

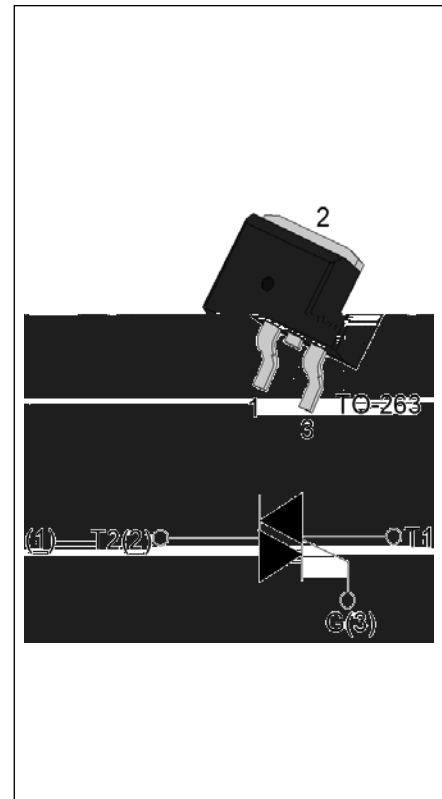


T0810H-6E 8A TRIAC

Rev.A.1.0

DESCRIPTION:

The T0810H-6E triac is suitable for general purpose AC switching. It can be used as an ON/OFF function in applications such as heating regulation, induction motor starting circuits, for phase control operation in light dimmers, motor speed controllers. Compared to traditional triacs, T0810H-6E provides a very high switching capability up to junction temperatures of 150°C. It can be driven directly through the MCU I/O port. Package TO-263 is RoHS compliant.



MAIN FEATURES

| Symbol | Value | Unit |
|-------------------|----------|------|
| $I_{T(RMS)}$ | 8 | A |
| V_{DRM}/V_{RRM} | 600 | V |
| $I_{GT} / /$ | 10/10/10 | mA |

ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|--|--------------|---------|-----------|
| Storage junction temperature range | T_{stg} | -40-150 | |
| Operating junction temperature range | T_j | -40-150 | |
| Repetitive peak off-state voltage ($T_j=25^\circ C$) | V_{DRM} | 600 | V |
| Repetitive peak reverse voltage ($T_j=25^\circ C$) | V_{RRM} | 600 | V |
| RMS on-state current ($T_c = 133^\circ C$) | $I_{T(RMS)}$ | 8 | A |
| Non repetitive surge peak on-state current (full cycle, $t_p=20ms$, $T_j=25^\circ C$) | I_{TSM} | 80 | A |
| Non repetitive surge peak on-state current (full cycle, $t_p=16.6ms$, $T_j=25^\circ C$) | | 88 | |
| I^2t value for fusing ($t_p=10ms$, $T_j=25^\circ C$) | I^2t | 32 | A^2s |
| Critical rate of rise of on-state current ($I_G=2 I_{GT}$, $f=100Hz$, $T_j=150^\circ C$) | di/dt | 50 | $A/\mu s$ |
| Peak gate current ($t_p=20\mu s$, $T_j=150^\circ C$) | I_{GM} | 4 | A |
| Average gate power dissipation ($T_j=150^\circ C$) | $P_{G(AV)}$ | 1 | W |

| | | | |
|--|----------|-----|----|
| Peak gate power | P_{GM} | 10 | W |
| Peak pulse voltage ($T_j=25$; non-repetitive, off-state; FIG.8) | V_{pp} | 2.5 | kV |

ELECTRICAL CHARACTERISTICS ($T_j=25$ unless otherwise specified)

| Symbol | Test Condition | Quadrant | Value | | Unit |
|----------------------|--|----------|-------|-----|------------|
| I_{GT} | $V_D=12V$ $R_L=33$ | - - | MAX. | 10 | mA |
| V_{GT} | | - - | MAX. | 1 | V |
| V_{GD} | $V_D=V_{DRM}$ $T_j=150$ $R_L=3.3K$ | - - | MIN. | 0.2 | V |
| I_L | $I_G=1.2I_{GT}$ | - | MAX. | 25 | mA |
| | | | | 40 | |
| I_H | $I_T=100mA$ | | MAX. | 25 | mA |
| dV/dt | $V_D=400V$ Gate Open $T_j=150$ | | MIN. | 200 | V/ μs |
| (dI/dt) _c | (dV/dt) _c =20V/ μs , $T_j=150$ | | MIN. | 1.8 | A/ms |
| t_{on} | $I_G=20mA$ $I_A=200mA$ $I_R=20mA$ $T_j=25$ | | TYP. | 2.5 | μs |
| t_{off} | | | | 25 | |

