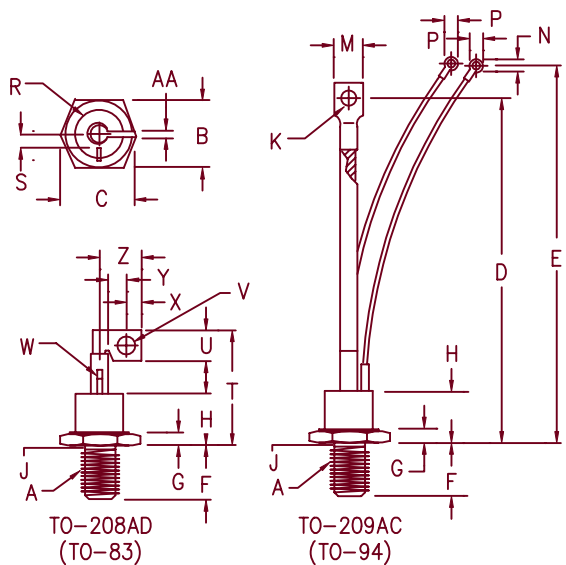


# Silicon Controlled Rectifier Series 70C



Note 1: 1/2-20 UNF-3A  
Note 2: Full thread within 2 1/2 threads  
Note 3: For insulated cathode lead,  
add suffix "IL" to catalog number

| Dim. | Inches  |         | Millimeter |         | Notes |
|------|---------|---------|------------|---------|-------|
|      | Minimum | Maximum | Minimum    | Maximum |       |
| A    | ---     | ---     | ---        | ---     | 1     |
| B    | 1.050   | 1.060   | 26.67      | 26.92   |       |
| C    | ---     | 1.161   | ---        | 29.49   |       |
| D    | 5.850   | 6.144   | 149.10     | 156.06  |       |
| E    | 6.850   | 7.375   | 173.99     | 187.33  |       |
| F    | .797    | .827    | 20.24      | 21.01   |       |
| G    | .276    | .286    | .701       | 7.26    |       |
| H    | ---     | .948    | ---        | 24.08   |       |
| J    | .425    | .499    | 10.80      | 12.67   | 2     |
| K    | .260    | .280    | 6.60       | 7.11    | Dia.  |
| M    | .500    | .600    | 12.70      | 15.24   |       |
| N    | .140    | .150    | 3.56       | 3.81    |       |
| P    | ---     | .295    | ---        | 7.49    |       |
| R    | ---     | .900    | ---        | 22.86   | Dia.  |
| S    | .225    | .275    | 6.48       | 6.99    |       |
| T    | ---     | 1.750   | ---        | 44.45   |       |
| U    | .370    | .380    | 9.40       | 9.65    |       |
| V    | .213    | .223    | 5.41       | 5.66    | Dia.  |
| W    | .065    | .075    | 1.65       | 1.91    | Dia.  |
| X    | .215    | .225    | 5.46       | 5.72    |       |
| Y    | .290    | .315    | 7.37       | 8.00    |       |
| Z    | .514    | .530    | 13.06      | 13.46   |       |
| AA   | .089    | .099    | 2.26       | 2.51    |       |

- High  $dv/dt$ —200 V/usec.
- 1200 Amperes surge current
- Low forward on-state voltage
- Package conforming to either TO-209AC or TO-208AD outline
- Economical for general purpose phase control applications

| Microsemi<br>Catalog Number | Forward & Reverse<br>Repetitive Blocking | Reverse Transient<br>Blocking |
|-----------------------------|------------------------------------------|-------------------------------|
| Standard Lead               | Flag Lead                                |                               |
| 70C50B                      | 70C50BF                                  | 500                           |
| 70C60B                      | 70C60BF                                  | 600                           |
| 70C80B                      | 70C80BF                                  | 800                           |
| 70C100B                     | 70C100BF                                 | 1000                          |
| 70C120B                     | 70C120BF                                 | 1200                          |

To specify  $dv/dt$  other than 200V/usec., contact factory.

