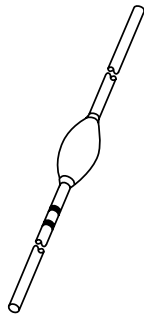


# DATA SHEET



## **BY715 to BY724**

**Very fast high-voltage soft-recovery  
rectifiers**

Product specification

2001 Sep 24

# Very fast high-voltage soft-recovery rectifiers

# BY715 to BY724

## FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Soft-recovery switching characteristics
- Compact construction.

## APPLICATIONS

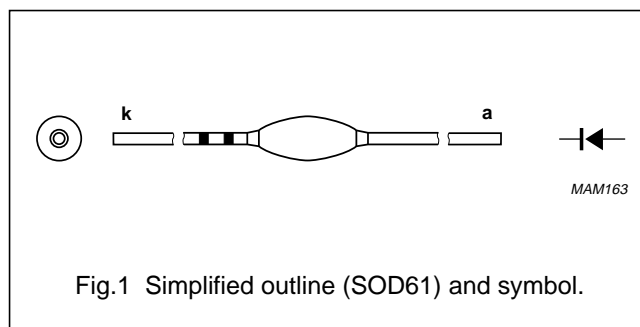
- For high-voltage rectification up to 75 kHz
- High-voltage applications for:
  - Multipliers
  - Slot-wound diode-split-transformers.

## DESCRIPTION

Rugged glass package, using a high temperature alloyed construction.

This package is hermetically sealed and fatigue free as coefficients of expansion of all used parts are matched.

The package is designed to be used in an insulating medium such as resin, oil or SF6 gas.



## MARKING

Table 1 Cathode band colour codes

TYPE NUMBER	PACKAGE CODE	OUTER BAND	INNER BAND
BY715	SOD61E	green	brown
BY716	SOD61E	red	brown
BY717	SOD61E	green	red
BY718	SOD61E	blue	red
BY719	SOD61E	yellow	red
BY720	SOD61G	red	green
BY721	SOD61G	blue	green
BY722	SOD61K	red	blue
BY723	SOD61K	green	blue
BY724	SOD61K	yellow	blue

## Very fast high-voltage soft-recovery rectifiers

## BY715 to BY724

**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>RSM</sub>	non-repetitive peak voltage				
	BY715		–	5	kV
	BY716		–	6	kV
	BY717		–	10	kV
	BY718		–	12	kV
	BY719		–	14	kV
	BY720		–	17	kV
	BY721		–	19	kV
	BY722		–	22	kV
	BY723		–	24	kV
BY724		–	30	kV	
V <sub>RRM</sub>	repetitive peak reverse voltage				
	BY715		–	5	kV
	BY716		–	6	kV
	BY717		–	10	kV
	BY718		–	12	kV
	BY719		–	14	kV
	BY720		–	17	kV
	BY721		–	19	kV
	BY722		–	22	kV
	BY723		–	24	kV
BY724		–	30	kV	
V <sub>RW</sub>	working reverse voltage				
	BY715		–	4	kV
	BY716		–	5	kV
	BY717		–	9	kV
	BY718		–	10	kV
	BY719		–	12	kV
	BY720		–	14	kV
	BY721		–	16	kV
	BY722		–	18	kV
	BY723		–	20	kV
BY724		–	24	kV	

## Very fast high-voltage soft-recovery rectifiers

## BY715 to BY724

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{F(AV)}$	average forward current	averaged over any 20 ms period; see Figs 2, 3, 4 and 5			
	BY715		–	20	mA
	BY716		–	20	mA
	BY717		–	4	mA
	BY718		–	4	mA
	BY719		–	4	mA
	BY720		–	3	mA
	BY721		–	3	mA
	BY722		–	3	mA
	BY723		–	3	mA
BY724		–	3	mA	
$I_{FRM}$	repetitive peak forward current		–	500	mA
$T_{stg}$	storage temperature		–65	+120	°C
$T_j$	junction temperature		–65	+120	°C

