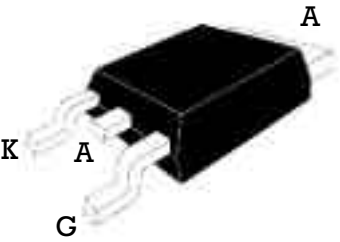


**SURFACE MOUNT SCR**

|                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                  |                                                    |                                                                |  |
|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------|----------------------------------------------------------------|--|
| <p style="text-align: center;"><b>DPAK<br/>(Plastic)</b></p>  | <table border="0" style="width: 100%;"> <tr> <td style="text-align: center; vertical-align: top;"> <b>On-State Current</b><br/>                     4 Amp                 </td><td style="text-align: center; vertical-align: top;"> <b>Gate Trigger Current</b><br/> <math>&lt; 200 \mu\text{A}</math> </td></tr> <tr> <td colspan="2" style="text-align: center; vertical-align: top;"> <b>Off-State Voltage</b><br/> <math>200 \text{ V} \div 600 \text{ V}</math> </td></tr> </table> <p>These series of <b>Silicon C</b>ontrolled Rectifier use a high performance PNPN technology.</p> <p>These parts are intended for general purpose applications where high gate sensitivity is required using surface mount technology.</p> | <b>On-State Current</b><br>4 Amp | <b>Gate Trigger Current</b><br>$< 200 \mu\text{A}$ | <b>Off-State Voltage</b><br>$200 \text{ V} \div 600 \text{ V}$ |  |
| <b>On-State Current</b><br>4 Amp                                                                                                               | <b>Gate Trigger Current</b><br>$< 200 \mu\text{A}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                  |                                                    |                                                                |  |
| <b>Off-State Voltage</b><br>$200 \text{ V} \div 600 \text{ V}$                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                  |                                                    |                                                                |  |

**Absolute Maximum Ratings, according to IEC publication No. 134**

| SYMBOL       | PARAMETER                       | CONDITIONS                                            | Min. | Max. | Unit                 |
|--------------|---------------------------------|-------------------------------------------------------|------|------|----------------------|
| $I_{T(RMS)}$ | On-state Current                | 180° Conduction Angle, $T_c = 115^\circ\text{C}$      | 4    |      | A                    |
| $I_{T(AV)}$  | Average On-State Current        | Half Cycle, $Q=180^\circ$ , $T_c = 115^\circ\text{C}$ | 2.5  |      | A                    |
| $I_{TSM}$    | Non-repetitive On-State Current | Half Cycle, 60 Hz                                     | 33   |      | A                    |
| $I_{TSM}$    | Non-repetitive On-State Current | Half Cycle, 50 Hz                                     | 30   |      | A                    |
| $I^2t$       | Fusing Current                  | $t = 10 \text{ ms}$ , Half Cycle                      | 4.5  |      | $\text{A}^2\text{s}$ |
| $V_{GRM}$    | Peak Reverse Gate Voltage       | $I_{GR} = 10\mu\text{A}$                              | 8    |      | V                    |
| $I_{GM}$     | Peak Gate Current               | 20 $\mu\text{s}$ max.                                 |      | 1.2  | A                    |
| $P_{GM}$     | Peak Gate Dissipation           | 20 $\mu\text{s}$ max.                                 |      | 3    | W                    |
| $P_{G(AV)}$  | Gate Dissipation                | 20 ms max.                                            |      | 0.2  | W                    |
| $T_j$        | Operating Temperature           |                                                       | -40  | +125 | $^\circ\text{C}$     |
| $T_{stg}$    | Storage Temperature             |                                                       | -40  | +150 | $^\circ\text{C}$     |
| $T_{sld}$    | Soldering Temperature           | 10s max                                               |      | 260  | $^\circ\text{C}$     |

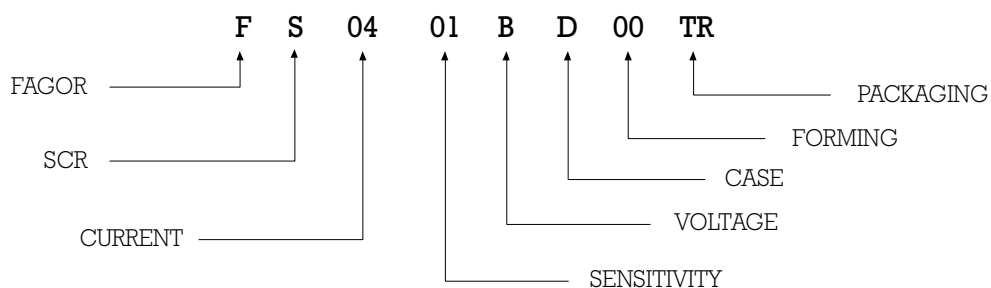
| SYMBOL                 | PARAMETER                            | CONDITIONS              | VOLTAGE |     |     | Unit |
|------------------------|--------------------------------------|-------------------------|---------|-----|-----|------|
|                        |                                      |                         | B       | D   | M   |      |
| $V_{DRM}$<br>$V_{RRM}$ | Repetitive Peak Off State<br>Voltage | $R_{GK} = 1 \text{ KW}$ | 200     | 400 | 600 | V    |

