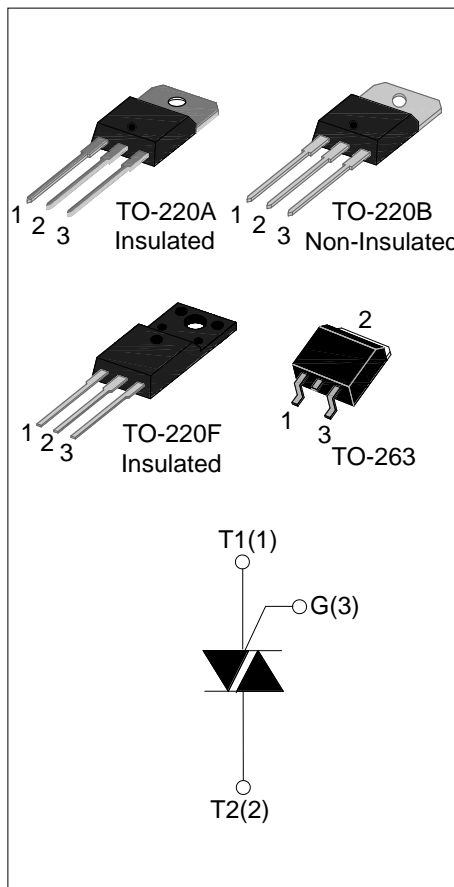




### DESCRIPTION:

JST24 series triacs, with high ability to withstand the shock loading of large current, provide high dv/dt rate with strong resistance to electromagnetic interface. With high commutation performances, 3 quadrants products especially recommended for use on inductive load.

JST24A provides insulation voltage rated at 2500V RMS and JST24F provides insulation voltage rated at 2000V RMS from all three terminals to external heatsink complying with UL standards (File ref: E252906).



### MAIN FEATURES

| Symbol            | Value                | Unit |
|-------------------|----------------------|------|
| $I_{T(RMS)}$      | 25                   | A    |
| $V_{DRM}/V_{RRM}$ | 600 and 800 and 1200 | V    |

### 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 ( $T_j=25^\circ\text{C}$ ) |  | $V_{DRM}$    | 600/800/1200    | V    |
| Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )   |  | $V_{RRM}$    | 600/800/1200    | V    |
| Non repetitive surge peak Off-state voltage                  |  | $V_{DSM}$    | $V_{DRM} + 100$ | V    |
| Non repetitive peak reverse voltage                          |  | $V_{RSM}$    | $V_{RRM} + 100$ | V    |
| RMS on-state current   | TO-220A(Ins)/<br>TO-220F(Ins) ( $T_C=75^\circ\text{C}$ ) | $I_{T(RMS)}$ | 25              | A    |
|  | TO-220B(Non-Ins)<br>( $T_C=90^\circ\text{C}$ )           |              |                 |      |
|  | TO-263 ( $T_C=100^\circ\text{C}$ )                       |              |                 |      |

|   |             |     |           |
|---|-------------|-----|-----------|
| Non repetitive surge peak on-state current (full cycle, F=50Hz)     | $I_{TSM}$   | 250 | A         |
| $I^2t$ value for fusing ( $t_p=10ms$ )                              | $I^2t$      | 340 | $A^2s$    |
| Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ ) | $di/dt$     | 50  | $A/\mu s$ |
| Peak gate current   | $I_{GM}$    | 4   | A         |
| Average gate power dissipation                                      | $P_{G(AV)}$ | 1   | W         |
| Peak gate power   | $P_{GM}$    | 10  | W         |

**ELECTRICAL CHARACTERISTICS** ( $T_j=25^\circ C$  unless otherwise specified)

$V_{DRM}/V_{RRM}$ : 600/800V

| Symbol      | Test Condition                                    | Quadrant    |     | JST24-600/800V |     | Unit      |
|-------------|---|-------------|-----|----------------|-----|-----------|
|             |   |             |     | BW             | CW  |           |
| $I_{GT}$    | $V_D=12V R_L=33\Omega$                            | I - II -III | MAX | 50             | 35  | mA        |
| $V_{GT}$    |   | I - II -III | MAX | 1.3            |     | V         |
| $V_{GD}$    | $V_D=V_{DRM} T_j=125^\circ C$<br>$R_L=3.3K\Omega$ | I - II -III | MIN | 0.2            |     | V         |
| $I_L$       | $I_G=1.2I_{GT}$                                   | I -III      | MAX | 80             | 70  | mA        |
|             |   | II          |     | 100            | 80  |           |
| $I_H$       | $I_T=100mA$                                       |             | MAX | 75             | 50  | mA        |
| $dV/dt$     | $V_D=2/3V_{DRM}$ Gate Open $T_j=125^\circ C$      |             | MIN | 1000           | 500 | $V/\mu s$ |
| $(dV/dt)_c$ | Without snubber $T_j=125^\circ C$                 |             | MIN | 22             | 13  | $V/\mu s$ |

