

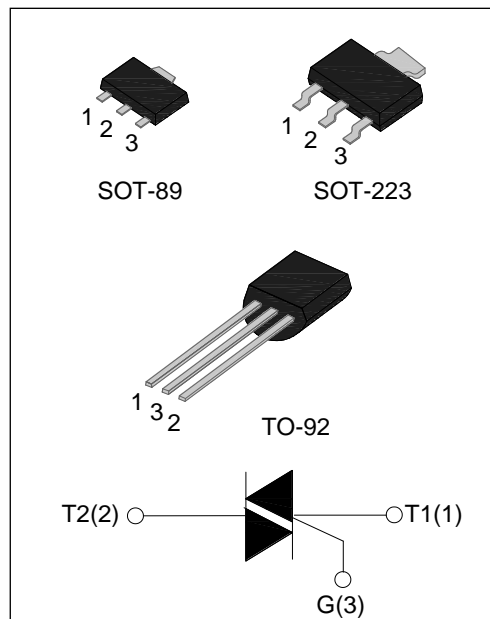


### DESCRIPTION:

JST131 series triacs with low holding and latching current are especially recommended for use on middle and small resistance type power load.

### MAIN FEATURES

| Symbol       | Value | Unit |
|--------------|-------|------|
| $I_{T(RMS)}$ | 1     | A    |
| $I_{TSM}$    | 16    | A    |
| $V_{TM}$     | 1.7   | 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         | V                      |
| Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )          | $V_{RRM}$                                  | 600/800         | 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-92 ( $T_C=51^\circ\text{C}$ )           | 1               | A                      |
|   | SOT-89/ SOT-223 ( $T_C=70^\circ\text{C}$ ) |                 |                        |
| Non repetitive surge peak on-state current (full cycle, F=50Hz)     | $I_{TSM}$                                  | 16              | A                      |
| $I^2t$ value for fusing ( $t_p=10\text{ms}$ )                       | $I^2t$                                     | 1.28            | $\text{A}^2\text{s}$   |
| Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ ) | $di/dt$                                    | 10              | $\text{A}/\mu\text{s}$ |
| Peak gate current   | $I_{GM}$                                   | 2               | A                      |
| Average gate power dissipation                                      | $P_{G(AV)}$                                | 0.5             | W                      |

|                 |          |   |   |
|-----------------|----------|---|---|
| Peak gate power | $P_{GM}$ | 5 | W |
|-----------------|----------|---|---|

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

| Symbol   | Test Condition   | Quadrant     |     | Value |    | Unit             |
|----------|--|--------------|-----|-------|----|------------------|
|          |  |              |     | T     | D  |                  |
| $I_{GT}$ | $V_D=12\text{V } R_L=33\Omega$                                   | I - II - III | MAX | 5     | 5  | mA               |
|          |  | IV           |     | 5     | 10 |                  |
| $V_{GT}$ |  | ALL          | MAX | 1.5   |    | V                |
| $V_{GD}$ | $V_D=V_{DRM} T_j=125^{\circ}\text{C}$<br>$R_L=3.3\text{K}\Omega$ | ALL          | MIN | 0.2   |    | V                |
| $I_L$    | $I_G=1.2I_{GT}$  | I - III      | MAX | 5     | 5  | mA               |
|          |  | II - IV      |     | 8     | 10 |                  |
| $I_H$    | $I_T=200\text{mA}$   |              | MAX | 5     | 7  | mA               |
| dV/dt    | $V_D=2/3V_{DRM}$ Gate Open $T_j=125^{\circ}\text{C}$             |              | MIN | 15    | 20 | V/ $\mu\text{s}$ |

**STATIC CHARACTERISTICS**

| Symbol    | Parameter                                |                           | Value(MAX) | Unit          |
|-----------|--|---------------------------|------------|---------------|
| $V_{TM}$  | $I_{TM}=1.4\text{A } t_p=380\mu\text{s}$ | $T_j=25^{\circ}\text{C}$  | 1.7        | V             |
| $I_{DRM}$ | $V_D=V_{DRM} V_R=V_{RRM}$                | $T_j=25^{\circ}\text{C}$  | 10         | $\mu\text{A}$ |
| $I_{RRM}$ |  | $T_j=125^{\circ}\text{C}$ | 500        | $\mu\text{A}$ |

