

Fast soft-recovery controlled avalanche rectifiers

BYM36 series

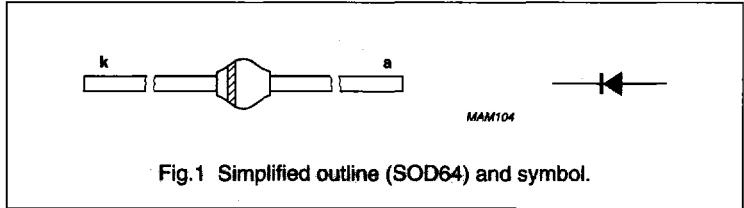
FEATURES

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



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{RRM}	repetitive peak reverse voltage				
	BYM36A		–	200	V
	BYM36B		–	400	V
	BYM36C		–	600	V
	BYM36D		–	800	V
	BYM36E		–	1000	V
	BYM36F BYM36G		–	1200 1400	V V
V _R	continuous reverse voltage				
	BYM36A		–	200	V
	BYM36B		–	400	V
	BYM36C		–	600	V
	BYM36D		–	800	V
	BYM36E		–	1000	V
	BYM36F BYM36G		–	1200 1400	V V
I _{F(AV)}	average forward current	T _{tp} = 55 °C; lead length = 10 mm; see Figs 2; 3 and 4			
	BYM36A to C	averaged over any 20 ms period; see also Figs 14; 15 and 16	–	3.0	A
	BYM36D and E BYM36F and G		–	2.9 2.9	A A
I _{F(AV)}	average forward current	T _{amb} = 65 °C; PCB mounting (see Fig.25); see Figs 5; 6 and 7			
	BYM36A to C	averaged over any 20 ms period; see also Figs 14; 15 and 16	–	1.25	A
	BYM36D and E BYM36F and G		–	1.20 1.15	A A

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SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{FRM}	repetitive peak forward current	$T_{ip} = 55\text{ °C}$; see Figs 8; 9 and 10	-	37	A
	BYM36A to C				
	BYM36D and E BYM36F and G				
I_{FRM}	repetitive peak forward current	$T_{amb} = 65\text{ °C}$; see Figs 11; 12 and 13	-	13	A
	BYM36A to C				
	BYM36D and E BYM36F and G				
I_{FSM}	non-repetitive peak forward current	$t = 10\text{ ms}$ half sine wave; $T_j = T_{j\text{ max}}$ prior to surge; $V_R = V_{RRM\text{ max}}$	-	65	A
E_{RSM}	non-repetitive peak reverse avalanche energy	$L = 120\text{ mH}$; $T_j = T_{j\text{ max}}$ prior to surge; inductive load switched off	-	10	mJ
T_{stg}	storage temperature		-65	+175	°C
T_j	junction temperature	see Figs 17 and 18	-65	+175	°C

ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	forward voltage	$I_F = 3\text{ A}$; $T_j = T_{j\text{ max}}$; see Figs 19; 20 and 21	-	-	1.22	V
	BYM36A to C					
	BYM36D and E BYM36F and G					
V_F	forward voltage	$I_F = 3\text{ A}$; see Figs 19; 20 and 21	-	-	1.60	V
	BYM36A to C					
	BYM36D and E BYM36F and G					
$V_{(BR)R}$	reverse avalanche breakdown voltage	$I_R = 0.1\text{ mA}$				V
	BYM36A					
	BYM36B					
	BYM36C					
	BYM36D					
	BYM36E					
	BYM36F					
BYM36G						
I_R	reverse current	$V_R = V_{RRM\text{ max}}$; see Fig.22	-	-	5	μA
		$V_R = V_{RRM\text{ max}}$; $T_j = 165\text{ °C}$; see Fig.22	-	-	150	μA

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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
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. 26	-	-	100	ns
	BYM36A to C					
	BYM36D and E					
C_d	diode capacitance	$f = 1$ MHz; $V_R = 0$ V; see Figs 23 and 24	-	85	-	pF
	BYM36A to C					
	BYM36D and E					
$\left \frac{dI_R}{dt} \right $	maximum slope of reverse recovery current	when switched from $I_F = 1$ A to $V_R \geq 30$ V and $dI_F/dt = -1$ A/ μ s; see Fig.27	-	-	7	A/ μ s
	BYM36A to C					
	BYM36D and E					
	BYM36F and G					

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point	lead length = 10 mm	25	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	75	K/W