$V_{DRM}/V_{RRM}$ : 1200V

| Symbol   | Test Condition                                    | Quadrant    |     | JST24-1200V |    | Unit |
|----------|---|-------------|-----|-------------|----|------|
|          |   |             |     | BW          | CW |      |
| $I_{GT}$ | $V_D=12V R_L=33\Omega$                            | I - II -III | MAX | 50          | 35 | mA   |
| $V_{GT}$ |   | I - II -III | MAX | 1.5         |    | V    |
| $V_{GD}$ | $V_D=V_{DRM} T_j=125^\circ C$<br>$R_L=3.3K\Omega$ | I - II -III | MIN | 0.2         |    | V    |
| $I_L$    | $I_G=1.2I_{GT}$                                   | I -III      | MAX | 90          | 70 | mA   |
|          |   | II          |     | 100         | 80 |      |
| $I_H$    | $I_T=100mA$                                       |             | MAX | 80          | 60 | mA   |

|                      |  |     |      |      |                  |
|----------------------|--|-----|------|------|------------------|
| dV/dt                | $V_D=2/3V_{DRM}$ Gate Open $T_j=125^\circ\text{C}$ | MIN | 1500 | 1000 | V/ $\mu\text{s}$ |
| (dV/dt) <sub>c</sub> | Without snubber $T_j=125^\circ\text{C}$            | MIN | 30   | 20   | V/ $\mu\text{s}$ |

## STATIC CHARACTERISTICS

| Symbol    | Parameter                                |                         | Value(MAX) | Unit          |
|-----------|--|-------------------------|------------|---------------|
| $V_{TM}$  | $I_{TM}=35\text{A}$ $t_p=380\mu\text{s}$ | $T_j=25^\circ\text{C}$  | 1.5        | V             |
| $I_{DRM}$ | $V_D=V_{DRM}$ $V_R=V_{RRM}$              | $T_j=25^\circ\text{C}$  | 5          | $\mu\text{A}$ |
| $I_{RRM}$ |  | $T_j=125^\circ\text{C}$ | 3          | mA            |

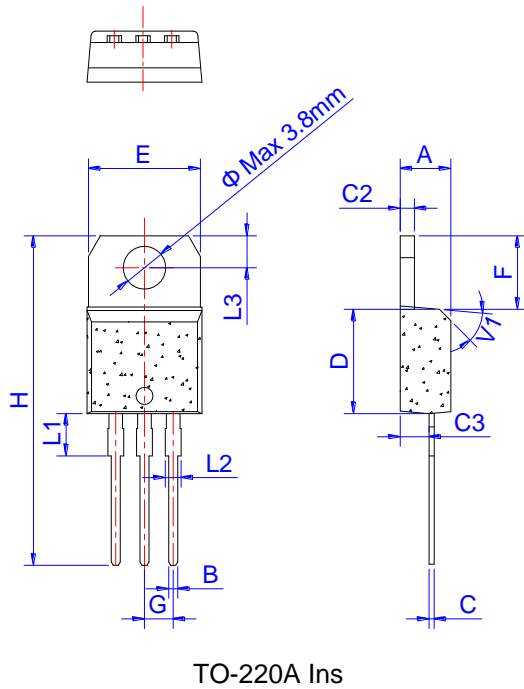
## THERMAL RESISTANCES

| Symbol        | Parameter            |                  | Value | Unit               |
|---------------|----------------------|------------------|-------|--------------------|
| $R_{th(j-c)}$ | junction to case(AC) | TO-220A(Ins)     | 3.9   | $^\circ\text{C/W}$ |
|               |                      | TO-220B(Non-Ins) | 1.2   |                    |
|               |                      | TO-220F(Ins)     | 3.3   |                    |
|               |                      | TO-263           | 0.85  |                    |