## Electrical Characteristics

|                                   |                               |                          |
|-----------------------------------|-------------------------------|--------------------------|
| Max. RMS on-state current         | $I_T(RMS)$ 110 Amps           | $T_C = 78^\circ C$       |
| Max. average on-state cur.        | $I_T(AV)$ 70 Amps             | $T_C = 78^\circ C$       |
| Max. peak on-state voltage        | $V_{TM}$ 1.4 Volts            | $I_{TM} = 220$ A(peak)   |
| Max. holding current              | $I_H$ 200 mA                  |                          |
| Max. peak one cycle surge current | $I_{TSM}$ 1600 A              | $T_C = 78^\circ C, 60Hz$ |
| Max. $I^2t$ capability for fusing | $I^2t_t$ 6000A <sup>2</sup> S | $t = 8.3$ ms             |

## Thermal and Mechanical Characteristics

|                                      |                 |                                                                                                   |
|--------------------------------------|-----------------|---------------------------------------------------------------------------------------------------|
| Operating junction temp range        | $T_J$           | -65°C to 125°C                                                                                    |
| Storage temperature range            | $T_{STG}$       | -65°C to 150°C                                                                                    |
| Maximum thermal resistance           | $R_{\theta JC}$ | 0.28°C/W Junction to case                                                                         |
| Typical thermal resistance (greased) | $R_{\theta CS}$ | 0.20°C/W Case to sink                                                                             |
| Max mounting torque                  |                 | 100-130 inch pounds                                                                               |
| Weight                               |                 | 70C-B Approx. 3.6 ounces (102.0 grams) typical<br>70C-BF Approx. 3.24 ounces (91.8 grams) typical |

# 70C

## Switching

|                                                    |         |            |                           |
|----------------------------------------------------|---------|------------|---------------------------|
| Critical rate of rise of on-state current (note 1) | $di/dt$ | 100A/usec. | $T_J = 125^\circ\text{C}$ |
| Typical delay time (note 1)                        | $t_d$   | 3.0 usec.  |                           |
| Typical circuit commuted turn-off time (note 2)    | $t_q$   | 100 usec.  | $T_J = 125^\circ\text{C}$ |

Note 1:  $I_{TM} = 50\text{A}$ ,  $V_D = V_{DRM}$ ,  $V_{GT} = 12\text{V}$  open circuit, 20 ohm-0.1 usec. rise time

Note 2:  $I_{TM} = 50\text{A}$ ,  $di/dt = 5\text{A/usec.}$ ,  $V_R$  during turn-off interval = 50V min.,  
reapplied  $dv/dt = 20\text{V/usec.}$ , linear to rated  $V_{DRM}$ ,  $V_{GT} = 0\text{V}$

## Triggering

|                                  |             |       |                           |
|----------------------------------|-------------|-------|---------------------------|
| Max. gate voltage to trigger     | $V_{GT}$    | 3.0V  | $T_J = 25^\circ\text{C}$  |
| Max. nontriggering gate voltage  | $V_{GD}$    | 0.25V | $T_J = 125^\circ\text{C}$ |
| Max. gate current to trigger     | $I_{GT}$    | 100mA | $T_J = 25^\circ\text{C}$  |
| Max. peak gate power             | $P_{GM}$    | 15W   |                           |
| Average gate power               | $P_{G(AV)}$ | 3.0W  | $t_p = 10 \text{ usec.}$  |
| Max. peak gate current           | $I_{GM}$    | 4.0A  |                           |
| Max. peak gate voltage (forward) | $V_{GM}$    | 10V   |                           |
| Max. peak gate voltage (reverse) | $V_{GM}$    | 5.0V  |                           |

## Blocking

|                                            |                    |            |                                                        |
|--------------------------------------------|--------------------|------------|--------------------------------------------------------|
| Max. leakage current                       | $I_{DRM}, I_{RRM}$ | 10mA       | $T_J = 125^\circ\text{C} \text{ \& } V_{DRM}, V_{RRM}$ |
| Max. reverse leakage                       | $I_{DRM}, I_{RRM}$ | 100uA      | $T_J = 25^\circ\text{C} \text{ \& } V_{DRM}, V_{RRM}$  |
| Critical rate of rise of off-state voltage | $dv/dt$            | 200V/usec. | $T_J = 125^\circ\text{C}$                              |

