

January 7, 1998

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

AXIAL LEADED HERMETICALLY SEALED FAST RECOVERY RECTIFIER DIODE

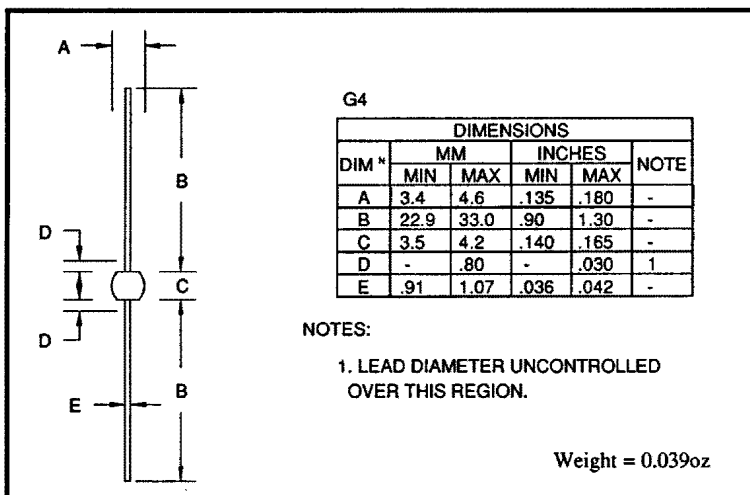
QUICK REFERENCE DATA

- Low reverse recovery time
 - Hermetically sealed in Metoxilite fused metal oxide
 - Low switching losses
 - High thermal shock resistance
 - Soft, non-snap off, recovery characteristics
- $V_R = 1000V$
 - $I_F = 3.25A$
 - $t_{rr} = 150nS$
 - $I_R = 1\mu A$

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

	Symbol	3SFR0	Unit
Working reverse voltage	V_{RWM}	1000	V
Repetitive reverse voltage	V_{RRM}	1000	V
Average forward current (@ 55°C, lead length 0.375")	$I_{F(AV)}$	3.25	A
Repetitive surge current (@ 55°C in free air, lead length 0.375")	I_{FRM}	15.0	A
Non-repetitive surge current ($t_p = 8.3mS$, @ V_R & T_{jmax})	I_{FSM}	80.0	A
Storage temperature range	T_{STG}	-65 to +175	°C
Operating temperature range	T_{OP}	-65 to +175	°C

MECHANICAL



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ELECTRICAL CHARACTERISTICS (@ 25°C unless otherwise specified)

	Symbol	3SFR0	Unit
Average forward current max. (pcb mounted; $T_A = 55^\circ\text{C}$) for sine wave	$I_{F(AV)}$	1.2	A
	$I_{F(AV)}$	1.3	A
Average forward current max. ($T_L = 55^\circ\text{C}$; $L = 3/8''$) for sine wave	$I_{F(AV)}$	3.00	A
	$I_{F(AV)}$	3.25	A
I^2t for fusing ($t = 8.3\text{mS}$) max.	I^2t	26	A^2S
Forward voltage drop max. @ $I_F = 3.0\text{A}$, $T_j = 25^\circ\text{C}$	V_F	1.5	V
Reverse current max. @ V_{RWM} , $T_j = 25^\circ\text{C}$	I_R	1.0	μA
	I_R	25	μA
Reverse recovery time max. 0.5A I_F to 1.0A I_R . Recovers to 0.25A I_{RR} .	t_{rr}	150	nS
Junction capacitance typ. @ $V_R = 5\text{V}$, $f = 1\text{MHz}$	C_j	80	ρF

THERMAL CHARACTERISTICS

	Symbol	3SFR0	Unit
Thermal resistance - junction to lead Lead length = 0"	$R_{\theta JL}$	4	$^\circ\text{C}/\text{W}$
	$R_{\theta JL}$	20	$^\circ\text{C}/\text{W}$
Thermal resistance - junction to amb. on 0.06" thick pcb. 1 oz. copper.	$R_{\theta JA}$	75	$^\circ\text{C}/\text{W}$

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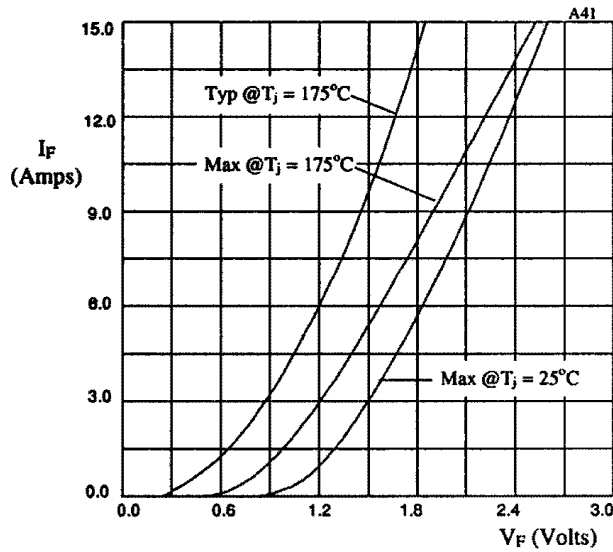


Fig 1. Forward voltage drop as a function of forward current.

