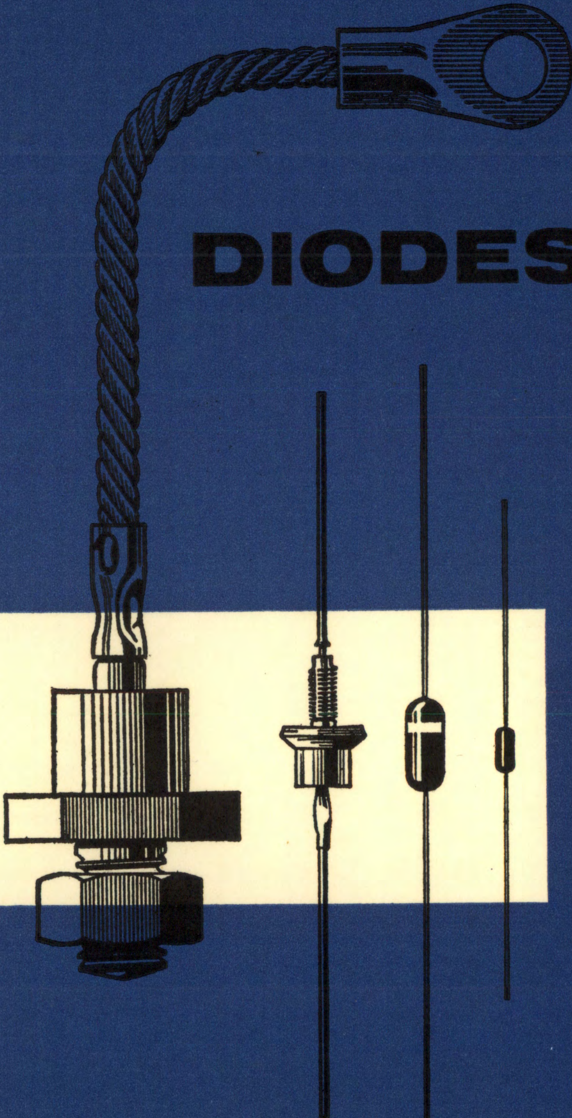
PHILIPS SEMICONDUCTORS

DIODES



SEMICONDUCTOR DIODES
DIODES SEMI-CONDUCTRICES
HALBLEITERDIODEN

The inclusion of a type number in this list does not necessarily imply its availability
La figuration d'un numéro de type sur cette liste n'implique pas nécessairement que le tube est livrable
Das Vorkommen einer Typennummer in dieser Liste bedeutet nicht dass sie tatsächlich lieferbar ist

Type Typ	Page Seite	Date Datum
	Dio 1,2	5. 5.1963
	Dio 3	5. 5.1963
AA119	1,2	6. 6.1962
	A,B	6. 6.1962
	C,D	6. 6.1962
AAY21	1,2	4. 4.1963
	3	4. 4.1963
	A,B	4. 4.1963
	C,D	4. 4.1963
	E	4. 4.1963
AAZ12	1,2	12.12.1961
	3,4	12.12.1961
	A,B	12.12.1961
AAZ13	1,2	12.12.1961
	3,4	12.12.1961
	A,B	12.12.1961
AAZ15	1,2	4. 4.1961
	3	4. 4.1961
	A,B	4. 4.1961
	C,D	4. 4.1961
	E,F	4. 4.1961
AAZ17	1,2	10.10.1960
	3,4	10.10.1960
	A,B	10.10.1960
	C,D	10.10.1960
	E	10.10.1960
AAZ18	1,2	4. 4.1961
	3,4	10.10.1960
	A,B	10.10.1960
	C,D	10.10.1960
	E	10.10.1960

Type Typ	Page Seite	Date Datum
BA100	1,2	5. 5.1960
	A,B	5. 5.1960
	C,D	5. 5.1960
BA102	1,2	9. 9.1960
	3,A	9. 9.1960
BA114	1	4. 4.1963
	A,B	4. 4.1963
BY100/S	1,2	5. 5.1963
	A,B	5. 5.1963
	C,D	5. 5.1963
	E	5. 5.1963
BY114	1,2	5. 5.1963
	A,B	5. 5.1963
	C,D	5. 5.1963
	E	5. 5.1963
BYY15 BYY16	1	5. 5.1963
BYY20 BYY21	1,2	5. 5.1963
	A,B	5. 5.1963
BYY22 BYY23 BYY24 BYY25 BYY67 BYY68	1,2	5. 5.1963
	3,4	5. 5.1963
	5,6	5. 5.1963
	7	5. 5.1963
	A,B	5. 5.1963
	C,D	5. 5.1963
	E,F	5. 5.1963
BYY73 BYY74	1	5. 5.1963

SEMICONDUCTOR DIODES
DIODES SEMI-CONDUCTRICES
HALBLEITERDIODEN

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Das Vorkommen einer Typennummer in dieser Liste bedeutet nicht dass sie tatsächlich lieferbar ist

Type Typ	Page Seite	Date Datum
BYZ10 BYZ11	1,2	5. 5.1963
BYZ12	3,4	5. 5.1963
BYZ13	5	5. 5.1963
	A,B	5. 5.1963
	C,D	5. 5.1963
	E	5. 5.1963
BYZ14 BYZ15	1,2	5. 5.1963
BYY15 BYY16	3,4	5. 5.1963
BYY73	5,6	5. 5.1963
BYY74	7	5. 5.1963
	A,B	4. 4.1963
	C,D	4. 4.1963
	E,F	4. 4.1963
BZY56 → 63	1,2	5. 5.1962
	3,A	5. 5.1962
	B,C	5. 5.1962
BZY64 → 69	1,2	5. 5.1962
	3,A	5. 5.1962
	B,C	5. 5.1962
BZY74 BZY75	1,2	4. 4.1963
BZY76	3	4. 4.1963
	A,B	4. 4.1963
	C,D	4. 4.1963
	E,F	4. 4.1963
	G,H	4. 4.1963
	I,J	4. 4.1963
	K,L	4. 4.1963
BZZ10 BZZ11	1,2	4. 4.1962
BZZ12	A,B	4. 4.1962
BZZ13	C	4. 4.1962

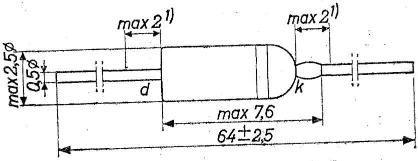
Type Typ	Page Seite	Date Datum
BZZ14 BZZ15	1,2	4. 4.1963
BZZ16	3,4	4. 4.1963
BZZ17 BZZ18	A,B	4. 4.1963
BZZ19	C,D	4. 4.1963
BZZ20	E,F	4. 4.1963
	G,H	4. 4.1963
	I,J	4. 4,1963
	K	4. 4.1963
OA5	1,2	7. 7.1957
	A,B	7. 7.1957
	C,D	7. 7.1957
OA7	1,2	6. 6.1960
	3	11.11.1960
	A,B	6. 6.1960
	C,D	6. 6.1960
	E,F	6. 6.1960
OA9	1,2	5. 5.1960
	3,4	5. 5.1960
	A,B	5. 5.1960
	C,D	5. 5.1960
	E,F	5. 5.1960
	G	5. 5.1960
OA31	1,2	4. 4.1959
	3	4. 4.1959
	A,B	6. 6.1958
OA47	1,2	10.10.1960
	3,4	10.10.1960
	A,B	10.10.1960
	C,D	10.10.1960
	E,F	10.10.1960
	G	10.10.1960

SEMICONDUCTOR DIODES
DIODES SEMI-CONDUCTRICES
HALBLEITERDIODEN

Type Typ	Page Seite	Date Datum
OA70	1,2	7. 7.1957
	A,B	10.10.1958
	C,D	10.10.1958
	E,F	7. 7.1957
	G,H	7. 7.1957
	I,J	7. 7.1957
OA71	1,2	7. 7.1957
	A,B	7. 7.1957
	C,D	7. 7.1957
OA72 2-OA72	1,2	7. 7.1957
	3	7. 7.1957
	A,B	7. 7.1957
OA73	1,2	7. 7.1957
	A,B	7. 7.1957
	C,D	7. 7.1957
	E,F	7. 7.1957
	G,H	7. 7.1957
	I,J	7. 7.1957
OA79 2-OA79	1,2	7. 7.1957
	3,4	7. 7.1957
	A,B	7. 7.1957
	C,D	7. 7.1957
	E	9. 9.1959
OA81	1,2	7. 7.1957
	A,B	7. 7.1957
	C,D	7. 7.1957
OA85	1,2	7. 7.1957
	A,B	7. 7.1957
	C,D	7. 7.1957
OA86 OA86C	1,2	7. 7.1957
	3,4	3. 3.1958
	A,B	7. 7.1957
	C,D	7. 7.1957
OA90	1,2	3. 3.1958
	A,B	4. 4.1959
	C,D	3. 3.1958
	E,F	3. 3.1958
OA91	1,2	3. 3.1958
	A,B	3. 3.1958
	C,D	3. 3.1958
OA92	1,2	6. 6.1961
	3	6. 6.1961
	A,B	6. 6.1961
	C,D	6. 6.1961
	E,F	6. 6.1961
	G	6. 6.1961
OA95	1,2	3. 3.1958
	A,B	3. 3.1958
	C,D	3. 3.1958
	E	3. 3.1958
OA200	1,2	6. 6.1960
	3	6. 6.1960
	A,B	6. 6.1960
	C,D	6. 6.1960
OA201	1,A	7. 7.1957
OA202	1,2	6. 6.1960
	3	6. 6.1960
	A,B	6. 6.1960
	C,D	6. 6.1960
OA210	1	12.12.1958
	A,B	10.10.1958
	C,D	10.10.1958
	E	10.10.1958
OA211	1,2	3. 3.1958
	A,B	10.10.1958
	C	10.10.1958
OA214	1,2	3. 3.1958
	A,B	10.10.1958
	C	10.10.1958
OAP12	1	7. 7.1958
OAZ200 → 213	1,2	5. 5.1960
	3,4	5. 5.1960
	5	5. 5.1960
	A,B	5. 5.1960
	C,D	5. 5.1960
	E,F	5. 5.1960
	G,H	5. 5.1960

POINT-CONTACT GERMANIUM DIODE in miniature all-glass construction for use in A.M. detector and ratio detector circuits

Dimensions in mm The white band indicates the cathode side



LIMITING VALUES (Absolute max. values)

		T_{amb} =	25 °C	60 °C
Inverse voltage				
Average value (averaging time max. 50 msec)	$-V_D$	= max.	30 V	30 V
	(t_{av}	= max.	50 msec	50 msec)
Peak value	$-V_{DM}$	= max.	45 V	45 V
Forward current				
Average value (averaging time max. 50 msec) (See page D)	I_D	= max.	35 mA	15 mA
	(t_{av}	= max.	50 msec	50 msec)
Peak value	I_{DM}	= max.	100 mA	100 mA
Surge current (max. duration 1 sec)	I_{Dsurge}	= max.	200 mA	200 mA
	(t	= max.	1 sec	1 sec)

Temperatures

Storage temperature	T_s	=	−55 °C to +75 °C
Operating ambient temperature	T_{amb}	=	−55 °C to +60 °C

THERMAL DATA

Thermal resistance from junction to ambience in free air K = max. 0.45 °C/mW

1) Not tinned

7Z2 1230
6.6.1962

Tentative data

AA119 PHILIPS

CHARACTERISTICS at T_{amb} = 25 °C

Forward current (I_D)	Forward voltage (V_D)	
	=	max.
0.1 mA	= 0.23 V	< 0.30 V
1 mA	= 0.56 V	< 0.88 V
30 mA	= 2.8 V	< 4.0 V 1)

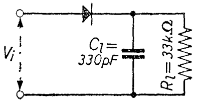
Inverse voltage ($-V_D$)	Reverse current ($-I_D$)	
	=	max.
1.5 V	= 0.8 µA	< 2.8 µA
10 V	= 4.5 µA	< 18 µA
30 V	= 35 µA	< 150 µA
45 V	= 90 µA	< 350 µA

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

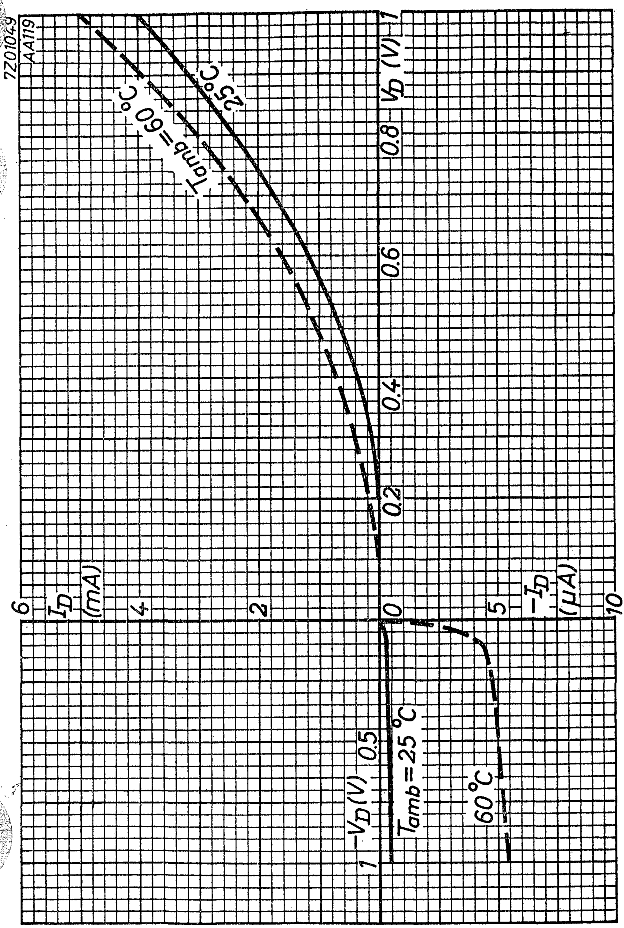
Forward current (I_D)	Forward voltage (V_D)			
	T_{amb} = 25 °C		T_{amb} = 60 °C	
	=	max.	=	max.
0.1 mA			= 0.16 V	< 0.25 V
1 mA			= 0.50 V	< 0.80 V
10 mA	= 1.5 V	< 2.2 V	= 1.4 V	< 2.1 V
30 mA 1)			= 2.6 V	< 3.8 V

Inverse voltage ($-V_D$)	Reverse current ($-I_D$)			
	T_{amb} = 25 °C		T_{amb} = 60 °C	
	=	max.	=	max.
0.1 V	= 0.35 µA	< 1.0 µA	= 4.5 µA	< 12 µA
1.5 V			= 6 µA	< 25 µA
10 V			= 16 µA	< 60 µA
30 V			= 60 µA	< 300 µA
45 V			= 170 µA	< 500 µA

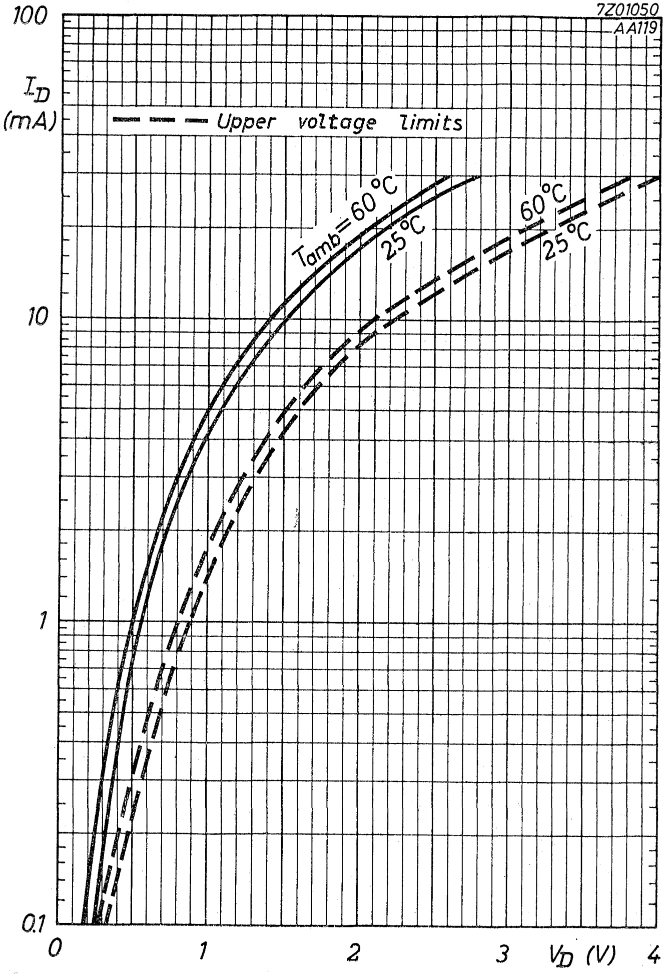
Input voltage	V_i =	3 Vrms	
Frequency	f =	10.7 Mc/s	
Efficiency	η =	85 %	
Damping resistance	r_d =	15 kΩ	> 13.5 kΩ < 19 kΩ

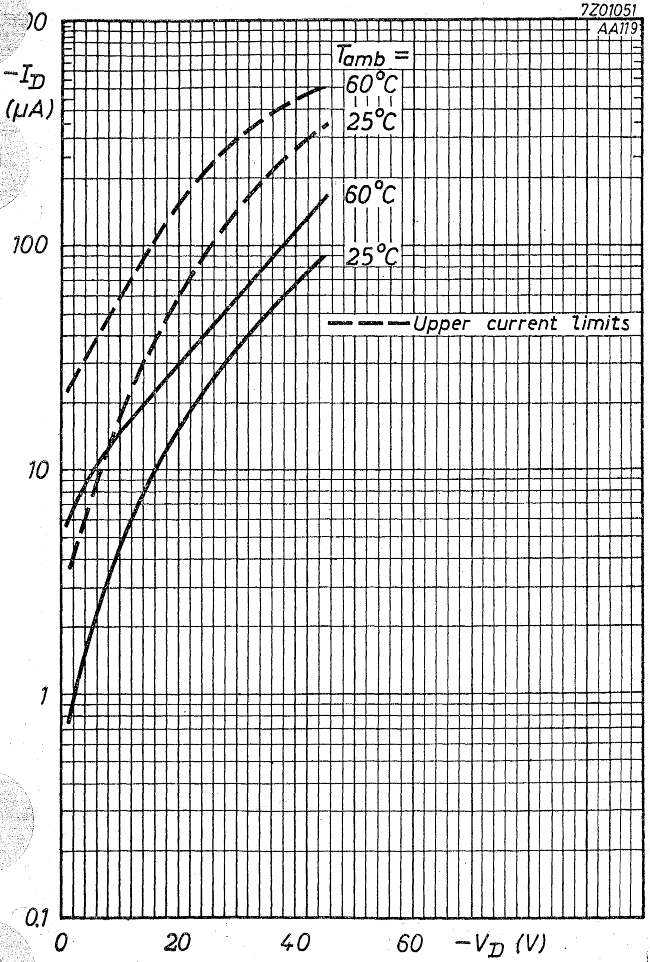


1) Measured with current pulses to prevent excessive dissipation

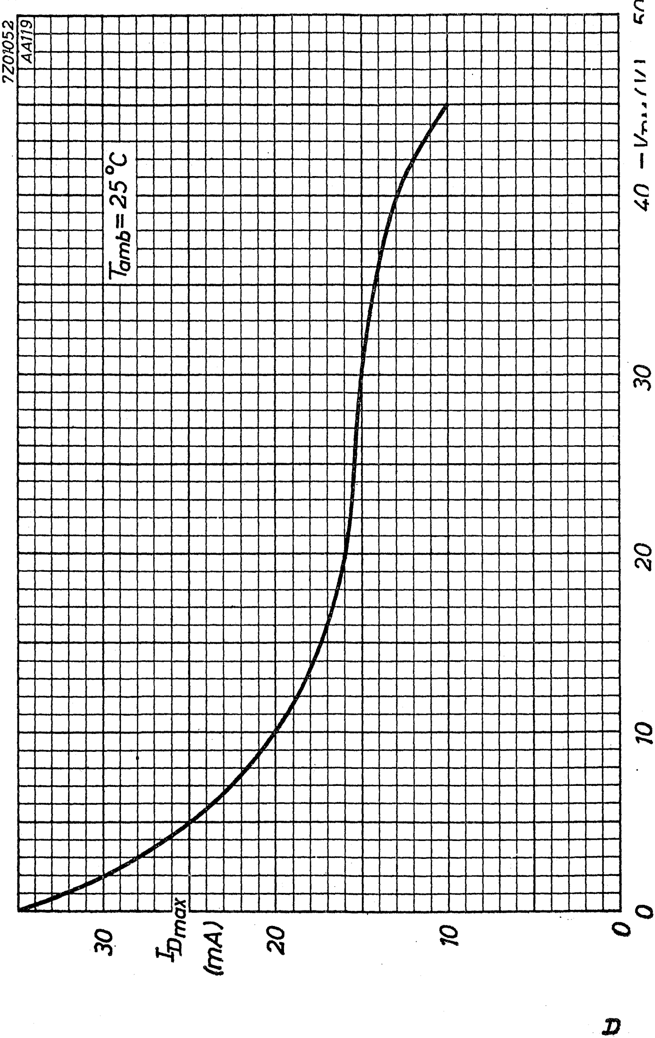

7Z01049
AA119
V_D (V)
1
0.8
0.6
0.4
0.2
T_{amb} = 60 °C
25 °C
I_D (mA)
6
4
2
0
5
10
$-I_D$ (μA)
0.5
1
$-V_D$ (V)
T_{amb} = 25 °C
60 °C

AA119 PHILIPS




7Z01051
AA119
$-I_D$
(μA)
100
10
1
0.1
0
20
40
60
$-V_D$ (V)
T_{amb} =
60°C
25°C
60°C
25°C
Upper current limits

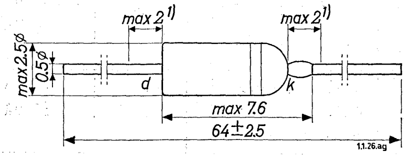
AA119 **PHILIPS**



D

POINT CONTACT GERMANIUM DIODE in miniature all-glass construction for high speed computer logic applications

Dimensions in mm   The white band indicates the cathode side



LIMITING VALUES (Absolute max. values)

Inverse voltage $-V_D$ = max. 15 V

Forward current

Continuous I_D = max. 20 mA

Peak value I_{DM} = max. 50 mA

Temperatures

Junction temperature T_j = max. 75 °C

Operating ambient temperature T_{amb} = −65 °C to +60 °C

Storage temperature T_s = −65 °C to +75 °C

THERMAL DATA

Thermal resistance from junction to ambience in free air   K = max. 0.75 °C/mW

CHARACTERISTICS

T_j = 25 °C		
Forward current (I_D)	Forward voltage (V_D) min.	Forward voltage (V_D) max.
2 mA	0.25 V	0.45 V
10 mA	0.40 V	0.80 V
50 mA	0.60 V	1.5 V

T_{amb} = 60 °C	
Inverse voltage ($-V_D$)	Reverse current ($-I_D$) max.
5 V	30 µA
15 V	100 µA

1) Not tinned

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

T_j = 60 °C		
Forward current (I_D)	Forward voltage (V_D) min.	Forward voltage (V_D) max.
2 mA	0.19 V	0.39 V
10 mA	0.34 V	0.74 V
50 mA	0.54 V	1.44 V

T_{amb} = 25 °C	
Inverse voltage ($-V_D$)	Reverse current ($-I_D$) max.
5 V	10 µA
15 V	60 µA

Diode capacitance

Inverse voltage	$-V_D$	=	1 V
Frequency	f	=	0.5 Mc/s
Ambient temperature	T_{amb}	=	25 °C
Diode capacitance	C_{dk}	<	1.2 pF

Reverse recovery time (see figs. 1, 3 and 4)

Initial forward current	I_D	=	3 mA
Inverse voltage	$-V_D$	=	1 V
Loop resistance	R_{loop}	=	100 Ω
Ambient temperature	T_{amb}	=	25 °C
Reverse recovery time for $-I_D$ = 1 mA	t_{rec}	=	5 nsec
		<	12 nsec

Reverse recovery current (see figs. 2, 3 and 5)

Initial forward current	I_D	=	3 mA
Inverse voltage	$-V_D$	=	5 V
Loop resistance	R_{loop}	=	500 Ω
Ambient temperature	T_{amb}	=	25 °C
Reverse recovery current after t = 50 nsec	$-I_D$	<	0.5 mA

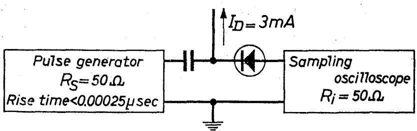


Fig. 1

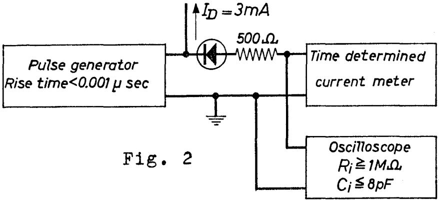


Fig. 2

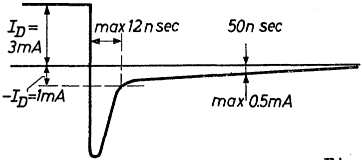


Fig. 3

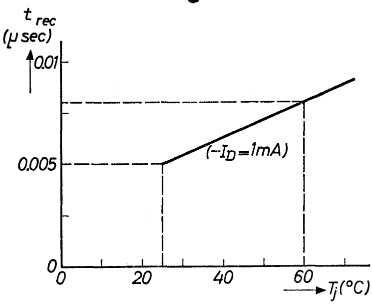


Fig. 4

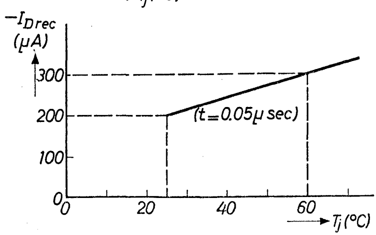
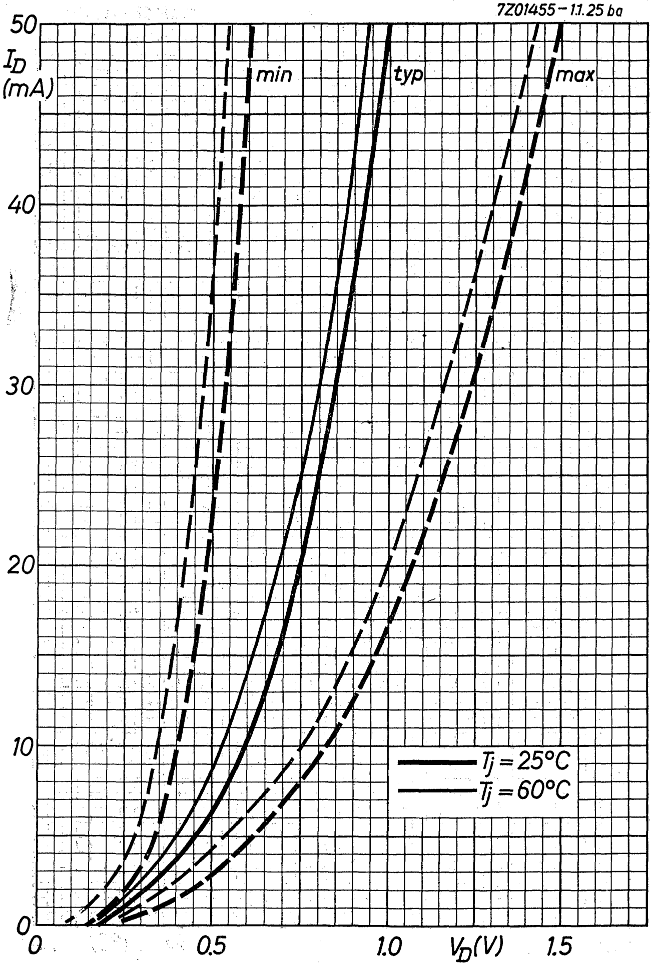
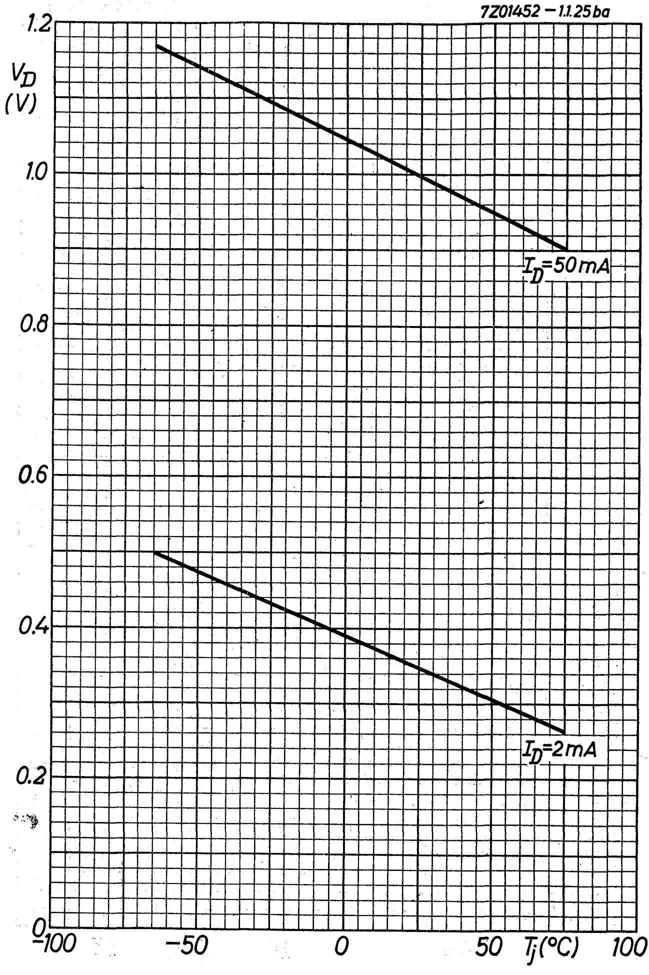
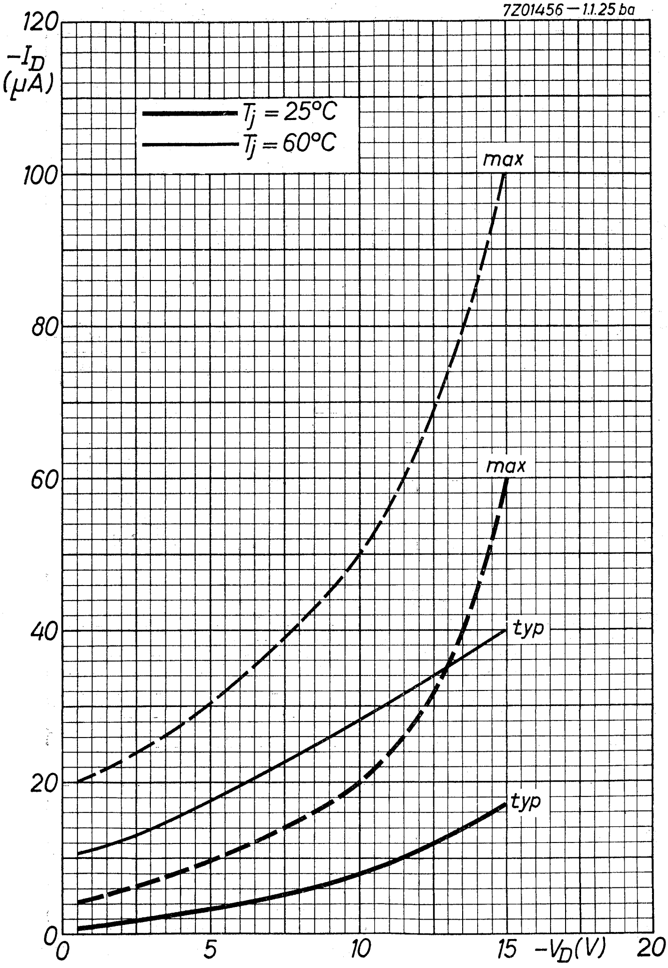


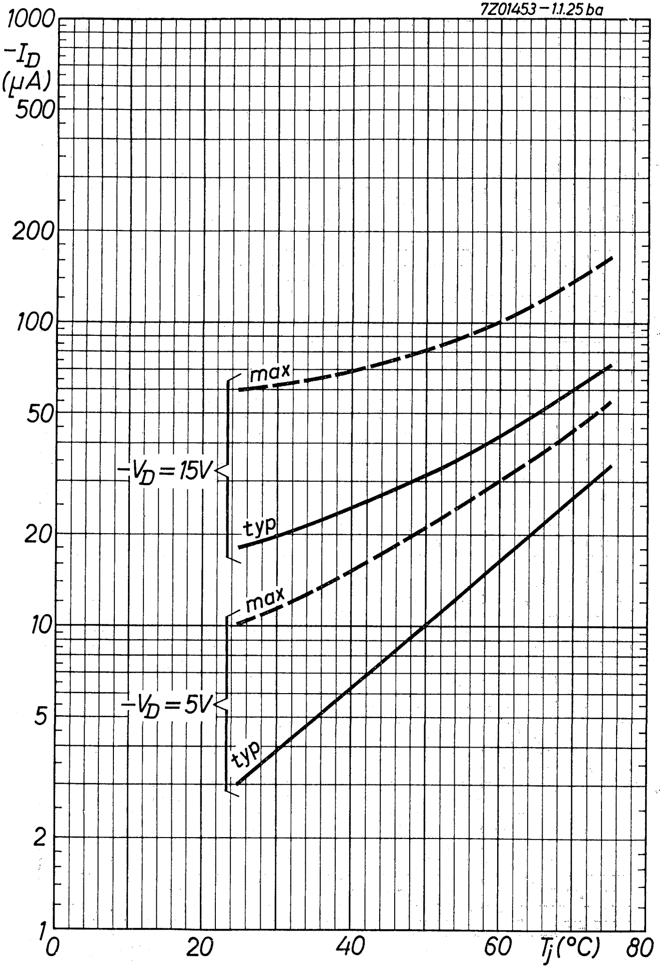
Fig. 5

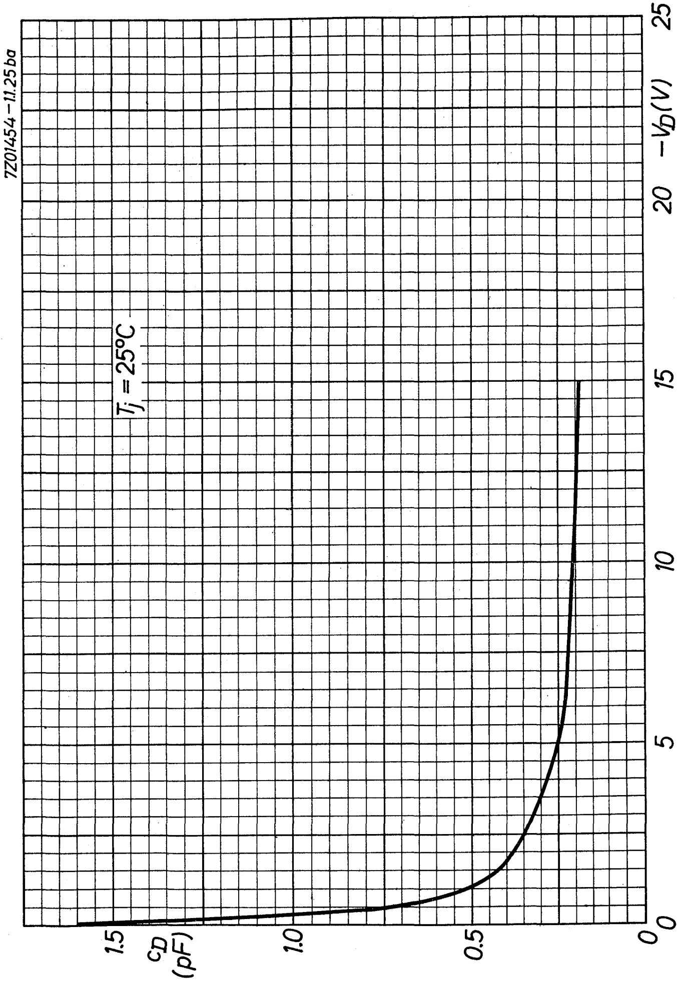

7Z01455 - 1.1.25 ba
50
I_D
(mA)
40
30
20
10
0
0
0.5
1.0
V_D(V)
1.5
min
typ
max
$T_j = 25°C$
$T_j = 60°C$

PHILIPS


7Z01452 – 1.1.25 ba
1.2
V_D
(V)
1.0
0.8
0.6
0.4
0.2
0
I_D=50 mA
I_D=2 mA
–100
–50
0
50
T_j(°C)
100


7Z01456 — 1.1.25 ba
120
$-I_D$ (μA)
$T_j = 25°C$
$T_j = 60°C$
100
80
60
40
20
0
max
max
typ
typ
0
5
10
15
$-V_D$ (V)
20


7Z01453 – 1.1.25 ba
1000
$-I_D$
(μA)
500
200
100
50
20
10
5
2
1
0
20
40
60
80
T_j (°C)
max
typ
$-V_D = 15V$
max
typ
$-V_D = 5V$



4.4.1963

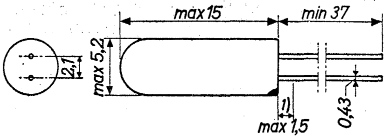
PHILIPS

AAZ12

GERMANIUM JUNCTION DIODE in single-ended all-glass construction for high current low hole-storage applications
DIODE AU GERMANIUM A JONCTION en construction tout-verre à sorties unilatérales destinée aux applications de courant élevé et de faible accumulation de lacunes
GERMANIUM-FLÄCHENDIODE in Allglastechnik mit einseitig ausgeführten Anschlüssen für Anwendungen mit hohen Strömen und geringer Löcheraufspeicherung

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The red dot indicates the cathode connection
Le point rouge indique la connexion de la cathode
Der rote Punkt bezeichnet den Katodenanschluss



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

T_{amb}	=	25	60	°C
$-V_D$	= max.	30	30	V
I_D (t_{av} = max. 50 msec)	= max.	100	100	mA
I_{DM}	= max.	1,0	0,5	A
I_D surge (t = max. 100 µsec)	= max.	4,0		A
T_j	=	max. 75 °C		
Storage temperature Température d'emmagasinage Lagerungstemperatur	=	-55 °C/+75 °C		

[1]) Not tinned; non étamé; nicht verzinnt

7Z2 0948
12.12.1961

Tentative data. Vorläufige Daten
Caractéristiques provisoires

AAZ12 PHILIPS

Thermal data. Thermal resistance from junction to ambience in free air K $\leq$ 0.4 °C/mW
Données thermiques. Résistance thermique entre la jonction et l'ambiance à l'air libre K $\leq$ 0,4 °C/mW
Thermische Daten. Wärmewiderstand zwischen Kristall und Umgebung in freier Luft K $\leq$ 0,4 °C/mW

Characteristics range values for equipment design
Gammes de valeurs des caractéristiques pour l'étude d'équipements
Kenndatenbereiche für Gerätentwurf

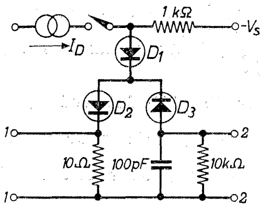
T_{amb} = 25 °C { unless otherwise specified / sauf indication différente / wenn nicht anders angegeben

I_D	=	0,3		mA		$-V_D$	=	1,5		V
V_D	=	135	< 190	mV		$-I_D$	=	1,5	< 5,0	µA
I_D	=	30		mA		$-V_D$	=	10		V
V_D	=	250	< 330	mV		$-I_D$	=	2,0	< 10	µA
I_D	=	100		mA		$-V_D$	=	20		V
V_D	=	320	< 420	mV		$-I_D$	=	3,2		µA
I_D	=	1000		mA[1])		$-V_D$	=	30		V
V_D	=	700		mV		$-I_D$	=	6,0		µA
$-V_D$	=	3		V		T_{amb}	=	60		°C
c_{dk}	=	9,0	< 12	pF[2])		$-V_D$	=	30		V
						$-I_D$	=	80	< 300	µA

[1]) Measured with current pulses to prevent excessive dissipation
Mesuré avec des impulsions de courant pour prévenir une dissipation excessive
Zur Vermeidung einer übermässigen Verlustleistung mit Stromimpulsen gemessen.

[2]) Capacitance with small signals
Capacité à faible signal
Kapazität bei kleiner Signalstärke

Recovered charge
Récupération de charge
Freikommende Ladung



D_1 = diode under test
D_1 = diode à l'essai
D_1 = geprüfte Diode

D_2 = low hole storage diode
D_2 = diode à faible accumulation de lacunes
D_2 = Diode mit geringer Löcheraufspeicherung

D_3 = diode with low forward voltage drop
D_3 = diode à faible chute de tension en sens conducteur
D_3 = Diode mit niedrigem Spannungsabfall im Durchlasszustand

Terminals 1: forward current wave form
Bornes 1 : forme d'onde du courant en sens conducteur
Anschlussklemmen 1: Wellenform des Stromes in Durchlassrichtung

Terminals 2: measuring of recovered charge
Bornes 2 : mesure de la charge de récupération
Anschlussklemmen 2: Messung der freigekommenen Ladung

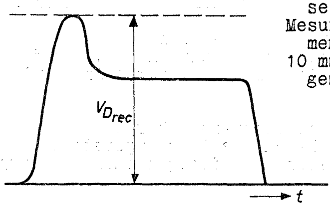
I_D	=	10		mA
Fall time of I_D Temps de descente de I_D Abfallzeit von I_D	<	0,01		µsec
$-V_S$	=	10		V
Q	=	150	< 200	pC

Recombination time (time taken by recovered charge in excess of that due to capacitance to fall to 10% of its peak value)
Temps de recombinaison (durée du temps prise par la charge de récupération, au-dessus de celle par suite de la capacité, pour descendre jusqu'à 10% de sa valeur de crête)
Rekombinationszeit (Zeit die die freikommende Ladung, ausser der infolge der Kapazität, braucht um bis 10% ihres Höchstwertes abzufallen).

Measured in the circuit page 3 with delayed application of $-V_S$
Mesuré avec le circuit page 3, mais avec application retardée de $-V_S$
Gemessen in der Schaltung Seite 3 aber mit verzögerter Anlegung von $-V_S$

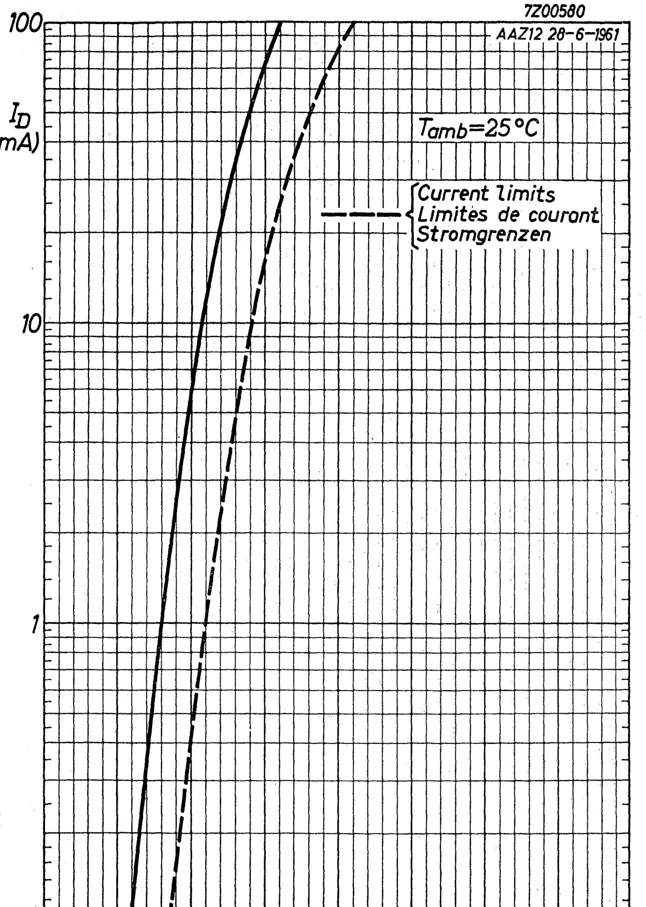
I_D	=	10		mA
τ_{rec}	=	0,05	< 0,12	µsec

Forward recovery voltage
Tension de recouvrement en sens conducteur
Übergangsspannung in Durchlassrichtung



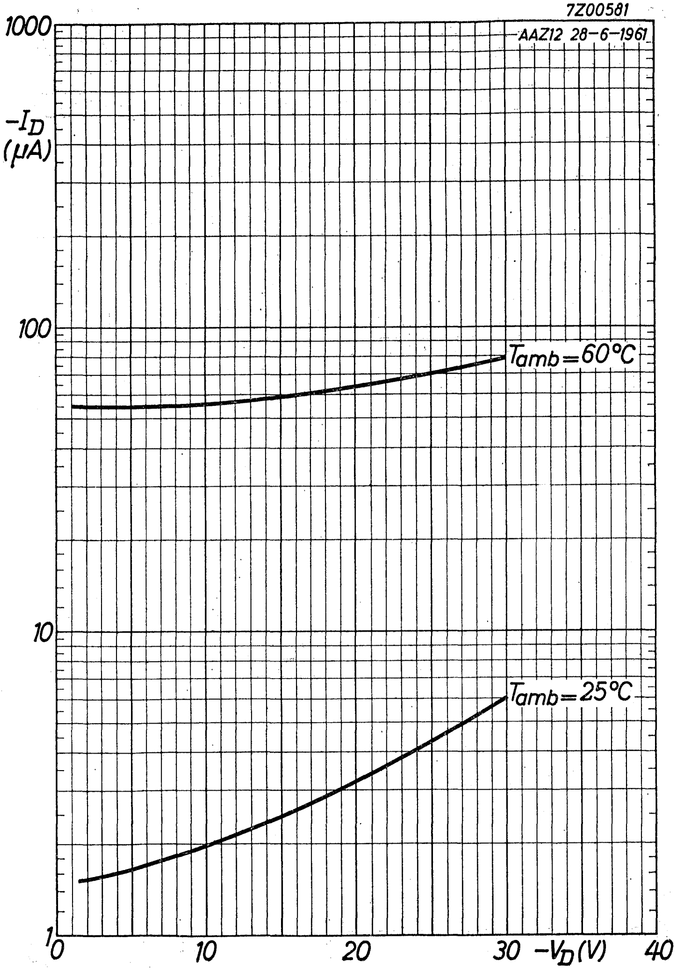
Measured at 10 mm from the seal
Mesuré à 10 mm du scellement
10 mm von der Einschmelzung gemessen

I_D	=	400		mA
Rise time of I_D Temps de montée de I_D Anstiegszeit von I_D	=	0,04		µsec
$V_{D\,rec}$	=	0,8	< 2,0	V


7Z00580
AAZ12 28-6-1961
I_D (mA)
100
10
1
0,1
T_{amb}=25°C
Current limits
Limites de courant
Stromgrenzen
0
0,2
0,4
0,6
V_D(V)
0,8

AAZ 12

PHILIPS



B

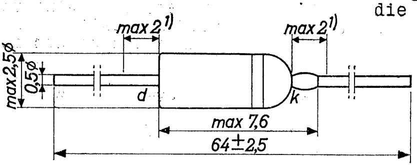
GOLD-BONDED GERMANIUM DIODE in miniature double-ended all-glass construction for use in high-speed switching applications

DIODE AU GERMANIUM À POINTE D'OR en construction miniature tout-verre à sorties bilatérales destinée aux applications de commutation à grande vitesse

GERMANIUM-GOLDDRAHTDIODE in Miniatur-Allglastechnik mit zweiseitig ausgeführten Anschlüssen zur Verwendung als Schalter grosser Geschwindigkeit

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc indique la position de la cathode
Der weisse Ring bezeichnet die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

T_{amb}	=		25	60 °C
$-V_D$	=	max.	8	8 V
I_D (t_{av} = max. 50 msec)	=	max.	30	20 mA
I_{DM} (t = max. 5 msec)	=	max.	100	50 mA
T_j	=		max.	75 °C

Storage temperature
Température d'emmagasinage = -55 °C/+75 °C
Lagerungstemperatur

[1]) Not tinned; non étamé; nicht verzinnt

AAZ13 PHILIPS

Thermal data. Thermal resistance from junction to ambience in free air	K	≦ 0.5 °C/mW
Données thermiques. Résistance thermique entre la jonction et l'ambiance à l'air libre	K	≦ 0,5 °C/mW
Thermische Daten. Wärmewiderstand zwischen Kristall und Umgebung in freier Luft	K	≦ 0,5 °C/mW

Characteristics range values for equipment design
Gammes de valeurs des caractéristiques pour l'étude d'équipements.
Kenndatenbereiche für Gerätentwurf

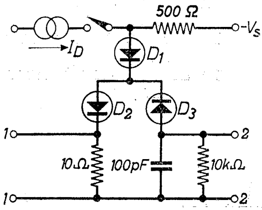
T_{amb} = 25 °C { unless otherwise specified / sauf indication différente / wenn nicht anders angegeben

I_D	= 1			mA
V_D	= 270	<	320	mV
I_D	= 10			mA
V_D	= 500	<	600	mV
I_D	= 30			mA
V_D	= 600	<	1000	mV
$-V_D$	= 1			V
c_{dk}	= 3,3			pF[1])
$-V_D$	= 3			V
c_{dk}	= 1,3	<	2,0	pF[1])

$-V_D$	= 3			V
$-I_D$	= 5	<	25	µA
T_{amb}	= 60			°C
$-V_D$	= 3			V
$-I_D$	= 30	<	85	µA
$-V_D$	= 8			V
$-I_D$	= 30	<	150	µA
T_{amb}	= 60			°C
$-V_D$	= 8			V
$-I_D$	= 190			µA

[1]) Capacitance with small signals
Capacité à faible signal.
Kapazität bei kleiner Signalstärke

Recovered charge
Récupération de charge
Freikommende Ladung



D_1 = diode under test
D_1 = diode à l'essai
D_1 = geprüfte Diode

D_2 = low hole storage diode
D_2 = diode à faible accumulation de lacunes
D_2 = Diode mit geringer Löcheraufspeicherung

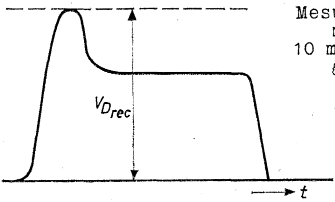
D_3 = diode with low forward voltage drop
D_3 = diode à faible chute de tension en sens conducteur
D_3 = Diode mit niedrigem Spannungsabfall im Durchlasszustand

Terminals 1: forward current wave form
Bornes 1 : forme d'onde du courant en sens conducteur
Anschlussklemmen 1: Wellenform des Stromes in Durchlass-richtung

Terminals 2: measuring of recovered charge
Bornes 2 : mesure de la charge de récupération
Anschlussklemmen 2: Messung der freigekommenen Ladung

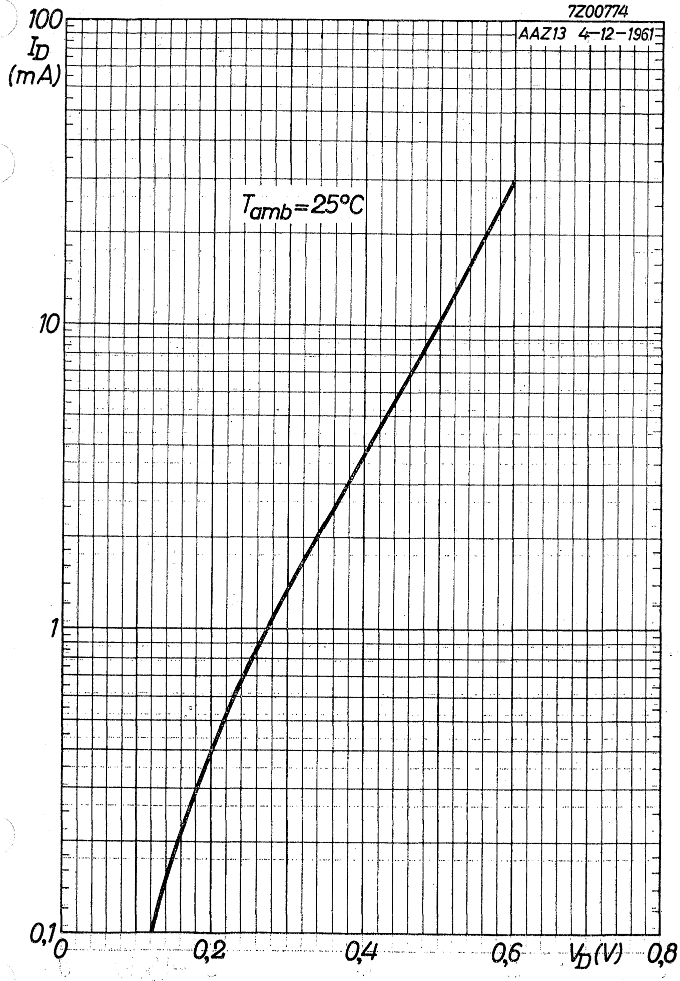
I_D	=	10		mA
Fall time of I_D Temps de descente de I_D Abfallzeit von I_D	<	0,005		µsec
$-V_S$	=	5		V
Q	=	20	< 30	pC

Forward recovery voltage
Tension de recouvrement en sens conducteur
Übergangsspannung in Durchlassrichtung



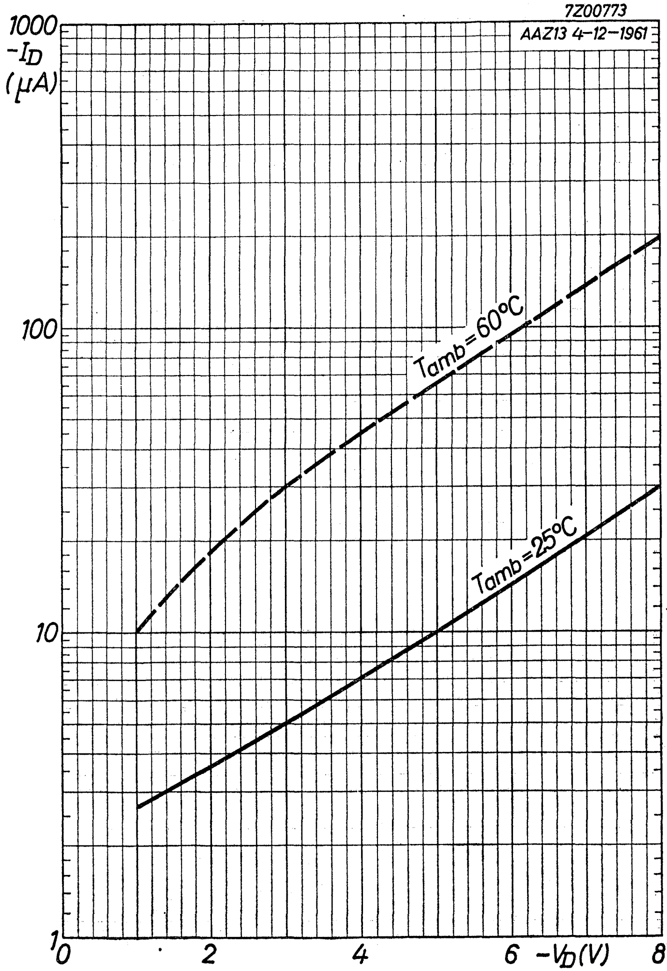
Measured at 10 mm from the seal
Mesuré à 10 mm du scellement
10 mm von der Einschmelzung gemessen

I_D	=	20	mA
Rise time of I_D Temps de montée de I_D Anstiegszeit von I_D	=	0,005	µsec
$V_{D\ rec}$	=	0,7 <1,5	V


7Z00774
AAZ13 4-12-1961
100
I_D
(mA)
$T_{amb}=25°C$
10
1
0,1
0
0,2
0,4
0,6
V_D(V)
0,8

AAZ 13

PHILIPS



B

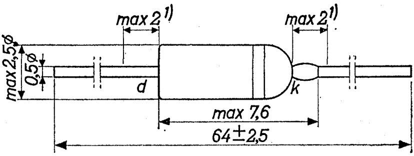
PHILIPS

AAZ 15

GOLD-BONDED GERMANIUM DIODE in all-glass construction for general purpose applications
DIODE À CRISTAL DE GERMANIUM À POINTE D'OR en construction tout-verre miniature pour usages généraux
GERMANIUM-GOLDDRAHTDIODE in Miniatur-Allglastechnik für allgemeine Verwendungszwecke

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc indique la position de la cathode
Der weisse Ring bezeichnet die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

T_{amb} =		25 °C	60 °C
$-V_D$	= max.	75	75 V
$-V_{DM}$	= max.	75	75 V
$-V_{Dsurge}$ (t = max. 1 sec)	= max.	115	115 V
I_D direct current / courant continu / Gleichstrom	= max.	140	55 mA 2)
I_D (t_{av} = max. 50 msec)	See pages E,F / Voir pages E,F / Siehe Seiten E,F		
I_{DM}	= max.	250	250 mA
I_{Dsurge} (t = max. 1 sec)	= max.	300	300 mA
T_{amb}	=	-55 °C/+60 °C	

Storage temperature
Température d'emmagasinage = -55 °C/+75 °C
Lagerungstemperatur

1) Not tinned
Non étamé
Nicht verzinnt

2) See also page D
Voir aussi page D
Siehe auch Seite D

Thermal data. Thermal resistance from junction to ambience in free air	$K \leq 0.45$ °C/mW
Données thermiques. Résistance thermique entre la jonction et l'ambiance à l'air libre	$K \leq 0,45$ °C/mW
Thermische Daten. Wärmewiderstand zwischen Kristall und Umgebung in freier Luft	$K \leq 0,45$ °C/mW

Characteristics
Caractéristiques
Kenndaten

I_D (mA)	V_D(V) T_{amb} = 25 °C =	T_{amb} = 25 °C max.	T_{amb} = 60 °C =	T_{amb} = 60 °C max.
0,1	= 0,15	< 0,23	= 0,08	< 0,18
10	= 0,35	< 0,45	= 0,30	< 0,40
250[1])	= 0,70	< 1,10	= 0,65	< 1,05

$-V_D$ (V)	$-I_D$(μA) T_{amb} = 25 °C =	T_{amb} = 25 °C max.	T_{amb} = 60 °C =	T_{amb} = 60 °C max.
1,5	= 0,6	< 2,5	= 12	< 30
10	= 1,0	< 4	= 16	< 60
75	= 10	< 25	= 35	<120

[1]) Measured under pulsed conditions to prevent excessive dissipation
Mesuré avec des impulsions pour prévenir une dissipation excessive
Zur Vermeidung einer übermässigen Verlustleistung mit Impulsen gemessen

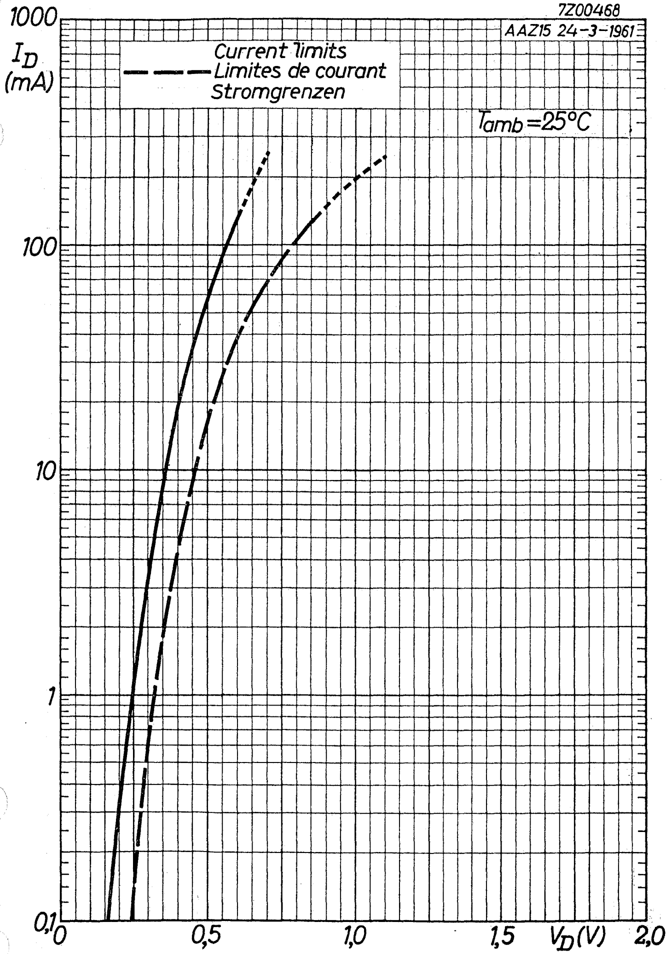
Characteristics (continued)
Caractéristiques (suite)
Kenndaten (Fortsetzung)

Capacitance Capacité Kapazität	$-V_D$	=	0,75 V
	f	=	0,5 Mc/s
	C_{dk}	=	1,2 pF
		<	4,0 pF [1])

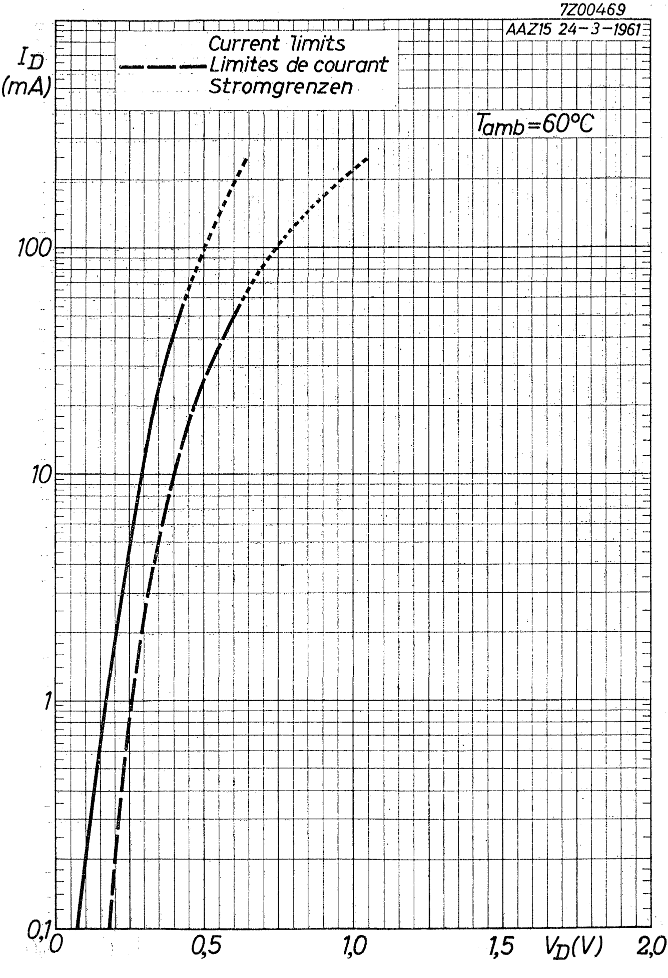
[1]) Characteristic range value for equipment design. For other characteristics range values for equipment design see curves pages A,B and C except for the points mentionned at page 2

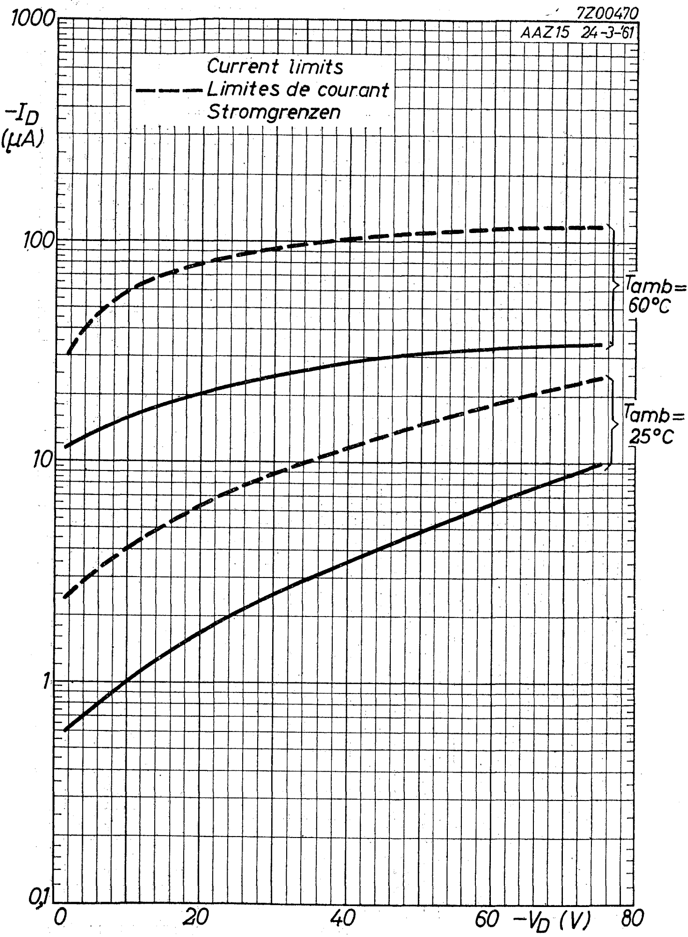
Gamme de valeur caractéristique pour l'étude d'équipements. Pour les autres gammes de valeurs caractéristiques pour l'étude d'équipements voir les courbes pages A,B et C sauf les points mentionnés page 2

Charakteristischer Kenndatenbereich für Gerätentwurf. Für die übrigen charakteristischen Kenndatenbereiche für Gerätentwurf siehe die Kurven auf Seite A,B und C, mit Ausnahme der auf Seite 2 erwähnten Punkte

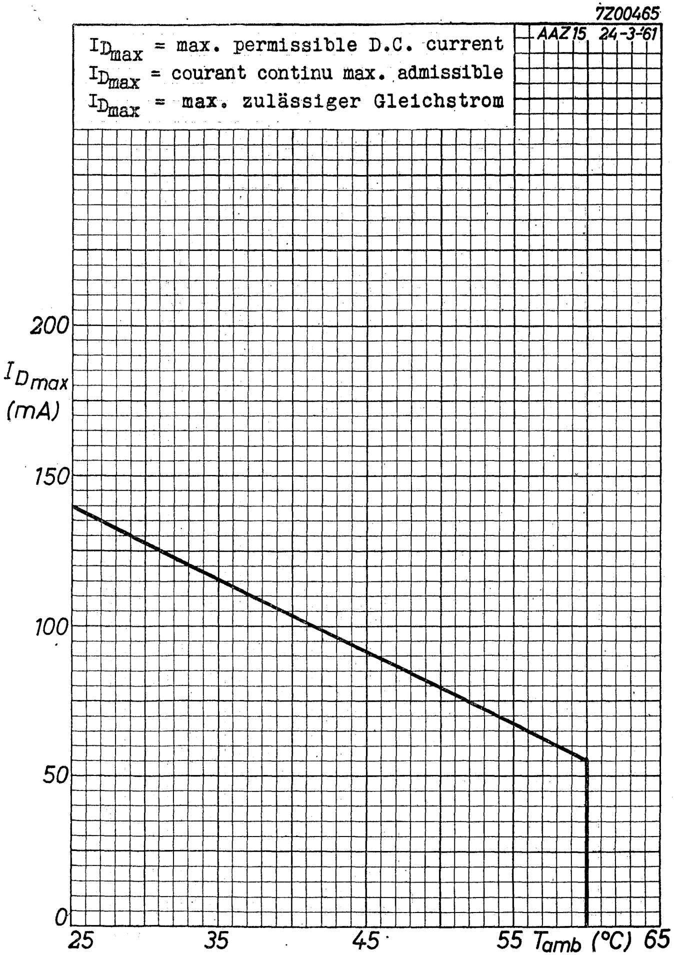

7Z00468
AAZ15 24-3-1961
1000
I_D
(mA)
100
10
1
0,1
Current limits
Limites de courant
Stromgrenzen
T_{amb}=25°C
0
0,5
1,0
1,5
V_D(V)
2,0

PHILIPS


7Z00469
AAZ15 24-3-1961
Current limits
Limites de courant
Stromgrenzen
I_D (mA)
T_{amb}=60°C
100
10
1
0,1
0
0,5
1,0
1,5
V_D(V)
2,0


7Z00470
AAZ15 24-3-'61
Current limits
Limites de courant
Stromgrenzen
$-I_D$ (μA)
1000
100
10
1
0,1
0
20
40
60
80
$-V_D$ (V)
T_{amb}= 60°C
T_{amb}= 25°C

PHILIPS

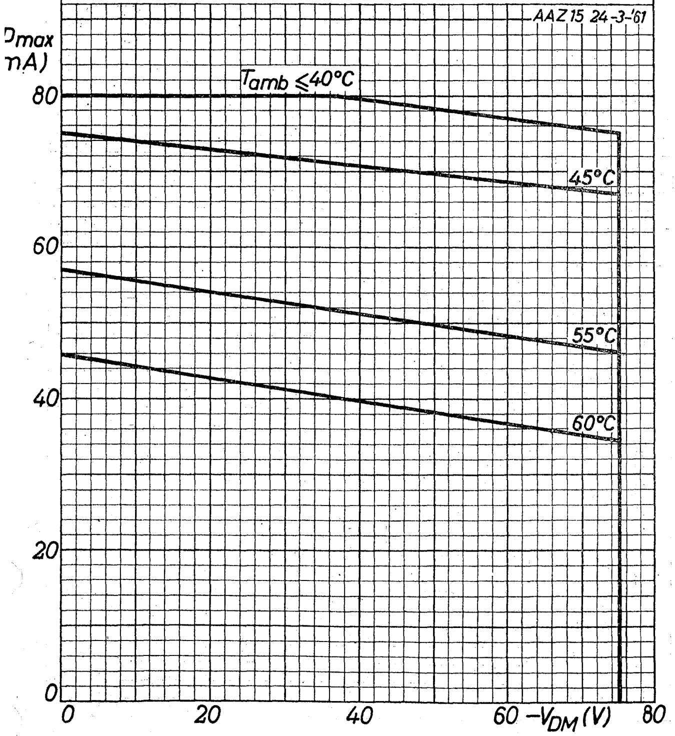

7Z00465
AAZ15 24-3-'61
I_{Dmax} = max. permissible D.C. current
I_{Dmax} = courant continu max. admissible
I_{Dmax} = max. zulässiger Gleichstrom
200
I_{Dmax}
(mA)
150
100
50
0
25
35
45
55
T_{amb} (°C)
65

7Z00466

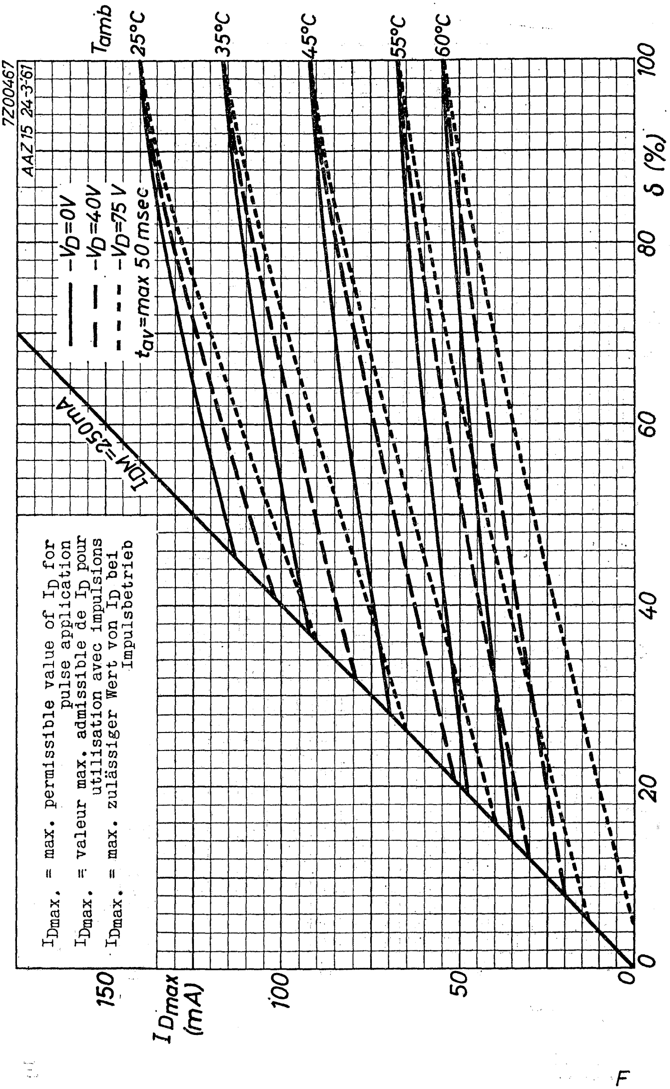
I_{Dmax} = max. permissible value of I_D for sinusoidal input voltages and resistive load. ($I_{DM} = \pi x I_D$; t_{av} = max. 50 msec)

I_{Dmax} = valeur max. admissible de I_D pour des tensions d'entrée sinusoïdales avec charge résistive. ($I_{DM} = \pi . I_D$; t_{av} = 50 msec au max.)

I_{Dmax} = max. zulässiger Wert von I_D bei sinusförmigen Eingangsspannungen mit Widerstandsbelastung. ($I_{DM} = \pi . I_D$; t_{av} = max. 50 mSek)



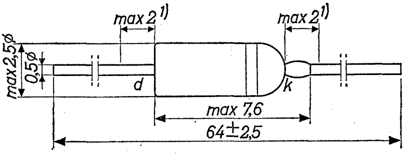
PHILIPS


7Z00467
AAZ 15 24-3-'61
Tamb
25°C
35°C
45°C
55°C
60°C
—— $-V_D$=0V
— — $-V_D$=40V
- - - $-V_D$=75 V
t_{av}=max 50 msec
I_{DM}=250mA
$I_{Dmax.}$ = max. permissible value of I_D for pulse application
$I_{Dmax.}$ = valeur max. admissible de I_D pour utilisation avec impulsions
$I_{Dmax.}$ = max. zulässiger Wert von I_D bei Impulsbetrieb
I_{Dmax} (mA)
150
100
50
0
0
20
40
60
80
100
δ (%)

GOLD-BONDED GERMANIUM DIODE in miniature all-glass construction for high back resistance switching applications
DIODE À CRISTAL DE GERMANIUM À POINTE D'OR en construction tout-verre miniature pour applications de commutation à résistance inverse élevée
GERMANIUM-GOLDDRAHTDIODE in Miniatur-Allglastechnik zur Verwendung als Schalterdiode mit hohem Widerstand im Sperrzustand

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring bezeichnet die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

		T_{amb} = 25 °C	60 °C
$-V_D$	= max.	50	50 V
$-V_{DM}$	= max.	50	50 V
$-V_{Dsurge}$ (t = max. 1 sec)	= max.	75	75 V
I_D { direct current / courant continu / Gleichstrom	= max.	110	40 mA 2)
I_D (t_{av} = max. 50 msec)	{ See pages D,E / Voir pages D,E / Siehe Seiten D,E		
I_{DM}	= max.	150	150 mA
I_{Dsurge} (t = max. 1 sec)	= max.	200	200 mA
T_{amb}	= −55 °C/+ 60 °C		
Storage temperature / Température d'emmagasinage / Lagerungstemperatur	= −55 °C/+ 75 °C		

1) Not tinned; non étamé; nicht verzinnt

2) See also page C; voir aussi page C; siehe auch Seite C

Thermal data. Junction temperature rise to ambient temperature in free air $K \leq 0.45\ ^{o}C/mW$

Données thermiques. Augmentation de la température de la jonction au regard de la température de l'ambiance à l'air libre $K \leq 0,45\ ^{o}C/mW$

Thermische Daten. Temperaturerhöhung des Kristalls in bezug auf die Umgebungstemperatur in freier Luft $K \leq 0,45\ ^{o}C/mW$

Characteristics
Caractéristiques
Kenndaten

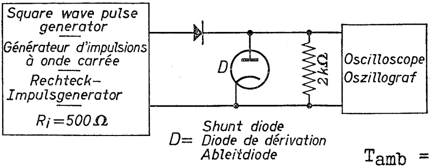
I_D (mA)	V_D (V)			
	T_{amb} = 25 °C		T_{amb} = 60 °C	
	=	max.	=	max.
1	=0,15	<0,25	=0,09	
10	=0,35	<0,65	=0,30	
150[1])	=0,74	<1,10	=0,68	

$-V_D$ (V)	$-I_D$ (μA)			
	T_{amb} = 25 °C		T_{amb} = 60 °C	
	=	max.	=	max.
1,5	= 1,5	< 3,5	= 14	
10	= 4,0	< 20	= 22	
50	= 30	< 150	= 100	

Reverse recovery, measured at $-V_D$ = 35 V after forward current pulse of 30 mA

Recouvrement inverse, mesuré à $-V_D$ = 35 V après une impulsion de courant en sens conducteur de 30 mA

Übergangszeit für Sperrichtung, gemessen bei $-V_D$ = 35 V nach einem Stromimpuls von 30 mA in der Durchlassrichtung



T_{amb} = 25 °C

Measuring circuit; circuit de mesure; Messchaltung

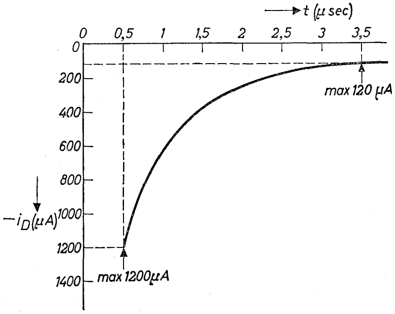
1) See page 3; voir page 3; siehe Seite 3

Reverse recovery (continued)
Recouvrement inverse (suite)
Übergangszeit für Sperrichtung (Fortsetzung)

Pulse data Données de l'impulsion Impulsdaten	f	=	50 kc/s
	δ	=	0,5
Rise time Temps de montée Anstiegszeit		<	0,1 μsec
	I_{DM}	=	30 mA
	$-V_{DM}$	=	35 V
Oscilloscope data Données de l'oscilloscope Daten des Oszillographen	C C_{inp}	=	40 pF
Rise time Temps de montée Anstiegszeit		=	0,025 μsec

$-i_D$ { 0.5 μsec after the current impuls / 0,5 μsec après l'impulsion de courant / 0,5 μSek nach dem Stromimpuls } = 850 μA, <1200 μA

$-i_D$ { 3.5 μsec after the current impuls / 3,5 μsec après l'impulsion de courant / 3,5 μSek nach dem Stromimpuls } = 60 μA, < 120 μA



[1]) Measured under pulsed conditions to prevent excessive dissipation
Mesuré avec des impulsions pour prévenir une dissipation excessive
Zur Vermeidung einer übermässigen Verlustleistung mit Impulsen gemessen

AAZ 17 **PHILIPS**

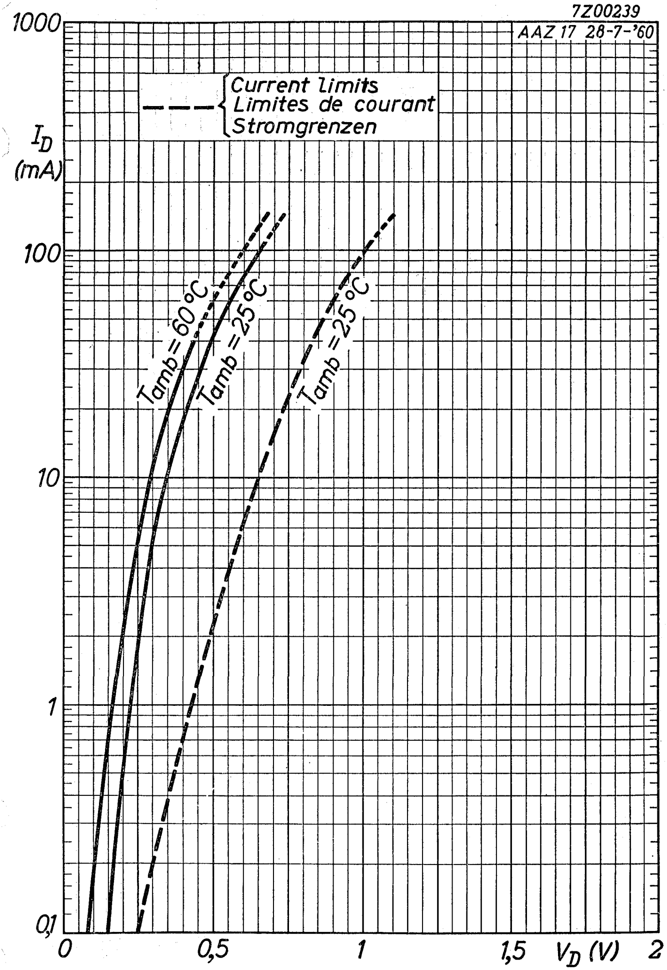
Characteristics (continued)
Caractéristiques (suite)
Kenndaten (Fortsetzung)

Capacitance
Capacité
Kapazität

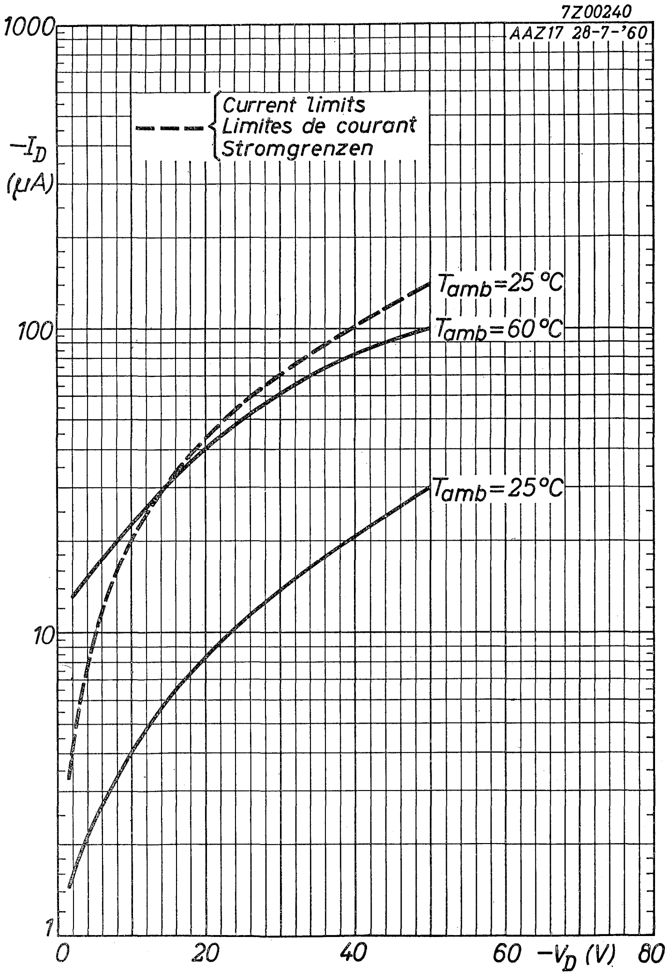
$-V_D$ = 0,75 V
f = 0,5 Mc/s

c_{dk} = 1,5 pF
c_{dk} < 4,0 pF [1])

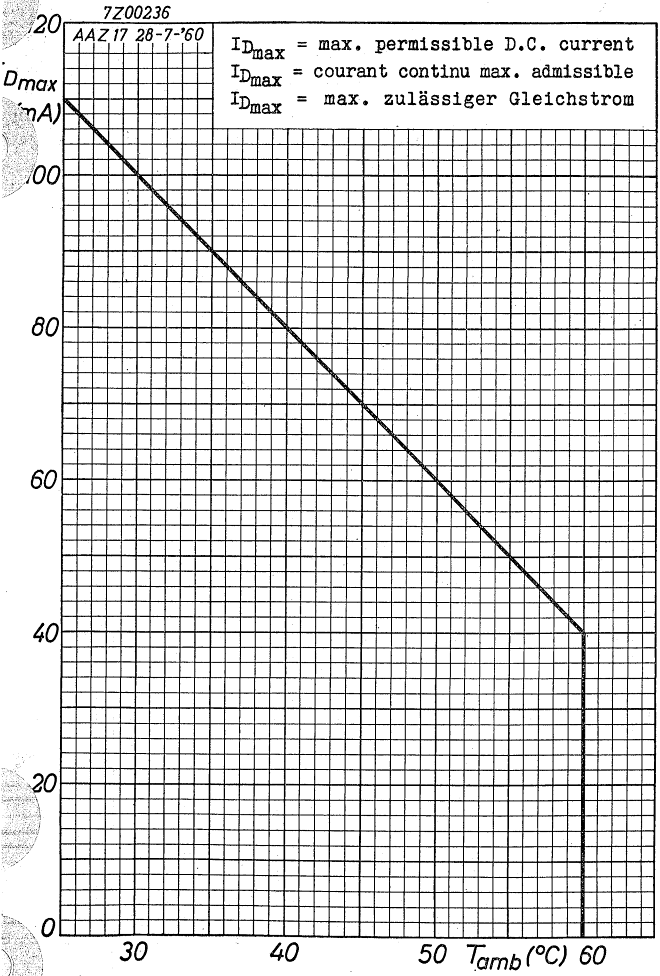
[1]) Characteristic range values for equipment design. For other characteristic range values for equipment design see curves pages A and B except the points mentionned at page 2
Gamme de valeurs caractéristiques pour l'étude d'équipements. Pour les autres gammes de valeurs caractéristiques pour l'étude d'équipements voir les courbes pages A et B sauf les points mentionnés page 2
Charakteristischer Wertbereich für Gerätentwurf. Für die übrigen charakteristischen Wertbereiche für Gerätentwurf siehe die Kurven Seiten A und B, mit Ausnahme der auf Seite 2 erwähnten Punkte.


7Z00239
AAZ 17 28-7-'60
Current limits
Limites de courant
Stromgrenzen
I_D (mA)
1000
100
10
1
0,1
Tamb = 60 °C
Tamb = 25 °C
Tamb = 25 °C
0
0,5
1
1,5
V_D (V)
2

AAZ 17


7Z00240
AAZ17 28-7-'60
1000
100
10
1
$-I_D$ (μA)
Current limits
Limites de courant
Stromgrenzen
T_{amb}=25 °C
T_{amb}=60 °C
T_{amb}=25°C
0
20
40
60
80
$-V_D$ (V)

B


7Z00236
AAZ 17 28-7-'60
$I_{D_{max}}$ = max. permissible D.C. current
$I_{D_{max}}$ = courant continu max. admissible
$I_{D_{max}}$ = max. zulässiger Gleichstrom
Dmax
mA)
20
00
80
60
40
20
0
30
40
50
T_{amb} (°C)
60

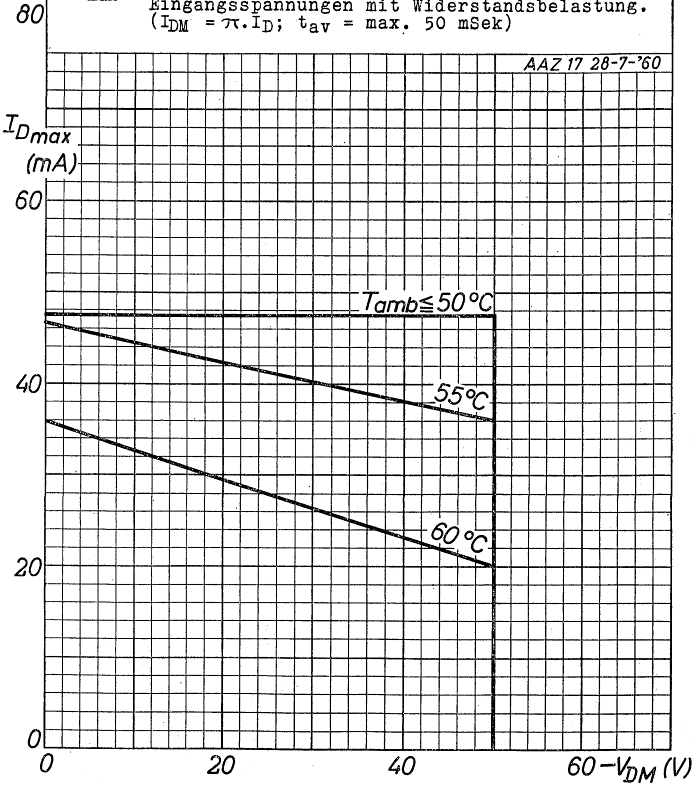
PHILIPS

7Z00237

I_{Dmax} = max. permissible value of I_D for sinusoidal input voltages and resistive load. ($I_{DM} = \pi x I_D$; t_{av} = max. 50 msec)

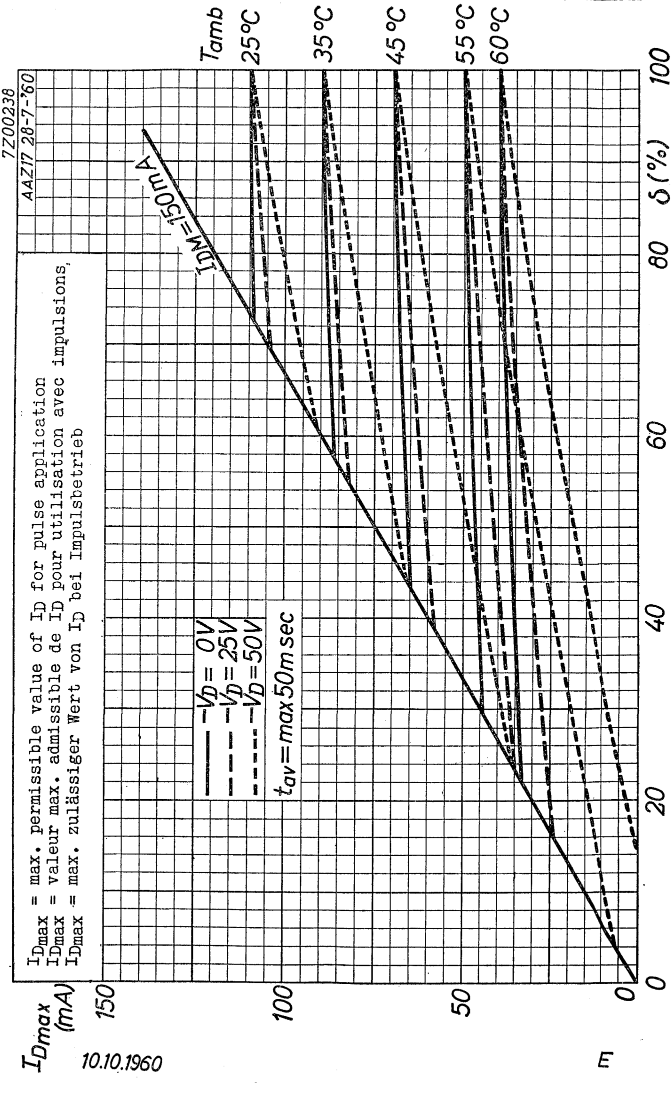
I_{Dmax} = valeur max. admissible de I_D pour des tensions d'entrée sinusoïdales avec charge résistive. ($I_{DM} = \pi . I_D$; t_{av} = 50 msec au max.)

