

**JST80CS-1200BW 80A TRIAC**

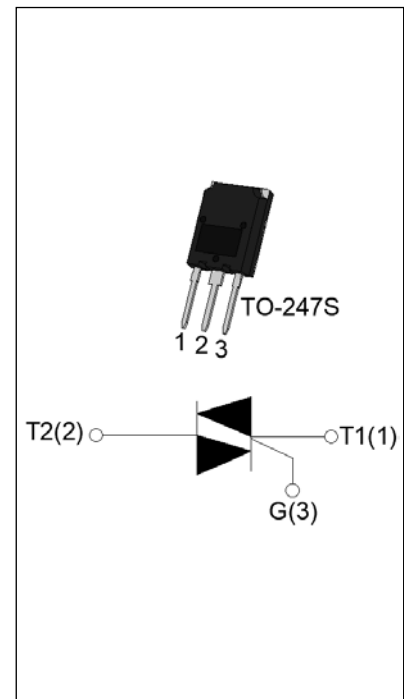
Rev.A.1.0

**DESCRIPTION:**

The JST80CS-1200BW 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. JST80CS-1200BW snubberless triac is especially recommended for use on inductive loads. Package TO-247S is RoHS compliant.

**MAIN FEATURES**

| Symbol             | Value    | Unit |
|--------------------|----------|------|
| $I_{T(RMS)}$       | 80       | A    |
| $V_{DRM}/V_{RRM}$  | 1200     | 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 ( $T_j=25^{\circ}C$ )                                              | $V_{DRM}$    | 1200    | V                |
| Repetitive peak reverse voltage ( $T_j=25^{\circ}C$ )                                                | $V_{RRM}$    | 1200    | V                |
| RMS on-state current ( $T_c \leq 86^{\circ}C$ )                                                      | $I_{T(RMS)}$ | 80      | A                |
| Non repetitive surge peak on-state current (full cycle , $t_p=20ms$ , $T_j=25^{\circ}C$ )            | $I_{TSM}$    | 800     | A                |
| Non repetitive surge peak on-state current (full cycle , $t_p=16.6ms$ , $T_j=25^{\circ}C$ )          |              | 880     |                  |
| $I^2t$ value for fusing ( $t_p=10ms$ , $T_j=25^{\circ}C$ )                                           | $I^2t$       | 3200    | A <sup>2</sup> s |
| Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ , $f=100Hz$ , $T_j=125^{\circ}C$ ) | $di/dt$      | 100     | A/ $\mu s$       |
| Peak gate current ( $t_p=20\mu s$ , $T_j=125^{\circ}C$ )                                             | $I_{GM}$     | 10      | A                |
| Average gate power dissipation ( $T_j=125^{\circ}C$ )                                                | $P_{G(AV)}$  | 0.5     | W                |
| Peak gate power                                                                                      | $P_{GM}$     | 25      | W                |

|                                                                                      |          |   |    |
|--------------------------------------------------------------------------------------|----------|---|----|
| Peak pulse voltage<br>( $T_j=25^{\circ}\text{C}$ ; 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.  | 50   | mA               |
| $V_{GT}$    |                                                                                    | I - II -III | MAX.  | 1.3  | V                |
| $V_{GD}$    | $V_D=V_{DRM}$ $T_j=125^{\circ}\text{C}$<br>$R_L=3.3\text{K}\Omega$                 | I - II -III | MIN.  | 0.2  | V                |
| $I_L$       | $I_G=1.2I_{GT}$                                                                    | I -III      | MAX.  | 80   | mA               |
|             |                                                                                    | II          |       | 120  |                  |
| $I_H$       | $I_T=1\text{A}$                                                                    |             | MAX.  | 70   | mA               |
| $dV/dt$     | $V_D=800\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$                              |             | MIN.  | 2000 | V/ $\mu\text{s}$ |
| $(dI/dt)_c$ | $(dV/dt)_c=20\text{V}/\mu\text{s}$ $T_j=125^{\circ}\text{C}$                       |             | MIN.  | 25   | A/ms             |
| $t_{on}$    | $I_G=80\text{mA}$ $I_A=400\text{mA}$ $I_R=40\text{mA}$<br>$T_j=25^{\circ}\text{C}$ |             | TYP.  | 8    | $\mu\text{s}$    |
| $t_{off}$   |                                                                                    |             |       | 60   |                  |

