

SEMTECH

**RECTIFIER, up to 1kV, 3.25A,
300ns**

**3PF8
3PF0**

January 29, 1998

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AXIAL LEADED HERMETICALLY SEALED FAST RECTIFIER DIODE

QUICK REFERENCE DATA

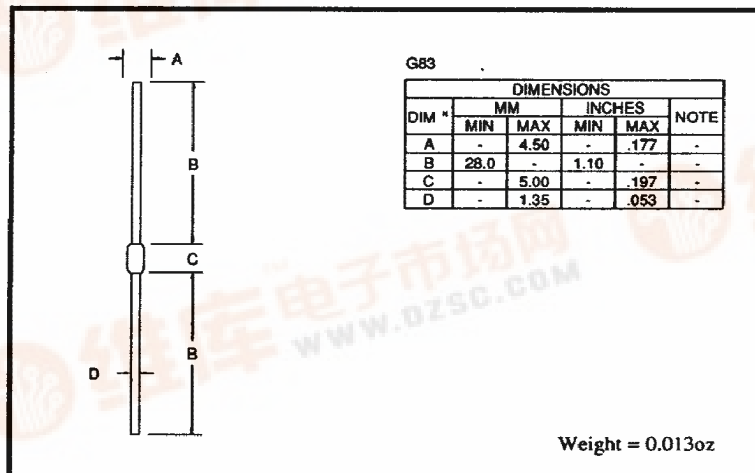
- Low reverse recovery time
- Glass passivated for hermetic sealing
- Low switching losses
- Soft, non-snap off, recovery characteristics
- Avalanche capability

- $V_R = 800 \text{ \& } 1000\text{V}$
- $I_F = 3.25\text{A}$
- $t_{rr} = 300\text{nS}$
- $I_R = 1\mu\text{A}$

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

	Symbol	3PF8	3PF0	Unit
Working reverse voltage	V_{RWM}	800	1000	V
Repetitive reverse voltage	V_{RRM}	800	1000	V
Surge reverse voltage	V_{RSM}	900	1100	V
Average forward current (@ 55°C, lead length 0.375")	$I_{F(AV)}$	← 3.25 →		A
Repetitive surge current (@ 55°C in free air, lead length 0.375")	I_{FRM}	← 27 →		A
Non-repetitive surge current ($t_p = 8.3\text{mS}$, @ V_R & T_{jmax})	I_{FSM}	← 76 →		A
Storage temperature range	T_{STG}	-65 to +175		°C
Operating temperature range	T_{OP}	-65 to +175		°C

MECHANICAL



These products are available in Europe to DEF STAN 59-61 (PART 80)/043 to F and FX levels.

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ELECTRICAL CHARACTERISTICS (@ 25°C unless otherwise specified)

	Symbol	3PF8	3PF0	Unit
Average forward current max. (pcb mounted; $T_A = 55^\circ\text{C}$) for sine wave	$I_{F(AV)}$	← 1.40 →		A
for square wave ($d = 0.5$)	$I_{F(AV)}$	← 1.50 →		A
Average forward current max. ($T_L = 55^\circ\text{C}$; $L = 3/8"$) for sine wave	$I_{F(AV)}$	← 3.10 →		A
for square wave	$I_{F(AV)}$	← 3.25 →		A
I^2t for fusing ($t = 8.3\text{mS}$) max.	I^2t	← 24 →		A^2S
Forward voltage drop max. @ $I_F = 3.0\text{A}$, $T_j = 25^\circ\text{C}$	V_F	← 1.3 →		V
Reverse current max @ V_{RWM} , $T_j = 25^\circ\text{C}$	I_R	← 1.0 →		μA
@ V_{RWM} , $T_j = 100^\circ\text{C}$	I_R	← 10 →		μA
Reverse recovery time max. 0.5A I_F to 1.0A I_R . Recovers to 0.25A I_{RR} .	t_{rr}	← 300 →		nS
Junction capacitance typ. @ $V_R = 5\text{V}$, $f = 1\text{MHz}$	C_j	← 30 →		pF

