

January 7, 1998

TEL:805-498-2111 FAX:805-498-3804 WEB:http://www.semtech.com

### AXIAL LEADED HERMETICALLY SEALED FAST RECTIFIER DIODE

### QUICK REFERENCE DATA

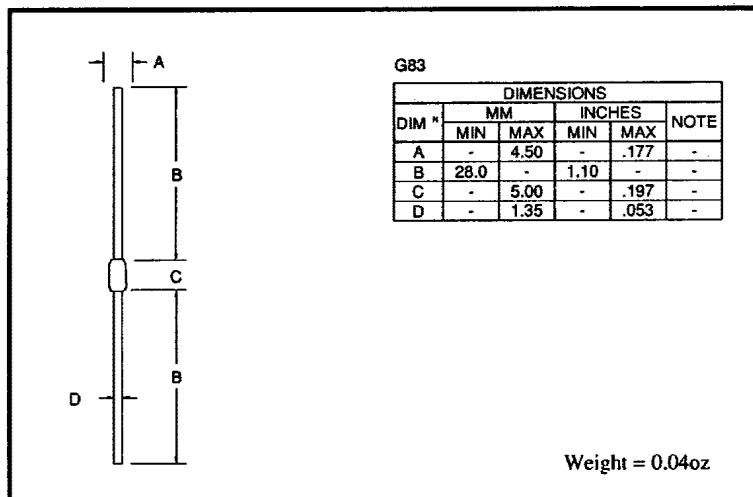
- Low reverse recovery time
- Glass passivated for hermetic sealing
- Low switching losses
- Soft, non-snap off, recovery characteristics
- Avalanche capability

- $V_R = 1000V$
- $I_F = 2.7A$
- $t_{rr} = 150nS$
- $I_R = 5\mu A$

### ABSOLUTE MAXIMUM RATINGS (@ 25°C unless otherwise specified)

	Symbol	3PFR0	Unit
Working reverse voltage	$V_{RWM}$	1000	V
Repetitive reverse voltage	$V_{RRM}$	1000	V
Surge reverse voltage	$V_{RSM}$	1100	V
Average forward current (@ 55°C, lead length 0.375")	$I_{F(AV)}$	2.7	A
Repetitive surge current (@ 55°C in free air, lead length 0.375")	$I_{FRM}$	21	A
Non-repetitive surge current ( $t_p = 8.3mS$ , @ $V_R$ & $T_{jmax}$ )	$I_{FSM}$	70	A
Storage temperature range	$T_{STG}$	-65 to +175	°C
Operating temperature range	$T_{OP}$	-65 to +175	°C

### MECHANICAL



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**ELECTRICAL CHARACTERISTICS** (@ 25°C unless otherwise specified)

	Symbol	3PFR0	Unit
Average forward current max. (pcb mounted; $T_A = 55^\circ\text{C}$ ) for sine wave	$I_{F(AV)}$	1.15	A
for square wave ( $d = 0.5$ )	$I_{F(AV)}$	1.20	A
Average forward current max. ( $T_L = 55^\circ\text{C}$ ; $L = 3/8"$ ) for sine wave	$I_{F(AV)}$	2.60	A
for square wave	$I_{F(AV)}$	2.70	A
$I^2t$ for fusing ( $t = 8.3\text{mS}$ ) max.	$I^2t$	20	$\text{A}^2\text{S}$
Forward voltage drop max. @ $I_F = 2.0\text{A}$ , $T_j = 25^\circ\text{C}$	$V_F$	1.5	V
Reverse current max. @ $V_{RWM}$ , $T_j = 25^\circ\text{C}$	$I_R$	5.0	$\mu\text{A}$
@ $V_{RWM}$ , $T_j = 100^\circ\text{C}$	$I_R$	25	$\mu\text{A}$
Reverse recovery time max. 0.5A $I_F$ to 1.0A $I_R$ . Recovers to 0.25A $I_{RR}$ .	$t_{rr}$	150	nS
Junction capacitance typ. @ $V_R = 5\text{V}$ , $f = 1\text{MHz}$	$C_j$	70	$\rho\text{F}$

**THERMAL CHARACTERISTICS**

	Symbol	3PFR0	Unit
Thermal resistance - junction to lead Lead length = 0"	$R_{\theta JL}$	12	$^\circ\text{C/W}$
Lead length = 0.375"	$R_{\theta JL}$	26	$^\circ\text{C/W}$
Thermal resistance - junction to amb. on 0.06" thick pcb. 1 oz. copper.	$R_{\theta JA}$	75	$^\circ\text{C/W}$

