SEMTECH

RECTIFIER, up to 2.5kV, 500mA, 300ns

S15F
S20F
S25F

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

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

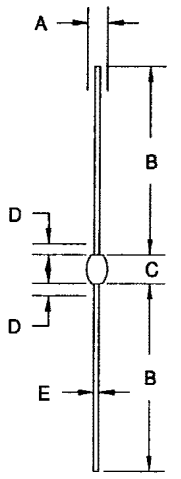
QUICK REFERENCE DATA

- V_R = 1500 - 2500V
- I_F = 0.5A
- t_{rr} = 300nS
- I_R = 1µA

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

	Symbol	S15F	S20F	S25F	Unit
Working reverse voltage	V_{RWM}	1500	2000	2500	V
Repetitive reverse voltage	V_{RRM}	1500	2000	2500	V
Average forward current (@ 55°C in oil)	$I_{F(AV)}$	← 0.5 →			A
Repetitive surge current (@ 55°C in oil)	I_{FRM}	← 2.5 →			A
Non-repetitive surge current (t_p = 8.3mS, @ V_R & T_{jmax})	I_{FSM}	← 10.0 →			A
Storage temperature range	T_{STG}	← -65 to +175 →			°C
Operating temperature range	T_{OP}	← -65 to +175 →			°C

MECHANICAL



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DIMENSIONS					
DIM	MM		INCHES		NOTE
	MIN	MAX	MIN	MAX	
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 available in Europe to DEF STAN 59-61 (PART 80)/034 to F and FX levels.

652 MITCHELL ROAD NEWBURY PARK CA 91320

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CHARACTERISTICS (@ 25°C unless otherwise specified)

	Symbol	S15F S20F S25F	Unit
Average forward current max. (pcb mounted; T_A = 55°C)			
for sine wave	$I_{F(AV)}$	← 0.23 →	A
for square wave (d = 0.5)	$I_{F(AV)}$	← 0.24 →	A
Average forward current max. (unstirred oil at 55°C)			
for sine wave	$I_{F(AV)}$	← 0.50 →	A
for square wave	$I_{F(AV)}$	← 0.50 →	A
I^2t for fusing (t = 8.3mS) max.	I^2t	← 0.4 →	A^2S
Forward voltage drop max. @ I_F = 0.10A, T_j = 25°C	V_F	← 5.0 →	V
Reverse current max.			
@ V_{RWM}, T_j = 25°C	I_R	← 1.0 →	µA
@ V_{RWM}, T_j = 100°C	I_R	← 25 →	µA
Reverse recovery time max. 50mA I_F, 100mA I_R, Recover to 25mA I_{RR}.	t_{rr}	← 300 →	nS
Junction capacitance typ. @ V_R = 5V , f = 1MHz	C_j	← 4.0 →	pF
Thermal resistance - junction to oil			
Stirred oil	$R_{\theta JO}$	← 18 →	°C/W
Unstirred oil	$R_{\theta JO}$	← 30 →	°C/W
Thermal resistance - junction to amb. on 0.06" thick pcb. 1oz copper.	$R_{\theta JA}$	← 90 →	°C/W

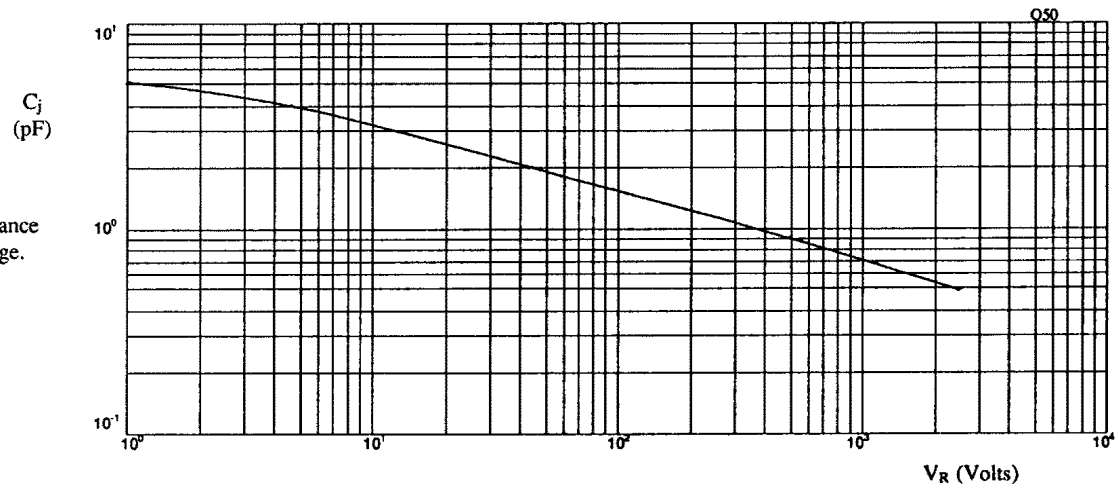

Fig 1 Junction capacitance against reverse voltage.

