

December 22, 1997

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QUICK REFERENCE DATA

- $V_R = 50V - 1000V$
- $I_F = 120A$
- $t_{rr} = 150nS$
- $I_{FSM} = 1800A$

HIGH CURRENT, HIGH DENSITY, FAST RECOVERY SILICON POWER RECTIFIER STUD

- Low thermal impedance
- Low forward voltage drop
- Low reverse recovery time
- Low reverse leakage current
- High forward and surge currents ratings

ABSOLUTE MAXIMUM RATINGS

| Device Type* | Working Reverse Voltage (V_{RWM}) | Average Rectified Current $I_{F(AV)}$ | | | | | 1 Cycle Surge Current I_{FSM} $t_p = 8.3mS$ | | Repetitive Surge Current I_{FRM} |
|--------------|---------------------------------------|---------------------------------------|--------|---------|--------------|---------------|--|---------|------------------------------------|
| | | insert mounting | | | stud mounted | stud + insert | @ 25°C | @ 100°C | |
| | | @ 25°C | @ 55°C | @ 100°C | @ 55°C | @ 55°C | | | |
| Volts | Amps | Amps | Amps | Amps | Amps | Amps | Amps | Amps | |
| SCSF05 | 50 | 120 | 100 | 65 | 82.5 | 150 | 1800 | 1200 | 250 |
| SCSF1 | 100 | 120 | 100 | 65 | 82.5 | 150 | 1800 | 1200 | 250 |
| SCSF2 | 200 | 120 | 100 | 65 | 82.5 | 150 | 1800 | 1200 | 250 |
| SCSF4 | 400 | 120 | 100 | 65 | 82.5 | 150 | 1800 | 1200 | 250 |
| SCSF0 | 1000 | 85 | 70 | 50 | 60 | 105 | 1250 | 875 | 150 |

Normal polarity is cathode to stud

* add suffix "R" to part number for reverse polarity

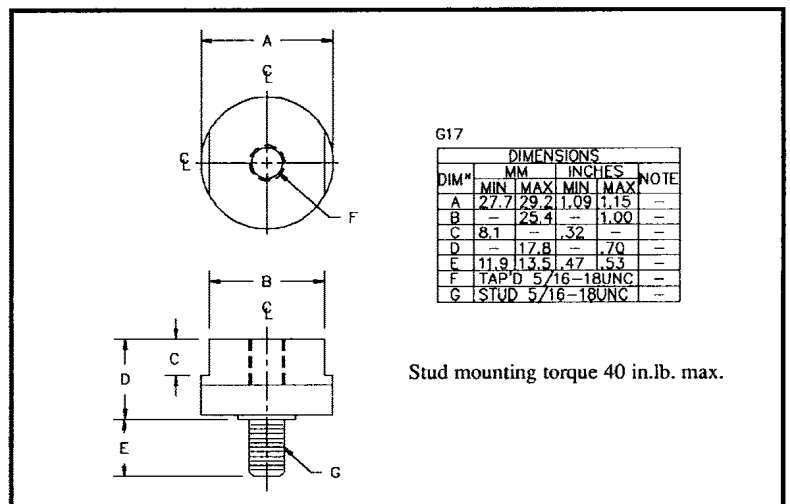
MECHANICAL

Maximum thermal impedances

Stud mounted $R_{\theta JC} < 0.67^\circ C/W$

Insert mounted $R_{\theta JC} < 0.5^\circ C/W$

Stud + insert mtd $R_{\theta JC} < 0.28^\circ C/W$



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ELECTRICAL CHARACTERISTICS

| Device Type | Maximum Reverse Leakage Current $I_R @ V_{RWM}$ | | Forward voltage $V_F @ 100A.$ | Reverse Recovery Time ⁽¹⁾ |
|-------------|---|----------|-------------------------------|--------------------------------------|
| | @ 25 °C | @ 100 °C | Max @ 25°C | max @ 25 °C |
| | μA | μA | Volts | nS |
| SCSF05 | 12.0 | 300 | 1.35 | 150 |
| SCSF1 | 12.0 | 300 | 1.35 | 150 |
| SCSF2 | 12.0 | 300 | 1.35 | 150 |
| SCSF4 | 12.0 | 300 | 1.35 | 150 |
| SCSF0 | 12.0 | 300 | 2.0 | 150 |

1) Measured on discrete devices prior to assembly.

