

# Silicon Diode

## **BYD37M**

1000V/1.5A

# DATASHEET

OEM – Philips

Source: Philips Databook 1999

## Fast soft-recovery controlled avalanche rectifiers

## BYD37 series

### FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Guaranteed avalanche energy absorption capability
- Smallest surface mount rectifier outline
- Shipped in 8 mm embossed tape.

### DESCRIPTION

Cavity free cylindrical glass package through Implotec™(1) technology. This package is hermetically sealed

and fatigue free as coefficients of expansion of all used parts are matched.

(1) Implotec is a trademark of Philips.

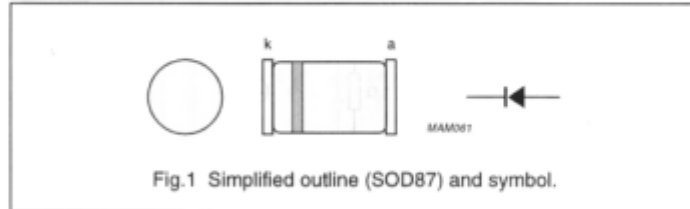


Fig.1 Simplified outline (SOD87) and symbol.

### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{RRM}$	repetitive peak reverse voltage				
	BYD37D		–	200	V
	BYD37G		–	400	V
	BYD37J		–	600	V
	BYD37K		–	800	V
	BYD37M		–	1000	V
$V_R$	continuous reverse voltage				
	BYD37D		–	200	V
	BYD37G		–	400	V
	BYD37J		–	600	V
	BYD37K		–	800	V
	BYD37M		–	1000	V
$I_{F(AV)}$	average forward current	$T_{tp} = 105\text{ °C}$ ; see Fig.2; averaged over any 20 ms period; see also Fig.6	–	1.5	A
$I_{F(AV)}$	average forward current	$T_{amb} = 60\text{ °C}$ ; PCB mounting (see Fig.11); see Fig.3; averaged over any 20 ms period; see also Fig.6	–	0.6	A
$I_{FRM}$	repetitive peak forward current	$T_{tp} = 105\text{ °C}$ ; see Fig.4	–	13	A
		$T_{amb} = 60\text{ °C}$ ; see Fig.5	–	5.5	A
$I_{FSM}$	non-repetitive peak forward current	$t = 10\text{ ms}$ half sine wave; $T_j = T_{jmax}$ prior to surge; $V_R = V_{RRMmax}$	–	20	A
$E_{RSM}$	non-repetitive peak reverse avalanche energy	$L = 120\text{ mH}$ ; $T_j = T_{jmax}$ prior to surge; inductive load switched off			
	BYD37D to J		–	10	mJ
	BYD37K and M		–	7	mJ

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SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$T_{stg}$	storage temperature		-65	+175	°C
$T_j$	junction temperature	see Fig.7	-65	+175	°C

**ELECTRICAL CHARACTERISTICS**

$T_j = 25$  °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT	
$V_F$	forward voltage	$I_F = 1$ A; $T_j = T_{j\max}$ ; see Fig.8	-	-	1.1	V	
		$I_F = 1$ A; see Fig.8	-	-	1.3	V	
$V_{(BR)R}$	reverse avalanche breakdown voltage	$I_R = 0.1$ mA					
			BYD37D	300	-	-	V
			BYD37G	500	-	-	V
			BYD37J	700	-	-	V
			BYD37K	900	-	-	V
BYD37M	1100	-	-	V			
$I_R$	reverse current	$V_R = V_{RRM\max}$ ; see Fig.9	-	-	1	µA	
		$V_R = V_{RRM\max}$ ; $T_j = 165$ °C; see Fig.9	-	-	100	µA	
$t_{rr}$	reverse recovery time	when switched from $I_F = 0.5$ A to $I_R = 1$ A; measured at $I_R = 0.25$ A; see Fig.12					
			BYD37D to J	-	-	250	ns
	BYD37K and M	-	-	300	ns		
$C_d$	diode capacitance	$f = 1$ MHz; $V_R = 0$ V; see Fig.10	-	20	-	pF	
$\left  \frac{dI_R}{dt} \right $	maximum slope of reverse recovery current	when switched from $I_F = 1$ A to $V_R \geq 30$ V and $dI_F/dt = -1$ A/µs; see Fig.13					
			BYD37D to J	-	-	6	A/µs
	BYD37K and M	-	-	5	A/µs		

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		30	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	150	K/W

