

# Silicon Diode

## **BYW28-500**

500V/4A

# DATASHEET

OEM – Philips

Source: Philips Databook 1999

## Ultra fast low-loss controlled avalanche rectifier

## BYW28 series

### FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Guaranteed avalanche energy absorption capability.

### DESCRIPTION

Rugged glass SOD115 package, using a high temperature alloyed construction.

The package is hermetically sealed and fatigue free as coefficients of expansion of all used parts are matched.



Fig.1 Simplified outline (SOD115) 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	BYW28-500	–	500	V
		BYW28-600	–	600	V
$V_R$	continuous reverse voltage	BYW28-500	–	500	V
		BYW28-600	–	600	V
$I_{F(AV)}$	average forward current	$T_{ip} = 85\text{ °C}$ ; lead length = 10 mm; see Fig.2; averaged over any 20 ms period; see also Fig.6	–	4	A
		$T_{amb} = 60\text{ °C}$ ; printed-circuit board mounting (see Fig.11); see Fig.3; averaged over any 20 ms period; see also Fig.6	–	1.7	A
$I_{FRM}$	repetitive peak forward current	$T_{ip} = 85\text{ °C}$ ; see Fig.4	–	46	A
		$T_{amb} = 60\text{ °C}$ ; see Fig.5	–	21	A
$I_{FSM}$	non-repetitive peak forward current	$t = 10\text{ ms}$ half sine wave; $T_j = T_{jmax}$ prior to surge; $V_R = V_{RRMmax}$	–	170	A
$E_{RSM}$	non-repetitive peak reverse avalanche energy	$L = 120\text{ mH}$ ; $T_j = T_{jmax}$ prior to surge; inductive load switched off	–	20	mJ
$T_{stg}$	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	MIN.	TYP.	MAX.	UNIT
$V_F$	forward voltage	$I_F = 3.5\text{ A}; T_j = T_{j\text{max}}$ ; see Fig.8	–	–	0.90	V
		$I_F = 3.5\text{ A}$ ; see Fig.8	–	–	1.15	V
$V_{(BR)R}$	reverse avalanche breakdown voltage BYW28-500 BYW28-600	$I_R = 0.1\text{ mA}$	560	–	–	V
			675	–	–	V
$I_R$	reverse current	$V_R = V_{RRM\text{max}}$ ; see Fig.9	–	–	5	$\mu\text{A}$
		$V_R = V_{RRM\text{max}}; T_j = 165\text{ °C}$ ; see Fig.9	–	–	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.12	–	–	50	ns
$C_d$	diode capacitance	$f = 1\text{ MHz}; V_R = 0$ ; see Fig.10	–	275	–	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	–	–	4	$\text{A}/\mu\text{s}$

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point	lead length = 10 mm	20	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	70	K/W

