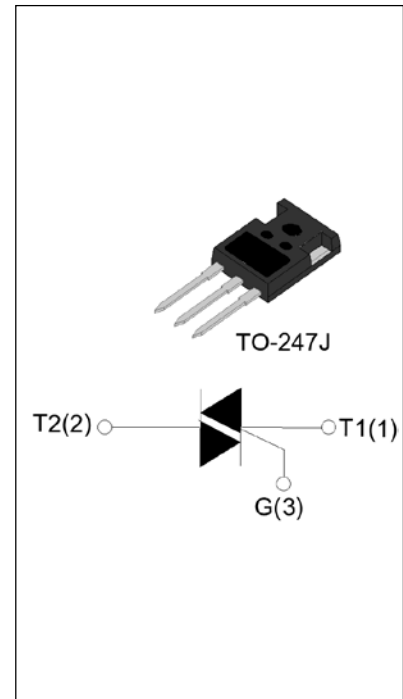


JST41SJ-600BW 40A TRIAC

Rev.A.1.0

DESCRIPTION:

The JST41SJ-600BW 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. JST41SJ-600BW snubberless triac is especially recommended for use on inductive loads. Package TO-247J is RoHS compliant.


MAIN FEATURES

| Symbol | Value | Unit |
|--------------------|----------|------|
| $I_{T(RMS)}$ | 40 | A |
| V_{DRM}/V_{RRM} | 600 | 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 | °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 ($T_c \leq 86^\circ\text{C}$) | $I_{T(RMS)}$ | 40 | A |
| Non repetitive surge peak on-state current (full cycle , $t_p=20\text{ms}$, $T_j=25^\circ\text{C}$) | I_{TSM} | 420 | A |
| Non repetitive surge peak on-state current (full cycle , $t_p=16.6\text{ms}$, $T_j=25^\circ\text{C}$) | | 462 | |
| I^2t value for fusing ($t_p=10\text{ms}$, $T_j=25^\circ\text{C}$) | I^2t | 1000 | A^2s |
| Critical rate of rise of on-state current ($I_G=2 \times I_{GT}$, $f=100\text{Hz}$, $T_j=125^\circ\text{C}$) | di/dt | 100 | $\text{A}/\mu\text{s}$ |
| Peak gate current ($t_p=20\mu\text{s}$, $T_j=125^\circ\text{C}$) | I_{GM} | 8 | A |
| Average gate power dissipation ($T_j=125^\circ\text{C}$) | $P_{G(AV)}$ | 1 | W |
| Peak gate power | P_{GM} | 40 | W |

| | | | |
|--|----------|-----|----|
| Peak pulse voltage ($T_j=25^{\circ}\text{C}$; non-repetitive, off-state; FIG.7) | V_{pp} | 1.5 | 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. | 50 | mA |
| V_{GT} | | I - II -III | MAX. | 1.3 | V |
| V_{GD} | $V_D=V_{DRM} T_j=125^{\circ}\text{C}$ $R_L=3.3\text{K}\Omega$ | I - II -III | MIN. | 0.2 | V |
| I_L | $I_G=1.2I_{GT}$ | I -III | MAX. | 80 | mA |
| | | II | | 200 | |
| I_H | $I_T=500\text{mA}$ | | MAX. | 100 | mA |
| dV/dt | $V_D=400\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$ | | MIN. | 2500 | V/ μs |
| (dI/dt) _c | (dV/dt) _c =20V/ μs $T_j=125^{\circ}\text{C}$ | | MIN. | 25 | A/ms |
| 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 | |