I_{Dmax} = max. zulässiger Wert von I_D bei sinusförmigen Eingangsspannungen mit Widerstandsbelastung. ($I_{DM} = \pi . I_D$; t_{av} = max. 50 mSek)



PHILIPS

AAZ 17



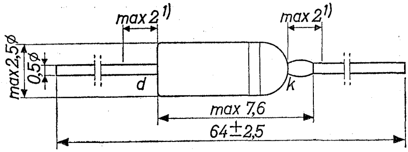
10.10.1960

E

GOLD-BONDED GERMANIUM DIODE in miniature all-glass construction for high current switching applications
DIODE À CRISTAL DE GERMANIUM À POINTE D'OR en construction tout-verre miniature pour applications de commutation à courant élevé
GERMANIUM-GOLDDRAHTDIODE in Miniatur-Allglastechnik zur Verwendung als Schalterdiode für hohe Ströme

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring bezeichnet die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

		T_{amb} = 25 °C	60 °C	
$-V_D$	= max.	20	20	V
$-V_{DM}$	= max.	20	20	V
$-V_{Dsurge}$ (t = max. 1 sec)	= max.	30	30	V
$-I_D$ { direct current / courant continu / Gleichstrom	= max.	180	65	mA 2)
I_D (t_{av} = max. 50 msec)	{ See pages D,E / Voir pages D,E / Siehe Seite D,E			
I_{DM}	= max.	300	300	mA
I_{Dsurge} (t = max. 1 sec)	= max.	400	400	mA

T_{amb} = - 55 °C/+ 60 °C

Storage temperature
Température d'emmagasinage = - 55 °C/+ 75 °C
Lagerungstemperatur

1) Not tinned; non étamé; nicht verzinnt

2) See also page C; voir aussi page C; siehe auch Seite C

Thermal data. Junction temperature rise to ambient temperature in free air — $K \leq 0.45\ ^{o}C/mW$

Données thermiques. Augmentation de la température de la jonction au regard de la température de l'ambiance à l'air libre — $K \leq 0,45\ ^{o}C/mW$

Thermische Daten. Temperaturerhöhung des Kristalls in bezug auf die Umgebungstemperatur in freier Luft — $K \leq 0,45\ ^{o}C/mW$

Characteristics
Caractéristiques
Kenndaten

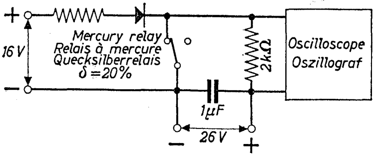
I_D (mA)	V_D (V) T_{amb} = 25 °C =	V_D (V) T_{amb} = 25 °C max.	V_D (V) T_{amb} = 60 °C =	V_D (V) T_{amb} = 60 °C max.
0,1	= 0,15	< 0,21	= 0,09	
10	= 0,34	< 0,41	= 0,29	
300[1])		< 0,78		

$-V_D$ (V)	$-I_D$ (µA) T_{amb} = 25 °C =	$-I_D$ (µA) T_{amb} = 25 °C max.	$-I_D$ (µA) T_{amb} = 60 °C =	$-I_D$ (µA) T_{amb} = 60 °C max.
1,5	= 0,6	< 3,5	= 5	
10	= 3	< 15	= 8	
20	= 6	< 50	= 15	

<u>Reverse recovery time</u>, measured at $-V_D$ = 10 V after forward current pulse of 300 mA

<u>Temps de recouvrement inverse</u>, mesuré à $-V_D$ = 10 V après une impulsion de courant de 300 mA dans le sens conducteur

<u>Übergangszeit für Sperrichtung</u>, gemessen bei $-V_D$ = 10 V nach einem Stromimpuls von 300 mA in Durchlassrichtung



Measuring circuit; circuit de mesure; Messschaltung

[1]) See page 3; voir page 3; siehe Seite 3

Reverse recovery time (continued)
Temps de recouvrement inverse (suite)
Übergangszeit für Sperrichtung (Fortsetzung)

Pulse data
Données de l'impulsion
Impulsdaten

I_{DM}	=	300 mA
$-V_{DM}$	≐	20 V
δ	=	20 %
f	=	50 c/s

Oscilloscope data
Données de l'oscilloscope
Daten des Oszillographen

C_{inp}	=	15 pF
R_{inp}	=	4 MΩ

Rise time
Temps de montée = 0,016 µsec
Anstiegszeit

$-i_D$ { 3.5 µsec after the current impuls / 3,5 µsec après l'impulsion de courant / 3,5 µSek nach dem Stromimpuls } = 40 µA, < 150 µA

Column I: Setting of the diode and typical (average) measuring results of new diodes
II: Characteristic range values for equipment design 2)
Colonne I: Valeurs pour le réglage de la diode et les résultats moyens de mesures de diodes neuves.
II: Gamme de valeurs caractéristiques pour l'étude d'équipements 2)
Spalte I: Einstelldaten der Diode und mittlere Messergebnisse neuer Dioden
II: Charakteristischer Wertbereich für Gerätentwurf 2)

Page 2, Seite 2

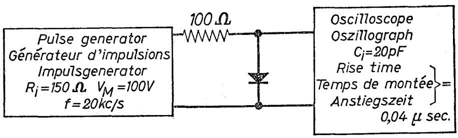
1) Measured under pulsed conditions to prevent excessive dissipation
Mesuré en service d'impulsions pour prévenir une dissipation excessive
Gemessen mit Impulsen zur Verhütung einer übermässigen Verlustleistung

2) For other characteristic range values for equipment design see curves at T_{amb} = 25 °C pages A and B
Pour les autres gammes de valeurs caractéristiques pour l'étude d'équipements voir les courbes à Tamb = 25 °C pages A et B
Für die übrigen charakteristischen Wertbereiche für Gerätentwurf siehe die Kurven bei T_{amb} = 25 °C Seiten A und B

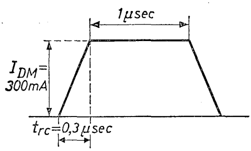
Capacitance
Capacité
Kapazität

		I	II	
$-V_D$	=	0,75		V
f	=	0,5		Mc/s
c_{dk}	=	1,8	< 4	pF

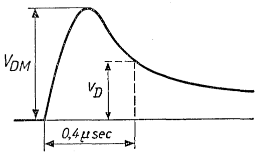
Forward recovery
Temps de recouvrement direct
Übergangszeit für Durchlassrichtung



Measuring circuit; circuit de mesure; Messanordnung

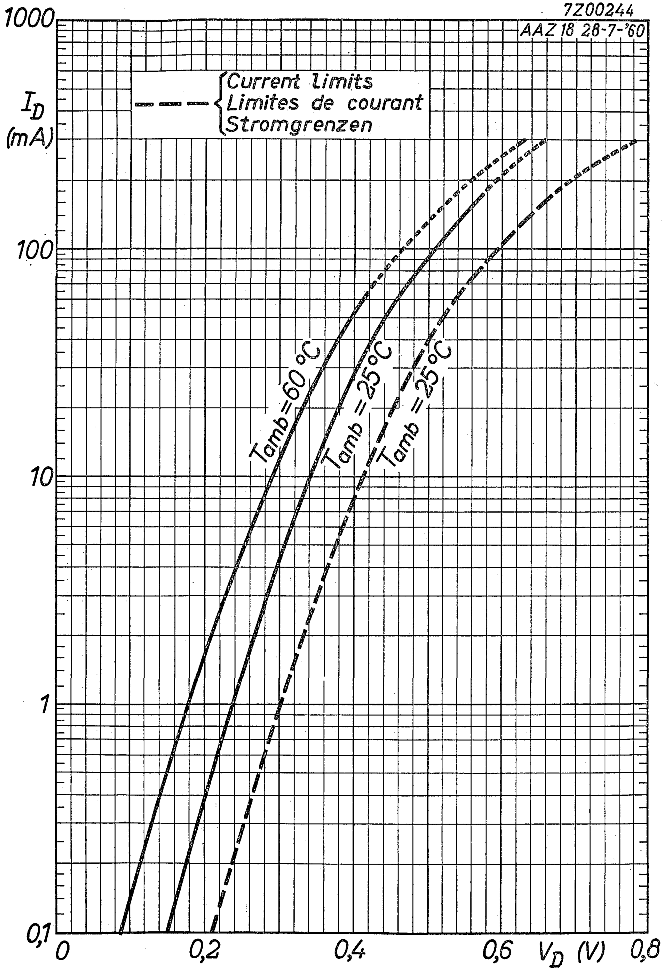


Current pulse
Impulsion de courant
Stromimpuls

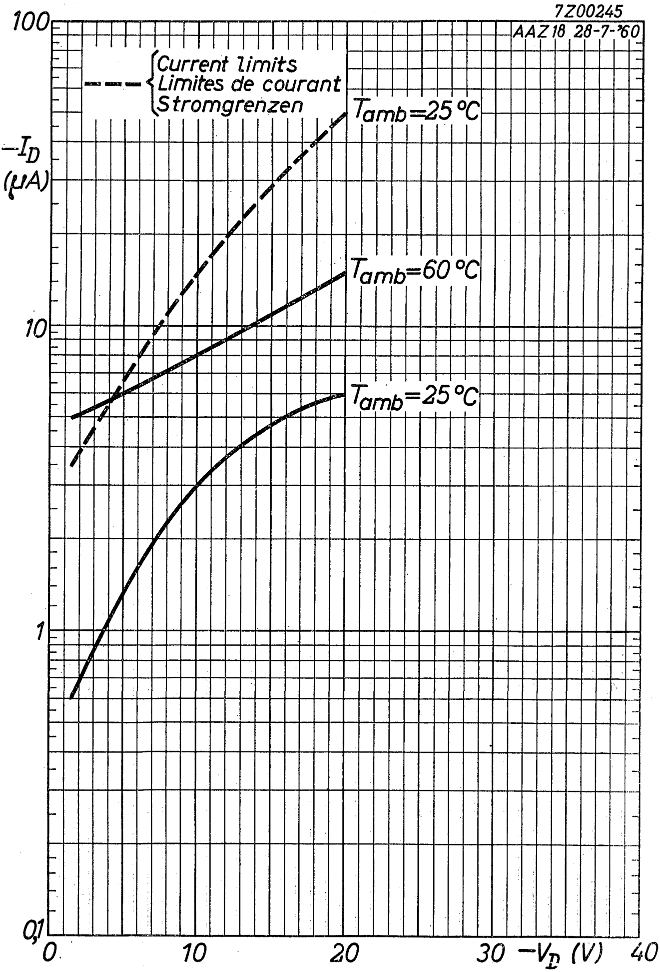


Voltage pulse
Impulsion de tension
Spannungsimpuls

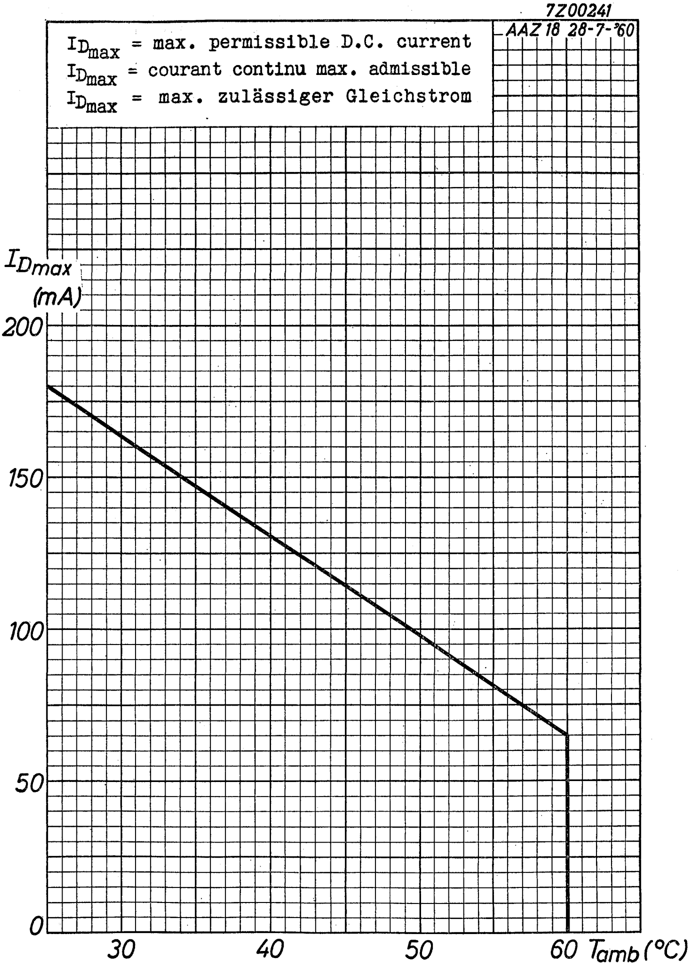
		I	II	
I_{DM}	=	300		mA
t_{imp}	=	1		μsec
V_{DM}	=	0,65		V
V_D { after 0.4 μsec / après 0,4 μsec / nach 0,4 μSek	=	0,62		V


7Z00244
AAZ 18 28-7-'60
Current limits
Limites de courant
Stromgrenzen
I_D
(mA)
1000
100
10
1
0,1
0
0,2
0,4
0,6
0,8
V_D (V)
Tamb=60 °C
Tamb = 25°C
Tamb = 25°C

PHILIPS


7Z00245
AAZ 18 28-7-'60
Current limits
Limites de courant
Stromgrenzen
T_{amb}=25 °C
T_{amb}=60 °C
T_{amb}=25 °C
$-I_D$ (μA)
100
10
1
0,1
0
10
20
30
40
$-V_D$ (V)

B


7Z00241
AAZ 18 28-7-'60
I_{Dmax} = max. permissible D.C. current
I_{Dmax} = courant continu max. admissible
I_{Dmax} = max. zulässiger Gleichstrom
I_{Dmax} (mA)
200
150
100
50
0
30
40
50
60
T_{amb} (°C)

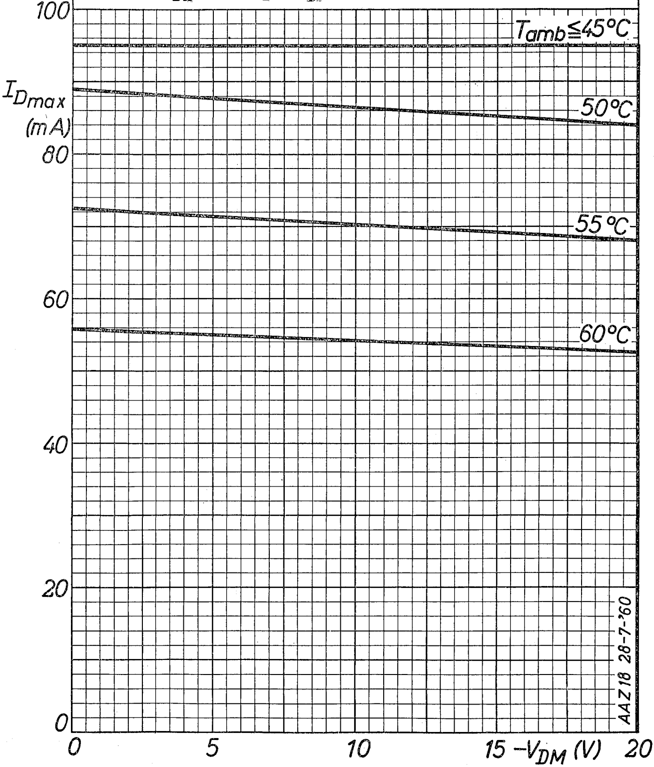
PHILIPS

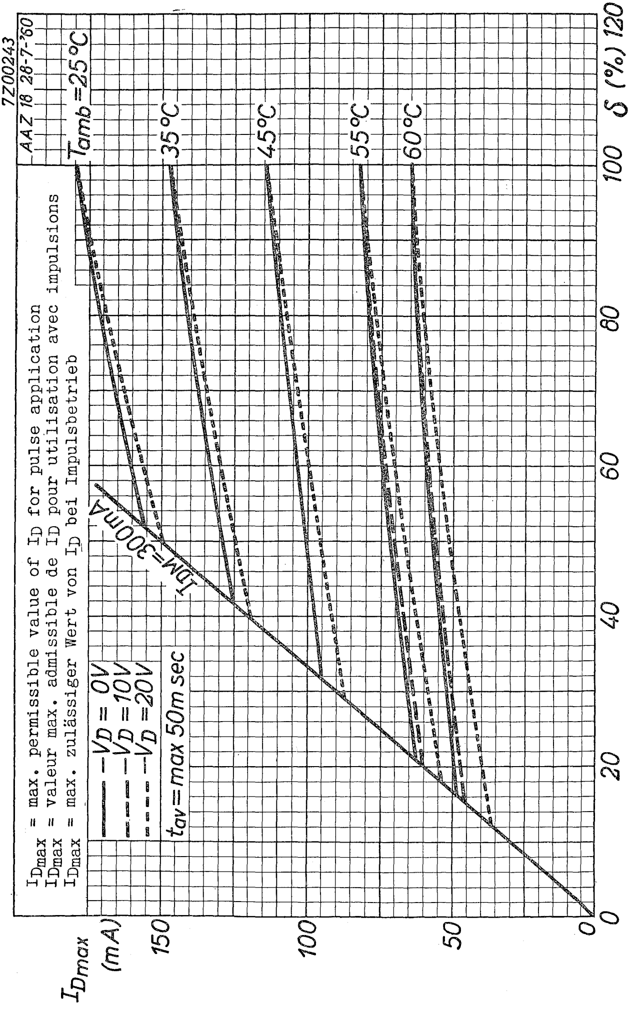
7Z00242

I_{Dmax} = max. permissible value of I_D for sinusoidal input voltages and resistive load. ($I_{DM} = \pi x I_D$; t_{av} = max. 50 msec)

I_{Dmax} = valeur max. admissible de I_D pour des tensions d'entrée sinusoïdales avec charge résistive. ($I_{DM} = \pi . I_D$; t_{av} = 50 msec au max.)

I_{Dmax} = max. zulässiger Wert von I_D bei sinusförmigen Eingangsspannungen mit Widerstandsbelastung. ($I_{DM} = \pi . I_D$; t_{av} = max. 50 mSek)

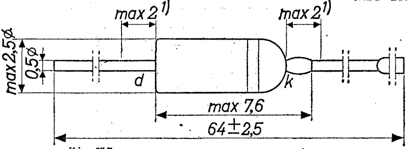



7Z00243
AAZ 18 28-7-'60
I_{Dmax} = max. permissible value of I_D for pulse application
I_{Dmax} = valeur max. admissible de I_D pour utilisation avec impulsions
I_{Dmax} = max. zulässiger Wert von I_D bei Impulsbetrieb
T_{amb} = 25°C
35°C
45°C
55°C
60°C
I_{DM} = 300 mA
$-V_D$ = 0V
$-V_D$ = 10V
$-V_D$ = 20V
t_{av} = max 50m sec
I_{Dmax} (mA)
150
100
50
0
0
20
40
60
80
100
120
δ (%)

GENERAL PURPOSE SILICON DIODE in miniature all-glass construction
DIODE A SILICIUM de construction miniature tout verre pour les usages généraux
ALLZWECKSILIZIUMDIODE in Miniatur- Allglasausführung

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc indique la position de la cathode
Der weisse Ring bezeichnet die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

		T_{amb} = 25°C	T_{amb} = 90°C
$-V_D$		= max. 60 V	max. 60 V
I_D		= max. 90 mA	max. 18 mA [2])
I_{DM}		= max. 100 mA	max. 100 mA
$I_{D\ surge}$	(T = max. 1 sec)	= max. 200 mA	max. 200 mA
T_{amb}		= -55 °C/ + 90 °C	

Storage temperature
Température d'emmagasinage = -55 °C/ + 90 °C
Lagerungstemperatur

Thermal data. Junction temperature rise to ambient temperature in free air K ≦ 0.4 °C/mW

Données thermiques. Augmentation de la température de la jonction au regard de la température de l'ambiance à l'air libre K ≦ 0,4 °C/mW

Thermische Daten. Temperaturerhöhung des Kristalls in Bezug auf die Umgebungstemperatur in freier Luft K ≦ 0,4 °C/mW

1) Not tinned; non étamé; nicht verzinnt
2) See pages B,C and D; voir pages B,C et D; siehe Seiten B,C und D

BA 100

PHILIPS

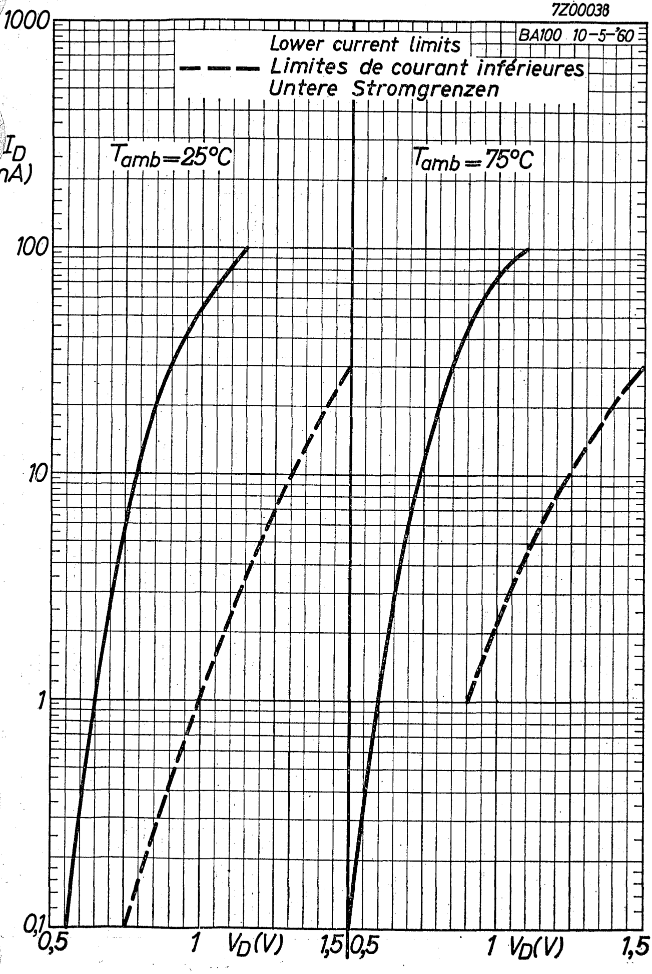
Characteristics
Caractéristiques
Kenndaten

I_D (mA)	V_D (V)					
	T_{amb} = 25 °C			T_{amb} = 60 °C		
	=	min.	max.	=	min.	max.
0,1	= 0,55		< 0,75	= 0,5		
1,0	= 0,65	> 0,5	< 1,0	= 0,6	> 0,4	< 0,9
30	= 0,9		< 1,5	= 0,85		< 1,5

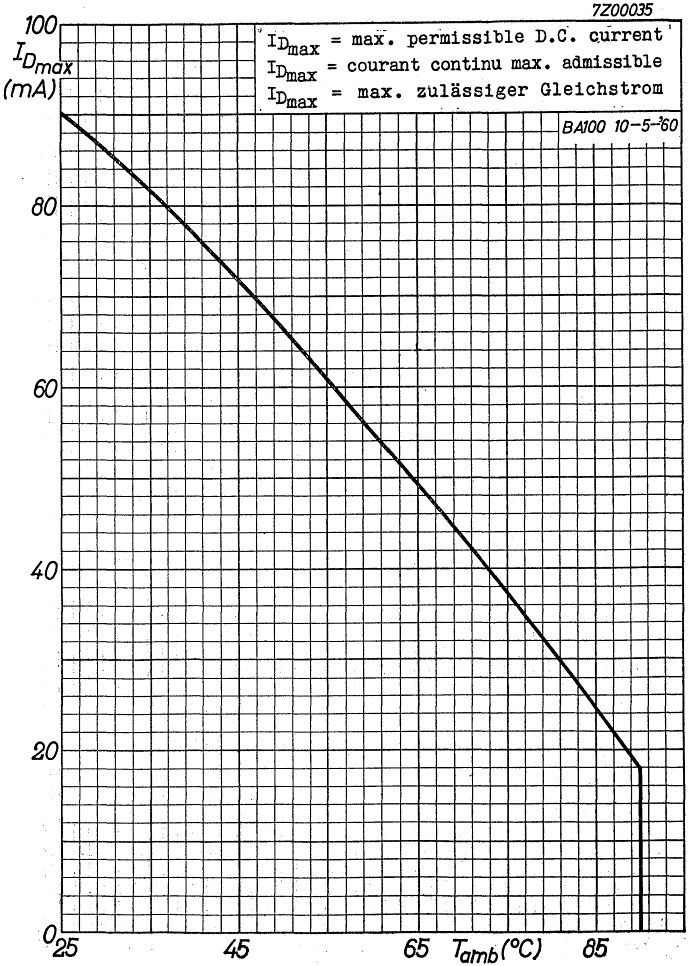
T_{amb} = 60 °C	
$-V_D$	$-I_D$
10 V	5,0 µA
60 V	10 µA

Characteristic range values for equipment design
(see also page A)
Gamme de valeurs caractéristiques pour l'étude d'équipements
(voir aussi page A)
Charakteristischer Wertbereich für Gerätentwurf
(siehe auch Seite A)

T_{amb} = 75 °C	
$-V_D$	$-I_D$
10 V	< 10 µA
60 V	< 20 µA


7Z00038
BA100 10-5-'60
Lower current limits
Limites de courant inférieures
Untere Stromgrenzen
I_D (mA)
1000
100
10
1
0,1
$T_{amb}=25°C$
$T_{amb}=75°C$
0,5
1
V_D(V)
1,5
0,5
1
V_D(V)
1,5

PHILIPS


7Z00035
$I_{D_{max}}$ (mA)
100
80
60
40
20
0
25
45
65
85
T_{amb} (°C)
$I_{D_{max}}$ = max. permissible D.C. current
$I_{D_{max}}$ = courant continu max. admissible
$I_{D_{max}}$ = max. zulässiger Gleichstrom
BA100 10-5-'60

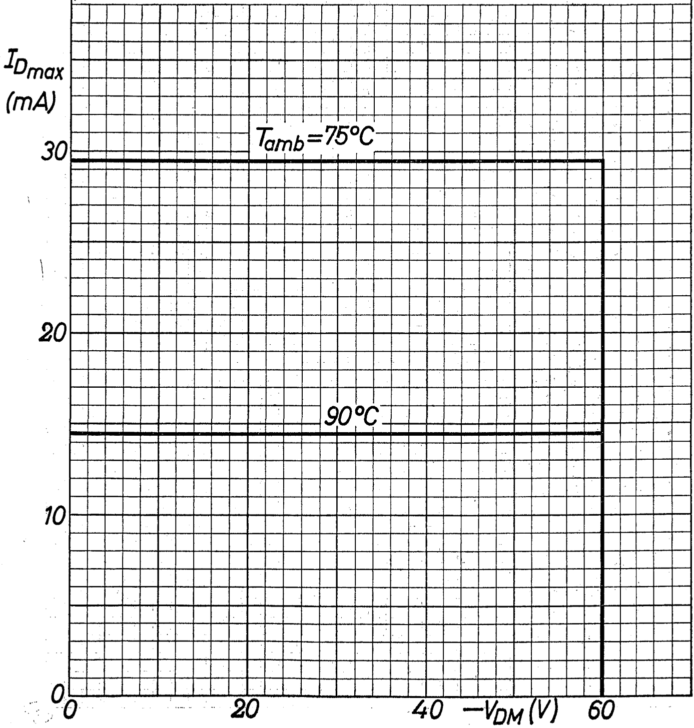
7Z00036

BA100 10-5-'60

I_{Dmax} = max. permissible value of I_D for sinusoidal input voltages and resistive load. ($I_{DM} = \pi x I_D$; t_{av} = max. 20 msec)

I_{Dmax} = valeur max. admissible de I_D pour des tensions d'entrée sinusoïdales avec charge résistive. ($I_{DM} = \pi . I_D$; t_{av} = 20 msec au max.)

I_{Dmax} = max. zulässiger Wert von I_D bei sinusförmigen Eingangsspannungen mit Widerstandsbelastung. ($I_{DM} = \pi . I_D$; t_{av} = max. 20 mSek)



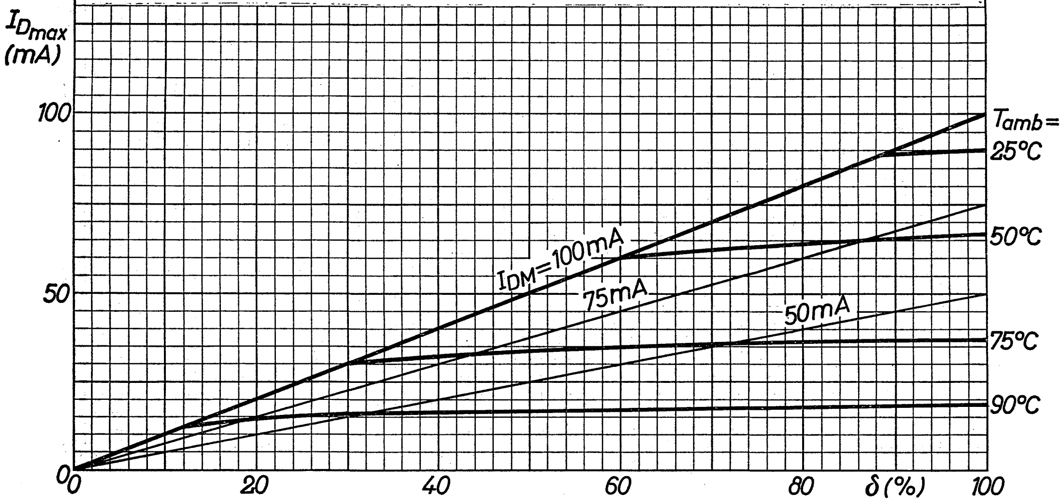
7Z00037

BA100 10-5-'60

I_{Dmax} = max. permissible value of I_D for sinusoidal input voltages with capacitive load and for pulse applications. (t_{av} = max. 20 msec)

I_{Dmax} = valeur max. admissible de I_D pour des tensions d'entrée sinusoidales avec charge capacitive et pour utilisation avec impulsions. (t_{av} = 20 msec au max.)

I_{Dmax} = max. zulässiger Wert von I_D bei sinusförmigen Eingangsspannungen mit kapazitiver Belastung und bei Impulsbetrieb. (t_{av} = max. 20 mSek)



D

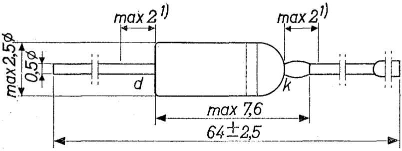
VOLTAGE DEPENDENT SILICON CAPACITOR in miniature all-glass construction intended for automatic frequency control in television receivers

CAPACITÉ À SILICIUM DEPENDANTE DE LA TENSION de construction miniature tout verre, conçu pour le réglage automatique de fréquence dans les récepteurs de télévision

SPANNUNGSABHÄNGIGE SILIZIUMKAPAZITÄT in Miniatur-Allglasausführung für die automatische Frequenzregelung in Fernsehempfängern

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc indique la position de la cathode
Der weisse Ring bezeichnet die Katodenseite



Limiting values at T_{amb} = 80 °C (Absolute max. values)
Caractéristiques limites à T_{amb} = 80 °C (Valeurs max. absolues)
Grenzdaten bei T_{amb} = 80 °C (Absolute Maximalwerte)

$-I_D$	= max.	100 µA [2]
T_{amb}	=	-55 °C/+ 80 °C
Storage temperature Température d'emmagasinage Lagerungstemperatur	=	-55 °C/+ 90 °C

Thermal data. Junction temperature rise to ambient temperature in free air — K ≤ 0.4 °C/mW

Données thermiques. Augmentation de la température de la jonction au regard de la température de l'ambiance à l'air libre — K ≤ 0,4 °C/mW

Thermische Daten. Temperaturerhöhung des Kristalls in Bezug auf die Umgebungstemperatur in freier Luft — K ≤ 0,4 °C/mW

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[1]) Not tinned; non étamé; nicht verzinnt

[2]) According to the characteristics ($-I_D$ = max. 5 µA at $-V_D$ = 20 V) the admissible voltage is at least 20 V
Suivant les caractéristiques ($-V_D$ = 5 µA au max. à $-V_D$ = 20 V) la tension admissible est de 20 V au moins
Nach den Kenndaten ($-I_D$ = max. 5 µA bei $-V_D$ = 20 V) ist die zulässige Spannung mindestens 20 V

BA 102

PHILIPS

Characteristics
Caractéristiques
Kenndaten

$$-I_D \left\{ \begin{array}{ll} -V_D & = 20\ \mathrm{V} \\ T_{amb} & = 80\ ^{o}\mathrm{C} \end{array} \right\} < 5\ \mu\mathrm{A}$$

$$c_d \left\{ \begin{array}{ll} -V_D & = 4\ \mathrm{V} \\ f & = 0{,}5\ \mathrm{Mc/s} \end{array} \right\} = 20\text{-}45\ \mathrm{pF}$$

Simplified equivalent circuit (L = lead inductance)
Circuit équivalent simplifié (L = inductance des connexions)
Vereinfachter Ersatzstromkreis (L = Selbstinduktion der Anschlussdrähte)

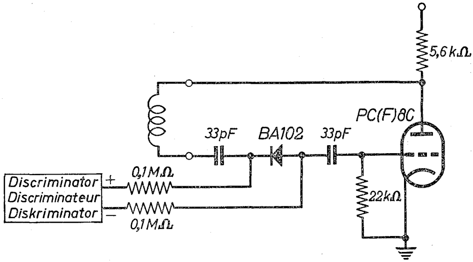
Column I: Setting of the diode and typical (average) measuring results of new diodes
II: Characteristic range values for equipment design

Colonne I: Valeurs pour le réglage de la diode et les résultats moyens de mesures sur diodes neuves
II: Gamme de valeurs caractéristiques pour l'étude d'équipements

Spalte I: Einstelldaten der Diode und mittlere Mess-Ergebnisse neuer Dioden
II: Charakteristischer Wertbereich für Gerätentwurf

	I	II	
$-V_D$ =	4		V
f =	200		Mc/s
r_s =		< 3,0	Ω
f =	0,5		Mc/s
$\dfrac{c_d\ (-V_D = 10\ \mathrm{V})}{c_d\ (-V_D = 4\ \mathrm{V})}$ =		< 0,7	
$-V_D$ =	4		V
f =	50		Mc/s
Quality factor Facteur de qualité = Gütefaktor	65		

Typical operating characteristics
Caractéristiques d'utilisation normales
Normale Betriebsdaten

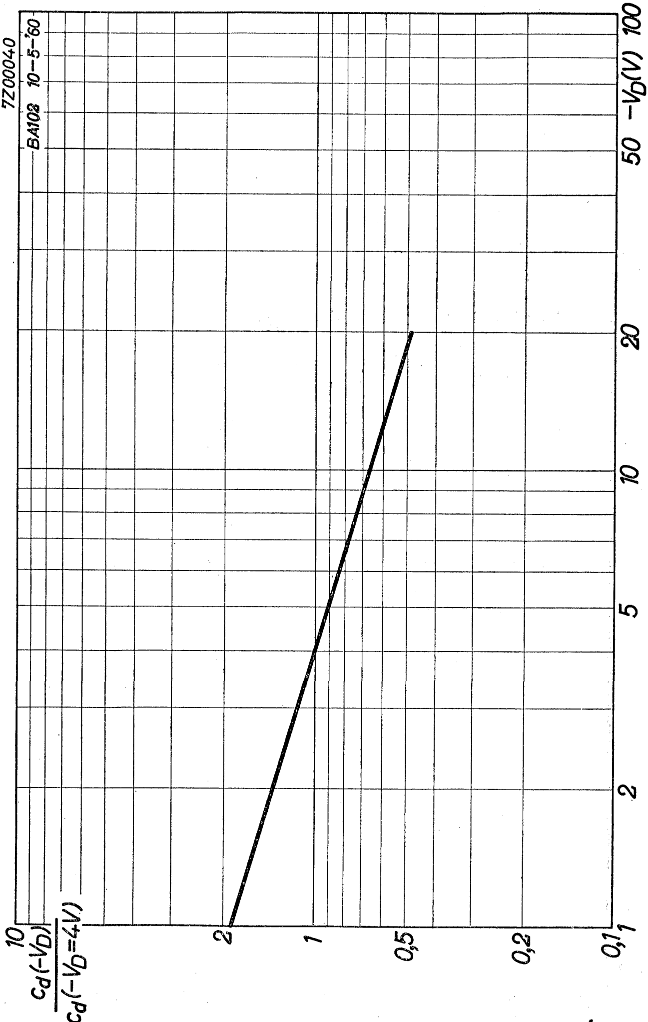


Basic circuit for automatic frequency control in television receivers using the BA 102 in series with the oscillator coil
Circuit fondamental pour réglage automatique de fréquence dans les récepteurs de télévision avec le BA 102 en série avec la bobine oscillatrice
Grundlegende Schaltung für automatische Frequenzregelung in Fernsehempfängern mit der BA 102 in Reihe mit der Oszillatorspule geschaltet

Sensitivity of the discriminator Sensibilité du discriminateur Empfindlichkeit des Diskriminators	= 25 V/Mc/s
Reduction of the frequency deviation Diminution de la déviation de fréquence Verringerung der Frequenzabweichung	Band I: 1:10 Band III: 1:25

BA 102

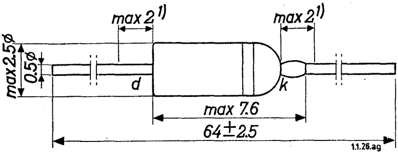
PHILIPS



A

SILICON ALLOYED JUNCTION DIODE in miniature all-glass construction for use as low voltage stabilizer

Dimensions in mm   The white band indicates the cathode side



LIMITING VALUES (Absolute max. values)

Continuous forward current	I_D	= max. 20 mA
Storage temperature	T_S	= -55 °C to +90 °C
Operating ambient temperature	T_{amb}	= -55 °C to +90 °C

THERMAL DATA

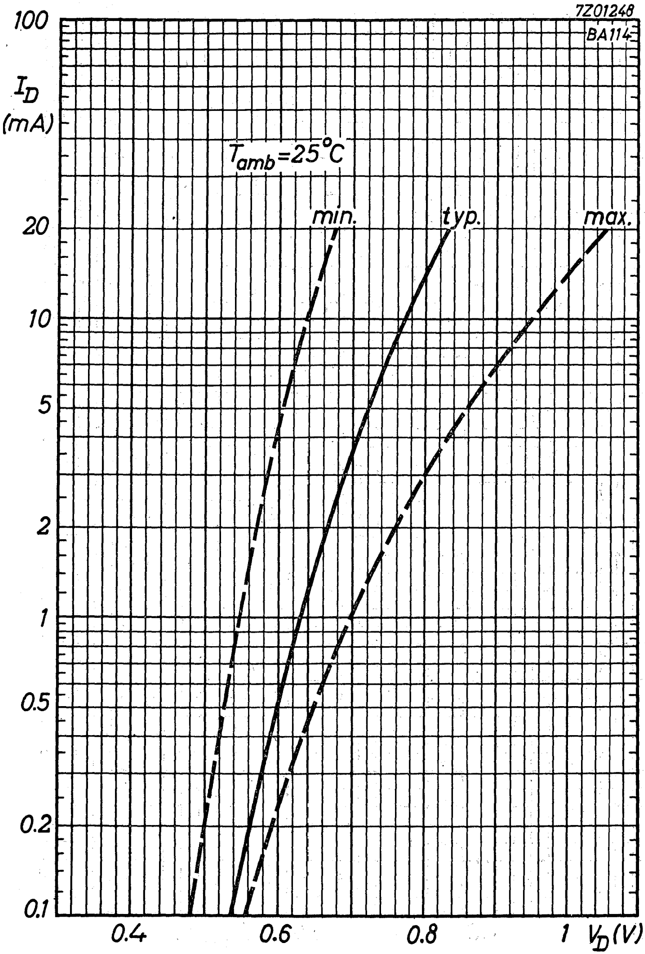
Thermal resistance from junction to ambience in free air	K_{j-amb}	= max. 0.4 °C/mW

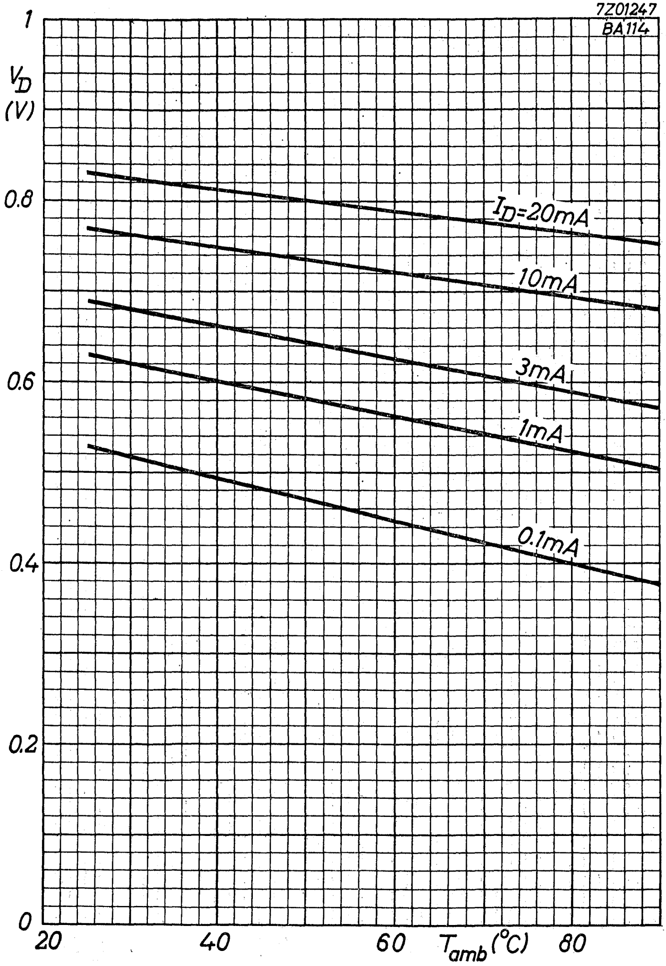
CHARACTERISTICS at T_{amb} = 25 °C

Forward voltage

V_D (I_D = 0.2 mA)	> 0.5 V
V_D (I_D = 3 mA)	< 0.8 V

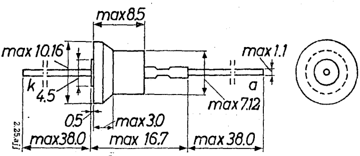
1) Not tinned


7Z01248
BA114
100
I_D
(mA)
T_{amb}=25°C
min.
typ.
max.
20
10
5
2
1
0.5
0.2
0.1
0.4
0.6
0.8
1
V_D(V)


7Z01247
BA114
1
V_D
(V)
0.8
0.6
0.4
0.2
0
I_D=20mA
10mA
3mA
1mA
0.1mA
20
40
60
T_{amb} (°C)
80

SILICON DOUBLE DIFFUSED JUNCTION POWER DIODE for mains rectifier application in television receivers

Dimensions in mm



LIMITING VALUES (Absolute max. values) at T_{amb} = 70 °C

Inverse voltage

Recurrent peak	$-V_{DM}$	= max. 800 V
Transient peak (max. duration 10 msec)	$-V_{DM}$ (t	= max. 1250 V = max. 10 msec)

Forward current

Average (averaging time = max. 50 msec)	I_D (t_{av}	= max. 0.45 A [1]) = max. 50 msec)
Recurrent peak	I_{DM}	= max. 5 A
Surge peak	I_{Dsurge}	= [2])

Temperatures

Storage temperature	T_s	= −55 °C to +150 °C
Operating ambient temperature	T_{amb}	= max. 70 °C

CHARACTERISTICS at diode base temperature T_m = 25 °C

Forward voltage

V_D (I_D = 5 A) = max. 1.5 V [3])

Reverse current

$-I_D$ ($-V_D$ = 1250 V) = max. 10 µA

---

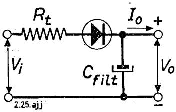
[1]) At T_{amb} = 50 °C a maximum average forward current I_D = 0.55 A is permitted. For voltage doubler circuits see also page E.

[2]) The diode can withstand the surge current during switching on ("inrush current") with an uncharged capacitor of 200 µF and a surge limiting resistor of 5 Ω at the specified maximum operating conditions.

[3]) Measured with current pulses to prevent excessive dissipation.

OPERATING CHARACTERISTICS (See also pages C and D)

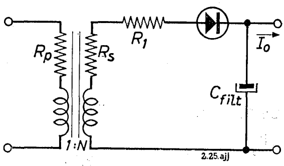
If large mains voltage fluctuations may be expected a capacitor of 2200 pF (800 V) is recommended to be used in parallel with the diode



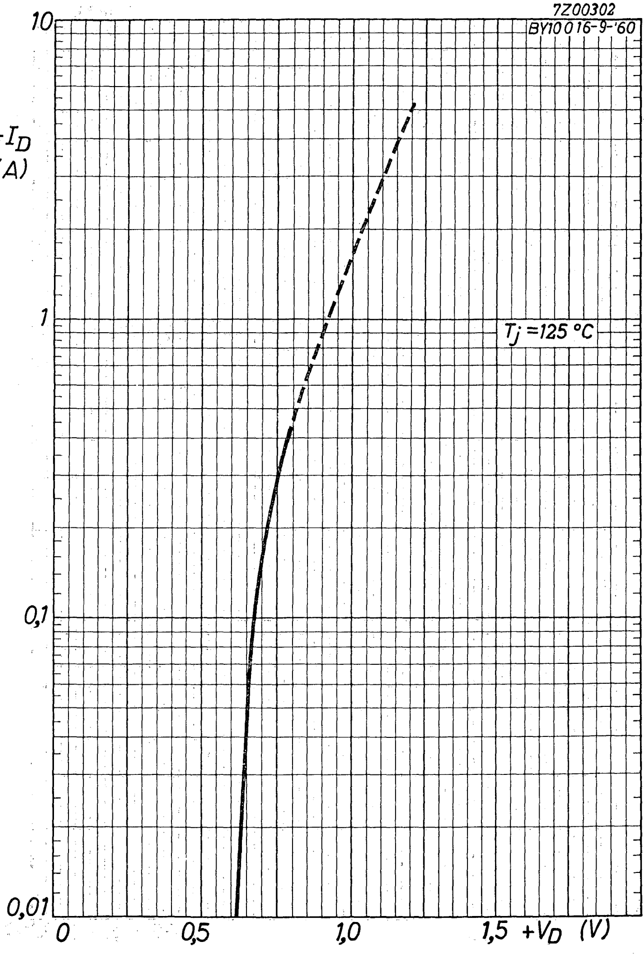
Input voltage	V_i	=	220	240	V(RMS)
Load capacitor	C_{filt}	=	200	200	µF
Surge limiting resistor	R_t	=	5	5	Ω
Output current	I_o	=	0.4	0.4	A
Output voltage	V_o	=	280	300	V

R_t = minimum required circuit resistance

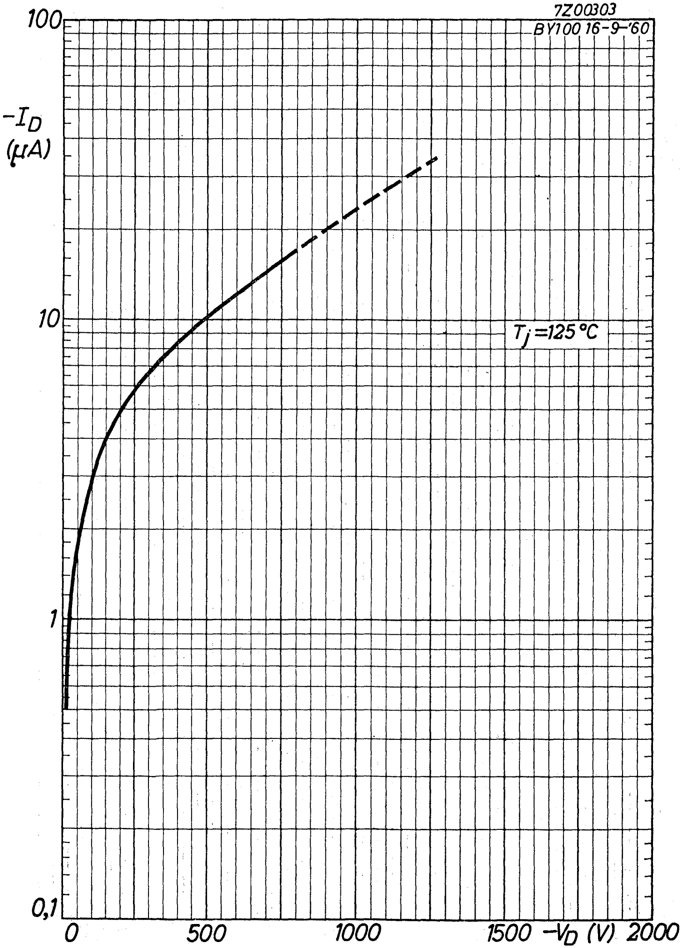
When a transformer is present between the mains and the diode $R_t = R_s + N^2R_p + R_1$ (See circuit diagram below)



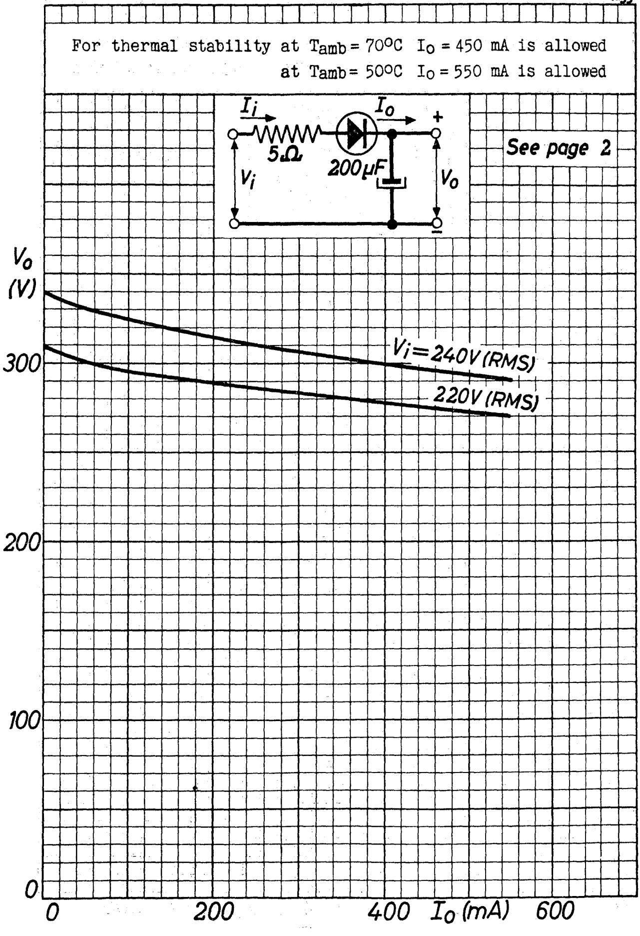
For operating characteristics for use as voltage doubler please refer to page E.


7Z00302
BY10 0 16-9-'60
10
1
0,1
0,01
$+I_D$
(A)
T_j =125 °C
0
0,5
1,0
1,5
$+V_D$ (V)

PHILIPS

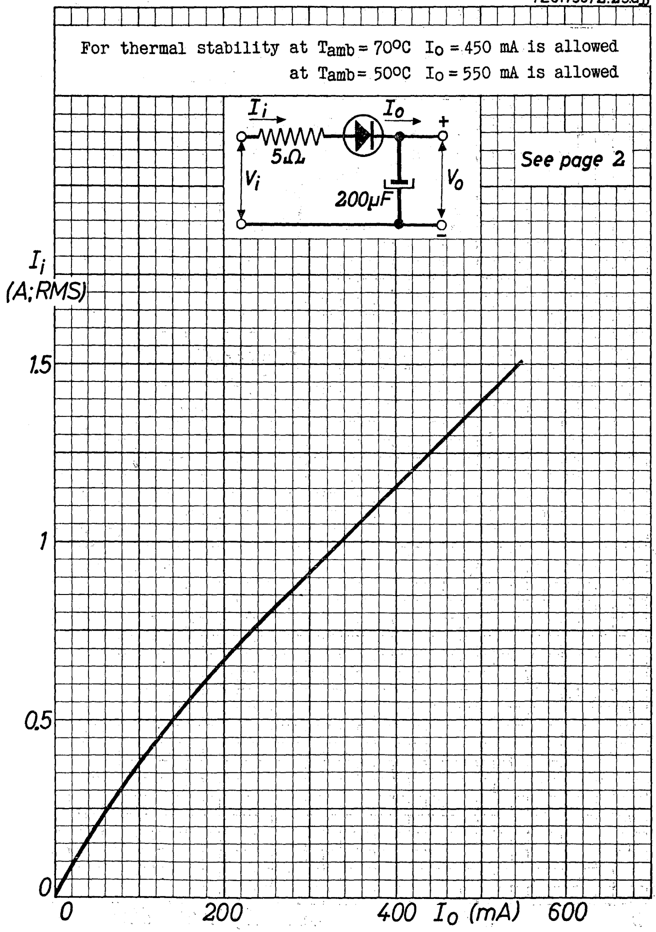

7Z00303
BY100 16-9-'60
100
10
1
0,1
$-I_D$
(μA)
T_j =125 °C
0
500
1000
1500
$-V_D$ (V)
2000

7Z01736/2.25ajj



PHILIPS

7Z01739/2.25ajj

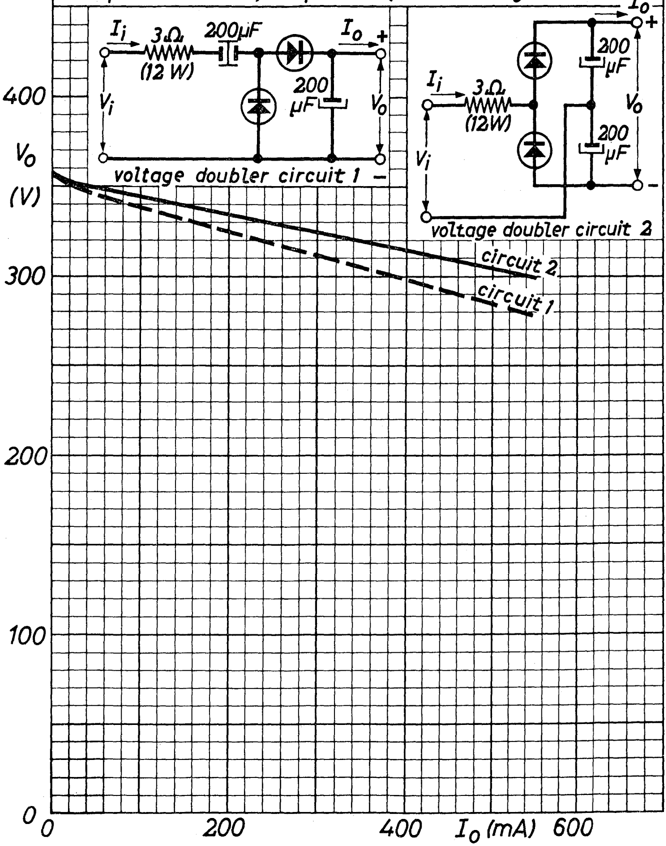


D

7Z01738/225.ajj

For thermal stability at T_{amb} = 70°C I_o = 500 mA is allowed
at T_{amb} = 50°C I_o = 550 mA is allowed

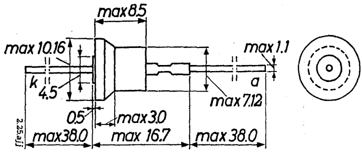
V_i = 127 V (RMS); I_i = 1.95 A (RMS) at I_o = 500 mA



PHILIPS BY114

SILICON DOUBLE DIFFUSED JUNCTION POWER DIODE for 110 to 127 volts mains rectifier application in television receivers

Dimensions in mm



<u>LIMITING VALUES</u> (Absolute max. values) at T_{amb} = 70 °C

<u>Inverse voltage</u>

Recurrent peak	$-V_{DM}$	= max.	450 V
Transient peak (max. duration 10 msec)	$-V_{DM}$ (t	= max. = max.	650 V 10 msec)

<u>Forward current</u>

Average (averaging time = max. 50 msec)	I_D (t_{av}	= max. = max.	0.45 A [1] 50 msec)
Recurrent peak	I_{DM}	= max.	5 A
Surge peak	I_{Dsurge}	=	[2]

<u>Temperatures</u>

Storage temperature	T_s	=	-55°C to +150°C
Operating ambient temperature	T_{amb}	= max.	70 °C

<u>CHARACTERISTICS</u> at diode base temperature T_m = 25 °C

Forward voltage

V_D (I_D = 5 A) = max. 1.5 V [3]

Reverse current

$-I_D$ ($-V_D$ = 650 V) = max. 10 µA

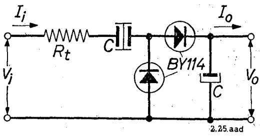
[1]) At T_{amb} = 50 °C a maximum average forward current I_D = 0.55 A is permitted. For voltage doubler circuits see also page E.

[2]) The diode can withstand the surge current during switching on ("inrush current") with an uncharged capacitor of 200 µF and a surge limiting resistor of 3 Ω at the specified maximum operating conditions.

[3]) Measured with current pulses to prevent excessive dissipation.

OPERATING CHARACTERISTICS (See also pages C,D and E)

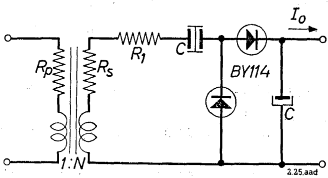
If large mains voltage fluctuations may be expected a capacitor of 2200 pF (500 V) is recommended to be used in parallel with the diode

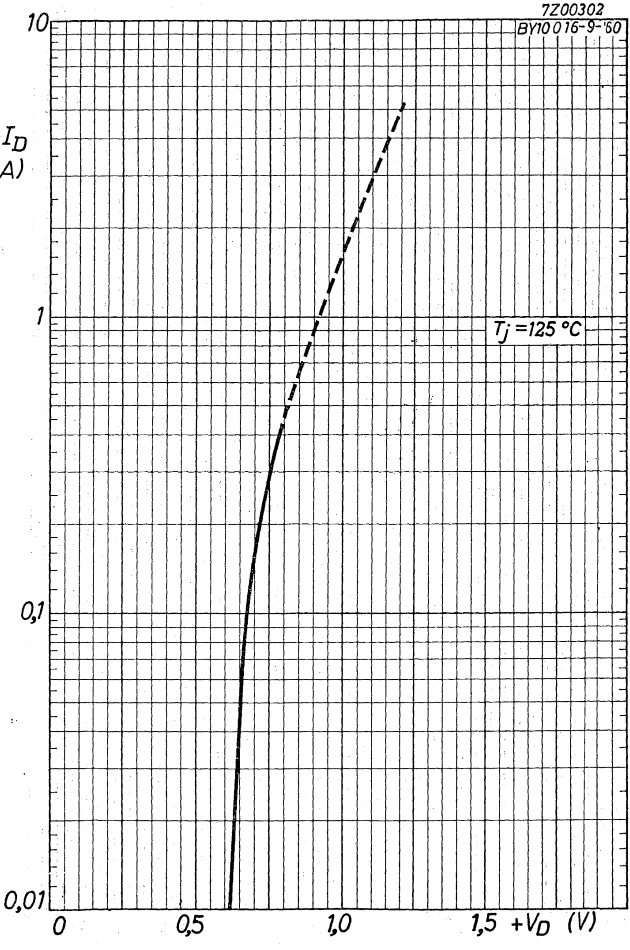


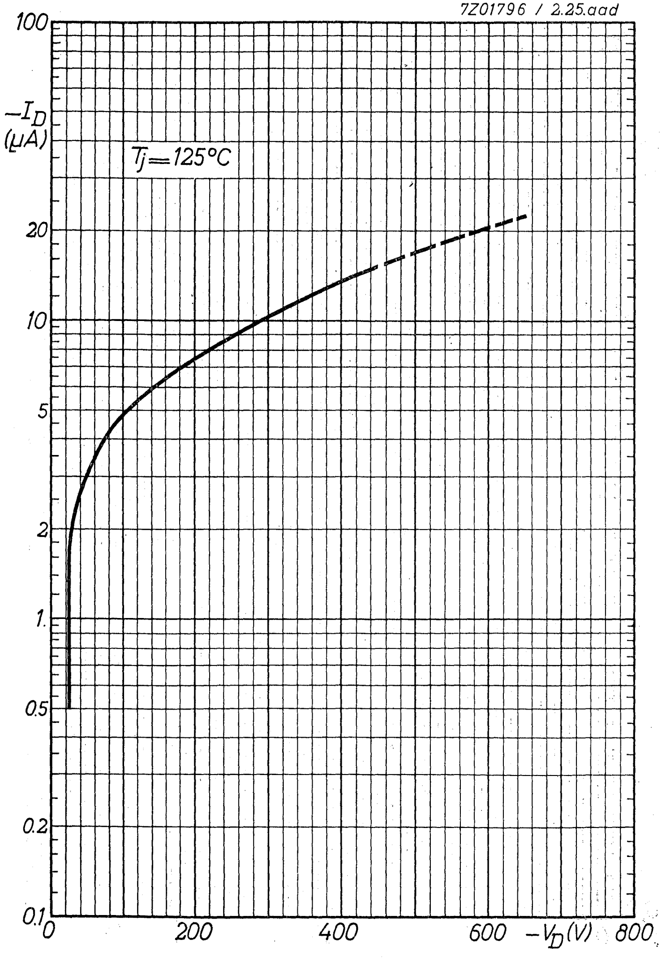
Input voltage	V_i	=	110	127	V(RMS)
Load capacitor	C_{filt}	=	200	200	µF
Surge limiting resistor	R_t	=	3	3	Ω

R_t = minimum required circuit resistance

When a transformer is present between the mains and the doubler circuit $R_t = R_s + N^2R_p + R_1$ (See circuit diagram below)

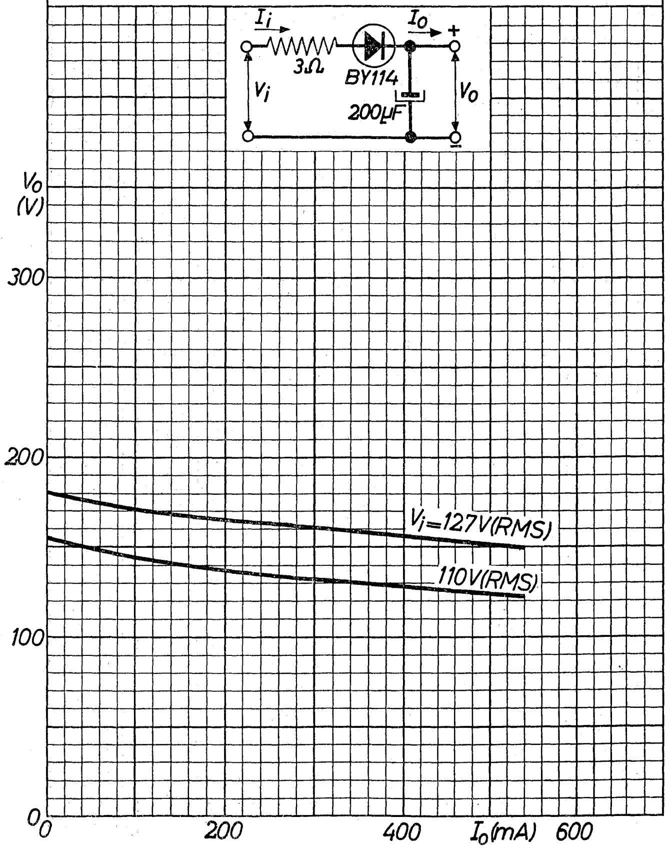



7Z00302
BY10 0 16-9-'60
10
+I_D
(A)
1
T_j = 125 °C
0,1
0,01
0
0,5
1,0
1,5
+V_D (V)


7Z01796 / 2.25.aad
100
$-I_D$
(μA)
$T_j = 125°C$
20
10
5
2
1
0.5
0.2
0.1
0
200
400
600
$-V_D$ (V)
800

7Z01797 / 2.25.aad

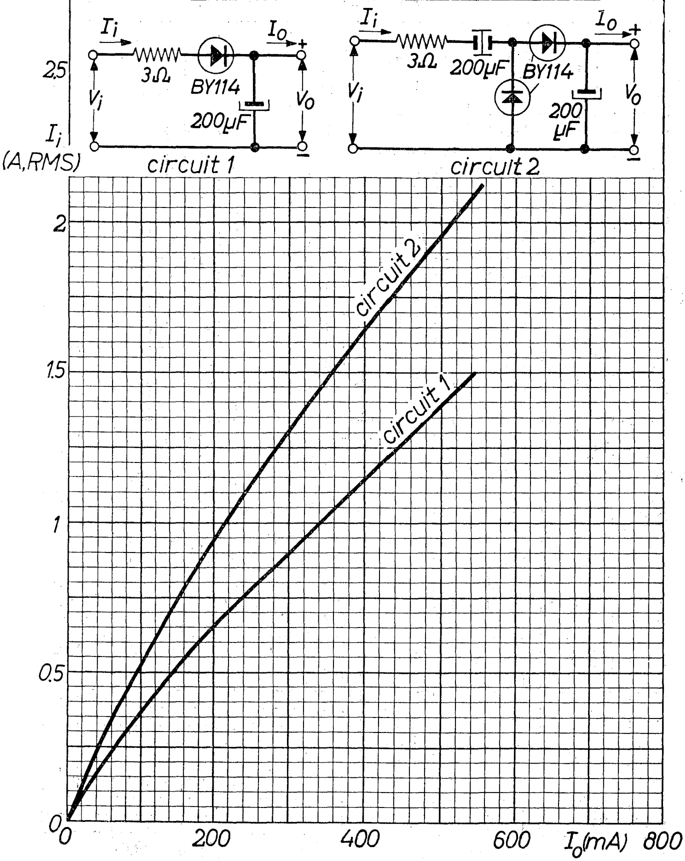
For thermal stability at T_{amb} = 70°C I_O = 450 mA is allowed
at T_{amb} = 50°C I_O = 550 mA is allowed

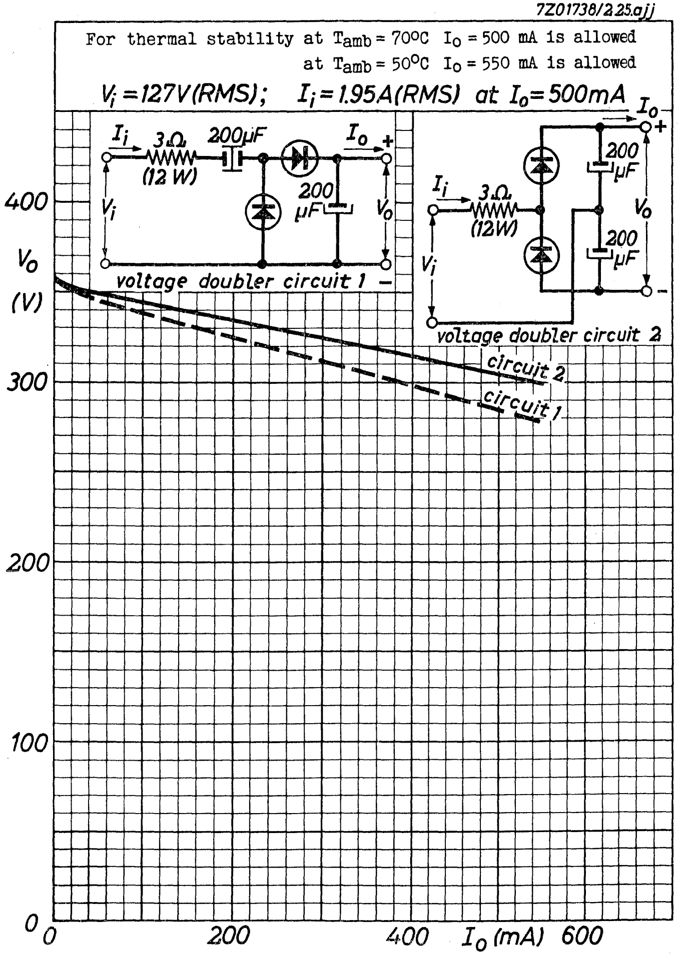


PHILIPS

7Z01798/2.25.aad

Tamb	Circuit 1	Circuit 2
70 °C	I_o = max. 450 mA	I_o = max. 500 mA
50 °C	I_o = max. 550 mA	I_o = max. 550 mA




7Z01738/2.25.ajj
For thermal stability at T_{amb} = 70°C I_o = 500 mA is allowed
at T_{amb} = 50°C I_o = 550 mA is allowed
V_i = 127V(RMS); I_i = 1.95A(RMS) at I_o = 500mA
I_i
3 Ω
(12 W)
200 μF
I_o
200 μF
V_i
V_o
voltage doubler circuit 1
voltage doubler circuit 2
circuit 2
circuit 1
V_o (V)
400
300
200
100
0
0
200
400
600
I_o (mA)

PHILIPS

BYY15
BYY16

For data and curves of these rectifiers
please refer to BYZ14 series

PHILIPS

BYY20
BYY21

SILICON DIFFUSED JUNCTION DIODES for use as power rectifier, especially for A.C. generating systems in motor cars with battery voltages up to 24 V.
The diodes have a metal case for press-fitted mounting or bottom-soldering.

The BYY21 is the reverse polarity type of the BYY20 (see outline drawing)

LIMITING VALUES (Absolute max. values)

Inverse voltage

Continuous	$-V_D$	= max. 75 V
Recurrent peak	$-V_{DM}$	= max. 75 V
Transient peak	$-V_{DM}$	= max. 200 V
Surge peak (max. duration 10 msec)	$-V_{Dsurge}$	= max. 200 V
	(t	= max. 10 msec)

Forward current

Average (averaging time max. 20 msec)	I_D	= max. 12 A
Recurrent peak	I_{DM}	= max. 40 A
Surge (max. duration 100 msec)	I_{Dsurge}	= max. 140 A [1])
	(t	= max. 100 msec)

Temperatures

Junction temperature	T_j	= max. 175 °C
Storage temperature	T_s	= -65°C to +150°C

THERMAL DATA

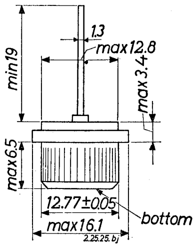
Thermal resistance from junction to case	K_{j-c}	= max. 2 °C/W
Thermal resistance from case to heat sink (if press mounted)	K_{c-h}	= max. 0.5 °C/W

[1]) Square wave pulse

BYY20
BYY21

PHILIPS

Dimensions in mm



Diameter of hole in heat sink	12.61-12.66 mm
Max. force to seat the diode	300 kg
Solder temperature for	
bottom mounting	max. 230 ± 5 °C
during	max. 30 sec

POLARITY

BYY20: anode connected to the envelope; blue mark at the bottom

BYY21: cathode connected to the envelope; red mark at the bottom

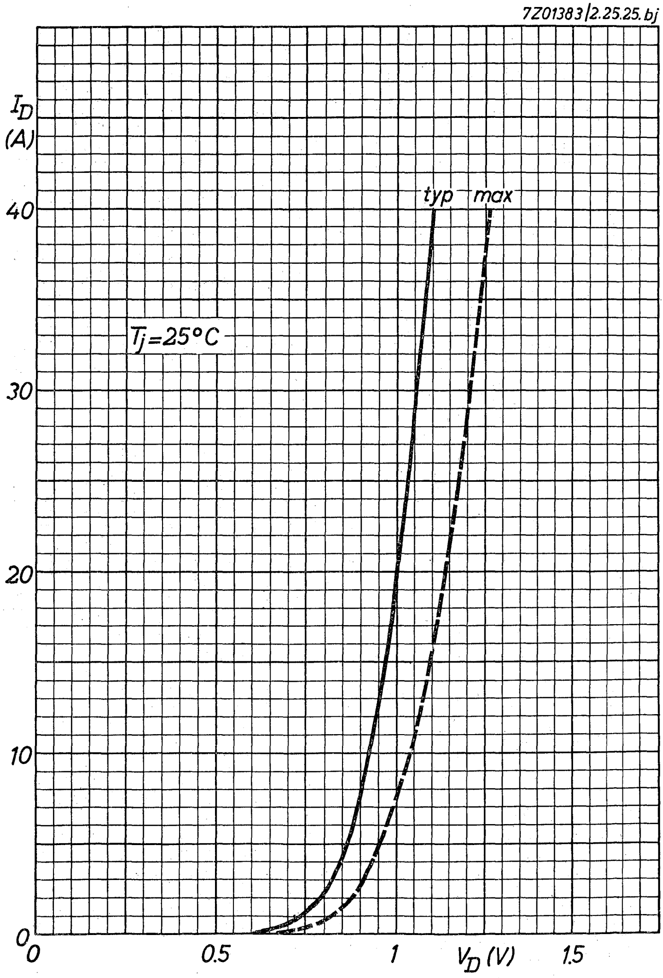
CHARACTERISTICS

Forward voltage

V_D (I_D = 12 A; T_j = 25 °C)	< 1.15 V
V_D (I_D = 40 A; T_j = 25 °C)	< 1.25 V

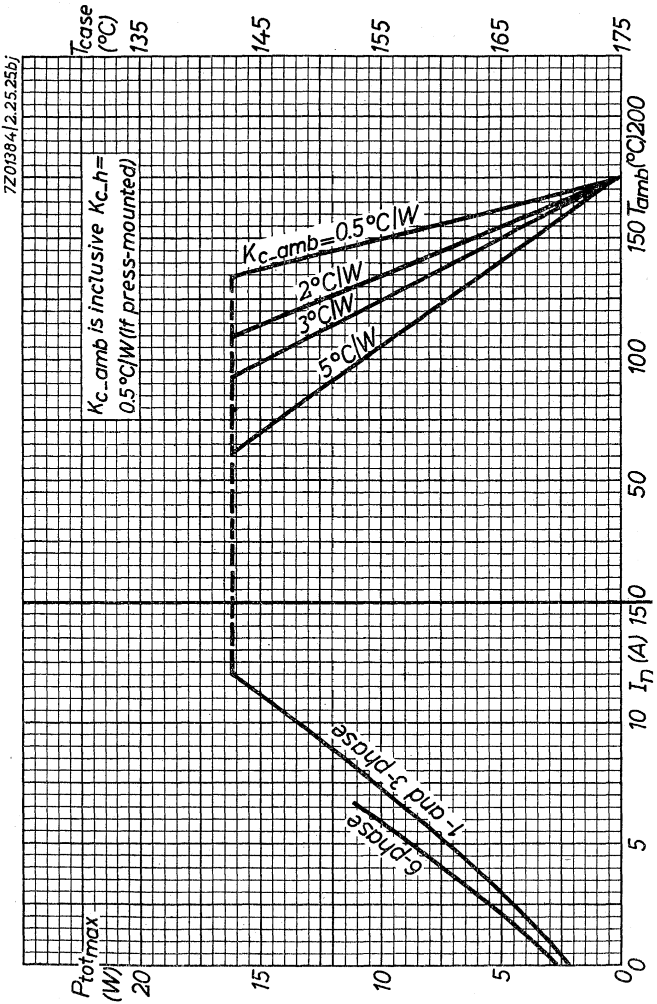
Reverse current

$-I_D$ ($-V_D$ = 75 V; T_j = 140 °C)	< 4 mA


7Z01383/2.25.25.bj
I_D
(A)
40
30
20
10
0
typ
max
$T_j = 25°C$
0
0.5
1
1.5
V_D (V)

BYY20
BYY21

PHILIPS



DOUBLE-DIFFUSED SILICON JUNCTION DIODES for power rectifier applications

The BYY23, BYY68, BYY25 are the reverse polarity types of the BYY22, BYY67, BYY24

(See outline drawing)

RECOMMENDED RATINGS

If the diodes are used within the recommended ratings, stable operation is ensured.

		BYY22/23	BYY67/68	BYY24/25
Inverse voltage 1)				
Continuous	$-V_D$	200 V	300 V	400 V
Recurrent peak	$-V_{DM}$	200 V	300 V	400 V
Transient peak	$-V_{DM}$	400 V	600 V	800 V
Surge peak (max. duration 10 msec)	$-V_{Dsurge}$	400 V	600 V	800 V
Forward current				
Average (averaging time max. 20 msec)	I_D 2)	10 A	10 A	10 A
Recurrent peak	I_{DM}	50 A	50 A	50 A
Surge peak	$I_{D surge}$	See page E		
Temperatures				
Junction	T_j	150 °C	150 °C	150 °C
Storage	T_s	-65 °C to +150 °C		
Operating ambient	T_{amb}	See page D		
Diode base	T_m	See page D		

THERMAL DATA

Thermal resistance from junction to diode base K = max. 1.1 °C/W 3)

Thermal resistance from diode base to heat sink K = 0.3 °C/W

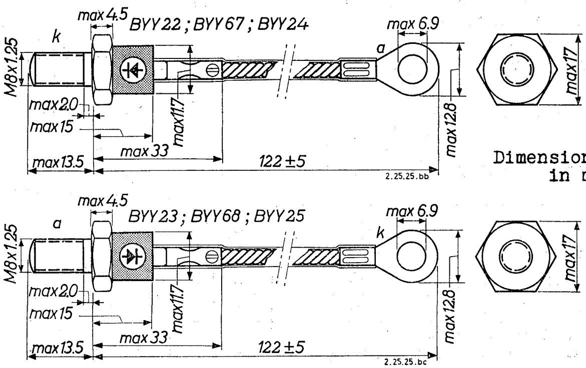
1) Each diode is tested individually at $-I_D \leq 10$ mA at a diode base temperature of 125 °C and a peak inverse voltage of 400 V for the BYY22/23; 600 V for the BYY67/68 800 V for the BYY24/25

2) For six-phase circuits or capacitive load the average current is max. 8 A. See also page D.

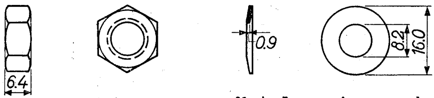
For battery chargers the average current may be exceeded by 25% when a fully discharged battery is taken under charge.

3) This value is intended as a calculating figure.

PHILIPS



Dimensions in mm



Metal spring washer

Nut: M8x1.25

Diameter of flexible conducting lead 4 mm^2

Diameter of hole in heat sink max. 8.5 mm

Mounting torque: min. 30 cm kg for good heat conductance
max. 60 cm kg

Net weight 25 g

Net weight with mounting accessories 35 g

CHARACTERISTICS

Forward voltage at diode base temperature of 25 °C

V_D (I_D = 1 A) < 0.9 V

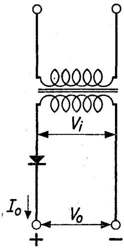
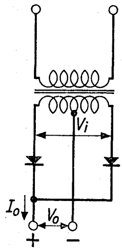
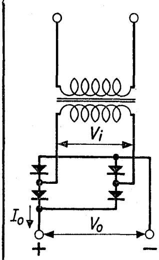
V_D (I_D = 50 A) < 1.5 V [1])

Reverse current at diode base temperature of 125 °C

	$-V_D$ (V)	$-I_D$ (mA)
BYY22/23	200	max. 2
BYY67/68	300	max. 2
BYY24/25	400	max. 2

[1]) Measured with current pulses to prevent excessive dissipation

OPERATING CHARACTERISTICS as rectifier

		Single phase Half wave		Two phase Half wave		Single phase Full wave bridge	
							
	V_i V_{RMS}	I_o (A)	V_o (V)	I_o (A)	V_o (V)	I_o (A)	V_o (V)
BYY22/23	140	10	60	20	60	20	125
BYY67/68	210	10	90	20	90	20	185
BYY24/25	280	10	125	20	125	20	250

The V_i and I_o values are max. values for resistive or inductive load. No source impedance is assumed.

The equipment designer has to determine an average design such that these values will not be exceeded.

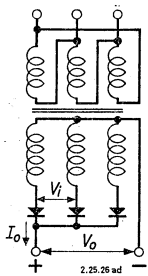
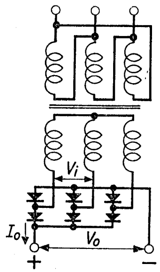
Example for heat sink calculation

For a given application the minimum required heat sink area can be determined as follows:
If in a three-phase full-wave circuit I_o = 25 A (8.3 A per diode) and T_{amb} = 75 °C, it follows from page D that the maximum value of the thermal resistance between the diode base and ambience is 4.7 °C/W.
When natural convection and a black heat sink are provided the minimum required heat sink area is 50 cm² according to page F.
From page D it may be seen that the temperature of the diode base is about 137 °C and that the dissipation is max. 12 W.

See also pages 4 and 5

PHILIPS

OPERATING CHARACTERISTICS as rectifier (continued)

		Three phase star		Three phase Full wave bridge	
					
	V_i (V_{RMS})	I_o (A)	V_o (V)	I_o (A)	V_o (V)
BYY22/23	140	30	95	30	190
BYY67/68	210	30	140	30	285
BYY24/25	280	30	190	30	380

OPERATING NOTES

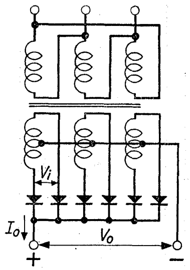
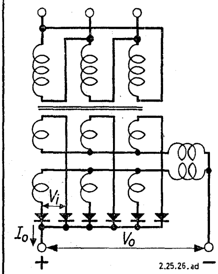
1) In order to prevent the diode from being damaged by surge currents higher than those mentioned at page E a fast fuse is recommended

2) The values of K include a thermal resistance between diode base and heat sink of about 0.3 °C/W

3) When there is a possibility that transient voltage surges will cause an inverse voltage higher than the rated surge value, a damping circuit across the transformer or across the diode should be applied, e.g. a series R.C. circuit or a voltage dependent resistor. Dimensioning of the R.C. circuit may be done according to the following formulae:

See page 5

OPERATING CHARACTERISTICS as rectifier (continued)

		Six phase Star		Three phase double Y with interphase transformer	
					
	V_i (V_{RMS})	I_o (A)	V_o (V)	I_o (A)	V_o (V)
BYY22/23	140	48	95	60	80
BYY67/68	210	48	135	60	120
BYY24/25	280	48	190	60	165

OPERATING NOTES (continued from page 4)

a. When applied to the primary side of the transformer:

$$C_1 \approx 200 \frac{I_{po}}{V} \ \mu F \qquad R_1 \approx \frac{150}{C_1} \ \Omega$$

b. When applied to the secondary of the transformer:

$$C_2 \approx 450 \frac{I_{po} \cdot V}{(-V_{DM})^2} \ \mu F \qquad R_2 \approx \frac{200}{C_2} \ \Omega$$

In which:

V = transformer primary R.M.S. voltage (V)

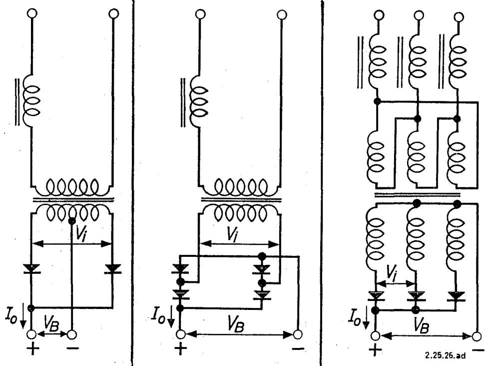
$-V_{DM}$ = recurrent peak inverse voltage (V)

I_{po} = magnetizing primary R.M.S. current (A)

PHILIPS

OPERATING CHARACTERISTICS for battery charging

Two phase Half wave	Single phase Full wave bridge	Three phase star



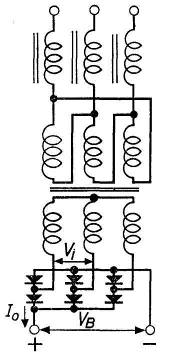
		Two phase Half wave			Single phase Full wave bridge			Three phase star		
	V_i V_{RMS}	I_o (A)	V_B (V)	n	I_o (A)	V_B (V)	n	I_o (A)	V_B (V)	n
BYY22/23	125	12	60	27	12	120	54	18	70	32
BYY67/68	190	12	90	41	12	180	82	18	105	47
BYY24/25	255	12	120	54	12	240	108	18	135	60

n = maximum number of Pb cells in series (nominal voltage per cell = 2.2 V)

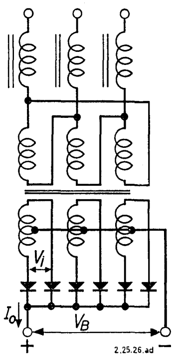
The above data are nominal values with battery load. The possibility of mains voltage fluctuations of max. 10 % has been taken into account. For current limiting use is made of inductors in series with the primary of the mains transformer

OPERATING CHARACTERISTICS for battery charging (continued)

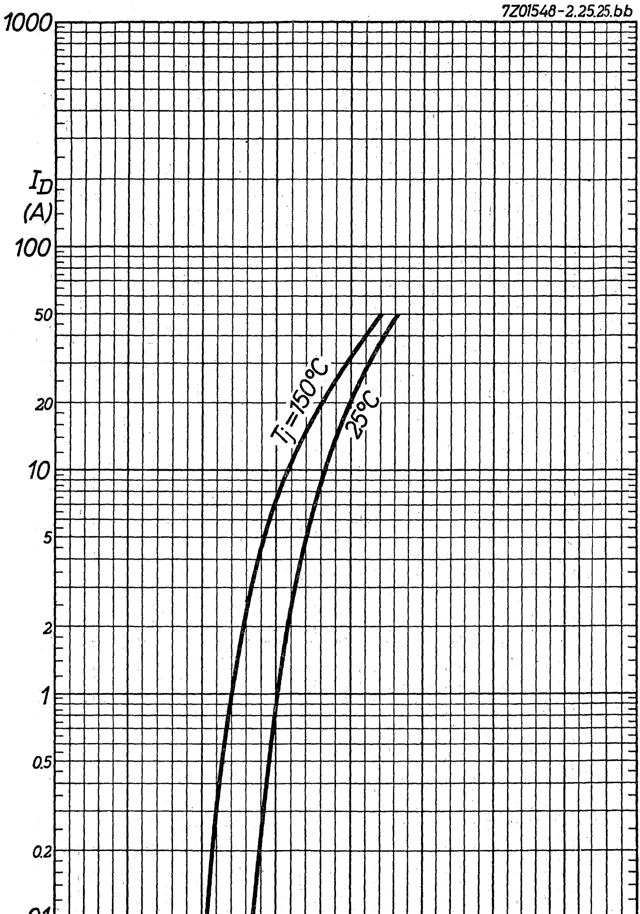
Three phase Full wave bridge



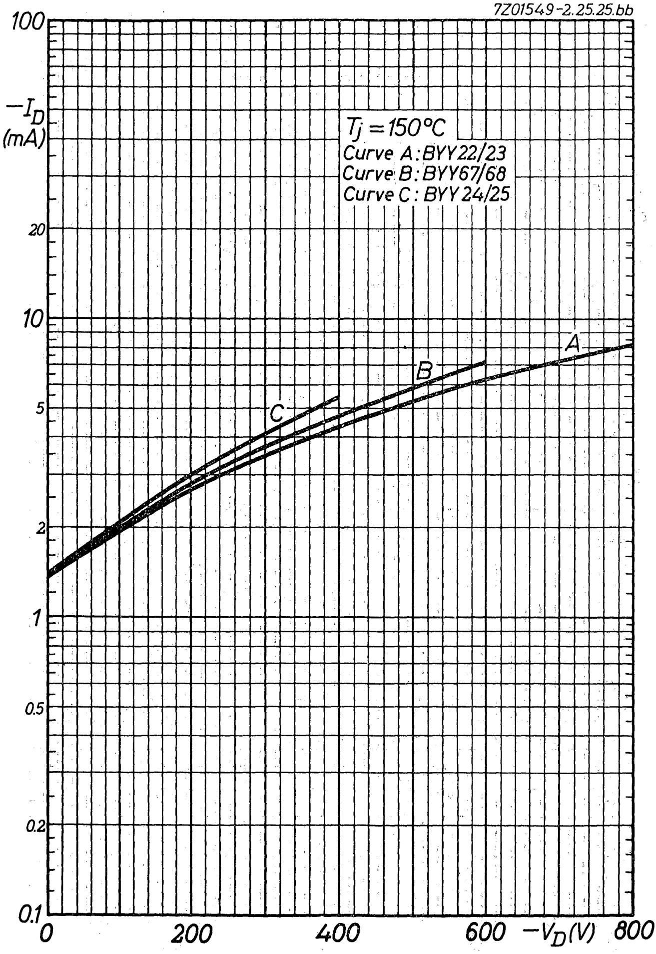
Six phase star



		Three phase Full wave bridge			Six phase star		
	V_i (V_{RMS})	I_o (A)	V_B (V)	n	I_o (A)	V_B (V)	n
BYY22/23	125	18	120	54	36	60	27
BYY67/68	190	18	180	82	36	90	41
BYY24/25	255	18	240	108	36	120	54

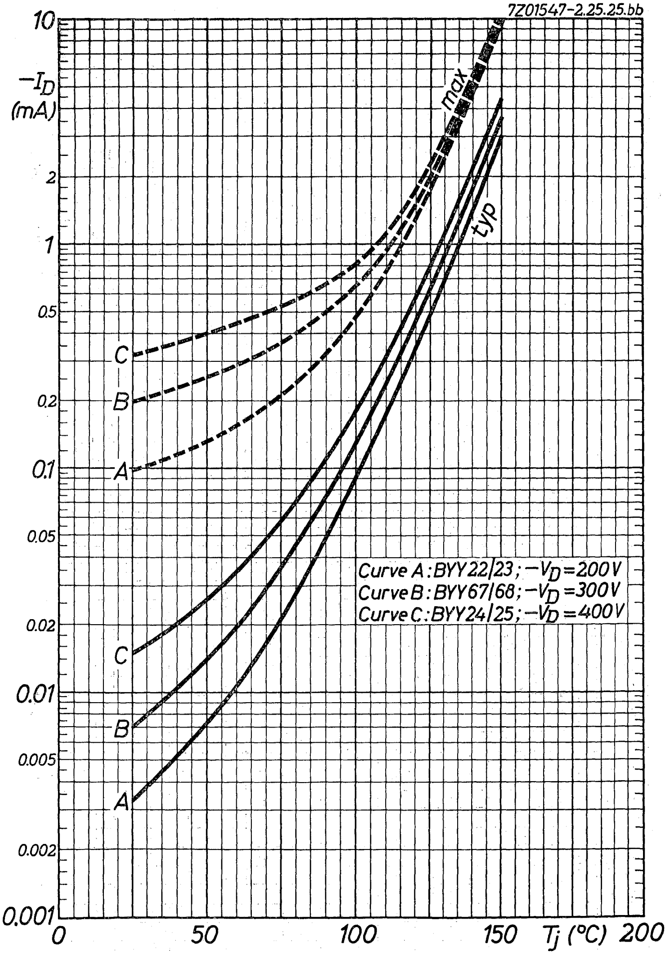

7Z01548-2.25.25.bb
1000
I_D
(A)
100
50
20
10
5
2
1
0.5
0.2
0.1
$T_j = 150°C$
25°C
0
0.5
1
1.5
V_D (V)
2

PHILIPS


7Z01549-2.25.25.bb
100
$-I_D$ (mA)
$T_j = 150\,^\circ C$
Curve A: BYY22/23
Curve B: BYY67/68
Curve C: BYY 24/25
20
10
5
2
1
0.5
0.2
0.1
A
B
C
0
200
400
600
$-V_D$(V)
800

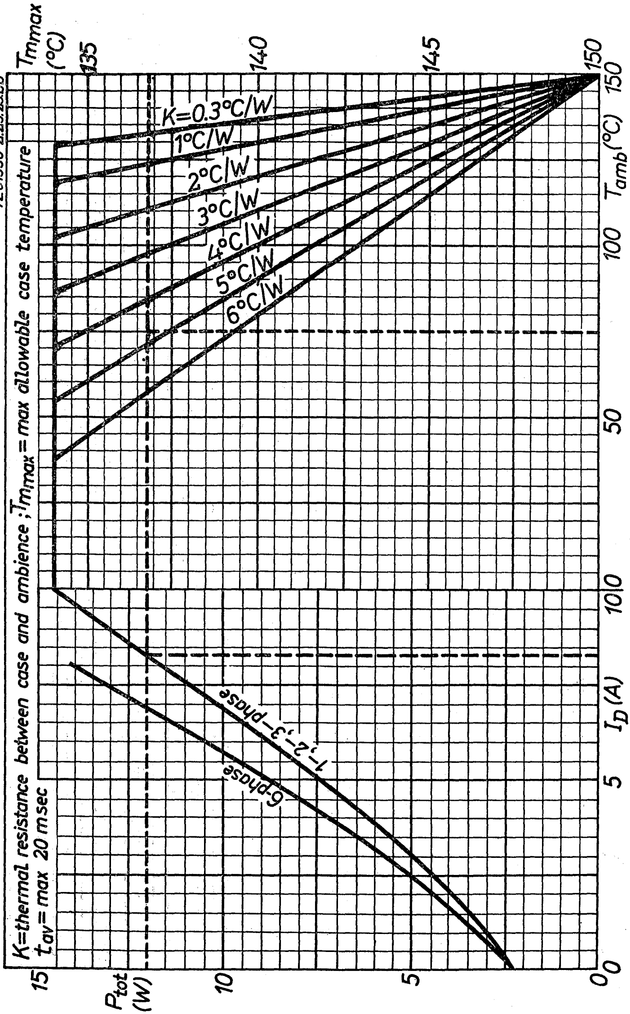
PHILIPS

BYY22 BYY23
BYY67 BYY68
BYY24 BYY25

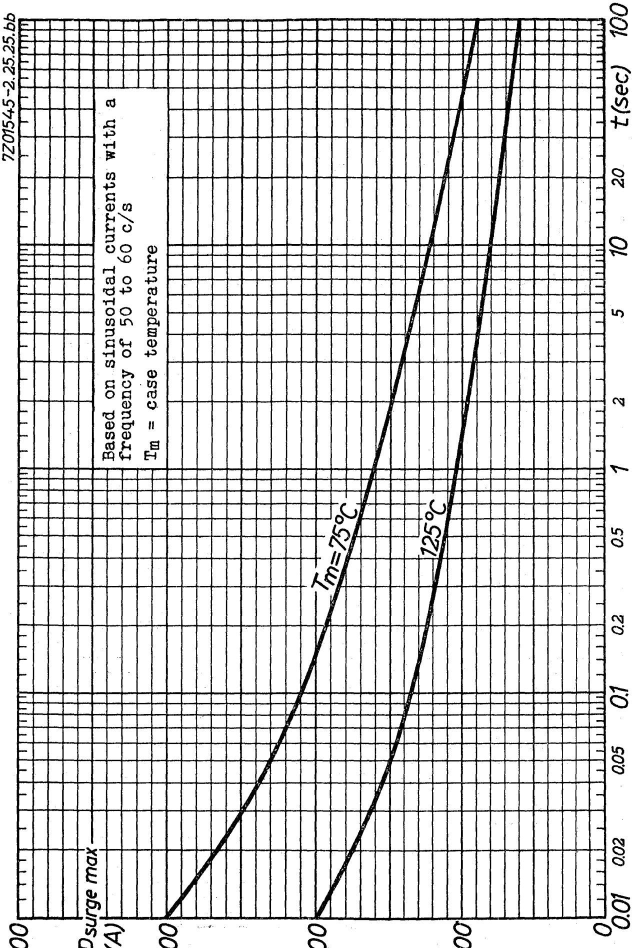


BYY22 BYY23
BYY67 BYY68
BYY24 BYY25

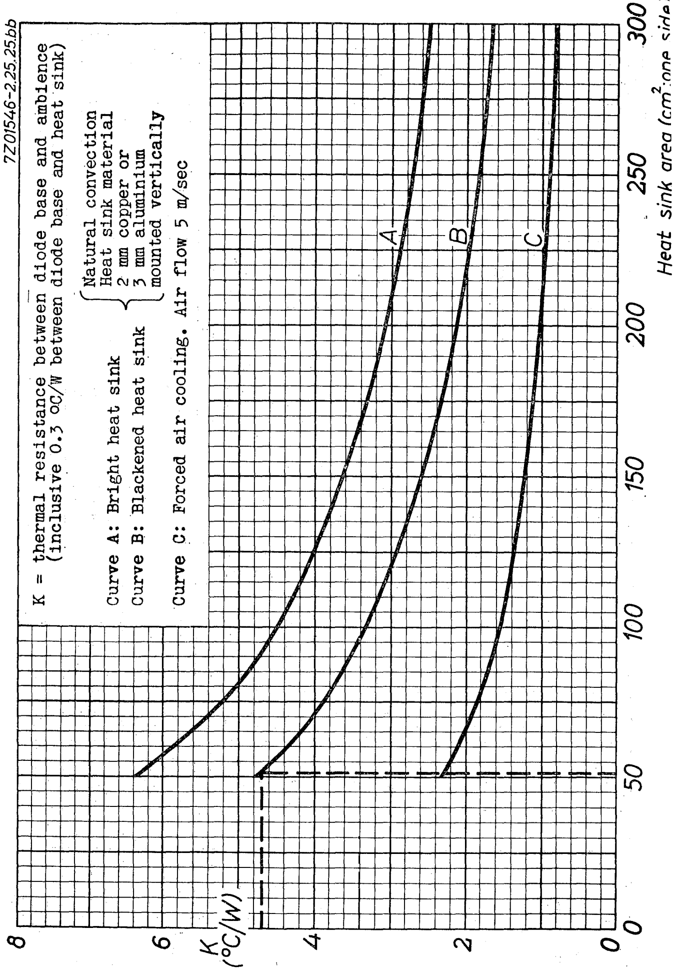
PHILIPS



D


7Z01545-2.25.25.bb
Based on sinusoidal currents with a frequency of 50 to 60 c/s
T_m = case temperature
T_m=75°C
125°C
t(sec)
100
20
10
5
2
1
0.5
0.2
0.1
0.05
0.02
0.01
$I_{D surge\ max}$
(A)
400
300
200
100
0

PHILIPS


7Z01546-2.25.25.bb
K = thermal resistance between diode base and ambience
(inclusive 0.3 °C/W between diode base and heat sink)
Curve A: Bright heat sink
Curve B: Blackened heat sink
Natural convection
Heat sink material
2 mm copper or
3 mm aluminium
mounted vertically
Curve C: Forced air cooling. Air flow 5 m/sec
A
B
C
K (°C/W)
8
6
4
2
0
0
50
100
150
200
250
300
Heat sink area (cm² one side)

For data and curves of these rectifiers
please refer to BYZ14 series

PHILIPS

BYZ10 → 13

DOUBLE DIFFUSED SILICON JUNCTION DIODES for power rectifier applications

RECOMMENDED RATINGS for sine wave operation at frequencies from 50 to 400 c/s

If the diodes are used within the recommended ratings, stable operation is ensured

		BYZ10	BYZ11	BYZ12	BYZ13
Inverse voltage					
Recurrent peak	$-V_{DM}$	800 V	600 V	400 V	200 V
Transient peak	$-V_{DM}$	1200 V	900 V	600 V	300 V
Surge peak (max. duration 10 msec)	$-V_{Dsurge}$	1200 V	900 V	600 V	300 V
Forward current					
Average (averaging time max. 20 msec)	I_D 1)	6 A	6 A	6 A	6 A
Recurrent peak	I_{DM}	20 A	20 A	20 A	20 A
Surge peak (max. duration 200 µsec)	I_{Dsurge} 2)	75 A	75 A	75 A	75 A
Temperatures					
Junction	T_j	150 °C	150 °C	150 °C	150 °C
Storage	T_s	150 °C	150 °C	150 °C	150 °C
Operating ambient	T_{amb}	See page C			

THERMAL DATA

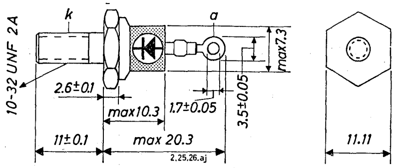
Thermal resistance from junction to case K = max. 6 °C/W

1) At a case temperature of 25 °C. See also page C

2) At a case temperature of 25 °C. See also page D

PHILIPS

Dimensions in mm



The soldering lug must not be bent and should be soldered into the circuit with flexible leads

The diode is supplied with nut, metal washer and metal locking washer

The diameter of the hole in the heat sink should not exceed 5.2 mm

Mounting torque: min. 8 cm kg for good heat conductance
max. 17 cm kg

Net weight 5.3 g
7.6 g with mounting accessories

CHARACTERISTICS

Forward voltage at case temperature of 25 °C

V_D (I_D = 5 A) = 1.4 V

V_D (I_D = 15 A) [1] = 2.0 V
< 3.0 V

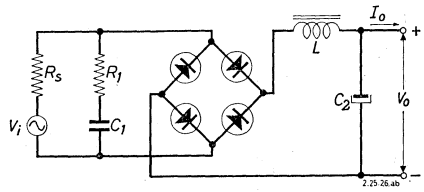
Reverse current at case temperature of 125 °C

	$-V_D$ (V)	$-I_D$ (μA)	
BYZ10	800	= 200	< 600
BYZ11	600	= 200	< 600
BYZ12	400	= 200	< 600
BYZ13	200	= 200	< 600

[1]) Measured with current pulses to prevent excessive dissipation

OPERATING CHARACTERISTICS

Full-wave bridge rectifier with choke input filter with rectifiers BYZ10, BYZ11 or BYZ12

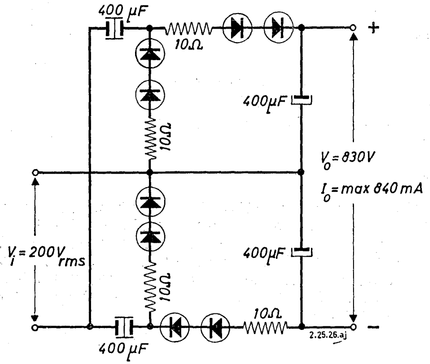


Each rectifier mounted on a 1.6 mm blackened aluminium cooling fin of 6x6 cm^2

I_o = 0.5 to 3A Ripple voltage is 0.2 % of output voltage

Type	V_i(RMS)	R_s	R_1	C_1	L	C_2	V_o
BYZ10	260 V	5 Ω	390 Ω	0.5 μF	1 H (R=max.5 Ω)	200 μF	200 V
BYZ11	200 V	5 Ω	220 Ω	1.0 μF	1 H (R=max.5 Ω)	200 μF	150 V
BYZ12	135 V	4 Ω	220 Ω	1.0 μF	0.5 H (R=max.3 Ω)	250 μF	100 V