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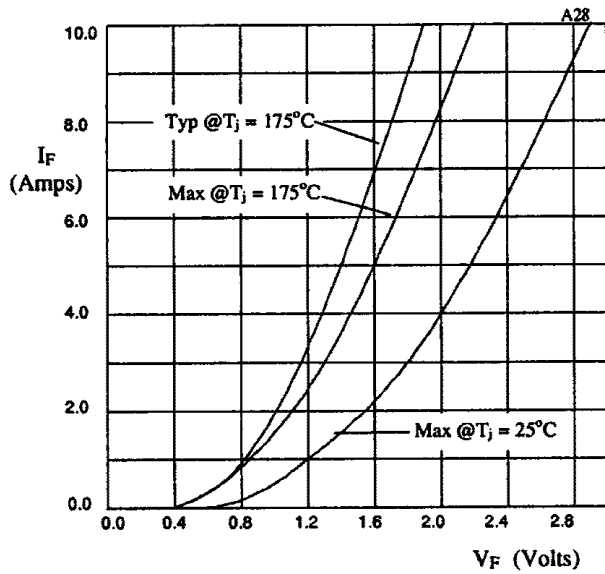


Fig 1. Forward voltage drop as a function of forward current.

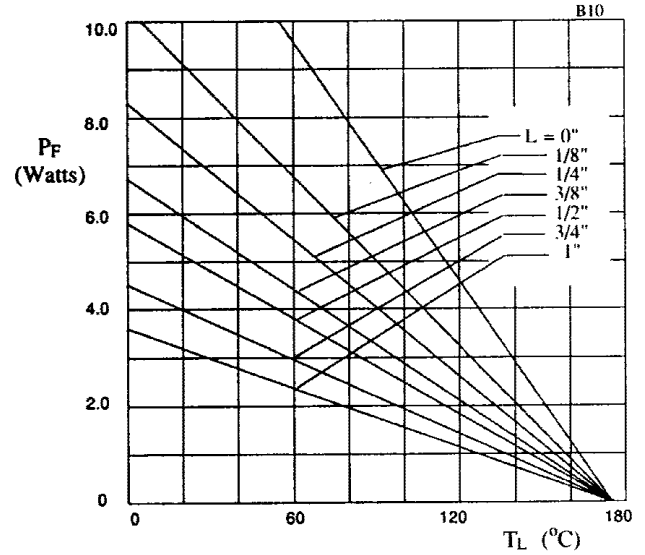


Fig 2. Maximum power versus lead temperature.

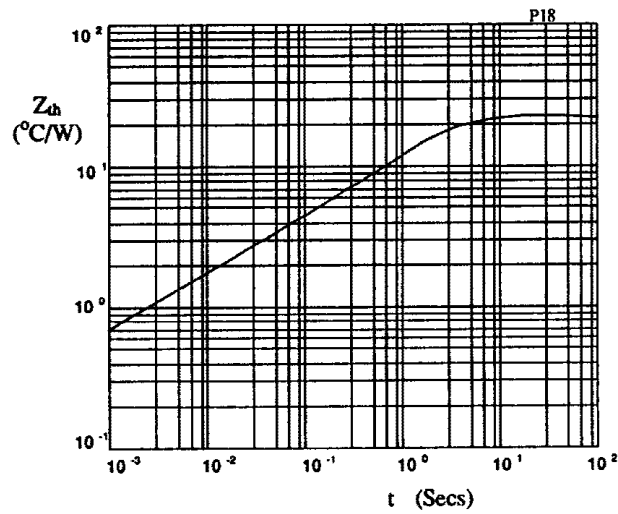


Fig 3. Transient thermal impedance characteristic.

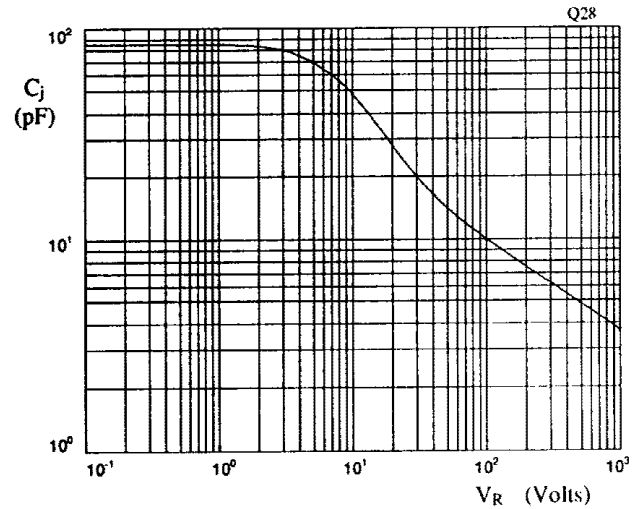


Fig 4. Typical junction capacitance as a function of reverse voltage.

