

# 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 $t_p=10ms$	$61.25 \times 10^3$	$A^2s$
$di/dt_{cr}$	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	$\mu s$
$t_{on}$	Minimum permissible on-time	10	$\mu s$
$T_{j op}$	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,  $180^{\circ}$  half-sinewave.
- 4)  $T_{j(initial)}=125^{\circ}C$ , single phase,  $180^{\circ}$  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/ $\mu s$
$I_{DRM}$	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	-	$V_D=600V, I_{TQ}=480A, di_T/dt=150A/\mu s, I_{GM}=6A, di_G/dt=5A/\mu s, C_S=1\mu F, R_S=5\Omega$	$\mu s$
$t_{gt}$	Turn-on time	-	3.5	5.0		$\mu s$
$E_{on}$	Turn-on Energy	-	-	150		mJ
$t_f$	Fall time	-	1.0	-	$V_D=600V, I_{TQ}=480A, di_{GQ}/dt=15A/\mu s, V_{GR}=-16V, C_S=1\mu F$	$\mu s$
$t_s$	Storage time	-	8.0	-		$\mu s$
$t_{gq}$	Turn-off time	-	-	10		$\mu s$
$I_{GQ}$	Peak turn-off gate current	-	125	-		A
$Q_{GQ}$	Turn-off gate charge	-	900	-		$\mu C$
$t_{tail}$	Tail time	-	10	-		$\mu s$
$E_{off}$	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