## SURFACE MOUNT SCR

### Electrical Characteristics

| SYMBOL              | PARAMETER                                        | CONDITIONS                                                                                      |            | SENSITIVITY |          |         |           | Unit            |
|---------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------|------------|-------------|----------|---------|-----------|-----------------|
|                     |                                                  |                                                                                                 |            | 01          | 04       | 02      | 03        |                 |
| $I_{GT}$            | Gate Trigger Current                             | $V_D = 12 V_{DC}$ , $R_L = 33W$ , $T_j = 25^\circ C$                                            | MIN<br>MAX | 1<br>20     | 15<br>50 | <br>200 | 20<br>200 | $\mu A$         |
| $I_{DRM} / I_{RRM}$ | Off-State Leakage Current                        | $V_D = V_{DRM}$ , $R_{GK} = 220W$ , $T_j = 125^\circ C$<br>$V_R = V_{RRM}$ , $T_j = 25^\circ C$ | MAX<br>MAX | 1<br>5      |          |         |           | $mA$<br>$\mu A$ |
| $V_{TM}$            | On-state Voltage                                 | at $I_T = 8 Amp$ , $t_p = 380 \mu s$ , $T_j = 25^\circ C$                                       | MAX        | 1.6         |          |         |           | V               |
| $V_{GT}$            | Gate Trigger Voltage                             | $V_D = 12 V_{DC}$ , $R_L = 33W$ , $T_j = 25^\circ C$                                            | MAX        | 0.8         |          |         |           | V               |
| $V_{GD}$            | Gate Non Trigger Voltage                         | $V_D = V_{DRM}$ , $R_L = 3.3 KW$ , $R_{GK} = 220W$ , $T_j = 125^\circ C$                        | MIN        | 0.1         |          |         |           | V               |
| $I_H$               | Holding Current                                  | $I_T = 50 mA$ , $R_{GK} = 1KW$ , $T_j = 25^\circ C$                                             | MAX        | 5           |          |         |           | $mA$            |
| $I_L$               | Latching Current                                 | $I_G = 1 mA$ , $R_{GK} = 1KW$ , $T_j = 25^\circ C$                                              | MAX        | 6           |          |         |           | $mA$            |
| $dv / dt$           | Critical Rate of Voltage Rise                    | $V_D = 0.67 \times V_{DRM}$ , $R_{GK} = 220W$ , $T_j = 125^\circ C$                             | MIN        | 10          | 10       | 5       | 10        | $V/\mu s$       |
| $di / dt$           | Critical Rate of Current Rise                    | $I_G = 2 \times I_{GT}$ , $Tr \leq 100 ns$ , $F = 60 Hz$ , $T_j = 125^\circ C$                  | MIN        | 50          |          |         |           | $A/\mu s$       |
| $R_{th(j-c)}$       | Thermal Resistance Junction-Case for DC          |                                                                                                 |            | 3           |          |         |           | $^\circ C/W$    |
| $R_{th(j-a)}$       | Thermal Resistance Junction-Amb ( $S=0.5 cm^2$ ) |                                                                                                 |            | 70          |          |         |           | $^\circ C/W$    |

### PART NUMBER INFORMATION



## SURFACE MOUNT SCR

Fig. 1: Maximum average power dissipation versus average on-state current

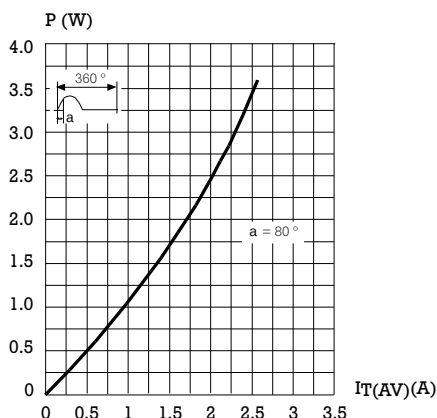


Fig. 3: Average and DC on-state current versus ambient temperature (device mounted on FR4 with recommended pad layout)

