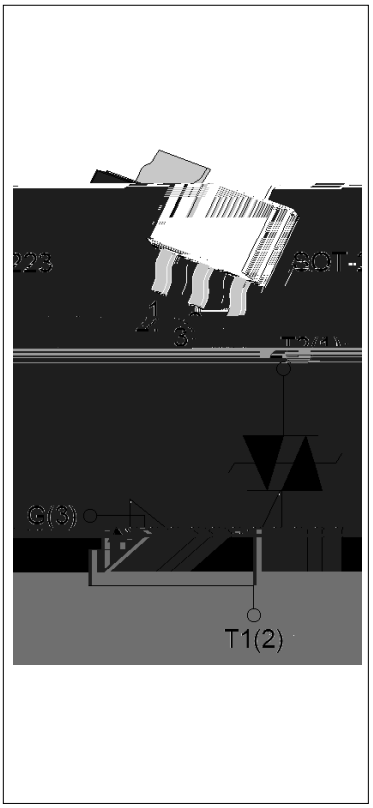
## ACJP01V-600SW 1A TRIAC

Rev.A.1.1

### DESCRIPTION:

The ACJP01V-600SW 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. The ACJP01V-600SW embeds a TVS structure to absorb the inductive turn-off energy such as those described in the IEC 61000-4-5 standards. At the same time, the triac shields the positive signal trigger to reduce the probability of product misoperation. It is triggered with a negative gate current flowing out of the gate pin. Package SOT-223 is RoHS compliant.




### MAIN FEATURES

| Symbol | Value | Unit |
|---|---|---|
| $I_{T(RMS)}$ | 1 | A |
| $V_{DRM}$ /$V_{RRM}$ | 600 | V |
| $I_{GT}$ / | 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 ) | $V_{DRM}$ | 600 | V |
| Repetitive peak reverse voltage ($T_j$=25 ) | $V_{RRM}$ | 600 | V |
| RMS on-state current ($T_C$ 93 ) | $I_{T(RMS)}$ | 1 | A |
| Non repetitive surge peak on-state current (full cycle , $t_p$=20ms , $T_j$=25 ) | $I_{TSM}$ | 18 | A |
| Non repetitive surge peak on-state current (full cycle , $t_p$=16.6ms , $T_j$=25 ) | | 19.8 | |
| $I^2t$ value for fusing ($t_p$=10ms , $T_j$=25 ) | $I^2t$ | 1.62 | $A^2s$ |
| 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 |
| Positive applied gate voltage | $V_{GM}$ | 15 | V |

| | | | |
|---|---|---|---|
| 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.8) | $V_{pp}$ | 4.5 | 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. | 1.3 | V |
| $V_{GD}$ | $V_D$ =$V_{DRM}$ $T_j$ =125 $R_L$ =3.3kΩ | - | MIN. | 0.15 | V |
| $I_L$ | $I_G$ =1.2$I_{GT}$ | | MAX. | 25 | mA |
| | | | | 10 | |
| $I_H$ | $I_T$ =100mA | | MAX. | 10 | mA |
| dV/dt | $V_D$=400V Gate Open $T_j$ =125 | | MIN. | 120 | V/μs |
| (dI/dt)c | (dV/dt)c=10V/μs, $T_j$=125 | | MIN. | 0.6 | A/ms |
| $t_{on}$ | $I_G$=20mA $I_A$=200mA $I_R$=20mA $T_j$=25 | | TYP. | 2.5 | μs |
| $t_{off}$ | | | | 25 | |
| $V_{CL}$ | $I_{CL}$=0.1mA $t_p$=1ms | | MIN. | 800 | V |

## STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|---|---|---|---|---|
| $V_{TM}$ | $I_{TM}$ =1.1A $t_p$=380μs | $T_j$=25 | 1.3 | V |
| $V_{TO}$ | Threshold voltage | $T_j$=125 | 0.77 | V |
| $R_D$ | Dynamic resistance | $T_j$=125 | 276 | mΩ |
| $I_{DRM}$ | $V_D$ =$V_{DRM}$ $V_R$ =$V_{RRM}$ | $T_j$=25 | 5 | μA |
| $I_{RRM}$ | | $T_j$=125 | 0.2 | mA |

## THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th(j-c)}$ | junction to case (AC) | 25 | /W |
| $R_{th(j-a)}$ | junction to ambient (AC) | 150 | /W |

**ACJ**

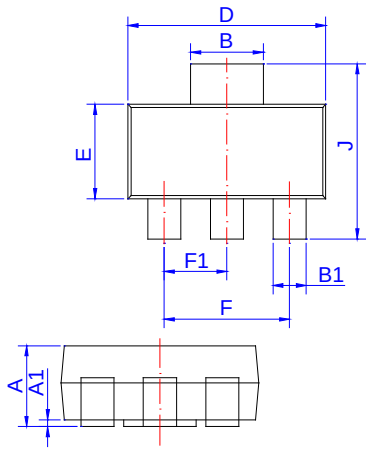
**ACJ**

**FIG.7:** Relative variations of gate trigger current, holding current and latching current versus junction temperature

## ORDERING INFORMATION

| Order code | Voltage $V_{DRM}/V_{RRM}$ (V) | IGT(mA) | Package | Base qty. (pcs) | Delivery mode |
|---|---|---|---|---|---|
| ACJP01V-600SW | 600 | 10 | SOT-223 | 4,000 | Tape & Reel 4,0004,000 |

## PACKAGE MECHANICAL DATA




| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 1.50 | 1.60 | 1.80 | 0.059 | 0.063 | 0.071 |
| A1 | 0.01 | 0.06 | 0.10 | 0.001 | 0.002 | 0.004 |
| B | 2.90 | 3.00 | 3.10 | 0.114 | 0.118 | 0.122 |
| B1 | 0.60 | 0.70 | 0.80 | 0.024 | 0.028 | 0.031 |
| C | 0.22 | 0.26 | 0.32 | 0.009 | 0.010 | 0.013 |
| D | 6.30 | 6.50 | 6.70 | 0.248 | 0.256 | 0.264 |
| E | 3.30 | 3.50 | 3.70 | 0.130 | 0.138 | 0.146 |
| F | 4.40 | | 4.80 | 0.173 | | 0.189 |
| F1 | 2.20 | | 2.40 | 0.087 | | 0.094 |
| G | 0.50 | | 1.00 | 0.020 | | 0.039 |
| H | 1.50 | 1.75 | 2.00 | 0.059 | 0.069 | 0.079 |
| J | 6.70 | 7.00 | 7.30 | 0.264 | 0.276 | 0.287 |
| K | 0.80 | | 1.00 | 0.031 | | 0.039 |
| | | | | | | |

## DELIVERY MODE

| Dimensions | | | | | | |
|---|---|---|---|---|---|---|
| Ref. | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| W | | | | | | |
| E | | | | | | |
| F | | | | | | |
| D0 | | | | | | |
| D1 | | | | | | |

P0Td (J)]16.(5Td596 0 M.1061 dTj 0.5.27c 0 0.121TTd (D)T