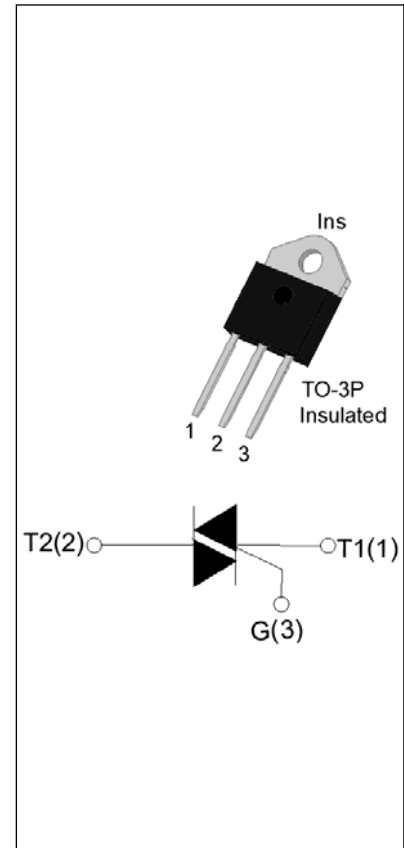


## JST41Z-1200GW 40A TRIAC

Rev.A.1.1

### DESCRIPTION:

The JST41Z-1200GW 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. JST41Z-1200GW snubberless triac is especially recommended for use on inductive loads. By using an internal ceramic pad, JST41Z-1200GW provides a rated insulation voltage of 2500 VRMS, complying with UL standards (File ref: E252906). Package TO-3P is RoHS compliant.



### MAIN FEATURES

| Symbol             | Value    | Unit |
|--------------------|----------|------|
| $I_{T(RMS)}$       | 40       | A    |
| $V_{DRM}/V_{RRM}$  | 1200     | V    |
| $I_{GT\ I/II/III}$ | 70/70/70 | 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 ( $T_j=25^\circ\text{C}$ )                                                     | $V_{DRM}$    | 1200    | V                      |
| Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )                                                       | $V_{RRM}$    | 1200    | V                      |
| RMS on-state current ( $T_c \leq 81^\circ\text{C}$ )                                                             | $I_{T(RMS)}$ | 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    | $\text{A}^2\text{s}$   |
| 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 ( $T_j=125^{\circ}\text{C}$ )                         | $P_{G(AV)}$ | 0.5 | W  |
| Peak gate power                                                                      | $P_{GM}$    | 40  | W  |
| Peak pulse voltage<br>( $T_j=25^{\circ}\text{C}$ ; 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.  | 70   | 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.  | 100  | mA               |
|             |                                                                                    | II          |       | 280  |                  |
| $I_H$       | $I_T=500\text{mA}$                                                                 |             | MAX.  | 140  | mA               |
| $dV/dt$     | $V_D=800\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$                              |             | MIN.  | 2500 | V/ $\mu\text{s}$ |
| $(dI/dt)_c$ | $(dV/dt)_c=20\text{V}/\mu\text{s}$ $T_j=125^{\circ}\text{C}$                       |             | MIN.  | 28   | 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.  | 10   | $\mu\text{s}$    |
| $t_{off}$   |                                                                                    |             |       | 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          | $\text{m}\Omega$ |
| $I_{DRM}$ | $V_D=V_{DRM}$ $V_R=V_{RRM}$              | $T_j=25^{\circ}\text{C}$  | 5           | $\mu\text{A}$    |
| $I_{RRM}$ |                                          | $T_j=125^{\circ}\text{C}$ | 5           | mA               |

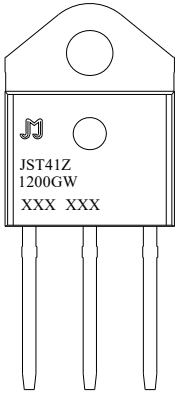
**THERMAL RESISTANCES**

| Symbol        | Parameter                | Value | Unit                        |
|---------------|--------------------------|-------|-----------------------------|
| $R_{th(j-c)}$ | junction to case (AC)    | 0.85  | $^{\circ}\text{C}/\text{W}$ |
| $R_{th(j-a)}$ | junction to ambient (AC) | 50    | $^{\circ}\text{C}/\text{W}$ |

