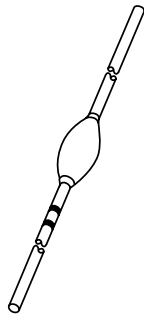


DATA SHEET



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

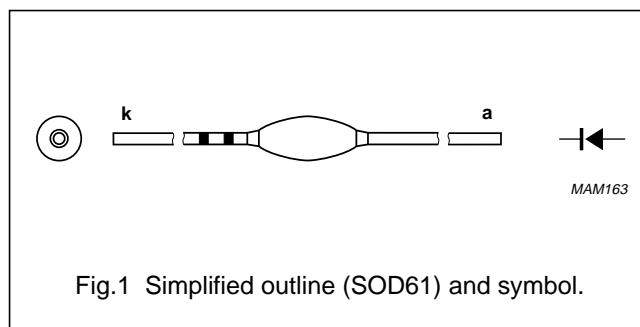
- For high-voltage rectification up to 75 kHz
- High-voltage applications for:
 - Multipliers
 - Slot-wound diode-split-transformers.

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 _{RSM}	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 _{RRM}	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 _{RW}	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

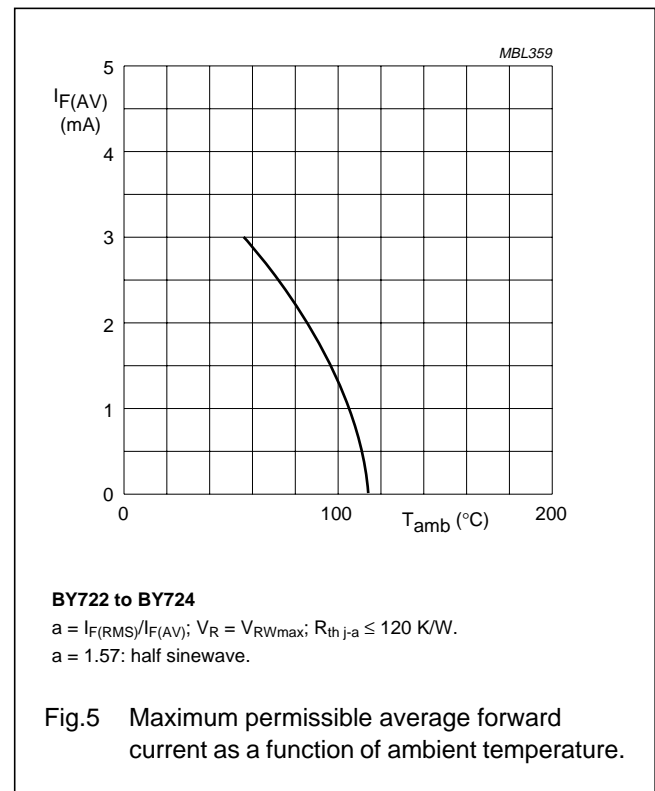
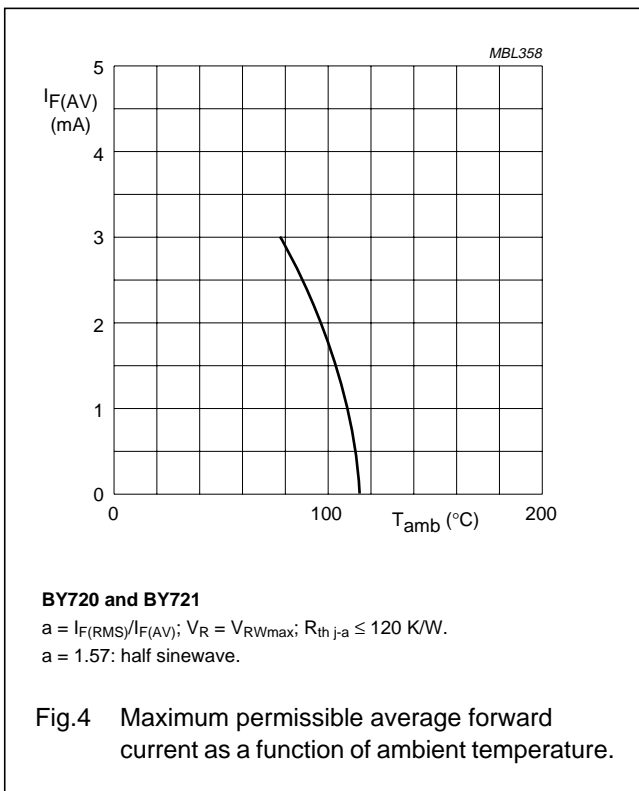
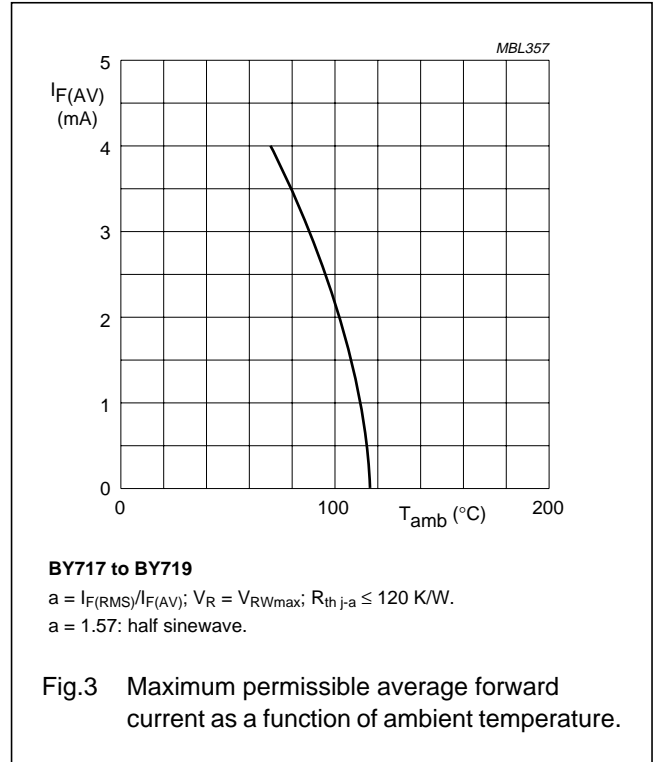
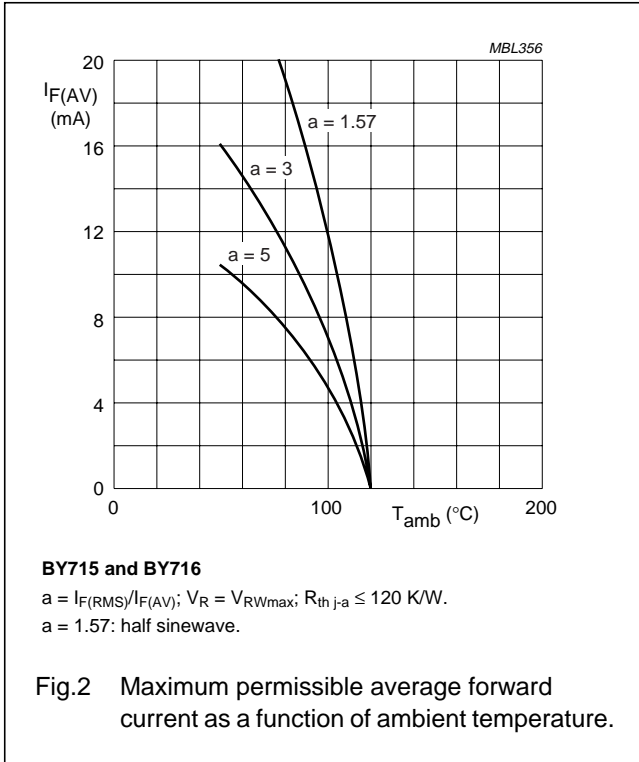
ELECTRICAL CHARACTERISTICST_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _F	forward voltage	I _F = 100 mA; T _j = T _{j max} ; 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 _F	forward voltage	I _F = 50 mA; T _j = T _{j max} ; see Fig.9				
	BY722		–	–	88	V
	BY723		–	–	88	V
	BY724		–	–	88	V
I _R	reverse current	V _R = V _{RWmax} ; T _j = 120 °C	–	–	3	µA
Q _r	recovery charge	when switched from I _F = 100 mA to V _R ≥ 100 V and dI _F /dt = –200 mA/µs; see Fig.11	–	–	0.4	nC
t _f	fall time	when switched from I _F = 100 mA to V _R ≥ 100 V and dI _F /dt = –200 mA/µs; see Fig.11	40	–	–	ns
t _{rr}	reverse recovery time	when switched from I _F = 100 mA to V _R ≥ 100 V and dI _F /dt = –200 mA/µs; see Fig.11	–	100	–	ns