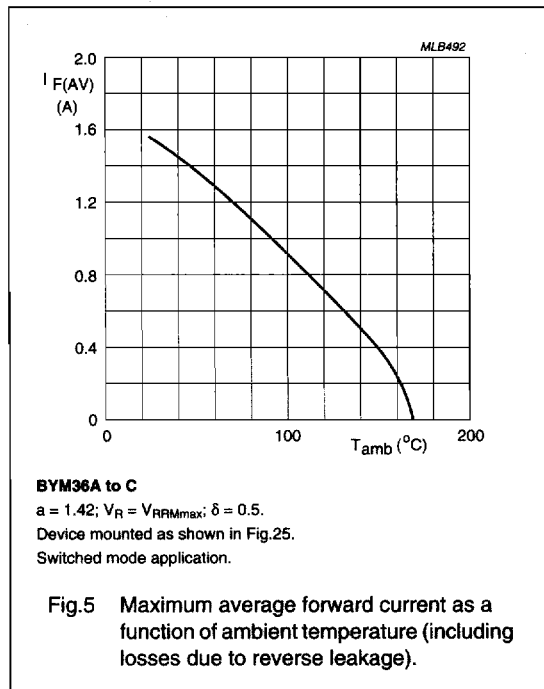
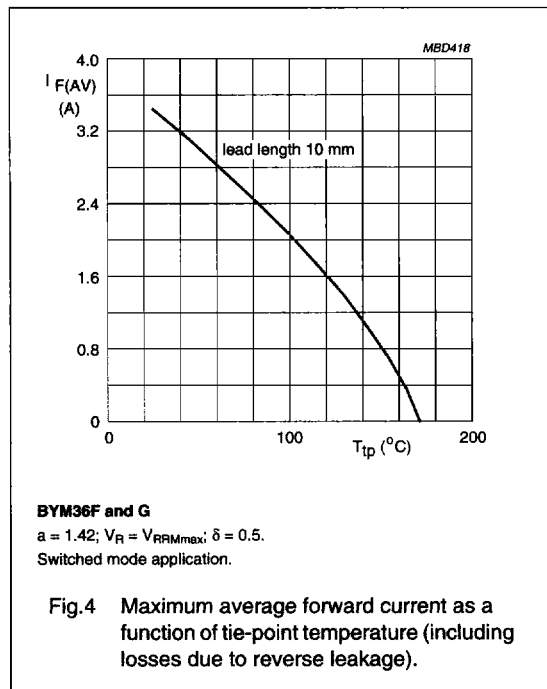
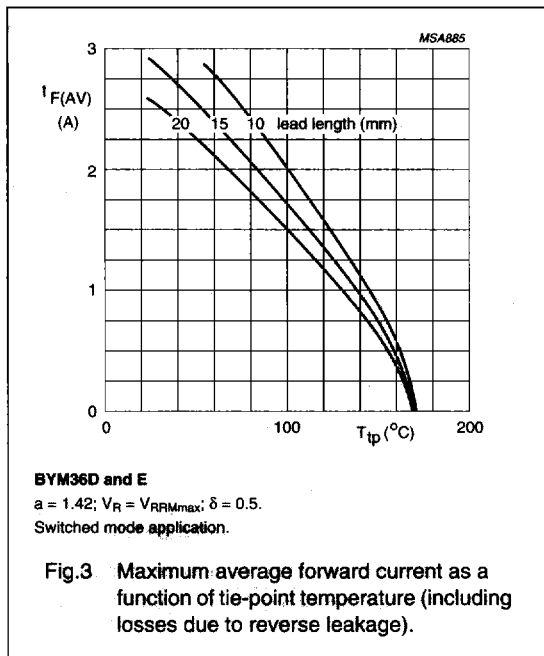
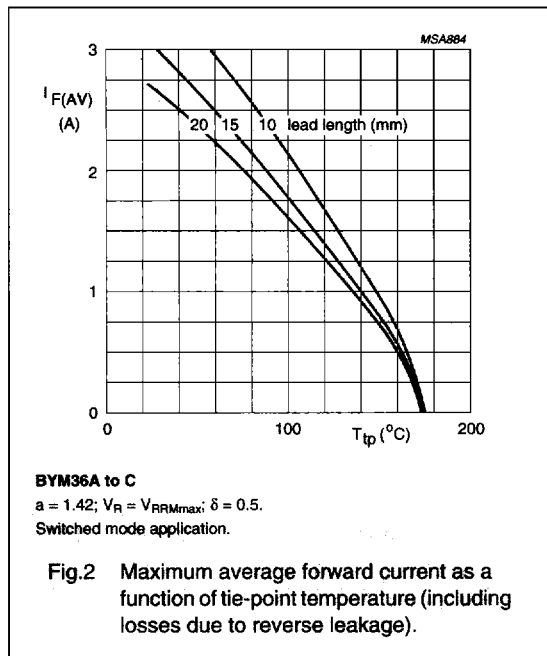
Note

1. Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer ≥ 40 μ m, see Fig.25. For more information please refer to the 'General Part of Handbook SC01'.

