January 29, 1998

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

## AXIAL LEADED HERMETICALLY SEALED FAST RECTIFIER DIODE

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

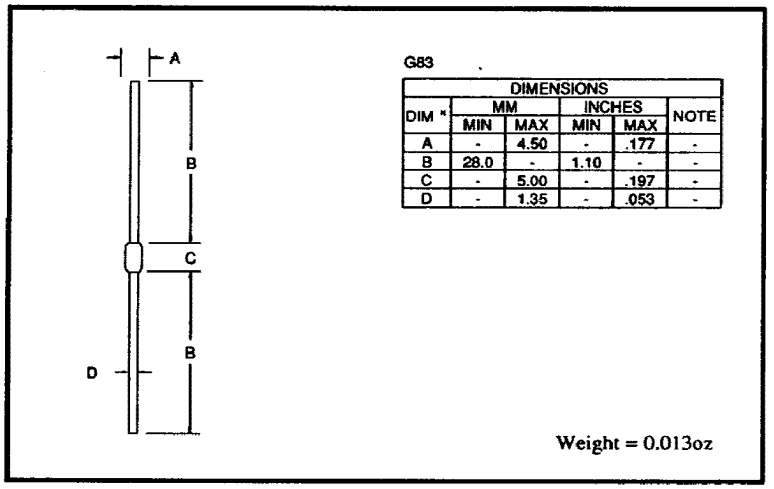
## QUICK REFERENCE DATA

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

### 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 ($t_p$ = 8.3mS, @ $V_R$ & $T_{jmax}$ ) | $I_{FSM}$ | ← 76 → | | A |
| Storage temperature range | $T_{STG}$ | -65 to +175 | | °C |
| Operating temperature range | $T_{OP}$ | -65 to +175 | | °C |

### MECHANICAL




| DIM | DIMENSIONS MM MIN | MM MAX | INCHES MIN | INCHES MAX | NOTE |
|---|---|---|---|---|---|
| A | - | 4.50 | - | .177 | - |
| B | 28.0 | - | 1.10 | - | - |
| C | - | 5.00 | - | .197 | - |
| D | - | 1.35 | - | .053 | - |

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



652 MITCHELL ROAD NEWBURY PARK CA 91320

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

| | Symbol | 3PF8 3PF0 | Unit |
|---|---|---|---|
| Average forward current max. (pcb mounted; $T_A$ = 55°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°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 = 8.3mS) max. | $I^2t$ | ← 24 → | $A^2S$ |
| Forward voltage drop max. @ $I_F$ = 3.0A, $T_j$ = 25°C | $V_F$ | ← 1.3 → | V |
| Reverse current max | | | |
| @ $V_{RWM}$, $T_j$ = 25°C | $I_R$ | ← 1.0 → | µA |
| @ $V_{RWM}$, $T_j$ = 100°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. @ $V_R$ = 5V , f = 1MHz | $C_j$ | ← 30 → | pF |

## THERMAL CHARACTERISTICS

| | Symbol | 3PF8 3PF0 | Unit |
|---|---|---|---|
| Thermal resistance - junction to lead | | | |
| Lead length = 0" | $R_{\theta JL}$ | ← 12 → | °C/W |
| Lead length = 0.375" | $R_{\theta JL}$ | ← 26 → | °C/W |
| Thermal resistance - junction to amb. on 0.06" thick pcb. 1 oz. copper. | $R_{\theta JA}$ | ← 75 → | °C/W |

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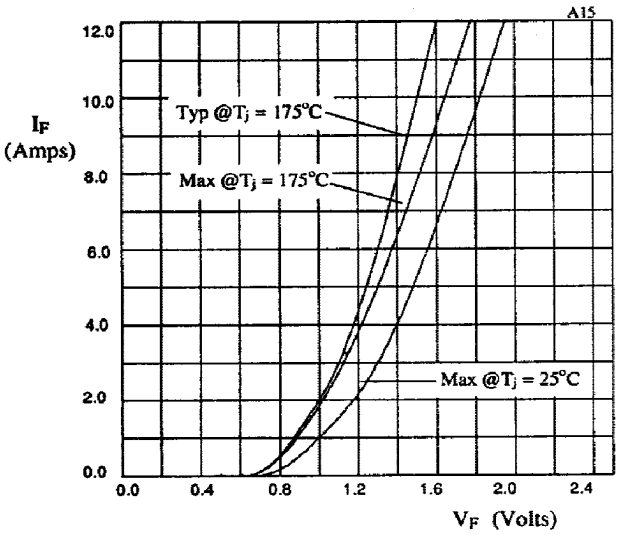


Fig 1. Forward voltage drop as a function of forward current.