**STATIC CHARACTERISTICS**

| Symbol    | Parameter                                 |                           | Value(MAX.) | Unit             |
|-----------|-------------------------------------------|---------------------------|-------------|------------------|
| $V_{TM}$  | $I_{TM}=120\text{A}$ $t_p=380\mu\text{s}$ | $T_j=25^{\circ}\text{C}$  | 1.9         | V                |
| $V_{TO}$  | Threshold voltage                         | $T_j=125^{\circ}\text{C}$ | 0.71        | V                |
| $R_D$     | Dynamic resistance                        | $T_j=125^{\circ}\text{C}$ | 23          | $\text{m}\Omega$ |
| $I_{DRM}$ | $V_D=V_{DRM}$ $V_R=V_{RRM}$               | $T_j=25^{\circ}\text{C}$  | 15          | $\mu\text{A}$    |
| $I_{RRM}$ |                                           | $T_j=125^{\circ}\text{C}$ | 10          | mA               |

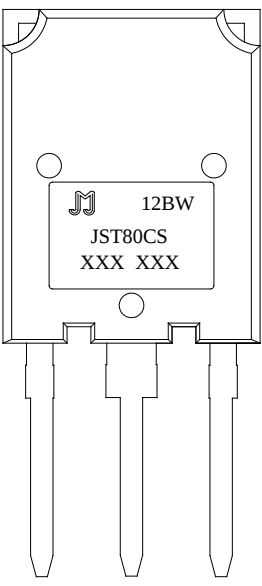
**THERMAL RESISTANCES**

| Symbol        | Parameter                | Value | Unit                        |
|---------------|--------------------------|-------|-----------------------------|
| $R_{th(j-c)}$ | junction to case (AC)    | 0.3   | $^{\circ}\text{C}/\text{W}$ |
| $R_{th(j-a)}$ | junction to ambient (AC) | 45    | $^{\circ}\text{C}/\text{W}$ |

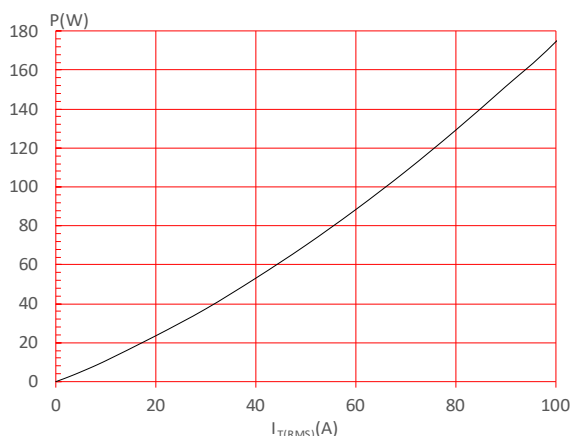
ORDERING INFORMATION

|                                   |        |                |              |                                   |                          |
|-----------------------------------|--------|----------------|--------------|-----------------------------------|--------------------------|
| J                                 | ST     | 80             | CS           | -1200                             | BW                       |
| JieJie Microelectronics Co., Ltd. | Triacs | $I_T(RMS):80A$ |              |                                   |                          |
|                                   |        |                | $CS:TO-247S$ |                                   |                          |
|                                   |        |                |              |                                   | $BW:I_{GT1-3} \leq 50mA$ |
|                                   |        |                |              | $1200:V_{DRM}/V_{RRM} \geq 1200V$ |                          |