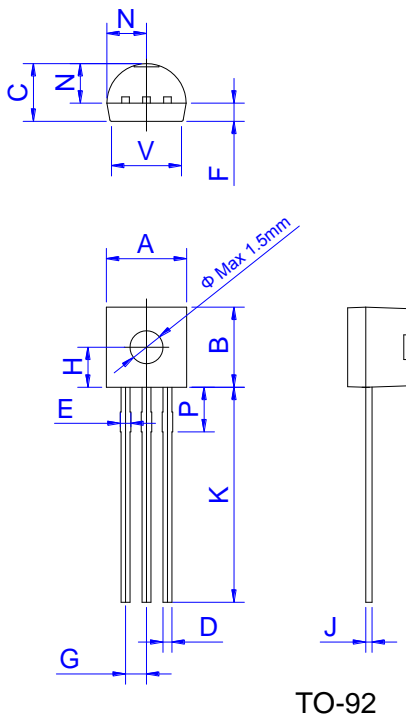
**THERMAL RESISTANCES**

| Symbol        | Parameter            |                 | Value | Unit                 |
|---------------|----------------------|-----------------|-------|----------------------|
| $R_{th(j-c)}$ | junction to case(AC) | TO-92           | 60    | $^{\circ}\text{C/W}$ |
|               |                      | SOT-89/ SOT-223 | 23    |                      |

ORDERING INFORMATION

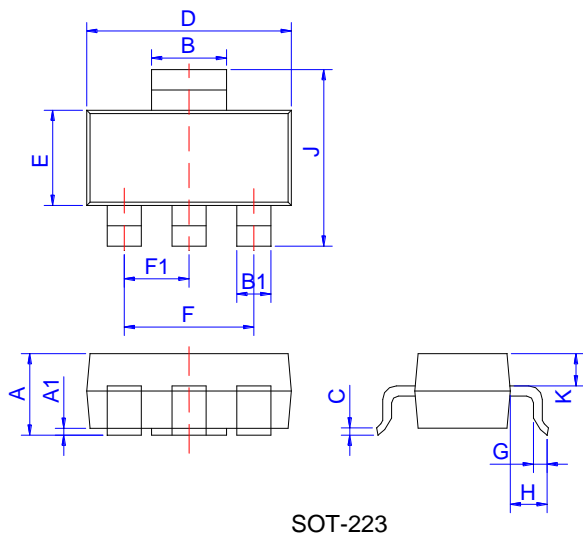
|                                 |        |    |                 |                            |  |  |
|---------------------------------|--------|----|-----------------|----------------------------|--|--|
| JieJie Microelectronics Co.,Ltd | J      | ST | 131             | U                          | -600   | D  |
|                                 | TRIACs |    | $I_{T(RMS)}:1A$ |                            | 600: $V_{DRM}/V_{RRM} \geq 600V$<br>800: $V_{DRM}/V_{RRM} \geq 800V$ | T: $I_{GT1-4} \leq 5mA$<br>D: $I_{GT1-3} \leq 5mA$ $I_{GT4} \leq 10mA$ |
|                                 |        |    |                 | U:TO-92 N:SOT-89 V:SOT-223 |  |  |