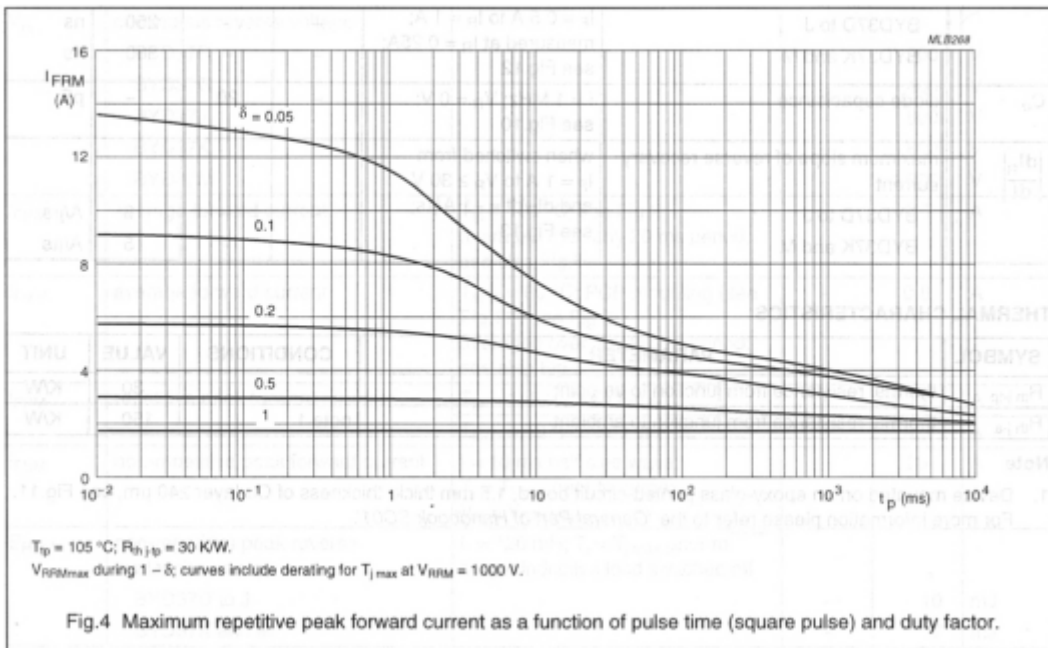
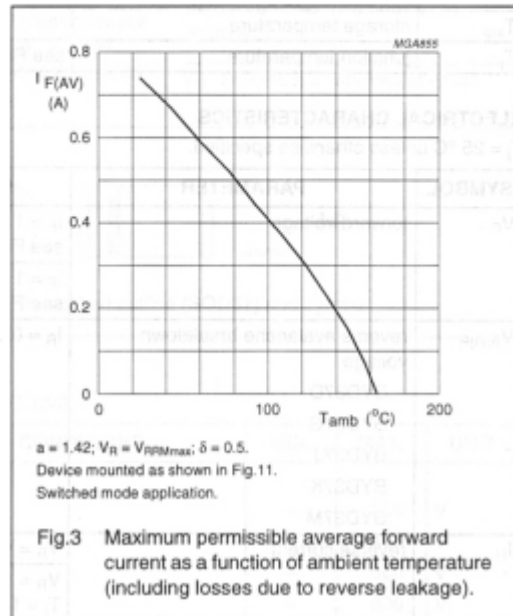
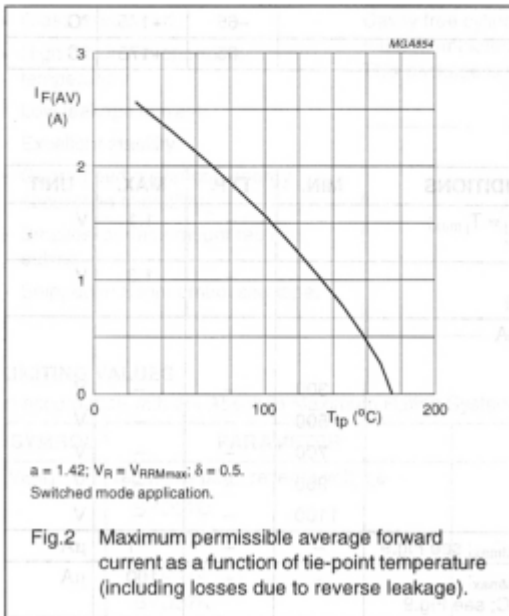
**Note**

1. Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer  $\geq 40$  µm, see Fig.11. For more information please refer to the 'General Part of Handbook SC01'.

