

Silicon Diode

BYM36A

200V/3A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

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.

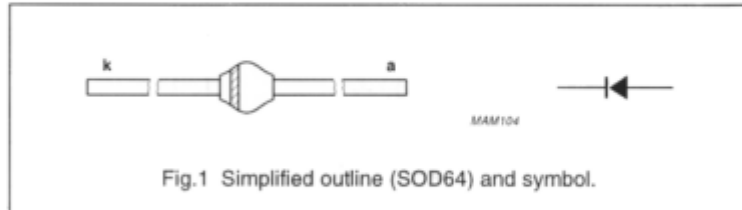


Fig.1 Simplified outline (SOD64) and symbol.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	repetitive peak reverse voltage				
	BYM36A		–	200	V
	BYM36B		–	400	V
	BYM36C		–	600	V
	BYM36D		–	800	V
	BYM36E		–	1000	V
	BYM36F BYM36G		–	1200 1400	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
$I_{F(AV)}$	average forward current	$T_{ip} = 55\text{ °C}$; 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
$I_{F(AV)}$	average forward current	$T_{amb} = 65\text{ °C}$; 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

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SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{FRM}	repetitive peak forward current	$T_{tp} = 55\text{ °C}$; see Figs 8; 9 and 10			
	BYM36A to C		–	37	A
	BYM36D and E		–	33	A
I_{FRM}	repetitive peak forward current	$T_{amb} = 65\text{ °C}$; see Figs 11; 12 and 13			
	BYM36A to C		–	13	A
	BYM36D and E		–	11	A
I_{FSM}	non-repetitive peak forward current	$t = 10\text{ ms}$ half sine wave; $T_j = T_{j\max}$ prior to surge; $V_R = V_{RRM\max}$	–	65	A
	BYM36F and G		–	10	A
E_{RSM}	non-repetitive peak reverse avalanche energy	$L = 120\text{ mH}$; $T_j = T_{j\max}$ 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	$I_F = 3\text{ A}$; $T_j = T_{j\max}$; see Figs 19; 20 and 21	–	–	1.22	V
	BYM36A to C		–	–	1.28	V
	BYM36D and E		–	–	1.24	V
V_F	forward voltage	$I_F = 3\text{ A}$; see Figs 19; 20 and 21	–	–	1.60	V
	BYM36A to C		–	–	1.78	V
	BYM36D and E		–	–	1.57	V
$V_{(BR)R}$	reverse avalanche breakdown voltage	$I_R = 0.1\text{ mA}$				
	BYM36A		300	–	–	V
	BYM36B		500	–	–	V
	BYM36C		700	–	–	V
	BYM36D		900	–	–	V
	BYM36E		1100	–	–	V
	BYM36F		1300	–	–	V
I_R	reverse current	$V_R = V_{RRM\max}$; see Fig.22	–	–	5	μA
		$V_R = V_{RRM\max}$; $T_j = 165\text{ °C}$; 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		-	-	150	ns
	BYM36D and E BYM36F and G		-	-	250	ns
C_d	diode capacitance	$f = 1$ MHz; $V_R = 0$ V; see Figs 23 and 24	-	85	-	pF
	BYM36A to C		-	75	-	pF
	BYM36D and E BYM36F and G		-	65	-	pF
$\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		-	-	6	A/ μ s
	BYM36D and E BYM36F and G		-	-	5	A/ μ s

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

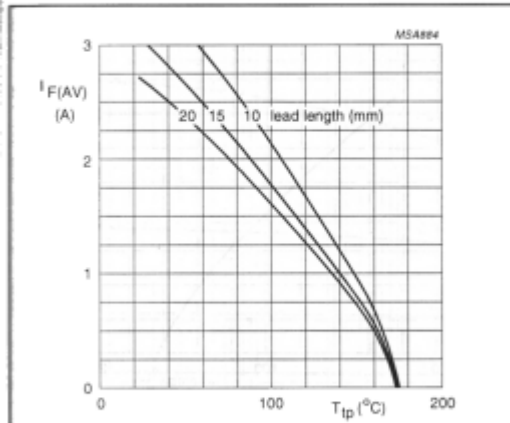
Note

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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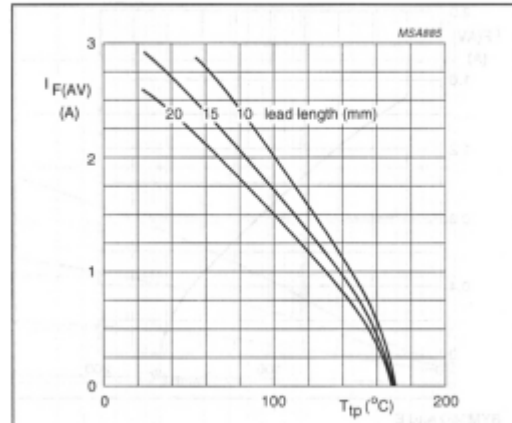
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GRAPHICAL DATA

