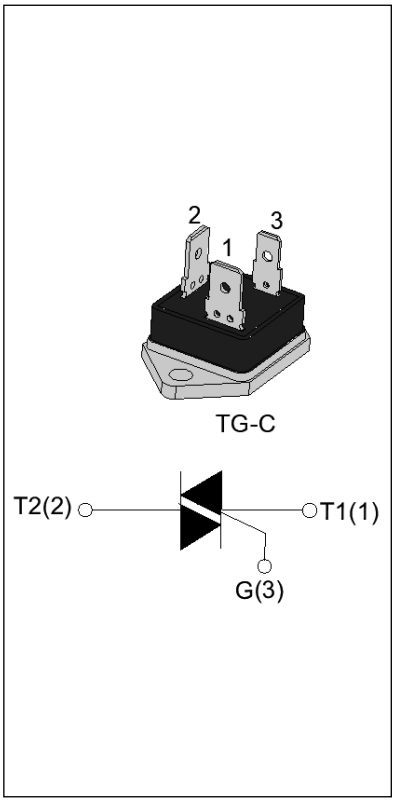
## JST60T-1600BW 60A TRIAC

Rev.A.1.0

### DESCRIPTION:

The JST60T-1600BW 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. JST60T-1600BW snubberless triac is especially recommended for use on inductive loads. By using a DBC, JST60T-1600BW provides a rated insulation voltage of 2500 VRMS, complying with UL standards (File ref: E252906). Package TG-C is RoHS compliant.




### MAIN FEATURES

| Symbol | Value | Unit |
|---|---|---|
| $I_{T(RMS)}$ | 60 | A |
| $V_{DRM}$ /$V_{RRM}$ | 1600 | V |
| $I_{GT\ I\ /\ II/III}$ | 50/50/50 | mA |

### ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Storage junction temperature range | $T_{stg}$ | -40-150 | ℃ |
| Operating junction temperature range | $T_j$ | -40-125 | ℃ |
| Repetitive peak off-state voltage ($T_j$=25℃) | $V_{DRM}$ | 1600 | V |
| Repetitive peak reverse voltage ($T_j$=25℃) | $V_{RRM}$ | 1600 | V |
| RMS on-state current ($T_C$≤94℃) | $I_{T(RMS)}$ | 60 | A |
| Non repetitive surge peak on-state current (full cycle , $t_p$=20ms , $T_j$=25℃) | $I_{TSM}$ | 600 | A |
| Non repetitive surge peak on-state current (full cycle , $t_p$=16.6ms , $T_j$=25℃) | | 660 | |
| $I^2t$ value for fusing ($t_p$=10ms , $T_j$=25℃) | $I^2t$ | 1800 | $A^2s$ |
| Critical rate of rise of on-state current ($I_G$=2×$I_{GT}$ , f=100Hz , $T_j$=125℃) | dI/dt | 100 | A/μs |
| Peak gate current ($t_p$=20μs , $T_j$=125℃) | $I_{GM}$ | 8 | A |
| Average gate power dissipation ($T_j$=125℃) | $P_{G(AV)}$ | 0.5 | W |

| | | | |
|---|---|---|---|
| Peak gate power | $P_{GM}$ | 10 | W |
| Peak pulse voltage ($T_j$=25℃; non-repetitive,off-state;FIG.7) | $V_{pp}$ | 1.1 | kV |

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

| Symbol | Test Condition | Quadrant | Value | | Unit |
|---|---|---|---|---|---|
| $I_{GT}$ | $V_D$ =12V $R_L$ =33Ω | Ⅰ-Ⅱ-Ⅲ | MAX. | 50 | mA |
| $V_{GT}$ | | Ⅰ-Ⅱ-Ⅲ | MAX. | 1.3 | V |
| $V_{GD}$ | $V_D$ =$V_{DRM}$ $T_j$=125℃ $R_L$ =3.3kΩ | Ⅰ-Ⅱ-Ⅲ | MIN. | 0.2 | V |
| $I_L$ | $I_G$=1.2$I_{GT}$ | Ⅰ-Ⅲ | MAX. | 120 | mA |
| | | Ⅱ | | 120 | |
| $I_H$ | $I_T$ =1A | | MAX. | 80 | mA |
| dV/dt | $V_D$=1070V Gate Open $T_j$=125℃ | | MIN. | 1500 | V/μs |
| (dI/dt)c | (dV/dt)c=20V/μs $T_j$=125℃ | | MIN. | 28 | A/ms |
| $t_{on}$ | $I_G$=80mA $I_A$=400mA $I_R$=40mA $T_j$=25℃ | | TYP. | 7 | μs |
| $t_{off}$ | | | | 70 | |

