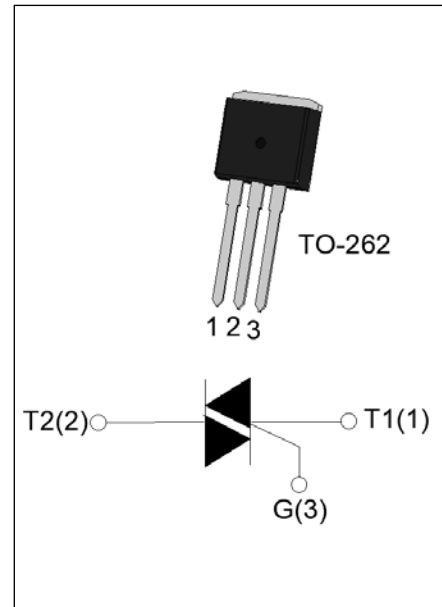


DESCRIPTION:

The JST139D-600F 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. From T2 terminals to external heatsink. Package TO-262 is RoHS compliant.


MAIN FEATURES

| Symbol | Value | Unit |
|-----------------------|-------------|------|
| $I_{T(RMS)}$ | 16 | A |
| V_{DRM}/V_{RRM} | 600 | V |
| $I_{GT\ I/II/III/IV}$ | 25/25/25/70 | mA |

ABSOLUTE MAXIMUM RATINGS

| Parameter | | Symbol | Value | Unit |
|--|--------|--------------|---------|------------------------|
| Storage junction temperature range | | T_{stg} | -40-150 | °C |
| Operating junction temperature range | | T_j | -40-125 | °C |
| 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 ($T_c \leq 95^\circ\text{C}$) | | $I_{T(RMS)}$ | 16 | A |
| Non repetitive surge peak on-state current (full cycle , $t_p=20\text{ms}$, $T_j=25^\circ\text{C}$) | | I_{TSM} | 140 | A |
| Non repetitive surge peak on-state current (full cycle , $t_p=16.6\text{ms}$, $T_j=25^\circ\text{C}$) | | | 154 | |
| I^2t value for fusing ($t_p=10\text{ms}$, $T_j=25^\circ\text{C}$) | | I^2t | 98 | A^2s |
| Critical rate of rise of on-state current ($I_G=2 \times I_{GT}$, $f=100\text{Hz}$, $T_j=125^\circ\text{C}$) | I - II | di/dt | 100 | $\text{A}/\mu\text{s}$ |
| | III-IV | | 70 | |
| Peak gate current ($t_p=20\mu\text{s}$, $T_j=125^\circ\text{C}$) | | I_{GM} | 4 | A |
| Average gate power dissipation ($T_j=125^\circ\text{C}$) | | $P_{G(AV)}$ | 0.5 | W |
| Peak gate power | | P_{GM} | 10 | W |
| Peak pulse voltage ($T_j=25^\circ\text{C}$; non-repetitive,off-state;FIG.7) | | V_{pp} | 1 | kV |

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

| Symbol | Test Condition | Quadrant | Value | | Unit |
|-------------|--|--------------|-------|-----|------------------------|
| I_{GT} | $V_D=12\text{V } R_L=33\Omega$ | I - II - III | MAX. | 25 | mA |
| | | IV | | 70 | |
| V_{GT} | | ALL | MAX. | 1 | V |
| V_{GD} | $V_D=V_{DRM} T_j=125^{\circ}\text{C}$ $R_L=3.3\text{K}\Omega$ | ALL | MIN. | 0.2 | V |
| I_L | $I_G=1.2I_{GT}$ | I - III - IV | MAX. | 50 | mA |
| | | II | | 100 | |
| I_H | $I_T=500\text{mA}$ | | MAX. | 40 | mA |
| dV/dt | $V_D=400\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$ | | MIN. | 250 | $\text{V}/\mu\text{s}$ |
| $(dV/dt)_c$ | $(dI/dt)_c=7.2\text{A/ms}$, $T_j=110^{\circ}\text{C}$ | | MIN. | 10 | $\text{V}/\mu\text{s}$ |
| t_{on} | $I_G=80\text{mA } I_A=400\text{mA } I_R=40\text{mA}$ $T_j=25^{\circ}\text{C}$ | | TYP. | 10 | μs |
| t_{off} | | | | 70 | |

