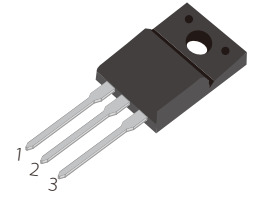
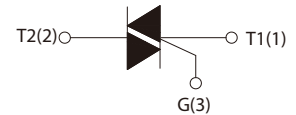


FEATURES

- | High current 20 A RMS current Triac
- | Low thermal resistance
- | High commutation or very high commutation capability
- | RoHS (2002/95/EC) compliant packages
- | UL-94, V0 flammability package resin compliance



TO-220F



Schematic Symbol

APPLICATIONS

- | General purpose motor control circuits
- | Phase control operations in light dimmers and motor speed controllers
- | Home appliances

ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|---|---------------------|----------|------------------|
| Repetitive peak off-state voltage ($T_j=25^\circ\text{C}$) | V_{DRM} | 600 | V |
| Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$) | V_{RRM} | 600 | V |
| RMS on-state current ($T_c=65^\circ\text{C}$) | $I_{\text{T(RMS)}}$ | 20 | A |
| Non repetitive surge peak on-state current (full cycle, F=50Hz) | I_{TSM} | 200 | A |
| I ² t value for fusing (tp=10ms) | I ² t | 100 | A ² S |
| Critical rate of rise of on-state current ($I_G=2*I_{\text{GT}}$) | dI/dt | 100 | A/ μs |
| Peak gate current | I_{GM} | 4 | A |
| Average gate power dissipation | $P_{\text{G(AV)}}$ | 1 | W |
| Peak gate power | P_{GM} | 10 | W |
| Operating junction temperature range | T_j | -40~+125 | °C |
| Storage junction temperature range | T_{STG} | -40~+150 | |

ELECTRICAL CHARACTERISTICS ($T_j=25^\circ\text{C}$ unless otherwise specified)

| Symbol | Test Condition | Quadrant | Value | | Unit |
|-----------|--|-------------------------|-------------|------------|------------------|
| | | | B | C | |
| I_{GT} | $V_D=12V, R_L=33\Omega$ | I - II - III | ≤ 50 | ≤ 35 | mA |
| | | IV | ≤ 70 | ≤ 60 | |
| V_{GT} | | ALL | ≤ 1.3 | | V |
| V_{GD} | $V_D=V_{DRM}, R_L=3.3K\Omega, T_j=125^\circ\text{C}$ | ALL | ≥ 0.2 | | V |
| I_H | $I_t=100\text{mA}$ | | ≤ 60 | ≤ 50 | mA |
| I_L | $I_G=1.2I_{GT}$ | I - III - IV | ≤ 70 | ≤ 60 | |
| | | II | ≤ 90 | ≤ 70 | |
| dV_D/dt | $V_D=67\%V_{DRM}, T_j=125^\circ\text{C}$ | | ≥ 1000 | ≥ 500 | V/ μs |
| V_{TM} | $I_{TM}=28\text{A}, t_p=380\mu\text{s}$ | | ≤ 1.5 | | V |
| I_{DRM} | $V_D=V_{DRM}, V_R=V_{RRM}$ | $T_j=25^\circ\text{C}$ | ≤ 5 | | μA |
| I_{RRM} | | $T_j=125^\circ\text{C}$ | ≤ 2.5 | | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|----------------------|-------|---------------------------|
| $R_{th(j-c)}$ | Junction to case(AC) | 2.1 | $^\circ\text{C}/\text{W}$ |

