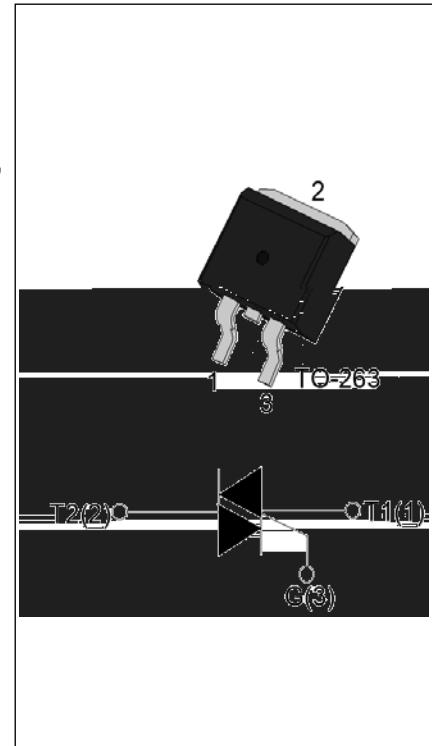


DESCRIPTION:

The T1650H-8E 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, T1650H-8E provides a very high switching capability up to junction temperatures of 150°C. Package TO-263 is RoHS compliant.



MAIN FEATURES

| Symbol | Value | Unit |
|-------------------|----------|------|
| $I_{T(RMS)}$ | 16 | A |
| V_{DRM}/V_{RRM} | 800 | V |
| $I_{GT} / /$ | 50/50/50 | 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 ($T_j=25^\circ\text{C}$) | V_{DRM} | 800 | V |
| Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$) | V_{RRM} | 800 | V |
| RMS on-state current ($T_c 0125^\circ\text{C}$) | $I_{T(RMS)}$ | 16 | A |
| Non repetitive surge peak on-state current (full cycle, $t_p=20\text{ms}$, $T_j=25^\circ\text{C}$) | I_{TSM} | 160 | A |
| Non repetitive surge peak on-state current (full cycle, $t_p=16.6\text{ms}$, $T_j=25^\circ\text{C}$) | | 176 | |
| I^2t value for fusing ($t_p=10\text{ms}$, $T_j=25^\circ\text{C}$) | I^2t | 128 | A^2s |
| Critical rate of rise of on-state current ($I_G=2 \times I_{GT}$, $f=100\text{Hz}$, $T_j=150^\circ\text{C}$) | di/dt | 100 | A/s |
| Peak gate current ($t_p=20\text{ }\mu\text{s}$, $T_j=150^\circ\text{C}$) | I_{GM} | 4 | A |
| Average gate power dissipation ($T_j=150^\circ\text{C}$) | $P_{G(AV)}$ | 1 | W |
| Peak gate power | P_{GM} | 10 | W |

| | | | |
|--|----------|---|----|
| Peak pulse voltage ($T_j=25$; non-repetitive, off-state; FIG.8) | V_{pp} | 4 | kV |
|--|----------|---|----|

ELECTRICAL CHARACTERISTICS (unless otherwise specified)

| Symbol | Test Condition | Quadrant | Value | | Unit |
|-------------|---|----------|-------|------|------|
| I_{GT} | $V_D=12V$ $R_L=33$ | - - | MAX. | 50 | 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. | 80 | mA |
| | | | | 100 | |
| I_H | $I_T=500mA$ | | MAX. | 60 | mA |
| dV/dt | $V_D=540V$ Gate Open $T_j=150$ | | MIN. | 1800 | V/s |
| $(dI/dt)_c$ | $V_D=150V$ $T_j=150$ | | MIN. | 25 | A/ms |
| t_{on} | $I_G=80mA$ $I_A=400mA$ $I_R=40mA$ $T_j=25$ | | TYP. | 12 | s |
| t_{off} | | | | 80 | |