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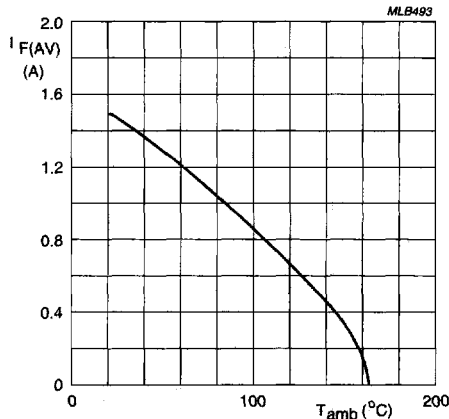
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GRAPHICAL DATA



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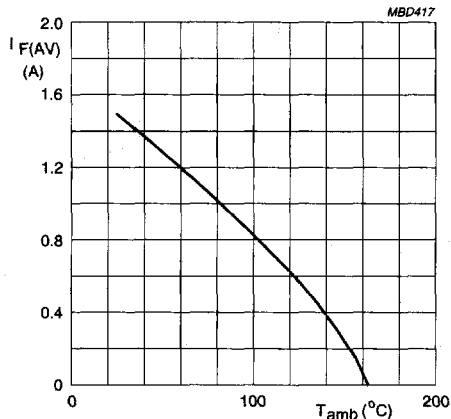
BYM36D and E

$a = 1.42; V_R = V_{RRMmax}; \delta = 0.5.$

Device mounted as shown in Fig.25.

Switched mode application.

Fig.6 Maximum average forward current as a function of ambient temperature (including losses due to reverse leakage).



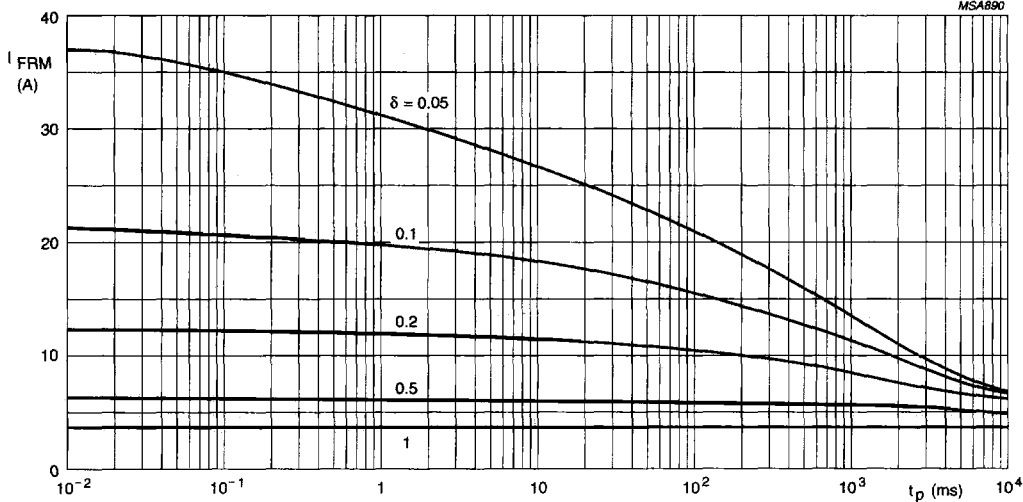
BYM36F and G

$a = 1.42; V_R = V_{RRMmax}; \delta = 0.5.$

Device mounted as shown in Fig.25.

Switched mode application.

Fig.7 Maximum average forward current as a function of ambient temperature (including losses due to reverse leakage).



