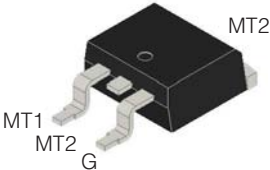
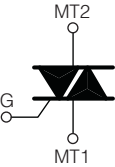


## STANDARD TRIAC

|                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                         |                             |        |         |                          |  |               |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------|--------|---------|--------------------------|--|---------------|--|
| <p style="text-align: center;"><b>D<sup>2</sup>PAK</b></p>   | <table> <tr> <td><b>On-State Current</b></td><td><b>Gate Trigger Current</b></td></tr> <tr> <td>12 Amp</td><td>≤ 75 mA</td></tr> <tr> <td colspan="2"><b>Off-State Voltage</b></td></tr> <tr> <td colspan="2">200 V ÷ 800 V</td></tr> </table> <p>This series of <b>TRIACs</b> uses a high performance PNP technology.</p> <p>These parts are intended for general purpose AC switching applications with highly inductive loads.</p> | <b>On-State Current</b> | <b>Gate Trigger Current</b> | 12 Amp | ≤ 75 mA | <b>Off-State Voltage</b> |  | 200 V ÷ 800 V |  |
| <b>On-State Current</b>                                                                                                                                                                                                        | <b>Gate Trigger Current</b>                                                                                                                                                                                                                                                                                                                                                                                                           |                         |                             |        |         |                          |  |               |  |
| 12 Amp                                                                                                                                                                                                                         | ≤ 75 mA                                                                                                                                                                                                                                                                                                                                                                                                                               |                         |                             |        |         |                          |  |               |  |
| <b>Off-State Voltage</b>                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                         |                             |        |         |                          |  |               |  |
| 200 V ÷ 800 V                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                         |                             |        |         |                          |  |               |  |

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

| SYMBOL       | PARAMETER                                 | CONDITIONS                                                                                        | Value      | Unit             |
|--------------|-------------------------------------------|---------------------------------------------------------------------------------------------------|------------|------------------|
| $I_{T(RMS)}$ | RMS On-state Current (full sine wave)     | All Conduction Angle, $T_c = 95\text{ °C}$                                                        | 12         | A                |
| $I_{TSM}$    | Non-repetitive On-State Current           | Full Cycle, 60 Hz ( $t = 16.7\text{ ms}$ )                                                        | 132        | A                |
| $I_{TSM}$    | Non-repetitive On-State Current           | Full Cycle, 50 Hz ( $t = 20\text{ ms}$ )                                                          | 120        | A                |
| $I^2t$       | Fusing Current                            | $t_p = 10\text{ ms}$ , Half Cycle                                                                 | 72         | A <sup>2</sup> s |
| $I_{GM}$     | Peak Gate Current                         | $20\text{ }\mu\text{s max.}$ $T_j = 125\text{ °C}$                                                | 4          | A                |
| $P_{G(AV)}$  | Average Gate Power Dissipation            | $T_j = 125\text{ °C}$                                                                             | 1          | W                |
| $di/dt$      | Critical rate of rise of on-state current | $I_G = 2 \times I_{GT}$ , $t_r \leq 100\text{ ns}$<br>$f = 120\text{ Hz}$ , $T_j = 125\text{ °C}$ | 50         | A/ $\mu\text{s}$ |
| $T_j$        | Operating Temperature                     |                                                                                                   | (-40 +125) | °C               |
| $T_{stg}$    | Storage Temperature                       |                                                                                                   | (-40 +150) | °C               |
| $T_{sld}$    | Soldering Temperature                     | 10s max                                                                                           | 260        | °C               |

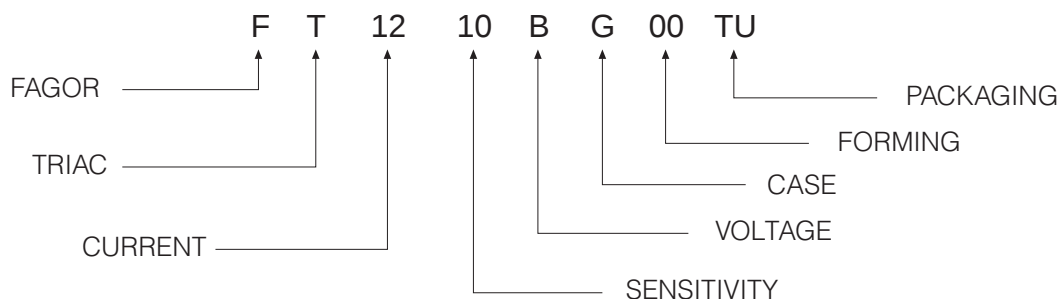
| SYMBOL    | PARAMETER                         | VOLTAGE |     |     |     |     | Unit |
|-----------|-----------------------------------|---------|-----|-----|-----|-----|------|
|           |                                   | B       | D   | M   | S   | N   |      |
| $V_{DRM}$ | Repetitive Peak Off State Voltage | 200     | 400 | 600 | 700 | 800 | V    |
| $V_{RRM}$ |                                   |         |     |     |     |     |      |

