

January 7, 1998

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

### QUICK REFERENCE DATA AXIAL LEADED HERMETICALLY SEALED STANDARD RECOVERY RECTIFIER DIODE

- $V_R = 200 - 1000V$
- $I_F = 2.0A$
- $t_{rr} = 2\mu s$
- $V_F = 1.1V$
- Low reverse leakage current
- Hermetically sealed in Metoxilite fused metal oxide
- Good thermal shock resistance
- Low forward voltage drop
- Avalanche capability.

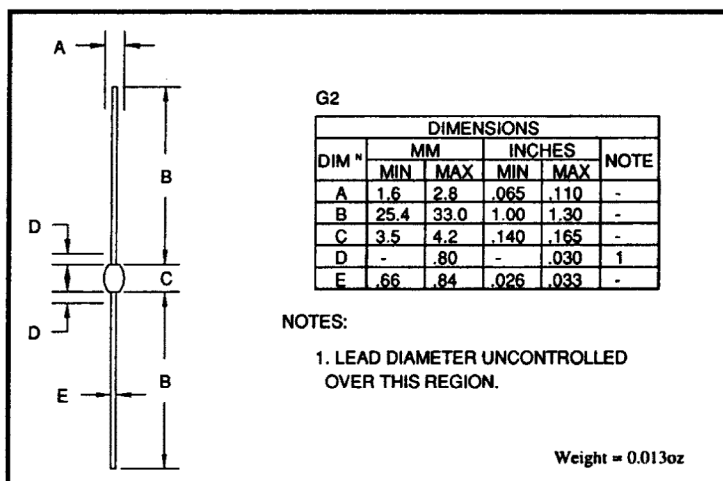
### ABSOLUTE MAXIMUM RATINGS (@ 25°C unless otherwise specified)

|                                                                          | Symbol      | 1N5614<br>S2M   | 1N5616<br>S4M | 1N5618<br>S6M | 1N5620<br>S8M | 1N5622<br>S0M | Unit |
|--------------------------------------------------------------------------|-------------|-----------------|---------------|---------------|---------------|---------------|------|
| Working reverse voltage                                                  | $V_{RWM}$   | 200             | 400           | 600           | 800           | 1000          | V    |
| Repetitive reverse voltage                                               | $V_{RRM}$   | 200             | 400           | 600           | 800           | 1000          | V    |
| Average forward current<br>(@ 55°C, lead length 0.375")                  | $I_{F(AV)}$ | ← 2.0 →         |               |               |               |               | A    |
| Repetitive surge current<br>(@ 55°C in free air, lead length 0.375")     | $I_{FRM}$   | ← 10 →          |               |               |               |               | A    |
| Non-repetitive surge current<br>( $t_p = 8.3ms$ , @ $V_R$ & $T_{jmax}$ ) | $I_{FSM}$   | ← 30 →          |               |               |               |               | A    |
| Storage temperature range                                                | $T_{STG}$   | ← -65 to +175 → |               |               |               |               | °C   |
| Operating temperature range                                              | $T_{OP}$    | ← -65 to +175 → |               |               |               |               | °C   |

### MECHANICAL

These products are qualified to MIL-PRF-19500/427 and are preferred parts as listed in MIL-STD-701. They can be supplied fully released as JAN, JANTX, JANTXV and JANS versions.

These products are available in Europe to DEF STAN 59-61 (PART 80)/029 to F and FX levels.