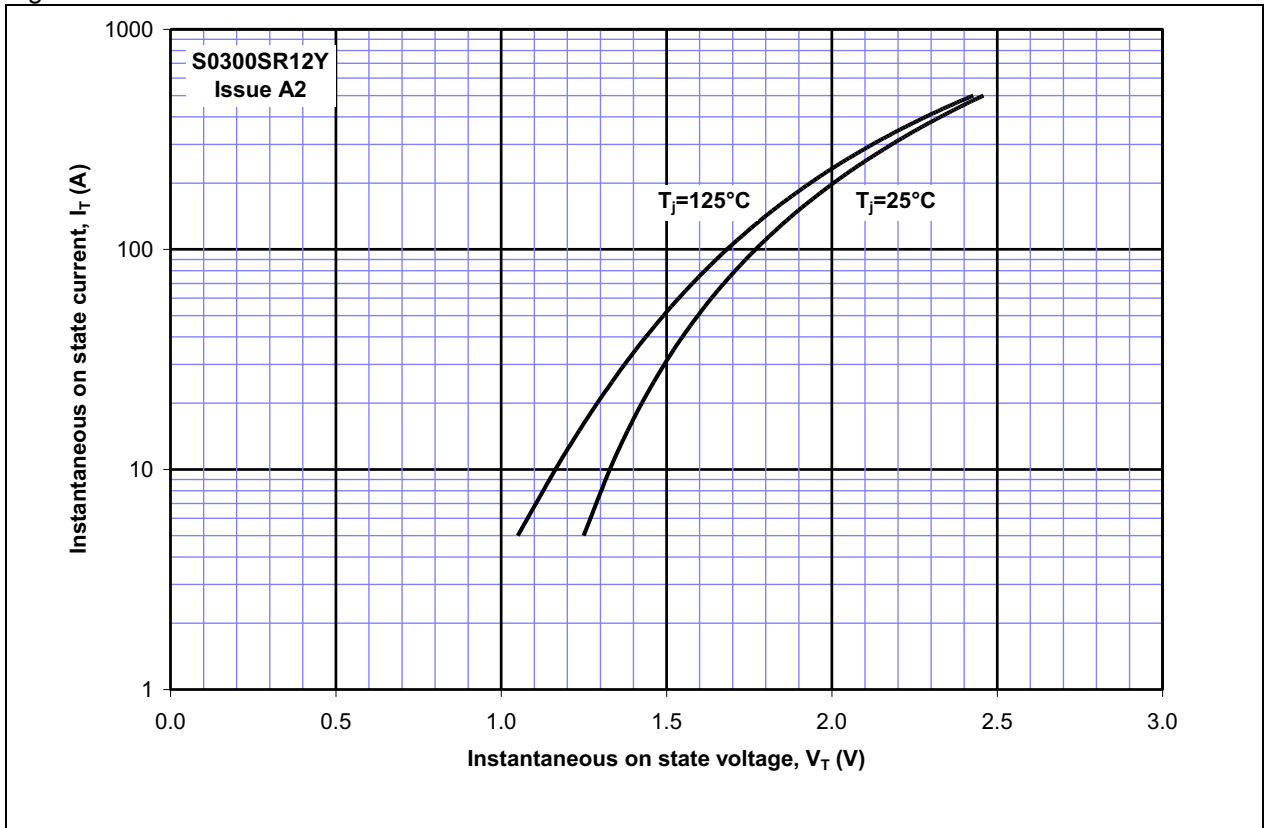


Figure 2 – Transient thermal impedance

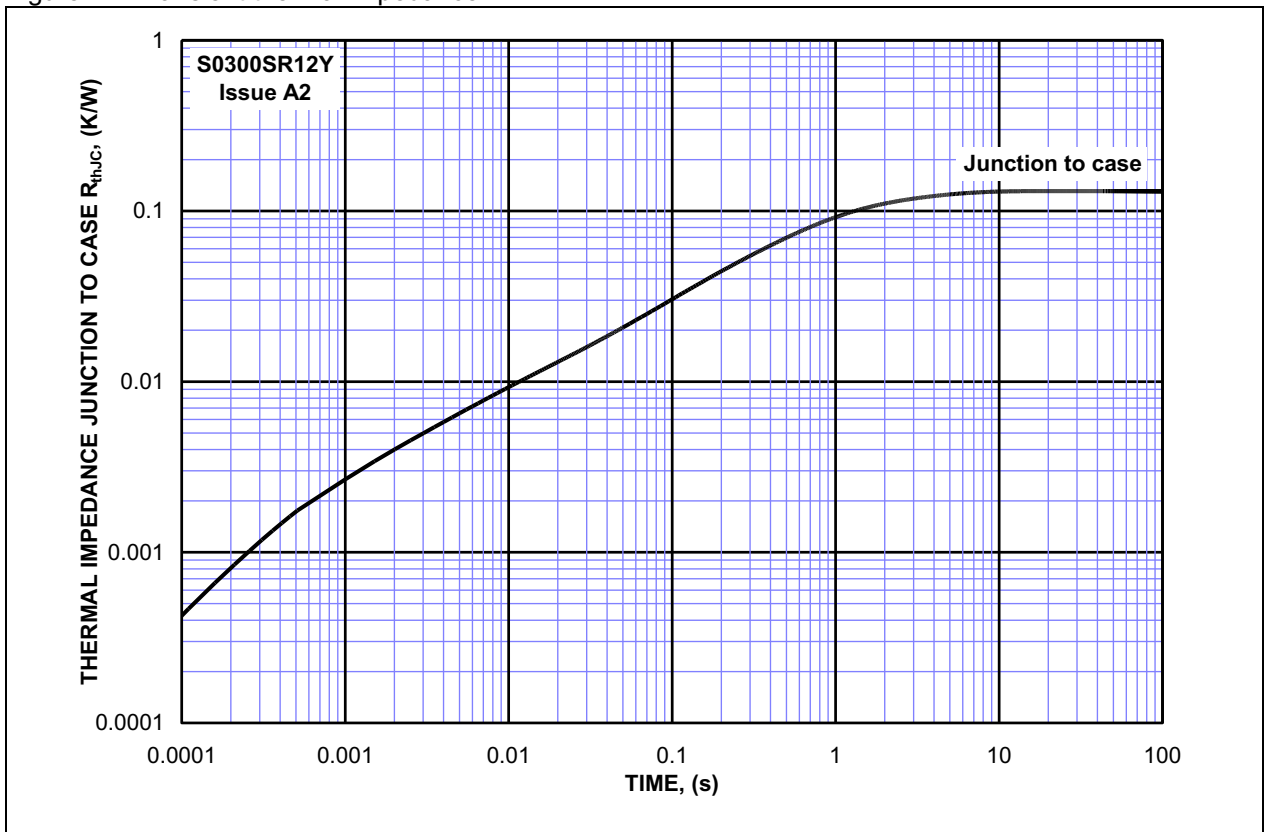
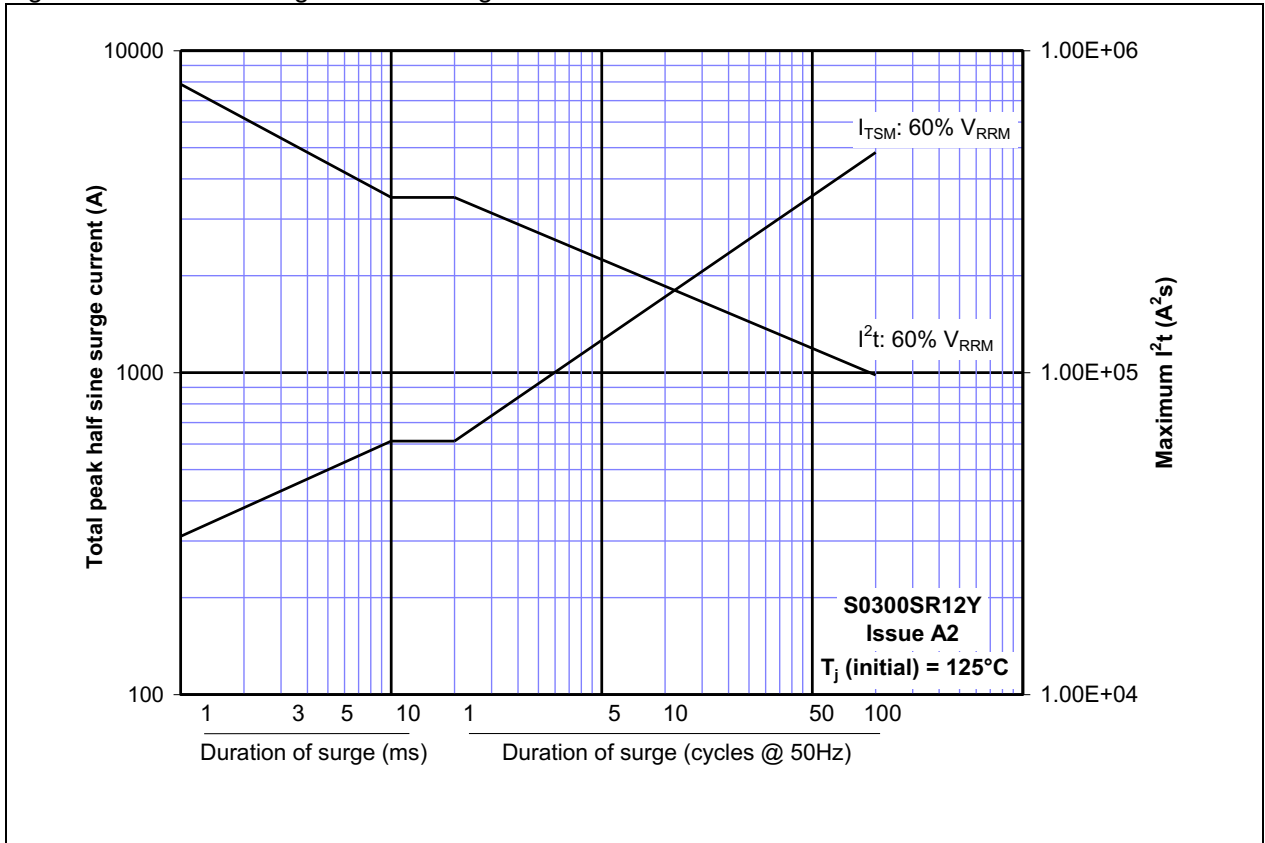
