

# Silicon Diode

## **BYD47-18**

1800V/800mA

# DATASHEET

OEM – Philips

Source: Philips Databook 1999

## Fast soft-recovery rectifiers

## BYD47 series

## FEATURES

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

## DESCRIPTION

Cavity free cylindrical glass SOD87 package through Implotec™<sup>(1)</sup> 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.

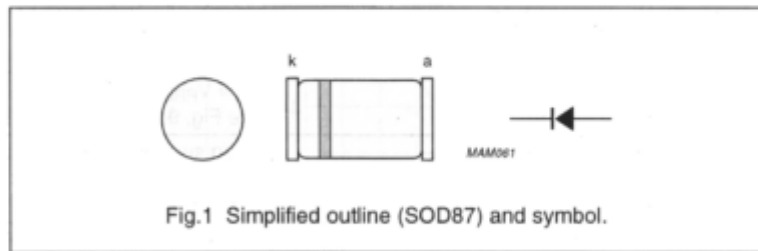


Fig.1 Simplified outline (SOD87) and symbol.

## LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{RSM}$	non-repetitive peak reverse voltage				
	BYD47-16		–	1700	V
	BYD47-18		–	1900	V
	BYD47-20		–	2100	V
$V_{RRM}$	repetitive peak reverse voltage				
	BYD47-16		–	1600	V
	BYD47-18		–	1800	V
	BYD47-20		–	2000	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	–	0.80	A
		$T_{amb} = 25\text{ °C}$ ; PCB mounting (see Fig.11); see Fig. 3; averaged over any 20 ms period; see also Fig. 6	–	0.34	A
$I_{FRM}$	repetitive peak forward current	$T_{tp} = 85\text{ °C}$ ; see Fig. 4	–	8.0	A
		$T_{amb} = 65\text{ °C}$ ; see Fig. 5	–	2.8	A
$I_{FSM}$	non-repetitive peak forward current	$t = 10\text{ ms}$ half sine wave; $T_j = T_{jmax}$ prior to surge; $V_R = V_{RRMmax}$	–	10	A
$T_{stg}$	storage temperature		–65	+175	°C
$T_j$	junction temperature	see Fig. 7	–65	+175	°C

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**ELECTRICAL CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
$V_F$	forward voltage	$I_F = 1\text{ A}$ ; $T_J = T_{J\text{max}}$ ; see Fig. 8	–	2.05	V
		$I_F = 1\text{ A}$ ; see Fig. 8	–	2.40	V
$I_R$	reverse current	$V_R = V_{RRM\text{max}}$ ; see Fig. 9	–	5	$\mu\text{A}$
		$V_R = V_{RRM\text{max}}$ ; $T_J = 125\text{ °C}$ ; see Fig. 9	–	50	$\mu\text{A}$
$t_{rr}$	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. 12	–	300	ns
$C_d$	diode capacitance	$f = 1\text{ MHz}$ ; $V_R = 0\text{ V}$ ; see Fig. 10	15	–	pF
$\left  \frac{dI_R}{dt} \right $	maximum slope of reverse recovery current	when switched from $I_F = 1\text{ A}$ to $V_R \geq 30\text{ V}$ and $dI_F/dt = -1\text{ A}/\mu\text{s}$ ; see Fig. 13	–	5	$\text{A}/\mu\text{s}$

