General Instrument · Rectifiers · Bridge Rectifiers

GENERAL INSTRUMENT

DISCRETE SEMICONDUCTORS
DATA BOOK

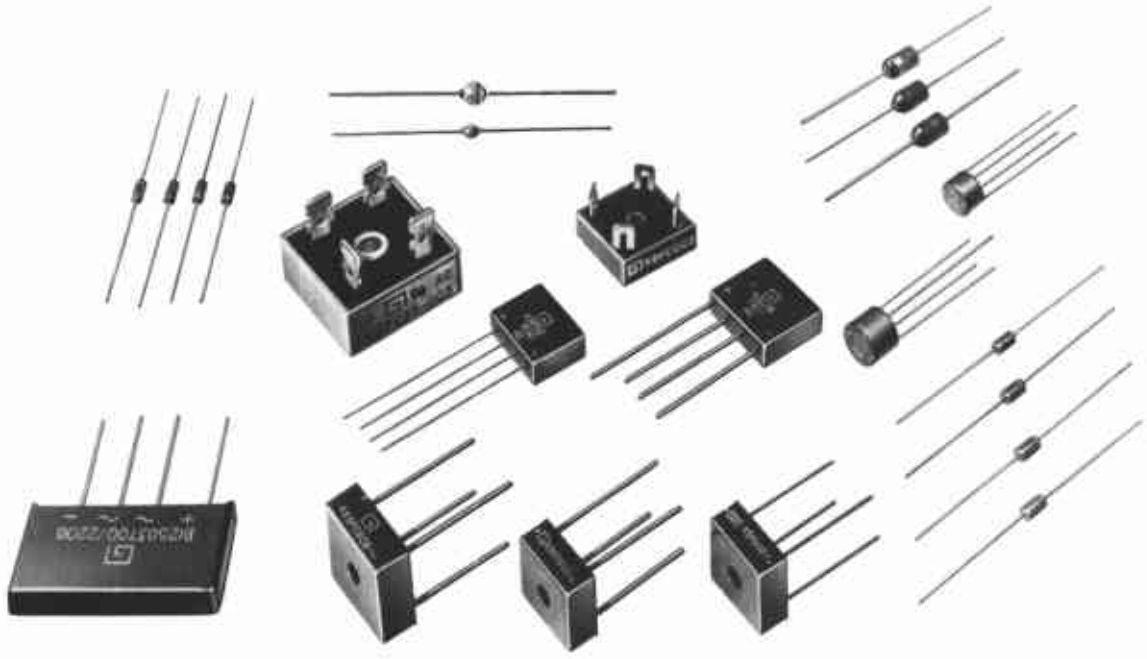
Introduction

General Instrument Corporation is a major international company manufacturing a wide range of products from data system, cable TV, component product to semiconductors. The Corporation, which has been in existence over 50 years, has factories throughout the world serving all markets.

The discrete semiconductor division has factories in United States and Far East, and is one of the leading manufacturers of rectifiers and bridges. This catalog details our range of low and medium power rectifier products and bridge assemblies, including SUPERECTIFIERS, plastic encapsulated rectifiers, glass passivated rectifiers, bridges and special assemblies. The information, contained in this booklet, is intended to provide the necessary technical and support data to assist the designer.

Particular emphasis has been focused on the SUPERECTIFIER product family, a new concept in rectifier technology, launched some three years ago. Featuring a metallurgically bonded junction, glass passivation and flame retardant epoxy encapsulation to provide the ultimate in rectifier quality and reliability.

It is our policy to maintain high standards of product manufacture and the GI logo printed on every component ensures that it reaches the high level of quality and reliability. In the complex and competitive semiconductor industry, high standards of quality are of the utmost importance since they constitute, for the customer, the assurance of reliable product performance.



Not every application problem can be solved using a standard device, in this case we often develop special products to meet the customer requirements. If in doubt, call your local Sales Office or our Application Engineering Laboratory (listed on page 111) for further information.

SYMBOLS

I_F	Forward Current
$I_{F(AV)}$	Average Forward Rectified Current
I_{FSM}	Peak Forward Surge Current
I_O	Mean Forward Current
I_R	Reverse Current
i_{rr}	Reverse Recovery Current
I^2t	I^2t Rating for Fusing
$R_{TH(J-A)}$	Thermal Resistance (Juntion to Ambient)
$R_{TH(J-C)}$	Thermal Resistance (Juntion to Case)
T_A	Ambient Temperature
T_C	Case Temperature
T_L	Lead Temperature
t_{rr}	Reverse Recovery Time
V_{BR}	Breakdown Voltage
V_F	Forward Voltage
V_{FR}	Forward Recovery Voltage
V_R	Reverse Voltage
V_{RMS}	RMS Input Voltage
V_{RRM}	Repetitive Peak Reverse Voltage
V_Z	Zener Voltage
Z_K	Dynamic Impedance

DRAWINGS

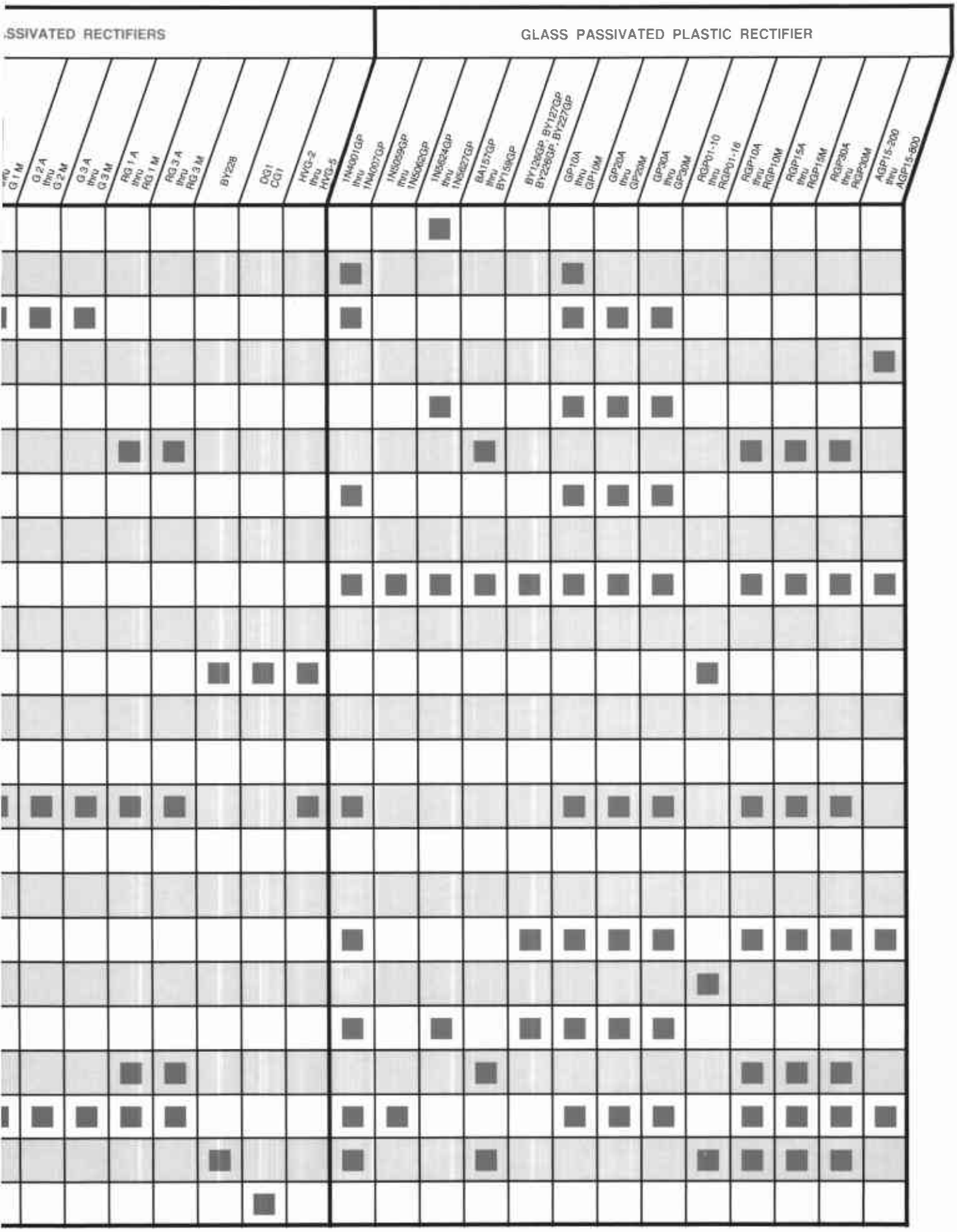
All dimensions in mm.
Figures not to scale.

TEMPERATURES

Ratings at 25°C ambient temperature unless otherwise specified.
Forward derating curves are measured while leads are hold to ambient temperature in a distance of 10 mm to the case except all KBPC-Bridges, where case temperature is measured.

CONTENTS

APPLICATION \ TYPE	PLASTIC RECTIFIERS										GLA					
	1N4001 thru 1N4007	1N5400 thru 1N5408	P300A thru P300M	BY251P thru BY255P	BY298P thru BY299P	BY500-100 thru BY500-800	P600A thru P600M	AR25A thru AR25M	HVPR20 thru HVPR60	HVR10- thru HVPR15-4	1N645 thru 1N649	1N3611 thru 1N3614	1N4942 thru 1N4948	1N5059 thru 1N5062	1N5624 thru 1N5627	
Audio Power Amplifier		■					■									
Automotive								■								
Computer Systems							■									
Controlled Avalanche																
Domestic Appliances	■	■	■				■									
Fast Switching					■	■							■			
General Purpose	■		■													
High Current							■	■								
High Mechanical Strength																
High Surge		■	■				■	■								
High Voltage									■	■						
Low Leakage											■					
Low RFI					■	■										
Medical Equipment							■				■		■			
Micro Wave Ovens										■						
Military Applications											■	■	■		■	
Industrial Systems							■	■								
Photo Flash																
Power Supplies	■	■	■	■			■	■								
Switch Mode Power Supply					■	■										
Telecommunication											■		■	■	■	
Television Scanning	■			■	■	■										
TV Clamping, Damping																


SSIVATED RECTIFIERS
GLASS PASSIVATED PLASTIC RECTIFIER
G1M
G2A thru G2M
G3A thru G3M
RG1A thru RG1M
RG3A thru RG3M
BY228
CG1 CG1
HVG-2 thru HVG-5
1N4001GP thru 1N4007GP
1N5059GP thru 1N5062GP
1N5624GP thru 1N5627GP
BA157GP thru BY159GP
BY126GP, BY127GP BY226GP, BY227GP
GP10A thru GP10M
GP20A thru GP20M
GP30A thru GP30M
RGP01-10 thru RGP01-16
RGP10A thru RGP10M
RGP15A thru RGP15M
RGP20A thru RGP20M
AGP15-200 thru AGP15-600

Plastic Rectifier

1 to 25 Amperes

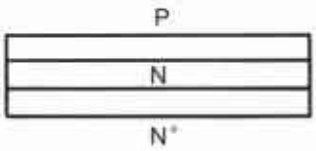
50 V to 15000 V

Principle of Construction

General Instrument has produced succesfully for many years Plastic Rectifiers. The key factor of our 1 Amp Plastic Rectifier is the use of the cell concept.
The small size and absence of leads allows many cells to be processed simultaneously in batch form.
This method ensures accurate pretesting of the cells before final assembly, and allows General Instrument to produce high volume of 1 Amp Rectifiers economically.

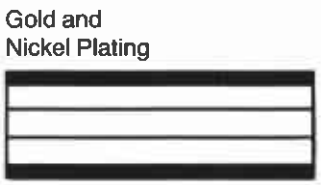
The cell construction consists of the following steps:

1 – Diffusing a PN junction into a slice of silicon.



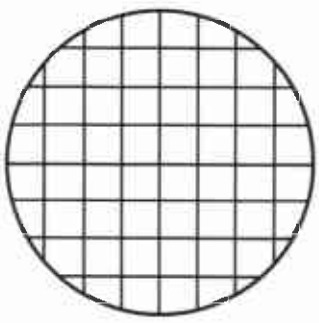
Diffused Slice

2 – Metallizing the slice of silicon.



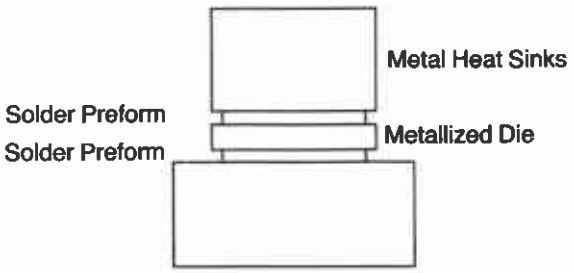
Metallized Slice

3 – Scribing and breaking the slice into individual dies.



Scribed Wafer

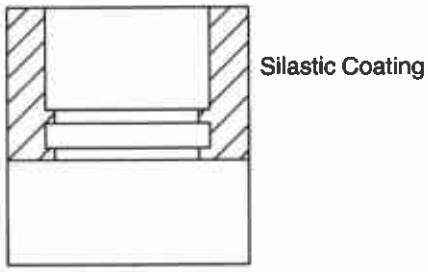
4 — Soldering the die between two heat sinks.



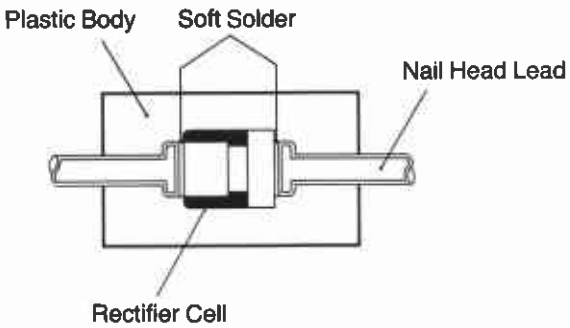
Soldering die between Heat Sinks

5 — Cleaning the assembly by chemical etching, washing and drying.

6 — Passivating the finished cell with silastic.



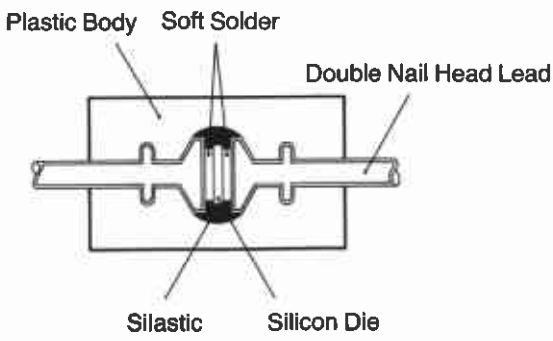
Silastic Coated Cell



Cell Constructed Plastic Rectifier

7 — In addition to the cell-construction for high current rectifiers the double nail head construction is used.
In this construction the cell is soldered, between two nail headed leads and over-molding with an expoxy body.

8 — The double nail head construction is used for high current plastic rectifiers.



Double Nail Head Plastic Rectifier

Miniature Plastic Silicon Rectifiers 1 AMP

Type: 1N4001 thru 1N4007

Features:
- Low Cost
- Diffused Junction
- Low Leakage
- High Current Capability
- Easily Cleaned with Freon, Alcohol, Chlorothene and similar Solvents
- Silver Plated Axial Leads, Solderable per MIL-STD-202/208
- Case: Jedec DO 41

Plastic Power Rectifiers 1.2 to 5 AMP

Types:

1N5400	thru 1N5408
P300A	thru P300M
BY251P	thru BY255P
BY296P	thru BY299P (Fast Recovery)
BY500-100	thru BY500-800 (Fast Recovery)
BYX55-350P	and BYX55-600P

Features:
- High Surge Current Capability
- Void-Free Plastic DO 27A Package
- High Current Operation
- Typical I_R less than 1 μA (1N5400, P300)
- Exceeds Environmental Standards of MIL-STD-19500/228
- High Temperature Soldering Guaranteed 350°C/10 Seconds/10 mm Lead Length at 2,25 kg Tension
- Controlled Soft Recovery guarantees low RFI and high Efficiency Switching Characteristics of BY296P thru BY299P and BY500-100 thru BY500-800.
- Silver Plated Axial Leads, Solderable per MIL-STD-202/208

High Current Plastic Silicon Rectifiers 6 to 25 AMP

Types: AR25A thru AR25M
P600A thru P600K

Features:
- High Current Lead Mounted (P600)
- Diffused Junction
- High Surge Current: 400 Ampere at Tj = 175°C
- Low Leakage
- Tinned Copper Leads (P600)
- Silver Plated Copper (AR25)

High Voltage Plastic Rectifiers

Types:

1N1730 A	thru 1N1734A
HVPR20	thru HVPR80
HVPR15-9	thru HVPR15-15
HVPR10-06	thru HVPR10-14

Features:
- Diffused Junction
- Low Forward Voltage Drop
- High Forward Overload Surge Rating
- Avalanche Operation
- Ideal for Magnetron Power Supply in Micro Wave Ovens.

QUICK GUIDE TO PLASTIC RECTIFIERS

TYPE	1N4001 thru 1N4007	BYX55-350P* and BYX55-600P*	BY296P* thru BY299P*	BY500-100* thru BY500-800*	BY251P thru BY255P	1N5400 thru 1N5408	P300A thru P300M	P600A thru P600M	AR25A thru AR25M
CASE	DO41	DO27A	DO27A	DO27C	DO27A	DO27A	DO27A	P600	AR25
I_o (A)	1.0	1.2	2.0	5.0	3.0	3.0	3.0	6.0	25
@T_A (°C)	75	55	55	45	75	105	105	60	150 T_c
V_R = 50 (V)	1N4001					1N5400	P300A	P600A	AR25A
V_R = 100 (V)	1N4002		BY296P	BY500-100		1N5401	P300B	P600B	AR25B
V_R = 200 (V)	1N4003		BY297P	B4500-200	BY251P	1N5402	P300D	P600D	AR25D
V_R = 300 (V)						1N5403			
V_R = 400 (V)	1N4004	BYX55-350P	BY298P	BY500-400	BY252P	1N5404	P300G	P600G	AR25G
V_R = 500 (V)						1N5405			
V_R = 600 (V)	1N4005			BY500-600	BY253P	1N5406	P300J	P600J	AR25J
V_R = 800 (V)	1N4006	BYX55-600P	BY299P	BY500-800	BY254P	1N5407	P300K	P600K	AR25K
V_R = 1000 (V)	1N4007					1N5408	P300M		
V_R > 1000 (V)					BY255P				
SURGE (A)	30	40	70	200	100	200	200	400	400
V_F (V)	1.1	1.25	1.3	1.25	1.1	1.2	1.1	1.25	1.0
Page	15	21	22	23	17	16	18	19	20

* Fast Recovery

QUICK GUIDE TO HV PLASTIC RECTIFIERS

TYPE	1N1730A thru 1N1734A	HVPR20 thru HVPR80	HVPR15	HVPR10-06 thru HVPR10-14	TYPE
I_o (A)	0.35				I_o (A)
@T_A (°C)	25				@T_A (°C)
SURGE (A)	6				SURGE (A)
V_R = 1000 (V)	1N1730A				V_R = 1000 (V)
V_R = 1500 (V)	1N1731A				V_R = 1500 (V)
V_R = 2000 (V)	1N1732A	HVPR20			V_R = 2000 (V)
V_R = 3000 (V)	1N1733A	HVPR30			V_R = 3000 (V)
V_R = 4000 (V)		HVPR40			V_R = 4000 (V)
V_R = 5000 (V)	1N1734A	HVPR50			V_R = 5000 (V)
V_R = 6000 (V)		HVPR60		HVPR10-06	V_R = 6000 (V)
V_R = 8000 (V)		HVPR80	HVPR15-9	HVPR10-08	V_R = 8000 (V)
V_R = 10000 (V)			HVPR15-11	HVPR10-10	V_R = 10000 (V)
V_R = 12000 (V)			HVPR15-13	HVPR10-12	V_R = 12000 (V)
V_R = 14000 (V)				HVPR10-14	V_R = 14000 (V)
V_R = 15000 (V)			HVPR15-15		V_R = 15000 (V)
Page	24	25	27	26	Page

1 A Plastic Rectifier

50 to 1000 V

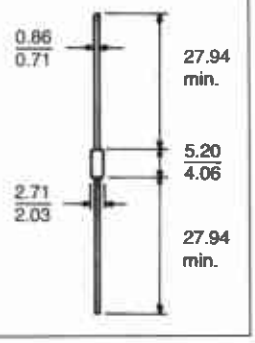
1N4001 thru 1N4007

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N4001	35 V	50 V
1N4002	70 V	100 V
1N4003	140 V	200 V
1N4004	280 V	400 V
1N4005	420 V	600 V
1N4006	560 V	800 V
1N4007	700 V	1000 V

CASE OUTLINE

DO-41



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	30 A
Maximum Forward Voltage at 1.0 A_{DC}	1.1 V
Maximum Reverse Current at 25°C	5.0 μA
Maximum Reverse Current at 75°C	50.0 μA
Typical Reverse Recovery Time – Measured with I_F = 20 mA, i_{rr} = 1 mA	20 μs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	30 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

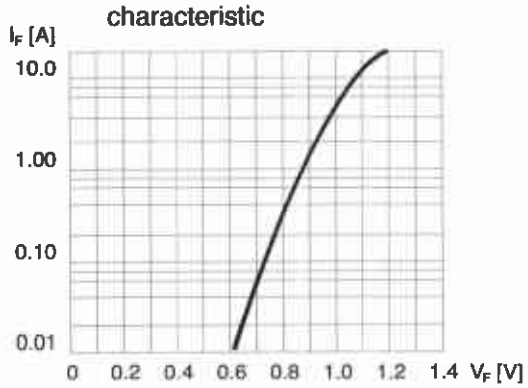
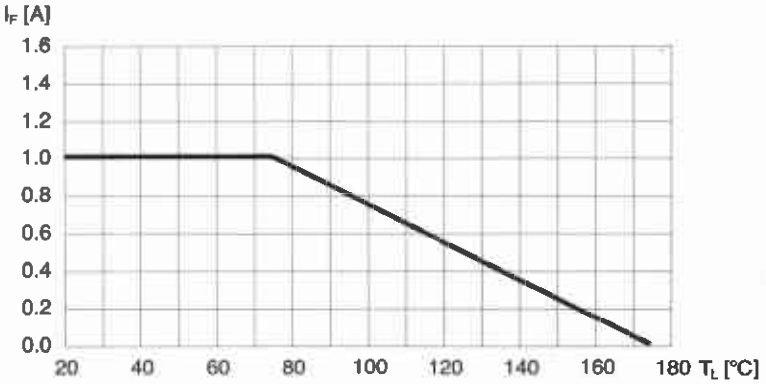


Fig. 2 – Forward derating curve



3 A Plastic Rectifier

50 to 1000 V

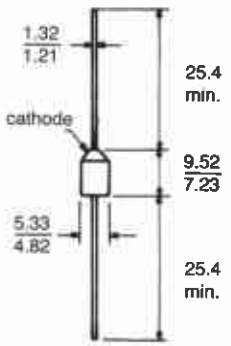
1N5400 thru 1N5408

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N5400	35 V	50 V
1N5401	70 V	100 V
1N5402	140 V	200 V
1N5403	210 V	300 V
1N5404	280 V	400 V
1N5405	350 V	500 V
1N5406	420 V	600 V
1N5407	560 V	800 V
1N5408	700 V	1000 V

CASE OUTLINE

DO-27A



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current at 105°C	3.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	200 A
Maximum Forward Voltage at 3.0 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	5.0 µA
Maximum Reverse Current at 105°C	500 µA
Typical Reverse Recovery Time – Measured with $I_F = 0.5$ A, $I_R = 1.0$ A, $i_{rr} = 0.25$ A	5 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	60 pF
Typical Thermal Resistance	25°C/W
Operating Temperature Range	−65 to +170°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

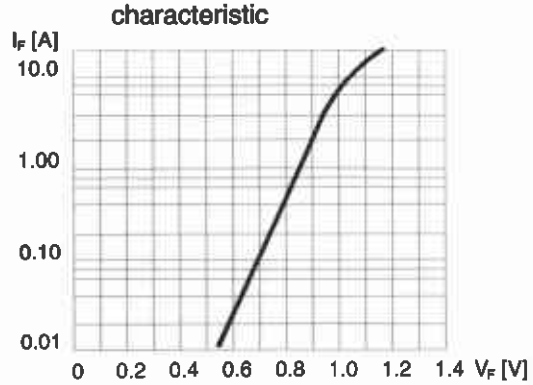
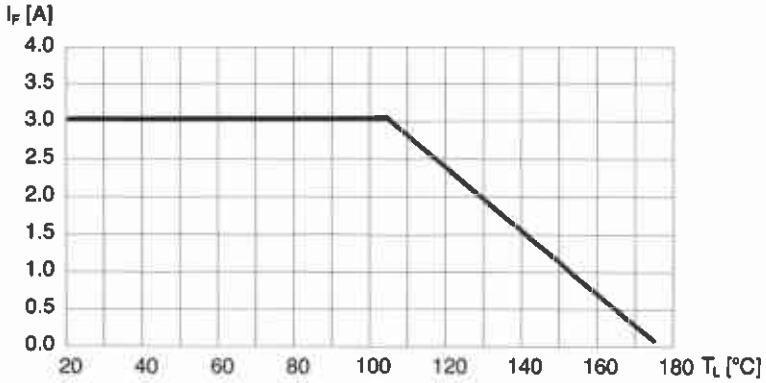


Fig. 2 – Forward derating curve



3 A Plastic Rectifier

200 to 1300 V

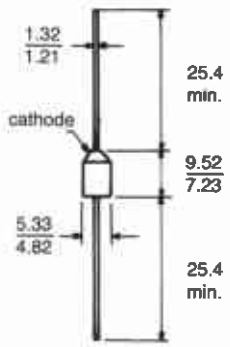
BY251P thru BY255P

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
BY251P	140 V	200 V
BY252P	280 V	400 V
BY253P	420 V	600 V
BY254P	560 V	800 V
BY255P	910 V	1300 V

CASE OUTLINE

DO-27A



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	3.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	100 A
Maximum Forward Voltage at 3.0 A_{DC}	1.1 V
Maximum Reverse Current at 25°C	5.0 µA
Maximum Reverse Current at 55°C	100 µA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	3 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	60 pF
Typical Thermal Resistance	25°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

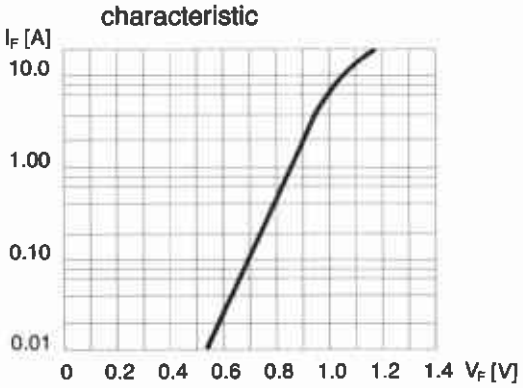
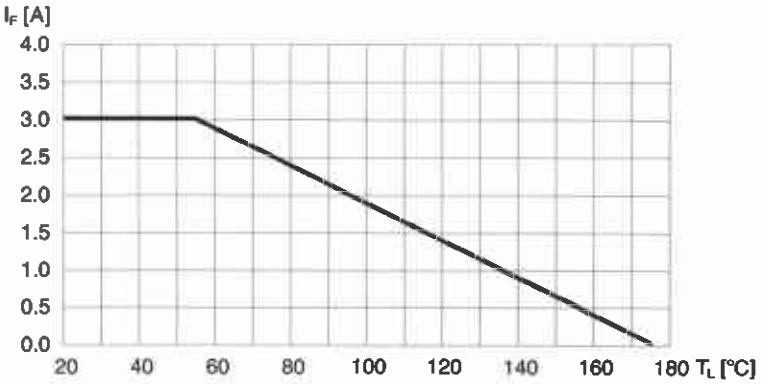


Fig. 2 – Forward derating curve



3 A Plastic Rectifier

500 to 1000 V

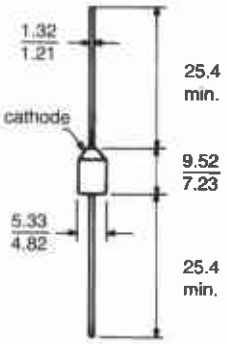
P300 Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
P300A	35 V	50 V
P300B	70 V	100 V
P300D	140 V	200 V
P300G	280 V	400 V
P300J	420 V	600 V
P300K	560 V	800 V
P300M	700 V	1000 V

CASE OUTLINE

DO-27A



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	3.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	200 A
Maximum Forward Voltage at 9.4 A_{DC}	1.1 V
Maximum Reverse Current at 25°C	5.0 μA
Maximum Reverse Current at 100°C	25.0 μA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	5.0 μs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	50.0 pF
Typical Thermal Resistance	25°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

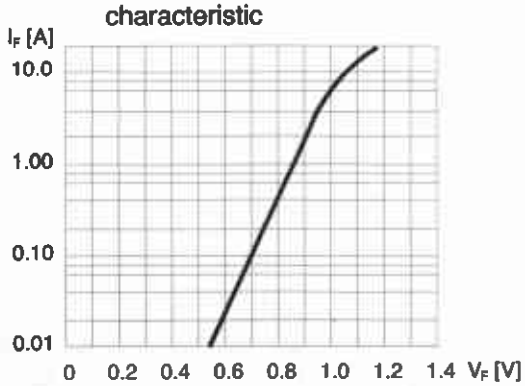
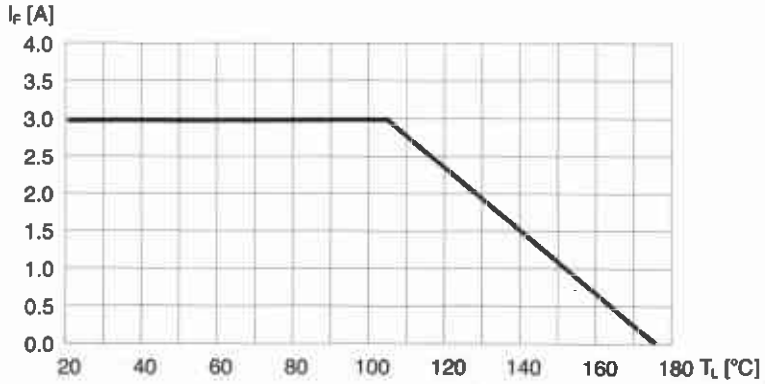


Fig. 2 – Forward derating curve



6 A Plastic Rectifier

50 to 800 V

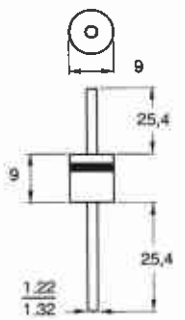
P600 Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
P600A	35 V	50 V
P600B	70 V	100 V
P600D	140 V	200 V
P600G	280 V	400 V
P600J	420 V	600 V
P600K	560 V	800 V

CASE OUTLINE

P600



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	6 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	400 A
Maximum Forward Voltage at 6.0 A_{DC}	0.9 V
Maximum Reverse Current at 25°C	25 µA
Maximum Reverse Current at 100°C	100 µA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	5 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	220 pF
Typical Thermal Resistance	10°C/W
Operating Temperature Range	−65 to +170°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

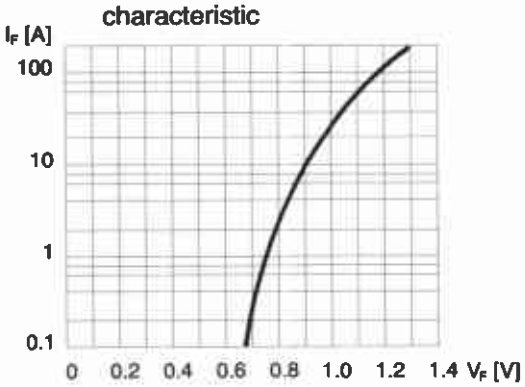
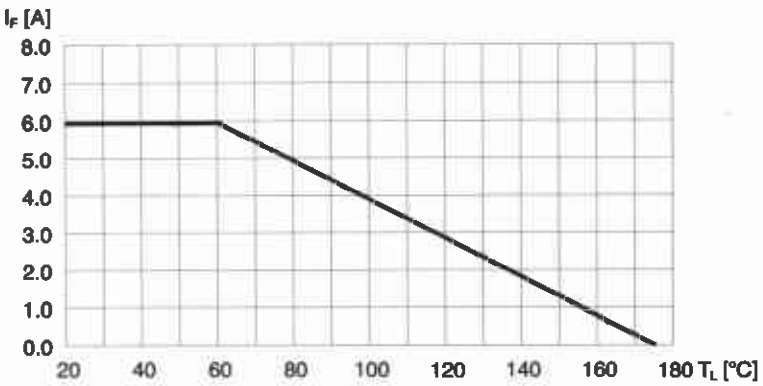


Fig. 2 – Forward derating curve



25 A Button Rectifier

50 to 1000 V

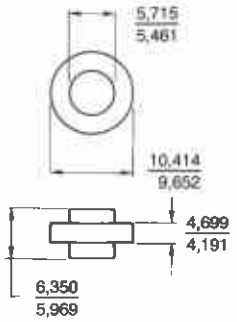
AR25 Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
AR25A	35 V	50 V
AR25B	70 V	100 V
AR25D	140 V	200 V
AR25G	280 V	400 V
AR25J	420 V	600 V
AR25K	560 V	800 V
AR25M	700 V	1000 V