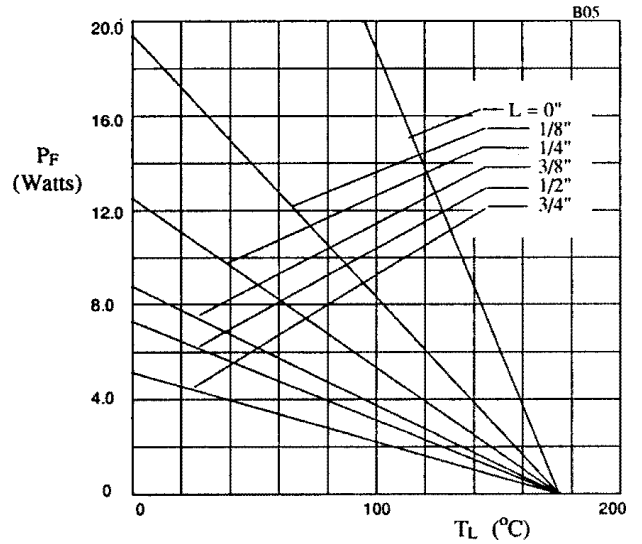


Fig 2. Maximum power versus lead temperature.

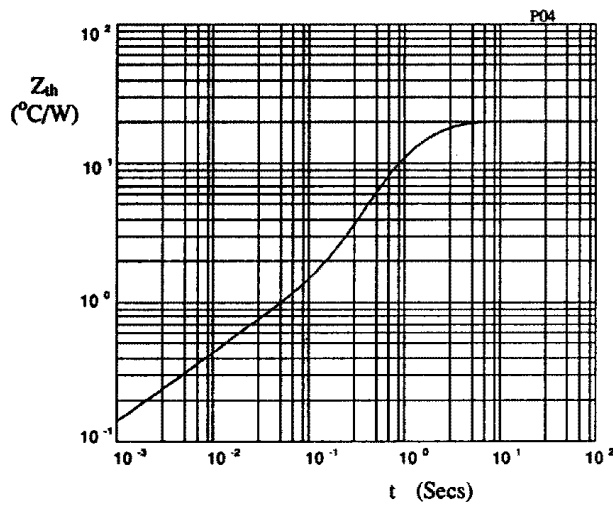


Fig 3. Transient thermal impedance characteristic.

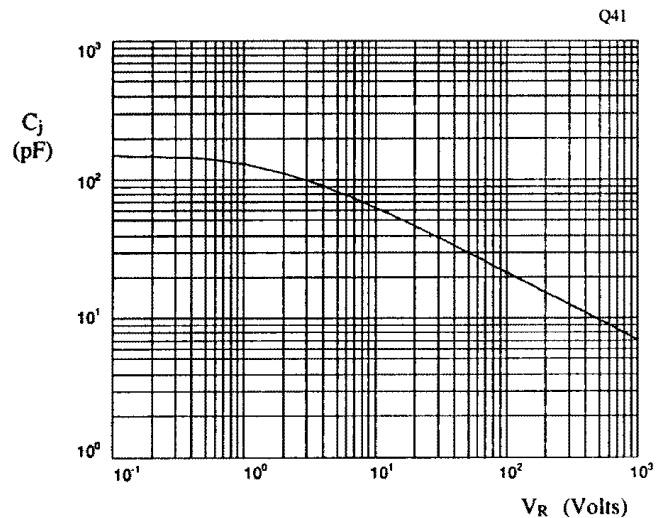


Fig 4. Typical junction capacitance as a function of reverse voltage.