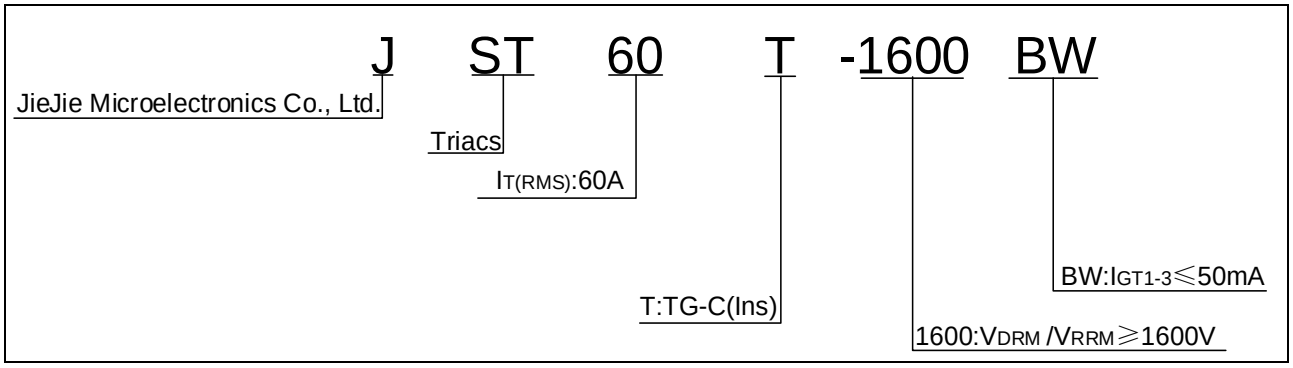
**STATIC CHARACTERISTICS**

| Symbol | Parameter | | Value(MAX.) | Unit |
|---|---|---|---|---|
| $V_{TM}$ | $I_{TM}$ =80A $t_p$=380μs | $T_j$=25℃ | 1.7 | V |
| $V_{TO}$ | Threshold voltage | $T_j$=125℃ | 0.75 | V |
| $R_D$ | Dynamic resistance | $T_j$=125℃ | 24 | mΩ |
| $I_{DRM}$ | $V_D$=$V_{DRM}$$V_R$ =$V_{RRM}$ | $T_j$=25℃ | 15 | μA |
| $I_{RRM}$ | | $T_j$=125℃ | 10 | mA |

**THERMAL RESISTANCES**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th(j-c)}$ | junction to case (AC) | 0.33 | ℃/W |
| $R_{th(j-a)}$ | junction to ambient (AC) | 45 | ℃/W |