CASE OUTLINE

AR25



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	25 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	400 A
Maximum Forward Voltage at 25 A_{DC}	1.0 V
Maximum Reverse Current at 25°C	25.0 µA
Maximum Reverse Current at 100°C	250 µA
Typical Reverse Recovery Time – Measured with $I_F = 0.5$ A, $I_R = 1.0$ A, $i_{rr} = 0.25$ A	5 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	300 pF
Typical Thermal Resistance	2.5°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

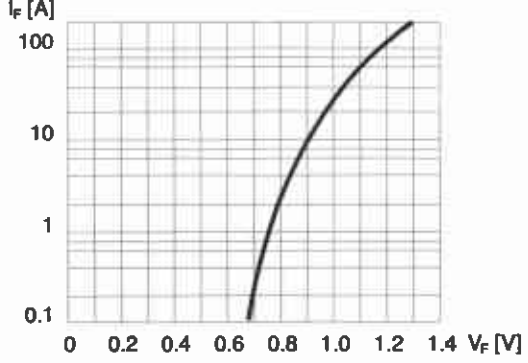
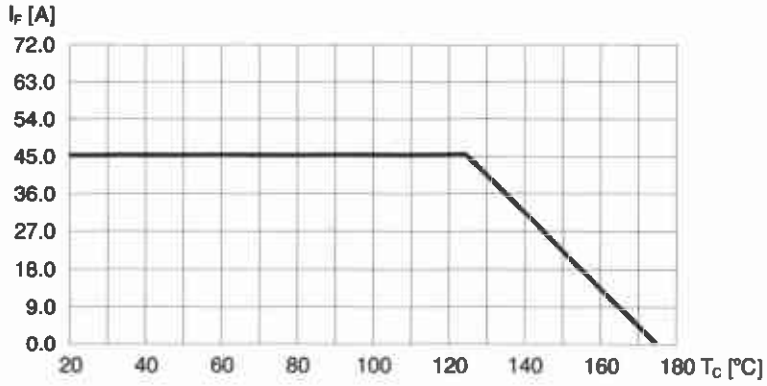


Fig. 2 – Forward derating curve



1.2 A Plastic Rectifier

350 and 600 V / Fast Recovery

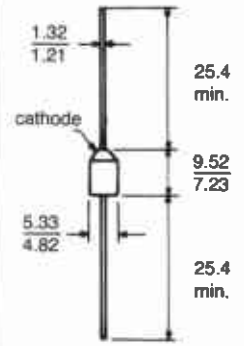
BYX55P

VOLTAGE RATINGS

Type	Maximum Recurrent Peak Reverse Voltage
BYX55-350P	350 V
BYX55-600P	600 V

CASE OUTLINE

DO-27A



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.2 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	40 A
Maximum Forward Voltage at 5.0 A_{DC}	1.25 V
Maximum Reverse Current at 25°C	5 µA
Maximum Reverse Current at 100°C	200 µA
Maximum Reverse Recovery Time – Measured with I_F = 1.0 A, V_R = 50 V	750 n
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	30 pF
Typical Thermal Resistance	25°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

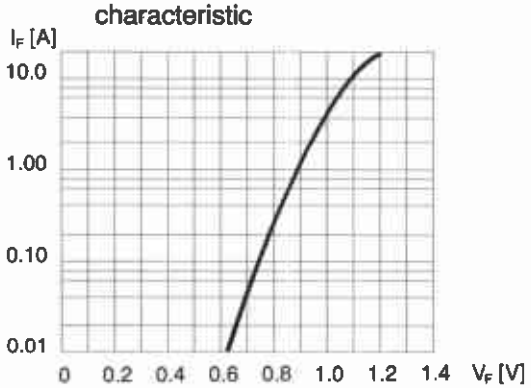
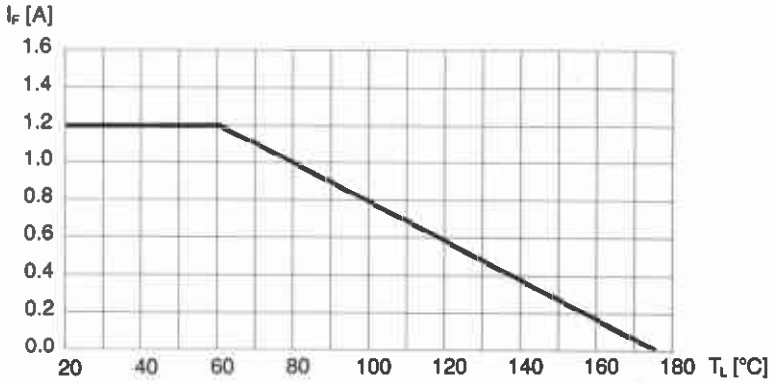


Fig. 2 – Forward derating curve



2 A Plastic Rectifier

100 to 800 V / Fast Recovery

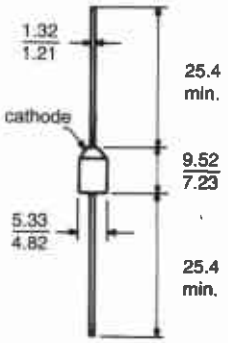
BY296P thru BY299P

VOLTAGE RATINGS

Type	Maximum Recurrent Peak Reverse Voltage
BY296P	100 V
BY297P	200 V
BY298P	400 V
BY299P	800 V

CASE OUTLINE

DO-27A



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	2.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	70 A
Maximum Forward Voltage at 3.0 A_{DC}	1.3 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 100°C	200 µA
Maximum Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	500 ns
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	40 pF
Typical Thermal Resistance	25°C/W
Operating Temperature Range	−65 to +150°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

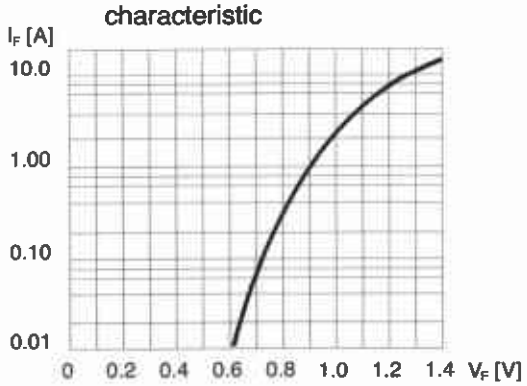
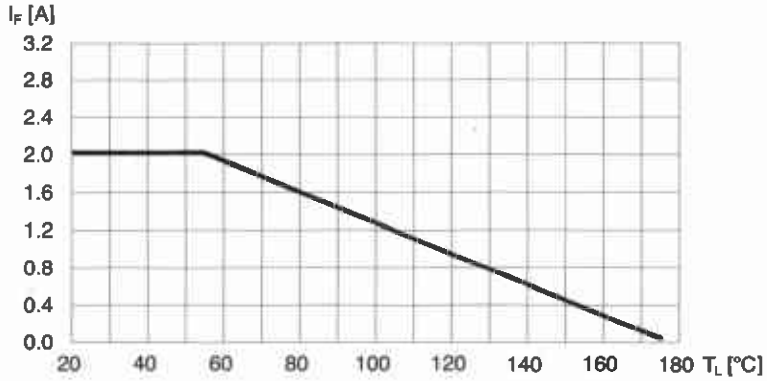


Fig. 2 – Forward derating curve



5 A Plastic Rectifier

100 to 800 V / Soft Recovery

BY500 Series

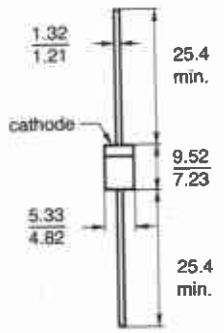
HIGH EFFICIENCY LOW NOISE SWITCHING RECTIFIER

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
BY500-100	70 V	100 V
BY500-200	140 V	200 V
BY500-400	280 V	400 V
BY500-600	420 V	600 V
BY500-800	560 V	800 V

Especially designed for applications such as Switch Mode Power Supplies, Inverters, Converters, Choppers, TV Scanning, Ultrasonic-Systems, speed controlled DC Motors, low RF Interference and free Wheeling Rectifiers.

CASE OUTLINE

DO-27C



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	5 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	200 A
Maximum Forward Voltage at 3.0 A_{DC}	1.25 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 100°C	1 mA
Typical Reverse Recovery Time – Measured with I_F = 1 A, V_R = 30 V	200 ns
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 12.0 V_{DC}	30 pF
Typical Thermal Resistance	25°C/W
Operating Temperature Range	−65 to +125°C
Storage Temperature Range	−65 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

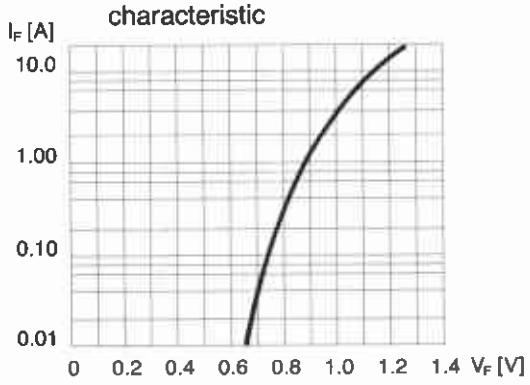
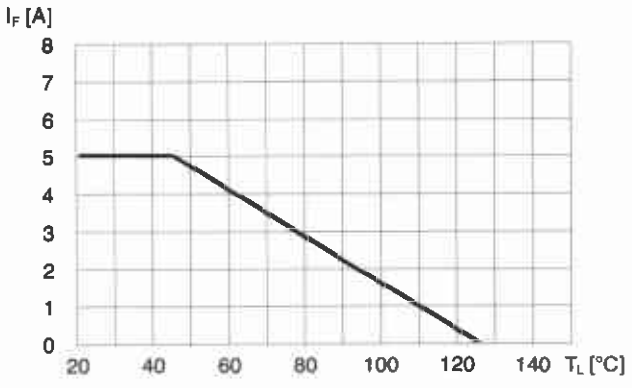


Fig. 2 – Forward derating curve



HV Plastic Rectifier

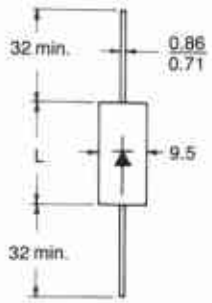
1000 to 5000 V

1N1730A thru 1N1734A

VOLTAGE RATINGS

Type	Maximum Forward Voltage at 0.4 A_{DC}	Maximum Recurrent Peak Reverse Voltage
1N1730A*	3.0 V	1000 V
1N1731A*	3.0 V	1500 V
1N1732A**	3.0 V	2000 V
1N1733A**	6.0 V	3000 V
1N1734A**	8.0 V	5000 V

CASE OUTLINE



*L = 12,7
**L = 25,4

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current at 25°C	0.35 A
Maximum Average Forward Rectified Current at 100°C	0.2 A
Maximum Average Forward Rectified Current at 175°C	0.05 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	6.0 A
Maximum Reverse Current at 25°C	1.0 µA
Maximum Reverse Current at 150°C	12.0 µA
Operating Temperature Range	−65 to +200°C
Storage Temperature Range	−65 to +200°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

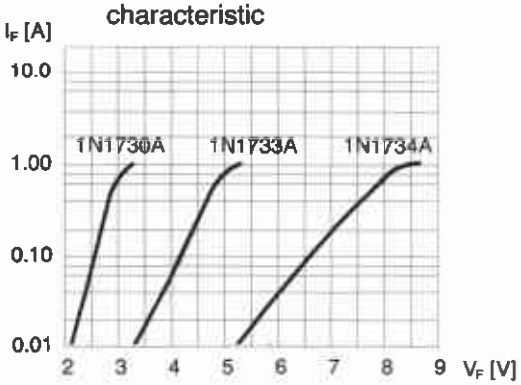
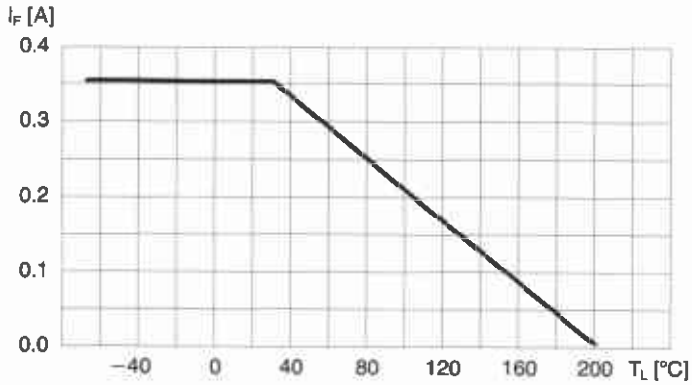


Fig. 2 – Forward derating curve



HV Plastic Rectifier

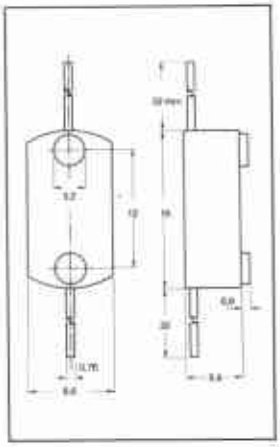
2000 to 8000 V

HVPR Series

VOLTAGE RATINGS

Type	Maximum Recurrent Peak Reverse Voltage
HVPR20	2000 V
HVPR30	3000 V
HVPR40	4000 V
HVPR50	5000 V
HVPR60	6000 V
HVPR80	8000 V

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	0.25 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	30 A
Maximum Forward Voltage at 0.25 A_{DC}	8 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 125°C	100 µA
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 100 V_{DC}	5 pF
Typical Thermal Resistance	35 °C/W
Operating Temperature Range	−40 to +125°C
Storage Temperature Range	−50 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

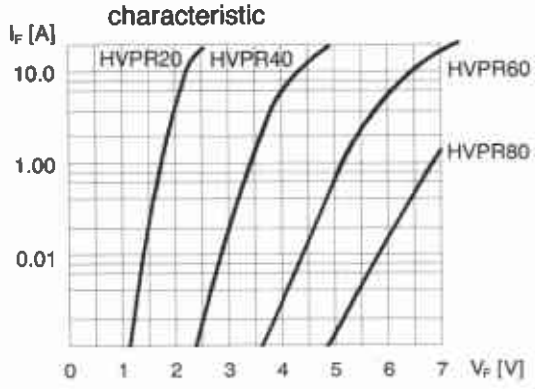
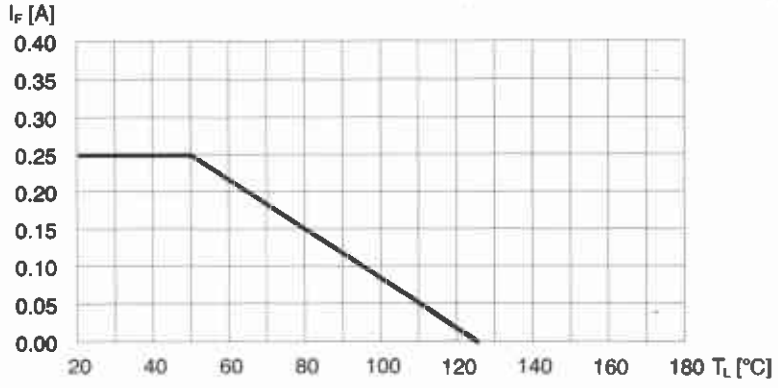


Fig. 2 – Forward derating curve



HV Plastic Rectifier

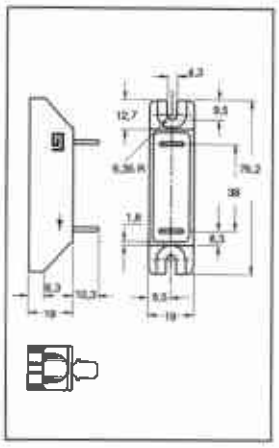
6000 to 14000 V

HVPR10 Series

VOLTAGE RATINGS

Type	Maximum Recurrent Peak Reverse Voltage
HVPR10-06	6000 V
HVPR10-08	8000 V
HVPR10-10	10000 V
HVPR10-12	12000 V
HVPR10-14	14000 V

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

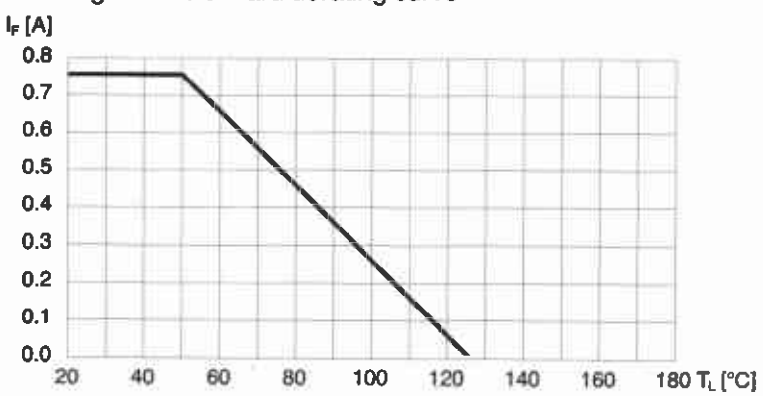
Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	0.75 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	250 A
Maximum Forward Voltage at 0.75 A_{DC}	14 V
Maximum Reverse Current at 25°C	5 µA
Operating Temperature Range	−20 to +125°C
Storage Temperature Range	−20 to +125°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

Fig. 2 – Forward derating curve



HV Plastic Rectifier

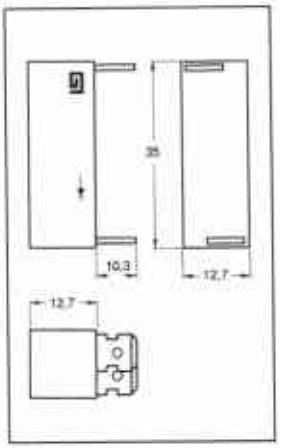
9000 to 15000 V

HVPR15

VOLTAGE RATINGS

Type	Maximum Recurrent Peak Reverse Voltage
HVPR15- 9	9000 V
HVPR15-11	11000 V
HVPR15-13	13000 V
HVPR15-15	15000 V

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

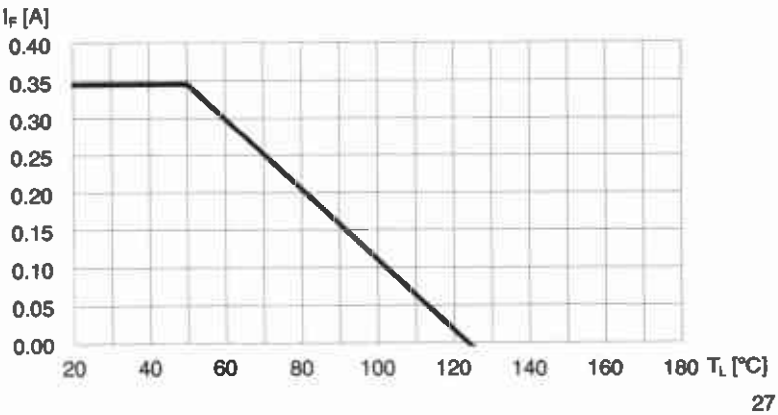
Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	0.35 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage at 0.35 A_{DC}	13.5 V
Maximum Reverse Current at 25°C	1 µA
Operating Temperature Range	−20 to +125°C
Storage Temperature Range	−20 to +125°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

Fig. 2 – Forward derating curve



Glass Rectifier

0.4 to 3 Amperes

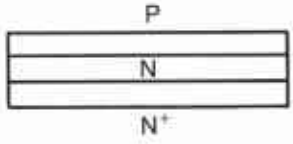
50 V to 5000 V

Device Design

The Glass-Amp II is a hermetically sealed, cavity-free, diffused junction rectifier with unsurpassed operating and surge characteristics at high temperature.
Cavity-free construction with a specially developed extremely pure glass in direct contact with the silicon junction plus durable heat sink design obviate the need for solder joints and compression contact parts. The carefully matched expansion characteristics of the glass and metal parts in combination with the direct contact of the glass and silicon junction make the active rectifying elements impervious to surface contamination, moisture or other external chemical agents.Further, the long term degradation associated with organic junction protection is avoided.

There are many steps necessary to produce such a device:

1 – Diffuse a PN junction into a slice of silicon

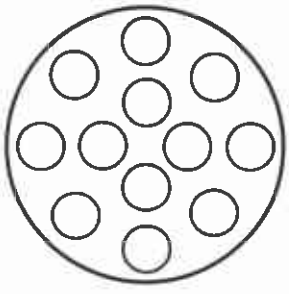


Diffused Slice

2 – Evaporate aluminium on both sides of the slice to make metallurgical contact

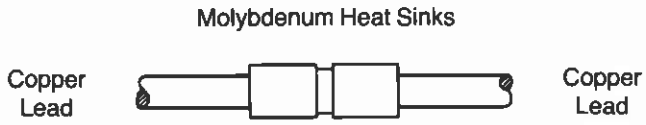
Metallized Slice

3 – Sandblast the slice to produce a round beveled die



Sandblasted Round Dice

4 – Braze the die between two molybdenum heat sinks to which leads have been attached at approximately 700°C.



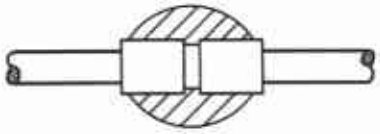
Brazed cell

Glass Passivated Rectifier

5 – Clean the assembly by chemically etching, washing and drying.

6 – Apply glass in the form of a frit to the die and molybdenum assembly.

7 – Melt the glass by heating in an oven to approximately 600°C.



Glass Passivated Rectifier

8 – Perform finishing operations such as lead tinning, electrical testing and marking.

Package Design

The small size of the glass package with its capability up to 3 Ampere permits greater packing densities in electronic assemblies and equipment, while increasing reliability. Furthermore, only high temperature brazing operations are used to withstand the 600°C required to melt and fuse the glass. This technique eliminates solder construction and tremendously enhances mechanical strength and temperature cycling capability, increasing operating and storage temperature range while reducing thermal resistance.

Reliability

Specified reliability data on Glass-Amp II devices are available from the General Instrument Semiconductor Components Division Reliability Department. The basic design of the Glass-Amp II rectifier and the strict positive controls over materials and manufacturing processes provide assurance of failure-free performance under the most severe conditions. Processing facilities have been geared to follow the procedural requirements of Military Standard 750. Glass-Amp II rectifiers are capable of withstanding environmental extremes in excess of MIL-S-19500/286 and of meeting the requirements of MIL-S-19500E, MIL-STD-883, MIL-Q-9858 and MIL-I-45208. Assurance of production uniformity and reliability is provided by a test technique called „Operational Load Line Testing", which has proven product reliability with over 1 Billion Glass-Amp rectifiers now in use.

Glass Passivated Silicon Diodes 0.4 AMP

Type: 1N645 thru 1N649

Features:
- High Temperature Metallurgically Bonded
- High Efficiency and Rectification Ratio
- Ideally Suited for Miniaturized Equipment
- Case: One Piece Glass, Hermetically Sealed
- Tin Plated Axial Leads, Solderable per MIL-STD-202/208
- Operating from −65°C to +175°C
- Low Leakage

Glass Passivated Silicon Rectifiers 1 to 3 AMP

Types: 1N3611 thru 1N3614
1N4245 thru 1N4249
1N5059 thru 1N5062
1N5624 thru 1N5627
G1A thru G1M
G2A thru G2M
G3A thru G3M

Features:
- Glass Passivated Junction
- High Mechanical Strength
- Storage up to 200°C
- Voidless Construction
- Hermetically Sealed
- Avalanche Operation
- Low Leakage
- High Conductance
- Tin Plated Axial Leads, Solderable per MIL-STD-202/208

Glass Passivated Fast Recovery Silicon Rectifiers 1 to 3 AMP

Types: 1N4942 thru 1N4948
1N5614 thru 1N5622
1N5615 thru 1N5623
RG1A thru RG1M
RG3A thru RG3M

Features:
- Glass Passivated Junction
- High Rectification Efficiency to 100 kHz
- High Mechanical Strength
- Low Leakage
- Hermetically Sealed
- Storage up to 200°C
- Tin Plated Axial Leads, Solderable per MIL-STD-202/208

Glass Passivated High Voltage Silicon Rectifiers 0.15 to 1.5 AMP

Types: CG1, DG1
HVG-2 thru HVG-5
BY228

Features:
- All Advantages of a Hermetically Sealed Glass Passivated Junction
- Especially designed for Clamper/Damper Applications in Television Circuits
- Low Leakage
- High Mechanical Strength
- Tin Plated Axial Leads, Solderable per MIL-STD-202/208

QUICK GUIDE TO GLASS PASSIVATED RECTIFIERS

TYPE	1N645 thru 1N649	1N3611 thru 1N3614	1N4245 thru 1N4249	1N4942* thru 1N4948*	RG 1 A* thru RG 1 M*	1N5059 thru 1N5062	1N5614 thru 1N5622	1N5615* thru 1N5623*	TYPE
CASE	GPD	GPR	GPR	GPR	GPR	GPR	GPR	GPR	CASE
I_o (A)	0.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	I_o (A)
@T_A (°C)	25	100	55	55	55	55	55	55	@T_A (°C)
V_R = 50 (V)					RG 1 A				V_R = 50 (V)
V_R = 100 (V)					RG 1 B				V_R = 100 (V)
V_R = 200 (V)	1N645	1N3611	1N4245	1N4942	RG 1 D	1N5059	1N5614	1N5615	V_R = 200 (V)
V_R = 300 (V)	1N646			1N4943					V_R = 300 (V)
V_R = 400 (V)	1N647	1N3612	1N4246	1N4944	RG 1 G	1N5060	1N5616	1N5617	V_R = 400 (V)
V_R = 500 (V)	1N648			1N4945					V_R = 500 (V)
V_R = 600 (V)	1N649	1N3613	1N4247	1N4946	RG 1 J	1N5061	1N5618	1N5619	V_R = 600 (V)
V_R = 800 (V)		1N3614	1N4248	1N4947	RG 1 K	1N5062	1N5620	1N5621	V_R = 800 (V)
V_R = 1000 (V)			1N4249	1N4948	RG 1 M		1N5622	1N5623	V_R = 1000 (V)
V_R > 1000 (V)									V_R > 1000 (V)
SURGE (A)	5	20	25	30	30	50	50	50	SURGE (A)
V_F (V)	1.0	1.1	1.2	1.3	1.3	1.2	1.2	1.2	V_F (V)
Page	33	34	35	41	44	36	42	43	Page

QUICK GUIDE TO GLASS PASSIVATED RECTIFIERS

TYPE	G 1 A thru G 1 M	CG 1 and DG 1	BY228	G 2 A thru G 2 M	RG 3 A* thru RG 3 M*	G 3 A thru G 3 M	1N5624 thru 1N5627	TYPE
CASE	GPR	GPR	GPR 3	GPR	GPR 3	GPR 3	GPR 3	CASE
I_o (A)	1.0	1.5	2.5	2.0	3.0	3.0	3.0	I_o (A)
@T_A (°C)	100	55	55	75	55	70	70	@T_A (°C)
V_R = 50 (V)	G 1 A			G 2 A	RG 3 A	G 3 A		V_R = 50 (V)
V_R = 100 (V)	G 1 B			G 2 B	RG 3 B	G 3 B		V_R = 100 (V)
V_R = 200 (V)	G 1 D			G 2 D	RG 3 D	G 3 D	1N5624	V_R = 200 (V)
V_R = 300 (V)								V_R = 300 (V)
V_R = 400 (V)	G 1 G			G 2 G	RG 3 G	G 3 G	1N5625	V_R = 400 (V)
V_R = 500 (V)								V_R = 500 (V)
V_R = 600 (V)	G 1 J			G 2 J	RG 3 J	G 3 J	1N5626	V_R = 600 (V)
V_R = 800 (V)	G 1 K			G 2 K	RG 3 K	G 3 K	1N5627	V_R = 800 (V)
V_R = 1000 (V)	G 1 M			G 2 M	RG 3 M	G 3 M		V_R = 1000 (V)
V_R > 1000 (V)		CG 1/DG 1	BY228					V_R > 1000 (V)
SURGE (A)	50	50	100	50	100	125	125	SURGE (A)
V_F (V)	1.1	1.0	1.3	1.1	1.3	1.1	1.0	V_F (V)
Page	37	46	47	38	45	40	39	Page

* Fast Recovery

0.4 A Glass Diode

225 to 600 V

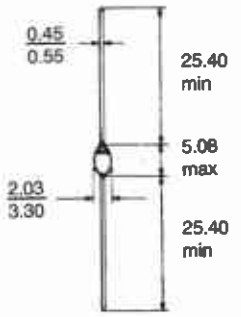
1N645 thru 1N649

VOLTAGE RATINGS

Type	Maximum Recurrent Peak Reverse Voltage
1N645	225 V
1N646	300 V
1N647	400 V
1N648	500 V
1N649	600 V

CASE OUTLINE

GPD



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	400 mA
Peak Forward Surge Current, 10 ms Single Half Sine Wave	5 A
Maximum Forward Voltage at 0.4 A_{DC}	1.0 V
Maximum Reverse Current at 25°C	0.2 µA
Maximum Reverse Current at 100°C	15 µA
Maximum Reverse Recovery Time – Measured with I_F = 20 mA, i_{rr} = 1 mA	20 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	100°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +200°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

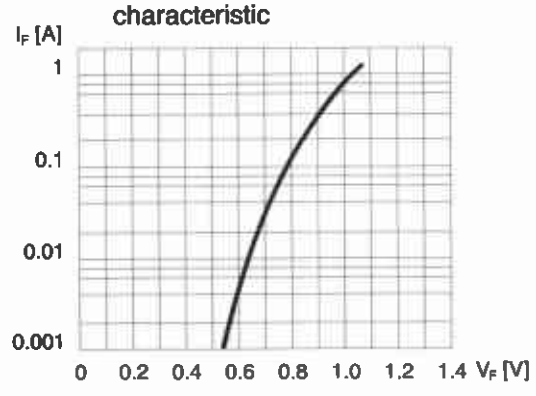
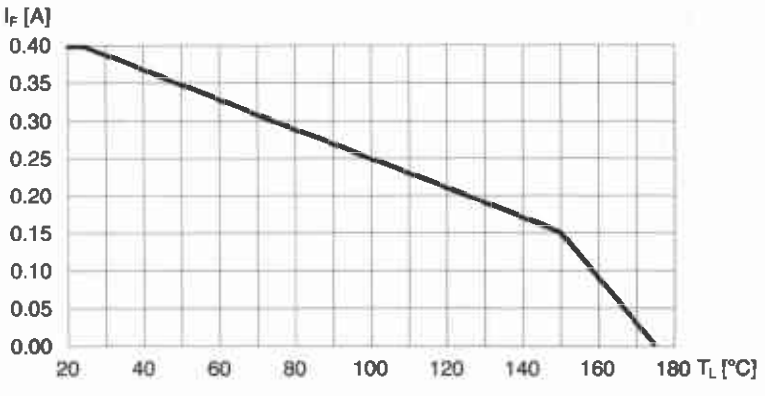


Fig. 2 – Forward derating curve



1 A Glass Rectifier

200 to 800 V

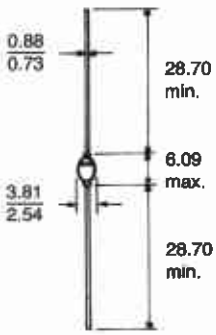
1N3611 thru 1N3614

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N3611	140 V	200 V
1N3612	280 V	400 V
1N3613	420 V	600 V
1N3614	560 V	800 V

CASE OUTLINE

GPR



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current @100°C	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	30 A
Maximum Forward Voltage at 2.0 A_{DC}	1.1 V
Maximum Reverse Current at 25°C	1.0 µA
Maximum Reverse Current at 150°C	300 µA
Maximum Reverse Recovery Time – Measured with I_F = 20 A, i_{rr} = 1 mA	20 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +300°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

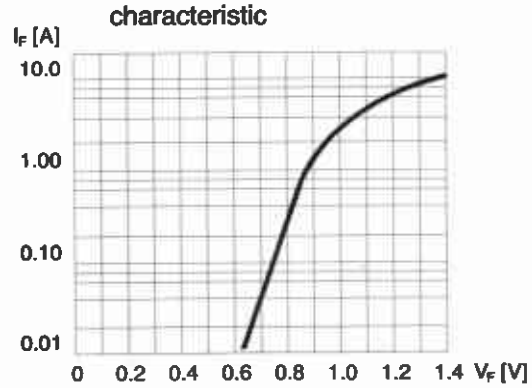
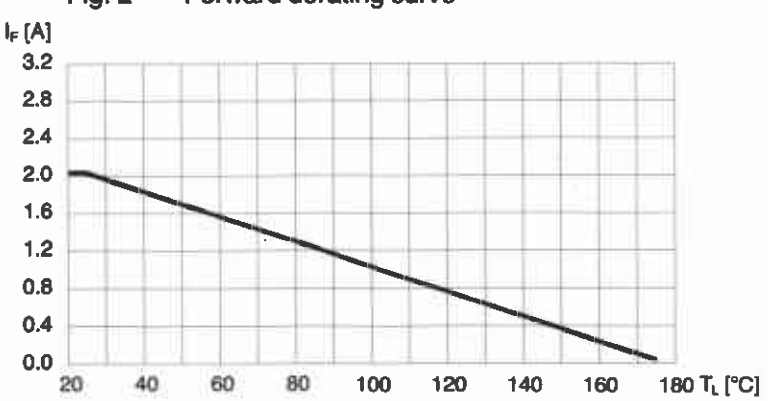