Operating temperature range -55 °C to +150 °C
Storage temperature range -55 °C to +150 °C

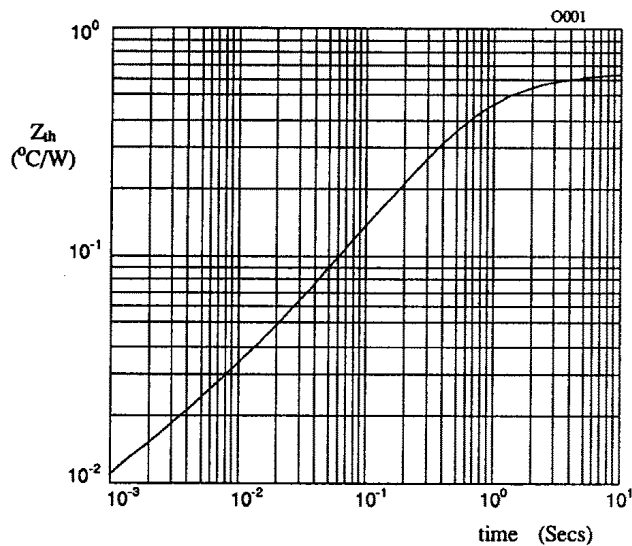


Fig 1. Transient thermal impedance characteristic when stud mounted.

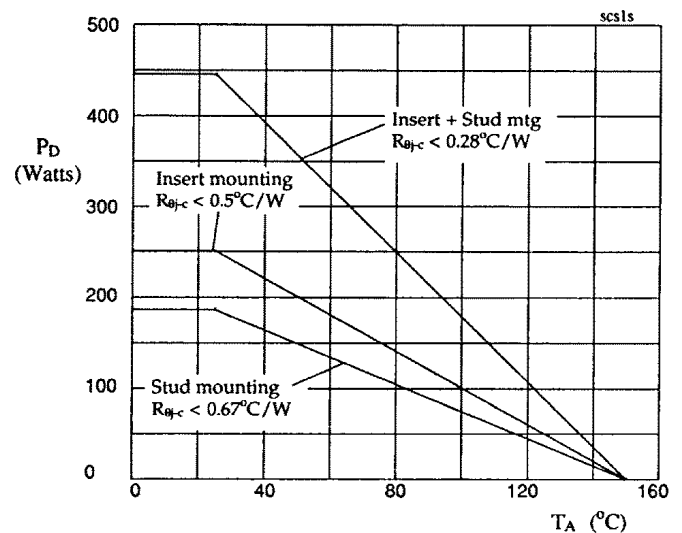


Fig 2. Power dissipation as a function of ambient temperature for different mountings.

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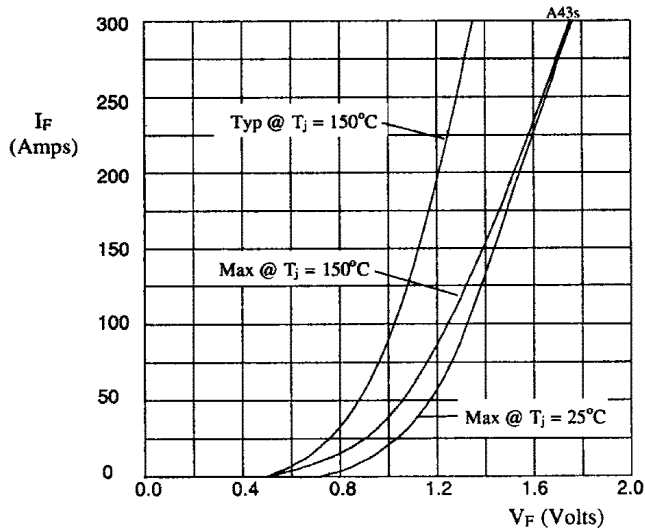


Fig 2. Forward voltage drop as a function of forward current for SCSF05 thru SCSF4.