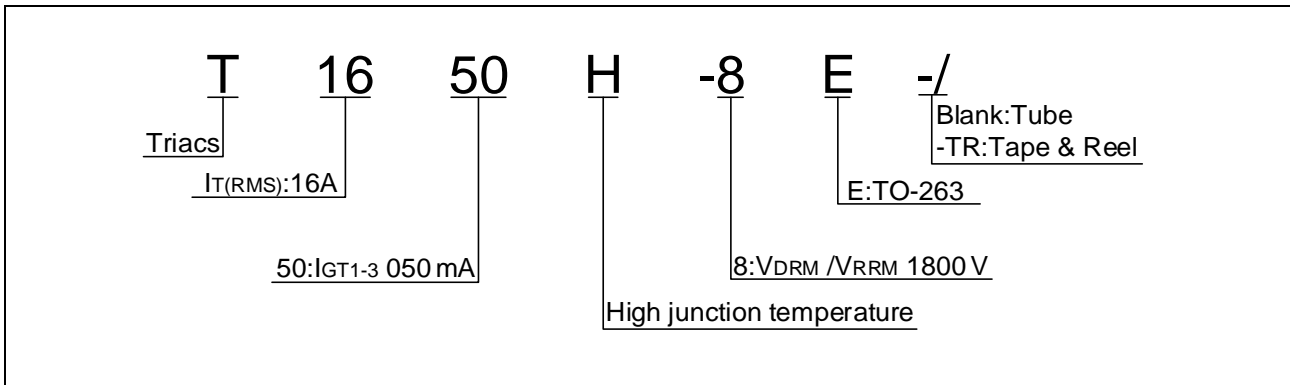
STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|-----------|-----------------------------|-----------|-------------|------|
| V_{TM} | $I_{TM}=22.5A$ $t_p=380$ s | $T_j=25$ | 1.4 | V |
| V_{TO} | Threshold voltage | $T_j=150$ | 0.75 | V |
| R_D | Dynamic resistance | $T_j=150$ | 27 | P |
| I_{DRM} | $V_D=V_{DRM}$ $V_R=V_{RRM}$ | $T_j=25$ | 5 | A |
| I_{RRM} | | $T_j=150$ | 2 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|--------------------------|-------|-------------|
| $R_{th(j-c)}$ | junction to case (AC) | 1.2 | $^{\circ}W$ |
| $R_{th(j-a)}$ | junction to ambient (AC) | 45 | $^{\circ}W$ |