Fig. 2 – Forward derating curve



1 A Glass Rectifier

200 to 1000 V

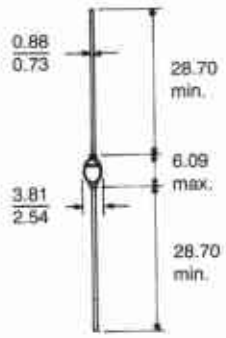
1N4245 thru 1N4249

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N4245	140 V	200 V
1N4246	280 V	400 V
1N4247	420 V	600 V
1N4248	560 V	800 V
1N4249	700 V	1000 V

CASE OUTLINE

GPR



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	25 A
Maximum Forward Voltage at 1.0 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	1.0 µA
Maximum Reverse Current at 125°C	25 µA
Typical Reverse Recovery Time – Measured with $I_F = 0.5$ A, $I_R = 1.0$ A, $i_{rr} = 0.25$ A	2 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +160°C
Storage Temperature Range	−65 to +200°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

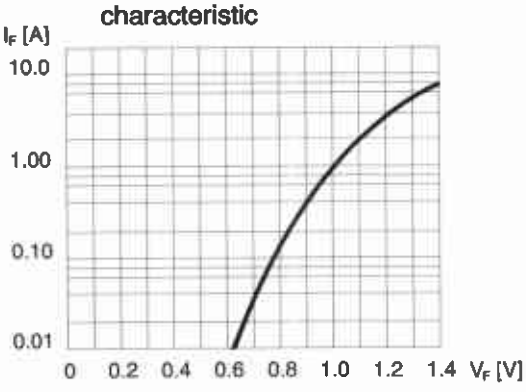
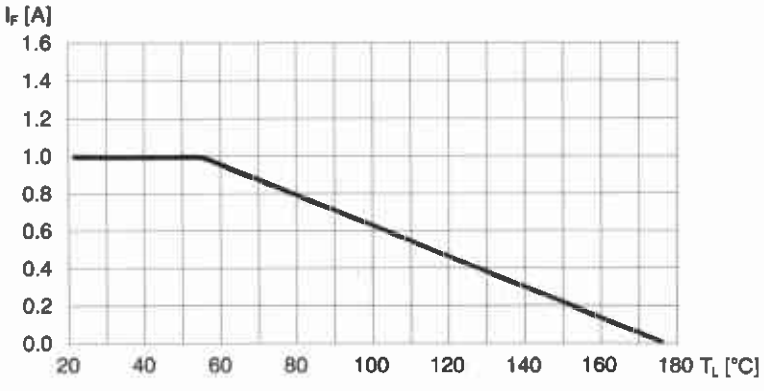


Fig. 2 – Forward derating curve



1 A Glass Rectifier

200 to 800 V

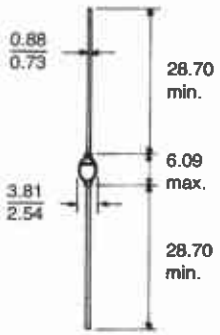
1N5059 thru 1N5062

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N5059	140 V	200 V
1N5060	280 V	400 V
1N5061	420 V	600 V
1N5062	560 V	800 V

CASE OUTLINE

GPR



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage at 1.0 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	5.0 µA
Maximum Reverse Current at 75°C	100 µA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	2 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	20 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

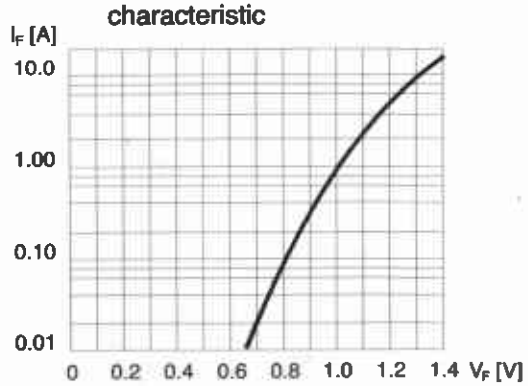
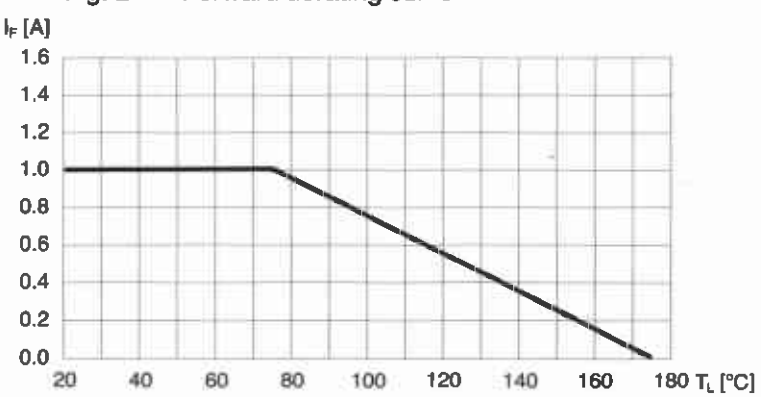


Fig. 2 – Forward derating curve



1 A Glass Rectifier

50 to 1000 V

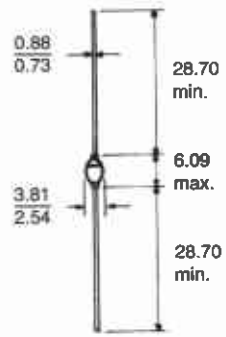
G1 Series

VOLTAGE RATINGS

Type	Maximum Forward Voltage at 1.0 A_{DC}	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
G1A	1.2 V	35 V	50 V
G1B	1.2 V	70 V	100 V
G1D	1.1 V	140 V	200 V
G1G	1.1 V	280 V	400 V
G1J	1.1 V	420 V	600 V
G1K	1.1 V	560 V	800 V
G1M	1.1 V	700 V	1000 V

CASE OUTLINE

GPR



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Reverse Current at 25°C	1.0 μA
Maximum Reverse Current at 100°C	100 μA
Typical Reverse Recovery Time – Measured with $I_F = 0.5$ A, $I_R = 1.0$ A, $i_{rr} = 0.25$ A	2 μs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	14 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +300°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

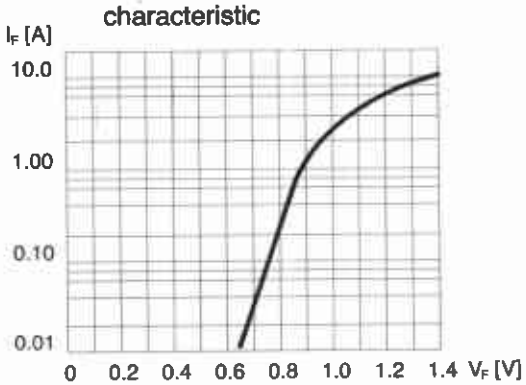
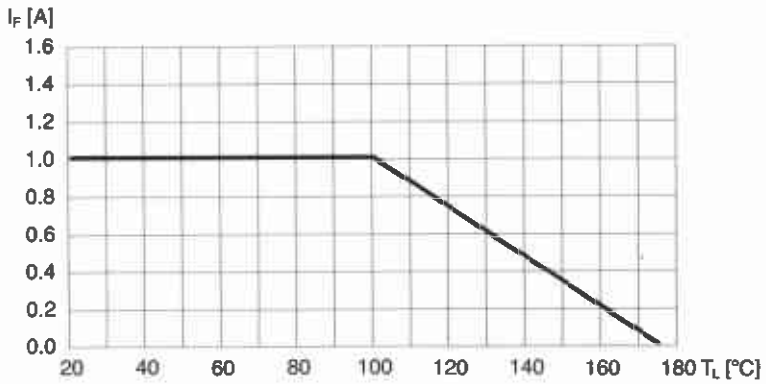


Fig. 2 – Forward derating curve



2 A Glass Rectifier

50 to 1000 V

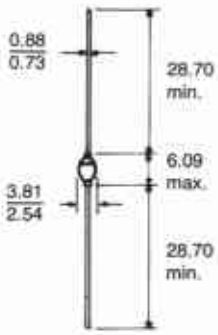
G2 Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
G2A	35 V	50 V
G2B	70 V	100 V
G2D	140 V	200 V
G2G	280 V	400 V
G2J	420 V	600 V
G2K	560 V	800 V
G2M	700 V	1000 V

CASE OUTLINE

GPR



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	2 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage at 2.0 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	0.2 μA
Maximum Reverse Current at 100°C	10 μA
Maximum Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	2 μs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	14 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +300°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

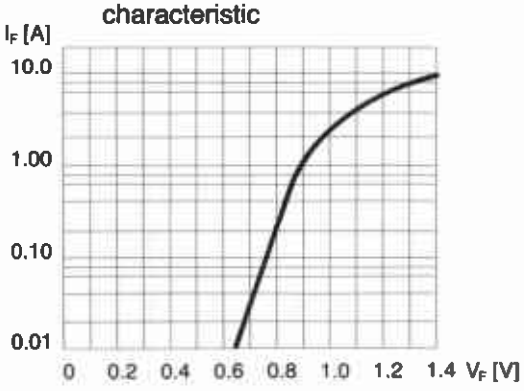
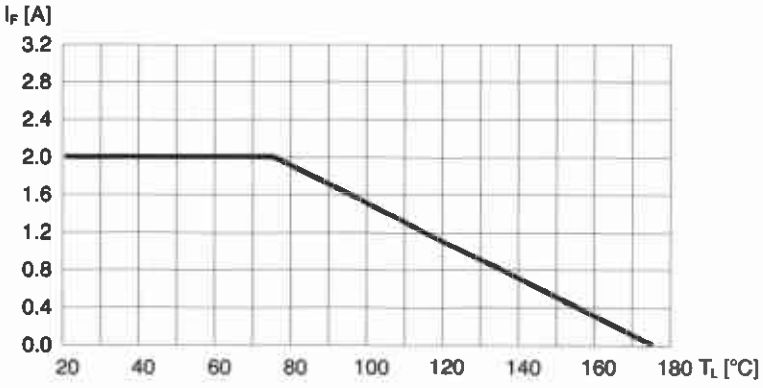


Fig. 2 – Forward derating curve



3 A Glass Rectifier

200 to 800 V

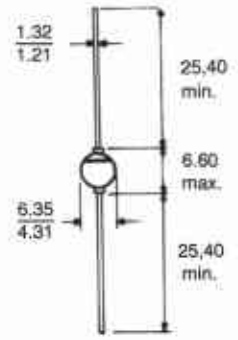
1N5624 thru 1N5627

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N5624	140 V	200 V
1N5625	280 V	400 V
1N5626	420 V	600 V
1N5627	560 V	800 V

CASE OUTLINE

GPR-3



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	3 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	125 A
Maximum Forward Voltage at 3.0 A_{DC}	1.0 V
Maximum Reverse Current at 25°C	1.0 µA
Maximum Reverse Current at 100°C	100 µA
Typical Reverse Recovery Time – Measured with $I_F = 0.5$ A, $I_R = 1.0$ A, $i_{rr} = 0.25$ A	3 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	30 pF
Typical Thermal Resistance	35°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +300°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

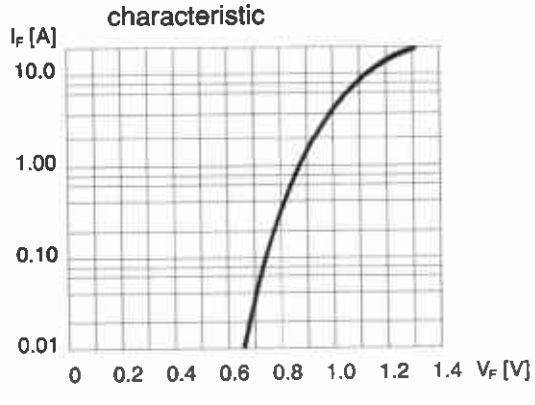
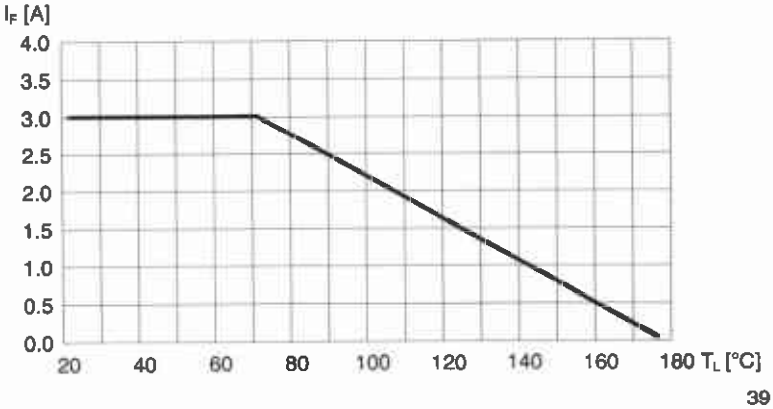


Fig. 2 – Forward derating curve



3 A Glass Rectifier

50 to 1000 V

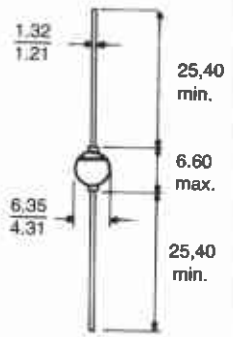
G3 Series

VOLTAGE RATINGS

Type	Maximum Forward Voltage at 3.0 A_{DC}	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
G3A	1.2 V	35 V	50 V
G3B	1.2 V	70 V	100 V
G3D	1.1 V	140 V	200 V
G3G	1.1 V	280 V	400 V
G3J	1.1 V	420 V	600 V
G3K	1.1 V	560 V	800 V
G3M	1.1 V	700 V	1000 V

CASE OUTLINE

GPR-3



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	3 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	125 A
Maximum Reverse Current at 25°C	1 µA
Maximum Reverse Current at 100°C	100 µA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	3 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	30 pF
Typical Thermal Resistance	25°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +300°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

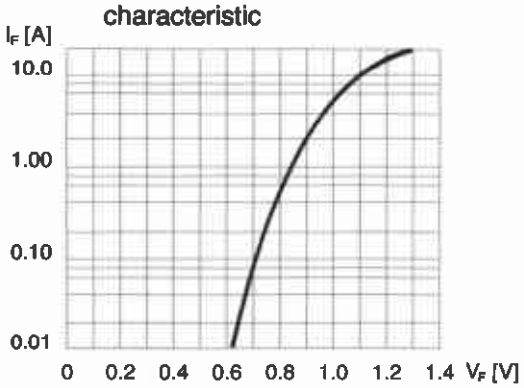
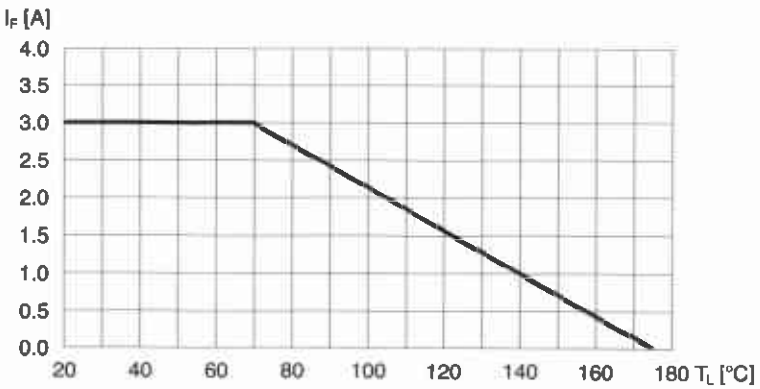


Fig. 2 – Forward derating curve



1 A Glass Rectifier

200 to 1000 V / Fast Recovery

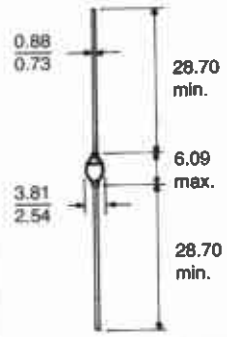
1N4942 thru 1N4948

VOLTAGE AND REVERSE RECOVERY RATINGS

Type	Maximum Reverse Recovery Time I_F = .5 A, I_R = 1 A, i_{rr} = .25 A	Maximum Recurrent Peak Reverse Voltage
1N4942	150 ns	200 V
1N4943	150 ns	300 V
1N4944	150 ns	400 V
1N4945	150 ns	500 V
1N4946	150 ns	600 V
1N4947	250 ns	800 V
1N4948	500 ns	1000 V

CASE OUTLINE

GPR



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	30 A
Maximum Forward Voltage at 1 A_{DC}	1.3 V
Maximum Reverse Current at 25°C	1.0 µA
Maximum Reverse Current at 100°C	100 µA
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	20 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +200°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

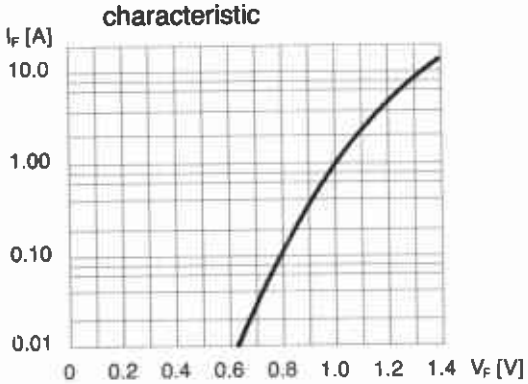
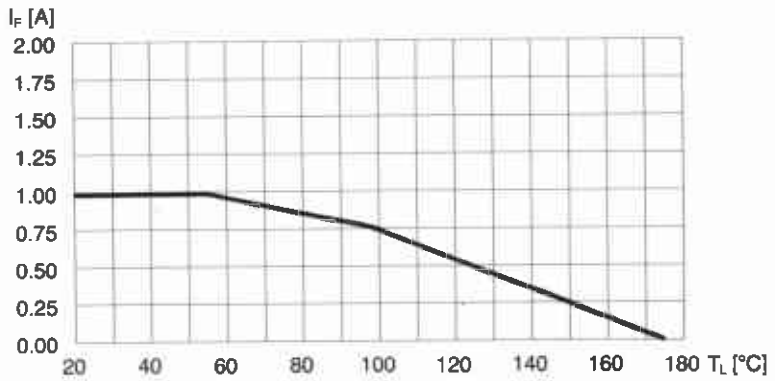


Fig. 2 – Forward derating curve



1 A Glass Rectifier

200 to 1000 V

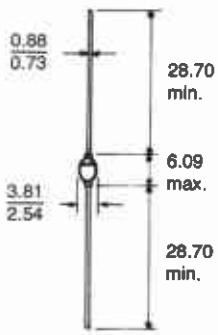
1N5614 even thru 1N5622

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N5614	140 V	200 V
1N5616	280 V	400 V
1N5618	420 V	600 V
1N5620	560 V	800 V
1N5622	700 V	1000 V

CASE OUTLINE

GPR



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage at 1.0 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	0.5 µA
Maximum Reverse Current at 100°C	25 µA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	2 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 12.0 V_{DC}	20 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−193 to +200°C
Storage Temperature Range	−193 to +200°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

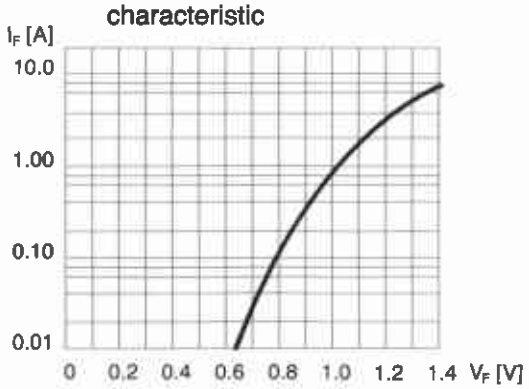
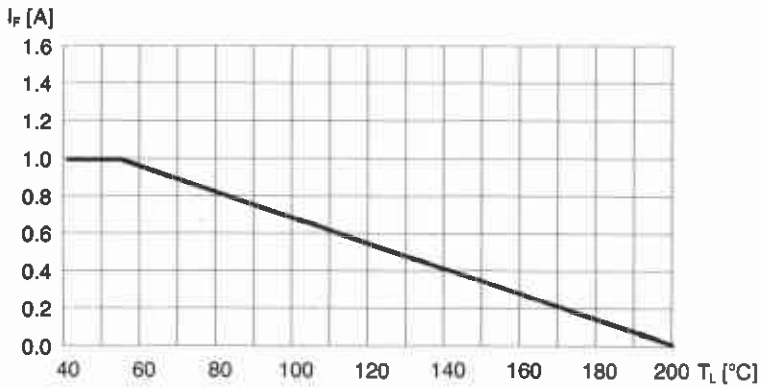


Fig. 2 – Forward derating curve



1 A Glass Rectifier

200 to 1000 V / Fast Recovery

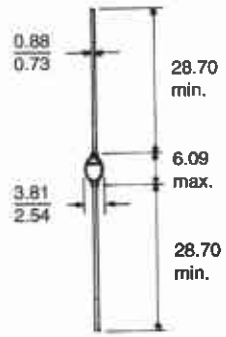
1N5615 odd thru 1N5623

VOLTAGE AND REVERSE RECOVERY RATINGS

Type	Maximum Reverse Recovery Time I_F = .5 A, I_R = 1 A, i_{rr} = .25 A	Maximum Recurrent Peak Reverse Voltage
1N5615	150 ns	200 V
1N5617	150 ns	400 V
1N5619	250 ns	600 V
1N5621	300 ns	800 V
1N5623	500 ns	1000 V

CASE OUTLINE

GPR



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage at 1.0 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	0.5 µA
Maximum Reverse Current at 100°C	25 µA
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	20 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−193 to +200°C
Storage Temperature Range	−193 to +200°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

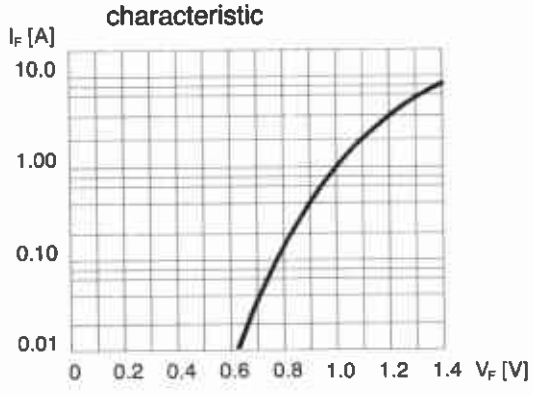
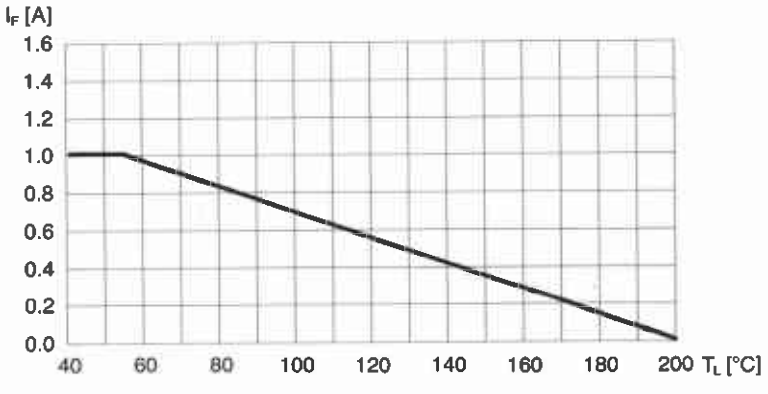


Fig. 2 – Forward derating curve



1 A Glass Rectifier

50 to 1000 V / Fast Recovery

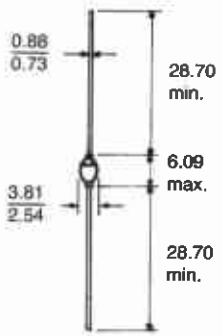
RG1 Series

VOLTAGE AND REVERSE RECOVERY RATINGS

Type	Maximum Reverse Recovery Time I_F = .5 A, I_R = 1 A, i_{rr} = .25 A	Maximum Recurrent Peak Reverse Voltage
RG1A	150 ns	50 V
RG1B	150 ns	100 V
RG1D	150 ns	200 V
RG1G	150 ns	400 V
RG1J	150 ns	600 V
RG1K	250 ns	800 V
RG1M	500 ns	1000 V

CASE OUTLINE

GPR



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	30 A
Maximum Forward Voltage at 1.0 A_{DC}	1.3 V
Maximum Reverse Current at 25°C	1.0 µA
Maximum Reverse Current at 100°C	100 µA
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	20 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +300°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

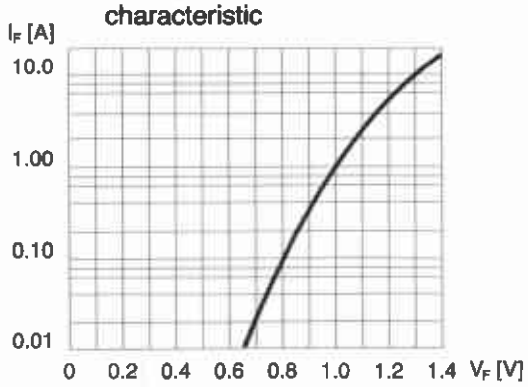
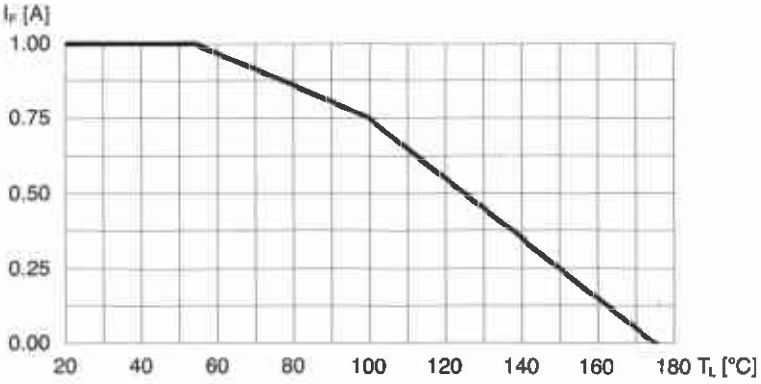


Fig. 2 – Forward derating curve



3 A Glass Rectifier

50 to 1000 V / Fast Recovery

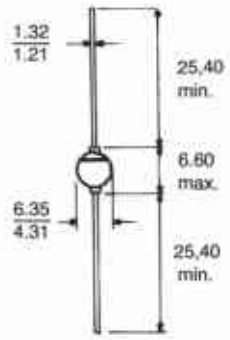
RG3 Series

VOLTAGE AND REVERSE RECOVERY RATINGS

Type	Maximum Reverse Recovery Time I_F = .5 A, I_R = 1 A, i_{rr} = .25 A	Maximum Recurrent Peak Reverse Voltage
RG3A	150 ns	50 V
RG3B	150 ns	100 V
RG3D	150 ns	200 V
RG3G	150 ns	400 V
RG3J	150 ns	600 V
RG3K	250 ns	800 V
RG3M	500 ns	1000 V

CASE OUTLINE

GPR-3



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	3 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	100 A
Maximum Forward Voltage at 3.0 A_{DC}	1.3 V
Maximum Reverse Current at 25°C	2.0 µA
Maximum Reverse Current at 100°C	100 µA
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	35 pF
Typical Thermal Resistance	25°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +300°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

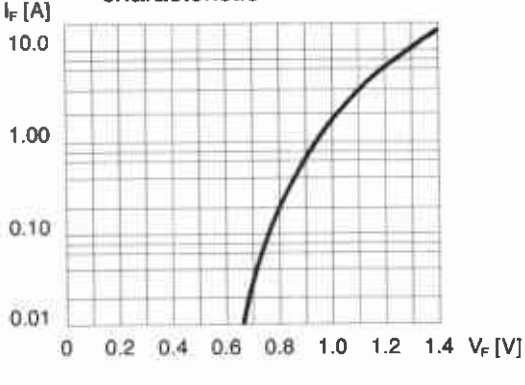
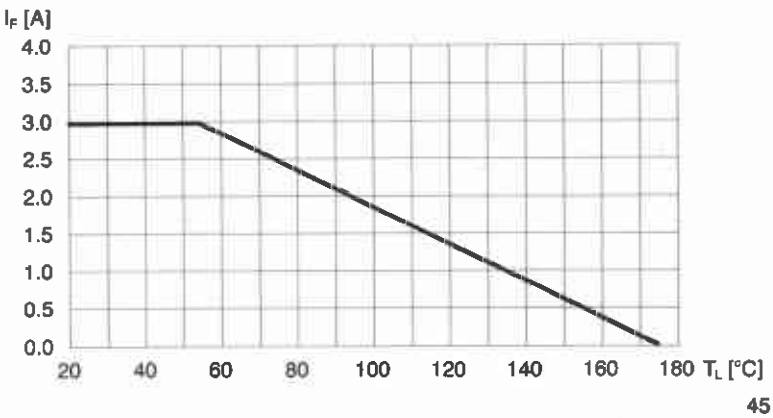


Fig. 2 – Forward derating curve



1.5 A Glass Rectifier

Clamper/Damper

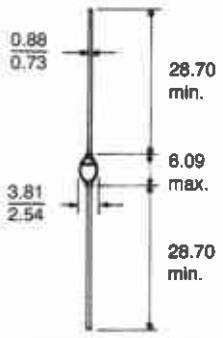
CG1
DG1

VOLTAGE AND RECOVERY RATINGS

Type	Typical Forward Recovery Voltage	Maximum Reverse Recovery Time	Maximum Recurrent Peak Reverse Voltage
CG1	30 V	15 µs	1400 V
DG1	25 V	20 µs	1400 V

CASE OUTLINE

GPR



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.5 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Reverse Current at 25°C	5.0 µA
Maximum Reverse Current at 125°C	100 µA
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +125°C
Storage Temperature Range	−65 to +200°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

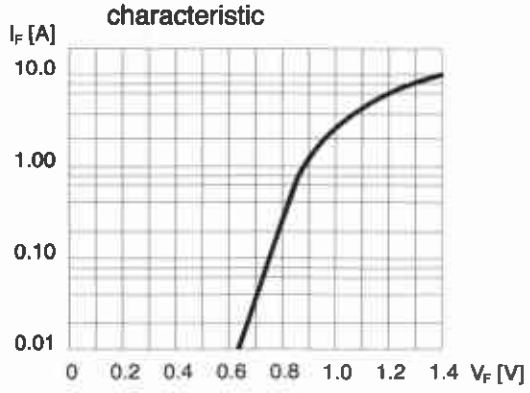
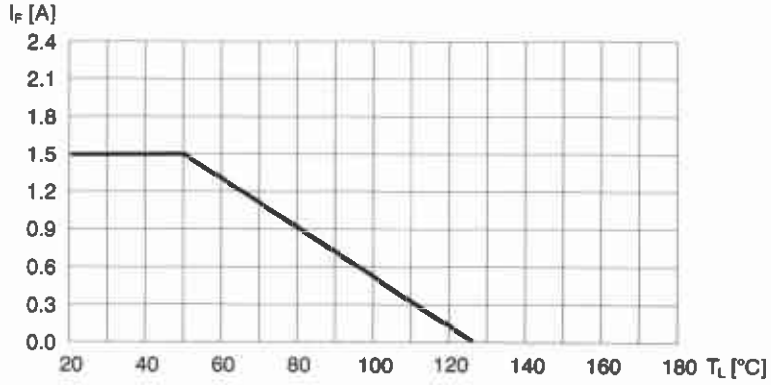


Fig. 2 – Forward derating curve



1.5 A Glass Rectifier

1500 V

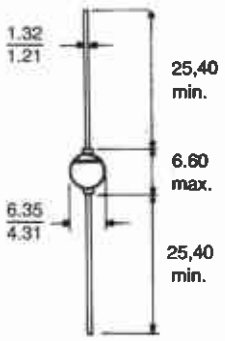
BY228

VOLTAGE RATINGS

Type	Maximum Recurrent Peak Reverse Voltage
BY228	1500 V

CASE OUTLINE

GPR-3



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	2.5 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	100 A
Maximum Forward Voltage at 5 A_{DC}	1.5 V
Maximum Reverse Current at 25°C	5 µA
Maximum Reverse Current at 125°C	200 µA
Maximum Reverse Recovery Time	20 µs
Typical Thermal Resistance	25 °C/W
Operating Temperature Range	−65 to +140°C
Storage Temperature Range	−65 to +200°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

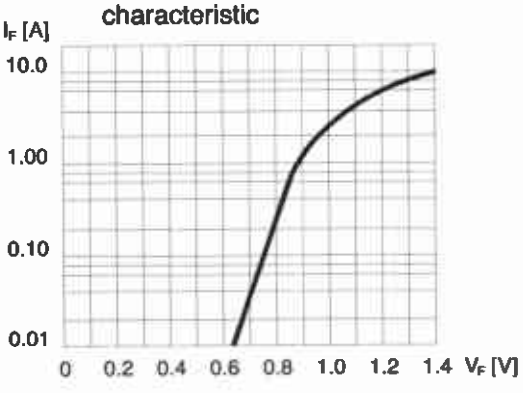
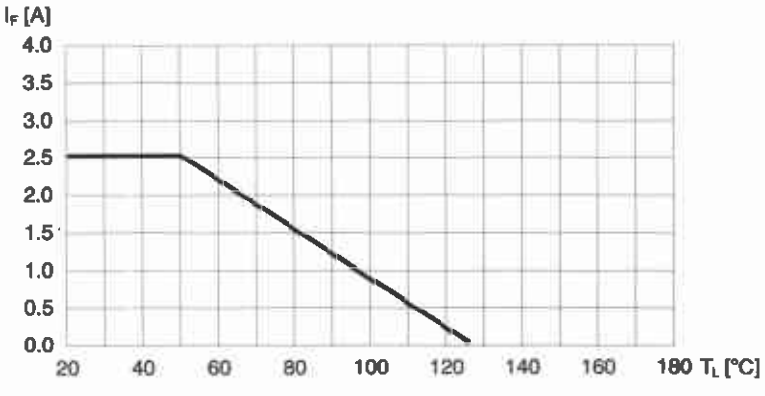


