

January 7, 1998

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## AXIAL LEADED HERMETICALLY SEALED SUPERFAST RECTIFIER DIODE

## QUICK REFERENCE DATA

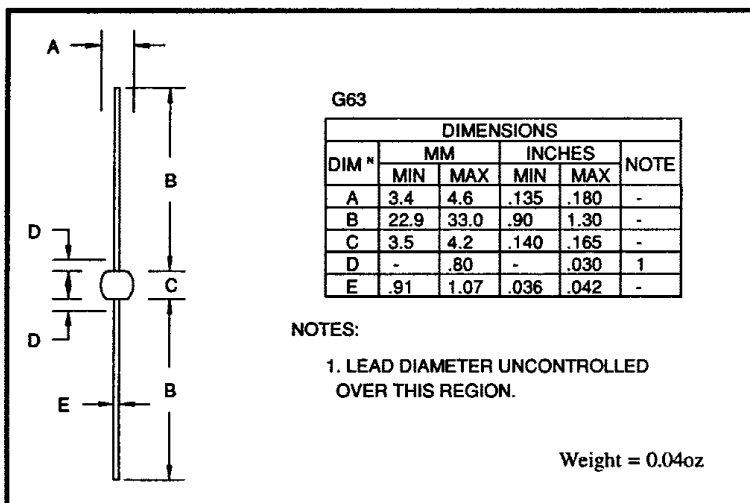
- Very low reverse recovery time
- Hermetically sealed with Metoxilite fused metal oxide
- Low switching losses
- Soft, non-snap off, recovery characteristics

- $V_R = 300 - 600V$
- $I_F = 3.4A$
- $t_{rr} = 50ns$
- $I_R = 10\mu A$

### 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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**ELECTRICAL CHARACTERISTICS** (@ 25°C unless otherwise specified)

	Symbol	3FF30	3FF40	3FF50	3FF60	Unit
Average forward current max. (pcb mounted; $T_A = 55^\circ\text{C}$ ) for sine wave	$I_{F(AV)}$	←	1.0	→		A
	$I_{F(AV)}$	←	1.1	→		A
Average forward current max. ( $T_L = 55^\circ\text{C}$ ; $L = 3/8''$ ) for sine wave	$I_{F(AV)}$	←	3.3	→		A
	$I_{F(AV)}$	←	3.4	→		A
$I^2t$ for fusing ( $t = 8.3\text{ms}$ ) max.	$I^2t$	←	41	→		$\text{A}^2\text{S}$
Forward voltage drop max. @ $I_F = 3.0\text{A}$ , $T_j = 25^\circ\text{C}$	$V_F$	←	1.40	→		V
Reverse current max. @ $V_{RWM}$ , $T_j = 25^\circ\text{C}$ @ $V_{RWM}$ , $T_j = 100^\circ\text{C}$	$I_R$	←	10	→		$\mu\text{A}$
	$I_R$	←	500	→		$\mu\text{A}$
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. @ $V_R = 5\text{V}$ , $f = 1\text{MHz}$	$C_j$	←	125	→		$\rho\text{F}$

**THERMAL CHARACTERISTICS**

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

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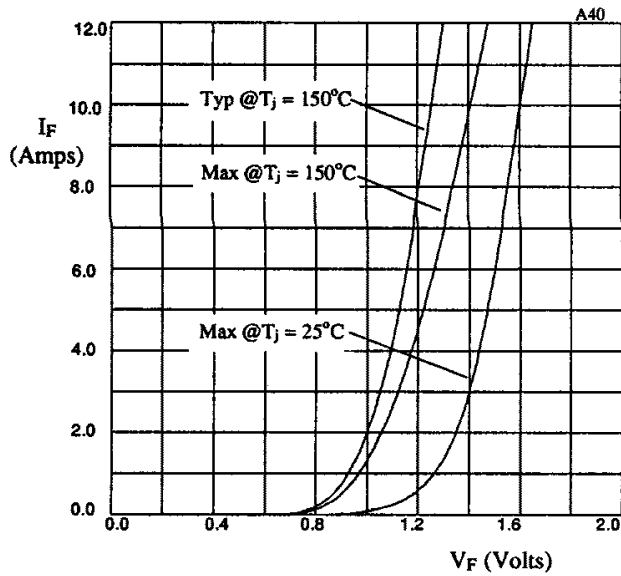


