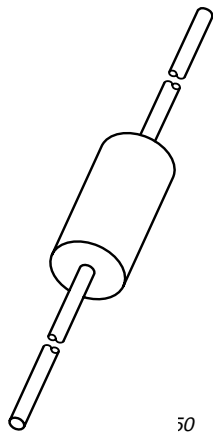


# DATA SHEET



## **BY8200 series**

Ultra fast high-voltage soft-recovery  
controlled avalanche rectifiers

Product specification

1998 Jul 16

# Ultra fast high-voltage soft-recovery controlled avalanche rectifiers

## BY8200 series

### FEATURES

- Plastic package
- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- 40% overvoltage allowed during 5 sec
- Guaranteed avalanche energy absorption capability
- Very low reverse recovery time
- Soft-recovery switching characteristics
- Compact construction.

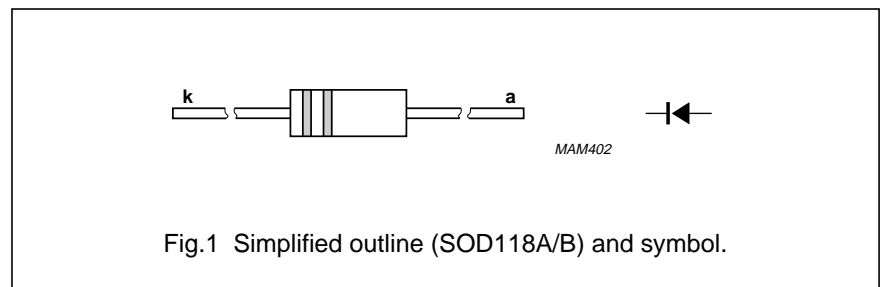
### DESCRIPTION

Plastic package, using glass passivation and 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 should be used in an insulating medium such as resin, oil or SF6 gas.



### APPLICATIONS

- For colour television and monitors up to 90 kHz (indication)
- High-voltage applications for:
  - multipliers
  - diode-split-transformers (FBT's).

### MARKING

#### Cathode band colour codes

TYPE NUMBER	PACKAGE CODE	INNER BAND	OUTER BAND
BY8206	SOD118A	green	green
BY8208	SOD118A	red	green
BY8210	SOD118B	violet	green
BY8212	SOD118B	orange	green

### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>RRM1</sub>	repetitive peak reverse voltage				
	BY8206		–	6	kV
	BY8208		–	8	kV
	BY8210		–	10	kV
V <sub>RRM2</sub>	repetitive peak reverse voltage	max. 5 seconds			
	BY8206		–	8.4	kV
	BY8208		–	11.2	kV
	BY8210		–	14.0	kV
	BY8212		–	16.8	kV

# Ultra fast high-voltage soft-recovery controlled avalanche rectifiers

## BY8200 series

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT				
$I_{F(AV)}$	average forward current	averaged over any 20 ms period; see Figs 2 to 5	–	10	mA				
	BY8206								
	BY8208								
	BY8210								
$I_{FRM}$	repetitive peak forward current	note 1	–	500	mA				
	BY8212								
	$T_{stg}$					storage temperature	–65	+175	°C
	$T_j$					junction temperature		–65	+160
BY8206									
BY8208									
BY8210									
$T_j$	BY8212		–65	+145	°C				