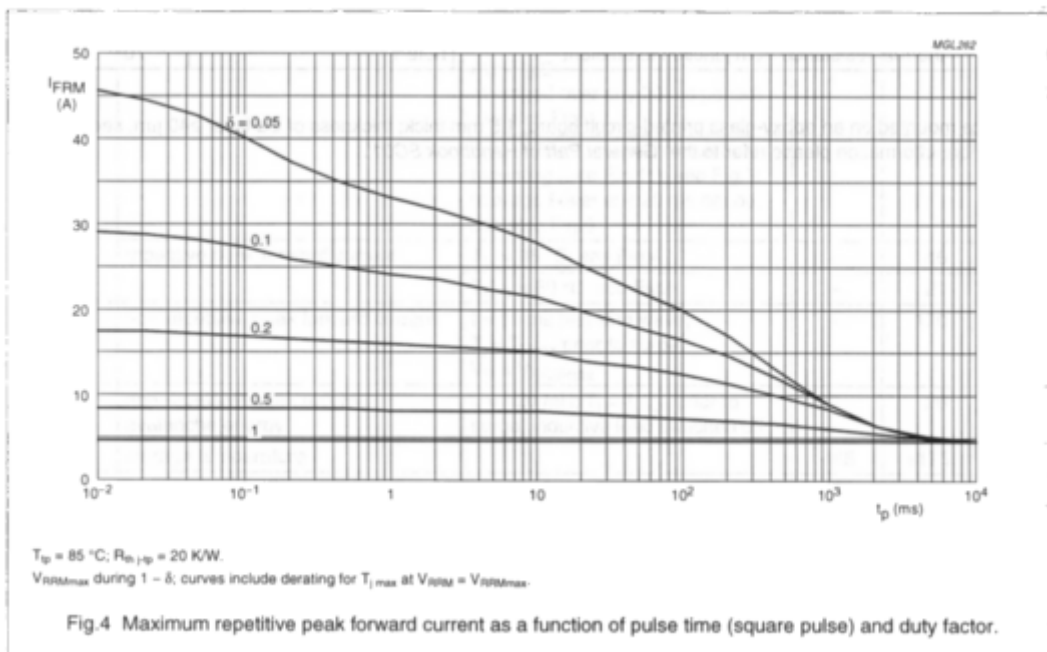
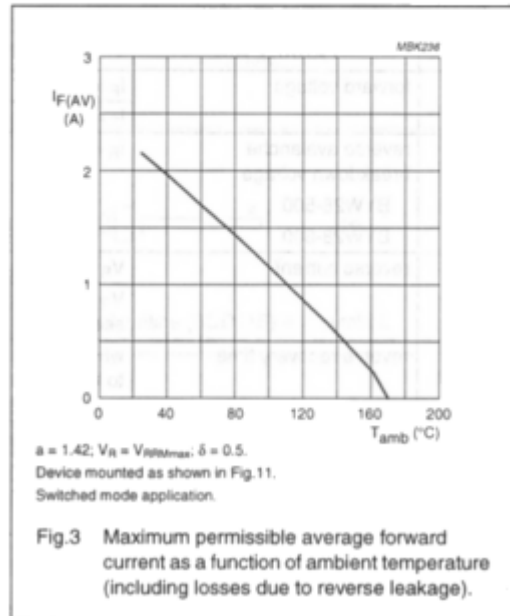
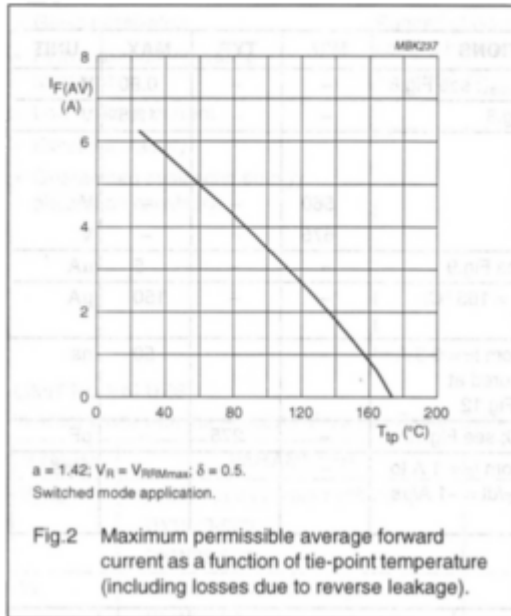
**Note**

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.11.  
For more information please refer to the 'General Part of Handbook SC01'.