**STANDARD TRIAC**
**Electrical Characteristics**

| SYMBOL            | PARAMETER                                           | CONDITIONS                                                                    | Quadrant         |            | SENSITIVITY |          | Unit          |
|-------------------|-----------------------------------------------------|-------------------------------------------------------------------------------|------------------|------------|-------------|----------|---------------|
|                   |                                                     |                                                                               |                  |            | 10          | 13       |               |
| $I_{GT}^{(1)}$    | Gate Trigger Current                                | $V_D = 12 V_{DC}$ , $R_L = 33\Omega$ , $T_j = 25^\circ C$                     | Q1÷Q3<br>Q4      | MAX<br>MAX | 25<br>25    | 50<br>75 | mA            |
| $V_{GT}$          | Gate Trigger Voltage                                | $V_D = 12 V_{DC}$ , $R_L = 33\Omega$ , $T_j = 25^\circ C$                     | Q1÷Q4            | MAX        | 1.3         |          | V             |
| $V_{GD}$          | Gate Non Trigger Voltage                            | $V_D = V_{DRM}$ , $R_L = 3.3 K\Omega$ , $T_j = 125^\circ C$                   | Q1÷Q4            | MIN        | 0.2         |          | V             |
| $I_H^{(2)}$       | Holding Current                                     | $I_T = 100$ mA, Gate open, $T_j = 25^\circ C$                                 |                  | MAX        | 25          | 50       | mA            |
| $I_L$             | Latching Current                                    | $I_G = 1.2 I_{GT}$ , $T_j = 25^\circ C$                                       | Q1, Q3, Q4<br>Q2 | MAX<br>MAX | 40<br>60    | 70<br>80 | mA            |
| $dV/dt^{(2)}$     | Critical Rate of Voltage Rise                       | $V_D = 0.67 \times V_{DRM}$ , Gate open<br>$T_j = 125^\circ C$                |                  | MIN        | 400         | 1000     | V/ $\mu s$    |
| $(dV/dt)_c^{(2)}$ | Critical Rate of Commu-<br>tating off-state voltage | $(dI/dt)_c = 2.7$ A/ms $T_j = 125^\circ C$                                    |                  | MIN        | 3           | 8        | V/ $\mu s$    |
| $V_{TM}^{(2)}$    | On-state Voltage                                    | $I_T = 17$ Amp, $t_p = 380 \mu s$ , $T_j = 25^\circ C$                        |                  | MAX        | 1.6         |          | V             |
| $V_{t(o)}^{(2)}$  | Threshold Voltage                                   | $T_j = 125^\circ C$                                                           |                  | MAX        | 0.80        |          | V             |
| $r_d^{(2)}$       | Dynamic resistance                                  | $T_j = 125^\circ C$                                                           |                  | MAX        | 70          |          | m $\Omega$    |
| $I_{DRM}/I_{RRM}$ | Off-State Leakage Current                           | $V_D = V_{DRM}$ , $T_j = 125^\circ C$<br>$V_R = V_{RRM}$ , $T_j = 25^\circ C$ |                  | MAX<br>MAX | 1<br>5      |          | mA<br>$\mu A$ |
| $R_{th(j-c)}$     | Thermal Resistance<br>Junction-Case                 | for AC 360° conduction angle                                                  |                  |            | 1.3         |          | $^\circ C/W$  |
| $R_{th(j-a)}$     | Thermal Resistance<br>Junction-Ambient              |                                                                               |                  |            | 45          |          | $^\circ C/W$  |

(1) Minimum  $I_{GT}$  is guaranteed at 5% of  $I_{GT}$  max.

(2) For either polarity of electrode MT2 voltage with reference to electrode MT1.

**PART NUMBER INFORMATION**


## STANDARD TRIAC

Fig. 1: Maximum power dissipation versus RMS on-state current (full cycle)

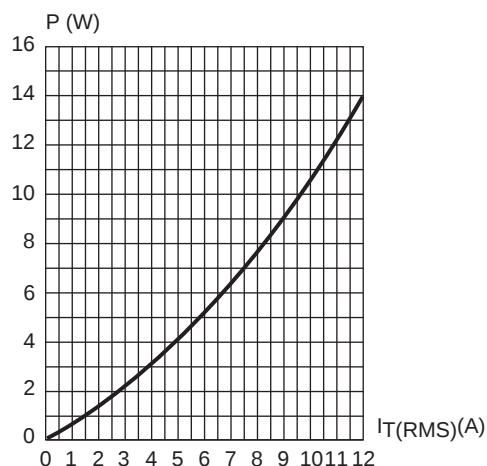


Fig. 2: RMS on-state current versus case temperature (full cycle).