Fig. 2 – Forward derating curve



HV Glass Rectifier

2000 to 5000 V

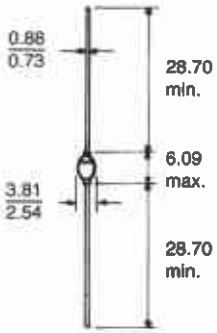
HVG Series

VOLTAGE RATINGS

Type	Maximum Forward Voltage at 0.1 A_{DC}	Maximum Recurrent Peak Reverse Voltage
HVG2	3.0 V	2000 V
HVG3	4.0 V	3000 V
HVG4	6.0 V	4000 V
HVG5	8.0 V	5000 V

CASE OUTLINE

GPR



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	0.3 to 0.15 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	25 to 8 A
Maximum Reverse Current at 25°C	5 μA
Maximum Reverse Current at 100°C	25 μA
Typical Thermal Resistance	50 °C/W
Operating Temperature Range	−65 to +150°C
Storage Temperature Range	−65 to +200°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

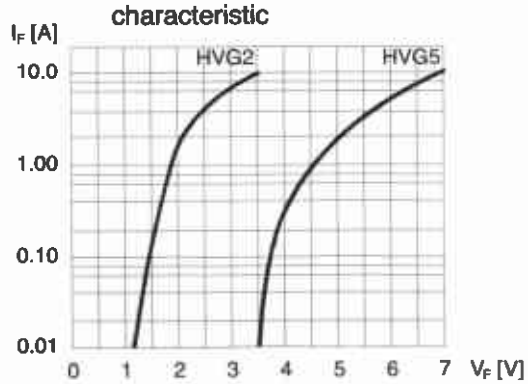
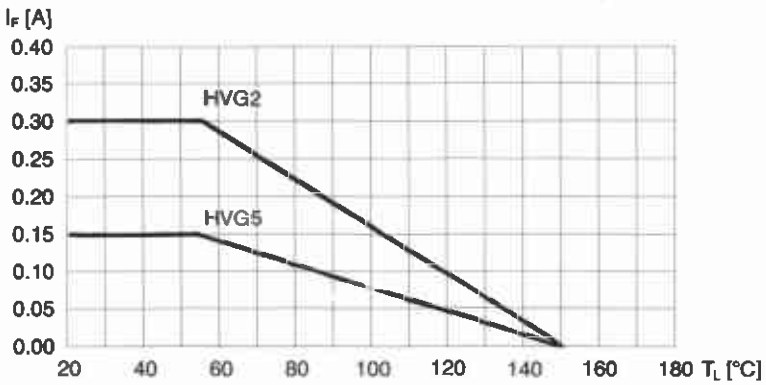


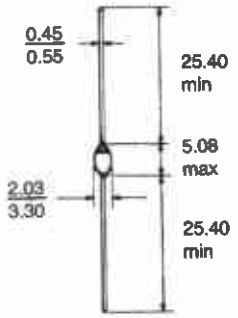
Fig. 2 – Forward derating curve



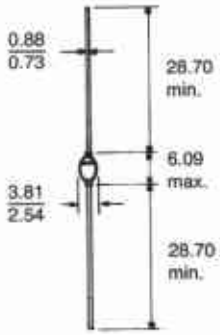
Unit	Package GPR	Package GPD	JANTX AVAILABLE	Package
1N483B		■	■	
1N485B		■	■	
1N486B		■	■	
1N645		■	■	
1N647		■	■	
1N649		■	■	
1N645-1		■	■	
1N647-1		■	■	
1N649-1		■	■	
1N3611	■		■	
1N3612	■		■	
1N3613	■		■	
1N3614	■		■	
1N3957	■		■	
1N4245	■		■	
1N4246	■		■	
1N4247	■		■	
1N4248	■		■	
1N4249	■		■	
1N4942	■		■	
1N4944	■		■	
1N4946	■		■	
1N4947	■		■	
1N4948	■		■	
1N5624*	■		■	
1N5625*	■		■	
1N5626*	■		■	
1N5627*	■		■	

* GPR 3 Package

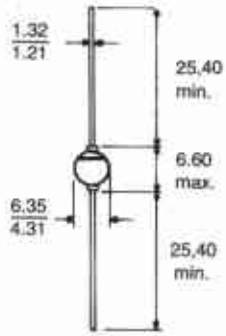
GPD



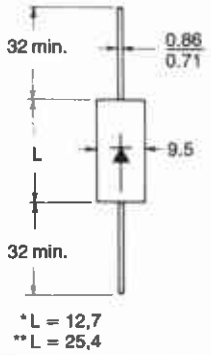
GPR



GPR 3



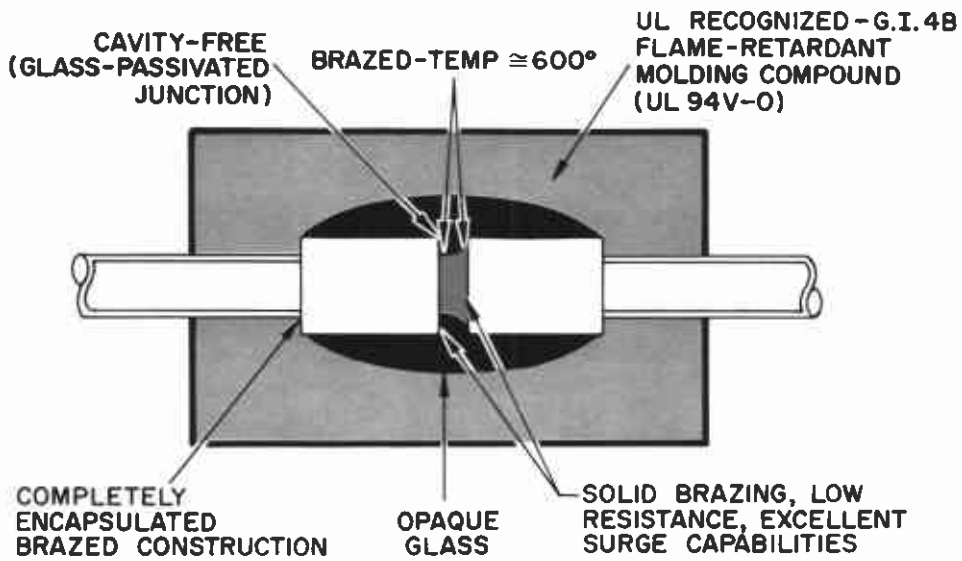
1N1731A* 1N1733A** 1N1734A**				



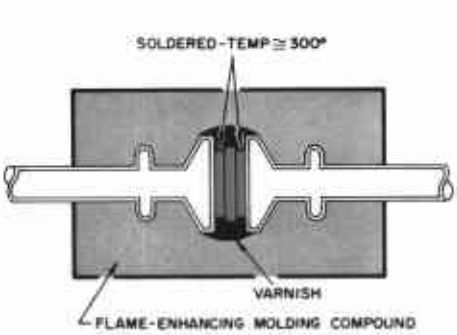
Environmental test conditions and further information see page 107.

GRAPHIC REPRESENTATION OF SUPERECTIFIER'S SUPERIORITY

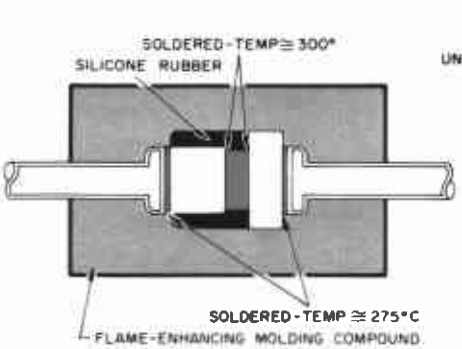
GI SUPERECTIFIER



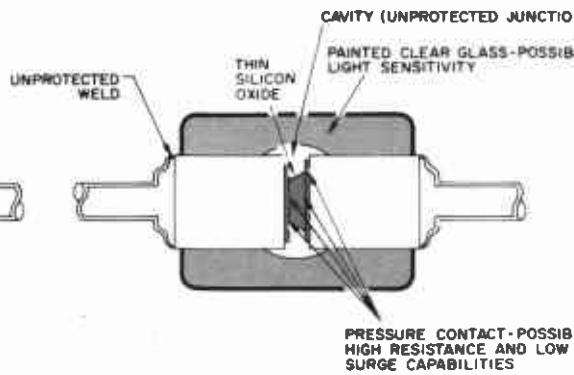
DOUBLE NAIL HEAD



DOUBLE SLUG



DOUBLE PLUG



Superectifier

0.4 to 3 Amperes

50 V to 1600 V

Introduction

No other 1 to 3 Amp rectifier – plastic, glass, or metal – can match (or even approach) SUPERECTIFIER's combination of features ... the result of General Instrument's unique glass-plastic construction:

- Brazed at greater than 600°C at both leads and cell – eliminates all soft solders
- Exclusive UL recognized *flame-retardant* epoxy molding compound rated 94V-0, the highest available
- Patented glass passivation
- Reliability proved equal to military requirements
- Hermetically sealed construction
- Cost effective construction

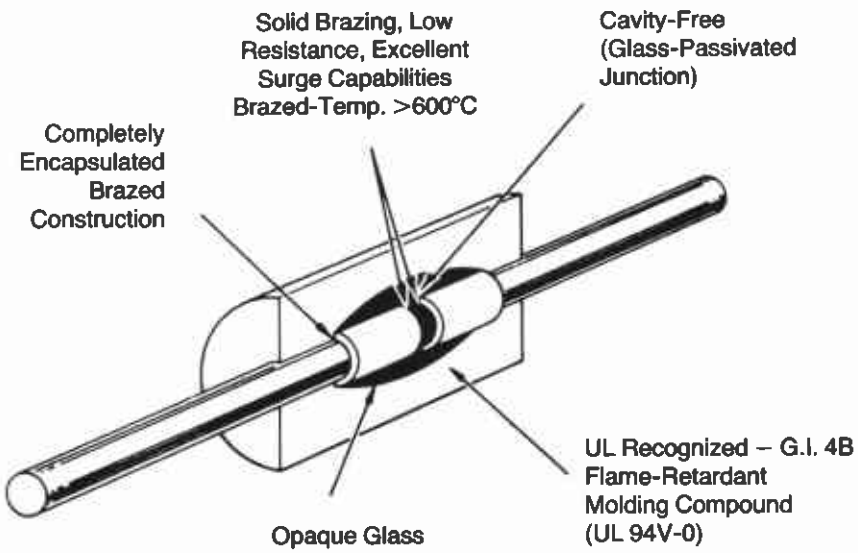
General instrument's SUPERECTIFIER is exactly that ... a super rectifier. There is nothing else in the world like it.

In cell construction, most other rectifiers rated up to 3 Amps are soft soldered or are only pressure contacted. SUPERECTIFIER is made into an entirely solid unit with its leads and cell brazed at temperatures greater than 600°C. All other rectifiers fail at half that temperature.

In cell protection, conventional plastic rectifiers use either varnish, silicon rubber or a thin film of silicon oxide to protect the junction. SUPERECTIFIER uses a patented glass passivation to seal its junction hermetically.

In device encapsulation, again SUPERECTIFIER is the only one that won't go up in flames. It is one of the few rectifier using an exclusive flame-RETARDANT molding compound, rated UL 94V-0, the highest rating available. Other plastic rectifiers use flame-ENHANCING compounds. Here again, SUPERECTIFIER's superiority is manifest. With this construction it exceeds environmental standards of MIL-STD-19500/228.

In summary, SUPERECTIFIER is the world's only rectifier with totally brazed construction, with a patented glass passivated junction, and with flame-retardant molding encapsulation.



Glass Passivated Junction Plastic Rectifiers 0.4 to 1.75 AMP

Types:		
	1N645GP	thru 1N649GP
	1N3611GP	thru 1N3614GP
	1N4001GP	thru 1N4007GP
	1N4245GP	thru 1N4249GP
	1N5059GP	thru 1N5062GP
	1N5391GP	thru 1N5399GP
	GP10A	thru GP10M
	GP15A	thru GP15M
	BY126GP	and BY127GP
	BY226GP	and BY227GP
	BY133GP	thru BY135GP

Features:
- High Temperature Metallurgically Bonded
- Plastic Package has Underwriters Laboratory Classification 94V-0
- Glass Passivated Junction
- No Thermal Runaway
- Exceeds Environmental Standards of MIL-STD-19500/228
- High Temperature Soldering Guaranteed 350°C/10 Second/10 mm Lead Length at 2.25 kg Tension
- Tin Plated Axial Leads, Solderable per MIL-STD-202/208

Glass Passivated Junction Plastic Rectifiers 2 to 3 AMP

Types:		
	1N5624GP	thru 1N5627GP
	GP20A	thru GP20M
	GP30A	thru GP30M

Features:
- High Temperature Metallurgically Bonded
- Plastic Package has Underwriters Laboratory Classification 94V-0
- Glass Passivated Junction in DO 27 Package
- 2.0 Ampere (GP20) and 3.0 Ampere Operation (GP30) at 55°C Ambient Temperature with no Thermal Runaway
- Typical I_R less than 1 μA
- Exceeds Environmental Standards of MIL-STD-19500/228
- Tin Plated Axial Leads, Solderable per MIL-STD-202/208
- High Temperature Soldering Guaranteed 350°C/10 Second/10 mm Lead Length at 2.25 kg Tension

Glass Passivated Junction Plastic Fast Recovery Rectifiers 0.4 to 3 AMP

Types:

1N4942GP	thru 1N4948GP
RGP01-10	thru RGP01-16
RGP10A	thru RGP10M
RGP15A	thru RGP15M
RGP30A	thru RGP30M
BA157GP	thru BA159GP
BY206GP	and BY207GP

Features:

- High Temperature Metallurgically Bonded
- High Rectification Efficiency to 100 kHz
- No Thermal Runaway
- Exceeds Environmental Standards of MIL-STD-19500/228
- Includes all Advantages of the SUPERECTIFIER Design
- Tin Plated Axial Leads, Solderable per MIL-STD-202/208

Glass Passivated Junction Plastic Controlled Avalanche Rectifiers 1.5 AMP

Type: AGP15-200 thru AGP15-800

Features:

- High Capability for Absorption of Peak Reverse Power
- Designed for Rectifier Applications where Inductive Loads may be switched on and off periodically
- All Advantages of the SUPERECTIFIER Design
- Tin Plated Axial Leads, Solderable per MIL-STD-202/208

Glass Passivated Junction Plastic Zener Rectifiers 160 to 200 VOLTS

Types: ZGP10-160 thru ZGP10-200

Features:

- Reliable SUPERECTIFIER Construction
- Zener Voltages available in 5%, 10% and 20% Tolerances
- High Capability for Absorption of Peak Reverse Power
- Tin Plated Axial Leads, Solderable per MIL-STD-202/208

QUICK GUIDE TO SUPERECTIFIERS

TYPE	1N645GP thru 1N649GP	BY206GP* thru BY207GP*	BA157GP* thru BA159GP*	GP10A thru GP10M	1N3611GP thru 1N3614GP	1N4001GP thru 1N4007GP	1N4245GP thru 1N4249GP	1N4942GP* thru 1N4948GP*	RGP10A* thru RGP10M*	BY133GP thru BY135GP	1N5059GP thru 1N5062GP
CASE	DO41	DO41	DO41	DO41	DO41	DO41	DO41	DO41	DO41	DO15	DO15
I_o (A)	0.4	0.4	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
@T_A (°C)	25	55	55	55	100	75	55	55	55	75	55
V_R = 50 (V)				GP10A		1N4001GP			RGP10A		
V_R = 100 (V)				GP10B		1N4002GP			RGP10B		
V_R = 200 (V)	1N645GP			GP10D	1N3611GP	1N4003GP	1N4245GP	1N4942GP	RGP10D	BY135GP	1N5059GP
V_R = 300 (V)	1N646GP							1N4943GP			
V_R = 400 (V)	1N647GP	BY206GP	BA157GP	GP10G	1N3612GP	1N4004GP	1N4246GP	1N4944GP	RGP10G		1N5060GP
V_R = 500 (V)	1N648GP							1N4945GP			
V_R = 600 (V)	1N649GP	BY207GP	BA158GP	GP10J	1N3613GP	1N4005GP	1N4247GP	1N4946GP	RGP10J	BY134GP	1N5061GP
V_R = 800 (V)			BA159DGP	GP10K	1N3614GP	1N4006GP	1N4248GP	1N4947GP	RGP10K		1N5062GP
V_R = 1000 (V)			BA159GP	GP10M	1N3957GP	1N4007GP	1N4249GP	1N4948GP	RGP10M		
V_R > 1000 (V)										BY133GP	
SURGE (A)	20	15	20	30	30	30	25	30	30	50	50
V_F (V)	1.2	1.3	1.3	1.1	1.1	1.1	1.2	1.3	1.3	1.2	1.2
Page	55	70	71	59	56	57	58	72	73	61	60

QUICK GUIDE TO SUPERECTIFIERS

TYPE	AGP15-200 thru AGP15-800	GP15A thru GP15M	1N5391GP thru 1N5399GP	RGP15A* thru RGP15M*	BY126GP thru BY127GP	BY226GP thru BY227GP	GP20A thru GP20M	1N5624GP thru 1N5627GP	GP30A thru GP30M	RGP30A* thru RGP30M*
CASE	DO15	DO15	DO15	DO15	DO27	DO27	DO27	DO27A	DO27A	DO27A
I_o (A)	1.5	1.5	1.5	1.5	1.5	1.75	2.0	3.0	3.0	3.0
@T_A (°C)	55	55	70	55	55	55	55	70	55	55
V_R = 50 (V)		GP15A	1N5391GP	RGP15A			GP20A		GP30A	RGP30A
V_R = 100 (V)		GP15B	1N5392GP	RGP15B			GP20B		GP30B	RGP30B
V_R = 200 (V)	AGP15-200	GP15D	1N5393GP	RGP15D			GP20D	1N5624GP	GP30D	RGP30D
V_R = 300 (V)			1N5394GP							
V_R = 400 (V)	AGP15-400	GP15G	1N5395GP	RGP15G			GP20G	1N5625GP	GP30G	RGP30G
V_R = 500 (V)			1N5396GP							
V_R = 600 (V)	AGP15-600	GP15J	1N5397GP	RGP15J	BY126GP	BY226GP	GP20J	1N5626GP	GP30J	RGP30J
V_R = 800 (V)	AGP15-800	GP15K	1N5398GP	RGP15K			GP20K	1N5627GP	GP30K	RGP30K
V_R = 1000 (V)		GP15M	1N5399GP	RGP15M			GP20M		GP30M	RGP30M
V_R > 1000 (V)					BY127GP	BY227GP				
SURGE (A)	50	50	50	50	50	60	65	125	125	125
V_F (V)	1.2	1.1	1.4	1.3	1.3	1.3	1.1	1.0	1.1	1.3
Page	76	63	62	74	64	65	66	67	68	75

* Fast Recovery

0.4 A Superectifier

225 to 600 V

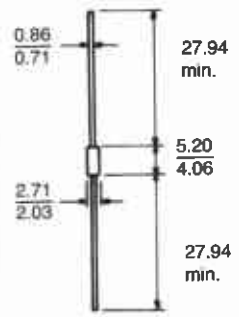
1N645GP thru 1N649GP

VOLTAGE RATINGS

Type	Maximum Recurrent Peak Reverse Voltage
1N645GP	225 V
1N646GP	300 V
1N647GP	400 V
1N648GP	500 V
1N649GP	600 V

CASE OUTLINE

DO-41



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	400 mA
Peak Forward Surge Current, 10 ms Single Half Sine Wave	20 A
Maximum Forward Voltage at 0.4 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	0.5 µA
Maximum Reverse Current at 150°C	25 µA
Typical Reverse Recovery Time – Measured with I_F = 20 mA, i_{rr} = 1 mA	20 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

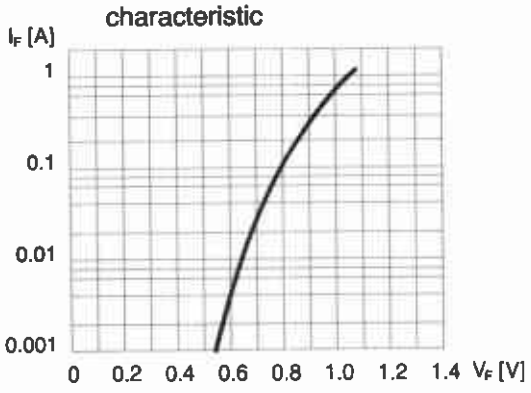
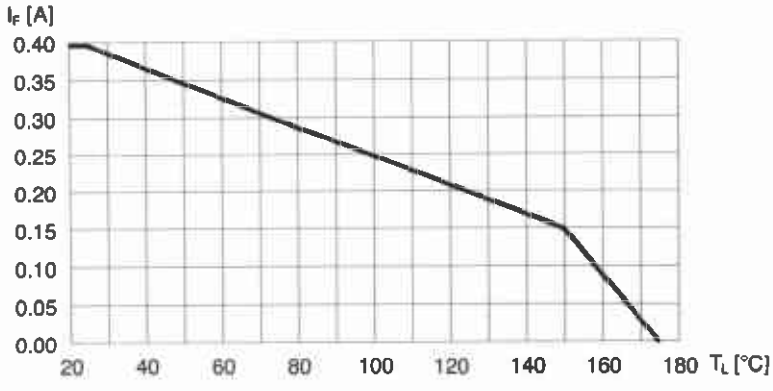


Fig. 2 – Forward derating curve



1 A Superectifier

200 to 1000 V

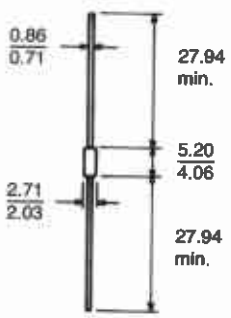
1N3611GP
1N3612GP
1N3613GP
1N3614GP
1N3957GP

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N3611GP	140 V	200 V
1N3612GP	280 V	400 V
1N3613GP	420V	600 V
1N3614GP	560 V	800 V
1N3957GP	700 V	1000 V

CASE OUTLINE

DO-41



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	30 A
Maximum Forward Voltage at 1.0 A_{DC}	1.0 V
Maximum Reverse Current at 25°C	1.0 µA
Maximum Reverse Current at 150°C	300 µA
Typical Reverse Recovery Time – Measured with I_F = 20 mA, i_{rr} = 1 mA	20 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

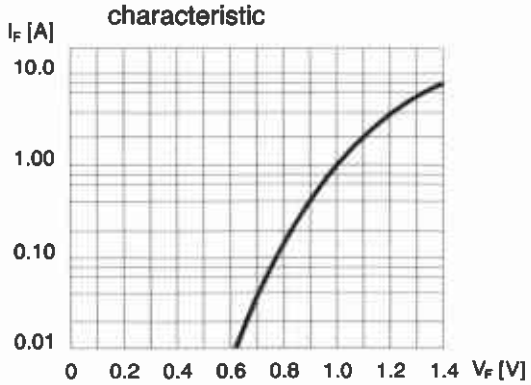
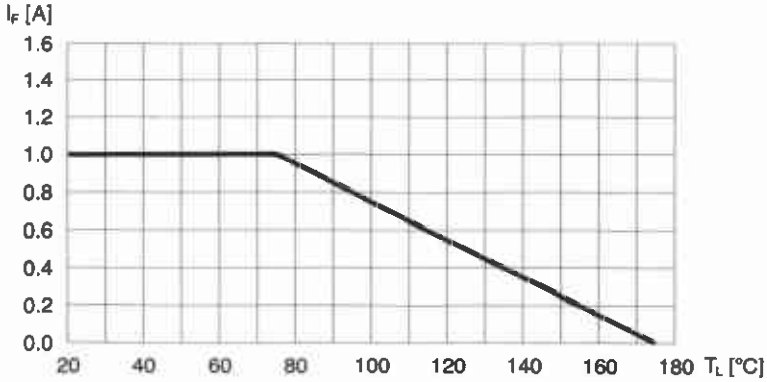


Fig. 2 – Forward derating curve



1 A Superectifier

50 to 1000 V

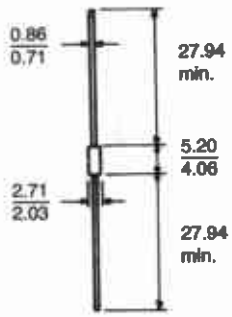
1N4001GP thru 1N4007GP

VOLTAGE RATINGS

Type	Maximum Forward Voltage at 1.0 A_{DC}	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N4001GP	1.1 V	35 V	50 V
1N4002GP	1.1 V	70 V	100 V
1N4003GP	1.1 V	140 V	200 V
1N4004GP	1.1 V	280 V	400 V
1N4005GP	1.1 V	420 V	600 V
1N4006GP	1.2 V	560 V	800 V
1N4007GP	1.2 V	700 V	1000 V

CASE OUTLINE

DO-41



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	30 A
Maximum Reverse Current at 25°C	5 µA
Maximum Reverse Current at 125°C	50 µA
Typical Reverse Recovery Time – Measured with I_F = 20 mA, i_{rr} = 1 mA	20 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

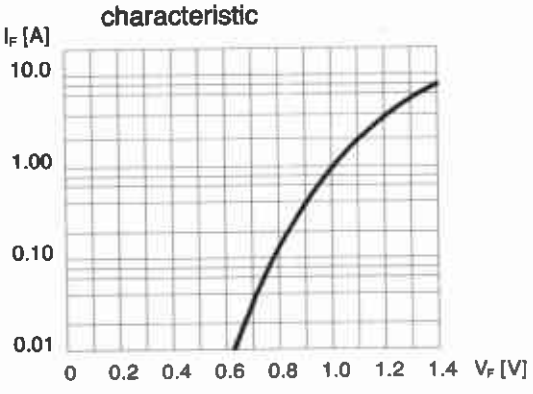
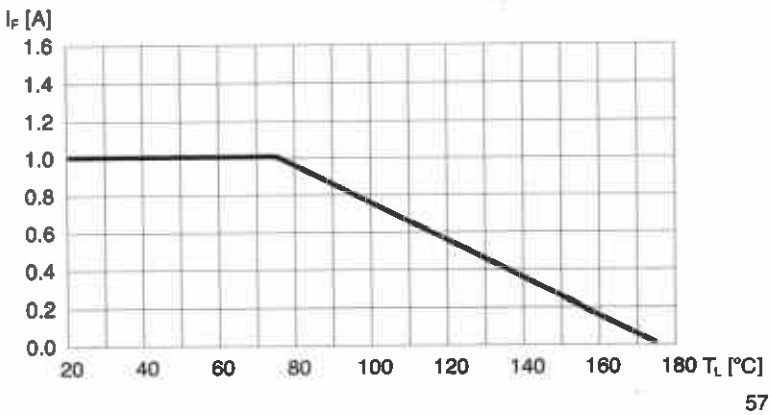


Fig. 2 – Forward derating curve



1 A Superectifier

200 to 1000 V

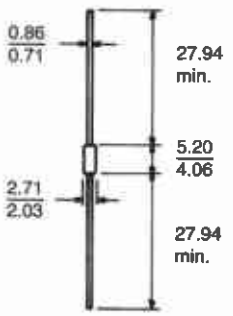
1N4245GP thru 1N4249GP

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N4245GP	140 V	200 V
1N4246GP	280 V	400 V
1N4247GP	420 V	600 V
1N4248GP	560 V	800 V
1N4249GP	700 V	1000 V

CASE OUTLINE

DO-41



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	25 A
Maximum Forward Voltage at 1.0 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	1.0 µA
Maximum Reverse Current at 125°C	25 µA
Typical Reverse Recovery Time – Measured with I_F = 20 mA, i_{rr} = 1 mA	20 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

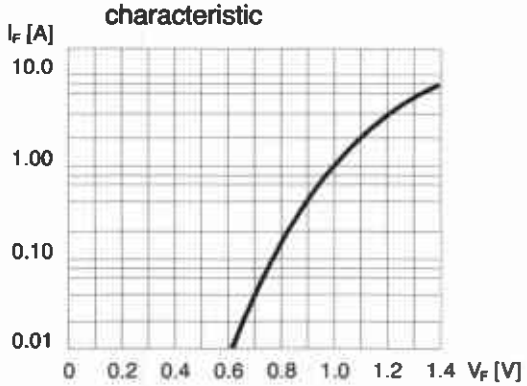
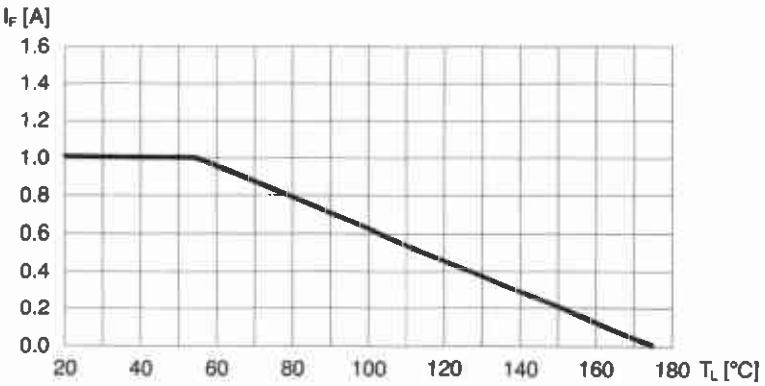


Fig. 2 – Forward derating curve



1 A Superectifier

50 to 1000 V

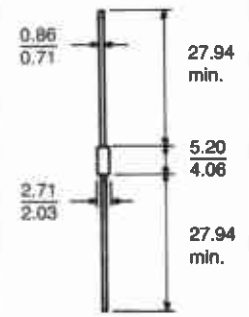
GP10 Series

VOLTAGE RATINGS

Type	Maximum Forward Voltage at 1.0 A_{DC}	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
GP10A	1.1 V	35 V	50 V
GP10B	1.1 V	70 V	100 V
GP10D	1.1 V	140 V	200 V
GP10G	1.1 V	280 V	400 V
GP10J	1.1 V	420 V	600 V
GP10K	1.2 V	560 V	800 V
GP10M	1.2 V	700 V	1000 V

CASE OUTLINE

DO-41



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	30 A
Maximum Reverse Current at 25°C	5 μA
Maximum Reverse Current at 55°C	100 μA
Typical Reverse Recovery Time – Measured with I_F = 20 mA, i_{rr} = 1 mA	20 μs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

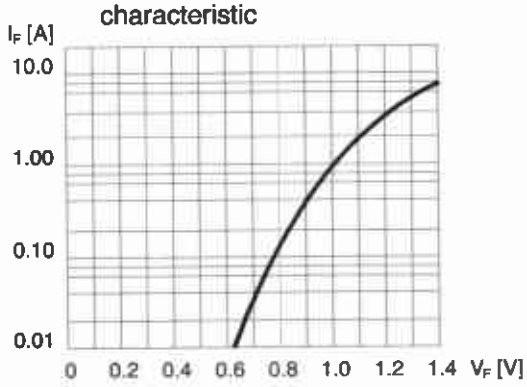
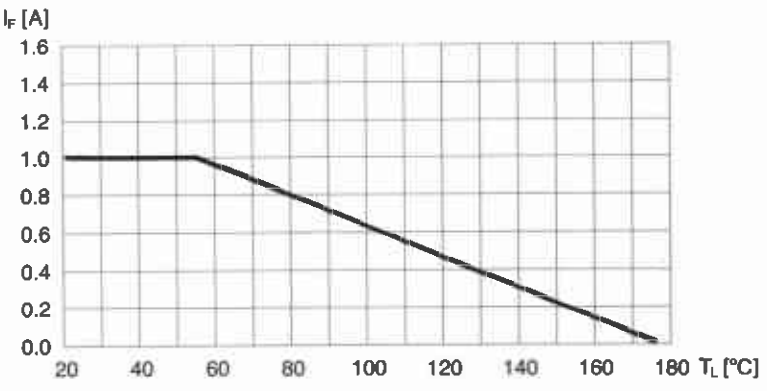


Fig. 2 – Forward derating curve



1 A Superectifier

200 to 800 V

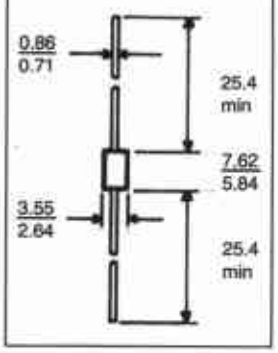
1N5059GP thru 1N5062GP

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N5059GP	140 V	200 V
1N5060GP	280 V	400 V
1N5061GP	420 V	600 V
1N5062GP	560 V	800 V

CASE OUTLINE

DO-15



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage at 1.0 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	5.0 µA
Maximum Reverse Current at 75°C	100 µA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	2 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	20 pF
Typical Thermal Resistance	40°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