PACKAGE MECHANICAL DATA

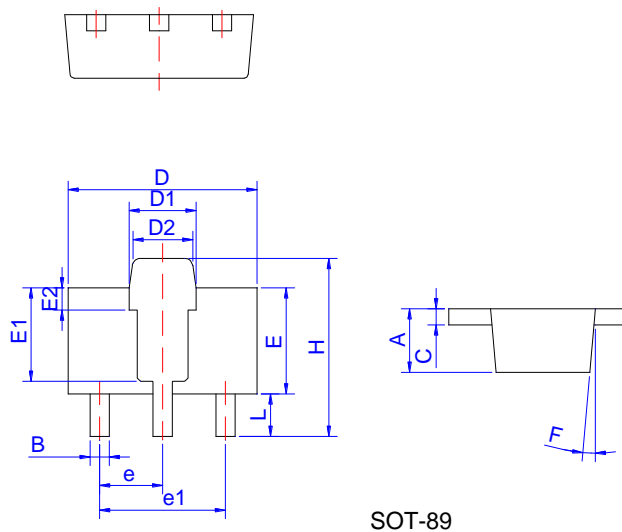


| Ref. | Dimensions  |      |       |        |       |       |
|------|-------------|------|-------|--------|-------|-------|
|      | Millimeters |      |       | Inches |       |       |
|      | Min.        | Typ. | Max.  | Min.   | Typ.  | Max.  |
| A    | 4.45        |      | 5.20  | 0.175  |       | 0.205 |
| B    | 4.32        |      | 5.33  | 0.170  |       | 0.210 |
| C    | 3.18        |      | 4.19  | 0.125  |       | 0.165 |
| D    | 0.407       |      | 0.533 | 0.016  |       | 0.021 |
| E    | 0.60        |      | 0.80  | 0.024  |       | 0.031 |
| F    | -           | 1.1  | -     | -      | 0.043 | -     |
| G    | -           | 1.27 | -     | -      | 0.050 | -     |
| H    | -           | 2.30 | -     | -      | 0.091 | -     |
| J    | 0.36        |      | 0.50  | 0.014  |       | 0.020 |
| K    | 12.70       |      | 15.0  | 0.500  |       | 0.591 |
| N    | 2.04        |      | 2.66  | 0.080  |       | 0.105 |
| P    | 1.86        |      | 2.06  | 0.073  |       | 0.081 |
| V    | -           |      | 4.3   | -      |       | 0.169 |

PACKAGE MECHANICAL DATA



| Ref. | Dimensions  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimeters |      |      | Inches |       |       |
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A    | 1.5         | 1.6  | 1.8  | 0.059  | 0.063 | 0.071 |
| A1   | 0.01        | 0.06 | 0.10 | 0.001  | 0.002 | 0.004 |
| B    | 2.9         | 3.0  | 3.1  | 0.114  | 0.118 | 0.122 |
| B1   | 0.6         | 0.7  | 0.8  | 0.024  | 0.028 | 0.031 |
| C    | 0.22        | 0.26 | 0.32 | 0.009  | 0.010 | 0.013 |
| D    | 6.3         | 6.5  | 6.7  | 0.248  | 0.256 | 0.264 |
| E    | 3.3         | 3.5  | 3.7  | 0.130  | 0.138 | 0.146 |
| F    |             | 4.6  |      |        | 0.181 |       |
| F1   |             | 2.3  |      |        | 0.091 |       |
| G    | 0.7         | 0.9  | 1.1  | 0.028  | 0.035 | 0.043 |
| H    | 1.5         | 1.75 | 2    | 0.059  | 0.069 | 0.079 |
| J    | 6.7         | 7.0  | 7.3  | 0.264  | 0.276 | 0.287 |
| K    |             | 0.9  |      |        | 0.035 |       |



| Ref. | Dimensions  |      |      |        |        |       |
|------|-------------|------|------|--------|--------|-------|
|      | Millimeters |      |      | Inches |        |       |
|      | Min.        | Typ. | Max. | Min.   | Typ.   | Max.  |
| A    | 1.40        |      | 1.60 | 0.055  |        | 0.063 |
| B    | 0.40        |      | 0.52 | 0.016  |        | 0.020 |
| C    | 0.35        |      | 0.41 | 0.014  |        | 0.016 |
| D    | 4.40        |      | 4.60 | 0.173  |        | 0.181 |
| D1   | 1.50        |      | 1.70 | 0.059  |        | 0.067 |
| D2   | 1.30        |      | 1.50 | 0.051  |        | 0.059 |
| E    | 2.40        |      | 2.60 | 0.094  |        | 0.102 |
| E1   |             | 2.20 |      |        | 0.087  |       |
| E2   |             | 0.52 |      |        | 0.020  |       |
| e    |             | 1.50 |      |        | 0.059  |       |
| e1   |             | 3.00 |      |        | 0.118  |       |
| F    |             | 5°   |      |        | 0.197° |       |
| H    | 4.05        |      | 4.25 | 0.159  |        | 0.167 |
| L    | 0.89        |      | 1.20 | 0.035  |        | 0.047 |

