

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 in Metoxilite fused metal oxide
- Low switching losses
- Low forward voltage drop
- Soft, non-snap off, recovery characteristics

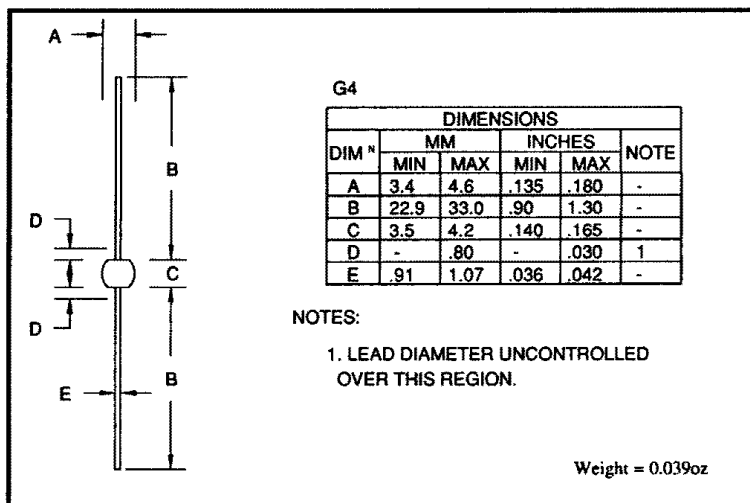
## QUICK REFERENCE DATA

- $V_R = 50 - 150V$
- $I_F = 5.0A$
- $t_{rr} = 30nS$
- $V_F = 0.97V$

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

	Symbol	1N6079 5FF05	1N6080 5FF10	1N6081 5FF15	Unit
Working reverse voltage	$V_{RWM}$	50	100	150	V
Repetitive reverse voltage	$V_{RRM}$	50	100	150	V
Average forward current (@ 55°C, lead length 0.375")	$I_{F(av)}$	← 5.0 →			A
Repetitive surge current (@ 55°C in free air, lead length 0.375")	$I_{FRM}$	← 24 →			A
Non-repetitive surge current ( $t_p = 8.3mS$ , @ $V_R$ & $T_{jmax}$ )	$I_{FSM}$	← 175 →			A
Storage temperature range	$T_{STG}$	← -65 to +150 →			°C
Operating temperature range	$T_{OP}$	← -65 to +150 →			°C

## MECHANICAL



These products are qualified to MIL-S-19500/503.

They can be supplied fully released as JAN, JANTX, and JANTXV versions.

These products are qualified in Europe to DEF STAN 59-61 (PART 80)/030 available to F and FX levels.

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

	Symbol	1N6079 5FF05	1N6080 5FF10	1N6081 5FF15	Unit
Average forward current max. T <sub>A</sub> = 55°C for sine wave	I <sub>F(AV)</sub>	← 2.0 →			A
Average forward current max. T <sub>L</sub> = 70°C; L = 0" T <sub>L</sub> = 55°C; L = 3/8" for sine wave	I <sub>F(AV)</sub>	← 12.0 →			A
for square wave	I <sub>F(AV)</sub>	← 4.8 →			A
	I <sub>F(AV)</sub>	← 5.0 →			A
I <sup>2</sup> t for fusing (t = 8.3mS) max.	I <sup>2</sup> t	← 127 →			A <sup>2</sup> S
Forward voltage drop max. @ I <sub>F</sub> = 5.0A, T <sub>j</sub> = 25°C	V <sub>F</sub>	← 0.97 →			V
Reverse current max. @ V <sub>RWM</sub> , T <sub>j</sub> = 25°C	I <sub>R</sub>	← 10 →			μA
@ V <sub>RWM</sub> , T <sub>j</sub> = 100°C	I <sub>R</sub>	← 500 →			μA
Reverse recovery time max. 0.5A I <sub>F</sub> to 1.0A I <sub>R</sub> . Recovers to 0.25A I <sub>RR</sub> .	t <sub>rr</sub>	← 30 →			nS
Junction capacitance typ. @ V <sub>R</sub> = 5V, f = 1MHz	C <sub>j</sub>	← 230 →			pF

**THERMAL CHARACTERISTICS**

	Symbol	1N6079 5FF05	1N6080 5FF10	1N6081 5FF15	Unit
Thermal resistance - junction to lead Lead length = 0.375"	R <sub>θJL</sub>	← 23.5 →			°C/W
Lead length = 0.0"	R <sub>θJL</sub>	← 5 →			°C/W
Thermal resistance - junction to amb. on 0.06" thick pcb. 1 oz. copper.	R <sub>θJA</sub>	← 75 →			°C/W