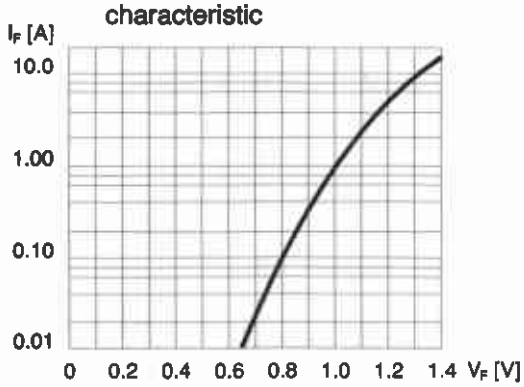
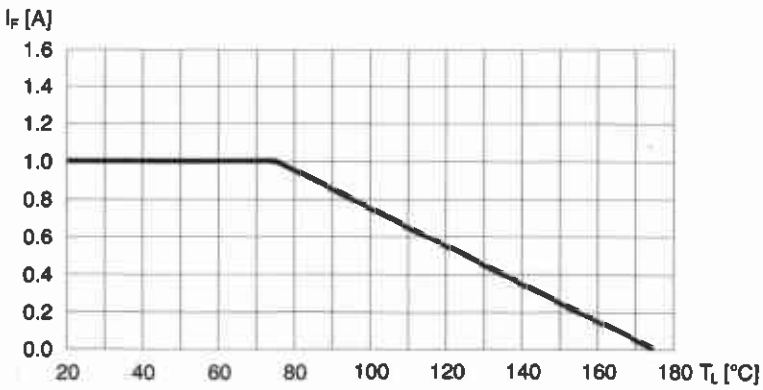


Fig. 2 – Forward derating curve



1 A Superectifier

200 to 1300 V

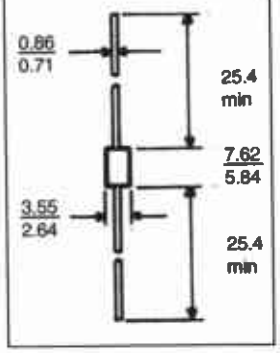
BY133GP thru BY135GP

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
BY133GP	910 V	1300 V
BY134GP	420 V	600 V
BY135GP	140 V	200 V

CASE OUTLINE

DO-15



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage at 2.0 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	5.0 μA
Maximum Reverse Current at 75°C	100 μA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	2.5 μs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	25 pF
Typical Thermal Resistance	40°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

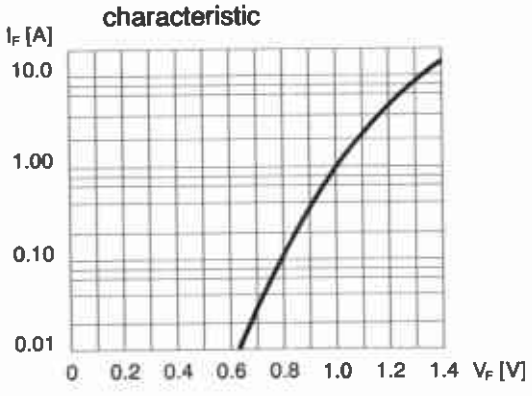
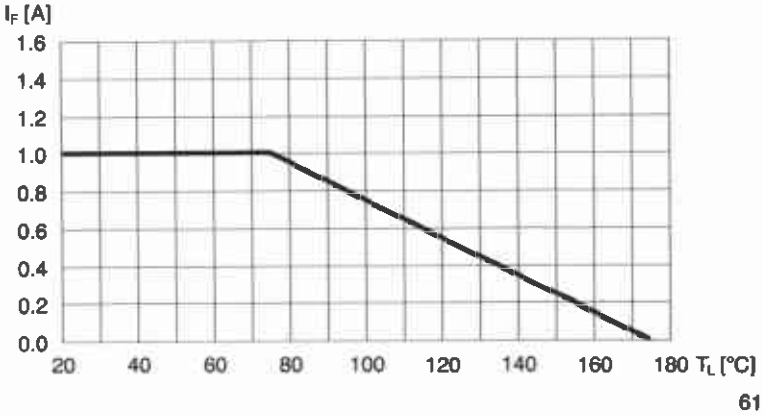


Fig. 2 – Forward derating curve



1,5 A Superectifier

50 to 1000 V

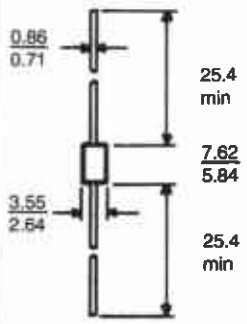
1N5391GP thru 1N5399GP

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N5391GP	35 V	50 V
1N5392GP	70 V	100 V
1N5393GP	140 V	200 V
1N5394GP	210 V	300 V
1N5395GP	280 V	400 V
1N5396GP	350 V	500 V
1N5397GP	420 V	600 V
1N5398GP	560 V	800 V
1N5399GP	700 V	1000 V

CASE OUTLINE

DO-15



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.5 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage at 1.5 A_{DC}	1.4 V
Maximum Reverse Current at 25°C	5 µA
Maximum Reverse Current at 150°C	300 µA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	2 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	25 pF
Typical Thermal Resistance	40°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

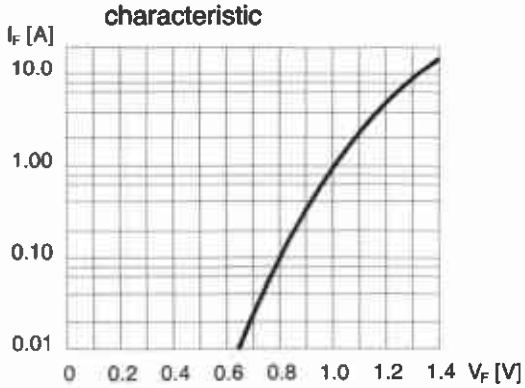
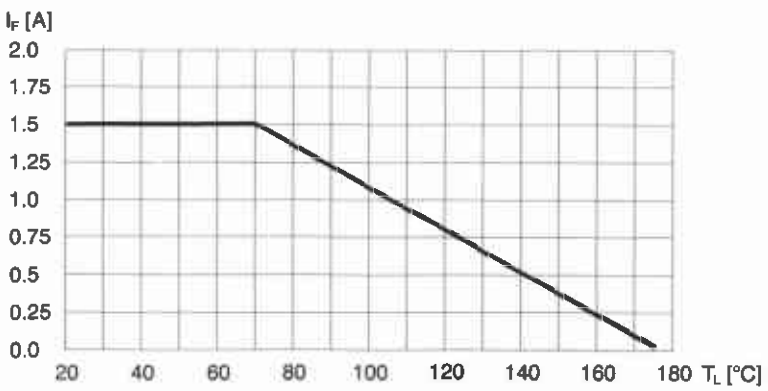


Fig. 2 – Forward derating curve



1,5 A Superectifier

50 to 1000 V

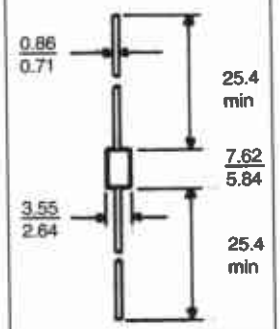
GP15 Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
GP15A	35 V	50 V
GP15B	70 V	100 V
GP15D	140 V	200 V
GP15G	280 V	400 V
GP15J	420 V	600 V
GP15K	560 V	800 V
GP15M	700 V	1000 V

CASE OUTLINE

DO-15



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.5 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage at 1.5 A_{DC}	1.1 V
Maximum Reverse Current at 25°C	5 µA
Maximum Reverse Current at 55°C	100 µA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	2 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	25 pF
Typical Thermal Resistance	40°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER

Fig. 1 – Typical forward characteristic

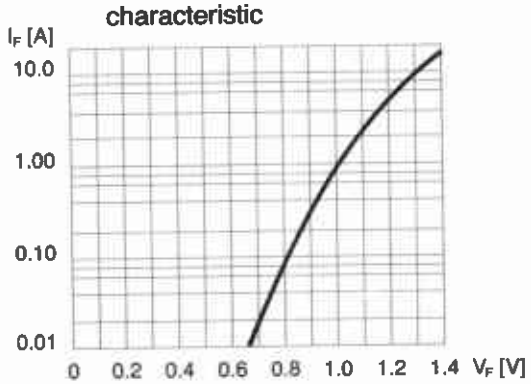
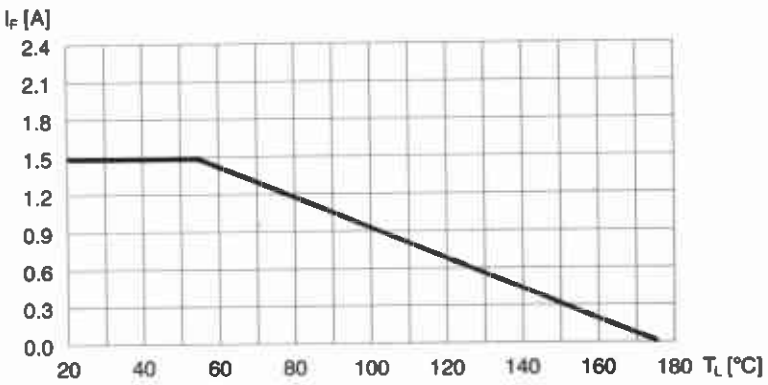


Fig. 2 – Forward derating curve



1.5 A Superectifier

650 to 1250 V

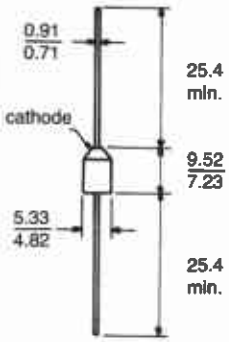
BY126GP
BY127GP

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
BY126GP	450 V	650 V
BY127GP	850 V	1250 V

CASE OUTLINE

DO-27



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.5 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage at 5.0 A_{DC}	1.5 V
Maximum Reverse Current at 25°C	5.0 µA
Maximum Reverse Current at 55°C	100 µA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	2.5 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	40 pF
Typical Thermal Resistance	30°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

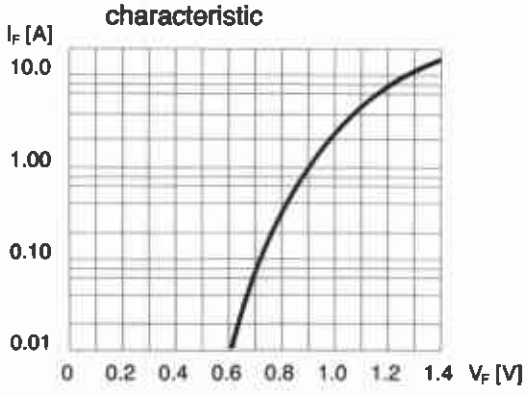
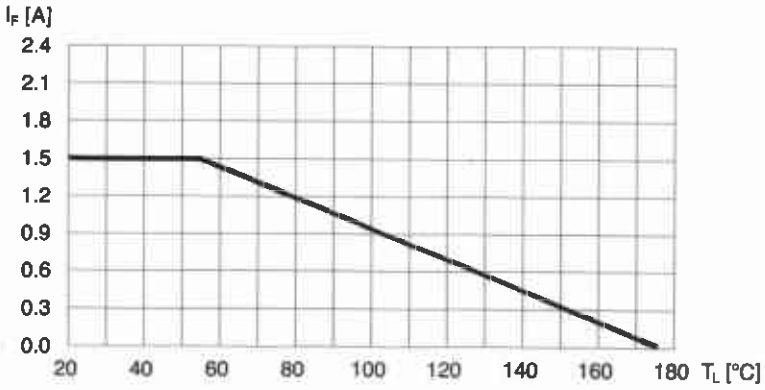


Fig. 2 – Forward derating curve



1.75 A Superectifier

650 to 1250 V

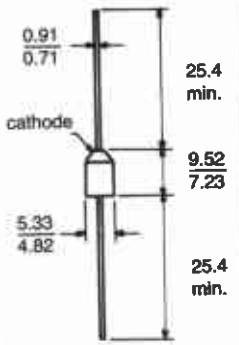
BY226GP
BY227GP

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
BY226GP	450 V	650 V
BY227GP	850 V	1250 V

CASE OUTLINE

DO-27



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.75 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	60 A
Maximum Forward Voltage at 5.0 A_{DC}	1.5 V
Maximum Reverse Current at 25°C	5.0 μA
Maximum Reverse Current at 55°C	100 μA
Typical Reverse Recovery Time – Measured with $I_F = 0.5$ A, $I_R = 1.0$ A, $i_{rr} = 0.25$ A	2.5 μs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	40 pF
Typical Thermal Resistance	30°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

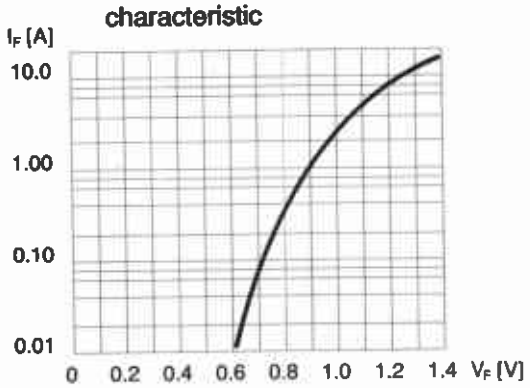
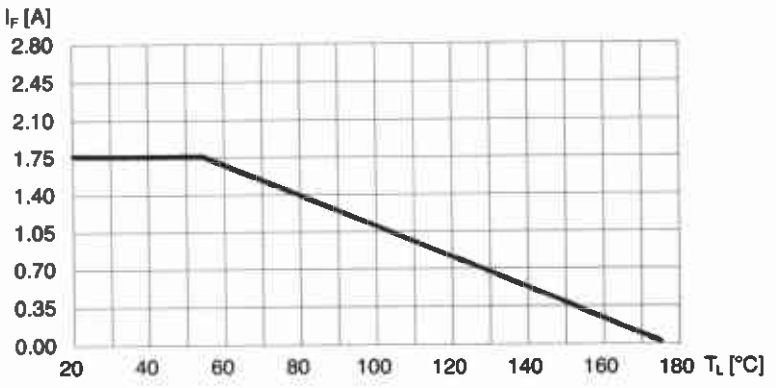


Fig. 2 – Forward derating curve



2 A Superectifier

50 to 1000 V

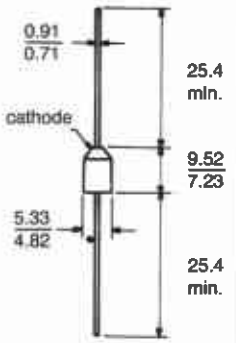
GP20 Series

VOLTAGE RATINGS

Type	Maximum Forward Voltage at 2.0 A_{DC}	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
GP20A	1.2 V	35 V	50 V
GP20B	1.2 V	70 V	100 V
GP20D	1.1 V	140 V	200 V
GP20G	1.1 V	280 V	400 V
GP20J	1.1 V	420 V	600 V
GP20K	1.1 V	560 V	800 V
GP20M	1.1 V	700 V	1000 V

CASE OUTLINE

DO-27



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	2.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	65 A
Maximum Reverse Current at 25°C	5 μA
Maximum Reverse Current at 55°C	100 μA
Typical Reverse Recovery Time – Measured with $I_F = 0.5$ A, $I_R = 1.0$ A, $i_{rr} = 0.25$ A	2.5 μs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	40 pF
Typical Thermal Resistance	30°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

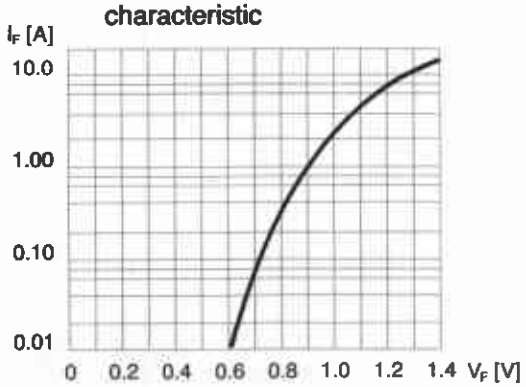
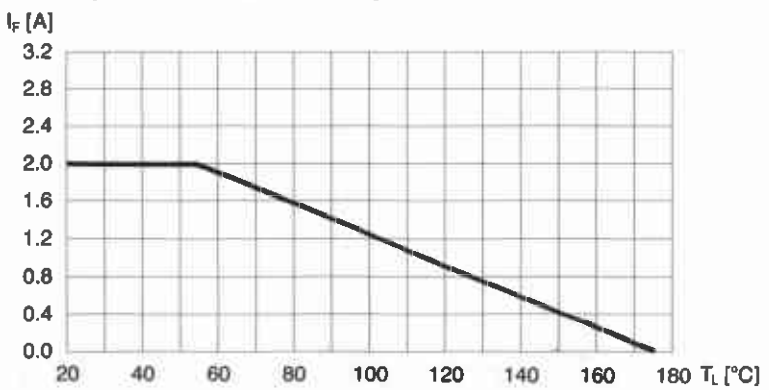


Fig. 2 – Forward derating curve



3 A Superectifier

200 to 800 V

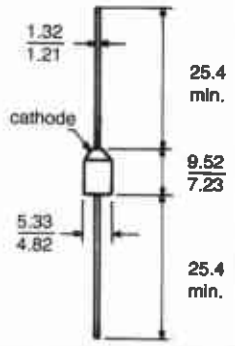
1N5624GP thru 1N5627GP

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
1N5624GP	140 V	200 V
1N5625GP	280 V	400 V
1N5626GP	420 V	600 V
1N5627GP	560 V	800 V

CASE OUTLINE

DO-27A



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	3.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	125 A
Maximum Forward Voltage at 3.0 A_{DC}	1.0 V
Maximum Reverse Current at 25°C	5.0 μA
Maximum Reverse Current at 100°C	100 μA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	3 μs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	60 pF
Typical Thermal Resistance	25°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

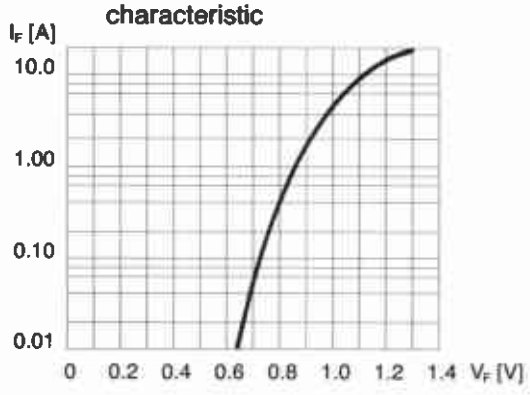
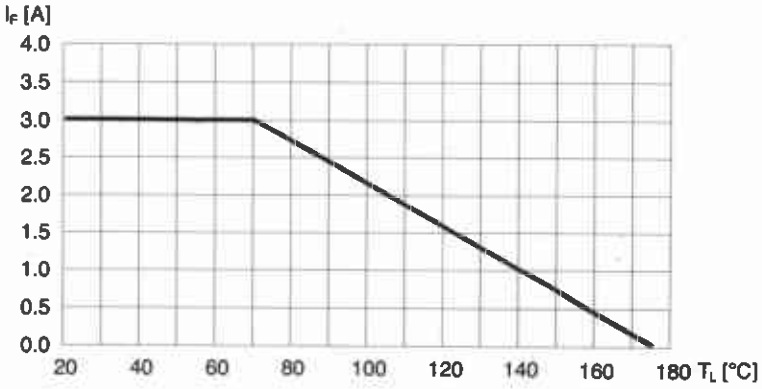


Fig. 2 – Forward derating curve



3 A Superectifier

50 to 1000 V

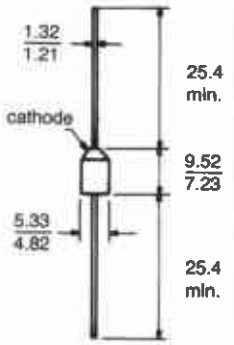
GP30 Series

VOLTAGE RATINGS

Type	Maximum Forward Voltage at 3.0 A_{DC}	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
GP30A	1.2 V	35 V	50 V
GP30B	1.2 V	70 V	100 V
GP30D	1.1 V	140 V	200 V
GP30G	1.1 V	280 V	400 V
GP30J	1.1 V	420 V	600 V
GP30K	1.1 V	560 V	800 V
GP30M	1.1 V	720 V	1000 V

CASE OUTLINE

DO-27A



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	3 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	125 A
Maximum Reverse Current at 25°C	5 μA
Maximum Reverse Current at 55°C	100 μA
Typical Reverse Recovery Time – Measured with I_F = 0.5 A, I_R = 1.0 A, i_{rr} = 0.25 A	3 μs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	60 pF
Typical Thermal Resistance	25°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

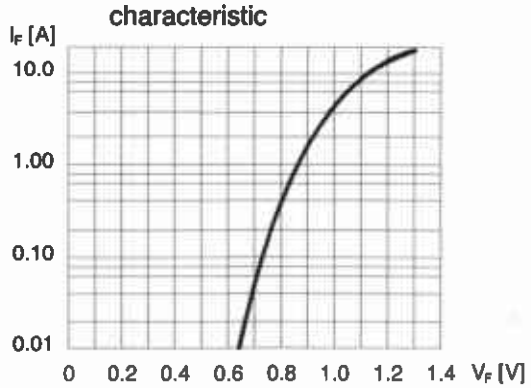
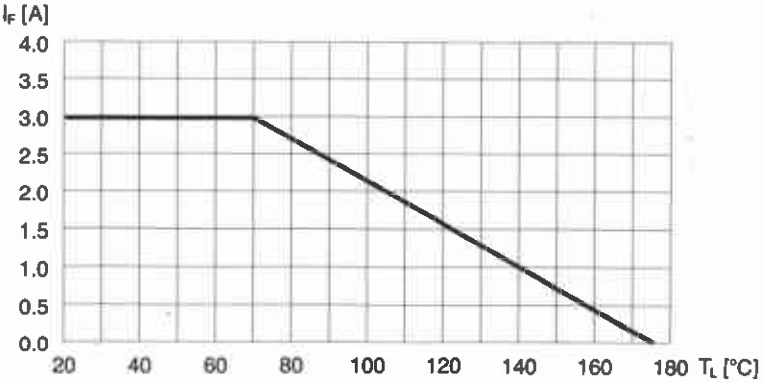


Fig. 2 – Forward derating curve



Photoflash Rectifier

1000 to 1600 V

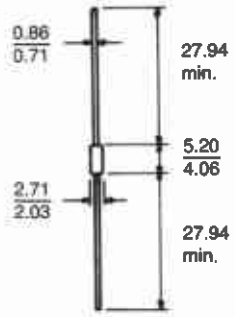
RGP01 Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
RGP01-10	700 V	1000 V
RGP01-12	840 V	1200 V
RGP01-14	980 V	1400 V
RGP01-16	1120 V	1600 V

CASE OUTLINE

DO-41



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	100 mA
Peak Forward Surge Current, 10 ms Single Half Sine Wave	20 A
Maximum Forward Voltage at 0.1 A_{DC}	1.5 V
Maximum Reverse Current at 25°C	5 μA
Maximum Reverse Current at 55°C	100 μA
Maximum Reverse Recovery Time – Measured with I_F = 10 mA, I_R = 10 mA, i_{rr} = 1 mA	1 μs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER

Fig. 1 – Typical forward characteristic

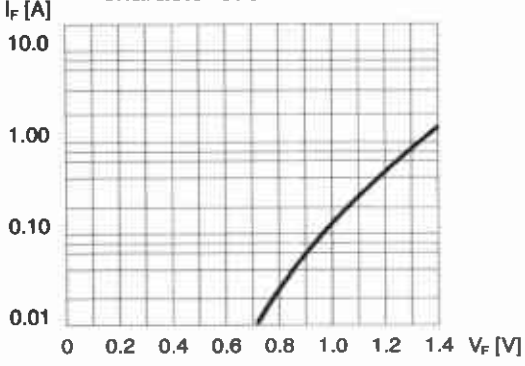
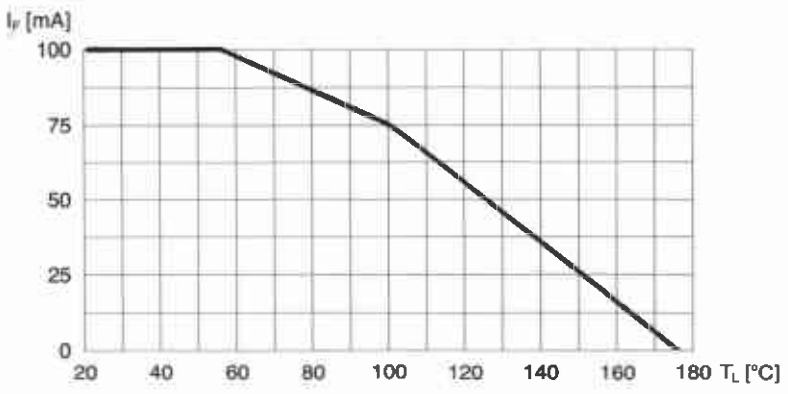


Fig. 2 – Forward derating curve



0.4 A Superectifier

350 and 600 V / Fast Recovery

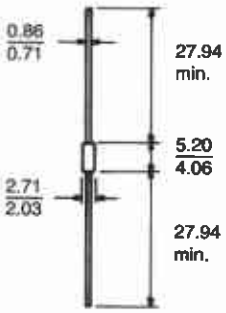
BY206GP
BY207GP

VOLTAGE RATINGS

Type	Maximum Recurrent Peak Reverse Voltage
BY206GP	350 V
BY207GP	600 V

CASE OUTLINE

DO-41



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	0.4 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	15 A
Maximum Forward Voltage at 2.0 A_{DC}	1.5 V
Maximum Reverse Current at 25°C	5.0 µA
Maximum Reverse Current at 100°C	100 µA
Typical Reverse Recovery Time – Measured with $I_F = 0.4$ A, $V_R = 50$ V	1 µs
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

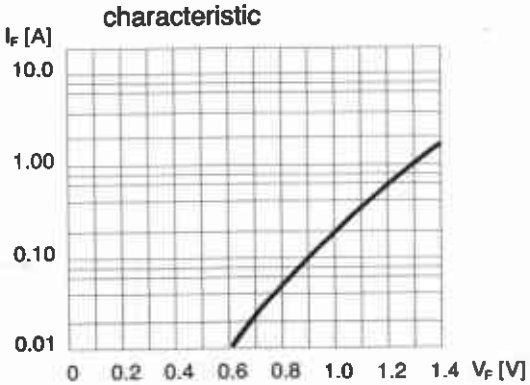
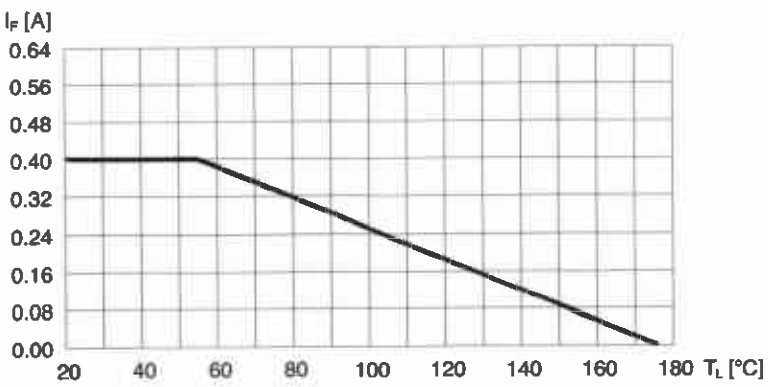


Fig. 2 – Forward derating curve



0.5 A Superectifier

400 to 1000 V / Fast Recovery

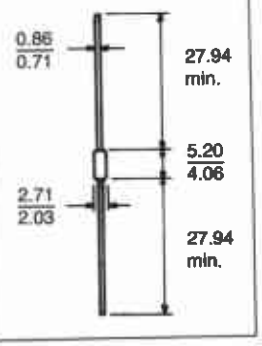
BA157GP thru BA159GP

VOLTAGE AND REVERSE RECOVERY RATINGS

Type	Maximum Reverse Recovery Time I_F = .5 A, I_R = 1 A, i_{rr} = .25 A	Maximum Recurrent Peak Reverse Voltage
BA157GP	150 ns	400 V
BA158GP	250 ns	600 V
BA159DGP	500 ns	800 V
BA159GP	500 ns	1000 V

CASE OUTLINE

DO-41



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	0.5 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	20 A
Maximum Forward Voltage at 1.0 A_{DC}	1.5 V
Maximum Reverse Current at 25°C	5.0 µA
Maximum Reverse Current at 55°C	100 µA
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

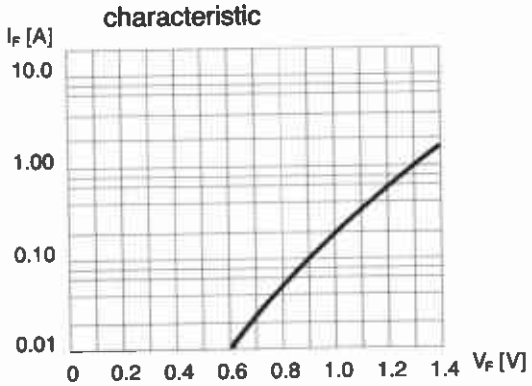
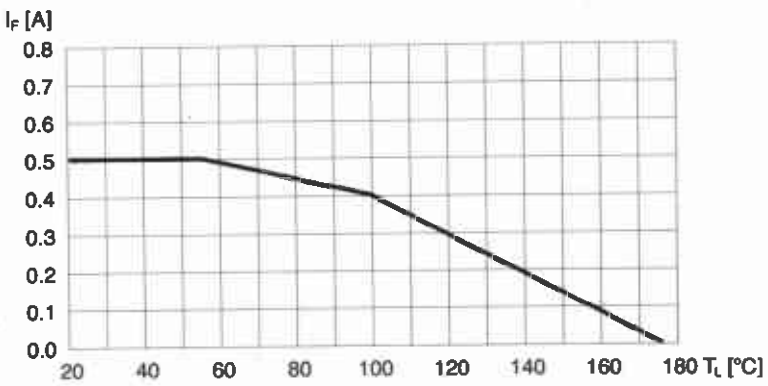


Fig. 2 – Forward derating curve



1 A Superectifier

200 to 1000 V / Fast Recovery

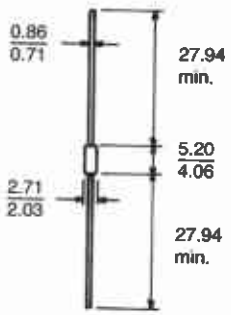
1N4942GP thru 1N4948GP

VOLTAGE AND REVERSE RECOVERY RATINGS

Type	Maximum Reverse Recovery Time I_F = .5 A, I_R = 1 A, i_{rr} = .25 A	Maximum Recurrent Peak Reverse Voltage
1N4942GP	150 ns	200 V
1N4944GP	150 ns	400 V
1N4946GP	150 ns	600 V
1N4947GP	250 ns	800 V
1N4948GP	500 ns	1000 V

CASE OUTLINE

DO-41



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	25 A
Maximum Forward Voltage at 1.0 A_{DC}	1.3 V
Maximum Reverse Current at 25°C	1.0 µA
Maximum Reverse Current at 150°C	200 µA
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

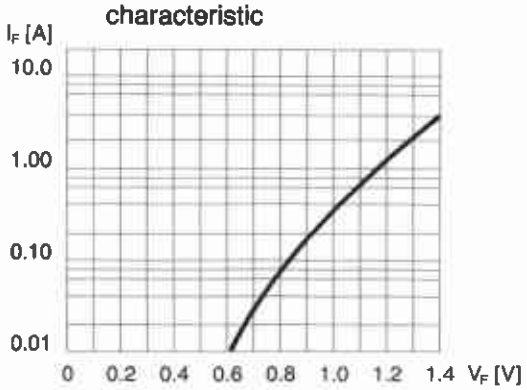
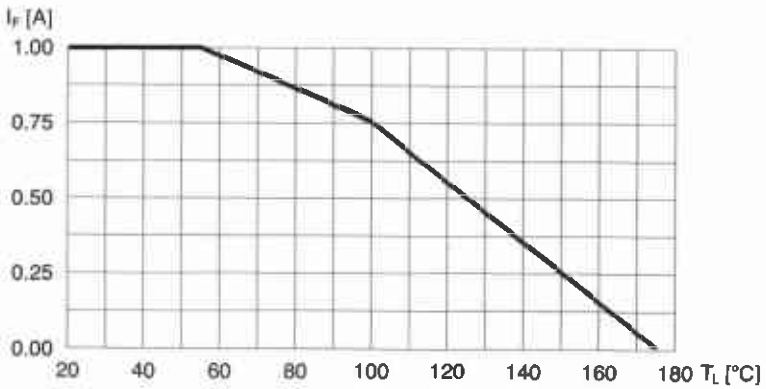


Fig. 2 – Forward derating curve



1 A Superectifier

50 to 1000 V / Fast Recovery

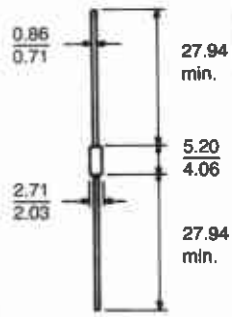
RGP10 Series

VOLTAGE AND REVERSE RECOVERY RATINGS

Type	Maximum Reverse Recovery Time I_F = .5 A, I_R = 1 A, i_{rr} = .25 A	Maximum Recurrent Peak Reverse Voltage
RGP10A	150 ns	50 V
RGP10B	150 ns	100 V
RGP10D	150 ns	200 V
RGP10G	150 ns	400 V
RGP10J	250 ns	600 V
RGP10K	500 ns	800 V
RGP10M	500 ns	1000 V

CASE OUTLINE

DO-41



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	30 A
Maximum Forward Voltage at 1 A_{DC}	1.3 V
Maximum Reverse Current at 25°C	5 μA
Maximum Reverse Current at 55°C	100 μA
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	15 pF
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