## Very fast high-voltage soft-recovery rectifiers

## BY715 to BY724

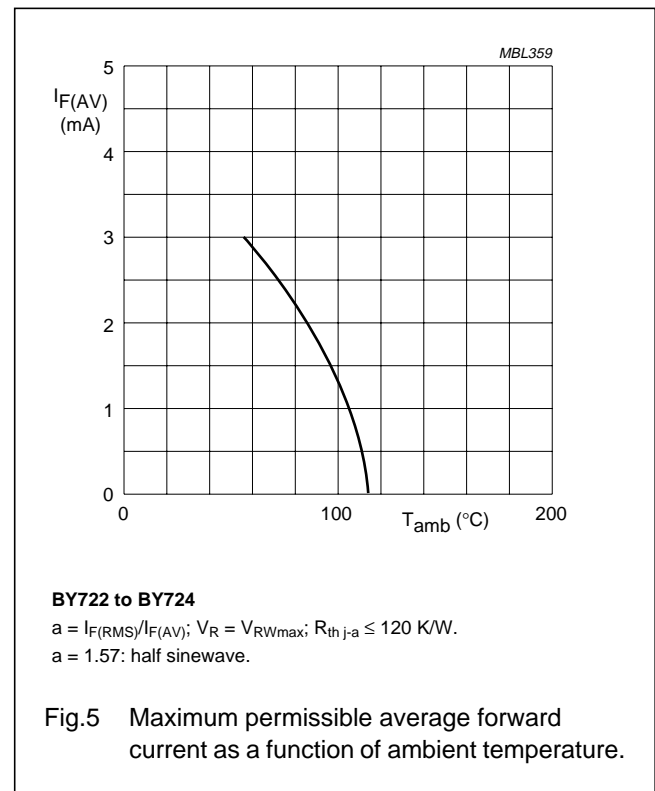
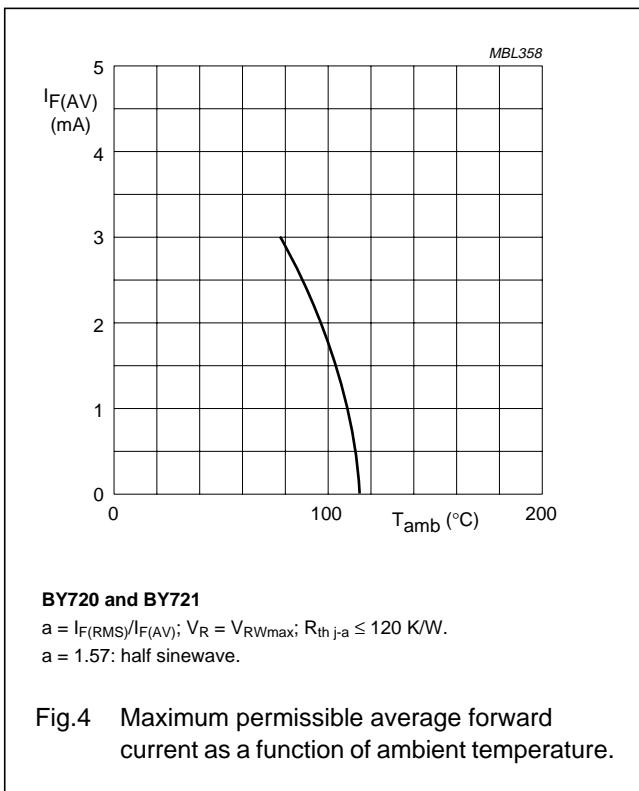
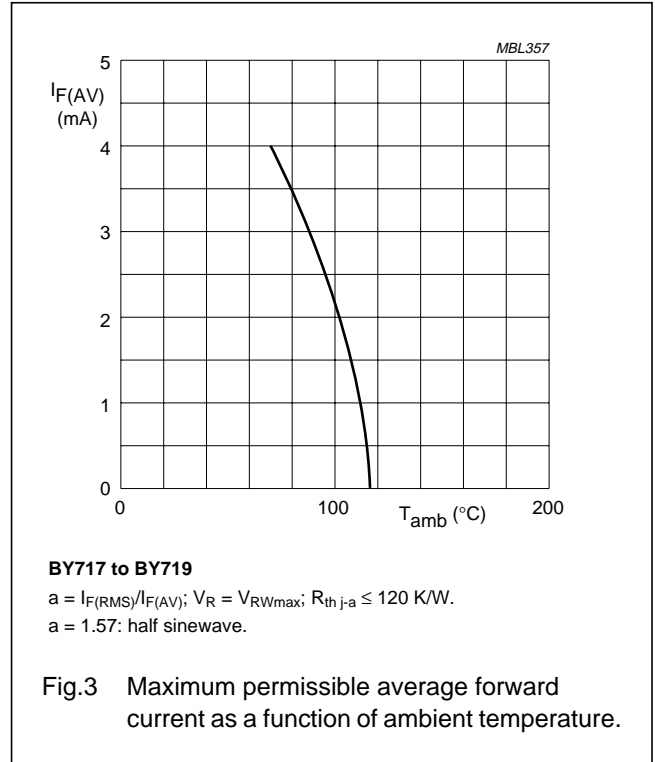
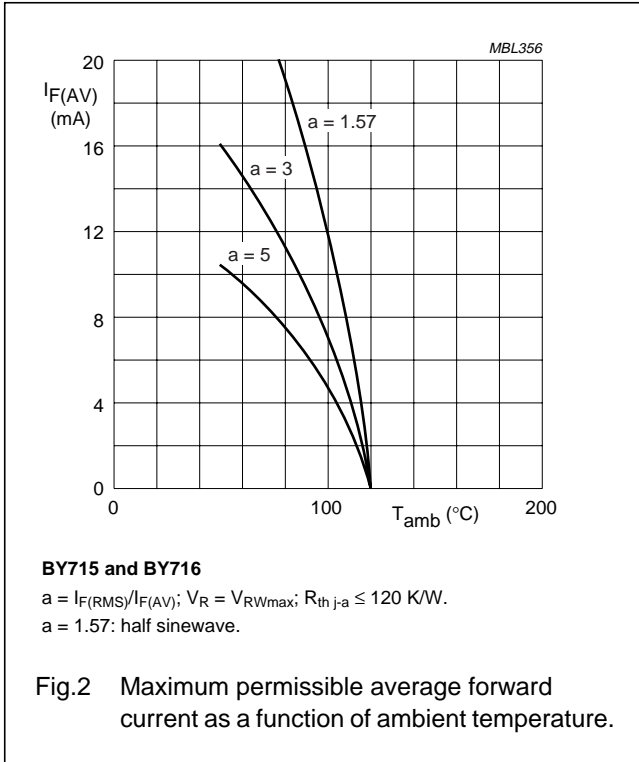
**ELECTRICAL CHARACTERISTICS**T<sub>j</sub> = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 100 mA; T <sub>j</sub> = T <sub>j max</sub> ; see Figs 6, 7 and 8				
	BY715		–	–	28	V
	BY716		–	–	28	V
	BY717		–	–	69	V
	BY718		–	–	69	V
	BY719		–	–	69	V
	BY720		–	–	92	V
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 50 mA; T <sub>j</sub> = T <sub>j max</sub> ; see Fig.9				
	BY722		–	–	88	V
	BY723		–	–	88	V
	BY724		–	–	88	V
I <sub>R</sub>	reverse current	V <sub>R</sub> = V <sub>RWmax</sub> ; T <sub>j</sub> = 120 °C	–	–	3	μA
Q <sub>r</sub>	recovery charge	when switched from I <sub>F</sub> = 100 mA to V <sub>R</sub> ≥ 100 V and dI <sub>F</sub> /dt = –200 mA/μs; see Fig.11	–	–	0.4	nC
t <sub>f</sub>	fall time	when switched from I <sub>F</sub> = 100 mA to V <sub>R</sub> ≥ 100 V and dI <sub>F</sub> /dt = –200 mA/μs; see Fig.11	40	–	–	ns
t <sub>rr</sub>	reverse recovery time	when switched from I <sub>F</sub> = 100 mA to V <sub>R</sub> ≥ 100 V and dI <sub>F</sub> /dt = –200 mA/μs; see Fig.11	–	100	–	ns