ORDERING INFORMATION



MARKING

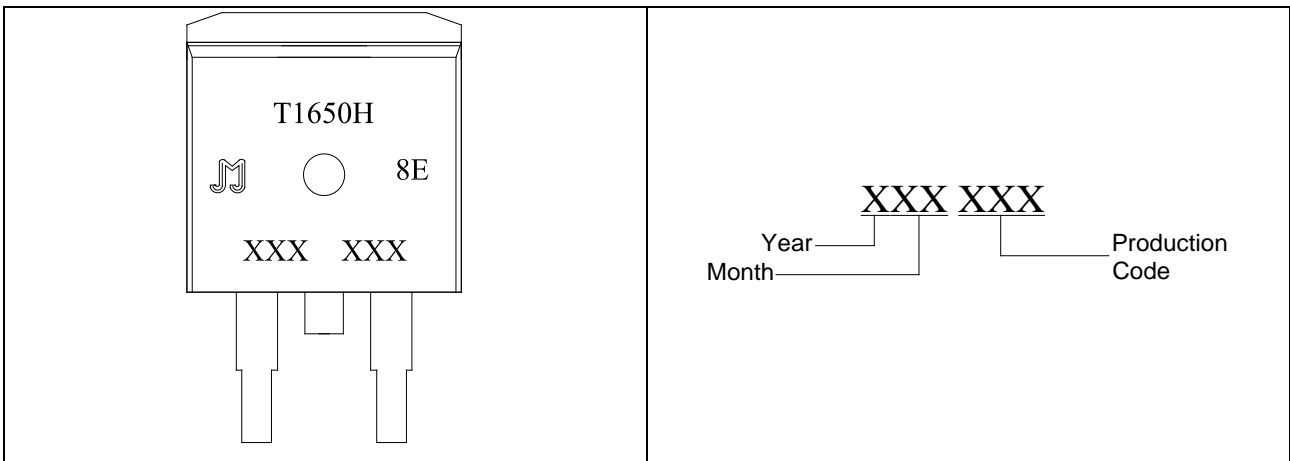


FIG.1 Maximum power dissipation versus RMS on-state current

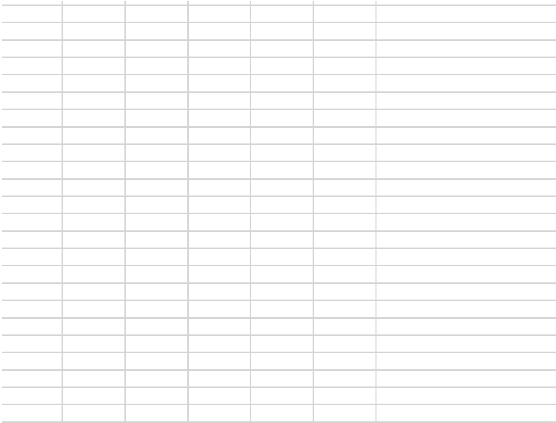


FIG.2: RMS on-state current versus case temperature

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

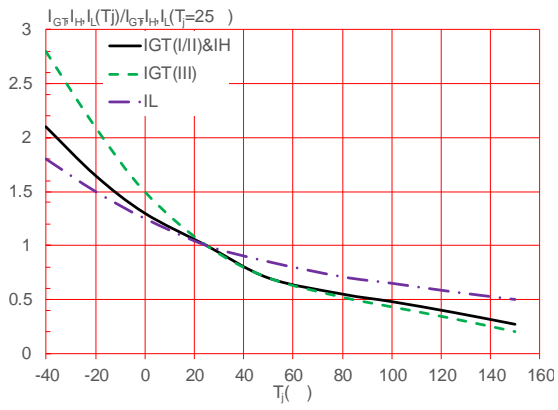
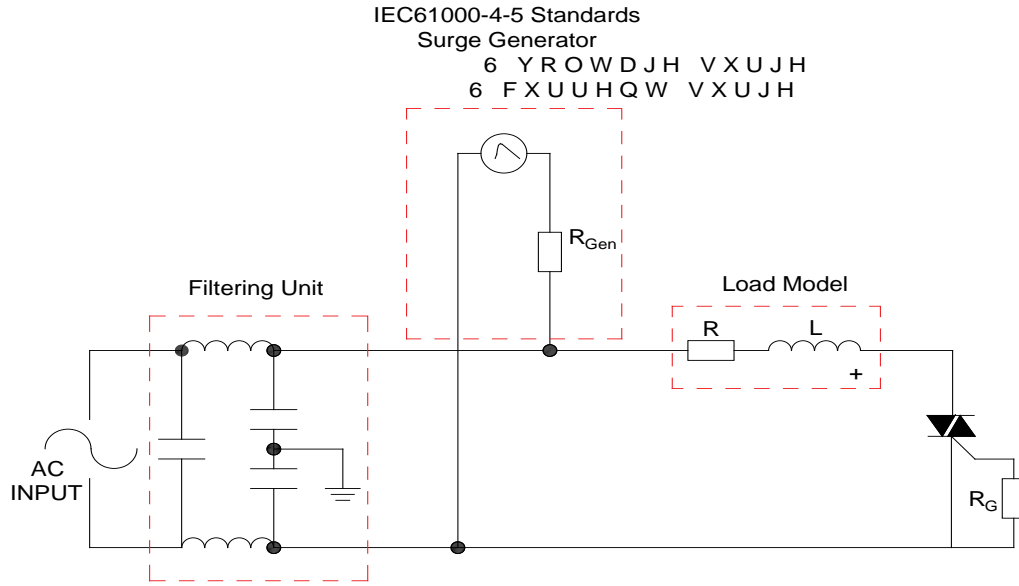
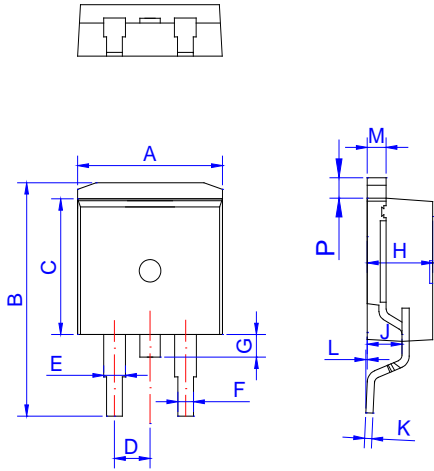


FIG.8 ÖTest circuit for inductive and resistive loads to IEC-61000-4-5 standards



T1650H-8E

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

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