

January 7, 1998

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

AXIAL LEADED HERMETICALLY SEALED HIGH VOLTAGE FAST RECTIFIER DIODE

QUICK REFERENCE DATA

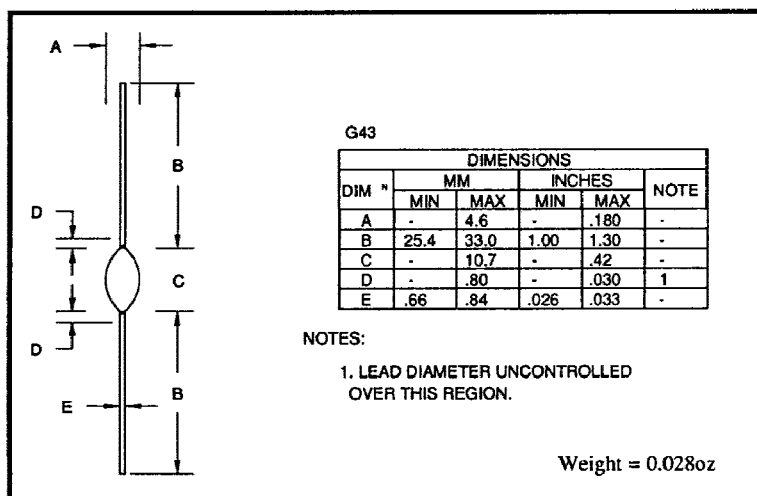
- Low reverse recovery time
- High thermal shock resistance
- Hermetically sealed with Metoxillite metal oxide
- Low switching losses
- Soft, non-snap off, recovery characteristics

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

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

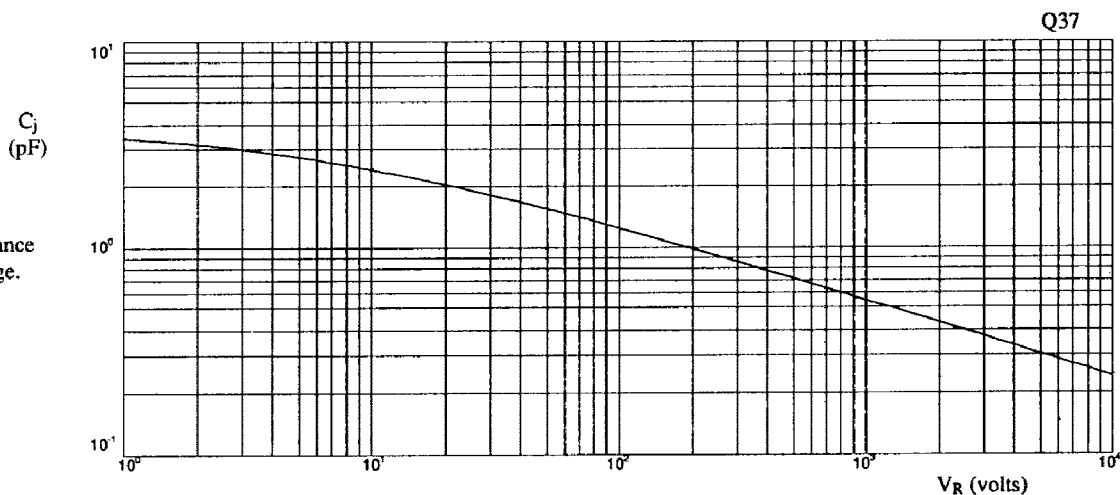


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CHARACTERISTICS (@ 25°C unless otherwise specified)

	Symbol	SM75F	SM100F	Unit
Average forward current max. (pcb mounted; $T_A = 55^\circ\text{C}$) for sine wave	$I_{F(AV)}$	0.11		A
for square wave ($d = 0.5$)	$I_{F(AV)}$	0.12		A
Average forward current max. (unstirred oil at 55°C) for sine wave	$I_{F(AV)}$	0.27		A
for square wave	$I_{F(AV)}$	0.29		A
I^2t for fusing ($t = 8.3\text{ms}$) max.	I^2t	0.81		A^2S
Forward voltage drop max. @ $I_F = 100\text{mA}$, $T_j = 25^\circ\text{C}$	V_F	12.0		V
Reverse current max. @ V_{RWM} , $T_j = 25^\circ\text{C}$	I_R	1.0		μA
@ V_{RWM} , $T_j = 100^\circ\text{C}$	I_R	20		μA
Reverse recovery time max. 50mA I_F to 100mA I_R . Recover to 25mA I_{RR}	t_{rr}	300		nS
Junction capacitance typ. @ $V_R = 5\text{V}$, $f = 1\text{MHz}$	C_j	3.0		pF
Thermal resistance - junction to oil Stirred oil	$R_{\theta JO}$	20		$^\circ\text{C/W}$
Unstirred oil	$R_{\theta JO}$	28		$^\circ\text{C/W}$
Thermal resistance - junction to amb. on 0.06" thick pcb. 1oz copper.	$R_{\theta JA}$	91		$^\circ\text{C/W}$

Fig 1 Junction capacitance
against reverse voltage.