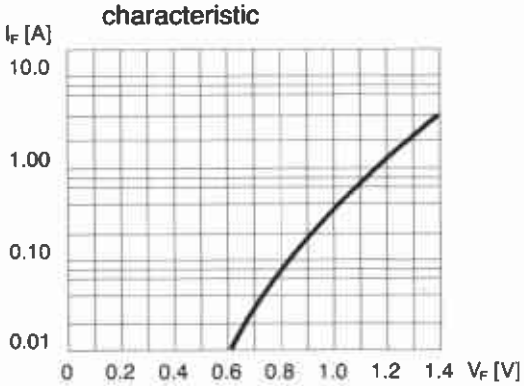
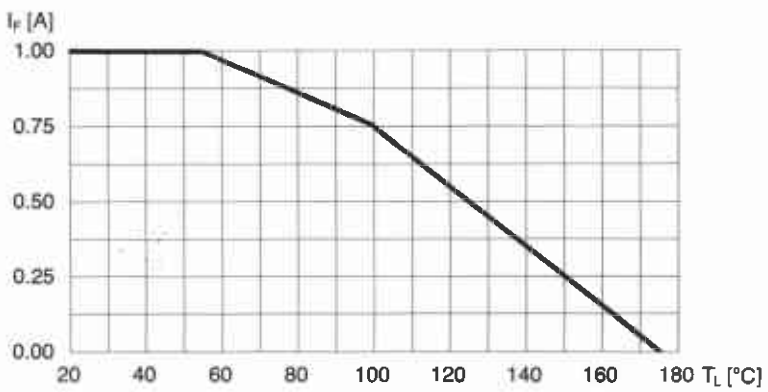


Fig. 2 – Forward derating curve



1,5 A Superectifier

50 to 1000 V / Fast Recovery

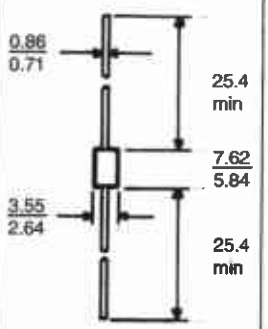
RGP15 Series

VOLTAGE AND REVERSE RECOVERY RATINGS

Type	Maximum Reverse Recovery Time I_F = .5 A, I_R = 1 A, i_{rr} = .25 A	Maximum Recurrent Peak Reverse Voltage
RGP15A	150 ns	50 V
RGP15B	150 ns	100 V
RGP15D	150 ns	200 V
RGP15G	150 ns	400 V
RGP15J	250 ns	600 V
RGP15K	500 ns	800 V
RGP15M	500 ns	1000 V

CASE OUTLINE

DO-15



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.5 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage at 1.5 A_{DC}	1.3 V
Maximum Reverse Current at 25°C	5 µA
Maximum Reverse Current at 55°C	100 µA
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	25 pF
Typical Thermal Resistance	40°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

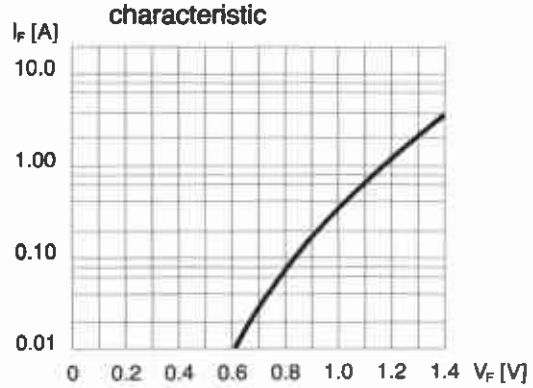
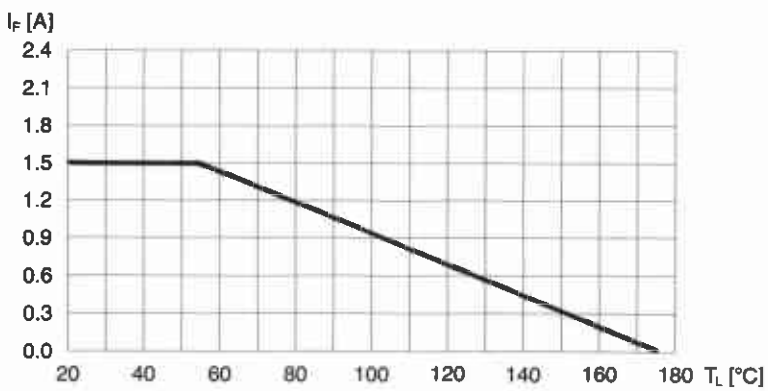


Fig. 2 – Forward derating curve



3 A Superectifier

50 to 1000 V / Fast Recovery

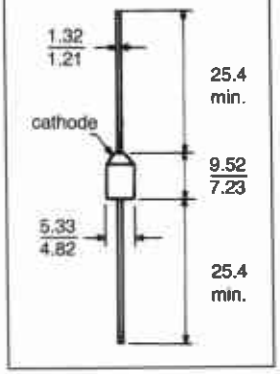
RGP30 Series

VOLTAGE AND REVERSE RECOVERY RATINGS

Type	Maximum Reverse Recovery Time I_F = .5 A, I_R = 1 A, i_{rr} = .25 A	Maximum Recurrent Peak Reverse Voltage
RGP30A	150 ns	50 V
RGP30B	150 ns	100 V
RGP30D	150 ns	200 V
RGP30G	150 ns	400 V
RGP30J	250 ns	600 V
RGP30K	500 ns	800 V
RGP30M	500 ns	1000 V

CASE OUTLINE

DO-27A



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	3 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	125 A
Maximum Forward Voltage at 3 A_{DC}	1.3 V
Maximum Reverse Current at 25°C	5 µA
Maximum Reverse Current at 55°C	100 µA
Typical Junction Capacitance at 1.0 MHz and Reverse Voltage of 4.0 V_{DC}	60 pF
Typical Thermal Resistance	25°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

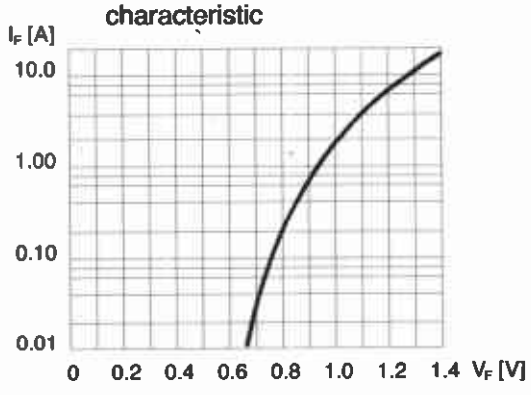
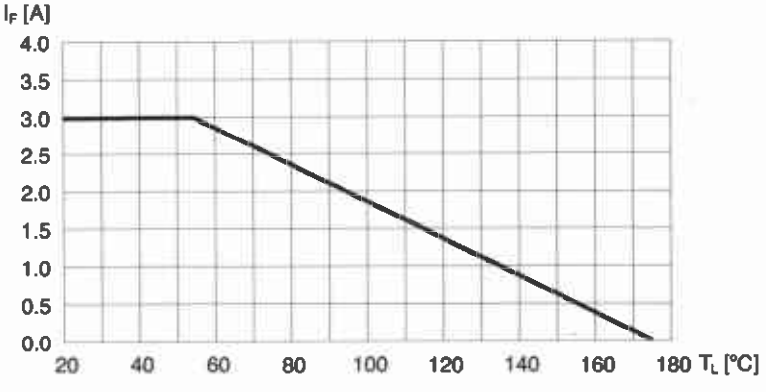


Fig. 2 – Forward derating curve



1.5 A Superectifier

200 to 800 V / Avalanche

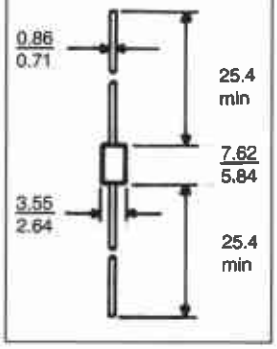
AGP15 Series

VOLTAGE RATINGS

Type	Maximum Recurrent Peak Reverse Voltage	Min. Avalanche Breakdown Voltage	Max. Avalanche Breakdown Voltage
AGP15-200	200 V	240 V	500 V
AGP15-400	400 V	450 V	750 V
AGP15-600	600 V	675 V	1000 V
AGP15-800	800 V	880 V	1200 V

CASE OUTLINE

DO-15



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.5 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage at 1.5 A	1.1 V
Maximum Reverse Current at 25°C	5.0 μA
Maximum Reverse Current at 100°C	100 μA
Maximum Continuous Avalanche Power Dissipation	500 mW
Maximum Peak Avalanche Power Dissipation 20 μs Pulse	500 W
Typical Thermal Resistance	40°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™

Fig. 1 – Typical forward characteristic

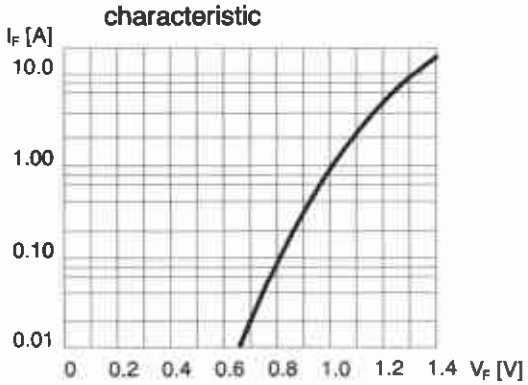
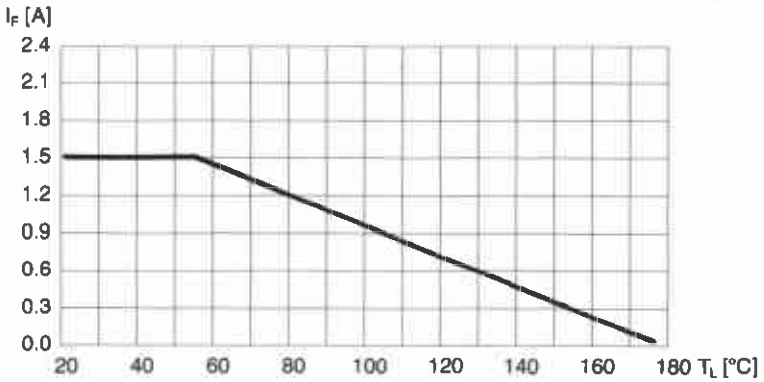


Fig. 2 – Forward derating curve



Zener Superectifier

160 to 200 V/1 Watt

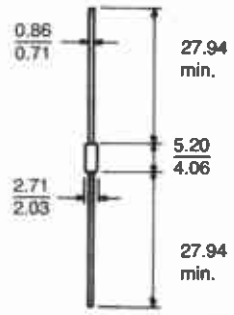
ZGP10 Series

VOLTAGE AND DYNAMIC IMPEDANCE RATINGS

Type	Maximum Dynamic Impedance	Reverse Current Measurement Voltage	Zener Voltage
ZGP10-160	1100 Ω	120 V	160 V
ZGP10-170	1200 Ω	130 V	170 V
ZGP10-180	1300 Ω	140 V	180 V
ZGP10-190	1400 Ω	150 V	190 V
ZGP10-200	1500 Ω	160 V	200 V

CASE OUTLINE

DO-41



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

SUPERECTIFIER

Maximum Average Forward Rectified Current	1 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	30 A
Maximum Forward Voltage at 0.5 A_{DC}	1.0 V
Maximum Reverse Current at 25°C	0.5 μA
Maximum Reverse Current at 100°C	100 μA
Maximum Non Recurrent Surge Power 20 μs Pulse	500 W
Typical Thermal Resistance	50°C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Non Recurrent Reverse Surge

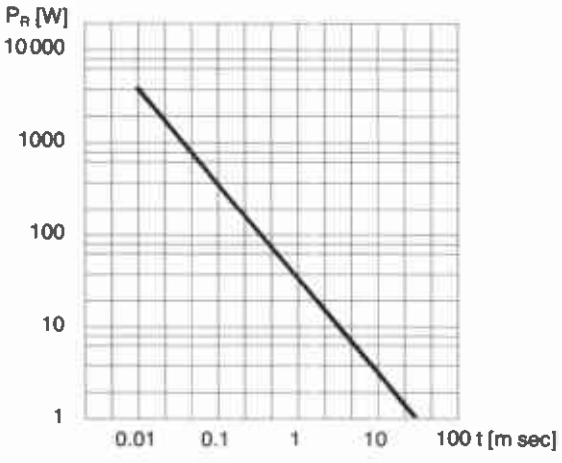
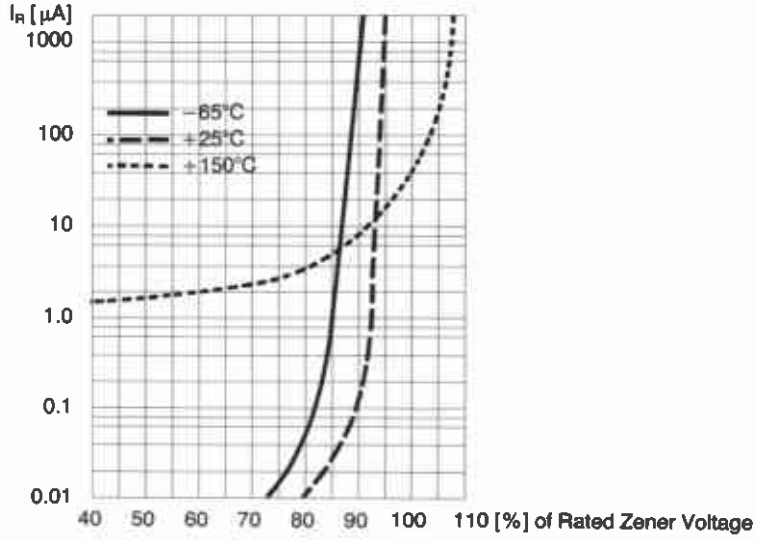


Fig. 2 – Typical Reverse Characteristic



Bridge Rectifiers

0.5 to 35 Amperes

50 V to 1000 V

Families of General Instrument Bridge Rectifiers

All types of rectifier cells, which are produced by GENERAL INSTRUMENT, are available in bridge configurations, molded in various plastic and metal packages.

The basic types of packages are
- Round Plastic Package (Fig. 1)
- IN-LINE Plastic Package (Fig. 2)
- Square Plastic/Metal Package for Chassis Mounting (Fig. 3)

These bridge families are available with different terminals, such as wire leads, FASTON or soldering lugs.

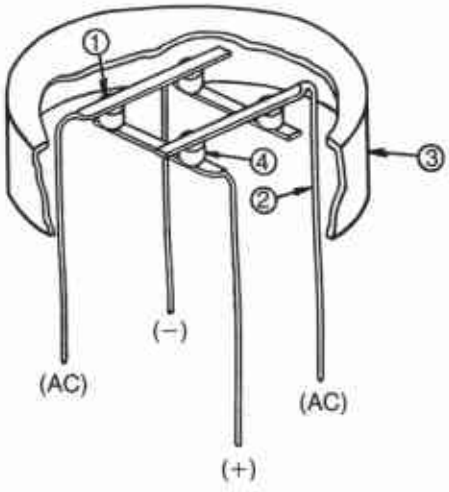


Fig. 1

ITEM	DESCRIPTION
1	Solder Preforms
2	Formed Leads
3	Case
4	Cell

Round Bridge

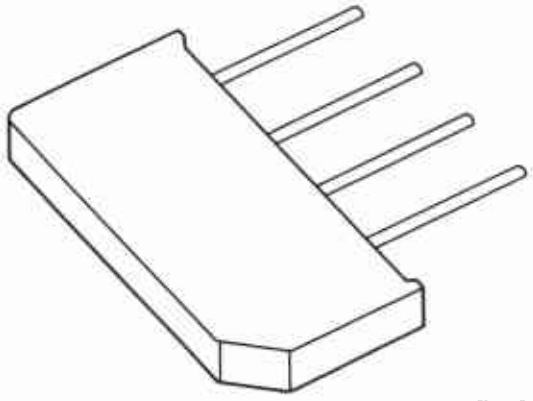


Fig. 2

IN-LINE Bridge

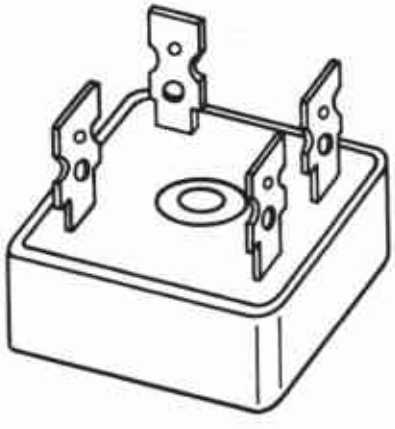


Fig. 3

Chassis Mounted Bridge

Silicon Miniature Single-Phase Bridge Rectifiers 0.5 to 2 AMP

Types:		
	WL005 (M)	thru WL10 (M)
	W005 (M)	thru W10 (M)
	2W005	thru 2W10
	B40C500 (M)	thru B250C500 (M)
	B40C800 (M)	thru B250C800 (M)
	B40C1000 (M)	thru B380C1000 (M)
	B40C1500	thru B380C1500
	B40C1500C	thru B380C1500C

Features:
- Surge Overload Rating 50 and 100 Amperes Peak
- Ideal for Printed Circuit Board
- Reliable Low Cost Construction
- Silver Plated Copper Leads
- Available in Avalanche Characteristics

Silicon In-Line Single Phase Bridge Rectifiers 1.5 to 5 AMP

Types:		
	KBP005	thru KBP10
	2KBP005	thru 2KBP10
	KBF005	thru KBF10
	KBL005	thru KBL08
	B40C3700/2200	thru B380C3700/2200
	B40C5000/3300	thru B380C5000/3300

Features:
- Surge Overload Rating up to 200 Amperes Peak
- Ideal for Printed Circuit Board
- Reliable Low Cost Construction utilizing molded Plastic
- Available in Avalanche Characteristics
- Silver Plated Copper Leads

High Current Single Phase Bridge Rectifiers 3 to 35 AMP

Types:			
	KBPC005	thru KBPC10	SUPERECTIFIER Construction
	KBPC1005	thru KBPC1110	SUPERECTIFIER Construction
	KBPC6005	thru KBPC610	
	KBPC6005t	thru KBPC610t	
	KBPC8005	thru KBPC810	SUPERECTIFIER Construction
	KBPC10005	thru KBPC1010	
	KBPC25005	thru KBPC2510	
	KBPC35005	thru KBPC3510	

Features:
- High Capability of Surge Overload Rating
- Insulated Case
- Low Forward Voltage Drop
- Tinned Copper Leads
- Simple Installation thru Screw hole
- Available in Avalanche and Fast Recovery Characteristics
- For all kind of DC Motors.

QUICK GUIDE TO BRIDGE RECTIFIERS

I_o (A)	1.0	1.5	1.5	2.0	2.0	2.5	4.0	I_o (A)
@T_A (°C)	50	25	50	25	50	50	50	@T_A (°C)
SURGE (A)	30	50	50	50	50	150	200	SURGE (A)
V_R = 50 (V)	WL005 (M)	W005 (M)*	KBP005*	2W005	2KBP005	KBF005	KBL005	V_R = 50 (V)
V_R = 200 (V)	WL02 (M)	W02 (M)*	KBP02 *	2W02	2KBP02	KBF02	KBL02	V_R = 200 (V)
V_R = 400 (V)	WL04 (M)	W04 (M)*	KBP04 *	2W04	2KBP04	KBF04	KBL04	V_R = 400 (V)
V_R = 600 (V)	WL06 (M)	W06 (M)*	KBP06 *	2W06	2KBP06	KBF06	KBL06	V_R = 600 (V)
V_R = 800 (V)	WL08 (M)	W08 (M)*	KBP08 *	2W08	2KBP08	KBF08	KBL08	V_R = 800 (V)
V_R = 1000 (V)	WL10 (M)	W10 (M)*	KBP10 *	2W10	2KBP10	KBF10	KBL10	V_R = 1000 (V)
Page	87	88	90	89	91	92	93	Page

(M) indicates Miniature Package

* Also available in Avalanche Characteristic.

QUICK GUIDE TO BRIDGE RECTIFIERS

I_o (A)	3.0	3.0	6.0	6.0	8.0	10	25	35	I_o (A)
@T_C (°C)	50	50	100	100	50	60	60	60	@T_C (°C)
SURGE (A)	50	50	200	200	125	200	300	400	SURGE (A)
V_R = 50 (V)	KBPC005■	KBPC1005■	KBPC6005	KBPC6005t	KBPC8005■	KBPC10-005	KBPC25-005	KBPC35-005	V_R = 50 (V)
V_R = 200 (V)	KBPC02 ■	KBPC102 ■	KBPC602	KBPC602 t	KBPC802 ■	KBPC10-02	KBPC25-02	KBPC35-02	V_R = 200 (V)
V_R = 400 (V)	KBPC04 ■	KBPC104 ■	KBPC604	KBPC604 t	KBPC804 ■	KBPC10-04	KBPC25-04	KBPC35-04	V_R = 400 (V)
V_R = 600 (V)	KBPC06 ■	KBPC106 ■	KBPC606	KBPC606 t	KBPC806 ■	KBPC10-06	KBPC25-06	KBPC35-06	V_R = 600 (V)
V_R = 800 (V)	KBPC08 ■	KBPC108 ■	KBPC608	KBPC608 t	KBPC808 ■	KBPC10-08	KBPC25-08	KBPC35-08	V_R = 800 (V)
V_R = 1000 (V)	KBPC10 ■	KBPC110 ■	KBPC610	KBPC610 t	KBPC810 ■	KBPC10-10	KBPC25-10	KBPC35-10	V_R = 1000 (V)
Page	96	97	98	99	100	101	102	103	Page

■ SUPERECTIFIER construction also available in Avalanche and Fast Recovery Characteristics.

QUICK GUIDE TO BRIDGE RECTIFIERS

I_o (A)	0.5	0.8	1.0	1.5	1.5	3.7	5.0	I_o (A)
@T_A (°C)	45	45	45	45	45	45	45	@T_A (°C)
SURGE (A)	30	45	45	45	100	100	200	SURGE (A)
V_{RMS} = 40 (V)	B40C500 (M)	B40C800 (M)	B40C1000 (M)	B40C1500	B40C1500 C	B40C3700/2200	B40C5000/3300	V_{RMS} = 40 (V)
V_{RMS} = 80 (V)	B80C500 (M)	B80C800 (M)	B80C1000 (M)	B80C1500	B80C1500 C	B80C3700/2200	B80C5000/3300	V_{RMS} = 80 (V)
V_{RMS} = 125 (V)	B125C500 (M)	B125C800 (M)	B125C1000 (M)	B125C1500	B125C1500 C	B125C3700/2200	B125C5000/3300	V_{RMS} = 125 (V)
V_{RMS} = 250 (V)	B250C500 (M)	B250C800 (M)	B250C1000 (M)	B250C1500	B250C1500 C	B250C3700/2200	B250C5000/3300	V_{RMS} = 250 (V)
V_{RMS} = 380 (V)	B380C500 (M)	B380C800 (M)	B380C1000 (M)	B380C1500	B380C1500 C	B380C3700/2200	B380C5000/3300	V_{RMS} = 380 (V)
Page	82	83	84	85	86	94	95	Page

(M) Indicates Miniature Package

0.5 A Bridge Rectifier

40 to 380 V_{RMS}

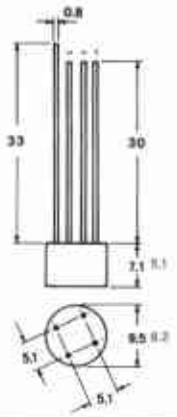
B 40C 500
B 80C 500
B125C 500
B250C 500
B380C 500

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
B 40C 500 (M)	40 V	100 V
B 80C 500 (M)	80 V	190 V
B125C 500 (M)	125 V	300 V
B250C 500 (M)	250 V	600 V
B380C 500 (M)	380 V	900 V

M indicates Miniature Package

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current natural cooling, t_A = 45°C C-Load	0.5 A
R+L-Load	0.6 A
Maximum Repetitive Peak Forward Current	6 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	30 A
I^2t Rating for fusing (t <10 ms)	4.5 A^2s
Maximum Forward Voltage per Element	1.25 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 125°C	1 mA
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

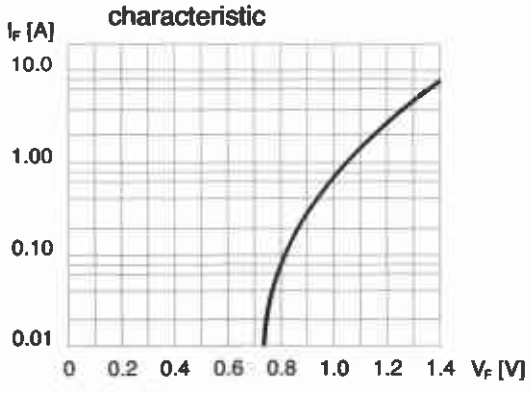
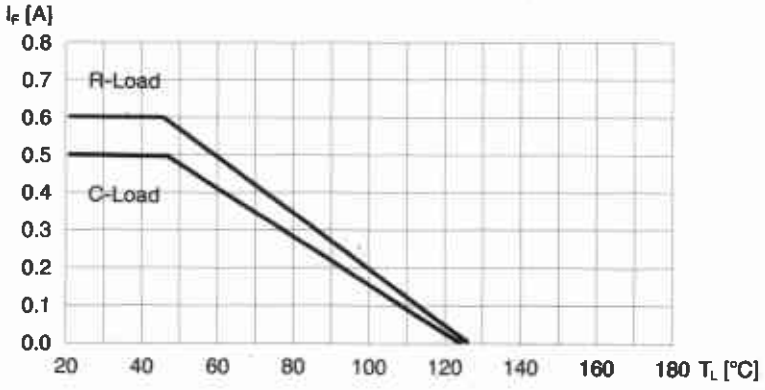


Fig. 2 – Forward derating curve



0.8 A Bridge Rectifier

40 to 380 V_{RMS}

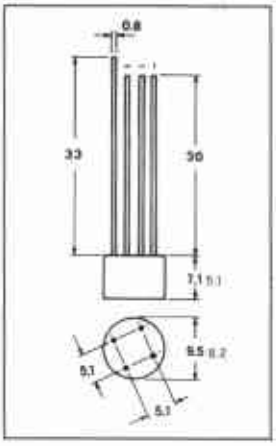
B 40C 800
B 80C 800
B125C 800
B250C 800
B380C 800

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
B 40C 800 (M)	40 V	100 V
B 80C 800 (M)	80 V	190 V
B125C 800 (M)	125 V	300 V
B250C 800 (M)	250 V	600 V
B380C 800 (M)	380 V	900 V

M indicates Miniature Package

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current natural cooling, t_A = 45°C C-Load	0.8 A
R+L-Load	0.9 A
Maximum Repetitive Peak Forward Current	10 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	45 A
I^2t Rating for fusing (t <10 ms)	10 A^2s
Maximum Forward Voltage per Element	1.0 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 125°C	1 mA
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

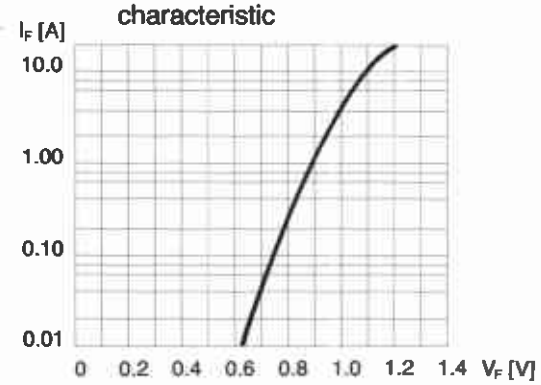
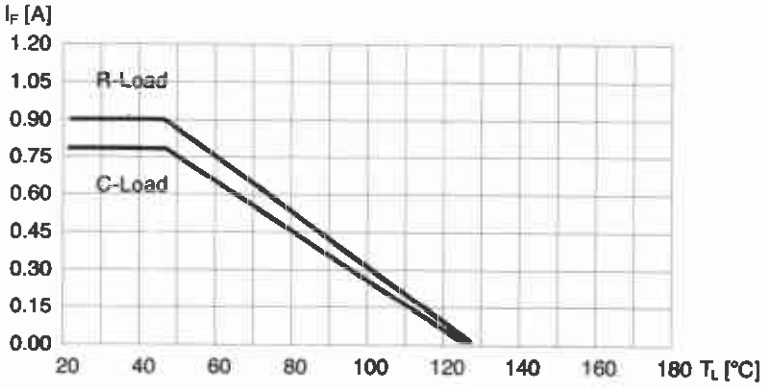


Fig. 2 – Forward derating curve



1 A Bridge Rectifier

40 to 380 V_{RMS}

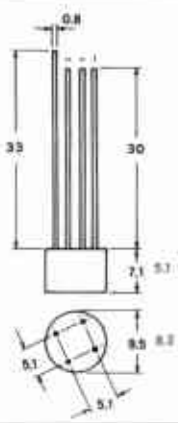
B 40C 1000
B 80C 1000
B125C 1000
B250C 1000
B380C 1000

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
B 40C 1000 (M)	40 V	100 V
B 80C 1000 (M)	80 V	190 V
B125C 1000 (M)	125 V	300 V
B250C 1000 (M)	250 V	600 V
B380C 1000 (M)	380 V	900 V

M indicates Miniature Package

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current natural cooling, t_A = 45°C C-Load	1.0 A
R+L-Load	1.2 A
Maximum Repetitive Peak Forward Current	10 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	45 A
I^2t Rating for fusing (t <10 ms)	10 A^2s
Maximum Forward Voltage per Element	1.0 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 125°C	1 mA
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

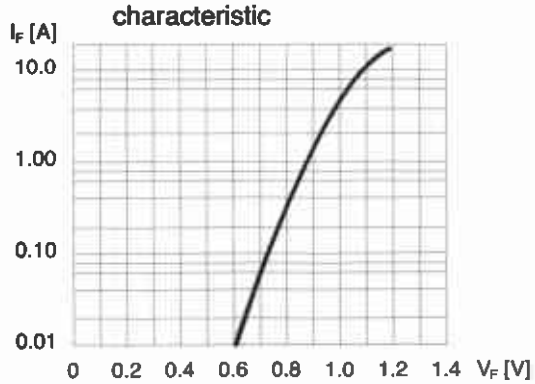
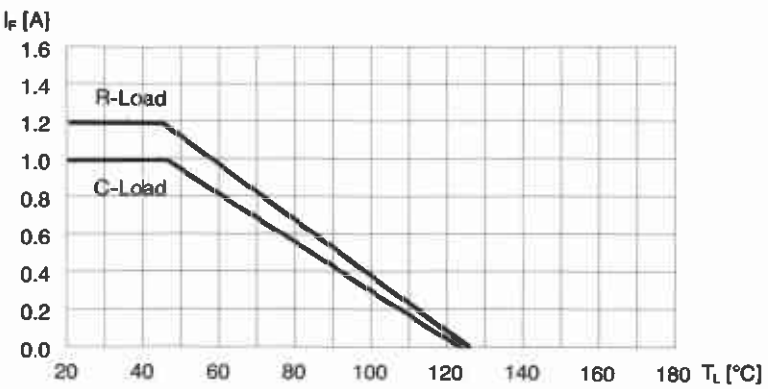


Fig. 2 – Forward derating curve



1.5 A Bridge Rectifier

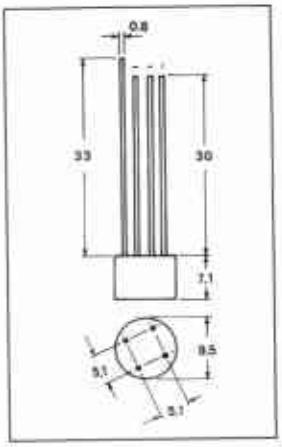
40 to 380 V_{RMS}

B 40C 1500
B 80C 1500
B125C 1500
B250C 1500
B380C 1500

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
B 40C 1500	40 V	100 V
B 80C 1500	80 V	190 V
B125C 1500	125 V	300 V
B250C 1500	250 V	600 V
B380C 1500	380 V	900 V

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current natural cooling, t_A = 45°C C-Load	1.5 A
R+L-Load	1.6 A
Maximum Repetitive Peak Forward Current	10 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	45 A
I^2t Rating for fusing (t <10 ms)	10 A^2s
Maximum Forward Voltage per Element	1.0 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 125°C	1.0 mA
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

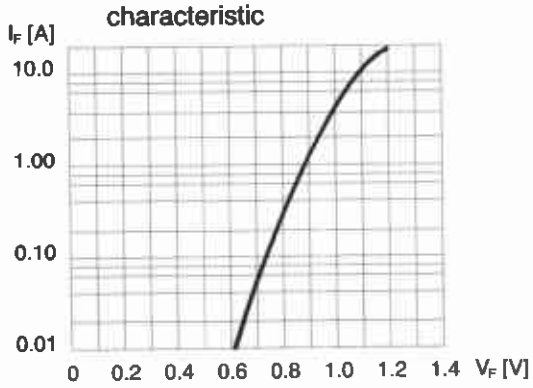
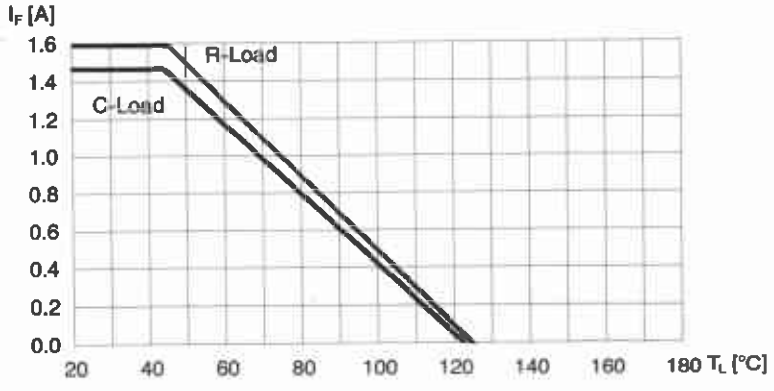