Fig 1. Forward voltage drops as a function of forward current

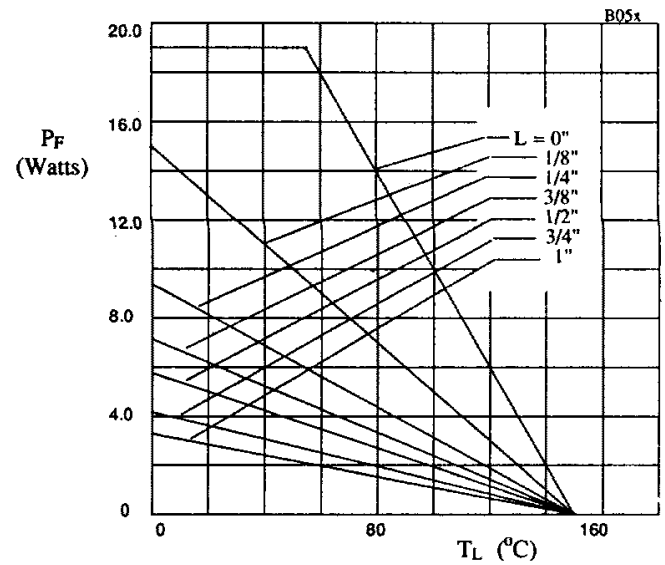


Fig 2. Maximum power versus lead temperature

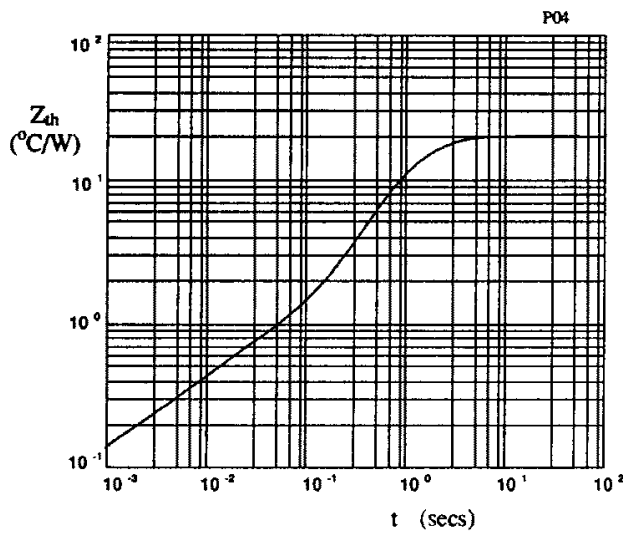


Fig 3. Transient thermal impedance characteristic.

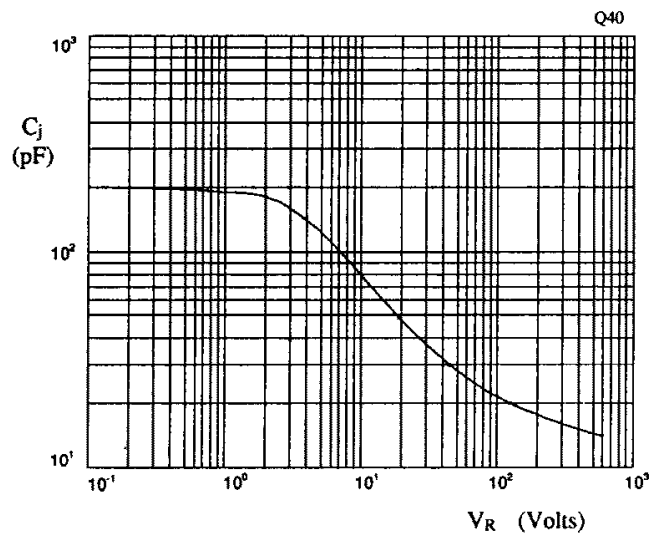


Fig 4. Typical junction capacitance as a function of reverse voltage.

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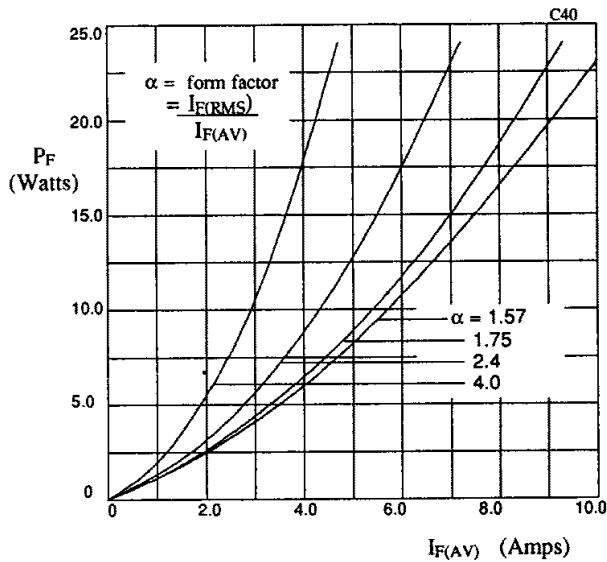


Fig 5. Forward power dissipation as a function of forward current, for sinusoidal operation.

