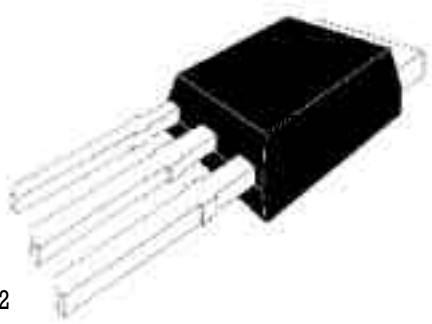
# LOGIC LEVEL TRIAC

IPAK
(Plastic)



MT1
MT2
G

**On-State Current**
8 Amp

**Gate Trigger Current**
< 5 mA to < 10 mA

**Off-State Voltage**
200 V ÷ 600 V

This series of **TRIAC**s uses a high performance PNPN technology.

These devices are intended for AC control applications using surface mount technology.

The high commutation performances combined with high sensitivity, make them perfect in all applications like solid state relays, home appliances, power tools, small motor drives...

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

| SYMBOL | PARAMETER | CONDITIONS | Min. | Max. | Unit |
|---|---|---|---|---|---|
| $I_{T(RMS)}$ | RMS On-state Current | All Conduction Angle, $T_C$ = 110 °C | 8 | | A |
| $I_{TSM}$ | Non-repetitive On-State Current | Half Cycle, 60 Hz | 84 | | A |
| $I_{TSM}$ | Non-repetitive On-State Current | Half Cycle, 50 Hz | 80 | | A |
| $I^2t$ | Fusing Current | $t_p$ = 10 ms, Half Cycle | 36 | | $A^2s$ |
| $I_{GM}$ | Peak Gate Current | 20 µs max. | | 4 | A |
| $P_{GM}$ | Peak Gate Dissipation | 20 µs max. | | 10 | W |
| $P_{G(AV)}$ | Gate Dissipation | 20 ms max. | | 1 | W |
| di/dt | Critical rate of rise of on-state current | $I_G$ = 2 x $I_{GT}$ Tr ≤ 100 ns, F = 120 Hz $T_j$ = 125 °C | 20 | | A/µs |
| $T_j$ | Operating Temperature Range | | -40 | +125 | °C |
| $T_{stg}$ | Storage Temperature Range | | -40 | +150 | °C |
| $T_L$ | Lead Temperature for soldering | 10s max. | | 260 | °C |

| SYMBOL | PARAMETER | VOLTAGE | | | Unit |
|---|---|---|---|---|---|
| | | B | D | M | |
| $V_{DRM}$<br>$V_{RRM}$ | Repetitive Peak Off State Voltage | 200 | 400 | 600 | V |

# LOGIC LEVEL TRIAC

## Electrical Characteristics

| SYMBOL | PARAMETER | CONDITIONS | Quadrant | | SENSITIVITY | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | | 07 | 08 | |
| $I_{GT}$ | Gate Trigger Current | $V_D$ = 12 $V_{DC}$, $R_L$ = 33Ω<br>$T_j$ = 25 °C | Q1÷Q3<br>Q4 | MAX | 5<br>7 | 10 | mA |
| $I_{DRM}$ /$I_{RRM}$ | Off-State Leakage Current | $V_R$ = $V_{DRM}$, $T_j$ = 125 °C<br>$V_R$ = $V_{RRM}$, $T_j$ = 25 °C | | MAX<br>MAX | 1<br>5 | | mA<br>µA |
| $V_{TM}$ | On-state Voltage | $I_T$ = 11 Amp, tp = 380 µs, $T_j$ = 25 °C | | MAX | 1.55 | | V |
| $V_{GT}$ | Gate Trigger Voltage | $V_D$ = 12 $V_{DC}$, $R_L$ = 33Ω, $T_j$ = 25 °C | Q1÷Q3 | MAX | 1.3 | | V |
| $V_{GD}$ | Gate Non Trigger Voltage | $V_D$ = $V_{DRM}$, $R_L$ = 3.3KΩ, $T_j$ = 125 °C | Q1÷Q3 | MIN | 0.2 | | V |
| $I_H$* | Holding Current | $I_T$ = 100 mA, Gate open, $T_j$ = 25 °C | | MAX | 10 | 15 | mA |
| $I_L$ | Latching Current | $I_G$ = 1.2 $I_{GT}$, $T_j$ = 25 °C | Q1,Q3<br>Q2 | MAX<br>MAX | 10<br>15 | 20<br>30 | mA |
| dv / dt* | Critical Rate of Voltage Rise | $V_D$ = 0.67 x $V_{DRM}$, Gate open<br>$T_j$ = 125 °C | | MIN | 20 | 100 | V/µs |
| (di/dt)c* | Critical Rate of Current Rise | (dv/dt)c= 0.1 V/µs $T_j$= 125 °C<br>(dv/dt)c= 15 V/µs $T_j$ = 125 °C<br>without snubber Tj = 125 °C | | MIN<br>MIN<br>MIN | 3.5<br>1.8 | 5.4<br>2.8 | A/ms |
| $R_{th(j-c)}$ | Thermal Resistance Junction-Case | | | | 1.6 | | °C/W |
| $R_{th(j-a)}$ | Thermal Resistance Junction-Ambient | | | | 100 | | °C/W |