## ORDERING INFORMATION




## MARKING

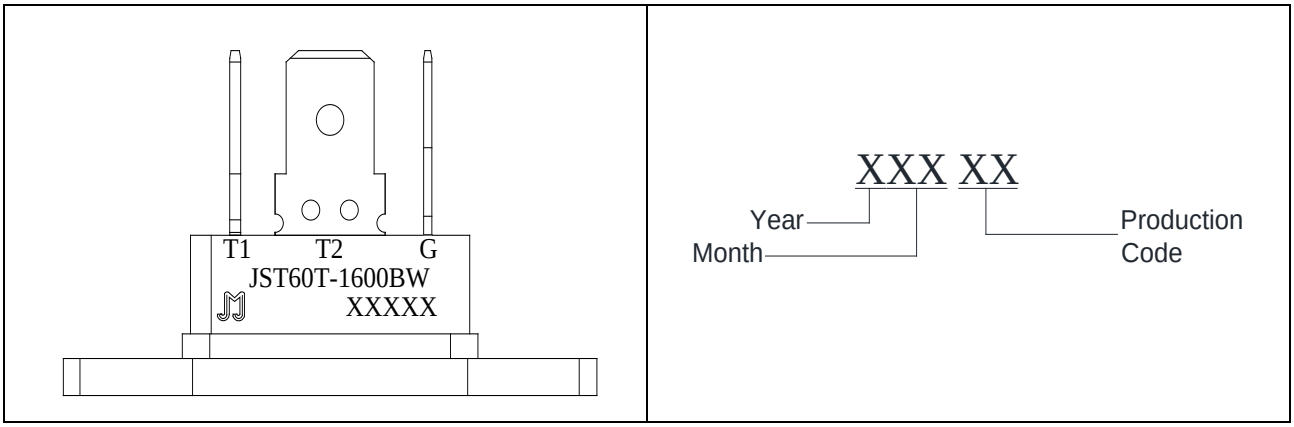


**FIG.1:** Maximum power dissipation versus RMS on-state current

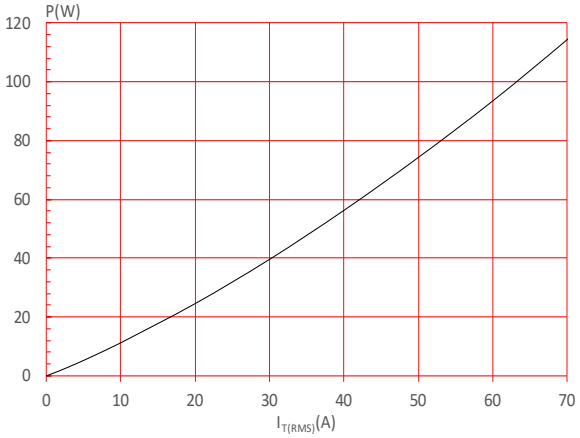



**FIG.2:** RMS on-state current versus case temperature

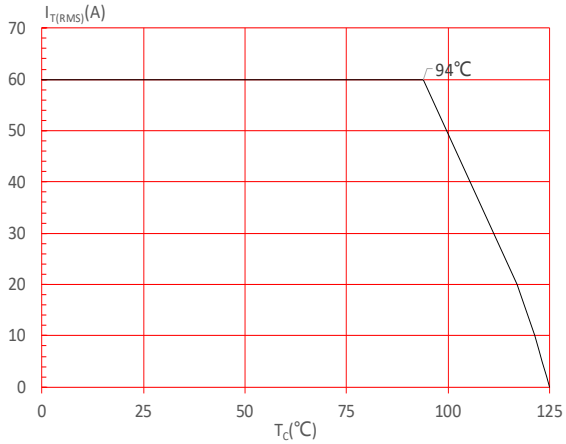



**FIG.3:** Surge peak on-state current versus number of cycles

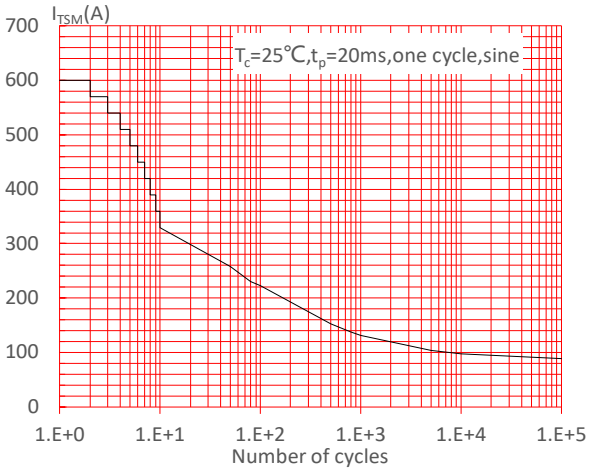



**FIG.4:** On-state characteristics

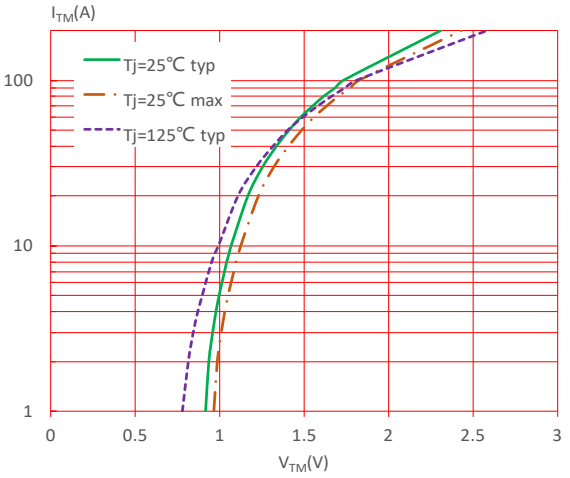