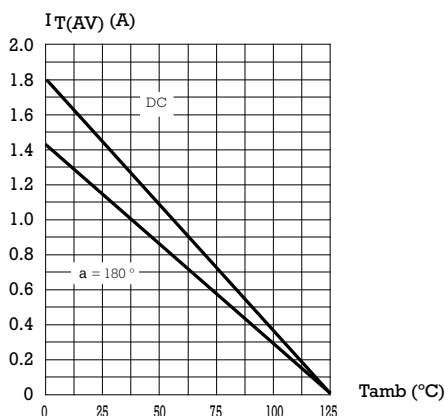


Fig. 4-2: Relative variation of thermal impedance junction to ambient versus pulse duration. (recommended pad layout)

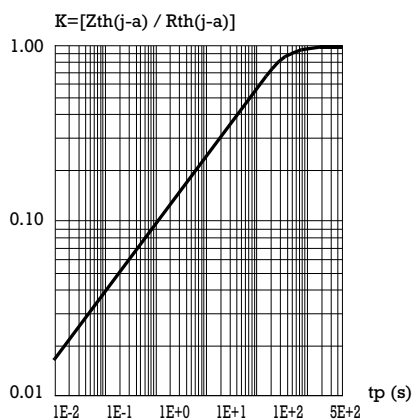


Fig. 2: Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink+contact.

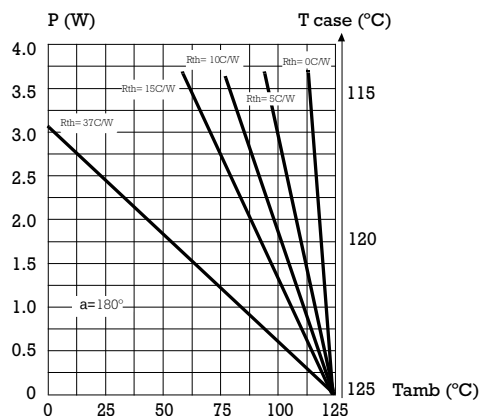


Fig. 4-1: Relative variation of thermal impedance junction to case versus pulse duration.

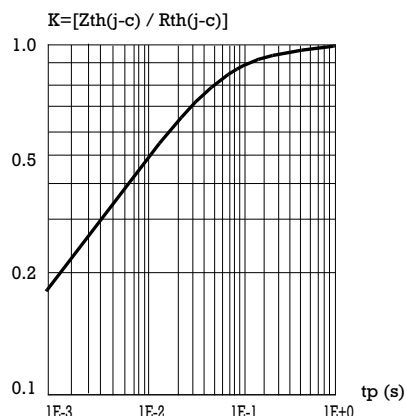
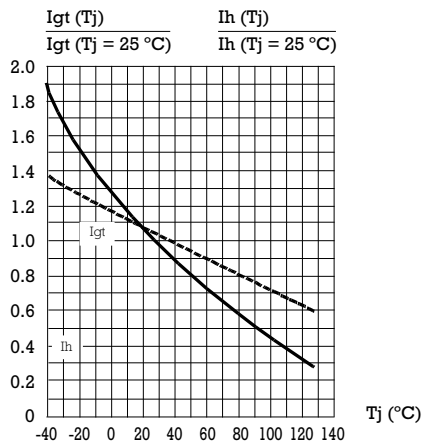


Fig. 5: Relative variation of gate trigger current and holding current versus junction temperature.



## SURFACE MOUNT SCR

Fig. 6: Non repetitive surge peak on-state current versus number of cycles.

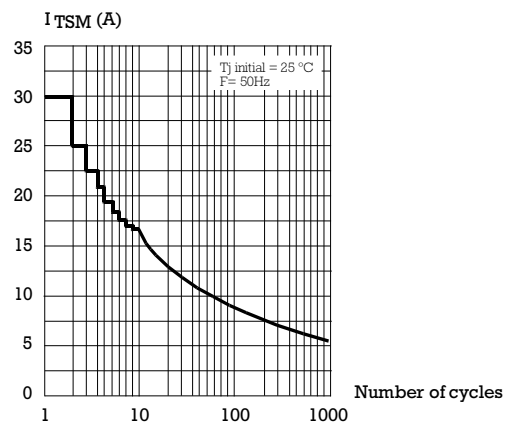


Fig. 7: Non repetitive surge peak on-state current for a sinusoidal pulse with width:  $t_p < 10$  ms, and corresponding value of  $I^2t$ .

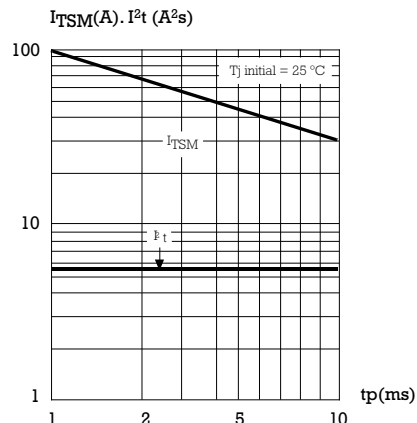


Fig. 8: On-state characteristics (maximum values).

