



SOT-89K Plastic-Encapsulate Thyristors

CT401J 4Q TRIACs

MAIN CHARACTERISTICS

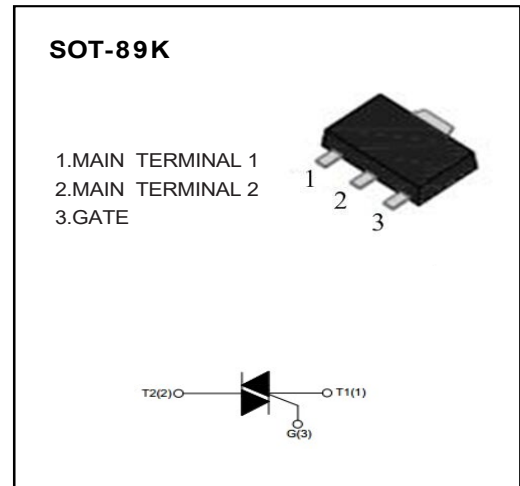
| | | |
|-------------------|---------------|--------------|
| $I_{T(RMS)}$ | | 1A |
| V_{DRM}/V_{RRM} | CT401J-600T/S | 600V |
| | CT401J-800T/S | 800V |
| V_{TM} | | 1.55V |

FEATURES

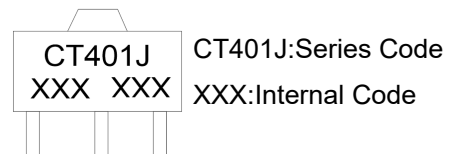
- NPNPN 5-layer Structure TRIACs
- Mesa Glass Passivated Technology
- Multi Layers Metal Electrodes
- High Junction Temperature
- Good Commutation Performance

APPLICATIONS

- Heater Control
- Motor Speed Controller
- Mixer



MARKING



ABSOLUTE RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

| Symbol | Parameter | Test condition | Value | Unit | |
|-------------------|--|--|---------------|----------------------|------------------------|
| V_{DRM}/V_{RRM} | Repetitive peak off-state voltage | $T_j=25^{\circ}\text{C}$ | CT401J-600T/S | 600 | V |
| | | | CT401J-800T/S | 800 | V |
| $I_{T(RMS)}$ | RMS on-state current | SOT- 89K($T_c \leq 70^{\circ}\text{C}$), Fig. 1,2 | 1 | A | |
| I_{TSM} | Non repetitive surge peak on-state current | Full sine wave , $T_j(\text{init})=25^{\circ}\text{C}$, $t_p=20\text{ms}$; Fig. 3,5 | 10 | A | |
| I^2t | I^2t value | $t_p=10\text{ms}$ | 1.28 | A^2s | |
| di_T/dt | Critical rate of rise of on-state current | $I_G=2 \cdot I_{GT}$, $t_r \leq 10\text{ns}$, $F=120\text{Hz}$, $T_j=125^{\circ}\text{C}$ | I - II -III | 50 | $\text{A}/\mu\text{s}$ |
| | | | IV | 10 | |
| I_{GM} | Peak gate current | $t_p=20\mu\text{s}$, $T_j=125^{\circ}\text{C}$ | 2 | A | |
| $P_{G(AV)}$ | Average gate power | $T_j=125^{\circ}\text{C}$ | 0.5 | W | |
| T_{STG} | Storage temperature | | -40~+150 | $^{\circ}\text{C}$ | |
| T_j | Operating junction temperature | | -40~+125 | | |

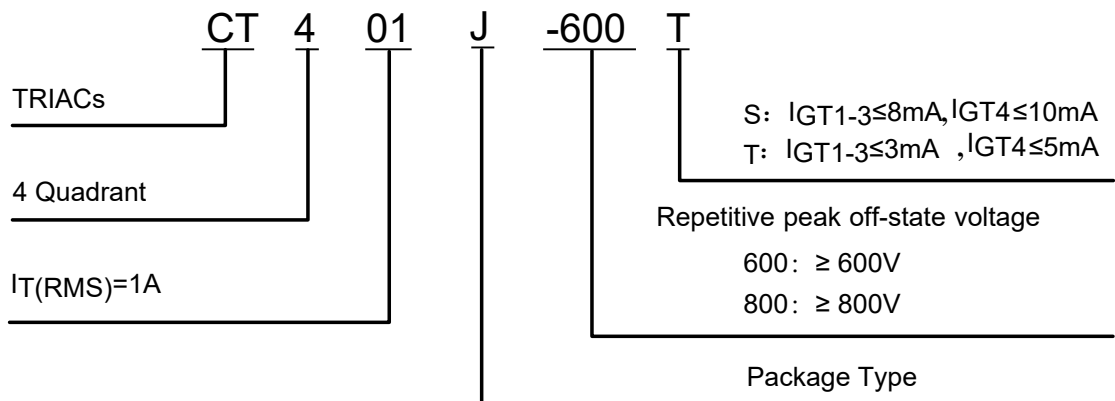
ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