**BYM36A to C**

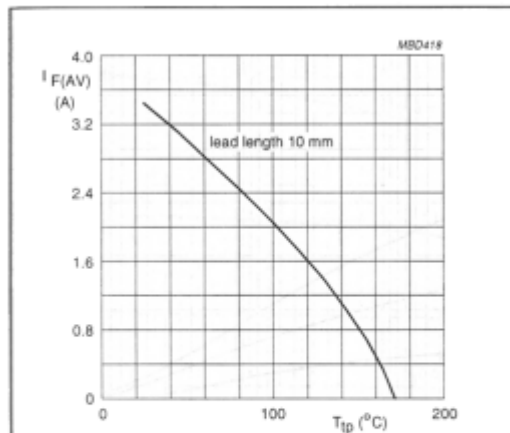
$a = 1.42$; $V_R = V_{RRMmax}$; $\delta = 0.5$.
Switched mode application.

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

**BYM36D and E**

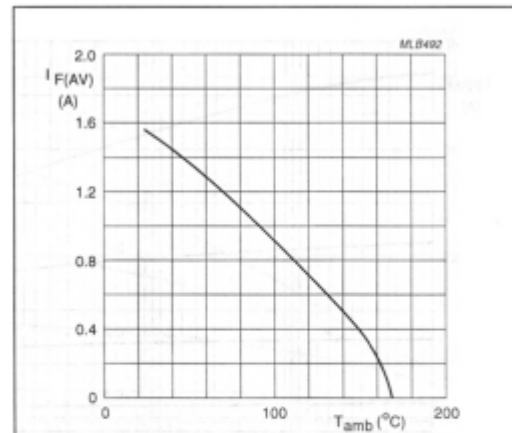
$a = 1.42$; $V_R = V_{RRMmax}$; $\delta = 0.5$.
Switched mode application.

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

**BYM36F and G**

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

Fig.4 Maximum average forward current as a function of tie-point temperature (including losses due to reverse leakage).

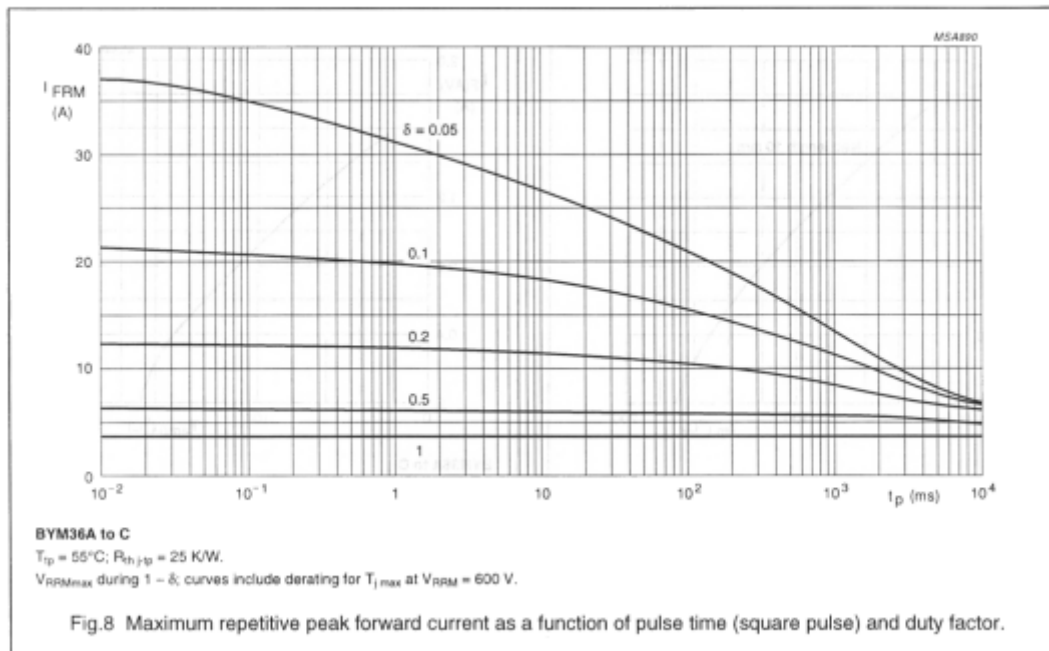
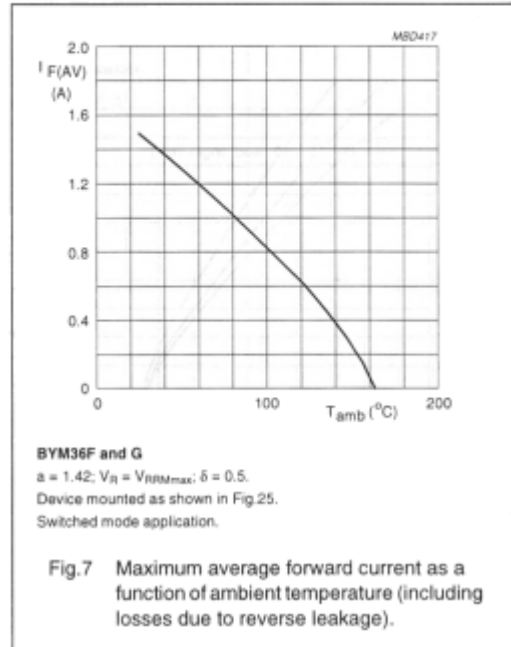
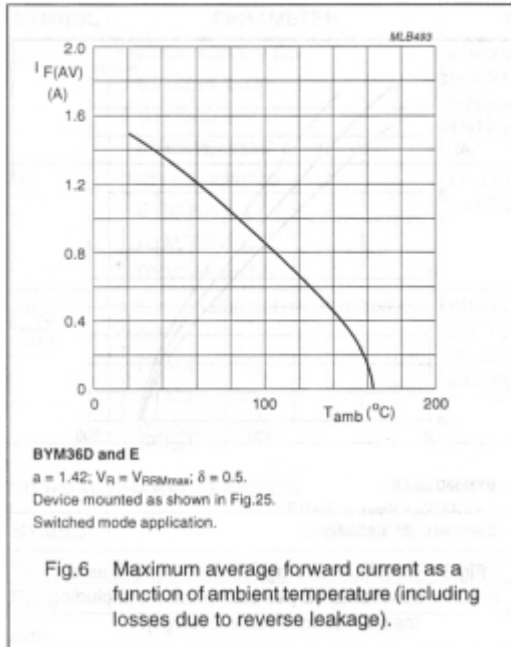
**BYM36A to C**