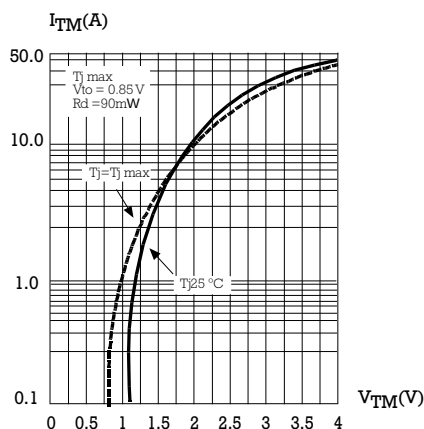


Fig. 9: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35  $\mu$ m).

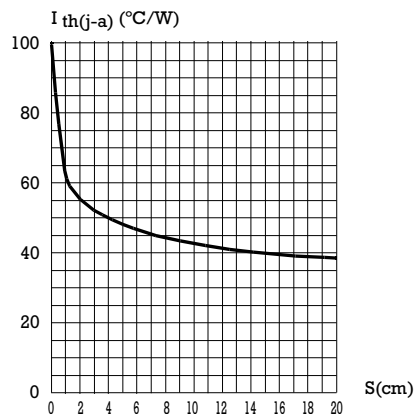
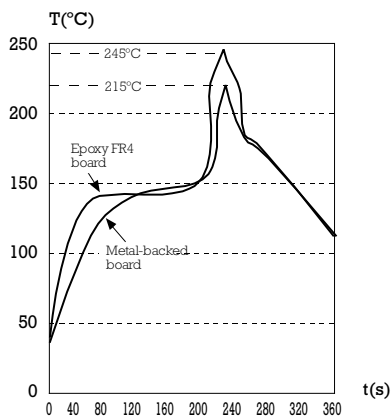
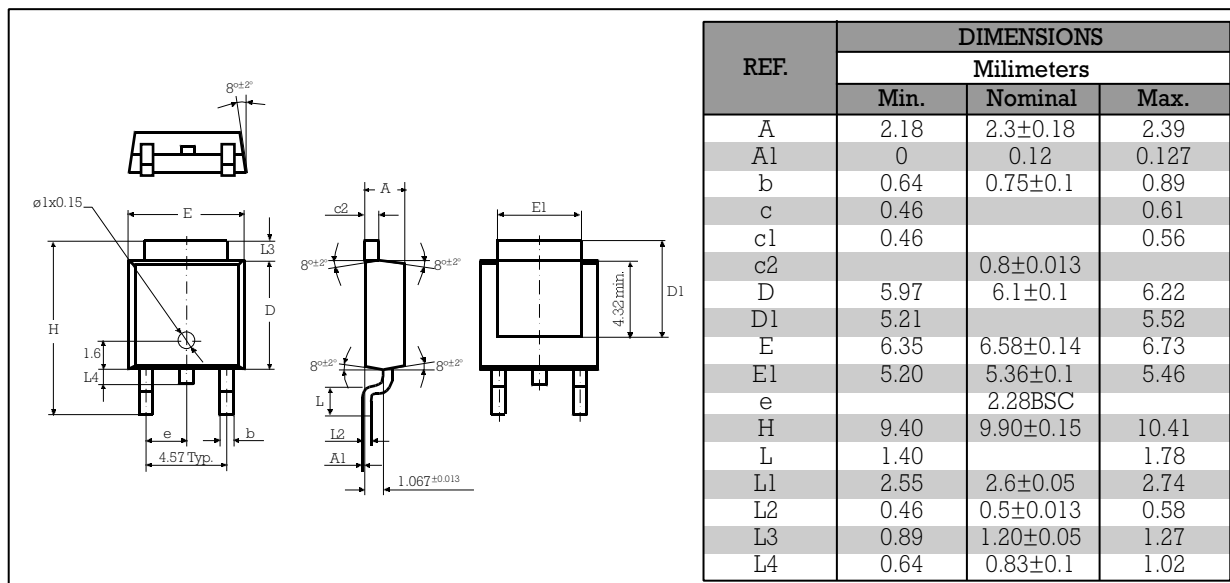


Fig. 10: Typical reflow soldering heat profile, either for mounting on FR4 or metal-backed boards.



## SURFACE MOUNT SCR

## PACKAGE MECHANICAL DATA



Marking: type number  
Weight: 0.2 g

## FOOT PRINT

