SEMTECH

RECTIFIER, up to 3kV, 600mA, 2.5µs

1N3645 SM20
1N3646 SM25
1N3647 SM30

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

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

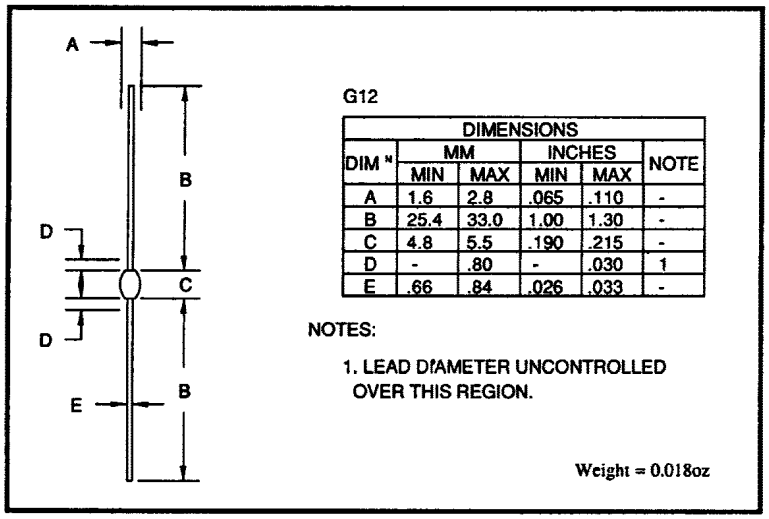
QUICK REFERENCE DATA

- V_R = 2kV - 3kV
- I_F = 600mA
- t_{rr} = 2.5µS
- I_R = 1.0µA

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 = 8.3mS, @ 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



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DIM	DIMENSIONS MM MIN	MM MAX	INCHES MIN	INCHES MAX	NOTE
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 = 0.018oz

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.

652 MITCHELL ROAD NEWBURY PARK CA 91320

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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^2S
Forward voltage drop max. @ I_F = 250mA, T_j = 25°C	V_F	←	5.00	→	V
Reverse current max.					
@ V_{RWM}, T_j = 25°C	I_R	←	1.00	→	µA
@ V_{RWM}, T_j = 100°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 = 5V , f = 1MHz	C_j	←	8.0	→	pF
Thermal resistance - junction to oil					
Unstirred @ 55°C	$R_{\theta JO}$	←	30.0	→	°C/W
Stirred @ 55°C	$R_{\theta JO}$	←	18.0	→	°C/W
Thermal resistance - junction to amb. on 0.06" thick pcb. 1oz copper.	$R_{\theta JA}$	←	90.0	→	°C/W

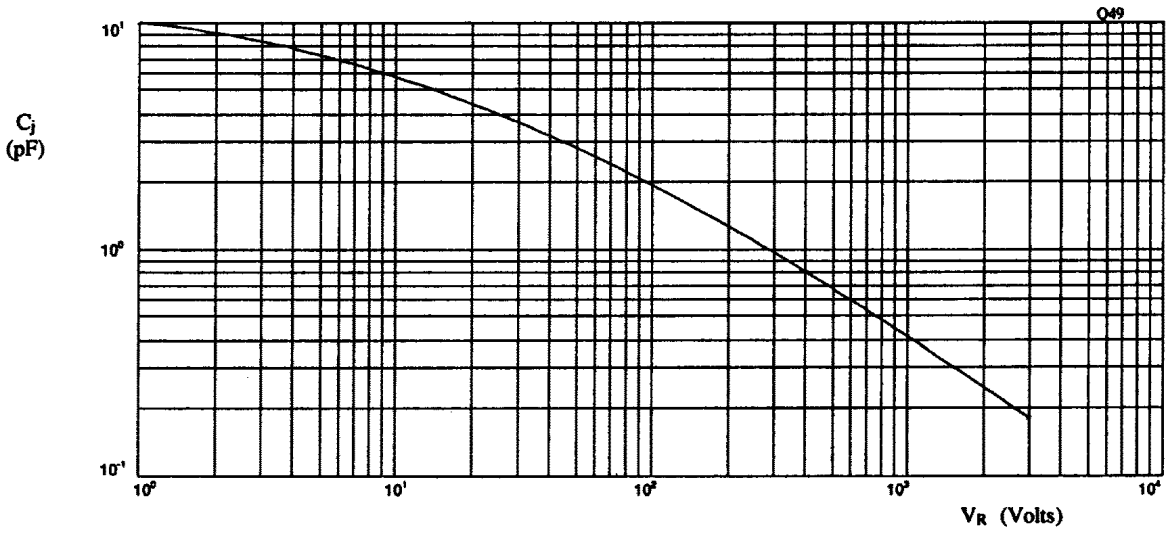

Fig 1. Typical junction capacitance as a function of reverse voltage.

