

Symmetrical Gate Turn-Off Thyristor

Types S0300SR12Y

Absolute Maximum Ratings

| | VOLTAGE RATINGS | MAXIMUM LIMITS | UNITS |
|---------------|---|----------------|-------|
| V_{DRM} | Repetitive peak off-state voltage, (note 1) | 1200 | V |
| V_{DSM} | Non-repetitive peak off-state voltage, (note 1) | 1300 | V |
| $V_{DC-link}$ | Maximum continuous DC-link voltage | 600 | V |
| V_{RRM} | Repetitive peak reverse voltage | 100 | V |
| V_{RSM} | Non-repetitive peak reverse voltage | 100 | V |

| | RATINGS | MAXIMUM LIMITS | UNITS |
|--------------|---|---------------------|-------------|
| I_{TGQ} | Peak turn-off current, (note 2) | 480 | A |
| L_s | Snubber loop inductance, $I_{TM}=I_{TGQ}$, (note 2) | 300 | nH |
| $I_{T(AV)M}$ | Mean on-state current, $T_{sink}=55^{\circ}C$ (note 3) | 215 | A |
| $I_{T(RMS)}$ | Nominal RMS on-state current, $25^{\circ}C$ (note 3) | 445 | A |
| I_{TSM} | Peak non-repetitive surge current $t_p=10ms$, (Note 4) | 3.5 | kA |
| I_{TSM2} | Peak non-repetitive surge current $t_p=2ms$, (Note 4) | 6.1 | kA |
| I^2t | I^2t capacity for fusing $t_p=10ms$ | 61.25×10^3 | A^2s |
| di/dt_{cr} | Critical rate of rise of on-state current, (note 5) | 400 | $A/\mu s$ |
| P_{FGM} | Peak forward gate power | 140 | W |
| P_{RGM} | Peak reverse gate power | 2 | kW |
| I_{FGM} | Peak forward gate current | 100 | A |
| V_{RGM} | Peak reverse gate voltage (note 6). | 18 | V |
| t_{off} | Minimum permissible off-time (note 2) | 40 | μs |
| t_{on} | Minimum permissible on-time | 10 | μs |
| $T_{j op}$ | Operating temperature range | -40 to +125 | $^{\circ}C$ |
| T_{stg} | Storage temperature range | -40 to +125 | $^{\circ}C$ |

Notes:-

- 1) $V_{GK}=-2Volts$.
- 2) $T_j=125^{\circ}C$, $V_D=600V$, $V_{DM} \leq 1200V$ $di_{GQ}/dt=15A/\mu s$, $I_{TGQ}=480A$ and $C_s=1\mu F$.
- 3) Double-side cooled, single phase; 50Hz, 180° half-sinewave.
- 4) $T_{j(initial)}=125^{\circ}C$, single phase, 180° sinewave, re-applied voltage $V_D=V_R \leq 720V$.
- 5) For $di/dt > 400A/\mu s$ please consult the factory.
- 6) May exceed this value during turn-off avalanche period.