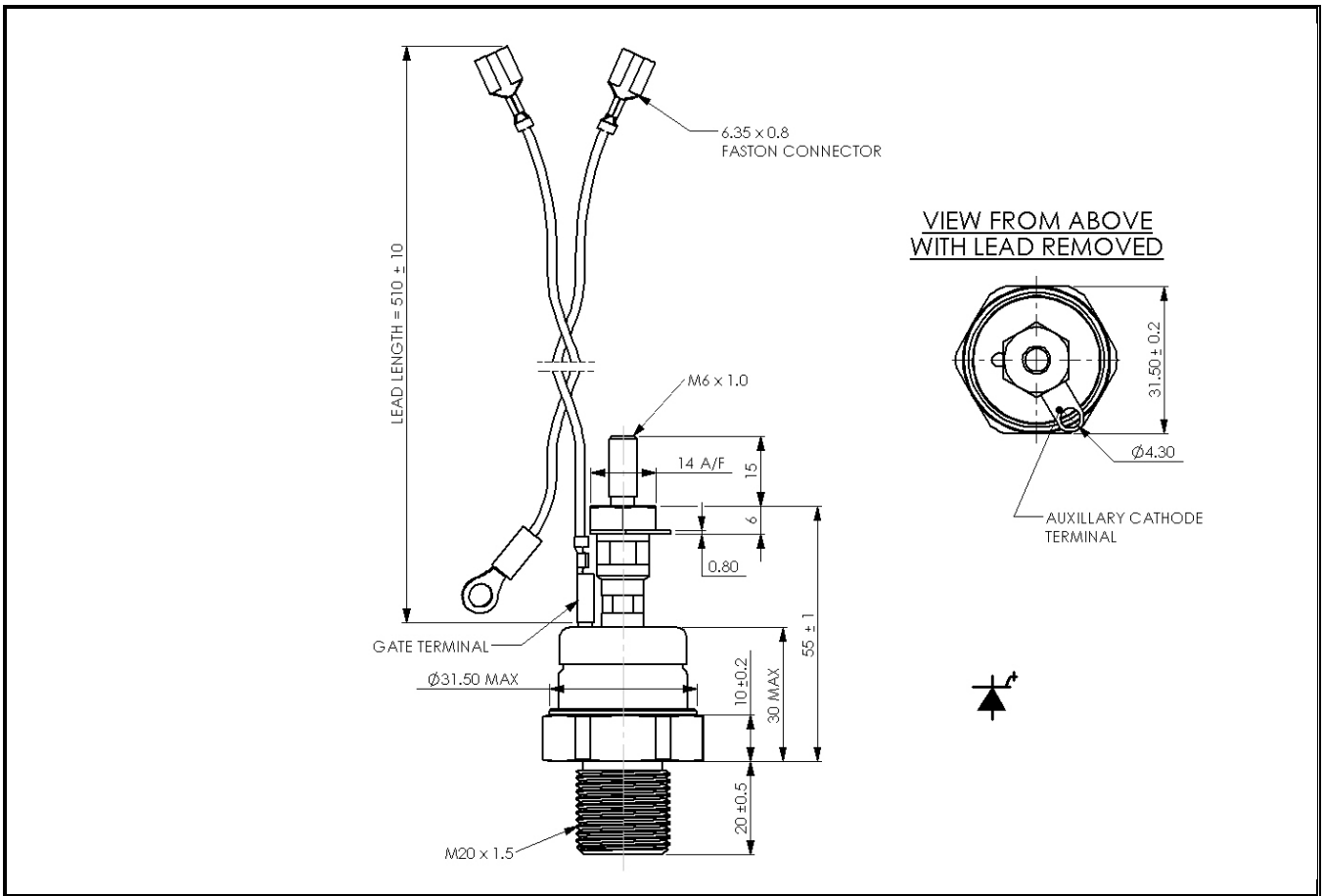


Figure 3 – Maximum surge and I<sup>2</sup>t Ratings



**Outline Drawing & Ordering Information**



**ORDERING INFORMATION**

(Please quote 10 digit code as below)

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

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

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