THERMAL CHARACTERISTICS

	Symbol	3PF8	3PF0	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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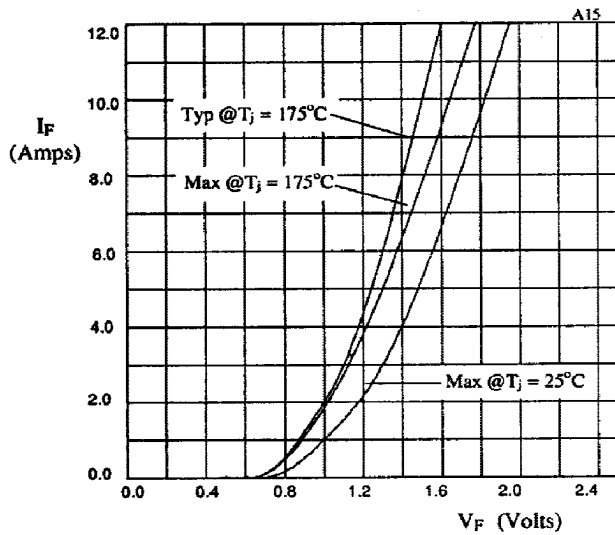


Fig 1. Forward voltage drop as a function of forward current.

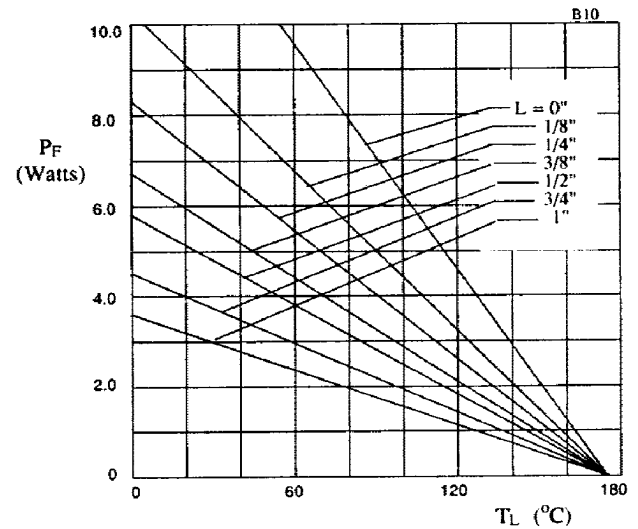


Fig 2. Maximum power versus lead temperature.

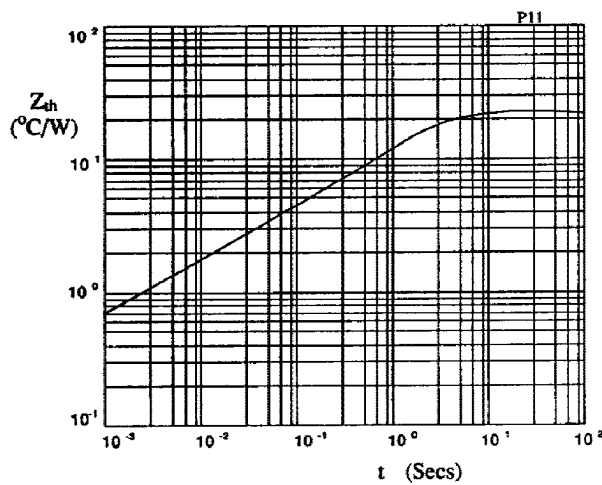


Fig 3. Transient thermal impedance characteristic.

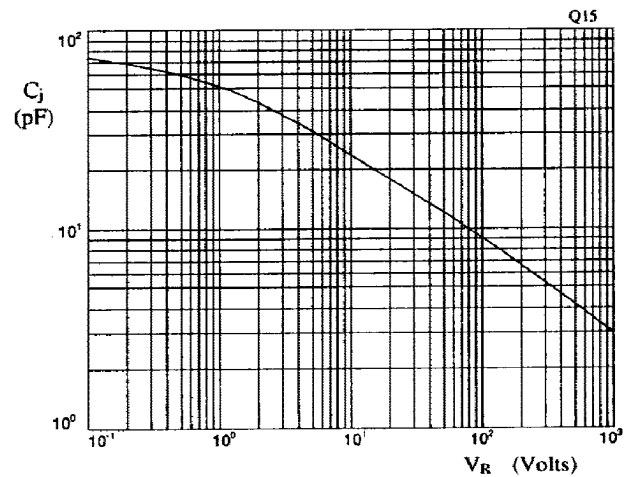


Fig 4. Typical junction capacitance as a function of reverse voltage.

