SCHOTTKY BARRIER RECTIFIER

BYM63 series

FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Guaranteed minimum turn-on time for absorbing forward current transients and oscillations
- Specially designed as rectifier in the auxiliary power supply in e.g. switched mode power supplies
- Available in ammo-pack.
- Also available with preformed leads for easy insertion.

DESCRIPTION

Rugged glass SOD64 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.

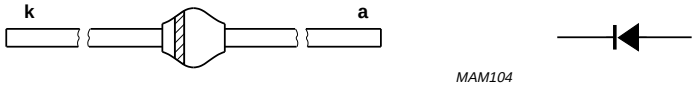

Fig.1 Simplified outline (SOD64) and symbol.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	repetitive peak reverse voltage		–	300	V
V_R	continuous reverse voltage		–	300	V
$I_{F(AV)}$	average forward current	averaged over any 20 ms period; T_{tp} = 55 °C; lead length = 10 mm; see Fig.2; see also Fig.4	–	2.4	A
		averaged over any 20 ms period; T_{amb} = 65 °C; PCB mounting (Fig.8); see Fig.3; see also Fig.4	–	1.0	A
I_{FRM}	repetitive peak forward current	T_{tp} = 55 °C	–	21	A
		T_{amb} = 65 °C	–	8.5	A
I_{FSM}	non-repetitive peak forward current	t = 10 ms half sine wave; $T_j = T_{j\ max}$ prior to surge; $V_R = V_{RRMmax}$	–	45	A
T_{stg}	storage temperature		–65	+175	°C
T_j	junction temperature		–65	+175	°C

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ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

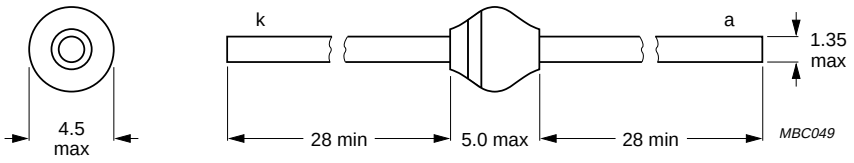
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	forward voltage	I_F = 2 A; T_j = $T_{j\ max}$; see Fig.5	–	–	1.34	V
		I_F = 2 A; see Fig.5	–	–	2.30	V
I_R	reverse current	V_R = V_{RRMmax}; see Fig.6	–	–	10	µA
		V_R = V_{RRMmax}; T_j = 165 °C; see Fig.6	–	–	150	µA
t_{fr}	forward recovery time	when switched to I_F = 5 A in 50 ns; see Fig.9	–	–	1.5	µs
t_{on}	turn-on time	when switched from V_F = 0 V to V_F = 3 V; measured between 10% and 90% of $I_{F\ max}$; see Fig.11	400	–	–	ns
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.11	–	–	150	ns
C_d	diode capacitance	f = 1 MHz; V_R = 0 V; see Fig.7	–	65	–	pF

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}tp}$	thermal resistance from junction to tie-point	lead length = 10 mm	25	K/W
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	75	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.8. For more information please refer to the *'General Part of Handbook SC01.'*



Dimensions in mm.
The marking band indicates the cathode.

Fig.12 SOD64.

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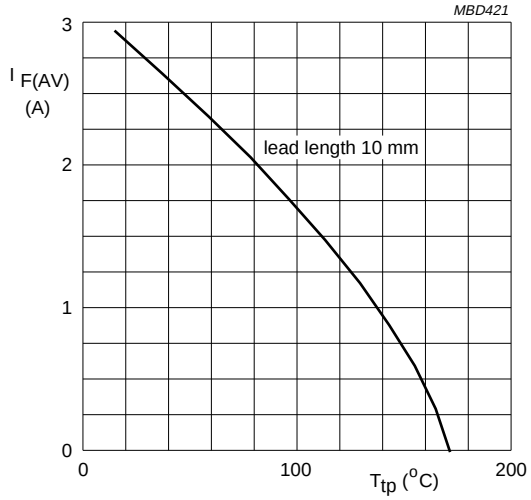
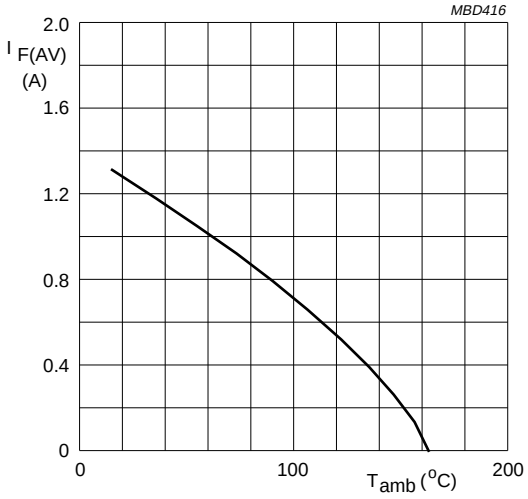
GRAPHICAL DATA