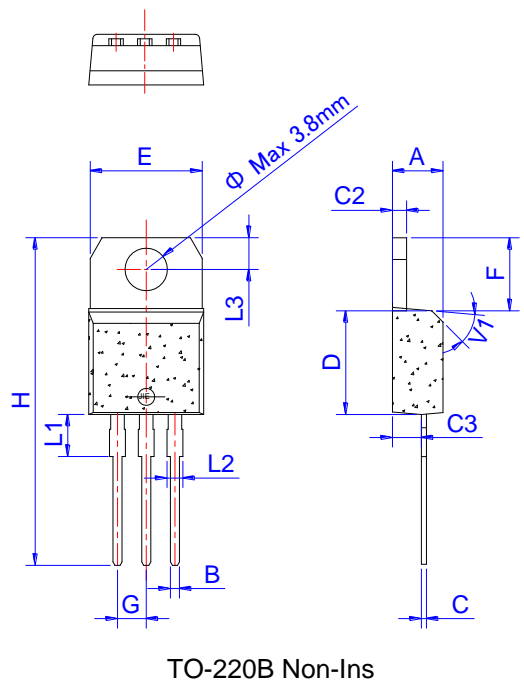
## ORDERING INFORMATION

|   |  |           |          |   |   |
|---|--|-----------|----------|---|---|
| <b>J</b><br>JieJie Microelectronics Co.,Ltd | <b>ST</b><br>Triacs<br>$I_{T(RMS)}:25\text{A}$<br>E:TO-263<br>A:TO-220A(Ins)<br>F:TO-220F(Ins)<br>B:TO-220B(Non-Ins) | <b>24</b> | <b>A</b> | <b>-600</b><br>600: $V_{DRM}/V_{RRM}\geq 600\text{V}$<br>800: $V_{DRM}/V_{RRM}\geq 800\text{V}$<br>1200: $V_{DRM}/V_{RRM}\geq 1200\text{V}$ | <b>BW</b><br>BW: $I_{GT3}\leq 50\text{mA}$<br>CW: $I_{GT3}\leq 35\text{mA}$ |
|---|--|-----------|----------|---|---|

PACKAGE MECHANICAL DATA

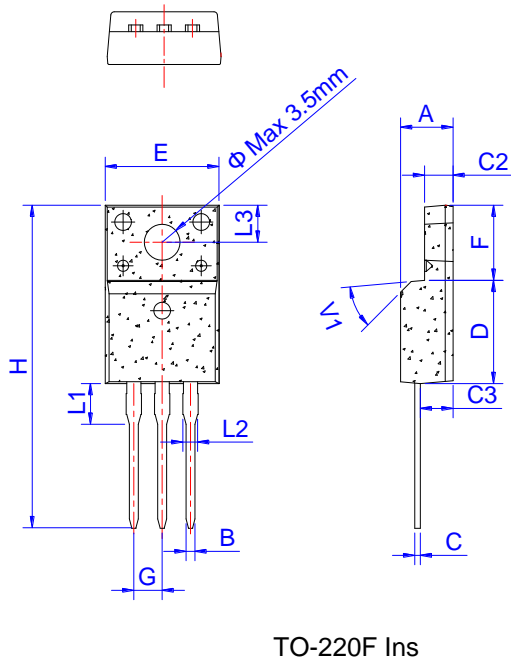


| Ref. | Dimensions  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimeters |      |      | Inches |       |       |
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A    | 4.40        |      | 4.60 | 0.173  |       | 0.181 |
| B    | 0.61        |      | 0.88 | 0.024  |       | 0.035 |
| C    | 0.46        |      | 0.70 | 0.018  |       | 0.028 |
| C2   | 1.21        |      | 1.32 | 0.048  |       | 0.052 |
| C3   | 2.40        |      | 2.72 | 0.094  |       | 0.107 |
| D    | 8.60        |      | 9.70 | 0.339  |       | 0.382 |
| E    | 9.80        |      | 10.4 | 0.386  |       | 0.409 |
| F    | 6.55        |      | 6.95 | 0.258  |       | 0.274 |
| G    |             | 2.54 |      |        | 0.1   |       |
| H    | 28.0        |      | 29.8 | 1.102  |       | 1.173 |
| L1   |             | 3.75 |      |        | 0.148 |       |
| L2   | 1.14        |      | 1.70 | 0.045  |       | 0.067 |
| L3   | 2.65        |      | 2.95 | 0.104  |       | 0.116 |
| V1   |             | 45°  |      |        | 45°   |       |

