

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/ μs
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	-	$T_J=25^{\circ}C$ $V_D=25V$, $R_L=25m\Omega$	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	$T_J=25^{\circ}C$ $V_D=25V$, $R_L=25m\Omega$	A
		-	0.05	0.1	$T_J=125^{\circ}C$	A
t_d	Delay time	-	1.1	-	$V_D=600V$, $I_{TGQ}=480A$, $di_T/dt=150A/\mu s$, $I_{GM}=6A$, $di_G/dt=5A/\mu s$, $C_S=1\mu F$, $R_s=5\Omega$	μs
t_{gt}	Turn-on time	-	3.5	5.0		μs
E_{on}	Turn-on Energy	-	-	150		mJ
t_f	Fall time	-	1.0	-	$V_D=600V$, $I_{TGQ}=480A$, $di_{GQ}/dt=15A/\mu s$, $V_{GR}=-16V$, $C_S=1\mu F$	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

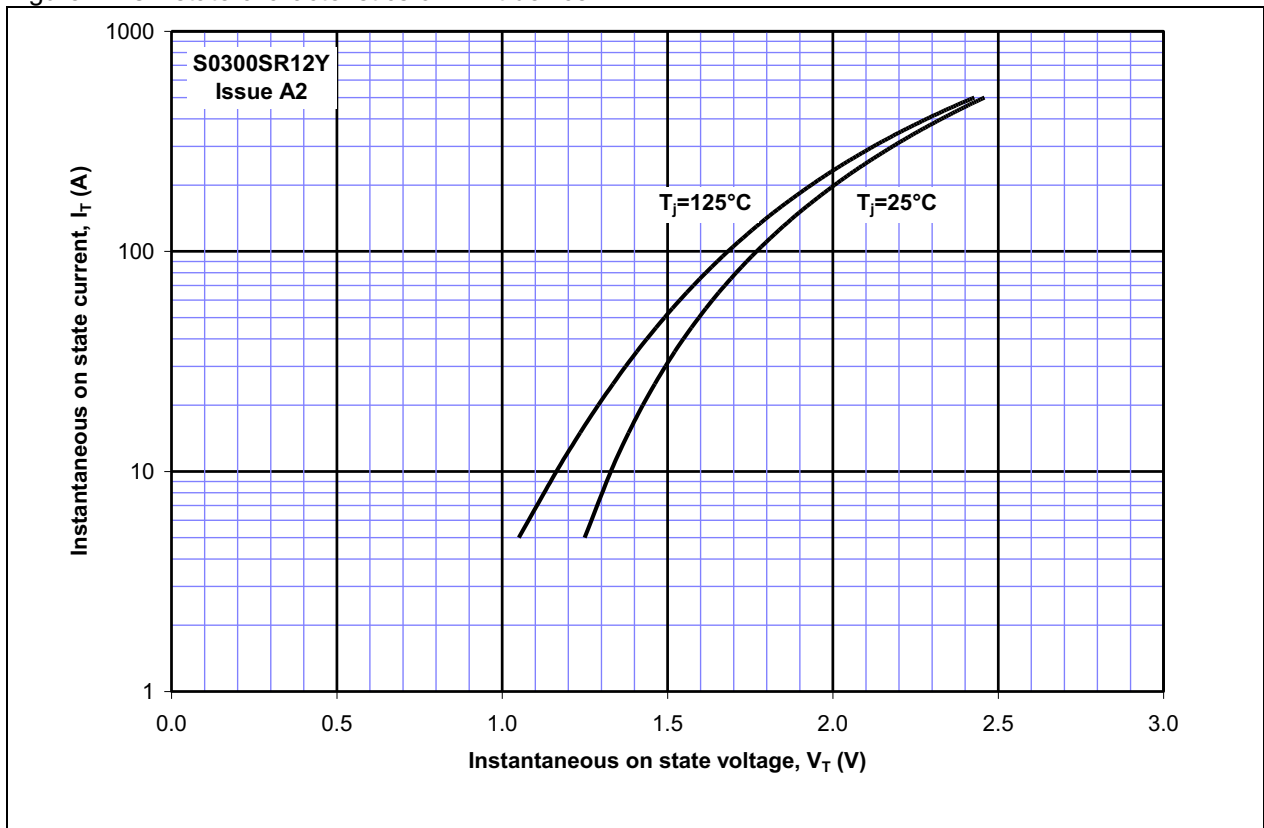


Figure 2 – Transient thermal impedance