### Note

1. Withstands peak currents during flash-over in a picture tube.

### ELECTRICAL CHARACTERISTICS

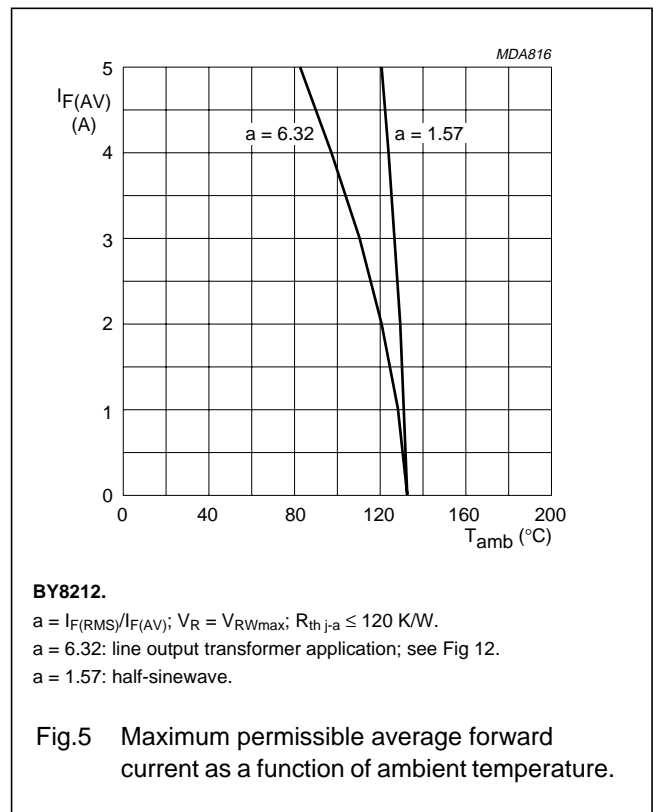
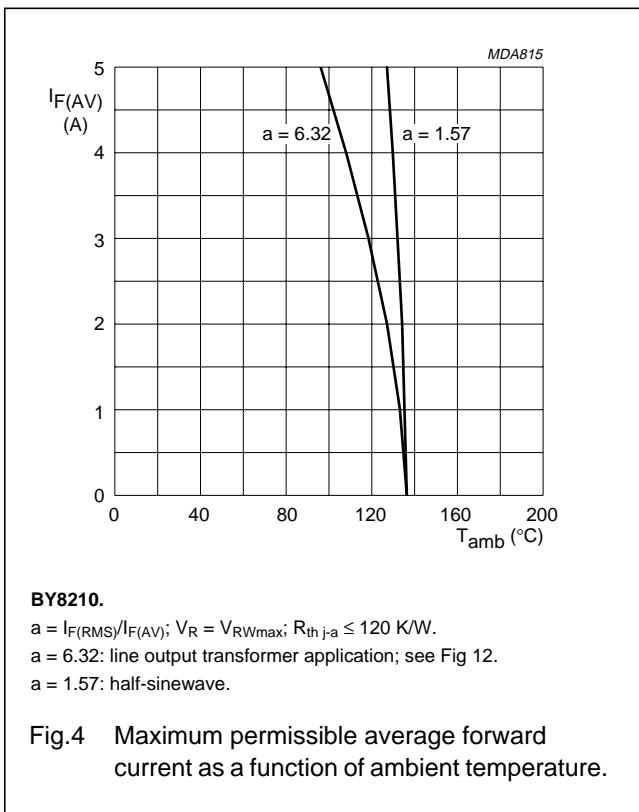
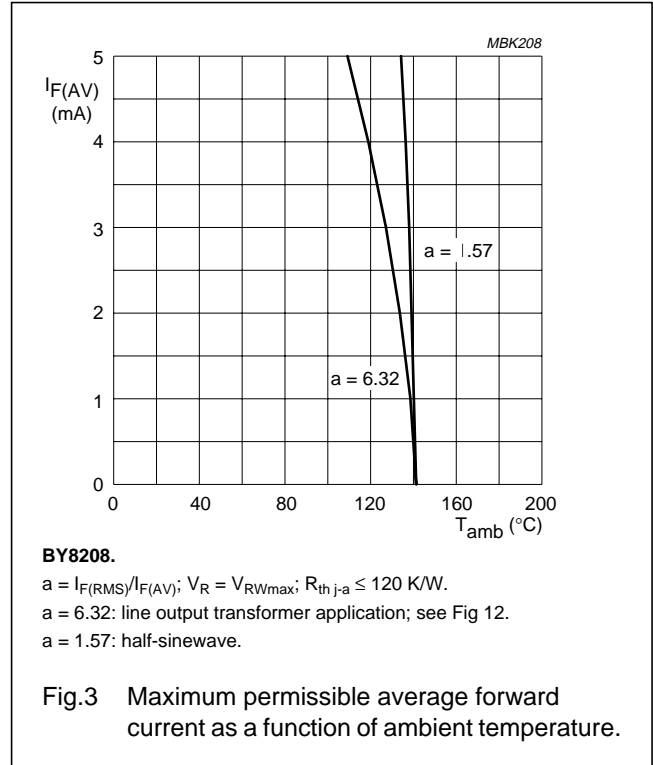
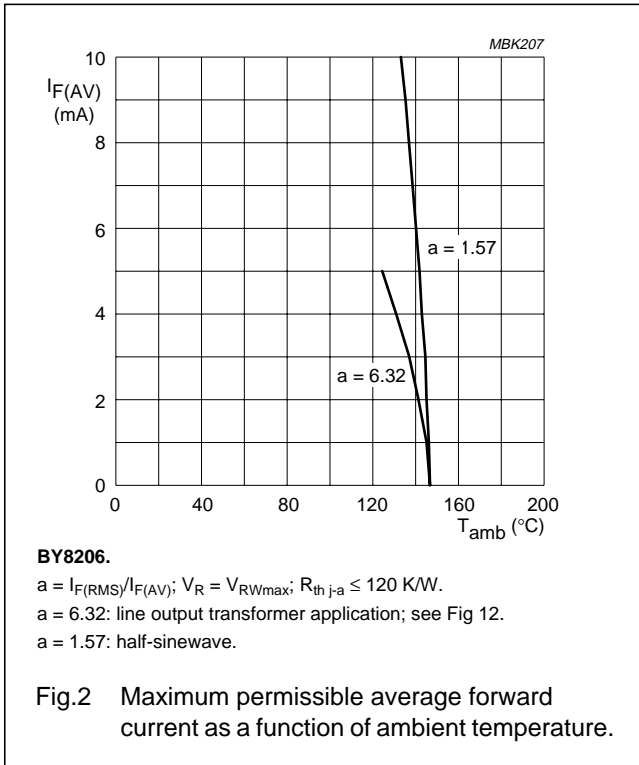
$T_j = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT					
$V_F$	forward voltage	$I_F = 10\text{ mA}$ ; see Figs 6 to 9	–	–	19	V					
	BY8206										
	BY8208										
	BY8210										
$I_R$	reverse current	$V_R = V_{RRM1}$ ; $T_j = 120\text{ °C}$	–	–	3	$\mu\text{A}$					
	BY8212										
	$Q_r$						recovery charge	when switched from $I_F = 100\text{ mA}$ to $V_R \geq 100\text{ V}$ and $dI_F/dt = -200\text{ mA}/\mu\text{s}$ ; see Fig 10	–	0.2	nC
	$t_{rr}$						reverse recovery time				
$C_d$	diode capacitance	$V_R = 0\text{ V}$ ; $f = 1\text{ MHz}$	–	0.50	–	pF					
	BY8206										
	BY8208										
	BY8210										
$C_d$	BY8212		–	0.30	–	pF					