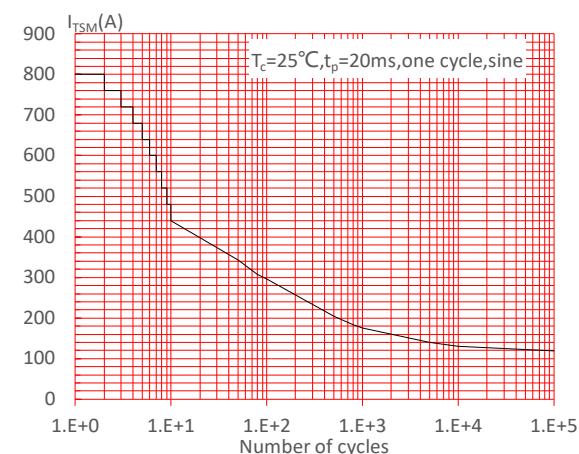
MARKING

|                                                                                     |                                                             |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------|
|  | <p>XXX XXX</p> <p>Year<br/>Month</p> <p>Production Code</p> |
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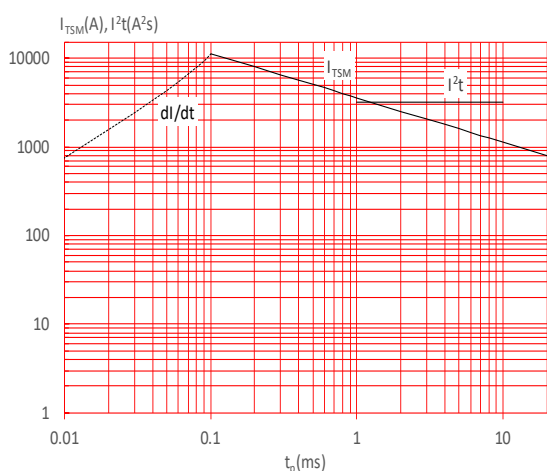
**FIG.1:** Maximum power dissipation versus RMS on-state current



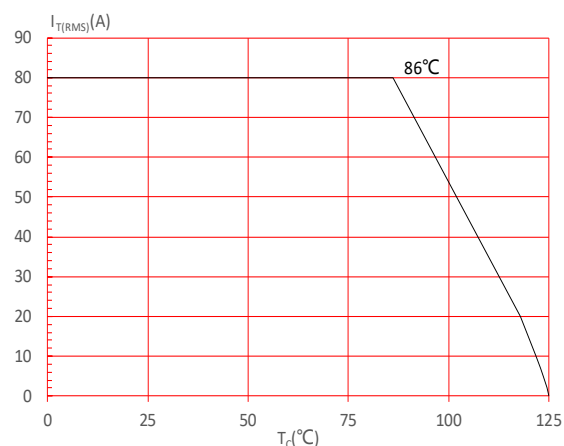
**FIG.3:** Surge peak on-state current versus number of cycles



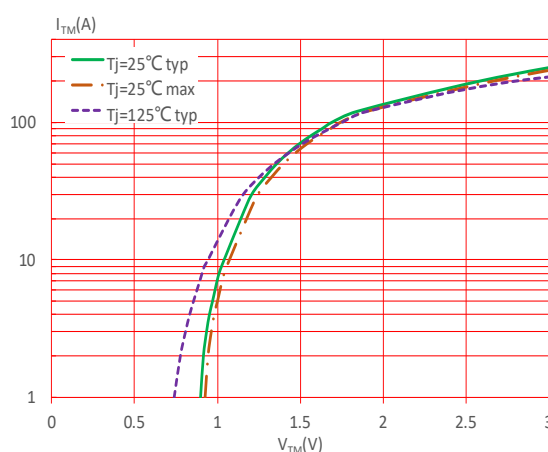
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$ , and corresponding value of  $I^2t$  ( $di/dt < 100\text{A}/\mu\text{s}$ )



