

January 7, 1998

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

## AXIAL LEADED HERMETICALLY SEALED SUPERFAST RECTIFIER DIODE

## QUICK REFERENCE DATA

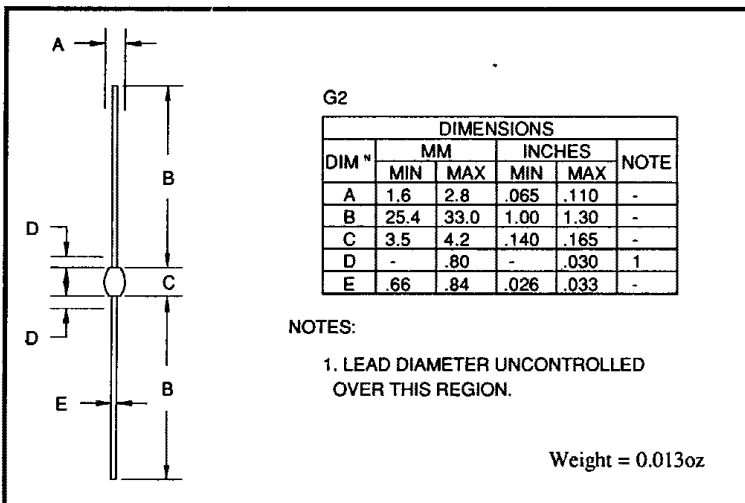
- Very low reverse recovery time
- Hermetically sealed with Metoxilite fused metal oxide
- Low thermal impedance
- Low switching losses
- Soft, non-snap off, recovery characteristics

- $V_R = 200 - 400V$
- $I_F = 2.1A$
- $t_{rr} = 50nS$
- $I_R = 10\mu A$

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

|  | Symbol      | USC1104         | USC1105 | USC1106 | Unit |
|--|-------------|-----------------|---------|---------|------|
| Working reverse voltage  | $V_{RWM}$   | 200             | 300     | 400     | V    |
| Repetitive reverse voltage   | $V_{RRM}$   | 200             | 300     | 400     | V    |
| Average forward current<br>(@ 55°C, lead length = 0.375")                | $I_{F(AV)}$ | ← 2.1 →         |         |         | A    |
| Repetitive surge current<br>(@ 55°C in free air, lead length 0.375")     | $I_{FRM}$   | ← 9.0 →         |         |         | A    |
| Non-repetitive surge current<br>( $t_p = 8.3mS$ , @ $V_R$ & $T_{jmax}$ ) | $I_{FSM}$   | ← 20 →          |         |         | A    |
| Storage temperature range  | $T_{STG}$   | ← -55 to +150 → |         |         | °C   |
| Operating temperature range  | $T_{OP}$    | ← -55 to +150 → |         |         | °C   |

### MECHANICAL



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

|  | Symbol             | USC1104 | USC1105 | USC1106 | Unit             |
|--|--------------------|---------|---------|---------|------------------|
| Average forward current max.<br>(pcb mounted; T <sub>A</sub> = 55°C)<br>for sine wave                          | I <sub>F(AV)</sub> | ←       | 1.0     | →       | A                |
|  | I <sub>F(AV)</sub> | ←       | 1.1     | →       | A                |
| Average forward current max.<br>(T <sub>L</sub> = 55°C; L = 3/8")<br>for sine wave                             | I <sub>F(AV)</sub> | ←       | 2.0     | →       | A                |
|  | I <sub>F(AV)</sub> | ←       | 2.1     | →       | A                |
| I <sup>2</sup> t for fusing (t = 8.3mS) max.   | I <sup>2</sup> t   | ←       | 1.7     | →       | A <sup>2</sup> S |
| Forward voltage drop max.<br>@ I <sub>F</sub> = 1.0A, T <sub>j</sub> = 25°C                                    | V <sub>F</sub>     | ←       | 1.25    | →       | V                |
| Reverse current max.<br>@ V <sub>RWM</sub> , T <sub>j</sub> = 25°C   | I <sub>R</sub>     | ←       | 10      | →       | μA               |
|  | I <sub>R</sub>     | ←       | 200     | →       | μA               |
| Reverse recovery time max.<br>0.5A I <sub>F</sub> to 1.0A I <sub>R</sub> . Recovers to 0.25A 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>     | ←       | 25      | →       | ρF               |

### THERMAL CHARACTERISTICS

|  | Symbol           | USC1104 | USC1105 | USC1106 | Unit |
|--|------------------|---------|---------|---------|------|
| Thermal resistance - junction to lead<br>Lead length = 0.0"                | R <sub>θJL</sub> | ←       | 7       | →       | °C/W |
|  | R <sub>θJL</sub> | ←       | 38      | →       | °C/W |
| Thermal resistance - junction to amb.<br>on 0.06" thick pcb. 1 oz. copper. | R <sub>θJA</sub> | ←       | 95      | →       | °C/W |