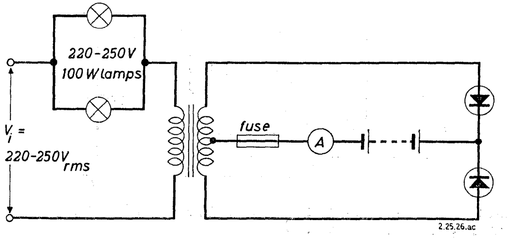
Voltage quadrupler with rectifiers BYZ10



Each rectifier mounted on a 1.6 mm blackened aluminium cooling fin of 6x6 cm^2

OPERATING CHARACTERISTICS (continued)

Protected battery charger with rectifiers BYZ13



The rectifiers are mounted on a vertical 1.6 mm blackened aluminium heat sink of 15x15 cm^2

V_i (RMS)	Mean charging current for battery voltage of	
	6 V	12 V
220 V	5.6 A	3.4 A
250 V	5.0 A	3.4 A

Transformer currents and voltages

N (primary to half secondary)	0.094
V_{in} (RMS)	150 V
$I_{primary}$ (RMS)	0.75 A
$I_{secondary}$ (RMS)	4.5 A
$I_{primary}$ (off-load saturation current with 220 Ω lamp resistance in series with primary)	0.6 A

OPERATING NOTES

1. When there is a possibility that transient voltage surges will cause an inverse voltage higher than the rated surge value, a damping circuit across the transformer or across the diode should be applied, e.g. a series R.C. circuit or a voltage dependent resistor. Dimensioning of the R.C. circuit may be done according to the following formulae:

See page 5

OPERATING NOTES (continued)

1. a. When applied to the primary side of the transformer:

$$C_1 = 200 \frac{I_{po}}{V} \ \mu F \qquad R_1 = \frac{150}{C_1} \ \Omega$$

b. When applied to the secondary of the transformer:

$$C_2 = 450 \frac{I_{po} \cdot V}{(-V_{DM})^2} \ \mu F \qquad R_2 = \frac{200}{C_2} \ \Omega$$

In which:

V = transformer primary RMS voltage (V)

$-V_{DM}$ = recurrent peak inverse voltage (V)

I_{p_o} = magnetizing primary RMS current (A)

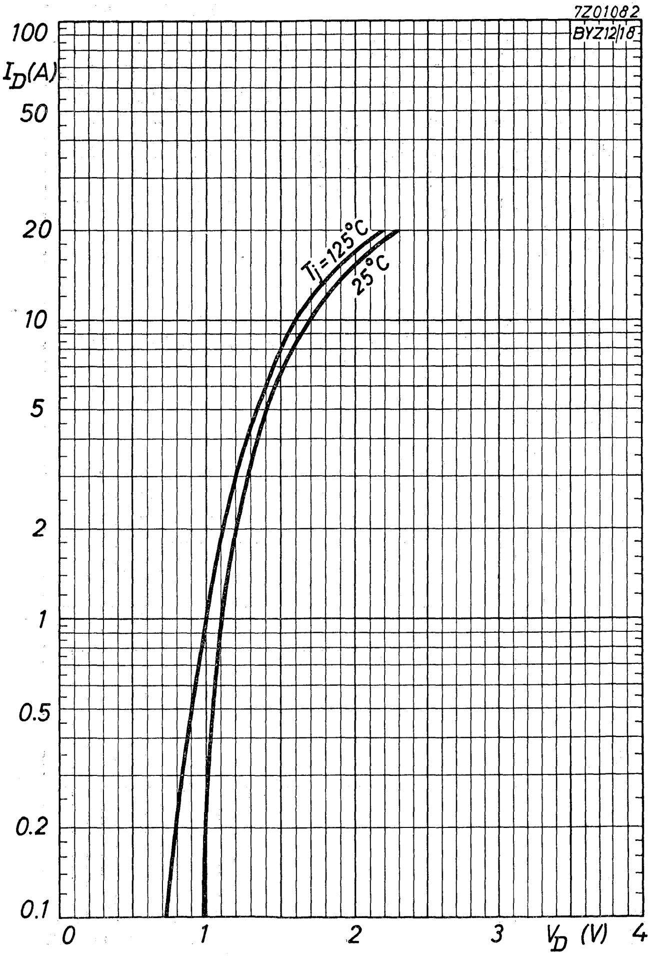
2. The maximum total dissipation is given by

$$P_{tot\,max} = \frac{T_m - T_{amb}}{K_{m-h} + K_{h-amb}}$$

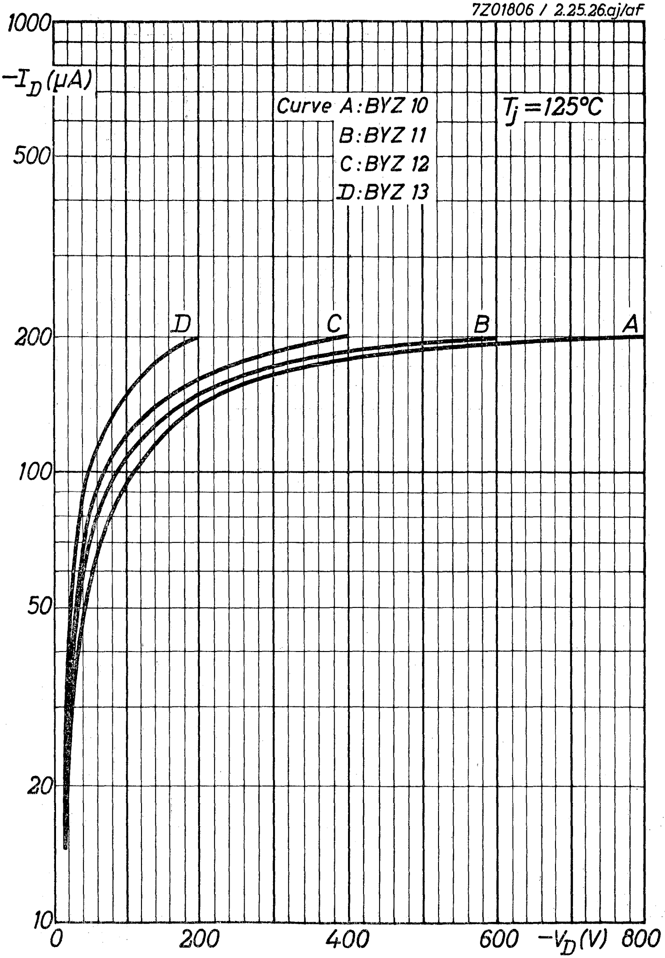
Where: T_m = case temperature

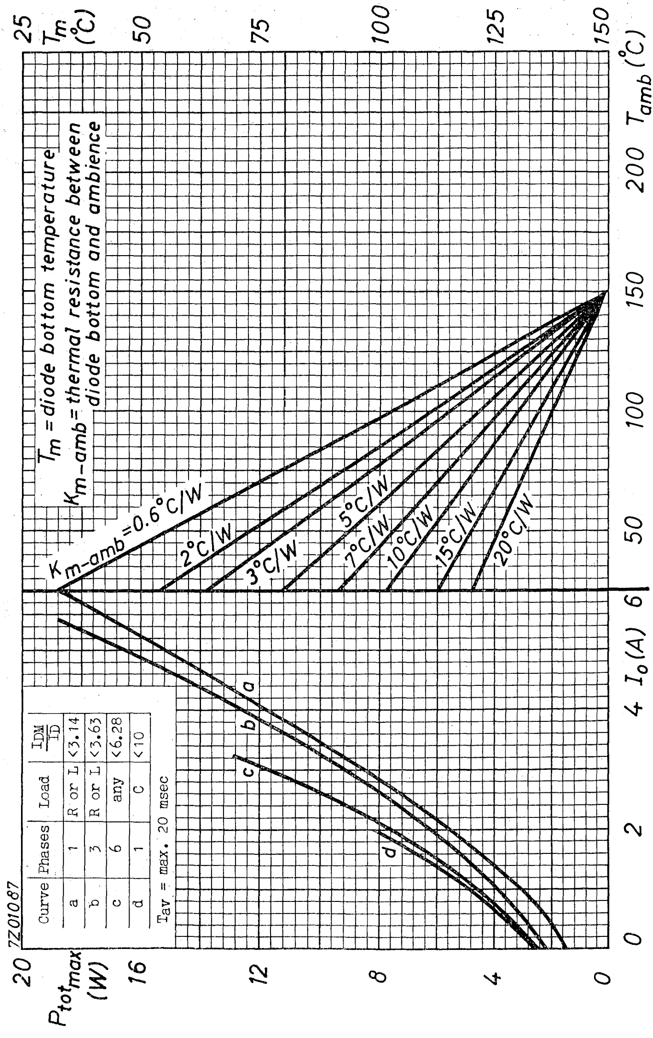
K_{m-h} = thermal resistance between case and heat sink (about 0.6 °C/W)

K_{h-amb} = thermal resistance between heat sink and ambience (see page E)


7Z01082
BYZ12|18
100
$I_D(A)$
50
20
10
5
2
1
0.5
0.2
0.1
$T_j=125°C$
25°C
0
1
2
3
V_D (V)
4

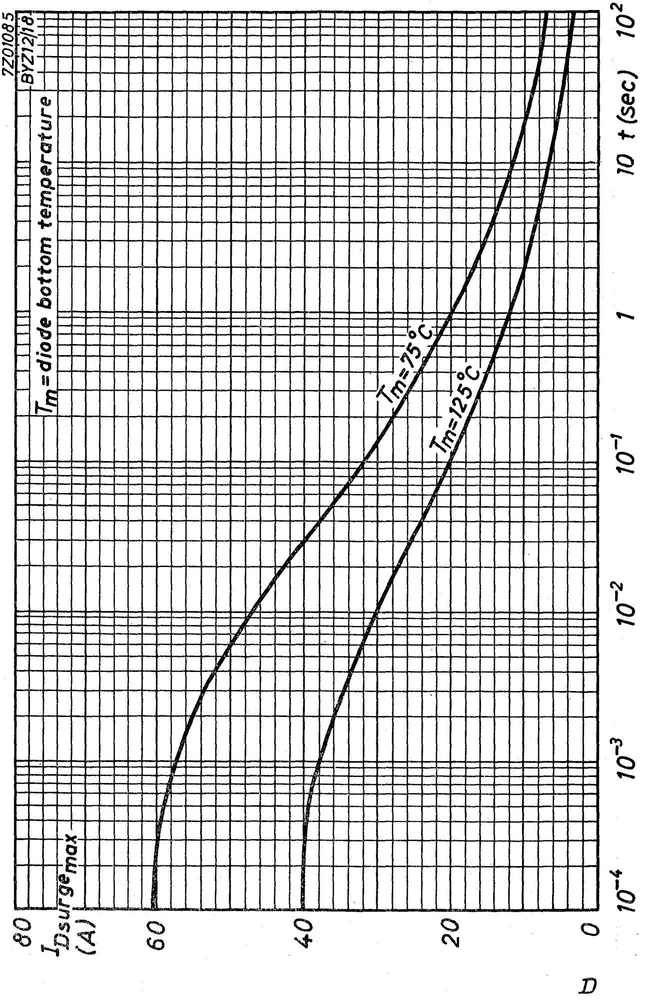
PHILIPS


7Z01806 / 2.25.26.aj/af
1000
−I_D (μA)
500
200
100
50
20
10
Curve A: BYZ 10
B: BYZ 11
C: BYZ 12
D: BYZ 13
T_j = 125°C
D
C
B
A
0
200
400
600
−V_D (V)
800


7Z01087
T_m = diode bottom temperature
K_{m-amb} = thermal resistance between diode bottom and ambience
K_{m-amb}=0.6°C/W
2°C/W
3°C/W
5°C/W
7°C/W
10°C/W
15°C/W
20°C/W
T_m (°C)
25
50
75
100
125
150
T_{amb} (°C)
200
150
100
50
I_o(A)
6
4
2
0
$P_{tot max}$ (W)
20
16
12
8
4
0
a
b
c
d
Curve | Phases | Load | $\frac{I_{DM}}{I_D}$
a | 1 | R or L | <3.14
b | 3 | R or L | <3.63
c | 6 | any | <6.28
d | 1 | C | <10
T_{av} = max. 20 msec

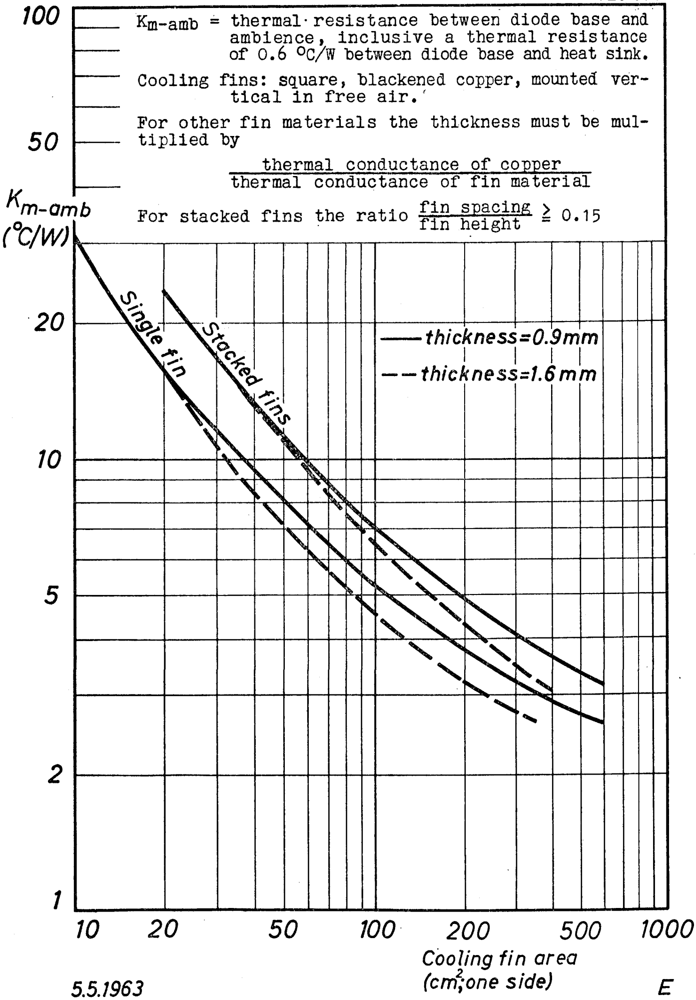
BYZ10 → 13

PHILIPS



D

7Z01089


100
50
20
10
5
2
1
K_{m-amb} (°C/W)
K_{m-amb} = thermal resistance between diode base and ambience, inclusive a thermal resistance of 0.6 °C/W between diode base and heat sink.
Cooling fins: square, blackened copper, mounted vertical in free air.
For other fin materials the thickness must be multiplied by
$\frac{\text{thermal conductance of copper}}{\text{thermal conductance of fin material}}$
For stacked fins the ratio $\frac{\text{fin spacing}}{\text{fin height}} \geq 0.15$
Single fin
Stacked fins
thickness=0.9mm
thickness=1.6mm
10
20
50
100
200
500
1000
Cooling fin area
(cm²; one side)

PHILIPS

BYZ14 BYZ15
BYY73 BYY74
BYY15 BYY16

DOUBLE-DIFFUSED SILICON JUNCTION DIODES for power rectifier applications

The BYZ15 / BYY74 / BYY16 are the reverse polarity types of the BYZ14 / BYY73 / BYY15

(See outline drawing)

RECOMMENDED RATINGS

If the diodes are used within the recommended ratings, stable operation is ensured.

		BYZ14/15	BYY73/74	BYY15/16
Inverse voltage 1)				
Continuous	$-V_D$	200 V	300 V	400 V
Recurrent peak	$-V_{DM}$	200 V	300 V	400 V
Transient peak	$-V_{DM}$	400 V	600 V	800 V
Surge peak (max. duration 10 msec)	$-V_{Dsurge}$	400 V	600 V	800 V
Forward current				
Average (averaging time max. 20 msec)	I_D 2)	40 A	40 A	40 A
Recurrent peak	I_{DM}	200 A	200 A	200 A
Surge peak	I_{Dsurge}	See page E		
Temperatures				
Junction	T_j	150 °C	150 °C	150 °C
Storage	T_S	150 °C	150 °C	150 °C
Operating ambient	T_{amb}	See page D		
Diode base	T_m	See page D		

THERMAL DATA

Thermal resistance from junction to diode base   K = max.   1.0 °C/W 3)

Thermal resistance from diode base to heat sink   K =   0.15 °C/W

NET WEIGHT   80 g

Net weight with mounting accessories 100 g

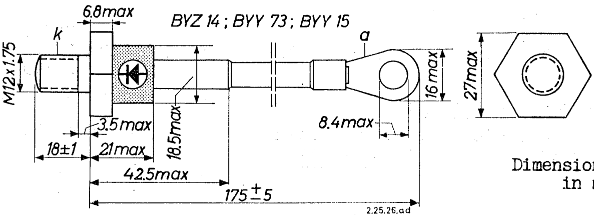
1) Each diode is tested individually at $-I_D \leqq 10$ mA at a diode base temperature of 125 °C and a peak inverse voltage of 400 V for the BYZ14/15; 600 V for the BYY73/74 800 V for the BYY15/16

2) For six-phase circuits or capacitive load the average current is max. 32 A. See also page D.

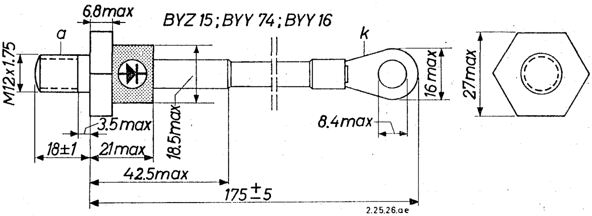
3) This value is intended as a calculating figure.

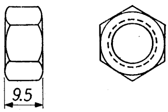
BYZ14 BYZ15
BYY73 BYY74
BYY15 BYY16

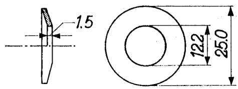
PHILIPS



Dimensions in mm







Metal spring washer

Nut: M12x1.75

Diameter of flexible conducting lead 10 mm^2

Diameter of hole in heat sink max. 13 mm

Mounting torque: min. 100 cm kg for good heat conductance
max. 250 cm kg

CHARACTERISTICS

Forward voltage at diode base temperature of 25 °C

V_D (I_D = 1 A) < 0.8 V

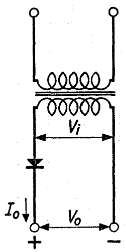
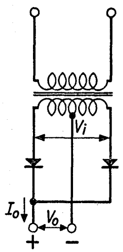
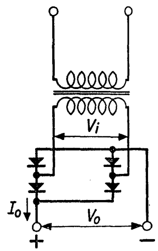
V_D (I_D = 200 A) < 1.8 V [1]

Reverse current at diode base temperature of 125 °C

	$-V_D$ (V)	$-I_D$ (mA)
BYZ14/15	200	max. 2
BYY73/74	300	max. 2
BYY15/16	400	max. 2

[1]) Measured with current pulses to prevent excessive dissipation

OPERATING CHARACTERISTICS as rectifier

		Single phase Half wave		Two phase Half wave		Single phase Full wave bridge	
							
	V_i V_{RMS}	I_o (A)	V_o (V)	I_o (A)	V_o (V)	I_o (A)	V_o (V)
BYZ14/15	140	40	60	80	60	80	125
BYY73/74	210	40	90	80	90	80	185
BYY15/16	280	40	125	80	125	80	250

The V_i and I_o values are max. values for resistive or inductive load. No source impedance is assumed.

The equipment designer has to determine an average design such that these values will not be exceeded.

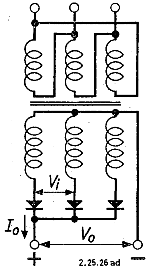
Example for heat sink calculation

For a given application the minimum required heat sink area can be determined as follows:
If in a three-phase full-wave circuit I_o = 90 A (30 A per diode) and T_{amb} = 50 °C, it follows from page D that the maximum value of the thermal resistance between the diode base and ambience is 1.4 °C/W.
When forced convection of 5 m/sec is provided the minimum required heat sink area is 100 cm² according to page F.
From page D it may be seen that the temperature of the diode base is about 108 °C and that the dissipation is max. 42 W.

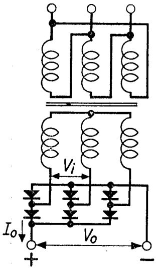
See also pages 4 and 5

OPERATING CHARACTERISTICS as rectifier (continued)

Three phase star



Three phase Full wave bridge



		Three phase star		Three phase Full wave bridge	
	V_i (V_{RMS})	I_o (A)	V_o (V)	I_o (A)	V_o (V)
BYZ14/15	140	120	95	120	190
BYY73/74	210	120	140	120	285
BYY15/16	280	120	190	120	380

OPERATING NOTES

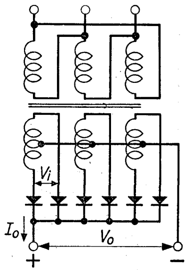
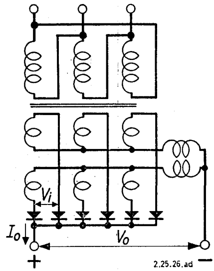
1) In order to prevent the diode from being damaged by surge currents higher than those mentioned at page E a fast fuse is recommended.

2) The values of K include a thermal resistance between diode base and heat sink of about 0.15 °C/W.

3) When there is a possibility that transient voltage surges will cause an inverse voltage higher than the rated surge value, a damping circuit across the transformer or across the diode should be applied, e.g. a series R.C. circuit or a voltage dependent resistor. Dimensioning of the R.C. circuit may be done according to the following formulae:

See page 5

OPERATING CHARACTERISTICS as rectifier (continued)

		Six phase Star		Three phase double Y with interphase transformer	
					
	V_i (V_{RMS})	I_o (A)	V_o (V)	I_o (A)	V_o (V)
BYZ14/15	140	192	95	240	80
BYY73/74	210	192	135	240	120
BYY15/16	280	192	190	240	165

OPERATING NOTES (continued from page 4)

a. When applied to the primary side of the transformer:

$$C_1 \approx 200 \frac{I_{po}}{V} \ \mu F \qquad R_1 \approx \frac{150}{C_1} \ \Omega$$

b. When applied to the secondary of the transformer:

$$C_2 \approx 450 \frac{I_{po} \cdot V}{(-V_{DM})^2} \ \mu F \qquad R_2 \approx \frac{200}{C_2} \ \Omega$$

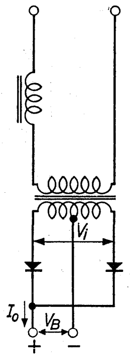
In which:

V = transformer primary R.M.S. voltage (V)
$-V_{DM}$ = recurrent peak inverse voltage (V)
I_{po} = magnetizing primary R.M.S. current (A)

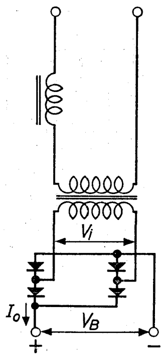
PHILIPS

OPERATING CHARACTERISTICS for battery charging

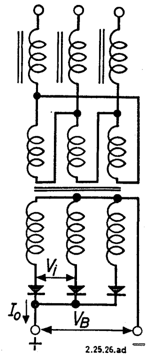
Two phase Half wave



Single phase Full wave bridge



Three phase star

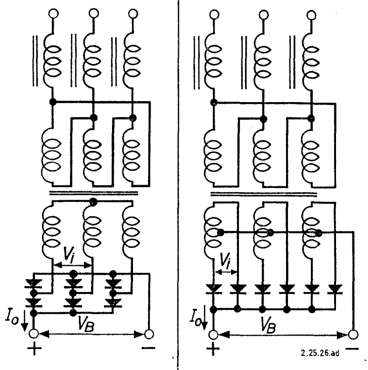


		Two phase Half wave			Single phase Full wave bridge			Three phase star		
	V_i V_{RMS}	I_o (A)	V_B (V)	n	I_o (A)	V_B (V)	n	I_o (A)	V_B (V)	n
BYZ14/15	125	40	60	27	40	120	54	60	70	32
BYY73/74	190	40	90	41	40	180	82	60	105	47
BYY15/16	255	40	120	54	40	240	108	60	135	60

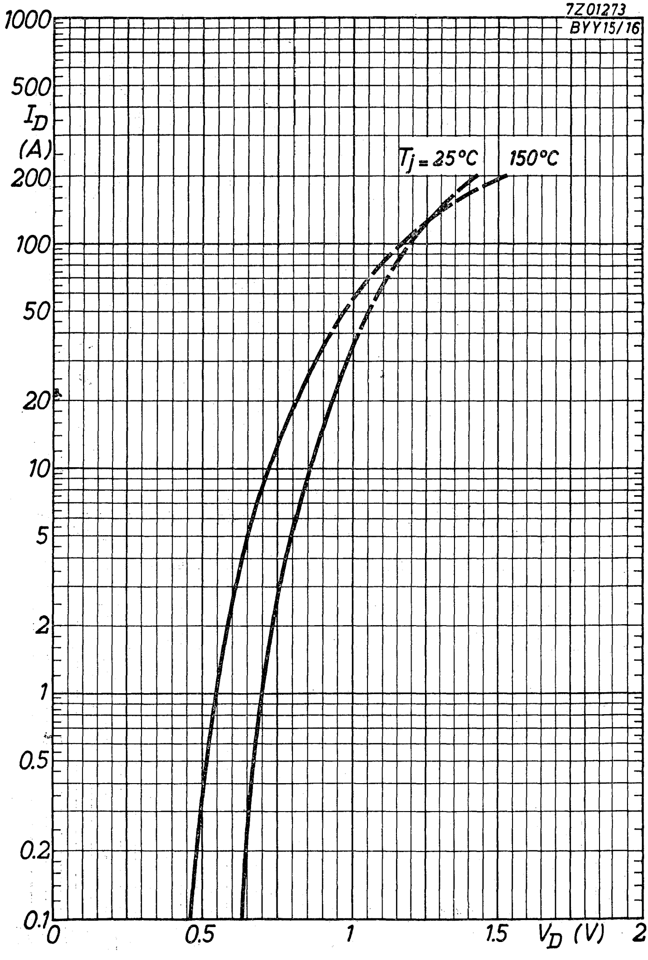
n = maximum number of Pb cells in series (nominal voltage per cell = 2.2 V)

The above data are nominal values with battery load. The possibility of mains voltage fluctuations of max. 10 % has been taken into account. For current limiting use is made of inductors in series with the primary of the mains transformer

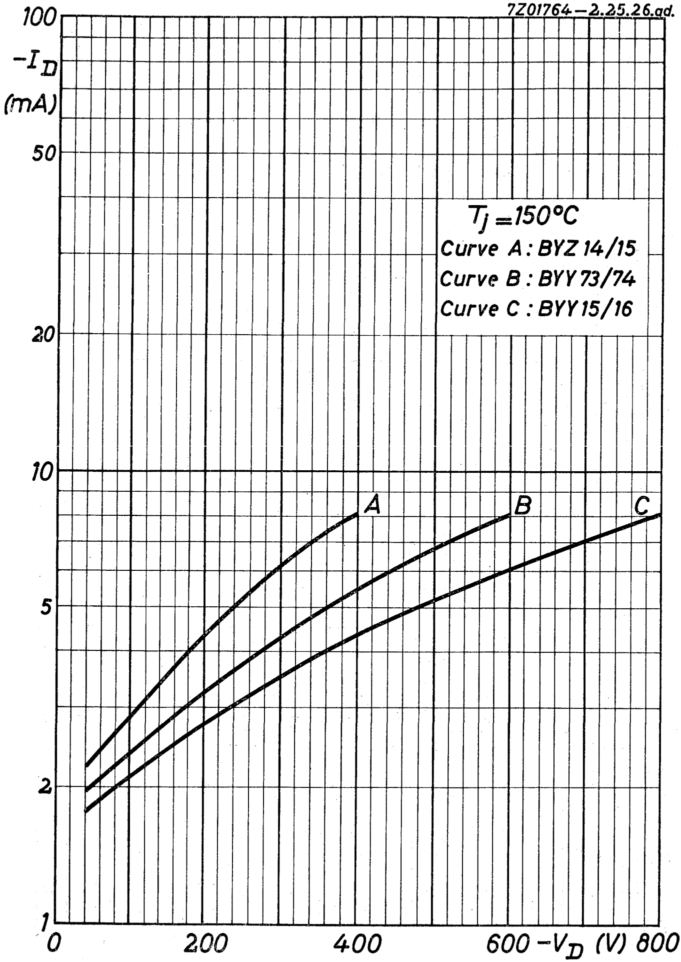
OPERATING CHARACTERISTICS for battery charging (continued)

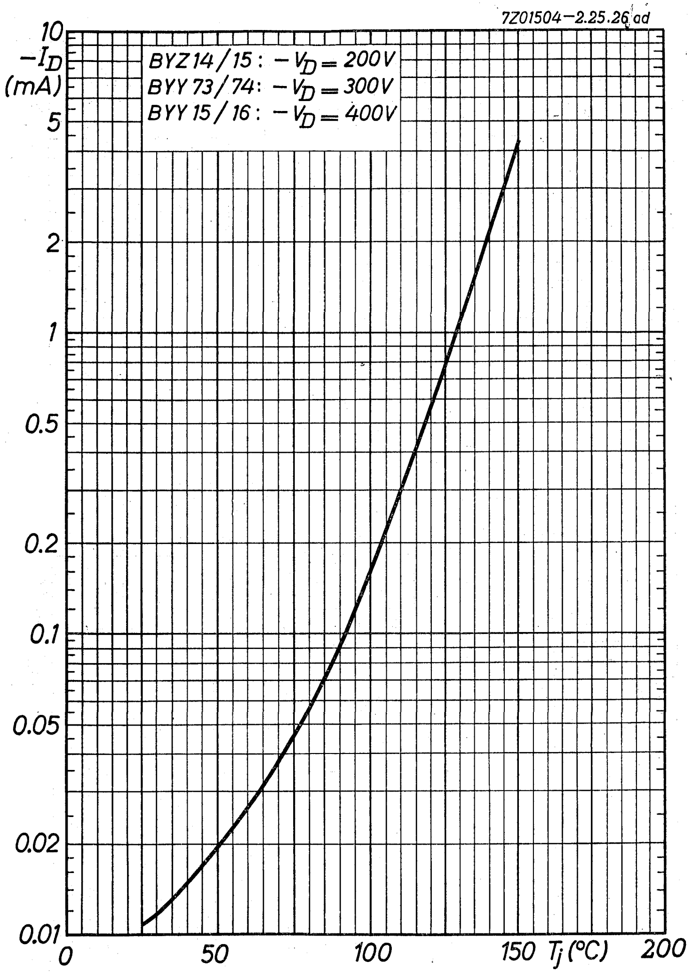


		Three phase Full wave bridge			Six phase star		
	V_i (V_{RMS})	I_o (A)	V_B (V)	n	I_o (A)	V_B (V)	n
BYZ14/15	125	60	120	54	120	60	27
BYY73/74	190	60	180	82	120	90	41
BYY15/16	255	60	240	108	120	120	54


7Z01273
BYY15/16
1000
500
I_D
(A)
200
100
50
20
10
5
2
1
0.5
0.2
0.1
$T_j = 25°C$
150°C
0
0.5
1
1.5
V_D (V)
2

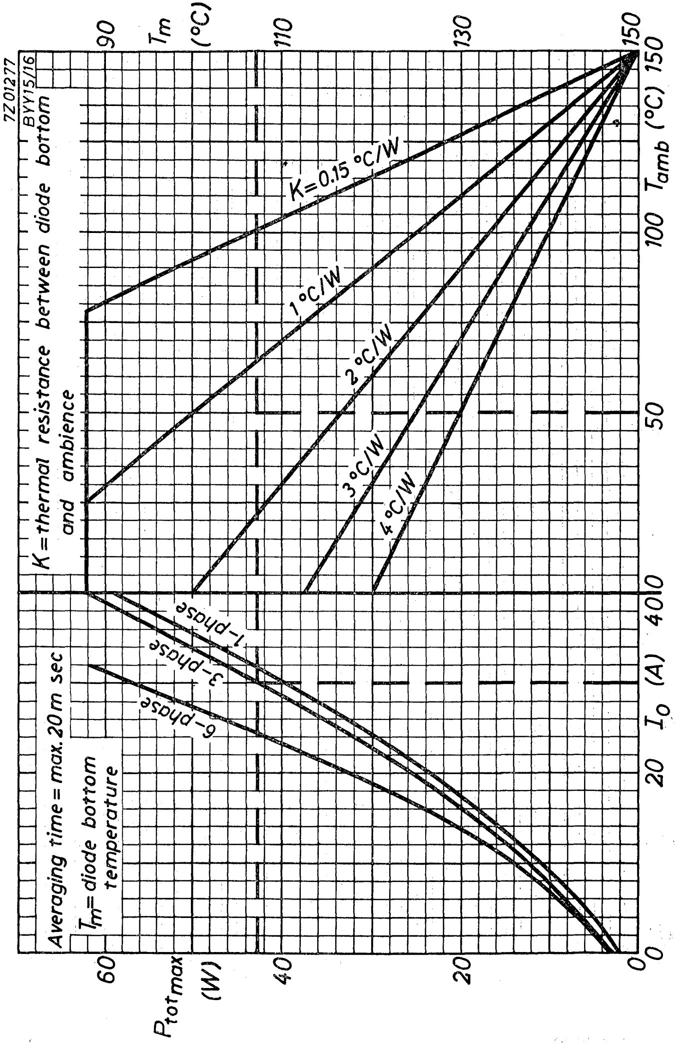
PHILIPS


7Z01764—2.25.26.ad.
100
$-I_D$
(mA)
50
20
10
5
2
1
0
200
400
600
$-V_D$ (V)
800
T_j = 150°C
Curve A : BYZ 14/15
Curve B : BYY 73/74
Curve C : BYY 15/16
A
B
C

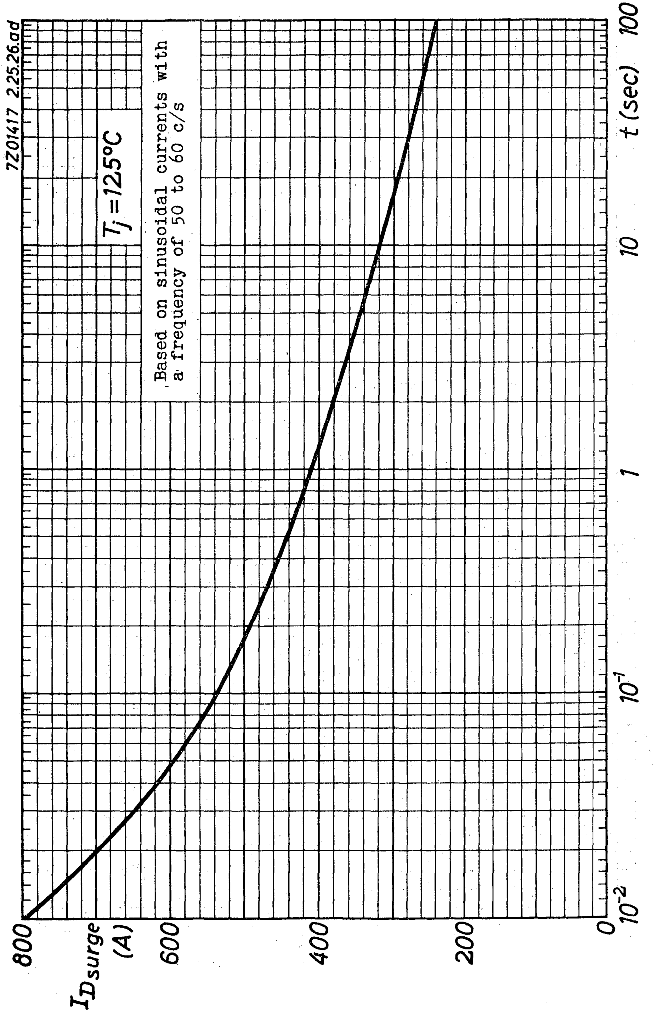

7Z01504-2.25.26 ad
10
$-I_D$
(mA)
5
2
1
0.5
0.2
0.1
0.05
0.02
0.01
BYZ 14/15 : $-V_D = 200V$
BYY 73/74 : $-V_D = 300V$
BYY 15/16 : $-V_D = 400V$
0
50
100
150
T_j (°C)
200

BYZ14 BYZ15
BYY73 BYY74
BYY15 BYY16

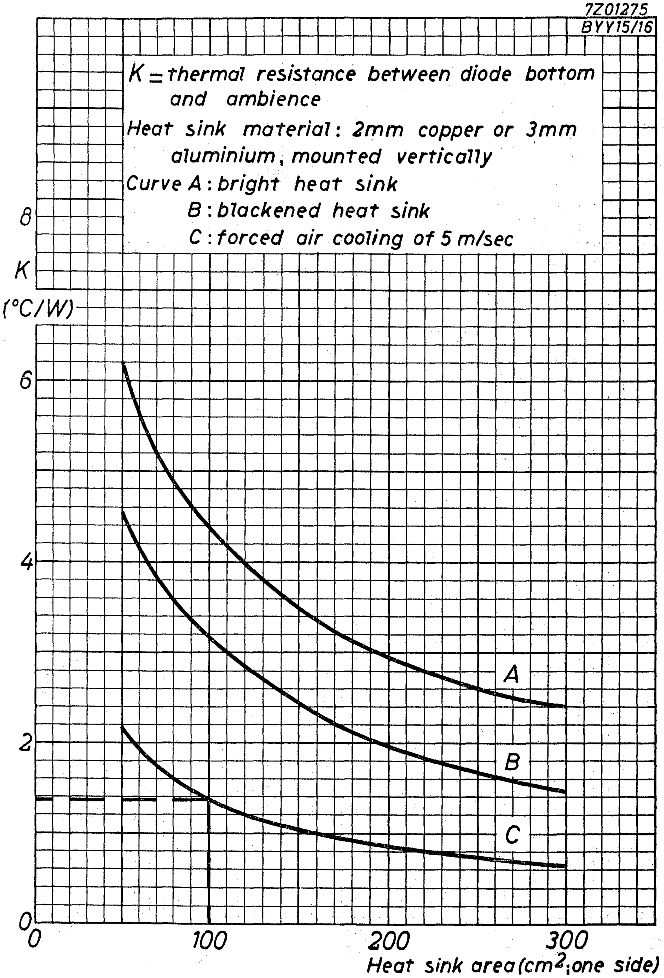
PHILIPS



D


7Z01417 2.25.26.ad
$T_j = 125°C$
Based on sinusoidal currents with
a frequency of 50 to 60 c/s
t (sec)
100
10
1
10^{-1}
10^{-2}
800
600
400
200
0
$I_{D surge}$
(A)

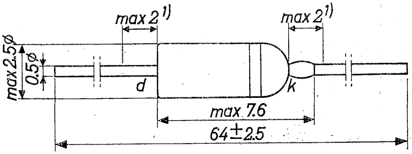
PHILIPS


7Z01275
BYY15/16
K = thermal resistance between diode bottom and ambience
Heat sink material: 2mm copper or 3mm aluminium, mounted vertically
Curve A: bright heat sink
B: blackened heat sink
C: forced air cooling of 5 m/sec
K (°C/W)
8
6
4
2
0
0
100
200
300
Heat sink area (cm²; one side)
A
B
C

SILICON ALLOY JUNCTION DIODE with 5 % tolerance in miniature double-ended all-glass construction for use as low-current VOLTAGE STABILIZER or as a VOLTAGE REFERENCE

Dimensions in mm

The white band indicates the position of the cathode



LIMITING VALUES (Absolute max. values)

Forward current	I_D	= max.	50 mA
Reverse current	$-I_D$	= max.	25 mA
Total dissipation (see also page C)	P_{tot}	= max.	$\frac{150 - T_{amb}}{0.45}$ mW
Junction temperature	T_j	= max.	150 °C
Storage temperature	T_s	=	-55 °C to +150 °C

THERMAL DATA

Thermal resistance from junction to ambience in free air — K = max. 0.45 °C/mW

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

T_{amb} = 25 °C	
Forward current	Forward voltage
I_D	V_D
0.1 mA	610 mV
10 mA	760 mV

T_{amb} = 60 °C	
Reverse voltage	Reverse current
$-V_D$	$-I_D$
1.0 V	0.004 µA

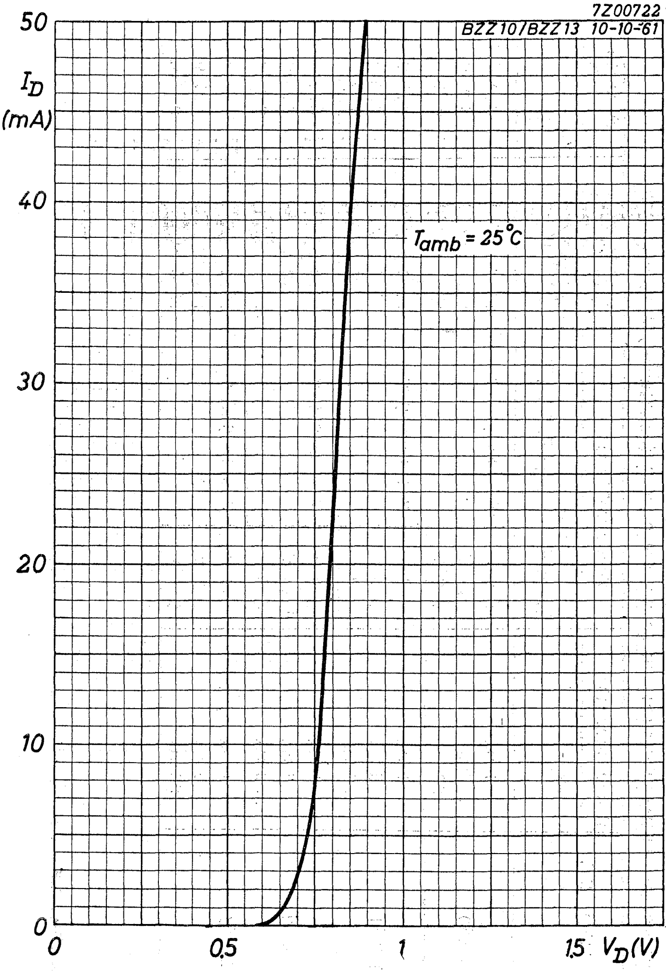
[1]) Not tinned

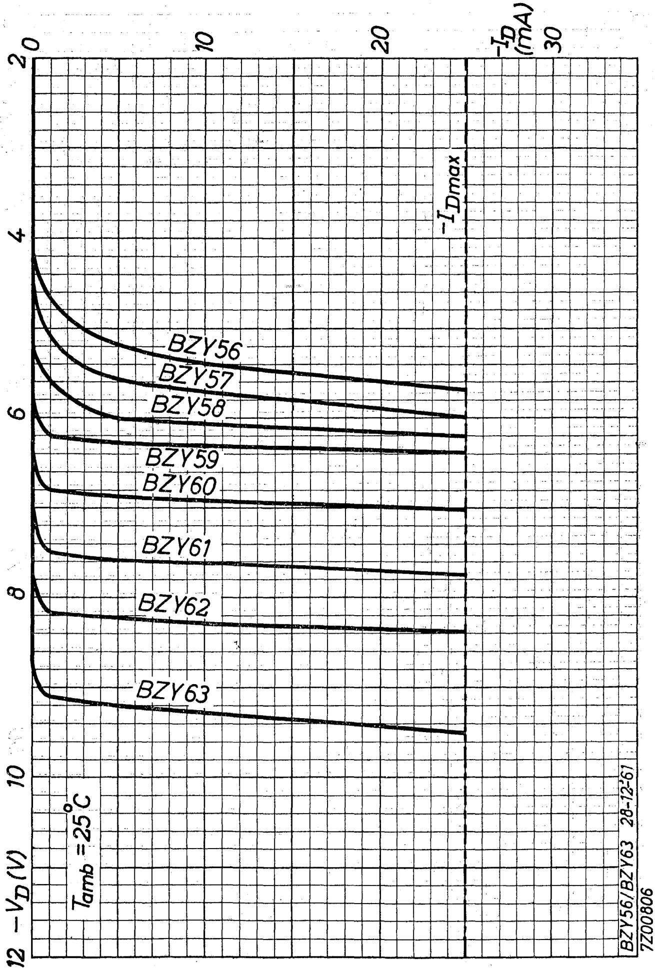
CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN (continued) T_{amb} = 25 °C

Type No.	Zener current	Zener voltage		Temperature coefficient	Dynamic impedance
	$-I_D$	$-V_D$		$\Delta(-V_D)/\Delta T$	r_D
		average	range values		
BZY56	1 mA	4.7 V	4.4 to 5.0 V	-2.0 mV/°C	370 Ω
	5 mA	5.2 V		-1.2 mV/°C	62 Ω
	20 mA	5.6 V		0.0 mV/°C	9.5 Ω
BZY57	1 mA	5.1 V	4.8 to 5.4 V	-1.8 mV/°C	360 Ω
	5 mA	5.6 V		-0.5 mV/°C	50 Ω
	20 mA	5.9 V		+1.0 mV/°C	6.0 Ω
BZY58	1 mA	5.6 V	5.3 to 6.0 V	-1.0 mV/°C	280 Ω
	5 mA	6.0 V		+1.0 mV/°C	28 Ω
	20 mA	6.2 V		+2.0 mV/°C	3.2 Ω
BZY59	1 mA	6.2 V	5.8 to 6.6 V	+0.5 mV/°C	200 Ω
	5 mA	6.3 V		+1.8 mV/°C	12 Ω
	20 mA	6.4 V		+2.5 mV/°C	2.0 Ω

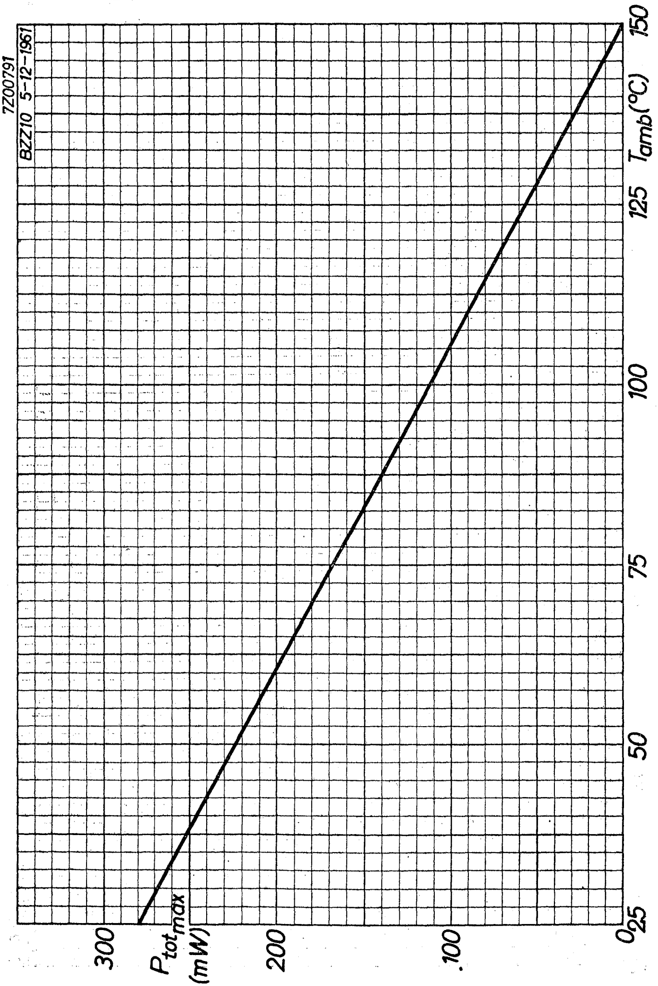
CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN (continued) T_{amb} = 25 °C

Type No.	Zener current	Zener voltage		Temperature coefficient	Dynamic impedance
	$-I_D$	$-V_D$		$\Delta(-V_D)/\Delta T$	r_D
		average	range values		
BZY60	1 mA	6.8 V	6.4 to 7.2 V	+2.7 mV/°C	5.0 Ω
	5 mA	6.9 V		+3.1 mV/°C	3.5 Ω
	20 mA	7.0 V		+3.6 mV/°C	1.5 Ω
BZY61	1 mA	7.5 V	7.1 to 7.9 V	+4.0 mV/°C	8.0 Ω
	5 mA	7.6 V		+4.3 mV/°C	2.8 Ω
	20 mA	7.7 V		+4.6 mV/°C	1.7 Ω
BZY62	1 mA	8.2 V	7.7 to 8.7 V	+5.0 mV/°C	6.2 Ω
	5 mA	8.25 V		+5.2 mV/°C	3.2 Ω
	20 mA	8.4 V		+5.5 mV/°C	2.0 Ω
BZY63	1 mA	9.1 V	8.6 to 9.6 V	+6.2 mV/°C	8.0 Ω
	5 mA	9.2 V		+6.4 mV/°C	4.4 Ω
	20 mA	9.4 V		+6.6 mV/°C	2.7 Ω


7Z00722
BZZ10/BZZ13 10-10-61
50
I_D
(mA)
40
30
20
10
0
0
0,5
1
1,5
V_D(V)
T_{amb} = 25 °C


0
10
20
30
$-I_D$ (mA)
$-I_{Dmax}$
2
4
6
8
10
12
$-V_D$ (V)
BZY56
BZY57
BZY58
BZY59
BZY60
BZY61
BZY62
BZY63
$T_{amb} = 25°C$
BZY56/BZY63 28-12-61
7Z00806

PHILIPS


7Z00791
BZZ10 5-12-1961
Tamb (°C)
150
125
100
75
50
25
Ptot max (mW)
300
200
100
0

c

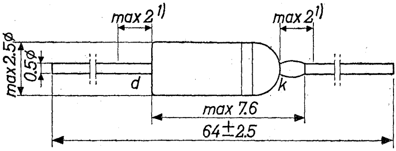
PHILIPS

BZY64 → 69

SILICON ALLOY JUNCTION DIODE with 15 % tolerance in miniature double-ended all-glass construction for use as low-current VOLTAGE STABILIZER or as a VOLTAGE REFERENCE

Dimensions in mm

The white band indicates the position of the cathode



LIMITING VALUES (Absolute max. values)

Forward current	I_D	= max.	50 mA
Reverse current	$-I_D$	= max.	25 mA
Total dissipation (see also page C)	P_{tot}	= max.	$\frac{150 - T_{amb}}{0.45}$ mW
Junction temperature	T_j	= max.	150 °C
Storage temperature	T_s	=	-55 °C to +150 °C

THERMAL DATA

Thermal resistance from junction to ambience in free air K = max. 0.45 °C/mW

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

T_{amb} = 25 °C	
Forward current	Forward voltage
I_D	V_D
0.1 mA	610 mV
10 mA	760 mV

T_{amb} = 60 °C	
Reverse voltage	Reverse current
$-V_D$	$-I_D$
1.0 V	0.004 μA

1) Not tinned

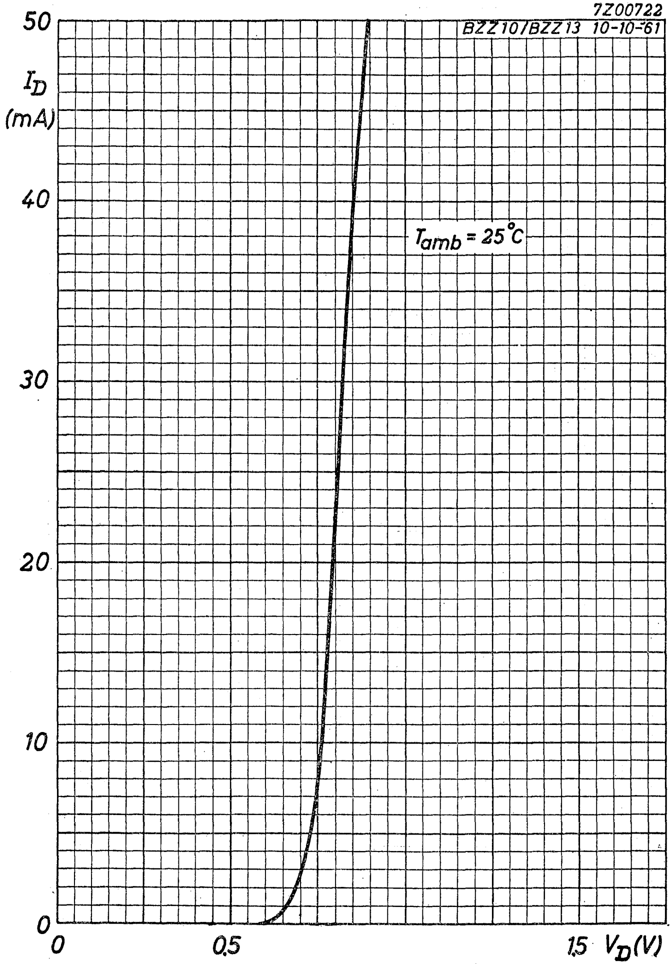
CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN (continued) Tamb = 25 °C

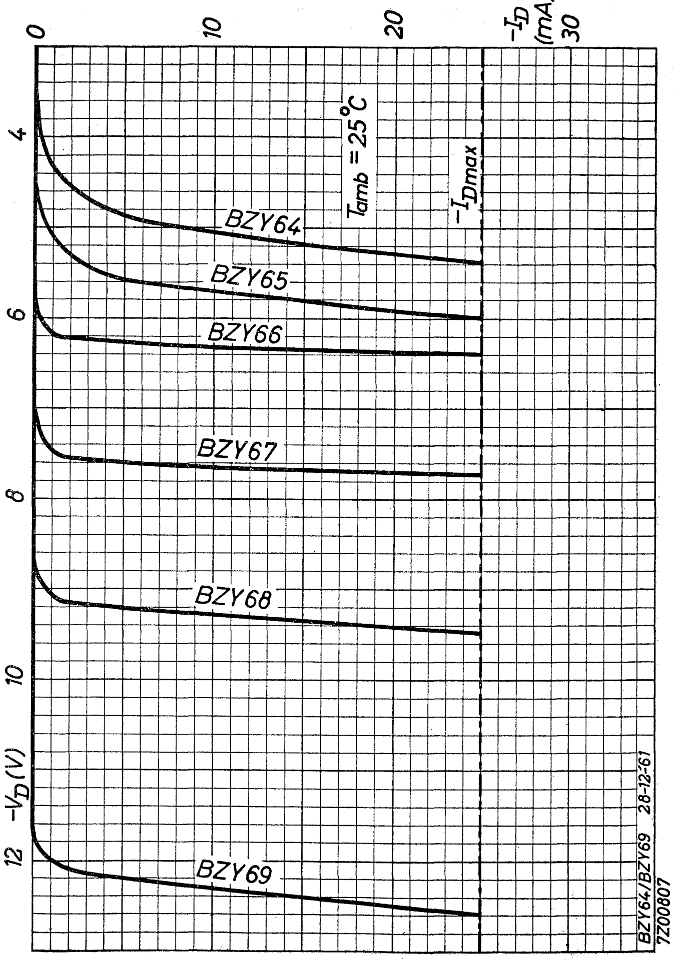
Type No.	Zener current	Zener voltage		Temperature coefficient	Dynamic impedance
	$-I_D$	$-V_D$		$\Delta(-V_D)/\Delta T$	r_D
		average	range values		
BZY64	1 mA	4.3 V	3.3 to 5.0 V	-2.2 mV/°C	375 Ω
	5 mA	4.9 V		-1.7 mV/°C	77 Ω
	20 mA	5.3 V		-1.2 mV/°C	12 Ω
BZY65	1 mA	5.1 V	4.4 to 6.0 V	-1.8 mV/°C	360 Ω
	5 mA	5.6 V		-0.5 mV/°C	50 Ω
	20 mA	5.9 V		+1.0 mV/°C	6.0 Ω
BZY66	1 mA	6.2 V	5.3 to 7.2 V	+0.5 mV/°C	200 Ω
	5 mA	6.3 V		+1.8 mV/°C	12 Ω
	20 mA	6.4 V		+2.5 mV/°C	2.0 Ω
BZY67	1 mA	7.5 V	6.4 to 8.7 V	+4.0 mV/°C	8.0 Ω
	5 mA	7.6 V		+4.3 mV/°C	2.8 Ω
	20 mA	7.7 V		+4.6 mV/°C	1.7 Ω

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN (continued) $T_{amb} = 25\ ^{o}C$

type No.	Zener current $-I_D$	Zener voltage $-V_D$ average	Zener voltage $-V_D$ range values	Temperature coefficient $\Delta(-V_D)/\Delta T$	Dynamic impedance r_D
BZY68	1 mA	9.1 V	7.7 to 10.6 V	+6.2 mV/°C	8.0 Ω
	5 mA	9.2 V		+6.4 mV/°C	3.5 Ω
	20 mA	9.4 V		+6.6 mV/°C	3.0 Ω
BZY69	1 mA	12.0 V	9.4 to 15.0 V	+9.2 mV/°C	21 Ω
	5 mA	12.2 V		+9.3 mV/°C	11 Ω
	20 mA	12.5 V		+9.4 mV/°C	7.0 Ω

PHILIPS

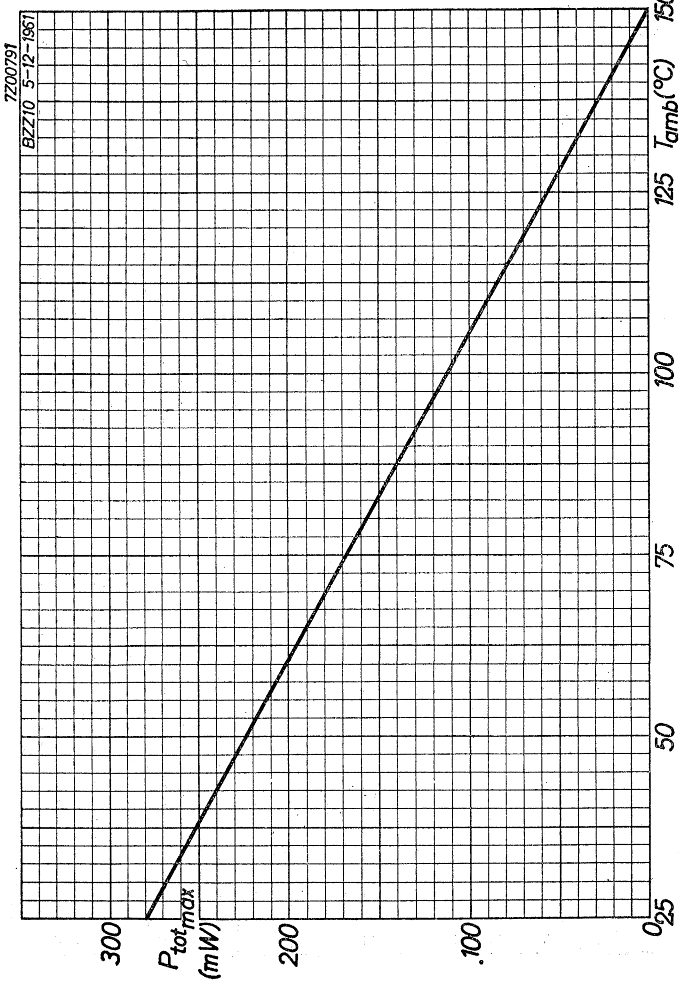

7Z00722
BZZ10/BZZ13 10-10-61
50
I_D
(mA)
40
30
20
10
0
0
0.5
1.5
V_D(V)
T_{amb} = 25°C



0
10
20
30
$-I_D$ (mA)
4
6
8
10
12
$-V_D$ (V)
$T_{amb} = 25°C$
$-I_{Dmax}$
BZY64
BZY65
BZY66
BZY67
BZY68
BZY69
BZY64/BZY69 28-12-'61
7Z00807

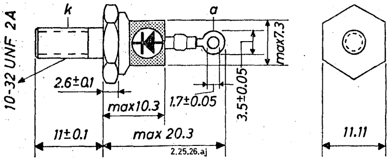
BZY64
→ 69

PHILIPS



SILICON ALLOY JUNCTION DIODE with 15 % tolerance for use as medium current VOLTAGE STABILIZER or as a VOLTAGE REFERENCE

Dimensions in mm



The diode is supplied with nut, metal washer and metal locking washer

LIMITING VALUES (Absolute max. values)

Forward current	I_D	= max.	0.5 A
Reverse current	$-I_D$	= max.	0.5 A
Surge reverse current (max. duration 100 µsec)	$-I_{D\,surge}$ (t	= max. = max.	10 A [1]) 100 µsec)
Dissipation (See also pages J and K)	P	= max.	$\frac{T_{jmax}-T_{amb}}{K}$
Storage temperature	T_S	=	-55°C to +150 °C

THERMAL DATA

Thermal resistance from junction to ambience in free air	K_{j-amb}	= max.	70 °C/W
Thermal resistance from junction to case	K_{j-c}	= max.	10 °C/W

[1]) For surge currents of longer duration see page I

PHILIPS

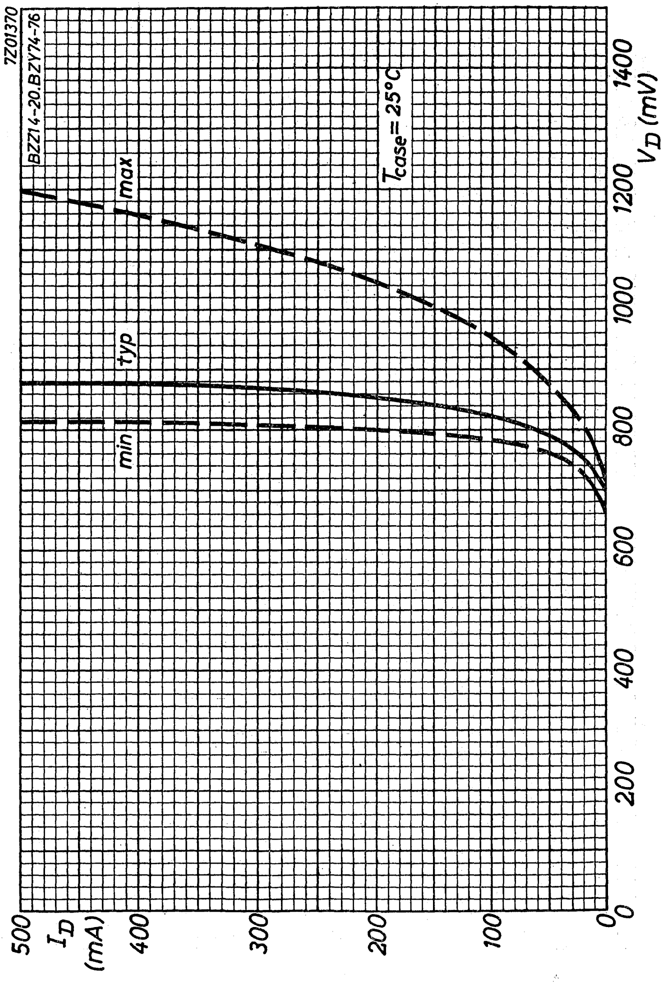
CHARACTERISTICS at a case temperature of 25°C

		BZY74	BZY75	BZY76
Forward voltage (V_D) at I_D = 200 mA	min. max.	0.8 V 1.05 V	0.8 V 1.05 V	0.8 V 1.05 V
Zener voltage ($-V_D$) at $-I_D$ = 20 mA	min. typ. max.	5.3 V 6.2 V 7.2 V	6.4 V 7.5 V 8.7 V	7.7 V 9.1 V 10.6 V
Dynamic resistance (r_D) at $-I_D$ = 20 mA	max.	13 Ω	10 Ω	11 Ω
Leakage current ($-I_D$) at $-V_D$ = 3 V	typ. max.	0.15 µA 0.5 µA	0.04 µA 0.5 µA	
Leakage current ($-I_D$) at $-V_D$ = 5 V	typ. max.			0.04 µA 0.4 µA

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

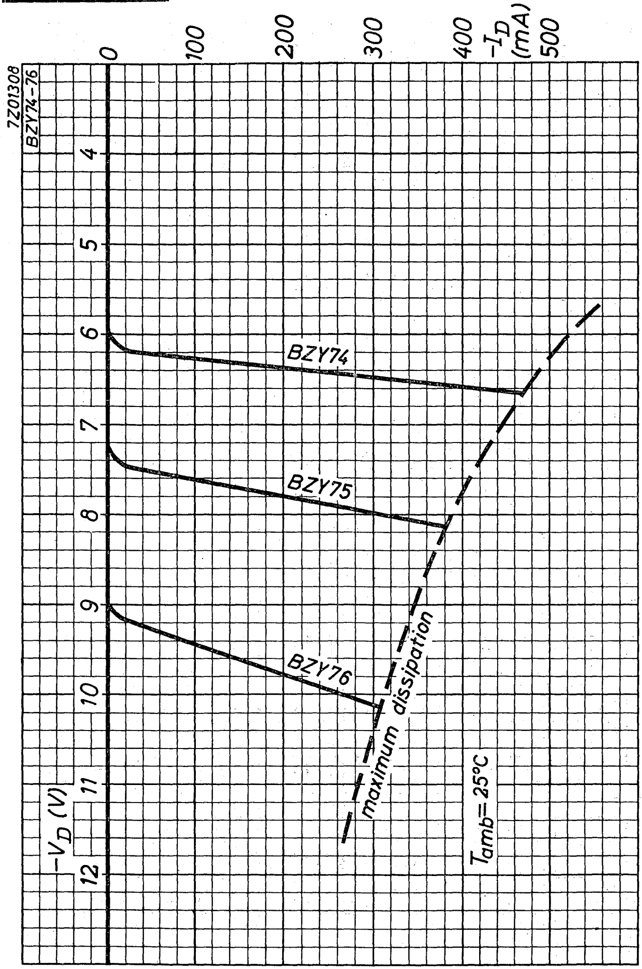
Case temperature = 25 °C

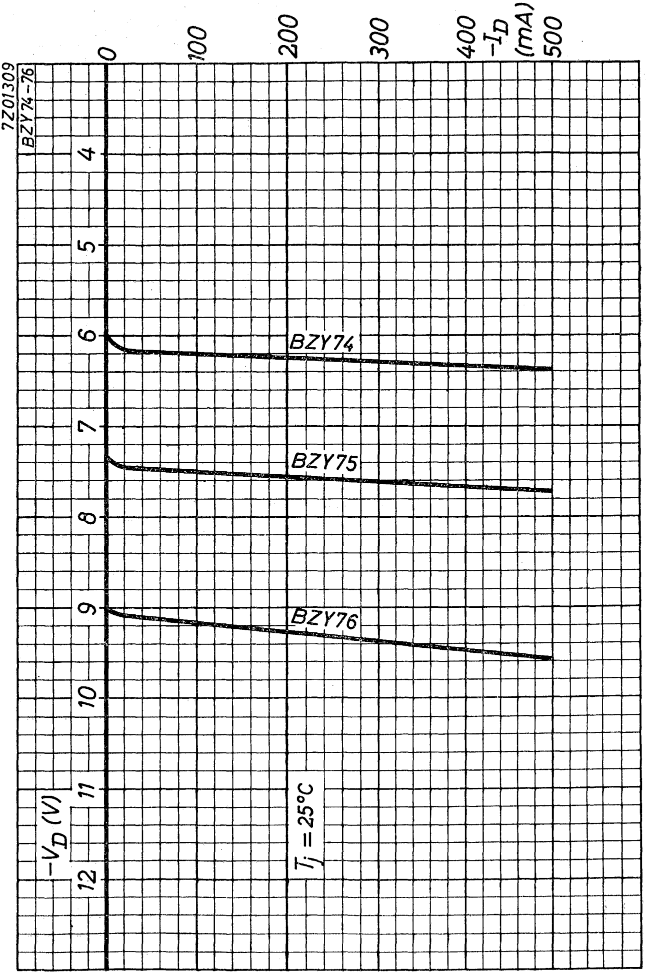
			BZY74	BZY75	BZY76	
Forward voltage (V_D)	I_D = 0-0.5 A	min. typ. max.	See page A			
Zener voltage ($-V_D$)	$-I_D$ = 50 mA	min.	5.4	6.4	7.8	V
		typ.	6.25	7.5	9.2	V
		max.	7.2	8.8	10.7	V
	$-I_D$ = 100 mA	min.	5.5	6.4	7.8	V
		typ.	6.3	7.6	9.3	V
		max.	7.4	9.0	11.0	V
	$-I_D$ = 200 mA	min.	5.5	6.6	8.0	V
		typ.	6.35	7.7	9.45	V
		max.	7.4	9.4	11.3	V
	$-I_D$ = 500 mA	min.	5.5	6.6	8.0	V
		typ.	6.6	7.82	9.55	V
		max.	7.9	9.5	11.6	V
Dynamic resistance (r_D)	$-I_D$ = 100 mA	typ.	See page G			
		max.	4.0	5.0	5.0	Ω
	$-I_D$ = 500 mA	typ.	See page G			
		max.	2.5	3.0	3.0	Ω
Temperature coefficient $\frac{\Delta(-V_D)}{\Delta T}$	$-I_D$ = 20 mA	typ.	See page F			
		min.	-0.4	2.0	4.0	mV/°C
		max.	4.0	6.0	8.0	mV/°C
	$-I_D$ = 100 mA	typ.	See page F			
		min.	0.5	2.5	3.0	mV/°C
		max.	4.0	6.1	11.0	mV/°C
	$-I_D$ = 500 mA	typ.	See page F			
		min.	0.0	2.5	3.0	mV/°C
		max.	4.0	7.0	11.0	mV/°C
Capacitance (c_{dk})	$-V_D$ = 2 V	typ.	475	350	250	pF


7Z01370
BZZ14-20.BZY74-76
T_{case} = 25°C
max
typ
min
V_D (mV)
I_D (mA)
0
200
400
600
800
1000
1200
1400
100
300
500

BZY74
→76

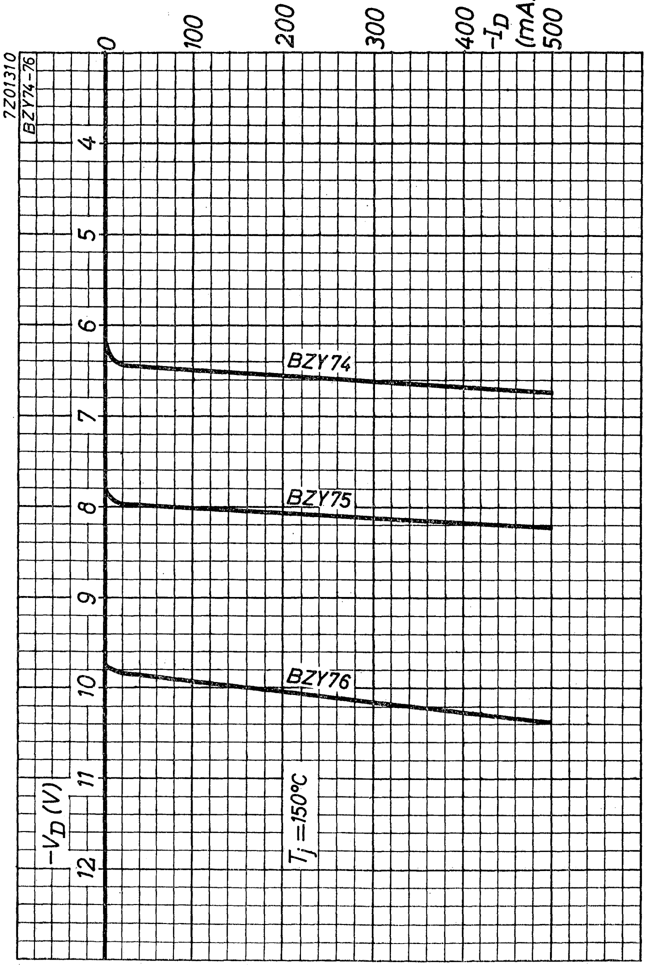
PHILIPS

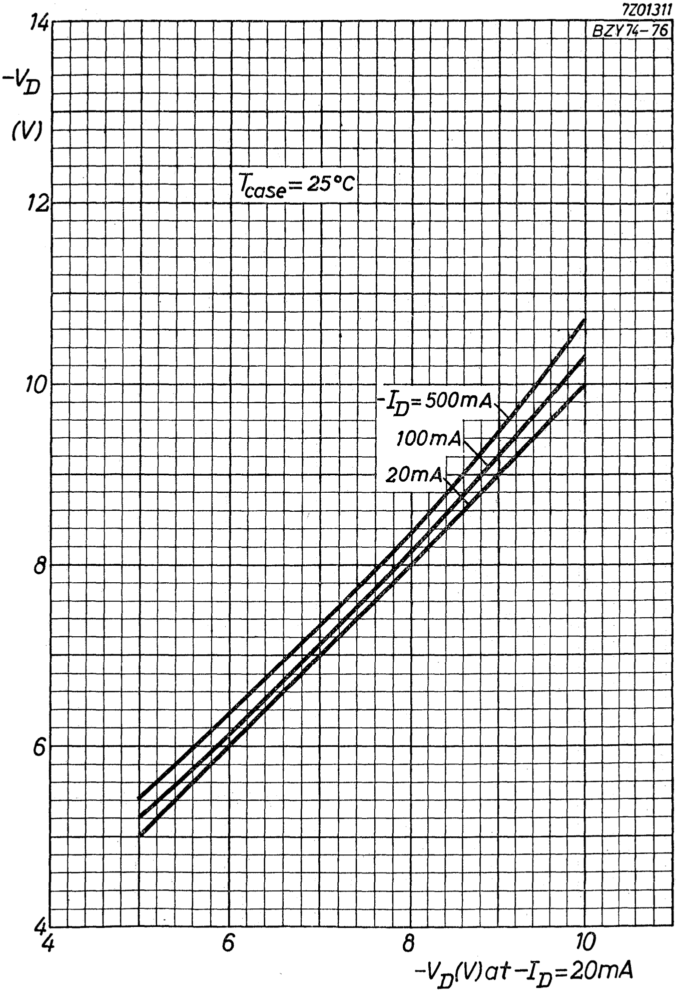



7Z01309
BZY74-76
0
100
200
300
400
500
$-I_D$ (mA)
4
5
6
7
8
9
10
11
12
$-V_D$ (V)
BZY74
BZY75
BZY76
$T_j = 25°C$

BZY74
→76

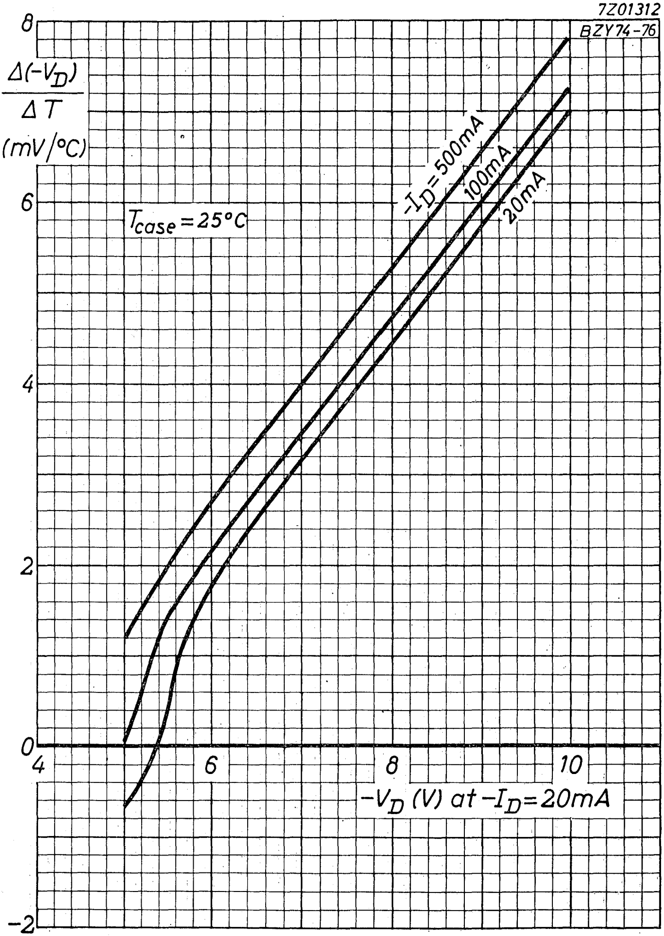
PHILIPS

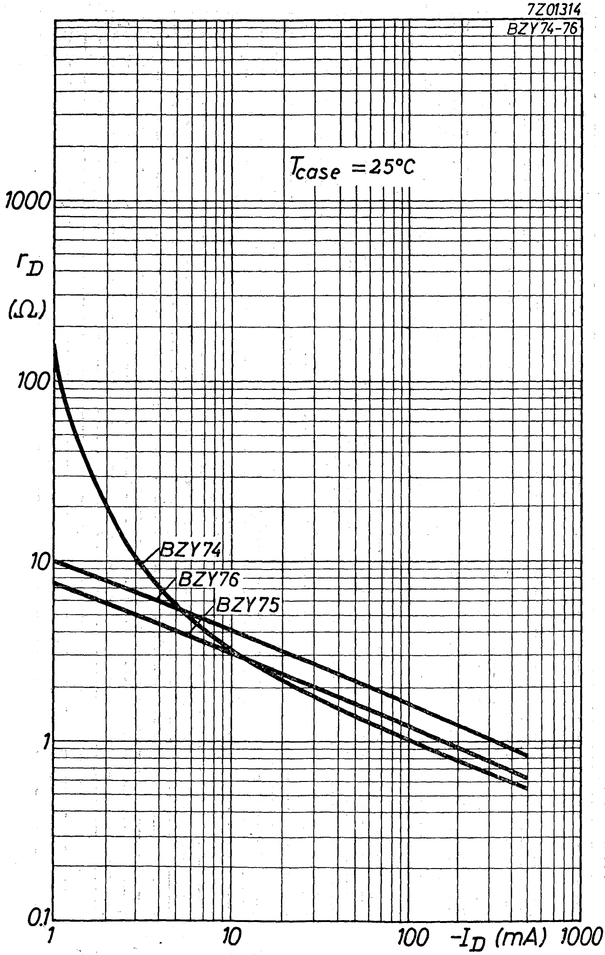



7Z01311
BZY74–76
14
$-V_D$
(V)
$T_{case} = 25\,°C$
12
10
$-I_D = 500\,mA$
100mA
20mA
8
6
4
4
6
8
10
$-V_D$(V) at $-I_D = 20\,mA$

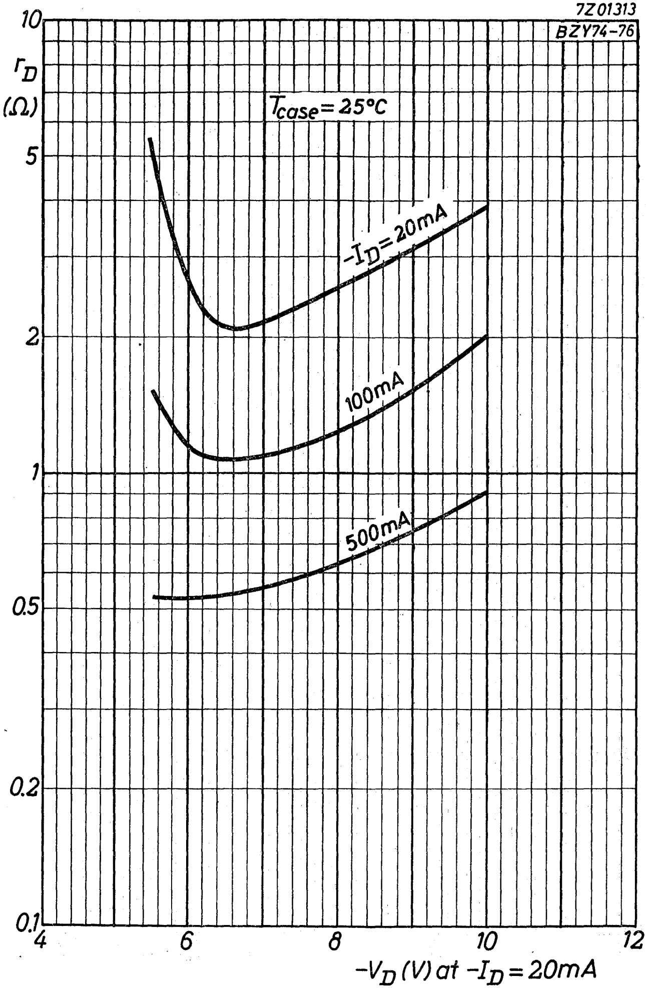
BZY74 → 76

PHILIPS



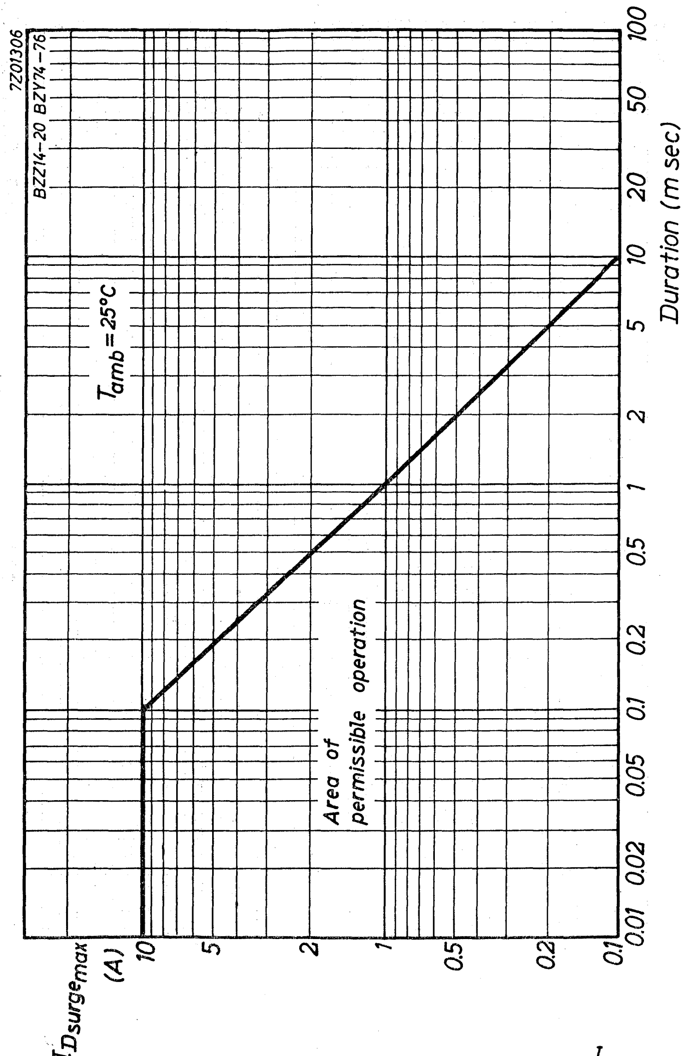

7Z01314
BZY74-76
T_{case} = 25°C
1000
r_D
(Ω)
100
10
1
0.1
1
10
100
$-I_D$ (mA)
1000
BZY74
BZY76
BZY75

PHILIPS


7Z01313
BZY74-76
r_D
(Ω)
T_{case} = 25°C
$-I_D$ = 20mA
100mA
500mA
10
5
2
1
0.5
0.2
0.1
4
6
8
10
12
$-V_D$ (V) at $-I_D$ = 20mA

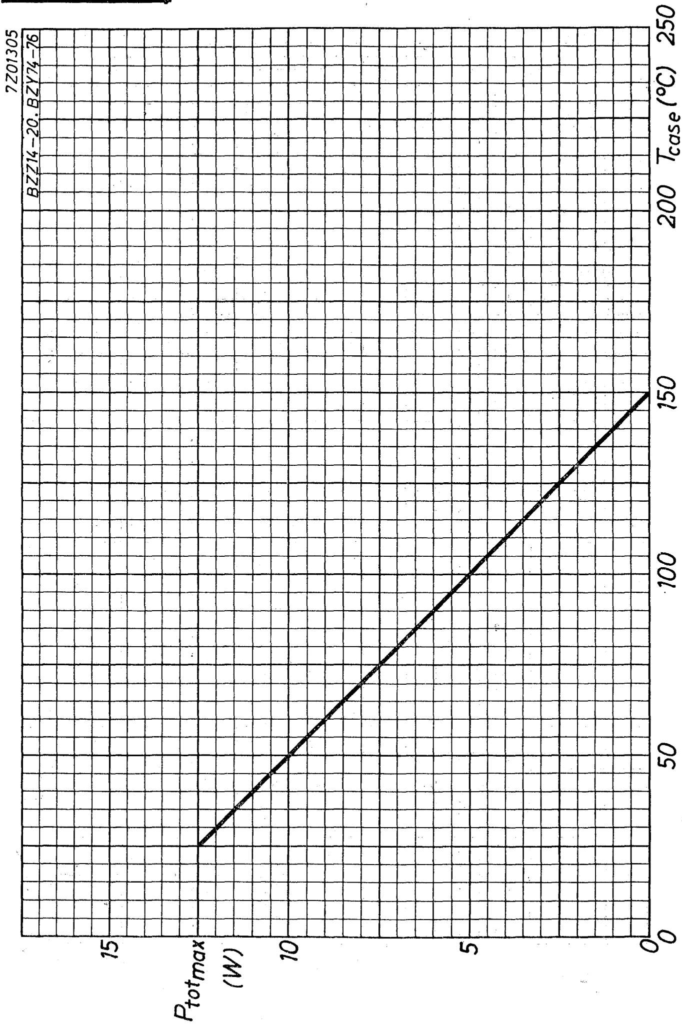
PHILIPS

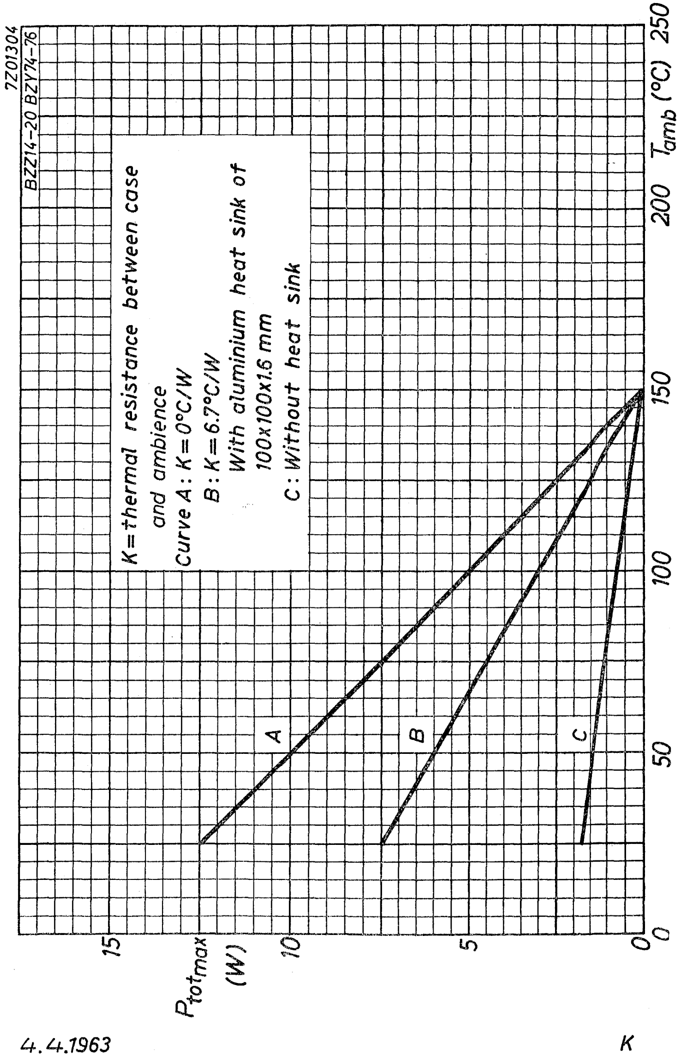
BZY74 →76



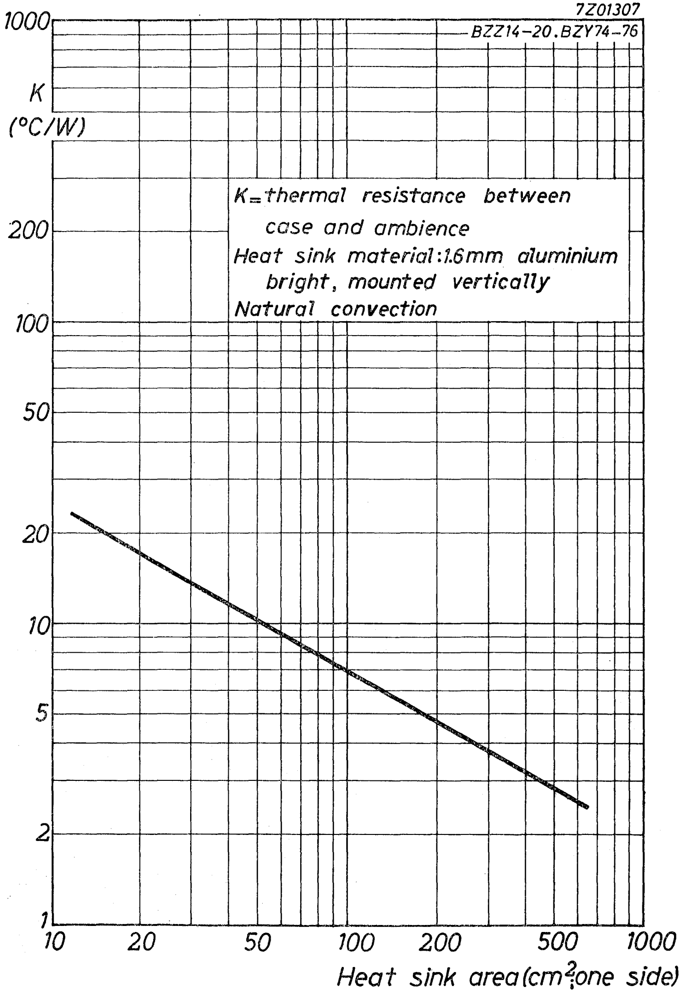
BZY74
→76

PHILIPS




7Z01304
BZZ14-20 BZY74-76
K = thermal resistance between case
and ambience
Curve A : K = 0°C/W
B : K = 6.7°C/W
With aluminium heat sink of
100x100x1.6 mm
C : Without heat sink
A
B
C
$P_{tot\,max}$
(W)
0
5
10
15
T_{amb} (°C)
0
50
100
150
200
250

PHILIPS



7Z01307
BZZ14-20.BZY74-76
K
(°C/W)
1000
200
100
50
20
10
5
2
1
10
20
50
100
200
500
1000
Heat sink area (cm²; one side)
K = thermal resistance between case and ambience
Heat sink material: 1.6mm aluminium bright, mounted vertically
Natural convection

L

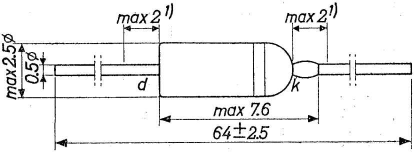
PHILIPS

BZZ10 → 13

SILICON ALLOY JUNCTION DIODE in double-ended all-glass construction for use as low current VOLTAGE STABILIZER or as a VOLTAGE REFERENCE

Dimensions in mm

The white band indicates the position of the cathode



LIMITING VALUES (Absolute maximum values)

Forward current	I_D = max.	50 mA
Reverse current	$-I_D$ = max.	25 mA
Total dissipation (see also page C)	P_{tot} = max.	$\frac{150-T_{amb}}{0.45}$ mW
Junction temperature	T_j = max.	150 °C
Storage temperature	T_s =	-55 °C to +150 °C

THERMAL DATA

Thermal resistance from junction to ambience in free air — K = max. 0.45 °C/mW

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

T_{amb} = 25 °C	
Forward current	Forward voltage
I_D	V_D
0.1 mA	610 mV
10 mA	760 mV

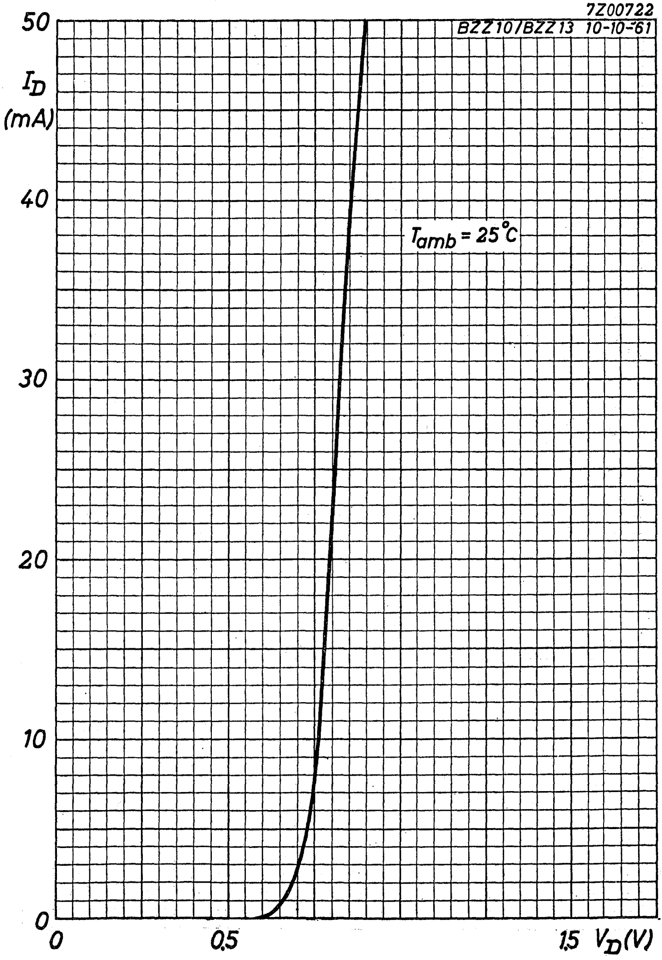
T_{amb} = 60 °C	
Reverse voltage	Reverse current
$-V_D$	$-I_D$
1.0 V	0.004 µA

1) Not tinned

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN at T_{amb} = 25 °C, unless otherwise specified

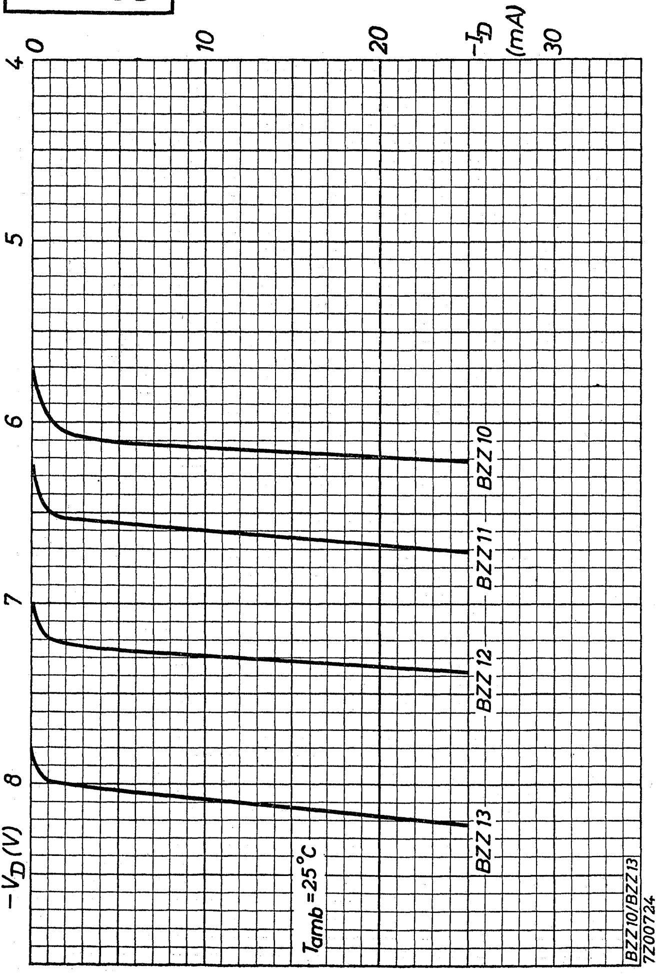
Type No.	Zener current $-I_D$	Zener voltage $-V_D$ average	Zener voltage $-V_D$ range values	Temperature coefficient $\Delta(-V_D)/\Delta T$	Dynamic impedance r_D
BZZ10	1 mA	6.0 V	5.3 to 6.6 V	-1.0 mV/°C	280 Ω
	5 mA	6.15 V		+1.0 mV/°C	27 Ω
	20 mA	6.3 V		+2.0 mV/°C	3.0 Ω
	1 to 15 mA		5.0 to 7.0 V[1]		
BZZ11	1 mA	6.5 V	5.8 to 7.2 V	+1.5 mV/°C	140 Ω
	5 mA	6.55 V		+2.2 mV/°C	6.0 Ω
	20 mA	6.75 V		+3.0 mV/°C	2.0 Ω
	1 to 15 mA		5.5 to 7.5 V[1]		
BZZ12	1 mA	7.2 V	6.4 to 7.9 V	+3.3 mV/°C	17 Ω
	5 mA	7.25 V		+3.7 mV/°C	3.0 Ω
	20 mA	7.35 V		+4.1 mV/°C	1.5 Ω
	1 to 15 mA		6.2 to 8.2 V[1]		
BZZ13	1 mA	8.0 V	7.1 to 8.7 V	+4.6 mV/°C	6.0 Ω
	5 mA	8.05 V		+4.9 mV/°C	3.0 Ω
	20 mA	8.2 V		+5.2 mV/°C	2.0 Ω
	1 to 15 mA		7.0 to 9.0 V[1]		