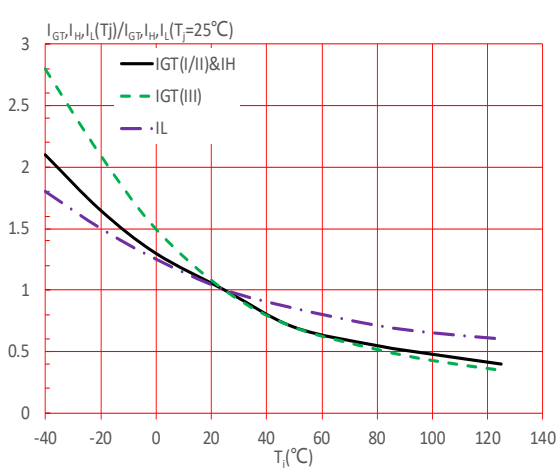
**FIG.2:** RMS on-state current versus case temperature

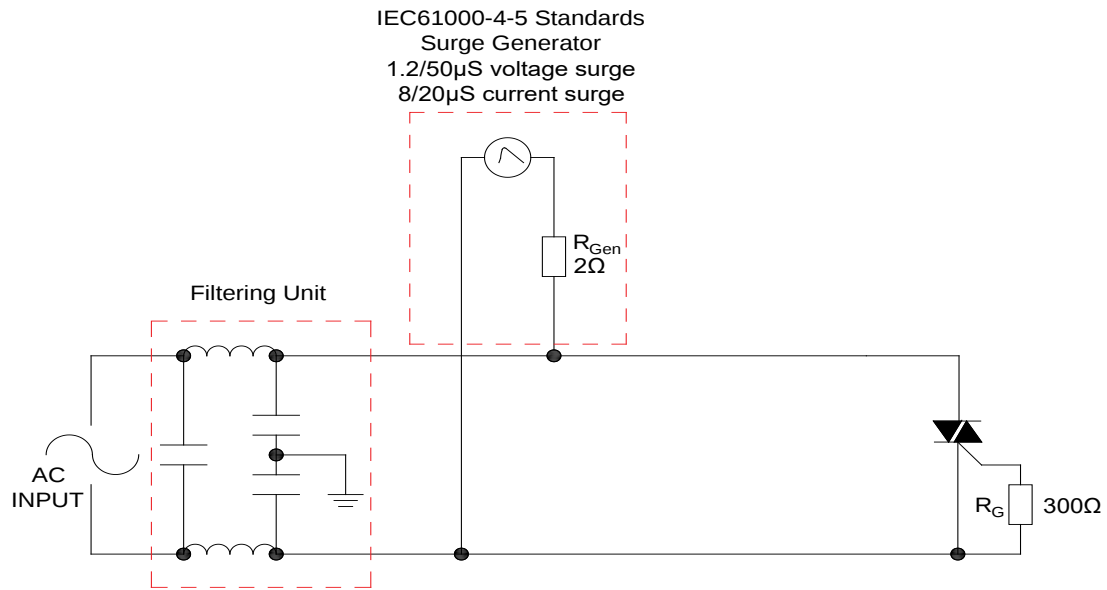


**FIG.4:** On-state characteristic



**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

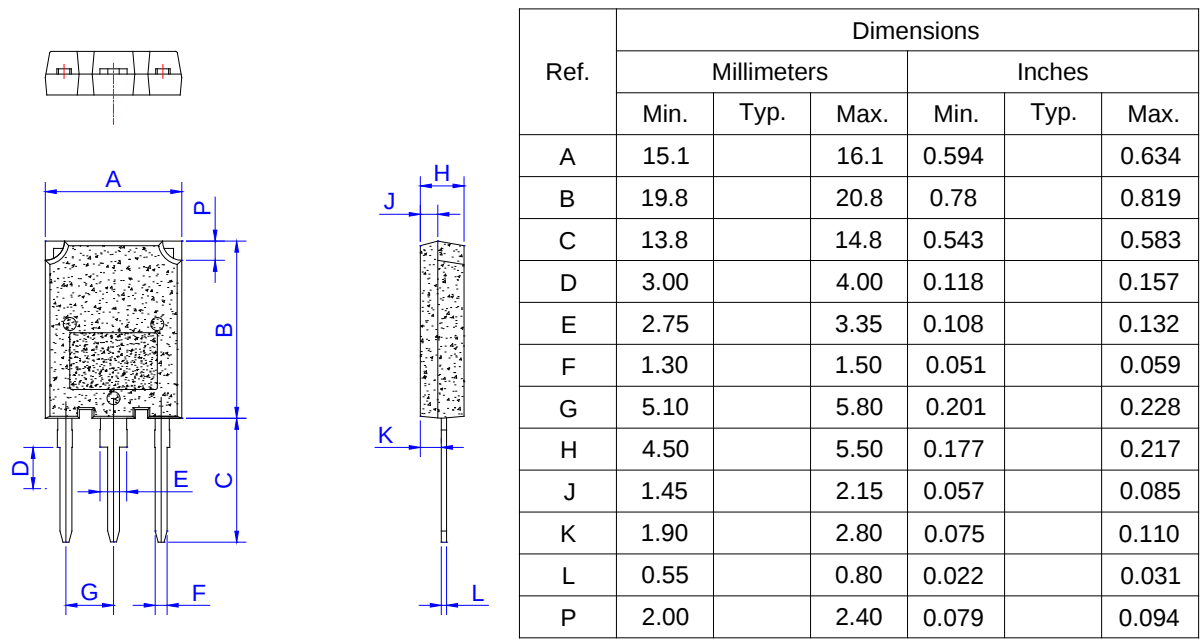
## ORDERING INFORMATION

| Order code     | Voltage<br>$V_{\text{DRM}}/V_{\text{RRM}}(\text{V})$ | IGT(mA)      | Package | Base qty.<br>(pcs) | Delivery<br>mode |
|----------------|------------------------------------------------------|--------------|---------|--------------------|------------------|