BYM36A to C

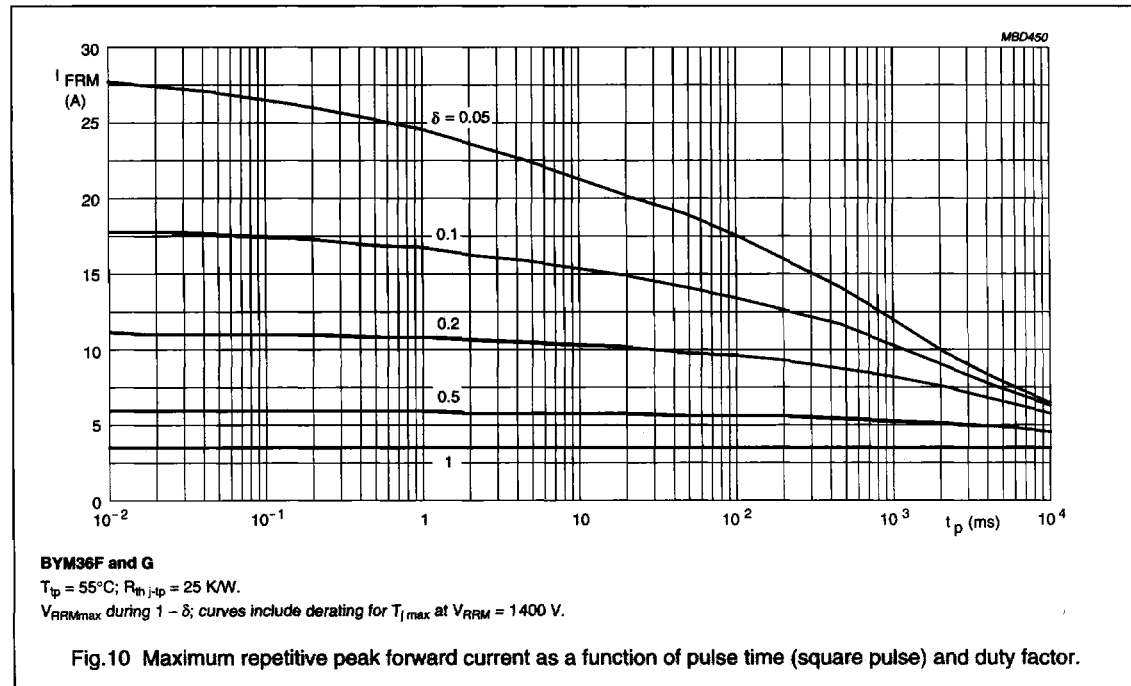
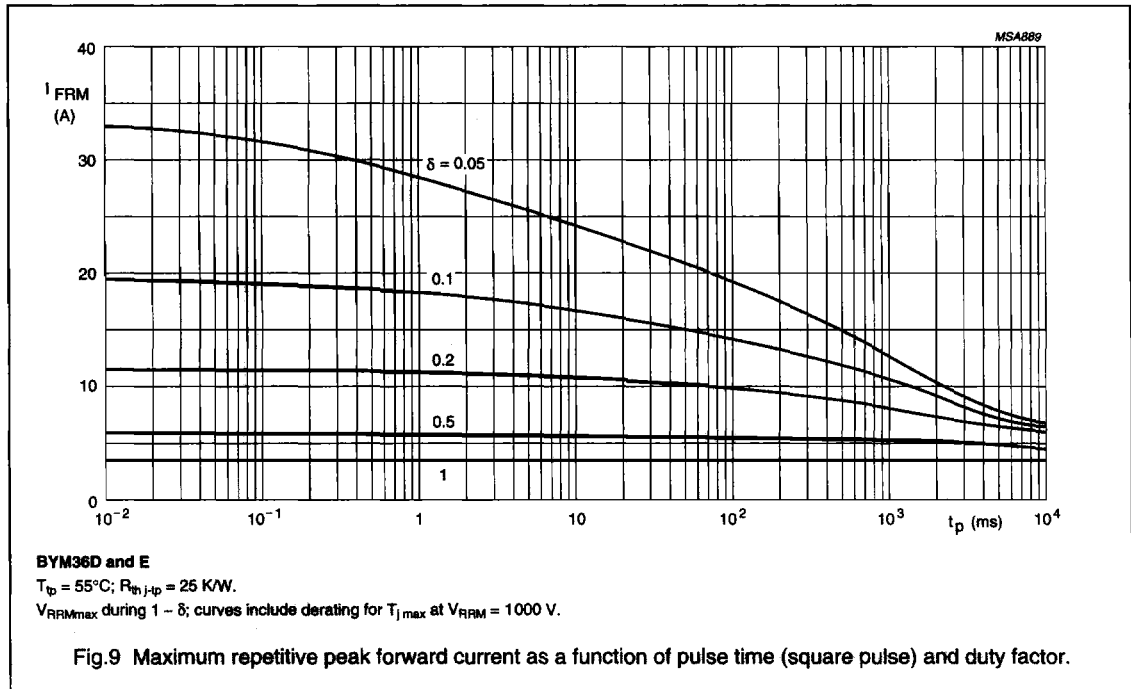
$T_{ip} = 55^{\circ}C; P_{thj-ip} = 25 \text{ K/W}.$

V_{RRMmax} during $1 - \delta$; curves include derating for T_{jmax} at $V_{RRM} = 600 \text{ V}.$

Fig.8 Maximum repetitive peak forward current as a function of pulse time (square pulse) and duty factor.