Fig. 2 – Forward derating curve



1.5 A Bridge Rectifier

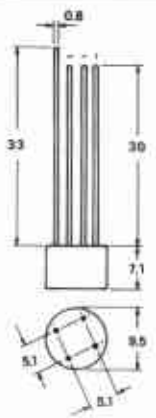
40 to 380 V_{RMS}

B 40C 1500C
B 80C 1500C
B125C 1500C
B250C 1500C
B380C 1500C

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
B 40C 1500C	40 V	100 V
B 80C 1500C	80 V	190 V
B125C 1500C	125 V	300 V
B250C 1500C	250 V	600 V
B380C 1500C	380 V	900 V

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current natural cooling, t_A = 45°C C-Load	1.5 A
R+L-Load	1.6 A
Maximum Repetitive Peak Forward Current	12 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	100 A
I^2t Rating for fusing (t <10 ms)	50 A^2s
Maximum Forward Voltage per Element	0.95 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 125°C	1 mA
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

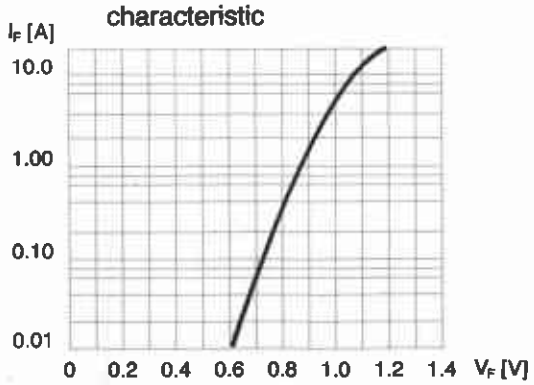
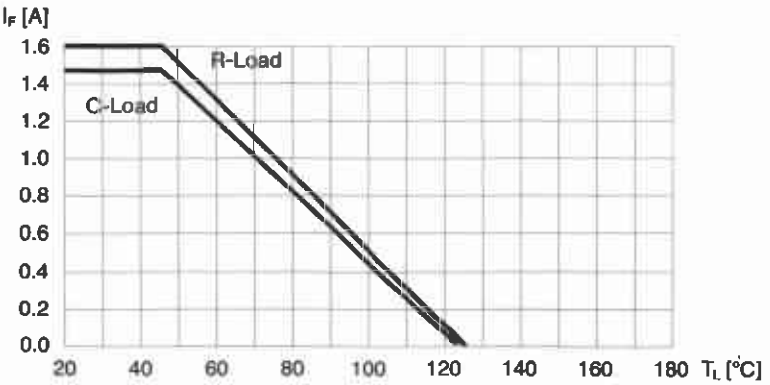


Fig. 2 – Forward derating curve



1 A Bridge Rectifier

50 to 1000 V

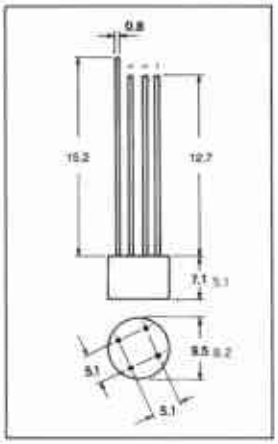
WL Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
WL005 (M)	35 V	50 V
WL02 (M)	140 V	200 V
WL04 (M)	280 V	400 V
WL06 (M)	420 V	600 V
WL08 (M)	560 V	800 V
WL10 (M)	700 V	1000 V

M indicates Miniature Package

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	30 A
Maximum Forward Voltage per Element at 1 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 100°C	1.0 mA
I^2t Rating for fusing (t <10 ms)	4.5 A^2s
Typical Thermal Resistance $R_{th\ J\text{-}A}$	25 °C/W
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

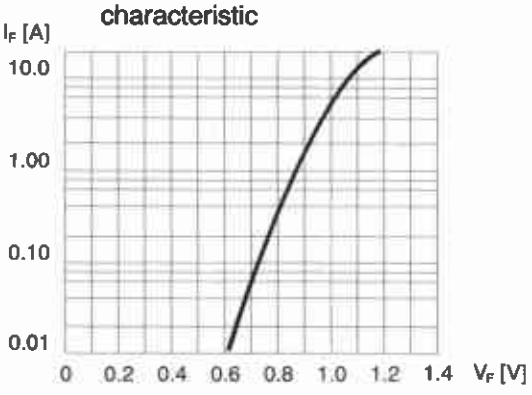
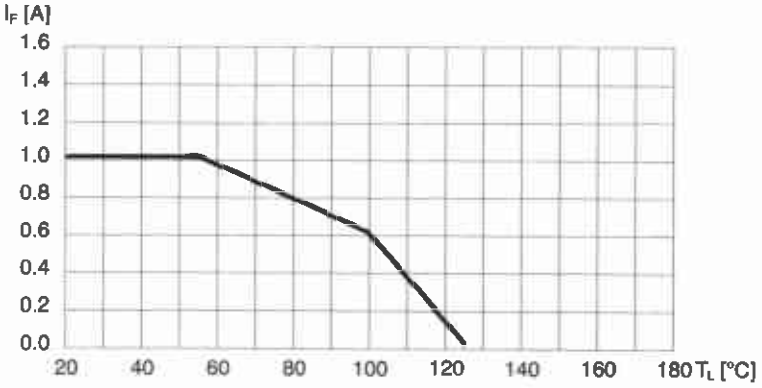


Fig. 2 – Forward derating curve



1.5 A Bridge Rectifier

50 to 1000 V

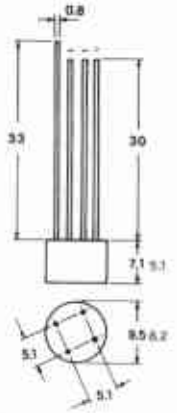
W Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
W005 (M)	35 V	50 V
W02 (M)	140 V	200 V
W04 (M)	280 V	400 V
W06 (M)	420 V	600 V
W08 (M)	560 V	800 V
W10 (M)	700 V	1000 V

M indicates Miniature Package Suffix A indicates Avalanche Characteristic.

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.5 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage per Element at 1 A_{DC}	1.0 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 100°C	1.0 mA
I^2t Rating for fusing (t <10 ms)	5 A^2s
Typical Thermal Resistance $R_{th\ J\text{-}A}$	25 °C/W
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

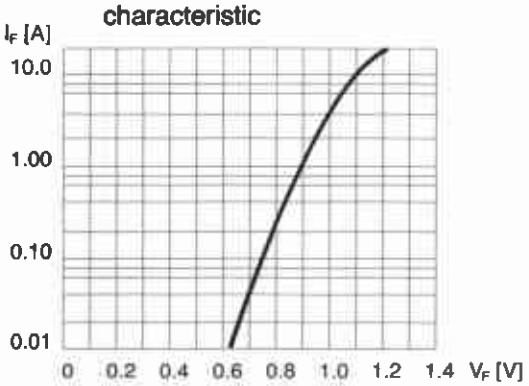
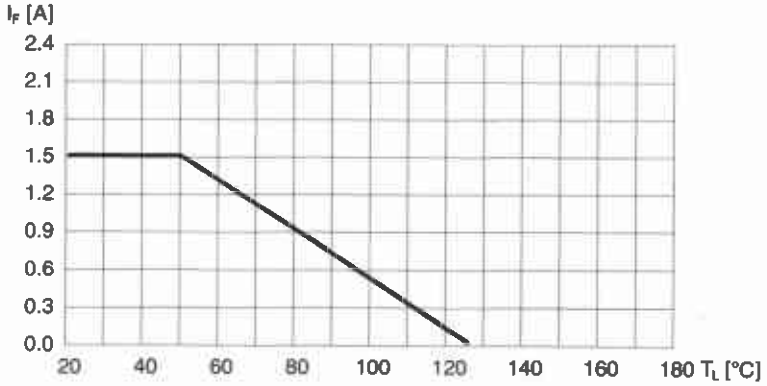


Fig. 2 – Forward derating curve



2 A Bridge Rectifier

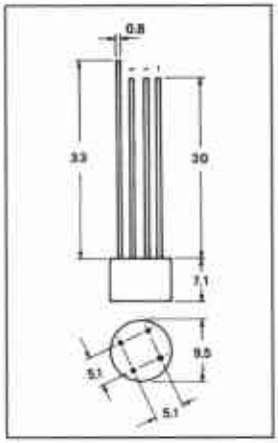
50 to 1000 V

2W Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
2W005	35 V	50 V
2W02	140 V	200 V
2W04	280 V	400 V
2W06	420 V	600 V
2W08	560 V	800 V
2W10	700 V	1000 V

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	2.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage per Element at 1 A_{DC}	1.0 V
Maximum Reverse Current at 25°C	10 μA
Maximum Reverse Current at 100°C	1 mA
I^2t Rating for fusing (t <10 ms)	5 A^2s
Typical Thermal Resistance $R_{th\ J\text{-}A}$	25 °C/W
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

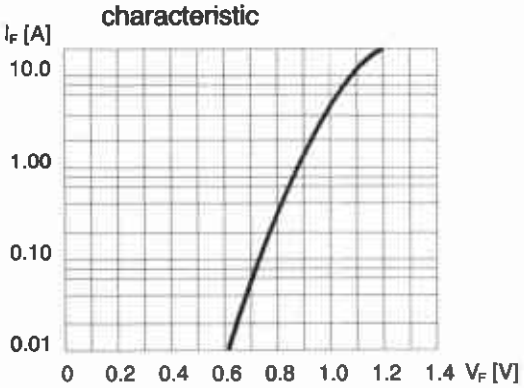
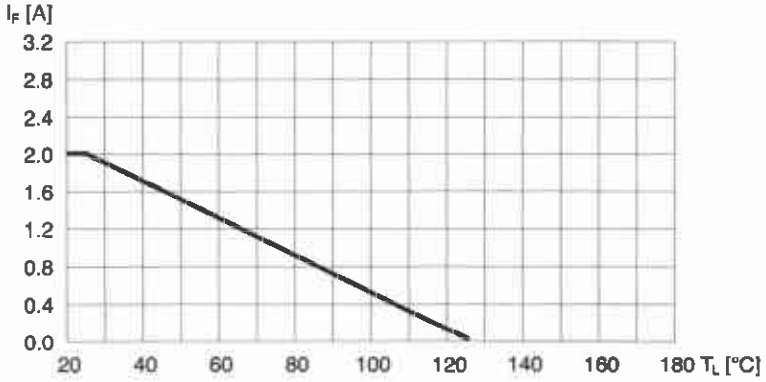


Fig. 2 – Forward derating curve



1.5 A Bridge Rectifier

50 to 1000 V

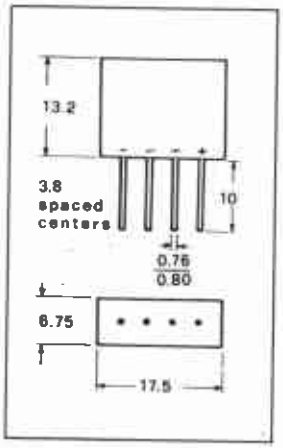
KBP Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
KBP005	35 V	50 V
KBP02	140 V	200 V
KBP04	280 V	400 V
KBP06	420 V	600 V
KBP08	560 V	800 V
KBP10	700 V	1000 V

Suffix A indicates Avalanche Characteristic

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	1.5 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage per Element at 1 A_{DC}	1.0 V
Maximum Reverse Current at 25°C	10 μA
Maximum Reverse Current at 100°C	1 mA
I^2t Rating for fusing (t <10 ms)	5 A^2s
Typical Thermal Resistance $R_{th\ J\text{-}A}$	25 °C/W
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

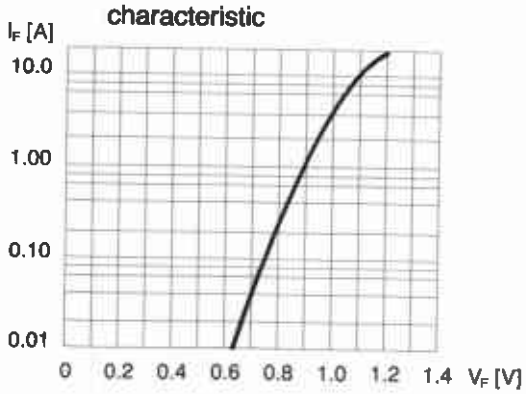
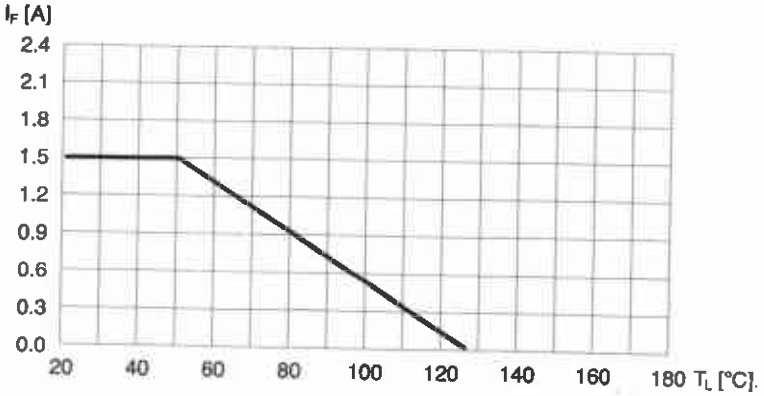


Fig. 2 – Forward derating curve



2 A Bridge Rectifier

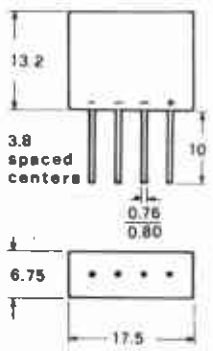
50 to 1000 V

2KBP Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
2KBP005	35 V	50 V
2KBP02	140 V	200 V
2KBP04	280 V	400 V
2KBP06	420 V	600 V
2KBP08	560 V	800 V
2KBP10	700 V	1000 V

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	2 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage per Element at 1 A_{DC}	1.0 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 100°C	1.0 mA
I^2t Rating for fusing (t <10 ms)	5 A^2s
Typical Thermal Resistance $R_{th\,J\text{-}A}$	25 °C/W
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

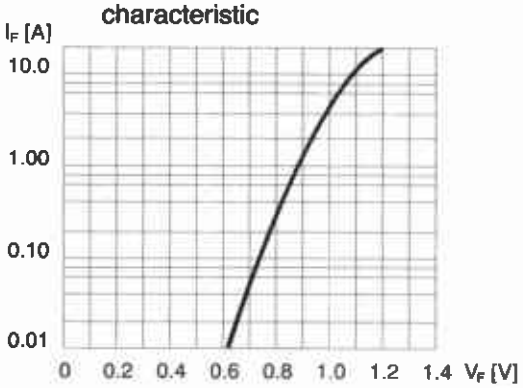
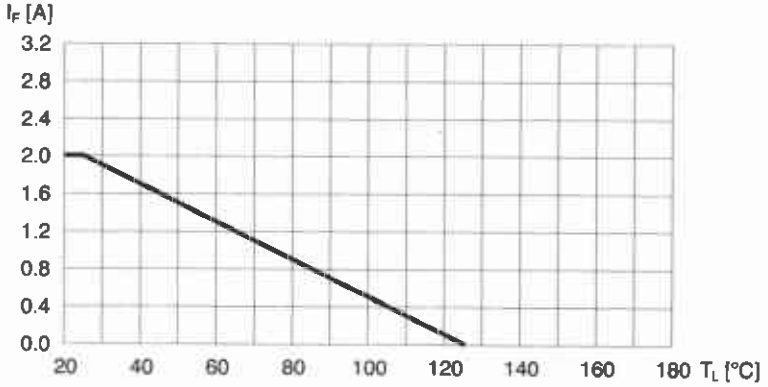


Fig. 2 – Forward derating curve



2.5 A Bridge Rectifier

50 to 1000 V

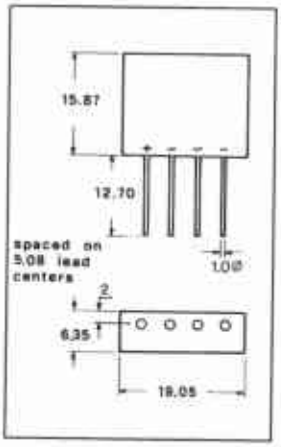
KBF Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
KBF005	35 V	50 V
KBF02	140 V	200 V
KBF04	280 V	400 V
KBF06	420 V	600 V
KBF08	560 V	800 V
KBF10*	700 V	1000 V

*Limited Production

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	2.5 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	150 A
Maximum Forward Voltage per Element at 2.5 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	10 μA
Maximum Reverse Current at 100°C	1.0 mA
I^2t Rating for fusing (t <10 ms)	112 A^2s
Typical Thermal Resistance $R_{th\ J\text{-}A}$	15 °C/W
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

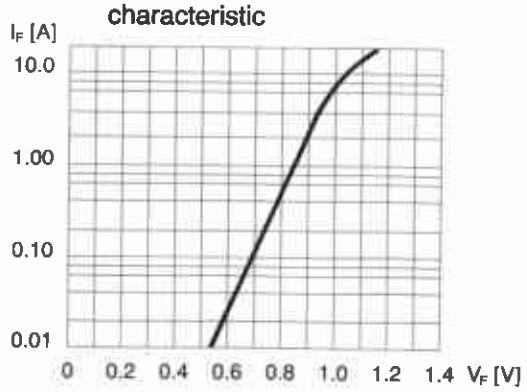
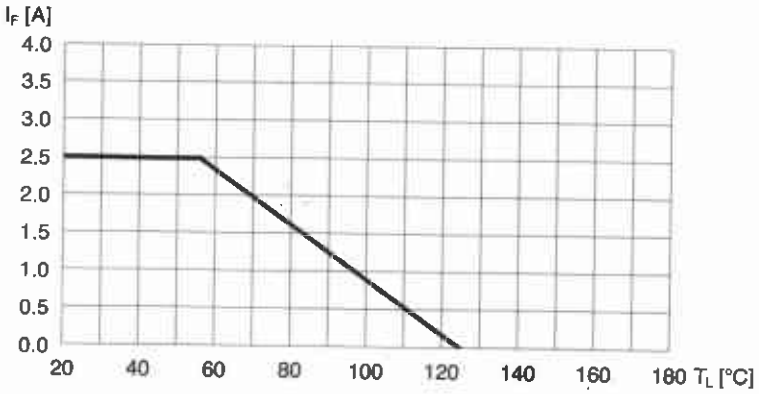


Fig. 2 – Forward derating curve



3 A Bridge Rectifier

50 to 1000 V

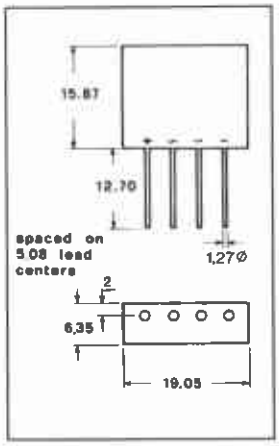
KBL Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
KBL005	35 V	50 V
KBL02	140 V	200 V
KBL04	280 V	400 V
KBL06	420 V	600 V
KBL08	560 V	800 V
KBL10*	700 V	1000 V

*Limited Production

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	3 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	200 A
Maximum Forward Voltage per Element at 3 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	10 μA
Maximum Reverse Current at 100°C	1 mA
I^2t Rating for fusing (t <10 ms)	200 A^2s
Typical Thermal Resistance $R_{th\ J\text{-}A}$	15 °C/W
Operating Temperature Range	−55 to +150°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

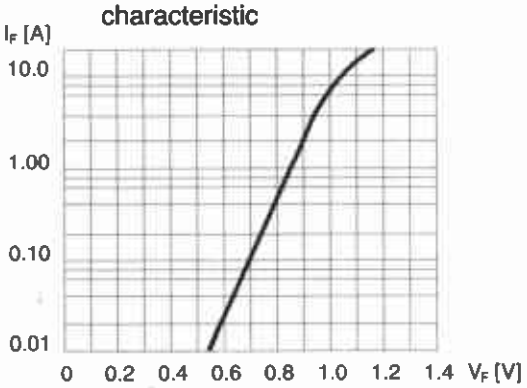
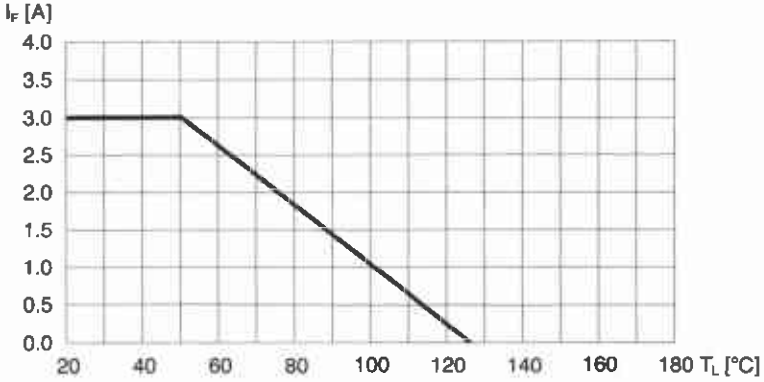


Fig. 2 – Forward derating curve



3.7 A Bridge Rectifier

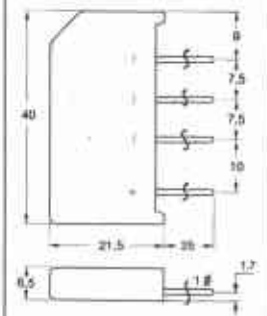
40 to 380 V_{RMS}

B 40C 3700/2200
B 80C 3700/2200
B125C 3700/2200
B250C 3700/2200
B380C 3700/2200

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
B 40C 3700/2200	40 V	100 V
B 80C 3700/2200	80 V	190 V
B125C 3700/2200	125 V	300 V
B250C 3700/2200	250 V	600 V
B380C 3700/2200	380 V	900 V

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current natural cooling, t_A = 45°C C-Load	2.2 A
R+L-Load	2.7 A
on chassis = 200 cm²; t_A = 45°C C-Load	3.7 A
R+L-Load	4.8 A
Maximum Repetitive Peak Forward Current	15 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	100 A
I^2t Rating for fusing (t <10 ms)	50 A^2s
Maximum Forward Voltage per element	1.0 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 150°C	6 mA
Operating Temperature Range	−55 to +150°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

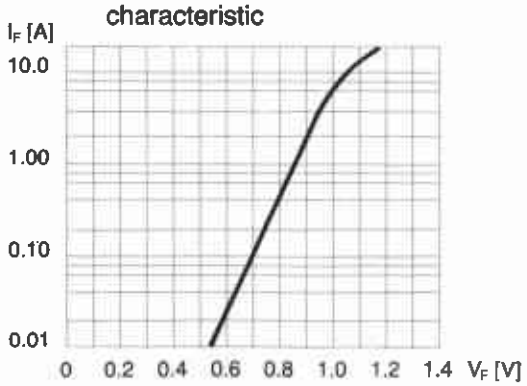
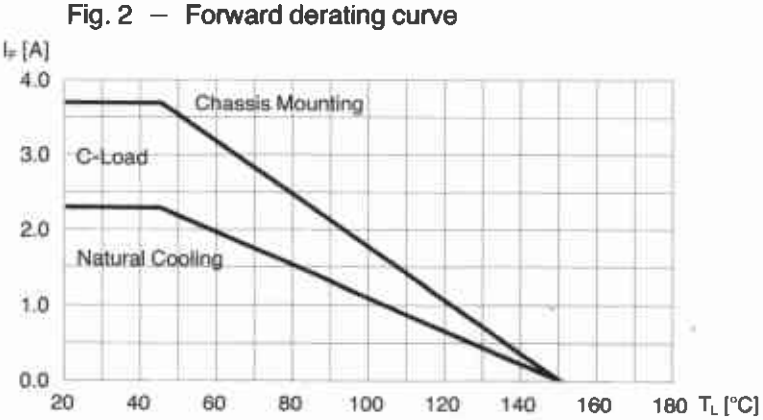


Fig. 2 – Forward derating curve



5 A Bridge Rectifier

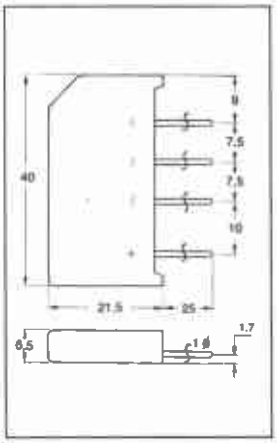
40 to 380 V_{RMS}

B 40C 5000/3300
B 80C 5000/3300
B125C 5000/3300
B250C 5000/3300
B380C 5000/3300

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
B 40C 5000/3300	40 V	100 V
B 80C 5000/3300	80 V	190 V
B125C 5000/3300	125 V	300 V
B250C 5000/3300	250 V	600 V
B380C 5000/3300	380 V	900 V

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current natural cooling, t_A = 45°C C-Load	3.3 A
R+L-Load	4.0 A
on chassis = 200 cm^2; t_A = 45°C C-Load	5.0 A
R+L-Load	6.0 A
Maximum Repetitive Peak Forward Current	30 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	250 A
I^2t Rating for fusing (t <10 ms)	312 A^2s
Maximum Forward Voltage per element	1.0 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 150°C	6 mA
Operating Temperature Range	−55 to +150°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

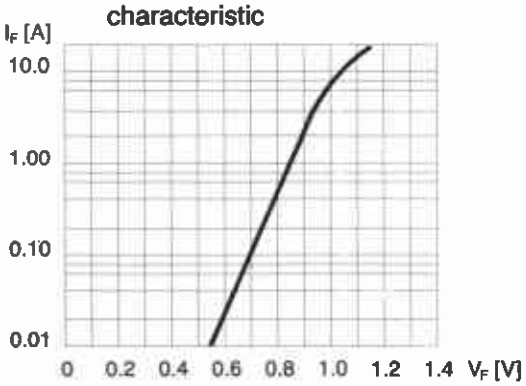
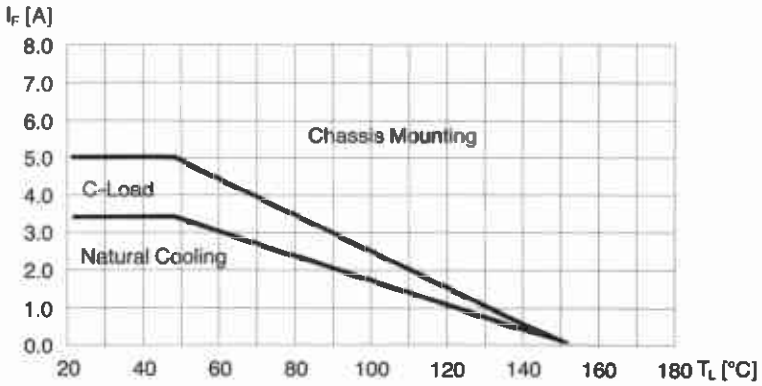


Fig. 2 – Forward derating curve



3 A Bridge Rectifier

50 to 1000 V

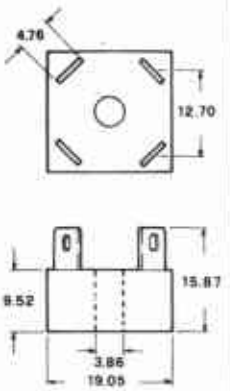
KBPC Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
KBPC005	35 V	50 V
KBPC02	140 V	200 V
KBPC04	280 V	400 V
KBPC06	420 V	600 V
KBPC08	560 V	800 V
KBPC10	700 V	1000 V

Also available in Avalanche and Fast Recovery Characteristics.

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	3.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage per Element at 1.5 A_{DC}	1.1 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 100°C	1 mA
I^2t Rating for fusing (t <10 ms)	12.5 A^2s
Typical Thermal Resistance $R_{th\ J\text{-}C}$	12.5 °C/W
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™ CONSTRUCTION

Fig. 1 – Typical forward characteristic

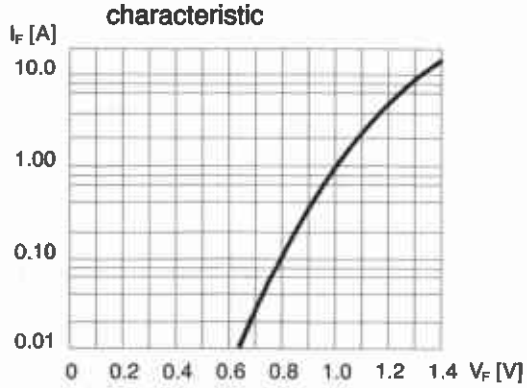
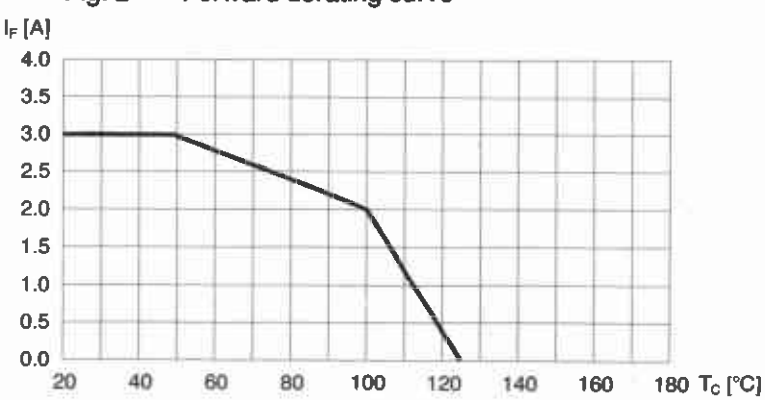


Fig. 2 – Forward derating curve



3 A Bridge Rectifier

50 to 1000 V

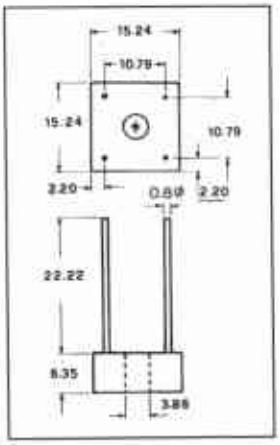
KBPC1 Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
KBPC1 005	35 V	50 V
KBPC1 02	140 V	200 V
KBPC1 04	280 V	400 V
KBPC1 06	420 V	600 V
KBPC1 08	560 V	800 V
KBPC1 10	700 V	1000 V

Also available in Avalanche and Fast Recovery Characteristics.