Very fast high-voltage soft-recovery rectifiers

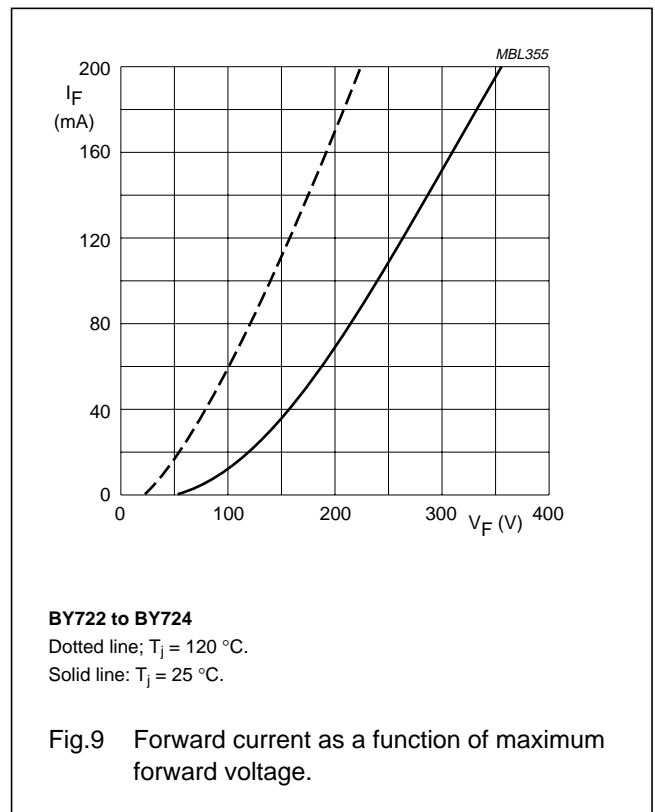
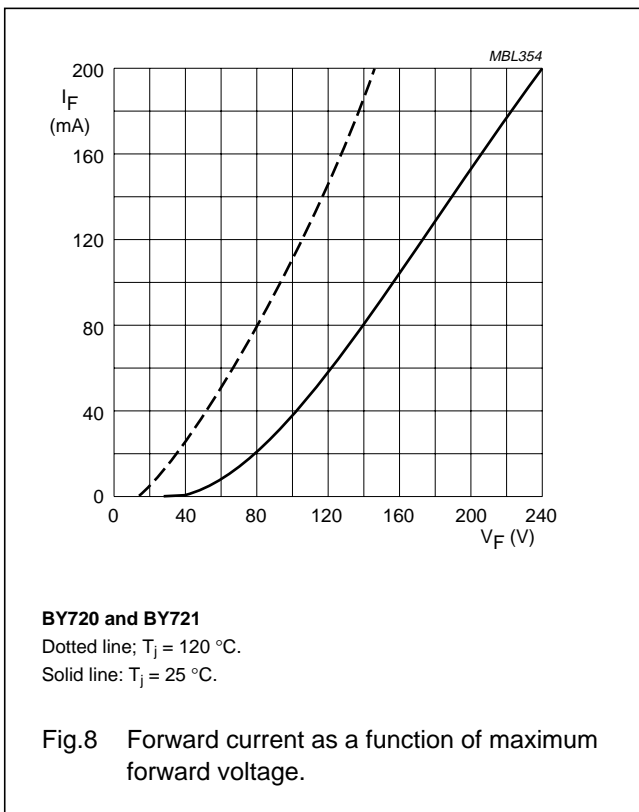