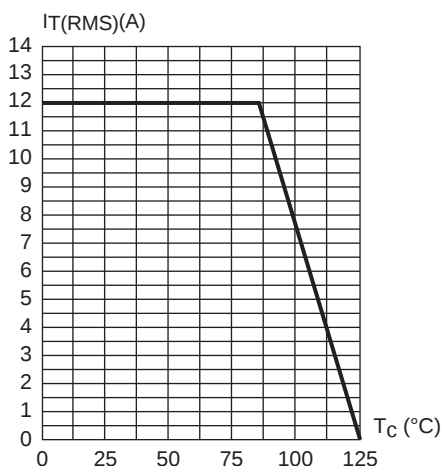


Fig. 3: Relative variation of thermal impedance versus pulse duration.

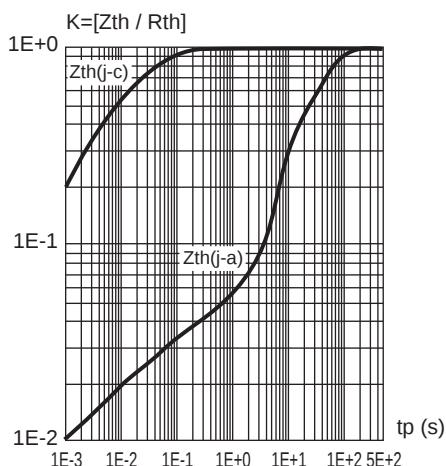


Fig. 5: Surge peak on-state current versus number of cycles

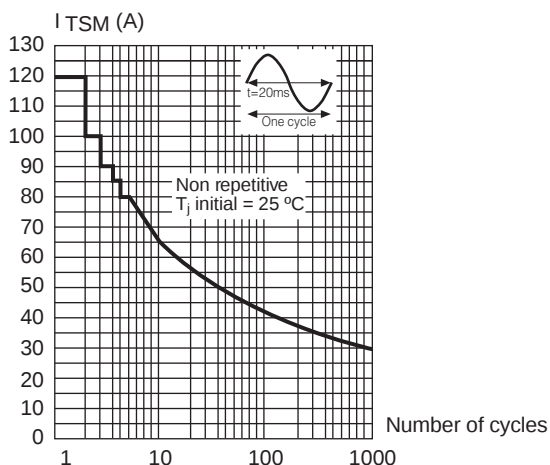


Fig. 4: On-state characteristics (maximum values)

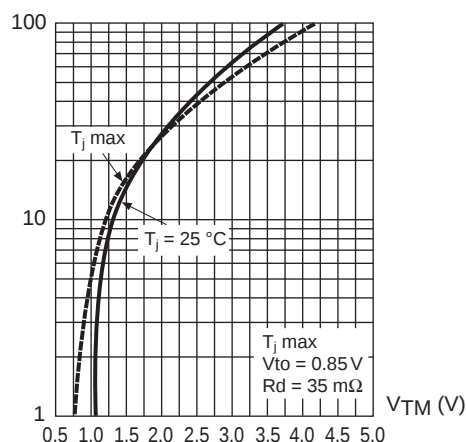
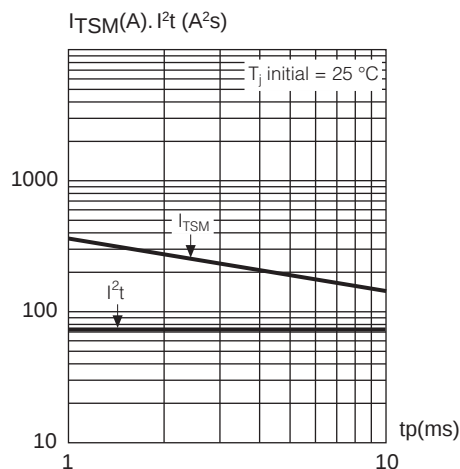


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width:  $t_p < 10$  ms, and corresponding value of  $I^2t$ .