**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p$<20ms, and corresponding value of $I^2t$ (dI/dt<100A/μs)

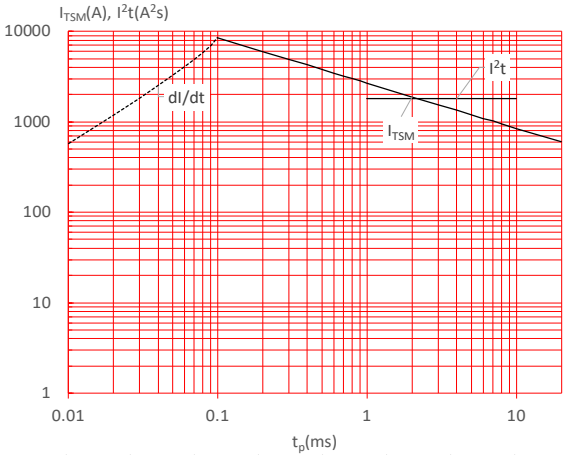



**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature

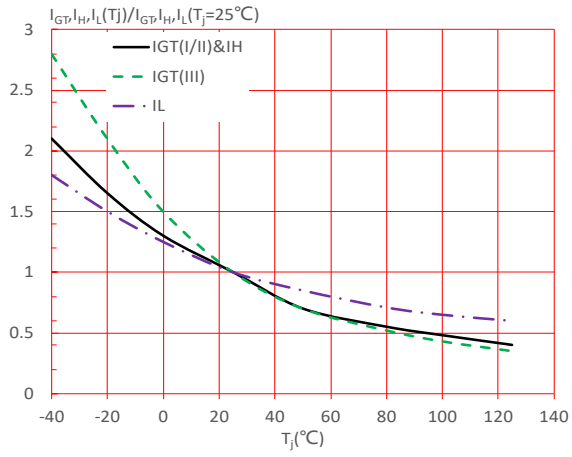
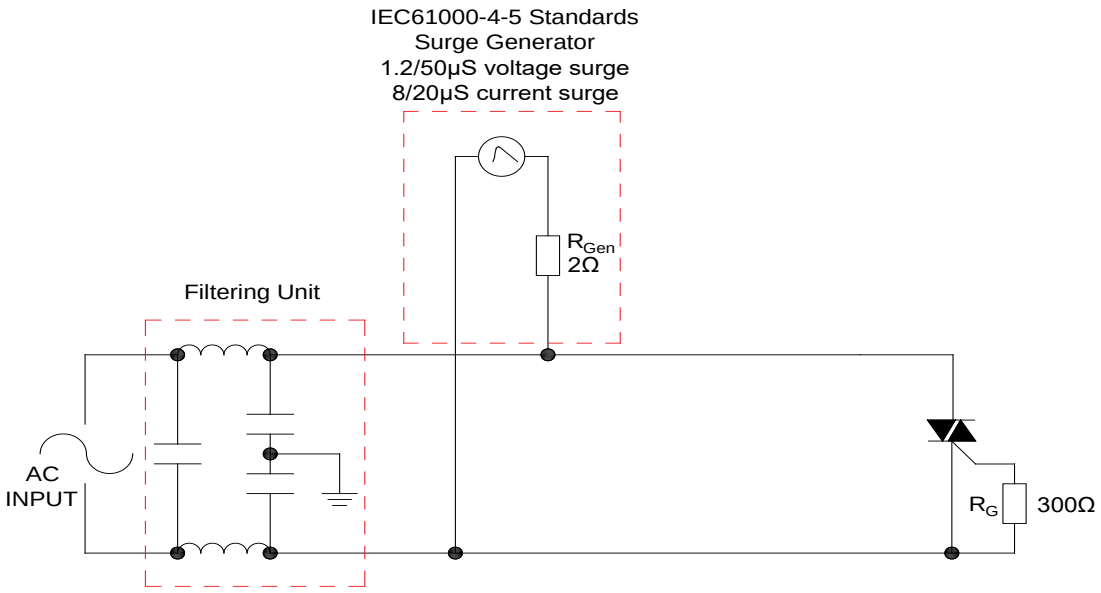


FIG.7：Test circuit for inductive and resistive loads to IEC-61000-4-5 standards




## LEAD FORMING AND SOLDERING

Refer to the application note “Assembly Instructions for Thyristors in Through-hole Package” released by JieJie Microelectronics.