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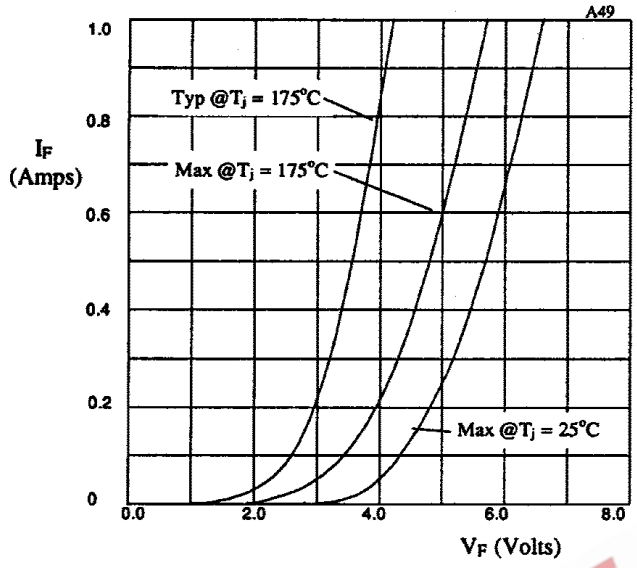

Fig 2. Forward voltage drop as a function of forward current.

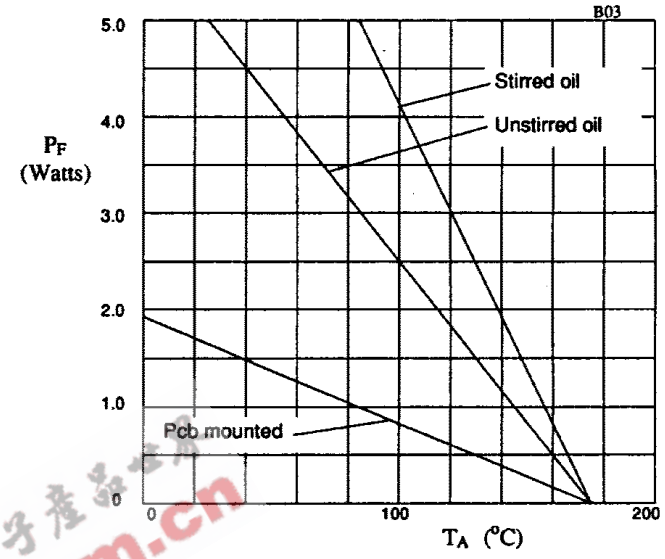

Fig 3. Power derating in oil and air.

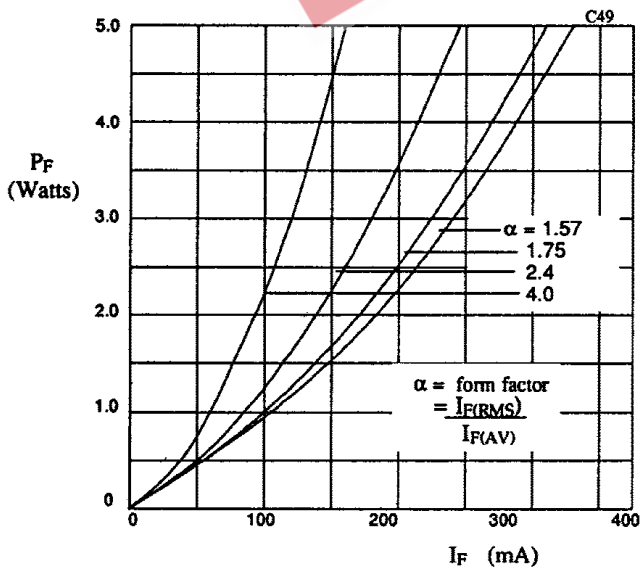

Fig 4. Forward power dissipation as a function of forward current, for sinusoidal operation.

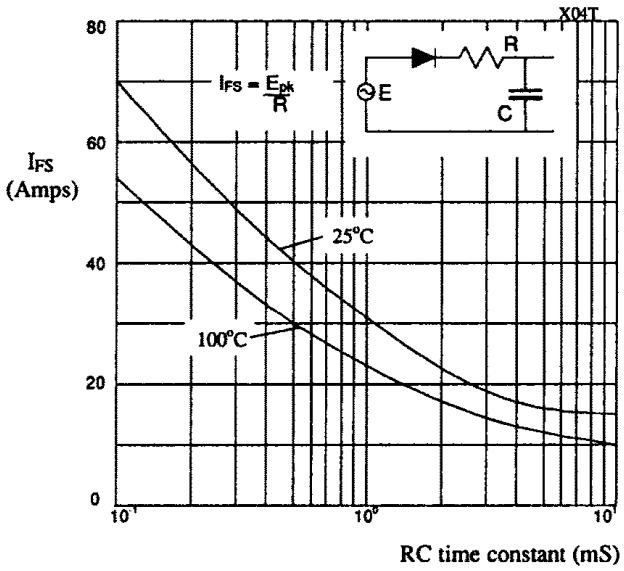

Fig 5. Maximum ratings for capacitive loads.