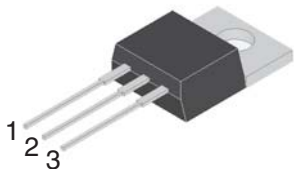
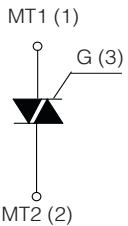


INSULATED HIGH COMMUTATION TRIAC

| | | | | | | | | | | | |
|---|--|---|--|---|--|---|--|---|--|--|--|
| <p style="text-align: center; font-weight: bold; font-size: 1.2em;">INSULATED TO-220AB</p> <div style="text-align: center; margin-top: 20px;">  </div> <div style="text-align: center; margin-top: 20px;">  </div> | <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> <p>On-State Current 10 Amp</p> </td> <td style="width: 50%; padding: 5px;"> <p>Gate Trigger Current ≤ 50 mA (16) ≤ 35 mA (14)</p> </td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;"> <p>Off-State Voltage 200 V ÷ 800 V</p> </td> </tr> <tr> <td colspan="2" style="padding: 5px;"> <p>FEATURES</p> <ul style="list-style-type: none"> Provides voltage insulated tab (rated at 2500V RMS) Glass/passivated die junctions Medium current Triac Low thermal resistance High commutation High surge current capability Low forward voltage drop Solder dip 260°C, 10s Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC Meets MSL level 3, per J-STD-020, LF maximum peak of 260° C Certified compliance of UL 1557 Standard for Electrically Isolated Semiconductors. Fille reference E320541, Vol. 3 </td> </tr> <tr> <td colspan="2" style="padding: 5px;"> <p>MECHANICAL DATA</p> <ul style="list-style-type: none"> Case: INSULATED TO-220AB. Epoxy meets UL 94V-0 flammability rating. Polarity: As marked on the body. Terminals: Matte tin plated leads, solderable per MIL-STD-750 Method 2026, J-STD-002 and JESD22-B102. Consumer grade, meets JESD 201 class 1A whisker test. </td> </tr> <tr> <td colspan="2" style="padding: 5px;"> <p>TYPICAL APPLICATIONS</p> <ul style="list-style-type: none"> Used on inductive loads, thanks to their high commutation performances. </td> </tr> </table> | <p>On-State Current 10 Amp</p> | <p>Gate Trigger Current ≤ 50 mA (16) ≤ 35 mA (14)</p> | <p>Off-State Voltage 200 V ÷ 800 V</p> | | <p>FEATURES</p> <ul style="list-style-type: none"> Provides voltage insulated tab (rated at 2500V RMS) Glass/passivated die junctions Medium current Triac Low thermal resistance High commutation High surge current capability Low forward voltage drop Solder dip 260°C, 10s Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC Meets MSL level 3, per J-STD-020, LF maximum peak of 260° C Certified compliance of UL 1557 Standard for Electrically Isolated Semiconductors. Fille reference E320541, Vol. 3 | | <p>MECHANICAL DATA</p> <ul style="list-style-type: none"> Case: INSULATED TO-220AB. Epoxy meets UL 94V-0 flammability rating. Polarity: As marked on the body. Terminals: Matte tin plated leads, solderable per MIL-STD-750 Method 2026, J-STD-002 and JESD22-B102. Consumer grade, meets JESD 201 class 1A whisker test. | | <p>TYPICAL APPLICATIONS</p> <ul style="list-style-type: none"> Used on inductive loads, thanks to their high commutation performances. | |
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RoHS
COMPLIANT

Maximun Ratings and Electrical Characteristics at 25°C

| SYMBOL | PARAMETER | CONDITIONS | Value | Unit |
|--------------|---|---|------------|-----------|
| $I_{T(RMS)}$ | RMS On-state Current (full sine wave) | All Conduction Angle, $T_c = 95\text{ °C}$ | 10 | A |
| I_{TSM} | Non-repetitive On-State Current | Full Cycle, 60 Hz ($t = 16.7\text{ ms}$) | 105 | A |
| I_{TSM} | Non-repetitive On-State Current | Full Cycle, 50 Hz ($t = 20\text{ ms}$) | 100 | A |
| I^2t | Fusing Current | $t_p = 10\text{ ms}$, Half Cycle | 55 | A^2s |
| I_{GM} | Peak Gate Current | $20\text{ }\mu s$ 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 | $I_G = 2 \times I_{GT}$, $t_r \leq 100ns$ $f = 120\text{ Hz}$, $T_j = 125\text{ °C}$ | 50 | $A/\mu s$ |
| T_j | Operating Temperature | | (-40 +125) | °C |
| T_{stg} | Storage Temperature | | (-40 +125) | °C |
| T_{sld} | Soldering Temperature | 10s max | 260 | °C |
| V_{iso} | R.M.S. isolation voltage 50/60 Hz sinusoidal waveform | | 2.500 | Vac |