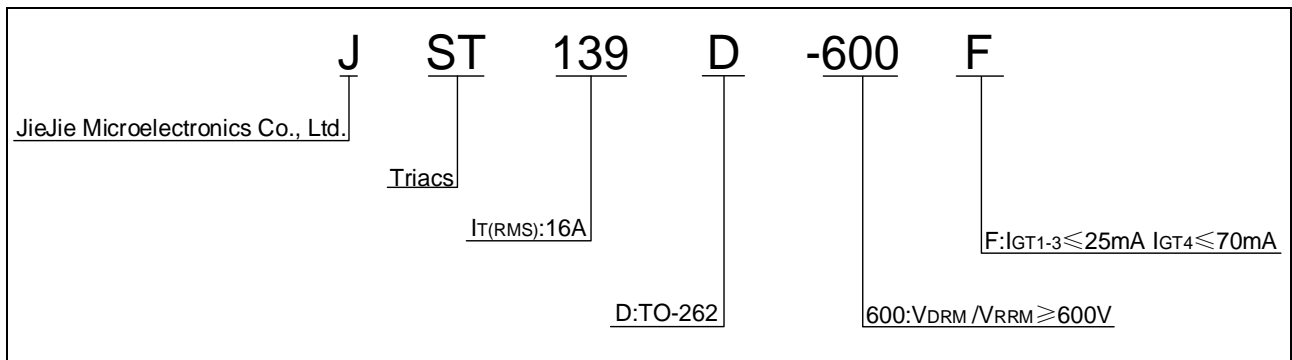
STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|-----------|---|---------------------------|-------------|------------------|
| V_{TM} | $I_{TM}=15\text{A } t_p=380\mu\text{s}$ | $T_j=25^{\circ}\text{C}$ | 1.5 | V |
| V_{TO} | Threshold voltage | $T_j=125^{\circ}\text{C}$ | 0.75 | V |
| R_D | Dynamic resistance | $T_j=125^{\circ}\text{C}$ | 27 | $\text{m}\Omega$ |
| I_{DRM} | $V_D=V_{DRM} V_R=V_{RRM}$ | $T_j=25^{\circ}\text{C}$ | 5 | μA |
| I_{RRM} | | $T_j=125^{\circ}\text{C}$ | 0.4 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|--------------------------|-------|-----------------------------|
| $R_{th(j-c)}$ | junction to case (AC) | 1.3 | $^{\circ}\text{C}/\text{W}$ |
| $R_{th(j-a)}$ | junction to ambient (AC) | 60 | $^{\circ}\text{C}/\text{W}$ |