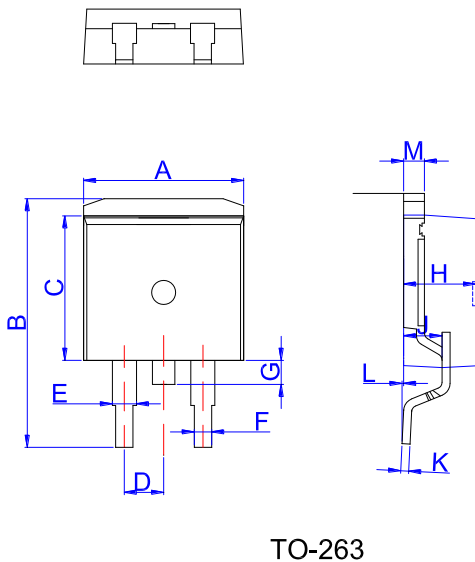


| Ref. | Dimensions  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimeters |      |      | Inches |       |       |
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A    | 4.40        |      | 4.60 | 0.173  |       | 0.181 |
| B    | 0.61        |      | 0.88 | 0.024  |       | 0.035 |
| C    | 0.46        |      | 0.70 | 0.018  |       | 0.028 |
| C2   | 1.21        |      | 1.32 | 0.048  |       | 0.052 |
| C3   | 2.40        |      | 2.72 | 0.094  |       | 0.107 |
| D    | 8.60        |      | 9.70 | 0.339  |       | 0.382 |
| E    | 9.60        |      | 10.4 | 0.378  |       | 0.409 |
| F    | 6.20        |      | 6.60 | 0.244  |       | 0.260 |
| G    |             | 2.54 |      |        | 0.1   |       |
| H    | 28.0        |      | 29.8 | 1.102  |       | 1.173 |
| L1   |             | 3.75 |      |        | 0.148 |       |
| L2   | 1.14        |      | 1.70 | 0.045  |       | 0.067 |
| L3   | 2.65        |      | 2.95 | 0.104  |       | 0.116 |
| V1   |             | 45°  |      |        | 45°   |       |

PACKAGE MECHANICAL DATA

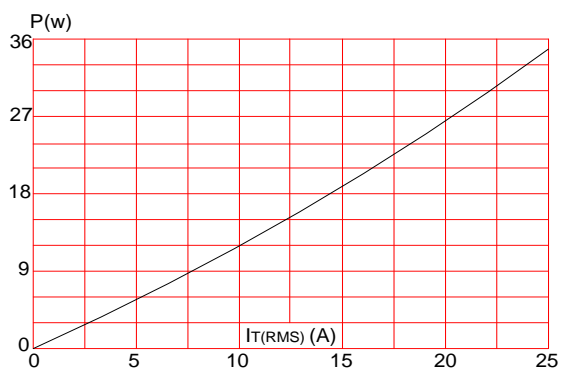


| Ref. | Dimensions  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimeters |      |      | Inches |       |       |
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A    | 4.40        |      | 4.80 | 0.173  |       | 0.189 |
| B    | 0.74        | 0.80 | 0.83 | 0.029  | 0.031 | 0.033 |
| C    | 0.48        |      | 0.75 | 0.019  |       | 0.030 |
| C2   | 2.40        |      | 2.70 | 0.094  |       | 0.106 |
| C3   | 2.60        |      | 3.00 | 0.102  |       | 0.118 |
| D    | 8.80        |      | 9.30 | 0.346  |       | 0.366 |
| E    | 9.70        |      | 10.3 | 0.382  |       | 0.406 |
| F    | 6.40        |      | 7.00 | 0.252  |       | 0.276 |
| G    |             | 2.54 |      |        | 0.1   |       |
| H    | 28.0        |      | 29.8 | 1.102  |       | 1.173 |
| L1   |             | 3.63 |      |        | 0.143 |       |
| L2   | 1.14        |      | 1.70 | 0.045  |       | 0.067 |
| L3   |             | 3.30 |      |        | 0.130 |       |
| V1   |             | 45°  |      |        | 45°   |       |

