

January 7, 1998

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## AXIAL LEADED HERMETICALLY SEALED HIGH VOLTAGE FAST RECTIFIER DIODE

## QUICK REFERENCE DATA

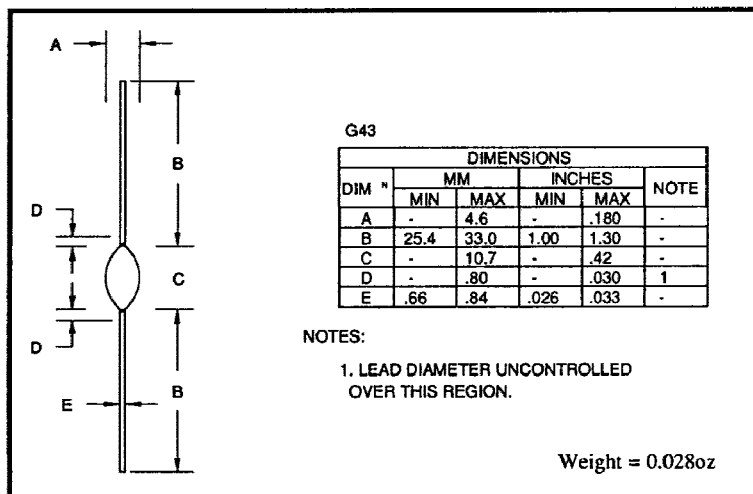
- Low reverse recovery time
- High thermal shock resistance
- Hermetically sealed with Metoxillite metal oxide
- Low switching losses
- Soft, non-snap off, recovery characteristics

- $V_R = 7.5 - 10kV$
- $I_F = 290mA$
- $t_{rr} = 300nS$
- $I_R = 1\mu A$

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

	Symbol	SM75F	SM100F	Unit
Working reverse voltage	$V_{RWM}$	7500	10000	V
Repetitive reverse voltage	$V_{RRM}$	7500	10000	V
Average forward current (@ 55°C in oil)	$I_{F(AV)}$	← 0.29 →		A
Repetitive surge current (@ 55°C)	$I_{FRM}$	← 1.00 →		A
Non-repetitive surge current ( $t_p = 8.3mS$ , @ $V_R$ & $T_{jmax}$ )	$I_{FSM}$	← 14.0 →		A
Storage temperature range	$T_{STG}$	← -65 to +175 →		°C
Operating temperature range	$T_{OP}$	← -65 to +175 →		°C

### MECHANICAL

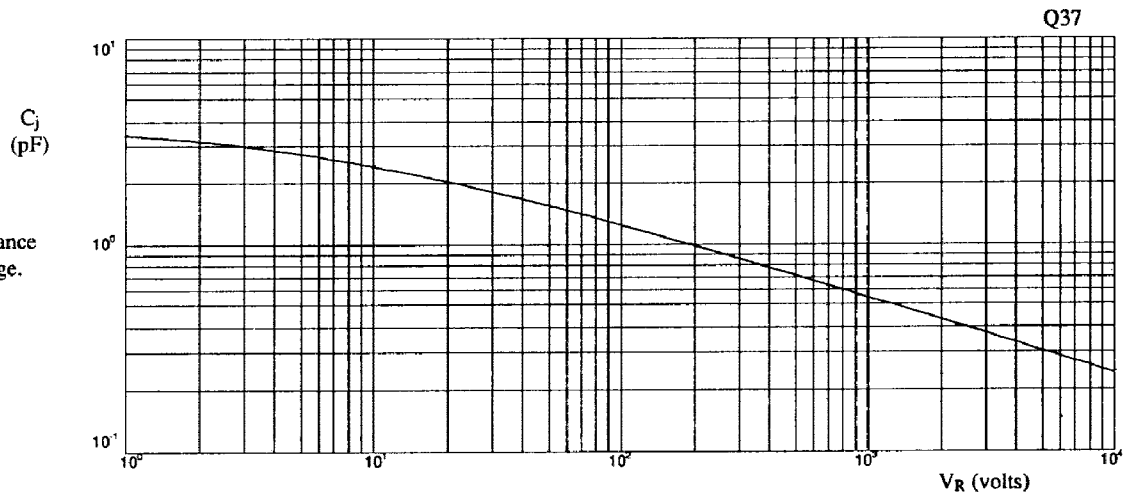


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**CHARACTERISTICS** (@ 25°C unless otherwise specified)