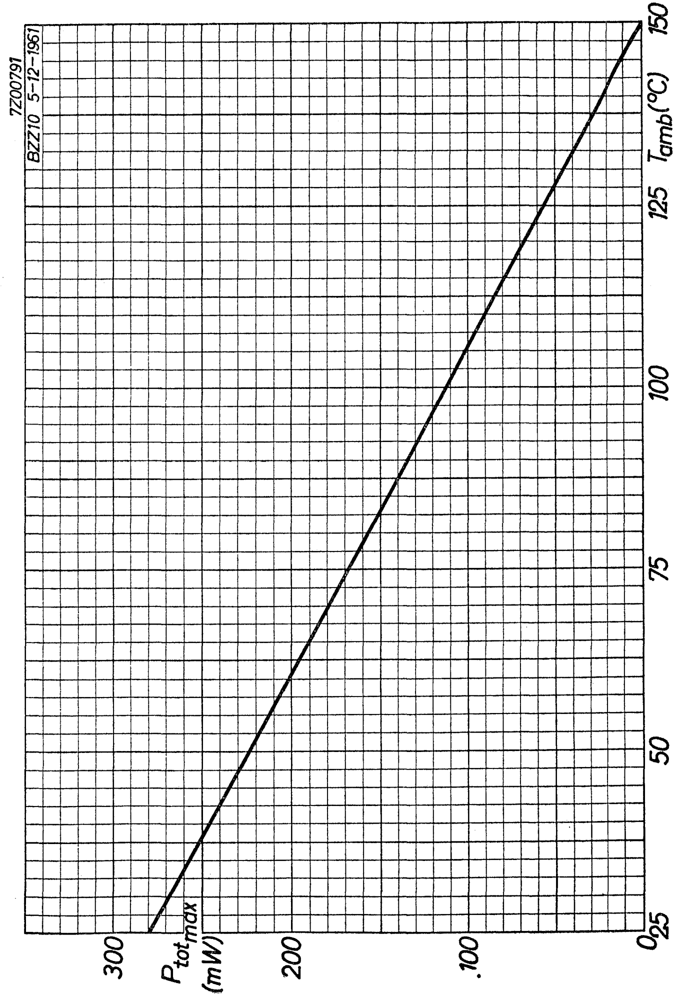
[1]) In the temperature range T_{amb} = 10 to 60 °C


7Z00722
BZZ10/BZZ13 10-10-'61
50
I_D
(mA)
40
30
20
10
0
0
0.5
1.5
V_D(V)
T_{amb} = 25 °C

BZZ10 → 13

PHILIPS

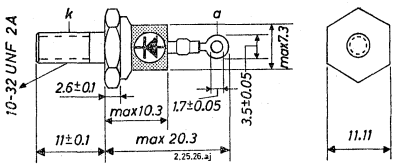




7Z00791
BZZ10 5-12-1961
T_{amb} (°C)
150
125
100
75
50
25
0
100
200
300
$P_{tot\,max}$ (mW)

SILICON ALLOY JUNCTION DIODE with 5 % tolerance for use as medium current VOLTAGE STABILIZER or as a VOLTAGE REFERENCE

Dimensions in mm



The diode is supplied with nut, metal washer and metal locking washer

LIMITING VALUES (Absolute max. values)

Forward current	I_D	= max. 0.5 A
Reverse current	$-I_D$	= max. 0.5 A
Surge reverse current (max. duration 100 µsec)	$-I_{D surge}$ (t	= max. 10 A 1) = max. 100 µsec)
Dissipation (See also pages I and J)	P	$= \max. \frac{T_{jmax} - T_{amb}}{K}$
Storage temperature	T_S	= -55°C to +150 °C

THERMAL DATA

Thermal resistance from junction to ambience in free air	K_{j-amb}	= max. 70 °C/W
Thermal resistance from junction to case	K_{j-c}	= max. 10 °C/W

1) For surge currents of longer duration see page H

PHILIPS

CHARACTERISTICS at a case temperature of 25 °C

		BZZ14	BZZ15	BZZ16	BZZ17	BZZ18	BZZ19	BZZ20
Forward voltage (V_D) at I_D = 200 mA	min.	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V
	max.	1.05 V	1.05 V	1.05 V	1.05 V	1.05 V	1.05 V	1.05 V
Zener voltage ($-V_D$) at $-I_D$ = 20 mA	min.	5.3 V	5.8 V	6.4 V	7.1 V	7.7 V	8.6 V	9.5 V
	typ.	5.6 V	6.2 V	6.8 V	7.5 V	8.2 V	9.1 V	10.0 V
	max.	6.0 V	6.6 V	7.2 V	7.9 V	8.7 V	9.6 V	10.6 V
Dynamic resistance (r_D) at $-I_D$ = 20 mA	max.	13 Ω	6 Ω	5 Ω	7.5 Ω	10 Ω	10 Ω	11 Ω
Leakage current ($-I_D$) at $-V_D$ = 2 V	typ.	0.15 µA	0.125 µA					
	max.	0.5 µA	0.5 µA					
Leakage current ($-I_D$) at $-V_D$ = 3 V	typ.			0.04 µA	0.04 µA			
	max.			0.5 µA	0.5 µA			
Leakage current ($-I_D$) at $-V_D$ = 5 V	typ.					0.04 µA	0.04 µA	
	max.					0.4 µA	0.4 µA	0.4 µA

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

Case temperature = 25 °C

			BZZ14	BZZ15	BZZ16	BZZ17	
Forward voltage (V_D)	I_D = 0-0.5 A	min. typ. max.	See page A				
Zener voltage ($-V_D$)	$-I_D$ = 50 mA	min.	5.4	5.8	6.4	7.0	V
		typ.	5.7	6.25	6.8	7.5	V
		max.	6.2	6.8	7.2	8.0	V
	$-I_D$ = 100 mA	min.	5.5	5.8	6.4	7.2	V
		typ.	5.72	6.3	6.9	7.6	V
		max.	6.3	6.8	7.4	8.2	V
	$-I_D$ = 200 mA	min.	5.5	5.9	6.6	7.2	V
		typ.	5.85	6.35	6.95	7.7	V
		max.	6.4	7.0	7.4	8.4	V
	$-I_D$ = 500 mA	min.	5.5	6.0	6.6	7.1	V
		typ.	5.97	6.6	7.12	7.82	V
		max.	6.5	7.4	7.9	8.5	V
Dynamic resistance (r_D)	$-I_D$ = 100 mA	typ.	See page G				
		max.	4	2.5	2.5	3.5	Ω
	$-I_D$ = 500 mA	typ.	See page G				
		max.	1.0	2.0	2.5	3.0	Ω
Temperature coefficient $\frac{\Delta(-V_D)}{\Delta T}$	$-I_D$ = 20 mA	typ.	See page F				
		min.	-0.4	1.0	2.0	3.0	mV/°C
		max.	2.5	3.5	4.0	4.5	mV/°C
	$-I_D$ = 100 mA	typ.	See page F				
		min.	0.5	2.0	2.5	3.0	mV/°C
		max.	3.0	4.0	4.0	4.0	mV/°C
	$-I_D$ = 500 mA	typ.	See page F				
		min.	0.0	1.5	2.5	3.0	mV/°C
		max.	3.0	4.0	4.0	7.0	mV/°C
Capacitance (c_{dk})	$-V_D$ = 2 V	typ.	575	475	375	350	pF

PHILIPS

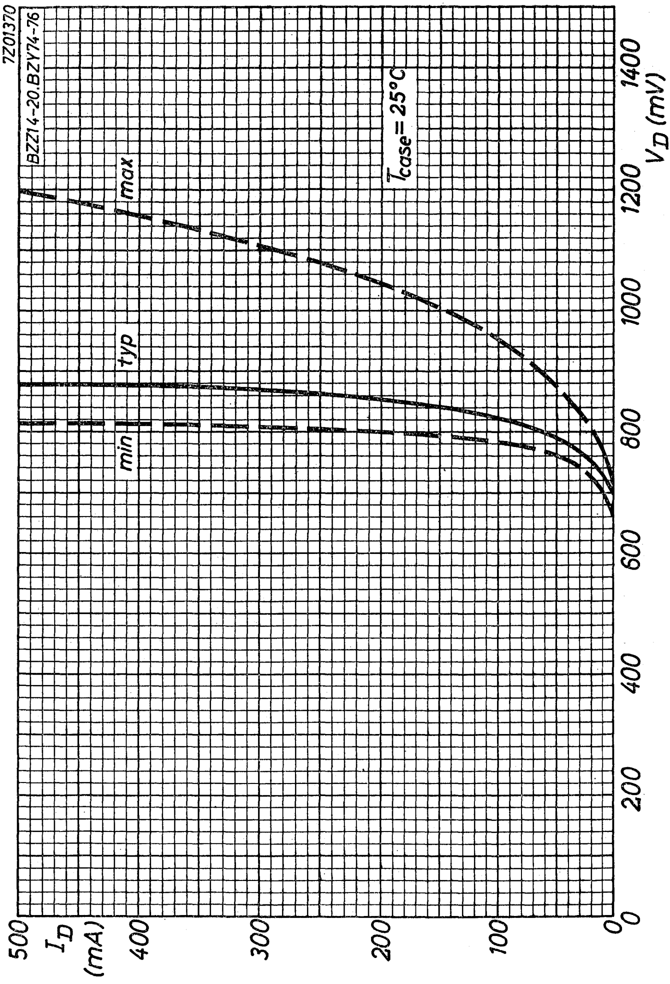
CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN (continued)

Case temperature = 25 °C

			BZZ18	BZZ19	BZZ20	
Forward voltage (V_D)	I_D = 0-0.5 A	min. typ. max.	See page A			
Zener voltage ($-V_D$)	$-I_D$ = 50 mA	min. typ. max.	7.8 8.25 8.8	8.6 9.2 9.8	9.6 10.2 10.7	V V V
	$-I_D$ = 100 mA	min. typ. max.	7.8 8.35 9.0	8.8 9.3 10.0	9.6 10.3 11.0	V V V
	$-I_D$ = 200 mA	min. typ. max.	8.0 8.45 9.4	9.0 9.45 10.5	9.9 10.5 11.3	V V V
	$-I_D$ = 500 mA	min. typ. max.	8.0 8.57 9.5	8.8 9.55 10.2	10.0 10.72 11.6	V V V
Dynamic resistance (r_D)	$-I_D$ = 100 mA	typ. max.	See page G 5	 5	 5	 Ω
	$-I_D$ = 500 mA	typ. max.	See page G 3.0	 3.0	 3.0	 Ω
Temperature coefficient $\frac{\Delta(-V_D)}{\Delta T}$	$-I_D$ = 20 mA	typ. min. max.	See page F 4.0 6.0	 3.5 6.5	 6.0 8.0	 mV/°C mV/°C
	$-I_D$ = 100 mA	typ. min. max.	See page F 3.0 6.1	 4.0 7.0	 3.0 11.0	 mV/°C mV/°C
	$-I_D$ = 500 mA	typ. min. max.	See page F 3.5 6.8	 4.5 7.5	 3.0 11.0	 mV/°C mV/°C
Capacitance (c_{dk})	$-V_D$ = 2 V	typ.	300	250		pF

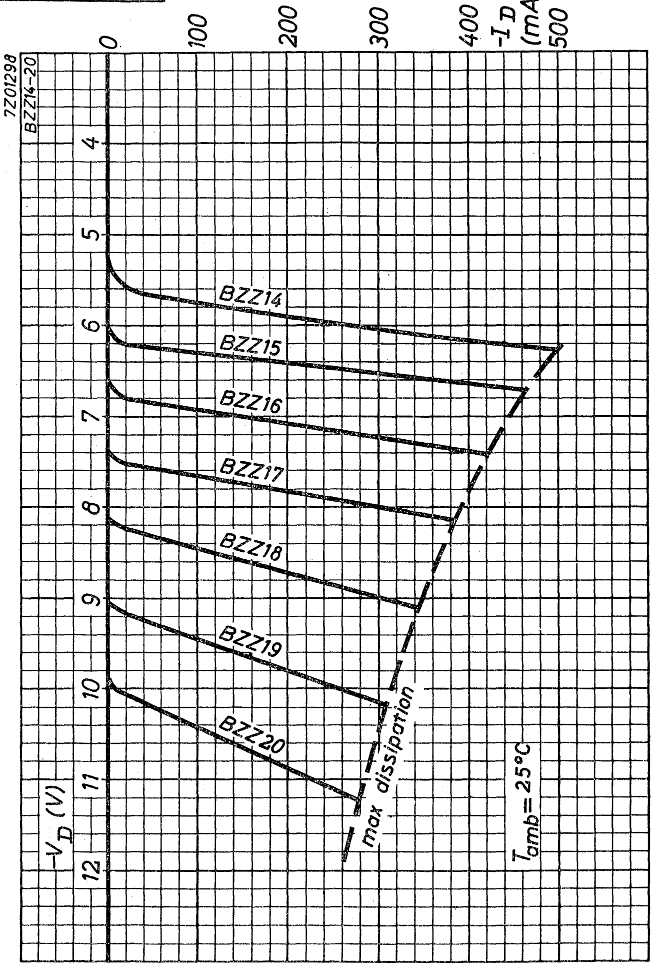
PHILIPS

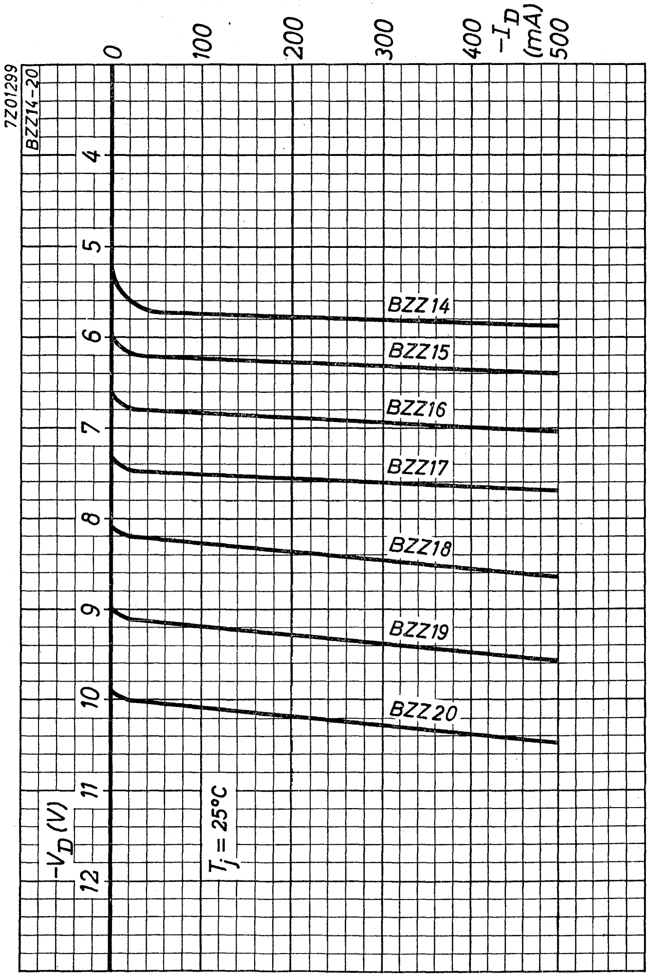
BZZ14 → 20



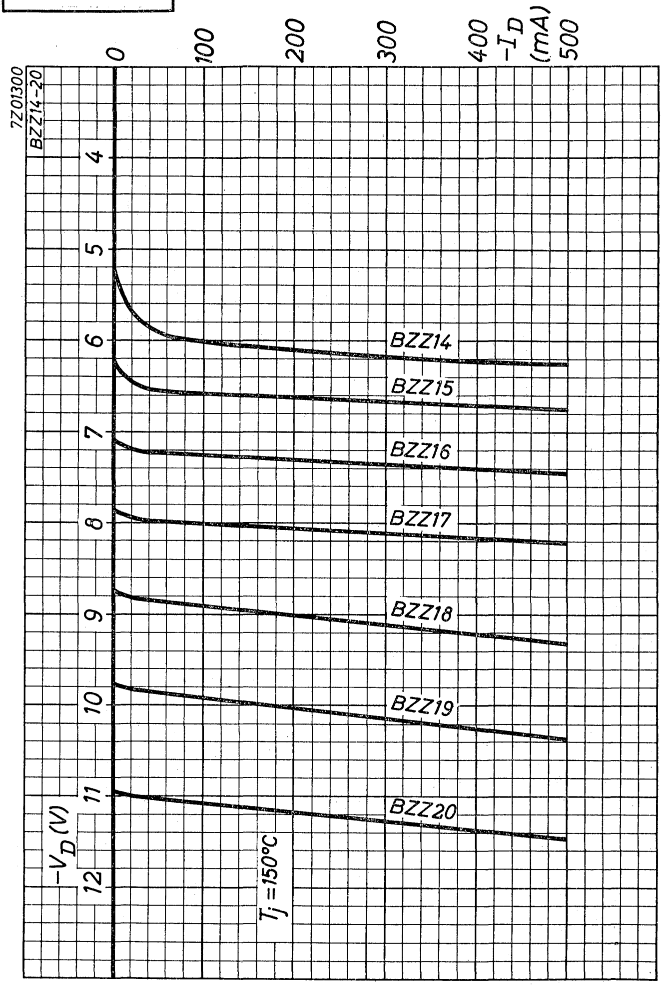
BZZ14
→20

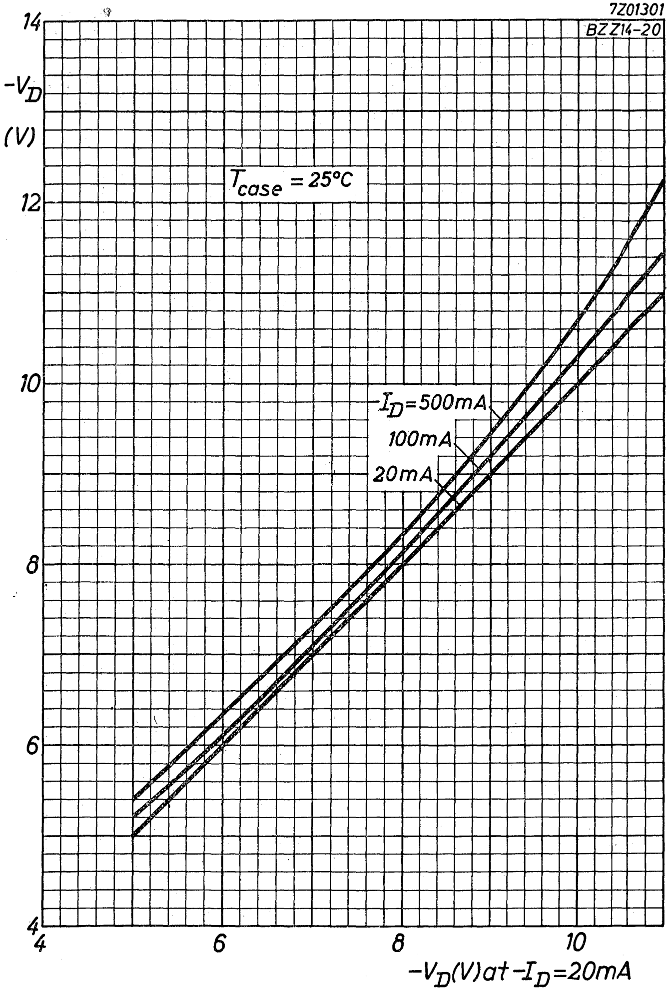
PHILIPS



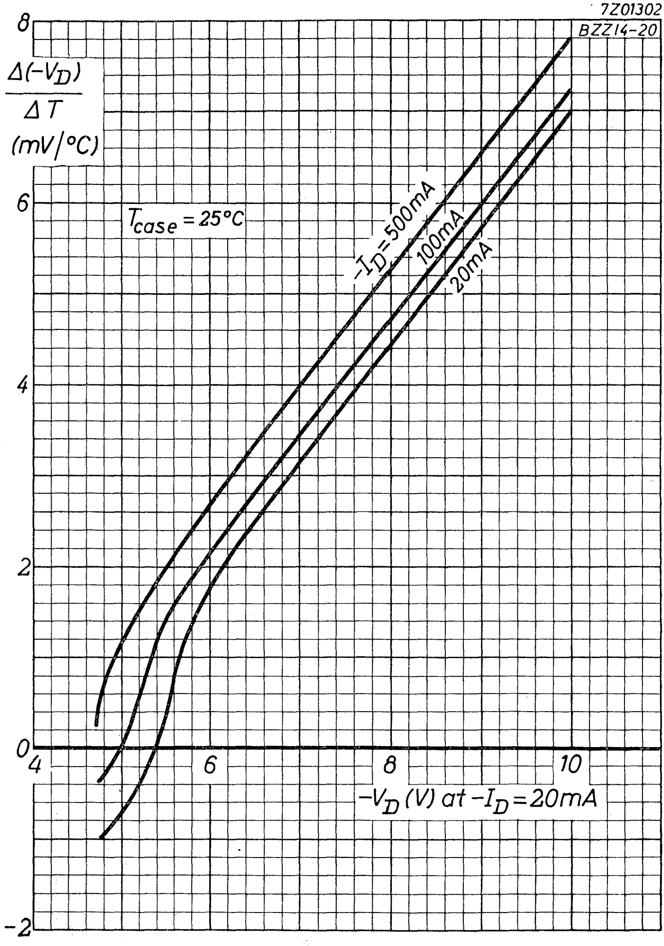

7Z01299
BZZ14-20
$-I_D$ (mA)
0
100
200
300
400
500
$-V_D$ (V)
4
5
6
7
8
9
10
11
12
BZZ14
BZZ15
BZZ16
BZZ17
BZZ18
BZZ19
BZZ20
$T_j = 25°C$

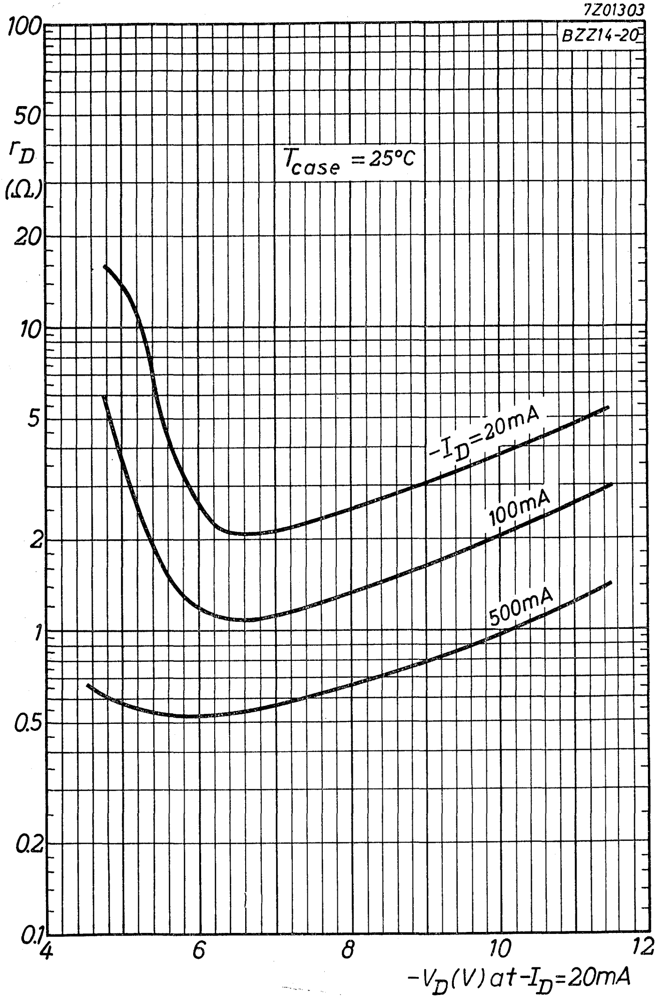
PHILIPS


7Z01300
BZZ14-20
$-I_D$ (mA)
0
100
200
300
400
500
$-V_D$ (V)
4
5
6
7
8
9
10
11
12
BZZ14
BZZ15
BZZ16
BZZ17
BZZ18
BZZ19
BZZ20
T_j = 150°C


7Z01301
BZZ14-20
$-V_D$
(V)
$T_{case} = 25°C$
$-I_D = 500mA$
100mA
20mA
14
12
10
8
6
4
4
6
8
10
$-V_D(V)$ at $-I_D = 20mA$

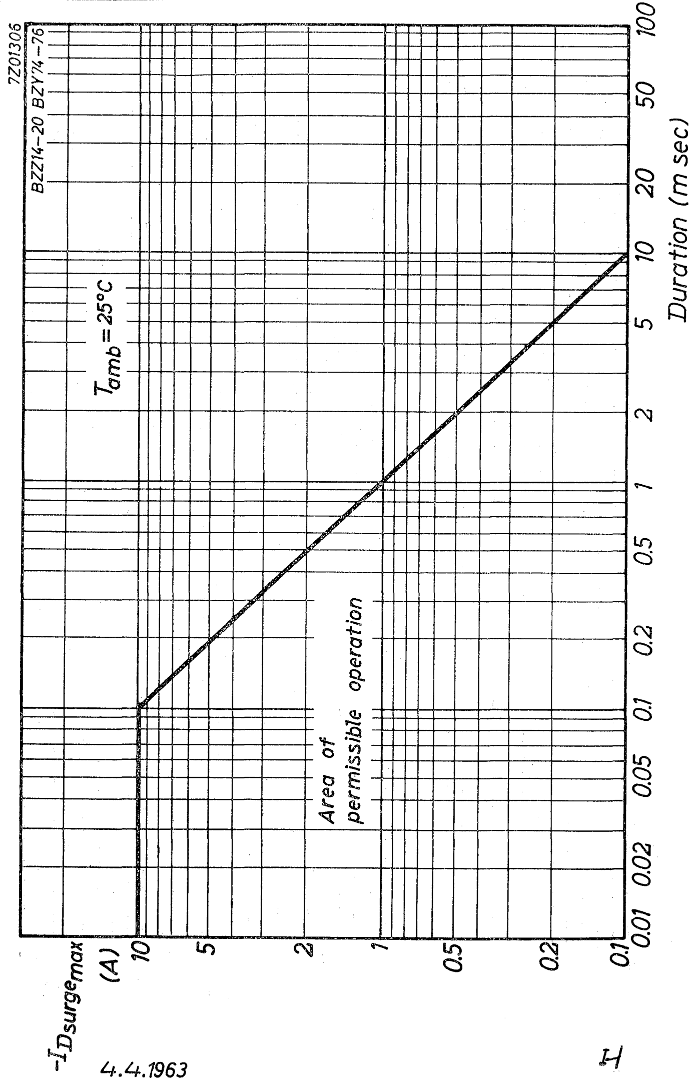
PHILIPS


7Z01302
BZZ14-20
8
$\frac{\Delta(-V_D)}{\Delta T}$
(mV/°C)
6
$T_{case} = 25°C$
$-I_D = 500mA$
100mA
20mA
4
2
0
4
6
8
10
$-V_D$ (V) at $-I_D = 20mA$
-2


7Z01303
BZZ14-20
100
50
r_D
(Ω)
20
10
5
2
1
0.5
0.2
0.1
4
6
8
10
12
T_{case} = 25°C
$-I_D$=20mA
100mA
500mA
$-V_D$(V) at $-I_D$=20mA

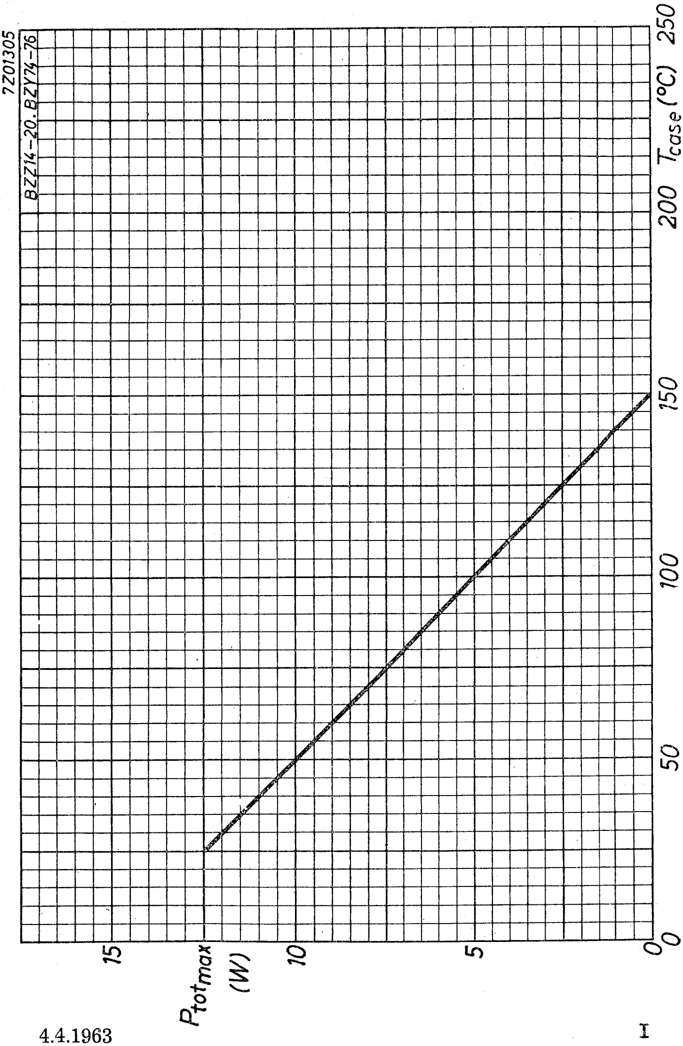
BZZ14
→ 20

PHILIPS

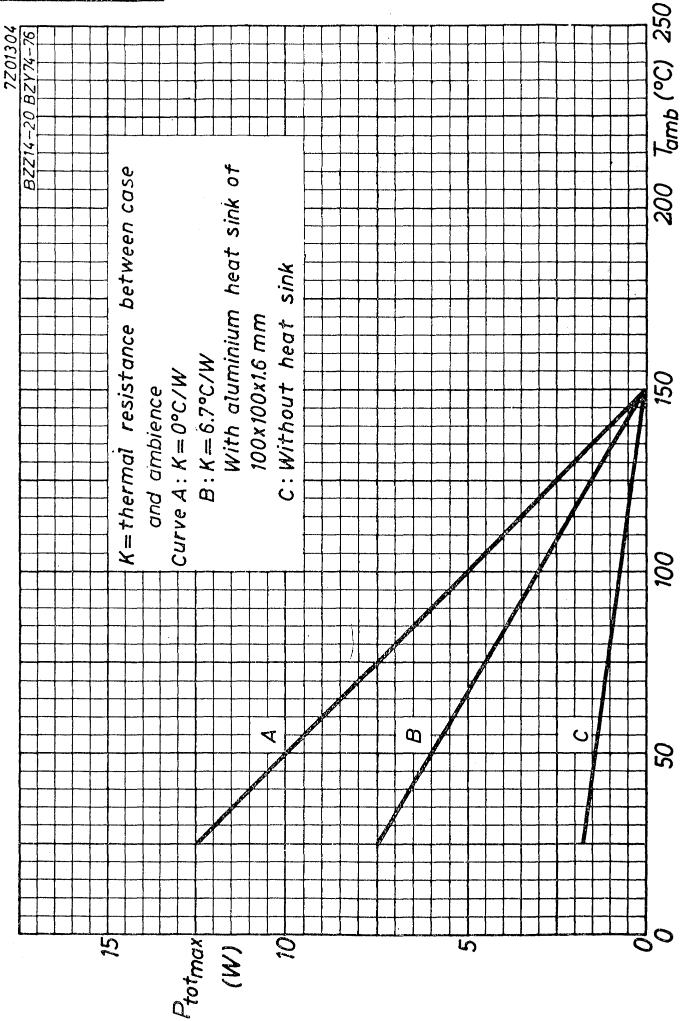


4.4.1963

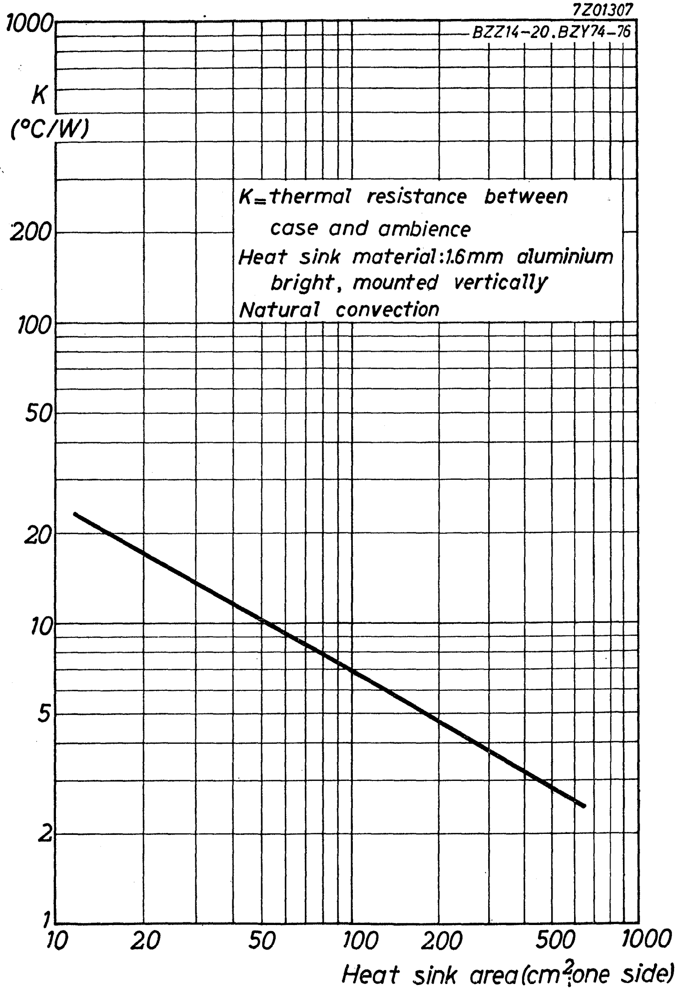
H


7Z01305
BZZ14-20. BZY74-76
T_{case} (°C)
0
50
100
150
200
250
$P_{tot\,max}$
(W)
0
5
10
15

PHILIPS



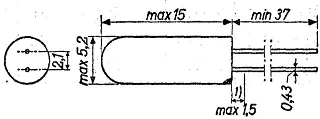
4.4.1963


7Z01307
BZZ14-20.BZY74-76
1000
K
(°C/W)
200
100
50
20
10
5
2
1
10
20
50
100
200
500
1000
Heat sink area (cm²; one side)
K = thermal resistance between
case and ambience
Heat sink material: 1.6mm aluminium
bright, mounted vertically
Natural convection

GOLD-BONDED GERMANIUM DIODE in all glass construction, designed as a general purpose diode
DIODE A CRISTAL DE GERMANIUM A POINTE D'OR de construction tout verre, conçue pour usages généraux
GERMANIUM-GOLDDRAHTDIODE in Allglastechnik für allgemeine Verwendungszwecke

Dimensions in mm
Dimensions in mm
Abmessungen in mm

The red dot indicates the position of the cathode
Le point rouge marque la position de la cathode
Der rote Punkt indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

Valid at / Valable à / Gültig bei T_{amb}	=	25	75	°C
$-V_D$	= max.	100	50	V 2)3)
$-V_{DM}$	= max.	100	50	V 3)
I_D (t_{av} = max. 50 msec)	= max.	115	35	mA 3)
I_{DM}	= max.	350	350	mA
I_D surge	= max.	500		mA 4)
I_D surge	= max.	600		mA 5)
I_D pulse (δ = 1%)	= max.	1000		mA 6)
T_{amb}	=	-55 °C/+75 °C		7)
Storage temperature / Température d'emmagasinage / Lagerungstemperatur	=	-55 °C/+90 °C		

1) Not tinned; non étamé; nicht verzinnt

2) Constant D.C. voltage
Tension continue constante
Konstante Gleichspannung

3) For derating curves see page D
Pour les courbes de réduction voir page D
Für die Reduktionskurven siehe Seite D

4) 5) 6) 7) See page 2; voir page 2; siehe Seite 2

OA5 PHILIPS

Characteristics
Caractéristiques
Kenndaten

	T_{amb} = 25 °C			T_{amb} = 60 °C		
	=	min.	max.	=	min.	max.
V_D (I_D=0,1mA)	= 0,15	>0,10	<0,25	= 0,08	>0,03	<0,20 V
V_D (I_D= 10mA)	= 0,4	>0,25	<0,55	= 0,35	>0,20	<0,50 V
V_D (I_D=200mA)	= 0,8	>0,50	< 1,0	= 0,77	>0,48	< 1,0 V
V_D (I_D=300mA)	= 0,9	>0,55	<1,25	= 0,88	>0,55	<1,25 V
$-I_D$($-V_D$=1,5 V)	= 0,8	> 0,2	< 5	= 15	> 5	< 26 µA
$-I_D$($-V_D$= 10 V)	= 1,1	> 0,3	< 6	= 20	>5,5	< 30 µA
$-I_D$($-V_D$= 50 V)	= 2,5	>0,45	< 9	= 32	>7,5	< 60 µA
$-I_D$($-V_D$=100 V)	= 8	> 0,7	< 30	= 50	> 10	< 120 µA

4)Max. duration 1 sec
Durée 1 sec. au max.
Max. Dauer 1 Sek.

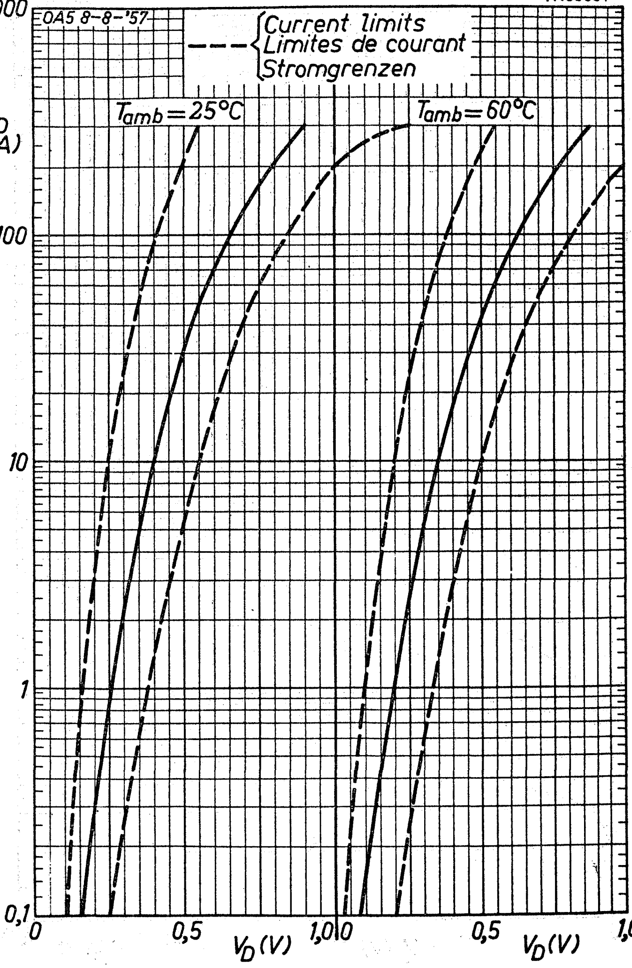
5)Max. duration 0.3 sec
Durée 0,3 sec au max.
Max. Dauer 0,3 Sek.

6)Pulse duration max. 1 µsec
Durée de l'impuls 1 µsec au max.
Impulsdauer max. 1 µSek.

7)During operation
Pendant l'opération
Während des Betriebs

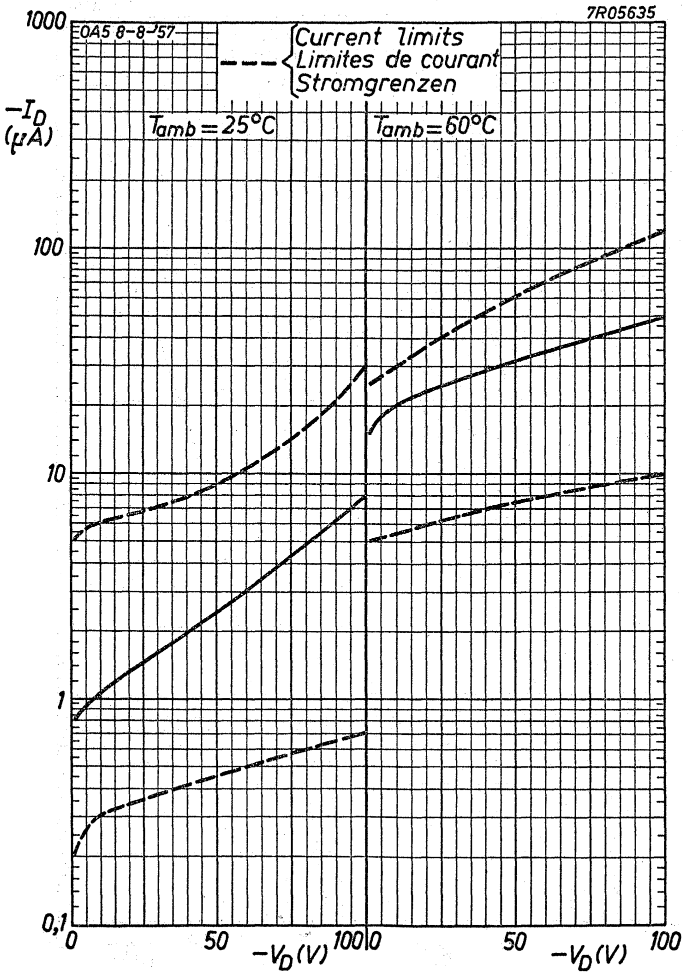
PHILIPS OA5

7R05634

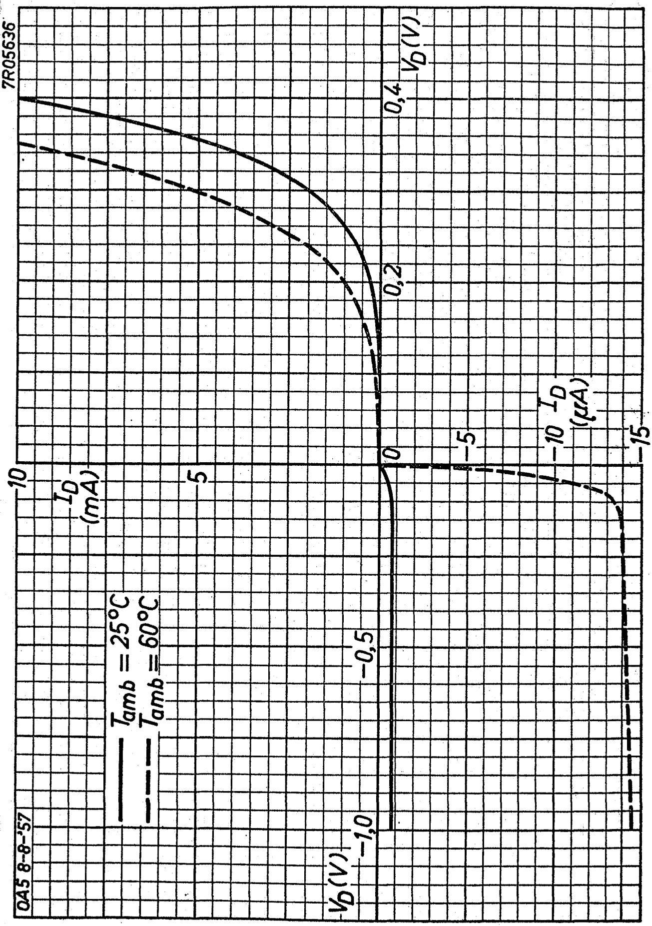


OA5

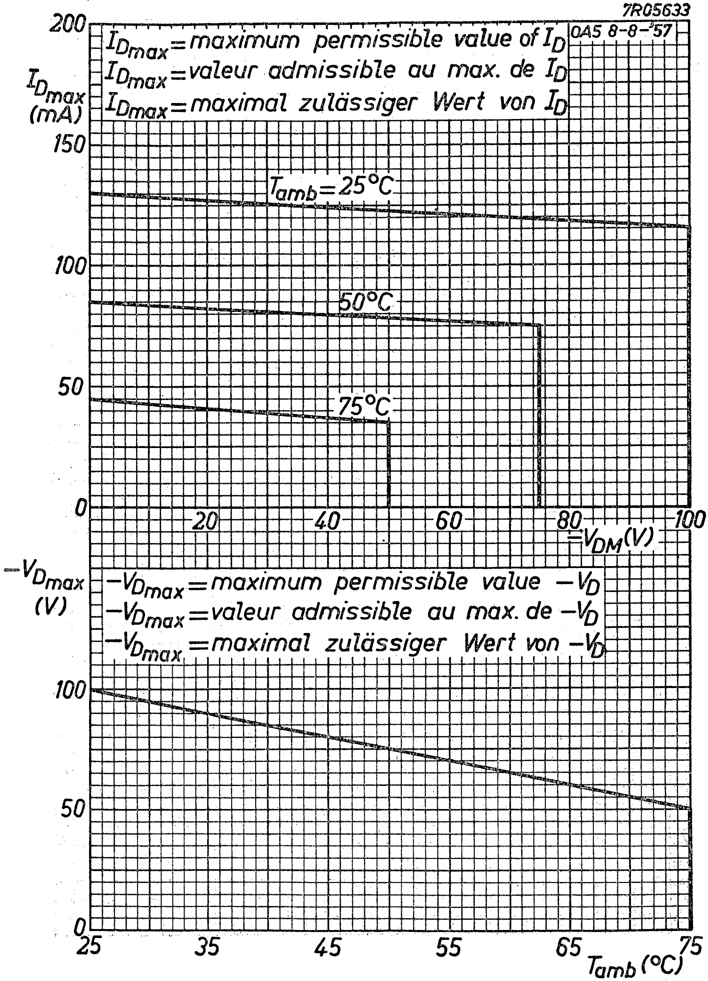
PHILIPS



B


7R05636
$V_D(V)$
0,4
0,2
0
−5
−10
−15
I_D (µA)
10
5
I_D (mA)
−0,5
−1,0
$V_D(V)$
$T_{amb} = 25°C$
$T_{amb} = 60°C$
OA5 8-8-'57

OA5 PHILIPS



D

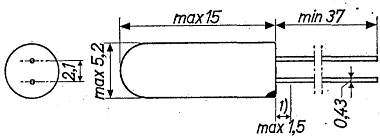
PHILIPS

OA 7

GOLD-BONDED GERMANIUM DIODE in single-ended all-glass construction designed for high forward current switching applications
DIODE A CRISTAL DE GERMANIUM A POINTE D'OR en construction tout-verre avec connexions unilatérales, conçue pour applications de commutateur à courant élevé en sens conducteur
GERMANIUM-GOLDDRAHTDIODE in Allglastechnik mit Elektroden - anschlüssen an einer Seite zur Verwendung als Schalter-diode mit hohem Strom in der Durchlassrichtung

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The red dot indicates the position of the cathode
Le point rouge indique la position de la cathode
Der rote Punkt bezeichnet die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

		T_{amb} = 25 °C	= 75 °C
$-V_D$		= max. 25 V	max. 25 V
$-V_{DM}$		= max. 25 V	max. 25 V
$-V_{D\ surge}$	(t = max. 1 sec)	= max. 30 V	max. 30 V
I_D	direct current / courant continu / Gleichstrom	= max. 140 mA	max. 50 mA[2]
I_D	(t_{av} = max. 50 msec)	See pages E,F / Voir pages E,F / Siehe Seiten E,F	
I_{DM}		= max. 250 mA	max. 250 mA
$I_{D\ surge}$	(t = max. 1 sec)	= max. 400 mA	max. 400 mA
T_{amb}		= -55 °C/ +75 °C	
Storage temperature / Température d'emmagasinage / Lagerungstemperatur		= -55 °C/ +75 °C	

1) Not tinned; non étamé; nicht verzinnt
2) See also page D; voir aussi page D; siehe auch Seite D

Thermal data. Junction temperature rise to ambient temperature in free air — $K \leq 0.4$ °C/mW

Données thermiques. Augmentation de la température de la jonction au regard de la température de l'ambiance à l'air libre — $K \leq 0,4$ °C/mW

Thermische Daten. Temperaturerhöhung in bezug auf die Umgebungstemperatur in freier Luft — $K \leq 0,4$ °C/mW

Characteristics
Caractéristiques
Kenndaten

I_D (mA)	V_D (V) $T_{amb} = 25$°C =	min.	max.	$T_{amb} = 60$°C =	min.	max.
0,1	= 0,18	> 0,12	< 0,26	= 0,11	> 0,06	< 0,19
1	= 0,25	> 0,20	< 0,33	= 0,20	> 0,14	< 0,28
10	= 0,38	> 0,30	< 0,48	= 0,35	> 0,25	< 0,43
30	= 0,50	> 0,36	< 0,65	= 0,47	> 0,32	< 0,61
50	= 0,56	> 0,40	< 0,78	= 0,54	> 0,37	< 0,75
250[1])	= 1,00		< 1,65			

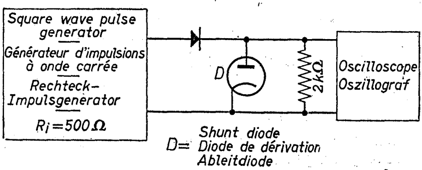
$-V_D$ (V)	$-I_D$ (µA) $T_{amb} = 25$°C =	$T_{amb} = 60$°C =	max.
1,5	= 0,4	= 5	< 20
10	= 1,5	= 9	< 30
25	= 6,0	= 22	< 150

Reverse recovery, measured at $-V_D = 5$ V after forward current pulse of 5 mA

Recouvrement inverse, mesuré à $-V_D = 5$ V après une impulsion de courant en sens conducteur de 5 mA

Übergangszeit für Sperrichtung, gemessen bei $-V_D = 5$ V nach einem Stromimpuls von 5 mA in der Durchlassrichtung

$T_{amb} = 25$°C



Measuring circuit; circuit de mesure; Messchaltung

[1]) See page 3; voir page 3; siehe Seite 3.

Reverse recovery (continued)
Recouvrement inverse (suite)
Übergangszeit für Sperrichtung (Fortsetzung)

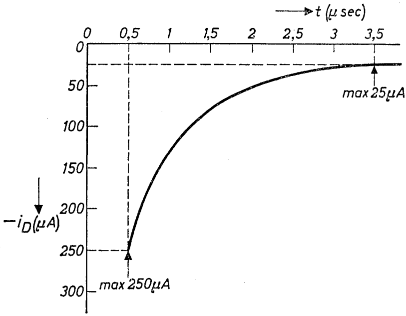
Pulse data
Données de l'impulsion
Impulsdaten

f	=	50 kc/s
δ	=	0,5
Rise time / Temps de montée / Anstiegszeit	<	0,1 µsec
I_{DM}	=	5 mA
$-V_{DM}$	=	5 V

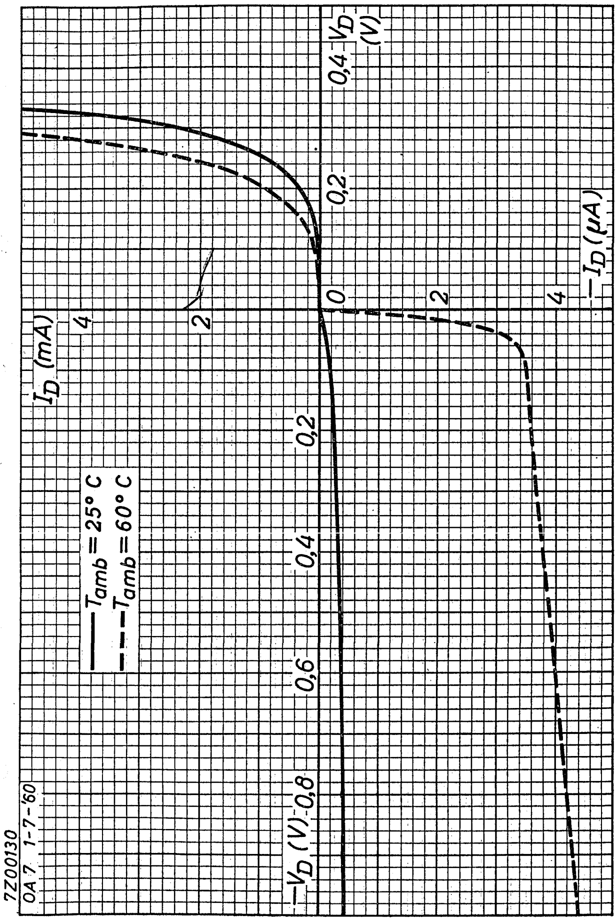
Oscilloscope data
Données de l'oscilloscope
Daten des Oszillografen

C_{inp}	=	40 pF
Rise time / Temps de montée / Anstiegszeit	=	0,025 µsec

$-i_D$	0.5 µsec after the current impuls / 0,5 µsec après l'impulsion de courant / 0,5 µSek nach dem Stromimpuls	=	140 µA
		<	250 µA
$-i_D$	3.5 µsec after the current impuls / 3,5 µsec après l'impulsion de courant / 3,5 µSek nach dem Stromimpuls	<	25 µA

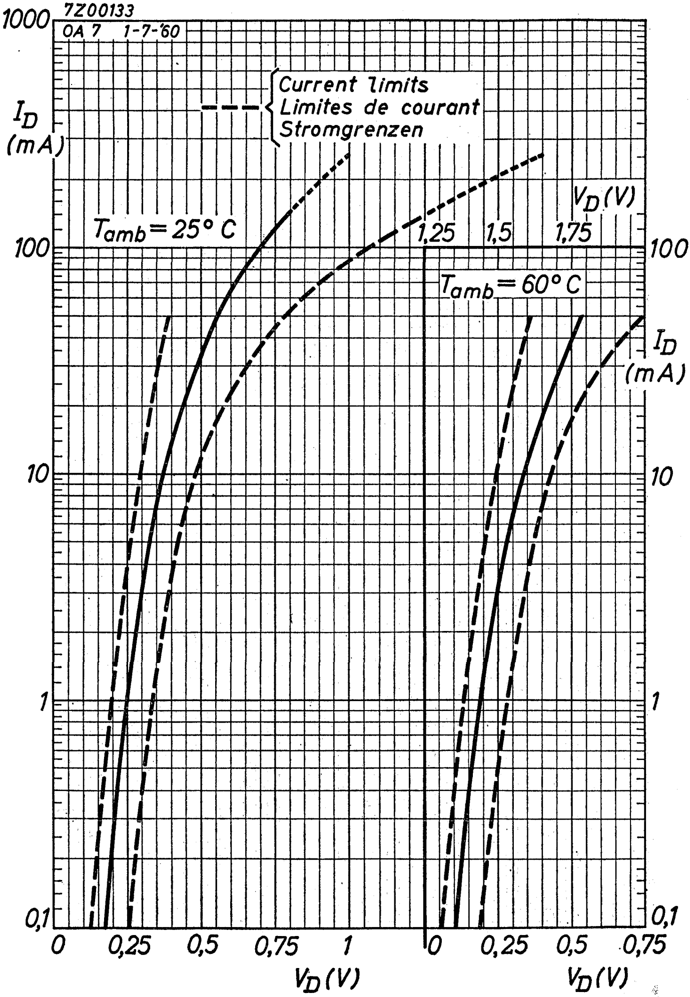


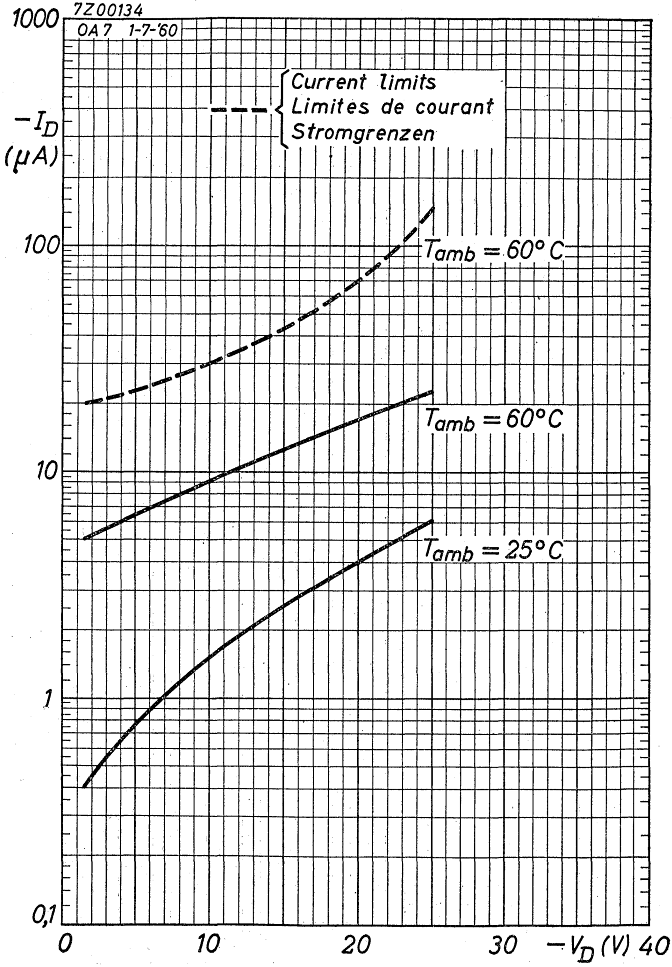
1) Measured under pulsed conditions to prevent excessive dissipation
Mesuré avec des impulsions pour prévenir une dissipation excessive
Zur Vermeidung einer übermässigen Verlustleistung mit Impulsen gemessen



0,4 V_D (V)
0,2
0
2
4
$-I_D$ (μA)
I_D (mA)
4
2
0,2
0,4
0,6
$-V_D$ (V) 0,8
$T_{amb} = 25°$ C
$T_{amb} = 60°$ C
7Z00130
OA 7 1-7-'60

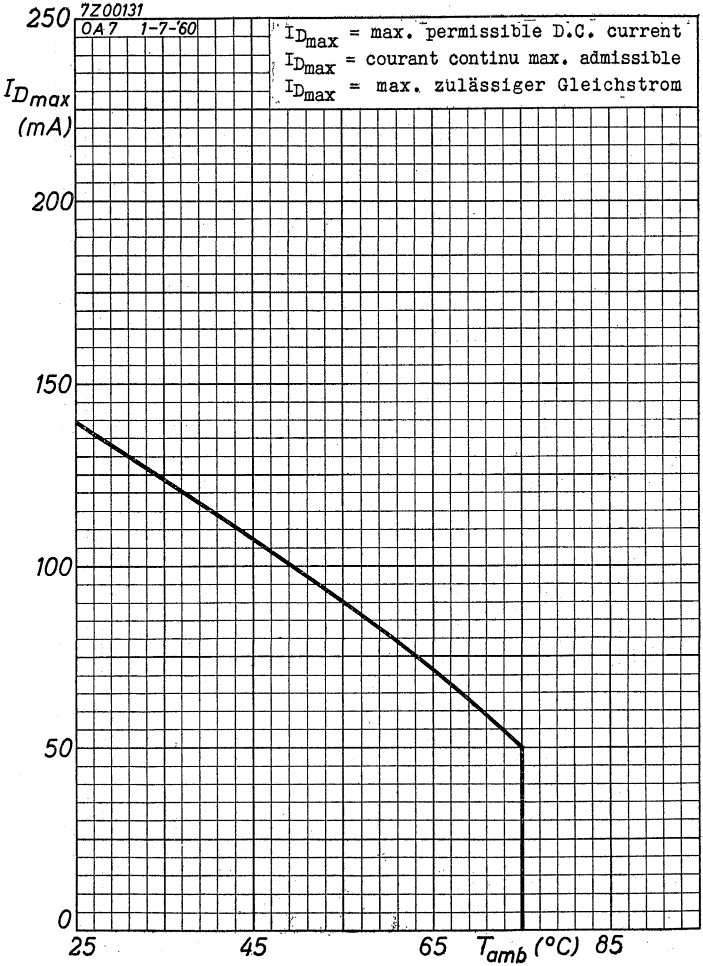
PHILIPS


7Z00133
OA 7 1-7-'60
1000
100
10
1
0,1
I_D (mA)
Current limits
Limites de courant
Stromgrenzen
T_{amb} = 25° C
V_D (V)
1,25
1,5
1,75
100
T_{amb} = 60° C
I_D (mA)
10
1
0,1
0
0,25
0,5
0,75
1
0
0,25
0,5
0,75
V_D (V)
V_D (V)


7Z00134
OA 7 1-7-'60
1000
100
10
1
0,1
$-I_D$ (μA)
Current limits
Limites de courant
Stromgrenzen
$T_{amb} = 60°C$
$T_{amb} = 60°C$
$T_{amb} = 25°C$
0
10
20
30
$-V_D$ (V) 40

OA 7

PHILIPS

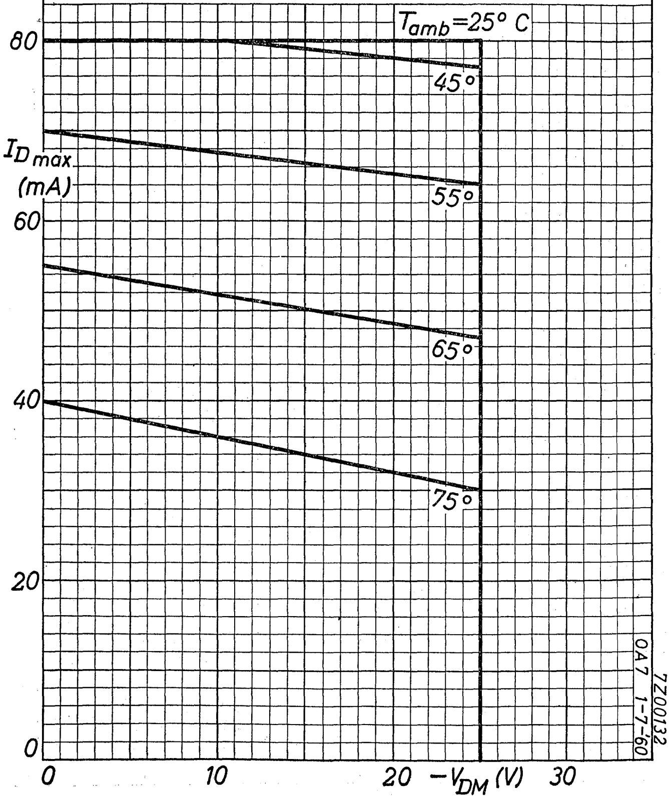


D

$I_{D max}$ = max. permissible value of I_D for sinusoidal input voltages and resistive load. ($I_{DM} = \pi x I_D$; t_{av} = max. 50 msec)

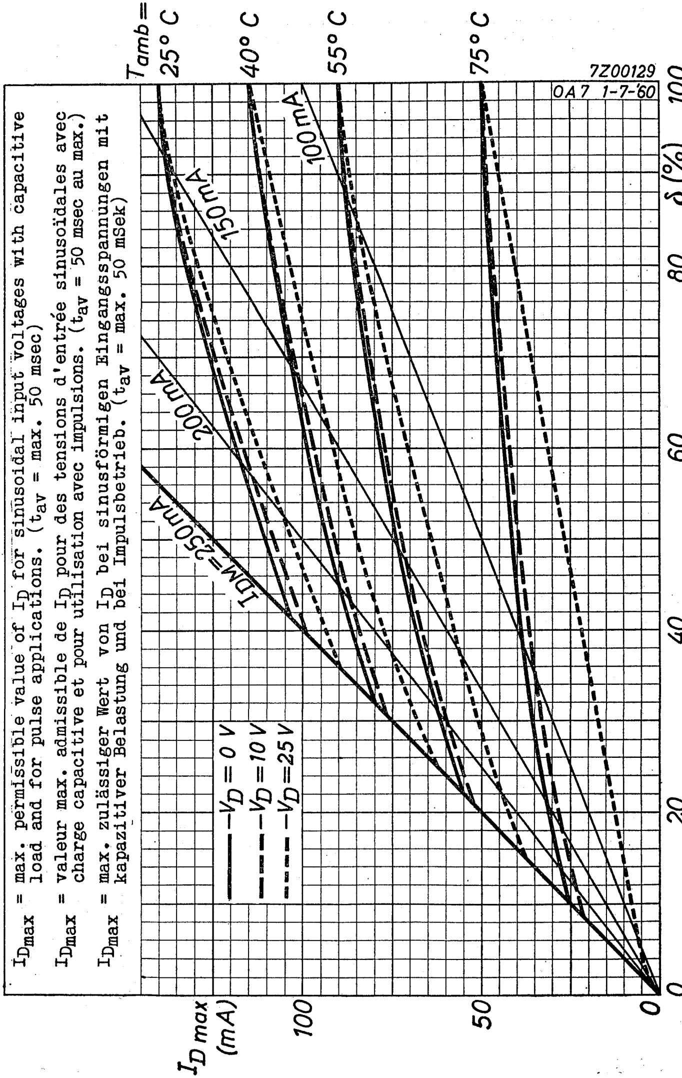
$I_{D max}$ = valeur max. admissible de I_D pour des tensions d'entrée sinusoïdales avec charge résistive. ($I_{DM} = \pi . I_D$; t_{av} = 50 msec au max.)

$I_{D max}$ = max. zulässiger Wert von I_D bei sinusförmigen Eingangsspannungen mit Widerstandsbelastung. ($I_{DM} = \pi . I_D$; t_{av} = max. 50 mSek)



OA 7

PHILIPS



F

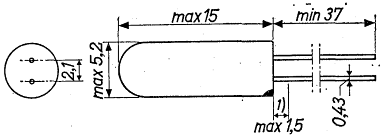
GOLD-BONDED GERMANIUM DIODE in single-ended all-glass construction, designed for high-current switching applications

DIODE A CRISTAL DE GERMANIUM A POINT D'OR en construction tout verre à sorties unilatérales; la diode est conçue pour applications de commutation à courants élevés

GERMANIUM-GOLDDRAHTDIODE in Allglastechnik mit einseitiger Drahtausführung; die Diode ist bestimmt für Schalteranwendungen mit hohen Strömen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The red dot indicates the position of the cathode
Le point rouge marque la position de la cathode
Der rote Punkt indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

	T_{amb} =		25	75 °C
$-V_D$		= max.	25	25 V
$-V_{DM}$		= max.	25	25 V
$-V_{Dsurge}$	(t = max. 1 sec)	= max.	40	40 V
I_D	direct current / courant continu / Gleichstrom	= max.	270	90 mA 2)
I_D	(t_{av} = max. 50 msec)		See pages E to G / Voir pages E - G / Siehe Seiten E bis G	
I_{DM}		= max.	500	500 mA
I_{Dsurge}	(t = max. 1 sec)	= max.	800	800 mA
T_{amb}		=	-55 °C/+ 75 °C	
Storage temperature / Température d'emmagasinage / Lagerungstemperatur		=	-55 °C/+ 90 °C	

1) Not tinned; non étamé; nicht verzinnt

2) See also page E; voir aussi page E; siehe auch Seite E.

OA 9 PHILIPS

Thermal data. Junction temperature rise to ambient temperature in free air K $\leqq$ 0.35 °C/mW

Données thermiques. Augmentation de la température de la jonction au regard de la température de l'ambiance à l'air libre K $\leqq$ 0,35 °C/mW

Thermische Daten. Temperaturerhöhung des Kristalls in bezug auf die Umgebungstemperatur in freier Luft K $\leqq$ 0,35 °C/mW

Characteristics
Caractéristiques
Kenndaten

I_D (mA)	V_D (V) Tamb = 25 °C		V_D (V) Tamb = 60 °C	
0,1	= 0,15	< 0,21	= 0,09	< 0,15
10	= 0,33	< 0,41	= 0,28	< 0,35
500 [1]	= 0,70	< 0,90	= 0,66	

$-V_D$ (V)	$-I_D$ (µA) Tamb = 25 °C		$-I_D$ (µA) Tamb = 60 °C	
1,5	= 0,7	< 3,5	= 8	< 20
10	= 1,5	< 10	= 12	< 45
25	= 7,0	< 50	= 20	< 100

Dynamical characteristics
Caractéristiques dynamiques Tamb = 25 °C
Dynamische Kenndaten

Column I: Setting of the diode and typical (average) measuring results of new diodes
II: Characteristic range values for equipment design

Colonne I: Valeurs pour le réglage de la diode et les résultats moyens de mesures de diodes neuves.
II: Gamme de valeurs caractéristiques pour l'étude d'équipements

Spalte I: Einstelldaten der Diode und mittlere Messergebnisse neuer Dioden
II: Charakteristischer Wertbereich für Gerätentwurf

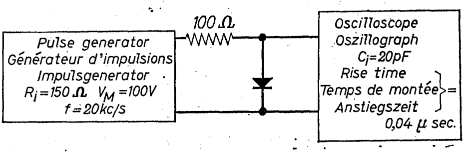
[1]) Measured under pulsed conditions to prevent excessive dissipation.
Mesuré en service d'impulsions pour prévenir une dissipation excessive
Gemessen mit Impulsen zur Verhütung einer übermässigen Verlustleistung

Dynamical characteristics (continued)
Caractéristiques dynamiques (suite) T_{amb} = 25 °C
Dynamische Kenndaten (Fortsetzung)

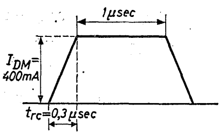
<u>Capacitance</u>
<u>Capacité</u>
<u>Kapazität</u>

	I	II	
$-V_D$ =	0,75		V
f =	0,5		Mc/s
C_{dk} =	3	< 7	pF

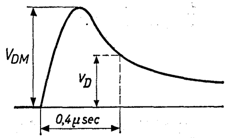
<u>Forward recovery</u>
<u>Temps de recouvrement direct</u>
<u>Übergangszeit für Durchlassrichtung</u>



Measuring circuit; circuit de mesure; Messanordnung



Current pulse
Impulsion de courant
Stromimpuls



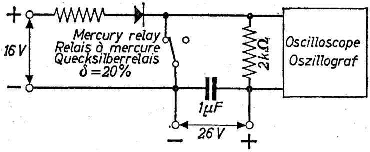
Voltage pulse
Impulsion de tension
Spannungsimpuls

	I	II	
I_{DM} =	400		mA
t_{imp} =	1		μsec
V_{DM} =	0,8	< 1,4	V
V_D { after 0.4 μsec / après 0,4 μsec / nach 0,4 μSek	0,7	< 1,0	V

Dynamical characteristics (continued)
Caractéristiques dynamiques (suite)
Dynamische Kenndaten (Fortsetzung)

T_{amb} = 25 °C

Reverse recovery time, measured at $-V_D$ = 10 V after forward current pulse of 400 mA
Temps de recouvrement inverse, mesuré à $-V_D$ = 10 V après une impulsion de courant de 400 mA dans le sens conducteur
Übergangszeit für Sperrichtung, gemessen bei $-V_D$ = 10 V nach einem Stromimpuls von 400 mA in Durchlassrichtung



Measuring circuit; circuit de mesure; Messanordnung

Pulse data
Données de l'impulsion
Impulsdaten

I_{DM} = 400 mA
$-V_{DM}$ = 10 V
δ = 20 %
f = 50 c/s ←

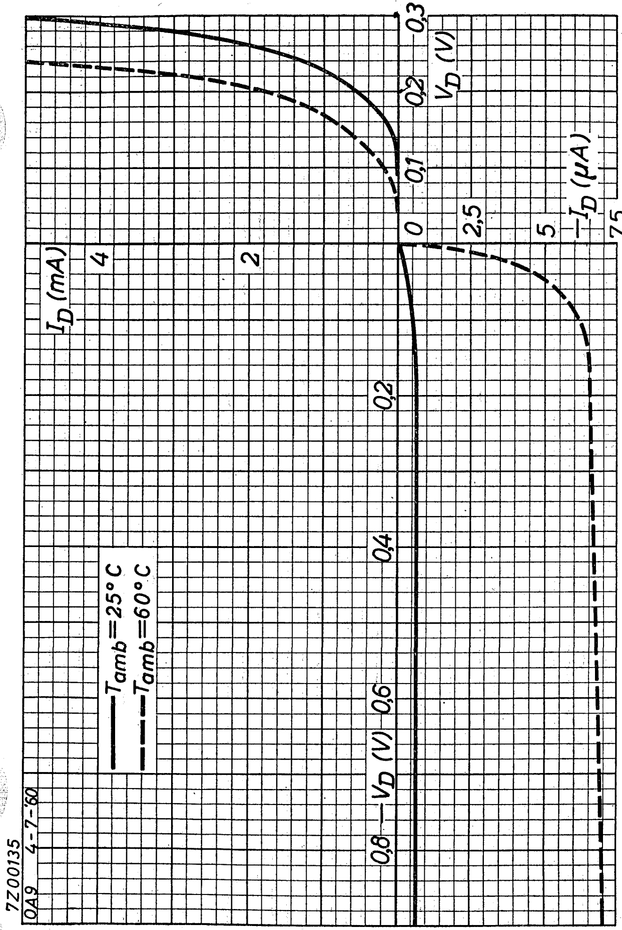
Oscilloscope data
Données de l'oscilloscope
Daten des Oszillografen

C_{inp} = 15 pF
R_{inp} = 4 MΩ

Rise time
Temps de montée = 0,016 µsec
Anstiegszeit

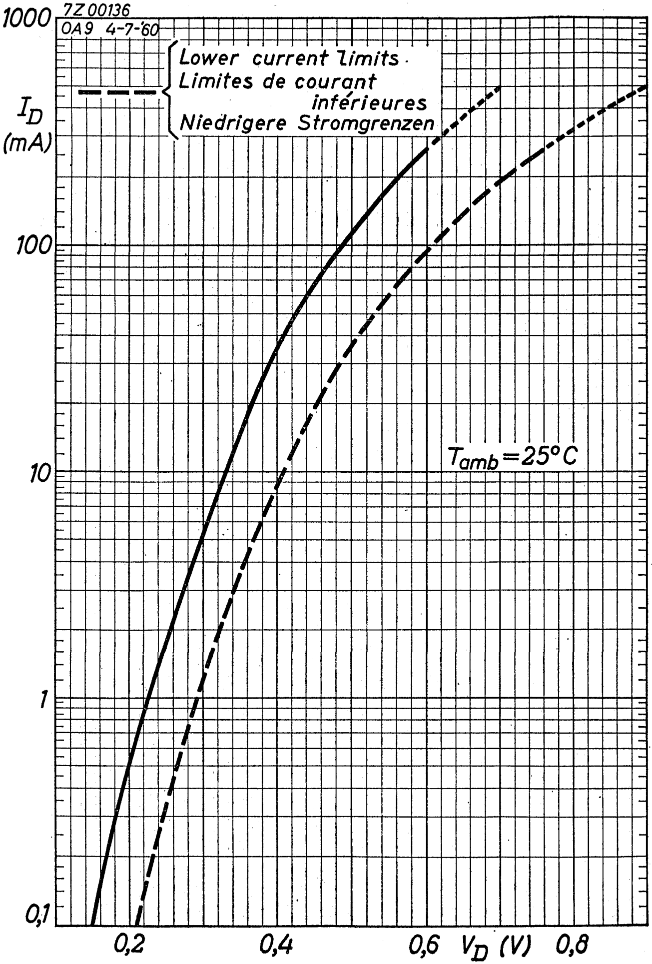
$-i_D$ { 3.5 µsec after the current impuls
3,5 µsec après l'impulsion de courant
3,5 µSek nach dem Stromimpuls } =

I	II
	< 150 µA

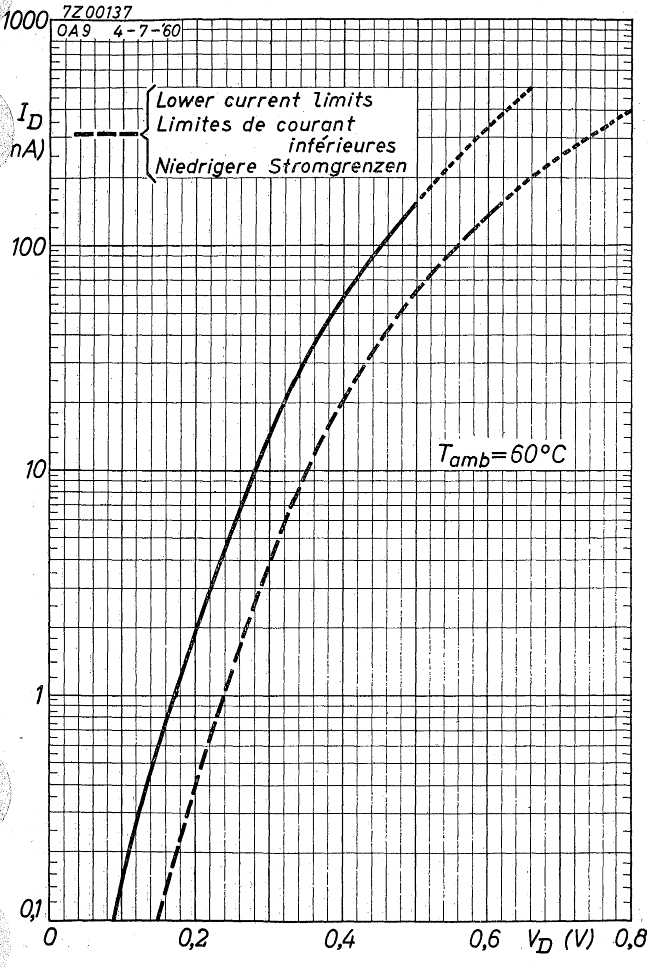

0,3
0,2
V_D (V)
0,1
0
2,5
5
$-I_D$ (μA)
7,5
I_D (mA)
4
2
0,2
0,4
0,6
0,8
$-V_D$ (V)
T_{amb}=25°C
T_{amb}=60°C
7Z00135
OA9 4-7-'60

OA 9

PHILIPS

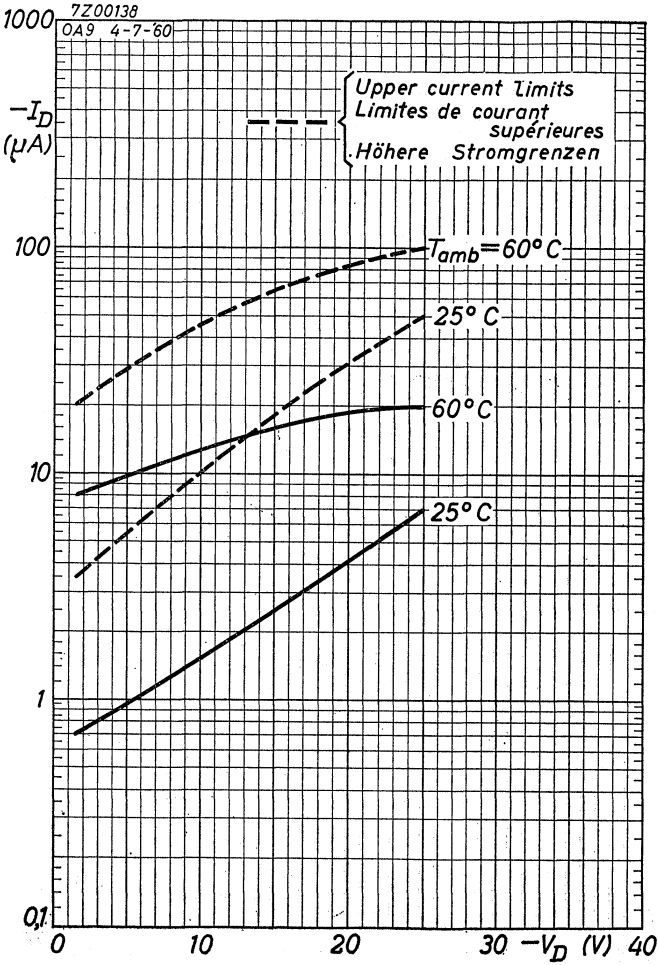


7Z 00136
OA 9 4-7-'60
1000
100
10
1
0,1
I_D (mA)
Lower current limits
Limites de courant inférieures
Niedrigere Stromgrenzen
T_{amb} = 25°C
0,2
0,4
0,6
V_D (V)
0,8

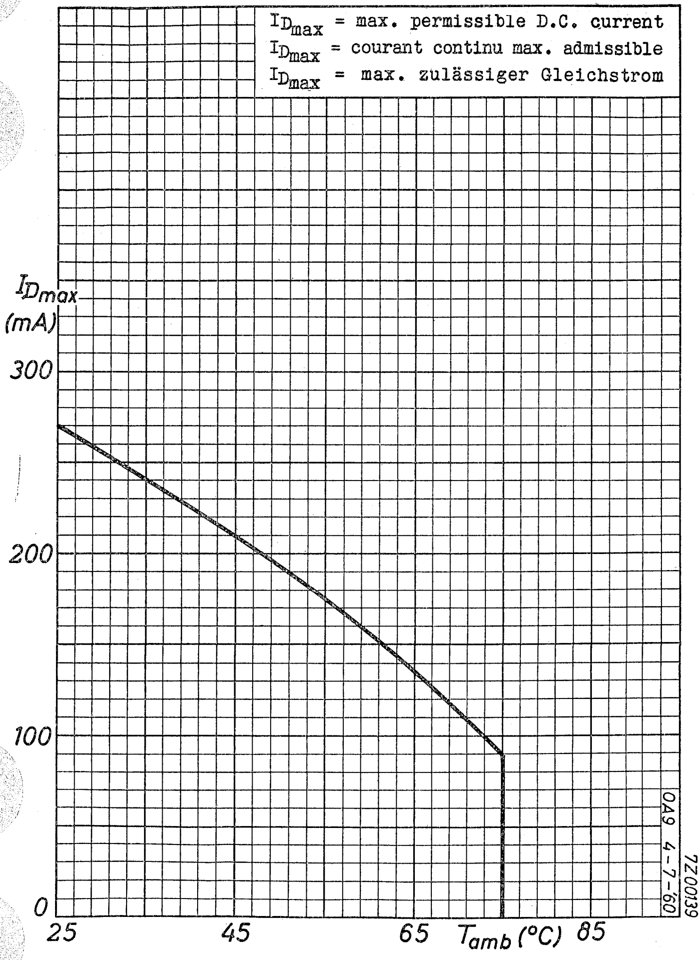

7Z00137
OA9 4-7-'60
1000
100
10
1
0,1
I_D
(nA)
Lower current limits
Limites de courant inférieures
Niedrigere Stromgrenzen
T_{amb}=60°C
0
0,2
0,4
0,6
V_D (V)
0,8

OA 9

PHILIPS



D

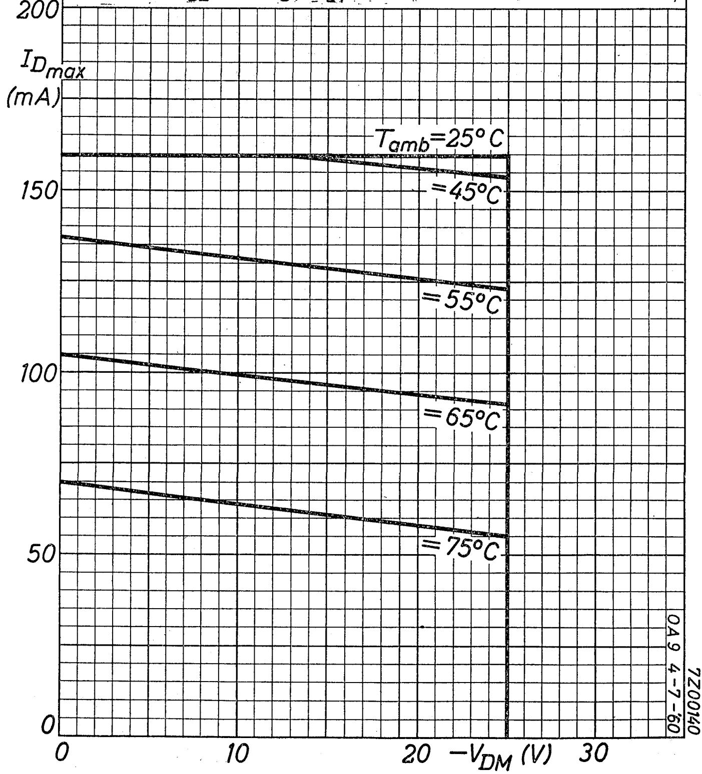

$I_{D_{max}}$ = max. permissible D.C. current
$I_{D_{max}}$ = courant continu max. admissible
$I_{D_{max}}$ = max. zulässiger Gleichstrom
$I_{D_{max}}$ (mA)
300
200
100
0
25
45
65
T_{amb} (°C)
85
OA9 4-7-'60
7Z00139

PHILIPS

I_{Dmax} = max. permissible value of I_D for sinusoidal input voltages and resistive load. ($I_{DM} = \pi x I_D$; t_{av} = max. 50 msec)

I_{Dmax} = valeur max. admissible de I_D pour des tensions d'entrée sinusoïdales avec charge résistive. ($I_{DM} = \pi . I_D$; t_{av} = 50 msec au max.)

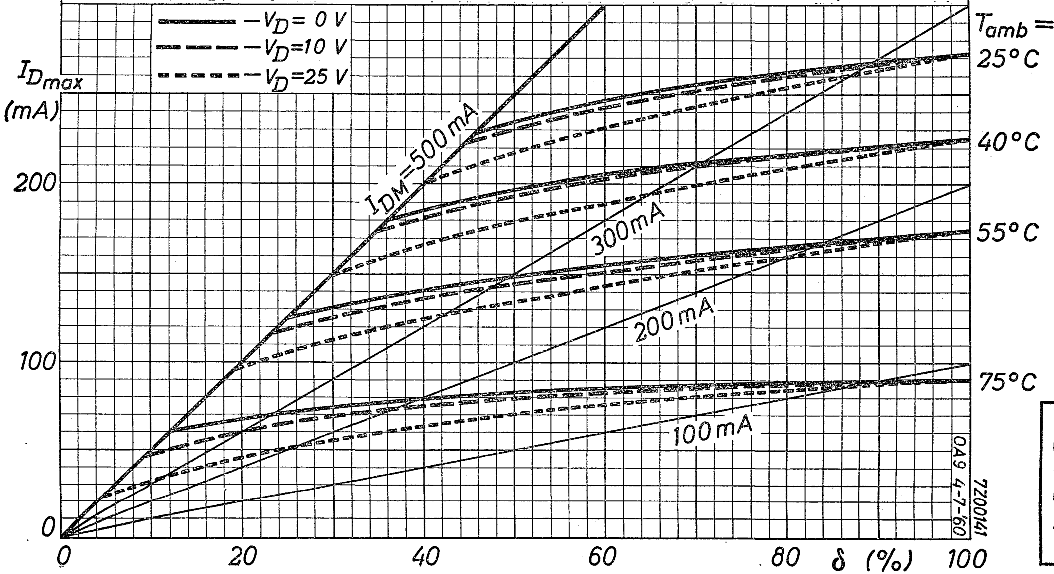
I_{Dmax} = max. zulässiger Wert von I_D bei sinusförmigen Eingangsspannungen mit Widerstandsbelastung. ($I_{DM} = \pi . I_D$; t_{av} = max. 50 mSek)



I_{Dmax} = max. permissible value of I_D for sinusoidal input voltages with capacitive load and for pulse applications. (t_{av} = max. 50 msec)

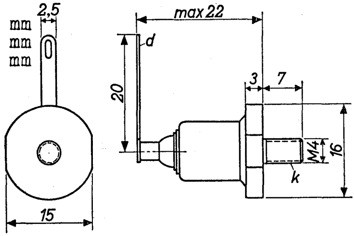
I_{Dmax} = valeur max. admissible de I_D pour des tensions d'entrée sinusoïdales avec charge capacitive et pour utilisation avec impulsions. (t_{av} = 50 msec au max.)

