

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

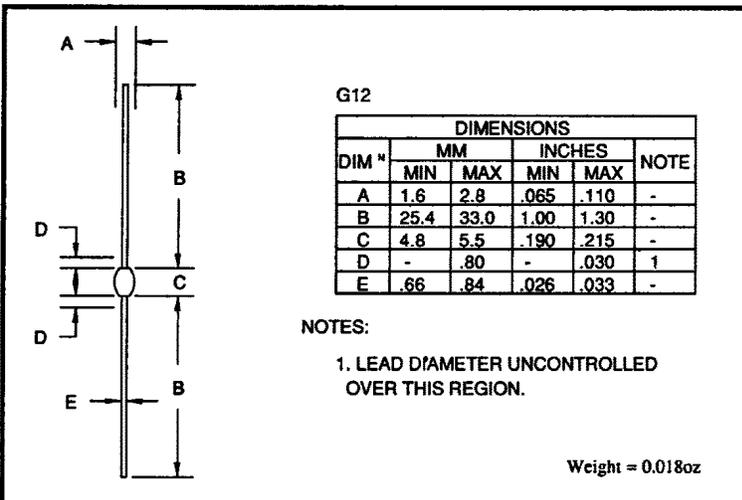
- High thermal shock resistance
- Hermetically sealed with Metoxillite fused metal oxide
- Multi-junction construction
- Low reverse leakage currents
- Subminiature body size

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

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 ² S
Forward voltage drop max. @ $I_F = 250\text{mA}$, $T_j = 25^\circ\text{C}$	V_F	←———— 5.00 —————→			V
Reverse current max. @ V_{RWM} , $T_j = 25^\circ\text{C}$	I_R	←———— 1.00 —————→			μA
@ V_{RWM} , $T_j = 100^\circ\text{C}$	I_R	←———— 20.0 —————→			μA
Reverse recovery time max. 50mA I_F to 100mA I_R . Recover to 25mA I_{RR} .	t_{rr}	←———— 2.5 —————→			μS
Junction capacitance typ. @ $V_R = 5\text{V}$, f = 1MHz	C_j	←———— 8.0 —————→			pF
Thermal resistance - junction to oil Unstirred @ 55°C	$R_{\theta JO}$	←———— 30.0 —————→			$^\circ\text{C}/\text{W}$
Stirred @ 55°C	$R_{\theta JO}$	←———— 18.0 —————→			$^\circ\text{C}/\text{W}$
Thermal resistance - junction to amb. on 0.06" thick pcb. 1oz copper.	$R_{\theta JA}$	←———— 90.0 —————→			$^\circ\text{C}/\text{W}$

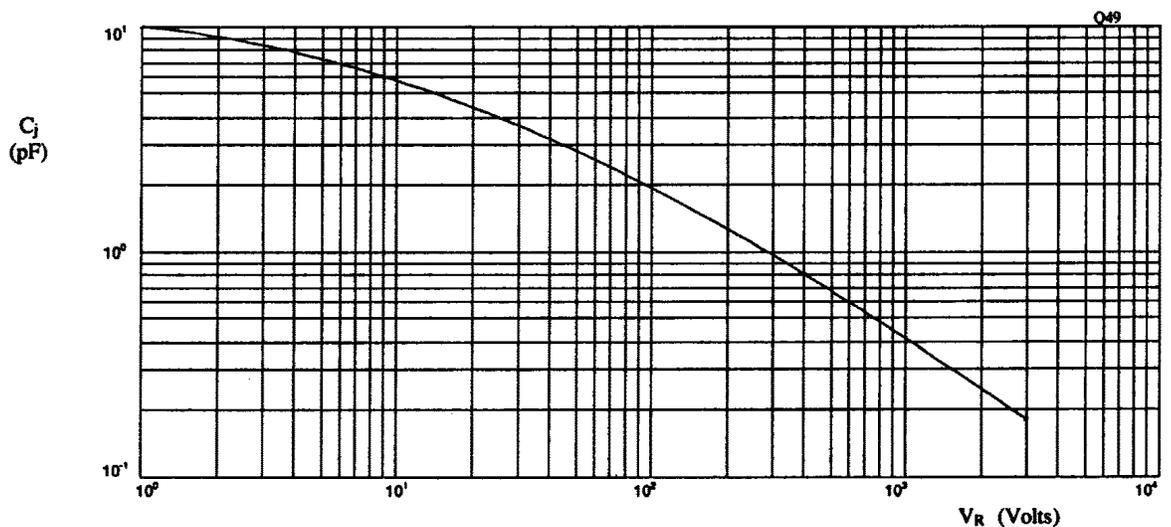


Fig 1. Typical junction capacitance as a function of reverse voltage.