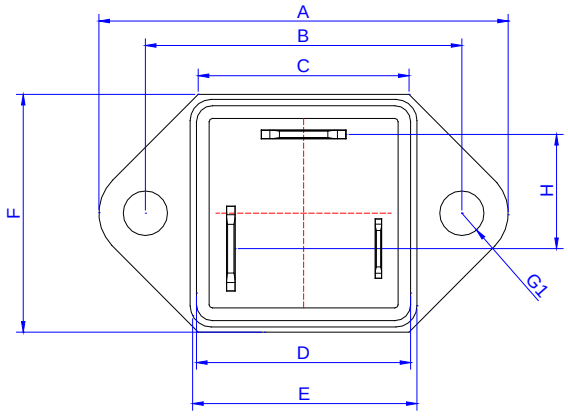
## ORDERING INFORMATION

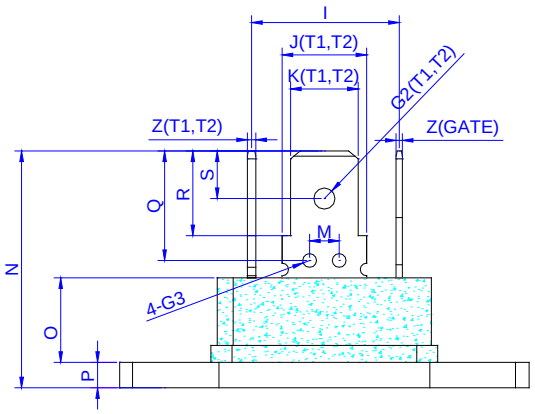
| Order code | Voltage $V_{DRM}/V_{RRM}$(V) | IGT(mA) | Package | Base qty. (pcs) | Delivery mode |
|---|---|---|---|---|---|
| | | Ⅰ-Ⅱ-Ⅲ | | | |
| JST60T-1600BW | 1600 | 50 | TG-C(Ins) | 10 | Tube |

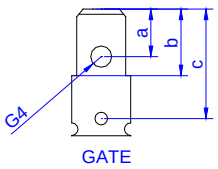
## Document Revision History

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

## PACKAGE MECHANICAL DATA




TG-C

| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | | | 39.2 | | | 1.543 |
| B | 29.8 | 30.0 | 30.2 | 1.173 | 1.181 | 1.189 |
| C | | | 20.2 | | | 0.795 |
| D | | | 20.5 | | | 0.807 |
| E | | | 21.6 | | | 0.85 |
| F | | | 23 | | | 0.905 |
| G1 | Φ4.1 | Φ4.2 | Φ4.3 | Φ0.161 | Φ0.165 | Φ0.169 |
| H | | 10.3 | | | 0.406 | |
| I | | 13.9 | | | 0.547 | |
| J(T1,T2) | | 8 | | | 0.315 | |
| K(T1,T2) | | 6.4 | | | 0.252 | |
| M | 2.7 | 3.0 | 3.3 | 0.106 | 0.118 | 0.130 |
| N | | | 22.8 | | | 0.898 |
| O | | 8.2 | | | 0.323 | |
| P | | 2.5 | | | 0.098 | |
| Q | 9.45 | 9.75 | 10.1 | 0.374 | 0.383 | 0.398 |
| R | 7.8 | 7.95 | 8.1 | 0.307 | 0.313 | 0.319 |
| S | 4.3 | 4.5 | 4.7 | 0.169 | 0.177 | 0.185 |
| Z(T1,T2) | 0.78 | 0.8 | 0.85 | 0.0307 | 0.0315 | 0.0335 |
| G2(T1,T2) | | Φ2 | Φ2.2 | | Φ0.079 | Φ0.087 |
| G3 | Φ1.1 | Φ1.3 | Φ1.5 | Φ0.043 | Φ0.051 | Φ0.059 |
| G4 | | Φ1.55 | Φ1.75 | | Φ0.061 | Φ0.069 |
| a | 2.95 | 3.15 | 3.35 | 0.116 | 0.124 | 0.132 |
| b | 6.2 | 6.35 | 6.5 | 0.244 | 0.25 | 0.256 |
| c | 9.35 | 9.75 | 10 | 0.368 | 0.384 | 0.393 |
| Z(GATE) | 0.58 | 0.6 | 0.65 | 0.0228 | 0.0236 | 0.0256 |
| J(GATE) | | 5.6 | | | 0.221 | |
| K(GATE) | | 4.65 | | | 0.183 | |

## DELIVERY MODE

| PACKAGE | OUTLINE | TUBE (PCS) | INNER BOX (PCS) | PER CARTON (PCS) |
|---|---|---|---|---|
| TG-C | TUBE | 10 | 100 | 500 |

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