Ultra fast high-voltage soft-recovery controlled avalanche rectifiers

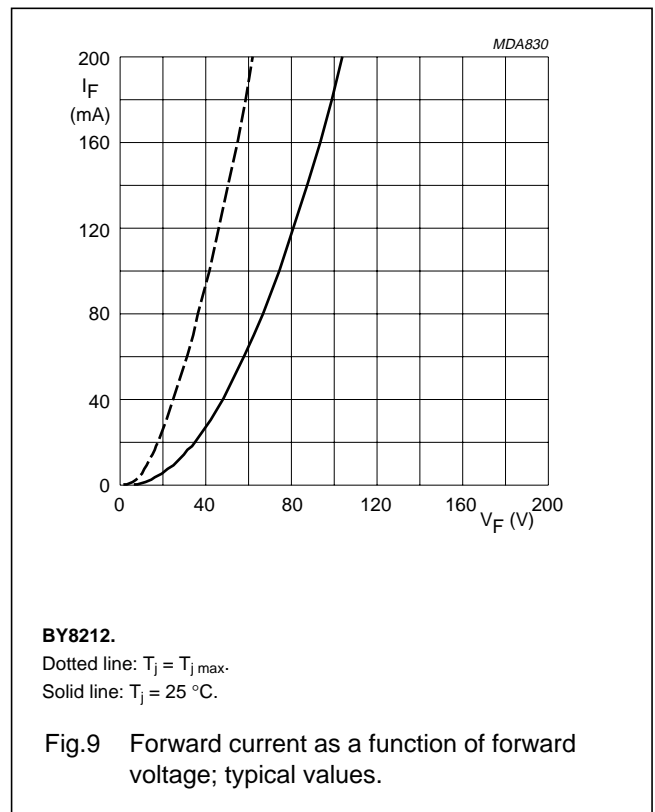
