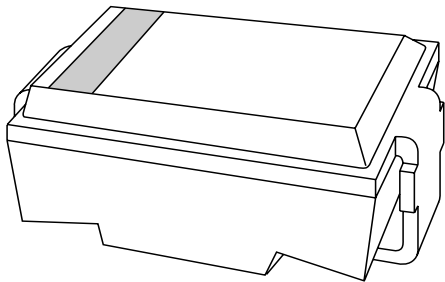


# DATA SHEET



## **BYG70 series** Fast soft-recovery controlled avalanche rectifiers

Preliminary specification  
File under Discrete Semiconductors, SC01

1996 Jun 05

# Fast soft-recovery controlled avalanche rectifiers

## BYG70 series

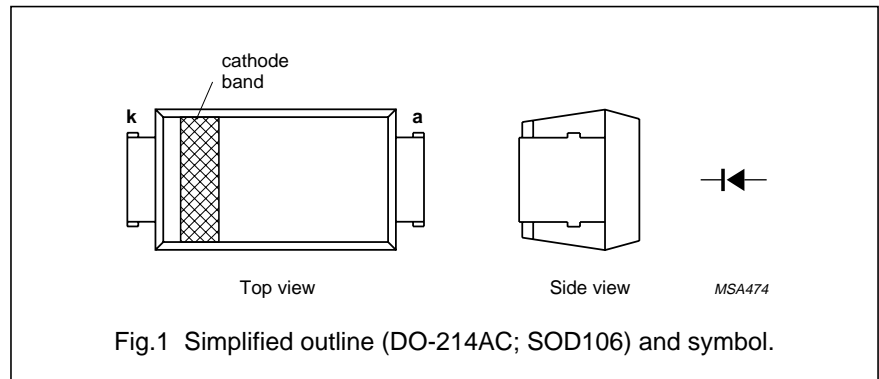
### FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Guaranteed avalanche energy absorption capability
- UL 94V-O classified plastic package
- Shipped in 12 mm embossed tape.

### DESCRIPTION

DO-214AC surface mountable package with glass passivated chip.

The well-defined void-free case is of a transfer-moulded thermo-setting plastic.



### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>RRM</sub>	repetitive peak reverse voltage				
	BYG70D		–	200	V
	BYG70G		–	400	V
	BYG70J		–	600	V
V <sub>R</sub>	continuous reverse voltage				
	BYG70D		–	200	V
	BYG70G		–	400	V
	BYG70J		–	600	V
I <sub>F(AV)</sub>	average forward current	averaged over any 20 ms period; T <sub>tp</sub> = 100 °C; see Fig.2	–	1.00	A
		averaged over any 20 ms period; Al <sub>2</sub> O <sub>3</sub> PCB mounting (see Fig.7); T <sub>amb</sub> = 60 °C; see Fig.3	–	0.53	A
		averaged over any 20 ms period; epoxy PCB mounting (see Fig.7); T <sub>amb</sub> = 60 °C; see Fig.3	–	0.39	A
I <sub>FSM</sub>	non-repetitive peak forward current	t = 10 ms half sine wave; T <sub>j</sub> = T <sub>jmax</sub> prior to surge; V <sub>R</sub> = V <sub>RRMmax</sub>	–	20	A
E <sub>RSM</sub>	non-repetitive peak reverse avalanche energy	L = 120 mH; T <sub>j</sub> = T <sub>jmax</sub> prior to surge; inductive load switched off	–	10	mJ
T <sub>stg</sub>	storage temperature		–65	+175	°C
T <sub>j</sub>	junction temperature	see Fig.4	–65	+175	°C