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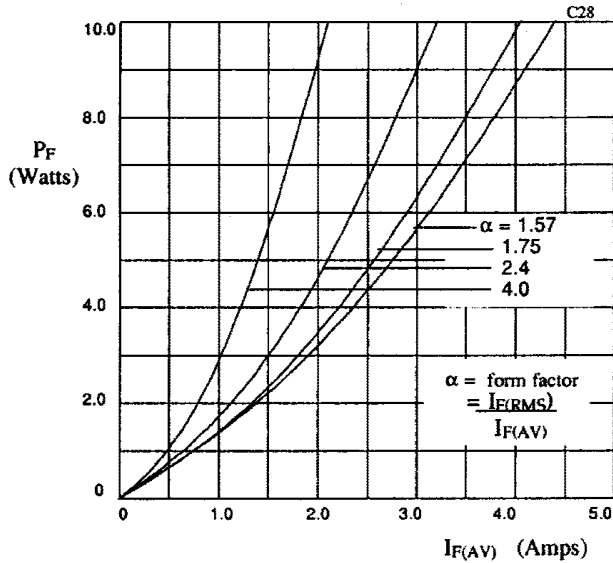


Fig 5. Forward power dissipation as a function of forward current, for sinusoidal operation.

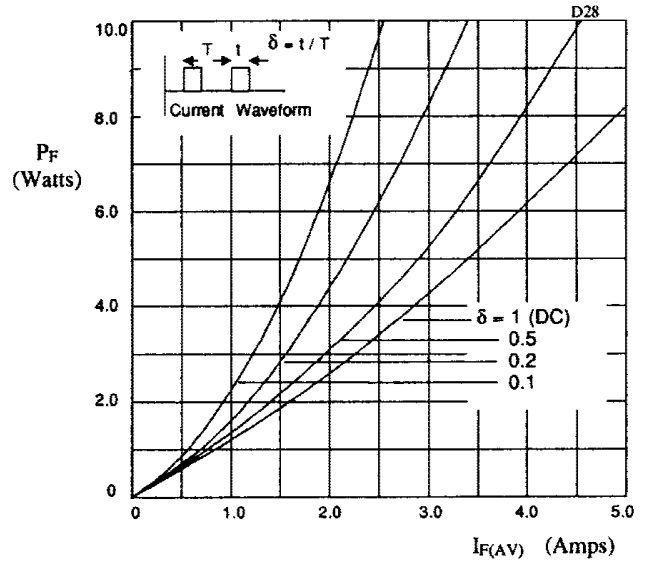


Fig 6. Forward power dissipation as a function of forward current, for square wave operation.

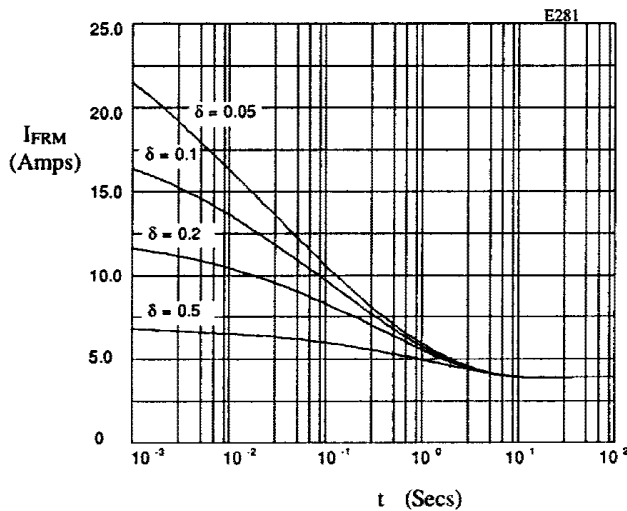


Fig 7. Typical repetitive forward current as a function of pulse width at 55°C;  $R_{\theta JL} = 22 \text{ }^\circ\text{C/W}$ ;  $V_{RWM}$  during  $1 - \delta$ .

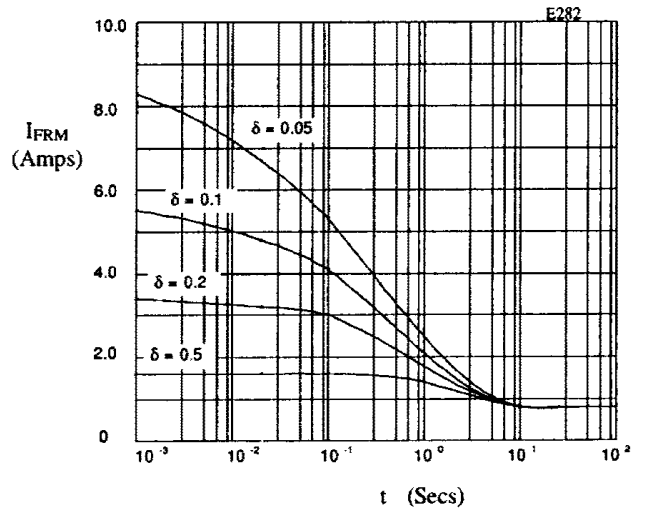


Fig 8. Typical repetitive forward current as a function of pulse width at 100°C;  $R_{\theta JL} = 75 \text{ }^\circ\text{C/W}$ ;  $V_{RWM}$  during  $1 - \delta$ .