

January 7, 1998

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

### AXIAL LEADED HERMETICALLY SEALED HIGH VOLTAGE SUPERFAST RECTIFIER DIODE

### QUICK REFERENCE DATA

- Very low reverse recovery time
- High thermal shock resistance
- Hermetically sealed with Metoxilite metal oxide
- Low switching losses
- Soft, non-snap off, recovery characteristics

- $V_R = 3000V$
- $I_F = 0.36A$
- $t_{rr} = 50ns$
- $I_R = 1\mu A$

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

|  | Symbol      | SFF30       | Unit |
|--|-------------|-------------|------|
| Working reverse voltage  | $V_{RWM}$   | 3000        | V    |
| Repetitive reverse voltage   | $V_{RRM}$   | 3000        | V    |
| Average forward current<br>(@ 55°C, in oil)                              | $I_{F(AV)}$ | 0.36        | A    |
| Repetitive surge current<br>(@ 55°C in oil)                              | $I_{FRM}$   | 1.0         | A    |
| Non-repetitive surge current<br>( $t_p = 8.3ms$ , @ $V_R$ & $T_{jmax}$ ) | $I_{FSM}$   | 10.0        | A    |
| Storage temperature range  | $T_{STG}$   | -65 to +175 | °C   |
| Operating temperature range  | $T_{OP}$    | -65 to +175 | °C   |

### MECHANICAL

G12

| DIM # | DIMENSIONS |      |        |      | NOTE |
|-------|------------|------|--------|------|------|
|       | MM         |      | INCHES |      |      |
|       | MIN        | MAX  | MIN    | MAX  |      |
| A     | 1.6        | 2.8  | .065   | .110 | -    |
| B     | 25.4       | 33.0 | 1.00   | 1.30 | -    |
| C     | 4.8        | 5.5  | .190   | .215 | -    |
| D     | -          | .80  | -      | .030 | 1    |
| E     | .66        | .84  | .026   | .033 | -    |

NOTES:  
1. LEAD DIAMETER UNCONTROLLED OVER THIS REGION.

Weight = 0.04oz

January 7, 1998

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

|  | Symbol             | SFF30 | Unit             |
|--|--------------------|-------|------------------|
| Average forward current max.<br>(pcb mounted; T <sub>A</sub> = 55°C)<br>for sine wave              | I <sub>F(AV)</sub> | 0.16  | A                |
|  | I <sub>F(AV)</sub> | 0.17  | A                |
| Average forward current max.<br>(oil at 55°C)<br>for sine wave                                     | I <sub>F(AV)</sub> | 0.33  | A                |
|  | I <sub>F(AV)</sub> | 0.36  | A                |
| I <sup>2</sup> t for fusing (t = 8.3mS) max.   | I <sup>2</sup> t   | 0.42  | A <sup>2</sup> S |
| Forward voltage drop max.<br>@ I <sub>F</sub> = 0.175A, T <sub>j</sub> = 25°C                      | V <sub>F</sub>     | 7.00  | V                |
| Reverse current max.<br>@ V <sub>RWM</sub> , T <sub>j</sub> = 25°C                                 | I <sub>R</sub>     | 1.0   | μA               |
|  | I <sub>R</sub>     | 25    | μA               |
| Reverse recovery time max.<br>50mA I <sub>F</sub> , 100mA I <sub>R</sub> ., 25mA I <sub>RR</sub> . | t <sub>rr</sub>    | 50    | nS               |
| Junction capacitance typ.<br>@ V <sub>R</sub> = 5V, f = 1MHz                                       | C <sub>j</sub>     | 6.5   | pF               |

**THERMAL CHARACTERISTICS**

|  | Symbol           | SFF30 | Unit |
|--|------------------|-------|------|
| Thermal resistance - junction to oil<br>Stirred oil                        | R <sub>θJO</sub> | 18    | °C/W |
| Unstirred oil  | R <sub>θJO</sub> | 30    | °C/W |
| Thermal resistance - junction to amb.<br>on 0.06" thick pcb. 1 oz. copper. | R <sub>θJA</sub> | 90    | °C/W |