**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

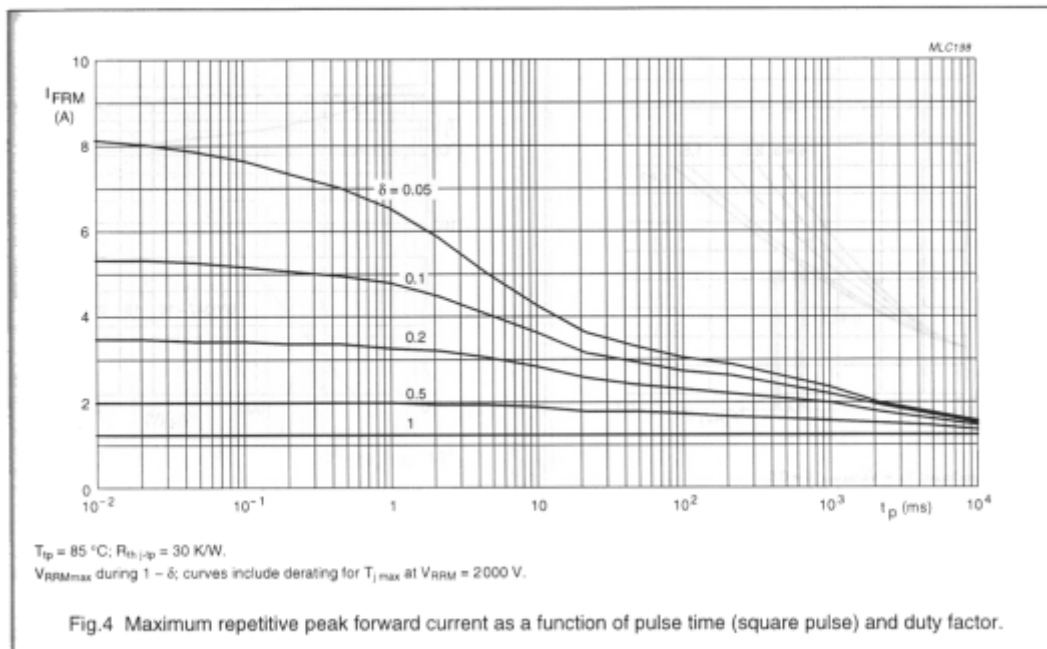
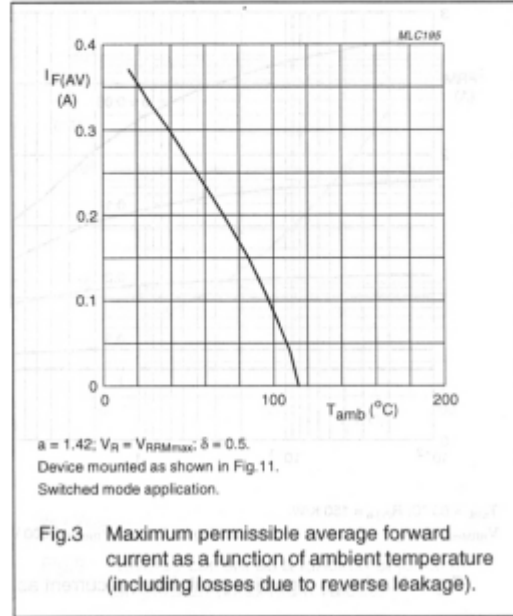
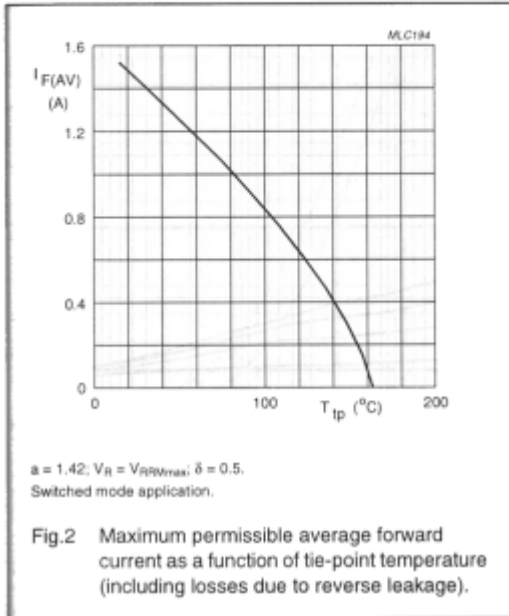
**Note**