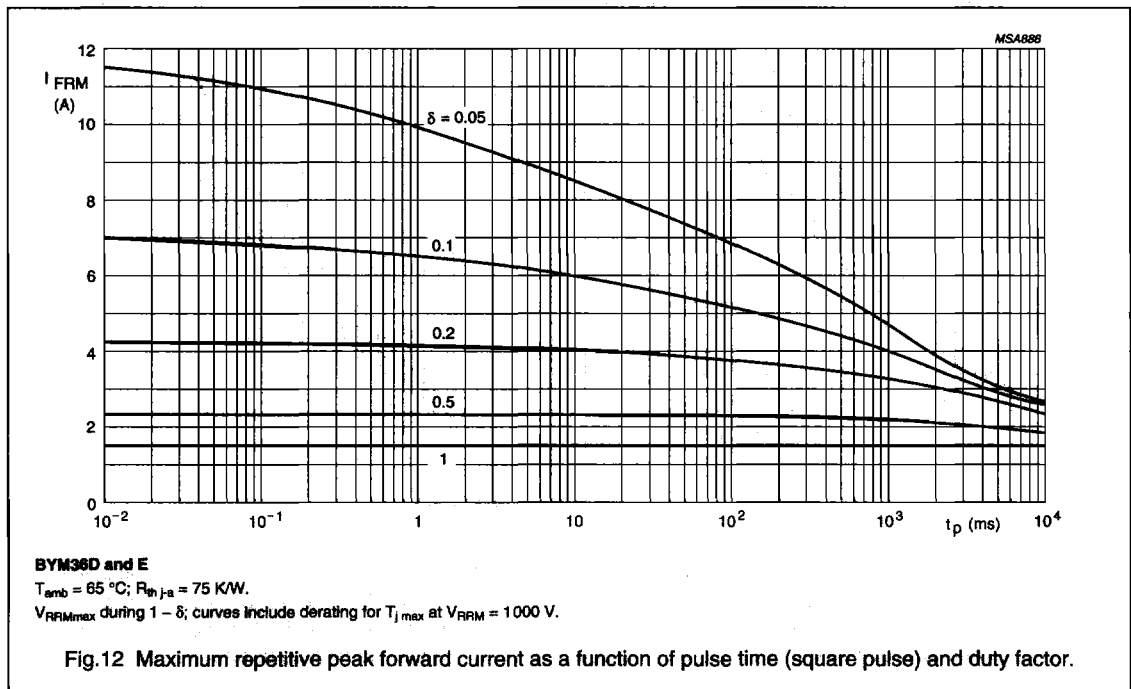
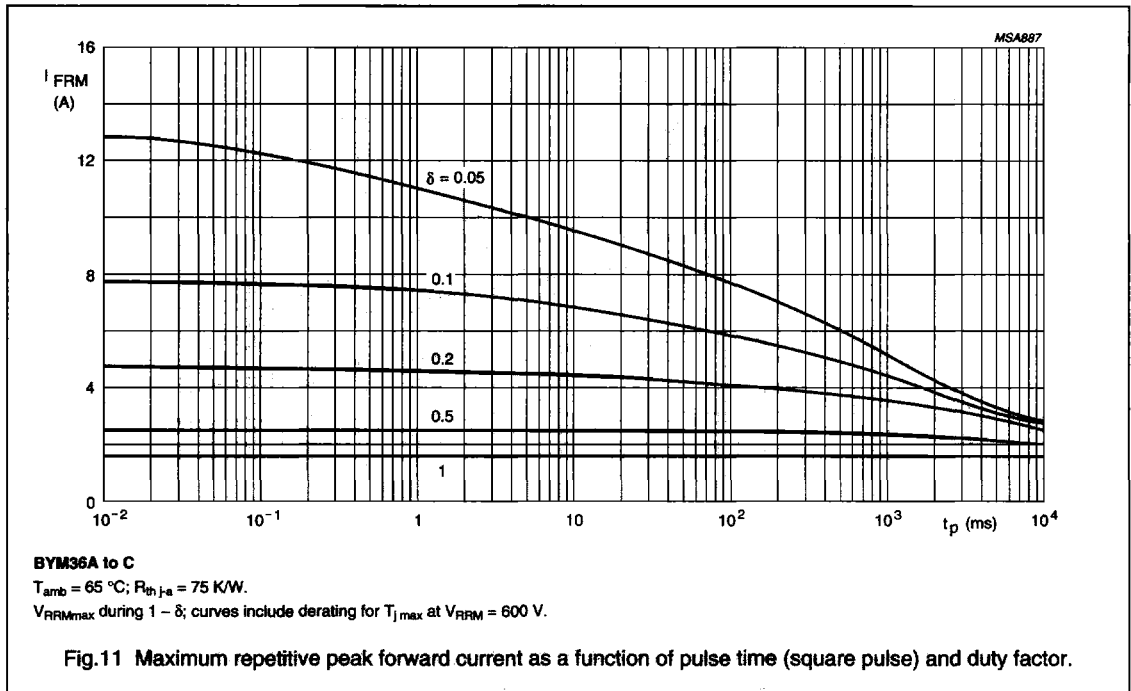
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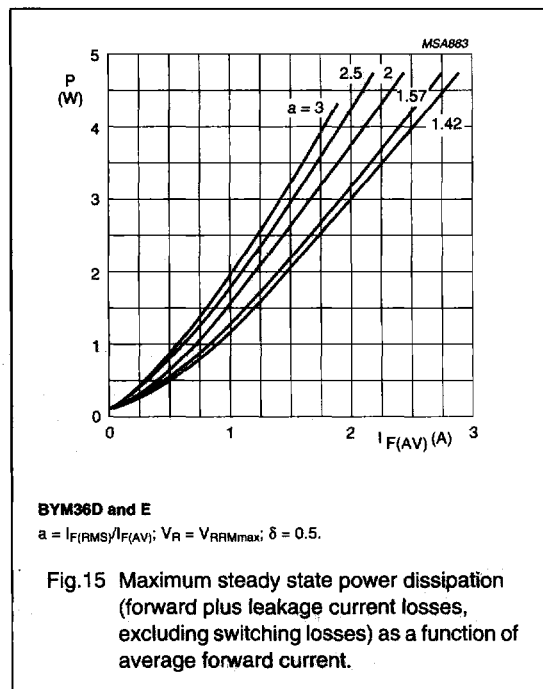
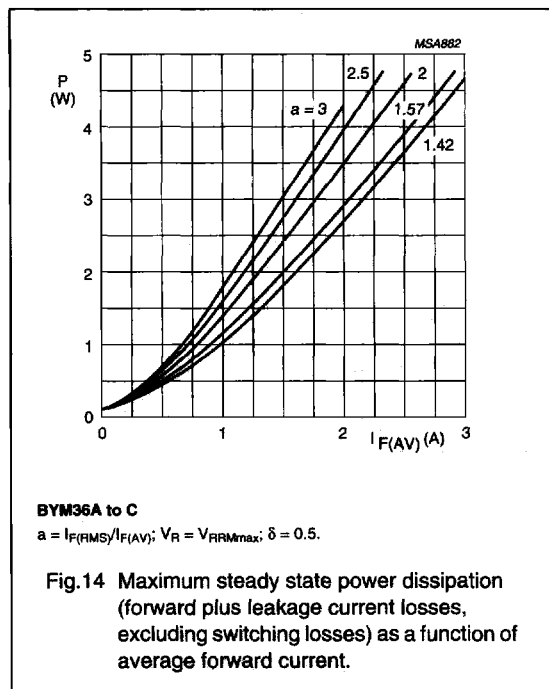
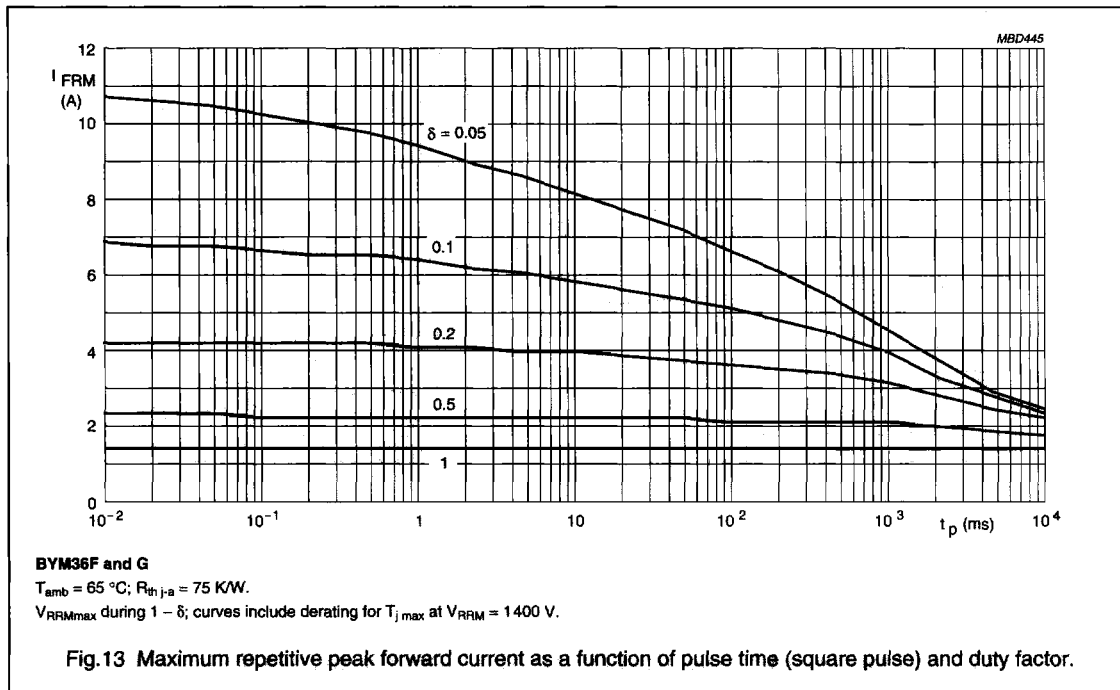