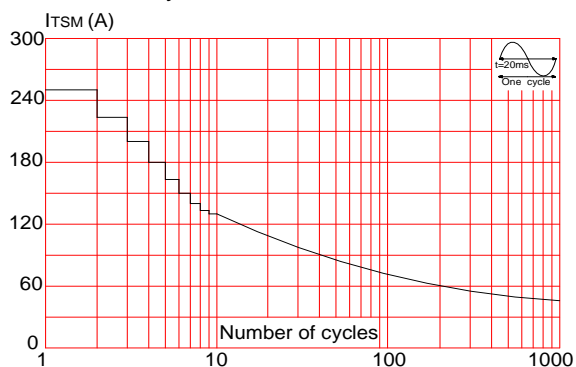


| Ref. | Dimensions  |      |       |        |       |       |
|------|-------------|------|-------|--------|-------|-------|
|      | Millimeters |      |       | Inches |       |       |
|      | Min.        | Typ. | Max.  | Min.   | Typ.  | Max.  |
| A    | 9.90        |      | 10.20 | 0.390  |       | 0.402 |
| B    | 14.70       |      | 15.80 | 0.579  |       | 0.622 |
| C    | 9.4         |      | 9.6   | 0.37   |       | 0.378 |
| D    |             | 2.54 |       |        | 0.100 |       |
| E    | 1.20        |      | 1.40  | 0.047  |       | 0.055 |
| F    | 0.75        |      | 0.85  | 0.029  |       | 0.033 |
| G    |             |      | 1.75  |        |       | 0.069 |
| H    | 4.40        |      | 4.70  | 0.173  |       | 0.185 |
| J    | 2.30        |      | 2.70  | 0.091  |       | 0.106 |
| K    | 0.38        |      | 0.55  | 0.015  |       | 0.022 |
| L    | 0           | 0.10 | 0.25  | 0      | 0.004 | 0.010 |
| M    | 1.25        |      | 1.35  | 0.049  |       | 0.053 |

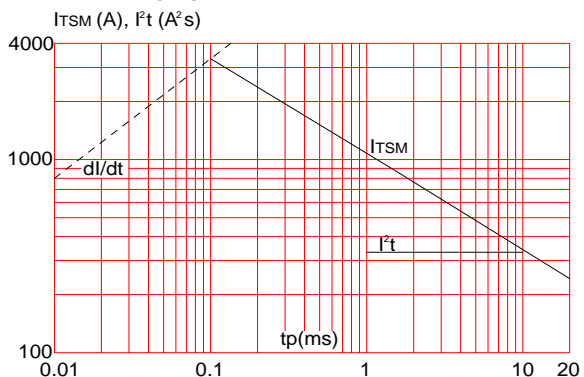
**FIG.1:** Maximum power dissipation versus RMS on-state current



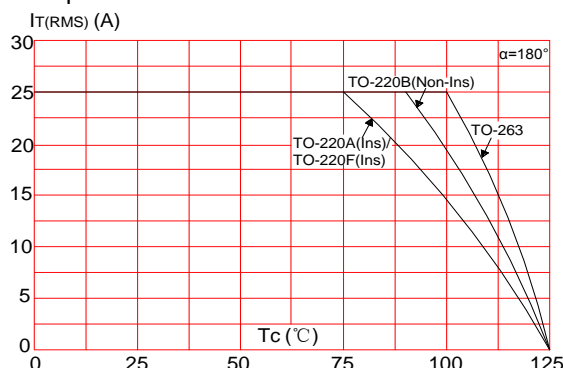
**FIG.3:** Surge peak on-state current versus number of cycles



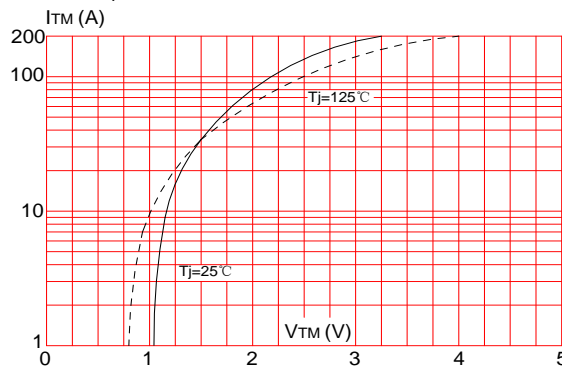
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$  ( $di/dt < 50\text{A}/\mu\text{s}$ )



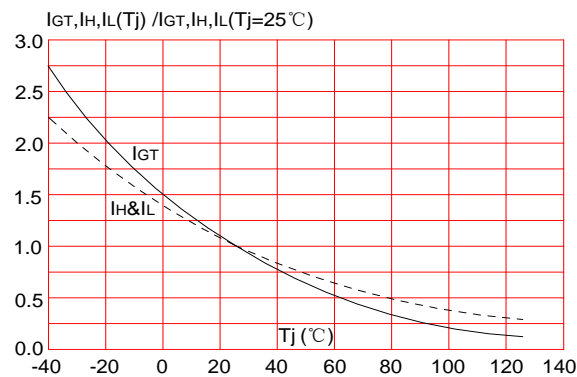
**FIG.2:** RMS on-state current versus case temperature




**FIG.4:** On-state characteristics (maximum values)



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



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