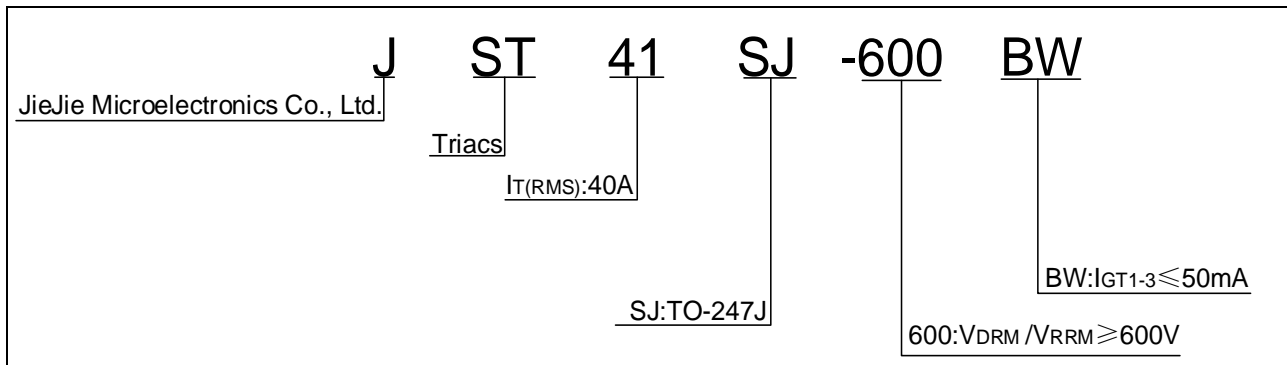
STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|-----------|---|---------------------------|-------------|---------------|
| V_{TM} | $I_{TM}=60\text{A } t_p=380\mu\text{s}$ | $T_j=25^{\circ}\text{C}$ | 1.4 | V |
| V_{TO} | Threshold voltage | $T_j=125^{\circ}\text{C}$ | 0.73 | V |
| R_D | Dynamic resistance | $T_j=125^{\circ}\text{C}$ | 10 | m Ω |
| I_{DRM} | $V_D=V_{DRM} V_R=V_{RRM}$ | $T_j=25^{\circ}\text{C}$ | 5 | μA |
| I_{RRM} | | $T_j=125^{\circ}\text{C}$ | 3 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|--------------------------|-------|----------------------|
| $R_{th(j-c)}$ | junction to case (AC) | 0.75 | $^{\circ}\text{C/W}$ |
| $R_{th(j-a)}$ | junction to ambient (AC) | 50 | $^{\circ}\text{C/W}$ |