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

INSULATED HIGH COMMUTATION TRIAC

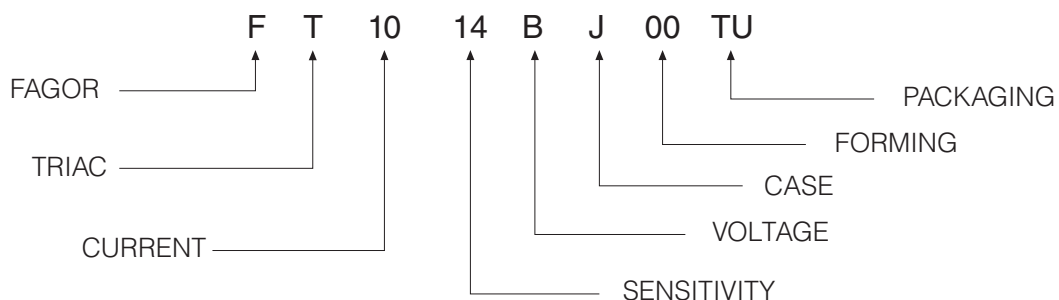
Electrical Characteristics at Tamb = 25 °C

| SYMBOL | PARAMETER | CONDITIONS | Quadrant | | SENSITIVITY | | Unit |
|-------------------|--|--|----------|-----|-------------|------|------------|
| | | | | | 14 | 16 | |
| $I_{GT}^{(1)}$ | Gate Trigger Current | $V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25\text{ °C}$ | Q1÷Q3 | MAX | 35 | 50 | mA |
| V_{GT} | Gate Trigger Voltage | $V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25\text{ °C}$ | Q1÷Q3 | MAX | 1.3 | | V |
| V_{GD} | Gate Non Trigger Voltage | $V_D = V_{DRM}, R_L = 3.3\text{ K}\Omega, T_j = 125\text{ °C}$ | Q1÷Q3 | MIN | 0.2 | | V |
| $I_H^{(2)}$ | Holding Current | $I_T = 100\text{ mA}, \text{Gate open}, T_j = 25\text{ °C}$ | | MAX | 35 | 50 | mA |
| I_L | Latching Current | $I_G = 1.2 I_{GT}, T_j = 25\text{ °C}$ | Q1,Q3 | MAX | 50 | 70 | mA |
| | | | Q2 | MAX | 80 | 100 | mA |
| $dV/dt^{(2)}$ | Critical Rate of Voltage Rise | $V_D = 0.67 \times V_{DRM}, \text{Gate open}$ $T_j = 125\text{ °C}$ | | MIN | 500 | 1000 | V/ μ s |
| $(dI/dt)^c^{(2)}$ | Critical Rate of Current Rise | $(dv/dt)^c = 0.1\text{ V}/\mu\text{s}$ $T_j = 125\text{ °C}$ $(dv/dt)^c = 10\text{ V}/\mu\text{s}$ $T_j = 125\text{ °C}$ without snubber $T_j = 125\text{ °C}$ | | MIN | - | - | A/ms |
| | | | | MIN | - | - | |
| | | | | MIN | 5.5 | 9 | |
| $V_{TM}^{(2)}$ | On-state Voltage | $I_T = 14\text{ Amp}, t_p = 380\text{ }\mu\text{s}, T_j = 25\text{ °C}$ | | MAX | 1.55 | | V |
| $V_{t(o)}^{(2)}$ | Threshold Voltage | $T_j = 125\text{ °C}$ | | MAX | 0.85 | | V |
| $r_d^{(2)}$ | Dynamic resistance | $T_j = 125\text{ °C}$ | | MAX | 40 | | m Ω |
| I_{DRM}/I_{RRM} | Off-State Leakage Current | $V_D = V_{DRM}, T_j = 125\text{ °C}$ $V_R = V_{RRM}, T_j = 25\text{ °C}$ | | MAX | 1 | | mA |
| | | | | MAX | 5 | | μ A |
| $R_{th(j-c)}$ | Thermal Resistance Junction-Case | for AC 360° conduction angle | | | 2.4 | | °C/W |
| $R_{th(j-a)}$ | Thermal Resistance Junction-Ambient | | | | 60 | | °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



