

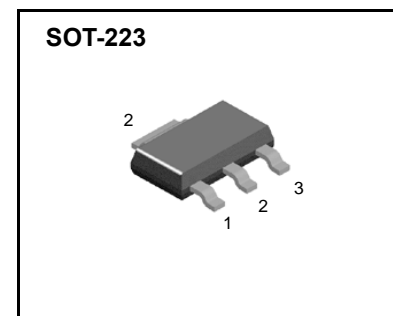
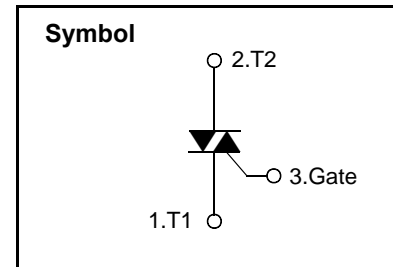
Bi-Directional Triode Thyristor

Features

- ◆ Repetitive Peak Off-State Voltage : 600V
- ◆ R.M.S On-State Current ($I_{T(RMS)} = 1\text{ A}$)
- ◆ High Commutation dv/dt
- ◆ Sensitive Gate Triggering 4 Mode
- ◆ Surface Mount Package

General Description

This device is suitable for low power AC switching application, phase control application such as fan speed and temperature modulation control, lighting control and static switching relay also designed for use in MPU interface, TTL-logic.



Absolute Maximum Ratings ($T_J = 25^\circ\text{C}$ unless otherwise specified)

| Symbol | Parameter | Condition | Ratings | Units |
|--------------|-----------------------------------|--|------------|----------------------|
| V_{DRM} | Repetitive Peak Off-State Voltage | Sine wave, 50 to 60 Hz, Gate open | 600 | V |
| $I_{T(RMS)}$ | R.M.S On-State Current | $T_C = 90^\circ\text{C}$, Full Sine wave | 1.0 | A |
| I_{TSM} | Surge On-State Current | One Cycle, 50Hz/60Hz, Peak, Non-Repetitive | 9.1/10 | A |
| I^2t | I^2t Value for fusing | $t_p = 10\text{ms}$ | 0.41 | A^2s |
| P_{GM} | Peak Gate Power Dissipation | $T_C = 90^\circ\text{C}$, Pulse width $\leq 1.0\mu\text{s}$ | 1.0 | W |
| $P_{G(AV)}$ | Average Gate Power Dissipation | $T_C = 90^\circ\text{C}$, $t = 8.3\text{ms}$ | 0.1 | W |
| I_{GM} | Peak Gate Current | $t_p = 20\mu\text{s}$, $T_J = 125^\circ\text{C}$ | 0.5 | A |
| V_{GM} | Peak Gate Voltage | $t_p = 20\mu\text{s}$, $T_J = 125^\circ\text{C}$ | 6.0 | V |
| T_J | Operating Junction Temperature | | - 40 ~ 125 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature | | - 40 ~ 150 | $^\circ\text{C}$ |

STM1A60

Electrical Characteristics

| Symbol | Items | | Conditions | Ratings | | | Unit |
|---------------|--|----------------------|---|---------|------|------|--------------------|
| | | | | Min. | Typ. | Max. | |
| I_{DRM} | Repetitive Peak Off-State Current | | $V_D = V_{DRM}$, Single Phase, Half Wave $T_J = 125\text{ }^\circ\text{C}$ | - | - | 0.5 | mA |
| V_{TM} | Peak On-State Voltage | | $I_T = 1.5\text{ A}$, Inst. Measurement | - | - | 1.6 | V |
| I_{GT1}^+ | I | Gate Trigger Current | $V_D = 6\text{ V}$, $R_L = 10\text{ }\Omega$ | - | - | 5 | mA |
| I_{GT1}^- | II | | | - | - | 5 | |
| I_{GT3}^- | III | | | - | - | 5 | |
| I_{GT3}^+ | IV | | | - | 7 | 12 | |
| V_{GT1}^+ | I | Gate Trigger Voltage | $V_D = 6\text{ V}$, $R_L = 10\text{ }\Omega$ | - | - | 1.8 | V |
| V_{GT1}^- | II | | | - | - | 1.8 | |
| V_{GT3}^- | III | | | - | - | 1.8 | |
| V_{GT3}^+ | IV | | | - | - | 2.0 | |
| V_{GD} | Non-Trigger Gate Voltage | | $T_J = 125\text{ }^\circ\text{C}$, $V_D = 1/2 V_{DRM}$ | 0.2 | - | - | V |
| $(dv/dt)_c$ | Critical Rate of Rise Off-State Voltage at Commutation | | $T_J = 125\text{ }^\circ\text{C}$, $[di/dt]_c = -0.5\text{ A/ms}$, $V_D = 2/3 V_{DRM}$ | 2.0 | - | - | V/ μs |
| I_H | Holding Current | | | - | 4.0 | - | mA |
| $R_{th(j-c)}$ | Thermal Resistance | | Junction to case | - | - | 25 | $^\circ\text{C/W}$ |
| $R_{th(j-a)}$ | Thermal Resistance | | Junction to Ambient | - | - | 60 | $^\circ\text{C/W}$ |