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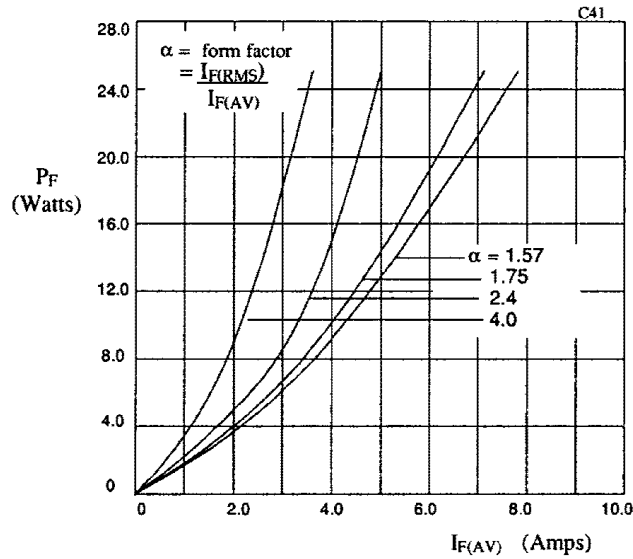


Fig 5. Forward power dissipation as a function of forward current, for sinusoidal operation.

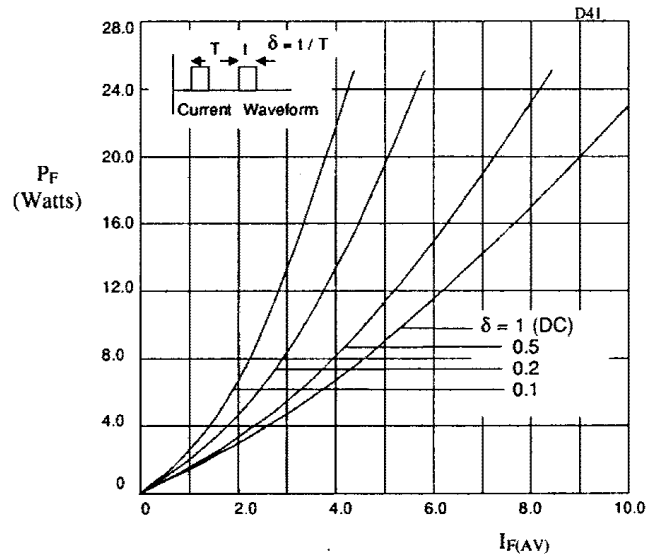


Fig 6. Forward power dissipation as a function of forward current, for square wave operation.

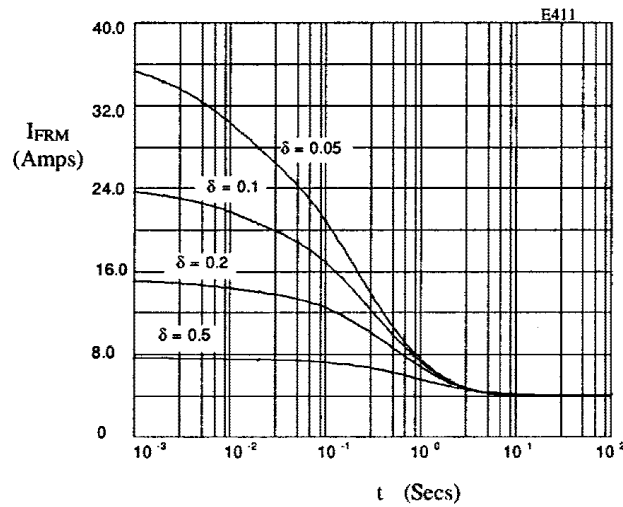


Fig 7. Typical repetitive forward current as a function of pulse width at 55°C; $R_{\theta JL} = 20 \text{ }^\circ\text{C/W}$; V_{RWM} during $1 - \delta$.

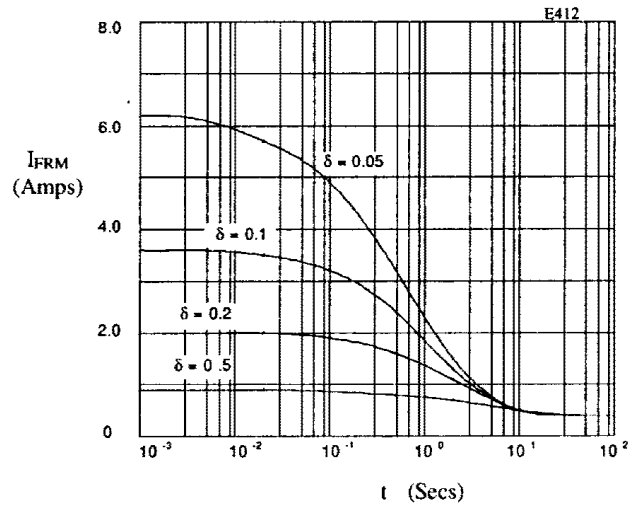


Fig 8. Typical repetitive forward current as a function of pulse width at 100°C; $R_{\theta JL} = 80 \text{ }^\circ\text{C/W}$; V_{RWM} during $1 - \delta$.