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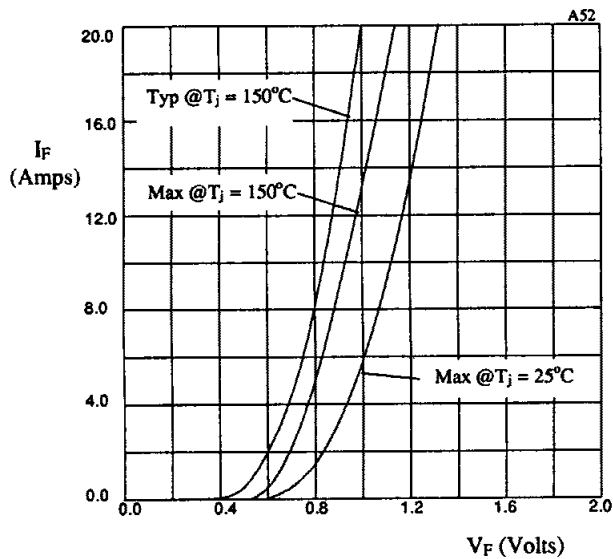


Fig 1. Forward voltage drop as a function of forward current

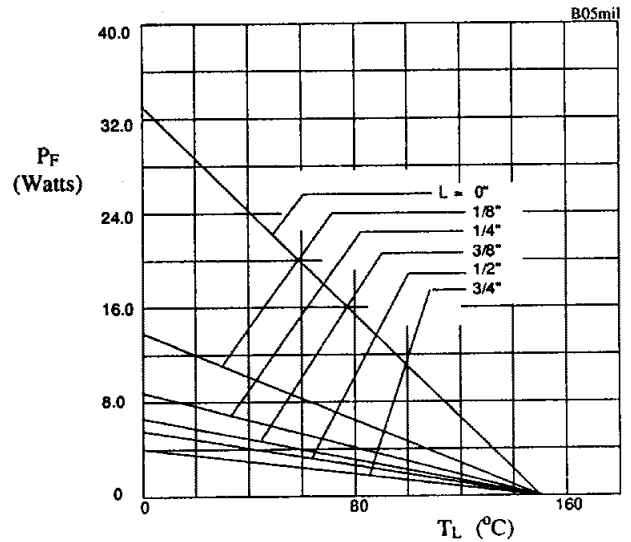


Fig 2. Maximum power versus lead temperature

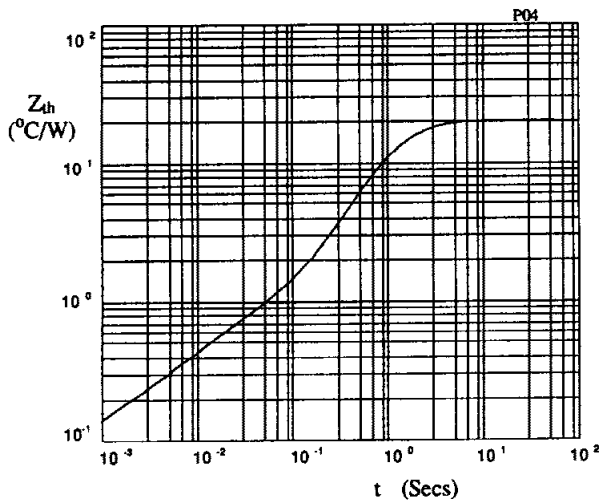


Fig 3. Transient thermal impedance characteristic.

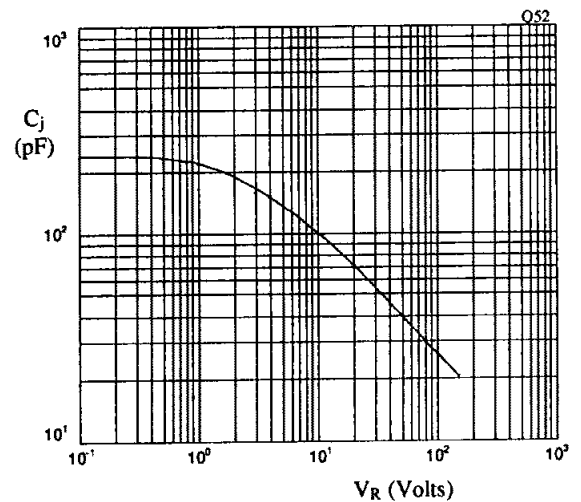


Fig 4. Typical junction capacitance as a function of reverse voltage.