※ Notes :

1. Pulse Width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$



Fig 1. Gate Characteristics

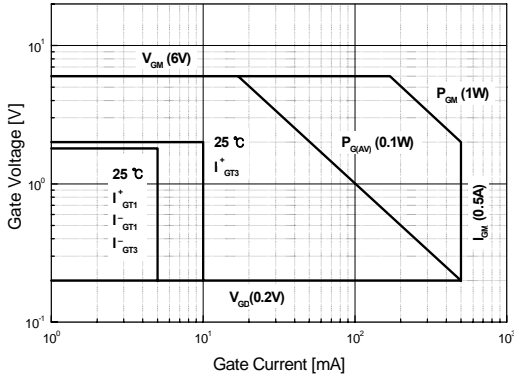


Fig 2. On-State Voltage

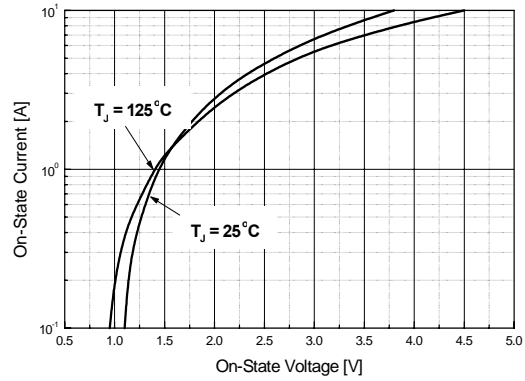


Fig 3. On State Current vs. Maximum Power Dissipation

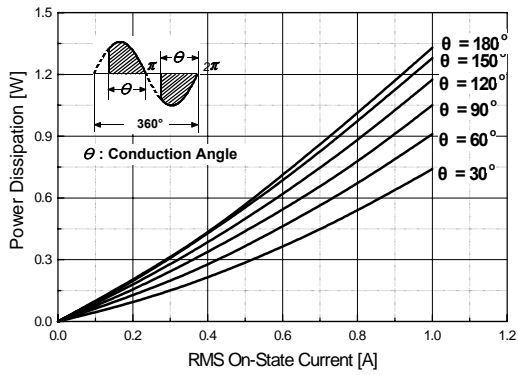


Fig 4. On State Current vs. Allowable Case Temperature

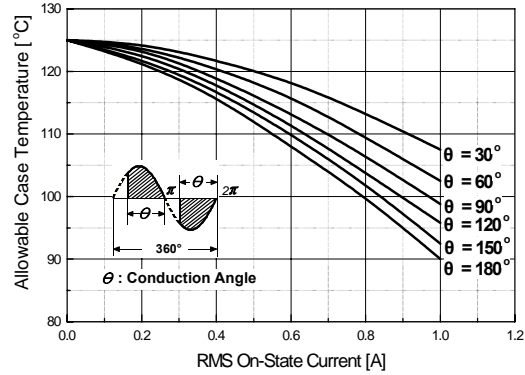


Fig 5. Surge On-State Current Rating (Non-Repetitive)