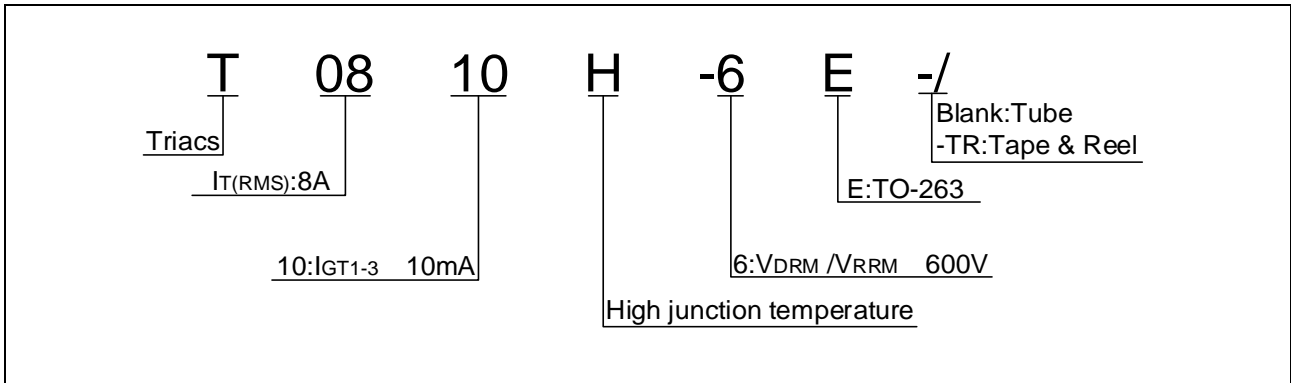
STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|-----------|-----------------------------|-----------|-------------|---------|
| V_{TM} | $I_{TM}=11A$ $t_p=380\mu s$ | $T_j=25$ | 1.4 | V |
| V_{TO} | Threshold voltage | $T_j=150$ | 0.79 | V |
| R_D | Dynamic resistance | $T_j=150$ | 51 | m |
| I_{DRM} | $V_D=V_{DRM}$ $V_R=V_{RRM}$ | $T_j=25$ | 5 | μA |
| I_{RRM} | | $T_j=150$ | 1 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|---|-------|------------|
| $R_{th(j-c)}$ | junction to case (AC) | 1.6 | W |
| $R_{th(j-a)}$ | junction to ambient (AC, in free air, $S=2cm^2$) | 45 | W |

ORDERING INFORMATION



MARKING

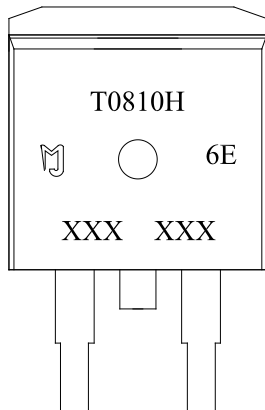


FIG.1 Maximum power dissipation versus RMS on-state current

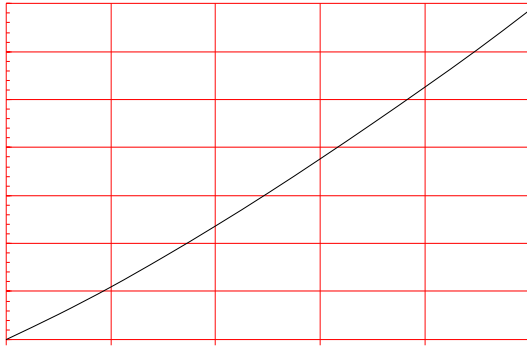


FIG.2: RMS on-state current versus case temperature

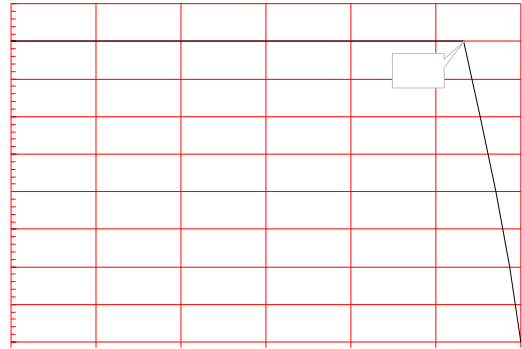


FIG.3: RMS on-state current versus ambient temperature (printed circuit board FR4,copper thickness:35 μ m)(full cycle)

