

SEMTECH

RECTIFIER, 2kV, 100mA, 200ns

PF20

January 7, 1998

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QUICK REFERENCE DATA

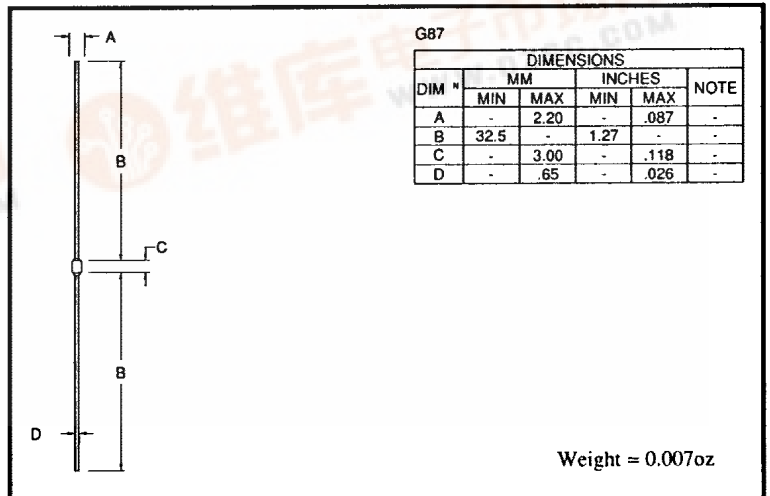
AXIAL LEADED HERMETICALLY SEALED HIGH VOLTAGE FAST RECTIFIER DIODE

- $V_R = 2000V$
- $I_F = 100mA$
- $t_{rr} = 200ns$
- $I_R = 0.25\mu A$
- Very low reverse recovery time
- Avalanche capabilities
- Glass passivated for hermetic sealing
- Low switching losses
- Soft, non-snap off, recovery characteristics

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

	Symbol	PF20	Unit
Working reverse voltage	V_{RWM}	2000	V
Repetitive reverse voltage	V_{RRM}	2200	V
Average forward current (@ 55°C in oil)	$I_{F(AV)}$	100	mA
Repetitive surge current (@ 55°C)	I_{FRM}	0.5	A
Non-repetitive surge current ($t_p = 8.3ms$, @ V_R & T_{jmax})	I_{FSM}	1.0	A
Storage temperature range	T_{STG}	-65 to +150	°C
Operating temperature range	T_{OP}	-65 to +150	°C

MECHANICAL

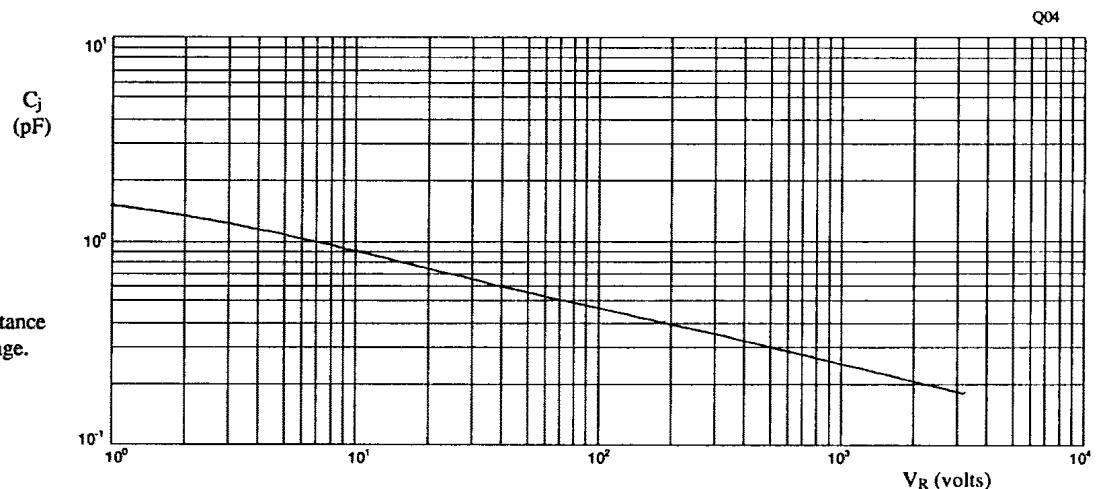


January 7, 1998

CHARACTERISTICS (@ 25°C unless otherwise specified)

	Symbol	PF20	Unit
Average forward current max. (pcb mounted; $T_A = 55^\circ\text{C}$) for sine wave	$I_{F(AV)}$	60	mA
for square wave ($d = 0.5$)	$I_{F(AV)}$	65	mA
Average forward current max. (unstirred oil at 55°C) for sine wave	$I_{F(AV)}$	90	mA
for square wave	$I_{F(AV)}$	100	mA
I^2t for fusing ($t = 8.3\text{mS}$) max.	I^2t	0.004	A^2S
Forward voltage drop max. @ $I_F = 50\text{mA}$, $T_j = 25^\circ\text{C}$	V_F	11.0	V
Reverse current max. @ V_{RWM} , $T_j = 25^\circ\text{C}$	I_R	0.25	μA
@ V_{RWM} , $T_j = 100^\circ\text{C}$	I_R	3.0	μA
Reverse recovery time max. 50mA I_F to 100mA I_R . Recover to 25mA I_{RR} .	t_{rr}	200	nS
Junction capacitance typ. @ $V_R = 5\text{V}$, $f = 1\text{MHz}$	C_j	1.1	pF
Thermal resistance - junction to oil Stirred oil	$R_{\theta JO}$	55	$^\circ\text{C/W}$
Unstirred oil	$R_{\theta JO}$	75	$^\circ\text{C/W}$
Thermal resistance - junction to amb. on 0.06" thick pcb. 1oz copper.	$R_{\theta JA}$	155	$^\circ\text{C/W}$

Fig 1. Junction capacitance against reverse voltage.