Very fast high-voltage soft-recovery rectifiers

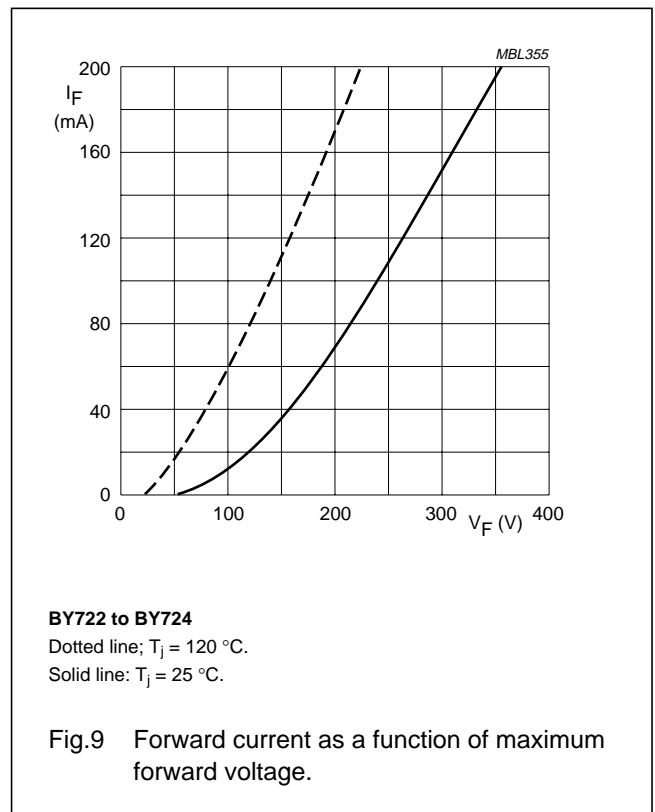
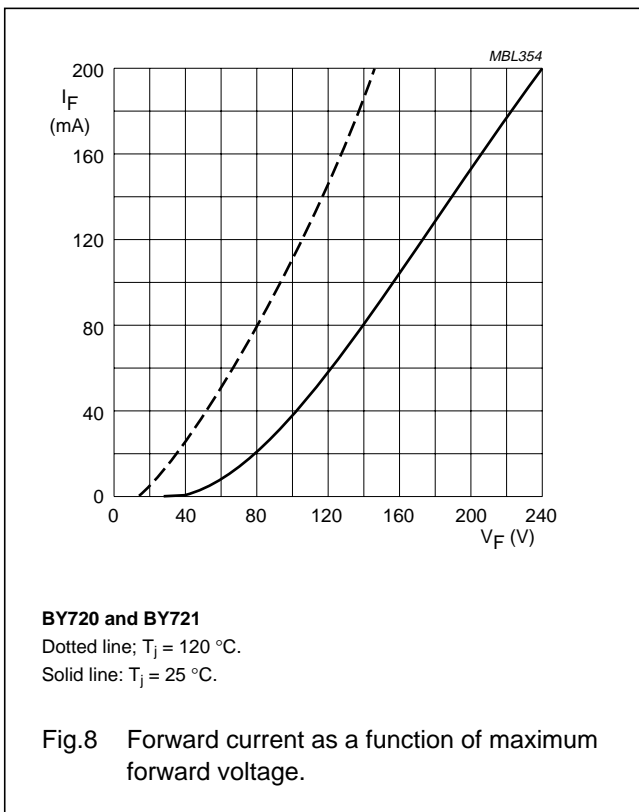