ORDERING INFORMATION



MARKING

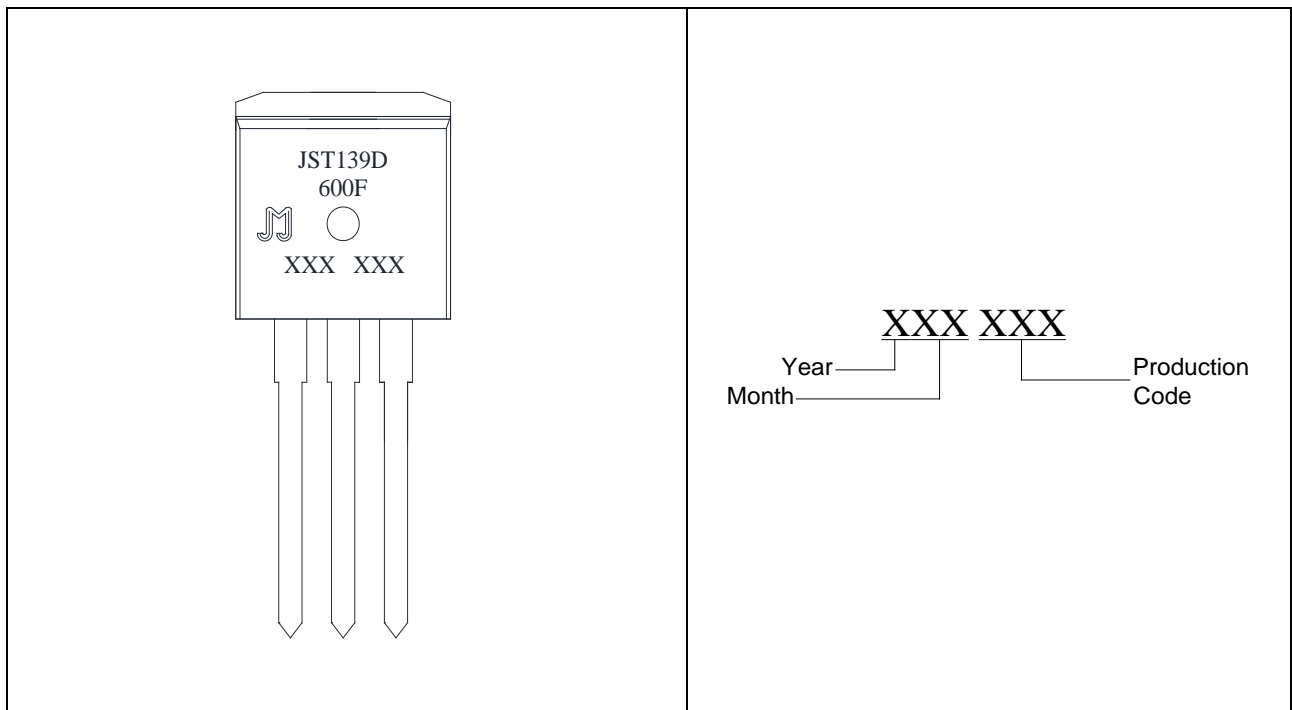


FIG.1 Maximum power dissipation versus RMS on-state current

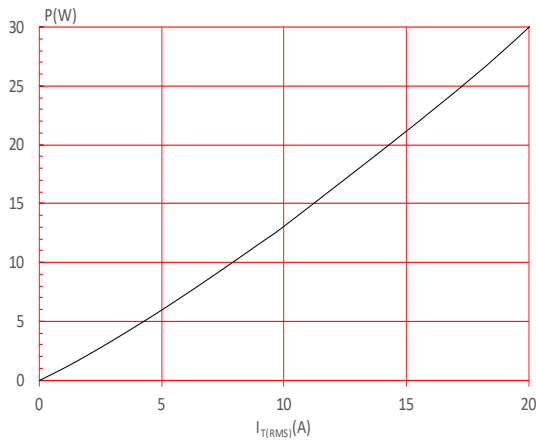


FIG.3: Surge peak on-state current versus number of cycles

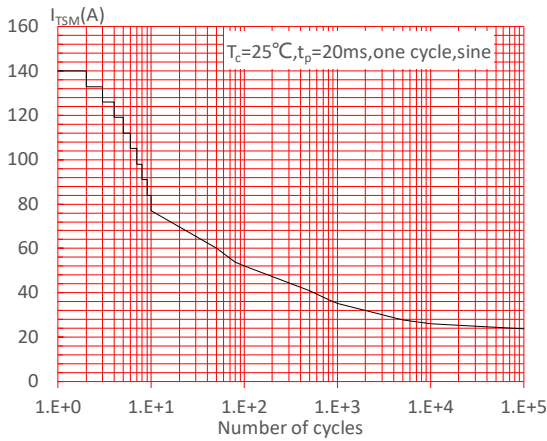


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t (I - II : $di/dt < 100\text{A}/\mu\text{s}$; III-IV : $di/dt < 70\text{A}/\mu\text{s}$)