## Fast soft-recovery controlled avalanche rectifiers

## BYG70 series

### ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT	
$V_F$	forward voltage	$I_F = 1\text{ A}$ ; $T_j = T_{j\text{ max}}$ ; see Fig.5	–	–	2.1	V	
		$I_F = 1\text{ A}$ ; see Fig.5	–	–	3.6	V	
$V_{(BR)R}$	reverse avalanche breakdown voltage	$I_R = 0.1\text{ mA}$					
			BYG70D	300	–	–	V
			BYG70G	500	–	–	V
	BYG70J	700	–	–	V		
$I_R$	reverse current	$V_R = V_{RRM\text{ max}}$ ; see Fig.6	–	–	5	$\mu\text{A}$	
		$V_R = V_{RRM\text{ max}}$ ; $T_j = 165\text{ °C}$ ; see Fig.6	–	–	100	$\mu\text{A}$	
$t_{rr}$	reverse recovery time	when switched from $I_F = 0.5\text{ A}$ to $I_R = 1\text{ A}$ ; measured at $I_R = 0.25\text{ A}$ ; see Fig.8	–	–	30	ns	
$C_d$	diode capacitance	$V_R = 0\text{ V}$ ; $f = 1\text{ MHz}$	–	30	–	pF	

### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		25	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	100	K/W
		note 2	150	K/W