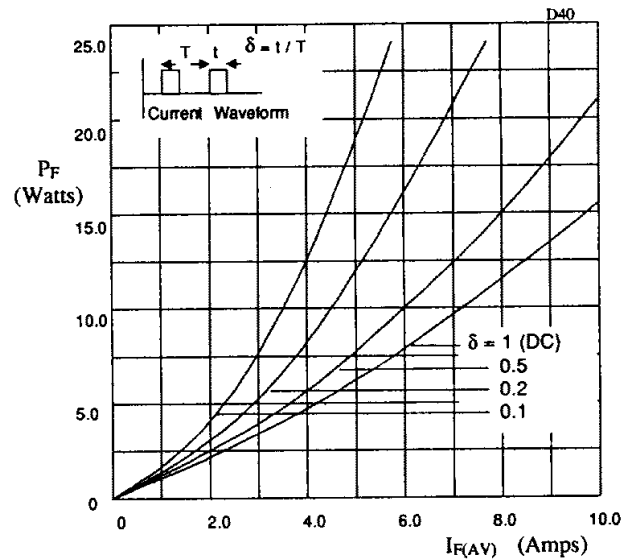


Fig 6. Forward power dissipation as a function of forward current, for square wave operation.

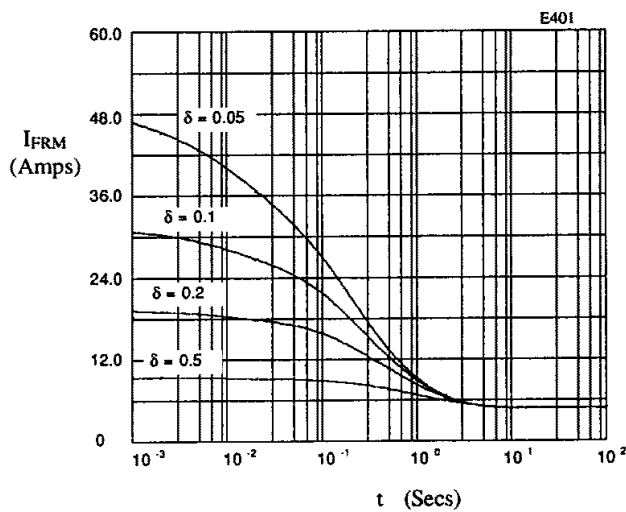


Fig 7. Typical repetitive forward current as a function of pulse width at 55°C;  $R_{\theta JL} = 20\text{ }^{\circ}\text{C/W}$ ;  $V_{RWM}$  during  $1 - \delta$ .

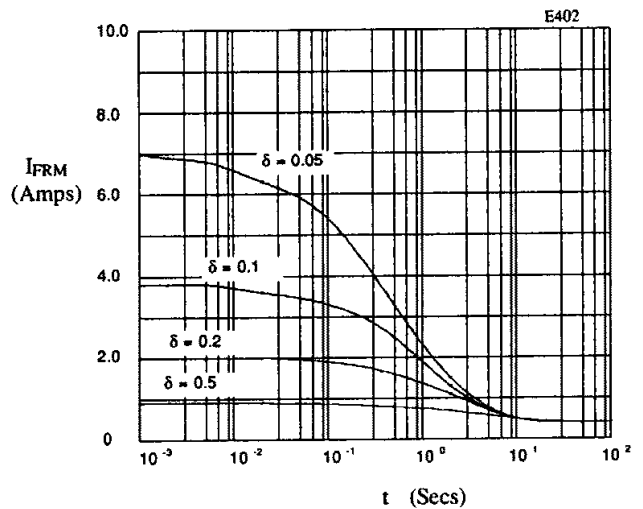


Fig 8. Typical repetitive forward current as a function of pulse width at 100°C;  $R_{\theta JL} = 80\text{ }^{\circ}\text{C/W}$ ;  $V_{RWM}$  during  $1 - \delta$ .