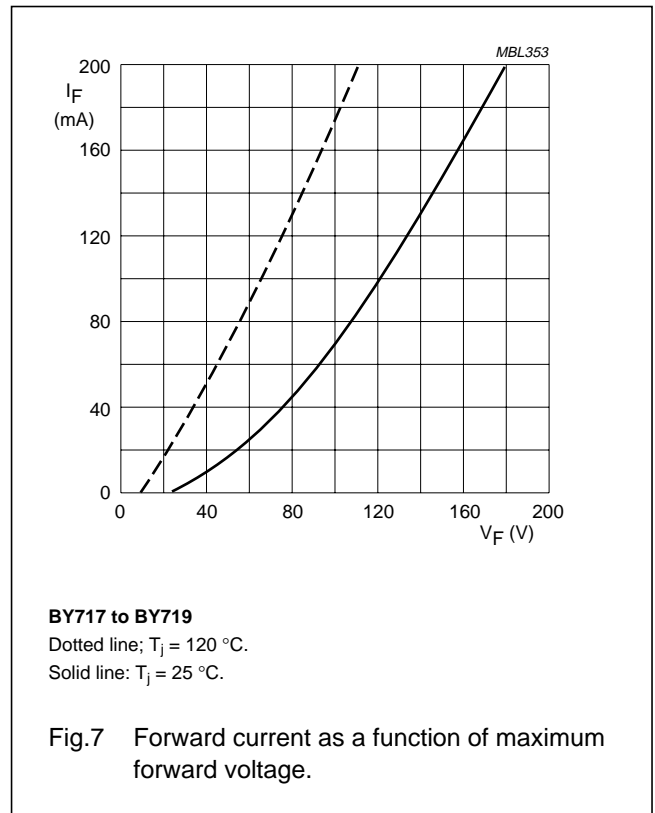
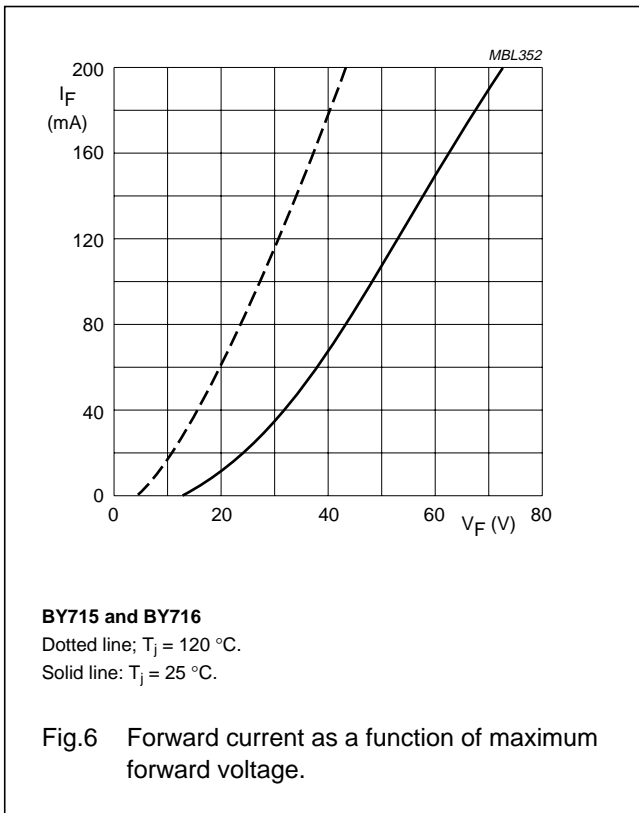
BY715 to BY724