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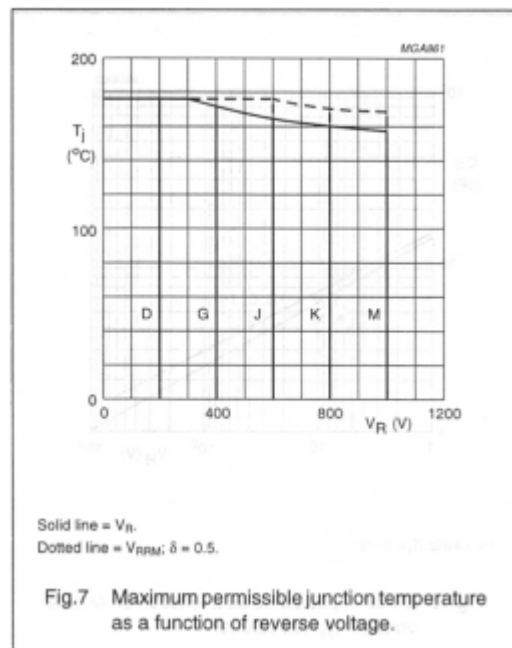
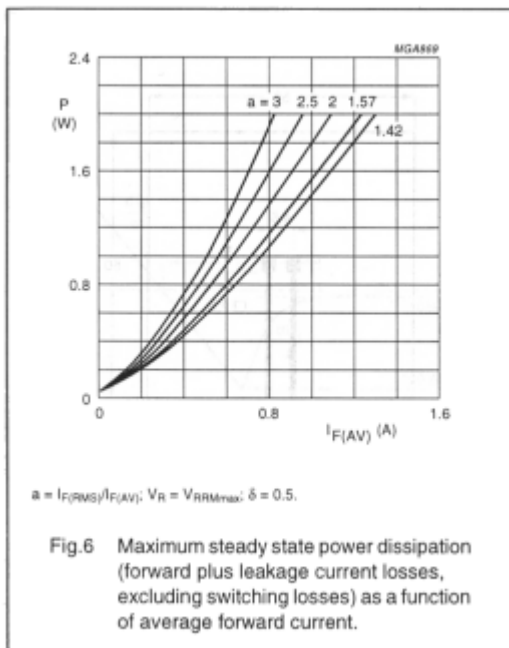
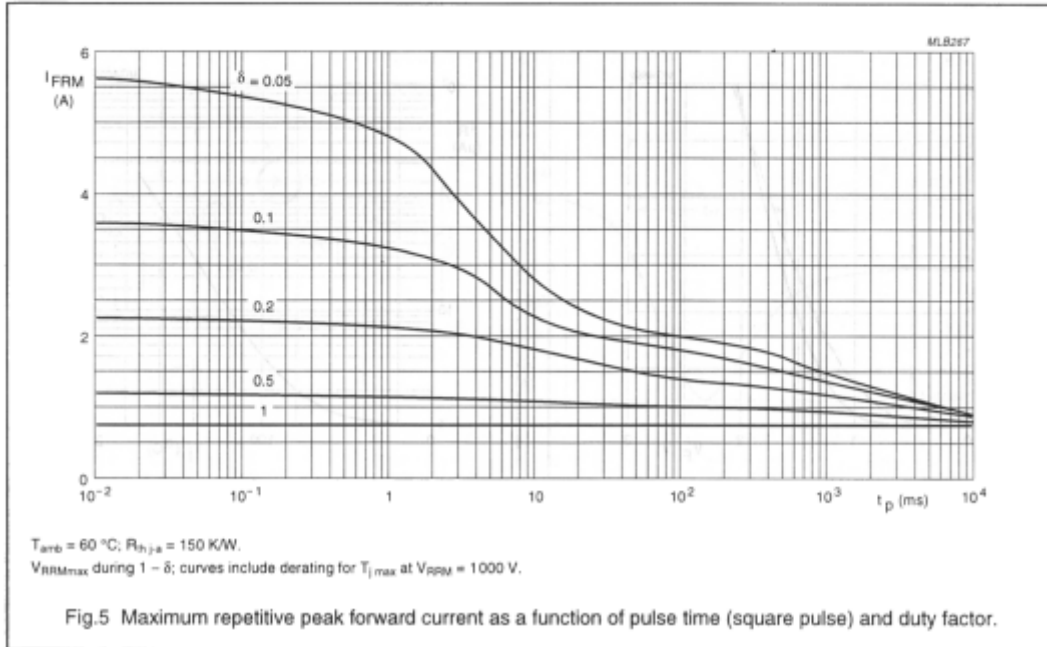
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GRAPHICAL DATA



