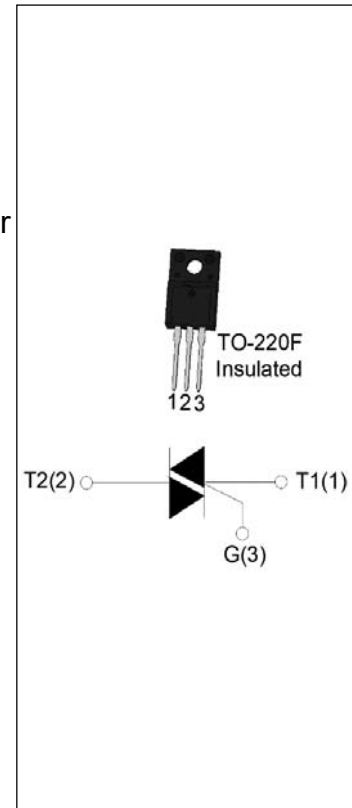


## JST16F-1000CW 16A TRIAC

Rev.A.1.1

### DESCRIPTION:

The JST16F-1000CW 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. JST16F-1000CW snubberless triac is especially recommended for use on inductive loads. By using an external plastic package, JST16F-1000CW provides a rated insulation voltage of 2000 VRMS, complying with UL standards (File ref: E252906). Package TO-220F is RoHS compliant.



### MAIN FEATURES

| Symbol             | Value    | Unit |
|--------------------|----------|------|
| $I_{T(RMS)}$       | 16       | A    |
| $V_{DRM}/V_{RRM}$  | 1000     | V    |
| $I_{GT\ I/II/III}$ | 35/35/35 | 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 ( $T_j=25^\circ\text{C}$ )                                                     | $V_{DRM}$    | 1000    | V                      |
| Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )                                                       | $V_{RRM}$    | 1000    | V                      |
| RMS on-state current ( $T_c \leq 73^\circ\text{C}$ )                                                             | $I_{T(RMS)}$ | 16      | A                      |
| Non repetitive surge peak on-state current (full cycle , $t_p=20\text{ms}$ , $T_j=25^\circ\text{C}$ )            | $I_{TSM}$    | 160     | A                      |
| Non repetitive surge peak on-state current (full cycle , $t_p=16.6\text{ms}$ , $T_j=25^\circ\text{C}$ )          |              | 176     |                        |
| $I^2t$ value for fusing ( $t_p=10\text{ms}$ , $T_j=25^\circ\text{C}$ )                                           | $I^2t$       | 128     | $\text{A}^2\text{s}$   |
| 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 ( $t_p=20\mu\text{s}$ , $T_j=125^\circ\text{C}$ )                                              | $I_{GM}$     | 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<br>( $T_j=25^{\circ}\text{C}$ ; non-repetitive, off-state; FIG.7) | $V_{pp}$ | 4  | 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.  | 35  | mA               |
| $V_{GT}$    |                                                                                    | I - II -III | MAX.  | 1   | 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.  | 50  | mA               |
|             |                                                                                    | II          |       | 60  |                  |
| $I_H$       | $I_T=500\text{mA}$                                                                 |             | MAX.  | 40  | mA               |
| $dV/dt$     | $V_D=670\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$                              |             | MIN.  | 800 | V/ $\mu\text{s}$ |
| $(dI/dt)_c$ | $(dV/dt)_c=20\text{V}/\mu\text{s}$ $T_j=125^{\circ}\text{C}$                       |             | MIN.  | 10  | A/ms             |
| $t_{on}$    | $I_G=40\text{mA}$ $I_A=200\text{mA}$ $I_R=20\text{mA}$<br>$T_j=25^{\circ}\text{C}$ |             | TYP.  | 7   | $\mu\text{s}$    |
| $t_{off}$   |                                                                                    |             |       | 50  |                  |

**STATIC CHARACTERISTICS**

| Symbol    | Parameter                                  |                           | Value(MAX.) | Unit          |
|-----------|--------------------------------------------|---------------------------|-------------|---------------|
| $V_{TM}$  | $I_{TM}=22.5\text{A}$ $t_p=380\mu\text{s}$ | $T_j=25^{\circ}\text{C}$  | 1.5         | V             |
| $V_{TO}$  | Threshold voltage                          | $T_j=125^{\circ}\text{C}$ | 0.77        | V             |
| $R_D$     | Dynamic resistance                         | $T_j=125^{\circ}\text{C}$ | 30          | m $\Omega$    |
| $I_{DRM}$ | $V_D=V_{DRM}$ $V_R=V_{RRM}$                | $T_j=25^{\circ}\text{C}$  | 10          | $\mu\text{A}$ |
| $I_{RRM}$ |                                            | $T_j=125^{\circ}\text{C}$ | 1           | mA            |

