

January 7, 1998

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

## AXIAL LEADED HERMETICALLY SEALED HIGH VOLTAGE STANDARD RECOVERY RECTIFIER DIODE

## QUICK REFERENCE DATA

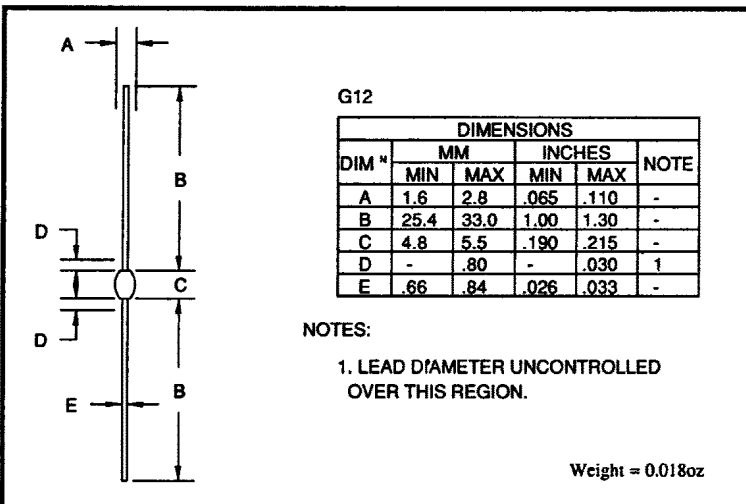
- High thermal shock resistance
- Hermetically sealed with Metoxillite fused metal oxide
- Multi-junction construction
- Low reverse leakage currents
- Subminiature body size

- $V_R = 2\text{kV} - 3\text{kV}$
- $I_F = 600\text{mA}$
- $t_{rr} = 2.5\mu\text{s}$
- $I_R = 1.0\mu\text{A}$

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

	Symbol	1N3645 SM20	1N3646 SM25	1N3647 SM30	Unit
Working reverse voltage	$V_{RWM}$	2000	2500	3000	V
Repetitive reverse voltage	$V_{RRM}$	2000	2500	3000	V
Average forward current (@ 55°C in oil)	$I_{F(AV)}$	← 600 →			mA
Repetitive surge current (@ 55°C in oil, lead length 0.375")	$I_{FRM}$	← 2.5 →			A
Non-repetitive surge current ( $t_p = 8.3\text{ms}$ , @ $V_R$ & $T_{jmax}$ )	$I_{FSM}$	← 14 →			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-S-19500/279 and are preferred parts as listed in MIL-STD-701. They can be supplied fully released as JAN and JANTX versions.

These products are available in Europe to DEF STAN 59-61 (PART 80)/034.

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

	Symbol	1N3645 SM20	1N3646 SM25	1N3647 SM30	Unit
Average forward current for sine wave - max. pcb mounted	$I_{F(AV)}$	← 260 →			mA
- max. in unstirred oil	$I_{F(AV)}$	← 600 →			mA
$I^2t$ for fusing (t = 8.3ms) max.	$I^2t$	← 0.026 →			A <sup>2</sup> S
Forward voltage drop max. @ $I_F = 250mA$ , $T_j = 25^\circ C$	$V_F$	← 5.00 →			V
Reverse current max. @ $V_{RWM}$ , $T_j = 25^\circ C$	$I_R$	← 1.00 →			$\mu A$
@ $V_{RWM}$ , $T_j = 100^\circ C$	$I_R$	← 20.0 →			$\mu A$
Reverse recovery time max. 50mA $I_F$ to 100mA $I_R$ . Recover to 25mA $I_{RR}$ .	$t_{rr}$	← 2.5 →			$\mu S$
Junction capacitance typ. @ $V_R = 5V$ , $f = 1MHz$	$C_j$	← 8.0 →			$\rho F$
Thermal resistance - junction to oil Unstirred @ 55°C	$R_{\theta JO}$	← 30.0 →			$^\circ C/W$
Stirred @ 55°C	$R_{\theta JO}$	← 18.0 →			$^\circ C/W$
Thermal resistance - junction to amb. on 0.06" thick pcb. 1oz copper.	$R_{\theta JA}$	← 90.0 →			$^\circ C/W$

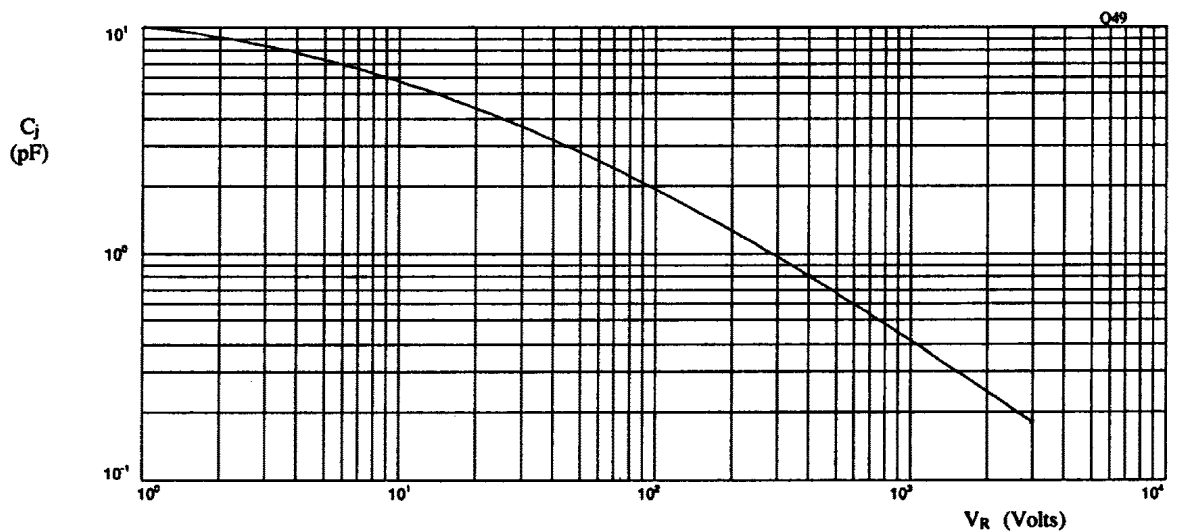


Fig 1. Typical junction capacitance as a function of reverse voltage.