$a = 1.42$; $V_R = V_{RRMmax}$; $\delta = 0.5$.
Device mounted as shown in Fig.25.
Switched mode application.

Fig.5 Maximum average forward current as a function of ambient temperature (including losses due to reverse leakage).

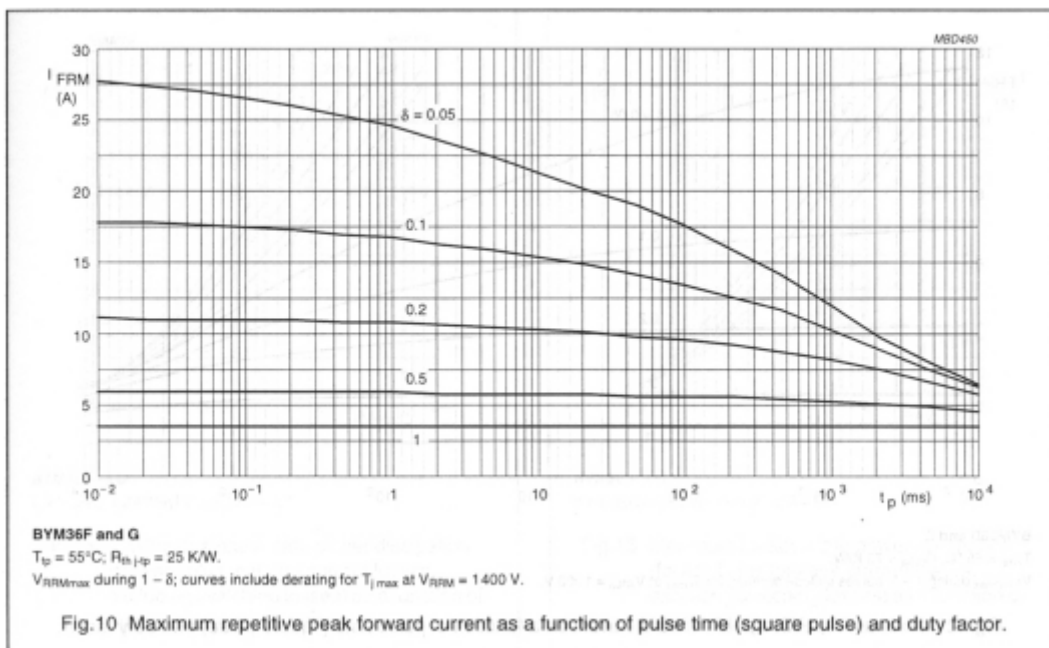
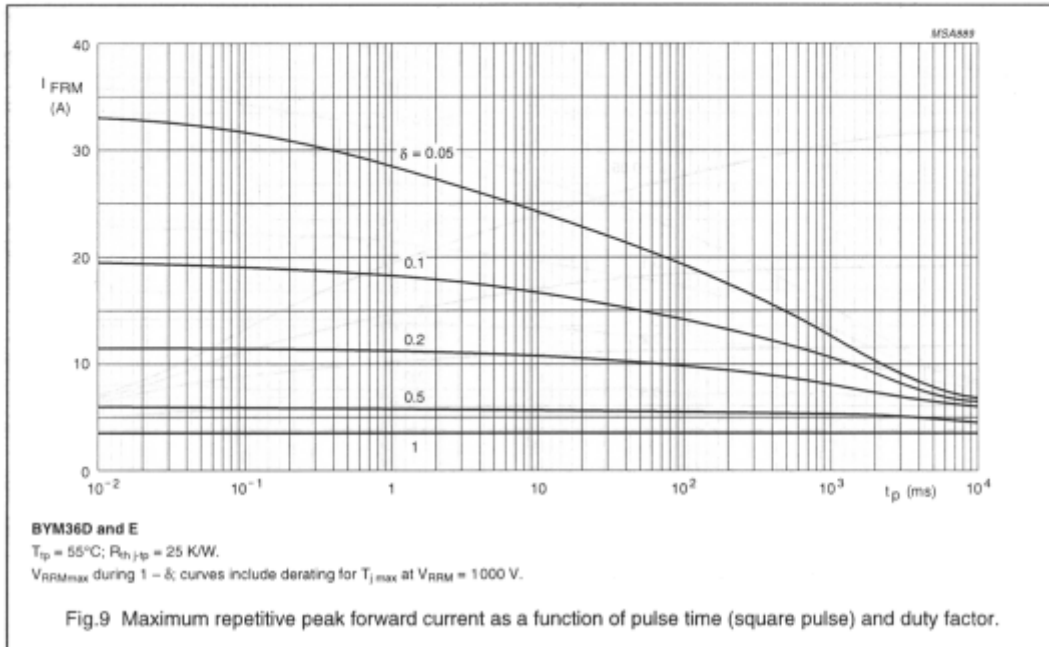
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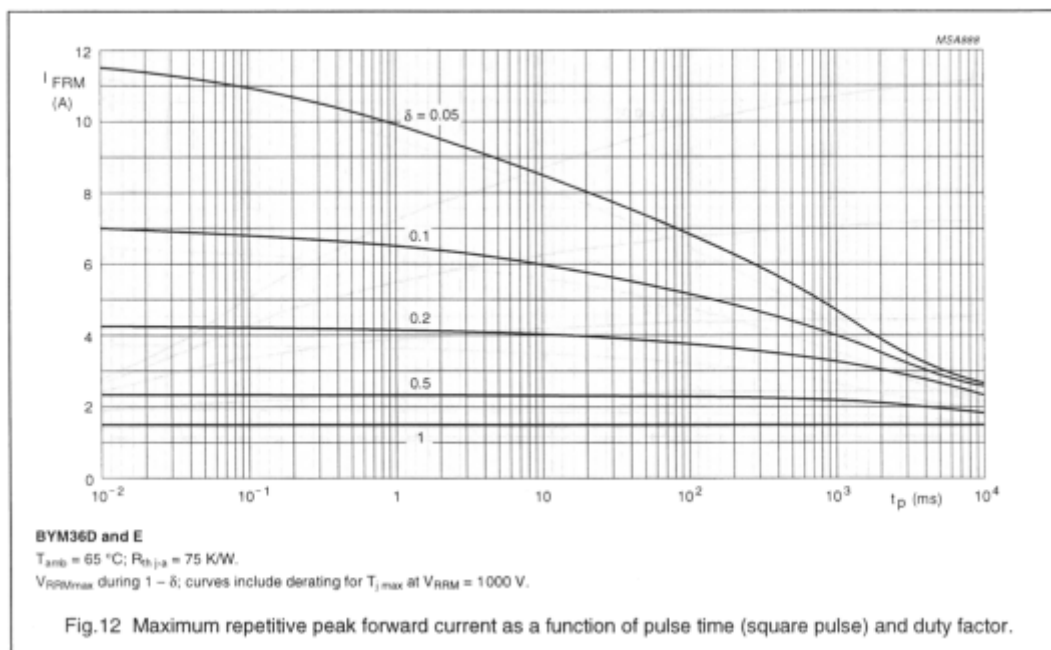
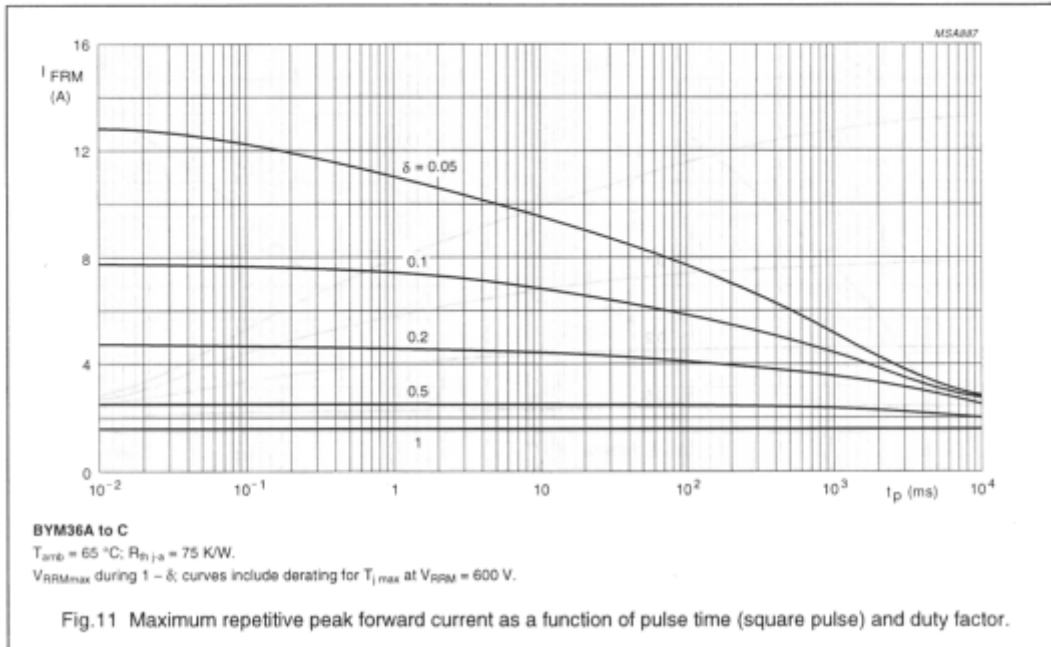