Characteristics

| | Parameter | MIN | TYP | MAX | TEST CONDITIONS (note 1) | UNITS |
|--------------|--|------|------|------|---|------------|
| V_{TM} | Maximum peak on-state voltage | - | 2.1 | 2.4 | $I_G=0.8A, I_T=480A$ | V |
| I_L | Latching current | - | 5 | - | $T_J=25^\circ C$ | A |
| I_H | Holding current. | - | 5 | - | $T_J=25^\circ C$ | A |
| dv/dt_{cr} | Critical rate of rise of off-state voltage | 1000 | - | - | $V_D=1250V, V_{GR}=-2V$ | V/ μs |
| I_{DRM} | Peak off state current | - | - | 30 | Rated $V_{DRM}, V_{GR}=-2V$ | mA |
| I_{RRM} | Peak reverse current | - | - | 30 | $V_{RR}=16V$ | mA |
| I_{GKM} | Peak negative gate leakage current | - | - | 50 | $V_{GR}=-16V$ | mA |
| V_{GT} | Gate trigger voltage | - | 0.9 | - | $T_J=-40^\circ C$ | V |
| | | - | 0.8 | - | $T_J=25^\circ C \quad V_D=25V, R_L=25m\Omega$ | V |
| | | - | 0.6 | - | $T_J=125^\circ C$ | V |
| I_{GT} | Gate trigger current | - | 0.75 | 2.0 | $T_J=-40^\circ C$ | A |
| | | - | 0.25 | 0.5 | $T_J=25^\circ C \quad V_D=25V, R_L=25m\Omega$ | A |
| | | - | 0.05 | 0.1 | $T_J=125^\circ C$ | A |
| t_d | Delay time | - | 1.1 | - | $V_D=600V, I_{TQ}=480A, di_T/dt=150A/\mu s, I_{GM}=6A, di_G/dt=5A/\mu s, C_S=1\mu F, R_S=5\Omega$ | μs |
| t_{gt} | Turn-on time | - | 3.5 | 5.0 | | μs |
| E_{on} | Turn-on Energy | - | - | 150 | | mJ |
| t_f | Fall time | - | 1.0 | - | $V_D=600V, I_{TQ}=480A, di_{GQ}/dt=15A/\mu s, V_{GR}=-16V, C_S=1\mu F$ | μs |
| t_s | Storage time | - | 8.0 | - | | μs |
| t_{gq} | Turn-off time | - | - | 10 | | μs |
| I_{GQ} | Peak turn-off gate current | - | 125 | - | | A |
| Q_{GQ} | Turn-off gate charge | - | 900 | - | | μC |
| t_{tail} | Tail time | - | 10 | - | | μs |
| E_{off} | Turn-off energy | - | - | 400 | | mJ |
| R_{thJC} | Thermal resistance junction to case | - | - | 0.13 | | K/W |
| F | Mounting torque | 24.5 | - | 27.0 | | Nm |
| W_t | Weight | - | 250 | - | | g |

Notes:-

 1) Unless otherwise indicated $T_J=125^\circ C$.