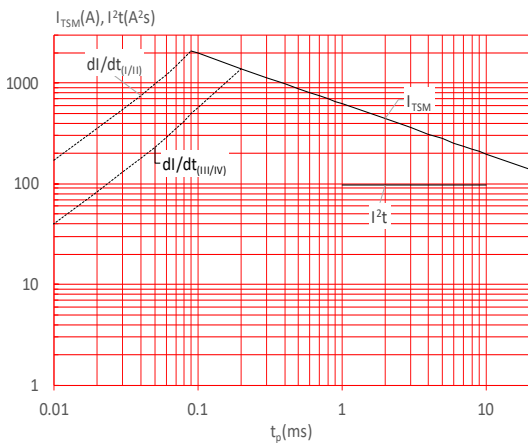


FIG.2: RMS on-state current versus case temperature

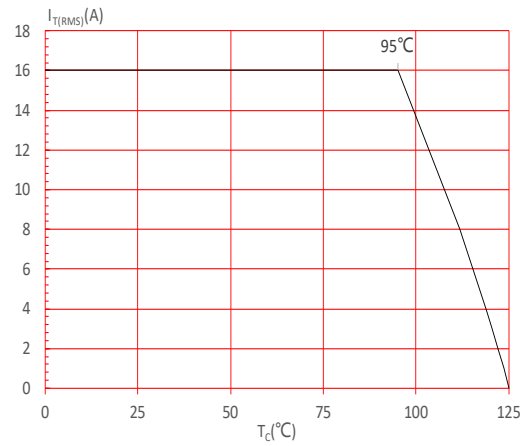


FIG.4: On-state characteristics

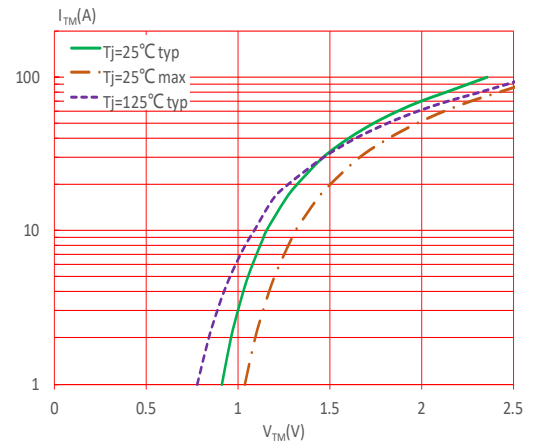


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

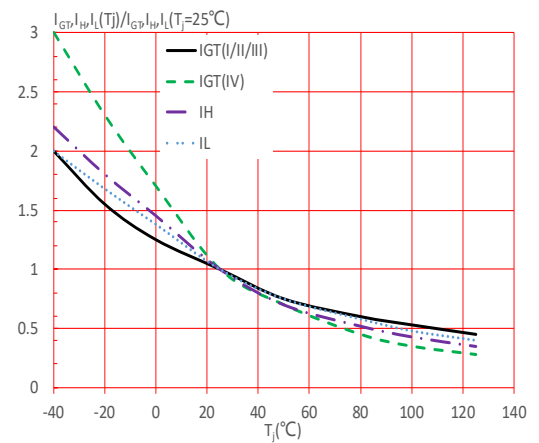
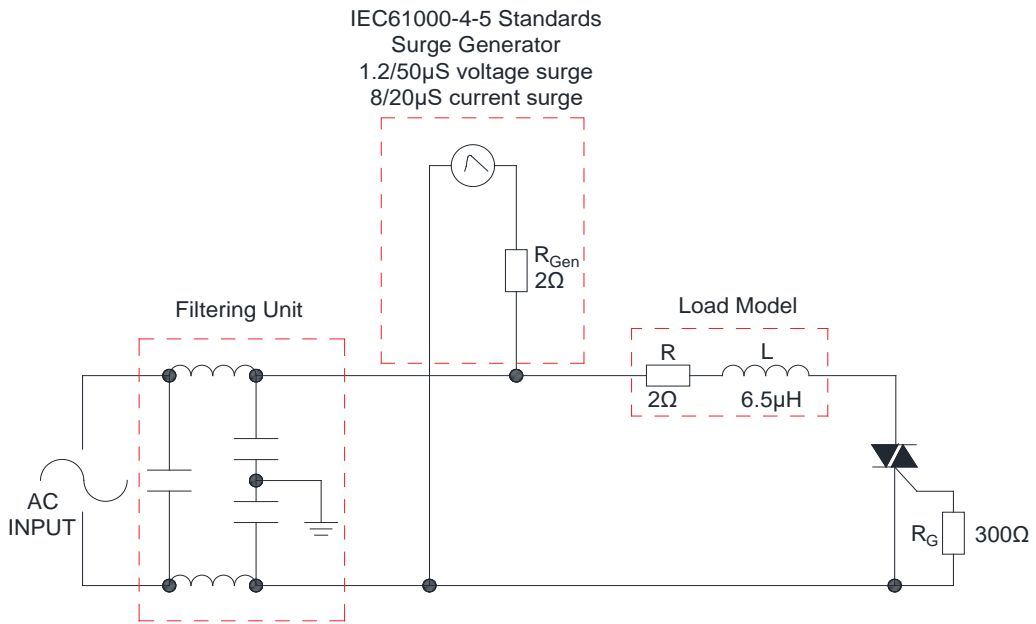


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



SHAPING AND SOLDERING PARAMETERS

Refer to 《Instructions for installation of plastic-sealed in-line power devices》 released by JieJie.