January 7, 1998

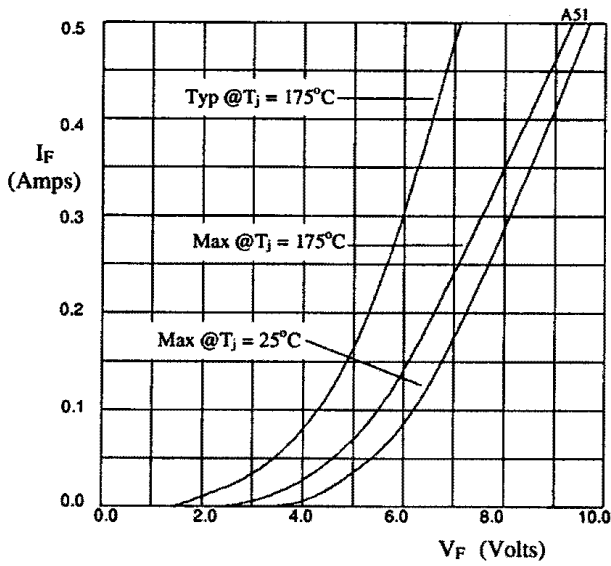


Fig 1. Forward voltage drop as a function of forward current.

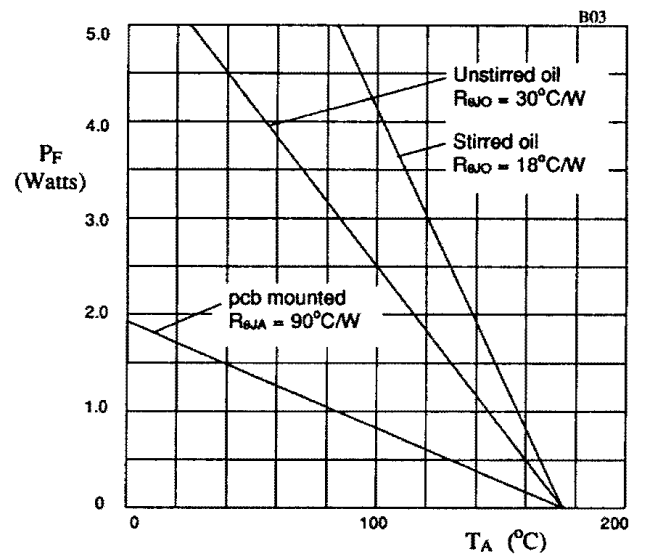


Fig 2. Power derating in air and oil.

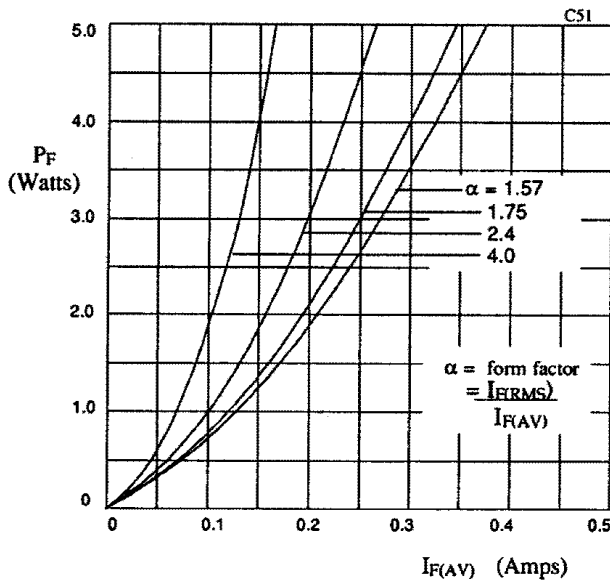


Fig 3. Forward power dissipation as a function of forward current, for sinusoidal operation.

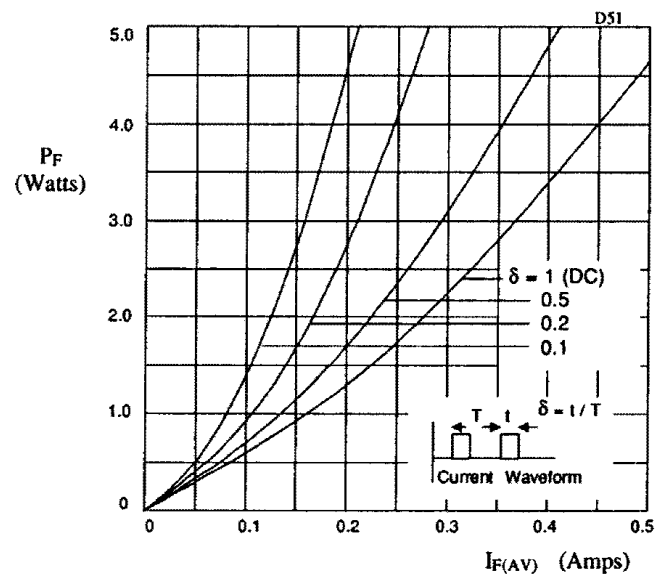


Fig 4. Forward power dissipation as a function of forward current, for square wave operation.