| Symbol | Parameter | Test condition | Value | | Unit | |
|-------------------------------------|------------------------------------|---|-------------------|-------|------|------|
| | | | T | S | | |
| I _{GT} | Gate trigger current | V _D =12V, I _T =0.1A, | I - II - III | ≤3 | ≤8 | mA |
| | | | IV | ≤5 | ≤10 | |
| V _{GT} | Gate trigger voltage | T _j =25°C, Fig. 6 | I - II - III - IV | ≤1.3 | | V |
| V _{GD} | Non-triggering gate voltage | V _D =V _{DRM} , T _j =125°C | | ≥0.2 | | V |
| I _H | Holding current | V _D =12V, I _{GT} =0.1A, T _j =25°C, Fig. 6 | I - II - III - IV | ≤5 | ≤5 | mA |
| I _L | Latching current | | I - III - IV | ≤6 | ≤10 | mA |
| | | | II | ≤10 | ≤15 | mA |
| dV _D /dt | Critical rate of rise of off-state | V _D =67%V _{DRM} , Gate Open T _j =125°C | | ≥20 | ≥50 | V/μs |
| V _{TM} | On-state Voltage | I _{TM} =1.5A, t _p =380μs, Fig. 4 | | ≤1.55 | | V |
| I _{DRM} / I _{RRM} | Repetitive peak off-state current | V _D =V _{DRM} /V _{RRM} , T _j =25°C | | ≤5 | ≤5 | μA |
| | | V _D =V _{DRM} /V _{RRM} , T _j =125°C | | ≤0.1 | ≤0.1 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|-----------------------|-----------------------|--------------------|---------|----------|
| R _{th} (j-c) | Junction to case (AC) | | SOT-89K | 23 °C/W |
| R _{th} (j-a) | Junction to ambient | S=5cm ² | SOT-89K | 100 °C/W |

PART NUMBER



CHARACTERISTICS CURVES

FIG.1: Maximum power dissipation versus RMS on-state current (full cycle)

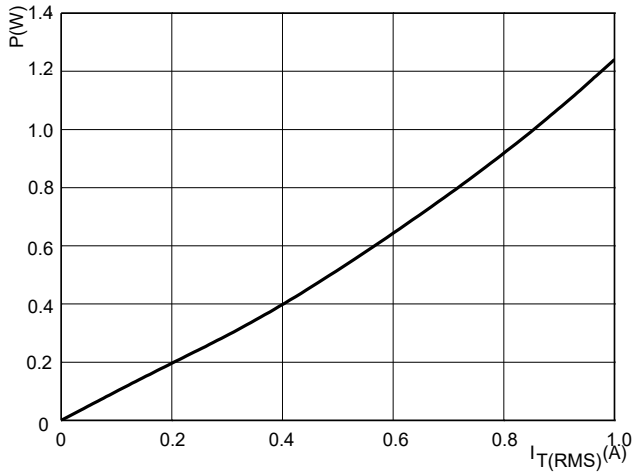


FIG.2: RMS on-state current versus case temperature (full cycle)

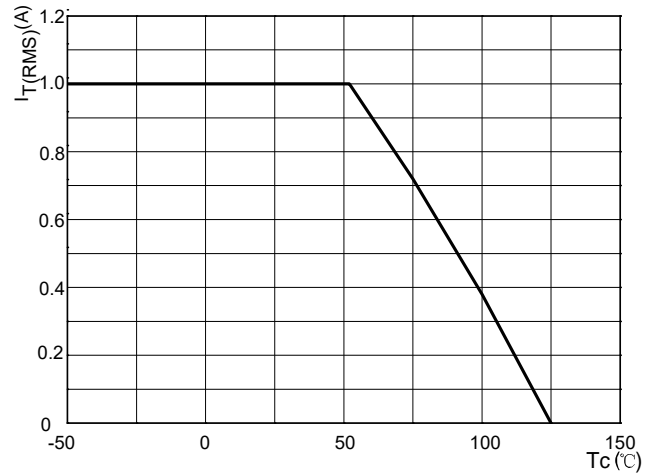


FIG.3: Surge peak on-state current versus number of cycles

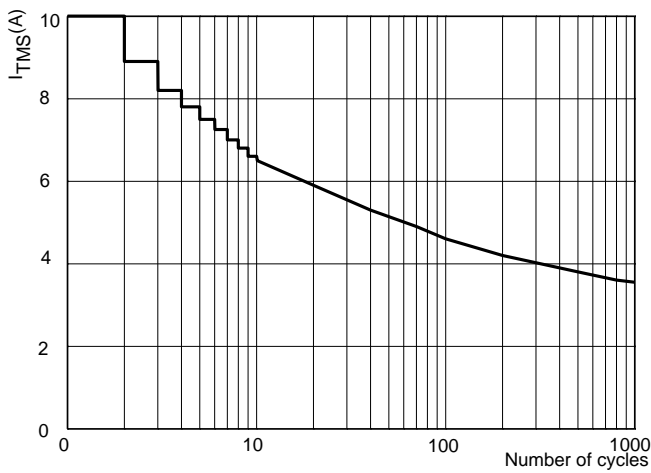


FIG.4: On-state characteristics (maximum values)