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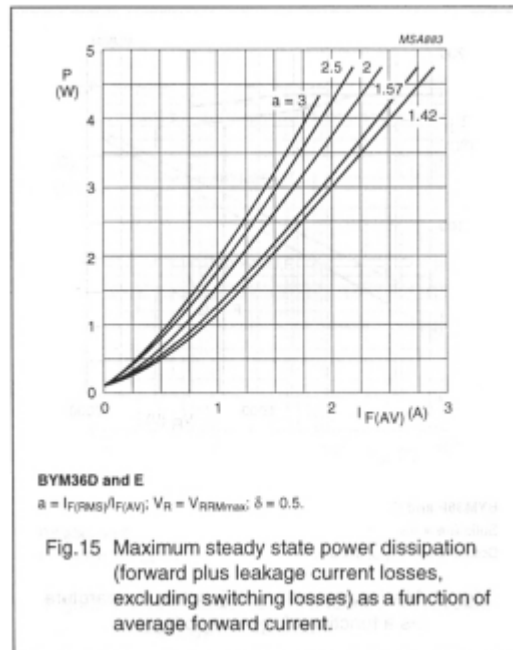
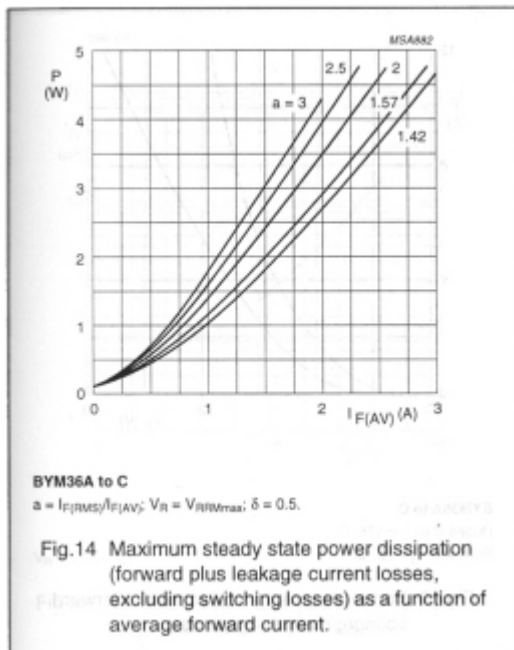
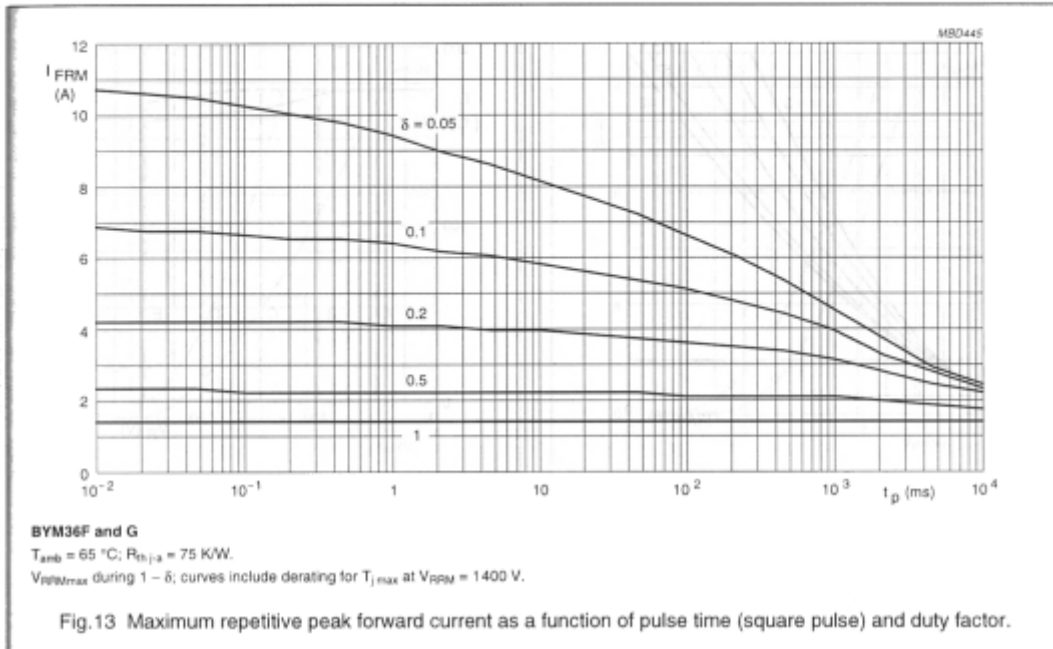