INSULATED HIGH COMMUTATION TRIAC

Ordering information

| PREFERRED P/N | PACKAGE CODE | DELIVERY MODE | BASE QUANTITY | UNIT WEIGHT (g) |
|---------------|--------------|---------------|---------------|-----------------|
| FT1014MJ 00TU | TU | TUBE | 1000 | 2.30 |

Package Outline Dimensions: (mm) INSULATED TO-220AB

Optional with chamfer

| REF. | DIMENSIONS | |
|------|------------|-------|
| | Milimeters | |
| | Min. | Max. |
| A | 4.32 | 4.62 |
| A1 | 1.21 | 1.29 |
| A2 | 2.40 | 2.70 |
| b | 0.80 | 0.83 |
| b2 | 1.40 | -- |
| c | 0.42 | 0.48 |
| D | 15.5 | 15.68 |
| D1 | 9.26 | 9.42 |
| E | 10.08 | 10.24 |
| e | 2.54 | 2.54 |
| e1 | 5.08 | 5.08 |
| H1 | 6.24 | 6.26 |
| L | 12.81 | 13.81 |
| L1 | 3.28 | 4.17 |
| P | 3.70 | 3.80 |
| Q | 2.75 | 2.85 |

Mounting Torque **0.8 N.m**

INSULATED HIGH COMMUTATION TRIAC

Ratings and Characteristics (Ta 25 °C unless otherwise noted)

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

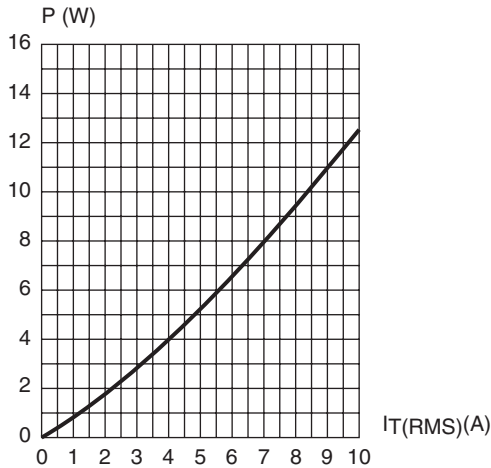


Fig. 2: RMS on-state current versus case temperature (full cycle).

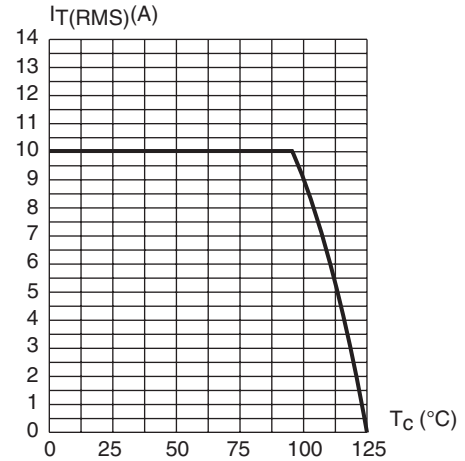


Fig. 3: Relative variation of thermal impedance versus pulse duration.

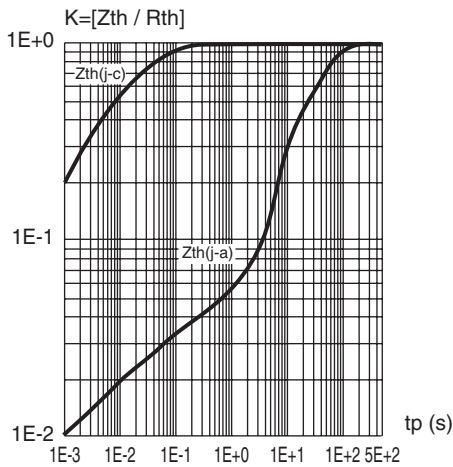


Fig. 4: On-state characteristics (maximum values)