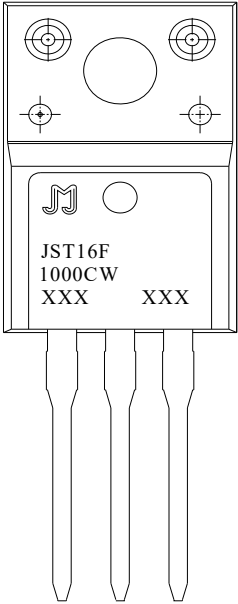
**THERMAL RESISTANCES**

| Symbol        | Parameter                | Value | Unit                        |
|---------------|--------------------------|-------|-----------------------------|
| $R_{th(j-c)}$ | junction to case (AC)    | 2.3   | $^{\circ}\text{C}/\text{W}$ |
| $R_{th(j-a)}$ | junction to ambient (AC) | 60    | $^{\circ}\text{C}/\text{W}$ |

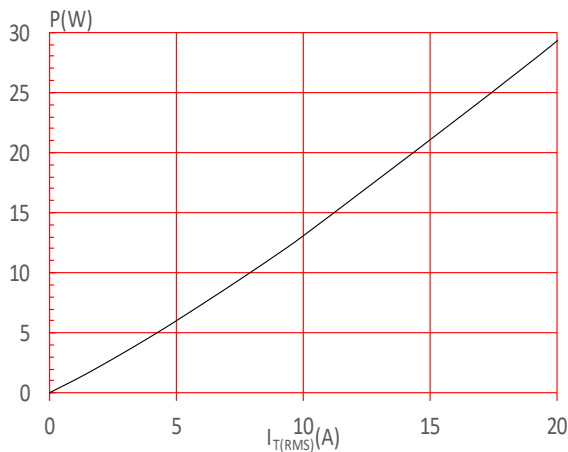
ORDERING INFORMATION

|                                   |           |                   |          |                                      |                           |
|-----------------------------------|-----------|-------------------|----------|--------------------------------------|---------------------------|
| <u>J</u>                          | <u>ST</u> | <u>16</u>         | <u>F</u> | <u>-1000</u>                         | <u>CW</u>                 |
| JieJie Microelectronics Co., Ltd. | Triacs    | $I_{T(RMS)}: 16A$ |          |                                      |                           |
|                                   |           | $F: TO-220F(Ins)$ |          |                                      | $CW: I_{GT1-3} \leq 35mA$ |
|                                   |           |                   |          | $1000: V_{DRM} / V_{RRM} \geq 1000V$ |                           |

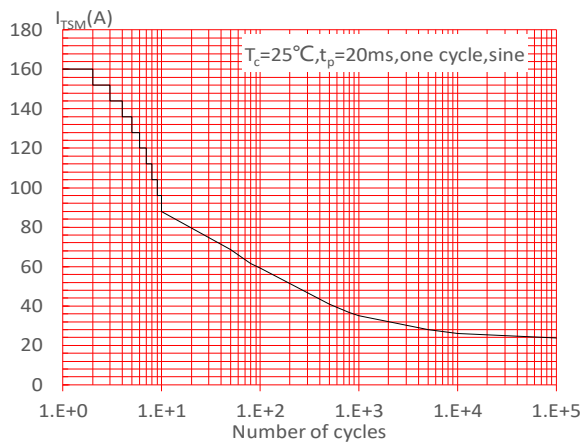
MARKING

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

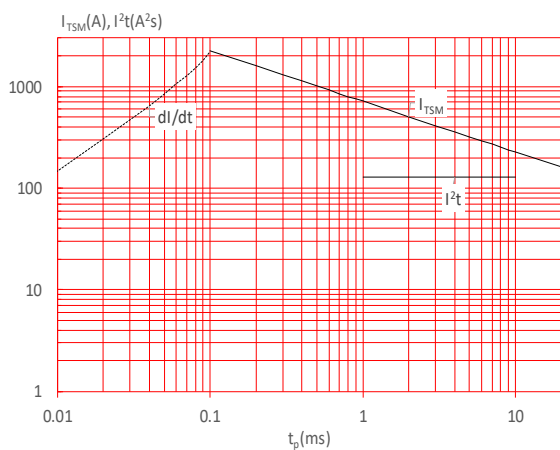
**FIG.1:** Maximum power dissipation versus RMS on-state current



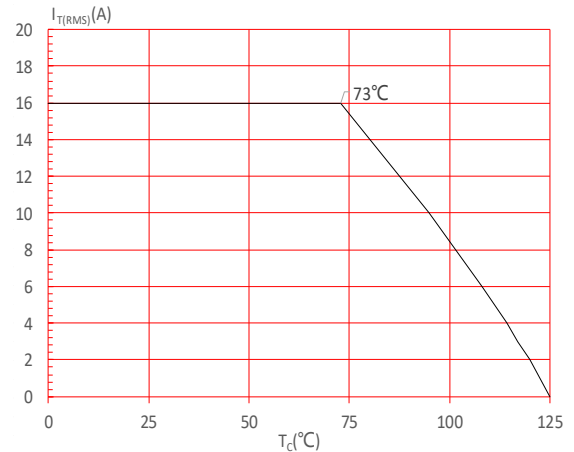
**FIG.3:** Surge peak on-state current versus number of cycles