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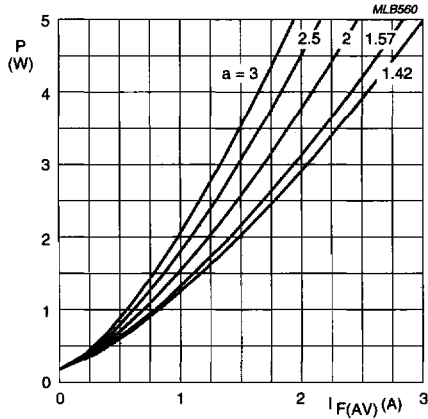
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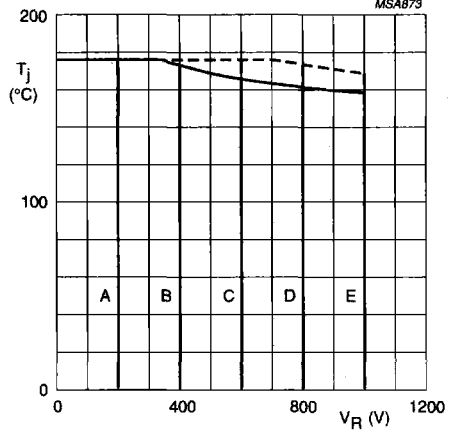
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BYM36F and G