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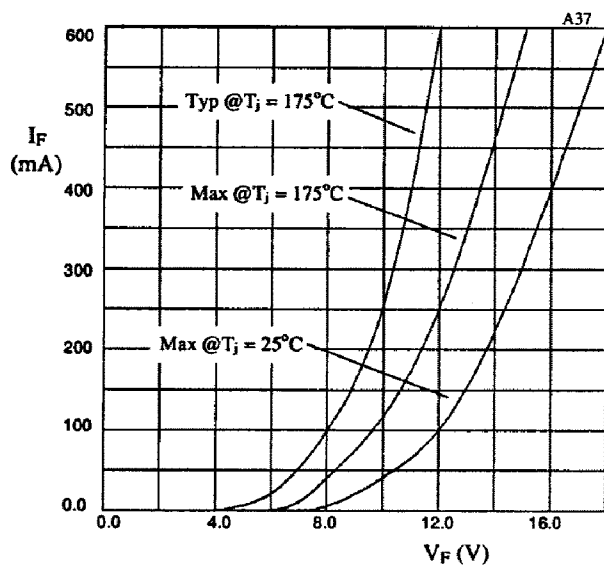


Fig 2. Forward voltage drop as a function of forward current.

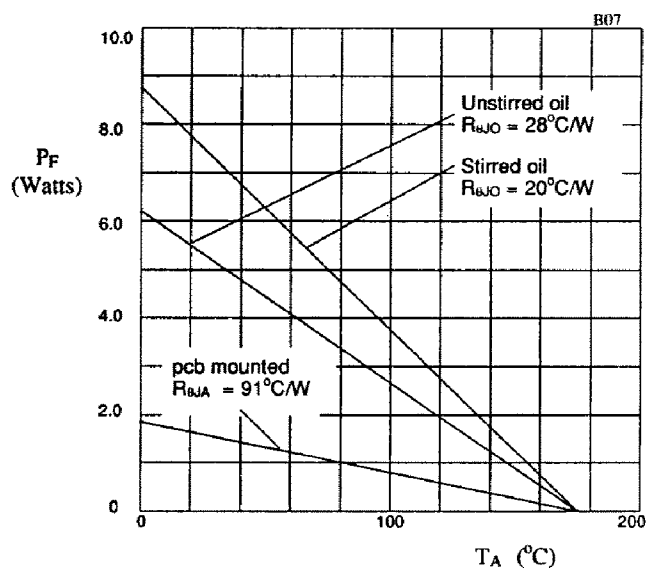


Fig 3. Power derating in air and oil.

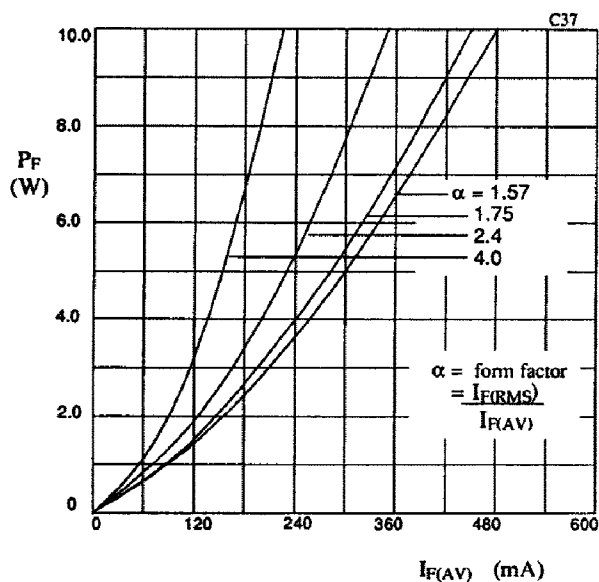


Fig 4. Forward power dissipation as a function of forward current, for sinusoidal operation.

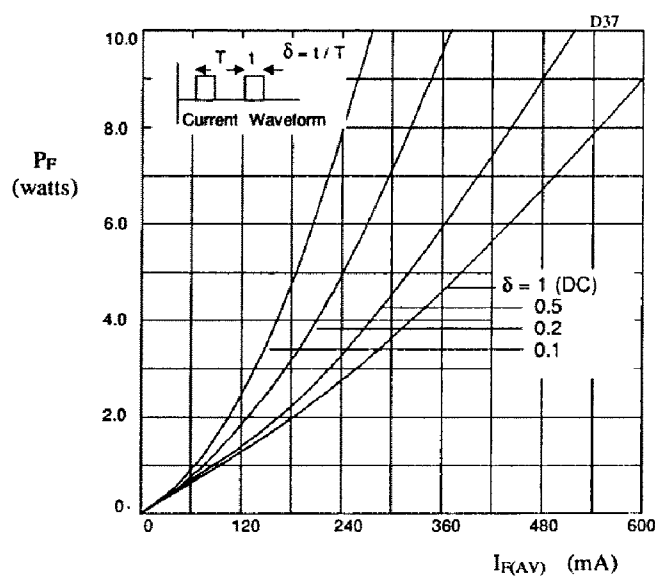


Fig 5. Forward power dissipation as a function of forward current, for square wave operation.