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

## PART NUMBER INFORMATION

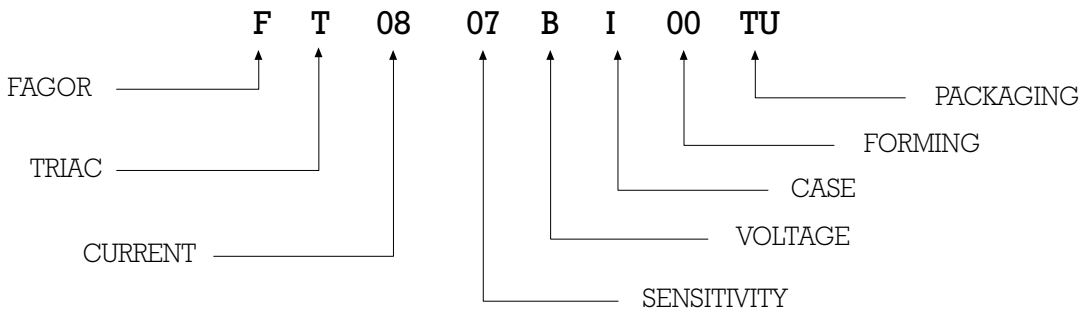


Fig. 1: Maximum power dissipation versus average on-state current

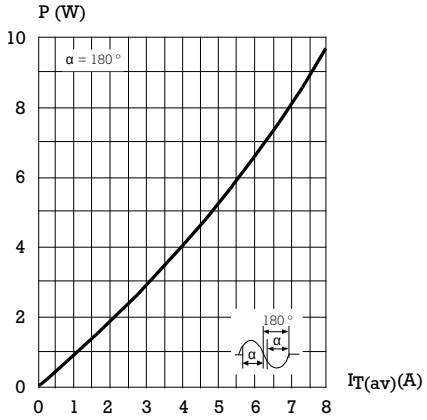



Fig. 2: Average and DC on-state current versus case temperature

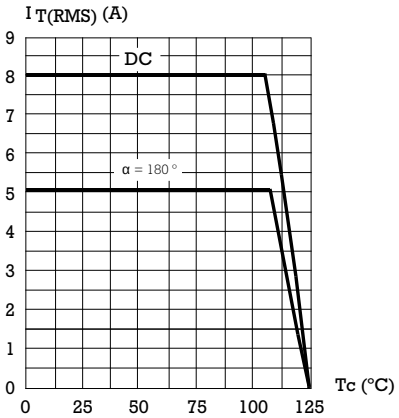



Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration

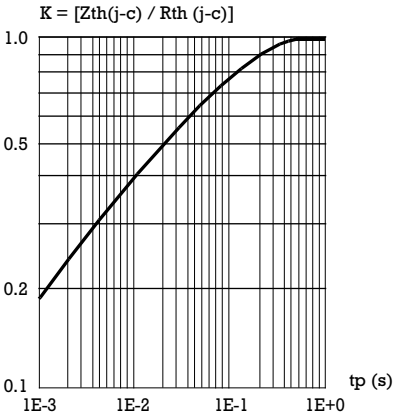



Fig. 4: Relative variation of gate trigger current and holding current versus junction temperature