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

|                                                                                                                                     | Symbol                               | 1N5614<br>S2M | 1N5616<br>S4M | 1N5618<br>S6M | 1N5620<br>S8M | 1N5622<br>S0M | Unit                 |
|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------------|---------------|---------------|---------------|---------------|----------------------|
| Average forward current (sine wave)<br>- max. pcb mounted; $T_A = 55^\circ\text{C}$<br>- max. $L = 3/8"$ ; $T_L = 55^\circ\text{C}$ | $I_F(\text{AV})$<br>$I_F(\text{AV})$ | ←             |               | 1.0           | →             |               | A<br>A               |
| $I^2t$ for fusing ( $t = 8.3\text{mS}$ ) max.                                                                                       | $I^2t$                               | ←             |               | 5.0           | →             |               | $\text{A}^2\text{S}$ |
| Forward voltage drop max.<br>@ $I_F = 1.0\text{A}$ , $T_j = 25^\circ\text{C}$                                                       | $V_F$                                | ←             |               | 1.1           | →             |               | V                    |
| Reverse current max.<br>@ $V_{RWM}$ , $T_j = 25^\circ\text{C}$<br>@ $V_{RWM}$ , $T_j = 100^\circ\text{C}$                           | $I_R$<br>$I_R$                       | ←             |               | 0.5<br>25     | →             |               | μA<br>μA             |
| Reverse recovery time max.<br>0.5A $I_F$ to 1.0A $I_R$ . Recovers to 0.25A $I_{RR}$ .                                               | $t_{rr}$                             | ←             |               | 2.0           | →             |               | μS                   |
| Junction capacitance typ.<br>@ $V_R = 5\text{V}$ , $f = 1\text{MHz}$                                                                | $C_j$                                | ←             |               | 23            | →             |               | pF                   |
| Thermal resistance - junction to lead<br>Lead length = 0.375"                                                                       | $R_{\theta JL}$                      | ←             |               | 36            | →             |               | $^\circ\text{C/W}$   |
| Lead length = 0"                                                                                                                    | $R_{\theta JL}$                      | ←             |               | 7             | →             |               | $^\circ\text{C/W}$   |
| Thermal resistance - junction to amb.<br>on 0.06" thick pcb. 1 oz. copper.                                                          | $R_{\theta JA}$                      | ←             |               | 95            | →             |               | $^\circ\text{C/W}$   |

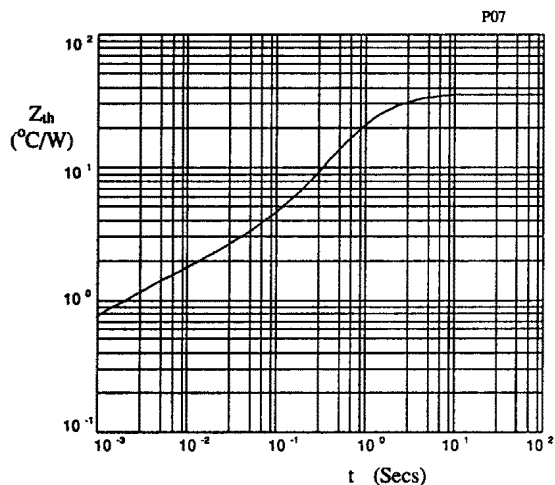


Fig 1. Transient thermal impedance characteristic.

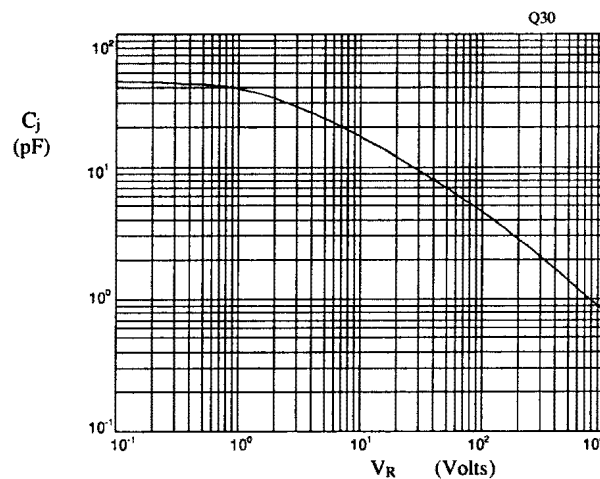


Fig 2. Typical junction capacitance as a function of reverse voltage.

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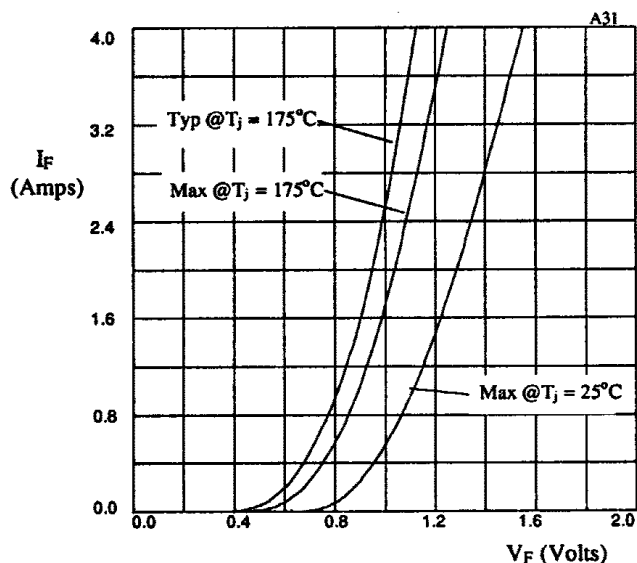


Fig 3. Forward voltage drop as a function of forward current.

