January 7, 1998

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

AXIAL LEADED HERMETICALLY SEALED SUPERFAST RECTIFIER DIODE

- Very low reverse recovery time
- Hermetically sealed with Metoxilite fused metal oxide
- Low switching losses
- Soft, non-snap off, recovery characteristics

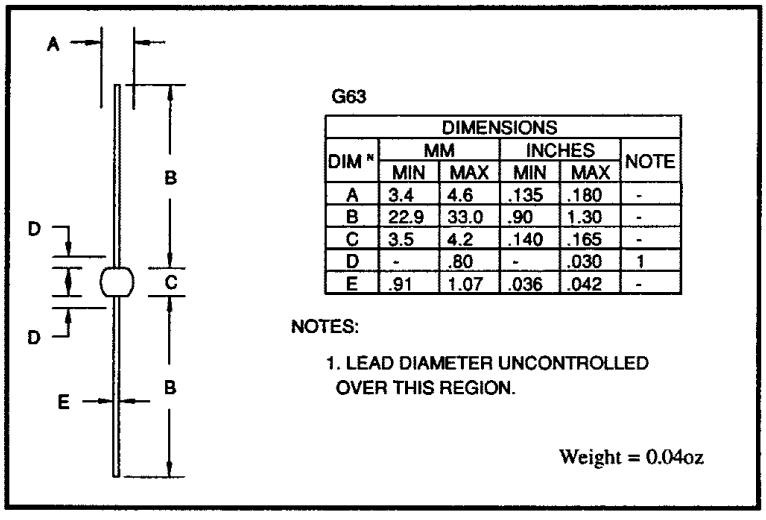
QUICK REFERENCE DATA

- V_R = 300 - 600V
- I_F = 3.4A
- t_{rr} = 50nS
- I_R = 10µA

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

	Symbol	3FF30	3FF40	3FF50	3FF60	Unit
Working reverse voltage	V_{RWM}	300	400	500	600	V
Repetitive reverse voltage	V_{RRM}	300	400	500	600	V
Average forward current (@ 55°C, lead length = 0.375")	$I_{F(AV)}$	← 3.4 →				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}	← 70 →				A
Storage temperature range	T_{STG}	← -65 to +150 →				°C
Operating temperature range	T_{OP}	← -65 to +150 →				°C

MECHANICAL



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DIM	DIMENSIONS MM MIN	MM MAX	INCHES MIN	INCHES MAX	NOTE
A	3.4	4.6	.135	.180	-
B	22.9	33.0	.90	1.30	-
C	3.5	4.2	.140	.165	-
D	-	.80	-	.030	1
E	.91	1.07	.036	.042	-

NOTES:

1. LEAD DIAMETER UNCONTROLLED OVER THIS REGION.

Weight = 0.04oz

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ELECTRICAL CHARACTERISTICS (@ 25°C unless otherwise specified)

	Symbol	3FF30	3FF40	3FF50	3FF60	Unit
Average forward current max. (pcb mounted; T_A = 55°C)						
for sine wave	$I_{F(AV)}$	←	1.0	→		A
for square wave (d = 0.5)	$I_{F(AV)}$	←	1.1	→		A
Average forward current max. (T_L = 55°C; L = 3/8")						
for sine wave	$I_{F(AV)}$	←	3.3	→		A
for square wave	$I_{F(AV)}$	←	3.4	→		A
I^2t for fusing (t = 8.3mS) max.	I^2t	←	41	→		A^2S
Forward voltage drop max. @ I_F = 3.0A, T_j = 25°C	V_F	←	1.40	→		V
Reverse current max.						
@ V_{RWM}, T_j = 25°C	I_R	←	10	→		µA
@ V_{RWM}, T_j = 100°C	I_R	←	500	→		µA
Reverse recovery time max. 0.5A I_F to 1.0A I_R. Recovers to 0.25A I_{RR}.	t_{rr}	←	50	→		nS
Junction capacitance typ. @ V_R = 5V , f = 1MHz	C_j	←	125	→		pF

THERMAL CHARACTERISTICS

	Symbol	3FF30	3FF40	3FF50	3FF60	Unit
Thermal resistance - junction to lead						
Lead length = 0.375"	$R_{\theta JL}$	←	20	→		°C/W
Lead length = 0.0"	$R_{\theta JL}$	←	5	→		°C/W
Thermal resistance - junction to amb. on 0.06" thick pcb. 1 oz. copper.	$R_{\theta JA}$	←	75	→		°C/W