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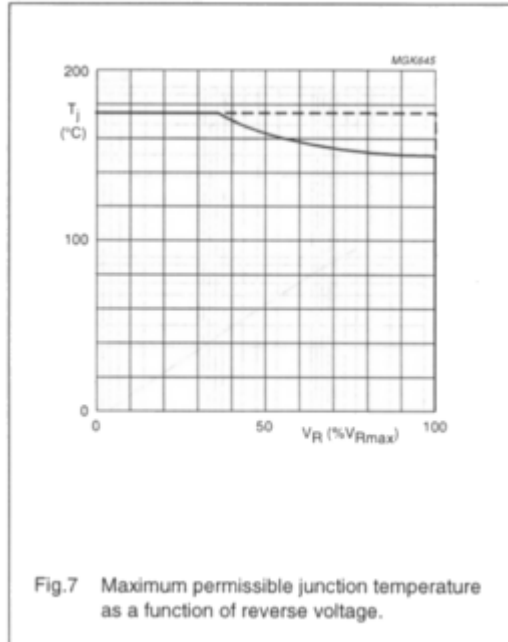
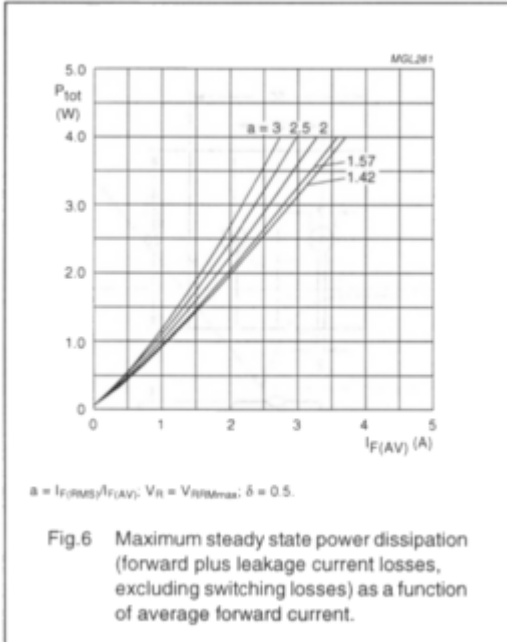
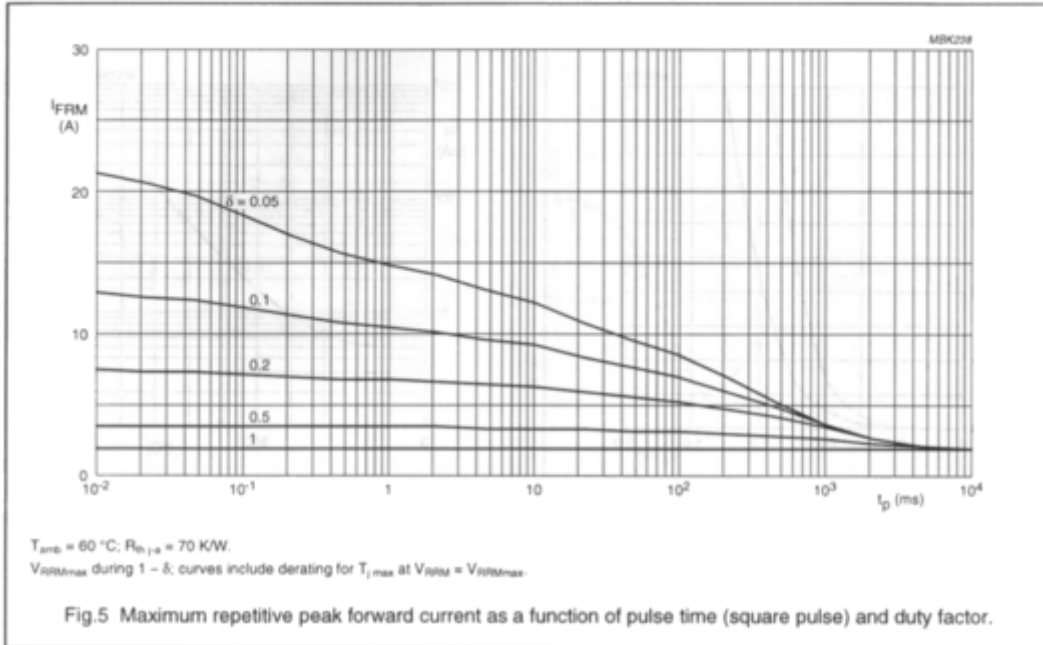
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GRAPHICAL DATA