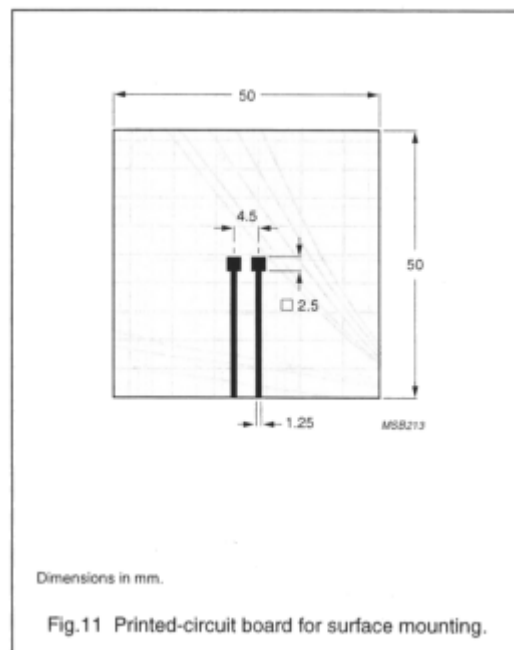
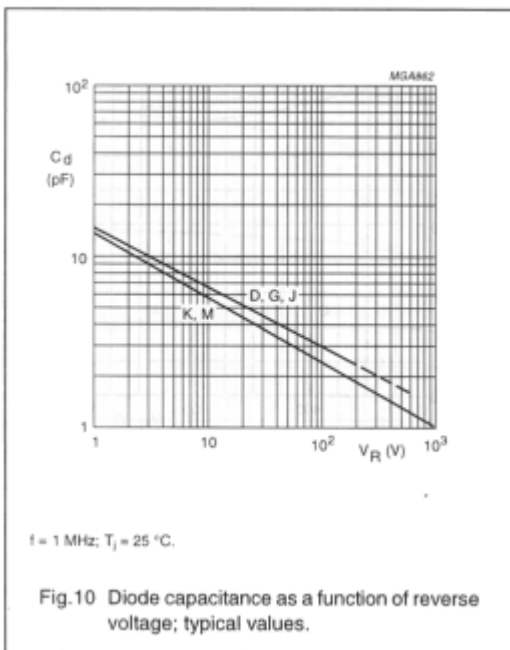
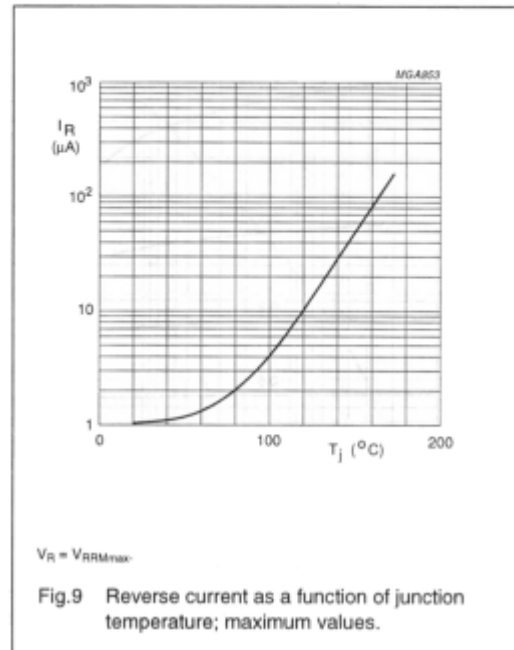
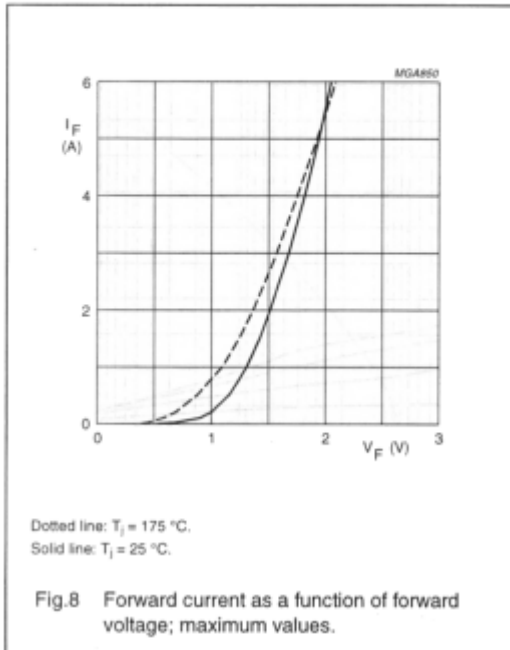
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