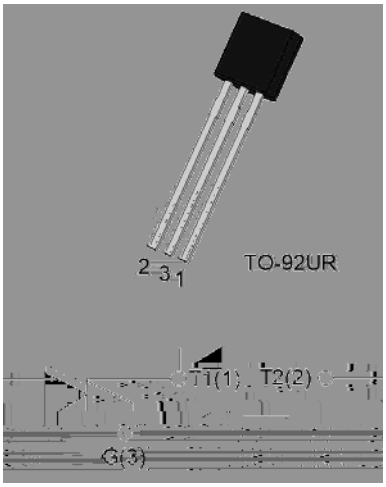
## JST01UR-1000SW 1A TRIAC

Rev.A.2.1

### DESCRIPTION:

The JST01UR-1000SW 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. JST01UR-1000SW snubberless triac is especially recommended for use on inductive loads. It can be driven directly through the MCU I/O port. Package TO-92UR is RoHS compliant.




### MAIN FEATURES

| Symbol | Value | Unit |
|---|---|---|
| $I_{T(RMS)}$ | 1 | A |
| $V_{DRM}$ /$V_{RRM}$ | 1000 | V |
| $I_{GT}$ / / | 10/10/10 | mA |

### ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Storage junction temperature range | $T_{stg}$ | -40-150 | |
| Operating junction temperature range | $T_j$ | -40-125 | |
| Repetitive peak off-state voltage ($T_j$=25 ) | $V_{DRM}$ | 1000 | V |
| Repetitive peak reverse voltage ($T_j$=25 ) | $V_{RRM}$ | 1000 | V |
| RMS on-state current ($T_C \leq$ 45 ) | $I_{T(RMS)}$ | 1 | A |
| Non repetitive surge peak on-state current (full cycle , $t_p$=20ms , $T_j$=25 ) | $I_{TSM}$ | 15 | A |
| Non repetitive surge peak on-state current (full cycle , $t_p$=16.6ms , $T_j$=25 ) | | 16.5 | |
| $I^2t$ value for fusing ($t_p$=10ms , $T_j$=25 ) | $I^2t$ | 1.25 | $A^2s$ |
| Critical rate of rise of on-state current ($I_G$=2 × $I_{GT}$ , f=100Hz , $T_j$=125 ) | dI/dt | 100 | A/μs |
| Peak gate current ($t_p$=20μs , $T_j$=125 ) | $I_{GM}$ | 1 | A |
| Average gate power dissipation ($T_j$=125 ) | $P_{G(AV)}$ | 0.1 | W |

| | | | |
|---|---|---|---|
| Peak gate power | $P_{GM}$ | 2 | W |
| Peak pulse voltage ($T_j$=25 ; non-repetitive,off-state;FIG.7) | $V_{pp}$ | 4 | kV |

## ELECTRICAL CHARACTERISTICS ($T_j$=25 unless otherwise specified)

| Symbol | Test Condition | Quadrant | Value | | Unit |
|---|---|---|---|---|---|
| $I_{GT}$ | $V_D$ =12V $R_L$ =33Ω | - - | MAX. | 10 | mA |
| $V_{GT}$ | | - - | MAX. | 1 | V |
| $V_{GD}$ | $V_D$ =$V_{DRM}$ $T_j$ =125 $R_L$ =3.3kΩ | - - | MIN. | 0.2 | V |
| $I_L$ | $I_G$ =1.2$I_{GT}$ | - | MAX. | 20 | mA |
| | | | | 40 | |
| $I_H$ | $I_T$ =100mA | | MAX. | 15 | mA |
| dV/dt | $V_D$=670V Gate Open $T_j$ =125 | | MIN. | 200 | V/μs |
| (dI/dt)c | (dV/dt)c=10V/μs $T_j$=125 | | MIN. | 1 | A/ms |
| $t_{on}$ | $I_G$=20mA $I_A$=200mA $I_R$=20mA $T_j$=25 | | TYP. | 2.5 | μs |
| $t_{off}$ | | | | 25 | |

## STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|---|---|---|---|---|
| $V_{TM}$ | $I_{TM}$ =1.4A $t_p$=380μs | $T_j$=25 | 1.3 | V |
| $V_{TO}$ | Threshold voltage | $T_j$=125 | 0.93 | V |
| $R_D$ | Dynamic resistance | $T_j$=125 | 146 | mΩ |
| $I_{DRM}$ | $V_D$ =$V_{DRM}$ $V_R$ =$V_{RRM}$ | $T_j$=25 | 8 | μA |
| $I_{RRM}$ | | $T_j$=125 | 0.2 | mA |

## THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th(j-c)}$ | junction to case (AC) | 65 | /W |
| $R_{th(j-a)}$ | junction to ambient (AC) | 150 | /W |