ORDERING INFORMATION



MARKING

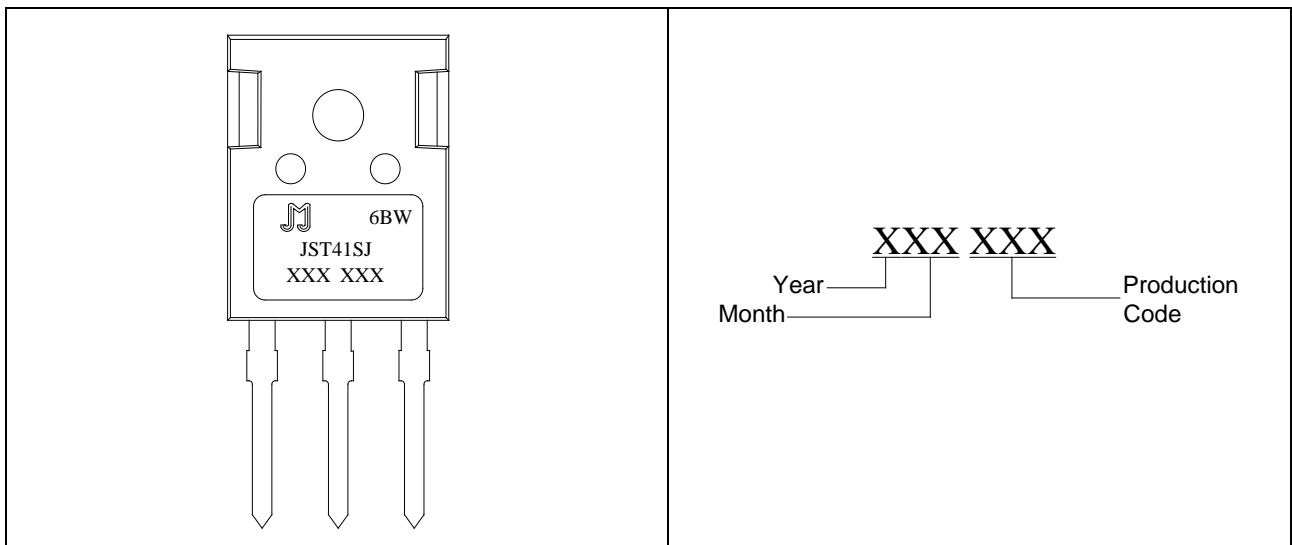


FIG.1 Maximum power dissipation versus RMS on-state current

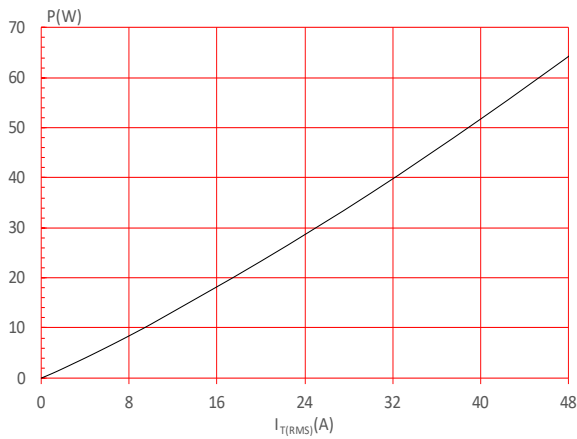


FIG.2: RMS on-state current versus case temperature

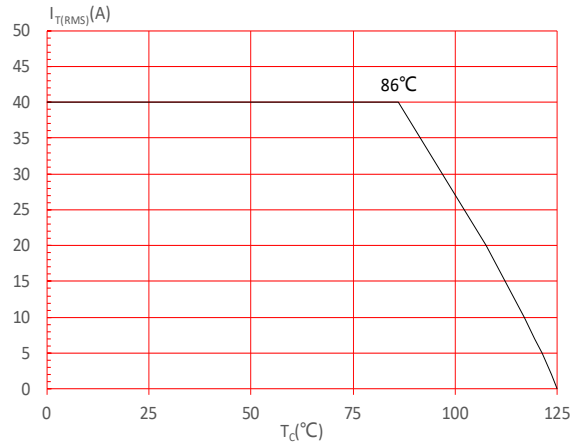


FIG.3: Surge peak on-state current versus number of cycles

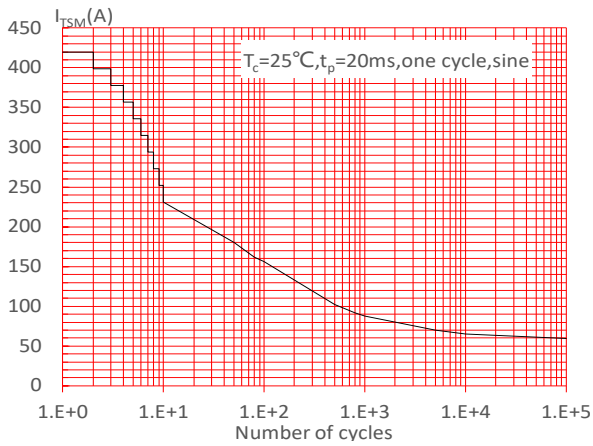


FIG.4: On-state characteristics

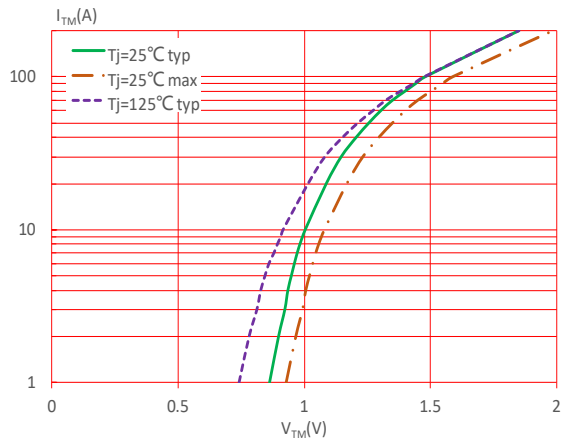


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($di/dt < 100\text{A}/\mu\text{s}$)