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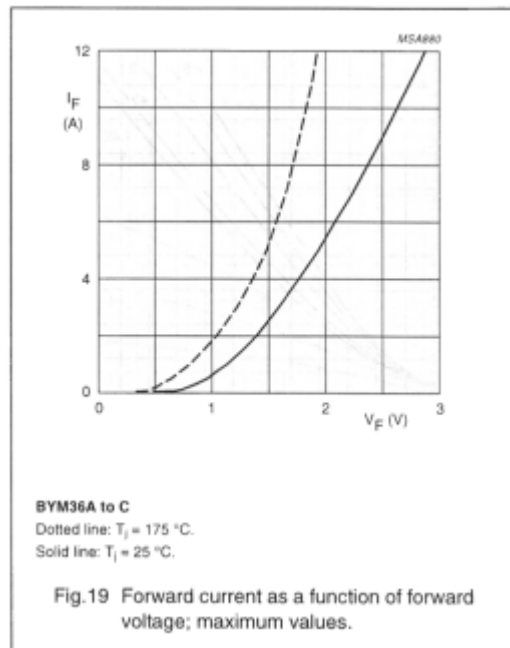
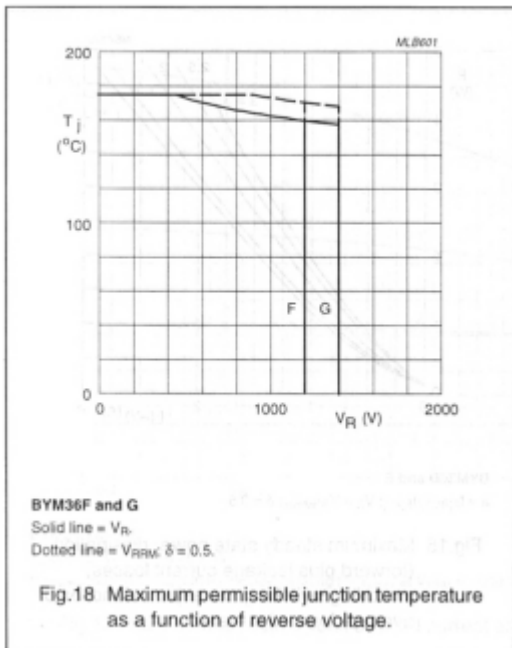
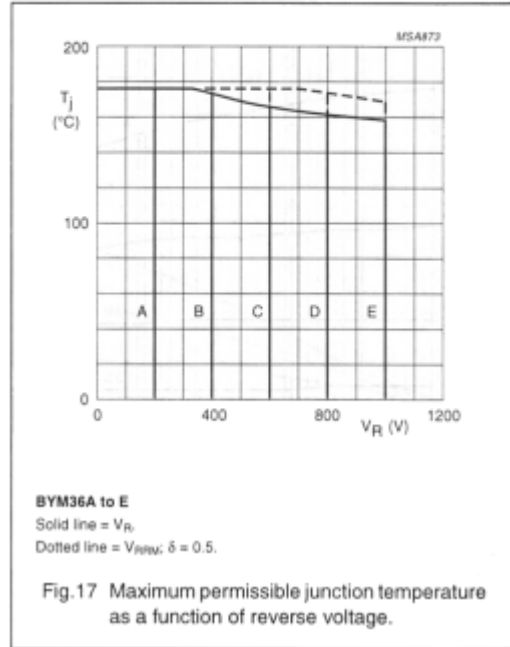
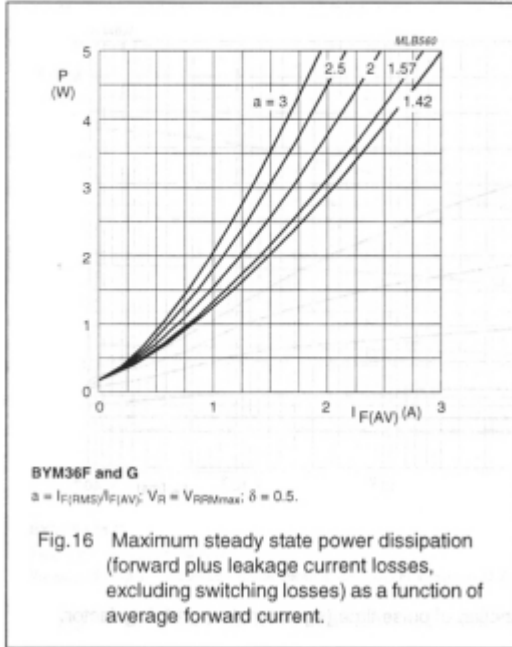