January 7, 1998

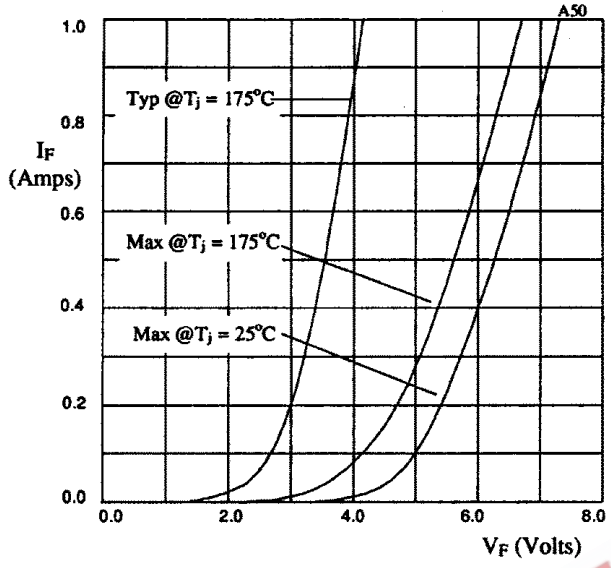

Fig 1. Forward voltage drop as a function of forward current.

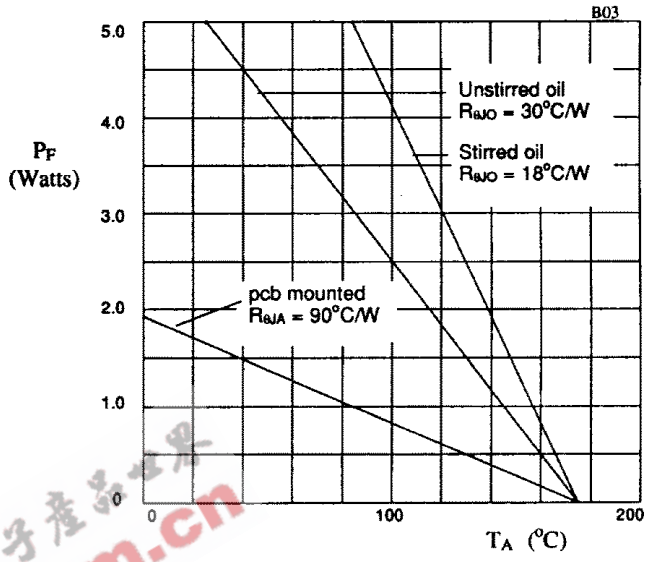

Fig 2. Power derating in air and oil.

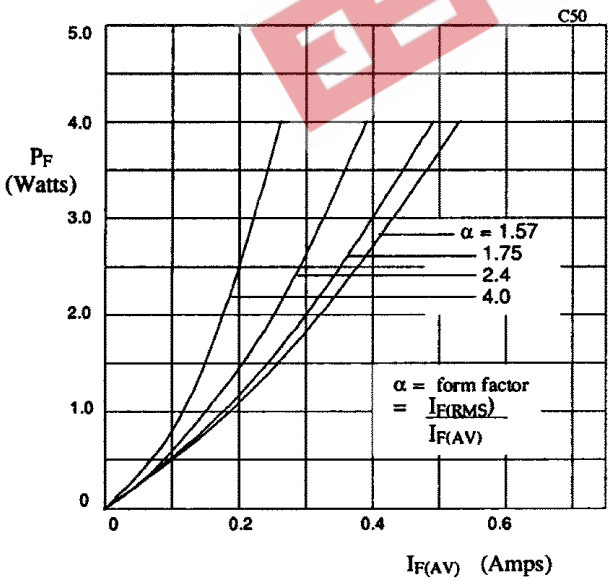

Fig 3. Forward power dissipation as a function of forward current, for sinusoidal operation.

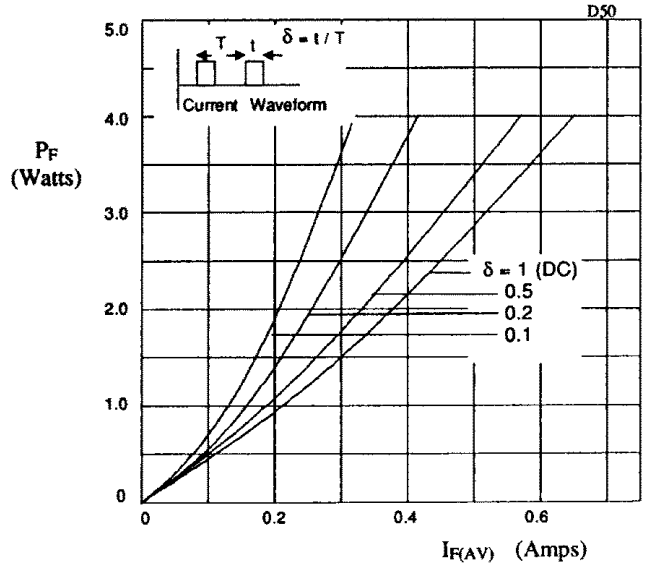

Fig 4. Forward power dissipation as a function of forward current, for square wave operation.