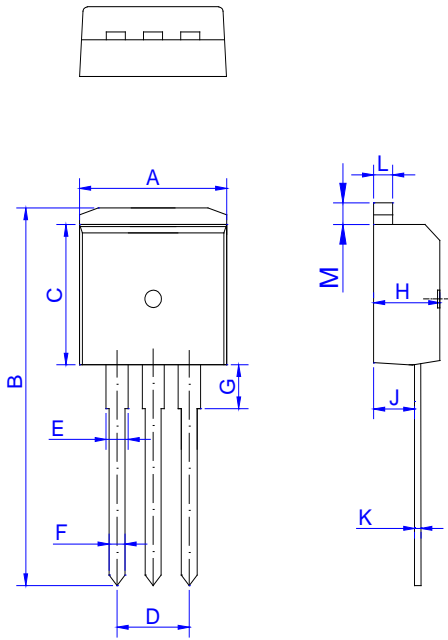
ORDERING INFORMATION

| Order code | Voltage V_{DRM}/V_{RRM} (V) | IGT(mA) | | Package | Base qty. (pcs) | Delivery mode |
|--------------|----------------------------------|-----------|----|---------|--------------------|------------------|
| | | I -II-III | IV | | | |
| JST139D-600F | 600 | 25 | 70 | TO-262 | 50 | Tube |

Document Revision History

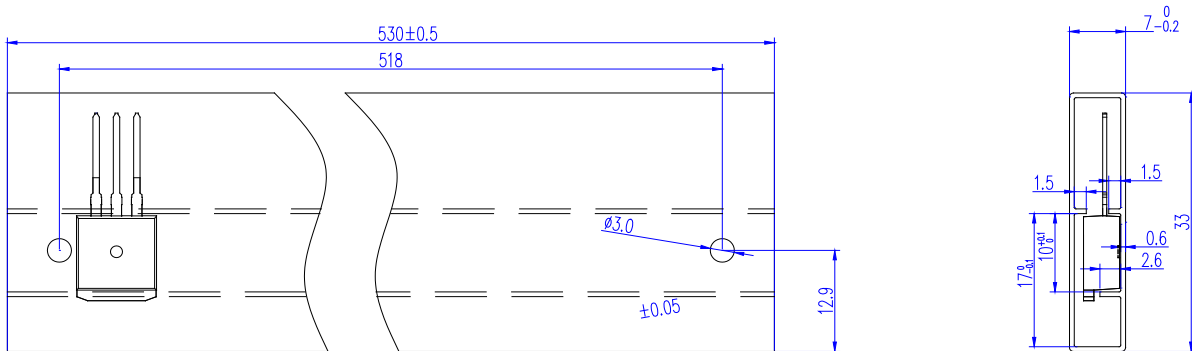
| Date | Revision | Changes |
|--------------|----------|--------------|
| Apr.14, 2023 | A.1.0 | Last updated |

PACKAGE MECHANICAL DATA



| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 9.95 | | 10.20 | 0.392 | | 0.402 |
| B | 23.85 | | 24.05 | 0.939 | | 0.947 |
| C | 9.40 | | 9.60 | 0.370 | | 0.378 |
| D | 4.95 | | 5.25 | 0.195 | | 0.207 |
| E | 1.35 | | 1.40 | 0.053 | | 0.055 |
| F | 0.80 | | 0.85 | 0.031 | | 0.033 |
| G | 2.70 | | 3.40 | 0.106 | | 0.134 |
| H | 4.45 | | 4.55 | 0.175 | | 0.179 |
| J | 2.20 | | 2.60 | 0.087 | | 0.102 |
| K | 0.48 | | 0.52 | 0.019 | | 0.020 |
| L | 1.30 | | 1.35 | 0.051 | | 0.053 |
| M | 1.20 | | 1.50 | 0.047 | | 0.059 |

DELIVERY MODE



| PACKAGE | OUTLINE | TUBE (PCS) | INNER BOX (PCS) | PER CARTON |
|---------|---------|------------|-----------------|------------|
| TO-262 | TUBE | 50 | 1,000 | 5,000 |

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