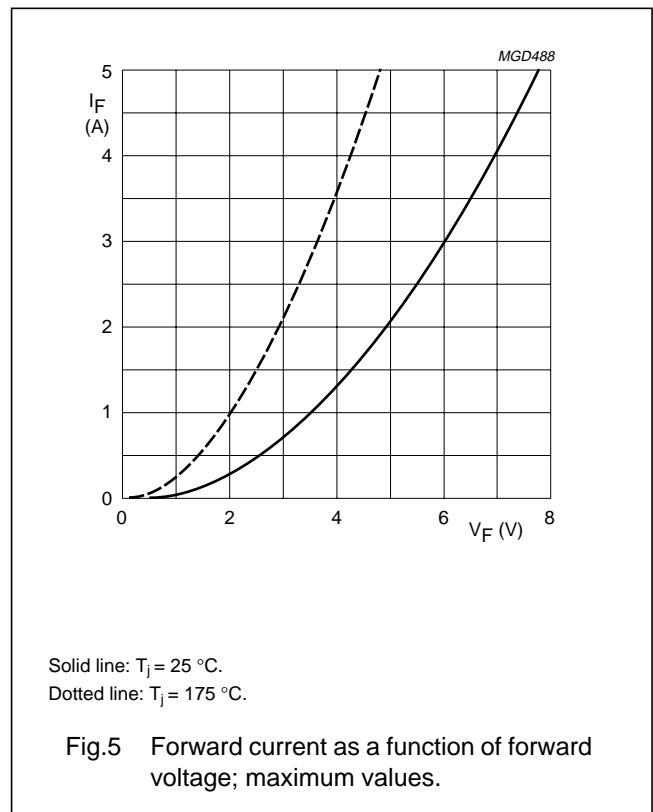
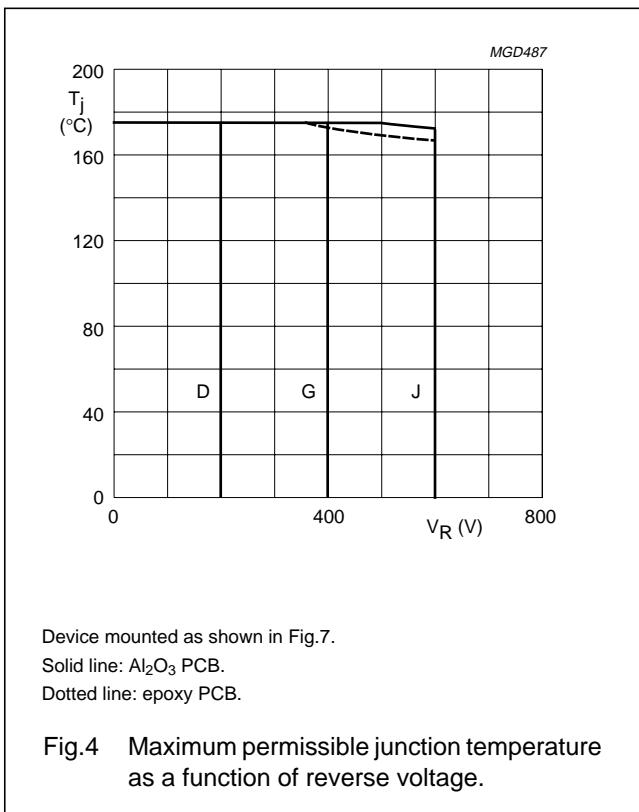
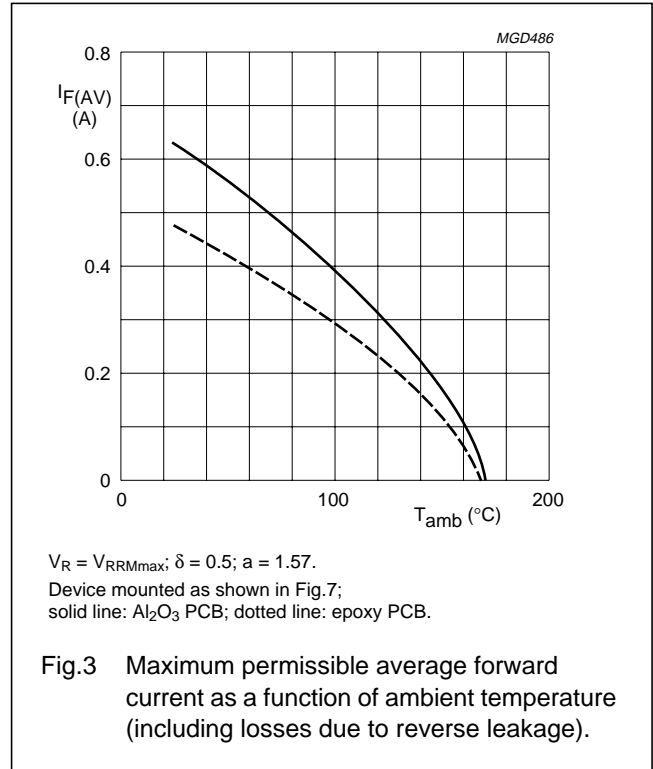
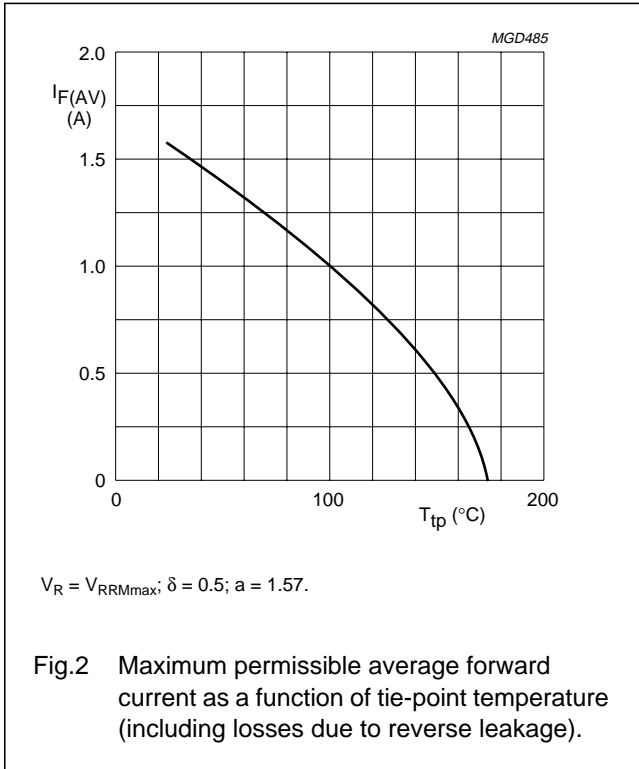
#### Notes

1. Device mounted on  $\text{Al}_2\text{O}_3$  printed-circuit board, 0.7 mm thick; thickness of copper  $\geq 35\text{ }\mu\text{m}$ , see Fig.7.
2. Device mounted on epoxy-glass printed-circuit board, 1.5 mm thick; thickness of copper  $\geq 40\text{ }\mu\text{m}$ , see Fig.7.  
For more information please refer to the 'General Part of Handbook SC01'.