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

Fig.16 Maximum steady state power dissipation (forward plus leakage current losses, excluding switching losses) as a function of average forward current.

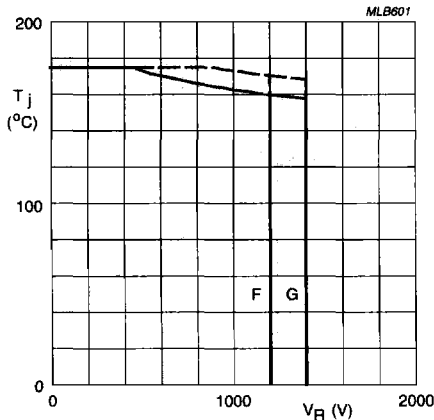


BYM36A to E

Solid line = V_R .

Dotted line = V_{RRM} ; $\delta = 0.5$.

Fig.17 Maximum permissible junction temperature as a function of reverse voltage.

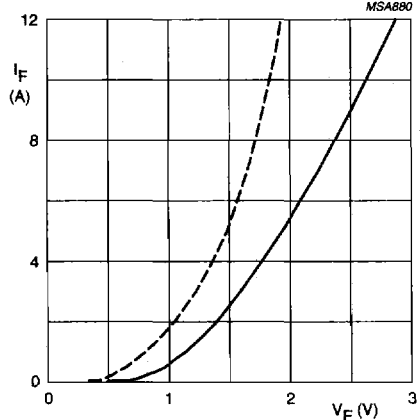


BYM36F and G

Solid line = V_R .

Dotted line = V_{RRM} ; $\delta = 0.5$.

Fig.18 Maximum permissible junction temperature as a function of reverse voltage.



BYM36A to C

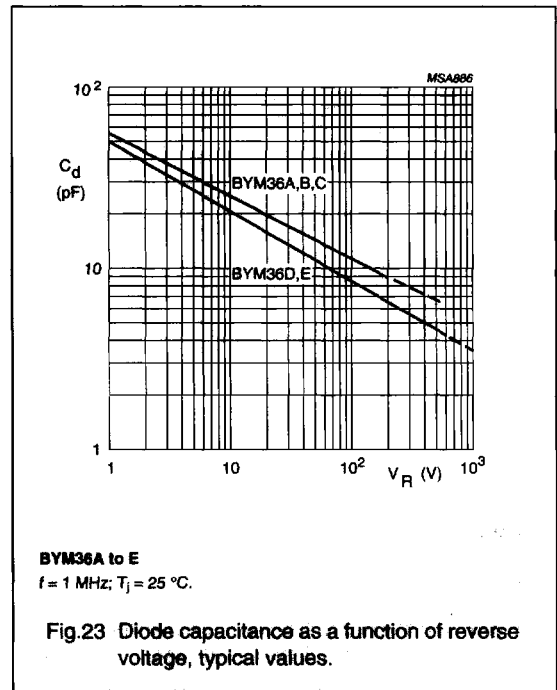
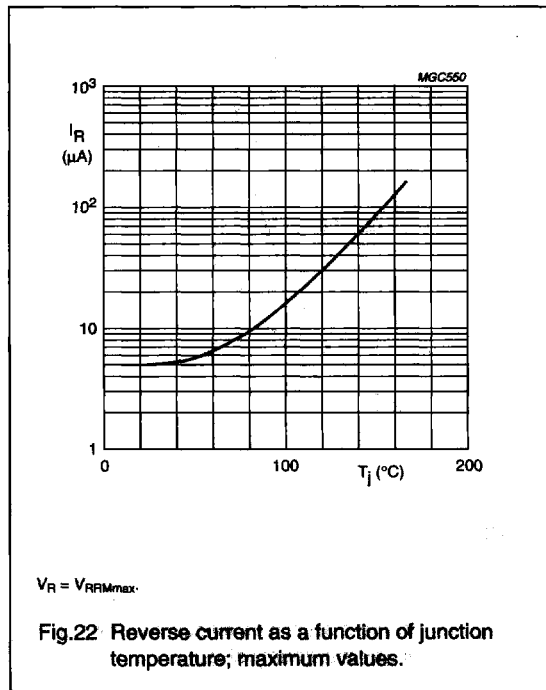
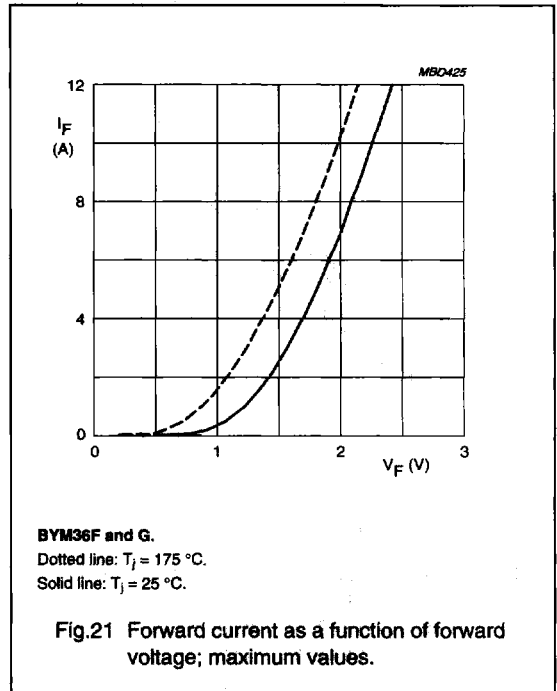
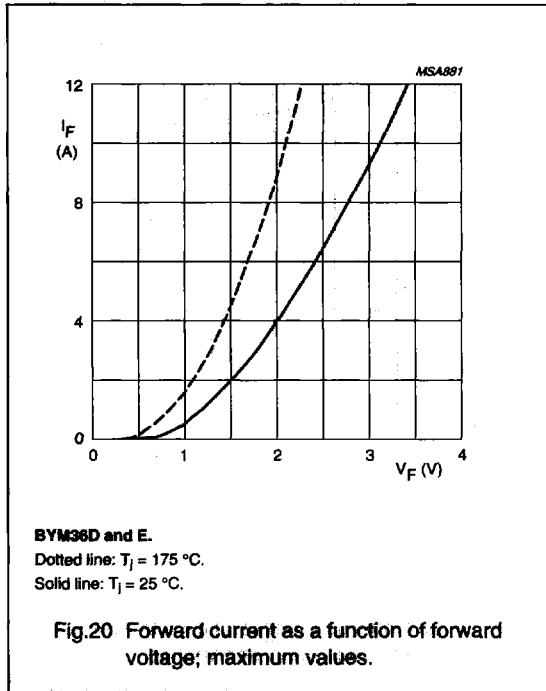
Dotted line: $T_j = 175$ °C.