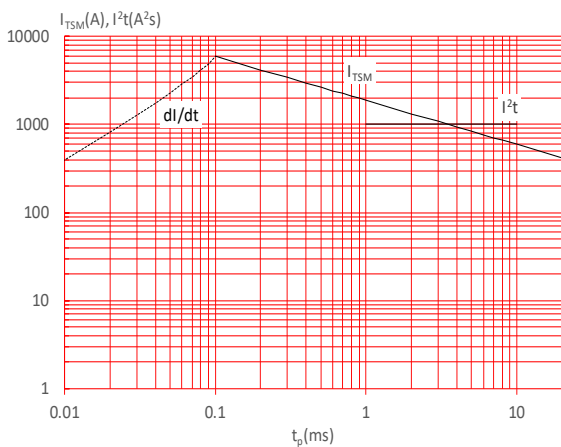


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

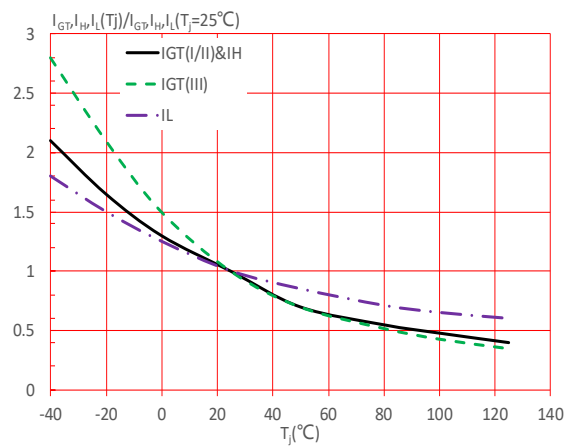
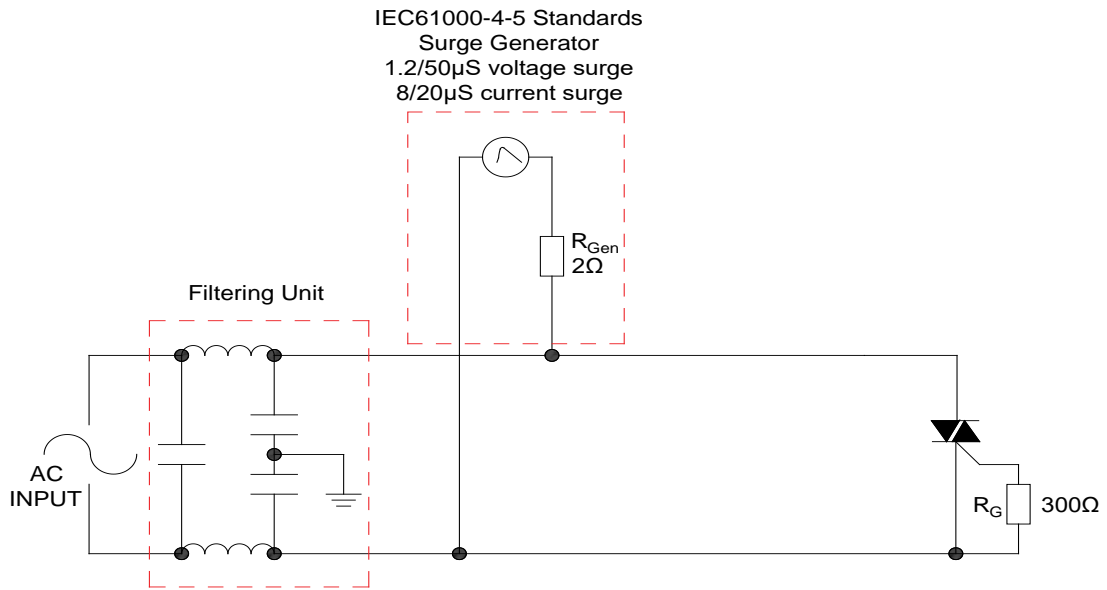


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



LEAD FORMING AND SOLDERING

Refer to the application note “Assembly Instructions for Power Discretes in Through-hole Packages” released by JieJie Microelectronics