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

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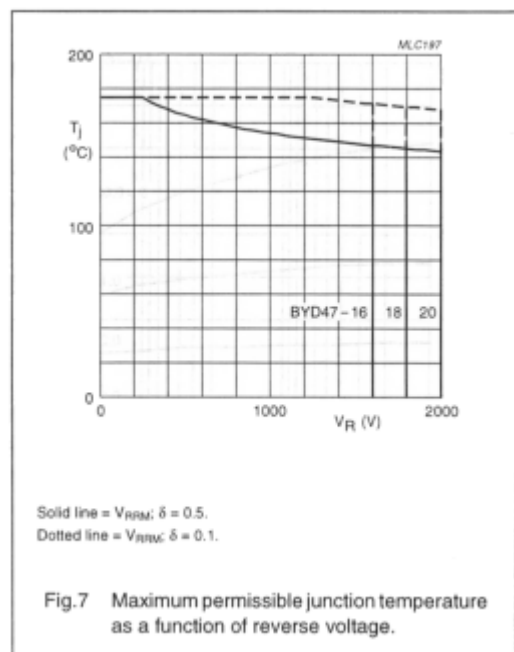
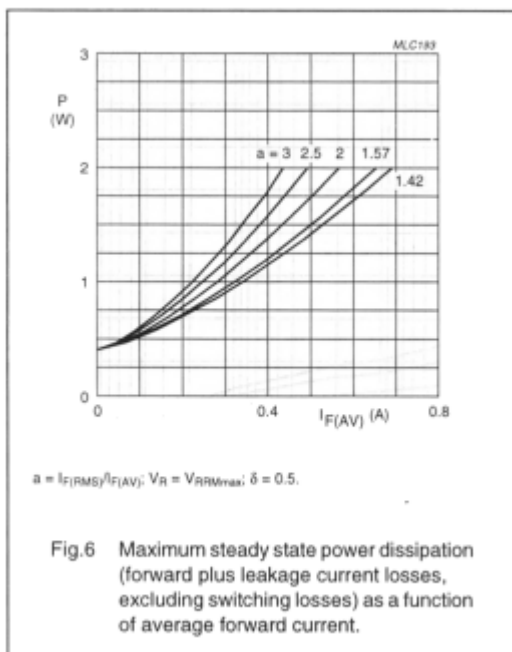
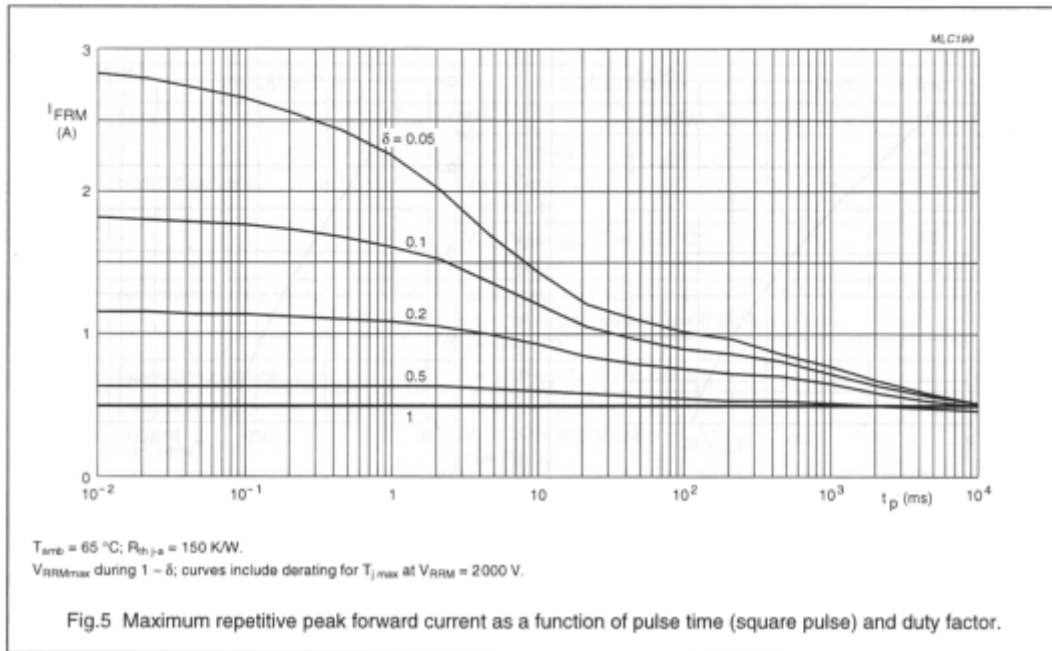
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GRAPHICAL DATA