Solid line: $T_j = 25$ °C.

Fig.19 Forward current as a function of forward voltage; maximum values.

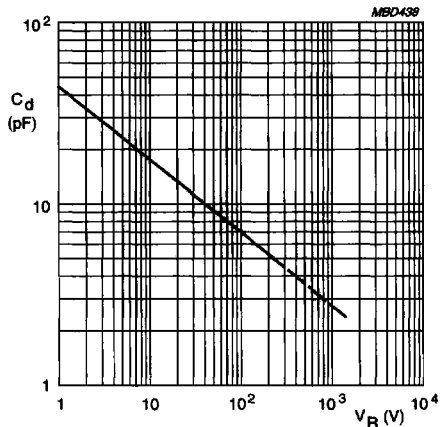
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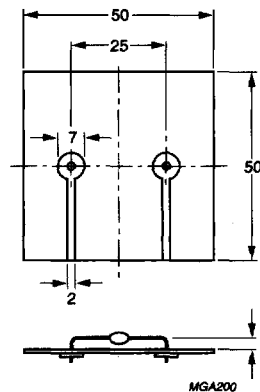
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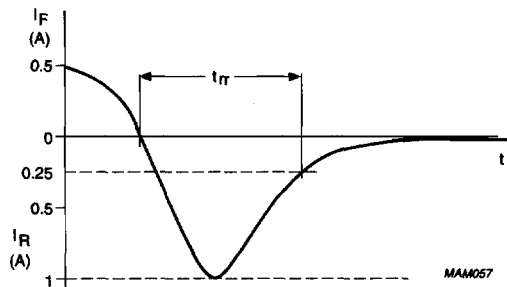
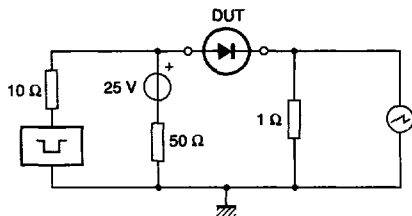
BYM36F and G
 $f = 1 \text{ MHz}; T_j = 25 \text{ }^\circ\text{C}.$

Fig.24 Diode capacitance as a function of reverse voltage, typical values.



Dimensions in mm.

Fig.25 Device mounted on a printed-circuit board.



Input impedance oscilloscope: $1 \text{ M}\Omega, 22 \text{ pF}; t_r \leq 7 \text{ ns}.$
 Source impedance: $50 \text{ }\Omega; t_r \leq 15 \text{ ns}.$

Fig.26 Test circuit and reverse recovery time waveform and definition.

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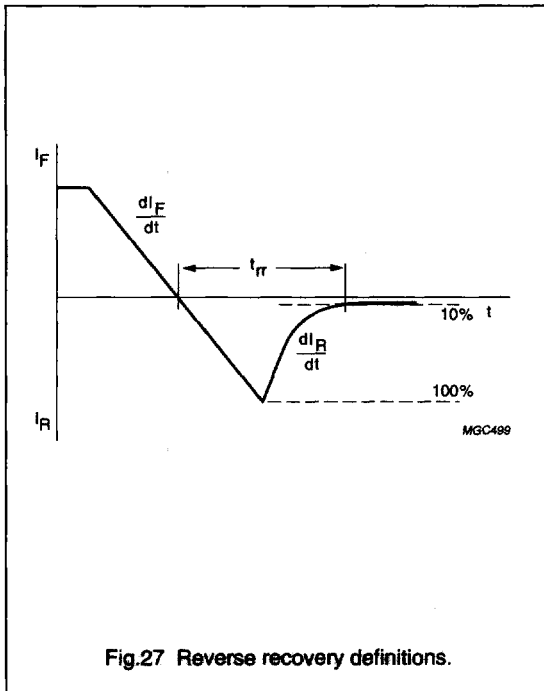


Fig.27 Reverse recovery definitions.