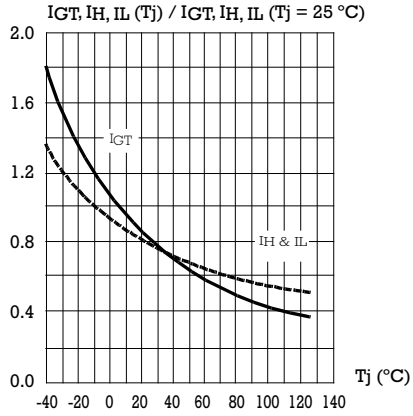



Fig. 5: Non repetitive surge peak on-state current versus number of cycles

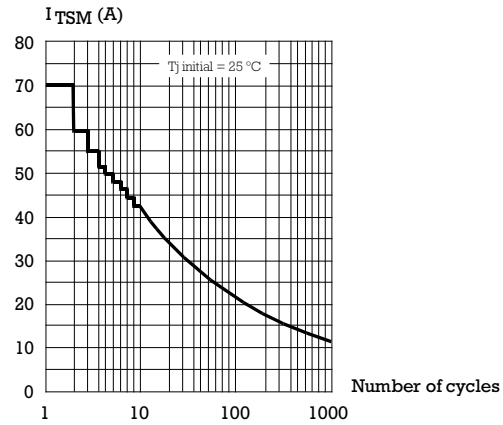



Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width: tp < 10 ms, and corresponding value of $I^2t$.

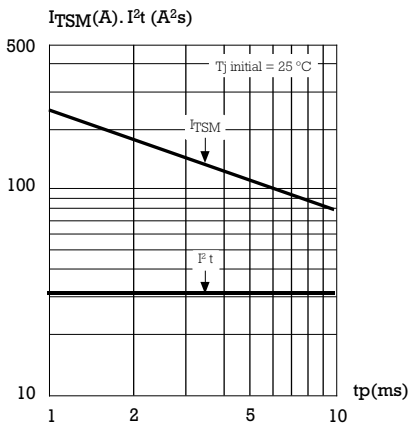
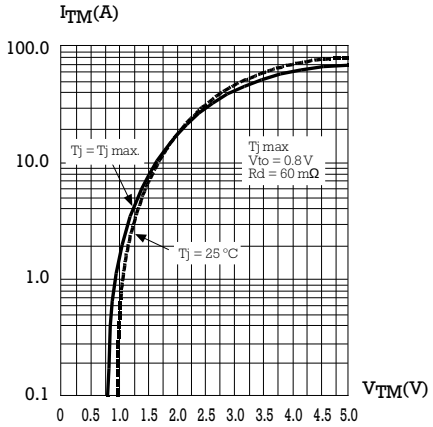
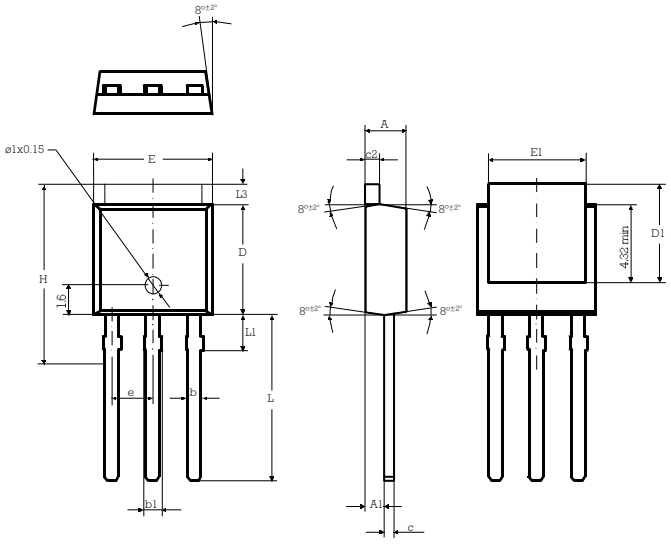


Fig. 8: On-state characteristics (maximum values).




## PACKAGE MECHANICAL DATA IPAK TO 251-AA




| REF. | DIMENSIONS | | |
|---|---|---|---|
| | Milimeters | | |
| | Min. | Nominal | Max. |
| A | 2.19 | 2.3±0.08 | 2.38 |
| A1 | 0.89 | 1.067±0.01 | 1.14 |
| b | 0.64 | 0.75±0.1 | 0.89 |
| b1 | 0.76 | 0.95 | 1.14 |
| c | 0.46 | | 0.58 |
| c2 | | 0.8±0.013 | |
| D | 5.97 | 6.1±0.1 | 6.22 |
| D1 | 5.21 | | 5.52 |
| E | 6.35 | 6.58±0.14 | 6.73 |
| E1 | 5.21 | 5.36±0.1 | 5.46 |
| e | | 2.28BSC | |
| L | 8.89 | 9.2±0.2 | 9.65 |
| L1 | 1.91 | 2±0.1 | 2.28 |
| L3 | 0.89 | | 1.27 |

Marking: type number
Weight: 0.2 g