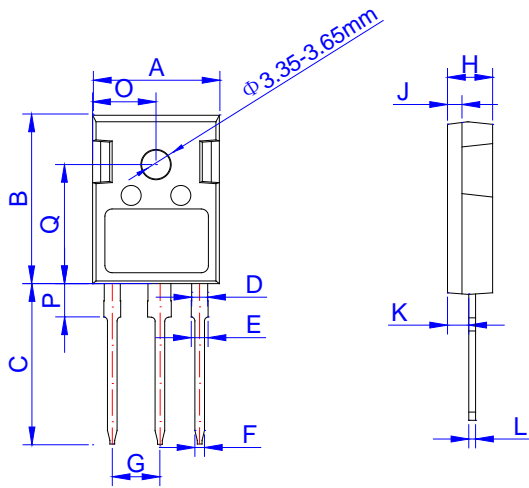
ORDERING INFORMATION

| Order code | Voltage $V_{DRM}/V_{RRM}(V)$ | IGT(mA) | Package | Base qty. (pcs) | Delivery mode |
|---------------|---------------------------------|--------------|---------|--------------------|---------------|
| | | I - II - III | | | |
| JST41SJ-600BW | 600 | 50 | TO-247J | 30 | Tube |

Document Revision History

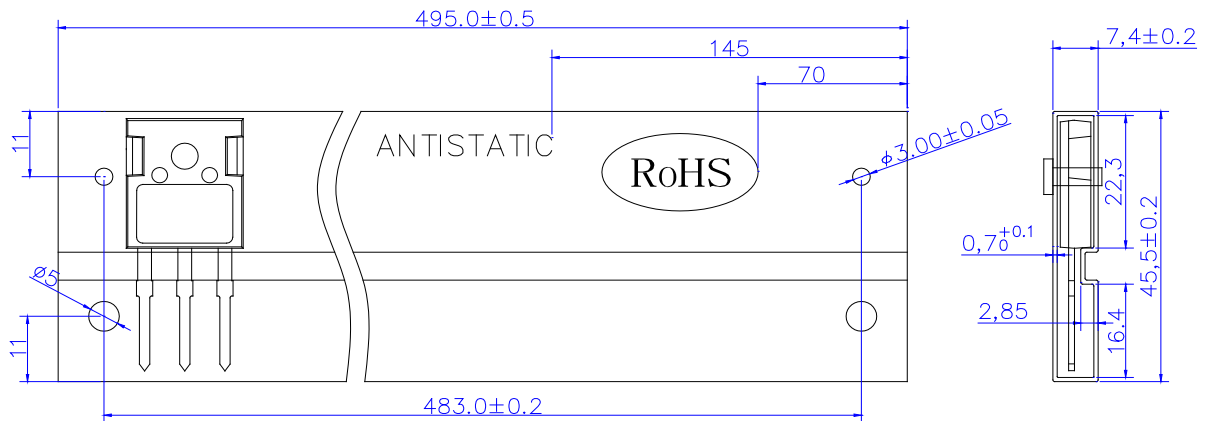
| Date | Revision | Changes |
|--------------|----------|--------------|
| Apr.11, 2023 | A.1.0 | Last updated |

PACKAGE MECHANICAL DATA



| Ref. | Dimensions | | | | | |
|------|-------------|-------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 15.50 | 15.80 | 16.10 | 0.610 | 0.622 | 0.634 |
| B | 20.80 | 21.00 | 21.20 | 0.819 | 0.827 | 0.835 |
| C | 19.70 | 20.00 | 20.30 | 0.776 | 0.787 | 0.799 |
| D | 1.80 | 2.00 | 2.20 | 0.071 | 0.079 | 0.087 |
| E | 1.90 | 2.10 | 2.30 | 0.075 | 0.083 | 0.091 |
| F | 1.00 | 1.20 | 1.40 | 0.039 | 0.047 | 0.055 |
| G | | 5.44 | | | 0.214 | |
| H | 4.80 | 5.00 | 5.20 | 0.189 | 0.197 | 0.205 |
| J | 1.90 | 2.00 | 2.10 | 0.075 | 0.079 | 0.083 |
| K | 2.20 | 2.35 | 2.50 | 0.087 | 0.093 | 0.098 |
| L | 0.41 | 0.60 | 0.79 | 0.016 | 0.024 | 0.031 |
| O | | 7.90 | | | 0.312 | |
| P | 4.05 | 4.15 | 4.25 | 0.016 | 0.024 | 0.031 |
| Q | | 14.85 | | | 0.587 | |

DELIVERY MODE



| PACKAGE | OUTLINE | TUBE (PCS) | INNER BOX (PCS) | PER CARTON |
|---------|---------|------------|-----------------|------------|
| TO-247J | TUBE | 30 | 450 | 2,250 |

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