GRAPHICAL DATA



Very fast high-voltage soft-recovery rectifiers

BY715 to BY724



Very fast high-voltage soft-recovery rectifiers

BY715 to BY724

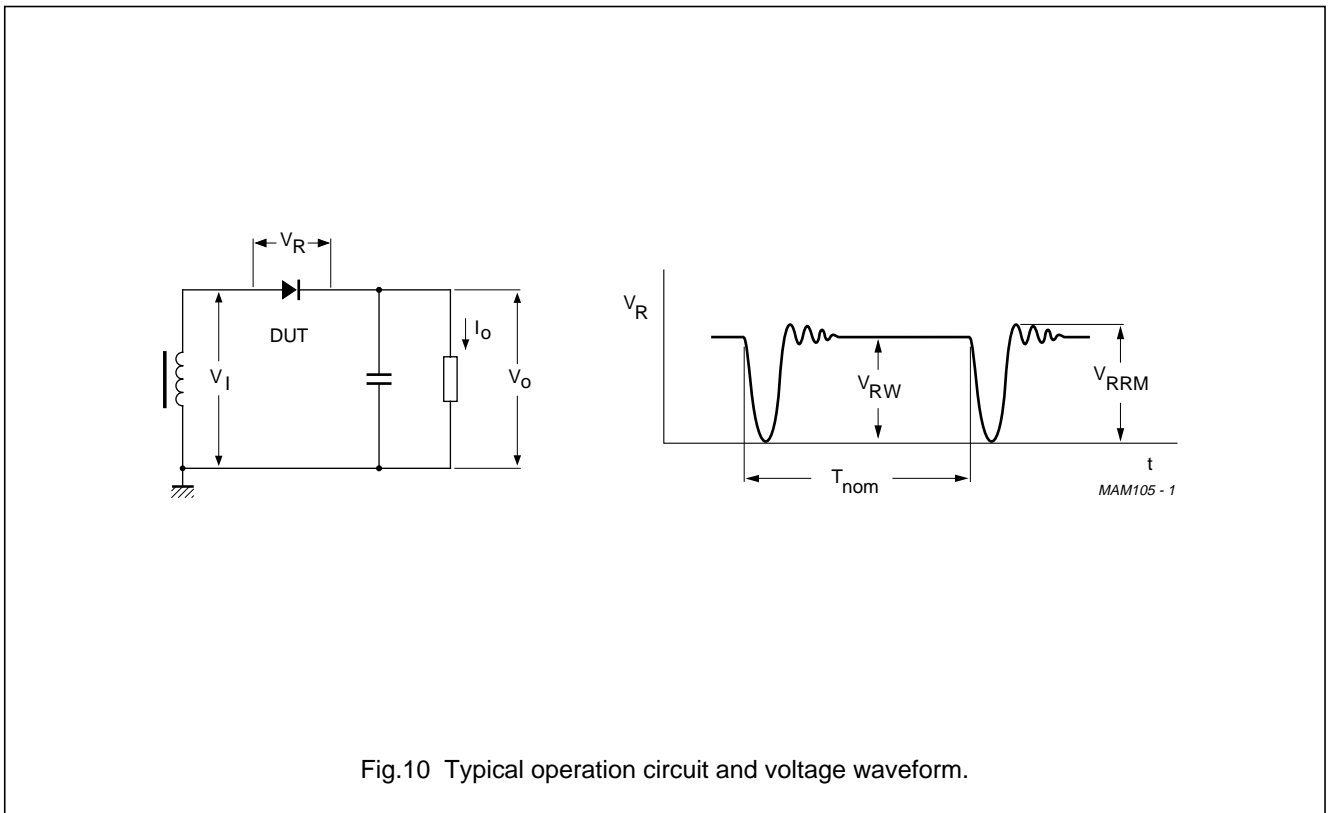


Fig.10 Typical operation circuit and voltage waveform.

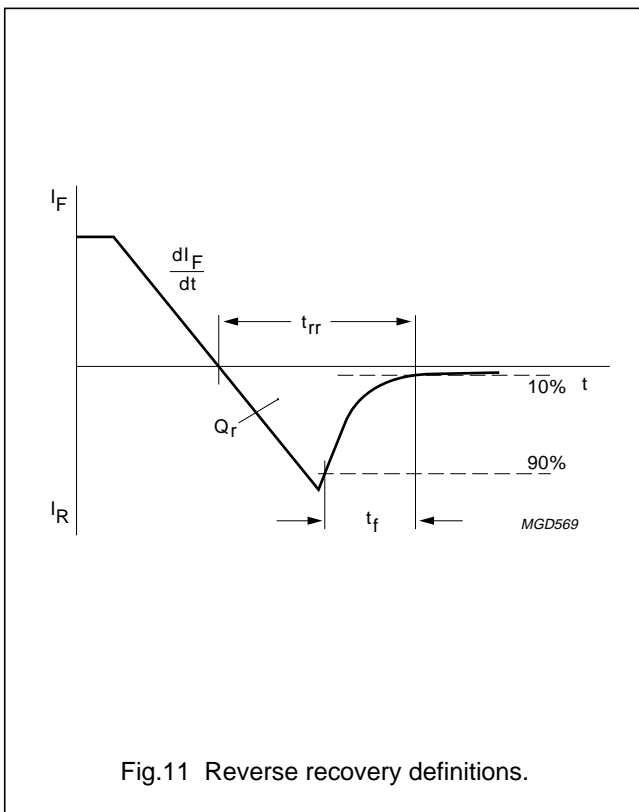


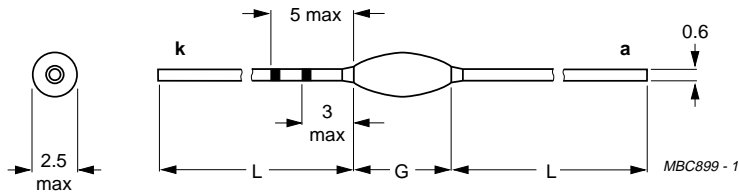
Fig.11 Reverse recovery definitions.



Very fast high-voltage soft-recovery rectifiers

BY715 to BY724

PACKAGE OUTLINE



The marking bands indicates the cathode.  
 Dimensions in mm; see table below.

Fig.12 SOD61E to K.

PACKAGE SPECIFICATION

TYPE NUMBER	PACKAGE CODE	$L_{min}$ (mm)	$G_{max}$ (mm)
BY715	SOD61E	29.7	9.5
BY716	SOD61E	29.7	9.5
BY717	SOD61E	29.7	9.5
BY718	SOD61E	29.7	9.5
BY719	SOD61E	29.7	9.5
BY720	SOD61G	29.0	11.0
BY721	SOD61G	29.0	11.0
BY722	SOD61K	28.2	12.5
BY723	SOD61K	28.2	12.5
BY724	SOD61K	28.2	12.5

## Very fast high-voltage soft-recovery rectifiers

## BY715 to BY724

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