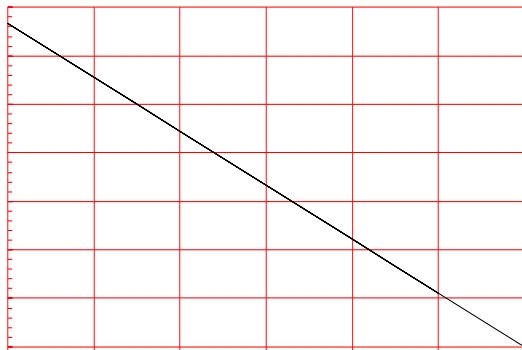


FIG.4: Surge peak on-state current versus number of cycles

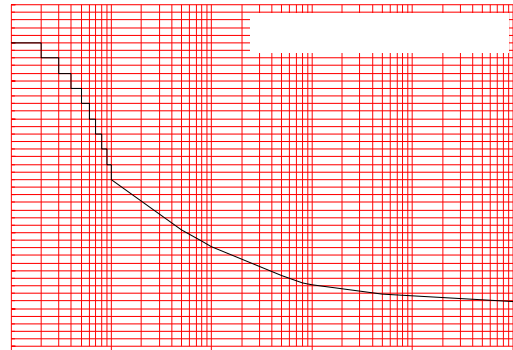


FIG.5: On-state characteristics

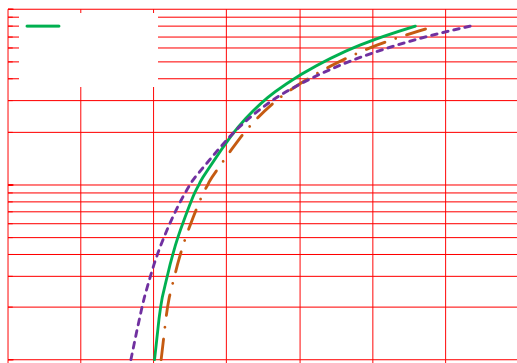


FIG.6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20$ ms, and corresponding value of I^2t ($di/dt < 50$ A/ μ s)

FIG.7: Relative variations of gate trigger current, holding current and latching current versus junction temperature

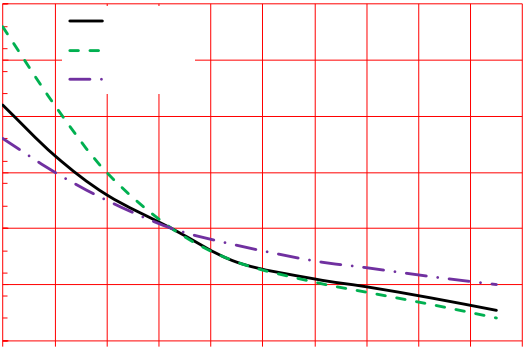
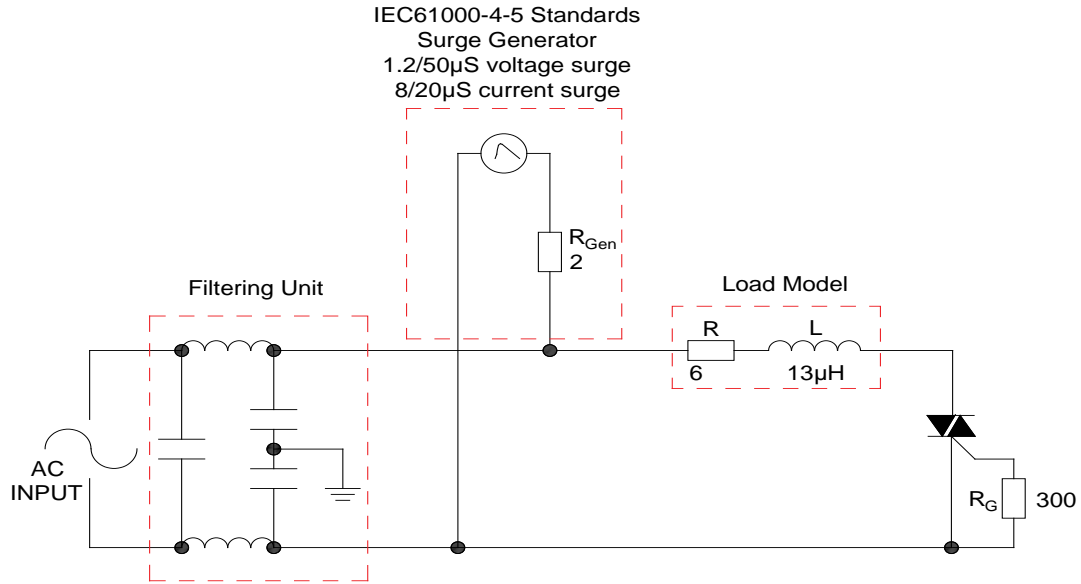
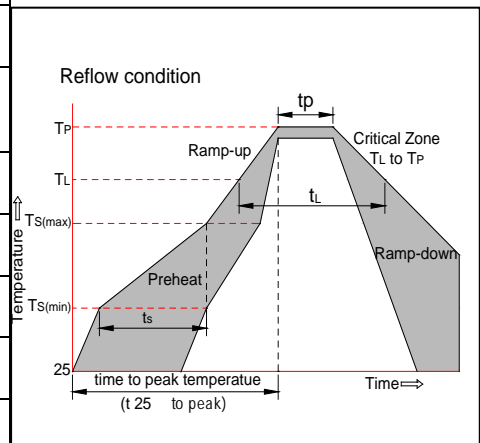