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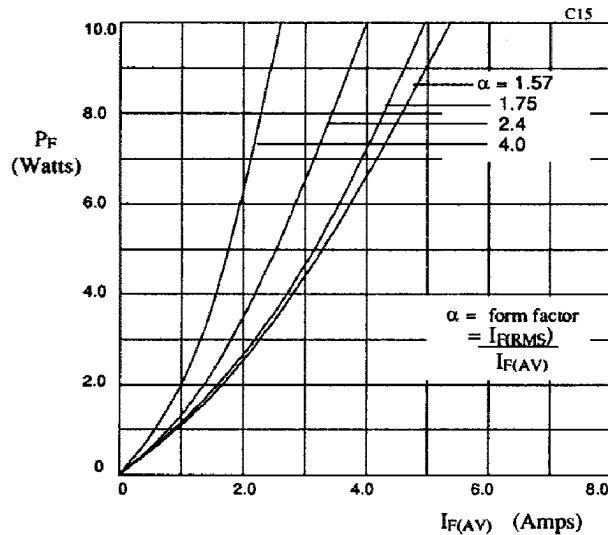


Fig 5. Forward power dissipation as a function of forward current, for sinusoidal operation.

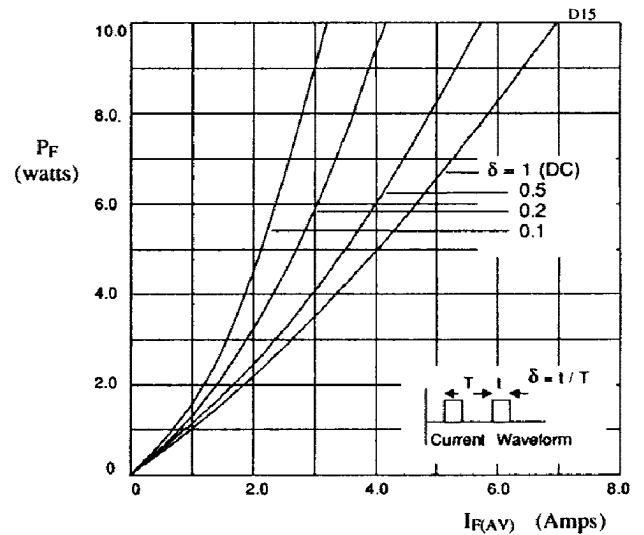


Fig 6. Forward power dissipation as a function of forward current, for square wave operation.

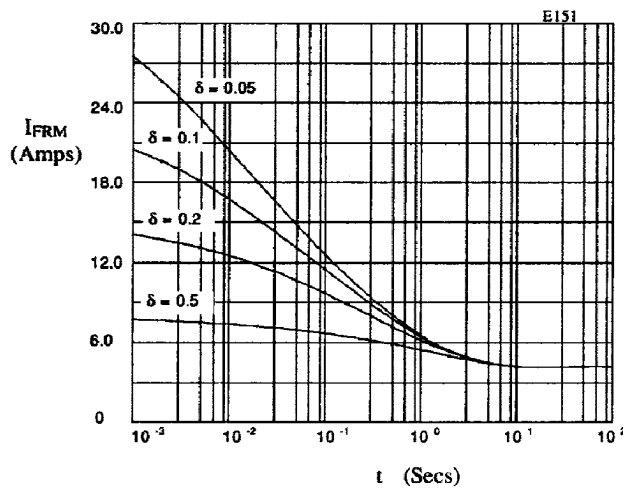


Fig 7. Typical repetitive forward current as a function of pulse width at 55°C; $R_{\theta JL} = 22^\circ\text{C/W}$; V_{RWM} during $1 - \delta$.

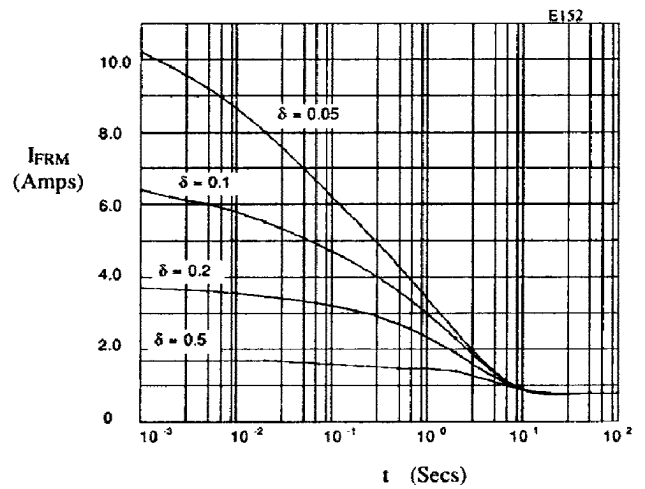


Fig 8. Typical repetitive forward current as a function of pulse width at 100°C; $R_{\theta JL} = 75^\circ\text{C/W}$; V_{RWM} during $1 - \delta$.