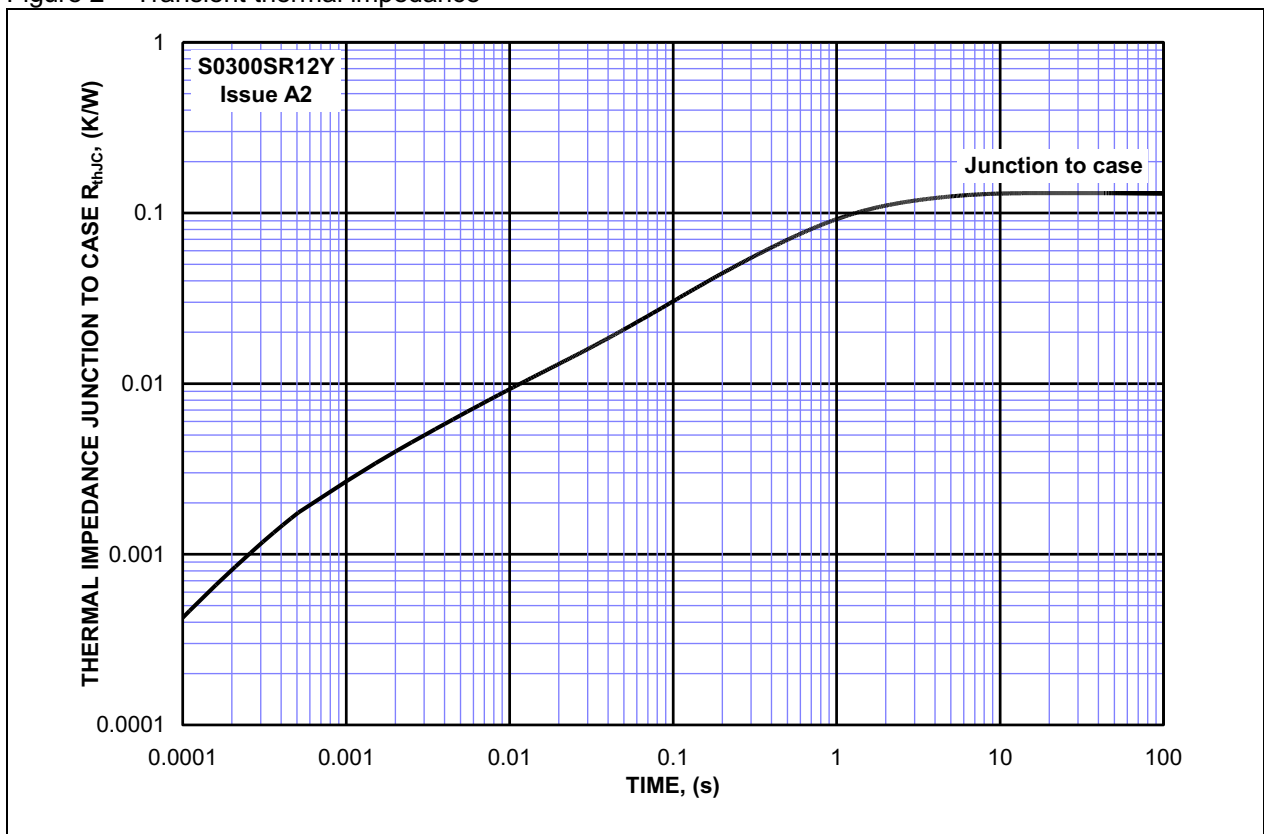
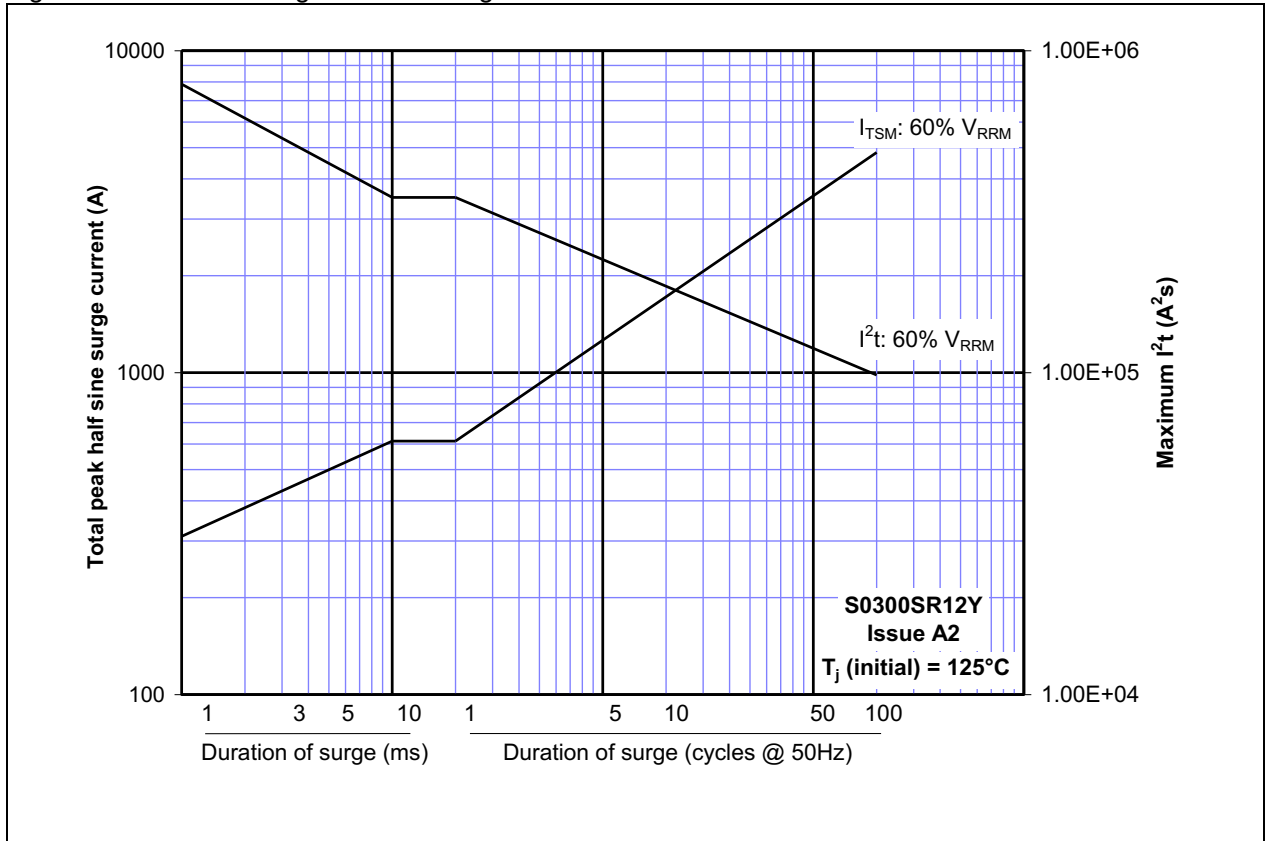
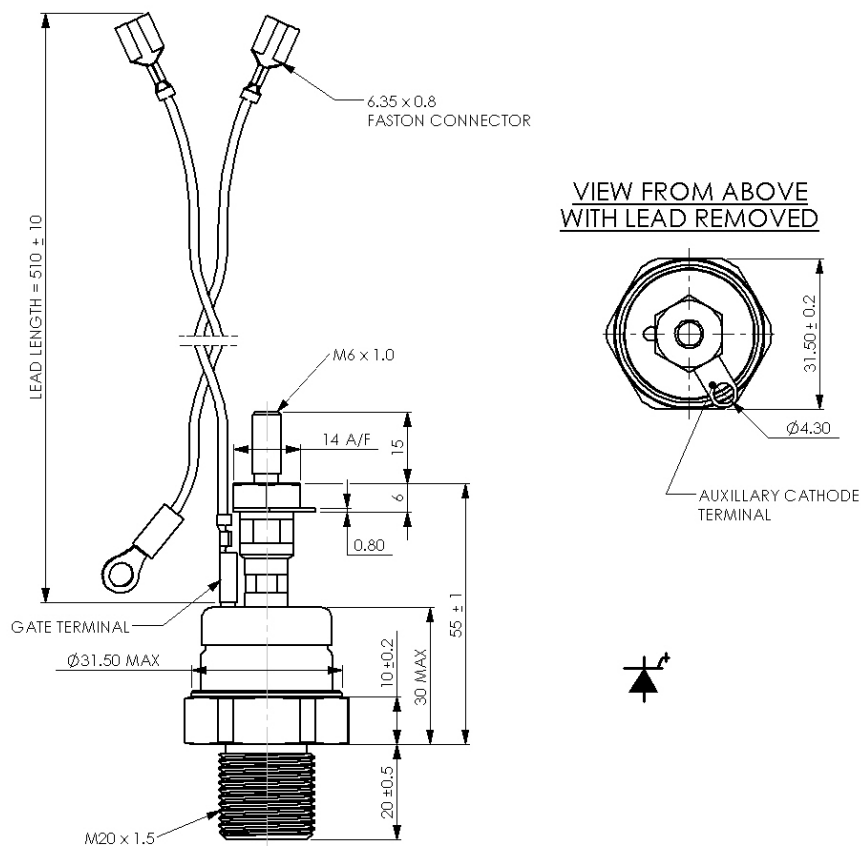


Figure 3 – Maximum surge and I^2t Ratings



Outline Drawing & Ordering Information



ORDERING INFORMATION

(Please quote 10 digit code as below)

S0300	SR	12	Y
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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