I_{Dmax} = max. zulässiger Wert von I_D bei sinusförmigen Eingangsspannungen mit kapazitiver Belastung und bei Impulsbetrieb. (t_{av} = max. 50 mSek)



GERMANIUM JUNCTION DIODE for use as rectifier for medium currents and voltages
DIODE A JONCTION DE CRISTAL DE GERMANIUM pour utilisation en redresseuse pour des courants et tensions moyens
GERMANIUM-FLÄCHENDIODE zur Verwendung als Gleichrichter für mittlere Ströme und Spannungen

Dimensions in mm
Dimensions en mm
Abmessungen in mm



When fastening the diode a torque of 3 cm kg should not be exceeded
En fixant la diode un moment de torsion de 3 cm kg ne sera pas surpassé
Beim Befestigen der Diode darf ein Drehmoment von 3 cm kg nicht überschritten werden

Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

$-V_D$	= max.	85 V
$-V_{DM}$	= max.	85 V
I_D	= max.	12 A
I_{DM}	= max.	12 A
I_{DM}	= max.	90 A [1]
P_D		See page B / Voir page B / Siehe Seite B
T_j	= max.	75 °C

Load capacitor
Capacité de charge ($-V_{DM}$ = 85 V) = max. 1000 μF [2]
Ladekondensator

[1] During switching on
Pendant la mise en circuit
Beim Einschalten

[2] At lower values of $-V_{DM}$ the load capacitor can be raised inversely proportional to $-V_{DM}$
A des valeurs plus basses de $-V_{DM}$ la capacité de charge peut être augmentée inversement proportionnelle à $-V_{DM}$
Bei kleineren Werten von $-V_{DM}$ kann der Ladekondensator umgekehrt proportional vergrössert werden

4.4.1959

OA 31 PHILIPS

Characteristics
Caractéristiques
Kenndaten

	$T_j = 25\ ^{\circ}C$		$T_j = 75\ ^{\circ}C$	
V_D (I_D = 0,1 A)	= 0,3 V			
V_D (I_D = 2 A)	= 0,5 V			
V_D (I_D = 12 A)	= 0,6 V	< 0,7 V		
$-I_D$ ($-V_D$ = 1 V)	= 25 µA		= 1,5 mA	
$-I_D$ ($-V_D$ = 85 V)	= 40 µA		= 1,8 mA	< 4 mA

Thermal resistance from junction to mounting base
Résistance thermique de la jonction jusqu'à la plaque de montage
Thermischer Widerstand vom Kristall bis an die Montageplatte

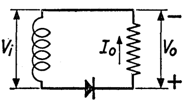
K = max. 5 °C/W

Operating characteristics
Caractéristiques d'utilisation
Betriebsdaten

$T_{amb} \leqq 45\ ^{\circ}C$; with copper heat sink of 100x80x1 mm per diode
$T_{amb} \leqq 45\ ^{\circ}C$; avec plaque de refroidissement de cuivre 100x80x1 mm par diode
$T_{amb} \leqq 45\ ^{\circ}C$; mit kupferner Kühlplatte von 100x80x1 mm pro diode

Half wave rectifier circuit
Circuit redresseur demi-onde
Halbwellengleichrichterschaltung

V_i = 54 V_{eff} [1])
I_O = 3,5 A
V_O = 24 V

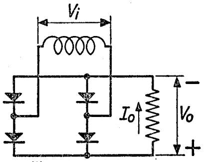


[1]) When a load capacitor is used the permissible value of V_i is max. 27 V
Si une capacité de charge est utilisée la valeur admissible de V_i est de 27 V au max.
Wenn ein Ladekondensator verwendet wird, ist der zulässige Wert von V_i max. 27 V

Operating characteristics (continued)
Caractéristiques d'utilisation (suite)
Betriebsdaten (Fortsetzung)

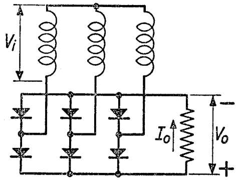
Bridge rectifier circuit
Circuit redresseur en pont
Gleichrichterbrückenschaltung

V_i = 54 V_{eff}
I_o = 7 A
V_o = 48 V



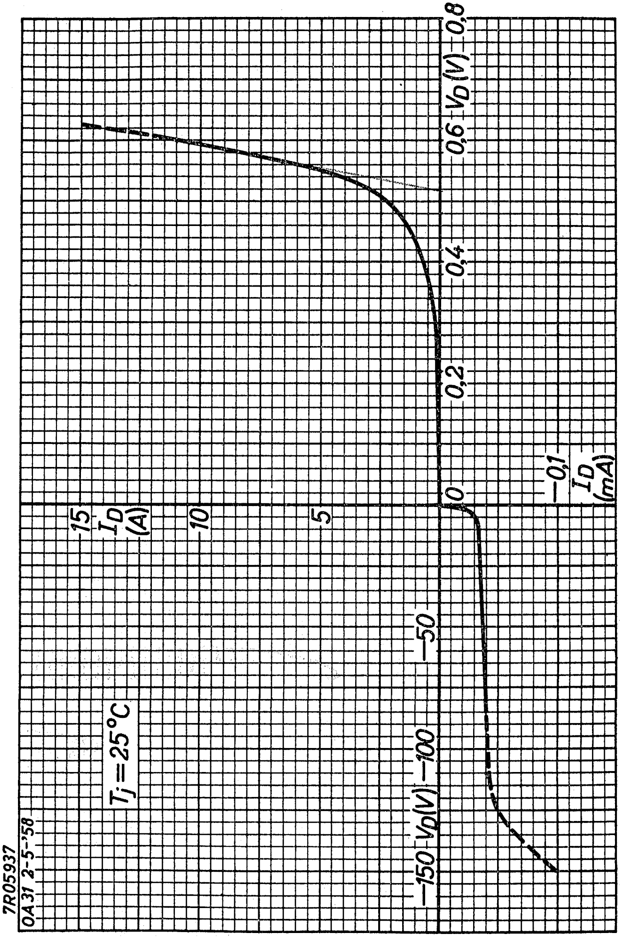
Three-phase bridge rectifier circuit
Circuit redresseur triphasé en pont
Dreiphasen-Gleichrichterbrückenschaltung

V_i = 31 V_{eff}
I_o = 10,5 A
V_o = 70 V

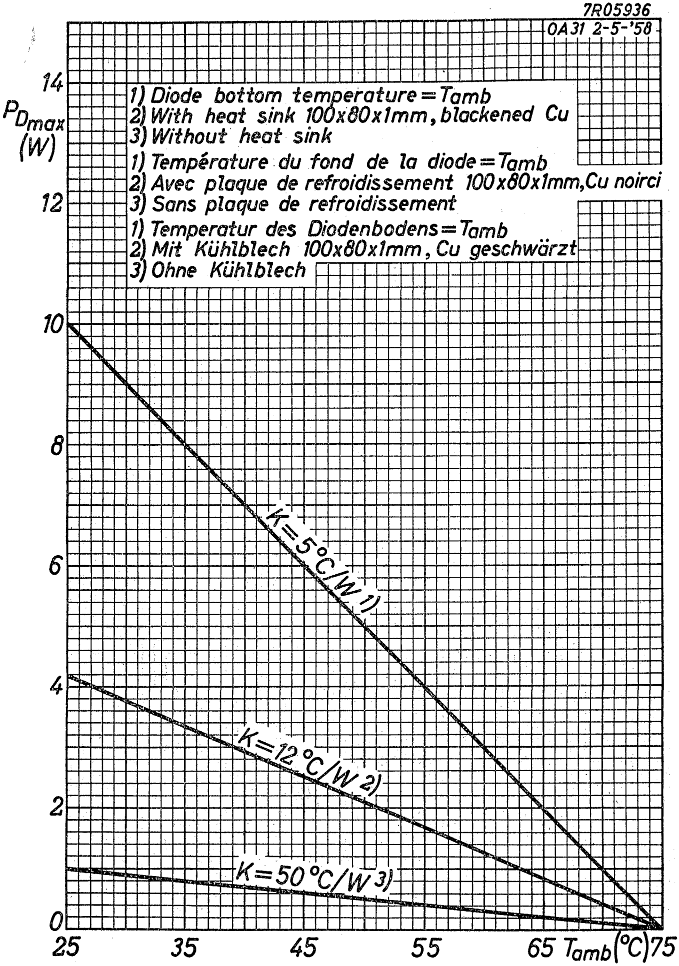


PHILIPS

OA 31



OA 31 PHILIPS



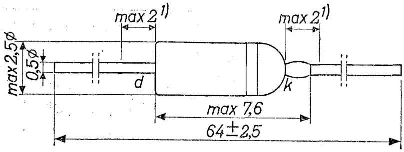
GOLD-BONDED GERMANIUM DIODE in miniature all-glass construction designed for high forward current switching applications

DIODE A CRISTAL DE GERMANIUM A POINTE D'OR en construction tout-verre miniature conçue pour applications de commutation à courant élevé dans le sens conducteur

GERMANIUM-GOLDDRAHTDIODE in Miniatur-Allglastechnik zur Verwendung als Schalterdiode mit hohem Strom in der Durchlassrichtung

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weise Ring bezeichnet die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

		T_{amb} = 25 °C	60 °C
$-V_D$	= max.	25	25 V
$-V_{DM}$	= max.	25	25 V
$-V_{Dsurge}$ (t = max. 1 sec)	= max.	30	30 V
I_D { direct current / courant continu / Gleichstrom	= max.	110	50 mA 2)
I_D (t_{av} = max. 50 msec)	{ See pages F,G / Voir pages F,G / Siehe Seiten F,G		
I_{DM}	= max.	150	150 mA
I_{Dsurge} (t = max. 1 sec)	= max.	200	200 mA
T_{amb}	= -55 °C/+ 60 °C		

Storage temperature
Température d'emmagasinage = -55 °C/+ 75 °C
Lagerungstemperatur

1) Not tinned; non étamé; nicht verzinnt

2) See also page E; voir aussi page E; siehe auch Seite E

OA 47 PHILIPS

Thermal data. Junction temperature rise to ambient temperature in free air — K ≦ 0.45 °C/mW

Données thermiques. Augmentation de la température de la jonction au regard de la température de l'imbiance à l'air libre — K ≦ 0,45 °C/mW

Thermische Daten. Temperaturerhöhung des Kristalls in bezug auf die Umgebungstemperatur in freier Luft — K ≦ 0,45 °C/mW

Characteristics
Caractéristiques
Kenndaten

I_D (mA)	V_D (V)					
	T_{amb} = 25 °C			T_{amb} = 60 °C		
	=	min.	max.	=	min.	max.
1	=0,26	>0,20	<0,33	=0,20	>0,14	<0,28
10	=0,40	>0,30	<0,48	=0,36	>0,25	<0,43
30	=0,54	>0,36	<0,65	=0,50		

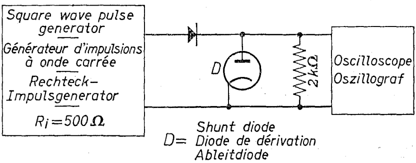
$-V_D$ (V)	$-I_D$ (µA)		
	T_{amb} = 25 °C	T_{amb} = 60 °C	
	=	=	max.
1,5	= 0,6	= 6	< 20
10	= 3,5	= 13	< 40
25	= 10	= 28	<160

<u>Reverse recovery</u>, measured at $-V_D$ = 5 V after forward current pulse of 5 mA

<u>Recouvrement inverse</u>, mesuré à $-V_D$ = 5 V après une impulsion de courant en sens conducteur de 5 mA

<u>Übergangszeit für Sperrichtung</u>, gemessen bei $-V_D$ = 5 V nach einem Stromimpuls von 5 mA in der Durchlassrichtung

T_{amb} = 25 °C



Measuring circuit; circuit de mesure; Messschaltung

Reverse recovery (continued)
Recouvrement inverse (suite)
Übergangszeit für Sperrichtung (Fortsetzung)

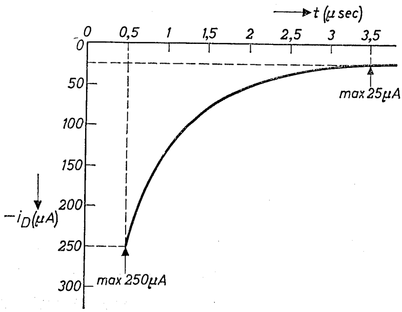
Pulse data
Données de l'impulsion
Impulsdaten

	f	=	50 kc/s
	δ	=	0,5
Rise time Temps de montée Anstiegszeit		<	0,1 μsec
	I_{DM}	=	5 mA
	$-V_{DM}$	=	5 V

Oscilloscope data
Données de l'oscilloscope
Daten des Oszillographen

	C_{inp}	=	40 pF
Rise time Temps de montée Anstiegszeit		=	0,025 μsec

$-i_D$	0.5 μsec after the current impuls 0,5 μsec après l'impulsion de courant 0,5 μSek nach dem Stromimpuls	<	250 μA
$-i_D$	3.5 μsec after the current impuls 3,5 μsec après l'impulsion de courant 3,5 μSek nach dem Stromimpuls	<	25 μA

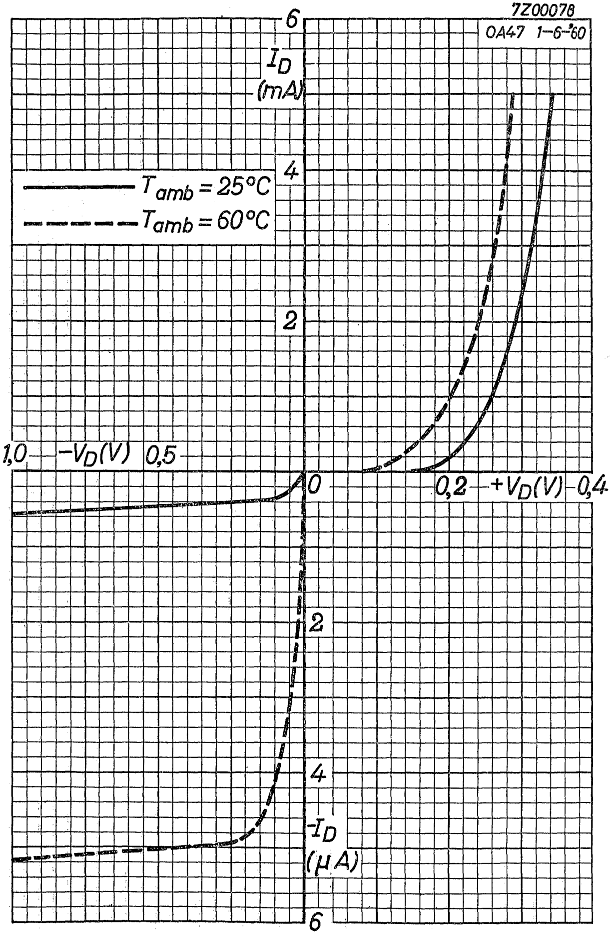


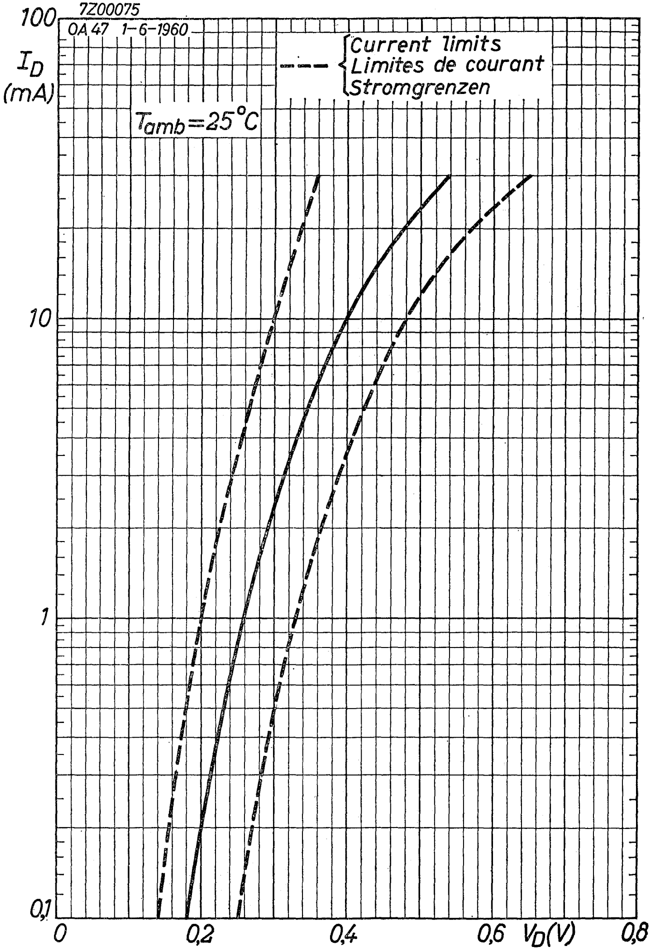
Characteristics (continued)
Caractéristiques (suite)
Kenndaten (Fortsetzung)

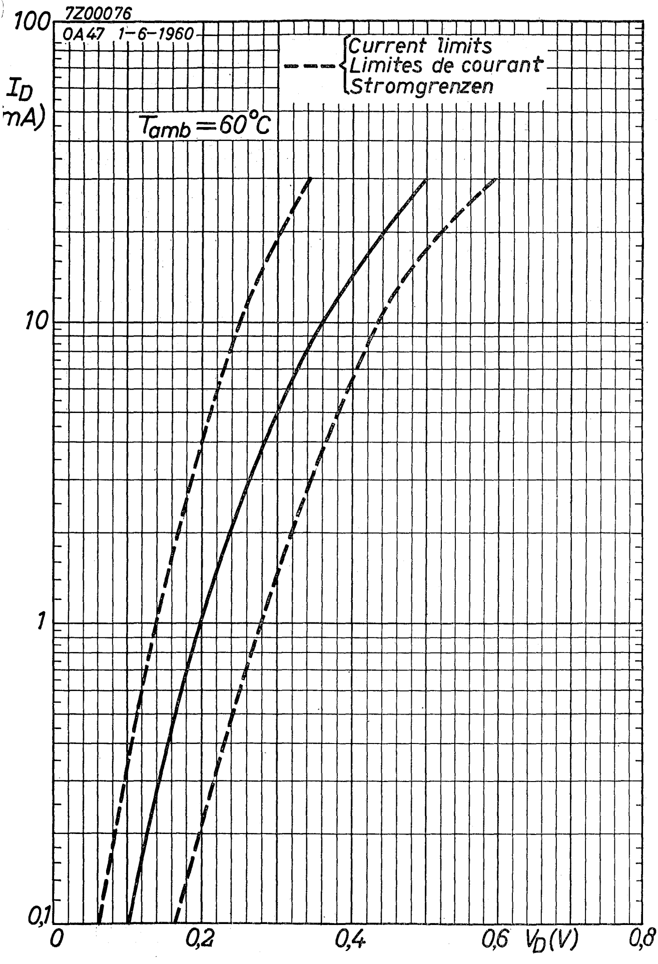
Capacitance
Capacité
Kapazität

$-V_D = 0{,}75$ V
$f = 0{,}5$ Mc/s
$c_{dk} = 1{,}0$ pF
$c_{dk} < 3{,}5$ pF [1])

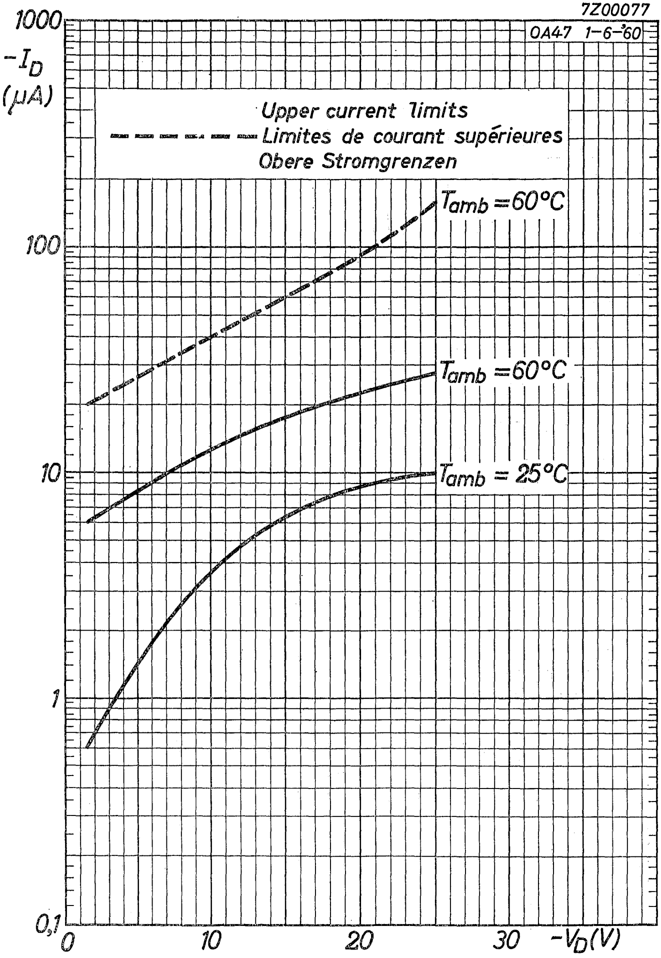
[1]) Characteristic range values for equipment design. For other characteristic range values for equipment design see curves pages B, C and D except the points mentionned at page 2.
Gamme de valeurs caractéristiques pour l'étude d'équipements. Pour les autres gammes de valeurs caractéristiques pour l'étude d'équipements voir les courbes pages B, C et D sauf les points mentionnés page 2
Charakteristischer Wertbereich für Gerätentwurf. Für die übrigen charakteristischen Wertbereiche für Gerätentwurf siehe die Kurven Seiten B, C und D, mit Ausnahme der auf Seite 2 erwähnten Punkte.

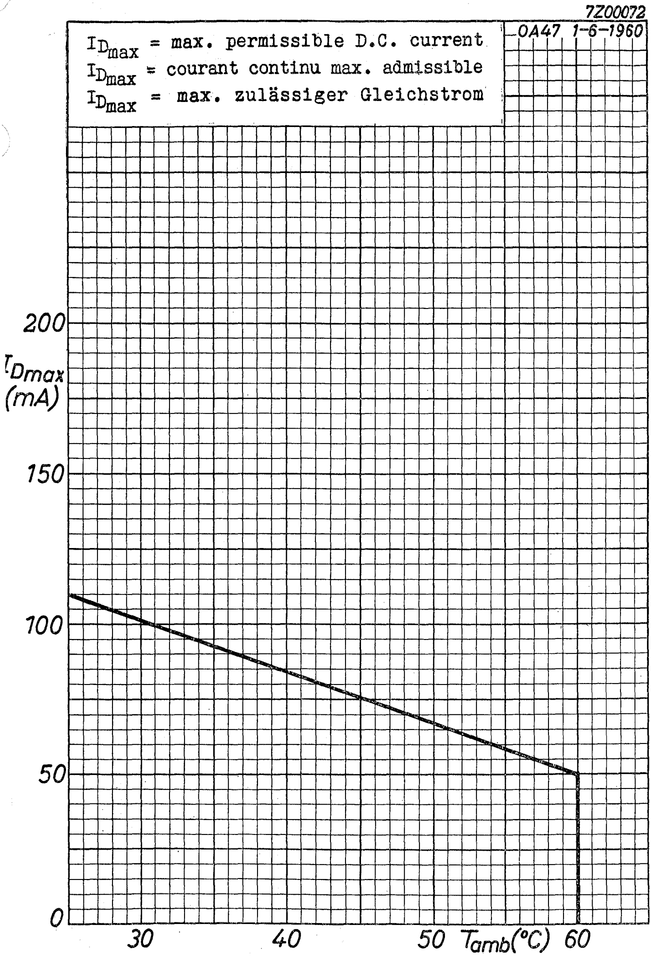

7Z00078
OA47 1-6-'60
I_D (mA)
6
4
2
$T_{amb} = 25°C$
$T_{amb} = 60°C$
1,0
$-V_D(V)$
0,5
0
0,2
$+V_D(V)$
0,4
2
4
$-I_D$ (μA)
6


7Z00075
OA 47 1-6-1960
100
10
1
0,1
I_D (mA)
Current limits
Limites de courant
Stromgrenzen
T_{amb}=25°C
0
0,2
0,4
0,6
0,8
V_D(V)


7Z00076
OA47 1-6-1960
Current limits
Limites de courant
Stromgrenzen
$T_{amb} = 60°C$
I_D (mA)
100
10
1
0,1
0
0,2
0,4
0,6
0,8
V_D (V)

OA 47 PHILIPS




7Z00072
OA47 1-6-1960
I_{Dmax} = max. permissible D.C. current
I_{Dmax} = courant continu max. admissible
I_{Dmax} = max. zulässiger Gleichstrom
200
I_{Dmax} (mA)
150
100
50
0
30
40
50
T_{amb}(°C)
60

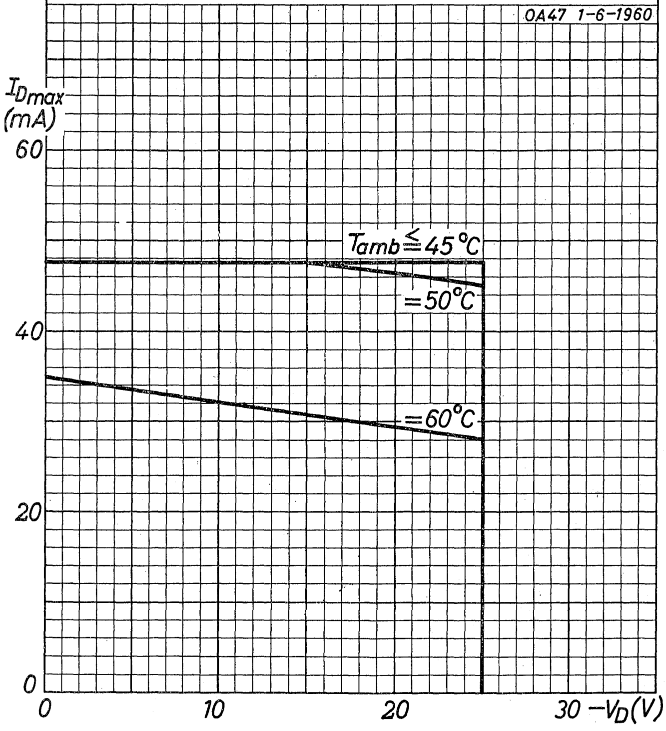
PHILIPS

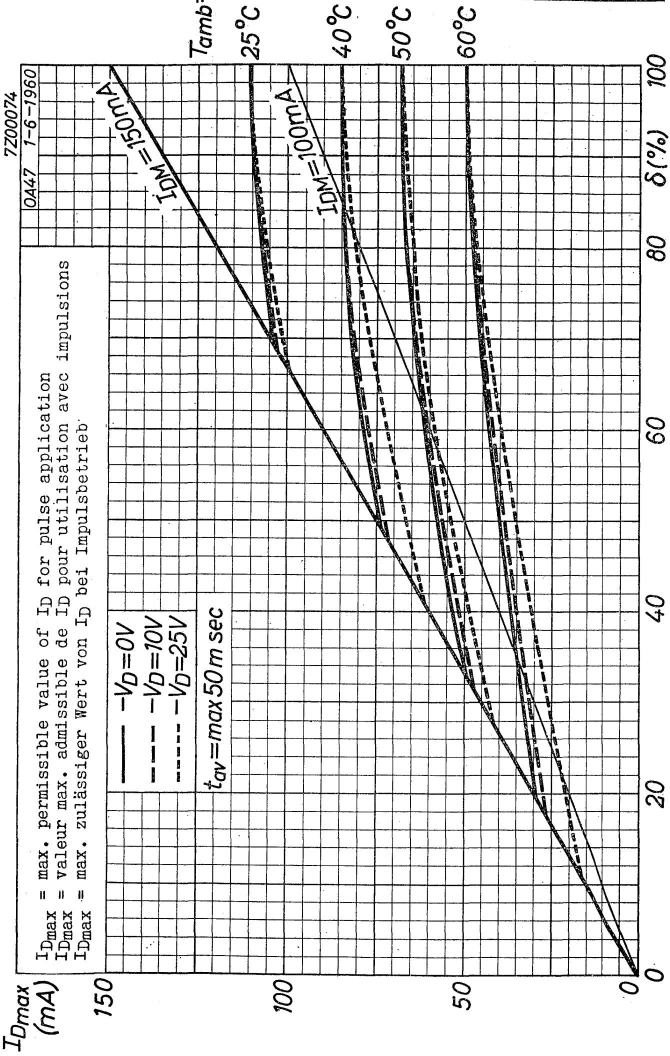
7Z00073

I_{Dmax} = max. permissible value of I_D for sinusoidal input voltages and resistive load. ($I_{DM} = \pi x I_D$; t_{av} = max. 50 msec)

I_{Dmax} = valeur max. admissible de I_D pour des tensions d'entrée sinusoïdales avec charge résistive. ($I_{DM} = \pi . I_D$; t_{av} = 50 msec au max.)

I_{Dmax} = max. zulässiger Wert von I_D bei sinusförmigen Eingangsspannungen mit Widerstandsbelastung. ($I_{DM} = \pi . I_D$; t_{av} = max. 50 mSek)



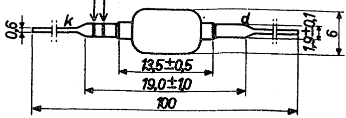

IDmax = max. permissible value of ID for pulse application
IDmax = valeur max. admissible de ID pour utilisation avec impulsions
IDmax = max. zulässiger Wert von ID bei Impulsbetrieb
—— $-V_D=0V$
– – – $-V_D=10V$
- - - - $-V_D=25V$
t_{av}=max 50 m sec
T_{amb}=
25°C
40°C
50°C
60°C
I_{DM}=150mA
I_{DM}=100mA
I_{Dmax} (mA)
150
100
50
0
δ(%)
0
20
40
60
80
100
OA47 7Z00074 1-6-1960

PHILIPS OA 50

CRYSTAL DIODE
DIODE A CRISTAL
KRISTALLDIODE

Dimensions in mm
Dimensions en mm
Abmessungen in mm

Green, vert, grün
Black, noir, schwarz

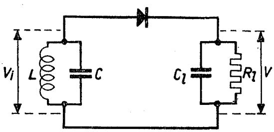


Capacitance Capacité Kapazität	C_{dk}	=	1,0 pF

Typical characteristics (at 20°C)
Caractéristiques types (à 20°C)
Kenndaten (bei 20°C)

I_d (V_d = +1 V)	=	min.	5 mA
$-I_d$ (V_d = -10 V)	=	max.	30 µA
$-I_d$ (V_d = -50 V)	=	max.	500 µA

Operating characteristics as detection diode at 20°C (up to 50 Mc/s)
Caractéristiques d'utilisation en détectrice à diode à 20°C (jusqu'à 50 Mc/s)
Betriebsdaten als Signalgleichrichter bei 20°C (bis 50 MHz)



V_i	=	10	10 Veff
R_ℓ	=	2	500 kΩ
$2\pi f \cdot R_\ell \cdot C_\ell$	=	150	150 ΩF c/s
η	=	78	96 %

Limiting values (at 20°C)
Caractéristiques limites (à 20°C) [1]
Grenzdaten (bei 20°C)

$V_{d\ inv}$	= max.	60 V		I_{surge}	= max.	500 mA [2]
$V_{d\ invp}$	= max.	75 V		W	= max.	150 mW
I_d	= max.	50 mA		t_{amb}	= max.	+60 °C
I_{dp}	= max.	150 mA			min.	-50 °C

Net weight; poids net; Nettogewicht 1 g

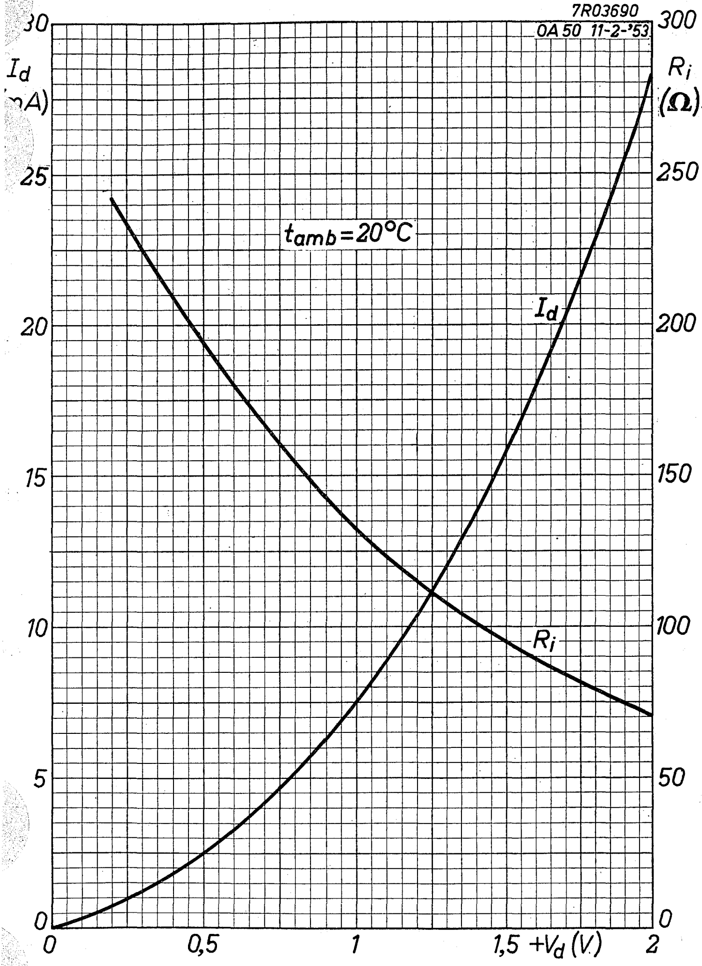
---

[1] For the relation between simultaneously allowable maximum values of V_{inv} and I_d see the derating curve. Operation in accordance with this derating curve is prescribed. The derating curve is valid at t_{amb} = 20 °C. At higher temperatures an extra derating of I_d is prescribed amounting to $\frac{20}{t_{amb}} I_{20^o}$

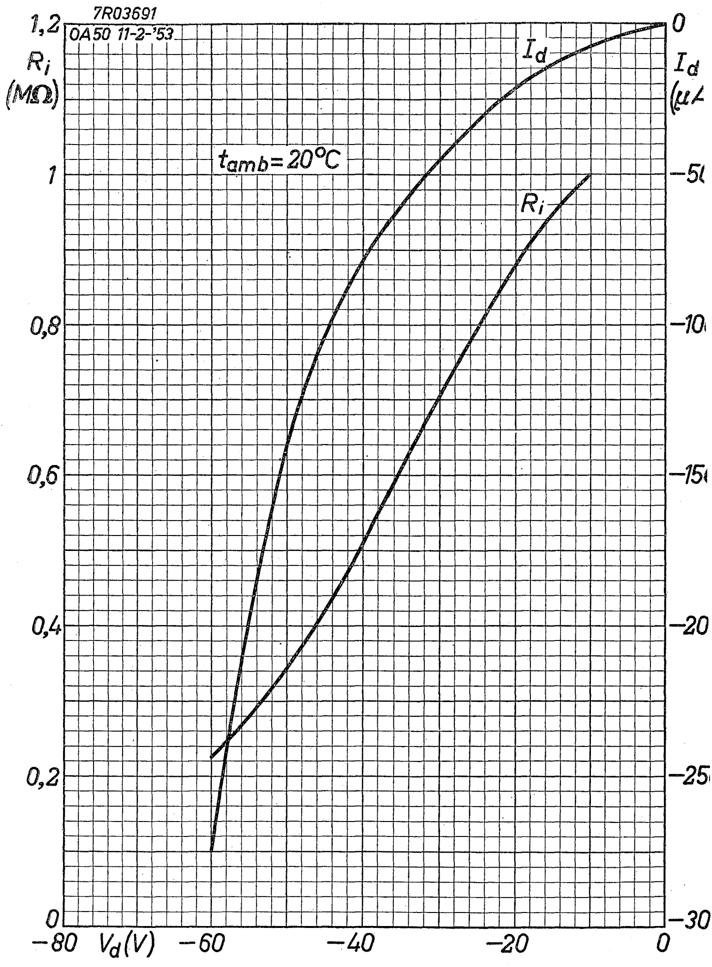
Pour le rapport entre les valeurs maximum de V_{inv} et I_d admissibles simultanément voir la courbe de réduction. Une opération en accord avec cette courbe est prescrite. La courbe de réduction est valable à t_{amb} = 20°C. A des températures plus élevées une réduction supplémentaire est prescrite se montant à $\frac{20}{t_{amb}} I_{20^o}$

Für die Beziehung zwischen den gleichzeitig zulässigen Höchstwerten von V_{inv} und I_d siehe die Reduktionskurve. Betrieb entsprechend dieser Kurve ist vorgeschrieben. Die Reduktionskurve ist gültig bei t_{amb} = 20°C. Bei höheren Temperaturen ist eine zusätzliche Reduktion von I_d im Betrage von $\frac{20}{t_{amb}} I_{20^o}$ vorgeschrieben.

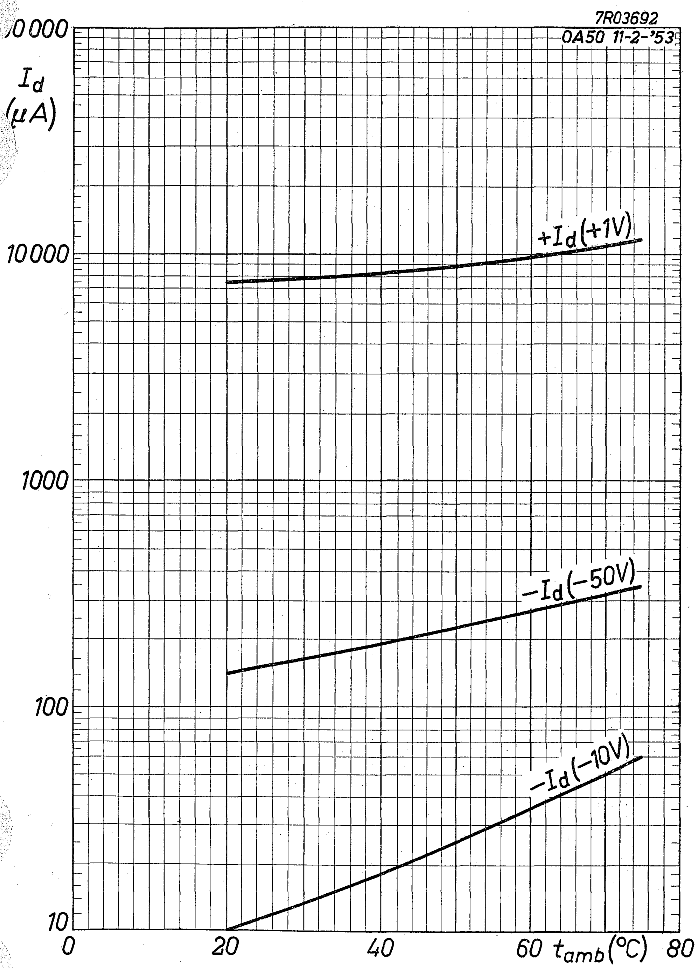
[2] Max.duration 1 sec.
Durée max. 1 sec.
Max.Dauer 1 Sek.


7R03690
OA 50 11-2-'53
I_d (mA)
R_i (Ω)
t_{amb}=20°C
I_d
R_i
+V_d (V)
0
5
10
15
20
25
30
0
50
100
150
200
250
300
0
0,5
1
1,5
2

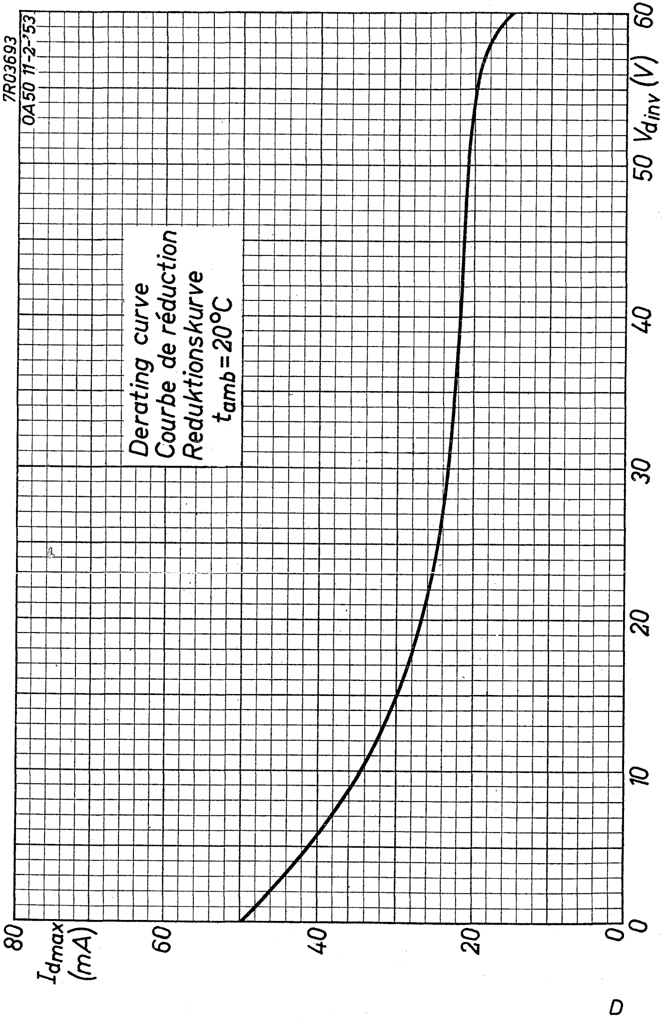
OA50 PHILIPS



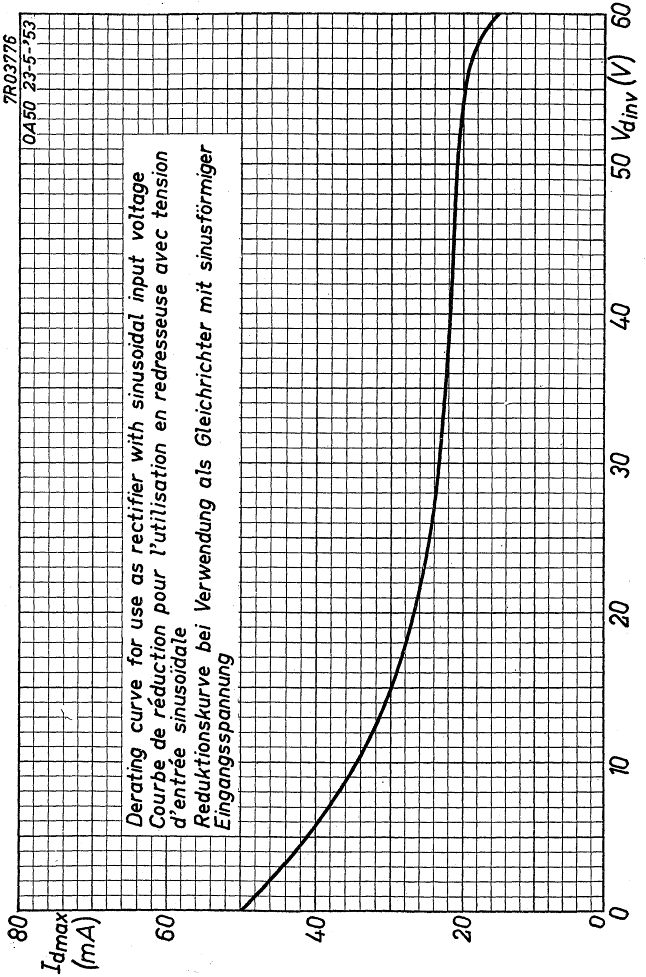
B


7R03692
OA50 11-2-'53
10 000
I_d
(μA)
10 000
1000
100
10
0
20
40
60
80
t_{amb} (°C)
$+I_d(+1V)$
$-I_d(-50V)$
$-I_d(-10V)$

OA50 PHILIPS



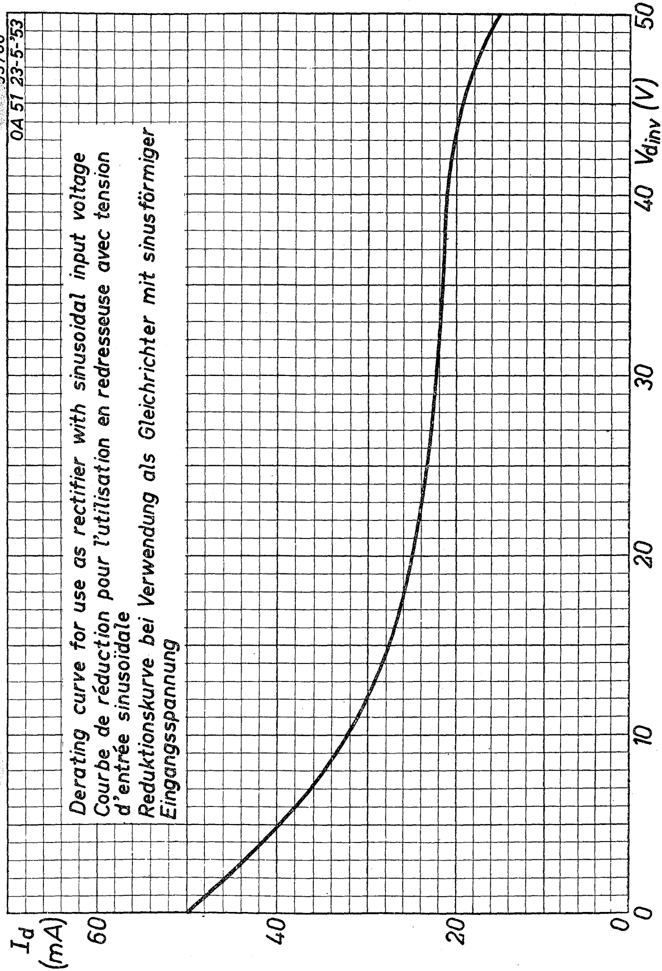
PHILIPS **OA50**



5.5.1953

E

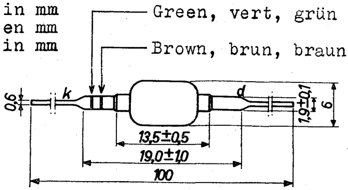
PHILIPS **OA 51**



PHILIPS
OA 51

CRYSTAL DIODE
DIODE A CRISTAL
KRISTALLDIODE

Dimensions in mm
Dimensions en mm
Abmessungen in mm



Capacitance
Capacité
Kapazität

C_{dk} = 1,0 pF

Typical characteristics (at 20°C)
Caractéristiques types (à 20°C)
Kenndaten (bei 20°C)

I_d	(V_d = +1 V) =	min.	5 mA
$-I_d$	(V_d = −10 V) =	max.	7 µA
$-I_d$	(V_d = −50 V) =	max.	100 µA

Limiting values (at 20°C)
Caractéristiques limites (à 20°C) [1]
Grenzdaten (bei 20°C)

$V_{d\ inv}$	= max. 50 V	I_{surge}	= max. 500 mA [2]
$V_{d\ inv_p}$	= max. 75 V	t_{amb}	= max. +60 °C min. −50 °C
I_d	= max. 50 mA		
I_{dp}	= max. 150 mA		

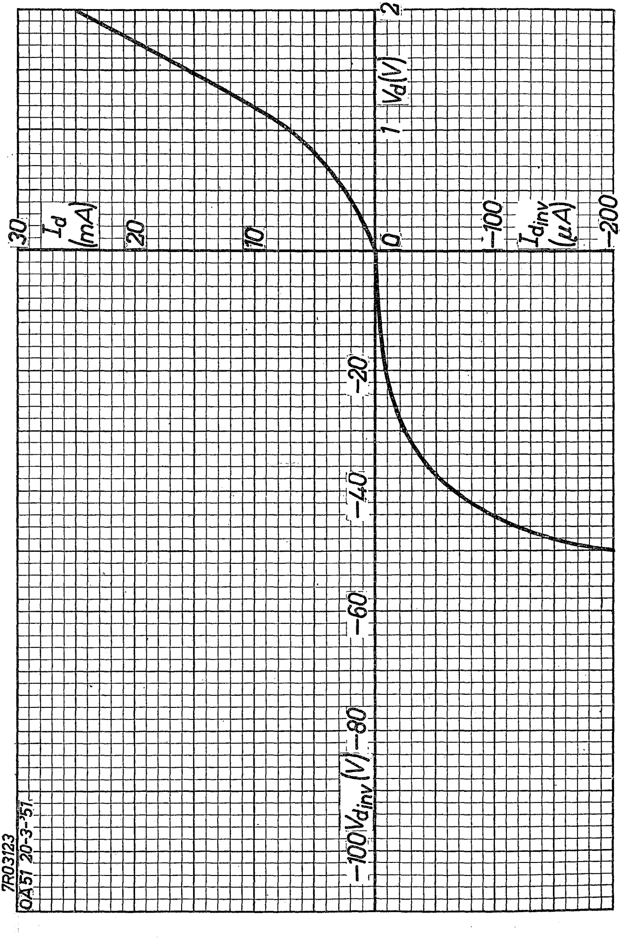
Net weight; poids net; Nettogewicht 1 g

---

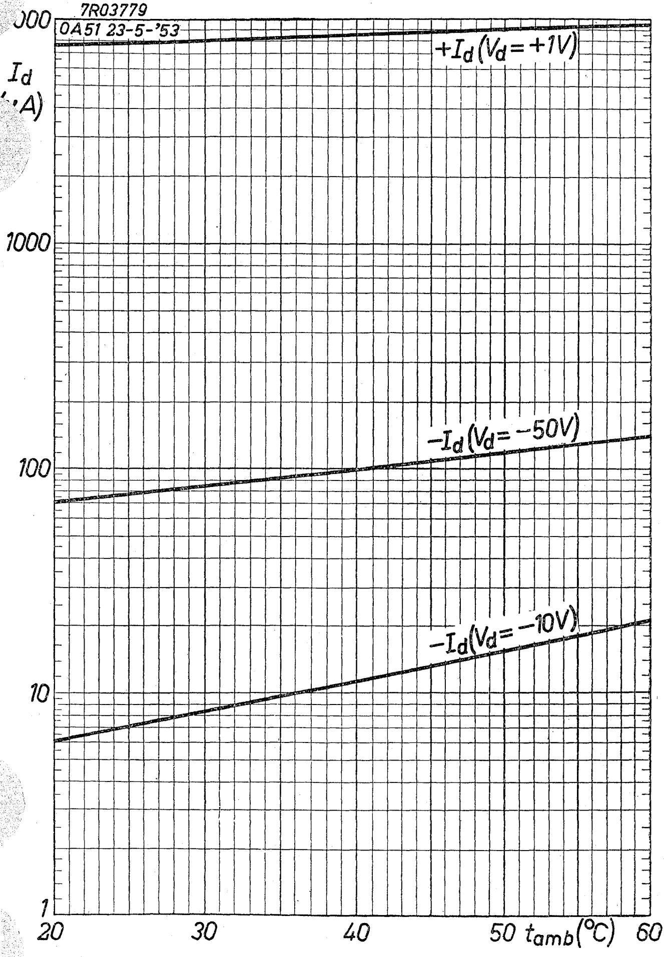
[1]) The diode is not permitted to operate at the limiting values for voltage, current and temperature simultaneously.
La diode ne doit pas fonctionner simultanément aux caractéristiques limites de la tension, du courant et de la température.
Die Diode soll nicht zugleich bei den Grenzdaten für Spannung, Strom und Temperatur benutzt werden.

[2]) Max.duration 1 sec.
Durée max. 1 sec.
Max.Dauer 1 Sek.

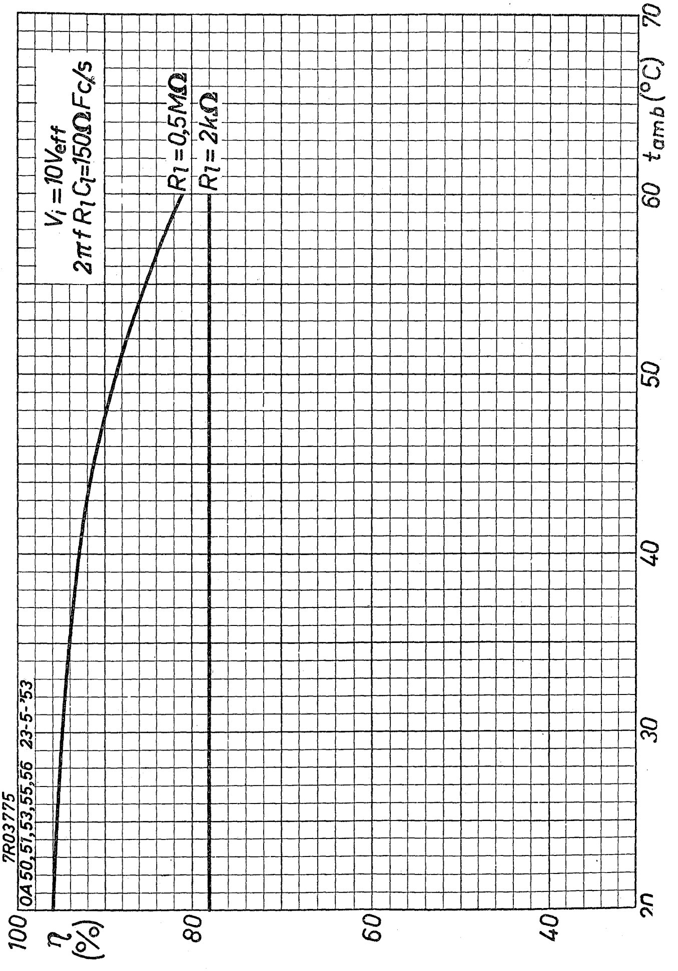
OA51 **PHILIPS**



A


7R03779
OA51 23-5-'53
I_d
(μA)
1000
100
10
1
$+I_d (V_d = +1V)$
$-I_d (V_d = -50V)$
$-I_d (V_d = -10V)$
20
30
40
50
60
t_{amb} (°C)

PHILIPS

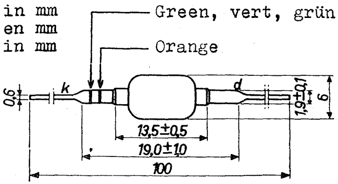


7R03775
OA50,51,53,55,56 23-5-'53
$V_i = 10V_{eff}$
$2\pi f R_l C_l = 150\Omega F c/s$
$R_l = 0,5M\Omega$
$R_l = 2k\Omega$
η (%)
100
80
60
40
20
30
40
50
60
70
t_{amb} (°C)

D

CRYSTAL DIODE
DIODE A CRISTAL
KRISTALLDIODE

Dimensions in mm
Dimensions en mm
Abmessungen in mm



Capacitance
Capacité
Kapazität

C_{dk} = 1,0 pF

Typical characteristics (at 20°C)
Caractéristiques types (à 20°C)
Kenndaten (bei 20°C)

I_d (V_d = +1 V) = min. 4 mA
$-I_d$ (V_d =-100 V) = max. 600 µA

Limiting values (at 20°C) [1]
Caractéristiques limites (à 20°C)
Grenzdaten (bei 20°C)

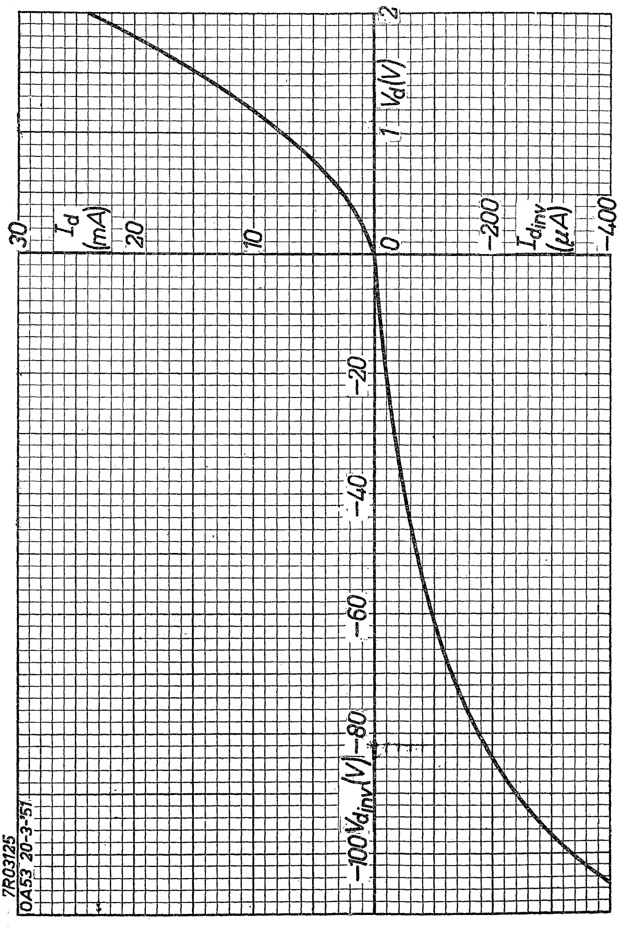
$V_{d\ inv}$ = max. 100 V		I_{surge}	= max. 500 mA[2]
$V_{d\ invp}$ = max. 120 V		t_{amb}	= max. +60 °C, min. -50 °C
I_d = max. 50 mA			
I_{dp} = max. 150 mA			

Net weight; poids net ; Nettogewicht 1 g

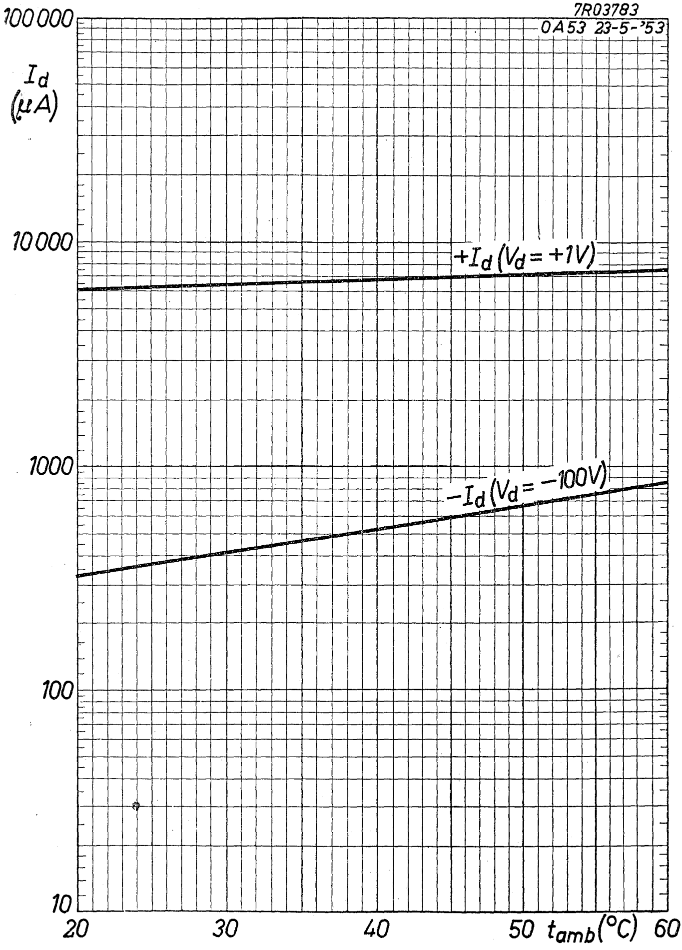
[1]) The diode is not permitted to operate at the limiting values for voltage, current and temperature simultaneously.
La diode ne doit pas fonctionner simultanément aux caractéristiques limites de la tension, du courant et de la température
Die Diode soll nicht zugleich bei den Grenzdaten für Spannung, Strom und Temperatur benutzt werden.

[2]) Max.duration 1 sec.
Durée max. 1 sec.
Max.Dauer 1 Sek.

OA53 PHILIPS

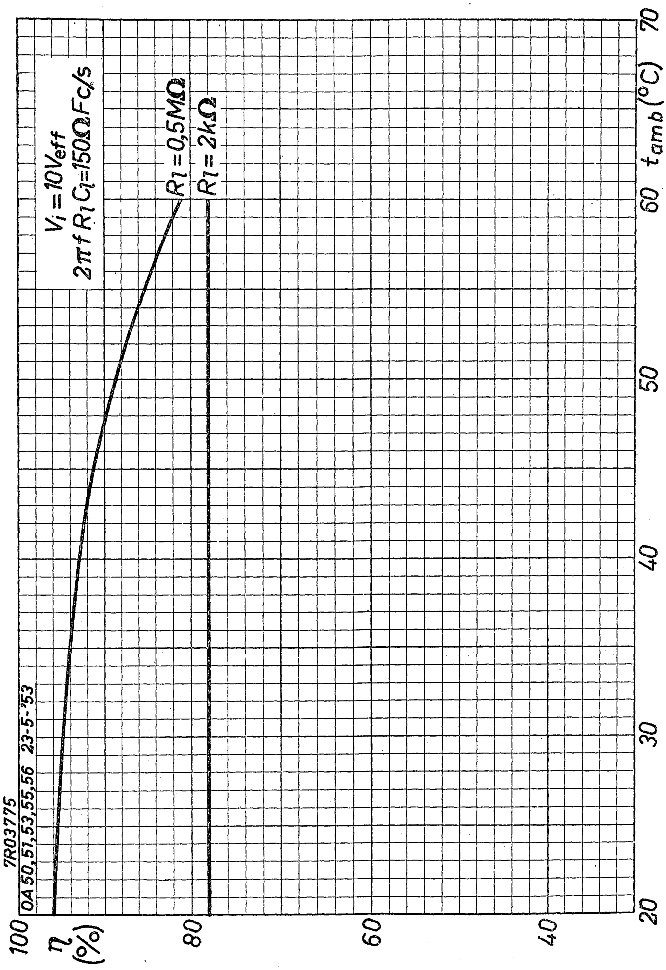


A

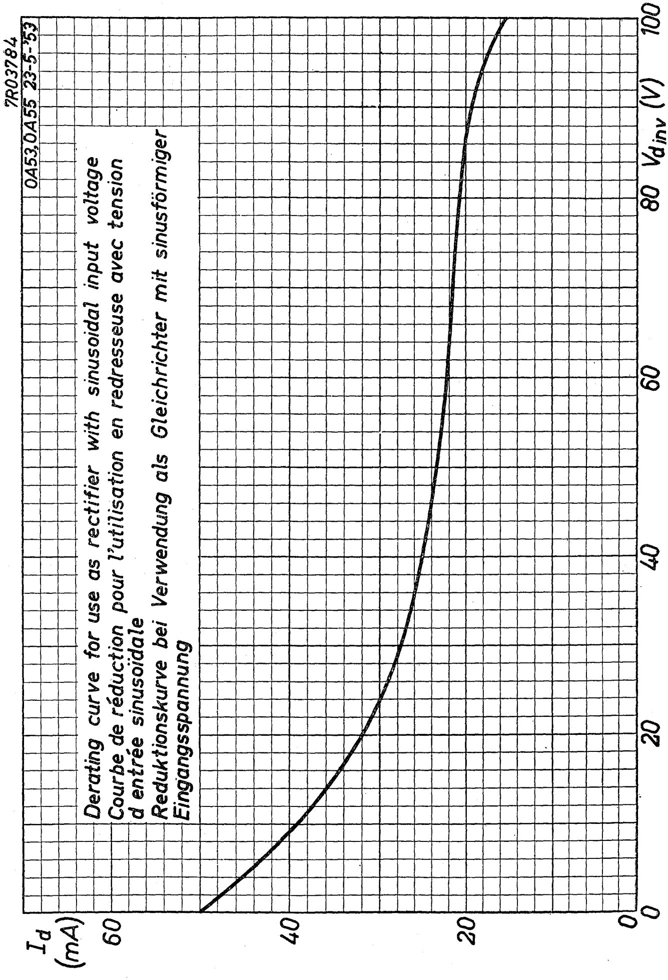


7R03783
OA53 23-5-'53
100 000
I_d (μA)
10 000
$+I_d$ ($V_d = +1V$)
1000
$-I_d$ ($V_d = -100V$)
100
10
20
30
40
50
t_{amb} (°C)
60

OA 53 **PHILIPS**



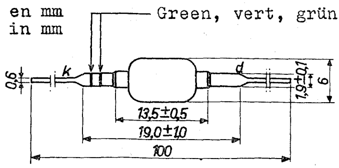
D


7R03784
OA53,OA55 23-5-'53
Derating curve for use as rectifier with sinusoidal input voltage
Courbe de réduction pour l'utilisation en redresseuse avec tension d'entrée sinusoïdale
Reduktionskurve bei Verwendung als Gleichrichter mit sinusförmiger Eingangsspannung
I_d (mA)
60
40
20
0
0
20
40
60
80
100
$V_{d_{inv}}$ (V)

PHILIPS OA 55

CRYSTAL DIODE
DIODE A CRISTAL
KRISTALLDIODE

Dimensions in mm
Dimensions en mm
Abmessungen in mm



Capacitance
Capacité
Kapazität

C_{dk} = 1,0 pF

Typical characteristics (at 20°C)
Caractéristiques types (à 20°C)
Kenndaten (bei 20°C)

I_d (V_d = +1 V) = min. 4 mA
$-I_d$ (V_d = -3 V) = max. 5 µA
$-I_d$ (V_d = -100 V) = max. 500 µA

Limiting values (at 20°C)
Caratéristiques limites (à 20°C) [1]
Grenzdaten (bei 20°C)

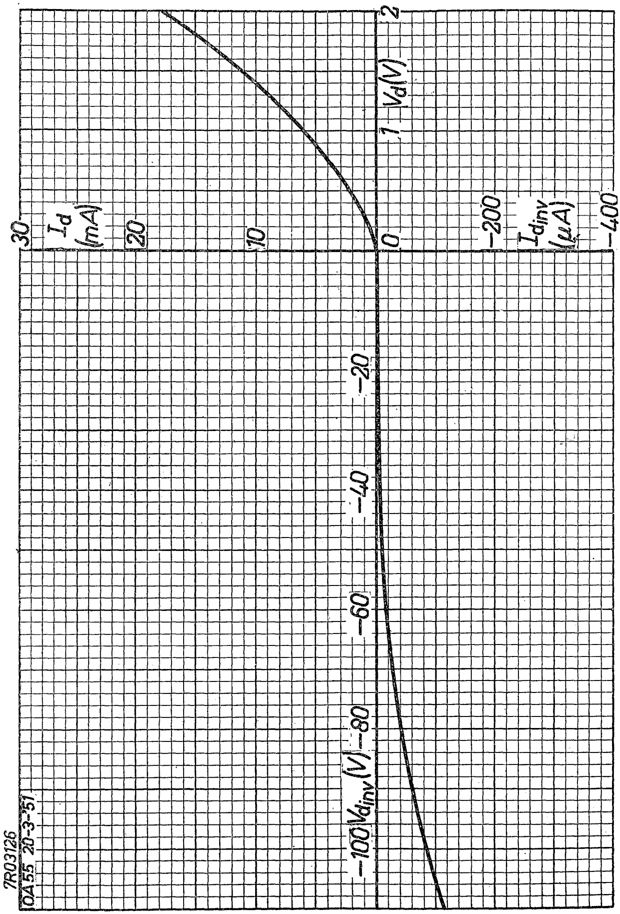
$V_{d\ inv}$	= max. 100 V	I_{surge}	= max. 500 mA [2]
$V_{d\ invp}$	= max. 120 V	t_{amb}	= max. +60 °C, min. -50 °C
I_d	= max. 50 mA		
I_{dp}	= max. 150 mA		

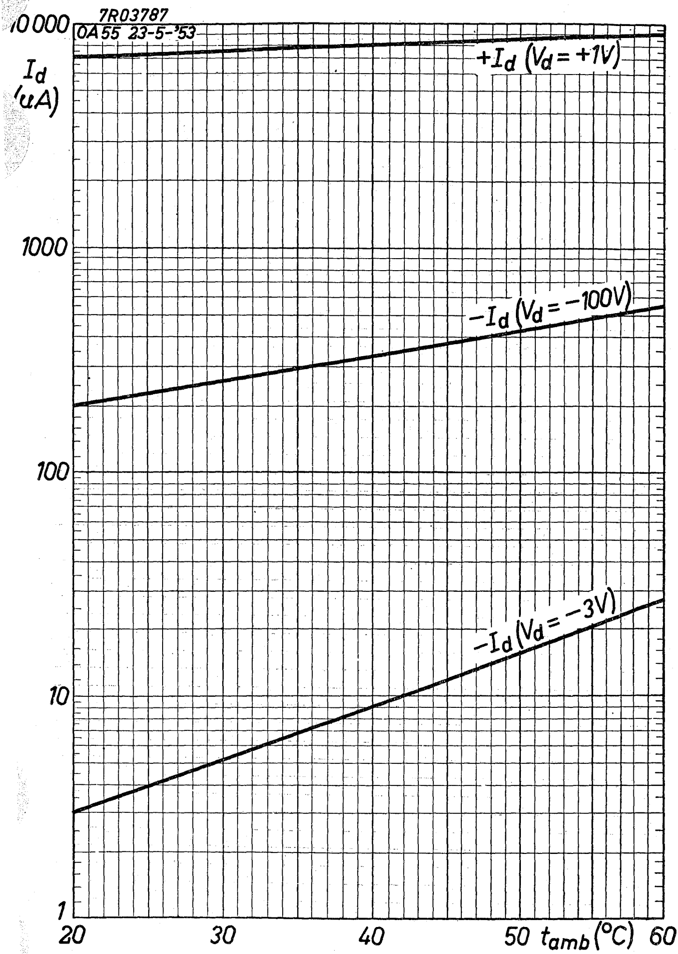
Net weight; poids net; Nettogewicht 1 g

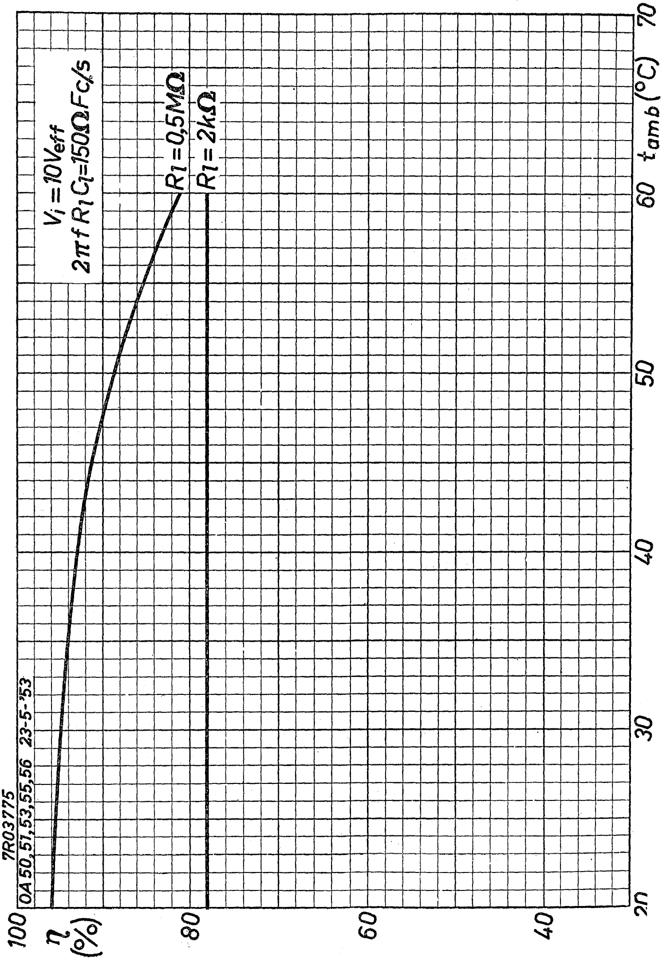
[1]) The diode is not permitted to operate at the limiting values for voltage, current and temperature simultaneously.
La diode ne doit pas fonctionner simultanément aux caractéristiques limites de la tension, du courant et de la température.
Die Diode soll nicht zugleich bei den Grenzdaten für Spannung, Strom und Temperatur benutzt werden.

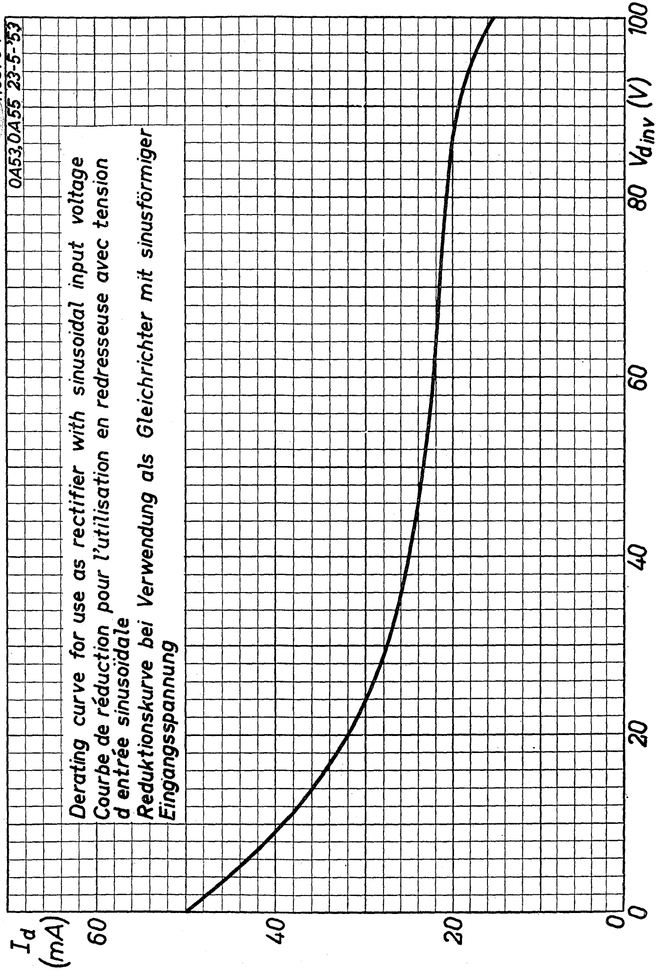
[2]) Max.duration 1 sec.
Durée max. 1 sec.
Max.Dauer 1 Sek.

OA55 PHILIPS



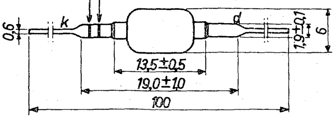

7R03787
OA55 23-5-'53
10 000
I_d (uA)
1000
100
10
1
20
30
40
50
60
t_{amb} (°C)
$+I_d$ ($V_d = +1V$)
$-I_d$ ($V_d = -100V$)
$-I_d$ ($V_d = -3V$)


$V_i = 10V_{eff}$
$2\pi f R_l C_l = 150\Omega F c/s$
$R_l = 0{,}5M\Omega$
$R_l = 2k\Omega$
t_{amb} (°C)
20
30
40
50
60
70
η (%)
100
80
60
40
7R03775
OA 50, 51, 53, 55, 56 23-5-'53


Derating curve for use as rectifier with sinusoidal input voltage
Courbe de réduction pour l'utilisation en redresseuse avec tension d'entrée sinusoïdale
Reduktionskurve bei Verwendung als Gleichrichter mit sinusförmiger Eingangsspannung
7Z03784
OA53,OA55 23-5-'53
$V_{d\,inv}$ (V)
0
20
40
60
80
100
I_d (mA)
0
20
40
60

CRYSTAL DIODE
DIODE A CRISTAL
KRISTALLDIODE

Dimensions in mm
Dimensions en mm
Abmessungen in mm



Capacitance
Capacité
Kapazität

C_{dk} = 1,0 pF

Typical characteristics (at 20°C)
Caractéristiques types (à 20°C)
Kenndaten (bei 20°C)

I_d (V_d = + 1 V)	= min.	4	mA
$-I_d$ (V_d = -10 V)	= max.	50	µA
$-I_d$ (V_d = -50 V)	= max.	833	µA

Limiting values (at 20°C)
Caractéristiques limites (à 20°C) [1]
Grenzdaten (bei 20°C)

$V_{d\ inv}$	= max.	70	V	I_{surge}	= max.	400	mA [2]
$V_{d\ invp}$	= max.	85	V	t_{amb}	= max.	+60	°C
I_d	= max.	50	mA		min.	-50	°C
I_{dp}	= max.	150	mA				

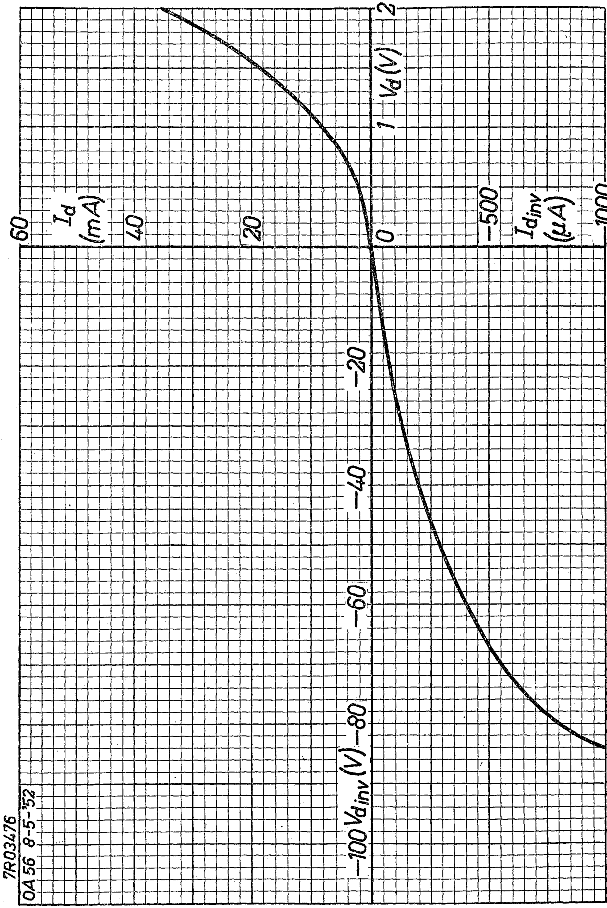
Net weight; poids net; Nettogewicht 1 g

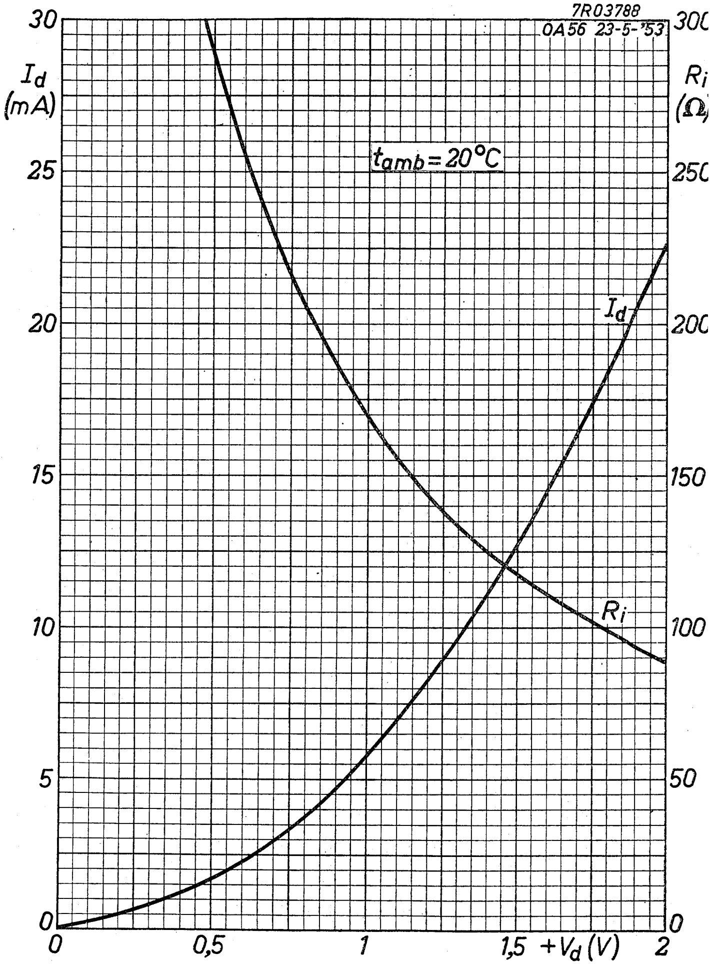
[1]) The diode is not permitted to operate at the limiting values for voltage, current and temperature simultaneously.
La diode ne doit pas fonctionner simultanément aux caractéristiques limites de la tension, du courant et de la température.
Die Diode soll nicht zugleich bei den Grenzdaten für Spannung, Strom und Temperatur benutzt werden.

[2]) Max. duration 1 sec.
Durée max. 1 sec.
Max.Dauer 1 Sek.

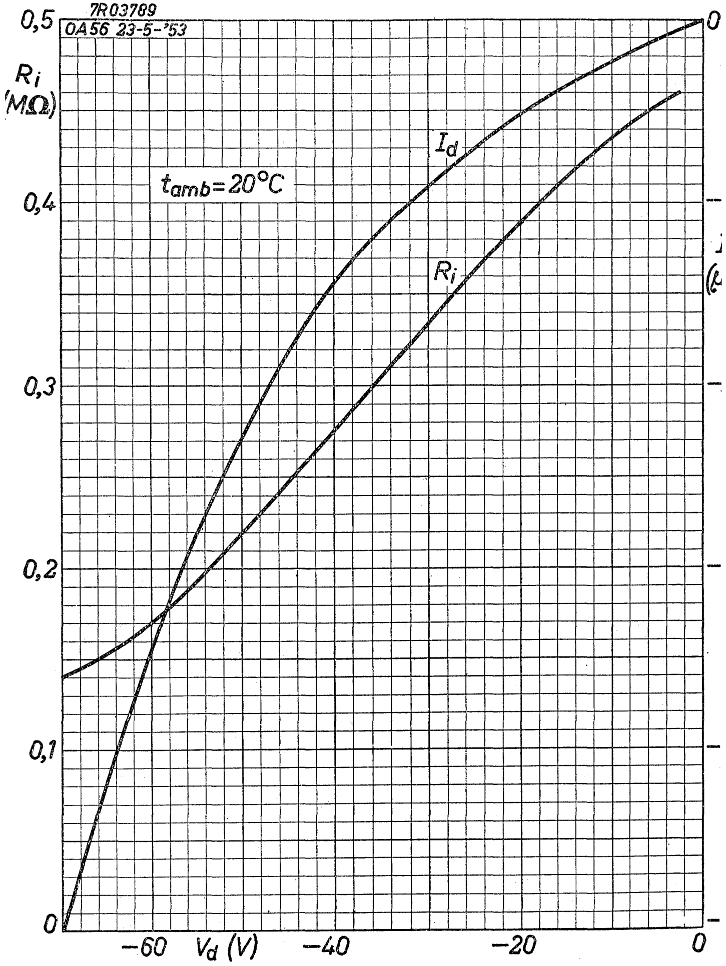
OA56

PHILIPS

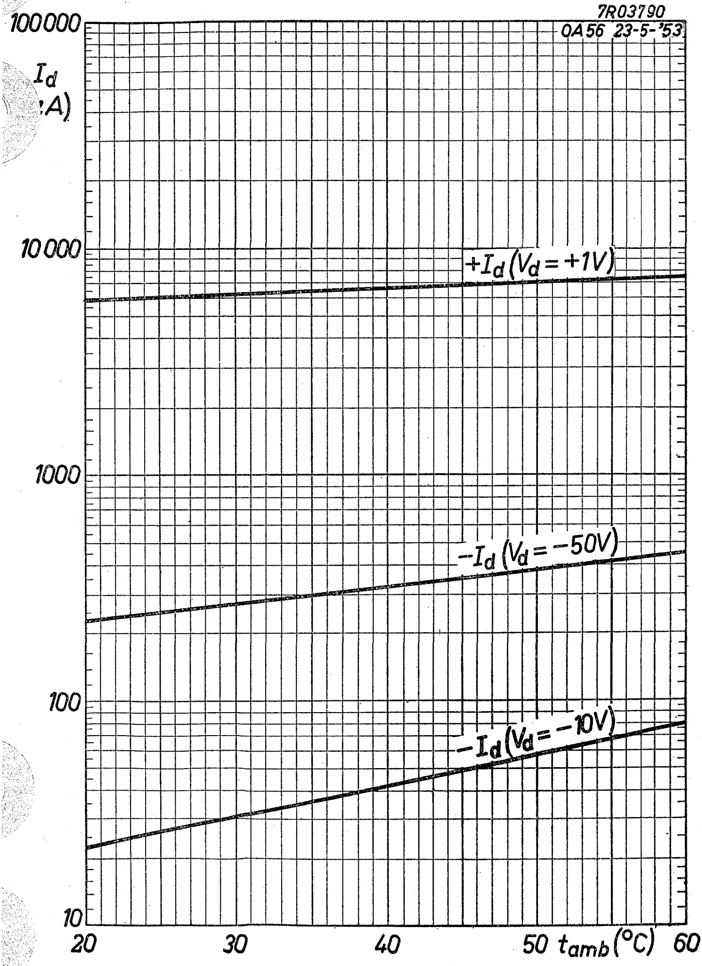



7R03788
OA56 23-5-'53
30
25
20
15
10
5
0
I_d (mA)
300
250
200
150
100
50
0
R_i (Ω)
$t_{amb} = 20°C$
I_d
R_i
0
0,5
1
1,5
2
$+V_d$ (V)

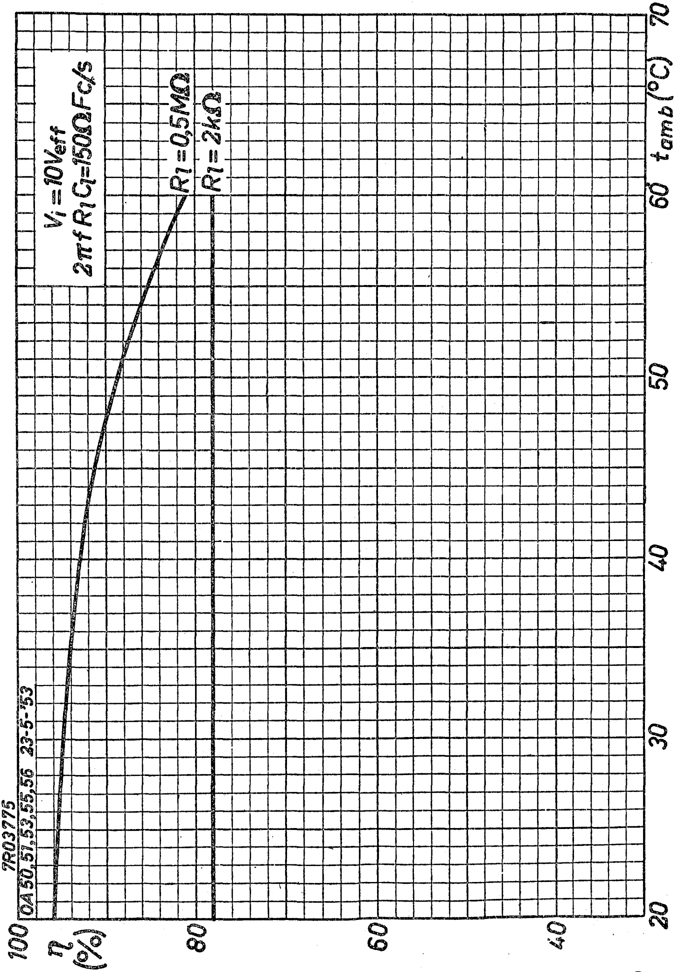
OA56 PHILIPS



B

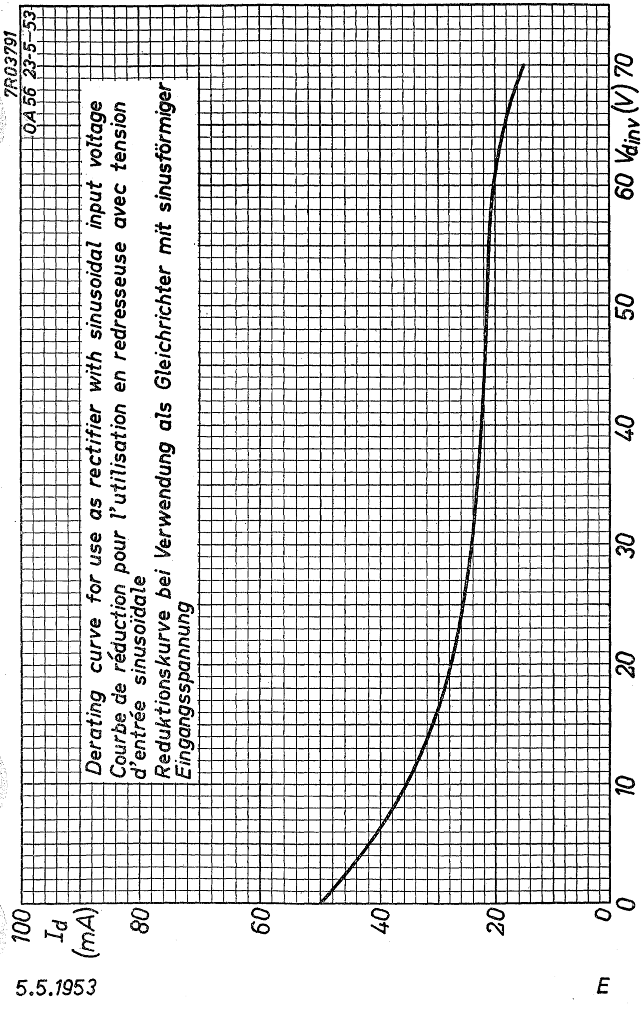

7R03790
OA56 23-5-'53
100000
I_d
(μA)
10000
1000
100
10
$+I_d (V_d = +1V)$
$-I_d (V_d = -50V)$
$-I_d (V_d = -10V)$
20
30
40
50
t_{amb} (°C)
60

OA56 PHILIPS



D

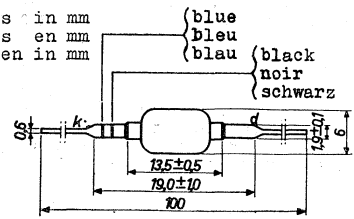
PHILIPS OA56



PHILIPS **OA 60**

CRYSTAL RECTIFIER for use as video detector.
REDRESSEUR A CRISTAL pour la détection vidéo
KRISTALLGLEICHRICHTER zur Video-Demodulation

Dimensions in mm
Dimensions en mm
Abmessungen in mm



Capacitance Capacité Kapazität	C_{dk}	=	1,0 pF

Typical characteristics (at 20 °C)
Caractéristiques types (à 20 °C)
Kenndaten (bei 20 °C)

See pages A, B, C, D.
Voir pages A, B, C, D.
Siehe Seiten A, B, C, D.

Limiting values
Caractéristiques types
Grenzdaten

V_d inv	=	max.	25	V
V_d invp	=	max.	30	V
I_d	=	max.	5	mA
t_{amb} 1)	=	max. min.	+60 -50	°C °C

Net weight Poids net Nettogewicht	1 g

1) In connection with life a low ambient temperature is recommended.
Par rapport à la durée de vie une température ambiante basse est recommandée.
In bezug auf die Lebensdauer wird eine niedrige Umgebungstemperatur empfohlen.

Remark

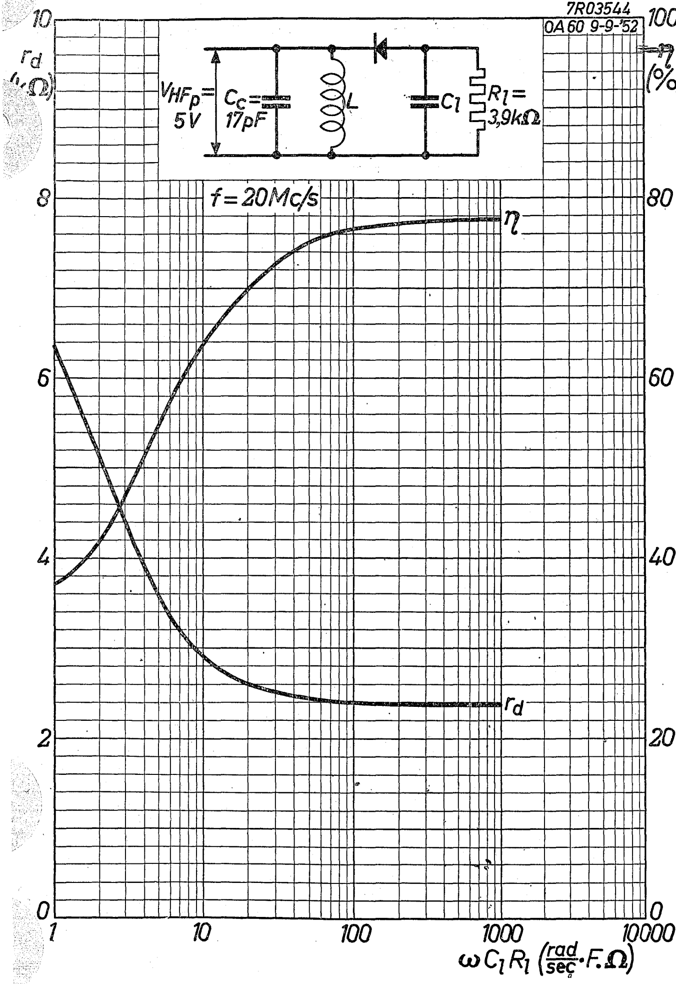
The static characteristics of the OA 60 need not meet specified requirements as only the dynamic data are decisive for the behaviour of the OA 60 as video detector.

Observation

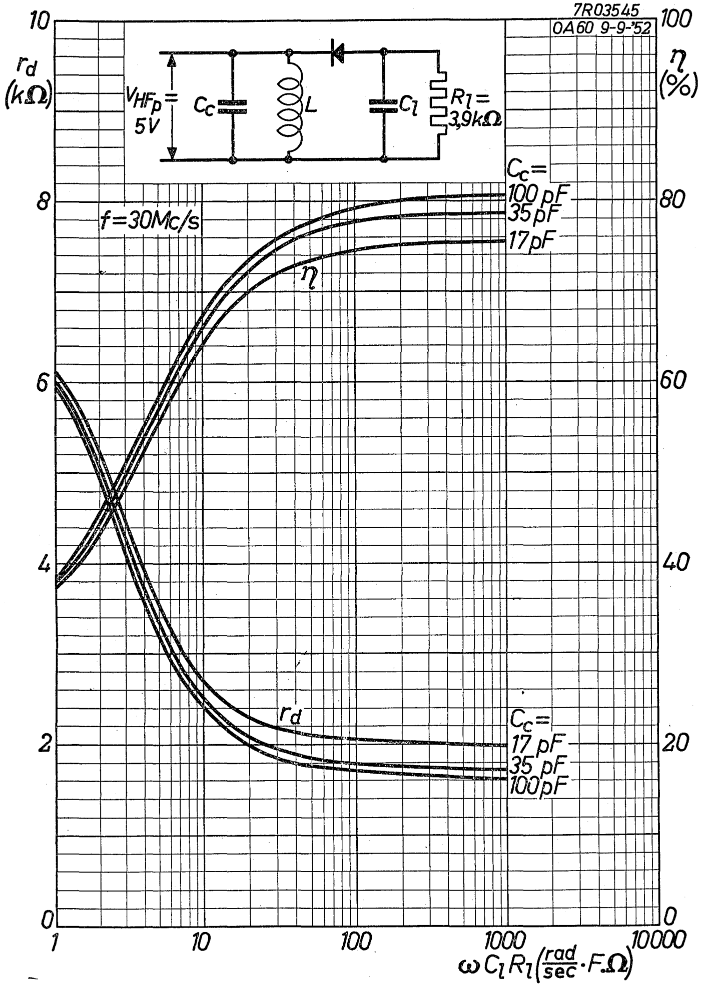
Les caractéristiques statiques du OA 60 n'ont pas à satisfaire à des exigences spécifiques, l'opération du OA 60 en détecteur vidéo n'étant déterminée que par les caractéristiques dynamiques.

Bemerkung

Die statischen Daten der OA 60 brauchen keinen speziellen Anforderungen zu genügen, da die Wirkung der OA 60 als Video-Demodulator nur von den dynamischen Daten bestimmt wird.

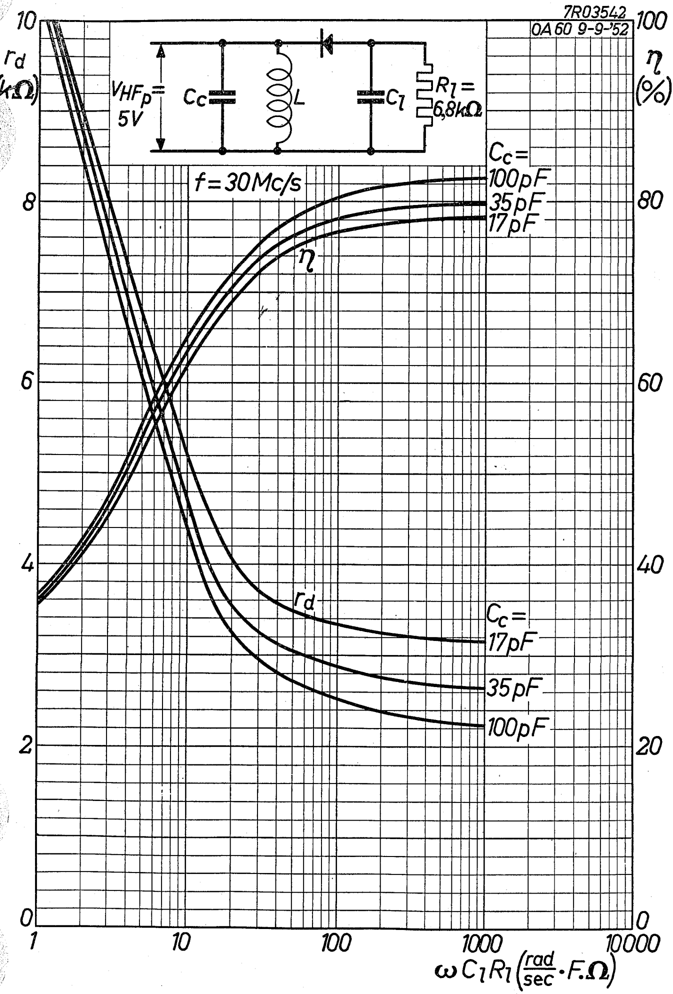

7R03544
OA 60 9-9-'52
r_d (kΩ)
η (%)
V_{HF_p} = 5 V
C_c = 17pF
L
C_l
R_l = 3,9kΩ
f = 20Mc/s
η
r_d
0
2
4
6
8
10
0
20
40
60
80
100
1
10
100
1000
10000
$\omega C_l R_l$ ($\frac{rad}{sec}$·F.Ω)

OA 60 PHILIPS

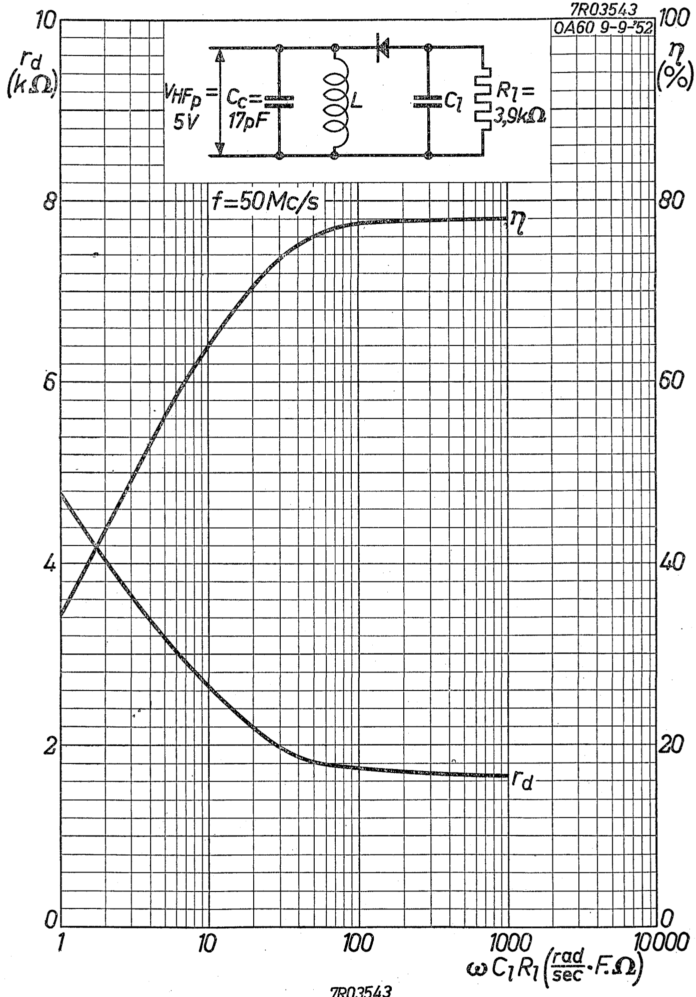


7R03545
v.M. 9-9-'52
OA 60

B


7R03542
OA 60 9-9-'52
10
8
6
4
2
0
r_d (kΩ)
100
80
60
40
20
0
η (%)
V_{HF_p} = 5V
C_c
L
C_l
R_l = 6,8kΩ
f = 30 Mc/s
η
C_c = 100pF
35pF
17pF
r_d
C_c = 17pF
35pF
100pF
1
10
100
1000
10000
$\omega C_l R_l \left(\frac{rad}{sec} \cdot F.\Omega\right)$

OA60 PHILIPS



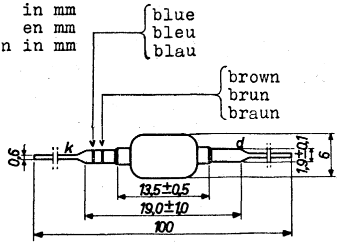
7R03543
v.M. 9-9-'52
OA60

D

PHILIPS OA 61

CRYSTAL DIODE
DIODE A CRISTAL
KRISTALLDIODE

Dimensions in mm
Dimensions en mm
Abmessungen in mm



Capacitance
Capacité
Kapazität

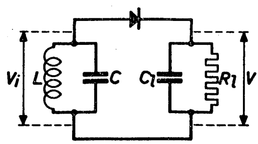
C_{dk} = 1,0 pF

Typical characteristics (at 20°C)
Caractéristiques types (à 20°C)
Kenndaten (bei 20°C)

I_d (V_d= +1 V) > 2,5 mA

$-I_d$ (V_d= -50 V) < 100 µA

Operating characteristics as detection diode at 20°C (up to 50 Mc/s)
Caractéristiques d'utilisation en détectrice à diode à 20°C (jusqu'à 50 Mc/s)
Betriebsdaten als Signalgleichrichter bei 20°C (bis 50 MHz)



V_i	=	10	10 V_{eff}
R_ℓ	=	2	500 kΩ
$2\pi f.R_\ell.C_\ell$	=	150	150 ΩFc/s
η	=	78	96 %

2.2.1954
939 4769

Provisional data. Vorläufige Daten
Caractéristiques provisoires

OA 61 PHILIPS

Limiting values (at 20°C)
Caractéristiques limites (à 20°C)
Grenzdaten (bei 20°C)

$V_{d\ inv}$	= max.	85	V
$V_{d\ inv_p}$	= max.	100	V
I_d	= max.	5	mA
I_{d_p}	= max.	15	mA
I_{surge}	= max.	500	mA[1])
W	= max.	150	mW
t_{amb}	= max.	+60	°C
	min.	-50	°C

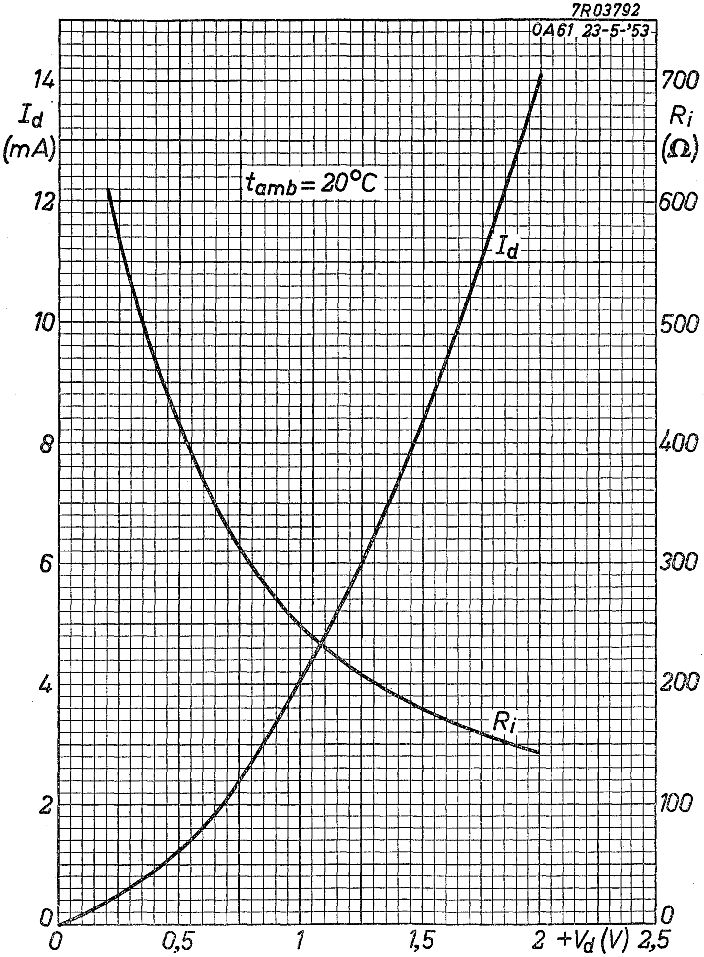
Net weight
Poids net 1 g
Nettogewicht

---

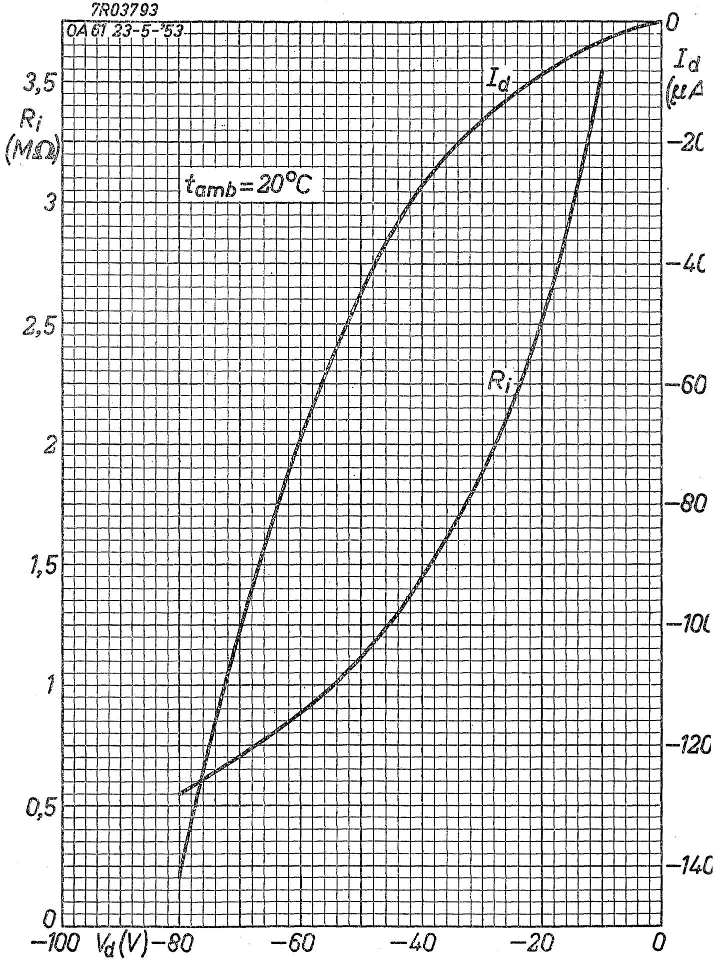
[1])Max. duration 1 sec.
Durée max.1 sec.
Max. Dauer 1 Sek.