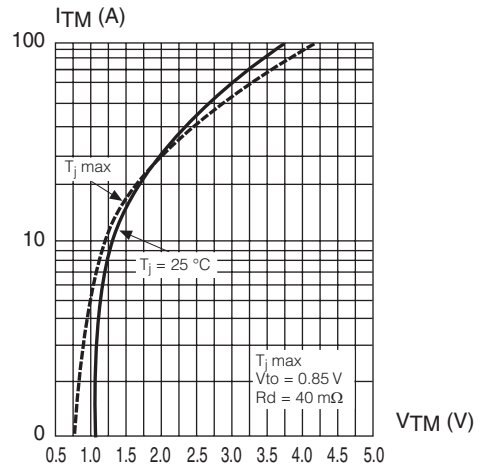


Fig. 5: Surge peak on-state current versus number of cycles

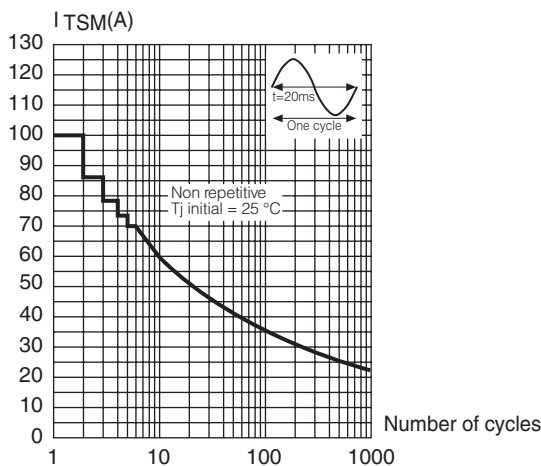
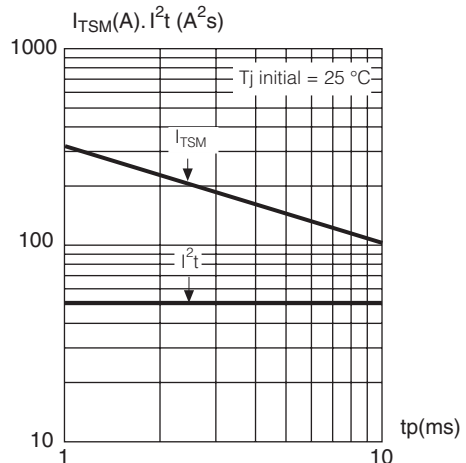


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width: $t_p < 10$ ms, and corresponding value of I^2t .



INSULATED HIGH COMMUTATION TRIAC

Ratings and Characteristics (Ta 25 °C unless otherwise noted)

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

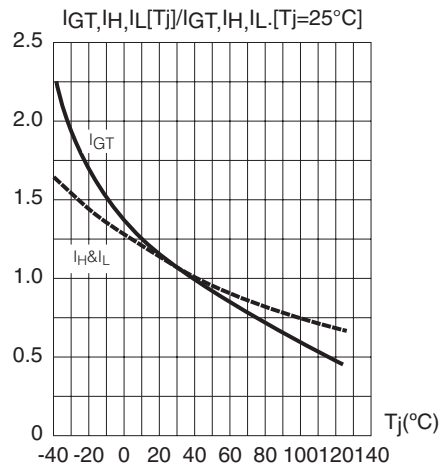
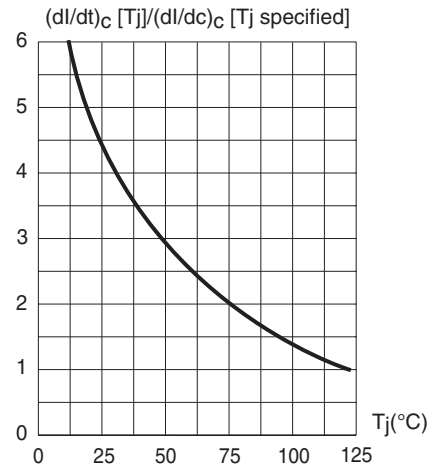


Fig. 8: Relative variation of critical rate of decrease of main current versus junction temperature



INSULATED HIGH COMMUTATION TRIAC

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