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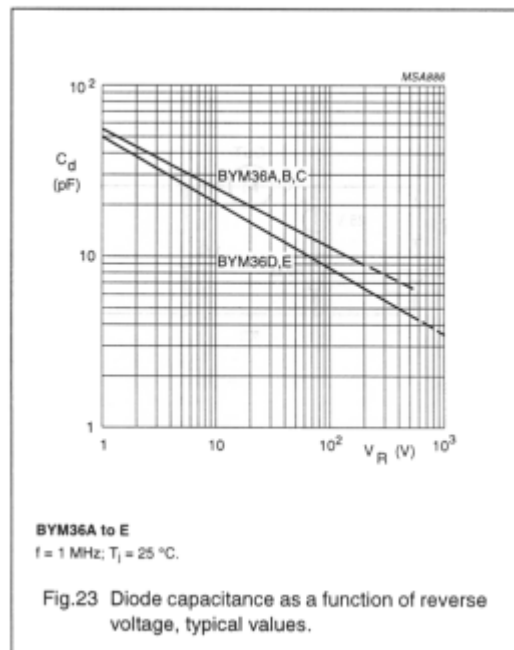
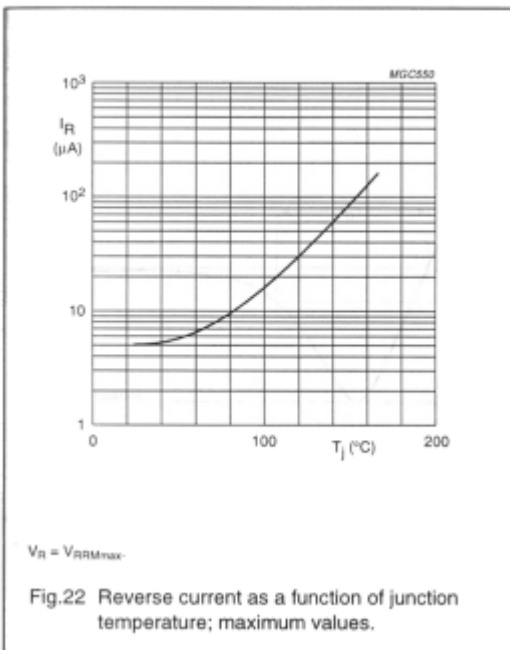
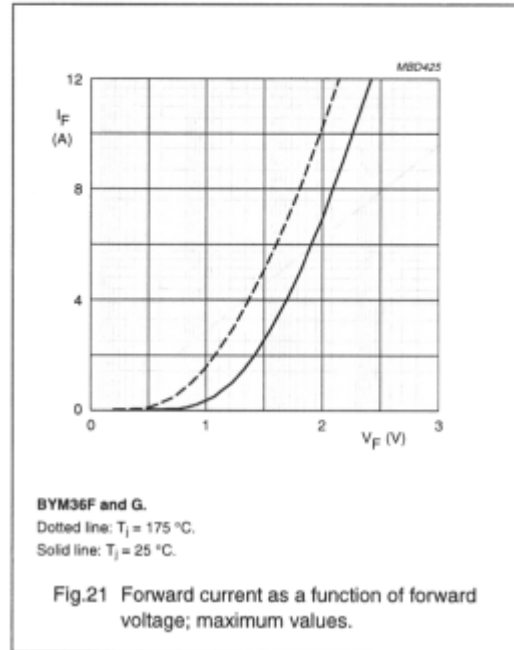
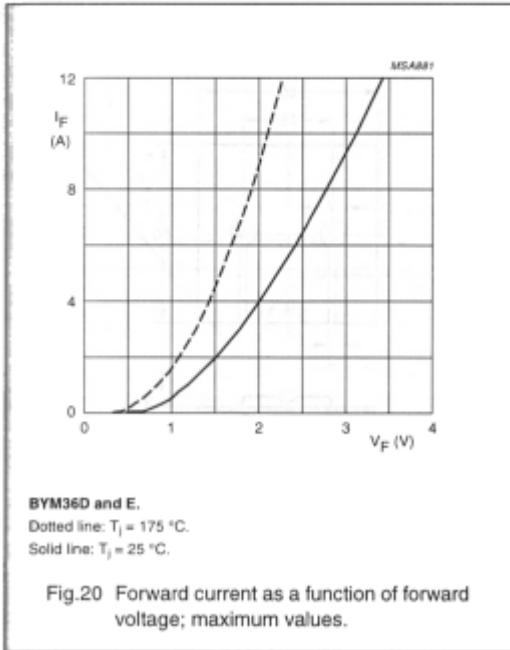