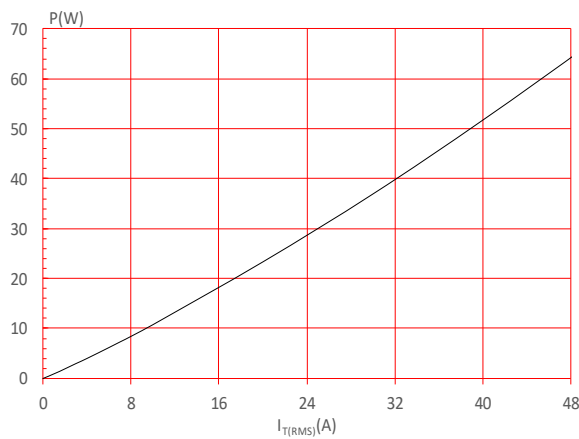
ORDERING INFORMATION

|                                   |           |                     |          |                                                    |                       |
|-----------------------------------|-----------|---------------------|----------|----------------------------------------------------|-----------------------|
| <u>J</u>                          | <u>ST</u> | <u>41</u>           | <u>Z</u> | <u>-1200</u>                                       | <u>GW</u>             |
| JieJie Microelectronics Co., Ltd. | Triacs    | $I_{T(RMS)}:40A$    |          |                                                    |                       |
|                                   |           | <u>Z:TO-3P(Ins)</u> |          |                                                    | <u>BW:IGT1-3≤70mA</u> |
|                                   |           |                     |          | <u>1200:V<sub>DRM</sub> /V<sub>RRM</sub>≥1200V</u> |                       |

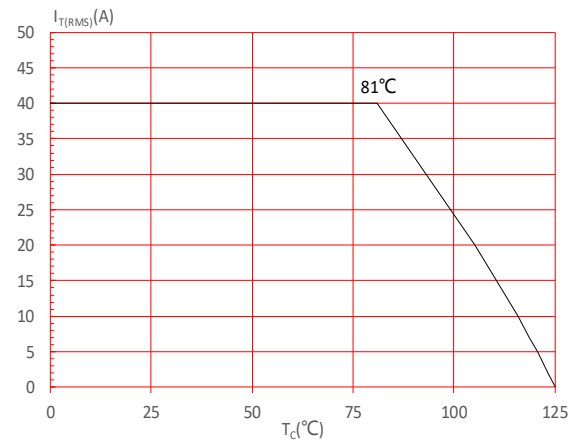
MARKING

|                                                                                     |                                                                                 |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|  | <p><u>XXX</u> <u>XXX</u></p> <p>Year———<br/>Month———</p> <p>Production Code</p> |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|

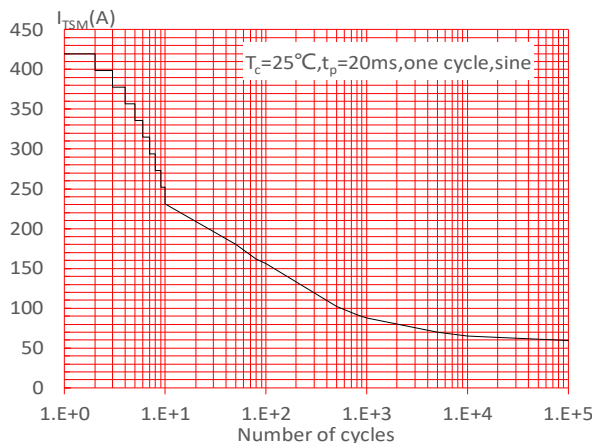
**FIG.1:** Maximum power dissipation versus RMS on-state current



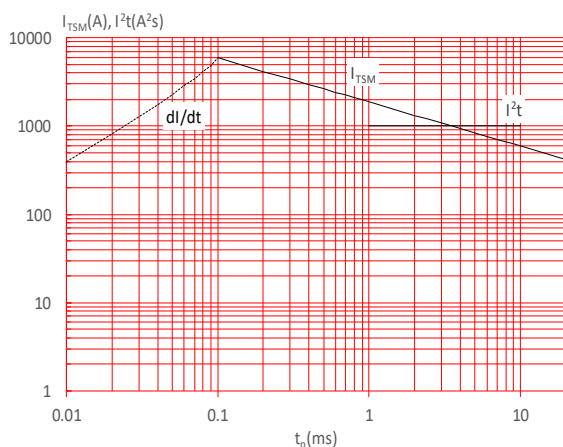
**FIG.2:** RMS on-state current versus case temperature



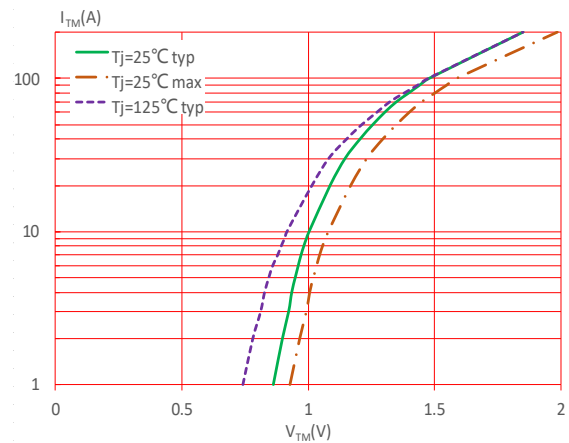
**FIG.3:** Surge peak on-state current versus number of cycles