Fast soft-recovery  
controlled avalanche rectifiers

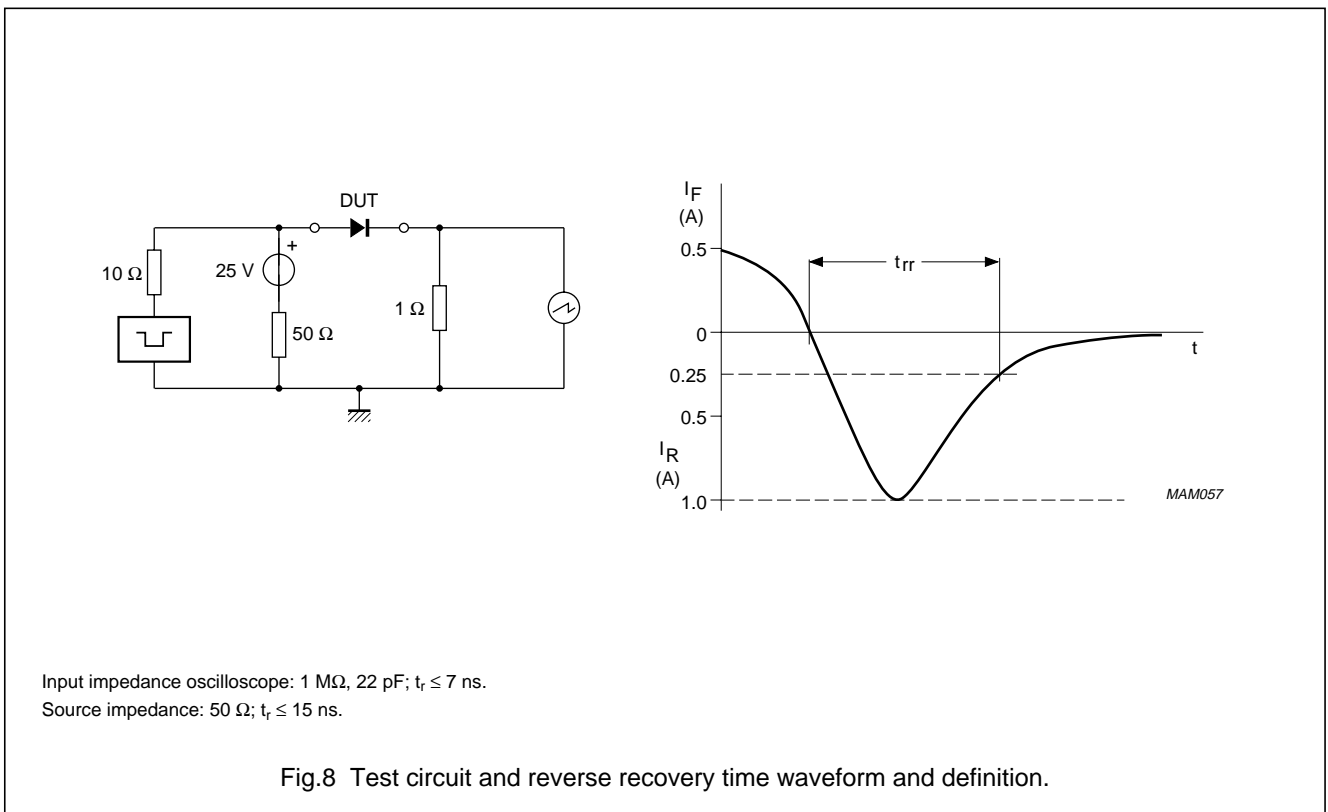
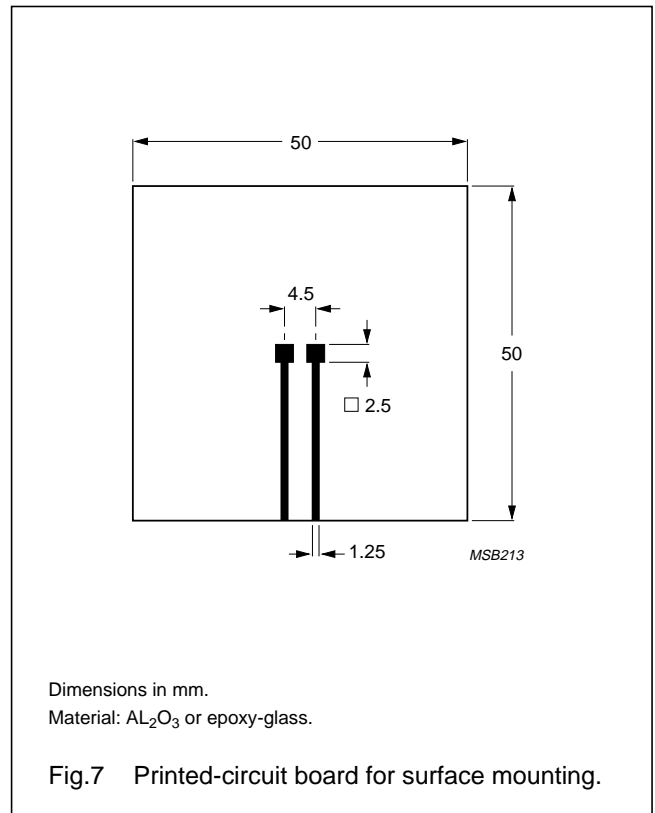
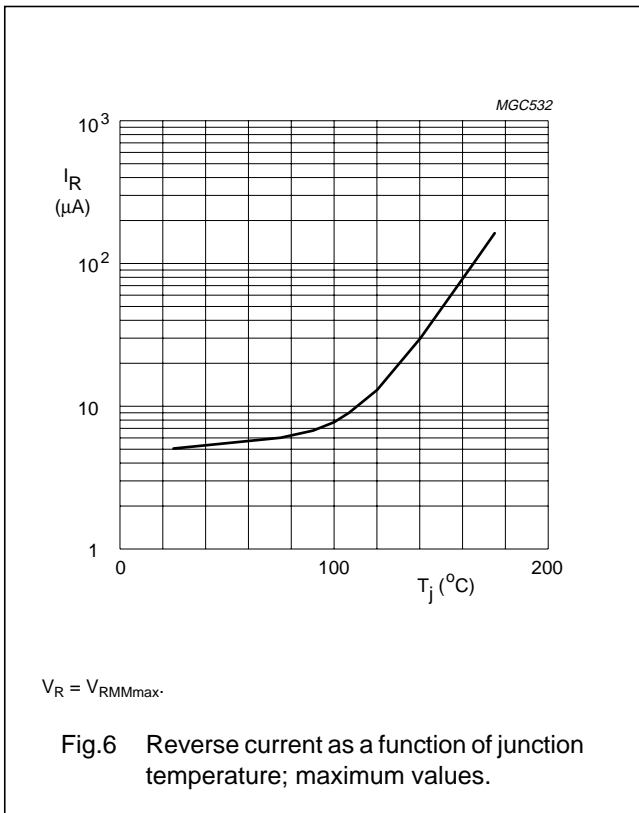
BYG70 series