PHILIPS

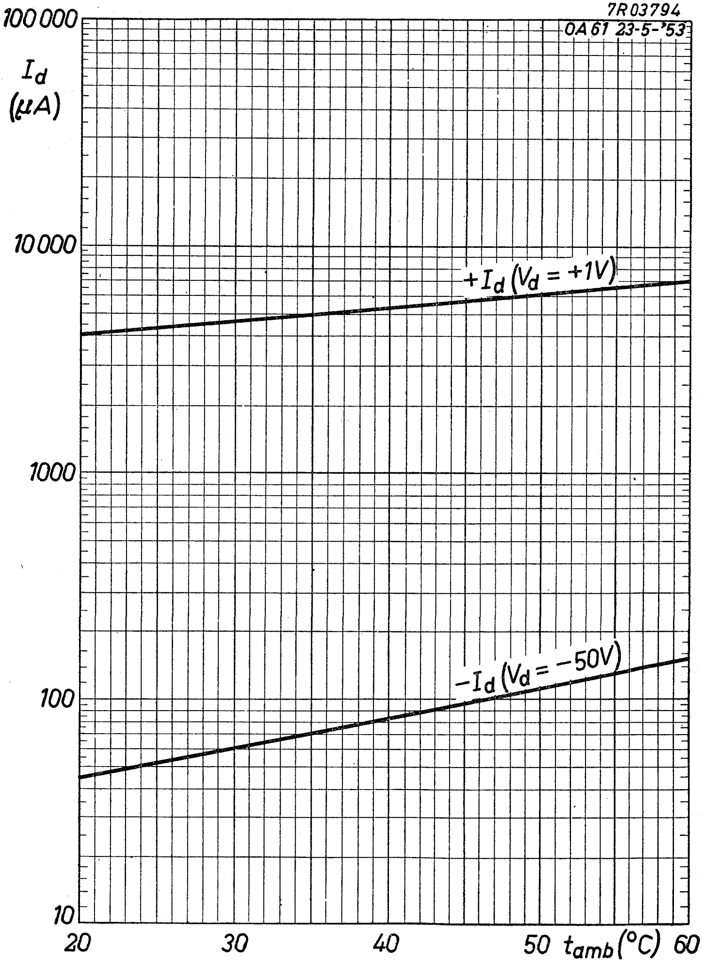
OA 61



OA 61 PHILIPS



B

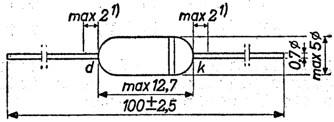

7R 03794
OA 61 23-5-'53
100 000
I_d
(μA)
10 000
1000
100
10
$+I_d\ (V_d = +1V)$
$-I_d\ (V_d = -50V)$
20
30
40
50
t_{amb} (°C)
60

PHILIPS OA 70

GERMANIUM DIODE for use as video detector
DIODE A CRISTAL DE GERMANIUM pour la détection vidéo
GERMANIUMDIODE zur Video-Demodulation

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

$-V_{DM}$	= max. 22,5 V
$-V_D$ (t_{av} = max. 50 msec)	= max. 15 V
I_D	= max. 50 mA 2)
I_{DM}	= max. 150 mA
I_{surge}	= max. 400 mA 3)
T_{amb}	= -50°C/+75 °C

1)Not tinned; non étamé; nicht verzinnt

2)For the relation between simultaneously allowable maximum values of $-V_{DM}$ and I_D see the derating curve (page D). Operation in accordance with this derating curve is prescribed. The derating curve is valid at $T_{amb} \leq 25$ °C. At higher temperatures an extra derating of I_D by a factor $\frac{25}{T_{amb}}$ is prescribed.

Pour le rapport entre les valeurs maximum de $-V_{DM}$ et I_D admissibles simultanément voir la courbe de réduction (page D). Une opération en accord avec cette courbe est prescrite. La courbe de réduction est valable à $T_{amb} \leq 25$°C A des températures plus élevées une réduction supplémentaire de I_D par un facteur $\frac{25}{T_{amb}}$ est prescrite.

Für die Beziehung zwischen den gleichzeitig zulässigen Höchstwerten von $-V_{DM}$ und I_D siehe die Reduktionskurve (Seite D). Betrieb entsprechend dieser Kurve ist vorgeschrieben. Die Reduktionskurve ist gültig bei $T_{amb} \leq 25$ °C. Bei höheren Temperaturen ist eine zusätzliche Reduktion von I_D mit einem Faktor $\frac{25}{T_{amb}}$ vorgeschrieben.

3)Max. duration 1 sec.
Durée 1 sec. au max.
Max. Dauer 1 Sek.

OA 70 PHILIPS

Capacitance
Capacité
Kapazität

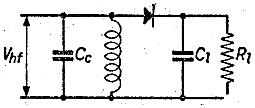
C_{dk} = 1 pF

Characteristics
Caractéristiques
Kenndaten

T_{amb} = 25 °C

V_D (I_D = 0,1 mA)	> 0,1	< 0,25 V
$-I_D$ ($-V_D$ = 1,5 V)	> 1	< 30 µA

Operating characteristics as video detector
Caractéristiques d'utilisation en détectrice vidéo
Betriebsdaten als Video-Demodulator

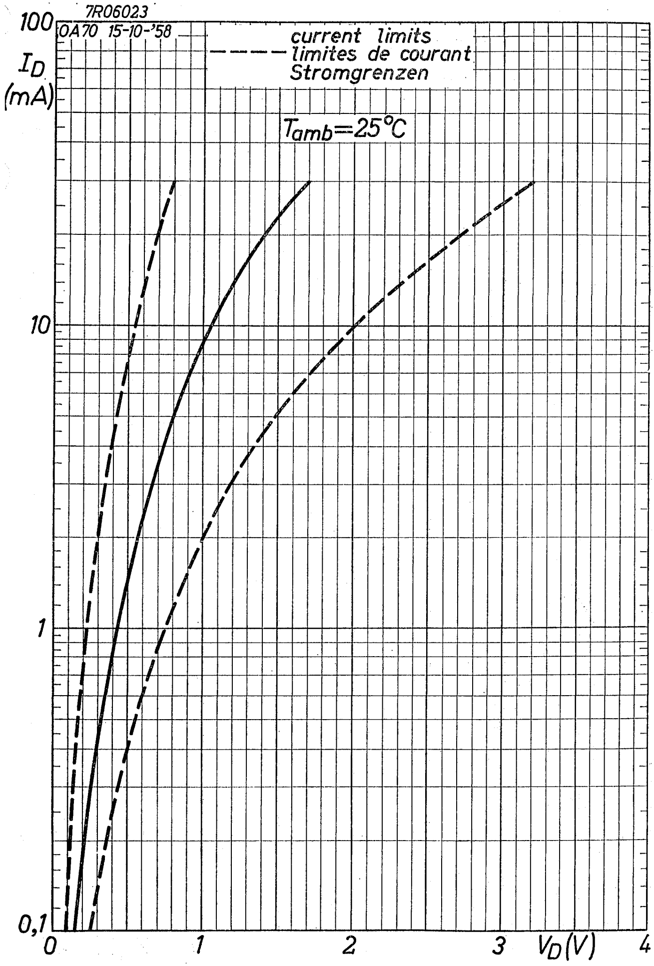


V_{hfm} = 5 V
R_ℓ = 3,9 kΩ
C_ℓ = 10 pF
C_c = 20 pF
f = 30 Mc/s
η = 62 %
rd = 3 kΩ

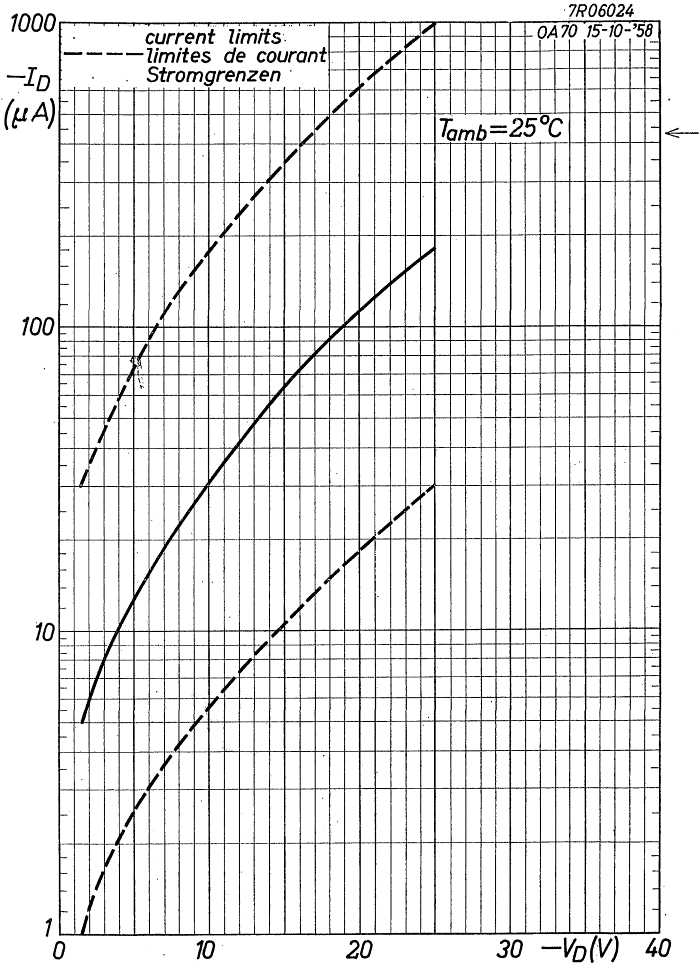
See also pages E to J
Voir aussi pages E jusqu'à J
Siehe also Seiten E bis J

Net weight
Poids net
Nettogewicht

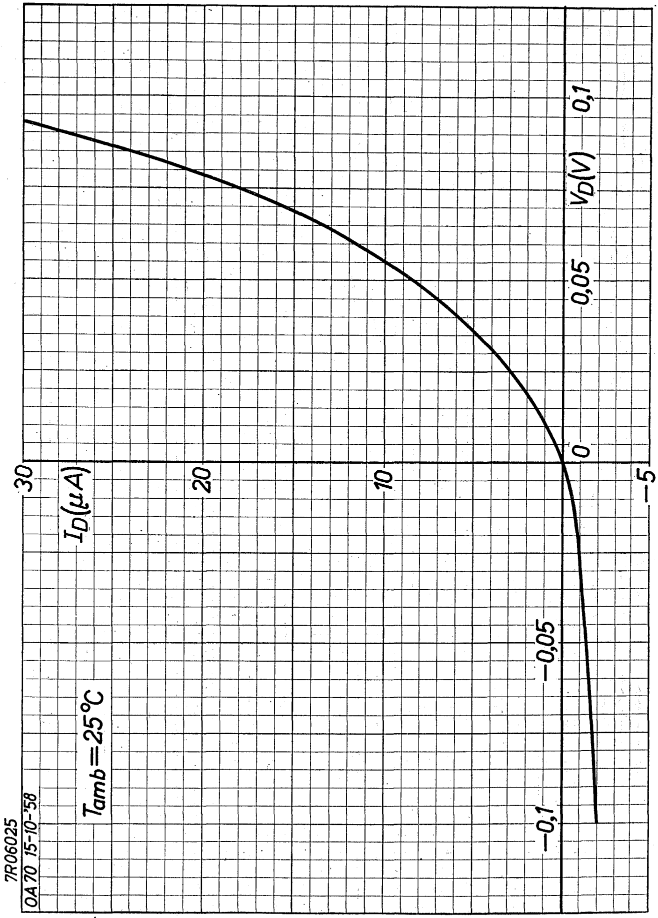
0,6 g


7R06023
OA70 15-10-'58
100
I_D (mA)
current limits
limites de courant
Stromgrenzen
T_{amb}=25°C
10
1
0,1
0
1
2
3
V_D(V)
4

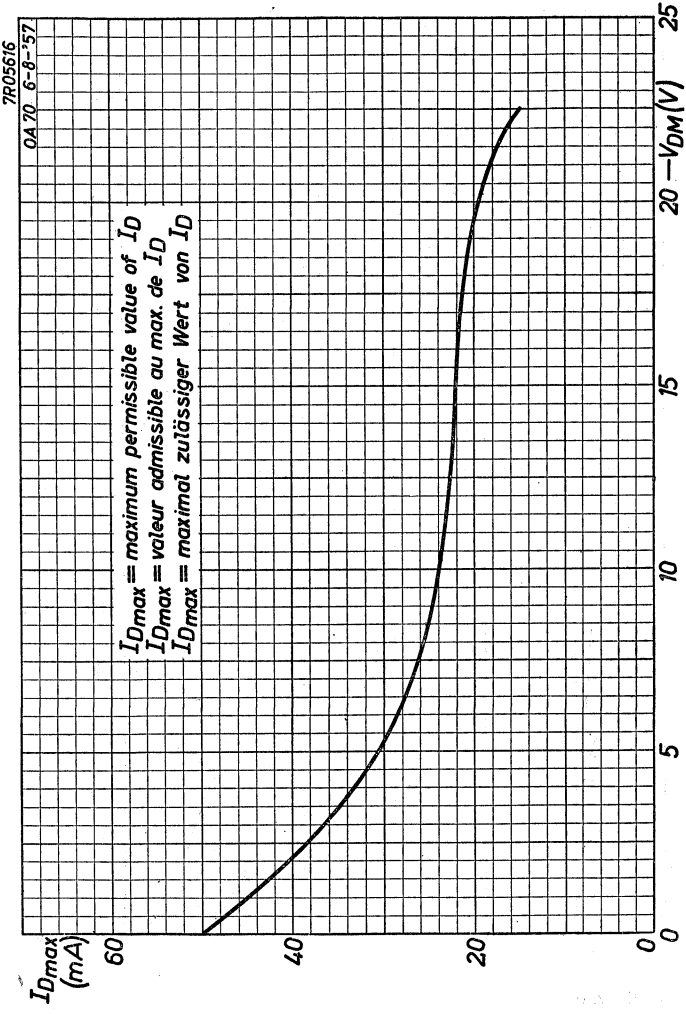
OA 70 PHILIPS



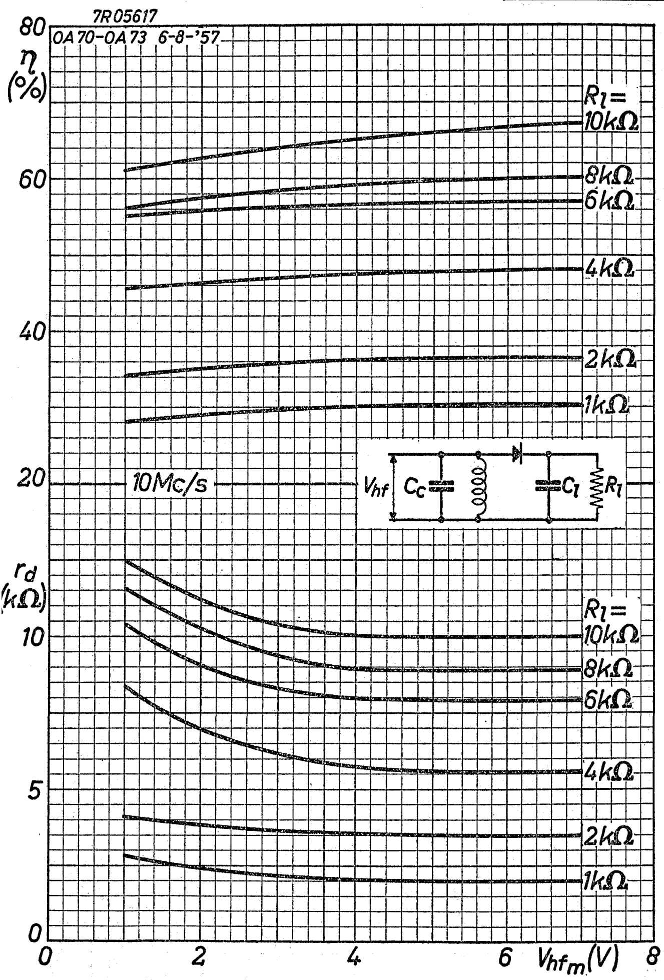
B


I_D (μA)
30
20
10
−5
V_D (V)
0,1
0,05
0
−0,05
−0,1
T_{amb} = 25°C
7R06025
OA 70 15-10-'58

OA 70 **PHILIPS**

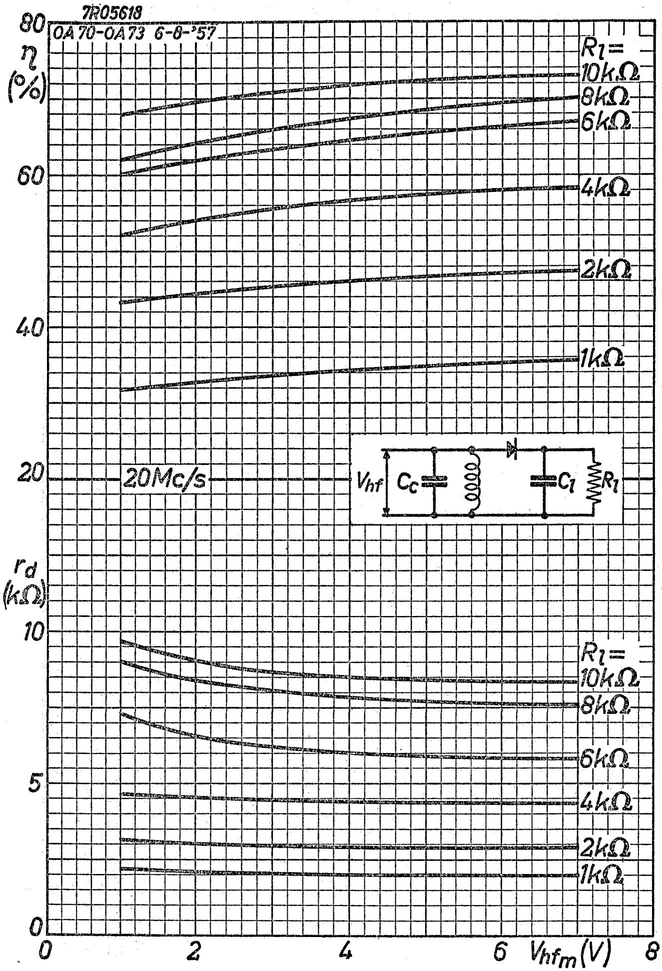


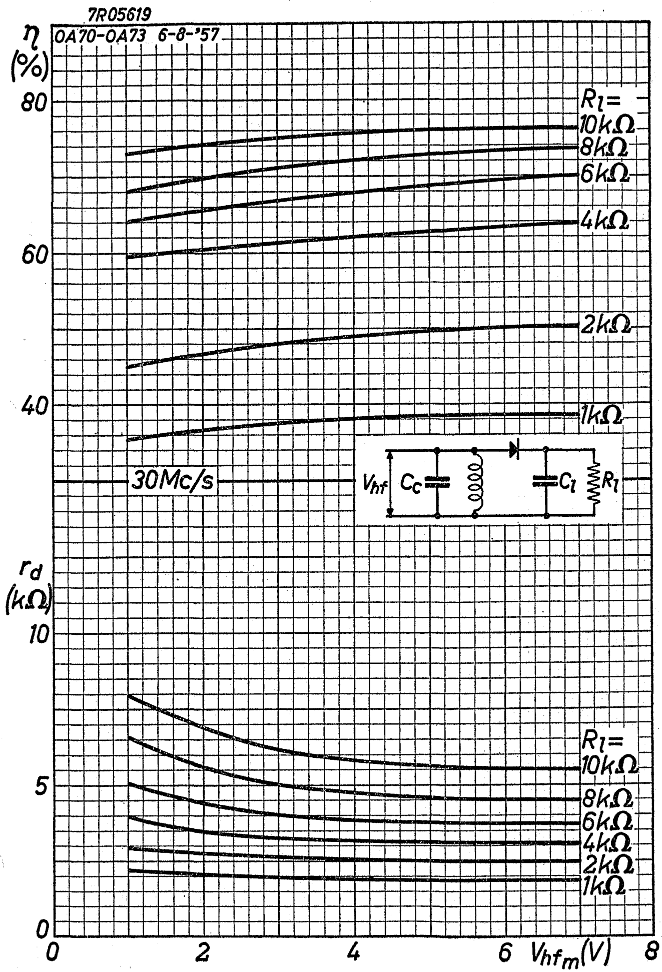
D


7R05617
OA70-OA73 6-8-'57
80
η (%)
60
40
20
10Mc/s
R_l =
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ
V_{hf}
C_c
C_l
R_l
r_d (kΩ)
10
5
0
2
4
6
V_{hfm}(V)
8

OA 70

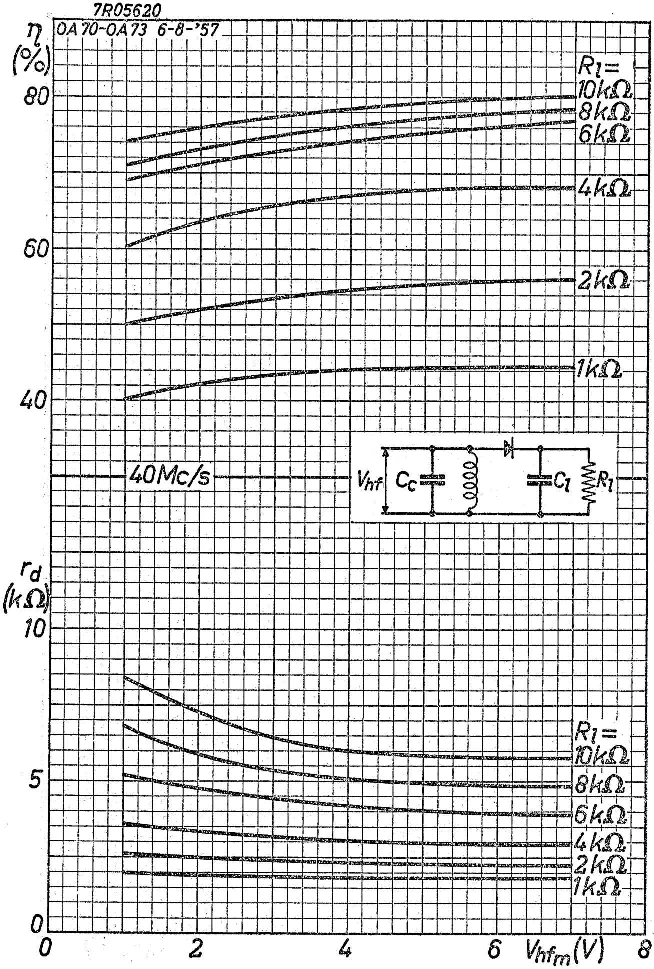
PHILIPS



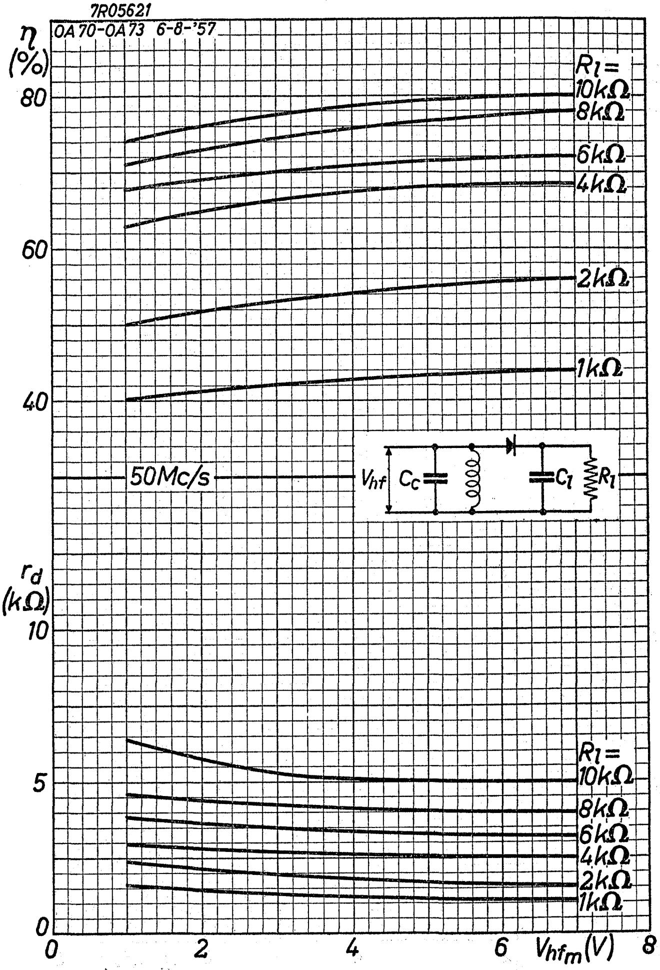

7R05619
OA70-OA73 6-8-'57
η (%)
80
60
40
R_l=
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ
30Mc/s
V_{hf}
C_c
C_l
R_l
r_d (kΩ)
10
5
0
R_l=
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ
0
2
4
6
V_{hf_m}(V)
8

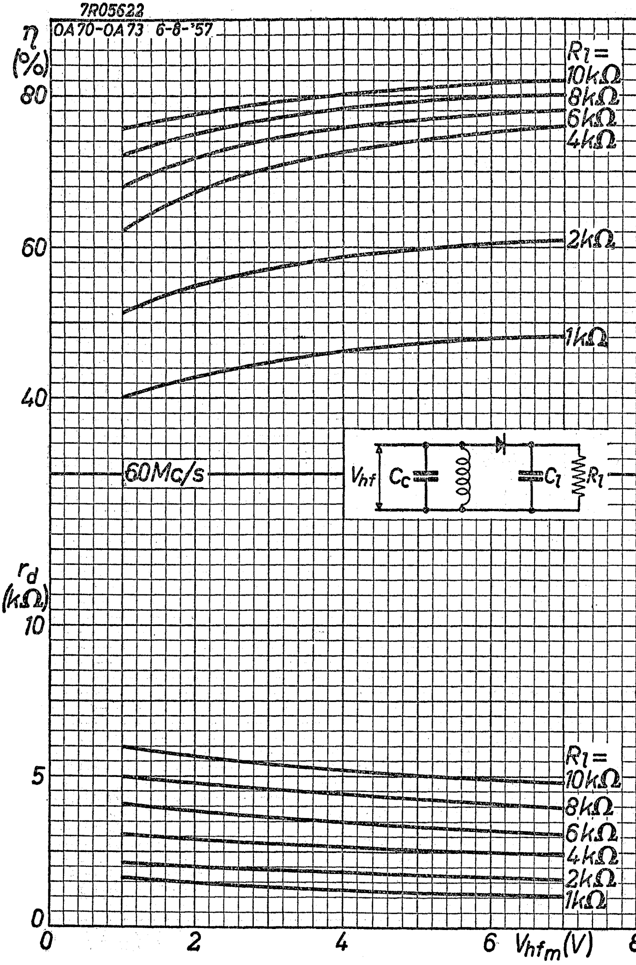
OA 70

PHILIPS



H


7R05621
OA70-OA73 6-8-'57
η (%)
80
60
40
R_l =
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ
50Mc/s
V_{hf}
C_c
C_l
R_l
r_d (kΩ)
10
5
0
R_l =
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ
0
2
4
6
V_{hfm}(V)
8


7R05622
OA70-OA73 6-8-'57
η (%)
80
60
40
R_l =
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ
60Mc/s
V_{hf}
C_c
C_l
R_l
r_d (kΩ)
10
5
0
0
2
4
6
8
V_{hfm}(V)
R_l =
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ

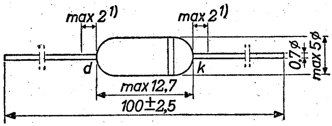
J

PHILIPS **OA 71**

GERMANIUM DIODE in all glass construction for high inverse voltages
DIODE A CRISTAL DE GERMANIUM de construction tout verre pour des tensions inverses élevées
GERMANIUMDIODE in Allglastechnik für hohe Sperrspannungen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Kenndaten (Absolute Maximalwerte)

Valid at / Valable à / Gültig bei					
T_{amb}	=	25	50	60	°C
$-V_D$ 2)	= max.	60	60	50	V
$-V_{DM}$ 3)	= max.	90	90	75	V
I_D ($-V_{DM}$ = 0 V) 4)	= max.	35			mA
I_D ($-V_{DM}$ = 90 V) 4)	= max.	10			mA
I_{DM}	= max.	150	150	150	mA
I_{surge} 5)	= max.	200	200	200	mA
T_{amb}	=		-50/+60		°C

1) Not tinned; non étamé; nicht verzinnt

2) Constant D.C. voltage
Tension continue constante
Konstante Gleichspannung

3) Sinusoidal voltage
Tension sinusoïdale
Sinusförmige Spannung

4) 5) See page 2; voir page 2; siehe Seite 2

Capacitance
Capacité
Kapazität

C_{dk} = 1 pF

Characteristics
Caractéristiques
Kenndaten

	T_{amb} = 25 °C			T_{amb} = 60 °C		
	=	Min.	Max.	=	Min.	Max.
$V_D(I_D = 3$ mA)	= 0,76	>0,40	<1,05	= 0,7	>0,3	<1,0 V
$V_D(I_D = 30$ mA)	= 2,8	>1,8	<4,1	= 2,6	>1,7	<3,9 V
$-I_D(-V_D = 1,5$ V)	= 1,6	>0,1	<7	= 17	>0,1	<40 µA
$-I_D(-V_D = 10$ V)	= 3,5	>0,5	<12	= 25	>8	<65 µA
$-I_D(-V_D = 60$ V)	= 28	>3	<115	= 90	>25	<280 µA
$-I_D(-V_D = 90$ V)	= 85	>8	<250	= 230	>35	<500 µA

Net weight
Poids net = 0,6 g
Nettogewicht

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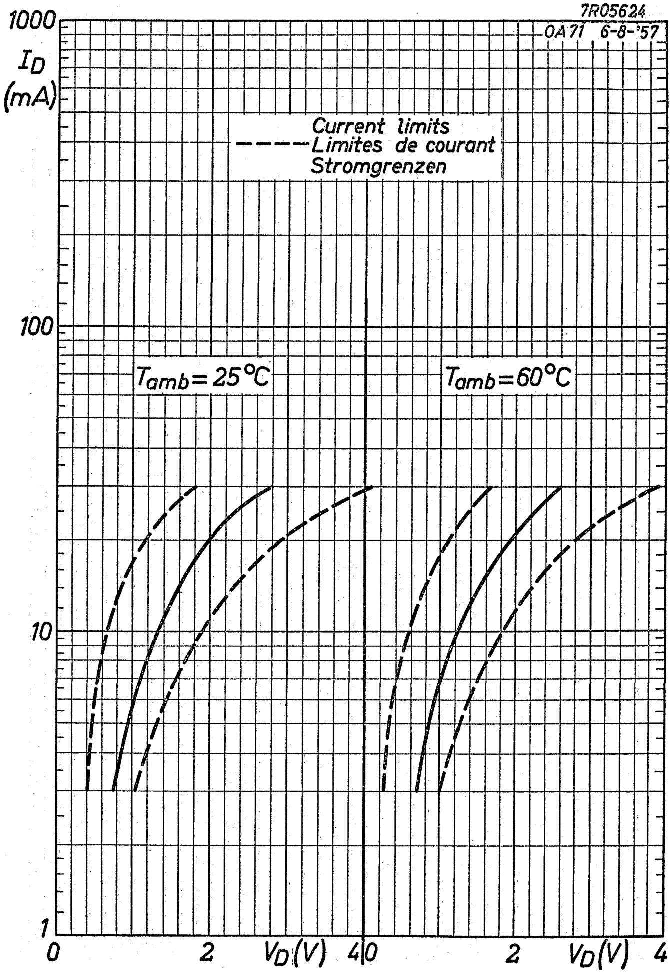
4) For the relation between simultaneously allowable maximum values of $-V_{DM}$ and I_D see the derating curve (page D). Operation in accordance with this derating curve is prescribed. The derating curve is valid at $T_{amb} \leq 25$ °C. At higher temperatures an extra derating of I_D by a factor $\frac{25}{T_{amb}}$ is prescribed.

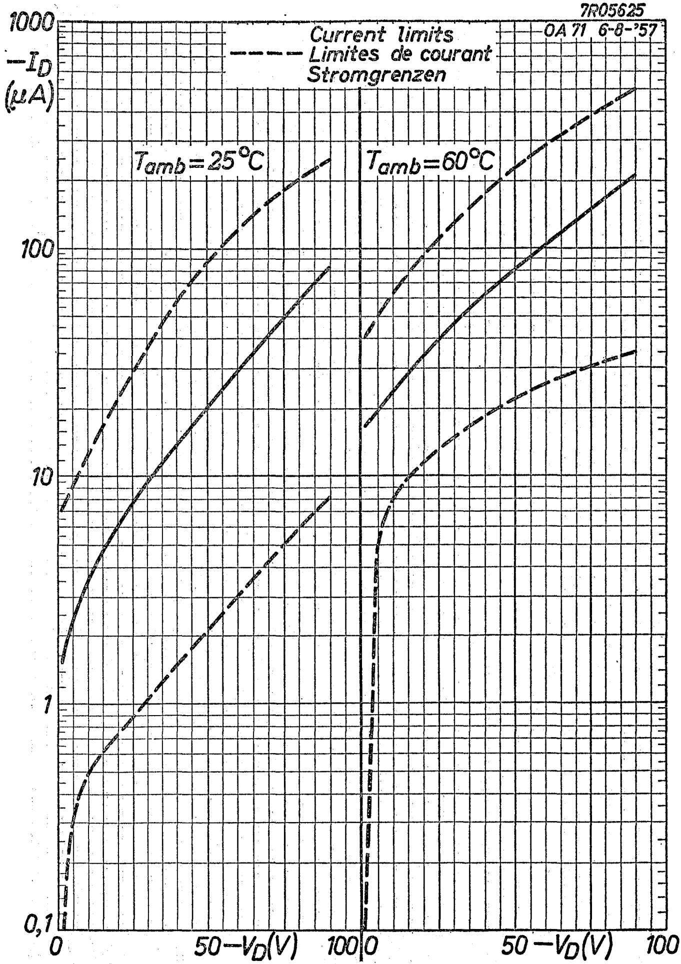
Pour le rapport entre les valeurs maximum de $-V_{DM}$ et I_D admissibles simultanément voir la courbe de réduction (page D). Une opération en accord avec cette courbe est prescrite. La courbe de réduction est valable à $T_{amb} \leq 25$°C A des températures plus élevées une réduction supplémentaire de I_D par un facteur $\frac{25}{T_{amb}}$ est prescrite

Für die Beziehung zwischen den gleichzeitig zulässigen Höchstwerten von $-V_{DM}$ und I_D siehe die Reduktionskurve (Seite D). Betrieb entsprechend dieser Kurve ist vorgeschrieben. Die Reduktionskurve ist gültig bei $T_{amb} \leq 25$ °C Bei höheren Temperaturen ist eine zusätzliche Reduktion von I_D mit einem Faktor $\frac{25}{T_{amb}}$ vorgeschrieben

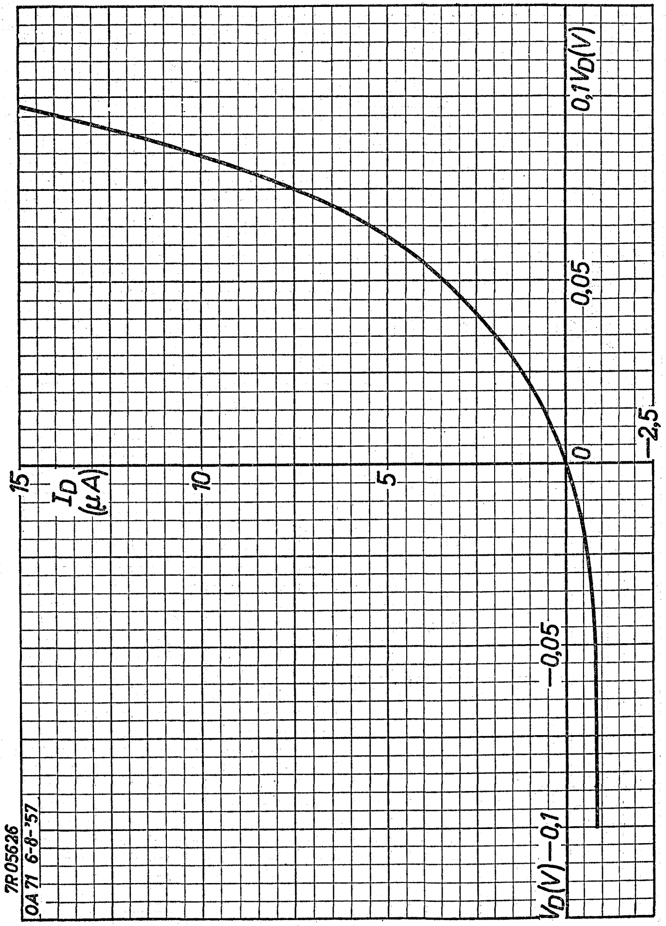
5) Max. duration 1 sec.
Durée 1 sec. au max.
Max. Dauer 1 Sek.


7R05624
OA71 6-8-'57
1000
I_D
(mA)
100
10
1
Current limits
Limites de courant
Stromgrenzen
$T_{amb}=25°C$
$T_{amb}=60°C$
0
2
$V_D(V)$
4 0
2
$V_D(V)$
4

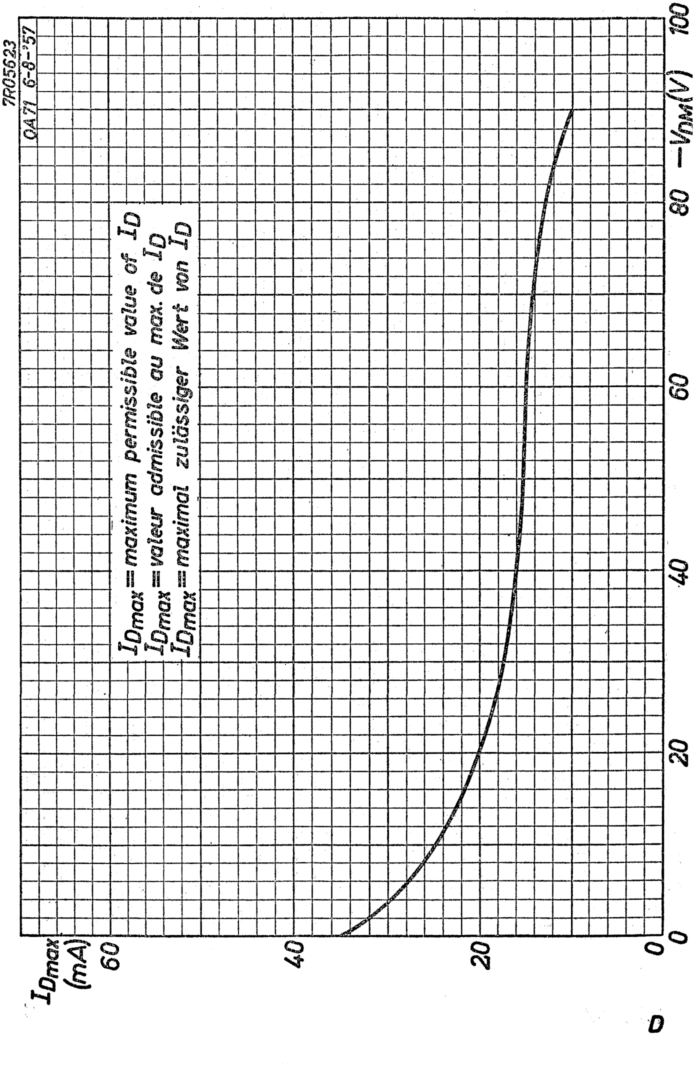
OA 71 PHILIPS



B


0,1 V_D(V)
0,05
0
−2,5
15
10
5
I_D (μA)
−0,05
V_D(V) −0,1
7R05626
OA 71 6-8-'57

OA 71 **PHILIPS**



D

PHILIPS

OA72
2-OA72

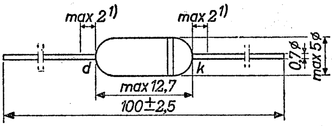
GERMANIUM R.F. RECTIFIER DIODE in all glass construction with high inverse resistance
TYPE 2-OA72 consists of 2 diodes OA 72 selected for operation in a ratio detector or similar circuits

DIODE REDRESSEUSE H.F. A CRISTAL DE GERMANIUM de construction tout verre, avec résistance inverse élevée
LE TYPE 2-OA72 est composé de 2 diodes OA72 sélectionnées pour opération en détectrice ratio ou en circuits analogues

HF-GERMANIUMGLEICHRICHTERDIODE in Allglastechnik mit hohem Sperrwiderstand
TYPENNUMMER 2-OA72 besteht aus 2 Dioden OA 72 die ausgesucht sind zur Verwendung als Ratio-Detektor oder in ähnlichen Schaltungen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

Valid at / Valable à / Gültig bei T_{amb} = 25 / 60 °C

T_{amb}	=	25	60	°C
$-V_D$ 2)	= max.	30	30	V
$-V_{DM}$ 3)	= max.	45	45	V
$I_D(-V_{DM} = 45\ V)$ 4)	= max.	10	4	mA
I_{DM}	= max.	100	100	mA
I_{surge} 5)	= max.	200	200	mA
T_{amb}	=	-50°C/+60		°C

1) Not tinned; non étamé; nicht verzinnt

2) Constant D.C. voltage
Tension continue constante
Konstante Gleichspannung

3) Sinusoidal voltage
Tension sinusoïdale
Sinusförmige Spannung

4) 5) See page 2; voir page 2; siehe Seite 2

OA 72
2-OA 72

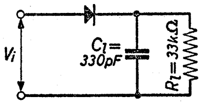
PHILIPS

Characteristics
Caractéristiques $T_{amb} = 25\ ^{o}C$
Kenndaten

Static
Statique
Statisch

$V_D(I_D = 0{,}1\ mA)$	=	0,20 V
$V_D(I_D = 10\ mA)$	=	1,4 V
$V_D(I_D = 30\ mA)$	=	2,4 V
$-I_D(-V_D = 1{,}5\ V)$	=	0,8 μA
$-I_D(-V_D = 10\ V)$	=	4,5 μA
$-I_D(-V_D = 30\ V)$	=	50 μA
$-I_D(-V_D = 45\ V)$	=	130 μA

Dynamic
Dynamique
Dynamisch



V_i	=	3 Veff
f	=	10,7 Mc/s
η	=	85 %
r_d	=	17 kΩ

4) For the relation between simultaneously allowable maximum values of $-V_{DM}$ and I_D see the derating curve (page B). Operating in accordance with this derating curve is prescribed. The derating curve is valid at $T_{amb} \leq 25\ ^{o}C$. At higher temperatures an extra derating of I_D by a factor $\frac{25}{T_{amb}}$ is prescribed

Pour le rapport entre les valeurs maximum de $-V_{DM}$ et I_D admissibles simultanément voir la courbe de réduction (page B). Une opération en accord avec cette courbe est prescrite. La courbe de réduction est valable à $T_{amb} \leq 25\ ^{o}C$ A des températures plus élevées une réduction supplémentaire de I_D par un facteur $\frac{25}{T_{amb}}$ est prescrite

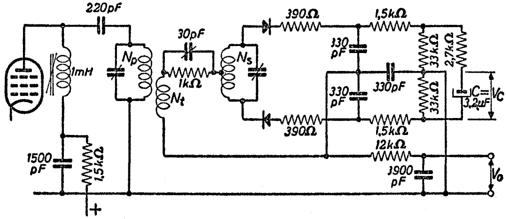
Für die Beziehung zwischen den gleichzeitig zulässigen Höchstwerten von $-V_{DM}$ und I_D siehe die Reduktionskurve (Seite B). Betrieb entsprechend dieser Kurve ist vorgeschrieben. Die Reduktionskurve ist gültig bei $T_{amb} \leq 25\ ^{o}C$. Bei höheren Temperaturen ist eine zusätzliche Reduktion von I_D mit einem Faktor $\frac{25}{T_{amb}}$ vorgeschrieben

5) Max. duration 1 sec.
Durée 1 sec. au max.
Max. Dauer 1 Sek.

PHILIPS

OA 72
2-OA 72

Operating characteristics of a matched pair 2-OA72 as ratio detector
Caractéristiques d'utilisation d'une paire jumelle 2-OA72 en détectrice ratio
Betriebsdaten eines Diodenpaars 2-OA72 als Ratio-Detektor



Transformer ratio
Rapport de transformation
Übersetzungsverhältnis $\frac{N_p}{N_t} = 2$

Primary circuit
Circuit primaire
Primärkreis $L = 7{,}4\ \mu H \quad R = 40\ k\Omega$ [1])

Secundary circuit
Circuit secondaire
Sekundärkreis $L = 5{,}5\ \mu H \quad R = 55\ k\Omega$ [1])

KQ	=	0,7 [2])
f_o	=	10,7 Mc/s
Δf	=	15 kc/s
m	=	30 %
$\alpha \begin{cases} f = f_o \\ 2\ V < V_C < 20\ V \end{cases}$	$\geq$	30
$\alpha \begin{cases} f = f_o \pm 25\ kc/s \\ 2\ V < V_C < 20\ V \end{cases}$	$\geq$	15

f_o = resonance frequency; fréquence de résonance; Resonanzfrequenz
Δf = frequency sweep; balayage de fréquence; Frequenzhub
m = AM modulation factor; facteur de modulation AM; AM-Modulationstiefe
α = AM suppression factor; coefficient de suppression AM; AM Unterdrückungsfaktor

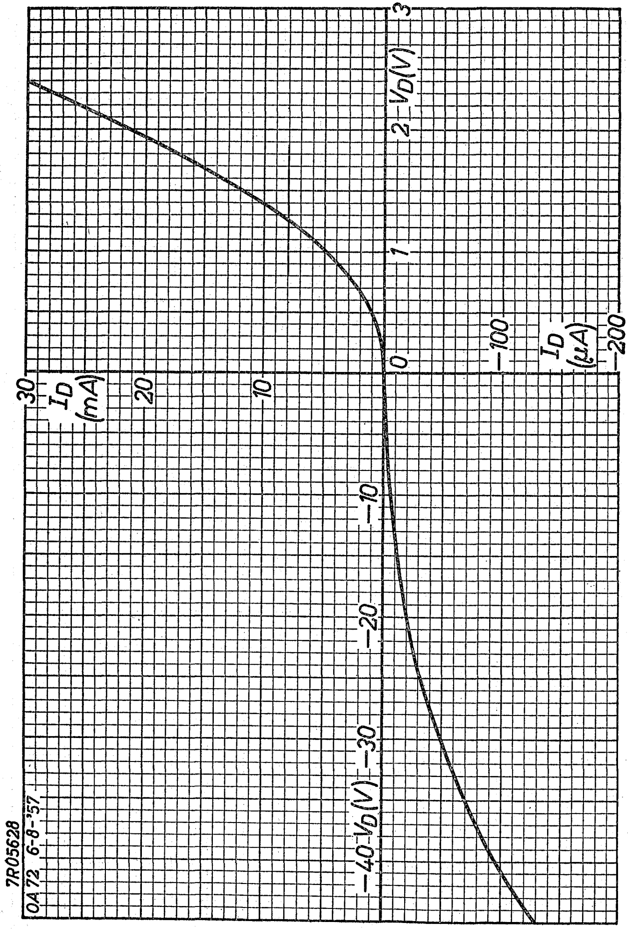
---

[1]) Undamped
Non amorti
Ungedämpft

[2]) Measured in the circuit
Mesuré dans le circuit
In der Schaltung gemessen

PHILIPS

OA 72
2-OA 72

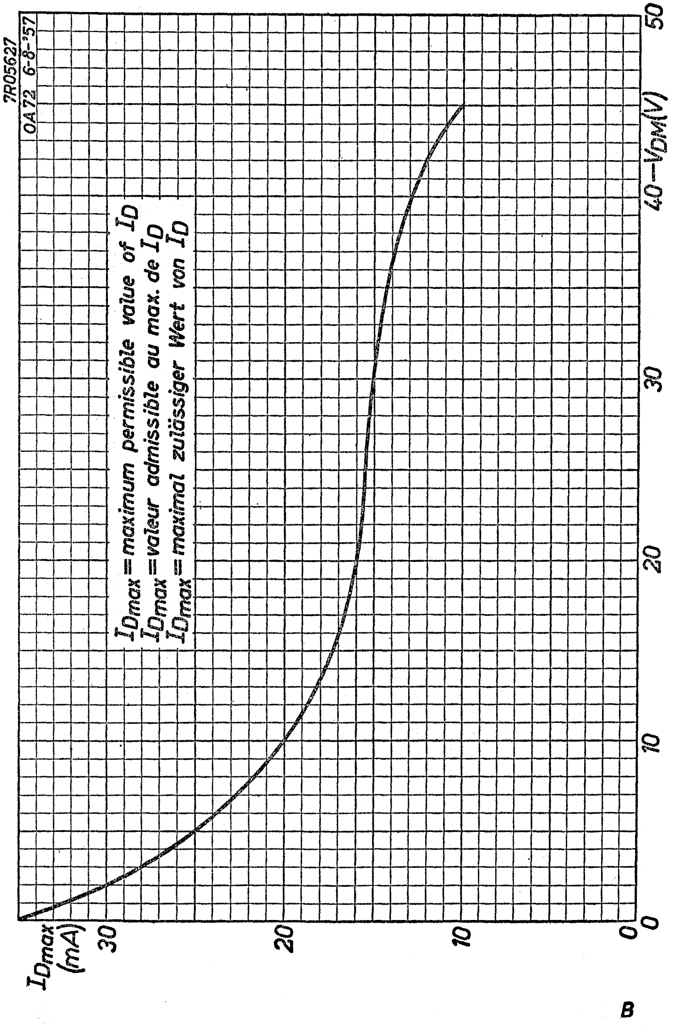


7.7.1957

A

OA 72
2-OA 72

PHILIPS



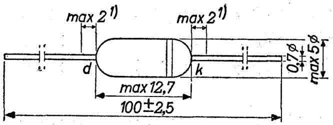
B

PHILIPS OA73

GERMANIUM DIODE in all glass construction for use as video detector
DIODE A CRISTAL DE GERMANIUM de construction tout verre pour la détection vidéo
GERMANIUMDIODE in Allglastechnik zur Video-Demodulation

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

$-V_{DM}$	= max. 30 V
$-V_D$ (t_{av} = max. 50 msec)	= max. 20 V
I_D ($-V_{DM}$ = 0 V)	= max. 50 mA [2]
I_{DM}	= max. 150 mA
I_{surge}	= max. 400 mA [3]
T_{amb}	= −50 °C/+75 °C

[1] Not tinned; non étamé; nicht verzinnt

[2] For the relation between simultaneously allowable maximum values of $-V_{DM}$ and I_D see the derating curve (page D). Operation in accordance with this derating curve is prescribed. The derating curve is valid at $T_{amb} \leq 25$ °C. At higher temperatures an extra derating of I_D by a factor $\frac{25}{T_{amb}}$ is prescribed
Pour le rapport entre les valeurs maximum de $-V_{DM}$ et I_D admissibles simultanément voir la courbe de réduction (page D). Une opération en accord avec cette courbe est prescrite. La courbe de réduction est valable à $T_{amb} \leq 25$ °C. A des températures plus élevées une réduction supplémentaire de I_D par un facteur $\frac{25}{T_{amb}}$ est prescrite.
Für die Beziehung zwischen den gleichzeitig zulässigen Höchstwerten von $-V_{DM}$ und I_D siehe die Reduktionskurve (Seite D). Betrieb entsprechend dieser Kurve ist vorgeschrieben. Die Reduktionskurve ist gültig bei $T_{amb} \leq 25$ °C. Bei höheren Temperaturen ist eine zusätzliche Reduktion von I_D mit einem Faktor $\frac{25}{T_{amb}}$ vorgeschrieben.

[3] Max. duration 1 sec.; durée 1 sec. au max.; max. Dauer 1 Sek.

OA 73 PHILIPS

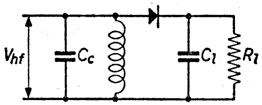
Capacitance
Capacité
Kapazität

C_{dk} = 1 pF

Characteristics
Caractéristiques T_{amb} = 25 °C
Kenndaten

	Min.	Max.
V_D (I_D = 8 mA)	> 0,5	< 1,0 V
V_D (I_D = 0,1 mA)	> 0,1	< 0,2 V
$-I_D$ ($-V_D$ = 1,5 V)	> 1	< 18 µA
$-I_D$ ($-V_D$ = 10 V)	> 8	< 100 µA
$-I_D$ ($-V_D$ = 20 V)	> 25	< 400 µA
$-I_D$ ($-V_D$ = 30 V)	> 45	< 1200 µA

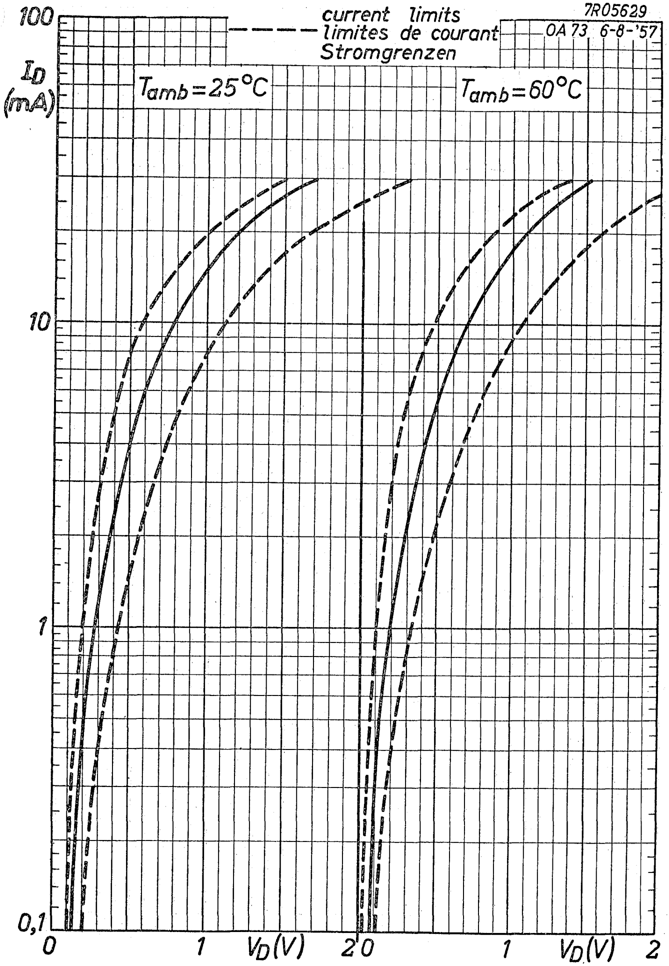
Operating characteristics as video detector
Caractéristiques d'utilisation en détectrice vidéo
Betriebsdaten als Video-Demodulator



V_{hfm} = 5 V
R_l = 3,9 kΩ
C_l = 10 pF
C_c = 20 pF
f = 30 Mc/s
η = 62 %
r_d = 3 kΩ

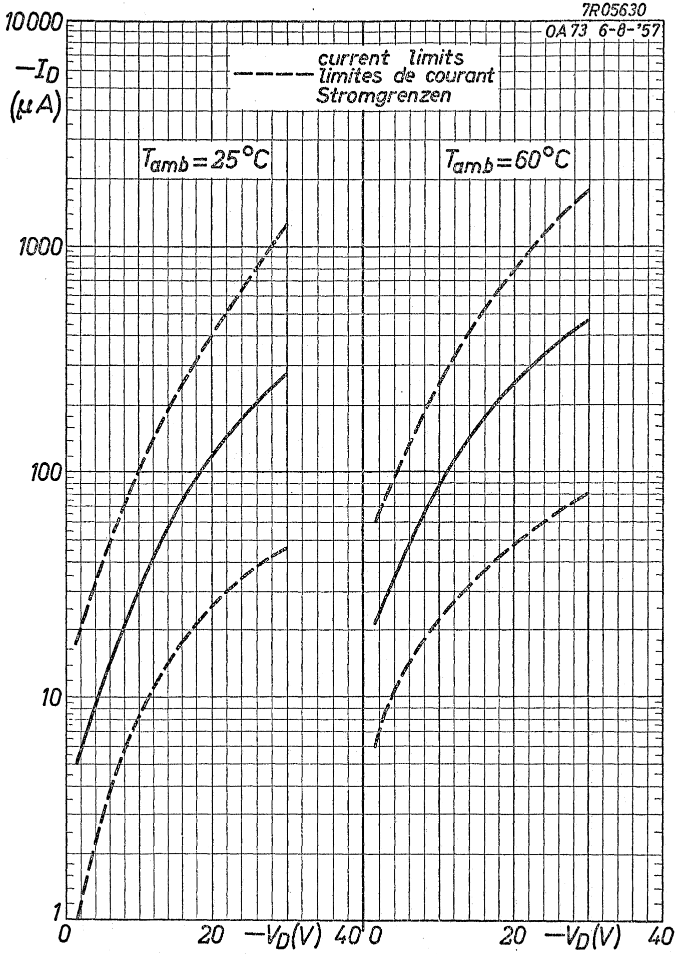
See also page E to J
Voir aussi page E jusqu'à J
Siehe also Seiten E bis J

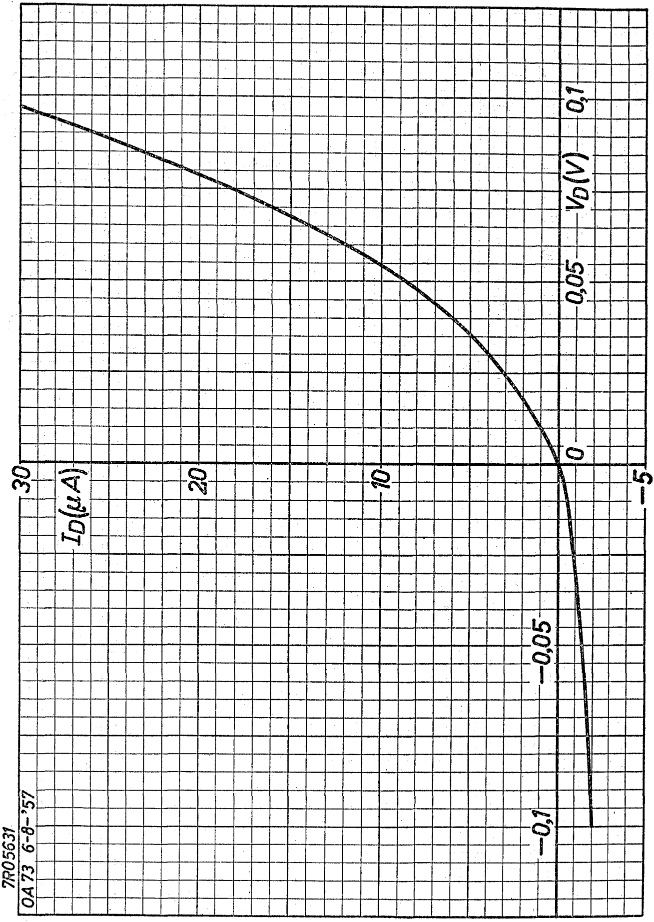
Net weight
Poids net 0, 6 g
Nettogewicht



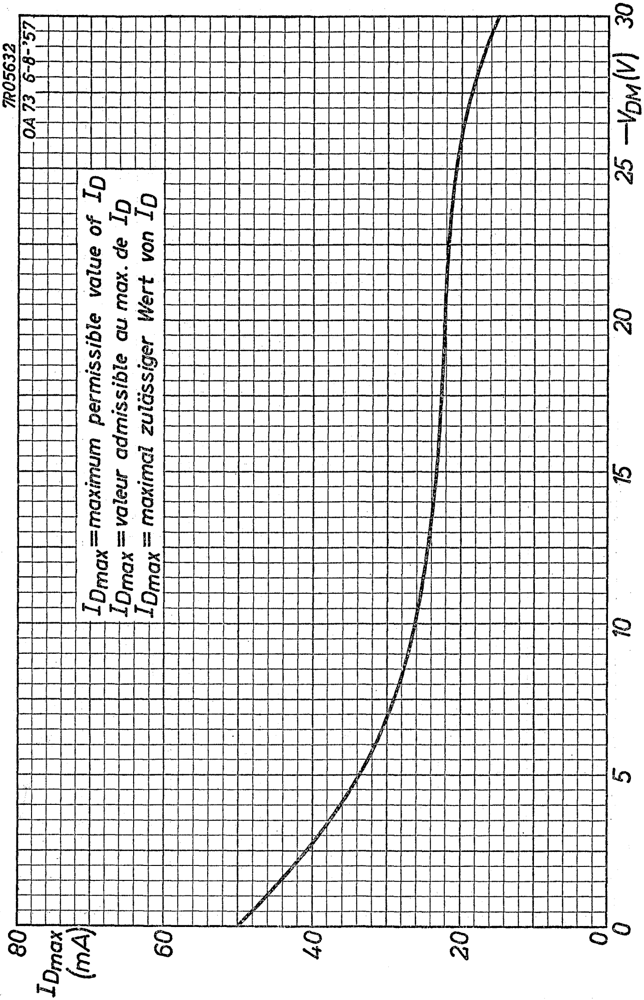
100
I_D (mA)
10
1
0,1
current limits
limites de courant
Stromgrenzen
7R05629
OA 73 6-8-'57
T_{amb}=25°C
T_{amb}=60°C
0
1
V_D(V)
2
0
1
V_D(V)
2

OA 73 PHILIPS

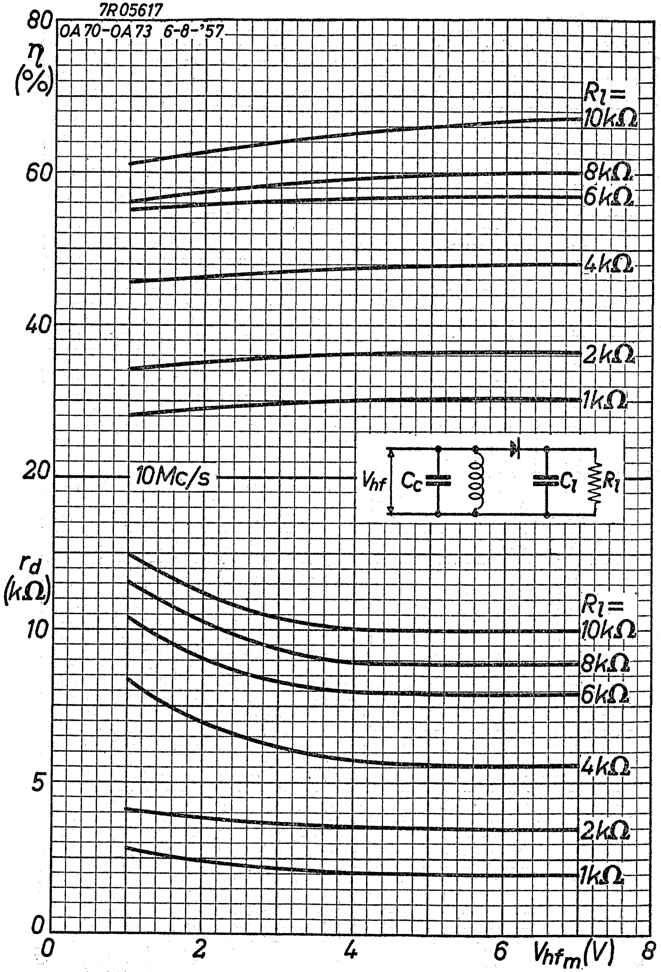



$I_D(\mu A)$
30
20
10
-5
$V_D(V)$
0,1
0,05
0
-0,05
-0,1
7R05631
OA 73 6-8-'57

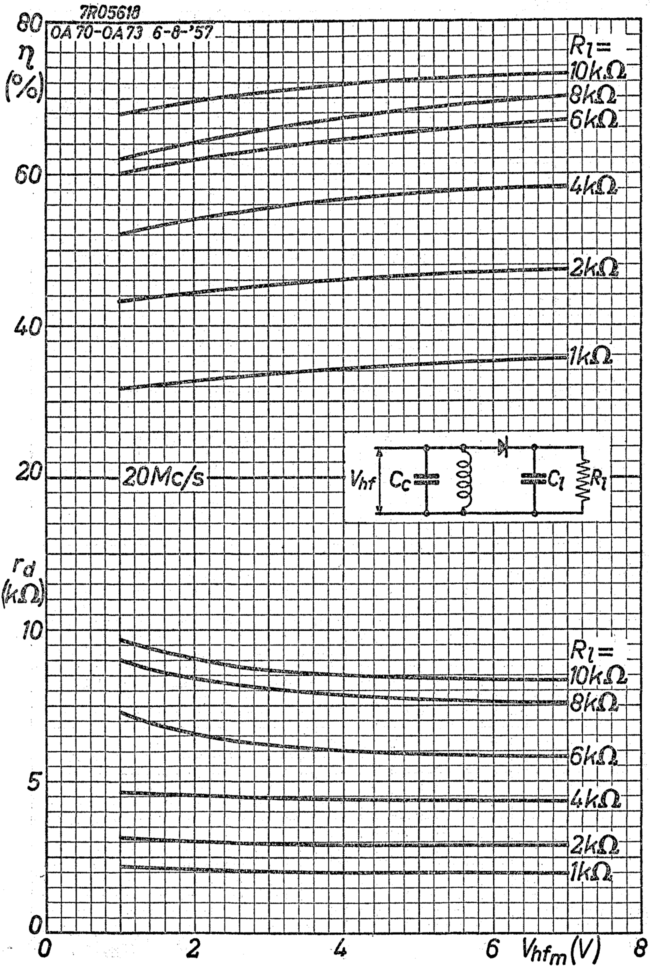
OA 73 **PHILIPS**

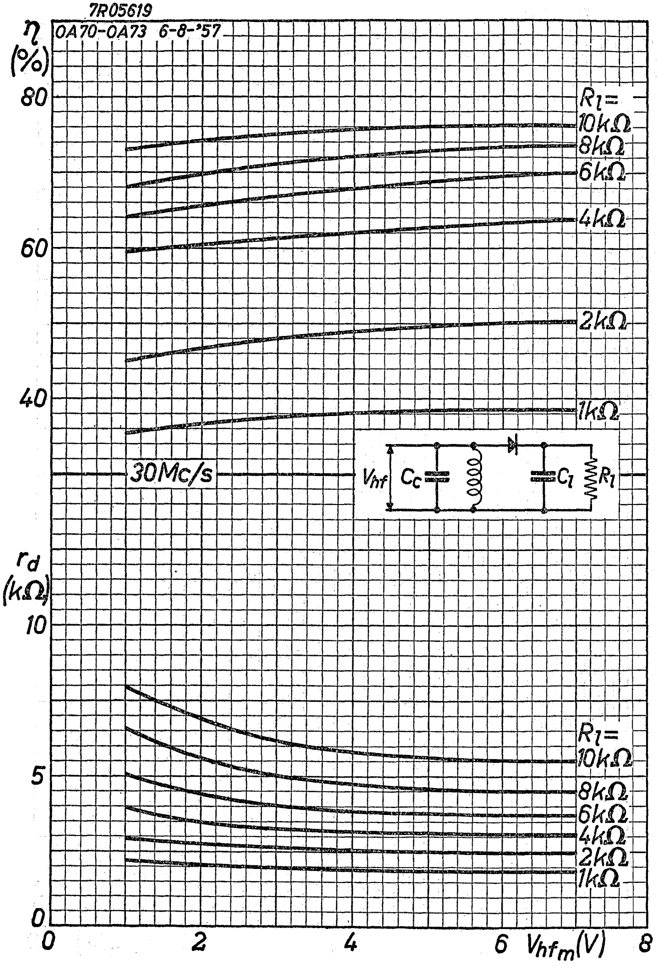


D

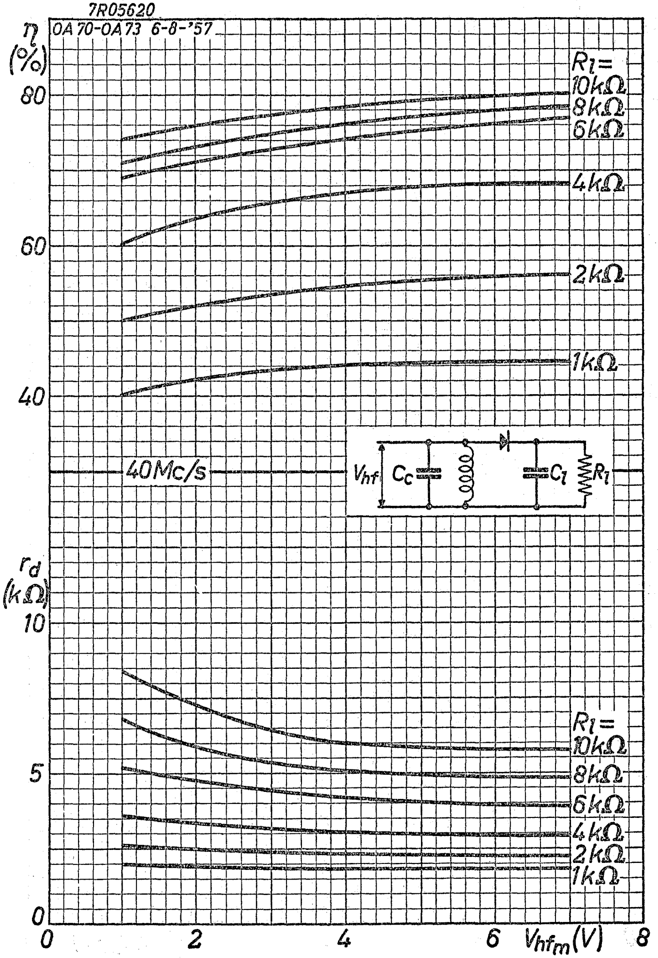

7R05617
OA70-OA73 6-8-'57
80
η
(%)
60
40
20
10Mc/s
R_l=
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ
V_{hf}
C_c
C_l
R_l
r_d
(kΩ)
10
5
0
0
2
4
6
V_{hf_m}(V)
8
R_l=
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ

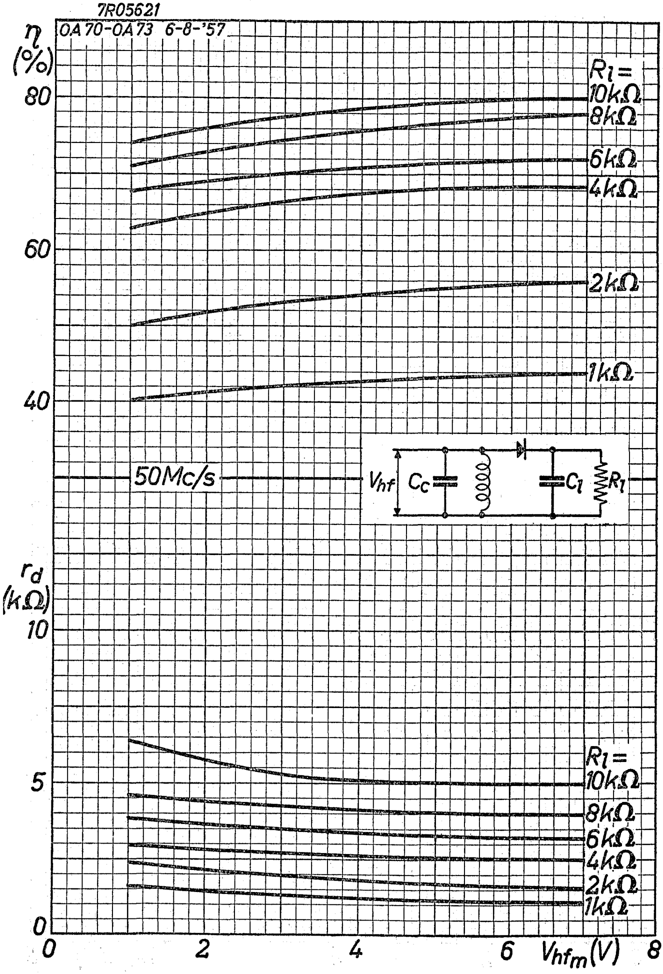
PHILIPS


7R05618
OA 70-OA 73 6-8-'57
80
η (%)
60
40
20
20Mc/s
V_{hf}
C_c
C_l
R_l
R_l=
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ
r_d (kΩ)
10
5
0
0
2
4
6
8
V_{hfm}(V)


7R05619
OA70-OA73 6-8-'57
η (%)
80
60
40
R_l=
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ
30Mc/s
V_{hf}
C_c
C_l
R_l
r_d (kΩ)
10
5
0
R_l=
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ
0
2
4
6
V_{hf_m}(V)
8

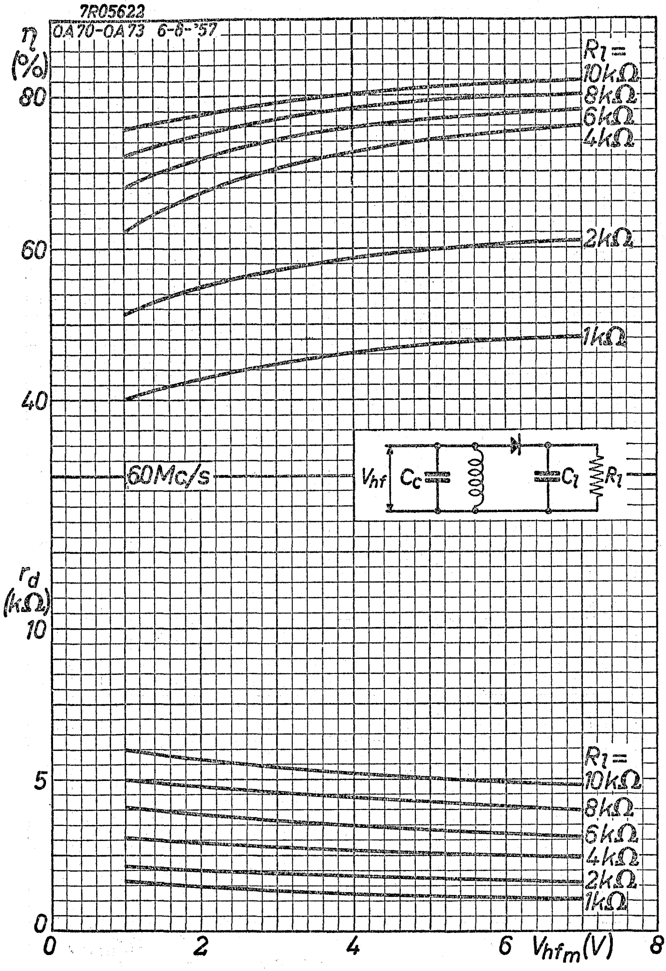
OA 73 PHILIPS




7R05621
OA70-OA73 6-8-'57
η (%)
80
60
40
R_l =
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ
50Mc/s
V_{hf}
C_c
C_l
R_l
r_d (kΩ)
10
5
0
R_l =
10kΩ
8kΩ
6kΩ
4kΩ
2kΩ
1kΩ
0
2
4
6
V_{hfm} (V)
8

OA 73

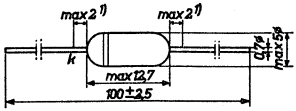
PHILIPS



J

GERMANIUM DIODE in all glass construction
DIODE A GERMANIUM de construction tout verre
GERMANIUMGLEICHRICHTER in Allglastechnik

Dimensions in mm
Dimensions en mm
Abmessungen in mm



Typical characteristics
Caractéristiques types
Kenndaten

		t_{amb} = 25		60	°C
		min.	max.	min.	max.
V_d	(I_d = 4 mA) =	0,35	1,05	0,3	1,0 V
V_d	(I_d = 30 mA) =	1,1	3,5	1,0	3,4 V
$-I_d$	($-V_d$ = 1,5 V) =	0,1	12	0,1	50 µA
$-I_d$	($-V_d$ = 10 V) =	0,5	25	8	140 µA
$-I_d$	($-V_d$ = 40 V) =	1,8	200	18	500 µA
$-I_d$	($-V_d$ = 60 V) =	3	400	25	800 µA

Limiting values
Caractéristiques limites
Grenzdaten

	t_{amb}	25	50	60 °C
V_{dinv}	= max.	40	40	35 V
$-V_{dp}$ 2)	= max.	60	60	50 V
I_{dp} 2)	= max.	150	150	150 mA
I_d (V_{dinv} = 0 V) 3)	= max.	35	-	- mA
I_d ($-V_{dp}$ = 60 V) 3)	= max.	10	-	- mA
I_{surge} 4)	= max.	200	200	200 mA

1) not tinned
non étamé
nicht verzinnt

2) f > 25 c/s

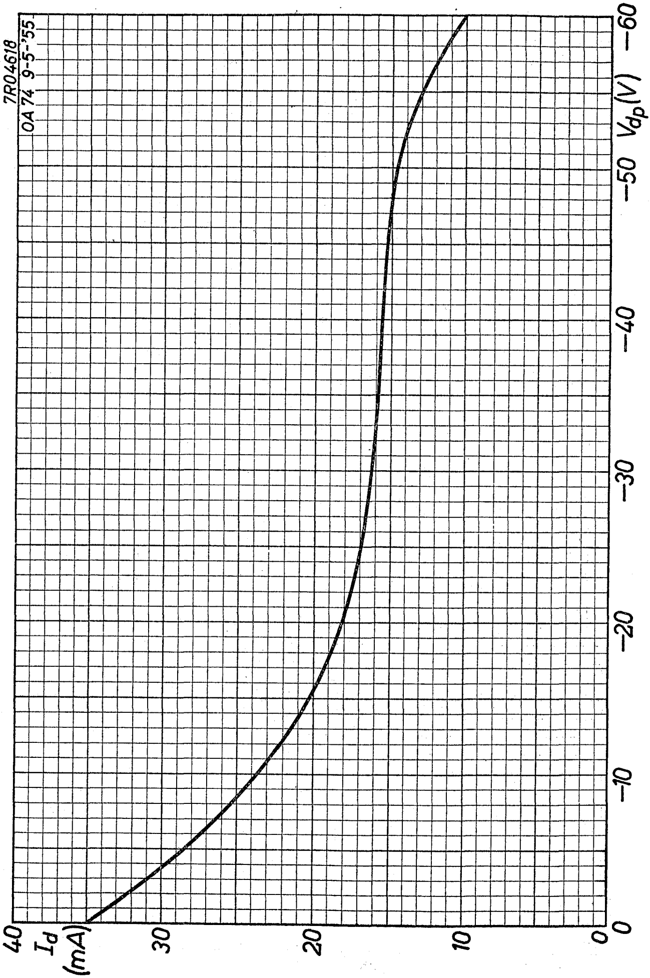
3) See page 2; voir page 2; siehe Seite 2

4) Max. duration 1 sec.
Durée max. 1 sec.
Max. Dauer 1 Sek.

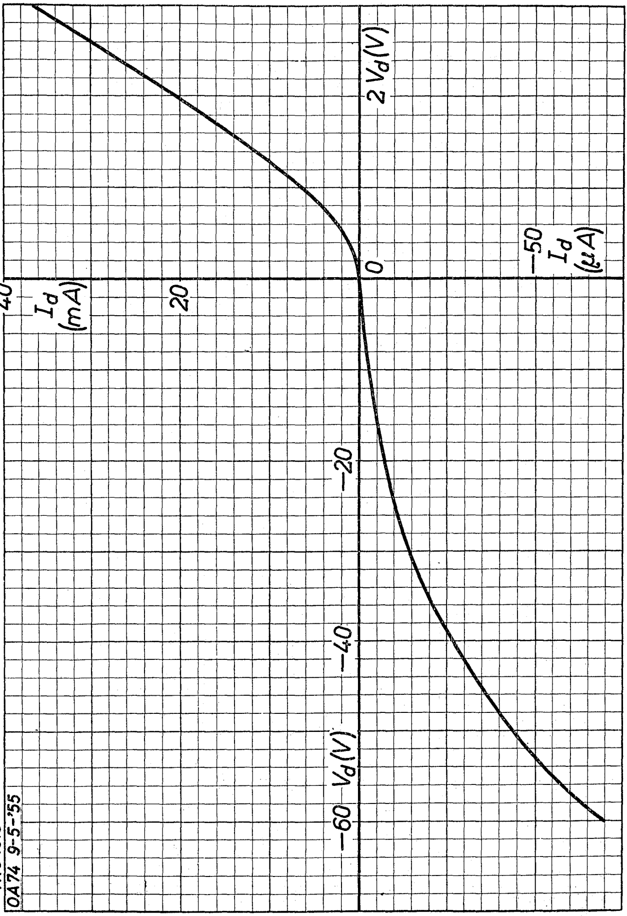
[3])For the relation between simultaneously allowable maximum values of $-V_d$ and I_d see the derating curve. Operation in accordance with this derating curve is prescribed. The derating curve is valid at t_{amb} = 25 °C. At higher temperatures an extra derating of I_d is prescribed amounting to $\frac{25}{t_{amb}} I_{25^o}$

Pour le rapport entre les valeurs maximum de $-V_d$ et I_d admissibles simultanément voir la courbe de réduction. Une opération en accord avec cette courbe est prescrite La courbe de réduction est valable à t_{amb} = 25 °C. A des températures plus élevées une réduction supplémentaire est prescrite se montant à $\frac{25}{t_{amb}} I_{25^o}$

Für die Beziehung zwischen den gleichzeitig zulässigen Höchstwerten von $-V_d$ und I_d siehe die Reduktionskurve. Betrieb entsprechend dieser Kurve ist vorgeschrieben. Die Reduktionskurve ist gültig bei t_{amb} = 25 °C. Bei höheren Temperaturen ist eine zusätzliche Reduktion von I_d im Betrage von $\frac{25}{t_{amb}} I_{25^o}$ vorgeschrieben.


7R04618
OA 74 9-5-'55
V_{dp} (V)
−60
−50
−40
−30
−20
−10
0
I_d (mA)
40
30
20
10
0

OA 74 **PHILIPS**



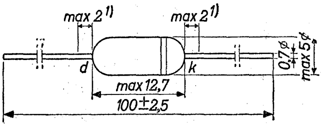
PHILIPS

OA 79
2-OA 79

GERMANIUM DIODE in all glass construction for use in AM detection circuits
TYPE 2-OA79 consists of 2 diodes OA 79 selected for operation in a ratio detector circuit
DIODE A CRISTAL DE GERMANIUM de construction tout verre pour opération en circuits détecteur AM
LE TYPE 2-OA79 est composé de deux diodes OA 79 selectionnées pour opération en circuits détecteur ratio
GERMANIUMDIODE in Allglastechnik zur Verwendung in AM-Gleichrichterschaltungen
TYPENNUMMER 2-OA79 besteht aus 2 Dioden OA 79 die ausgesucht sind zur Verwendung in Ratiodetektorschaltungen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

Valid at / Valable à / Gültig bei				
T_{amb}	=	25	60	°C
$-V_D$ (t_{av} = 50 msec)	= max.	30	30	V
$-V_{DM}$	= max.	45	45	V[2])
I_D (t_{av} = 50 msec)	= max.	35	15	mA[2])
I_{DM}	= max.	100	100	mA
I_{surge}	= max.	200	200	mA[3])
T_{amb}	=	-50 °C/+ 60 °C		

[1])Not tinned
Non étamé
Nicht verzinnt

[2])See page 4
Voir page 4
Siehe Seite 4

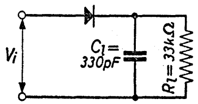
[3])Max. duration 1 sec
Durée 1 sec. au max.
Max. Dauer 1 Sek.

OA79
2-OA79

PHILIPS

Characteristics
Caractéristiques
Kenndaten

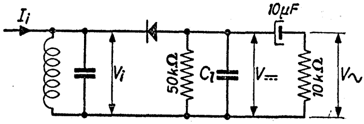
	Tamb = 25°C			Tamb = 60°C		
	=	Min.	Max.	=	Min.	Max.
V_D(I_D = 0,1 mA)	= 0,23	>0,15	<0,30	= 0,16	>0,1	<0,25 V
V_D(I_D = 10 mA)	= 1,5	>0,8	<2,2	= 1,4	>0,7	<2,1 V
V_D(I_D = 30 mA)	= 2,8	>1,4	<4,0	= 2,6	>1,2	<3,8 V
$-I_D$($-V_D$ = 0,1 V)	= 0,35		<1,0	= 4,5		<12 µA
$-I_D$($-V_D$ = 1,5 V)	= 0,8	>0,1	<2,8	= 6	>0,8	<25 µA
$-I_D$($-V_D$ = 10 V)	= 4,5	>0,4	<18	= 16	>2,5	<60 µA
$-I_D$($-V_D$ = 30 V)	= 35	>1,5	<150	= 60	>8	<300 µA
$-I_D$($-V_D$ = 45 V)	= 90	>4	<350	= 170	>15	<500 µA



Tamb = 25 °C
V_i = 3 Veff
f = 10,7 Mc/s
η = 85 %
r_d = 15 kΩ >13,5 kΩ <19 kΩ

Operating characteristics as A.M. detector
Caractéristiques d'utilisation en détectrice A.M.
Betriebsdaten als AM-Signalgleichrichter

Tamb = 25 °C
V_i = 0,1 Veff
f = 0,5 Mc/s
$V_{=}$ = 55 mV
$V_{\sim}$ = 4,5 mVeff [1])
r_d = 40 kΩ [2])

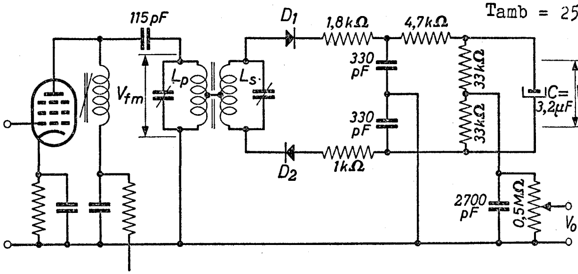


[1]) I_i 30 % modulated
I_i modulé de 30 %
I_i 30 % moduliert

[2]) Unmodulated input signal
Signal d'entrée non modulé
Nicht-moduliertes Eingangssignal

Operating characteristics of a matched pair 2-OA 79 as ratio detector
Caractéristiques d'utilisation d'une paire jumelle 2-OA 79 en détectrice ratio
Betriebsdaten eines Diodenpaars 2-OA 79 als Ratio-Detektor

$T_{amb} = 25^{\circ}C$



For optimum A.M. suppression D_1 must be that diode of the matched pair which has the better dynamic forward characteristic

Afin d'obtenir la suppression A.M. optimum, D_1 sera cette diode de la paire jumelle qui a la meilleure caractéristique dynamique en sens conducteur

Zur Erhaltung der optimalen AM-Unterdrückung muss D_1 diejenige Diode des Diodenpaars sein die die beste dynamische Kennlinie in Durchlassrichtung hat

Primary circuit / Circuit primaire / Primärkreis	L_p	=	7,4 μH
	Q	=	80 [1])
	R	=	40 kΩ [1])
Tap / Prise / Anzapfung		=	0,5
Secundary circuit / Circuit secondaire / Sekundärkreis	L_s	=	4,4 μH
	Q	>	150 [1])
	R	>	45 kΩ [1])
KQ		=	0,8 [2])
f_o		=	10,7 Mc/s
Δf		=	15 kc/s
m		=	30 %
$\alpha \left\{\begin{matrix} f = f_o \\ 2\ V < V_C < 20\ V \end{matrix}\right\}$		≥	30
$\alpha \left\{\begin{matrix} f = f_o \pm 25\ kc/s \\ 2\ V < V_C < 20\ V \end{matrix}\right\}$		≥	15

f_o = resonance frequency; fréquence de résonance; Resonanzfrequenz
Δf = Frequency sweep; balayage de fréquence; Frequenzhub
m = AM modulation factor; facteur de modulation AM; AM-Modulationstiefe
α = AM suppression factor; coefficient de suppression AM; AM Unterdrückungsfaktor

1) Undamped / Non amorti / Ungedämpft
2) Measured in the circuit with V_{fm} = 350 mV / Mesuré dans le circuit avec V_{fm} = 350 mV / In der Schaltung mit V_{fm} = 350 mV gemessen

PHILIPS

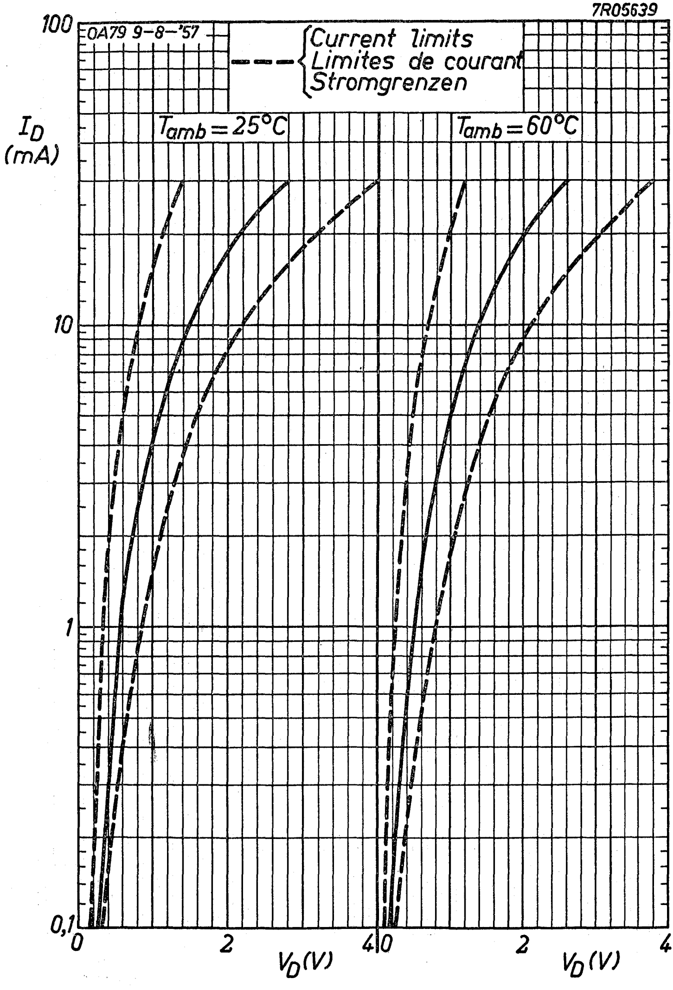
[2])For the relation between simultaneously allowable maximum values of $-V_{DM}$ and I_D see the derating curve (page E.) Operation in accordance with this derating curve is prescribed. The derating curve is valid at $T_{amb} \leq 25\ ^oC$. At higher temperatures an extra derating of I_D by a factor $\frac{25}{T_{amb}}$ is prescribed.

Pour le rapport entre les valeurs maximum de $-V_{DM}$ et I_D admissibles simultanément voir la courbe de réduction (page E). Une opération en accord avec cette courbe est prescrite. La courbe de réduction est valable à $T_{amb} \leq 25\ ^oC$ A des températures plus élevées une réduction supplémentaire de I_D par un facteur $\frac{25}{T_{amb}}$ est prescrite.

Für die Beziehung zwischen den gleichzeitig zulässigen Höchstwerten von $-V_{DM}$ und I_D siehe die Reduktionskurve (Seite E). Betrieb entsprechend dieser Kurve ist vorgeschrieben. Die Reduktionskurve ist gültig bei $T_{amb} \leq 25\ ^oC$. Bei höheren Temperaturen ist eine zusätzliche Reduktion von I_D mit einem Faktor $\frac{25}{T_{amb}}$ vorgeschrieben.