PARAMETER CHARACTERISTIC CURVE

FIG.1 Maximum power dissipation versus RMS on-state current

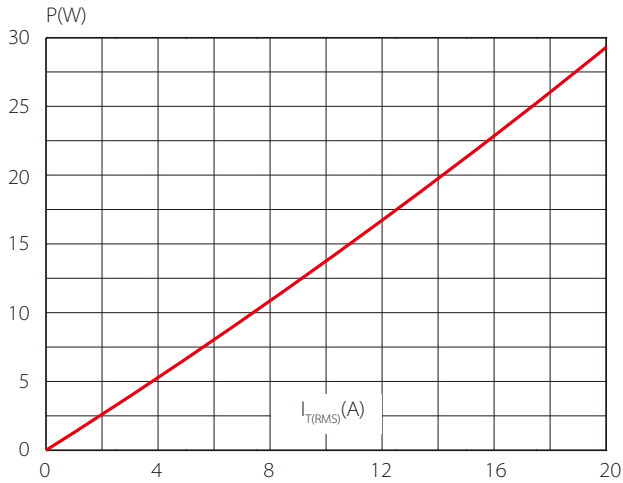


FIG.2: RMS on-state current versus case temperature

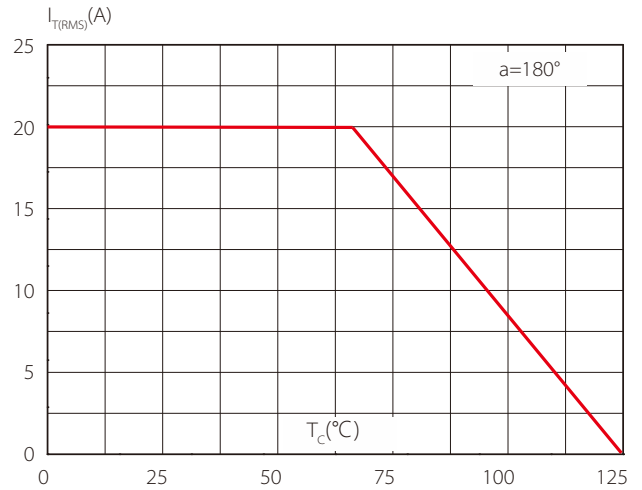


FIG.3: Surge peak on-state current versus number of cycles

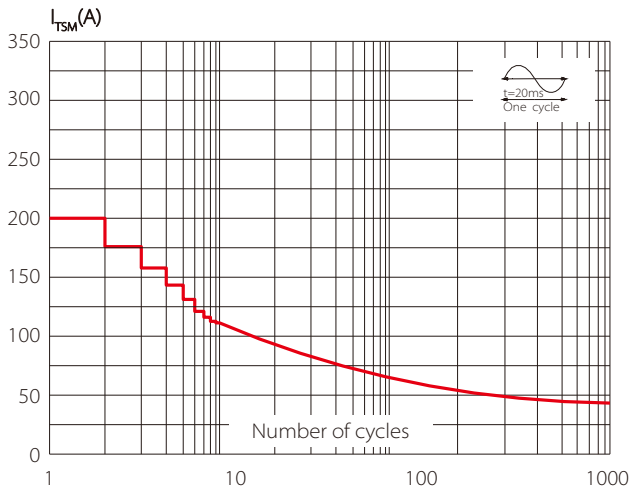


FIG.4 On-state characteristics (maximum values)

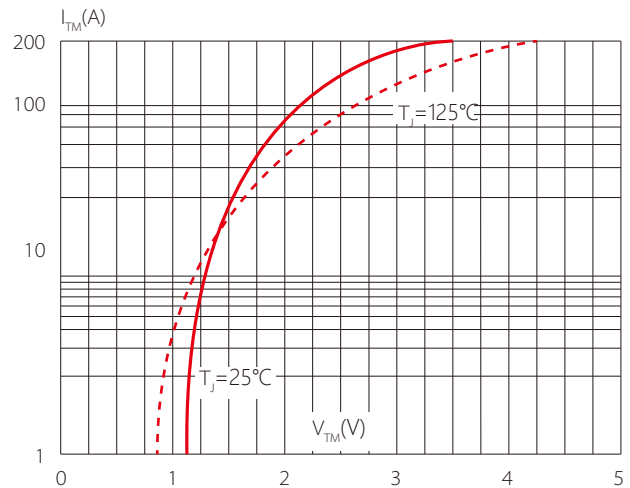


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$ and corresponding value of I^2t (I - II - III: $di/dt < 50\text{A}/\mu\text{s}$; IV: $di/dt < 10\text{A}/\mu\text{s}$)