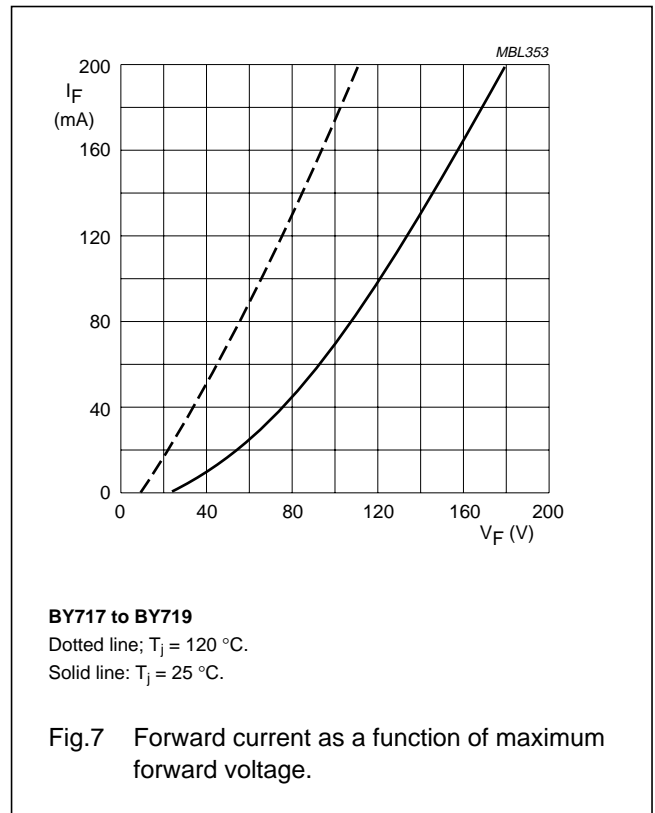
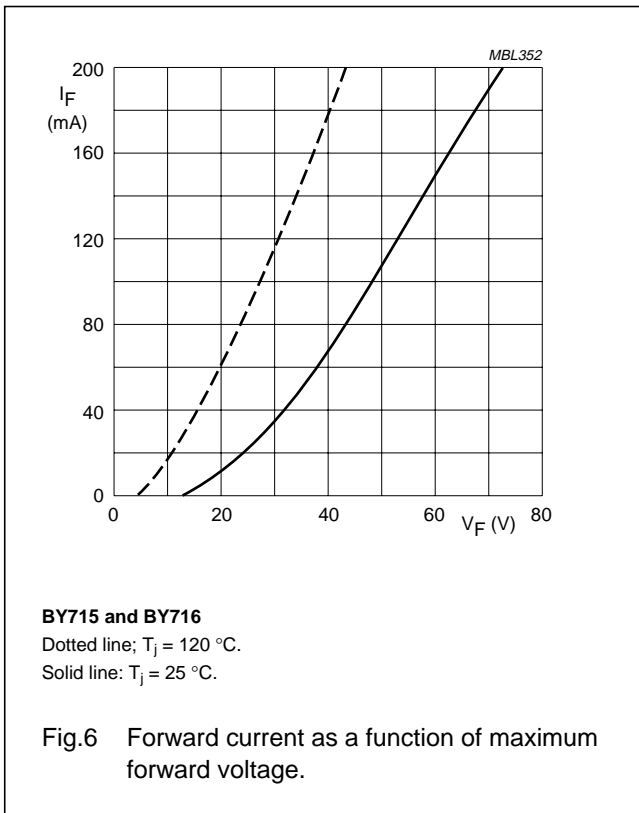
BY715 to BY724