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	3.0 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	50 A
Maximum Forward Voltage per Element at 1 A_{DC}	1.0 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 100°C	1 mA
I^2t Rating for fusing (t <10 ms)	12.5 A^2s
Typical Thermal Resistance $R_{th\ J\text{-}C}$	15 °C/W
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™ CONSTRUCTION

Fig. 1 – Typical forward characteristic

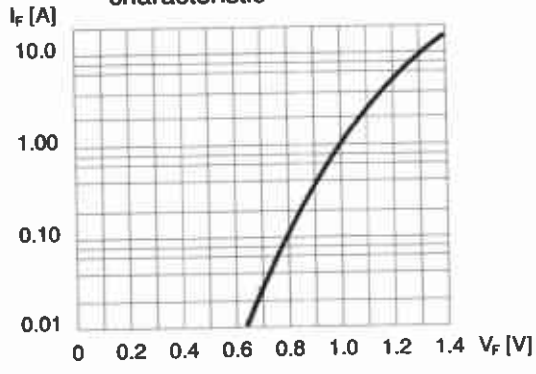
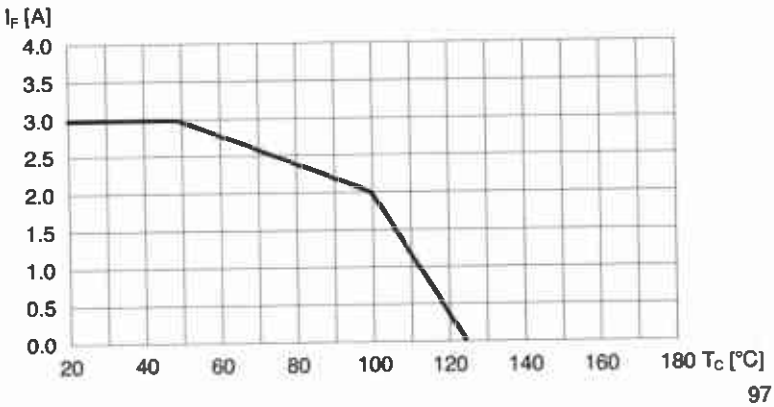


Fig. 2 – Forward derating curve



8 A Bridge Rectifier

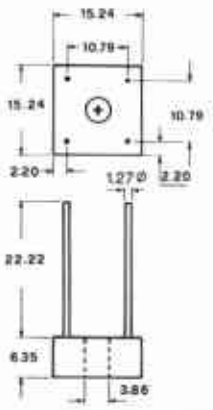
50 to 1000 V

KBPC6 Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
KBPC6 005	35 V	50 V
KBPC6 02	140 V	200 V
KBPC6 04	280 V	400 V
KBPC6 06	420 V	600 V
KBPC6 08	560 V	800 V
KBPC6 10	700 V	1000 V

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	8 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	125 A
Maximum Forward Voltage per Element at 3 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 100°C	1 mA
I^2t Rating for fusing (t <10 ms)	78 A^2s
Typical Thermal Resistance $R_{th\,J\text{-}C}$	5 °C/W
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +125°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

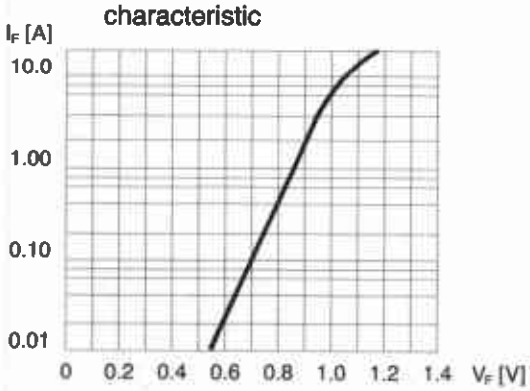
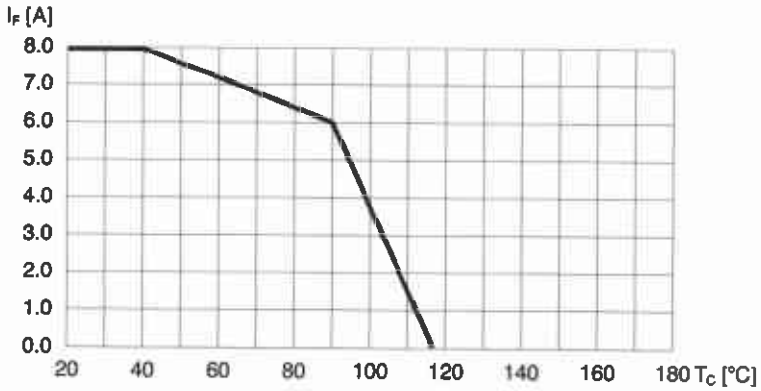


Fig. 2 – Forward derating curve



8 A Bridge Rectifier

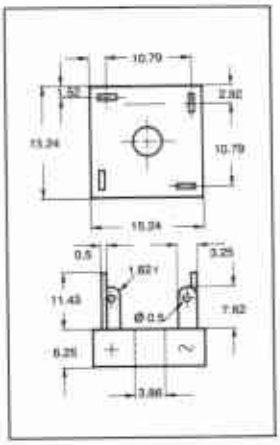
50 to 1000 V

KBPC6t Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
KBPC6 005t	35 V	50 V
KBPC6 02t	140 V	200 V
KBPC6 04t	280 V	400 V
KBPC6 06t	420 V	600 V
KBPC6 08t	560 V	800 V
KBPC6 10t	700 V	1000 V

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	8 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	125 A
Maximum Forward Voltage per Element at 3 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 100°C	1 mA
I^2t Rating for fusing (t <10 ms)	78 A^2s
Typical Thermal Resistance $R_{th\,J\text{-}C}$	5 °C/W
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +125°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

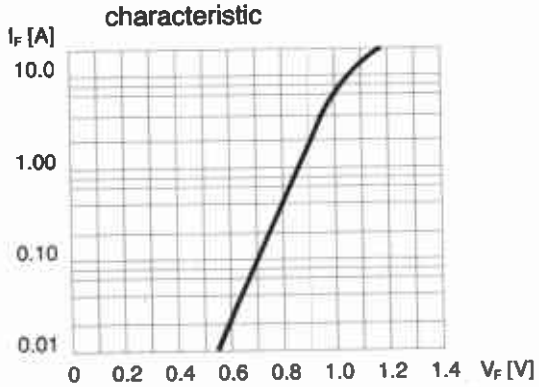
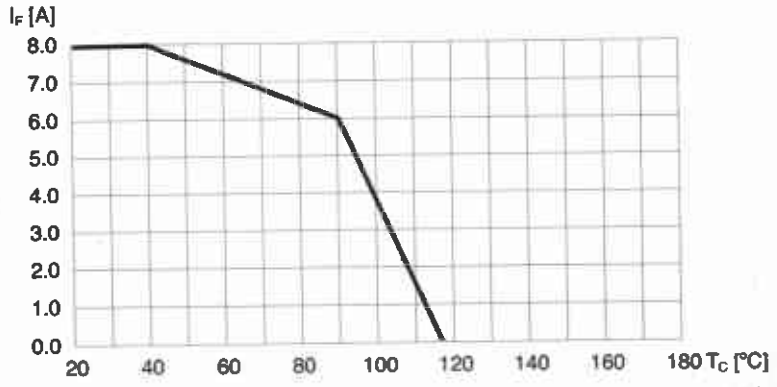


Fig. 2 – Forward derating curve



8 A Bridge Rectifier

50 to 1000 V

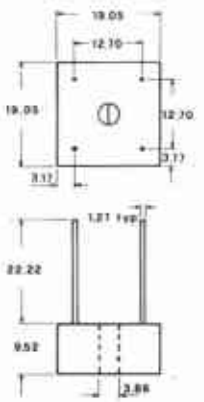
KBPC8 Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
KBPC8 005	35 V	50 V
KBPC8 02	140 V	200 V
KBPC8 04	280 V	400 V
KBPC8 06	420 V	600 V
KBPC8 08	560 V	800 V
KBPC8 10	700 V	1000 V

Also available in Avalanche and Fast Recovery Characteristics.

CASE OUTLINE



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	8 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	125 A
Maximum Forward Voltage per Element at 3 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	10 μA
Maximum Reverse Current at 100°C	1.0 mA
I^2t Rating for fusing (t <10 ms)	78 A^2s
Typical Thermal Resistance $R_{th\ J\text{-}C}$	5 °C/W
Operating Temperature Range	−55 to +125°C
Storage Temperature Range	−55 to +150°C

RATING AND CHARACTERISTIC CURVES

SUPERECTIFIER™ CONSTRUCTION

Fig. 1 – Typical forward characteristic

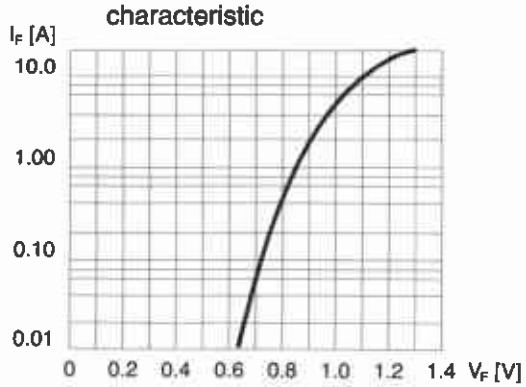
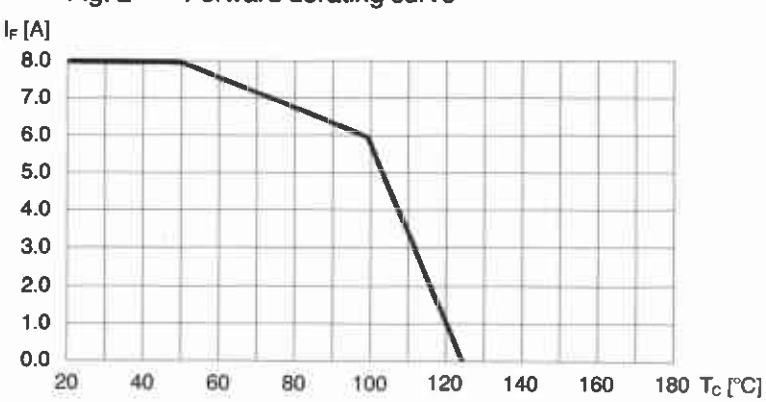


Fig. 2 – Forward derating curve



10 A Bridge Rectifier

50 to 1000 V

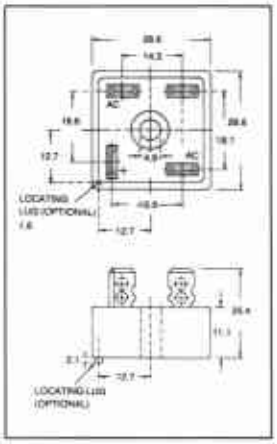
KBPC10 Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
KBPC10 005	35 V	50 V
KBPC10 02	140 V	200 V
KBPC10 04	280 V	400 V
KBPC10 06	420 V	600 V
KBPC10 08	560 V	800 V
KBPC10 10*	700 V	1000 V

*Limited Production

CASE OUTLINE



Suffix indication: **D** Insulated Case **L** Position Lug **W** Wire Leads

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	10 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	200 A
Maximum Forward Voltage per Element at 5 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	10 μA
Maximum Reverse Current at 100°C	1 mA
I^2t Rating for fusing (t <10 ms)	200 A^2s
Typical Thermal Resistance $R_{th\ J\text{-}C}$	2.5 °C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

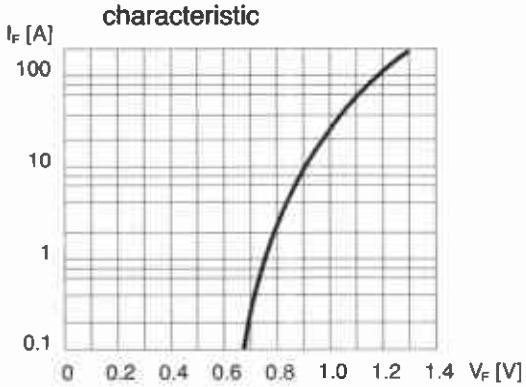
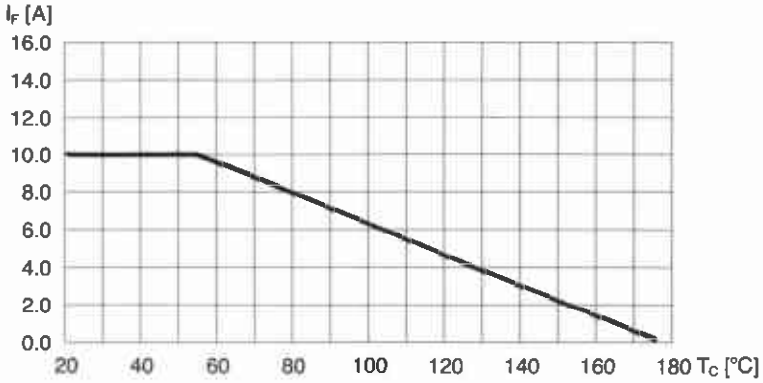


Fig. 2 – Forward derating curve



25 A Bridge Rectifier

50 to 1000 V

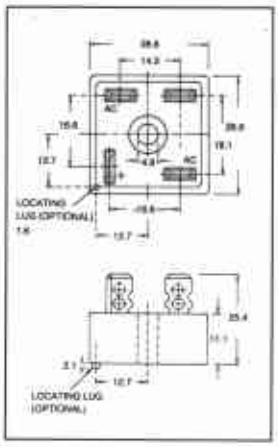
KBPC25 Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
KBPC25 005	35 V	50 V
KBPC25 02	140 V	200 V
KBPC25 04	280 V	400 V
KBPC25 06	420 V	600 V
KBPC25 08	560 V	800 V
KBPC25 10*	700 V	1000 V

*Limited Production

CASE OUTLINE



Suffix indication: **D** Insulated Case **L** Position Lug **W** Wire Leads

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	25 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	300 A
Maximum Forward Voltage per Element at 12.5 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 100°C	1.0 mA
I^2t Rating for fusing (t <10 ms)	450 A^2s
Typical Thermal Resistance $R_{th\ J\text{-}C}$	2.5 °C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

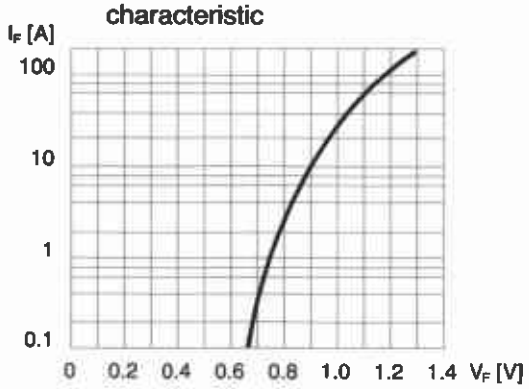
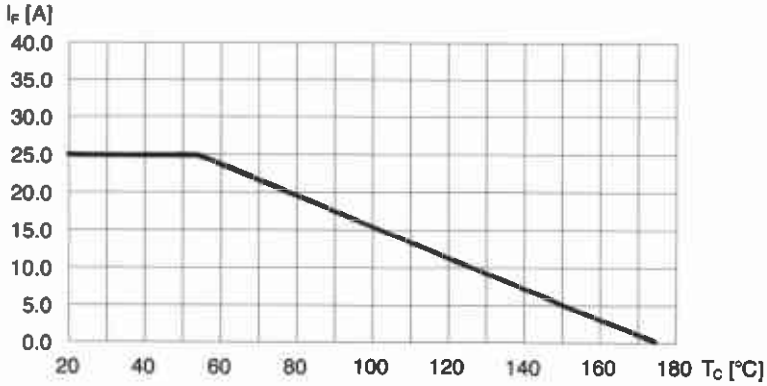


Fig. 2 – Forward derating curve



35 A Bridge Rectifier

50 to 1000 V

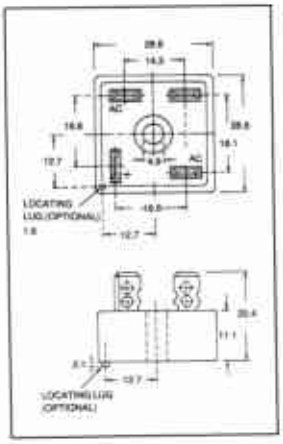
KBPC35 Series

VOLTAGE RATINGS

Type	Maximum RMS Voltage	Maximum Recurrent Peak Reverse Voltage
KBPC35 005	35 V	50 V
KBPC35 02	140 V	200 V
KBPC35 04	280 V	400 V
KBPC35 06	420 V	600 V
KBPC35 08*	560 V	800 V
KBPC35 10*	700 V	1000 V

*Limited Production

CASE OUTLINE



Suffix indication: **D** Insulated Case **L** Position Lug **W** Wire Leads

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature and 10 mm lead length unless otherwise specified.
Single-phase, half-wave, 50 Hz, resistive or inductive load.

Maximum Average Forward Rectified Current	35 A
Peak Forward Surge Current, 10 ms Single Half Sine Wave	400 A
Maximum Forward Voltage per Element at 17.5 A_{DC}	1.2 V
Maximum Reverse Current at 25°C	10 µA
Maximum Reverse Current at 100°C	1.0 mA
I^2t Rating for fusing (t <10 ms)	800 A^2s
Typical Thermal Resistance $R_{th\ J\text{-}C}$	2.5 °C/W
Operating Temperature Range	−65 to +175°C
Storage Temperature Range	−65 to +175°C

RATING AND CHARACTERISTIC CURVES

Fig. 1 – Typical forward characteristic

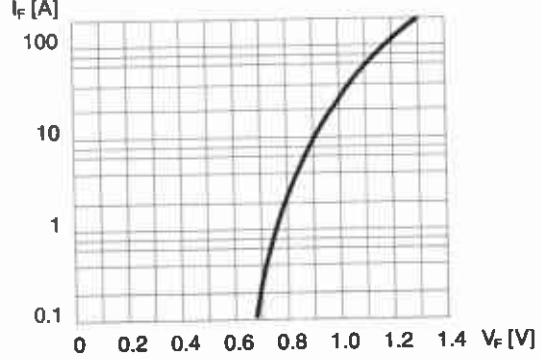
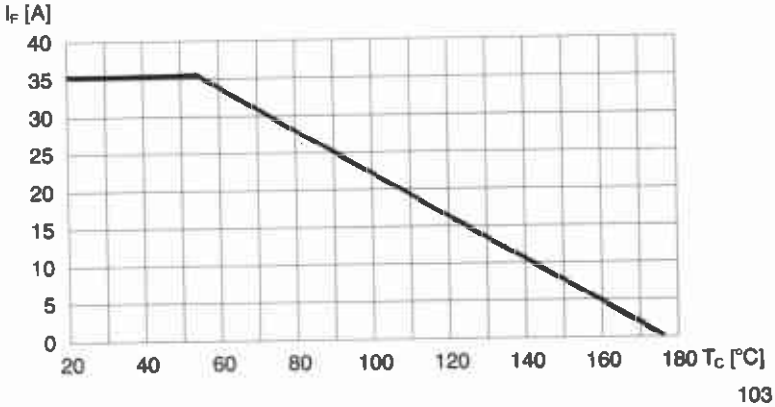


Fig. 2 – Forward derating curve



Quality Assurance

Customer Information

Introduction

Quality and Reliability Engineering of the Discrete Semiconductor Division extends its services to the areas of materials and product analysis, reliability evaluation, quality inspection and development of new test methods.

Headquartered in New York, it assumes the responsibility for the development, implementation and administration of the Quality Assurance programs for all operations of the Division, both domestic and foreign.

Additionally at our manufacturing plants, rigid and extensive in-process quality controls are utilized such that the quality and reliability of our products are consistent and repeatable. The laboratories of our facilities are equipped with the latest high-level instrumentation and staffed with skilled technicians and engineers.

Professional expertise and the most modern scientific equipment maintains our position of excellence and leadership as the foremost producer of semiconductor devices, and assures that the quality levels of our products, from inspection and test of raw materials to final approval of completed devices, meet the highest standards of the industry.

We offer . . .

- Top-flight specialists and modern facilities.
- Experienced Test Engineers and Reliability Engineers.
- A fully equipped laboratory able to perform almost any type of scientific investigation.

Services of the Materials and Device Analysis Section

- Testing, inspection and evaluation of materials and products utilizing the facilities of the electrical, mechanical, high-reliability and chemical analysis departments of our laboratories.
- Research and development of testing methods.
- Inspection of materials to ensure compliance by suppliers and contractors to specifications.
- Failure analysis to determine the cause of breakdown in materials or components.
- Qualification testing of military devices in accordance with applicable military specifications. The laboratories are qualified to perform testing to MIL-S-19500, MIL-STD-750, MIL-STD-202, and also are qualified to MIL-STD-883 tests under MIL-M-38510. Qualification approvals (QPL listing) were awarded by the United States, Canadian and West German Departments of Defense.
- A continuing program of military reliability (JAN-TX) also is in progress to assure conformance to the requirements for aerospace and the military.

Operational Life
Conditions: Rated voltage, rated current, for 1000 hours at 25°C.

DC Blocking
Conditions: Rated voltage for 1000 hours at 100°C in inert environment.

Storage Life
Conditions: 100°C for 1000 hours in inert environment.

Lead Pull
Conditions: Axial pull to destruction.

Lead Fatigue
Conditions: Number of 90-degree bends with 0.5 kg weight attached to lead.

Moisture Resistance
Conditions: 85°C, 85 % Relative Humidity for 10 days.

Solderability
Conditions: 95 % coverage within 1.2 mm of device body.

Temperature Cycling
Conditions: −65°C to +175°C.

Shock
Conditions: 5 blows of 1500 g's.

Vibration (Constant)
Conditions: 20 g's at 60 Hz ±20 Hz.

Acceleration
Conditions: 20,000 g's.

Salt Atmosphere
Conditions: 5 % solution for 24 hours at 35°C.

Flammability
Conditions: Encapsulating compound, General Instrument's proprietary formulas, GI-4B or GI-5A is self-extinguishing, recognized and registered by Underwriters' Laboratories, U.S.

Moisture Capabilities of Diodes, Rectifiers, and Bridges

Conditions: T_a = 25°C to 85°C in Operating Mode Suitability Tested by Reverse Leakage Current at Rated Voltage

	Yearly Average				
Device	≥ 95 % RH	≥ 85 % RH	100 % RH 30 Days Continuous	95 % RH 30 Days Continuous	Balance Occasional 100 % RH
GPD	■		■		■
GPR	■		■		■
GP10		■	■		■
GP15		■	■		■
GP20	■		■		■
GP30	■		■		■
DO41		■		■	■
WO/WL Series	■		■		■
KBP Series	■			■	■
KBPC Series	■		■		■
KBL Series	■			■	■

Description of HI-REL Test Capabilities

- Barometric Pressure: This equipment simulates low atmospheric pressure encountered in non-pressurized environments up to 200,000 feet.
- Humidity: This equipment evaluates units in an accelerated manner, and monitors the effects of their resistance to high humidity and heat conditions. Typical RH of 90 to 98 % is achieved.
- Salt (Spray) and Salt Atmosphere: The equipment provides an accelerated laboratory corrosion test simulating the effects of seacoast atmospheres. Salt concentration and velocity per day can be maintained between 10,000 and 50,000 mgm/m^2/day. Salt Atmosphere – Salt spray 5 % – 20 % salt solution.
- Thermal Shock Temp.-Cycling: This test determines the resistance of devices to exposure at extremely high and low temperatures. Chamber limits −74°C to 250°C.
- Mass Spectrometer Leak Detector (Fine Leak): To determine the effectiveness (or the hermeticity) of the seal on devices with internal cavities which are evacuated or contain air or gas. Machine limits $1 \cdot 10^{-9}$ to $10 \cdot 10^{-6}$ atm.
- Gross Leak: Determine seal leak greater than $10 \cdot 10^{-6}$ ATM cc/Sec.
- Constant Acceleration: Determines the effects of a centrifugal force on devices up to 700,000 g under space environment (refrigerated vacuum).
- Shock: Subjects the devices to conditions resulting from sudden applied forces or abrupt changes in motion produced by rough handling, transportation or field operation from 10 to 4,500 g.
- Vibration Fatigue: Tests the effects of vibration within the frequency range of 60 Hz at 0–70 g.
- Vibration Noise: Measures the amount of electrical noise produced by the devices under vibration from 0–5 kHz and 0–70 g.
- Vibration Variable Frequency: Tests the effect of the devices to vibration in specified frequency ranges from 0–5 kHz at 0–70 g.
- Non-Operating Life: To determine the effects on devices at elevated temperatures. Temperature ranges up to 300°C.
- Operating Life Test: To operate the devices under intended condition to screen and eliminate marginal devices and eliminate mortality.
    - Steady State Operating Life.
    - Reverse Bias Operating Life.
    - Intermittent Operating Life.
- Solderability – Lead Integrity (Lead Tension):
  Determine the solderability on all devices from 0 to 400°C. Lead Tension – Designed to check the capabilities of the devices to withstand straight pulls.
- Lead Integrity (bending stress): Check the quality of leads, welds and seals of the devices to withstand bends under specific weights.
- Lead Integrity (lead torque): Check the devices, leads and seals for resistance to twisting motion. Equipment limits from .5 cmkg to 100 mkg.
- Hi-Power Microscopic Inspection: Examine internal and external construction of our devices up to 600 times.
- Bond Strength: This determines strength of lead bonding between the active area of the device and connecting package leads.

HI-Reliability, Military, JAN and JANTX Devices

Where application demand higher reliability parts than our normal commercial units, there are two categories of product screening which are available as a stock item: JAN and JANTX. When reliability classes are required for use in military applications, on other very critical areas which are not for military use but require same special processing the JAN and JANTX devices are available. Where possible it is advantageous to specify a JAN or JANTX device rather than a special screening procedure because the JAN and JANTX parts are already processed as a standard stock item and do not place an additional load on the factory as will a small speciality requirement.

Reliability of each individual JAN and JANTX lot is accepted when sample tested, versus a commercial lot where a product line is tested for reliability on a periodic basis. JAN devices are processed according to a sample basis, where JANTX devices have 100 % processing and conditioning prior to release to the customer. Both JAN and JANTX devices are lot accepted by undergoing tests including electrical, solderability, thermal shock, terminal strength, moisture resistance, shock, vibration, acceleration, salt atmosphere, surge, storage and operating life. JAN parts are inspected electrically and shipped to the customer. All JANTX devices go through an additional environmental screening consisting of:

- Stabilization Bake for a minimum of 24 hours.
- Temperature Cycling of 10 complete cycles.
- Acceleration of 20,000 G's.
- Fine Leak.
- Gross Leak.
- Initial Electrical with data.
- Operating Life Burn-In for a minimum of 96 hours.
- Post Electrical with data.
- Delta Calculations on leakage current and forward voltage drop.

These devices are being processed on a daily ongoing basis. This in turn makes for a hi-reliability 100 % screened part readily available as an off-the-self item. A list of available parts and their packages is seen on page 49 under Glass Passivated Rectifier.

REEL PACKAGING (Standard Specification)

COMPONENT CASE TYPE *	UNITS PER REEL	COMPONENT SPACING "A" FIG. 1		TAPE SPACING "B" FIG. 1		APPROX. REEL DIMENSION "C" FIG. 4		MAX OFF ALIGNMENT "E" FIG. 1		APPROX. GROSS WEIGHT PER REEL PACKED	
		in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg.
DO15	3500	.200	5.04	2.0	50.8	2.8	71	.047	1.2	5.06	2.3
DO27	1200	.375	9.5	2.0	50.8	2.8	71	.047	1.2	3.52	1.6
DO27A/C	1200	.375	9.5	2.0	50.8	2.8	71	.047	1.2	5.06	2.3
DO41	5000	.200	5.04	2.0	50.8	2.8	71	.047	1.2	5.76	2.6
G1	4000	.200	5.04	2.0	50.8	2.8	71	.047	1.2	5.76	2.6
G3	1500	.375	9.5	2.0	50.8	2.8	71	.047	1.2	4.8	2.2
GPD	4000	.200	5.04	2.0	50.8	2.8	71	.047	1.2	3.74	1.7

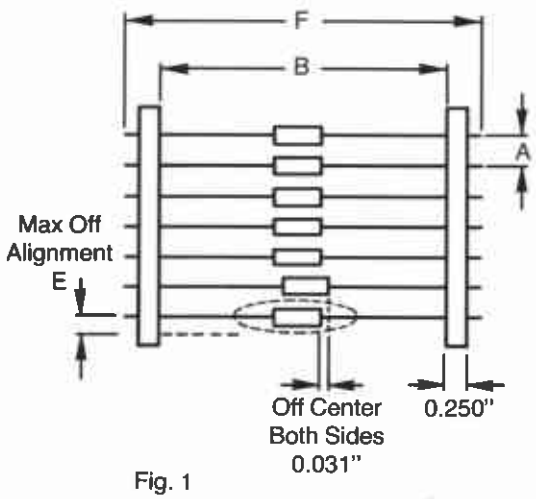


Fig. 1


Fig. 2

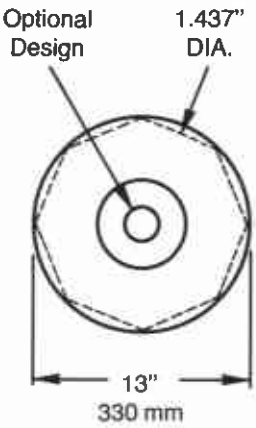


Fig. 3

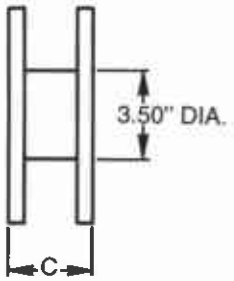


Fig. 4

REEL PACKAGING (Metric Specification)

COMPONENT CASE TYPE *	UNITS PER REEL	COMPONENT SPACING "A" FIG. 1		TAPE SPACING "B" FIG. 1		APPROX. REEL DIMENSION		MAX OFF ALIGNMENT "E" FIG. 1		APPROX. GROSS WEIGHT PER REEL PACKED	
		in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg.
DO15	3500	.197	5	2.062	52.4	2.8	71	.047	1.2	5.06	2.3
DO27	1200	.394	10	2.062	52.4	2.8	71	.047	1.2	3.52	1.6
DO27A	1200	.394	10	2.062	52.4	2.8	71	.047	1.2	5.06	2.3
DO41	5000	.197	5	2.062	52.4	2.8	71	.047	1.2	5.76	2.6
G1	4000	.197	5	2.062	52.4	2.8	71	.047	1.2	5.76	2.6
G3	1500	.394	10	2.062	52.4	2.8	71	.047	1.2	4.8	2.2
GPD	4000	.197	5	2.062	52.4	2.8	71	.047	1.2	3.74	1.7

* Rectifier type numbers versus product families (GPD, G1 etc.) please see Numerical Index page 6/7

Bulk Packaging Diodes and Rectifiers

Device Type	Box Size		Quantity No. of Pieces	Approx. Gross Weight	
	in.	cm		lbs.	kg
	RECTIFIERS				
DO41, GP10, GPD	8 x3.5 x1	20.3 x 8.8 x 2.54	1000	.81/.83/.52	.37/.38/.24
GP15, G1	8 x3.5 x1	20.3 x 8.8 x 2.54	500	0.55	0.25
DO27, P100, P300, GP20	12 x3.2 x2.5	30.4 x 8.1 x 6.3	1000	1.76/2.86/1.78	.80/1.3/.81
P600	12 x3.2 x2.5	30.4 x 8.1 x 6.3	500	2.64	1.2
DO27A/C, GP30, GP25, G3	12 x3.2 x2.5	30.4 x 8.1 x 6.3	1000	2.86	1.3
AR25	Plastic Bag		200	7.26	3.3
HVPR10-1	7 x5 x3.4	17.7 x 12.8 x 8.6	50	4.84	2.2
HVPR15-4	7.8 x 7.8 x 1.8	19.8 x 19.8 x 4.5	100	2.86	1.3
HVPR20-80	7.5 x 10 x2.2	19 x25.4 x 5.5	200	0.66	0.3
	BRIDGES				
B...C800	10.5 x 2.75 x 2.5	26.7 x 7 x6.3	250	1.21	0.55
B...C1000	10.5 x 2.75 x 2.5	26.7 x 7 x6.3	250	1.21	0.55
B...C1500	10.5 x 2.75 x 2.5	26.7 x 7 x6.3	250	1.21	0.55
W, WOM, WL, 2W	10.5 x 2.75 x 2.5	26.7 x 7 x6.3	250	1.21	0.55
KBP	8.3 x 6.5 x2.3	21 x 16.5 x 5.8	200	0.77	0.35
KBL	9 x6 x2.2	22.8 x 15.2 x 5.5	200	3.08	1.3
KBF	6 x6 x2	15.2 x 15.2 x 5.1	100	1.54	0.7
KBPC8	8.8 x 8.8 x 1.8	22.3 x 22.3 x 4.5	200	3.52	1.6
KBPC	8.8 x 8.8 x 1.2	21 x 22.3 x 3	200	2.86	1.3
KBPC1, KBPC6	4.8 x 7.8 x 1.8	19.8 x 19.8 x 4.5	200	1.87/.66	.85/.3
KBPC3	8 x6.3 x2.2	20.3 x 16 x 5.5	50	3.74	1.7
KBPC10/25/35 With Faston Term.	10 x6.3 x1.7	25.4 x 16 x 4.3	50	3.08	1.4
KBPC10/25/35 With Leads	10 x6.3 x1.7	25.4 x 16 x 4.3	40	4.07	1.85

A. Tape and Reel Packaging of Axial Lead Units

Axial lead units are packed in accordance with EIA Standard RS-296-C plus specifications given below and the diagrams given below which are referred to in the specifications.

1. Reeling

A. Component leads are positioned between tapes as shown in Fig. 1.

B. A minimum of 30 cm of tape is provided before the first unit and after the last unit on the reel.

C. 23 kg kraft paper is wound between layers of components and extended beyond the tape sufficiently to protect the components.

D. A maximum of ten components may be omitted from any 3 m length and a maximum of two consecutive components may be missing if this omission is followed by six consecutive components.

2. Tolerances

A. Bending of components leads is held to the off-alignment dimension shown in Column E and indicated by E in Fig. 1.

B. The C dimension of Fig. 3 is between 3 mm and 6 mm greater than the length of the component involved. See F, Fig. 1.

C. The units are held between an perpendicular to a colored tape and a white tape. Polarized units are oriented in one direction with the cathode lead being held by the colored type. The spacing between leads is shown in Column A in the table and A in Fig. 1.

D. Units are centered between tapes 1.2 mm but individual units may deviate from center of row ±0.7 mm. See Fig. 1.

GENERAL INSTRUMENT EUROPE

EUROPEAN HEADQUARTERS
52 Rue de Faubourg · Saint Honoré · 75008 Paris
Tel.: 2665634 · Telex: 641078

EUROPEAN APPLICATION LABORATORY
Neumarkter Straße 61 · 8000 München 80
Tel.: 089/491004 · Telex: 05-24523

EUROPEAN SALES OFFICES

FRANCE
General Instrument France
11/13, Rue Gandon · 75013 Paris
Tel.: 5848731 · Telex: 260766

GERMANY, AUSTRIA AND SWITZERLAND
General Instrument Deutschland GmbH
Neumarkter Str. 61 · 8000 München 80
Tel.: 089/491004 · Telex: 05-24523

ITALY
C.P. Clare Elettronica SRL · Divisione Semiconduttori
Via Anfossi 32 · Milano
Tel.: 02/5465514, 02/5469187 · Telex: 320348

UNITED KINGDOM
General Instrument U.K.Ltd.
Cock Lane 2 · High Wycombe-Buckinghamshire
Tel.: 445311 · Telex: 83691

OTHER COUNTRIES
General Instrument Deutschland GmbH
Neumarkter Str. 61 · 8000 München 80
Tel.: 089/491004 · Telex: 05-24523

GENERAL INSTRUMENT CORPORATION

DISCRETE SEMICONDUCTOR DIVISION
600 West John Street, Hicksville, N.Y. 11802, (516) 733-3333
TWX: 510-221-1865