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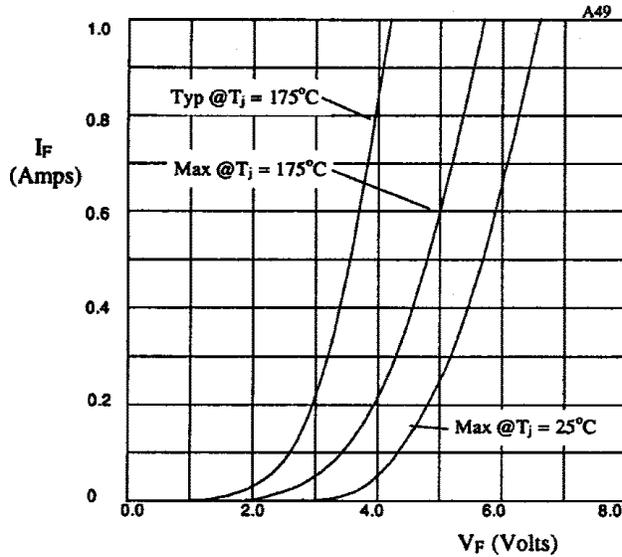


Fig 2. Forward voltage drop as a function of forward current.

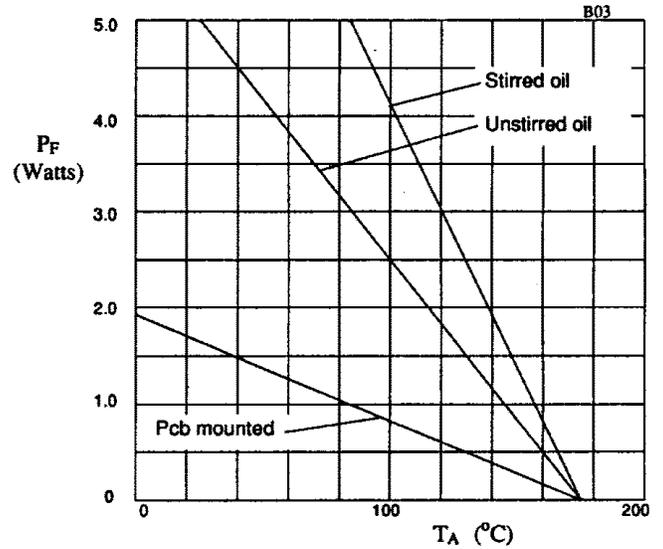


Fig 3. Power derating in oil and air.

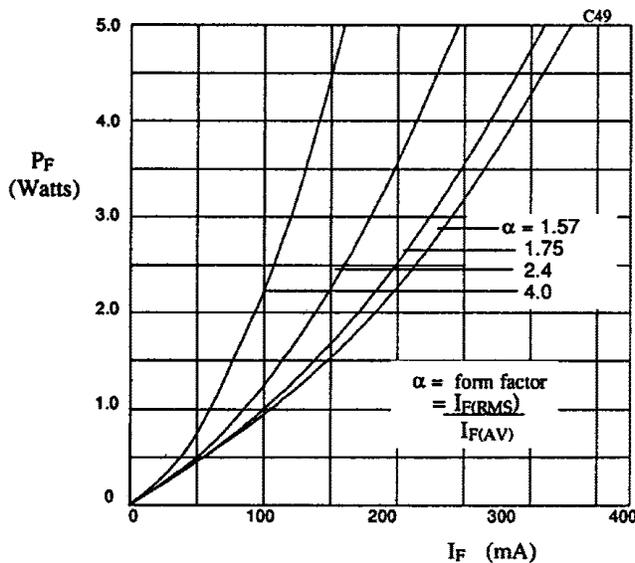


Fig 4. Forward power dissipation as a function of forward current, for sinusoidal operation.

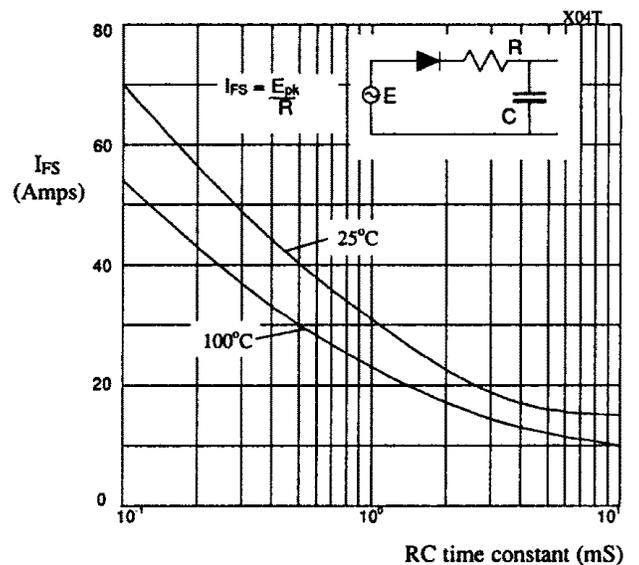


Fig 5. Maximum ratings for capacitive loads.

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