FIG.8 Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



SOLDERING PARAMETERS

| | | |
|---|-----------------------------------|---|
| Reflow Condition | | Pb-Free assembly (see figure at right) |
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150 |
| | -Temperature Max($T_{s(max)}$) | +200 |
| | -Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquidus Temp (T_L) to peak) | | 3 /sec. Max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3 /sec. Max |
| Reflow | -Temperature(T_L)(Liquidus) | +217 |
| | -Temperature(t_L) | 60-150 secs. |
| Peak Temp (T_p) | | +260(+0/-5) |
| Time within 5 of actual Peak Temp (t_p) | | 20-40secs. |
| Ramp-down Rate | | 6 /sec. Max |
| Time 25 to Peak Temp (T_p) | | 8 min. Max |
| Do not exceed | | +260 |



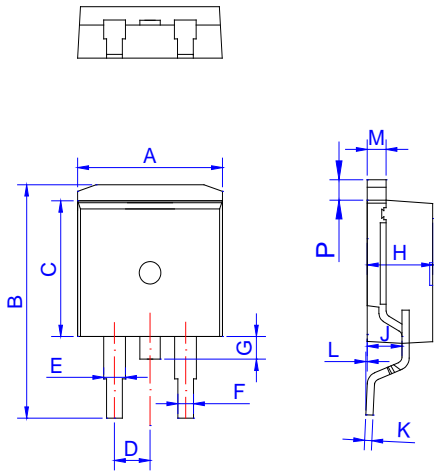
ORDERING INFORMATION

| Order code | Voltage V_{DRM}/V_{RRM} (V) | IGT(mA) | Package | Base qty. (pcs) | Delivery mode |
|--------------|----------------------------------|---------|---------|--------------------|------------------|
| | | - - | | | |
| T0810H-6E | 600 | 10 | TO-263 | 50 | Tube |
| T0810H-6E-TR | | | | 800 | Tape & Reel |

Document Revision History

| Date | Revision | Changes |
|--------------|----------|--------------|
| Apr.11, 2023 | A.1.0 | Last updated |

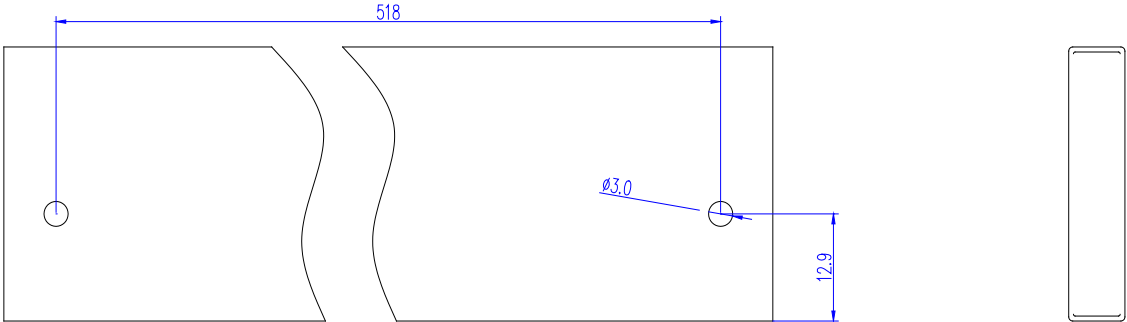
PACKAGE MECHANICAL DATA



| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 9.90 | | 10.20 | 0.390 | | 0.402 |
| B | 14.70 | | 15.80 | 0.579 | | 0.622 |
| C | 9.40 | | 9.60 | 0.37 | | 0.378 |
| D | 2.40 | | 2.70 | 0.094 | | 0.106 |
| E | 1.20 | | 1.50 | 0.047 | | 0.059 |
| F | 0.75 | | 0.85 | 0.029 | | 0.033 |
| G | 1.00 | | 1.50 | 0.039 | | 0.059 |
| H | 4.40 | | 4.70 | 0.173 | | 0.185 |
| J | 2.30 | | 2.70 | 0.091 | | 0.106 |
| K | 0.38 | | 0.55 | 0.015 | | 0.022 |
| L | 0 | 0.10 | 0.25 | 0 | 0.004 | 0.010 |
| M | 1.25 | | 1.35 | 0.049 | | 0.053 |
| P | 1.20 | | 1.50 | 0.047 | | 0.059 |

FOOTPRINT-

DELIVERY MODE



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