January 7, 1998

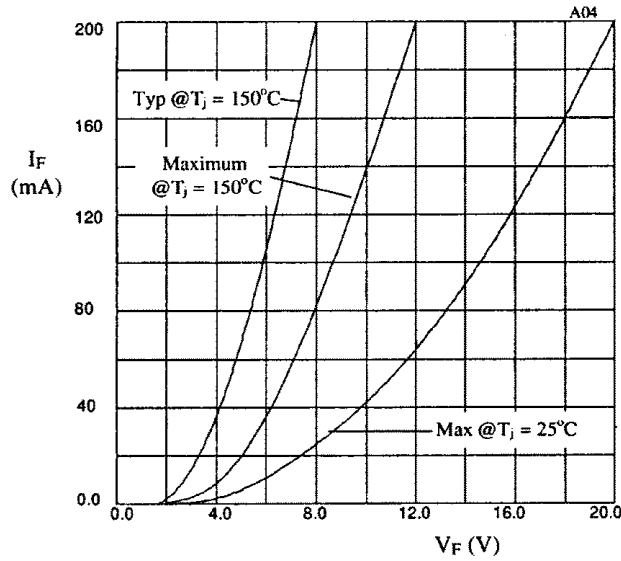


Fig 2. Forward voltage drop as a function of forward current.

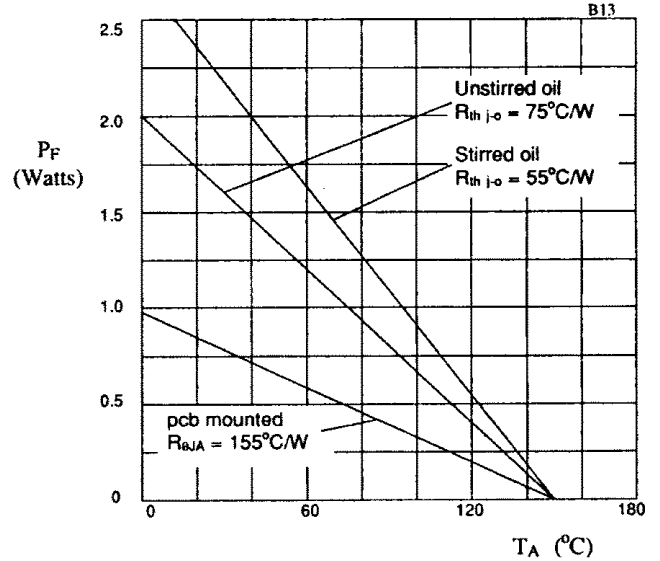


Fig 3. Power derating in air and oil.

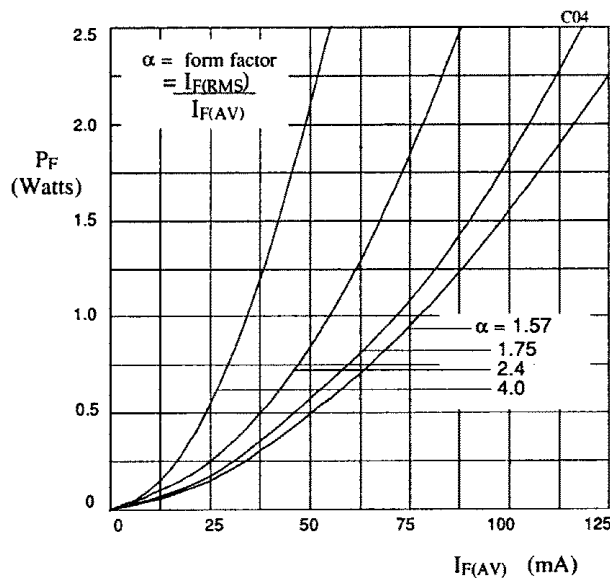


Fig 4. Forward power dissipation as a function of forward current, for sinusoidal operation.

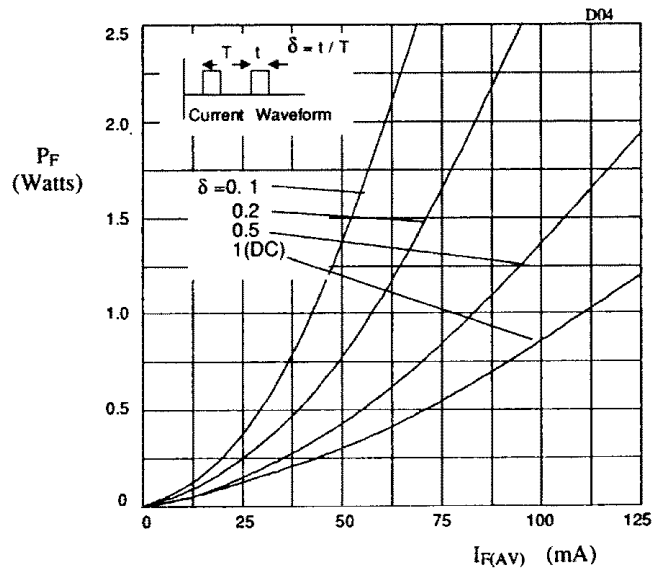


Fig 5. Forward power dissipation as a function of forward current, for square wave operation.