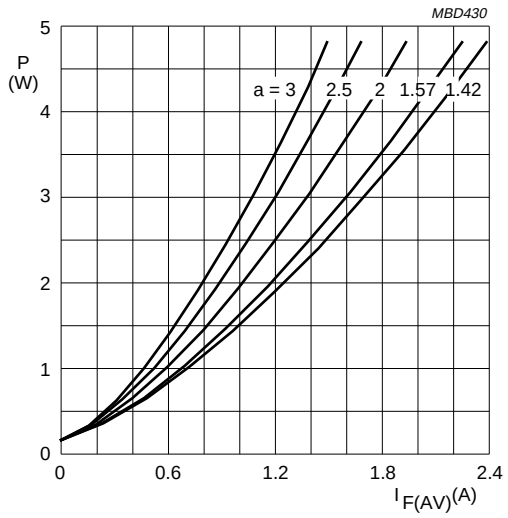
a = 1.42; $V_R = V_{RRMmax}$; δ = 0.5.
Switched mode application.

Fig.2 Maximum permissible average forward current as a function of tie-point temperature (including losses due to reverse leakage).



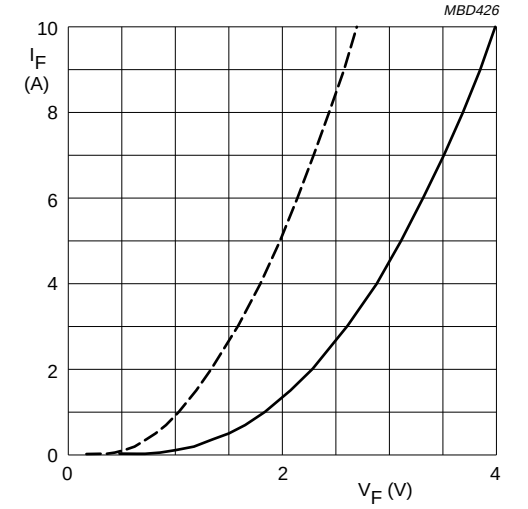
a = 1.42; $V_R = V_{RRMmax}$; δ = 0.5.
Device mounted as shown in Fig.8.
Switched mode application.

Fig.3 Maximum permissible average forward current as a function of ambient temperature (including losses due to reverse leakage).



a = $I_{F(RMS)}/I_{F(AV)}$; $V_R = V_{RRMmax}$; δ = 0.5.

Fig.4 Maximum steady state power dissipation (forward plus leakage current losses, excluding switching losses) as a function of average forward current.



Dotted line: T_j = 175 °C.
Solid line: T_j = 25 °C.

Fig.5 Forward current as a function of forward voltage; maximum values.

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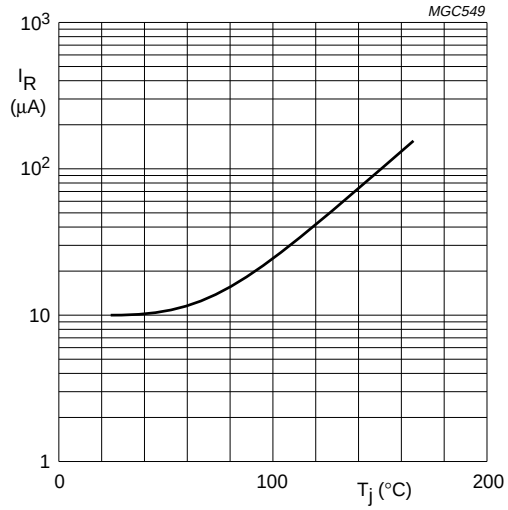
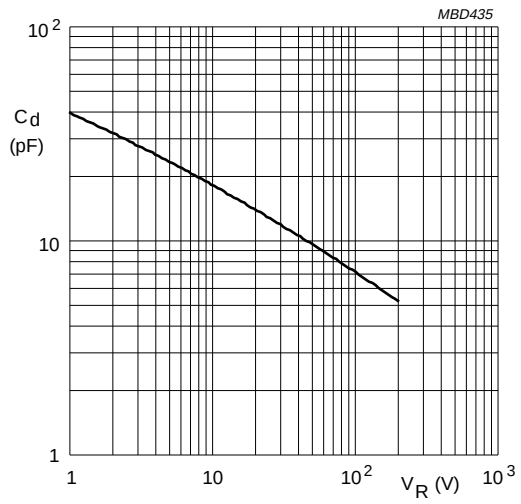