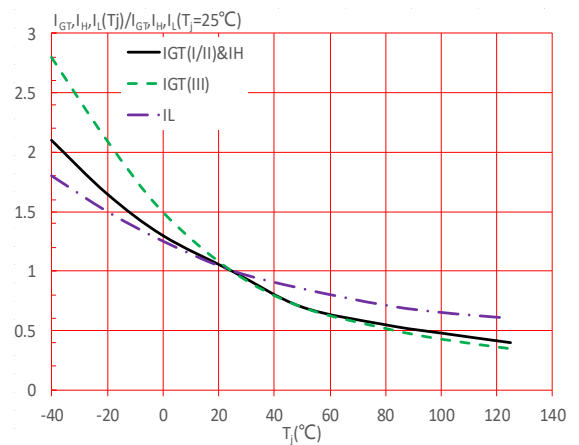
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$ , and corresponding value of  $I^2t$  ( $dI/dt < 100\text{A}/\mu\text{s}$ )

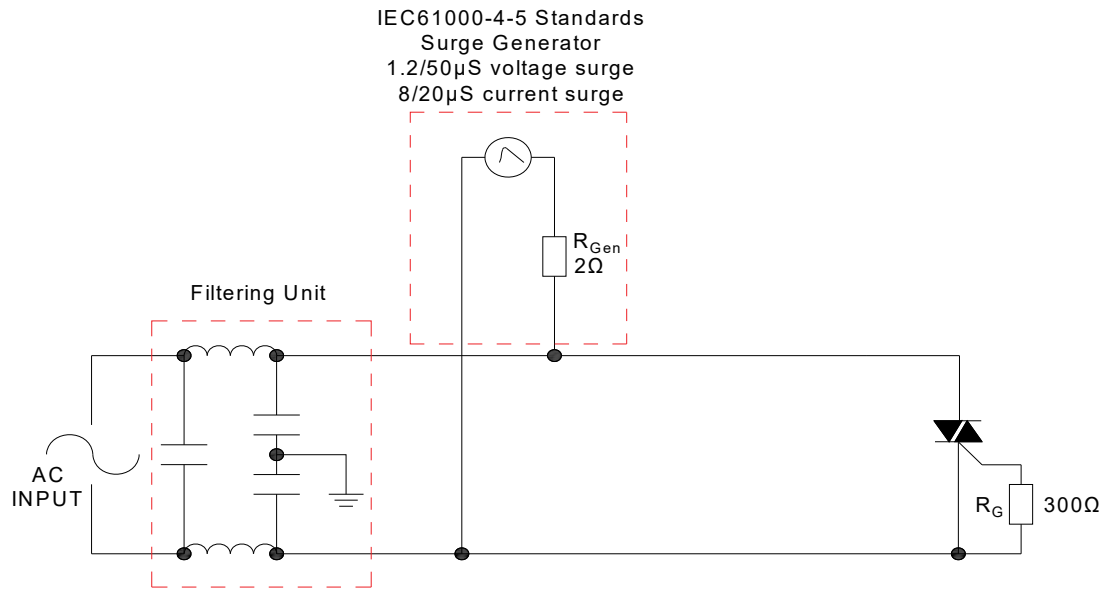


**FIG.4:** On-state characteristics



**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**

## LEAD FORMING AND SOLDERING

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

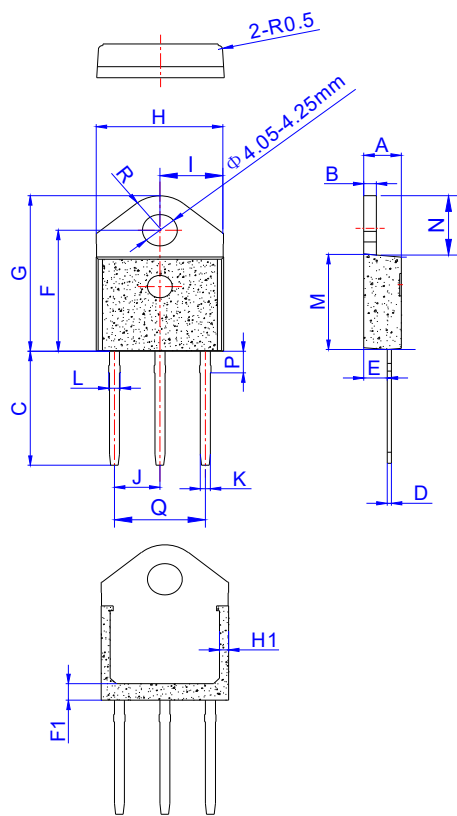
**ORDERING INFORMATION**

| Order code    | Voltage<br>$V_{\text{DRM}}/V_{\text{RRM}}$ (V) | IGT(mA)      | Package    | Base qty.<br>(pcs) | Delivery<br>mode |
|---------------|------------------------------------------------|--------------|------------|--------------------|------------------|
|               |                                                | I - II - III |            |                    |                  |
| JST41Z-1200GW | 1200                                           | 70           | TO-3P(Ins) | 30                 | Tube             |