## STANDARD TRIAC

Fig. 7: Relative variation of gate trigger current, holding current and latching versus junction temperature (typical values)

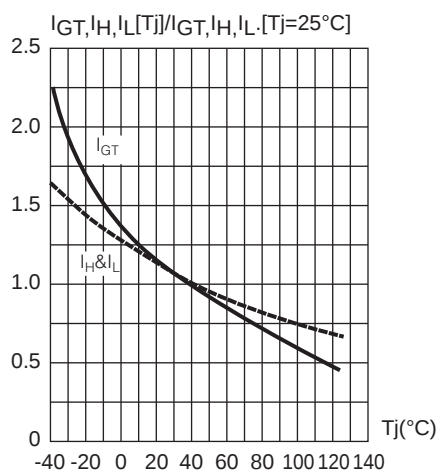


Fig. 8: Relative variation of critical rate of decrease of main current versus junction temperature

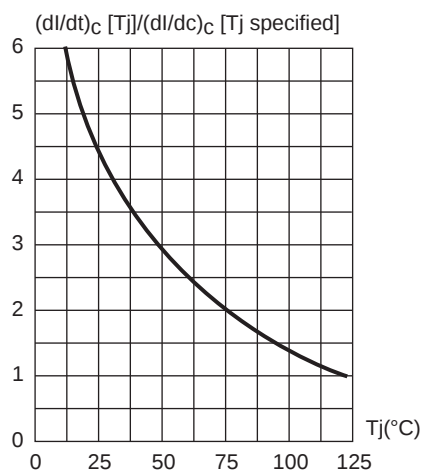
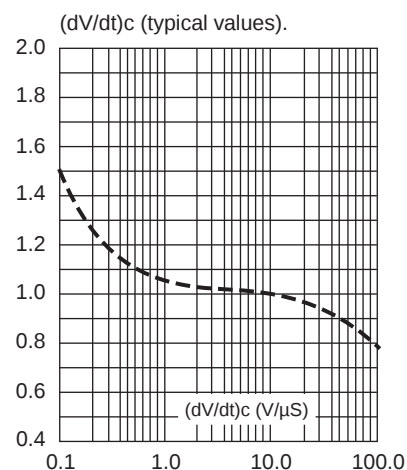
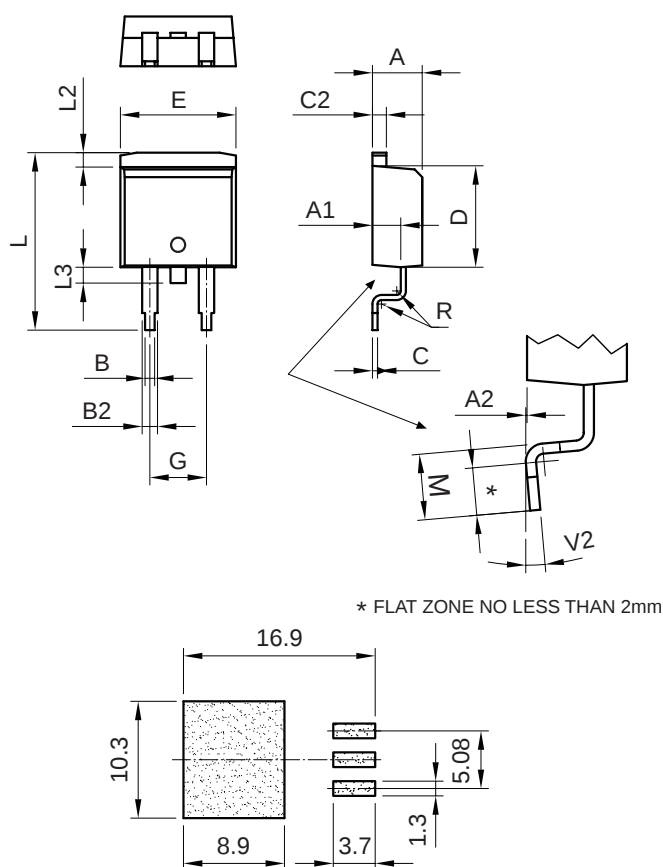


Fig. 9: Relative variation of critical rate of decrease of main current versus



## PACKAGE MECHANICAL DATA

## D<sup>2</sup>PAK



| REF. | DIMENSIONS |         |       |
|------|------------|---------|-------|
|      | Milimeters |         |       |
|      | Min.       | Nominal | Max.  |
| A    | 4.40       | 4.45    | 4.60  |
| A1   | 2.49       | 2.50    | 2.69  |
| A2   | 0.03       | 0.10    | 0.23  |
| B    | 0.70       | 0.90    | 0.93  |
| B2   | 1.14       | 1.03    | 1.70  |
| C    | 0.45       | 0.45    | 0.60  |
| C2   | 1.23       | 1.23    | 1.36  |
| D    | 8.95       | 9.00    | 9.35  |
| E    | 10.00      | 10.25   | 10.40 |
| G    | 4.88       | 5.15    | 5.28  |
| L    | 15.00      | 15.40   | 15.85 |
| L2   | 1.27       | 1.27    | 1.40  |
| L3   | 1.40       | 1.55    | 1.75  |
| M    | 2.40       | 3.00    | 3.20  |
| R    | 0.40 typ   |         |       |
| V2   | 0°         |         | 8°    |

NOTE: LIMITING VALUES AND LIFE SUPPORT APPLICATIONS (SEE WEB PAGE).