

# Silicon Diode

## **BY448**

1500V/4A

# DATASHEET

OEM – Philips

Source: Philips Databook 1999

**Damper diode****BY448****FEATURES**

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Available in ammo-pack.

**APPLICATIONS**

- Damper diode in high frequency horizontal deflection circuits up to 16 kHz.

**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.

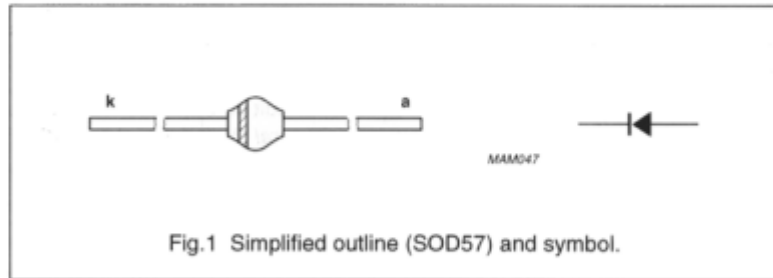


Fig.1 Simplified outline (SOD57) and symbol.

**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{RSM}$	non-repetitive peak reverse voltage		–	1650	V
$V_{RRM}$	repetitive peak reverse voltage		–	1650	V
$V_R$	continuous reverse voltage		–	1500	V
$I_{FWM}$	working peak forward current	$T_{amb} = 50\text{ }^\circ\text{C}$ ; PCB mounting (see Fig 4); see Fig.2	–	4	A
$I_{FRM}$	repetitive peak forward current		–	8	A
$I_{FSM}$	non-repetitive peak forward current	$t = 10\text{ ms}$ half sinewave; $T_j = T_{j\text{max}}$ prior to surge; $V_R = V_{RRM\text{max}}$	–	30	A
$T_{stg}$	storage temperature		–65	+175	$^\circ\text{C}$
$T_j$	junction temperature		–65	+150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS**

$T_j = 25\text{ }^\circ\text{C}$ ; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
$V_F$	forward voltage	$I_F = 3\text{ A}$ ; $T_j = T_{j\text{max}}$ ; see Fig.3	1.45	V
		$I_F = 3\text{ A}$ ; see Fig.3	1.60	V
$I_R$	reverse current	$V_R = V_{R\text{max}}$ ; $T_j = 150\text{ }^\circ\text{C}$	150	$\mu\text{A}$
$t_{rr}$	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.6	1	$\mu\text{s}$
$t_{fr}$	forward recovery time	when switched to $I_F = 4\text{ A}$ in 50 ns; $T_j = T_{j\text{max}}$ ; see Fig.7	1	$\mu\text{s}$

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**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point	lead length = 10 mm	46	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	100	K/W
		mounted as shown in Fig.5	55	K/W

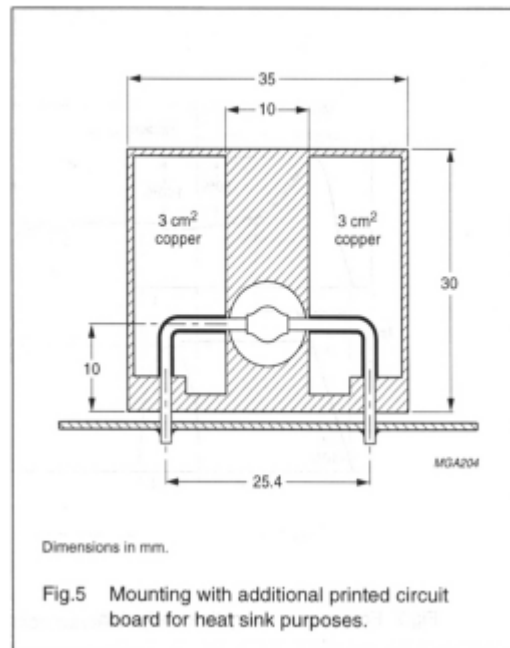
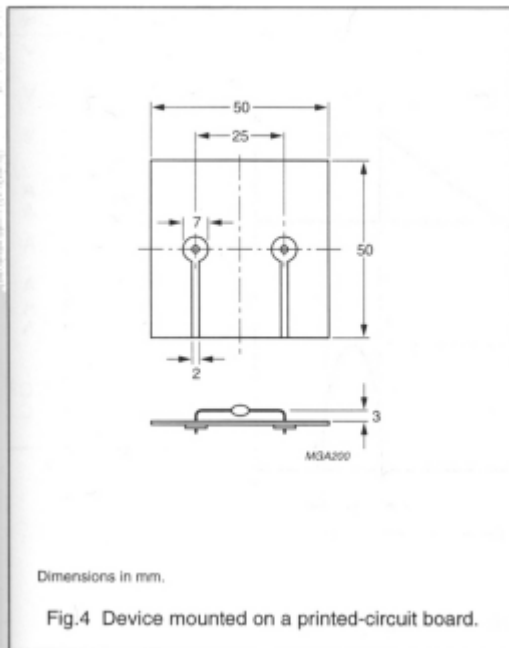
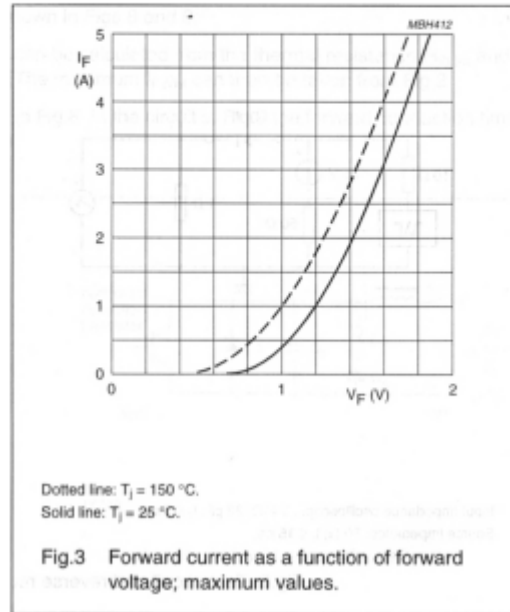
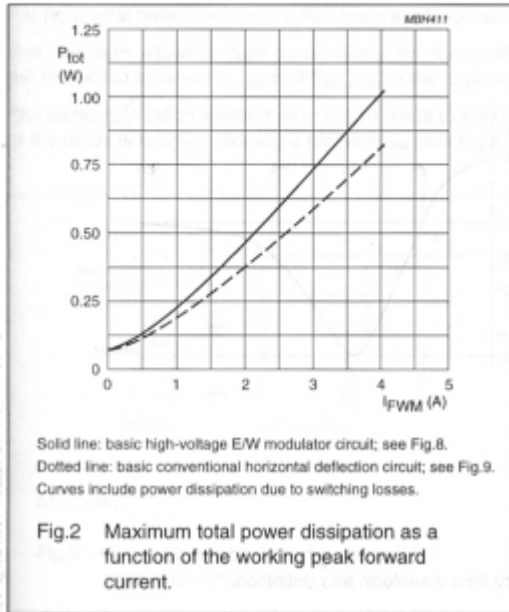
**Note**

1. Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer  $\geq 40\ \mu\text{m}$ , see Fig.4. For more information please refer to the "General Part of Handbook SC01".

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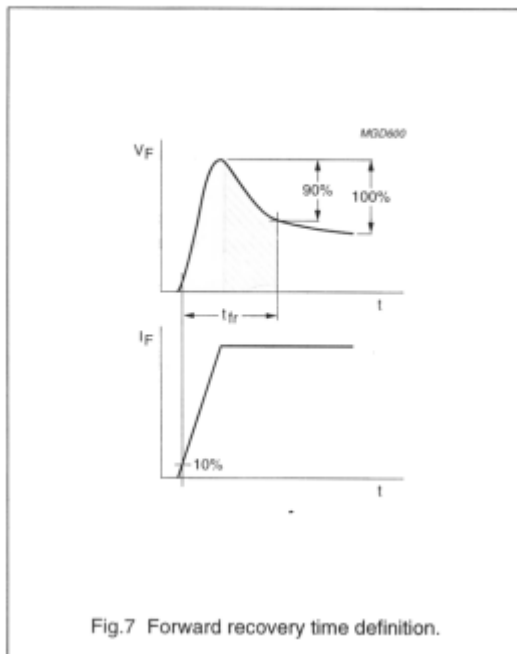
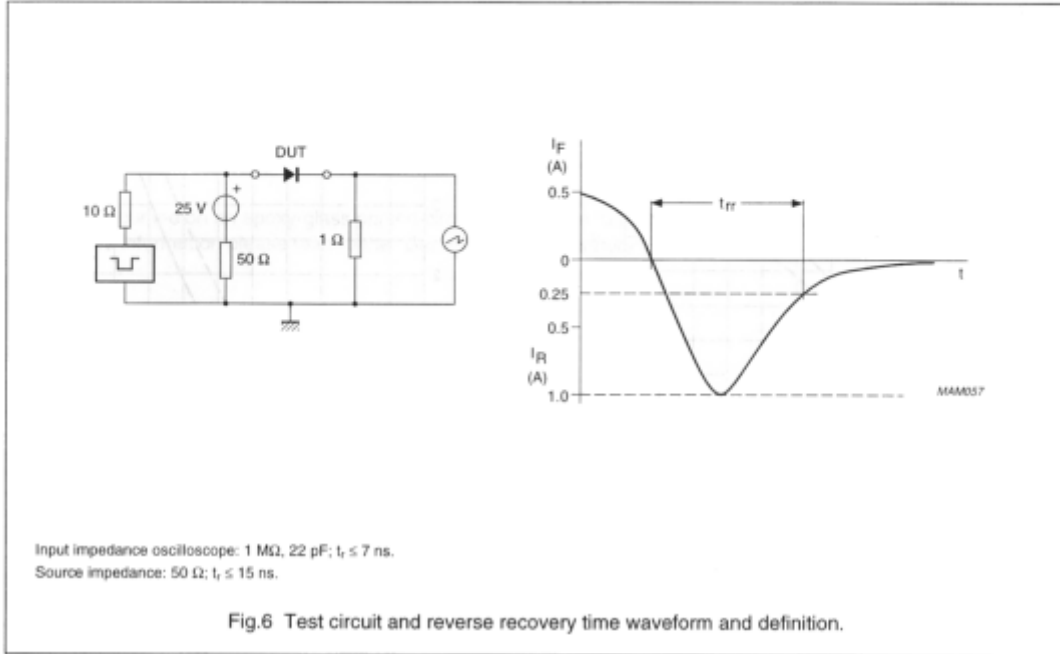
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GRAPHICAL DATA



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APPLICATION INFORMATION

For horizontal deflection circuits, two basic applications are shown in Figs 8 and 9.

The maximum allowable total power dissipation for the diode can be calculated from the thermal resistance  $R_{th\ j-a}$  and the difference between  $T_{j\ max}$  and  $T_{amb\ max}$  in the application. The maximum  $I_{FWM}$  can then be taken from Fig.2.

The basic application waveforms in Fig.10 relate to the circuit in Fig.8. In the circuit in Fig.9 the forward conduction time of the diode is shorter, allowing a higher  $I_{FWM}$  (see Fig.2).