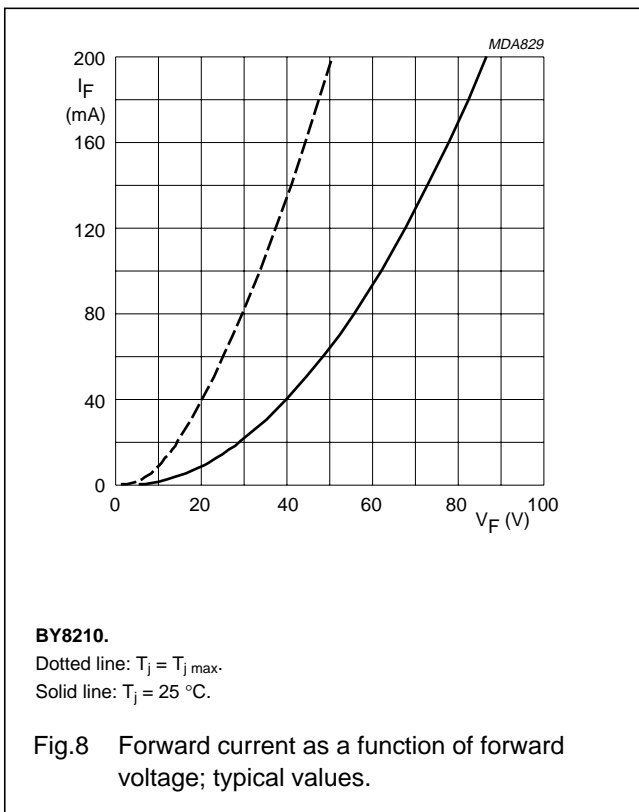
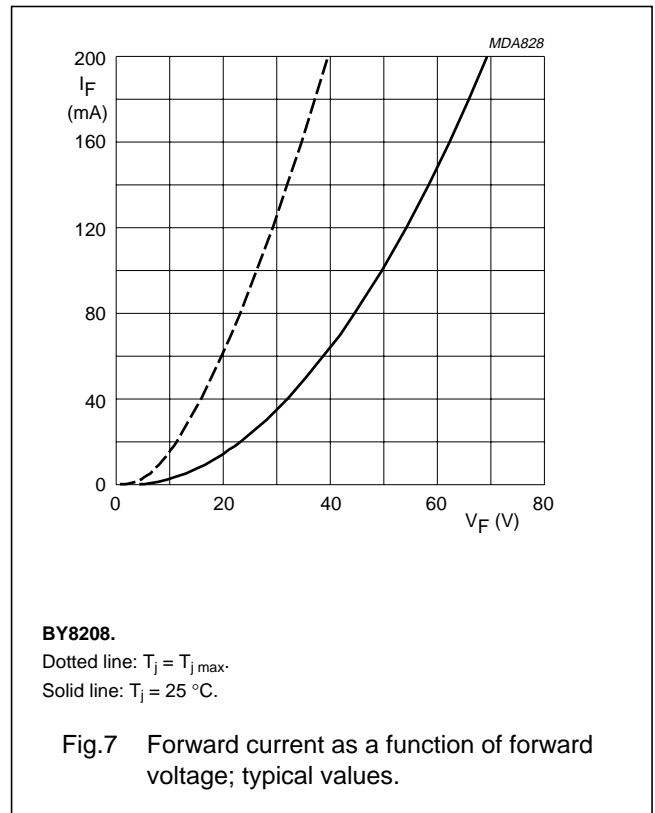
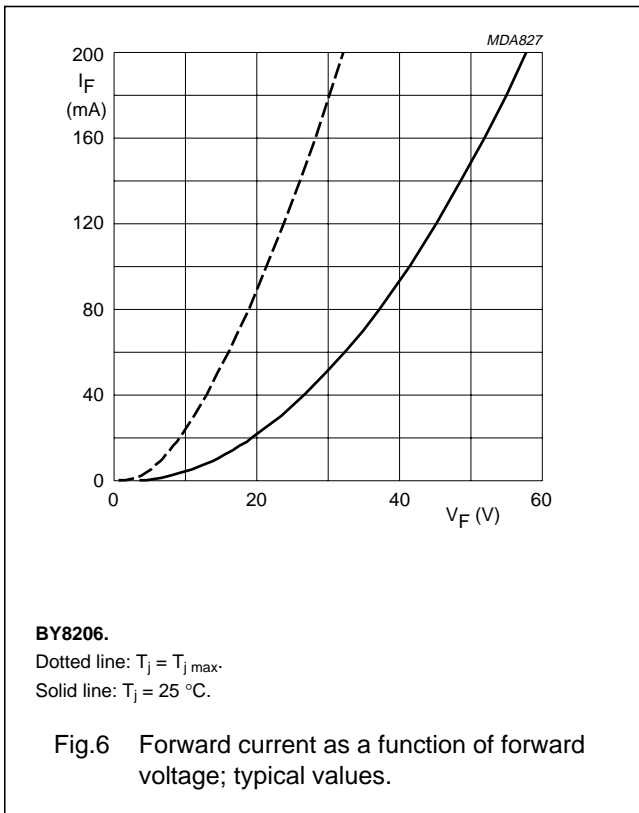
BY8200 series