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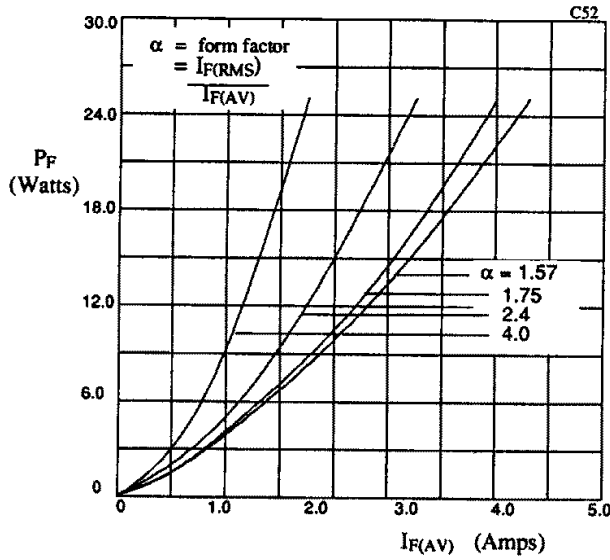


Fig 5. Forward power dissipation as a function of forward current, for sinusoidal operation.

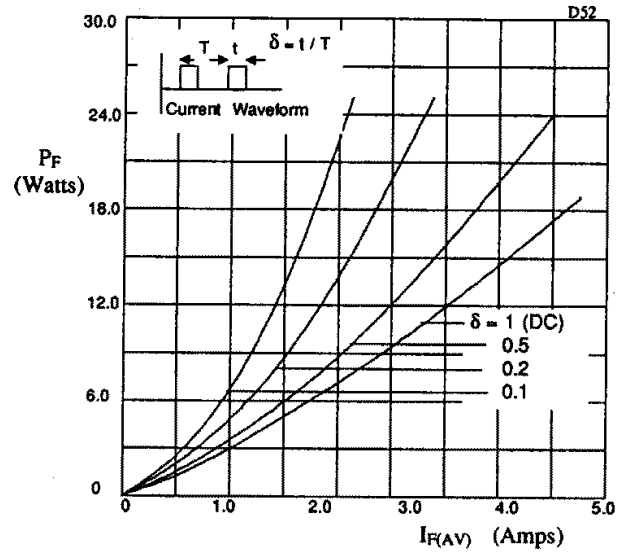


Fig 6. Forward power dissipation as a function of forward current, for square wave operation.

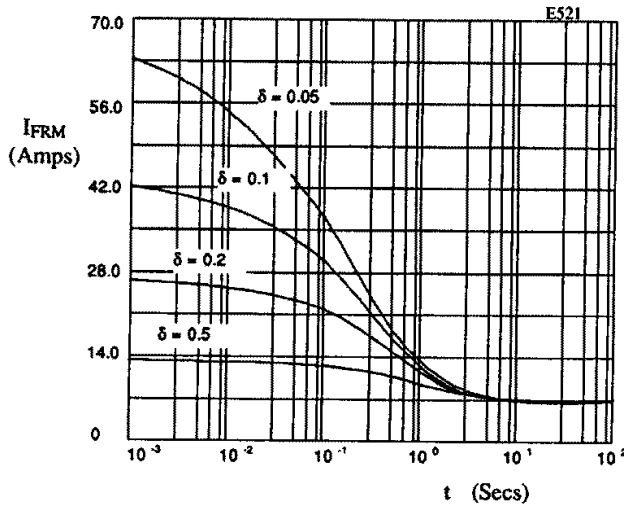


Fig 7. Maximum repetitive forward current as a function of pulse width at  $55^\circ\text{C}$ ;  $R_{\theta JL} = 20^\circ\text{C/W}$ ;  $V_{RWM}$  during  $1 - \delta$ .

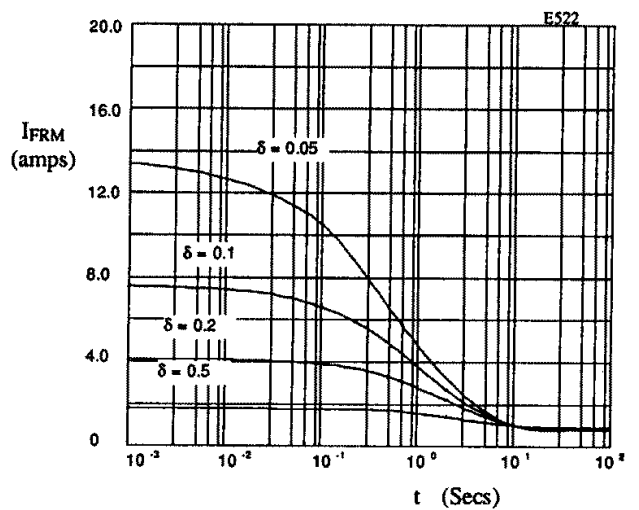


Fig 8. Maximum repetitive forward current as a function of pulse width at  $100^\circ\text{C}$ ;  $R_{\theta JL} = 80^\circ\text{C/W}$ ;  $V_{RWM}$  during  $1 - \delta$ .