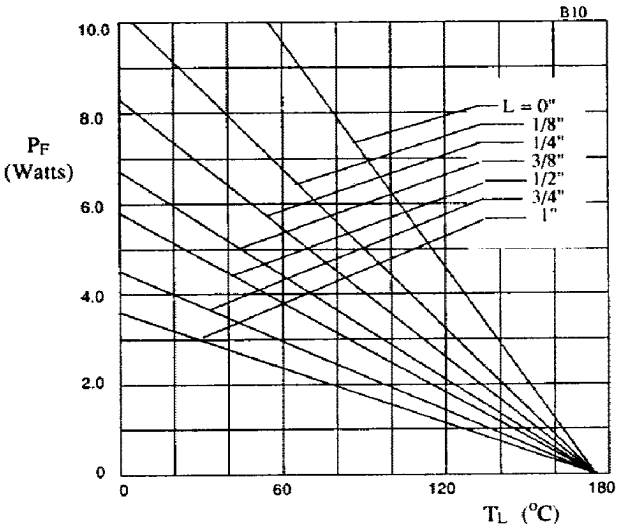


Fig 2. Maximum power versus lead temperature.

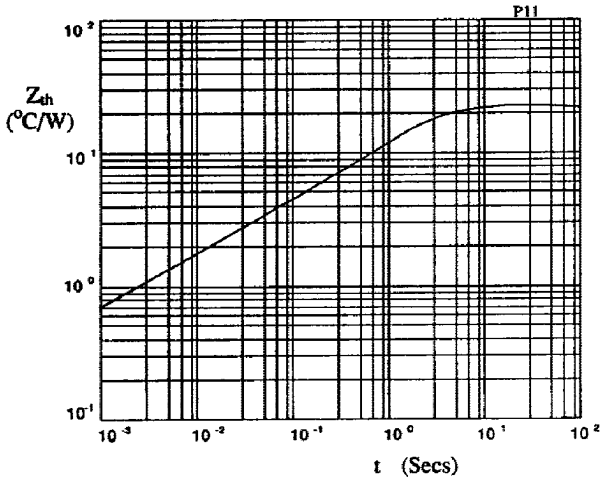


Fig 3. Transient thermal impedance characteristic.

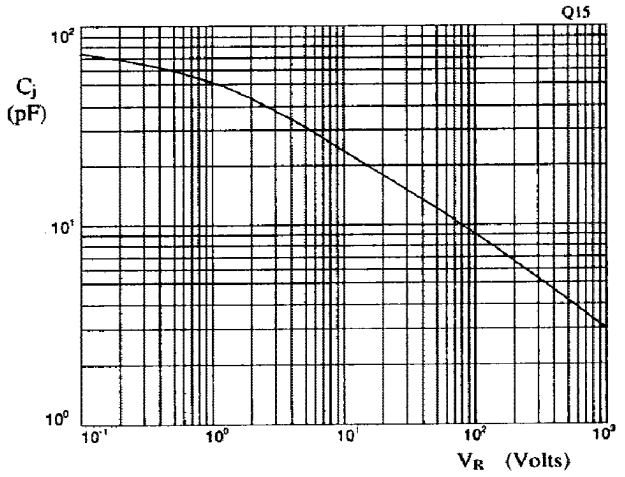


Fig 4. Typical junction capacitance as a function of reverse voltage.

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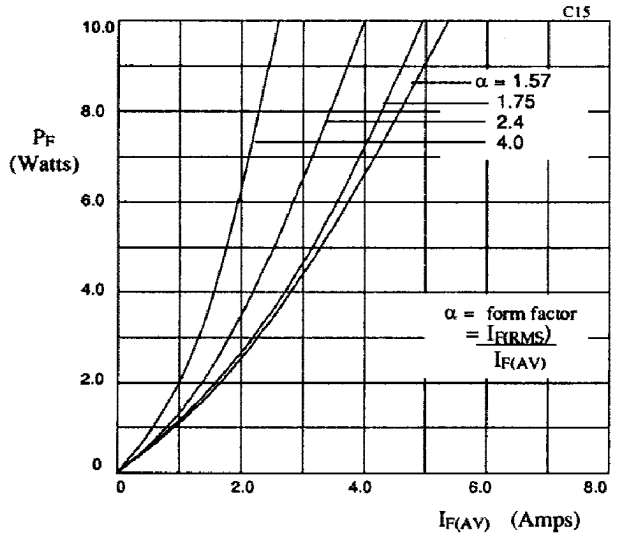


Fig 5. Forward power dissipation as a function of forward current, for sinusoidal operation.