GRAPHICAL DATA



Fast soft-recovery  
controlled avalanche rectifiers

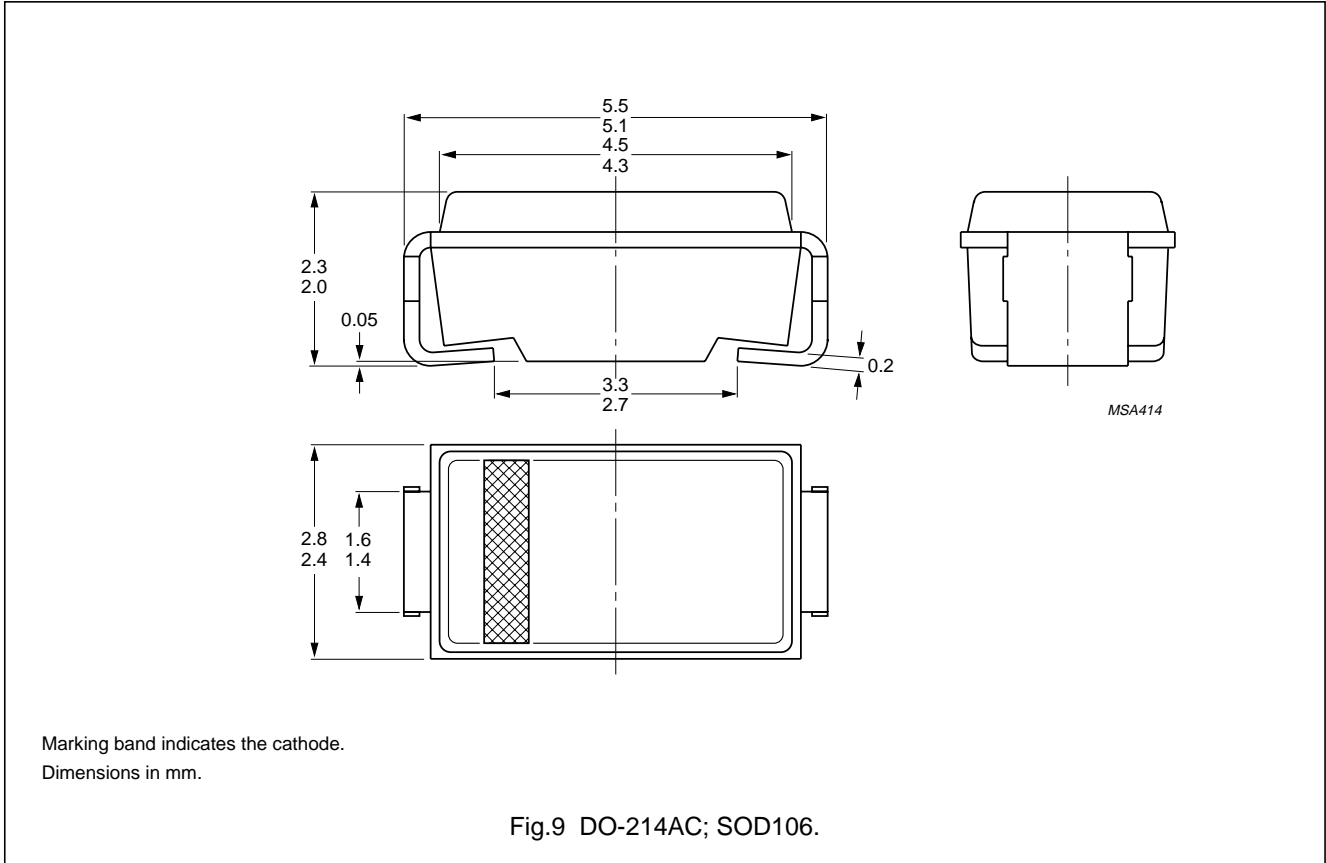
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Fast soft-recovery  
controlled avalanche rectifiers

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PACKAGE OUTLINE



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.