GRAPHICAL DATA



Very fast high-voltage soft-recovery rectifiers

BY715 to BY724



Very fast high-voltage soft-recovery rectifiers

BY715 to BY724

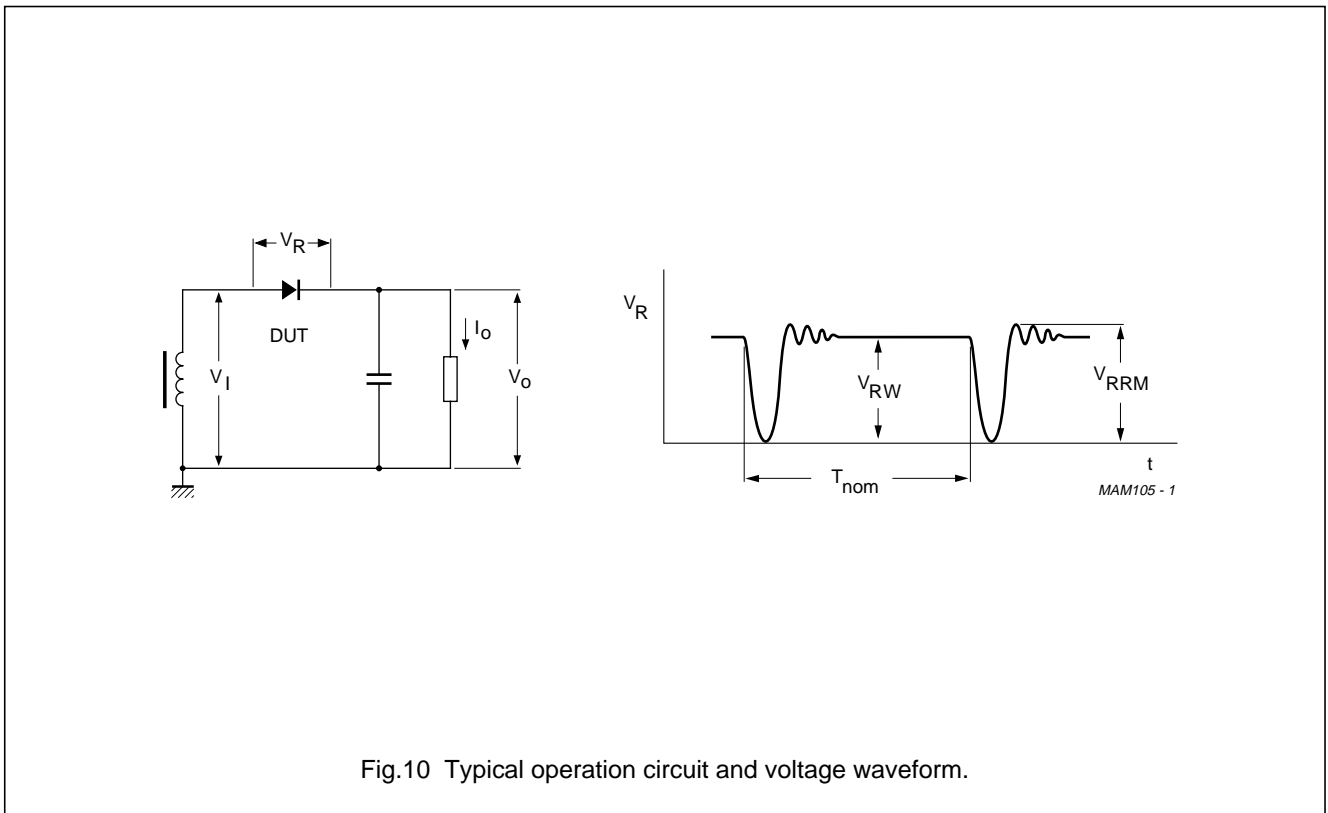


Fig.10 Typical operation circuit and voltage waveform.