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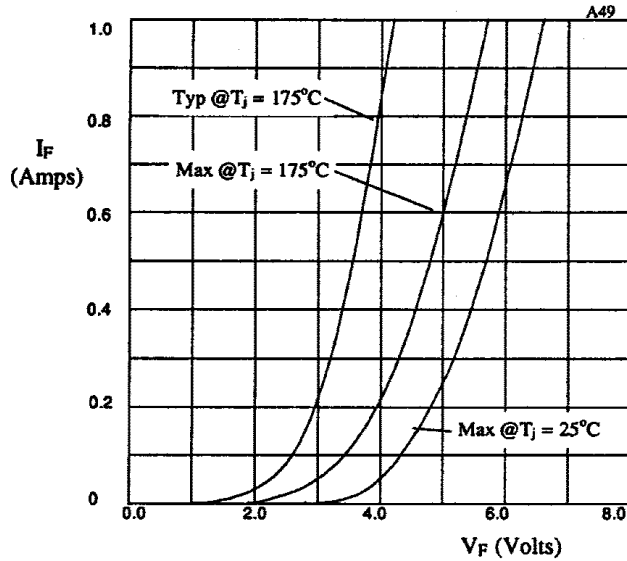


Fig 2. Forward voltage drop as a function of forward current.

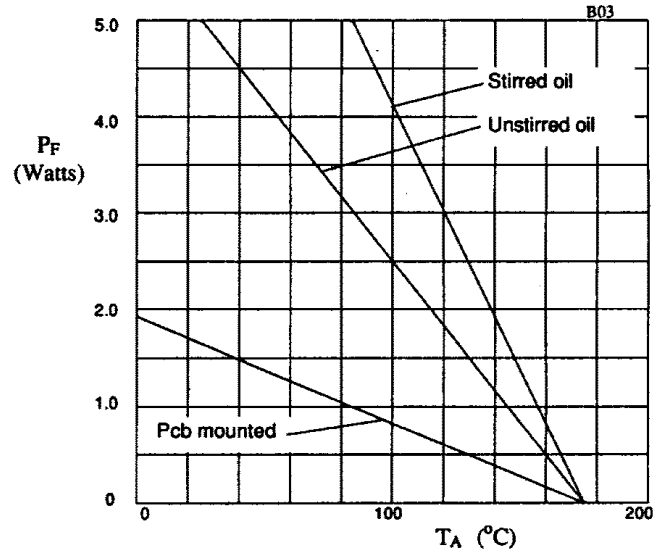


Fig 3. Power derating in oil and air.

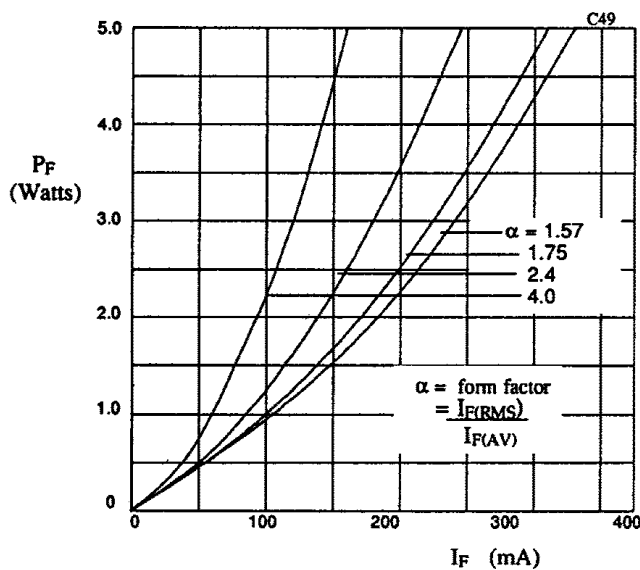


Fig 4. Forward power dissipation as a function of forward current, for sinusoidal operation.

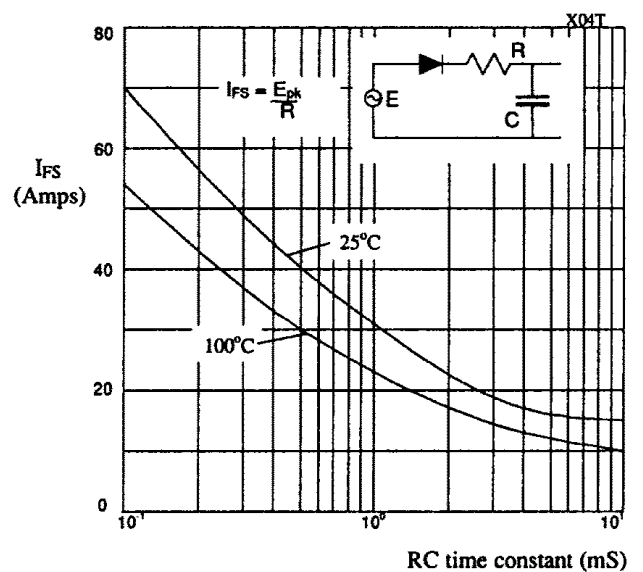


Fig 5. Maximum ratings for capacitive loads.

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