	Symbol	SM75F	SM100F	Unit
Average forward current max. (pcb mounted; $T_A = 55^\circ\text{C}$ ) for sine wave	$I_{F(AV)}$	← 0.11 →	← 0.11 →	A
	$I_{F(AV)}$	← 0.12 →	← 0.12 →	A
Average forward current max. (unstirred oil at $55^\circ\text{C}$ ) for sine wave	$I_{F(AV)}$	← 0.27 →	← 0.27 →	A
	$I_{F(AV)}$	← 0.29 →	← 0.29 →	A
$I^2t$ for fusing ( $t = 8.3\text{ms}$ ) max.	$I^2t$	← 0.81 →	← 0.81 →	$\text{A}^2\text{S}$
Forward voltage drop max. @ $I_F = 100\text{mA}$ , $T_j = 25^\circ\text{C}$	$V_F$	← 12.0 →	← 12.0 →	V
Reverse current max. @ $V_{RWM}$ , $T_j = 25^\circ\text{C}$ @ $V_{RWM}$ , $T_j = 100^\circ\text{C}$	$I_R$	← 1.0 →	← 1.0 →	$\mu\text{A}$
	$I_R$	← 20 →	← 20 →	$\mu\text{A}$
Reverse recovery time max. 50mA $I_F$ to 100mA $I_R$ . Recover to 25mA $I_{RR}$	$t_{rr}$	← 300 →	← 300 →	nS
Junction capacitance typ. @ $V_R = 5\text{V}$ , $f = 1\text{MHz}$	$C_j$	← 3.0 →	← 3.0 →	$\rho\text{F}$
Thermal resistance - junction to oil Stirred oil	$R_{\theta JO}$	← 20 →	← 20 →	$^\circ\text{C/W}$
	$R_{\theta JO}$	← 28 →	← 28 →	$^\circ\text{C/W}$
Thermal resistance - junction to amb. on 0.06" thick pcb. 1oz copper.	$R_{\theta JA}$	← 91 →	← 91 →	$^\circ\text{C/W}$

Fig 1 Junction capacitance against reverse voltage.



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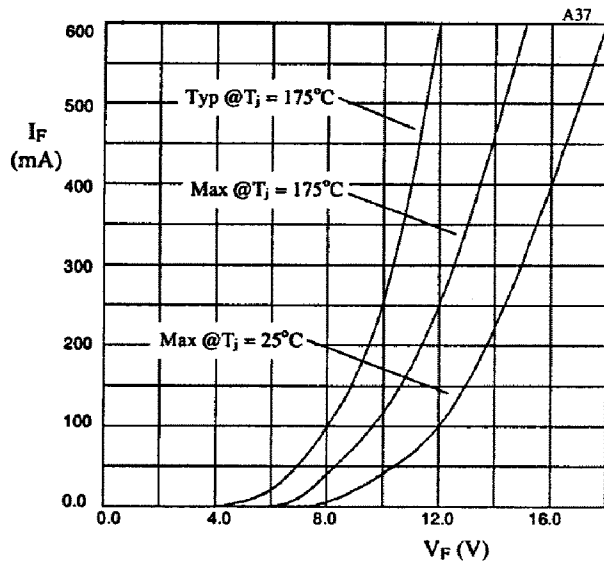


Fig 2. Forward voltage drop as a function of forward current.