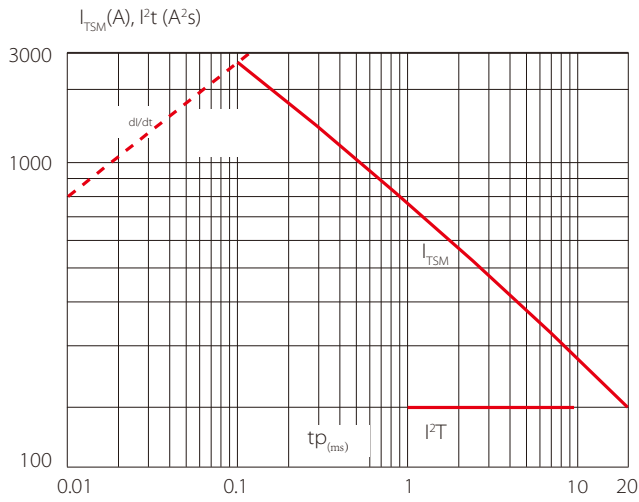


FIG.6 Relative variations of gate trigger current versus junction temperature

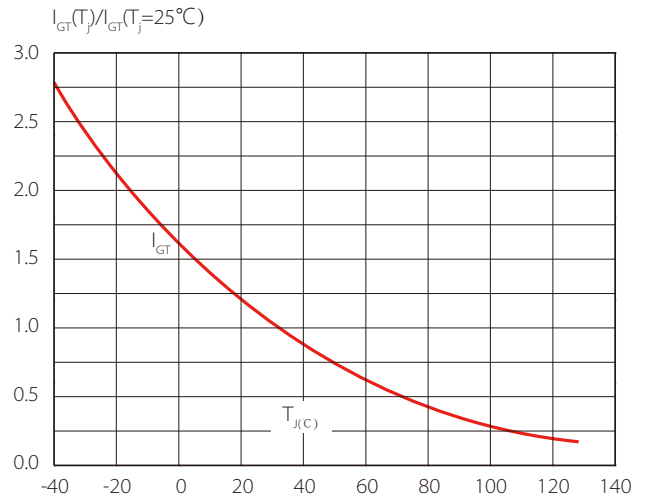


FIG.7 Relative variations of holding current versus junction temperature

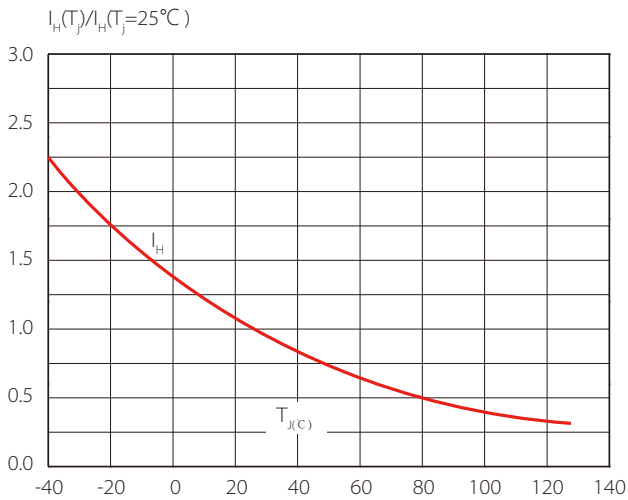
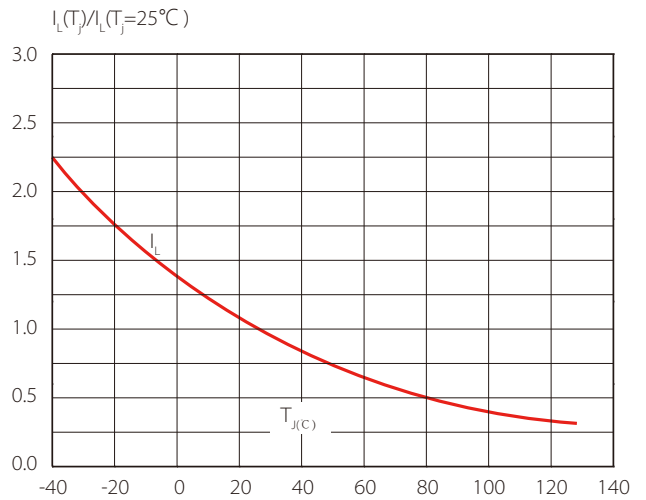
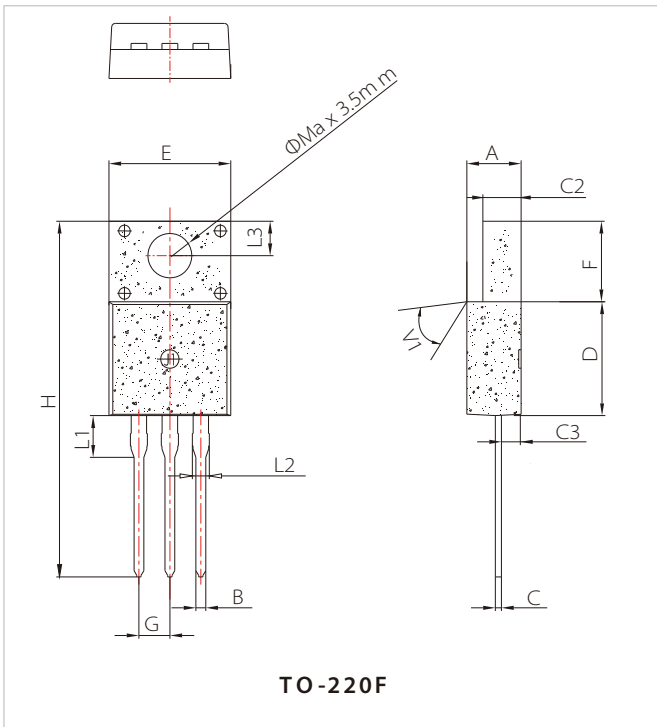


FIG.8 Relative variations of latching current versus junction temperature



PACKAGE MECHANICAL DATA



| Ref. | Dimensions | | | | | |
|------|------------------|------|------|--------|-------|-------|
| | Ref. Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.40 | | 4.80 | 0.173 | | 0.181 |
| B | 0.74 | 0.80 | 0.83 | 0.029 | | 0.033 |
| C | 0.48 | | 0.75 | 0.019 | | 0.030 |
| C2 | 2.40 | | 2.70 | 0.094 | | 0.106 |
| C3 | 2.60 | | 3.00 | 0.102 | | 0.118 |
| D | 8.80 | | 9.30 | 0.346 | | 0.366 |
| E | 9.70 | | 10.3 | 0.382 | | 0.406 |
| F | 6.40 | | 7.00 | 0.252 | | 0.276 |
| G | | 2.54 | | | 0.1 | |
| H | 28.0 | | 29.8 | 1.102 | | 1.173 |
| L1 | | 3.63 | | | 0.143 | |
| L2 | 1.14 | | 1.70 | 0.045 | | 0.067 |
| L3 | | 3.30 | | | 0.130 | |
| V1 | | 45° | | | 45° | |

ORDERING INFORMATION

| Part Number | Package | Qty/pcs | | |
|--------------|---------|---------|-----------|--------|
| | | Tube | Inner Box | Carton |
| STF20Q60B(C) | TO-220F | 50 | 1000 | 5000 |

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