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

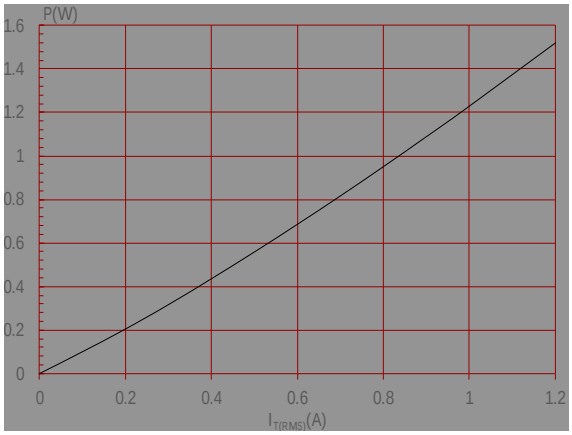



**FIG.2:** RMS on-state current versus case temperature

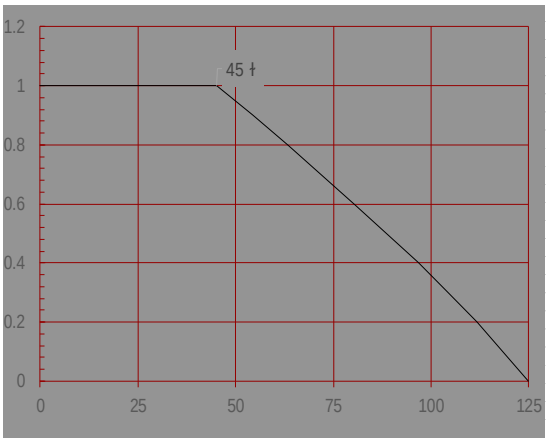
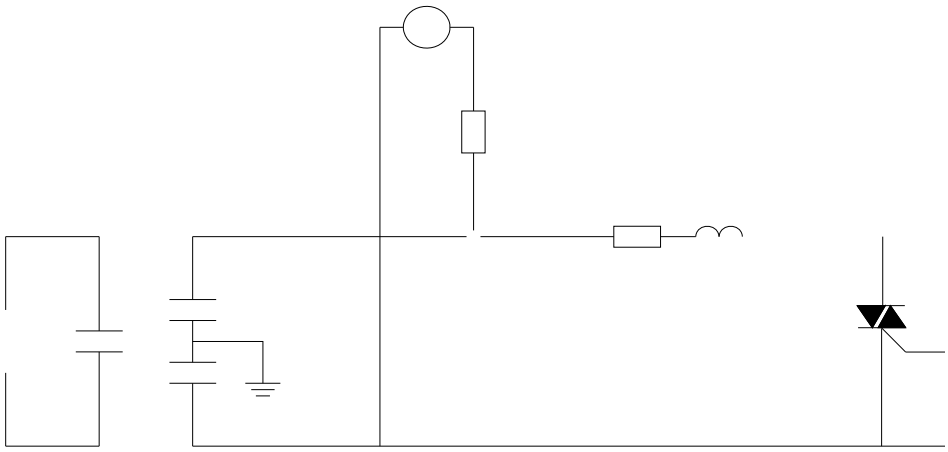


FIG.7 Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



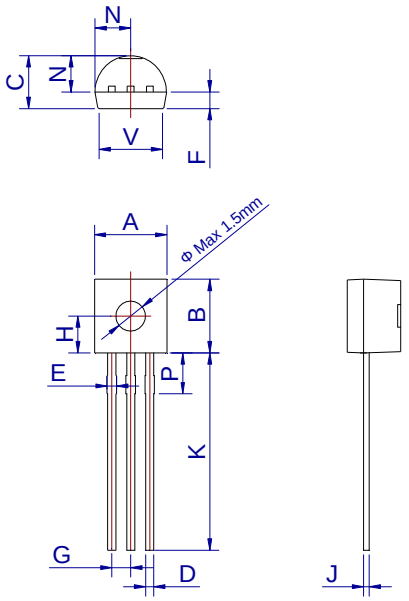
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## PACKAGE MECHANICAL DATA




| 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 | 0.50 | | 0.70 | 0.020 | | 0.028 |
| F | 1.10 | | 1.30 | | | 0.051 |
| G | 1.10 | | 1.40 | 0.043 | | 0.055 |
| H | 2.20 | | 2.40 | 0.087 | | 0.094 |
| 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 | 1.80 | | 2.30 | 0.071 | | 0.091 |
| V | 4.10 | | 4.50 | 0.161 | | 0.177 |

## DELIVERY MODE

| PACKAGE | OUTLINE | BAG (PCS) | INNER BOX (PCS) | CARTON BOX (PCS) |
|---|---|---|---|---|
| TO-92UR | Bulk Pack | 1,000 | 10,000 | 50,000 |

| Dimensions | | | | | | |
|---|---|---|---|---|---|---|
| Ref. | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| P | 12.40 | 12.70 | 13.00 | 0.488 | 0.500 | 0.512 |
| P0 | 12.40 | 12.70 | 13.00 | 0.488 | 0.500 | 0.512 |
| P1 | 3.55 | 3.85 | 4.15 | 0.140 | 0.152 | 0.163 |
| P2 | 5.95 | 6.35 | 6.75 | 0.233 | 0.250 | 0.265 |
| P | -1.00 | 0 | 1.00 | -0.039 | 0 | 0.039 |
| F1 F2 | 2.30 | 2.50 | 2.70 | 0.090 | 0.098 | 0.106 |
| F1-F2 | -0.10 | 0 | 0.10 | -0.004 | 0 | 0.004 |
| W | 17.50 | 18.00 | 19.00 | 0.689 | 0.709 | 0.748 |
| W0 | 5.50 | 6.00 | 6.50 | 0.217 | 0.236 | 0.256 |
| W1 | 8.50 | 9.00 | 9.50 | 0.335 | 0.354 | 0.374 |
| W2 | | | 1.00 | | | 0.039 |
| D0 | 3.80 | 4.00 | 4.20 | 0.150 | 0.157 | 0.165 |
| H | -1.00 | 0 | 1.00 | -0.039 | 0 | 0.039 |
| L1 | 2.50 | | | 0.098 | | |
| H | 18.00 | 19.00 | 20.00 | 0.709 | 0.748 | 0.787 |

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