GRAPHICAL DATA



Ultra fast high-voltage soft-recovery controlled avalanche rectifiers

BY8200 series



Ultra fast high-voltage soft-recovery controlled avalanche rectifiers

BY8200 series

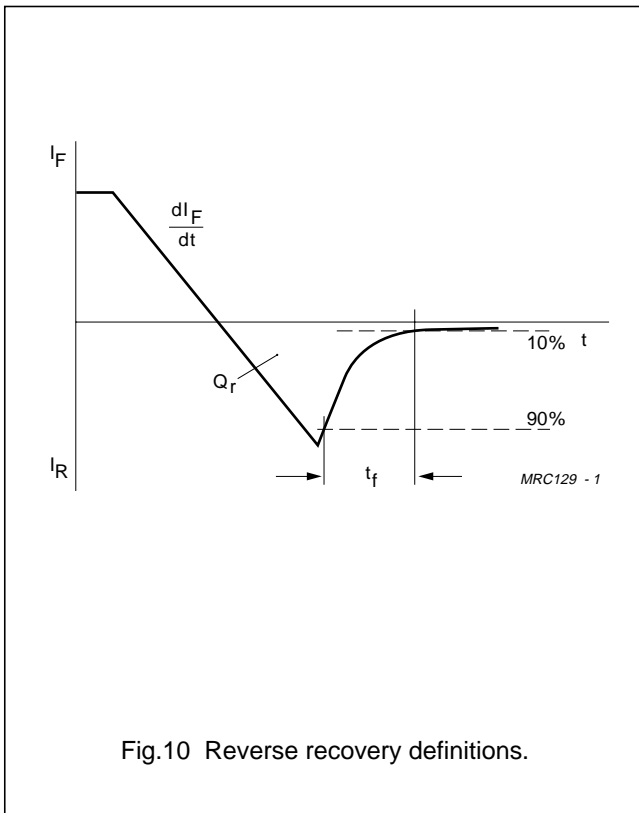
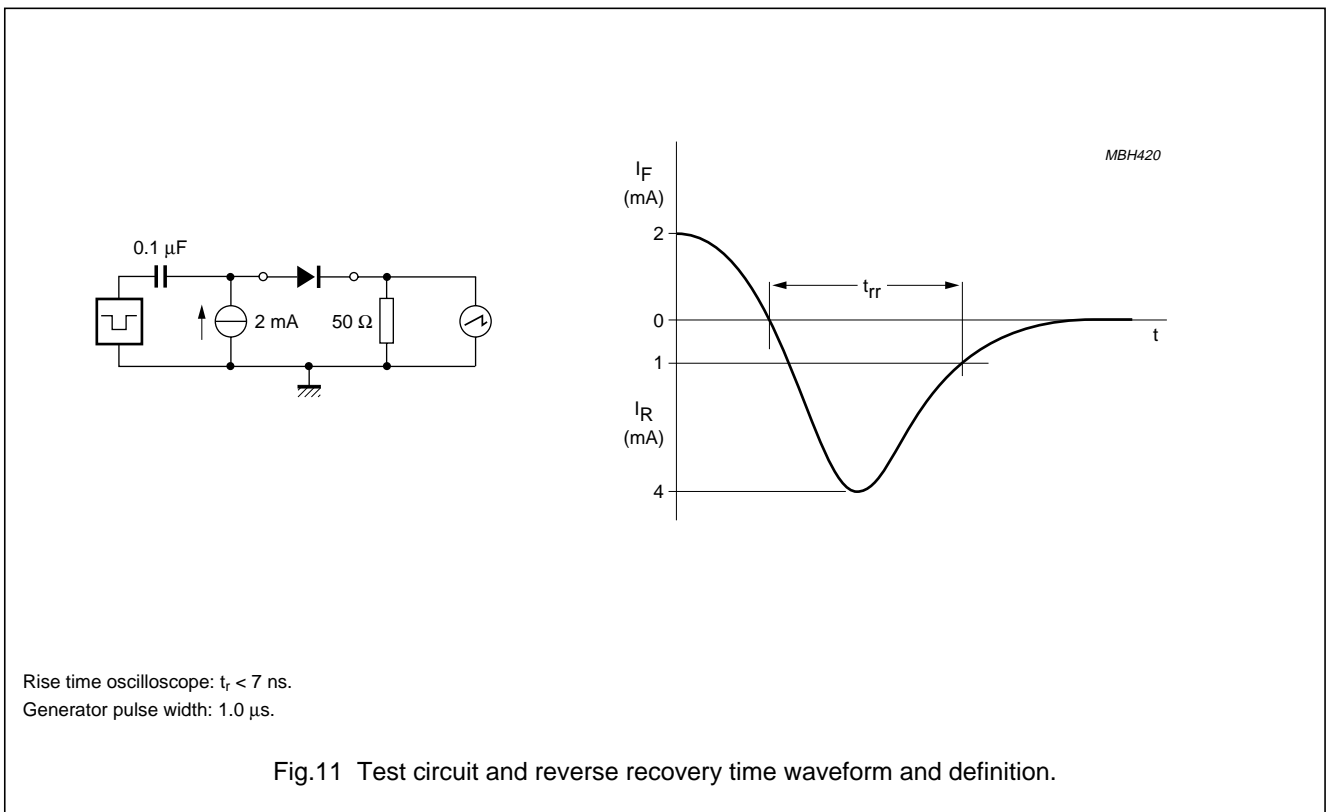


