Silicon Diode

BY558

1500V/2.5A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

Datasheet Rev. 1.3 – 04/19 – data without warranty / liability

Damper diodes BY558; BY578

FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Also available with preformed leads for easy insertion
- Designed to withstand transients up to 1700 V.

APPLICATIONS

- For use in multi-sync monitor horizontal deflection circuits

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.

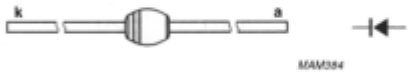


Fig.1 Simplified outline (SOD115) and symbol.

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				
	BY558		–	1500	V
	BY578		–	1700	V
V_{RRM}	repetitive peak reverse voltage				
	BY558		–	1500	V
	BY578		–	1700	V
V_R	continuous reverse voltage		–	1400	V
$I_{F(AV)}$	average forward current	T_{tp} = 65 °C; see Fig.2; PCB mounting; averaged over any 20 ms period; see Fig.4	–	2.5	A
I_{FRM}	repetitive peak forward current		–	12	A
I_{FSM}	non-repetitive peak forward current	t = 10 ms half sine wave; $T_j = T_{j\,max}$ prior to surge; $V_R = V_{RRMmax}$	–	80	A
T_{stg}	storage temperature		−65	+175	°C
T_j	junction temperature		−65	+150	°C

ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_F	forward voltage	I_F = 5 A; $T_j = T_{j\,max}$; see Fig.3	–	1.3	V
		I_F = 5 A; see Fig.3	–	1.7	V
I_R	reverse current	$V_R = V_{RRMmax}$; T_j = 150 °C	–	175	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.6	–	250	ns
V_{FRM}	forward recovery voltage	I_F = 5 A; dI_F/dt = 50 A/µs; see Fig.5	15	20	V
t_{fr}	forward recovery time	I_F = 5 A; dI_F/dt = 50 A/µs; V_F = 5 V; see Fig.5	260	350	ns
		I_F = 5 A; dI_F/dt = 50 A/µs; V_F = 2 V; see Fig.5	700	–	ns

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\,j\text{-}tp}$	thermal resistance from junction to tie-point	lead length = 10 mm	20	K/W
$R_{th\,j\text{-}a}$	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 ≥40 µm, see Fig.4. For more information please refer to the *'General Part of Handbook SC01'*.

GRAPHICAL DATA

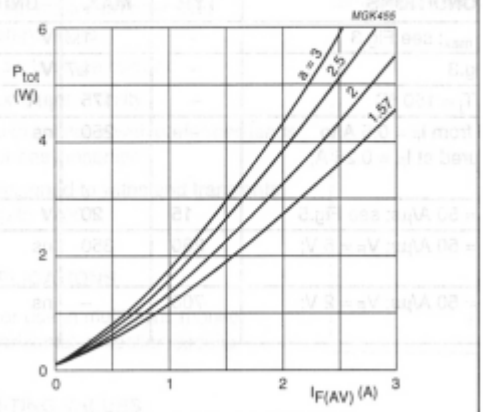
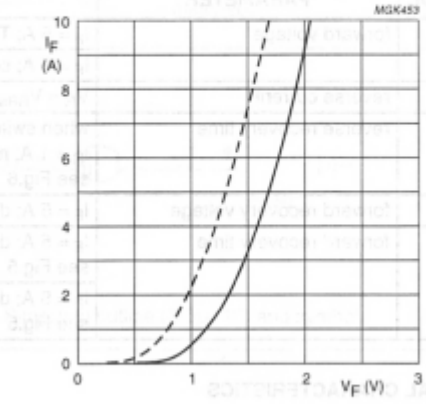
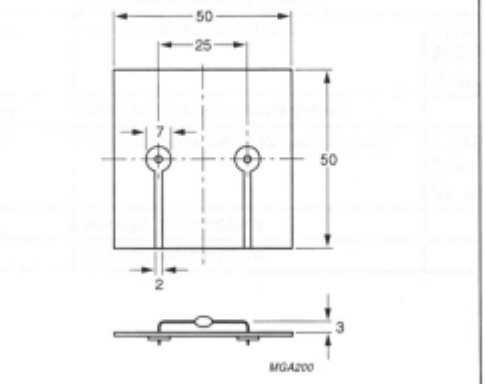


Fig.2 Maximum steady state power dissipation (forward plus leakage current losses, excluding switching losses) as a function of average forward current.



Dotted line: T_j = 150 °C.
Solid line: T_j = 25 °C.

Fig.3 Forward current as a function of forward voltage; maximum values.



Dimensions in mm.

Fig.4 Device mounted on a printed-circuit board.

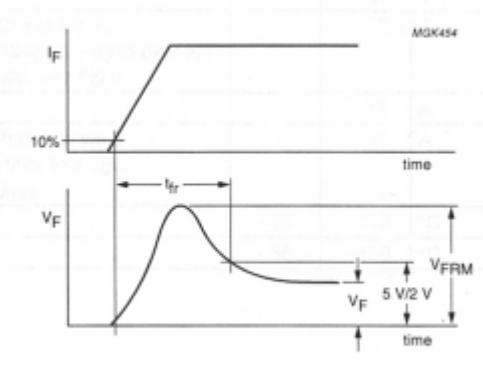
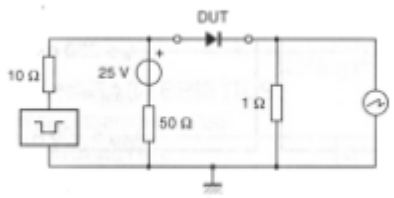
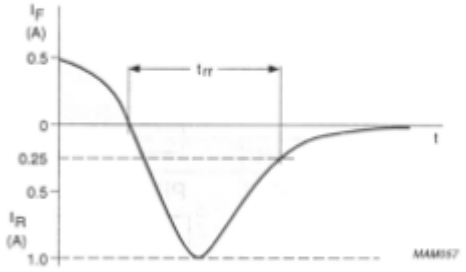


Fig.5 Forward recovery time and voltage definition.





Input impedance oscilloscope: 1 MΩ, 22 pF; $t_r \leq 7$ ns.
Source impedance: 50 Ω; $t_r \leq 15$ ns.

Fig.6 Test circuit and reverse recovery time waveform and definition.