# 70C

Figure 1  
Typical Forward On-State Characteristics

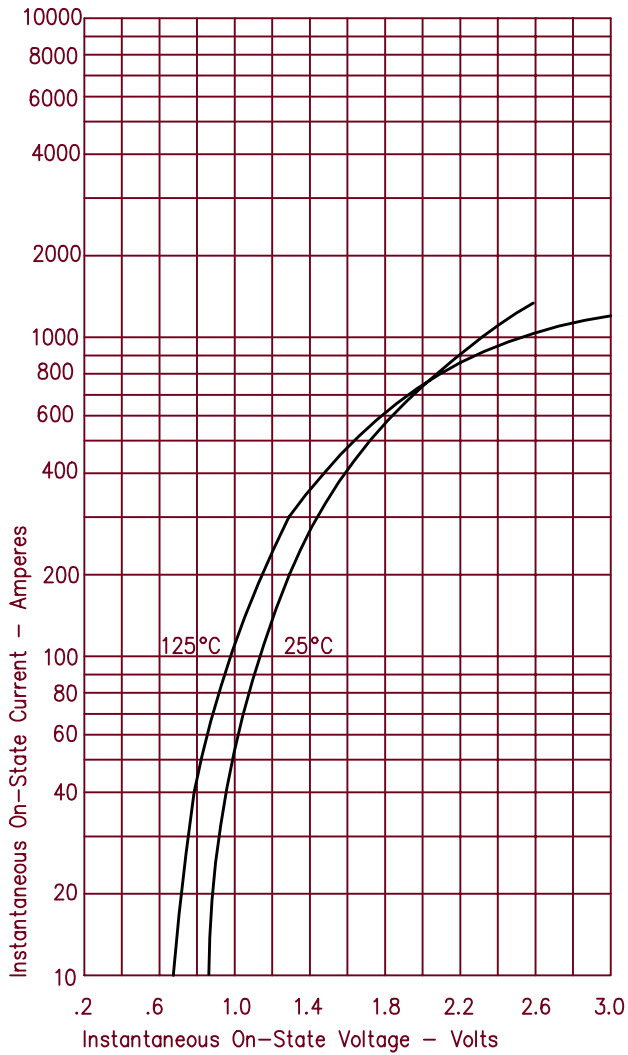


Figure 3  
Maximum Power Dissipation

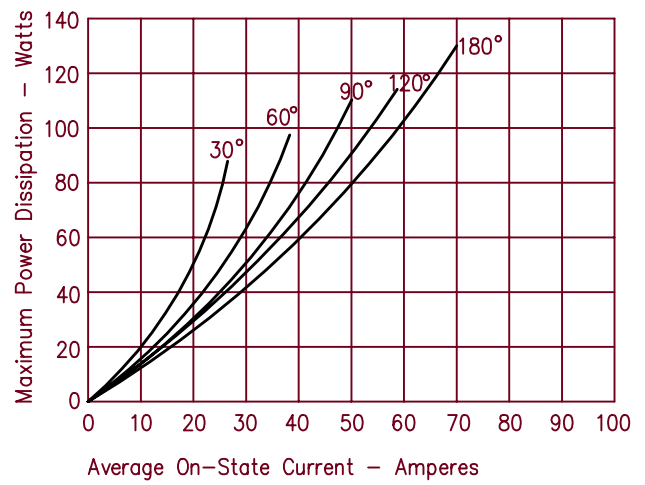


Figure 4  
Transient Thermal Impedance

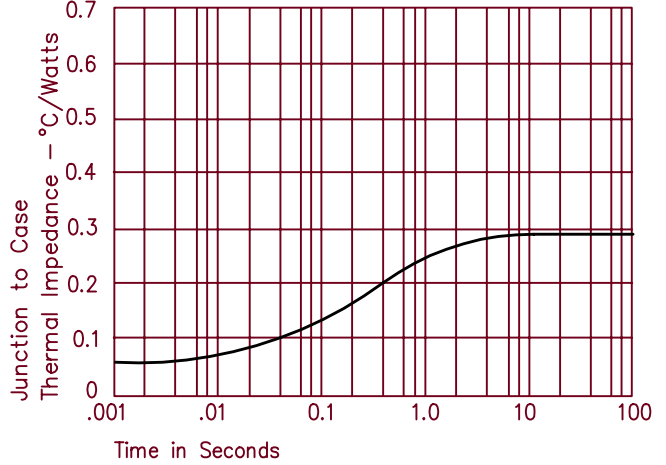


Figure 2  
Forward Current Derating

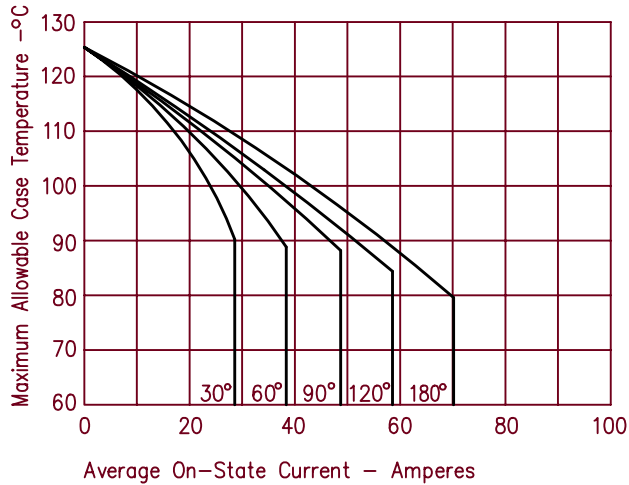


Figure 5  
Maximum Nonrepetitive Surge Current