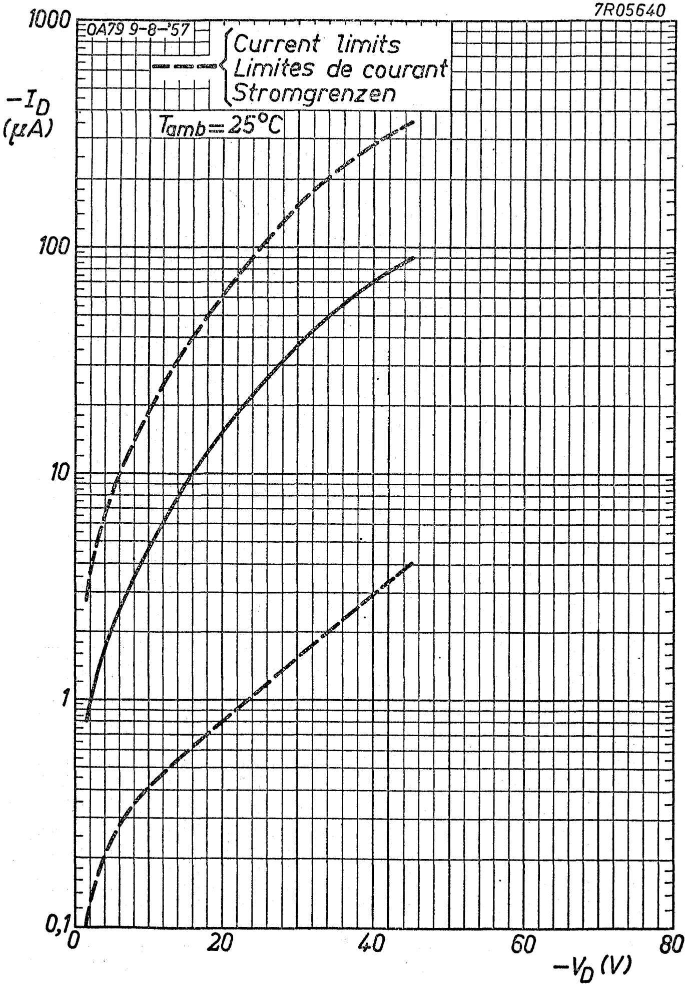
PHILIPS

OA79
2-OA79

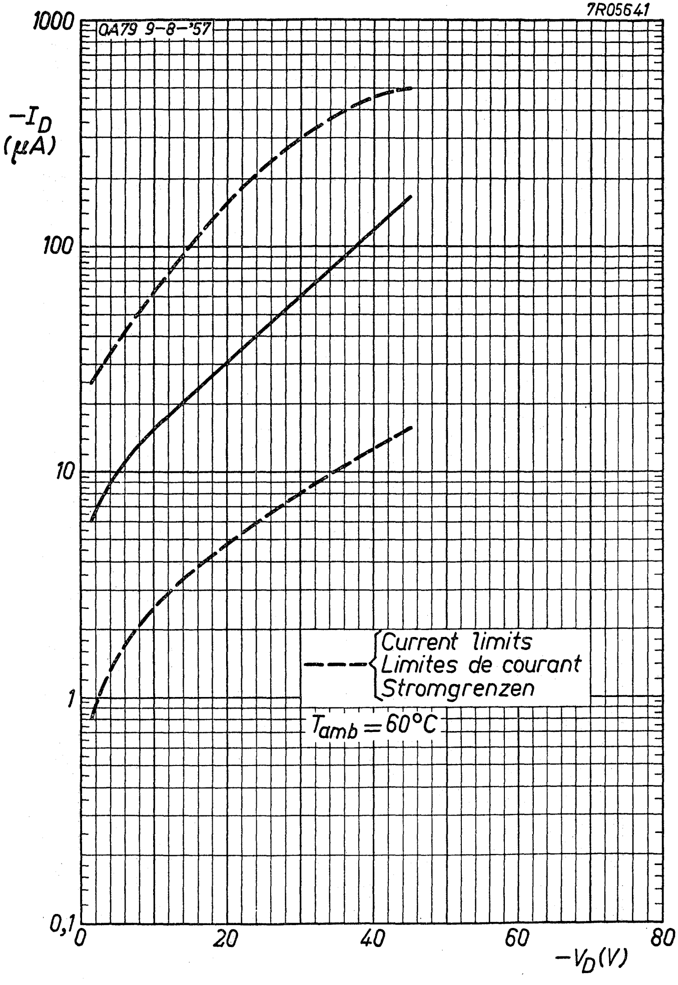


OA79
2-OA79

PHILIPS

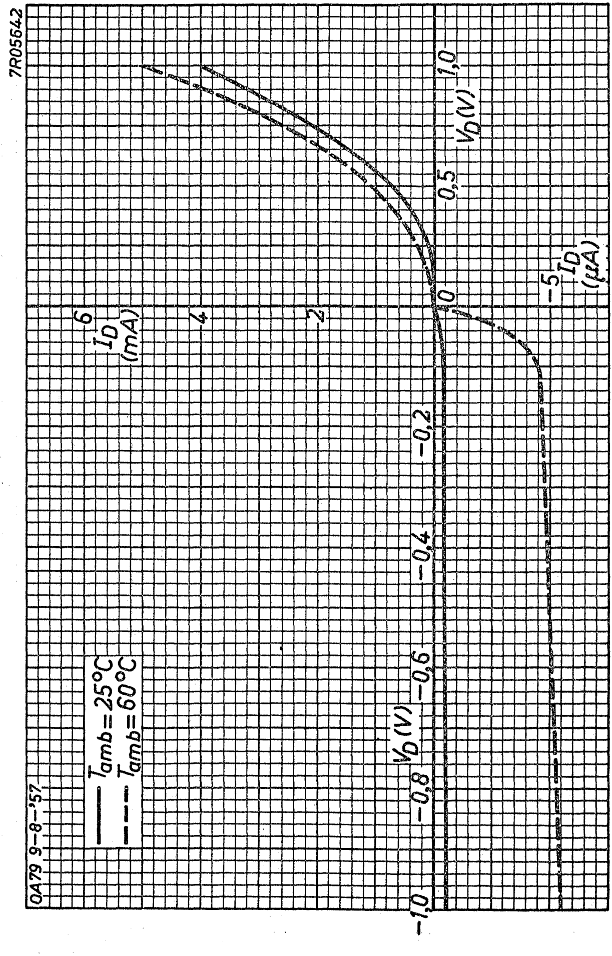


B


7R05641
OA79 9-8-'57
1000
100
10
1
0,1
$-I_D$
(μA)
0
20
40
60
80
$-V_D$(V)
Current limits
Limites de courant
Stromgrenzen
$T_{amb} = 60°C$

OA79
2-OA79

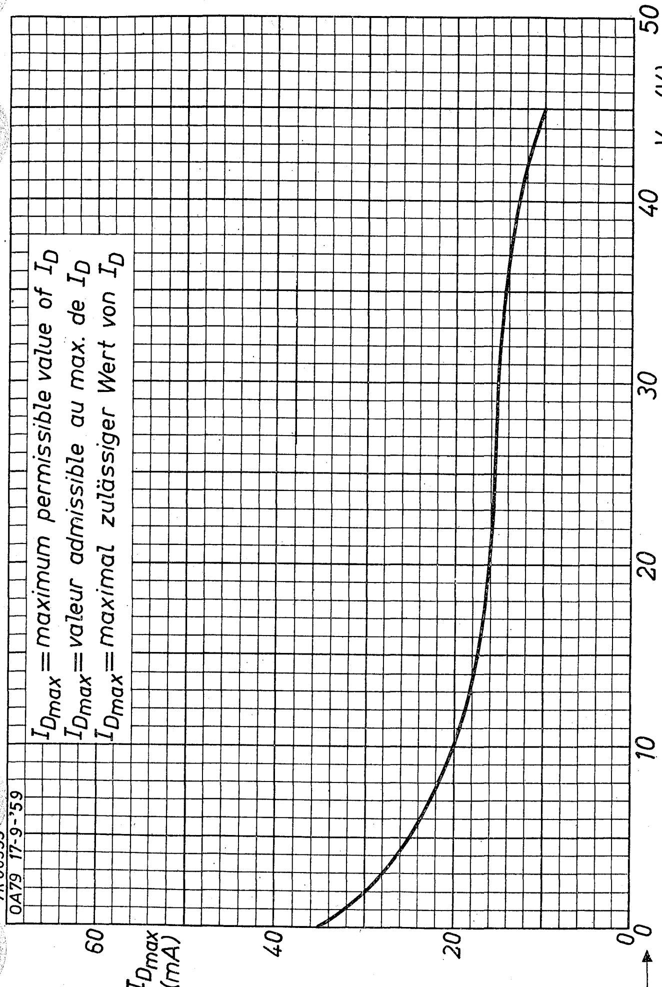
PHILIPS



D

PHILIPS

OA79
2-OA79



9.9.1959

E

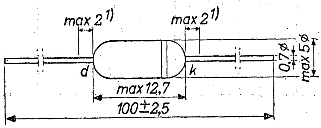
PHILIPS

OA 81

GERMANIUM DIODE in all glass construction for high inverse voltages
DIODE A CRISTAL DE GERMANIUM de construction tout verre pour des tensions inverses élevées
GERMANIUMDIODE in Allglastechnik für hohe Sperrspannungen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

Valid at / Valable à / Gültig bei					
T_{amb}	=		25	75	°C
$-V_D$(tav = max.50 msec)	=	max.	90	75	V
$-V_{DM}$	=	max.	115	100	V 2)
I_D(tav = max.50 msec)	=	max.	50	17	mA 2)
I_{DM}	=	max.	150	150	mA
I_{surge}	=	max.	500	500	mA 3)
T_{amb}	=		-50°C/+75		°C

---

1) Not tinned; non étamé; nicht verzinnt

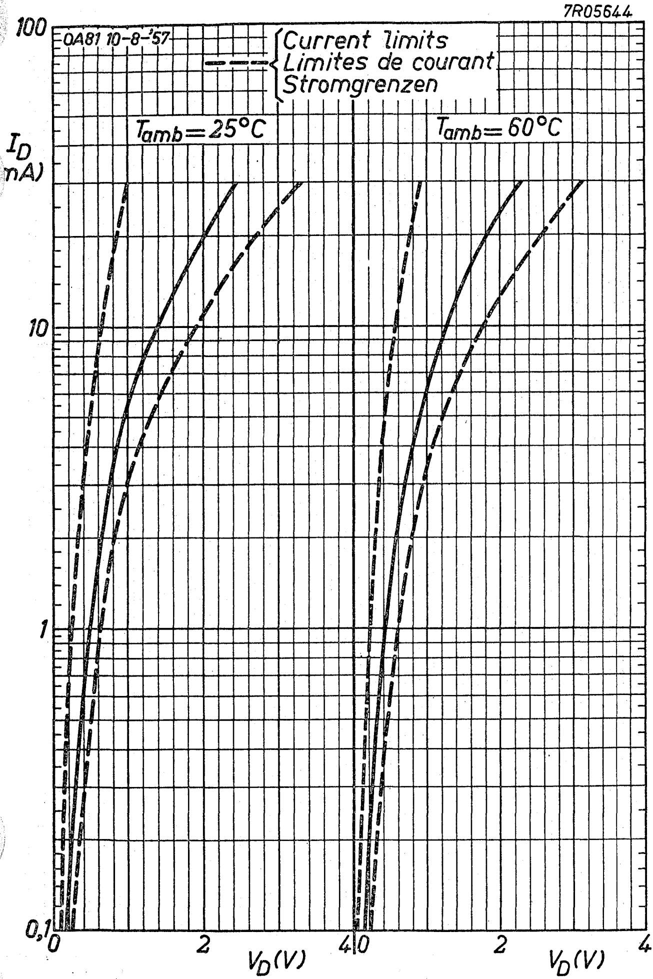
2) At page D derating curves are given representing the max. permissible value of I_D as a function of $-V_{DM}$ at T_{amb} = 25, 50 and 75 °C. At intermediate temperatures the max. permissible values of I_D can be found by linear interpolation
Sur la page D des courbes de réduction sont données représentant la valeur max. admissible de I_D en fonction de $-V_{DM}$ à T_{amb} = 25, 50 et 75 °C. A des températures intermédiaires les valeurs admissibles aux max. de I_D peuvent être trouvées par interpolation linéaire
Auf Seite D sind Reduktionskurven gegeben, die den max. zulässigen Wert von I_D als Funktion von $-V_{DM}$ bei T_{amb} = 25, 50 and 75 °C darstellen. Bei zwischenliegenden Temperaturen können die max. zulässigen Werte von I_D mittels linearer Interpolation gefunden werden

3) Max. duration 1 sec.; Durée 1 sec. au max.; Max.Dauer 1 Sek.

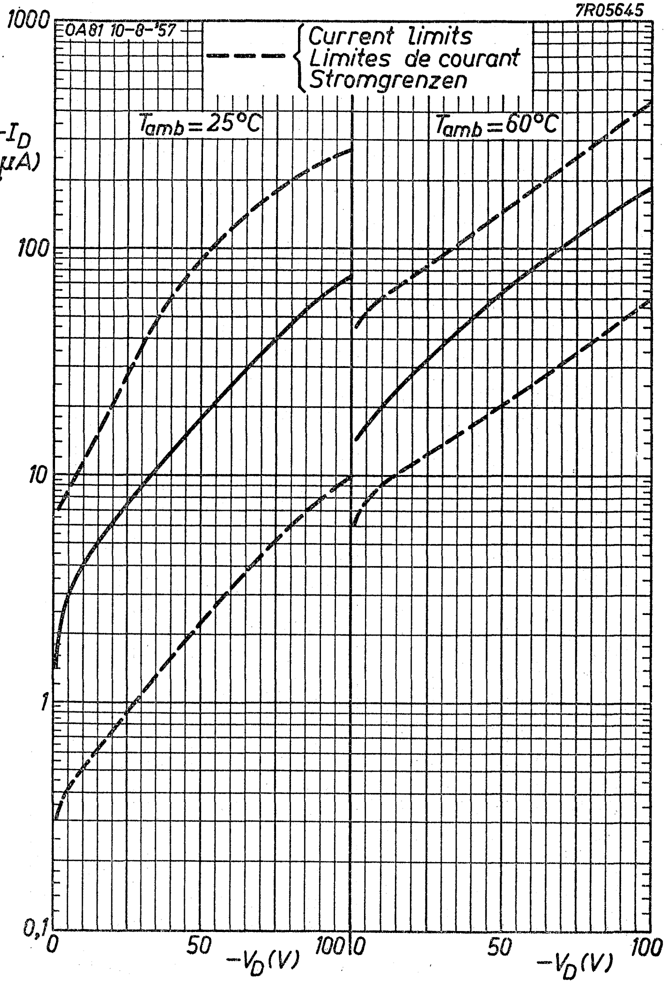
OA 81 PHILIPS

Characteristics
Caractéristiques
Kenndaten

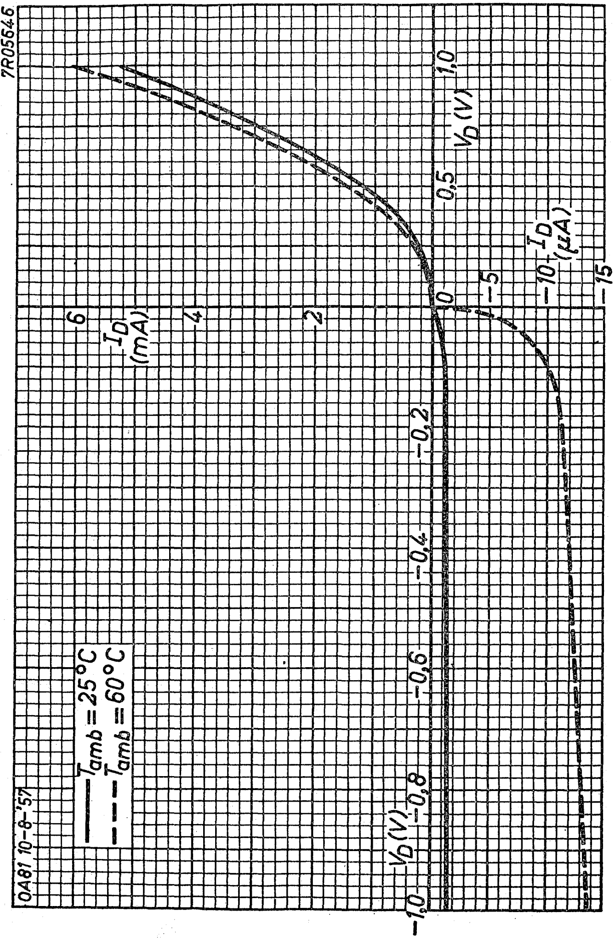
	T_{amb} = 25 °C			T_{amb} = 60 °C		
	=	Min.	Max.	=	Min.	Max.
$V_D(I_D = 0{,}1$ mA)	= 0,2	>0,1	<0,25	= 0,13	>0,05	<0,2 V
$V_D(I_D = 10$ mA)	= 1,4	>0,65	<1,9	= 1,3	>0,55	<1,8 V
$V_D(I_D = 30$ mA)	=2,45	>1,0	<3,3	= 2,3	>0,9	<3,15 V
$-I_D(-V_D = 1{,}5$ V)	= 1,5	>0,3	<7	= 15	>6	<45 µA
$-I_D(-V_D = 10$ V)	= 4	>0,5	<11	= 20	>9	<60 µA
$-I_D(-V_D = 75$ V)	= 40	>5,5	<180	= 115	>35	<260 µA
$-I_D(-V_D = 100$ V)	= 75	>10	<275	= 190	>60	<450 µA


7R05644
OA81 10-8-'57
Current limits
Limites de courant
Stromgrenzen
T_{amb} = 25°C
T_{amb} = 60°C
I_D (mA)
100
10
1
0,1
0
2
4
0
2
4
V_D(V)
V_D(V)

OA 81 PHILIPS



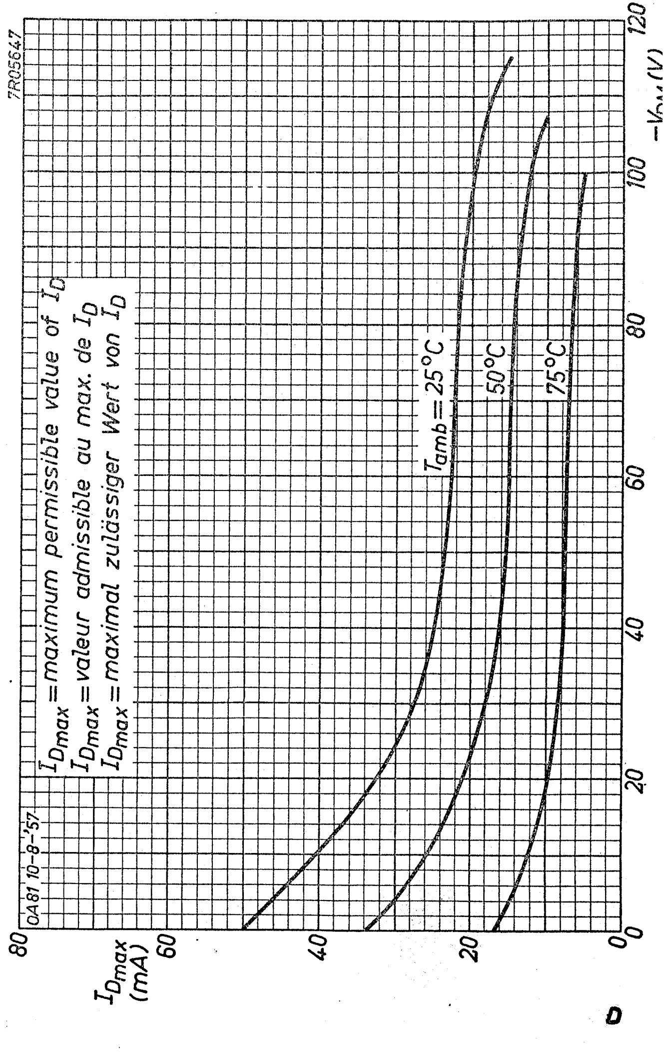
B



7R05646
V_D (V)
1,0
0,5
I_D (μA)
0
−5
−10
−15
6
4
2
I_D (mA)
−0,2
−0,4
−0,6
−0,8
−1,0
V_D (V)
T_{amb} = 25°C
T_{amb} = 60°C
OA81 10-8-'57

OA 81

PHILIPS



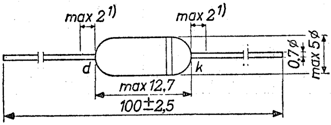
D

PHILIPS OA 85

GERMANIUM DIODE in all glass construction for high inverse voltages
DIODE A CRISTAL DE GERMANIUM de construction tout verre pour des tensions inverses élevées
GERMANIUMDIODE in Allglastechnik für hohe Sperrspannungen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

Valid at / Valable à / Gültig bei					
T_{amb}	=		25	75	°C
$-V_D$ (tav = max.50 msec)	=	max.	90	75	V
$-V_{DM}$	=	max.	115	100	V 2)
I_D (tav = max.50 msec)	=	max.	50	17	mA 2)
I_{DM}	=	max.	150	150	mA
I_{surge}	=	max.	500	500	mA 3)
T_{amb}	=		-50°C/+75		°C

1) Not tinned; non étamé; nicht verzinnt

2) At page D derating curves are given representing the max. permissible value of I_D as a function of $-V_{DM}$ at T_{amb} = 25, 50 and 75 °C. At intermediate temperatures the max. permissible values of I_D can be found by linear interpolation
Sur la page D des courbes de réduction sont données représentant la valeur max. admissible de I_D en fonction de $-V_{DM}$ à T_{amb} = 25, 50 et 75 °C. A des températures intermédiaires les valeurs admissibles aux max. de I_D peuvent être trouvées par interpolation linéaire
Auf Seite D sind Reduktionskurven gegeben, die den max. zulässigen Wert von I_D als Funktion von $-V_{DM}$ bei T_{amb} = 25, 50 and 75 °C darstellen. Bei zwischenliegenden Temperaturen können die max. zulässigen Werte von I_D mittels linearer Interpolation gefunden werden

3) Max. duration 1 sec.; Durée 1 sec. au max.; Max.Dauer 1 Sek.

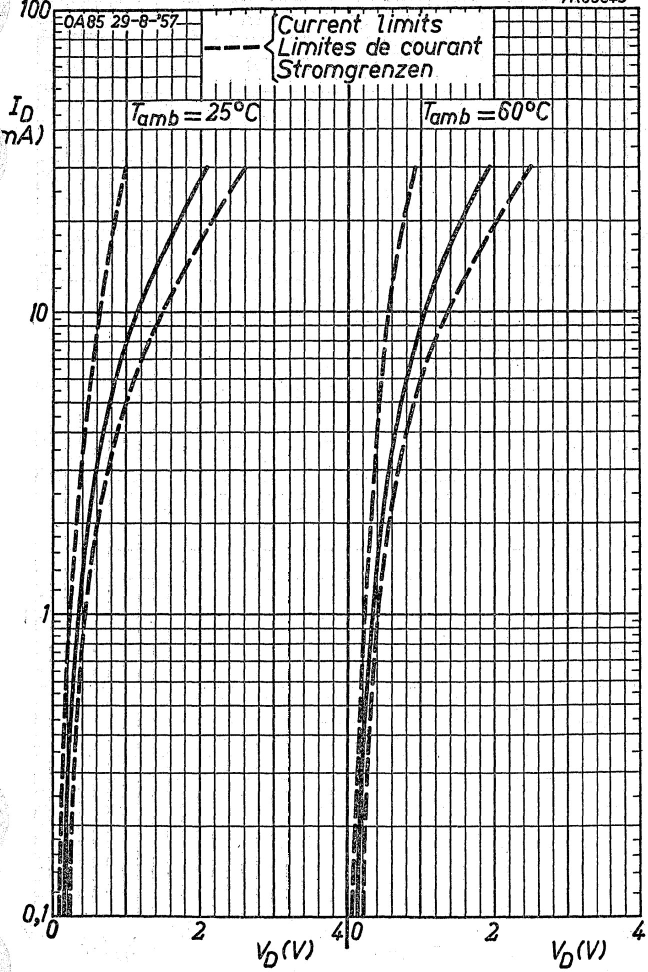
OA 85 PHILIPS

Characteristics
Caractéristiques
Kenndaten

	T_{amb} = 25 °C			T_{amb} = 60 °C		
	=	Min.	Max.	=	Min.	Max.
V_D (I_D = 0,1 mA)	= 0,2	>0,1	<0,25	= 0,13	>0,05	<0,2 V
V_D (I_D = 10 mA)	=1,15	>0,65	<1,5	= 1,05	>0,55	<1,4 V
V_D (I_D = 30 mA)	=2,05	>1,0	<2,6	= 1,95	>0,9	<2,5 V
$-I_D$ ($-V_D$ = 1,5 V)	= 1,2	>0,4	<4,5	= 12	>5,5	<26 µA
$-I_D$ ($-V_D$ = 10 V)	= 2,5	>0,8	<7	= 17	>8	<40 µA
$-I_D$ ($-V_D$ = 75 V)	= 35	>5,7	<110	= 100	>20	<250 µA
$-I_D$ ($-V_D$ = 100 V)	= 75	>10	<250	= 190	>30	<430 µA

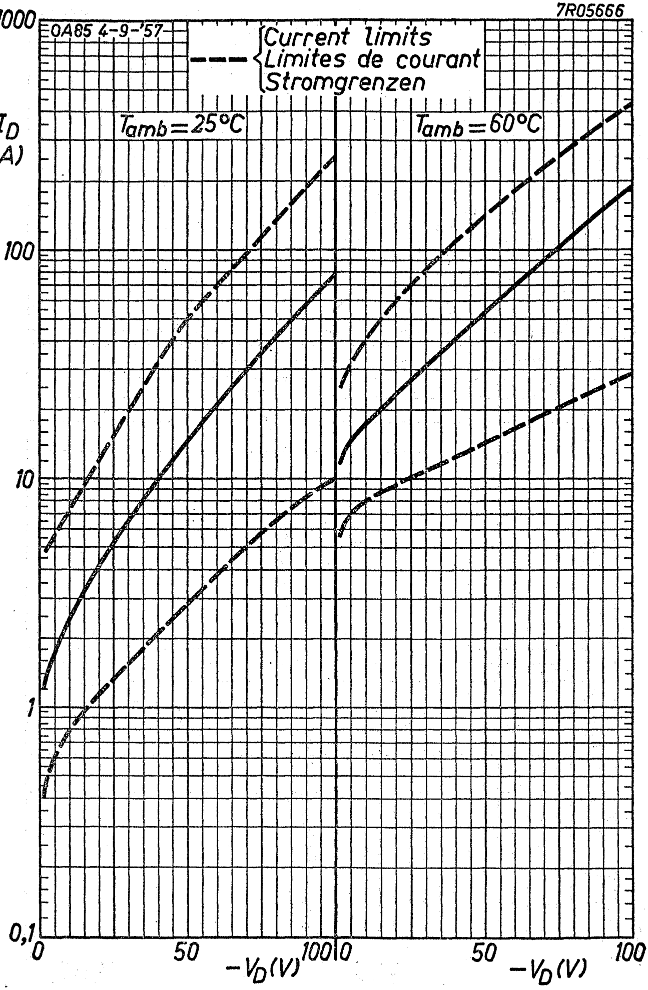
PHILIPS OA85

7R05649

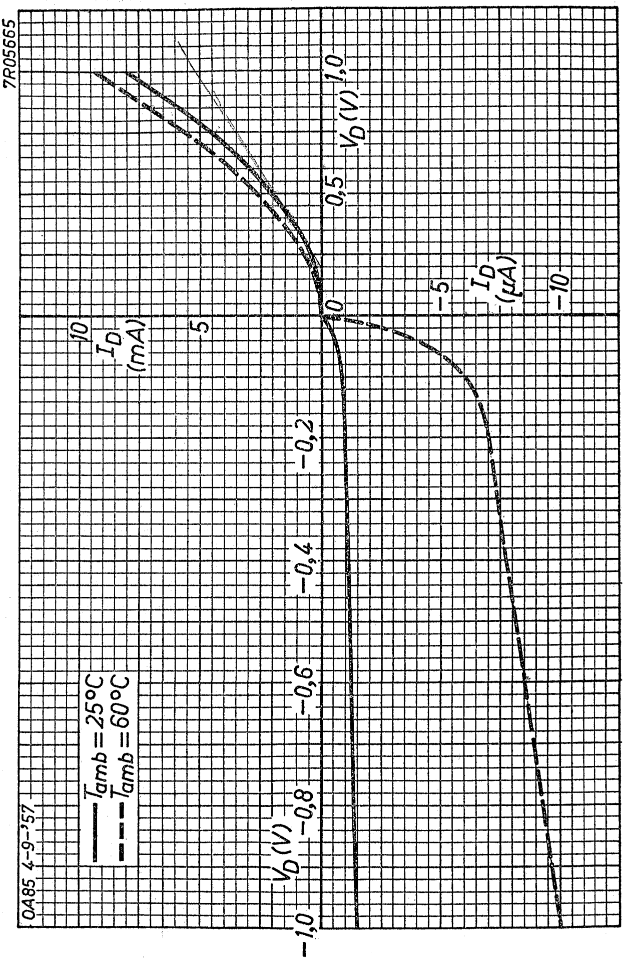


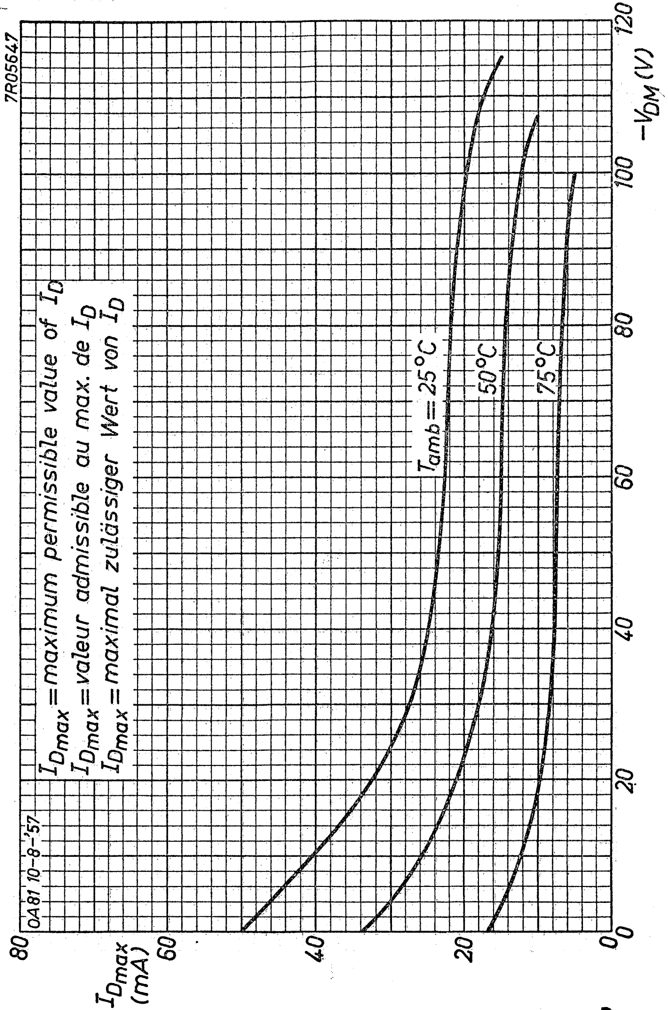
OA85

PHILIPS



B


7R05665
OA85 4-9-'57
T_amb = 25°C
T_amb = 60°C
V_D (V)
1,0
0,5
0
-0,2
-0,4
-0,6
-0,8
-1,0
I_D (mA)
10
5
I_D (μA)
-5
-10


7R05647
OA81 10-8-'57
I_{Dmax} = maximum permissible value of I_D
I_{Dmax} = valeur admissible au max. de I_D
I_{Dmax} = maximal zulässiger Wert von I_D
T_{amb} = 25°C
50°C
75°C
I_{Dmax} (mA)
80
60
40
20
0
0
20
40
60
80
100
120
$-V_{DM}$ (V)

D

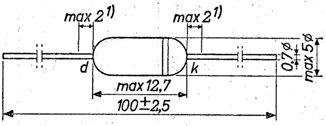
PHILIPS

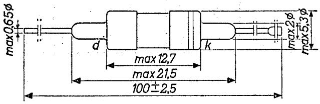
OA 86
OA 86C

GERMANIUM DIODE in all glass construction for use in computers
DIODE A CRISTAL DE GERMANIUM en construction tout verre pour utilisation dans les machines à calculer
GERMANIUMDIODE in Allglastechnik zur Verwendung in Rechenmaschinen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring indiziert die Katodenseite





Clip-in execution (type number OA86C)
Exécution à fixation par pinces (numéro de type OA86C)
Ausführung mit Klemmfederbefestigung (Typennummer OA86C)

Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

Valid at / Valable à / Gültig bei T_{amb}	=		25	60 °C
$-V_D(t_{av} = 50$ msec)	=	max.	60	60 V
$-V_{DM}$	=	max.	90	90 V [2])
$I_D(t_{av} = 50$ msec)	=	max.	35	15 mA[2])
I_{DM}	=	max.	150	150 mA
I_{Dsurge}	=	max.	200	200 mA[3])
T_{amb}	=		-50°C/+60°C	

[1])Not tinned; non étamé; nicht verzinnt

[2])[3])See page 4; voir page 4; siehe Seite 4

OA 86
OA 86C

PHILIPS

Characteristics
Caractéristiques
Kenndaten

Static
Statique
Statisch

	Tamb = 25 °C			Tamb = 60 °C		
	=	Min.	Max.	=	Min.	Max.
$V_D(I_D$ =0,1 mA)	= 0,18	>0,14	<0,25	= 0,1	>0,07	<0,20 V
$V_D(I_D$ = 5 mA)	= 0,78	>0,6	<1,0	= 0,72	>0,5	<0,95 V
$V_D(I_D$ = 10 mA)	= 1,12	>0,82	<1,47	= 1,02	>0,72	<1,4 V
$V_D(I_D$ = 30 mA)	= 2,15	>1,5	<3,0	= 1,9	>1,3	<2,8 V
$-I_D(-V_D$=1,5 V)	= 1,3	>0,3	<4	= 9	>3	<28 μA
$-I_D(-V_D$= 10 V)	= 2,5	>0,8	<7	= 20	>6	<40 μA
$-I_D(-V_D$= 60 V)	= 35	>5,7	<92	= 75	>25	<200 μA
$-I_D(-V_D$= 90 V)	= 130	>13	<250	= 170	>50	<500 μA

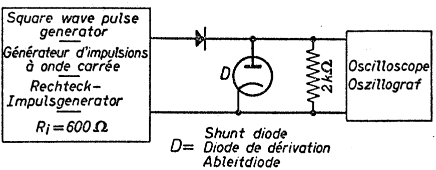
Dynamic
Dynamique
Dynamisch

Inverse resistance
Résistance inverse
Sperrwiderstand

Tamb = 55 °C
f = 50 c/s
$-V_D$ = 20-50 V

Inverse resistance
Résistance inverse > 400 kΩ
Sperrwiderstand

Recovery time, measured at $-V_D$ = 35 V after forward pulse current of 30 mA
Durée de rétablissement, mesurée à $-V_D$ = 35 V après une impulsion de courant en sens conducteur de 30 mA
Erholungszeit, gemessen bei $-V_D$ = 35 V nach einem Stromimpuls von 30 mA in der Durchlassrichtung



Measuring circuit; circuit de mesure; Mess-Schaltung

PHILIPS

OA 86
OA 86C

Pulse data
Données de l'impulsion
Impulsdater

f = 50 kc/s
δ = 0,5

Rise time
Temps d'accroisement < 0,1 µsec
Anstiegszeit

I_{DM} = 30 mA
$-V_{DM}$ = 35 V

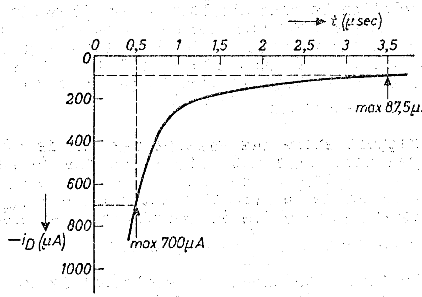
Oscilloscope data
Données de l'oscilloscope
Daten des Oszillografen

C_{inp} = 40 pF

Rise time
Temps d'accroisement = 0,025 µsec
Anstiegszeit

$-i_D$ {0.5 µsec after the current impuls / 0,5 µsec après l'impulsion de courant / 0,5 µSek nach dem Stromimpuls} = 380 < 700 µA

$-i_D$ {3.5 µsec after the current impuls / 3,5 µsec après l'impulsion de courant / 3,5 µSek nach dem Stromimpuls} = 36 <87,5 µA



PHILIPS

[2])For the relation between simultaneously allowable maximum values of $-V_{DM}$ and I_D see the derating curve (page D). Operating in accordance with this derating curve is prescribed. The derating curve is valid at $T_{amb} \leq 25\ ^{o}C$. At higher temperatures an extra derating of I_D by a factor $\frac{25}{T_{amb}}$ is prescribed

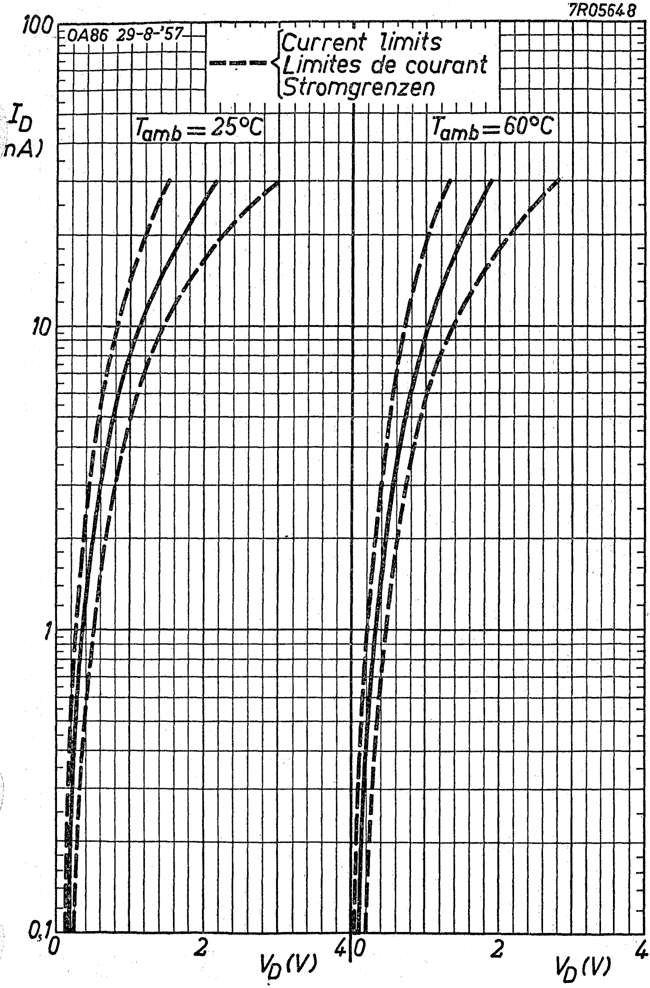
Pour le rapport entre les valeurs maximum de $-V_{DM}$ et I_D admissibles simultanément voir la courbe de réduction (page D). Une opération en accord avec cette courbe est prescrite. La courbe de réduction est valable à $T_{amb} \leq 25^{o}C$. A des températures plus élevées une réduction supplémentaire de I_D par un facteur $\frac{25}{T_{amb}}$ est prescrite

Für die Beziehung zwischen den gleichzeitig zulässigen Höchstwerten von $-V_{DM}$ und I_D siehe die Reduktionskurve (Seite D). Betrieb entsprechend dieser Kurve ist vorgeschrieben. Die Reduktionskurve ist gültig bei $T_{amb} \leq 25\ ^{o}C$. Bei höheren Temperaturen ist eine zusätzliche Reduktion von I_D mit einem Faktor $\frac{25}{T_{amb}}$ vorgeschrieben

[3])Max. duration 1 sec.
Durée 1 sec. au max.
Max. Dauer 1 Sek.

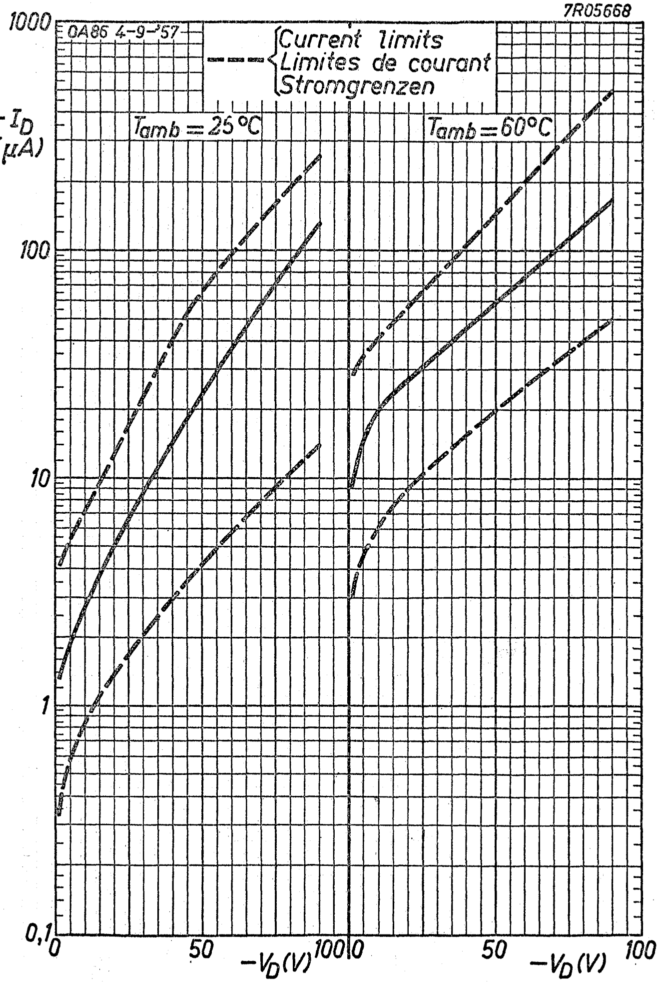
PHILIPS

OA86
OA86C



OA 86
OA 86 C

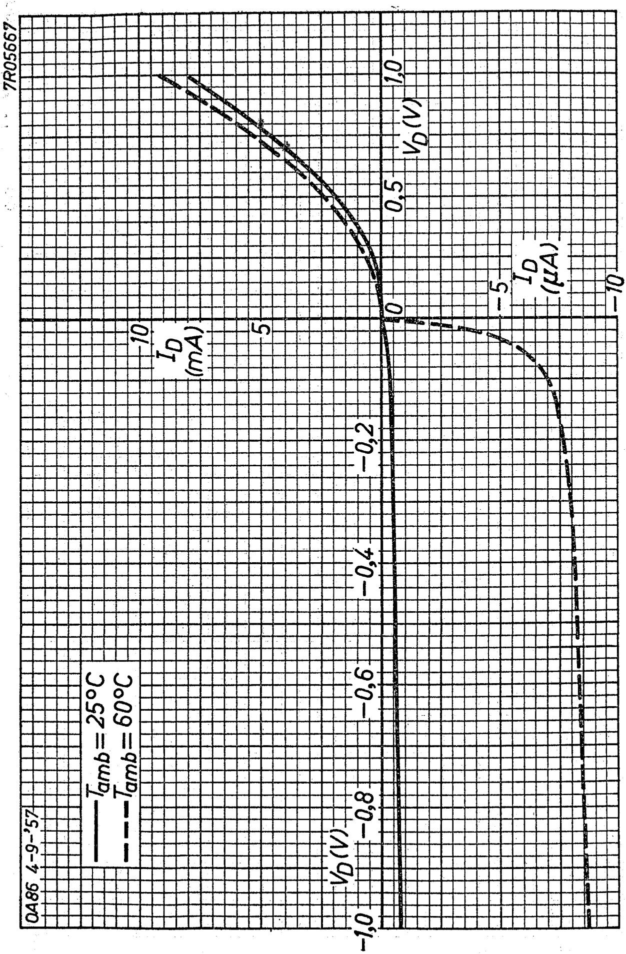
PHILIPS



B

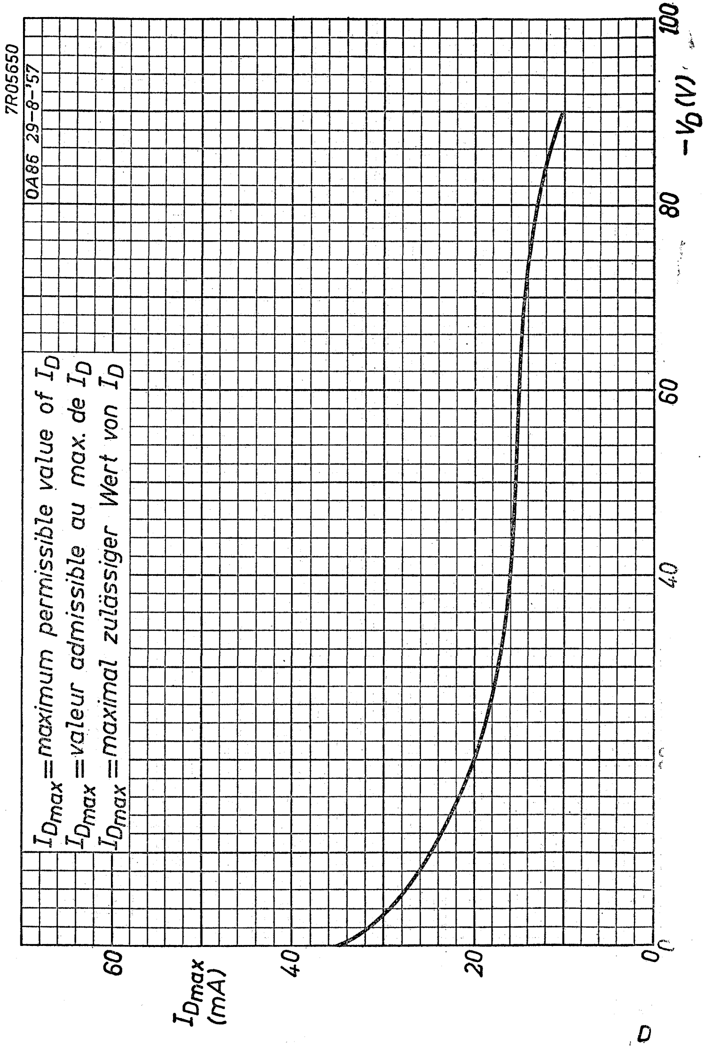
PHILIPS

OA 86
OA 86C



OA 86
OA 86C

PHILIPS

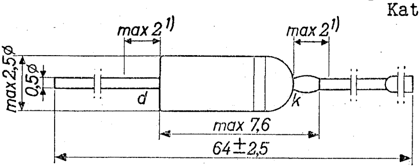


PHILIPS OA90

GERMANIUM DIODE in miniature all glass construction for use as video detector
DIODE A CRISTAL DE GERMANIUM de construction tout verre miniature pour utilisation en détectrice vidéo
GERMANIUMDIODE in Miniatur-Allglasausführung zur Video-Demodulation

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

T_{amb} = 75 °C

$-V_D$ (t_{av} = max. 50 msec)	= max.	20 V
$-V_{DM}$	= max.	30 V
$-V_{Dsurge}$	= max.	40 V[2])
I_D (t_{av} = max. 50 msec)	= max.	8 mA[3])
I_{DM}	= max.	45 mA
I_{Dsurge} (t = max. 1 sec)	= max.	200 mA
T_{amb}	=	-55°C/+75 °C

Storage temperature
Température d'emmagasinage = -55°C/+90 °C
Lagerungstemperatur

---

[1])Not tinned; non étamé; nicht verzinnt

[2])Allowable in a video detector circuit. See also page F.
Admis dans un circuit détecteur vidéo. Voir aussi page F.
Erlaubt in einer Video-Demodulationsschaltung. Siehe auch Seite F.

[3])At the max. allowed value of $-V_{DM}$
A la valeur max. admissible de $-V_{DM}$
Bei dem max. zulässigen Wert von $-V_{DM}$

[5])Max. duration 1 sec.
Durée 1 sec. au max.
Max. Dauer 1 Sek.

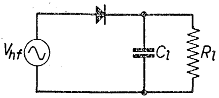
OA 90 PHILIPS

Characteristics
Caractéristiques
Kenndaten

Statical
Statique
Statisch

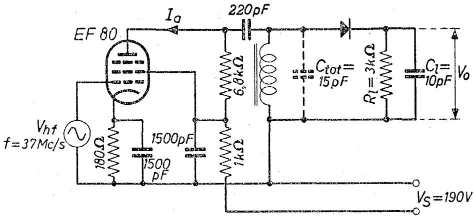
	T_{amb} = 25 °C			T_{amb} = 60 °C		
	=	min.	max.	=	min.	max.
$V_D(I_D$=0,1 mA)	=0,18	>0,1	<0,25	=0,12	-	<0,20 V
$V_D(I_D$= 10 mA)	= 1,0	>0,5	<1,5	=0,95	>0,4	<1,4 V
$V_D(I_D$= 30 mA)	= 2,0	>1,1	<3,2	=1,95	>1,0	<3,1 V
$-I_D(-V_D$=1,5 V)	= 2,4	-	<10	= 11	-	<40 µA
$-I_D(-V_D$= 10 V)	= 20	-	<135	= 45	-	<270 µA
$-I_D(-V_D$= 20 V)	= 90	-	<450	= 140	-	<650 µA
$-I_D(-V_D$= 30 V)	= 300	-	<1100	= 400	-	<1500 µA

Dynamical
Dynamique T_{amb} = 25 °C
Dynamisch



V_{hfm}	=	5	1,4	0,5	5	V
R	=	3	3	3	3,9	kΩ
C	=	10	10	10	10	pF
f	=	40	40	40	30	Mc/s
η	=	63	54	34	>60	%
r_d	=	2,4	2,8	3,7	>2,9	kΩ

Operating characteristics for use as video detector
Caractéristiques d'utilisation en détectrice vidéo
Betriebsdaten als Video-Demodulator

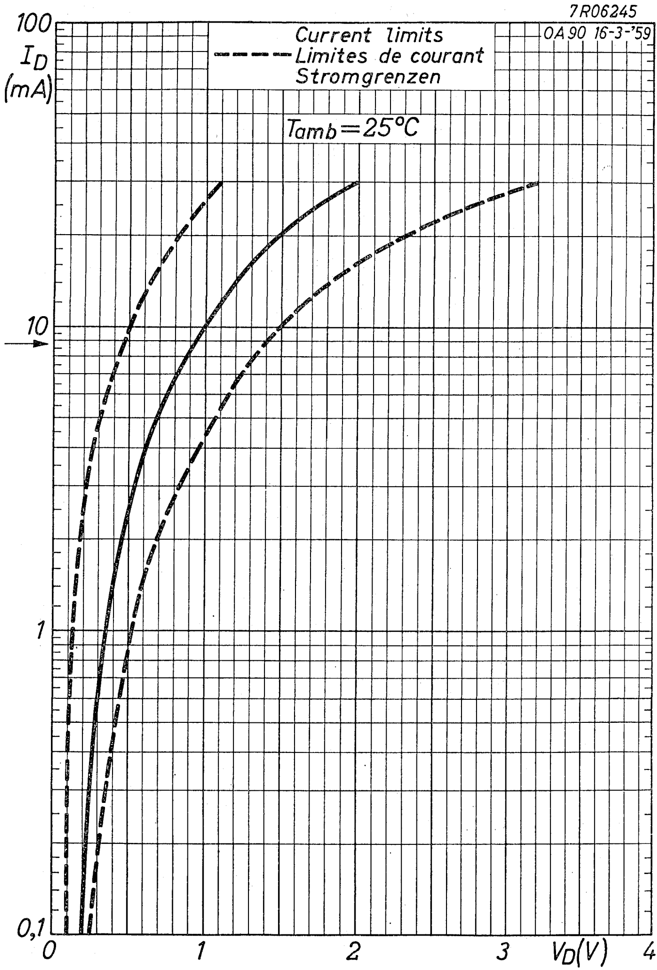


Q of the tuned circuit = 19 (diode removed)
Q du circuit accordé = 19 (diode éloignée)
Q des abgestimmten Kreises = 19 (Diode entfernt)

I_{am}	=	2,5	0,25	mA
V_o	=	2,7	0,20	V
B	=	4,7	4,1	Mc/s

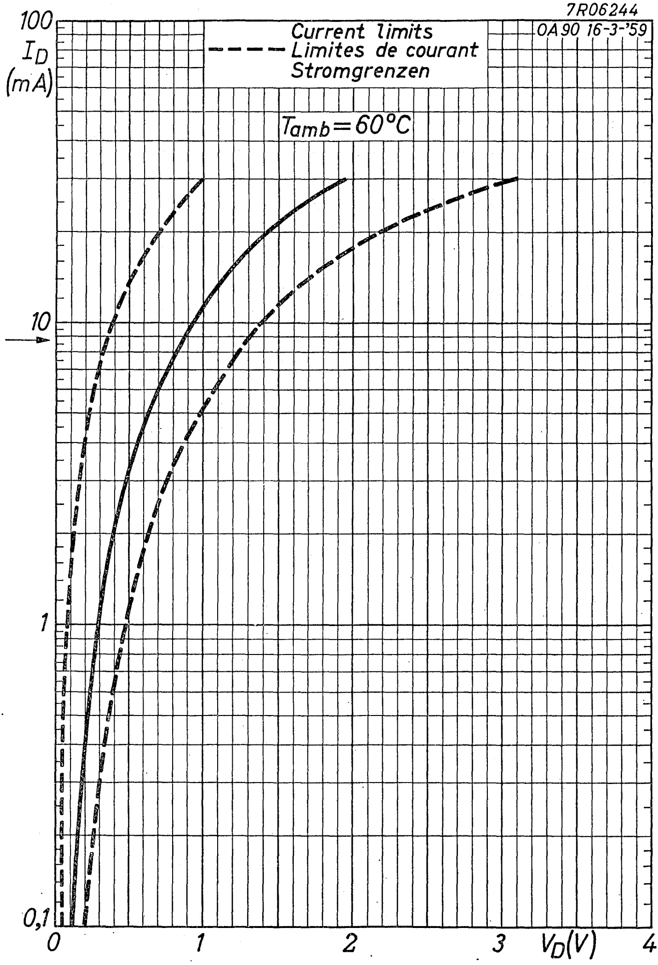
PHILIPS

OA 90

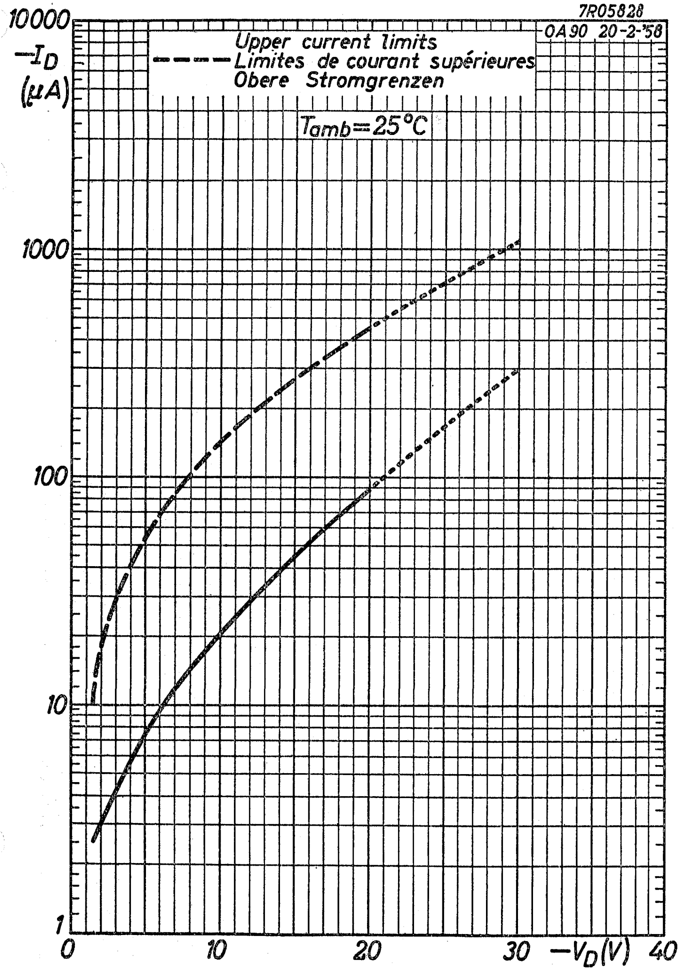


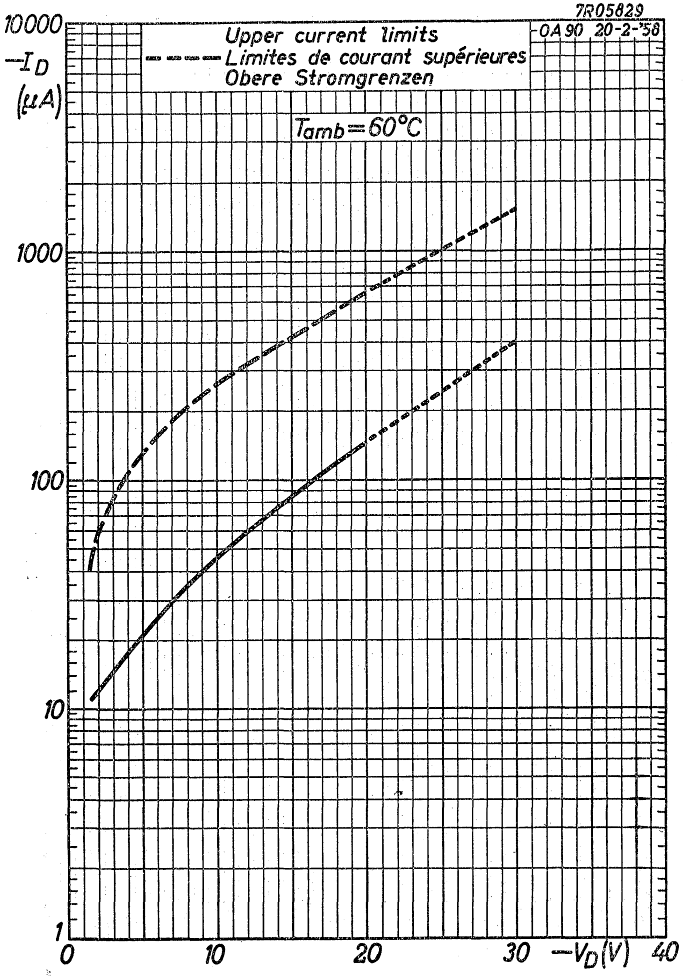
OA90

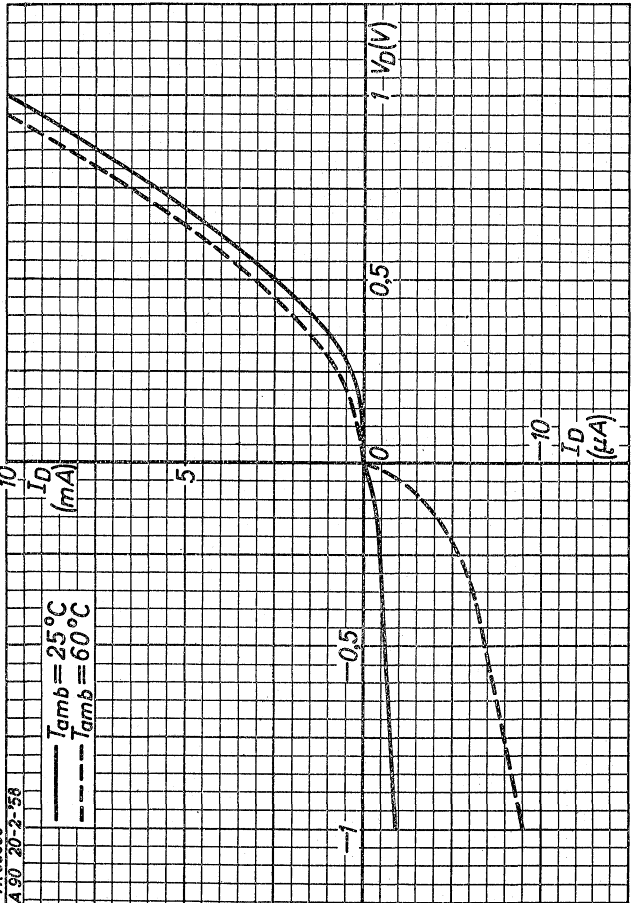
PHILIPS

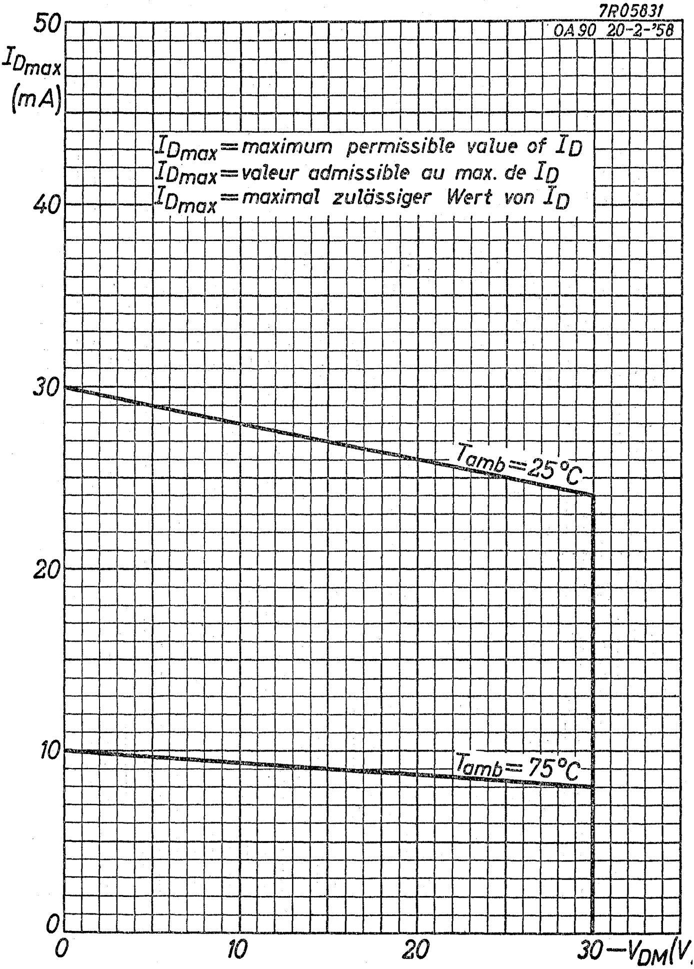


B


7R05828
OA90 20-2-'58
10000
$-I_D$
(μA)
Upper current limits
Limites de courant supérieures
Obere Stromgrenzen
$T_{amb} = 25°C$
1000
100
10
1
0
10
20
30
$-V_D(V)$
40


7R05829
OA 90 20-2-'58
10000
1000
100
10
1
$-I_D$ (μA)
Upper current limits
Limites de courant supérieures
Obere Stromgrenzen
T_{amb}=60°C
0
10
20
30
40
$-V_D$(V)


1
V_D(V)
0,5
0
−0,5
−1
10
5
I_D (mA)
10
I_D (μA)
T_{amb} = 25°C
T_{amb} = 60°C
7R05830
OA 90 20-2-'58

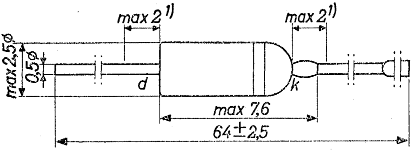

7R05831
OA90 20-2-'58
I_{Dmax} (mA)
50
40
30
20
10
0
I_{Dmax} = maximum permissible value of I_D
I_{Dmax} = valeur admissible au max. de I_D
I_{Dmax} = maximal zulässiger Wert von I_D
T_{amb} = 25°C
T_{amb} = 75°C
0
10
20
30 — V_{DM} (V)

F

GENERAL PURPOSE GERMANIUM DIODE in miniature all glass construction for high inverse voltages
DIODE A CRISTAL DE GERMANIUM de construction tout verre miniature pour les usages généraux à tension inverse élevée
ALLZWECKGERMANIUMDIODE in Miniatur-Allglasausführung für hohe Sperrspannungen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

Valid at / Valable à / Gültig bei T_{amb}	=	25	75	°C
$-V_D$ (t_{av} = max. 50 msec)	= max.	90	75	V
$-V_{DM}$	= max.	115	100	V
I_D (t_{av} = max. 50 msec)	= max.	50	17	mA 2)
I_{DM}	= max.	150	150	mA
I_{Dsurge} (t = max. 1 sec)	= max.	500	500	mA
T_{amb}	=	-55°C/+75°C		
Storage temperature / Température d'emmagasinage / Lagerungstemperatur		-55°C/+75°C		

1) Not tinned; non étamé; nicht verzinnt

2) At page D derating curves are given representing the max. permissible value of I_D as a function of $-V_{DM}$ at T_{amb} = 25, 50 and 75 °C. At intermediate temperatures the max.permissible values of I_D can be found by linear interpolation
Sur la page D des courbes de réduction sont données représentant la valeur max.admissible de I_D en fonction de $-V_{DM}$ à T_{amb} = 25, 50 et 75 °C. A des températures intermédiaires les valeurs admissibles aux max. de I_D peuvent être trouvées par interpolation linéaire
Auf Seite D sind Reduktionskurven gegeben, die den max. zulässigen Wert von I_D als Funktion von $-V_{DM}$ bei T_{amb} = 25, 50 und 75 °C darstellen. Bei zwischenliegenden Temperaturen können die max. zulässigen Werte von I_D mittels linearer Interpolation gefunden werden

Characteristics
Caractéristiques
Kenndaten

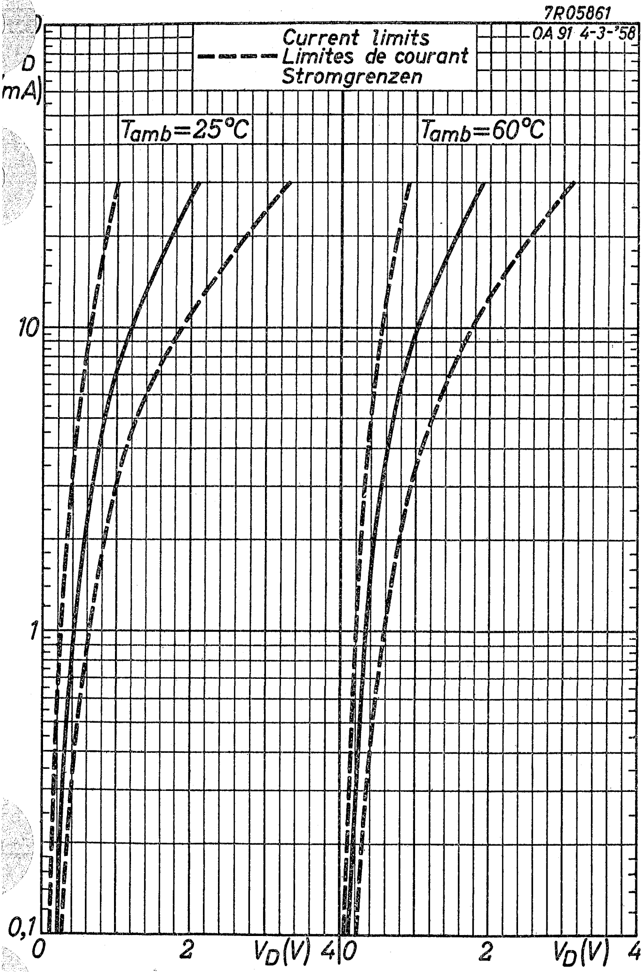
Thermal resistance (junction to free air)
Résistance thermique (de la jonction jusqu'à l'air libre)
Thermischer Widerstand (vom Kristall bis freier Luft)

K = max.0,4 °C/mW

	T_{amb} = 25 °C			T_{amb} = 60 °C		
	=	min.	max.	=	min.	max.
V_D (I_D = 0,1 mA)	=0,18	> 0,1	<0,25	= 0,1	>0,05	<0,2 V
V_D (I_D = 10 mA)	= 1,2	>0,65	< 1,9	=1,05	>0,55	<1,8 V
V_D (I_D = 30 mA)	= 2,1	> 1,0	< 3,3	= 1,9	> 0,9	<3,15 V
$-I_D$ ($-V_D$ = 1,5 V)	= 1,5	> 0,3	< 7	= 15	> 6	< 45 µA
$-I_D$ ($-V_D$ = 10 V)	= 4	> 0,5	< 11	= 20	> 9	< 60 µA
$-I_D$ ($-V_D$ = 75 V)	= 40	> 5,5	< 180	= 115	> 35	<260 µA
$-I_D$ ($-V_D$ = 100 V)	= 75	> 10	< 275	= 190	> 60	<450 µA

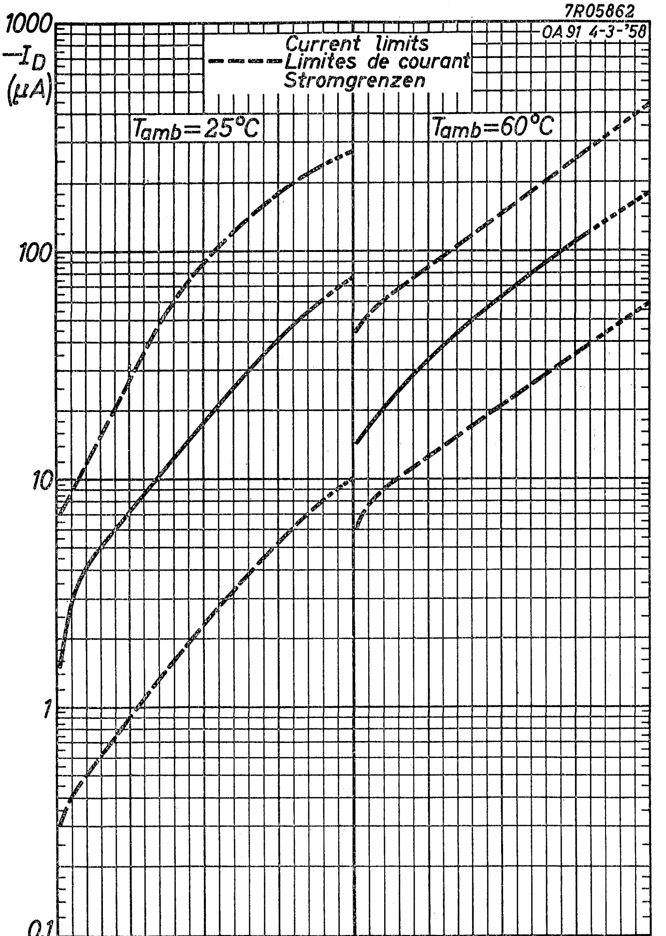
PHILIPS

OA91



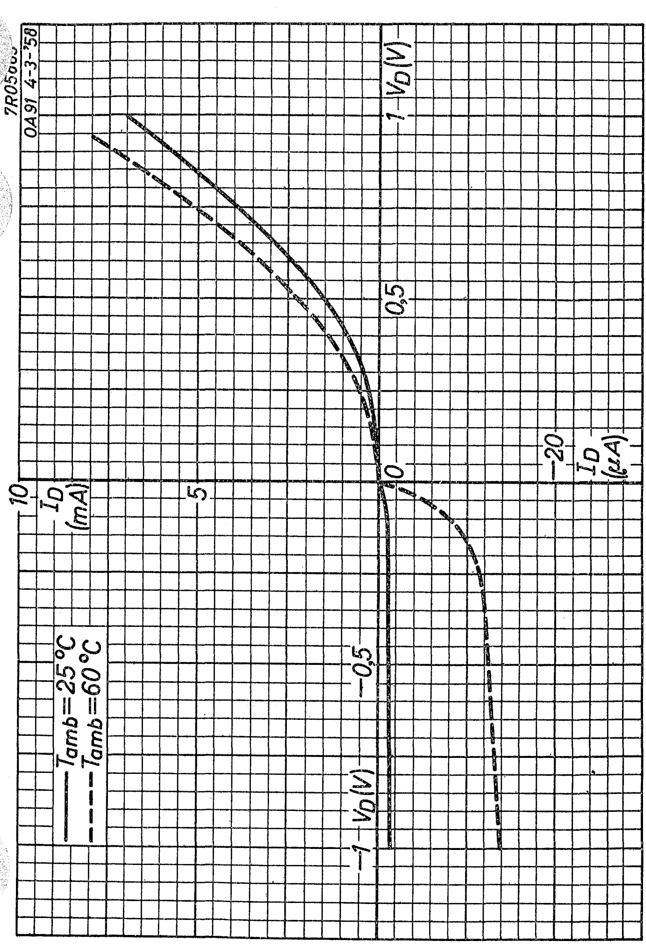
OA91

PHILIPS



B

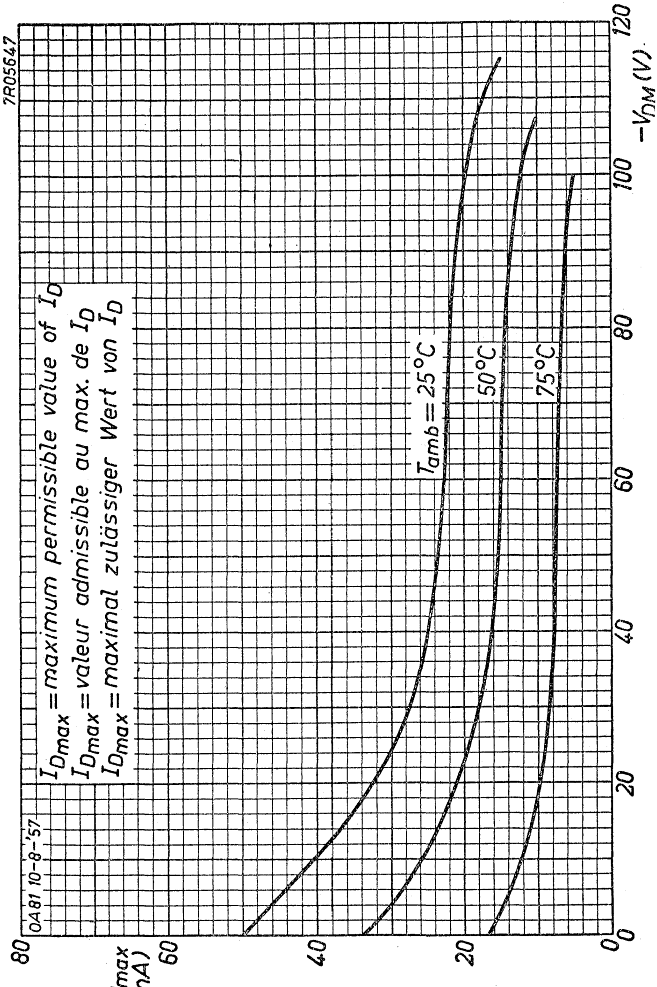
PHILIPS | OA91



3.3.1958

C

OA91 PHILIPS

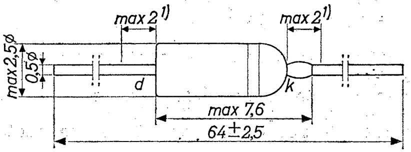


D

GERMANIUM DIODE in miniature all glass construction for computer applications
DIODE À CRISTAL DE GERMANIUM de construction tout verre miniature pour utilisation dans des machines à calculer
GERMANIUMDIODE in Miniatur-Allglasausführung zur Verwendung in Rechenmaschinen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc indique la position de la cathode
Der weisse Ring bezeichnet die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

	T_{amb} =	75 °C
$-V_D$	= max.	15 V
$-V_{DM}$	= max.	15 V
$-V_{Dsurge}$	= max.	20 V
I_D {direct current / courant continu / Gleichstrom}	= max.	10 mA 2)
I_D (t_{av} = max. 50 msec)	See pages F and G / Voir pages F et G / Siehe Seiten F und G	
I_{DM}	= max.	50 mA
I_{Dsurge} (t = max. 1 sec)	= max.	100 mA
T_{amb}	=	-55 °C/+75 °C
Storage temperature / Température d'emmagasinage / Lagerungstemperatur	=	-55 °C/+90 °C

1) Not tinned; non étamé; nicht verzinnt
2) See also page E; voir aussi page E; siehe auch Seite E.

THERMAL DATA. Thermal resistance from junction to ambience in free air $K \leq 0.55\ ^{o}C/mW$

DONNÉES THERMIQUES. Résistance thermique entre la jonction et l'ambiance à l'air libre $K \leq 0,55\ ^{o}C/mW$

THERMISCHE DATEN. Wärmewiderstand zwischen Kristall und Umgebung in freier Luft $K \leq 0,55\ ^{o}C/mW$

Characteristics
Caractéristiques
Kenndaten

$V_D(I_D = 3\ mA;\ T_{amb} = 25\ ^{o}C)$	$=0,55\ V$	$> 0,30\ V$	$< 1,00\ V$
$-I_D(-V_D = 15\ V;\ T_{amb} = 60\ ^{o}C)$	$=\ 40\ \mu A$		$<\ 155\ \mu A$

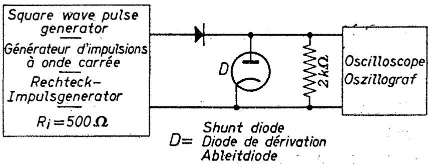
Characteristic range values for equipment design (see also pages A,B,C,D)
Gammes de valeurs des caractéristiques pour l'étude d'équipements (voir aussi pages A,B,C,D)
Kenndatenbereiche für Gerätentwurf (siehe auch Seiten A, B,C,D)

Capacitance
Capacité
Kapazität

$$C_{dk} \left\{ \begin{array}{l} -V_D = 0,75\ V \\ f\ =\ 0,5\ Mc/s \end{array} \right\} < 0,5\ pF$$

Reverse recovery, measured at $-V_D = 5$ V after forward current pulse of 5 mA
Recouvrement inverse, mesuré à $-V_D = 5$ V après une impulsion de courant en sens conducteur de 5 mA
Übergangszeit für Sperrichtung, gemessen bei $-V_D = 5$ V nach einem Stromimpuls von 5 mA in der Durchlassrichtung

$T_{amb} = 25\ ^{o}C$



Measuring circuit; circuit de mesure; Messchaltung

Reverse recovery (continued)
Recouvrement inverse (suite)
Übergangszeit für Sperrichtung (Fortsetzung)

Pulse data
Données de l'impulsion
Impulsdaten

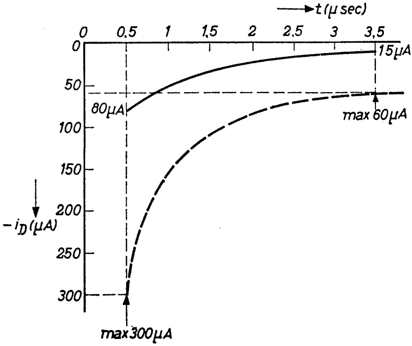
f	=	50 kc/s
δ	=	0,5
Rise time Temps de montée Anstiegszeit	<	0,1 µsec
I_{DM}	=	5 mA
$-V_{DM}$	=	5 V

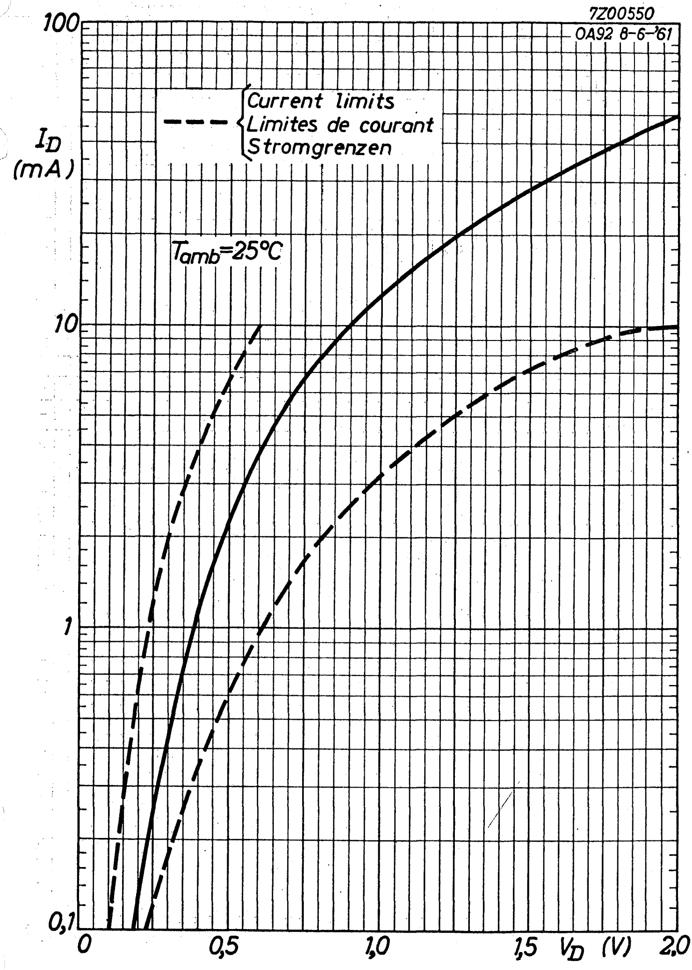
Oscilloscope data
Données de l'oscilloscope
Daten des Oszillografen

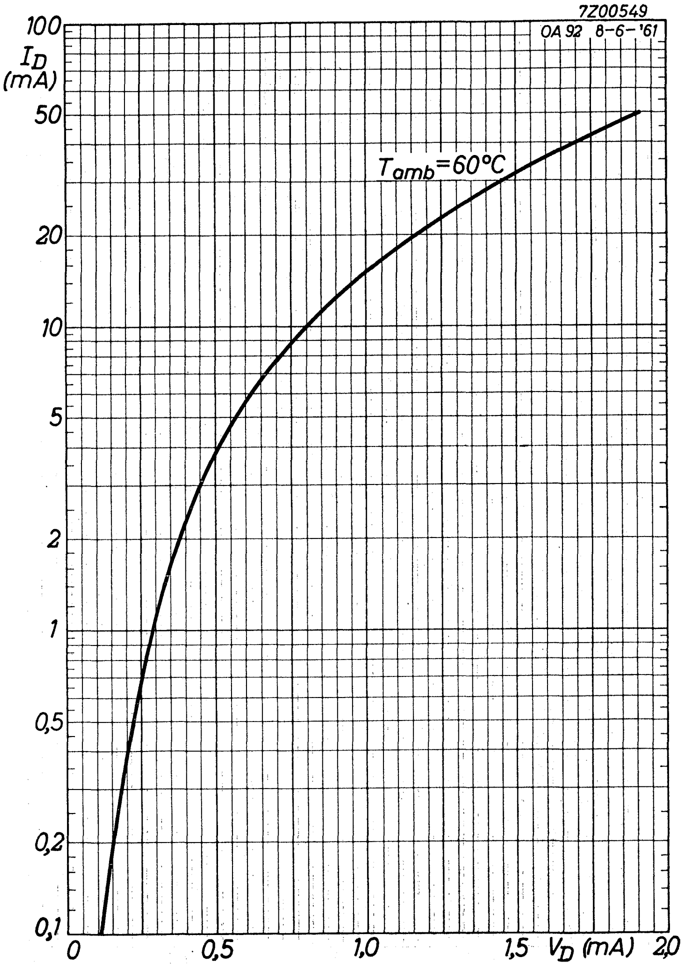
C_{inp}	=	40 pF
Rise time Temps de montée Anstiegszeit	=	0,025 µsec

$-i_D$ { 0.5 µsec after the current impuls / 0,5 µsec apres l'impulsion de courant / 0,5 µSek nach dem Stromimpuls } = 80 µA, < 300 µA

$-i_D$ { 3.5 µsec after the current impuls / 3,5 µsec après l'impulsion de courant / 3,5 µSek nach dem Stromimpuls } = 15 µA, < 60 µA

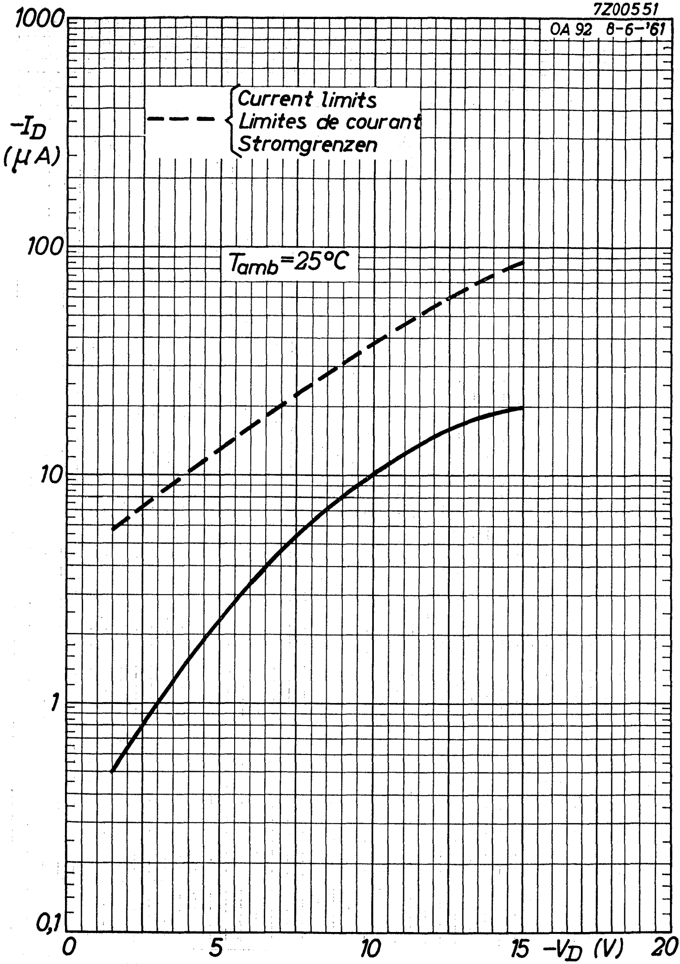



7Z00550
OA92 8-6-'61
Current limits
Limites de courant
Stromgrenzen
I_D (mA)
T_{amb}=25°C
100
10
1
0,1
0
0,5
1,0
1,5
V_D (V)
2,0

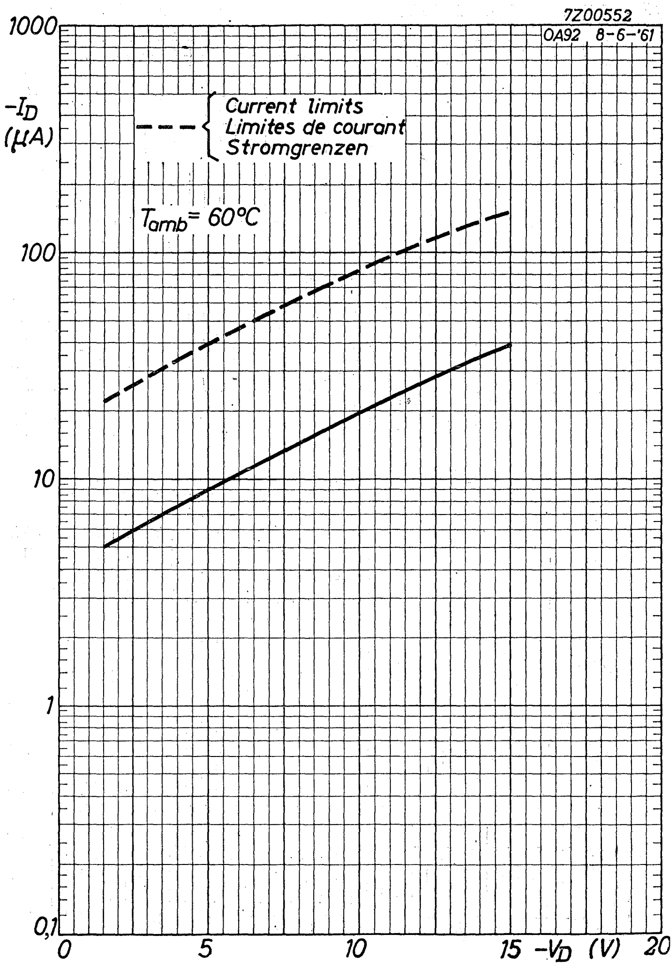

7Z00549
OA 92 8-6-'61
100
I_D
(mA)
50
20
10
5
2
1
0,5
0,2
0,1
T_{amb}=60°C
0
0,5
1,0
1,5
V_D (mA)
2,0

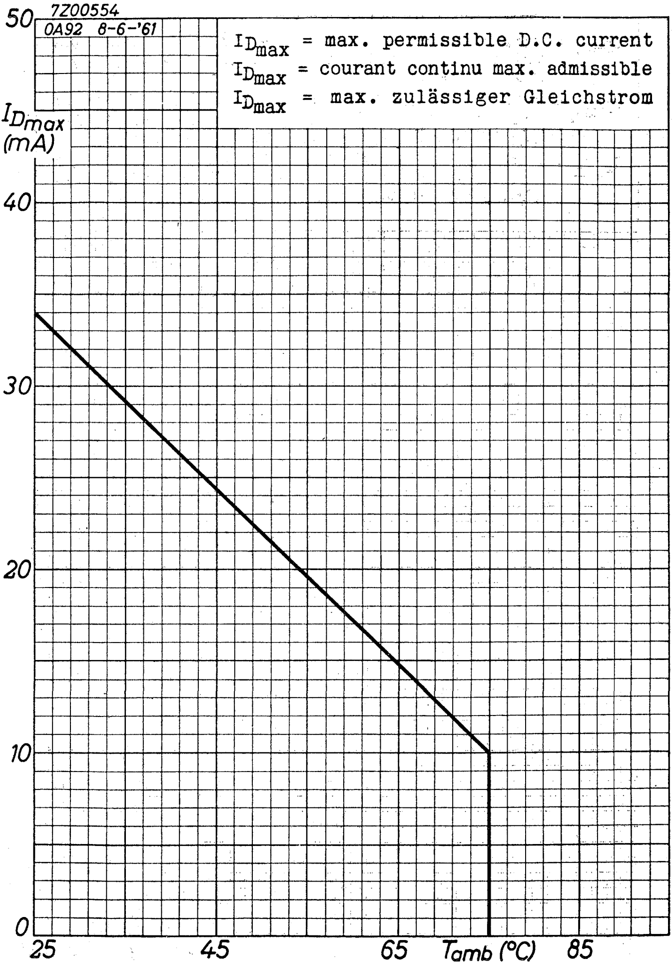
PHILIPS

OA 92



PHILIPS


7Z00552
OA92 8-6-'61
$-I_D$ (μA)
Current limits
Limites de courant
Stromgrenzen
T_{amb} = 60°C
1000
100
10
1
0,1
0
5
10
15
20
$-V_D$ (V)

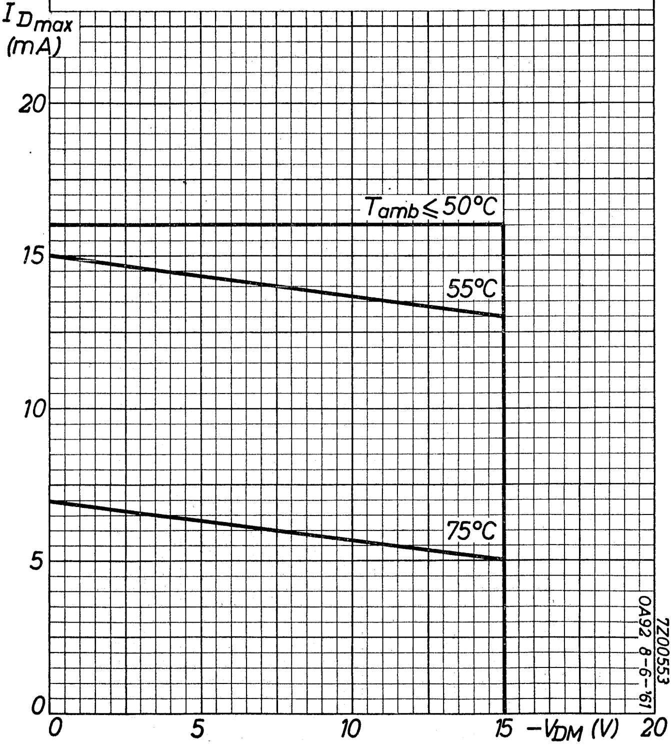

7Z00554
OA92 8-6-'61
$I_{D_{max}}$ = max. permissible D.C. current
$I_{D_{max}}$ = courant continu max. admissible
$I_{D_{max}}$ = max. zulässiger Gleichstrom
$I_{D_{max}}$ (mA)
50
40
30
20
10
0
25
45
65
85
T_{amb} (°C)

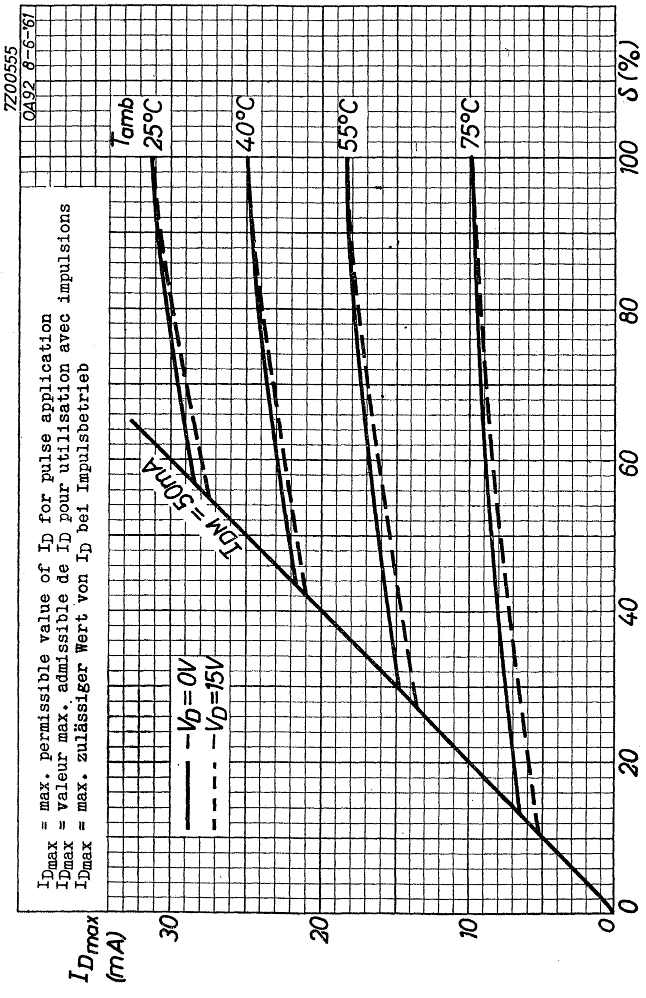
PHILIPS

$I_{D max}$ = max. permissible value of I_D for sinusoidal input voltages and resistive load. ($I_{DM} = \pi x I_D$; t_{av} = max. 50 msec)

$I_{D max}$ = valeur max. admissible de I_D pour des tensions d'entrée sinusoïdales avec charge résistive. ($I_{DM} = \pi . I_D$; t_{av} = 50 msec au max.)