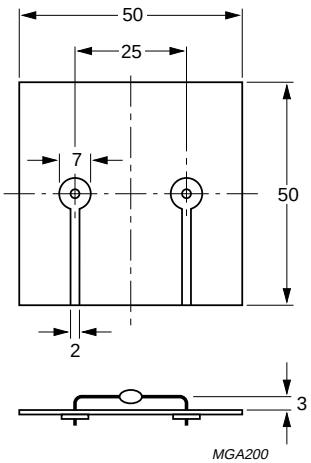
$V_R = V_{RRMmax}$.

Fig.6 Reverse current as a function of junction temperature; maximum values.



f = 1 MHz; T_j = 25 °C.

Fig.7 Diode capacitance as a function of reverse voltage; typical values.



Dimensions in mm.

Fig.8 Device mounted on a printed-circuit board.

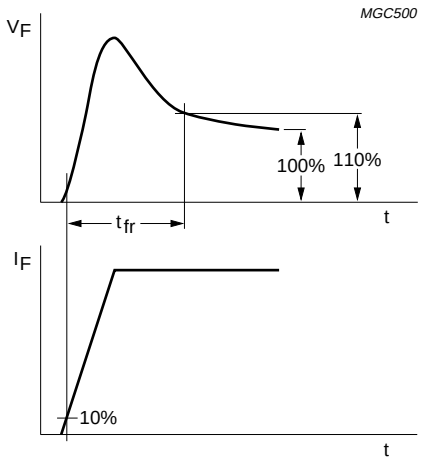
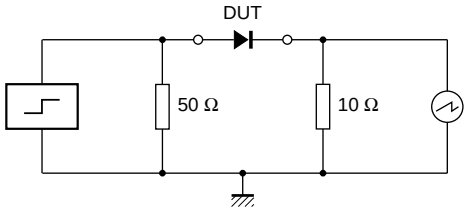
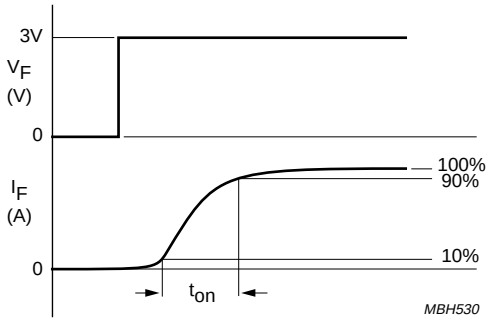


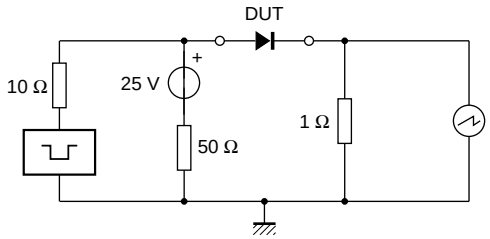
Fig.9 Forward recovery time definition.

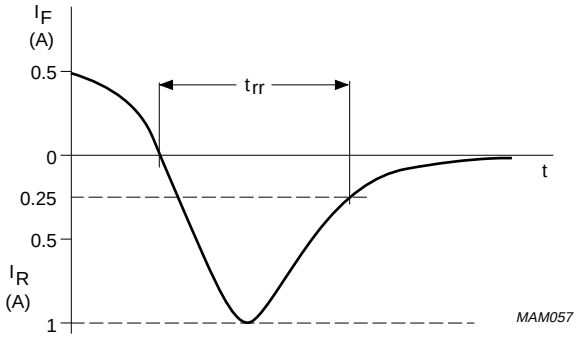




Input impedance oscilloscope: 1 MΩ, 22 pF; $t_r \leq 7$ ns.
Source impedance: 50 Ω; $t_r \leq 10$ ns.

Fig.10 Test circuit and turn-on time waveform and definition.





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

Fig.11 Test circuit and reverse recovery time waveform and definition.