

## Excellent Integrated System Limited

Stocking Distributor

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For any questions, you can email us directly:  
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**SEMTECH**

**RECTIFIER, up to 6kV, 100mA,  
300ns**

**F40A  
F50A  
F60A**

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**

**QUICK REFERENCE  
DATA**

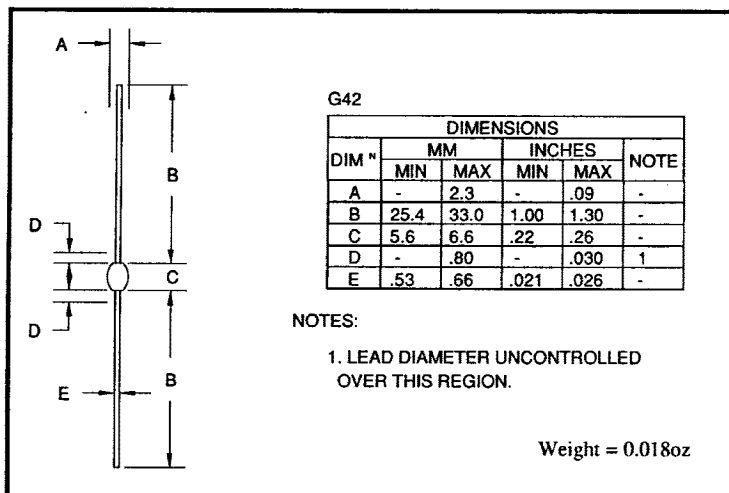
- Low reverse recovery time
- High thermal shock resistance
- Hermetically sealed with Metoxilite metal oxide
- Low switching losses
- Soft, non-snap off, recovery characteristics

- $V_R = 4 - 6kV$
- $I_F = 0.25A$
- $t_{rr} = 300ns$
- $I_R = 1\mu A$

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

	Symbol	F40A	F50A	F60A	Unit
Working reverse voltage	$V_{RWM}$	4000	5000	6000	V
Repetitive reverse voltage	$V_{RRM}$	4000	5000	6000	V
Average forward current (@ 55°C in oil)	$I_{F(AV)}$	←	0.10	→	A
Repetitive surge current (@ 55°C)	$I_{FRM}$	←	0.75	→	A
Non-repetitive surge current ( $t_p = 8.3ms$ , @ $V_R$ & $T_{jmax}$ )	$I_{FSM}$	←	2.50	→	A
Storage temperature range	$T_{STG}$	←	-65 to +175	→	°C
Operating temperature range	$T_{OP}$	←	-65 to +175	→	°C

**MECHANICAL**



These products are available in Europe to DEF STAN 59-61 (PART 80)/034 to F and FX levels.

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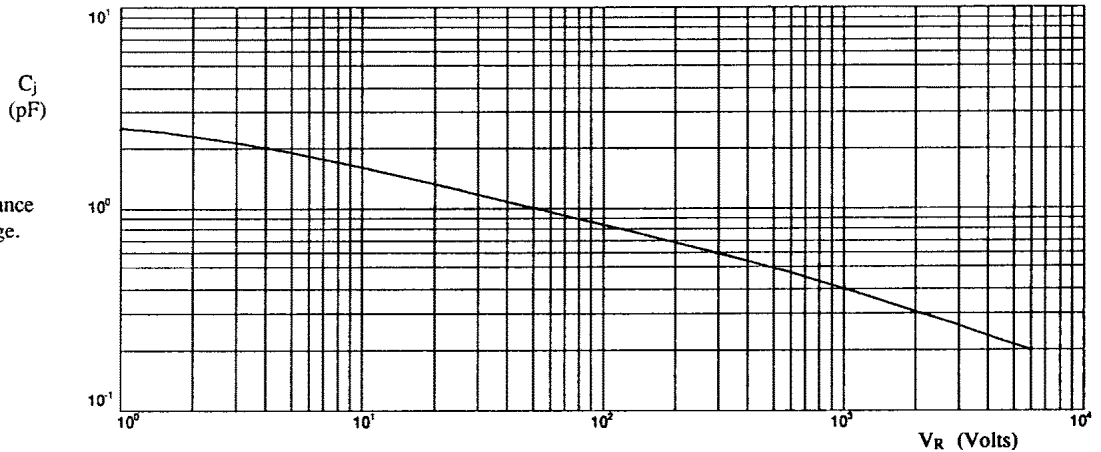
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**CHARACTERISTICS** (@ 25°C unless otherwise specified)

	Symbol	F40A	F50A	F60A	Unit
Average forward current max. (pcb mounted; T <sub>A</sub> = 55°C) for sine wave	I <sub>F(av)</sub>	← 0.12 →			A
	I <sub>F(av)</sub>	← 0.13 →			A
Average forward current max. (unstirred oil at 55°C) for sine wave	I <sub>F(av)</sub>	← 0.23 →			A
	I <sub>F(av)</sub>	← 0.25 →			A
I <sup>2</sup> t for fusing (t = 8.3mS) max.	I <sup>2</sup> t	← 0.026 →			A <sup>2</sup> S
Forward voltage drop max. @ I <sub>F</sub> = 50mA, T <sub>j</sub> = 25°C	V <sub>F</sub>	← 8.0 →			V
Reverse current max. @ V <sub>RWM</sub> , T <sub>j</sub> = 25°C	I <sub>R</sub>	← 1.0 →			μA
	I <sub>R</sub>	← 10 →			μA
Reverse recovery time max. 50mA I <sub>F</sub> to 100mA I <sub>R</sub> . Recover to 25mA I <sub>RR</sub> .	t <sub>rr</sub>	← 300 →			nS
Junction capacitance typ. @ V <sub>R</sub> = 5V, f = 1MHz	C <sub>j</sub>	← 2.0 →			pF
Thermal resistance - junction to oil Stirred oil	R <sub>θJO</sub>	← 26 →			°C/W
	R <sub>θJO</sub>	← 40 →			°C/W
Thermal resistance - junction to amb. on 0.06" thick pcb. 1oz copper.	R <sub>θJA</sub>	← 95 →			°C/W

Q54

Fig 1 Junction capacitance against reverse voltage.