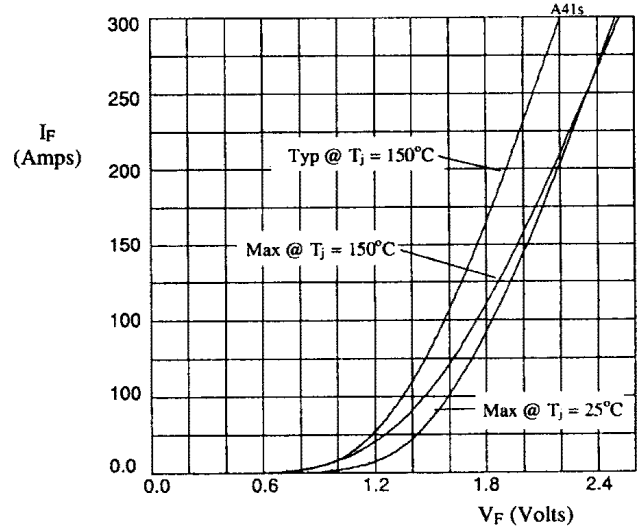


Fig 3. Forward voltage drop as a function of forward current for SCSF0.

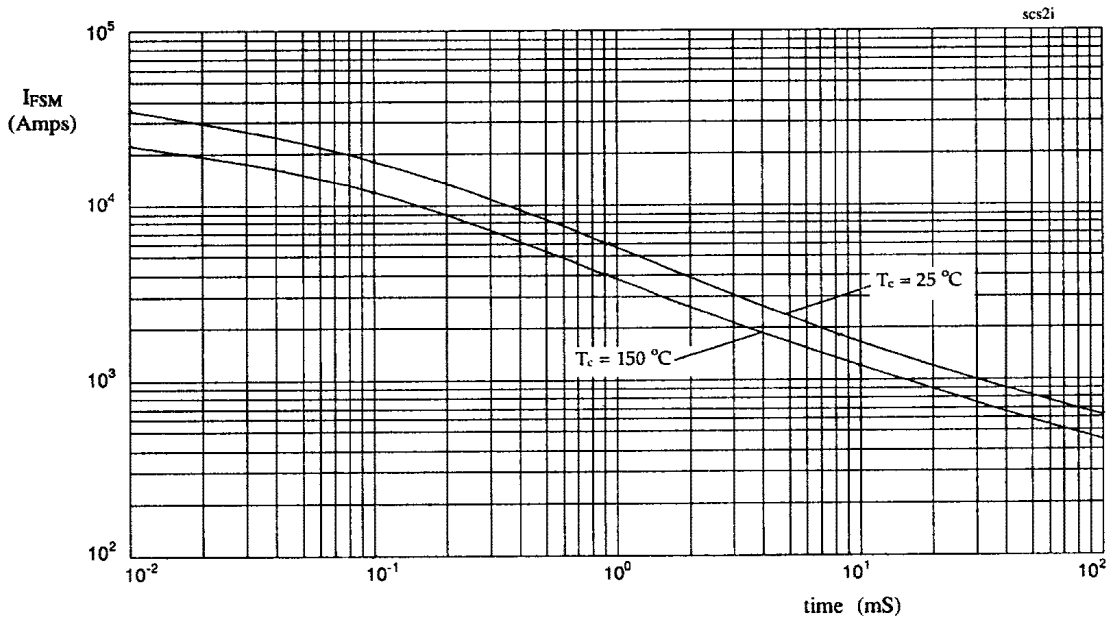


Figure 4. Maximum non-repetitive surge current against pulse width (SCSF05 thru SCSF4).