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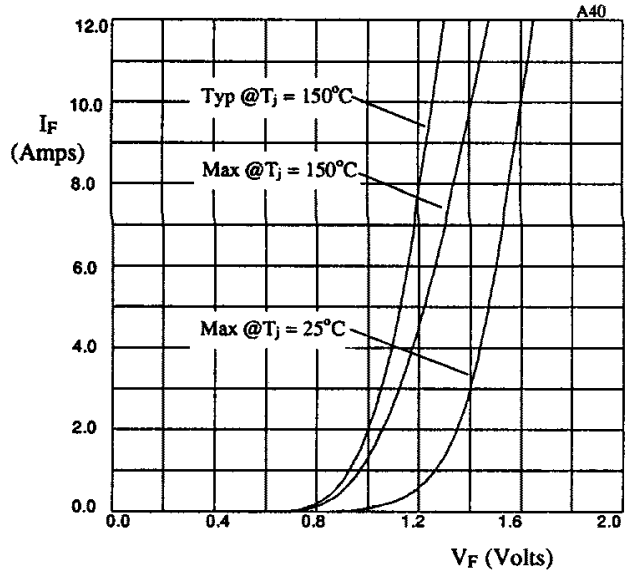

Fig 1. Forward voltage drops as a function of forward current

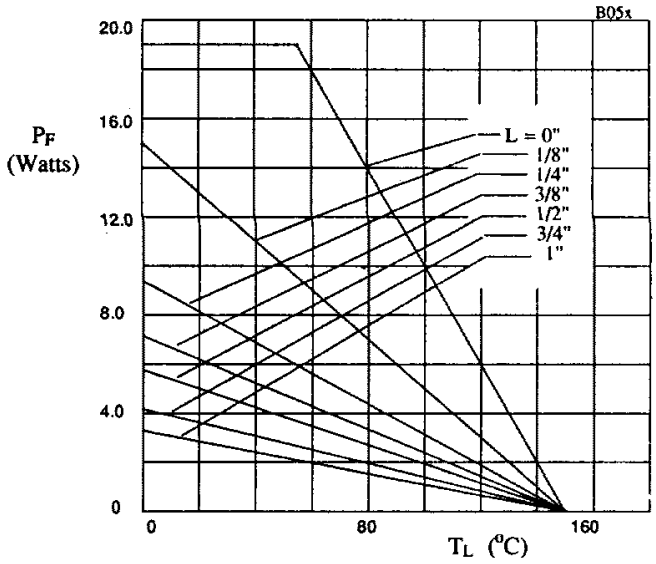

Fig 2. Maximum power versus lead temperature

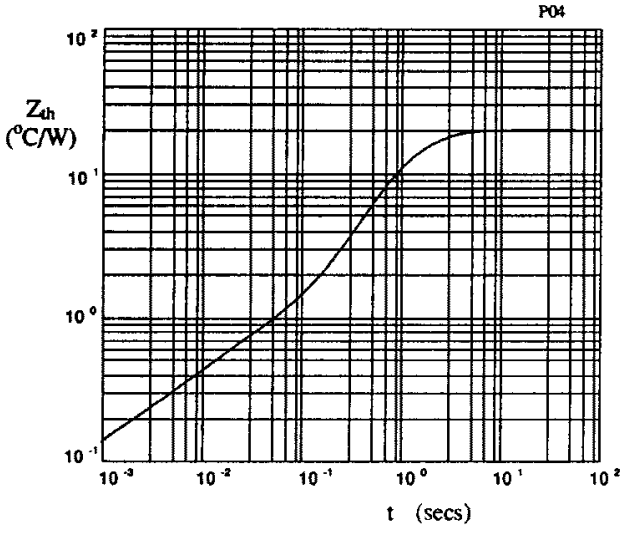

Fig 3. Transient thermal impedance characteristic.

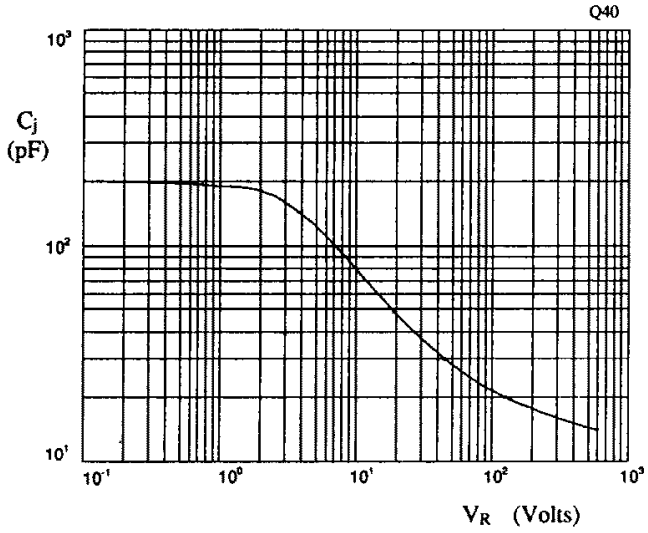

Fig 4. Typical junction capacitance as a function of reverse voltage.