$I_{D max}$ = max. zulässiger Wert von I_D bei sinusförmigen Eingangsspannungen mit Widerstandsbelastung. ($I_{DM} = \pi . I_D$; t_{av} = max. 50 mSek)



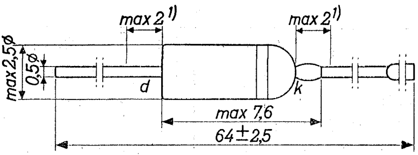

7Z00555
OA92 8-6-'61
I_{Dmax} = max. permissible value of I_D for pulse application
I_{Dmax} = valeur max. admissible de I_D pour utilisation avec impulsions
I_{Dmax} = max. zulässiger Wert von I_D bei Impulsbetrieb
T_{amb}
25°C
40°C
55°C
75°C
I_{DM} = 50mA
— $-V_D$=0V
- - $-V_D$=15V
I_{Dmax} (mA)
30
20
10
0
S (%)
0
20
40
60
80
100

PHILIPS OA 95

GENERAL PURPOSE GERMANIUM DIODE in miniature all glass construction for high inverse voltages
DIODE A CRISTAL DE GERMANIUM de construction tout verre miniature pour les usages généraux à tension inverse élevée
ALLZWECKGERMANIUMDIODE in Miniatur-Allglasausführung für hohe Sperrspannungen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

Valid at / Valable à / Gültig bei	T_{amb}	=	25	75	°C
$-V_D$ (t_{av} = max. 50 msec)		= max.	90	75	V
$-V_{DM}$		= max.	115	100	V
I_D (t_{av} = max. 50 msec)		= max.	50	17	mA 2)
I_{DM}		= max.	150	150	mA
I_{Dsurge} (t = max. 1 sec)		= max.	500	500	mA
T_{amb}		=	-55°C/+75°C		
Storage temperature / Température d'emmagasinage / Lagerungstemperatur		=	-55°C/+75°C		

1) Not tinned; non étamé; nicht verzinnt

2) At page E derating curves are given representing the max. permissible value of I_D as a function of $-V_{DM}$ at T_{amb} = 25, 50 and 75 °C. At intermediate temperatures the max. permissible values of I_D can be found by linear interpolation
Sur la page E des courbes de réduction sont données représentant la valeur max.admissible de I_D en fonction de $-V_{DM}$ à T_{amb} = 25, 50 et 75 °C. A des températures intermédiaires les valeurs admissibles aux max. de I_D peuvent être trouvées par interpolation linéaire
Auf Seite E sind Reduktionskurven gegeben, die den max. zulässigen Wert von I_D als Funktion von $-V_{DM}$ bei T_{amb} = 25, 50 und 75 °C darstellen. Bei zwischenliegenden Temperaturen können die max. zulässigen Werte von I_D mittels linearer Interpolation gefunden werden

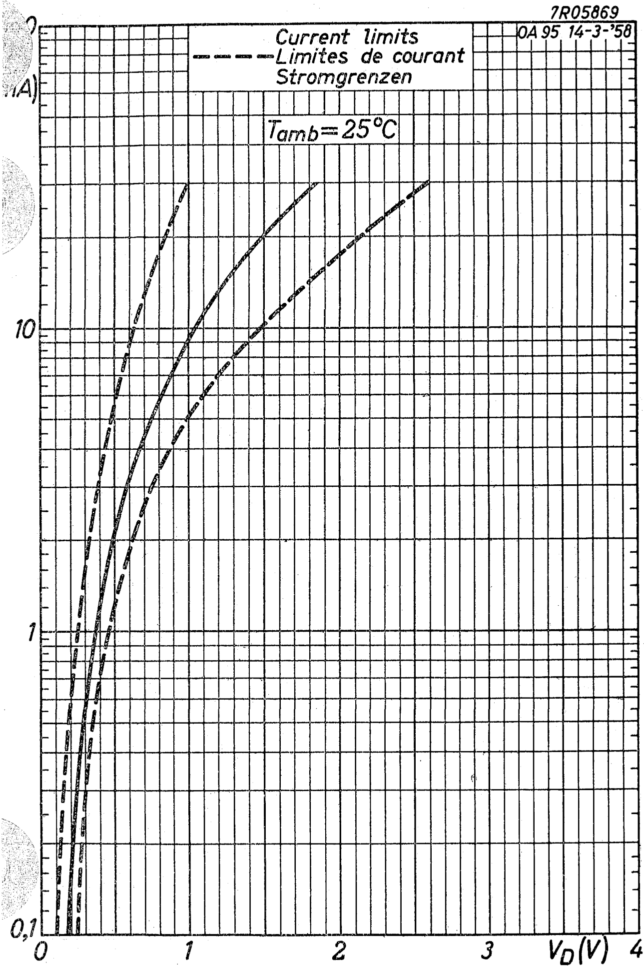
OA 95 PHILIPS

Characteristics
Caractéristiques
Kenndaten

Thermal resistance (junction to free air)
Résistance thermique (de la jonction jusqu'à l'air libre)
Thermischer Widerstand (vom Kristall bis freier Luft)

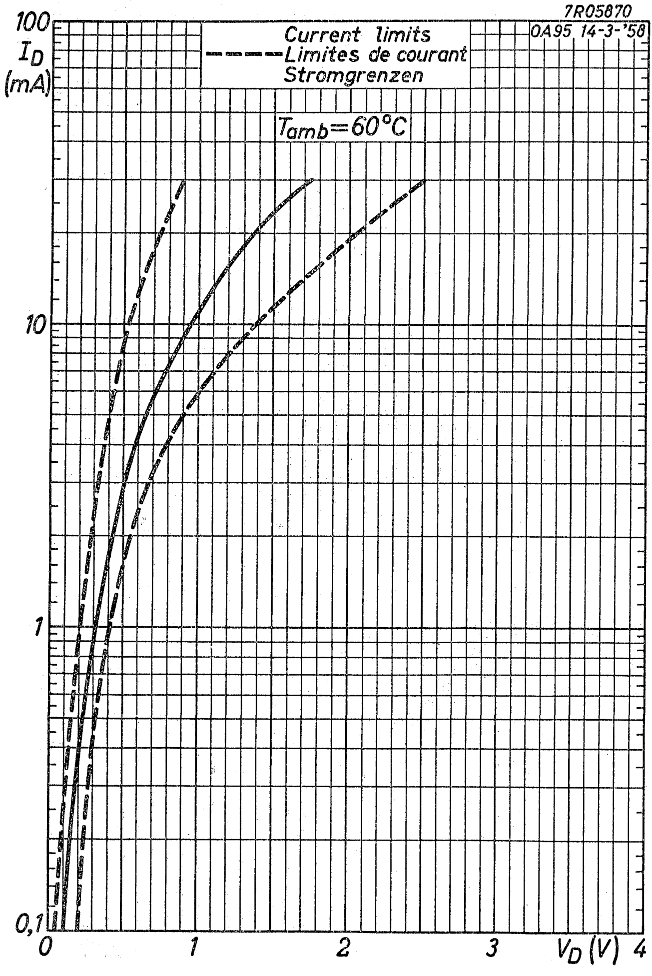
K = max. 0,4 °C/mW

	T_{amb} = 25 °C			T_{amb} = 60 °C		
	=	min.	max.	=	min.	max.
$V_D(I_D$ = 0,1 mA)	=0,18	>0,1	<0,25	= 0,1	>0,05	< 0,2 V
$V_D(I_D$ = 10 mA)	=1,05	>0,65	<1,5	=0,95	>0,55	< 1,4 V
$V_D(I_D$ = 30 mA)	=1,85	>1,0	<2,6	=1,75	>0,9	< 2,5 V
$-I_D(-V_D$ = 1,5 V)	= 1,2	>0,4	<4,5	= 12	>5,5	< 26 µA
$-I_D(-V_D$ = 10 V)	= 2,5	>0,8	< 7	= 17	> 8	< 40 µA
$-I_D(-V_D$ = 75 V)	= 35	>5,7	<110	= 100	> 20	< 250 µA
$-I_D(-V_D$ = 100 V)	= 80	> 10	<250	= 200	> 30	< 430 µA

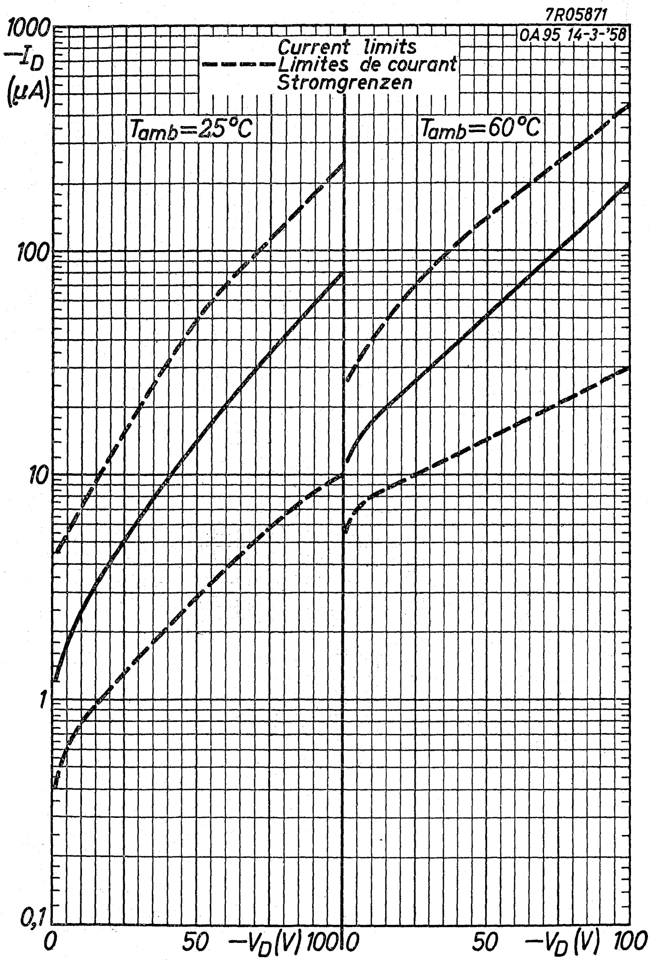

7R05869
OA 95 14-3-'58
Current limits
Limites de courant
Stromgrenzen
T_{amb}=25°C
100
(mA)
10
1
0,1
0
1
2
3
V_D(V)
4

OA95

PHILIPS

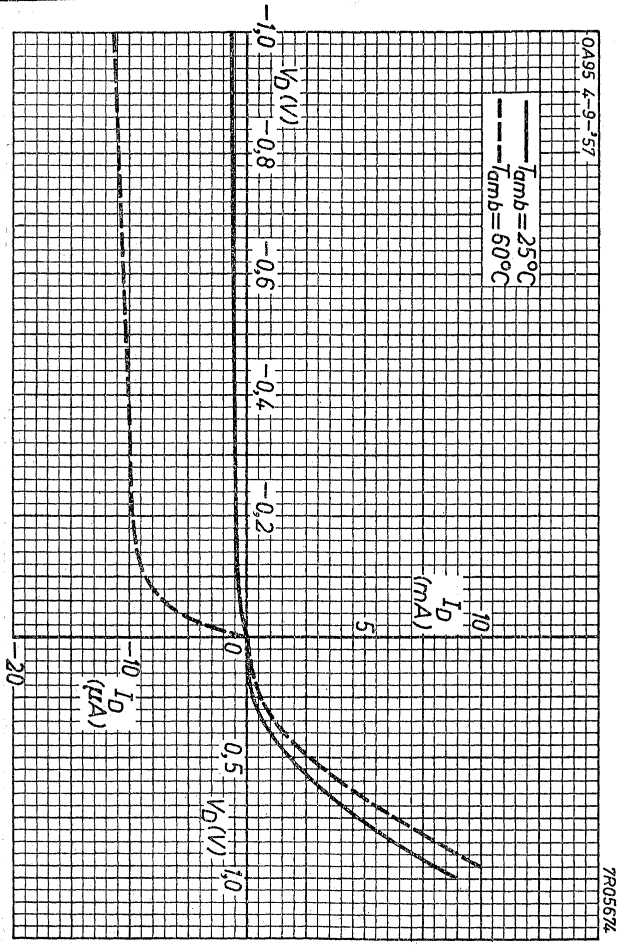


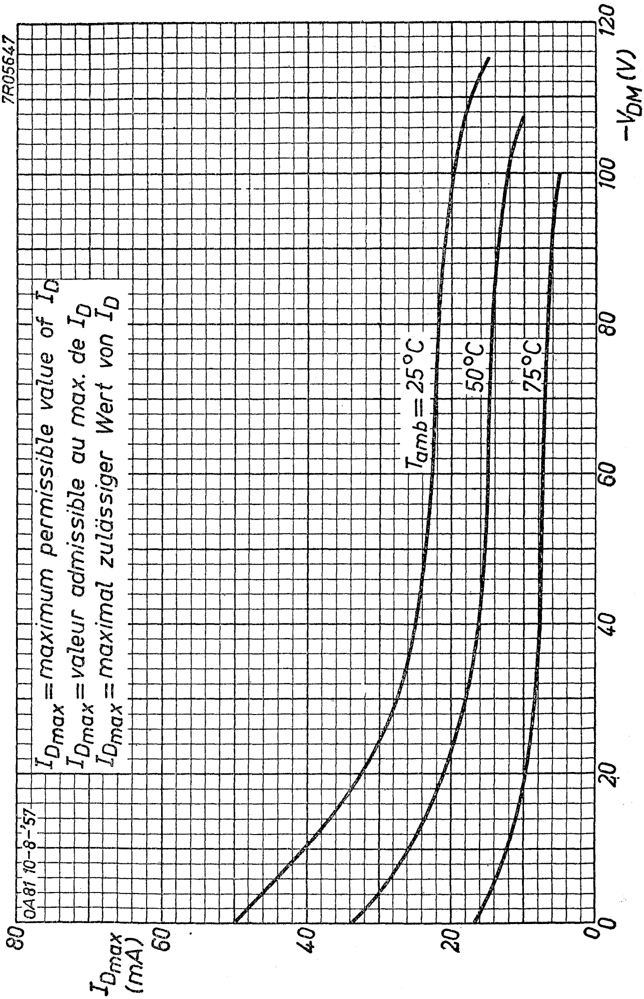
B


7R05871
OA95 14-3-'58
Current limits
Limites de courant
Stromgrenzen
1000
$-I_D$
(μA)
100
10
1
0,1
T_{amb}=25°C
T_{amb}=60°C
0
50
$-V_D$(V)
100
0
50
$-V_D$(V)
100

OA95

PHILIPS




7R05647
0A81 10-8-'57
I_{Dmax} = maximum permissible value of I_D
I_{Dmax} = valeur admissible au max. de I_D
I_{Dmax} = maximal zulässiger Wert von I_D
T_{amb} = 25°C
50°C
75°C
I_{Dmax} (mA)
80
60
40
20
0
$-V_{DM}$ (V)
0
20
40
60
80
100
120

PHILIPS

OA 200

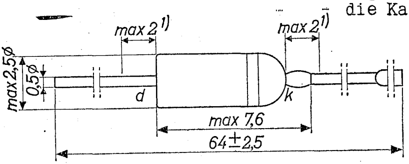
GENERAL PURPOSE SILICON DIODE of the alloyed junction type with low inverse current in miniature all-glass construction for operation at high ambient temperatures

DIODE AU SILICIUM POUR USAGES GENERAUX de type jonction par alliage et de construction miniature tout verre pour utilisation aux températures ambiantes élevées

Legierte ALLZWECKSILIZIUMDIODE in Miniatur-Allglasausführung mit niedrigem Strom in der Sperrichtung zur Verwendung bei hohen Umgebungstemperaturen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc indique la position de la cathode
Der weisse Ring bezeichnet die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

		T_{amb} = 25 °C	= 125 °C
$-V_D$		= max. 50 V	max. 50 V
I_D	direct current courant continu Gleichstrom	= max. 160 mA	max. 48 mA 2)
I_D (t_{av} = max. 50 msec)		See pages C and D Voir pages C et D Siehe Seite C und D	
I_{DM}		= max. 250 mA	max. 125 mA
T_{amb}		= -55 °C/ +125 °C	
Storage temperatur Température d'emmagasinage Lagerungstemperatur		= -55 °C/ +125 °C	

1) Not tinned
Non étamé
Nicht verzinnt

2) See also page B
Voir aussi page B
Siehe auch Seite B

OA 200 PHILIPS

Thermal data. Junction temperature rise to ambient temperature in free air — K ≦ 0.4 °C/mW

Données thermiques. Augmentation de la température de la jonction au regard de la température de l'ambiance à l'air libre — K ≦ 0,4 °C/mW

Thermische Daten. Temperaturerhöhung in bezug auf die Umgebungstemperatur in freier Luft — K ≦ 0,4 °C/mW

Characteristics
Caractéristiques
Kenndaten

I_D (mA)	V_D (V) T_{amb} = 25°C		T_{amb} = 125°C
0,1	0,52	< 0,62	0,30
10	0,80	< 0,96	0,65
30	0,90	< 1,15	0,80

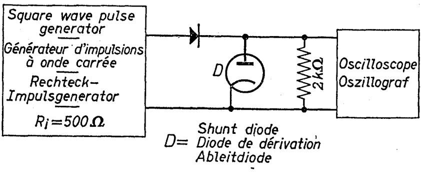
$-V_D$ (V)	$-I_D$ (μA) T_{amb} = 25°C		T_{amb} = 125°C	
50	0,02	< 0,1	1	< 10

Capacitance
Capacité
Kapazität

T_{amb} = 25 °C
$-V_D$ = 0,75 V
f = 0,5 Mc/s
C_D = 10 pF
C_D < 25 pF [1]

Reverse recovery
Recouvrement inverse
Übergangszeit für Sperrichtung

T_{amb} = 25 °C



Measuring circuit; circuit de mesure; Messchaltung

[1]) Characteristic value for equipment design
Valeur caractéristique pour l'étude d'équipements
Charakteristischer Wert für Gerätentwurf

Reverse recovery (continued)
Recouvrement inverse (suite)
Übergangszeit für Sperrichtung (Fortsetzung)

Pulse data
Données de l'impulsion
Impulsdaten

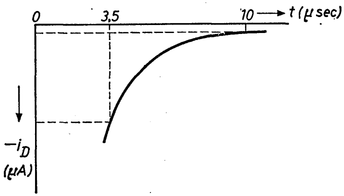
f = 50 kc/s
δ = 0,5

Rise time
Temps de montée < 0,1 µsec
Anstiegszeit

Oscilloscope data
Données de l'oscilloscope
Daten des Oszillographen

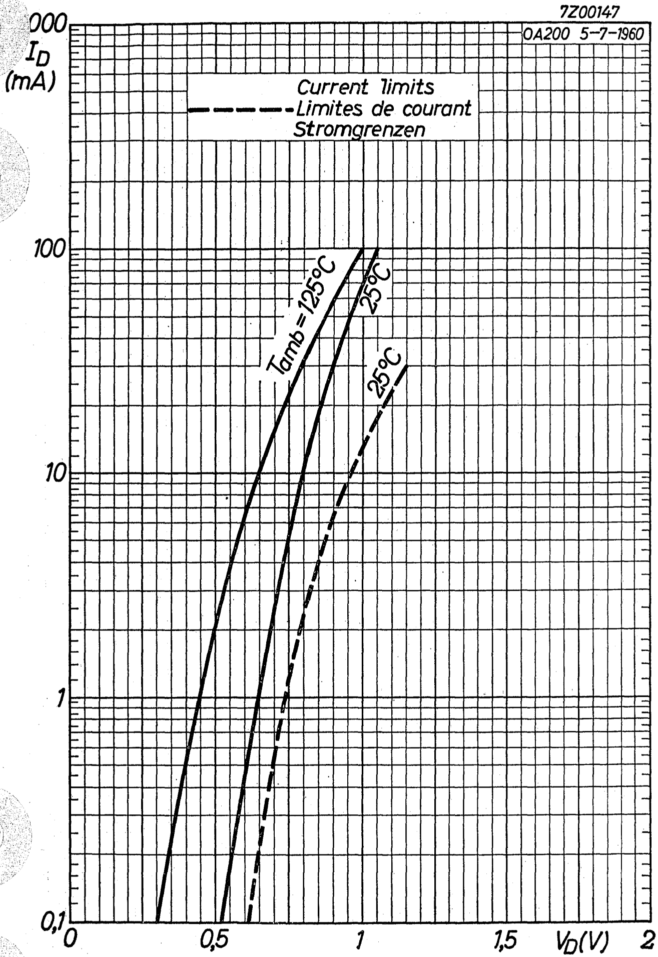
C_{inp} = 40 pF

Rise time
Temps de montée = 0,025 µsec
Anstiegszeit

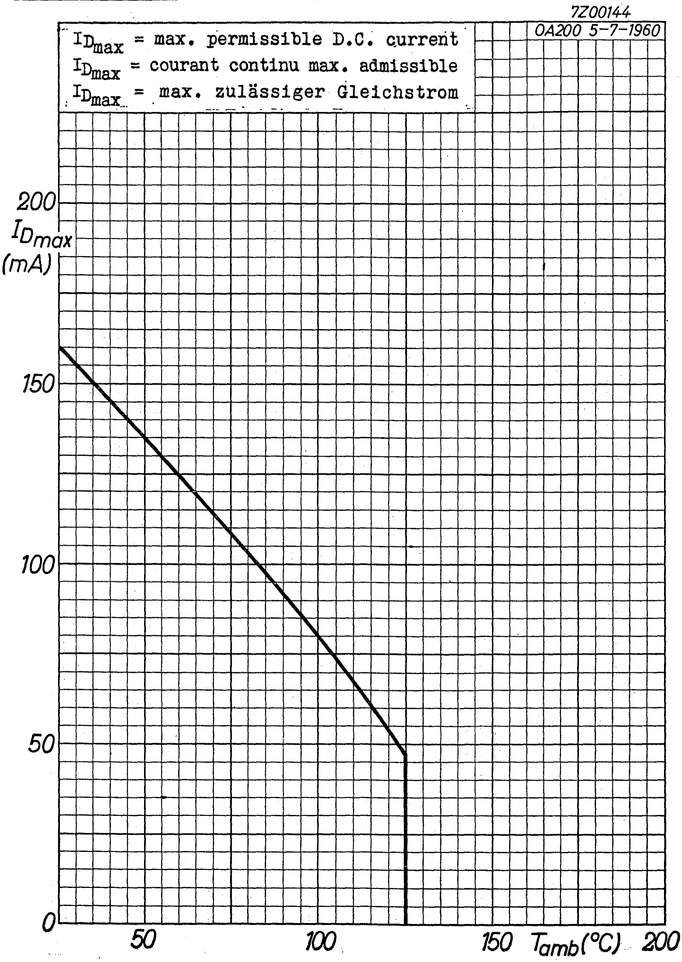


[1] I_{DM} (mA)	[1] $-V_{DM}$ (V)	$-i_D$	
		t = 3,5 µsec	t = 10 µsec
5	5	1,2 mA	35 µA
30	35	4 mA	230 µA

[1]) Reverse voltage pulse ($-V_{DM}$) after forward current pulse (I_{DM})
Impulsion de tension inverse ($-V_{DM}$) après impulsion de courant en sens conducteur (I_{DM})
Spannungsimpuls in Sperrichtung ($-V_{DM}$) nach Stromimpuls in Durchlassrichtung (I_{DM})


7Z00147
OA200 5-7-1960
1000
I_D
(mA)
Current limits
Limites de courant
Stromgrenzen
100
10
1
0,1
T_{amb}=125°C
25°C
25°C
0
0,5
1
1,5
V_D(V)
2

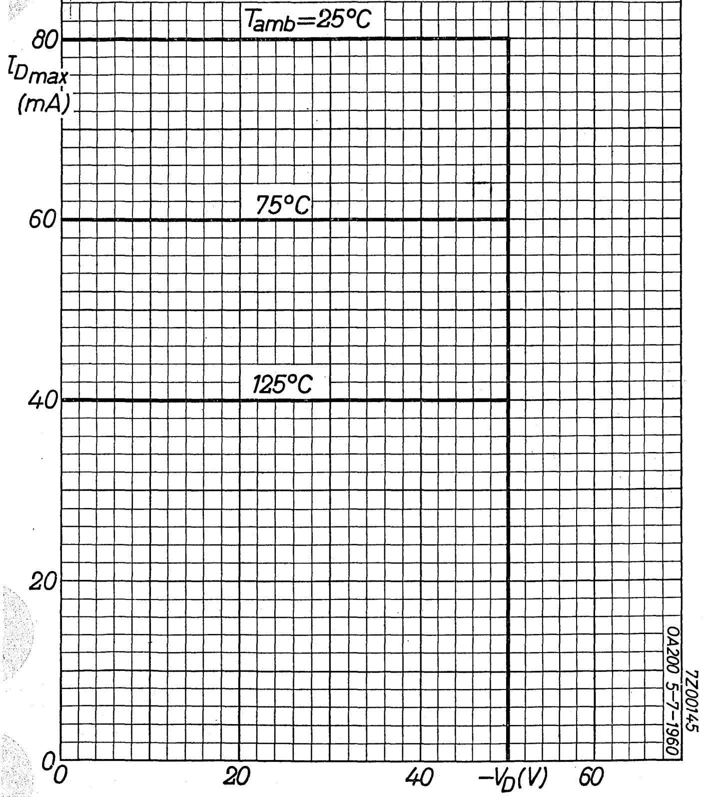
PHILIPS

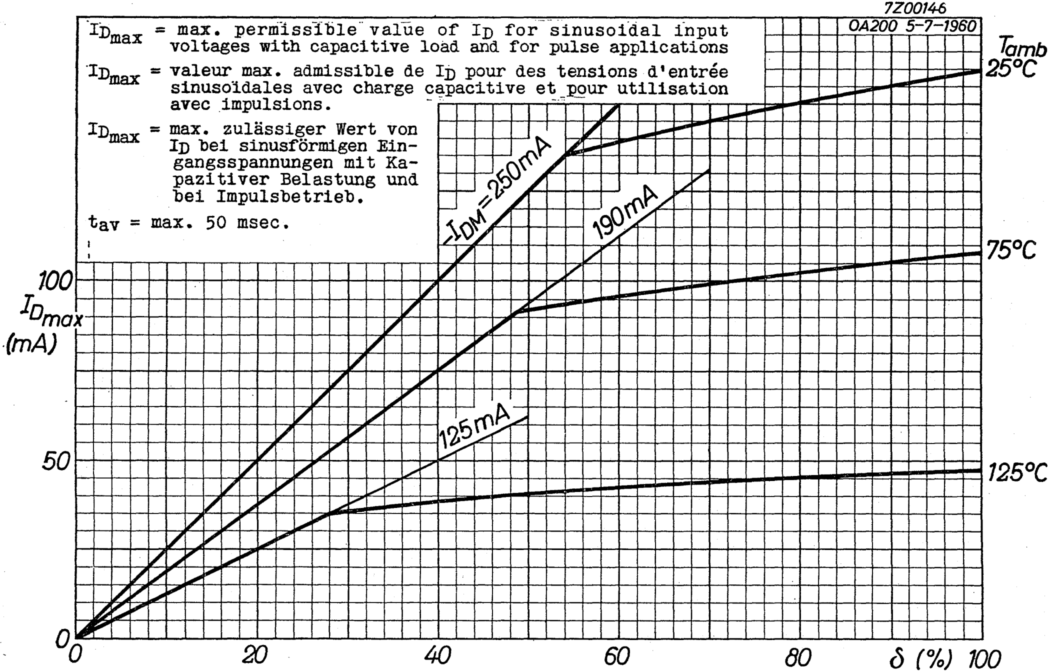

7Z00144
OA200 5-7-1960
I_{Dmax} = max. permissible D.C. current
I_{Dmax} = courant continu max. admissible
I_{Dmax} = max. zulässiger Gleichstrom
200
I_{Dmax}
(mA)
150
100
50
0
50
100
150
T_{amb}(°C)
200

I_{Dmax} = max. permissible value of I_D for sinusoidal input voltages and resistive load. ($I_{DM} = \pi x I_D$; t_{av} = max. 50 msec)

I_{Dmax} = valeur max. admissible de I_D pour des tensions d'entrée sinusoïdales avec charge résistive. ($I_{DM} = \pi . I_D$; t_{av} = 50 msec au max.)

I_{Dmax} = max. zulässiger Wert von I_D bei sinusförmigen Eingangsspannungen mit Widerstandsbelastung. ($I_{DM} = \pi . I_D$; t_{av} = max. 50 mSek)



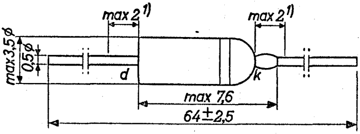

7Z00146
OA200 5-7-1960
$I_{D_{max}}$ = max. permissible value of I_D for sinusoidal input voltages with capacitive load and for pulse applications
$I_{D_{max}}$ = valeur max. admissible de I_D pour des tensions d'entrée sinusoïdales avec charge capacitive et pour utilisation avec impulsions.
$I_{D_{max}}$ = max. zulässiger Wert von I_D bei sinusförmigen Eingangsspannungen mit Kapazitiver Belastung und bei Impulsbetrieb.
t_{av} = max. 50 msec.
$-I_{DM}$=250mA
190mA
125mA
T_{amb}=
25°C
75°C
125°C
100
50
0
$I_{D_{max}}$ (mA)
0
20
40
60
80
δ (%) 100

PHILIPS OA 201

GENERAL PURPOSE SILICON DIODE in miniature all-glass construction with low inverse current for operation at high ambient temperatures
DIODE A SILICIUM de construction tout verre miniature avec petit courant inverse pour les usages généraux aux températures ambiantes élevées
ALLZWECKSILIZIUMDIODE in Miniatur-Allglasausführung mit niedrigem Strom in der Sperrichtung zur Verwendung bei hohen Umgebungstemperaturen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc marque la position de la cathode
Der weisse Ring indiziert die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

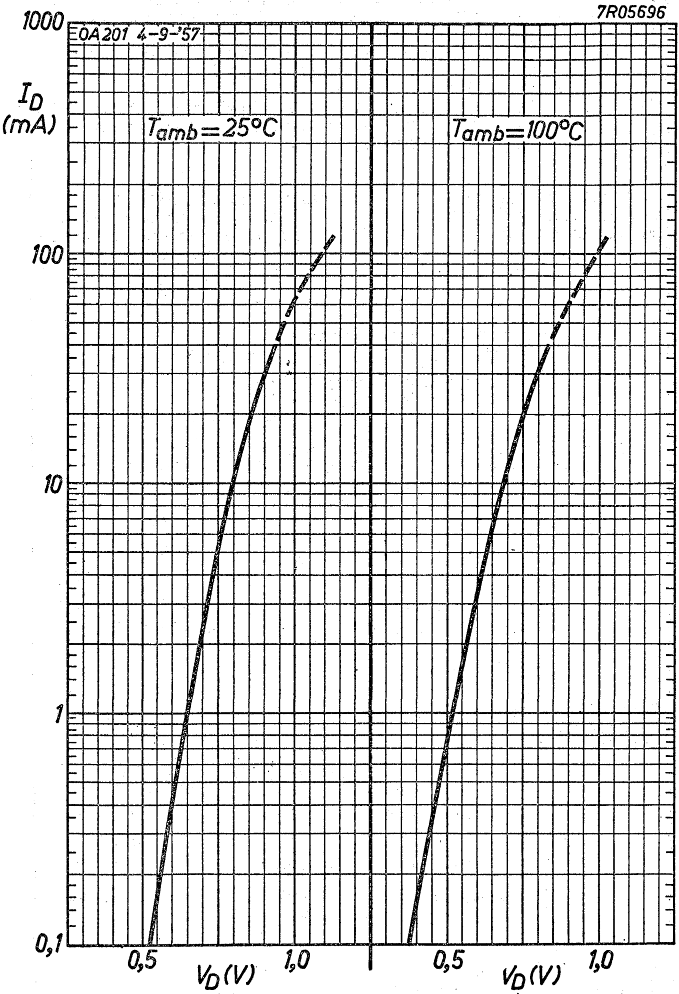
$-V_D$	= max.	100 V
$-V_{DM}$	= max.	100 V
I_D (t_{av} = 50 msec)	= max.	40 mA
I_{DM}	= max.	120 mA
T_{amb}	=	-50 °C/+125 °C

Characteristics
Caractéristiques
Kenndaten

	T_{amb} = 25 °C	T_{amb} = 100 °C
V_D (I_D = 0,1 mA) =	0,53	0,38 V
V_D (I_D = 10 mA) =	0,80	0,70 V
V_D (I_D = 30 mA) =	0,90	0,80 V
$-I_D$($-V_D$= 100 V) = <	0,05 0,1	5 µA µA

1) Not tinned; non étamé; nicht verzinnt

OA 201 PHILIPS



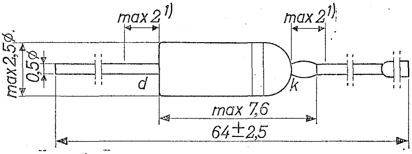
A

PHILIPS **OA 202**

GENERAL PURPOSE SILICON DIODE of the alloyed junction type with low inverse current in miniature all-glass construction for operation at high ambient temperatures
DIODE AU SILICIUM POUR USAGES GENERAUX de type jonction par alliage et de construction miniature tout verre pour utilisation aux températures ambiantes élevées
Legierte ALLZWECKSILIZIUMDIODE in Miniatur- Allglasausführung mit niedrigem Strom in der Sperrichtung zur Verwendung bei hohen Umgebungstemperaturen

Dimensions in mm
Dimensions en mm
Abmessungen in mm

The white band indicates the position of the cathode
L'anneau blanc indique la position de la cathode
Der weisse Ring bezeichnet die Katodenseite



Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

		T_{amb} = 25 °C	= 125 °C
$-V_D$		= max. 150 V	max. 150 V
I_D	direct current / courant continu / Gleichstrom	= max. 160 mA	max. 48 mA 2)
I_D	(t_{av} = max. 50 msec)	See pages C and D / Voir pages C et D / Siehe Seite C und D	
I_{DM}		= max. 250 mA	max. 125 mA
T_{amb}		= -55 °C/ +125 °C	
Storage tempeıatur / Température d'emmagasinage / Lagerungstemperatur		= -55 °C/ +125 °C	

1) Not tinned
Non étamé
Nicht verzinnt

2) See also page B
Voir aussi page B
Siehe auch Seite B

OA 202

PHILIPS

Thermal data. Junction temperature rise to ambient temperature in free air — K = 0.4 °C/mW

Données thermiques. Augmentation de la température de la jonction au regard de la température de l'ambiance à l'air libre — K = 0,4 °C/mW

Thermische Daten. Temperaturerhöhung in bezug auf die Umgebungstemperatur in freier Luft — K = 0,4 °C/mW

Characteristics
Caractéristiques
Kenndaten

I_D (mA)	V_D (V) T_{amb} = 25°C		V_D (V) T_{amb} = 125°C
0,1	0,52	< 0,62	0,30
10	0,80	< 0,96	0,65
30	0,90	< 1,15	0,80

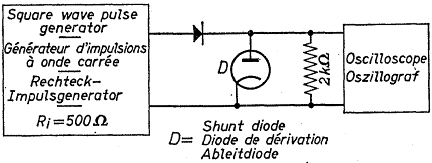
$-V_D$ (V)	$-I_D$ (µA) T_{amb} = 25°C		$-I_D$ (µA) T_{amb} = 125°C	
150	0,01	< 0,1	0,5	< 10

Capacitance
Capacité
Kapazität

T_{amb} = 25 °C
$-V_D$ = 0,75 V
f = 0,5 Mc/s
C_D = 10 pF
C_D < 25 pF [1])

Reverse recovery
Recouvrement inverse
Übergangszeit für Sperrichtung

T_{amb} = 25°C



Measuring circuit; circuit de mesure; Messschaltung

[1]) Characteristic value for equipment design
Valeur caractéristique pour l'étude d'équipements
Charakteristischer Wert für Gerätentwurf

Reverse recovery (continued)
Recouvrement inverse (suite)
Übergangszeit für Sperrichtung (Fortsetzung)

Pulse data
Données de l'impulsion
Impulsdaten

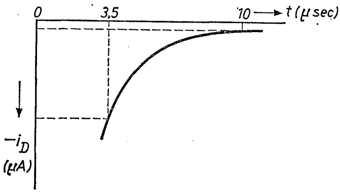
f = 50 kc/s
δ = 0,5

Rise time
Temps de montée
Anstiegszeit < 0,1 µsec

Oscilloscope data
Données de l'oscilloscope
Daten des Oszillographen

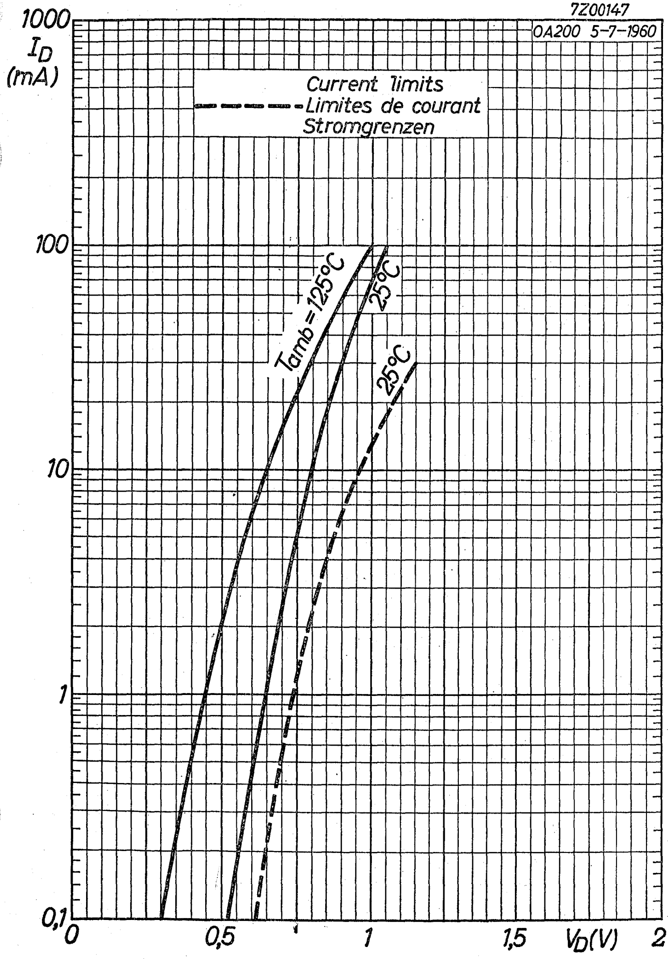
C_{inp} = 40 pF

Rise time
Temps de montée
Anstiegszeit = 0,025 µsec

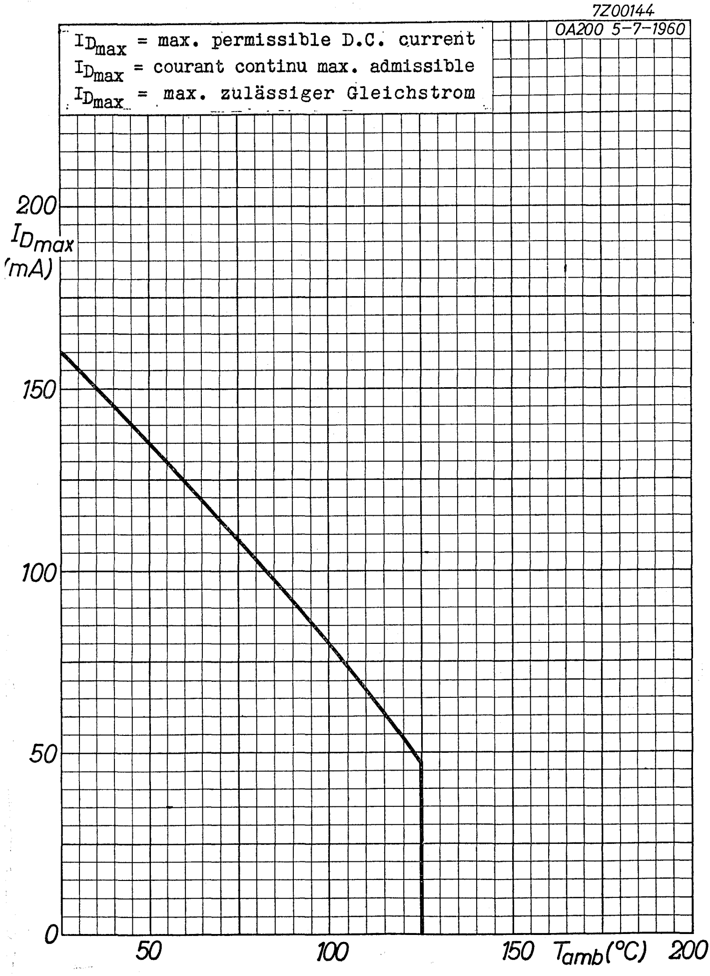


[1]) I_{DM} (mA)	[1]) $-V_{DM}$ (V)	$-i_D$ t = 3,5 µsec	t = 10 µsec
5	5	1,2 mA	35 µA
30	35	4 mA	230 µA

[1]) Reverse voltage pulse ($-V_{DM}$) after forward current pulse (I_{DM})
Impulsion de tension inverse ($-V_{DM}$) après impulsion de courant en sens conducteur (I_{DM})
Spannungsimpuls in Sperrichtung ($-V_{DM}$) nach Stromimpuls in Durchlassrichtung (I_{DM})


7Z00147
OA200 5-7-1960
1000
I_D
(mA)
100
10
1
0,1
Current limits
Limites de courant
Stromgrenzen
Tamb=125°C
25°C
25°C
0
0,5
1
1,5
V_D(V)
2

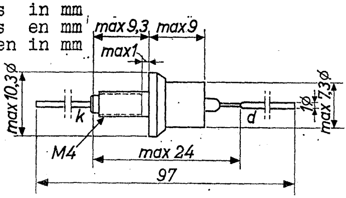
PHILIPS



7Z00144
OA200 5-7-1960
I_{Dmax} = max. permissible D.C. current
I_{Dmax} = courant continu max. admissible
I_{Dmax} = max. zulässiger Gleichstrom
200
I_{Dmax}
(mA)
150
100
50
0
50
100
150
T_{amb}(°C)
200

SILICON JUNCTION DIODE for use as 127 volts mains rectifier in television receivers
DIODE A JONCTION A SILICIUM pour utilisation en redresseuse de réseau de 127 volts dans les récepteurs de télévision
SILIZIUM-FLÄCHENDIODE zur Verwendung als Gleichrichter für 127 Volts-Netze in Fernsehempfängern

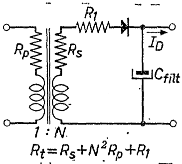
Dimensions in mm
Dimensions en mm
Abmessungen in mm

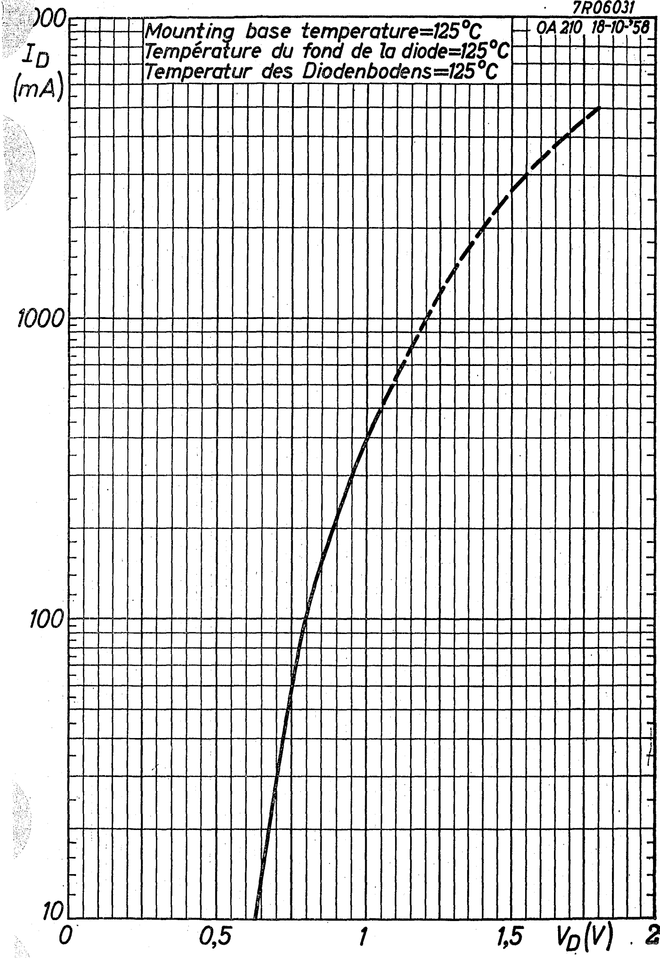


Limiting values at T_{amb} = 70 °C (Absolute max. values)
Caractéristiques limites à T_{amb} = 70 °C (Valeurs max.absolues)
Grenzdaten bei T_{amb} = 70 °C (Absolute Maximalwerte)

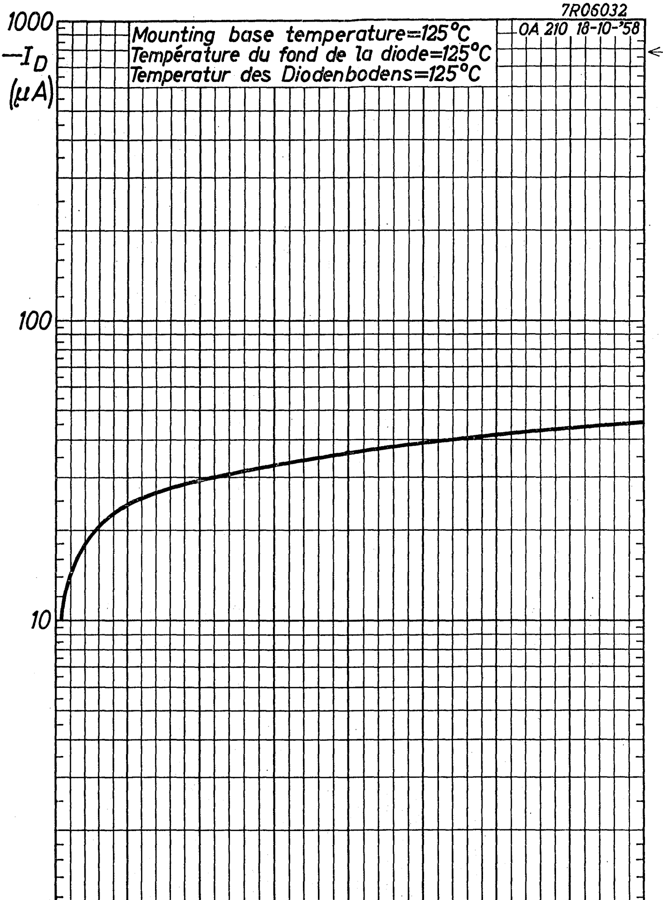
$-V_{DM}$	= max. 400 V
I_D (t_{av} = max. 50 msec)	= max. 0,5 A
I_{DM}	= max. 5 A
C_{filt}	= max. 200 µF
R_t [1]	= min. 4 Ω
T_{amb}	= max. 70 °C
Storage temperature Température d'emmagasinage Lagerungstemperatur	= max. 150 °C

[1]) R_t = min. required circuit resistance. When a transformer is present between the mains and the diode $R_t = R_s + N^2 R_p + R_1$
R_t = la résistance de circuit requise au min. S'il y a un transformateur entre le réseau et la diode $R_t = R_s + N^2 R_p + R_1$
R_t = Mindestwiderstand der in der Schaltung anwesend sein soll. Wenn ein Transformator zwischen Netz und Diode geschaltet ist, ist $R_t = R_s + N^2 R_p + R_1$

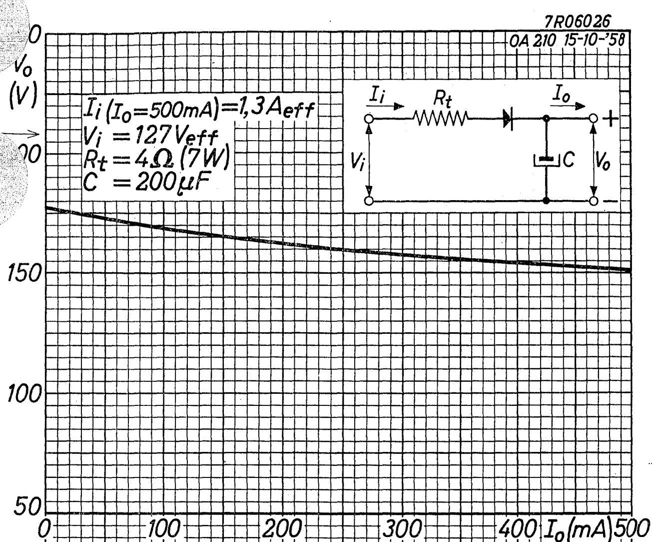


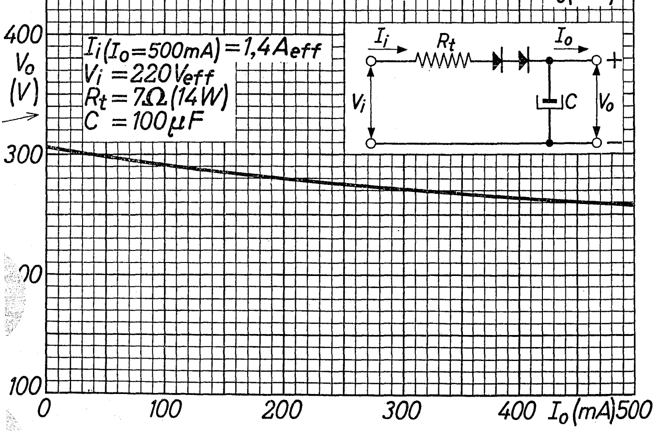

7R06031
OA 210 18-10-'58
Mounting base temperature=125°C
Température du fond de la diode=125°C
Temperatur des Diodenbodens=125°C
I_D (mA)
1000
100
10
0
0,5
1
1,5
V_D (V)
2

OA 210 PHILIPS

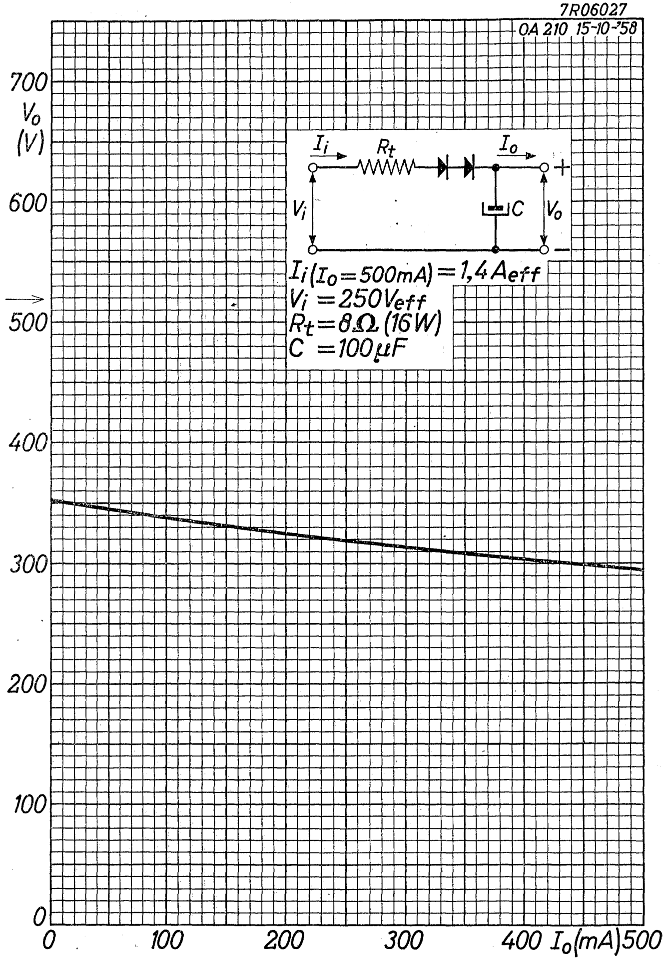


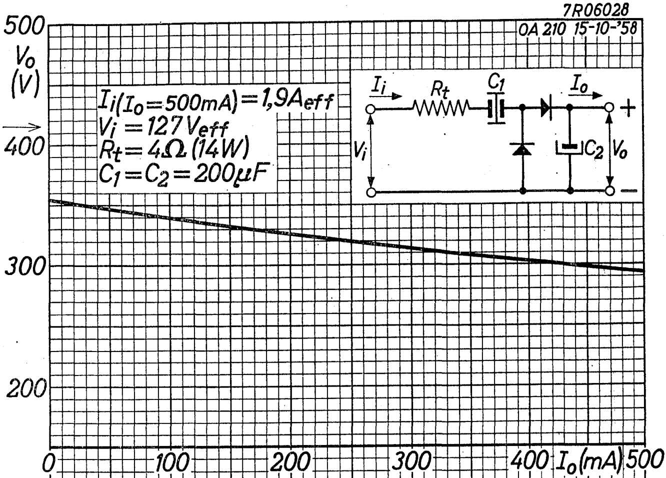
B

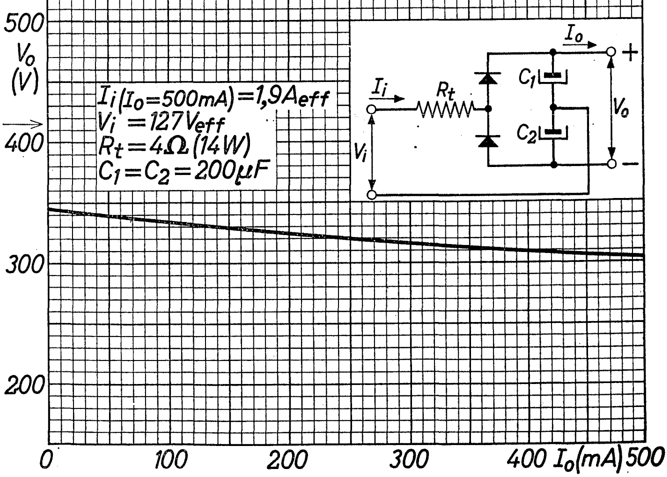

7R06026
OA 210 15-10-'58
V_o (V)
I_i (I_o=500mA)=1,3 A_{eff}
V_i = 127 V_{eff}
R_t = 4Ω (7W)
C = 200µF
I_i
R_t
I_o
V_i
C
V_o
+
−
0
0
150
100
50
0
100
200
300
400
I_o(mA)
500


400
V_o (V)
I_i(I_o=500mA)=1,4 A_{eff}
V_i = 220 V_{eff}
R_t = 7Ω (14W)
C = 100µF
I_i
R_t
I_o
V_i
C
V_o
+
−
300
0
100
0
100
200
300
400
I_o(mA)
500

OA 210 PHILIPS

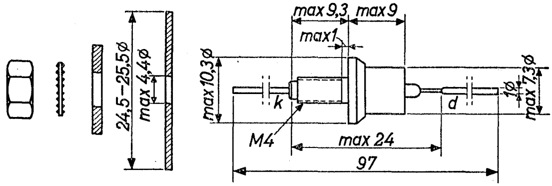



7R06028
OA 210 15-10-'58
500
400
300
200
V_o (V)
$I_i(I_o = 500mA) = 1,9A_{eff}$
$V_i = 127 V_{eff}$
$R_t = 4\Omega$ (14W)
$C_1 = C_2 = 200\mu F$
I_i
R_t
C_1
I_o
V_i
C_2
V_o
+
−
0
100
200
300
400
I_o(mA)
500


500
400
300
200
V_o (V)
$I_i(I_o = 500mA) = 1,9A_{eff}$
$V_i = 127 V_{eff}$
$R_t = 4\Omega$ (14W)
$C_1 = C_2 = 200\mu F$
I_o
I_i
R_t
C_1
C_2
V_i
V_o
+
−
0
100
200
300
400
I_o(mA)
500

SILICON JUNCTION DIODE for use as 250 volts mains rectifier in television receivers
DIODE A JONCTION A SILICIUM pour utilisation en redresseuse de réseau de 250 volts dans les récepteurs de télévision
SILIZIUM-FLÄCHENDIODE zur Verwendung als Gleichrichter für 250 Volts-Netze in Fernsehempfängern

Dimensions in mm. Heat sink and mounting parts can be supplied separately
Dimensions en mm. Plaque de refroidissement et pièces de montage peuvent être fournies séparément
Abmessungen in mm. Kühlplatte und Montagezubehör können getrennt geliefert werden



Limiting values with heat sink of min. 5 cm² at T_{amb} = 60 °C (Absolute max. values)
Caractéristiques limites avec plaque de refroidissement de 5 cm² au moins à T_{amb} = 60 °C (Valeurs max. absolues)
Grenzdaten mit Kühlfläche von mindestens 5 cm² bei T_{amb} = 60 °C (Absolute Maximalwerte)

$-V_{DM}$	= max.	800 V
I_D (t_{av} = max. 50 msec)	= max.	0,4 A
I_{DM}	= max.	4 A
C_{filt}	= max.	100 µF
R_t [1])	= min.	8 Ω
T_{amb}	= max.	60 °C
Storage temperature Température d'emmagasinage Lagerungstemperatur	= max.	150 °C

[1]) See page 2; voir page 2; siehe Seite 2

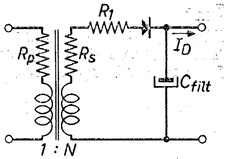
Tentative data. Vorläufige Daten
Caractéristiques provisoires

---

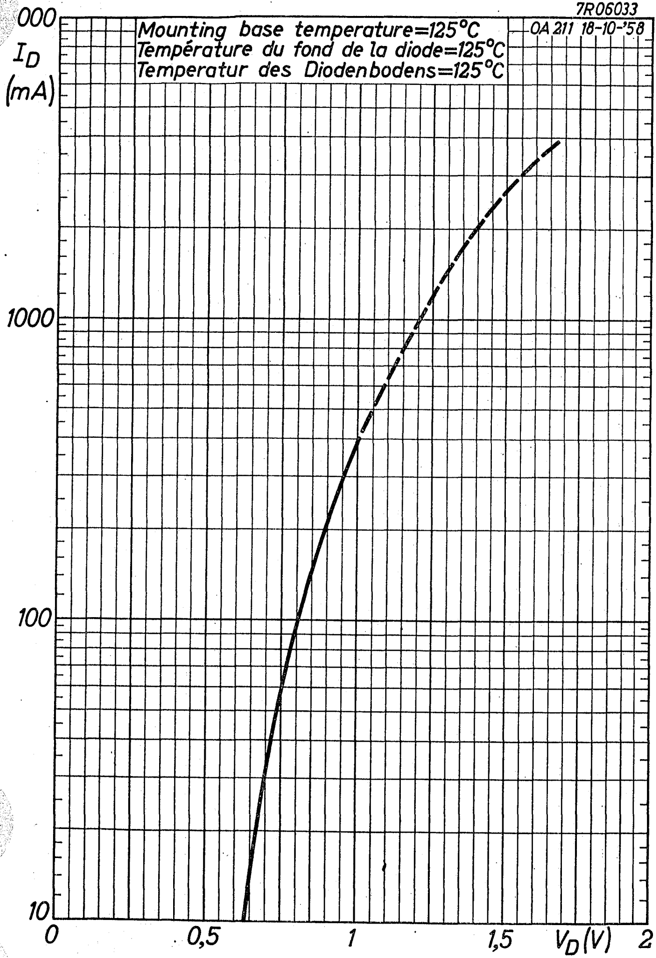
[1]) R_t = min. required circuit resistance. When a transformer is present between the mains and the diode $R_t = R_s + N^2R_p + R_1$

R_t = la résistance de circuit requise au min. S'il y a un transformateur entre le réseau et la diode $R_t = R_s + N^2R_p + R_1$

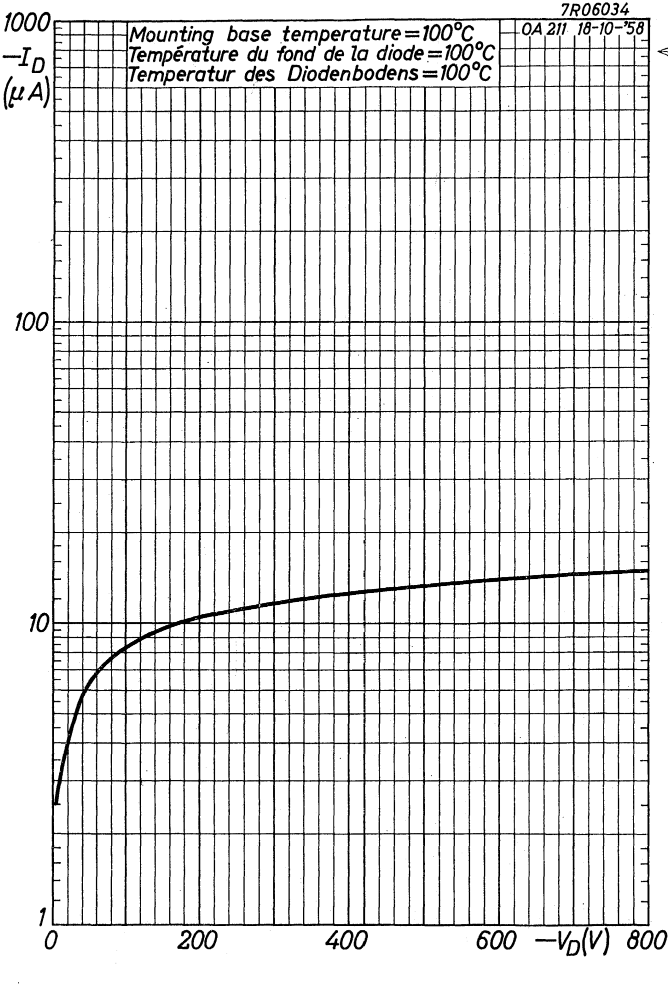
R_t = Mindestwiderstand der in der Schaltung anwesend sein soll. Wenn ein Transformator zwischen Netz und Diode geschaltet ist, ist $R_t = R_s + N^2R_p + R_1$



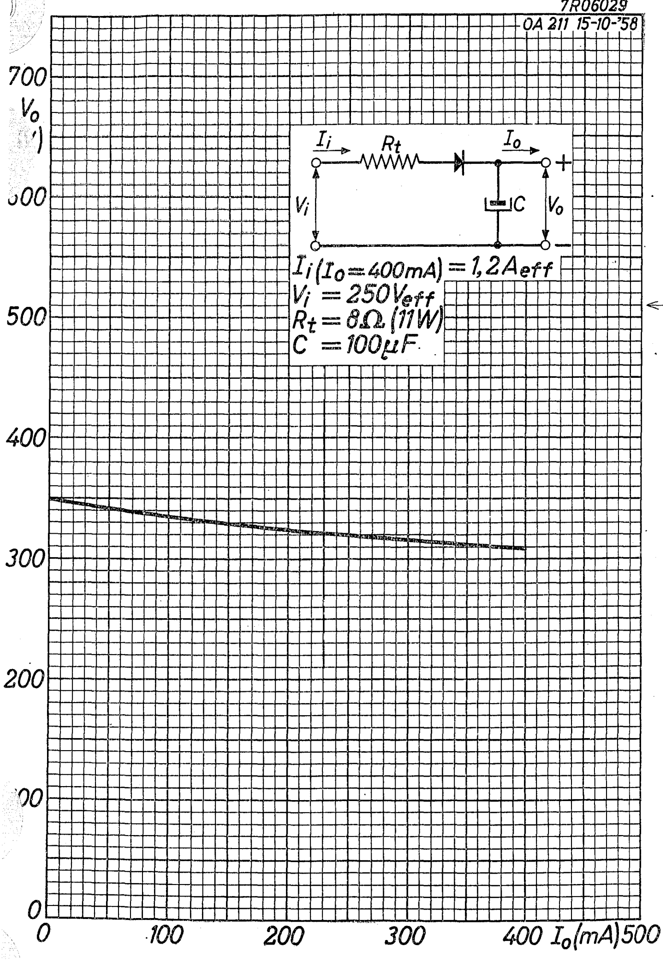
$R_t = R_s + N^2R_p + R_1$


7R06033
OA 211 18-10-'58
Mounting base temperature=125°C
Température du fond de la diode=125°C
Temperatur des Diodenbodens=125°C
000
I_D
(mA)
1000
100
10
0
0,5
1
1,5
V_D(V)
2

OA 211 PHILIPS

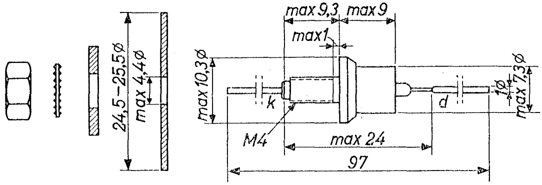


B


7R06029
OA 211 15-10-'58
700
V_o
(V)
600
500
400
300
200
100
0
0
100
200
300
400 I_o(mA) 500
I_i
R_t
I_o
+
V_i
C
V_o
−
I_i (I_o = 400mA) = 1,2 A_{eff}
V_i = 250 V_{eff}
R_t = 8Ω (11W)
C = 100μF

SILICON JUNCTION DIODE for use as 220 volts mains rectifier in television receivers
DIODE A JONCTION A SILICIUM pour utilisation en redresseuse de réseau de 220 volts dans les récepteurs de télévision
SILIZIUM-FLÄCHENDIODE zur Verwendung als Gleichrichter für 220 Volts-Netze in Fernsehempfängern

Dimensions in mm. Heat sink and mounting parts can be supplied separately
Dimensions en mm. Plaque de refroidissement et pièces de montage peuvent être fournies séparement
Abmessungen in mm. Kühlplatte und Montagezubehör können getrennt geliefert werden



Limiting values with heat sink of min. 5 cm² at T_{amb} = 70 °C (Absolute max. values)
Caractéristiques limites avec plaque de refroidissement de 5 cm² au moins à T_{amb} = 70 °C (Valeurs max. absolues)
Grenzdaten mit Kühlfläche von mindestens 5 cm² bei T_{amb} = 70 °C (Absolute Maximalwerte)

$-V_{DM}$	= max.	700 V
I_D (t_{av} = max. 50 msec)	= max.	0,5 A
I_{DM}	= max.	5 A
C_{filt}	= max.	100 µF
R_t [1])	= min.	7 Ω
T_{amb}	= max.	70 °C
Storage temperature Température d'emmagasinage Lagerungstemperatur	= max.	150 °C

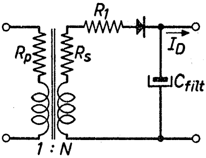
[1]) See page 2; voir page 2; siehe Seite 2

Tentative data. Vorläufige Daten
Caractéristiques provisoires

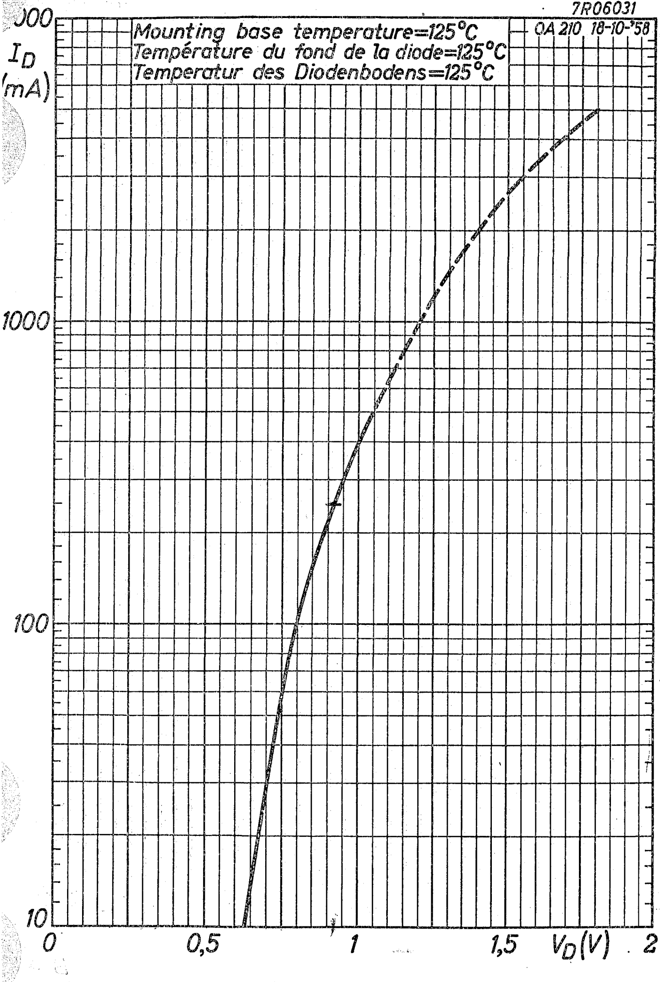
[1]) R_t = min. required circuit resistance. When a transformer is present between the mains and the diode $R_t = R_s + N^2R_p + R_1$

R_t = la résistance de circuit requise au min. S'il y a un transformateur entre le réseau et la diode $R_t = R_s + N^2R_p + R_1$

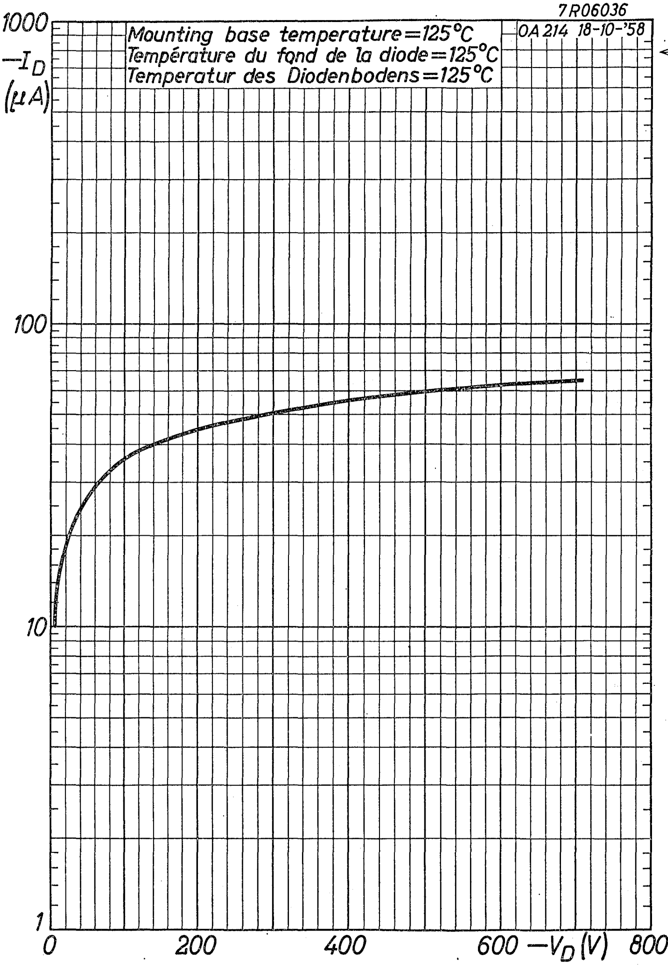
R_t = Mindestwiderstand der in der Schaltung anwesend sein soll. Wenn ein Transformator zwischen Netz und Diode geschaltet ist, ist $R_t = R_s + N^2R_p + R_1$



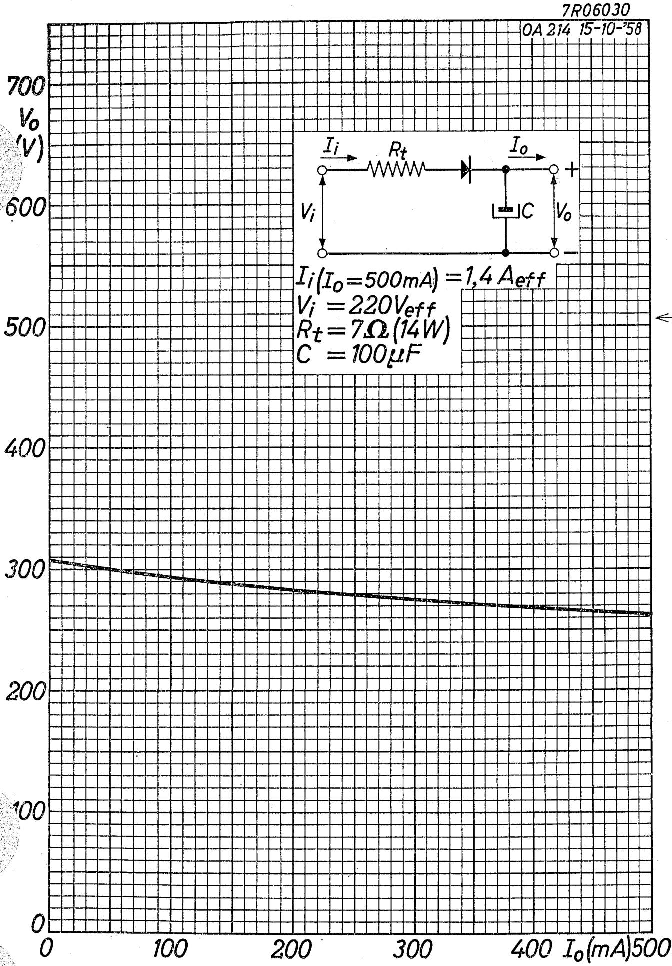
$R_t=R_s+N^2R_p+R_1$


7R06031
OA 210 18-10-'58
Mounting base temperature=125°C
Température du fond de la diode=125°C
Temperatur des Diodenbodens=125°C
I_D (mA)
000
1000
100
10
0
0,5
1
1,5
V_D(V)
2

OA 214 PHILIPS



B


7R06030
OA 214 15-10-'58
700
600
500
400
300
200
100
0
V_o (V)
0
100
200
300
400
500
I_o(mA)
I_i
R_t
I_o
+
−
V_i
C
V_o
$I_i (I_o = 500mA) = 1,4\ A_{eff}$
$V_i = 220V_{eff}$
$R_t = 7\Omega\ (14W)$
$C = 100\mu F$

GERMANIUM PHOTODIODE
PHOTODIODE AU GERMANIUM
GERMANIUM-PHOTODIODE

For data sheets of this type please refer to the chapter "Photo Tubes" in this volume

Pour les feuilles de données de ce type voir sous le chapitre "Tubes Photo-électriques" dans ce tome

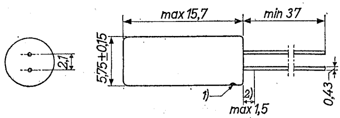
Für Datenblätter dieser Typennummer siehe unter "Photoelektrische Röhren" in diesem Bande

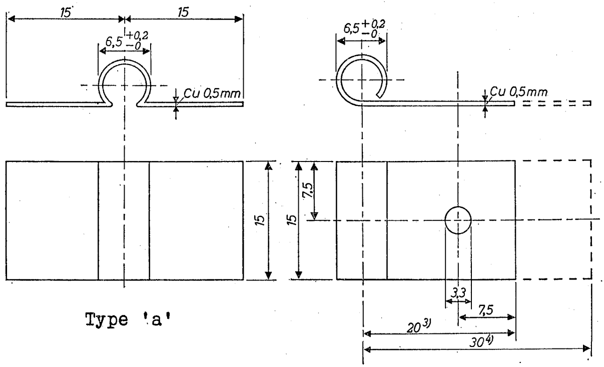
SILICON ALLOY JUNCTION DIODE in all-glass construction with metal can for use as low current VOLTAGE STABILIZER or as a VOLTAGE REFERENCE

DIODE AU SILICIUM À JONCTION PAR ALLIAGE en construction tout verre avec enveloppe métallique pour utilisation comme STABILISATEUR DE TENSION ou comme ÉTALON DE TENSION

LEGIERTE SILIZIUM-FLÄCHENDIODE in Allglastechnik mit Metallumhüllung zur Verwendung als SPANNUNGSSTABILISATOR bei kleinen Strömen oder als BEZUGSSPANNUNGSQUELLE

Dimensions in mm
Dimensions en mm
Abmessungen in mm





Type 'a'

Type 'b'

---

1) The coloured dot indicates the position of the cathode
Le point coloré marque la position de la cathode
Der farbige Punkt bezeichnet die Katodenseite

2) Not tinned; non étamé; nicht verzinnt

3) Standard cooling fin
Ailette de refroidissement standard
Normal-Kühlschelle

4) Extended cooling fin
Ailette de refroidissement prolongée
Verlängerte Kühlschelle

PHILIPS

Limiting values (Absolute max. values)
Caractéristiques limites (Valeurs max. absolues)
Grenzdaten (Absolute Maximalwerte)

I_D	= max. 100 mA
I_{DM}	= max. 100 mA
$-I_D$ (t_{av} = max. 20 msec)	= max. 50 mA [1]
$-I_{DM}$	= max. 100 mA
$-I_{D\ surge}$ (t=max. 0,1 msec)	= max. 10 A [2]
P	= max. $\frac{T_{j\ max} - T_{amb}}{K}$ [3]
T_j	= max. 150 °C
Storage temperature Température d'emmagasinage Lagerungstemperatur	= -55 °C/+150 °C

Thermal data

Junction temperature rise to metal can K = 0.15 °C/mW

Junction temperature rise above ambient temperature

a. Without cooling fin in free air K = 0.4 °C/mW
b. With type a or extended type b cooling fin in free air K = 0.3 °C/mW
c. With standard type b cooling fin and heat sink of 3.5x3.5 cm^2 of 1.6 mm aluminium K = 0.25 °C/mW

Données thermiques, voir page 3

Thermische Daten, siehe Seite 3

[1]) Provided the maximum dissipation is not exceeded
Pourvu que la dissipation maximum admissible ne soit pas dépassée
Unter der Bedingung dass die höchstzulässige Leistung nicht überschritten wird

[2]) See page H; voir page H; siehe Seite H

[3]) See page G; voir page G; siehe Seite G

Données thermiques

Augmentation de la température de la jonction par rapport à l'enveloppe métallique K = 0,15 °C/mW

Augmentation de la température de la jonction par rapport à la température de l'ambiance

a. Sans ailette de refroidissement à l'air libre K = 0,4 °C/mW
b. Avec ailette de refroidissement type a ou type b prolongé à l'air libre K = 0,3 °C/mW
c. Avec ailette de refroidissement type b standard et plaque de refroidissement additionnelle de 3,5x3,5 cm² d'aluminium de 1,6 mm K = 0,25 °C/mW

Thermische Daten

Temperaturerhöhung des Kristalls in Bezug auf die Metallumhüllung K = 0,15 °C/mW

Temperaturerhöhung des Kristalls in Bezug auf die Umgebungstemperatuur

a. Ohne Kühlschelle in freier Luft K = 0,4 °C/mW
b. Mit Kühlschelle Type a oder verlängerter Type b in freier Luft K = 0,3 °C/mW
c. Mit Kühlschelle Normaltype b und zusätzlicher Kühlfläche von 1,6 mm Aluminium von 3,5x3,5 cm² K = 0,25 °C/mW

Characteristics
Caractéristiques
Kenndaten

T_{amb} = 25 °C

Column I : Typical (average) measuring results of new diodes.
II: Characteristic range values for equipment design

Colonne I : Résultats moyens de mesures de diodes neuves
II: Gamme de valeurs caractéristiques pour l'étude d'équipements

Spalte I : Mittlere Messergebnisse neuer Dioden
II: Charakteristischer Wertbereich für Gerätentwurf

I_D (mA)	V_D (mV) I	V_D (mV) II
10	730	700-850
100	800	

OAZ 200 → 213

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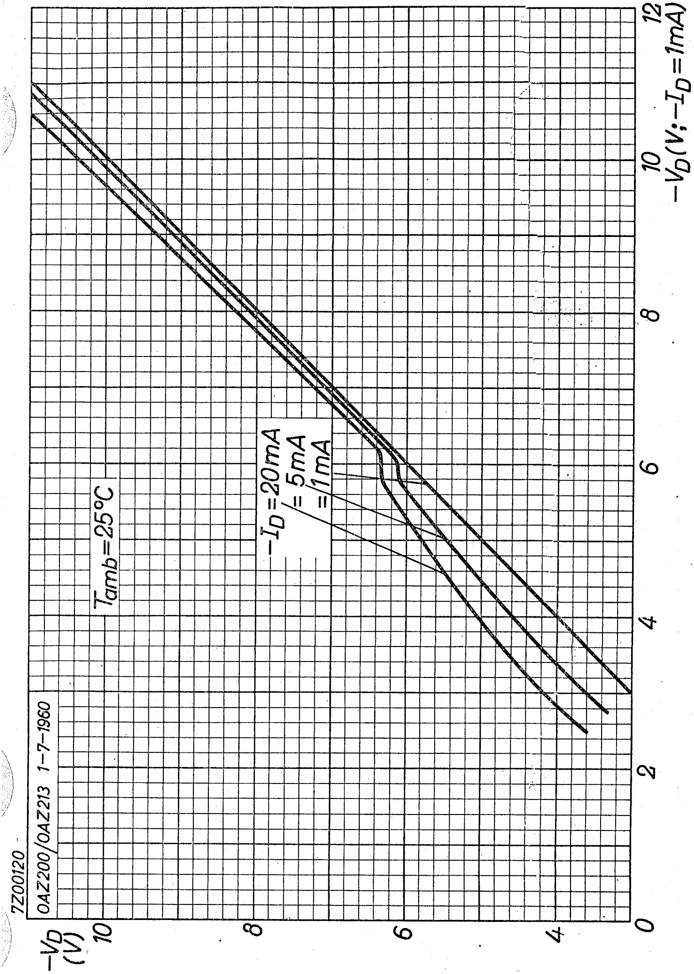
Characteristics (continued) Caractéristiques (suite)
Kenndaten (Fortsetzung) T_{amb} = 25 °C

Type nr. / Nr. de Type / Typennummer	$-I_D$ (mA)	$-V_D$ (V)		$\Delta(-V_D)/\Delta T$ (mV/°C)	r_D (Ω) [1]	
	I	I	II	I	I	II
OAZ 200	1 5 20	4,7 5,2 5,6	4,4-5,0 4,9-5,6 5,3-5,9	-2,0 -1,2 +0,2	350 52 7,0	300-420 30- 70 3,0- 15
OAZ 201	1 5 20	5,1 5,6 5,9	4,8-5,4 5,2-6,0 5,6-6,2	-1,8 -0,6 +1,0	340 40 4,7	300-400 25- 75 3,0- 15
OAZ 202	1 5 20	5,6 6,0 6,2	5,3-6,0 5,6-6,3 5,9-6,6	-1,0 +0,8 +1,9	320 30 3,9	250-380 20- 55 2,0-6,0
OAZ 203	1 5 20	6,2 6,3 6,4	5,8-6,6 6,1-6,8 6,1-6,9	+0,5 +1,7 +2,6	200 10,5 2,0	10-280 2,5- 15 1,0-4,0
OAZ 204	1 5 20	6,8 6,9 7,0	6,4-7,2 6,4-7,3 6,5-7,4	+2,5 +3,0 +3,6	40 4,0 1,6	5,0-180 2,0- 10 0,75-3,5
OAZ 205	1 5 20	7,5 7,6 7,7	7,1-7,9 7,1-8,0 7,1-8,2	+4,0 +4,3 +4,6	8,0 3,0 1,6	3,0- 28 1,0- 15 0,75-7,5
OAZ 206	1 5 20	8,2 8,2 8,4	7,7-8,7 7,7-8,8 7,8-9,0	+5,0 +5,2 +5,4	6,5 3,0 1,8	2,5- 28 1,5- 20 1,0- 10
OAZ 207	1 5 20	9,1 9,2 9,4	8,6-9,6 8,6-9,8 8,8-10,0	+6,2 +6,4 +6,6	8,0 4,3 2,7	2,5- 28 1,5- 15 0,75- 10
OAZ 208	1 5 20	4,3 4,9 5,3	3,3-5,0 3,8-5,6 4,3-5,9	-2,0 -1,4 -0,5	370 67 12	
OAZ 209	1 5 20	5,1 5,6 5,9	4,4-6,0 4,9-6,3 5,3-6,4	-1,8 -0,6 +1,0	340 40 4,7	< 400
OAZ 210	1 5 20	6,2 6,3 6,4	5,3-7,2 5,6-7,3 5,9-7,4	+0,5 +1,7 +2,6	200 10,5 2,0	< 280
OAZ 211	1 5 20	7,5 7,6 7,7	6,4-8,7 6,4-8,8 6,5-9,0	+4,0 +4,3 +4,6	8,0 3,0 1,6	< 28
OAZ 212	1 5 20	9,1 9,2 9,4	7,7-10,6 7,7-10,8 7,8-11,1	+6,2 +6,4 +6,6	8,0 3,2 2,7	< 28
OAZ 213	1 5 20	12,0 12,2 12,5	9,4-15,0 9,4-15,3 9,6-15,7	+9,2 +9,3 +9,4	21 11 7,0	

[1] Dynamic impedance; impédance dynamique; dynamische Impedanz



7Z00120
OAZ200/OAZ213 1-7-1960
$T_{amb}=25°C$
$-I_D=20mA$
$=5mA$
$=1mA$
$-V_D$ (V)
10
8
6
4
0
2
4
6
8
10
12
$-V_D(V;-I_D=1mA)$

OAZ 200
→ 213

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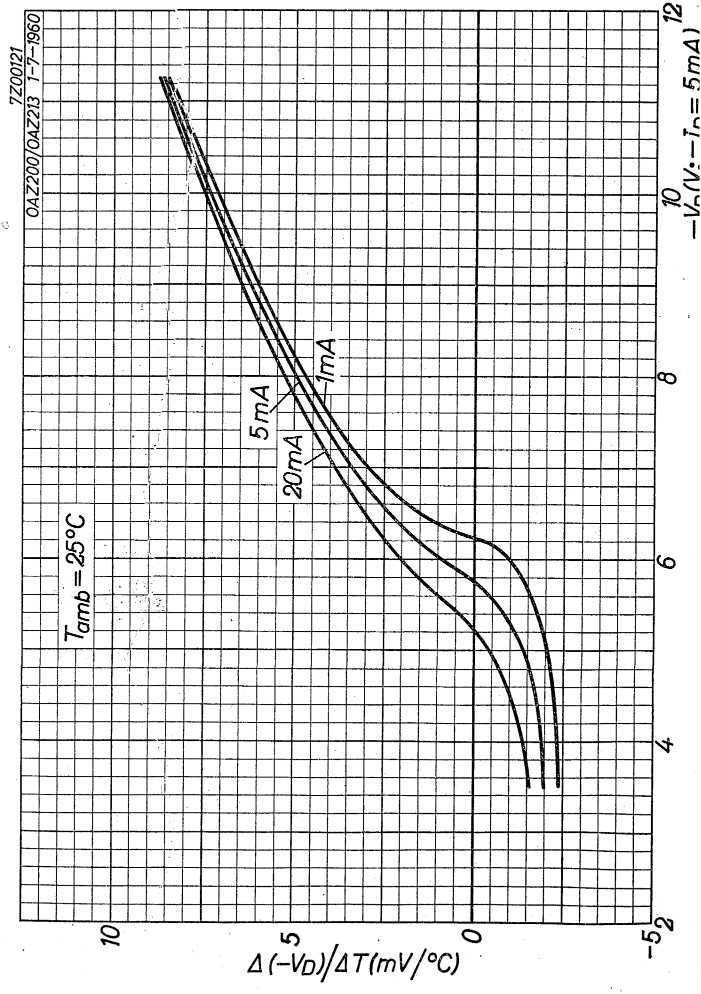
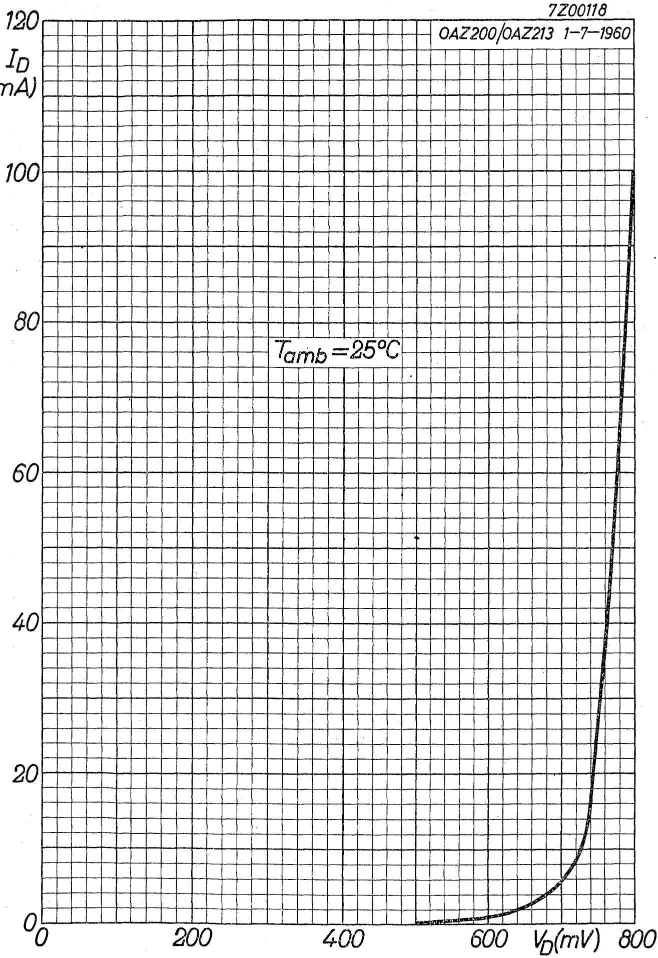
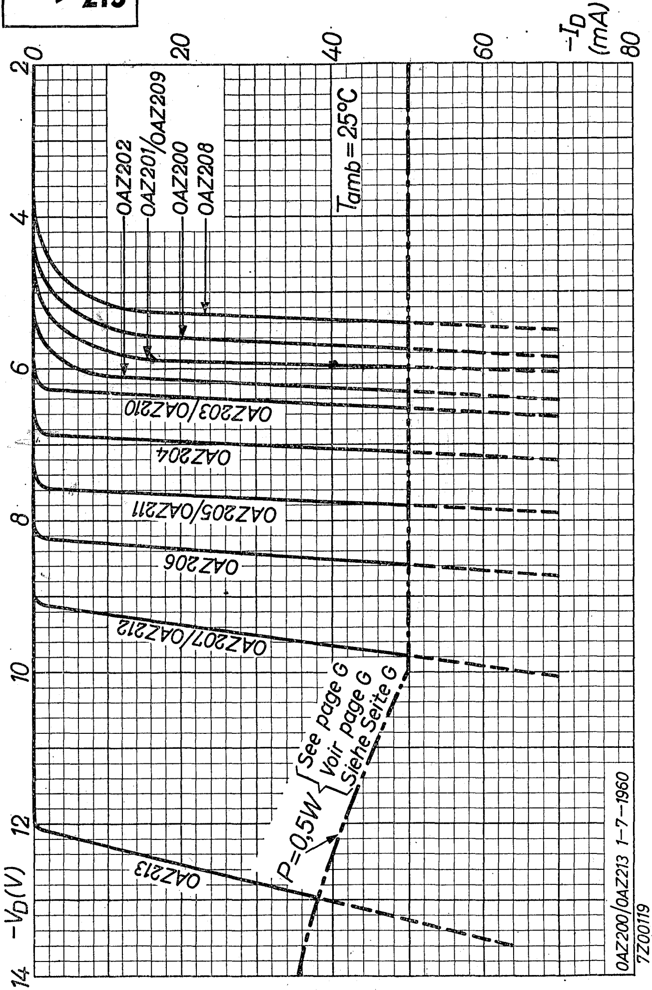


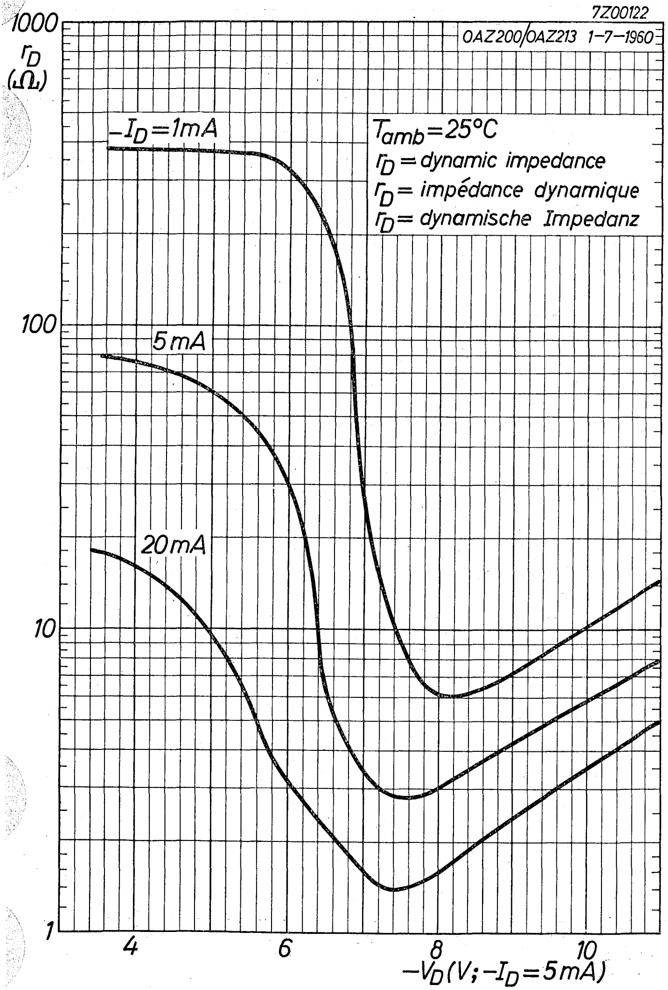
D


7Z00118
OAZ200/OAZ213 1-7-1960
120
I_D
(mA)
100
80
60
40
20
0
0
200
400
600
V_D(mV)
800
T_{amb}=25°C

OAZ 200 → 213

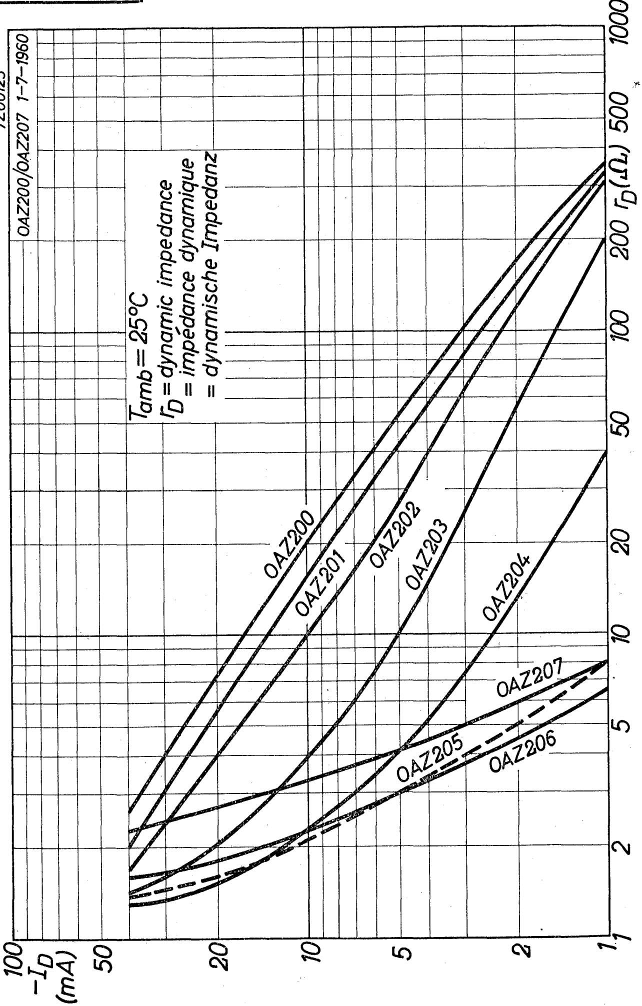
PHILIPS




7Z00122
OAZ200/OAZ213 1-7-1960
1000
r_D
(Ω)
100
10
1
$-I_D$=1mA
5mA
20mA
T_{amb}=25°C
r_D = dynamic impedance
r_D = impédance dynamique
r_D = dynamische Impedanz
4
6
8
10
$-V_D$(V; $-I_D$=5mA)

OAZ 200 → 213

PHILIPS



F

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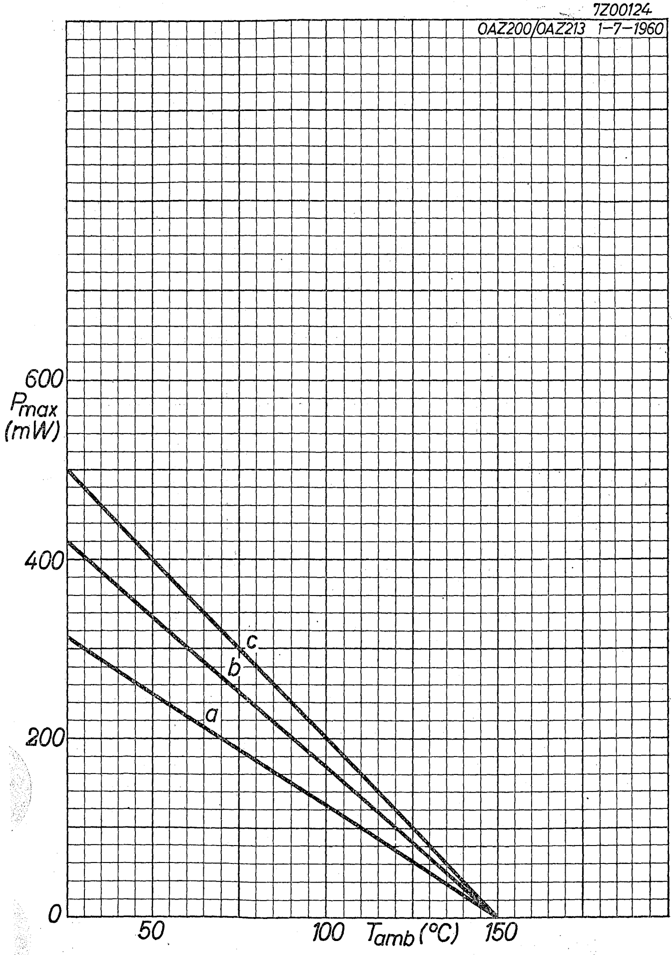
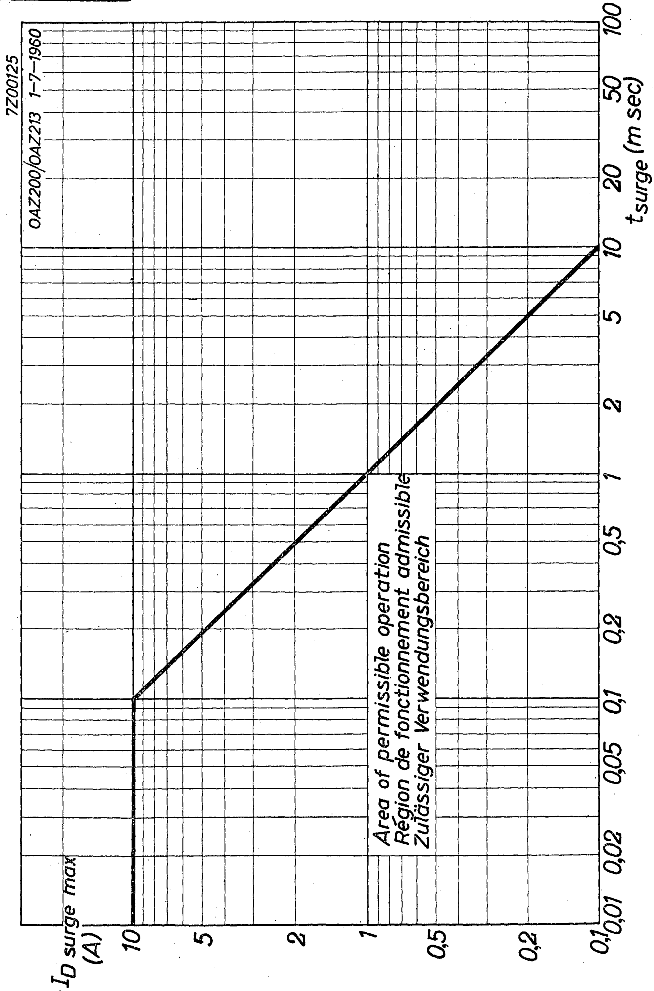
OAZ 200 → 213



OAZ 200
→ 213

PHILIPS



H

Characteristics (continued)
Caractéristiques (suite)
Kenndaten (Fortsetzung)

T_{amb} = 25 °C

Typenr. Nr. de Type Typennummer	$-V_D$ (V)	$-I_D$ (μA)		c_D (pF) ($-V_D$ = 2V)
	I	I	II	I
OAZ 200	2	0,25	<1,0	575
OAZ 201	2	0,1	<1,0	525
OAZ 202	2	0,03	<0,5	475
OAZ 203	3	0,04	<0,5	425
OAZ 204	3	0,03	<0,5	375
OAZ 205	3	0,02	<0,5	350
OAZ 206	5	0,04	<0,4	300
OAZ 207	5	0,03	<0,4	250
OAZ 208	1,5	0,2		600
OAZ 209	2	0,1	<1,0	525
OAZ 210	2	0,01	<0,5	425
OAZ 211	3	0,02	<0,5	350
OAZ 212	5	0,03	<0,4	250
OAZ 213	5	0,025	<0,4	150