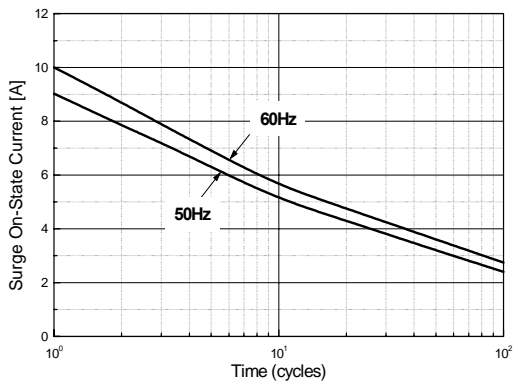
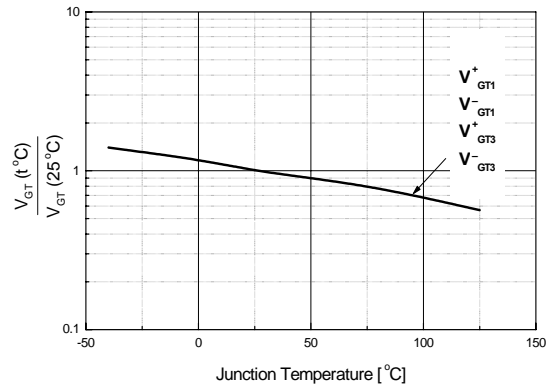


Fig 6. Gate Trigger Voltage vs. Junction Temperature



STM1A60

Fig 7. Gate Trigger Current vs. Junction Temperature

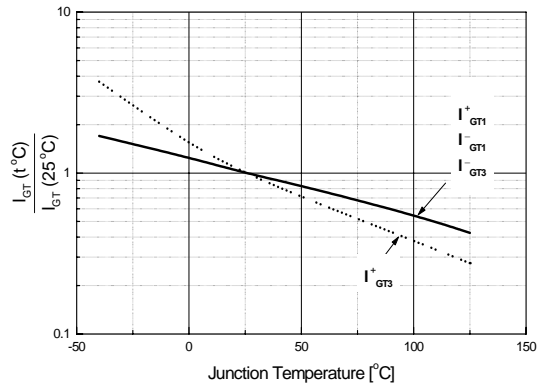


Fig 8. Transient Thermal Impedance

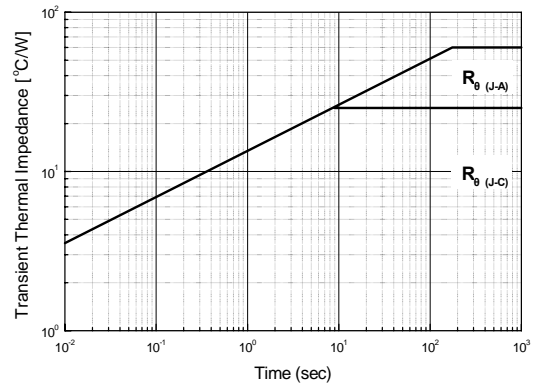
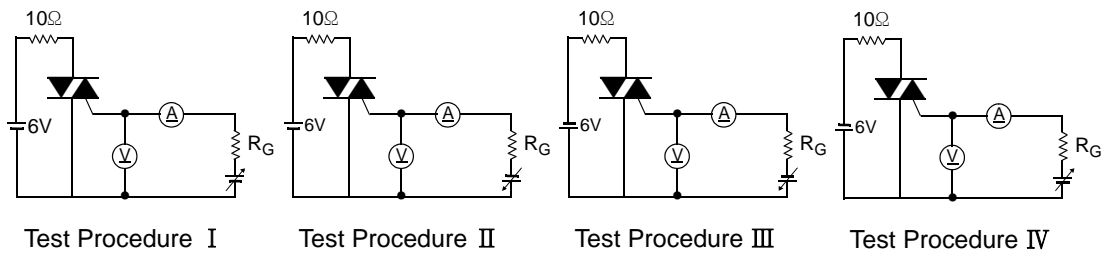


Fig 9. Gate Trigger Characteristics Test Circuit



STM1A60

SOT-223 Package Dimension

| Dim. | mm | | | Inch | | |
|------|---------|------|------|--------|-------|-------|
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | | | 1.80 | | | 0.071 |
| A1 | 0.02 | | 0.1 | 0.0008 | | 0.004 |
| B | 0.60 | 0.70 | 0.85 | 0.024 | 0.027 | 0.034 |
| B1 | 2.90 | 3.00 | 3.15 | 0.114 | 0.118 | 0.124 |
| C | 0.24 | 0.26 | 0.35 | 0.009 | 0.010 | 0.014 |
| D | 6.30 | 6.50 | 6.70 | 0.248 | 0.256 | 0.264 |
| e | | 2.3 | | | 0.090 | |
| e1 | | 4.6 | | | 0.181 | |
| E | 3.30 | 3.50 | 3.70 | 0.130 | 0.138 | 0.146 |
| H | 6.70 | 7.00 | 7.30 | 0.264 | 0.276 | 0.287 |
| V | 10° Max | | | | | |