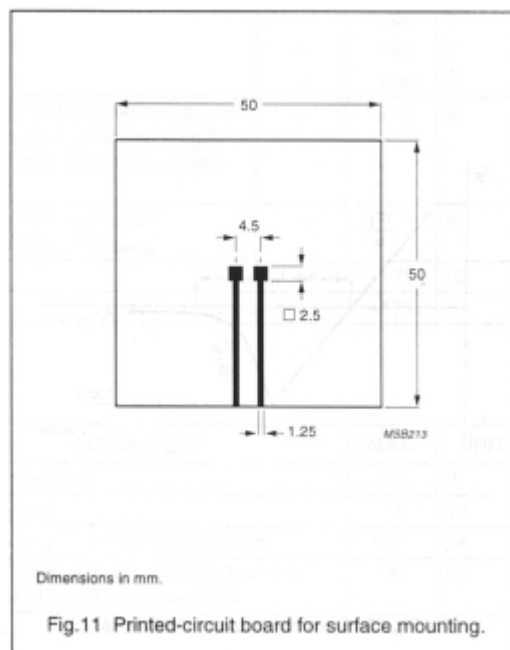
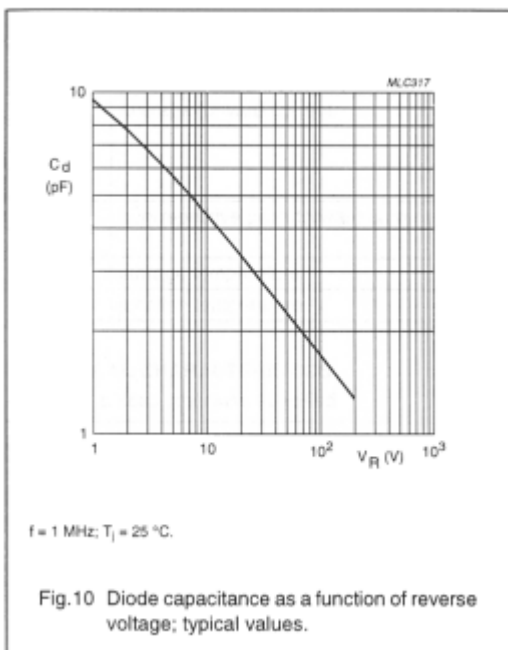
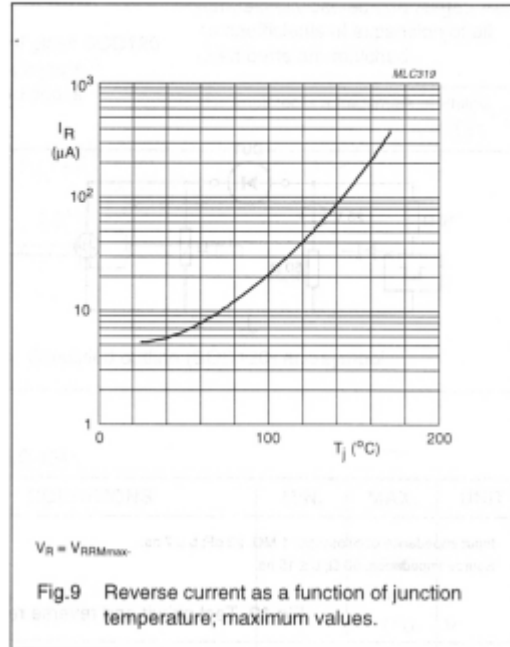
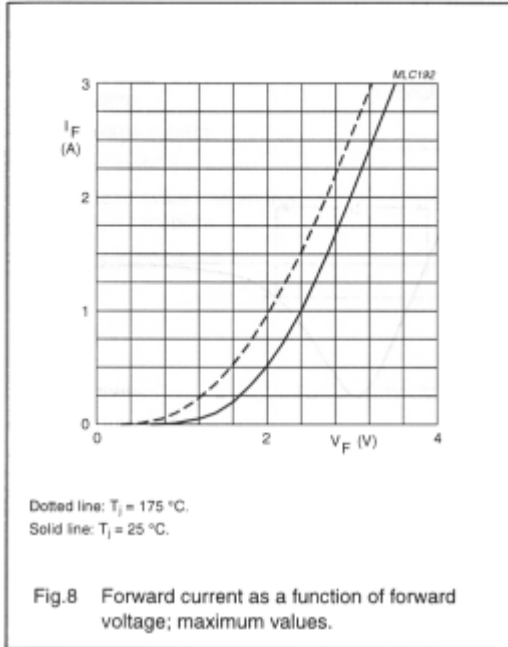
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