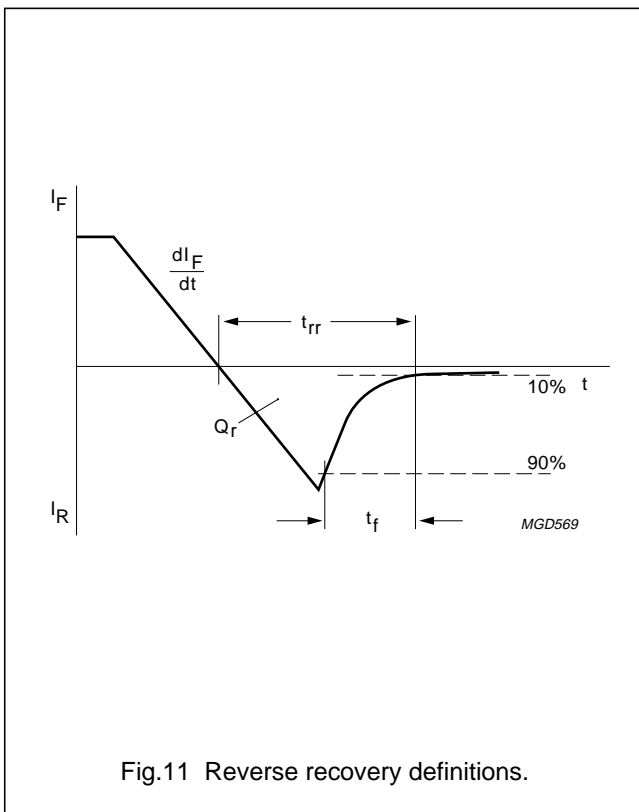
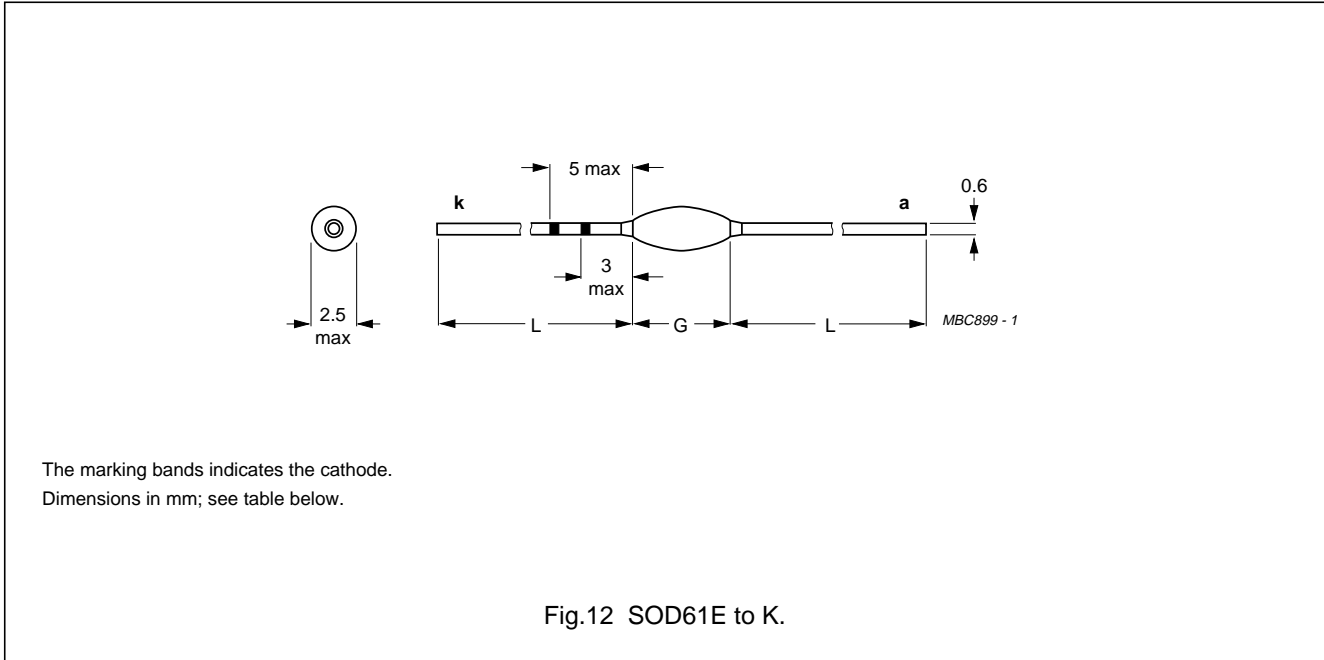


Fig.11 Reverse recovery definitions.

Very fast high-voltage soft-recovery rectifiers

BY715 to BY724

PACKAGE OUTLINE



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

DATA SHEET STATUS

DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITIONS
Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Changes will be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A.

Notes

1. Please consult the most recently issued data sheet before initiating or completing a design.
2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL <http://www.semiconductors.philips.com>.

DEFINITIONS

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

Application information — Applications that are described herein for any of these products are for illustrative purposes only. Philips Semiconductors make no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

DISCLAIMERS

Life support applications — These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips Semiconductors customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips Semiconductors for any damages resulting from such application.

Right to make changes — Philips Semiconductors reserves the right to make changes, without notice, in the products, including circuits, standard cells, and/or software, described or contained herein in order to improve design and/or performance. Philips Semiconductors assumes no responsibility or liability for the use of any of these products, conveys no licence or title under any patent, copyright, or mask work right to these products, and makes no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified.

Very fast high-voltage soft-recovery rectifiers

BY715 to BY724

NOTES

Philips Semiconductors – a worldwide company

Contact information

For additional information please visit <http://www.semiconductors.philips.com>. Fax: +31 40 27 24825

For sales offices addresses send e-mail to: sales.addresses@www.semiconductors.philips.com.

© Koninklijke Philips Electronics N.V. 2001

SCA73

All rights are reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner.

The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

Printed in The Netherlands

613510/01/pp12

Date of release: 2001 Sep 24

Document order number: 9397 750 08656

Let's make things better.

**Philips
Semiconductors**



PHILIPS