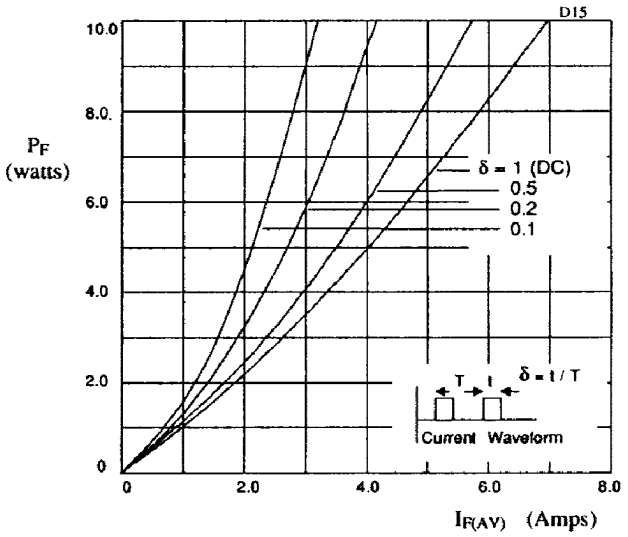


Fig 6. Forward power dissipation as a function of forward current, for square wave operation.

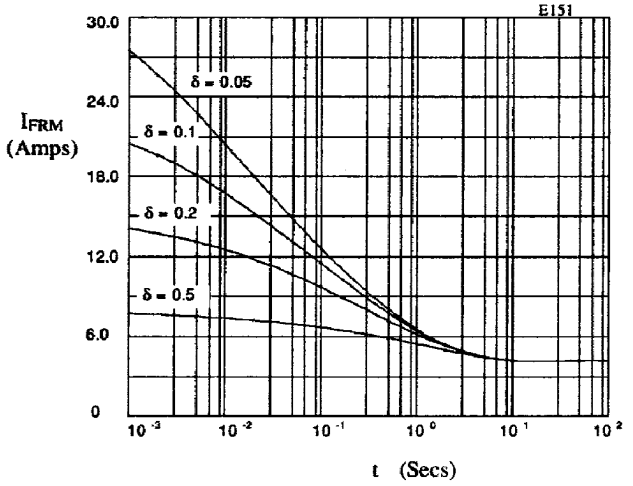


Fig 7. Typical repetitive forward current as a function of pulse width at 55°C; $R_{\theta JL}$ = 22 °C/W; $V_{RWM}$ during 1 - δ.

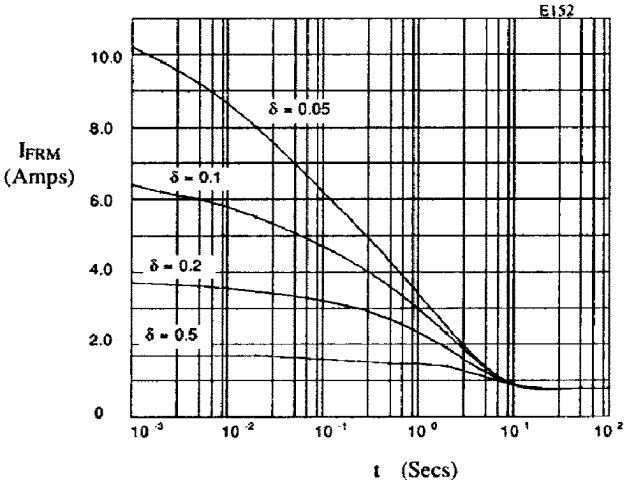


Fig 8. Typical repetitive forward current as a function of pulse width at 100°C; $R_{\theta JL}$ = 75 °C/W; $V_{RWM}$ during 1 - δ.