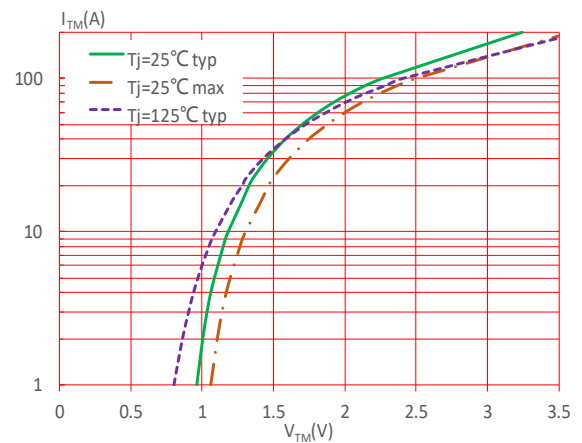
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$ , and corresponding value of  $I^2t$  ( $dI/dt < 100\text{A}/\mu\text{s}$ )



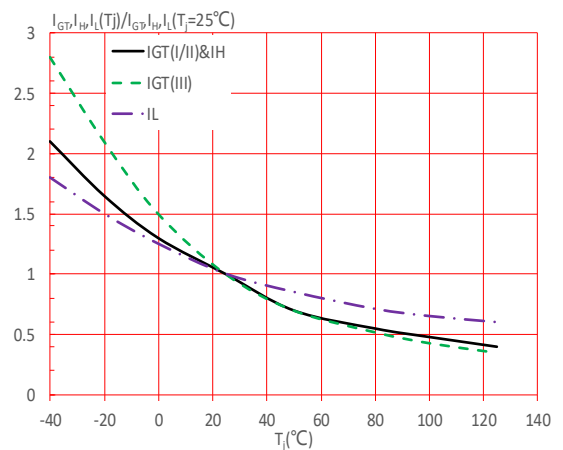
**FIG.2:** RMS on-state current versus case temperature

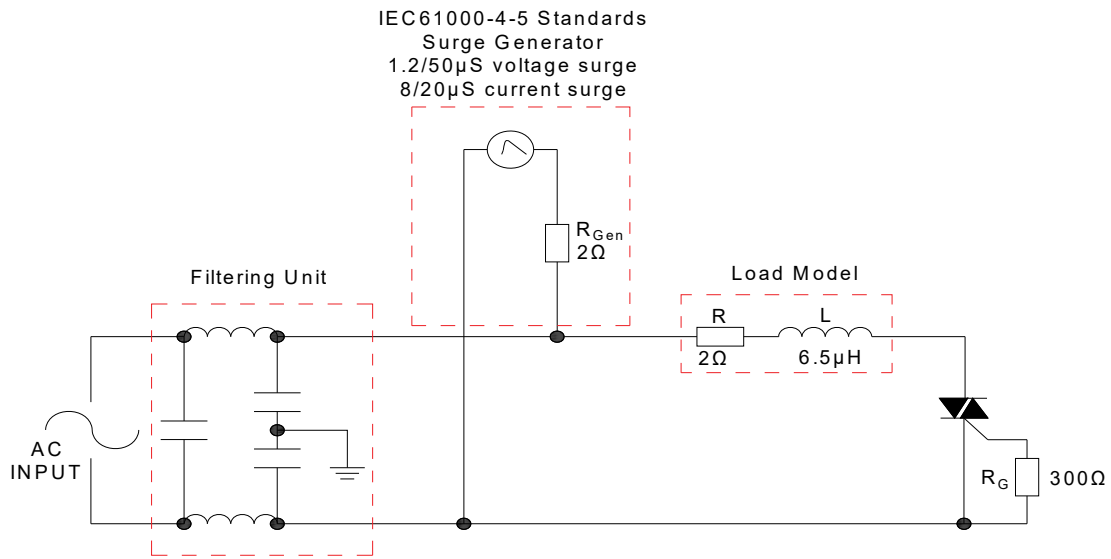


**FIG.4:** On-state characteristics



**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 <sub>DRM</sub> /V <sub>RRM</sub> (V) | IGT(mA)      | Package      | Base qty.<br>(pcs) | Delivery<br>mode |
|---------------|---------------------------------------------------|--------------|--------------|--------------------|------------------|
|               |                                                   | I - II - III |              |                    |                  |
| JST16F-1000CW | 1000                                              | 35           | TO-220F(Ins) | 50                 | Tube             |

**Document Revision History**

| Date         | Revision | Changes                        |
|--------------|----------|--------------------------------|
| May.18, 2023 | A.1.0    | Last updated                   |
| Oct.13, 2025 | A.1.1    | Revise PACKAGE MECHANICAL DATA |



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