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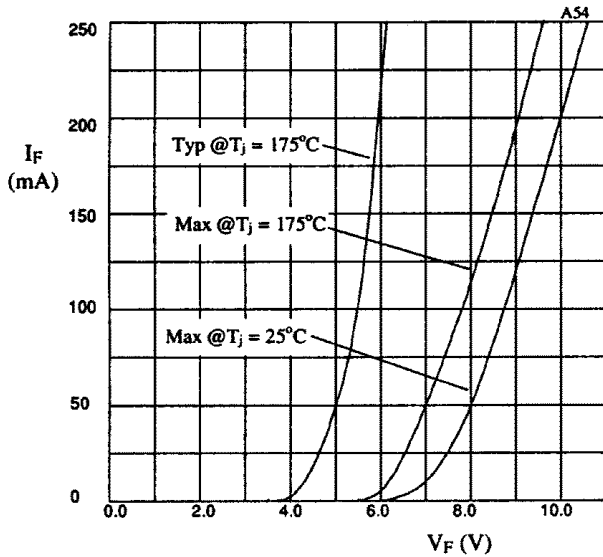


Fig 2. Forward voltage drop as a function of forward current.

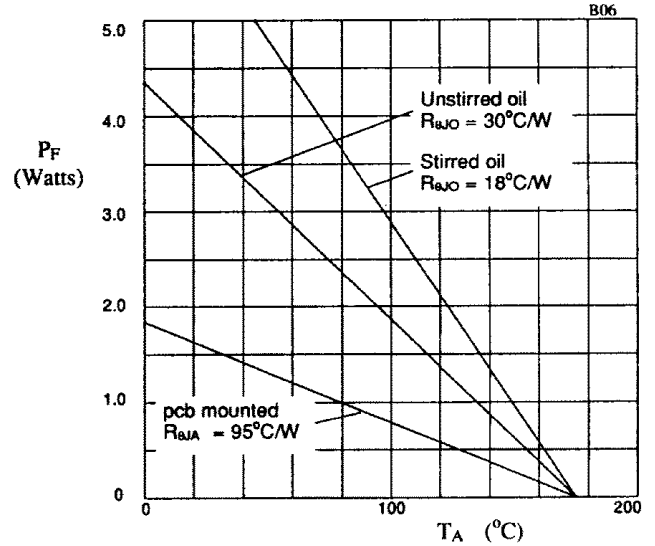


Fig 3. Power derating in air and oil.

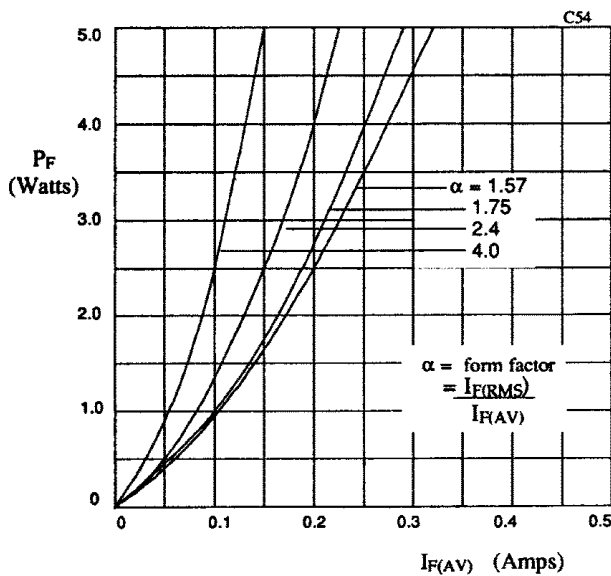


Fig 4. Forward power dissipation as a function of forward current, for sinusoidal operation.

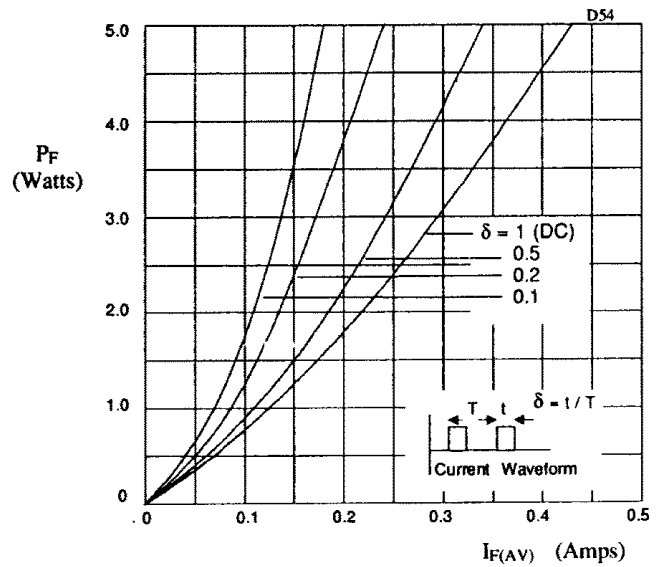


Fig 5. Forward power dissipation as a function of forward current, for square wave operation.