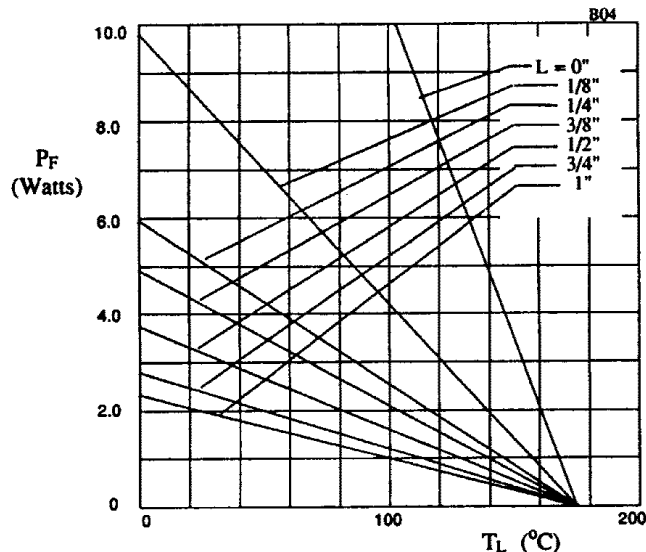


Fig 4. Maximum power versus lead temperature.

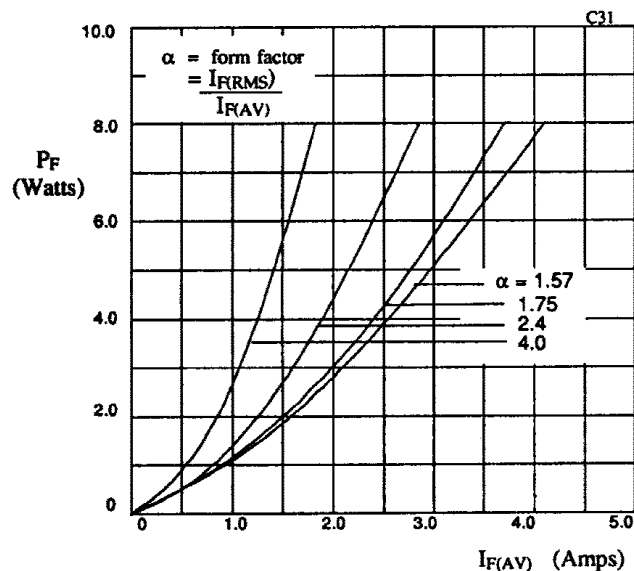


Fig 5. Forward power dissipation as a function of forward current, for sinusoidal operation.

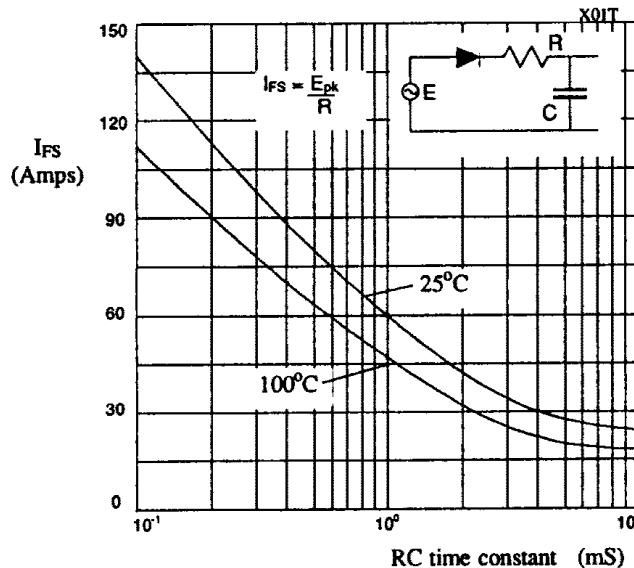


Fig 6. Maximum ratings for capacitive loads.