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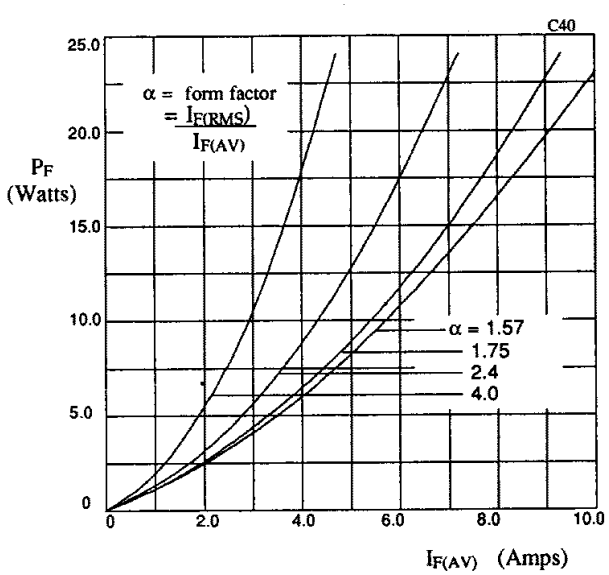

Fig 5. Forward power dissipation as a function of forward current, for sinusoidal operation.

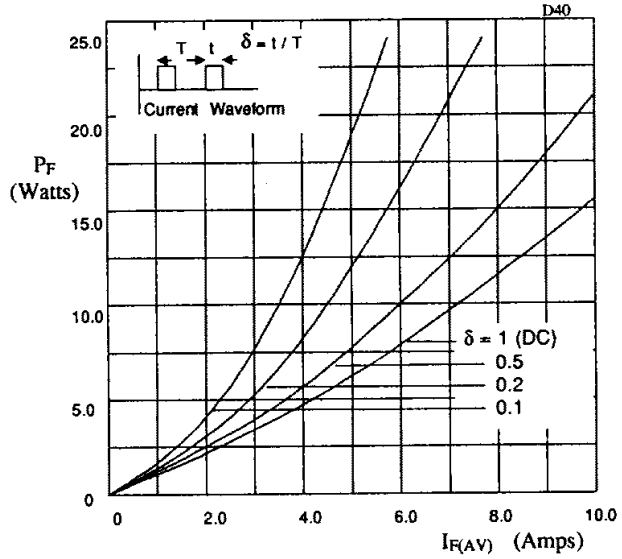

Fig 6. Forward power dissipation as a function of forward current, for square wave operation.

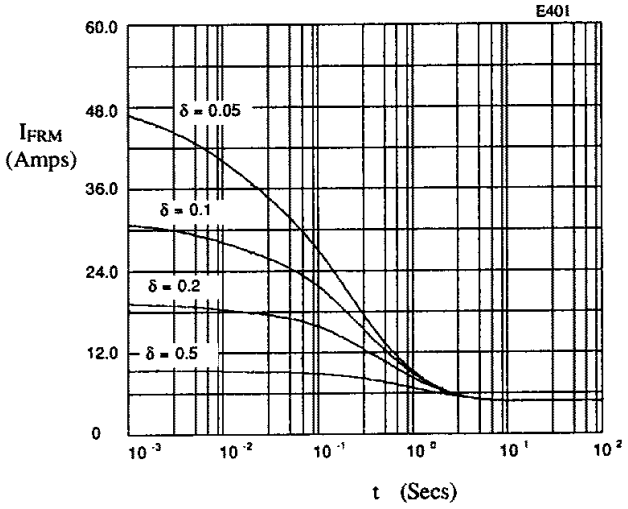

Fig 7. Typical repetitive forward current as a function of pulse width at 55°C; $R_{\theta JL}$ = 20 °C/W; V_{RWM} during 1 - δ.

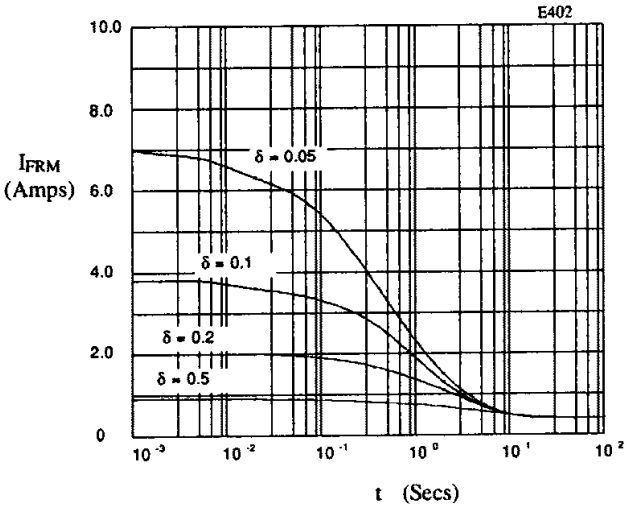

Fig 8. Typical repetitive forward current as a function of pulse width at 100°C; $R_{\theta JL}$ = 80 °C/W; V_{RWM} during 1 - δ.