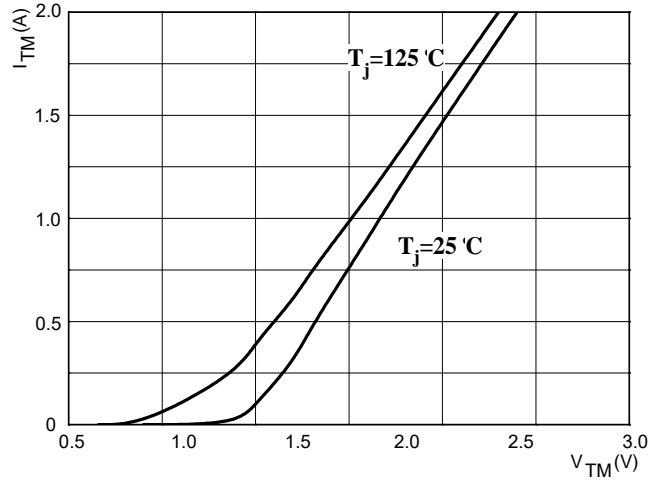


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$

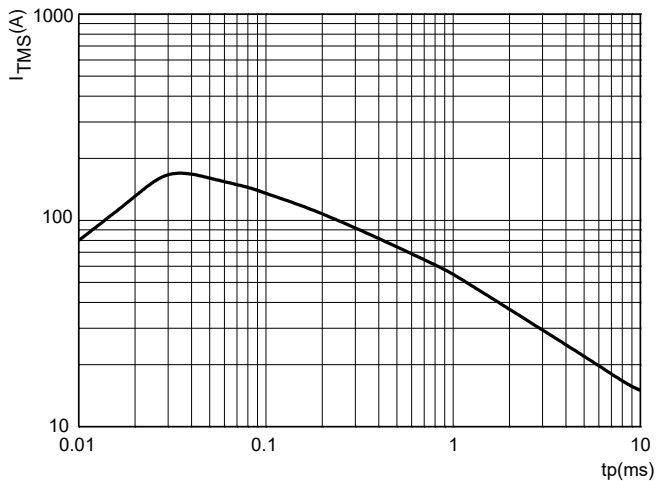
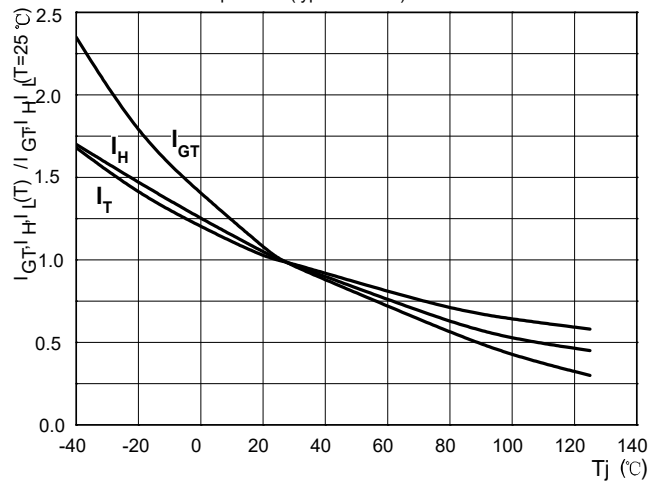
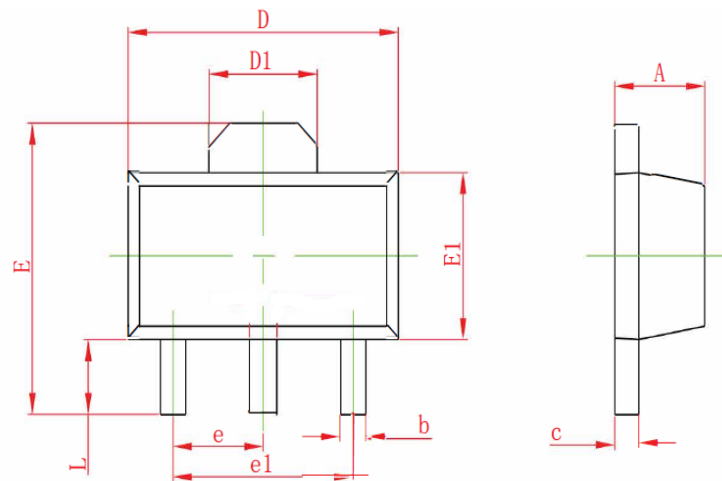


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



SOT-89K PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| c | 0.350 | 0.460 | 0.014 | 0.017 |
| D | 4.300 | 4.700 | 0.169 | 0.185 |
| D1 | 1.550 REF. | | 0.061 REF. | |
| E | 3.940 | 4.250 | 0.155 | 0.167 |
| E1 | 2.300 | 2.700 | 0.091 | 0.106 |
| e | 1.500 TYP. | | 0.060 TYP. | |
| e 1 | 3.000 TYP. | | 0.118 TYP. | |
| L | 0.800 | 1.200 | 0.031 | 0.047 |