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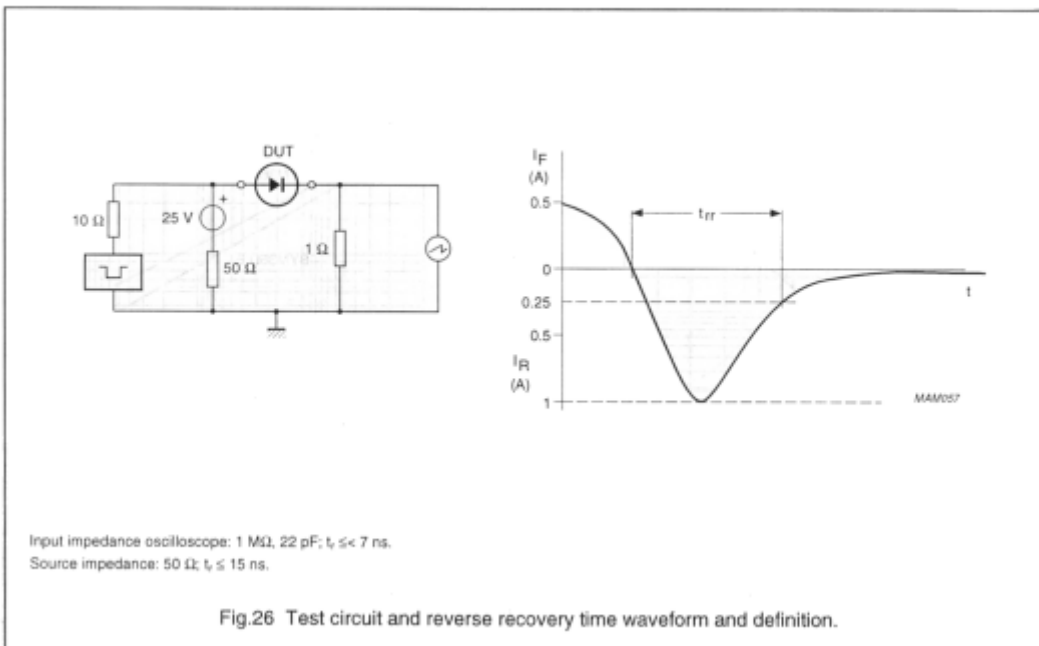
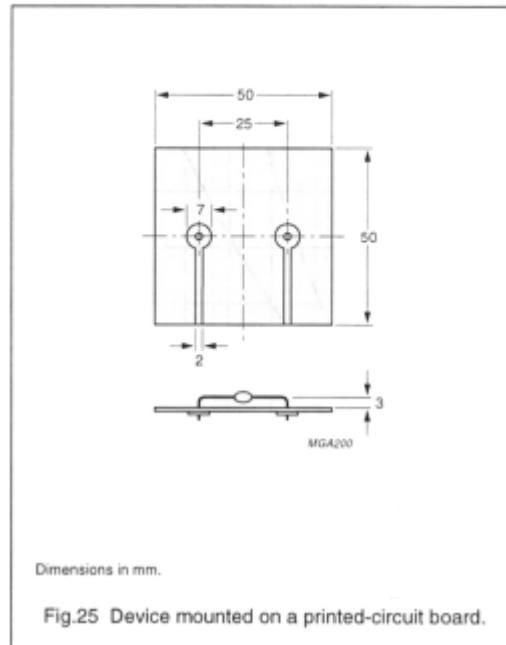
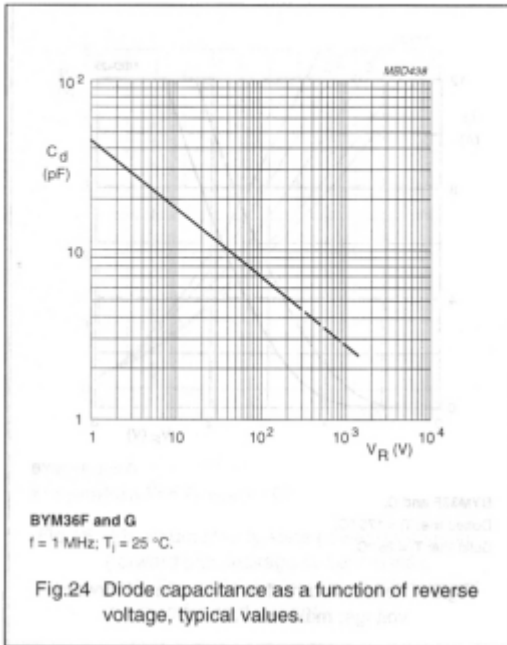
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