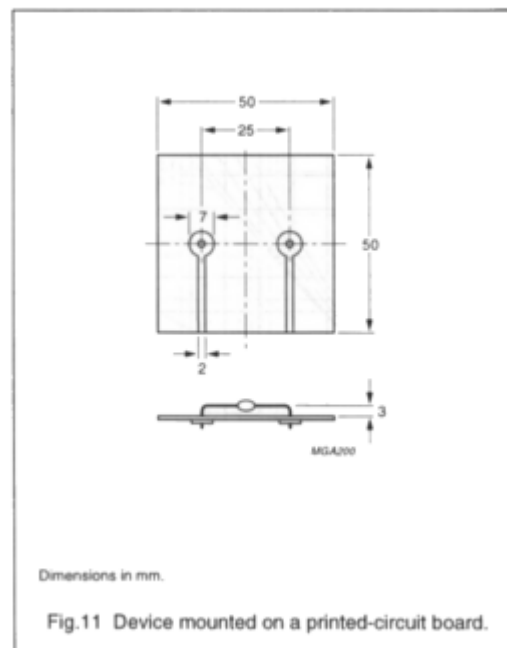
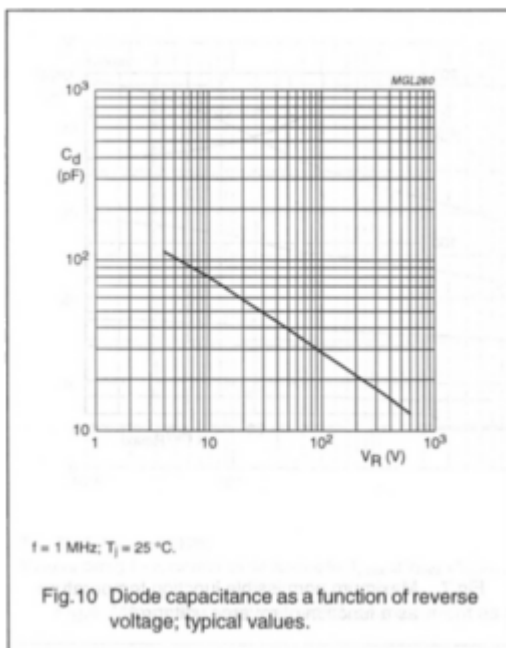
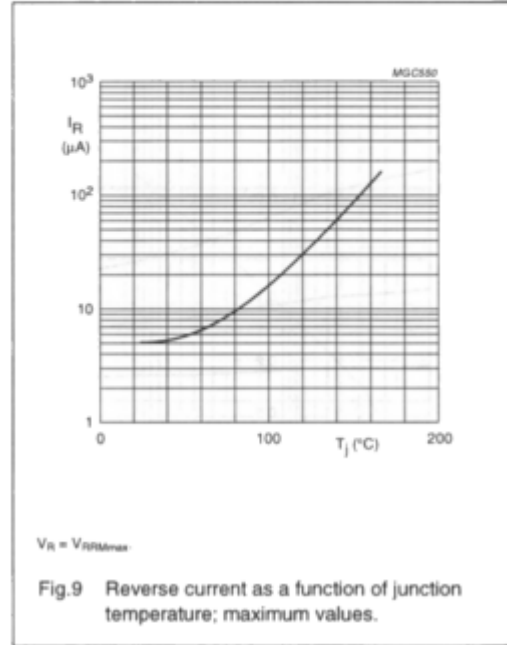
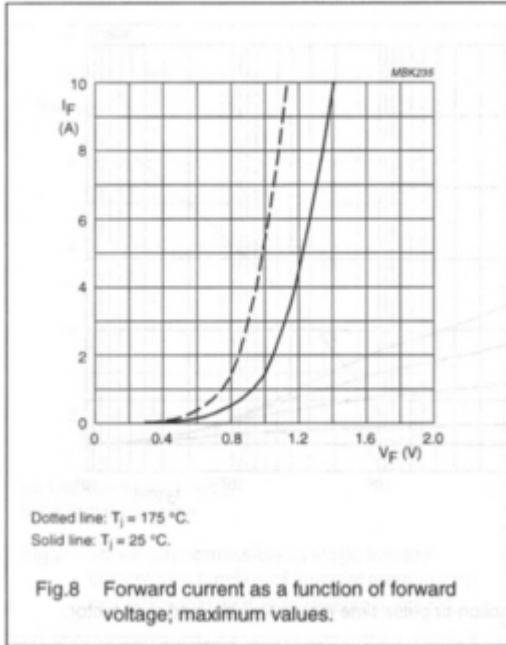
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