**Document Revision History**

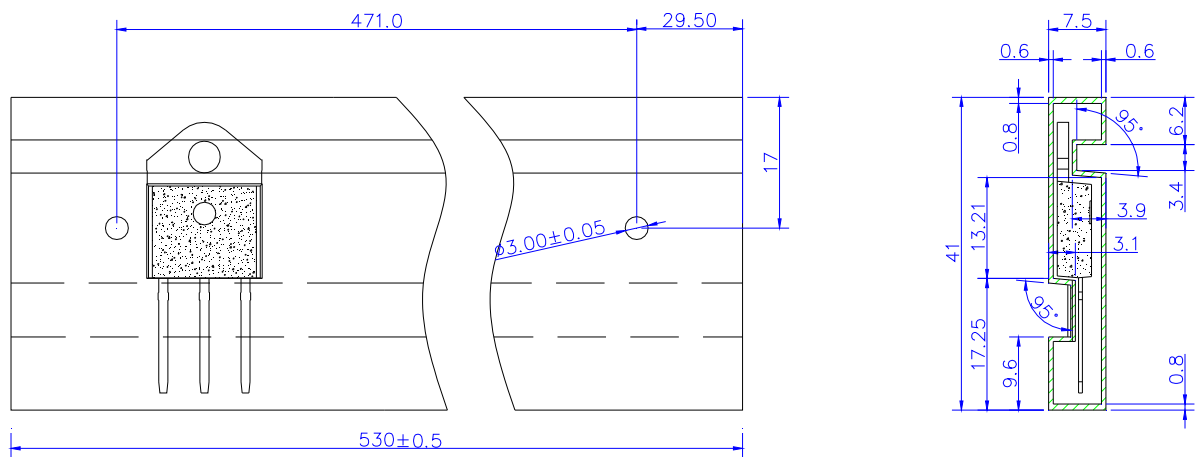
| Date         | Revision | Changes                        |
|--------------|----------|--------------------------------|
| Apr.11, 2025 | A.1.0    | Last updated                   |
| Oct.16, 2025 | A.1.1    | Revise PACKAGE MECHANICAL DATA |

PACKAGE MECHANICAL DATA



| Ref. | Dimensions  |      |       |        |       |       |
|------|-------------|------|-------|--------|-------|-------|
|      | Millimeters |      |       | Inches |       |       |
|      | Min.        | Typ. | Max.  | Min.   | Typ.  | Max.  |
| A    | 4.40        |      | 4.60  | 0.173  |       | 0.181 |
| B    | 1.45        |      | 1.55  | 0.057  |       | 0.061 |
| C    | 14.35       |      | 15.60 | 0.565  |       | 0.614 |
| D    | 0.50        |      | 0.70  | 0.020  |       | 0.028 |
| E    | 2.70        |      | 2.90  | 0.106  |       | 0.114 |
| F    | 15.80       |      | 16.50 | 0.622  |       | 0.650 |
| F1   | 2.45        |      | 2.85  | 0.096  |       | 0.112 |
| G    | 20.40       |      | 21.10 | 0.803  |       | 0.831 |
| H    | 15.10       |      | 15.50 | 0.594  |       | 0.610 |
| H1   | 1.10        |      | 1.50  | 0.043  |       | 0.059 |
| I    | 7.25        |      | 7.65  | 0.285  |       | 0.301 |
| J    | 5.40        |      | 5.65  | 0.213  |       | 0.222 |
| K    | 1.10        |      | 1.40  | 0.043  |       | 0.055 |
| L    | 1.25        |      | 1.45  | 0.049  |       | 0.057 |
| M    | 12.37       |      | 12.77 | 0.487  |       | 0.503 |
| N    | 7.80        |      | 8.20  | 0.307  |       | 0.323 |
| P    | 2.80        |      | 3.00  | 0.110  |       | 0.118 |
| Q    | 10.70       |      | 11.10 | 0.421  |       | 0.437 |
| R    |             | 4.35 |       |        | 0.171 |       |

DELIVERY MODE



| PACKAGE | OUTLINE | TUBE (PCS) | INNER BOX (PCS) | PER CARTON |
|---------|---------|------------|-----------------|------------|
| TO-3P   | TUBE    | 30         | 450             | 2,250      |

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