Curves

Figure 1 - On-state characteristics of Limit device

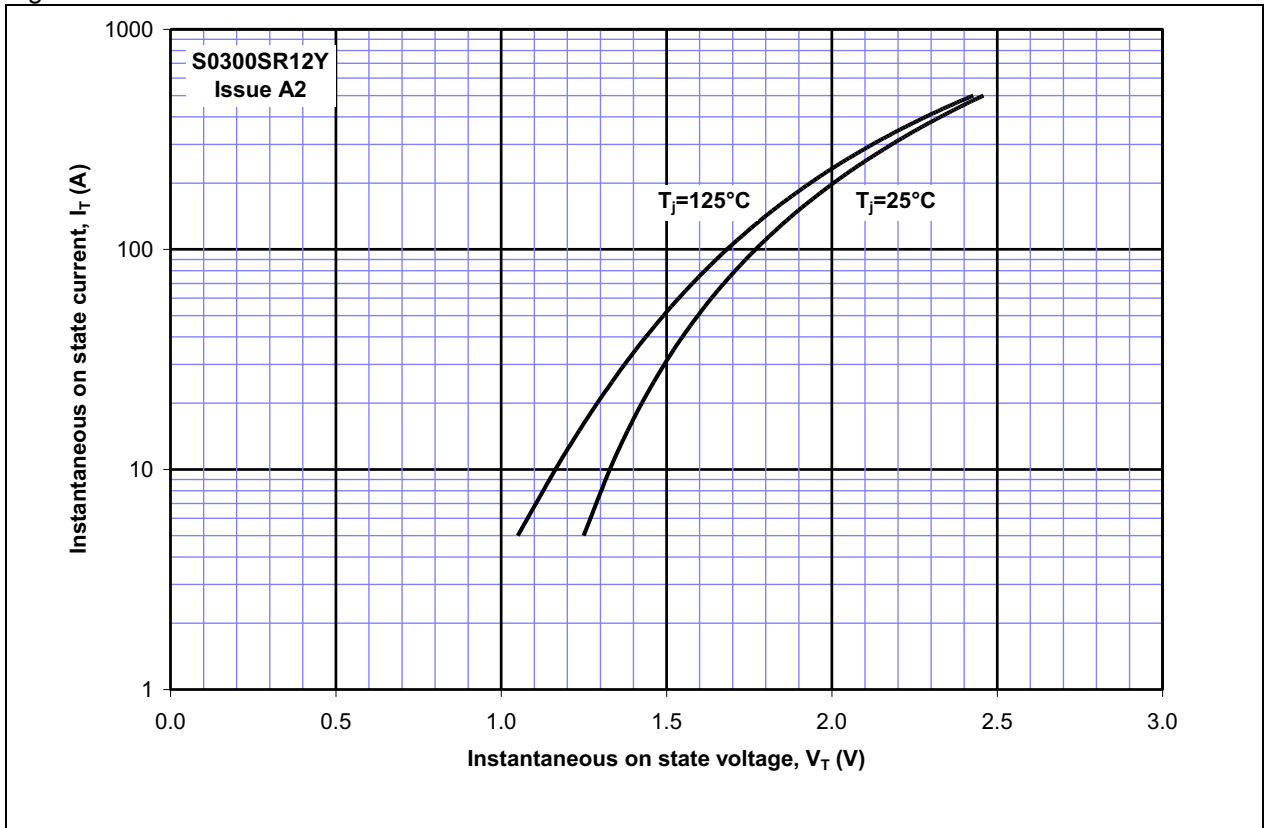


Figure 2 – Transient thermal impedance

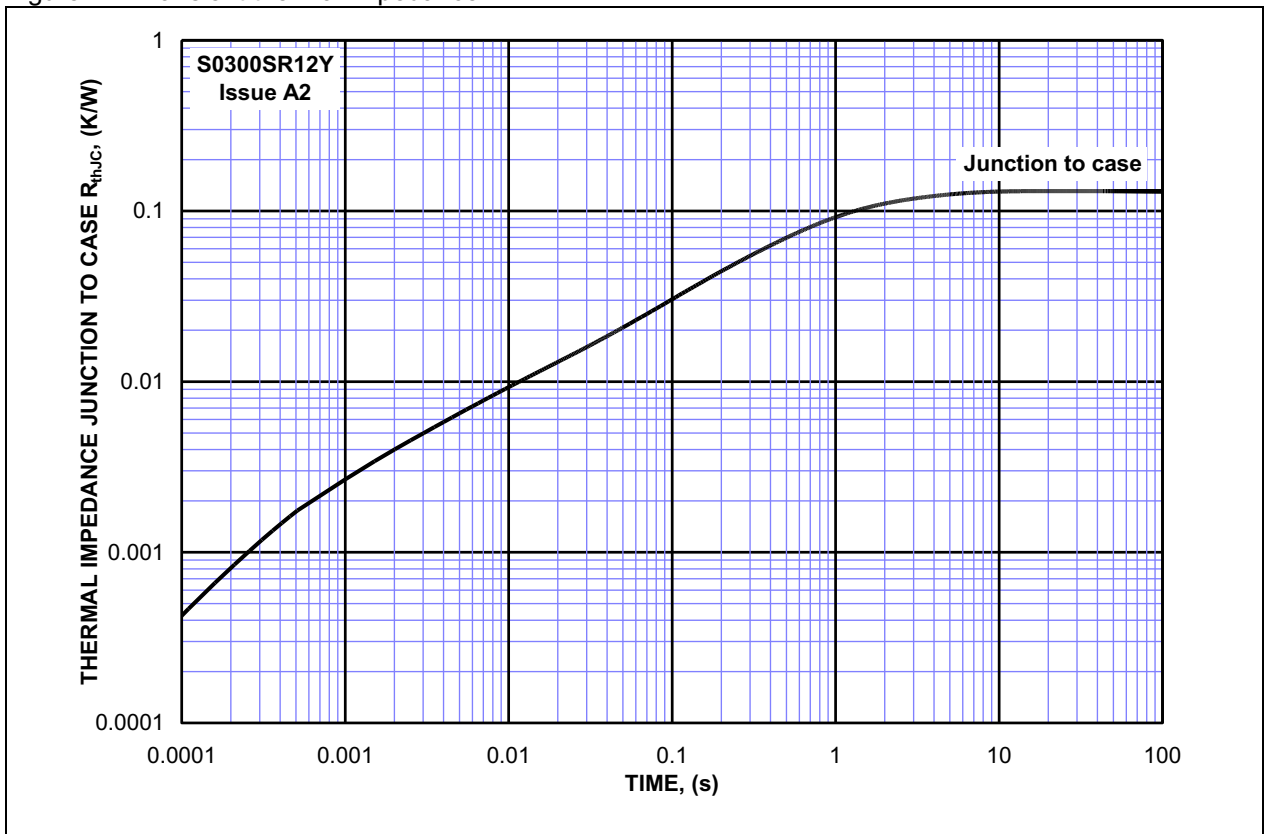
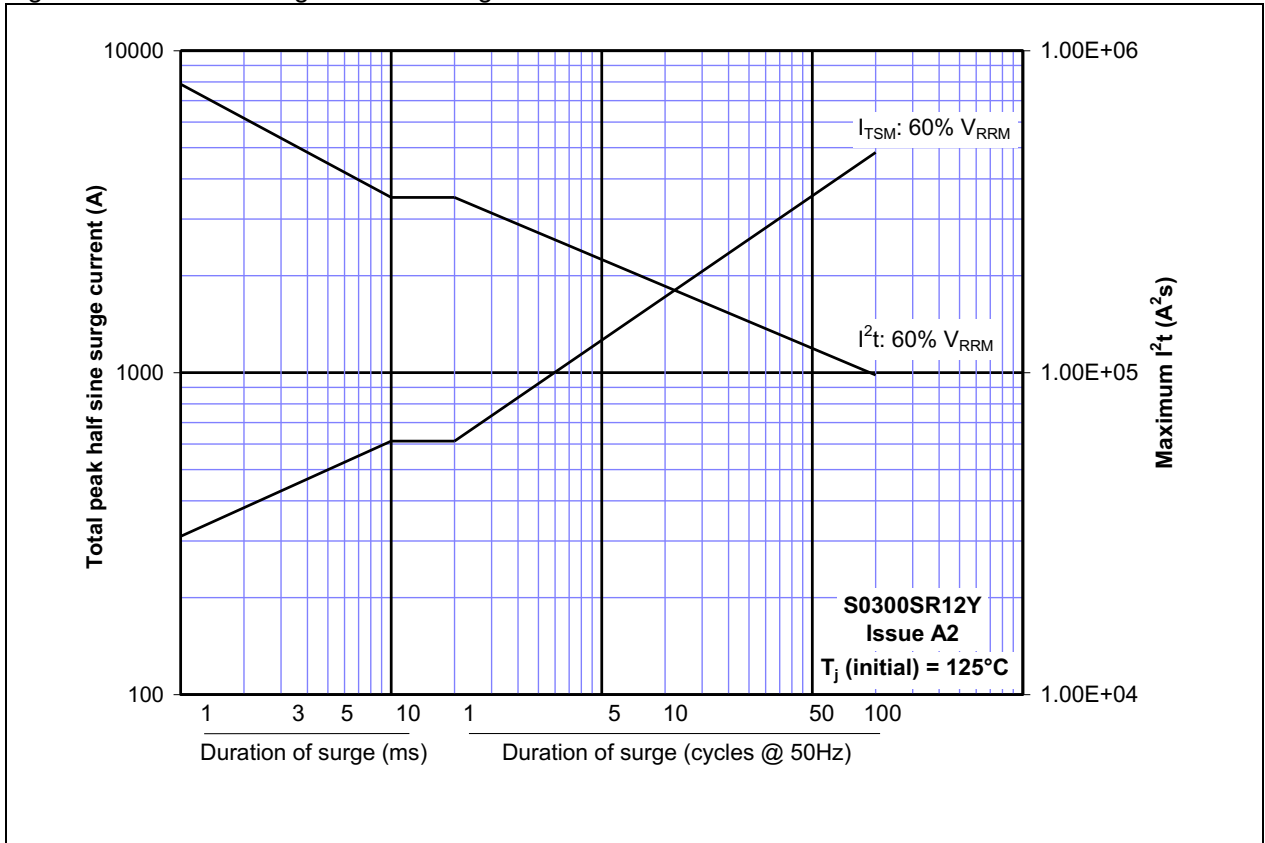
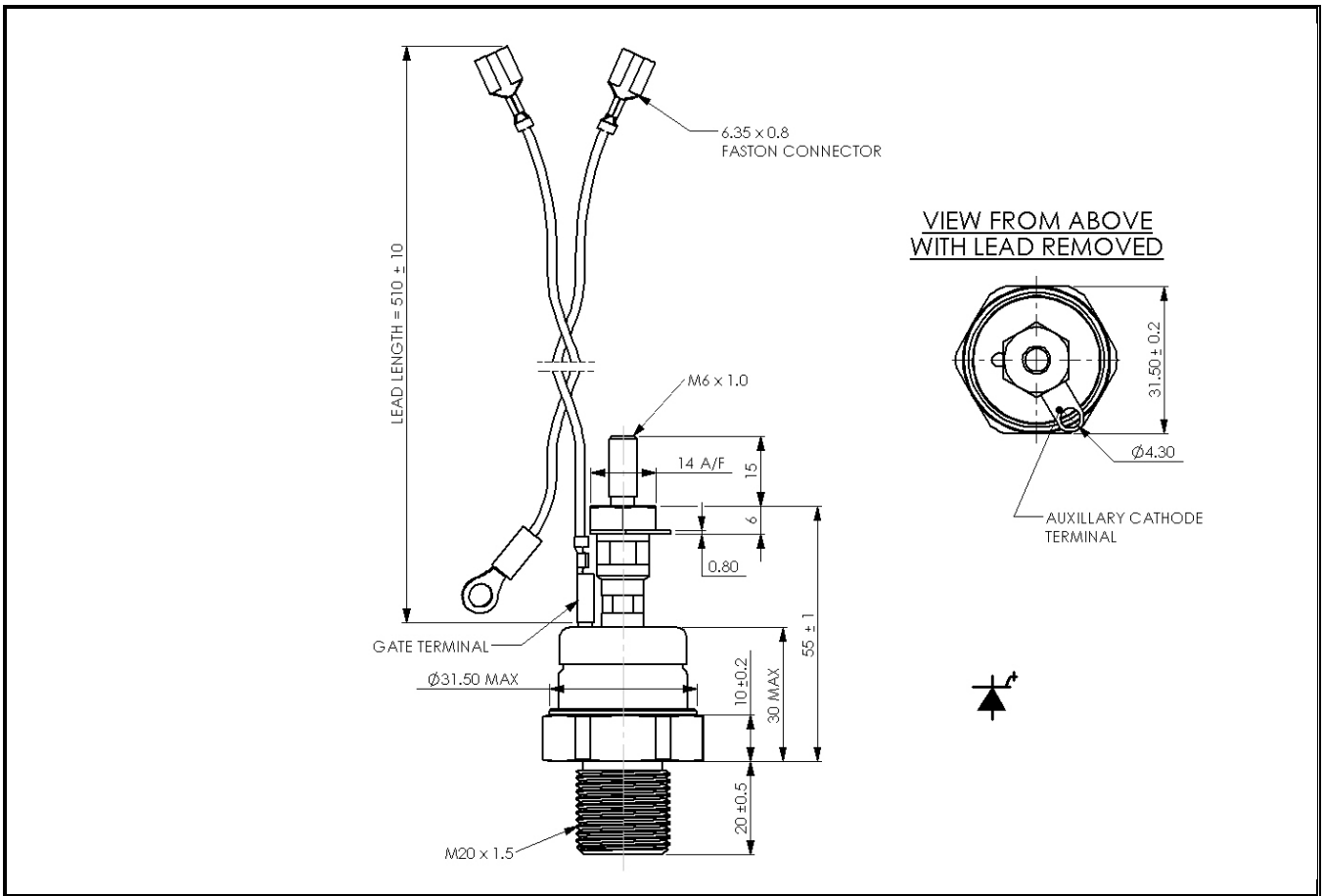


Figure 3 – Maximum surge and I²t Ratings



Outline Drawing & Ordering Information



ORDERING INFORMATION

(Please quote 10 digit code as below)

| | | | |
|------------------------------------|------------------------------------|--|--------------------------------------|
| S0300 Fixed Type Code | SR Fixed Outline Code | 12 Fixed Voltage Code $V_{DRM}/100$ 25 | Y V_{RRM} Code Y=100V |
|------------------------------------|------------------------------------|--|--------------------------------------|

Typical order code: S0300SR12Y – $V_{DRM} = 1200V$ & $V_{RRM} = 100V$.

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