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

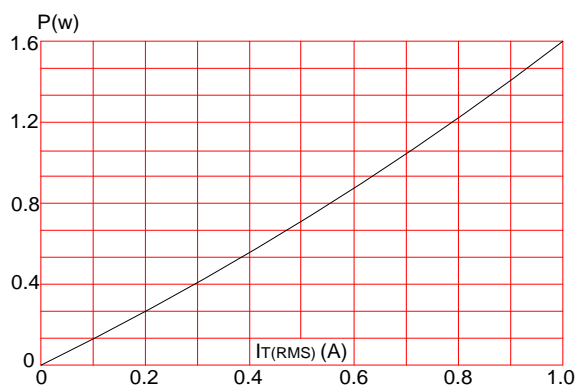
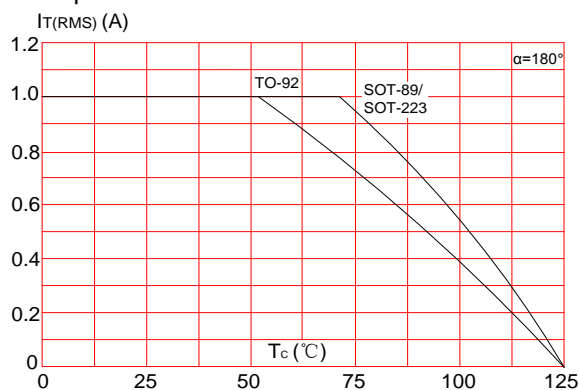
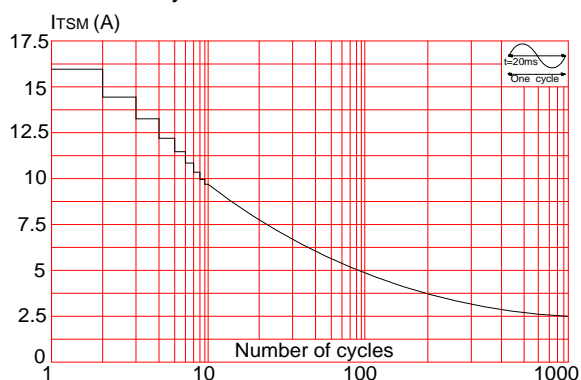


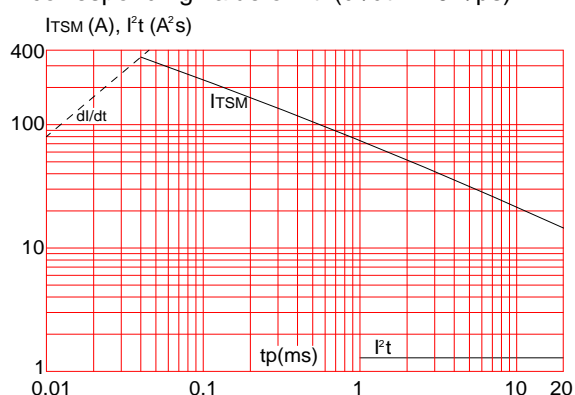
FIG.2: RMS on-state current versus case temperature



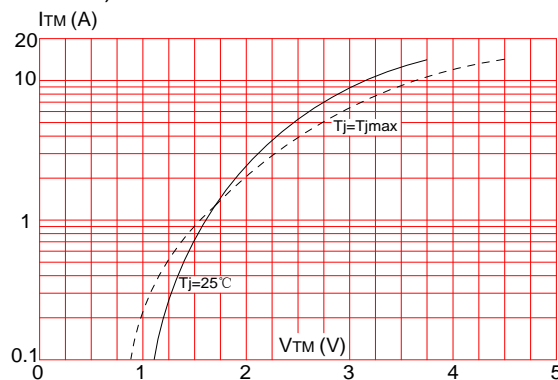
**FIG.3:** Surge peak on-state current versus number of cycles



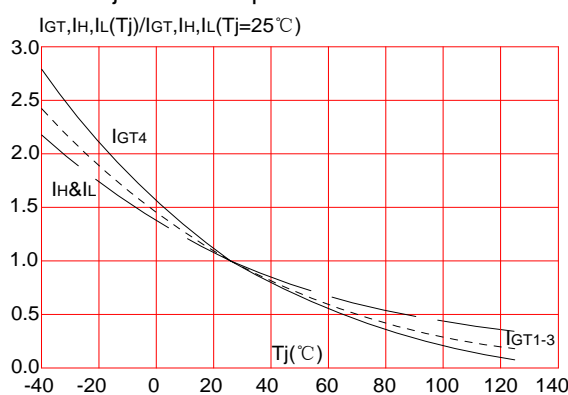
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$  and corresponding value of  $I^2t$  ( $di/dt < 10\text{A}/\mu\text{s}$ )




**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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