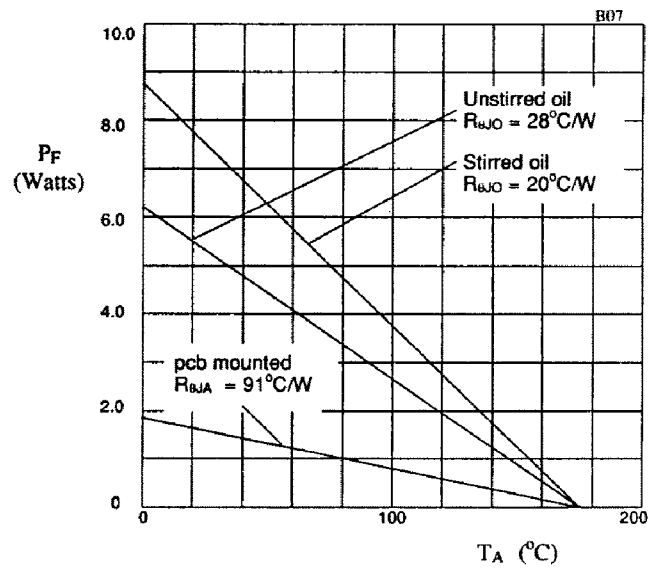


Fig 3. Power derating in air and oil.

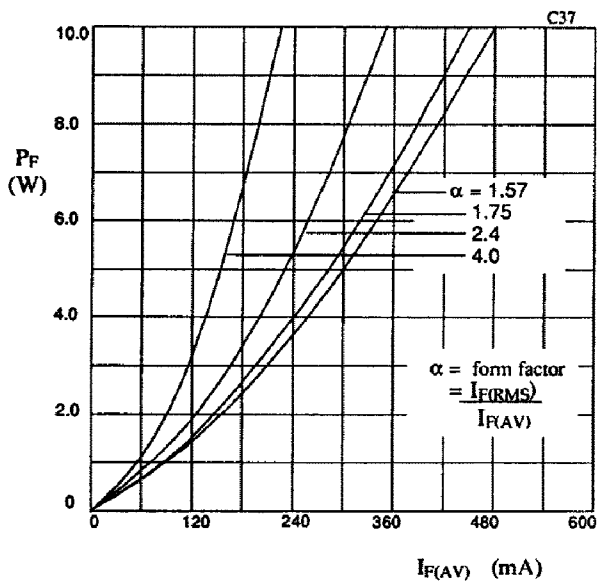


Fig 4. Forward power dissipation as a function of forward current, for sinusoidal operation.

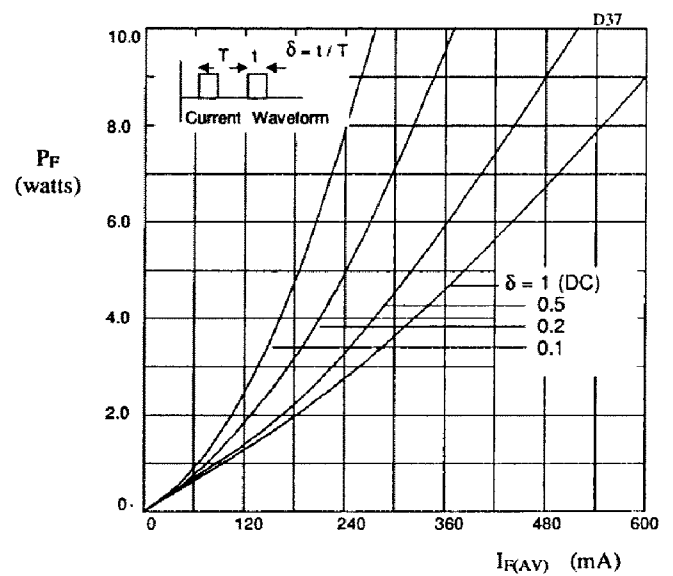


Fig 5. Forward power dissipation as a function of forward current, for square wave operation.