|                |                                                      | I - II - III |         |                    |                  |
| JST80CS-1200BW | 1200                                                 | 50           | TO-247S | 30                 | Tube             |

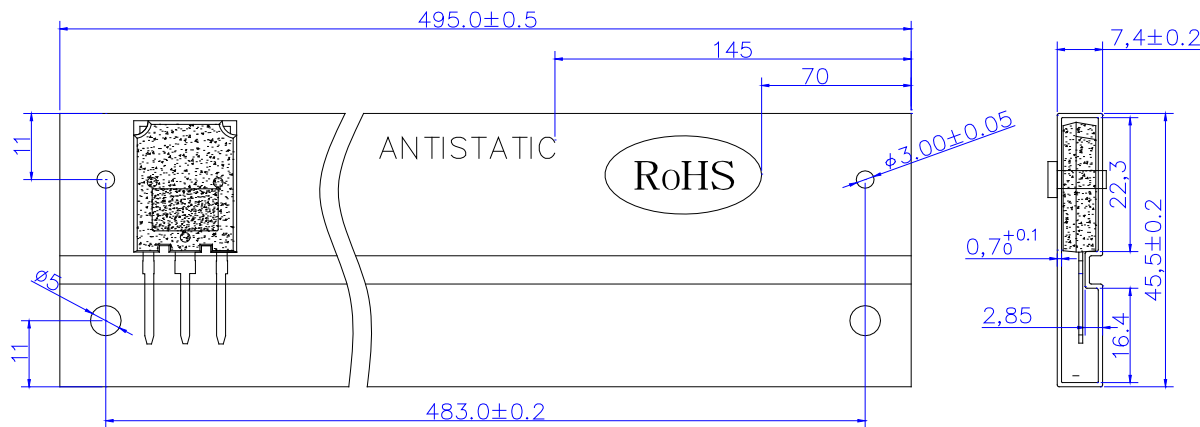
## Document Revision History

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

PACKAGE MECHANICAL DATA



DELIVERY MODE



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

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