Fig.10 Reverse recovery definitions.



Rise time oscilloscope:  $t_r < 7 \text{ ns}$ .  
 Generator pulse width:  $1.0 \mu\text{s}$ .

Fig.11 Test circuit and reverse recovery time waveform and definition.

# Ultra fast high-voltage soft-recovery controlled avalanche rectifiers

## BY8200 series

### APPLICATION INFORMATION

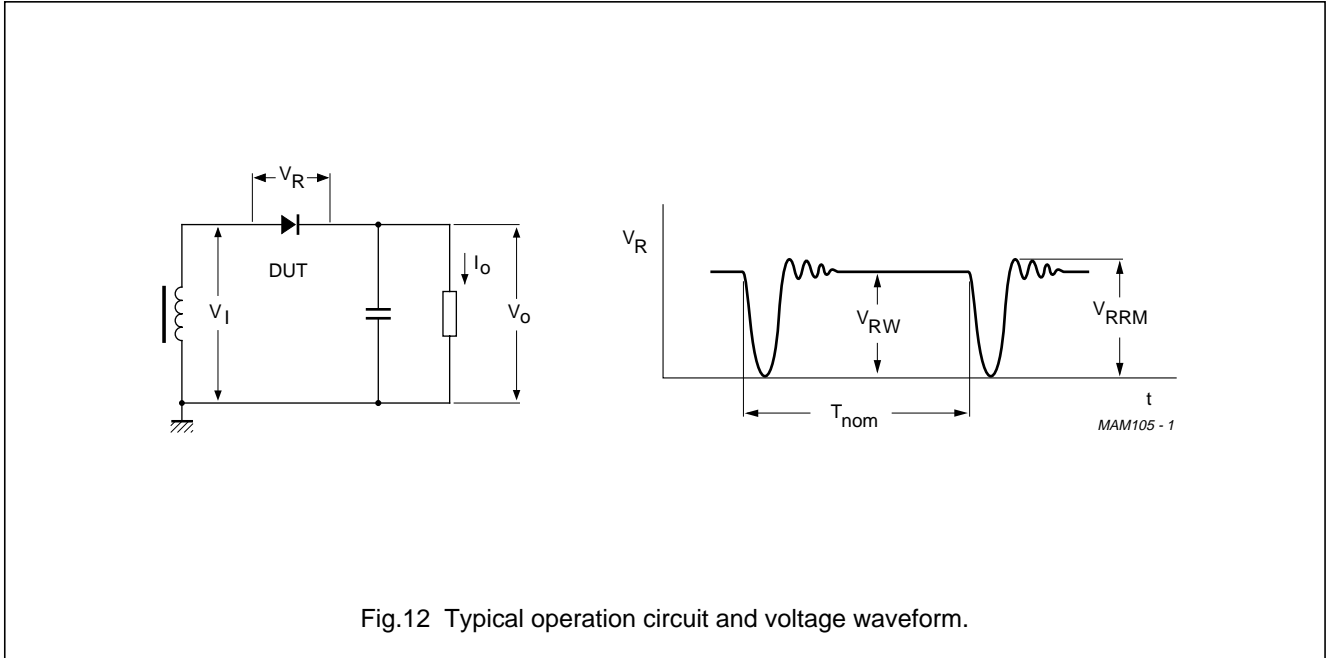


Fig.12 Typical operation circuit and voltage waveform.

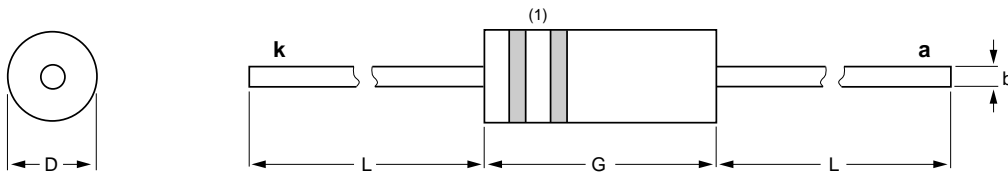
Ultra fast high-voltage soft-recovery  
controlled avalanche rectifiers

BY8200 series

PACKAGE OUTLINES

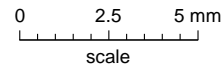
Hermetically sealed plastic package; axial leaded; 2 leads

SOD118A



DIMENSIONS (mm are the original dimensions)

UNIT	b	D	G	L min.
mm	0.5	2.6 2.4	6.7 6.3	31



Note

1. The marking bands indicate the cathode.

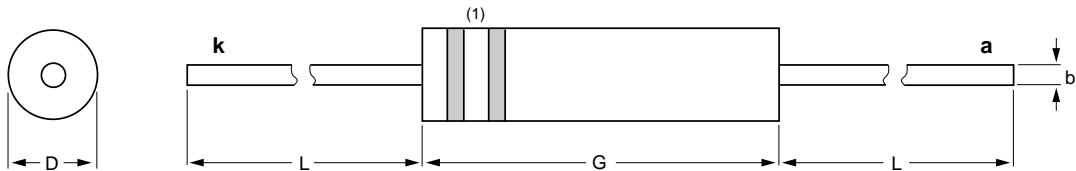
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD118A						98-05-28

Ultra fast high-voltage soft-recovery  
controlled avalanche rectifiers

BY8200 series

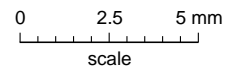
Hermetically sealed plastic package; axial leaded; 2 leads

SOD118B



DIMENSIONS (mm are the original dimensions)

UNIT	b	D	G	L min.
mm	0.5	2.6 2.4	10.5 9.5	29



Note

1. The marking bands indicate the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD118B						98-05-28

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**Ultra fast high-voltage soft-recovery  
controlled avalanche rectifiers**


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**BY8200 series**


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**DEFINITIONS**

<b>Data Sheet Status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

**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 customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

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