

Provisional Data

Symmetrical Gate Turn-Off Thyristor Types S0300SR12#

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	960	V
V_{RSM}	Non-repetitive peak reverse voltage	960	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) $V_{GK}=-2V$ olts.
- 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

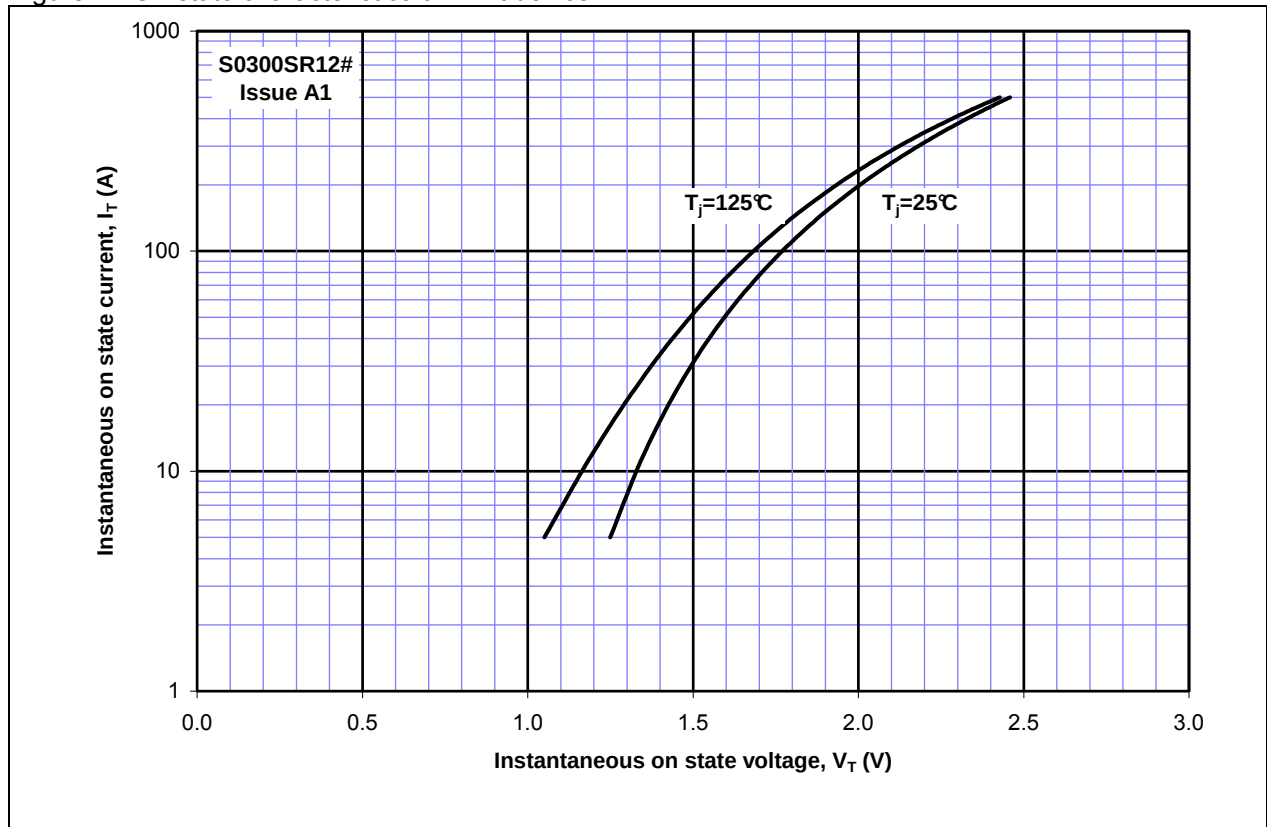


Figure 2 – Transient thermal impedance

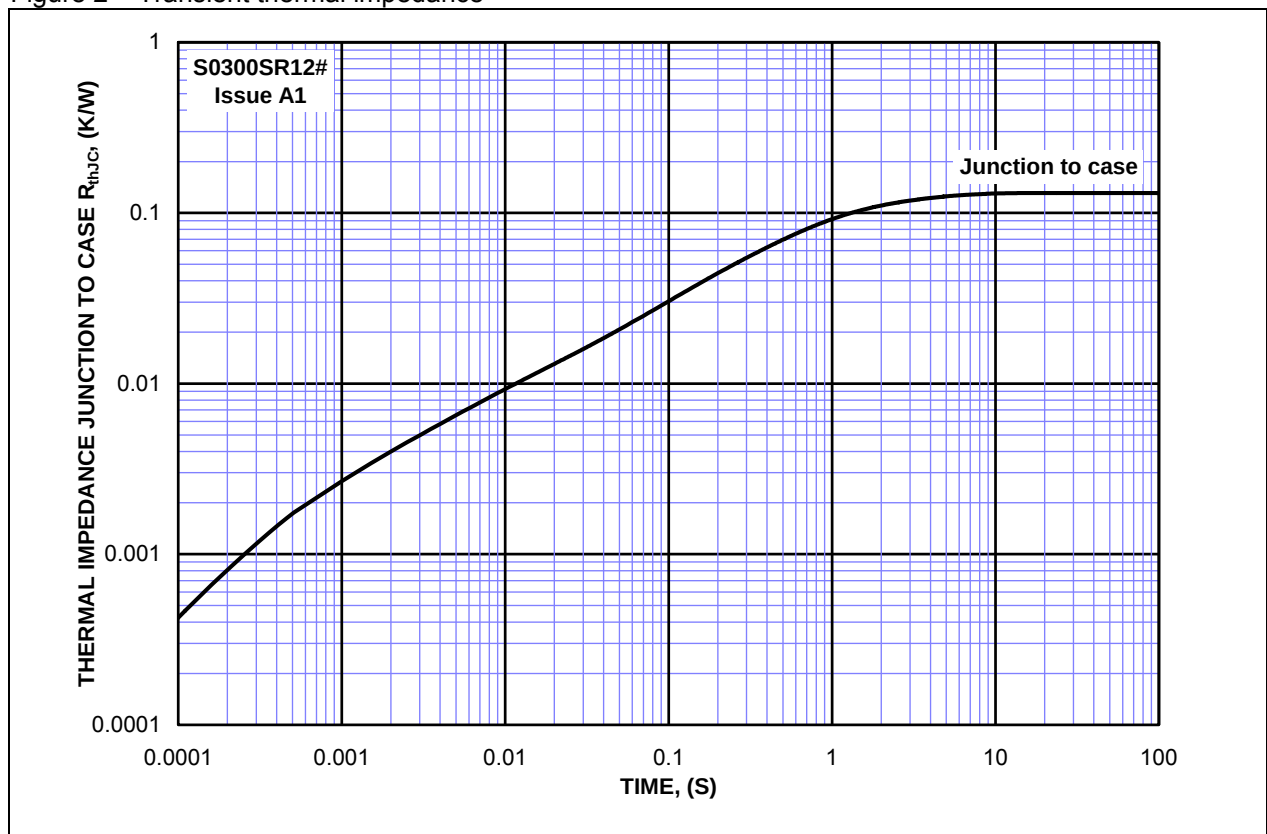
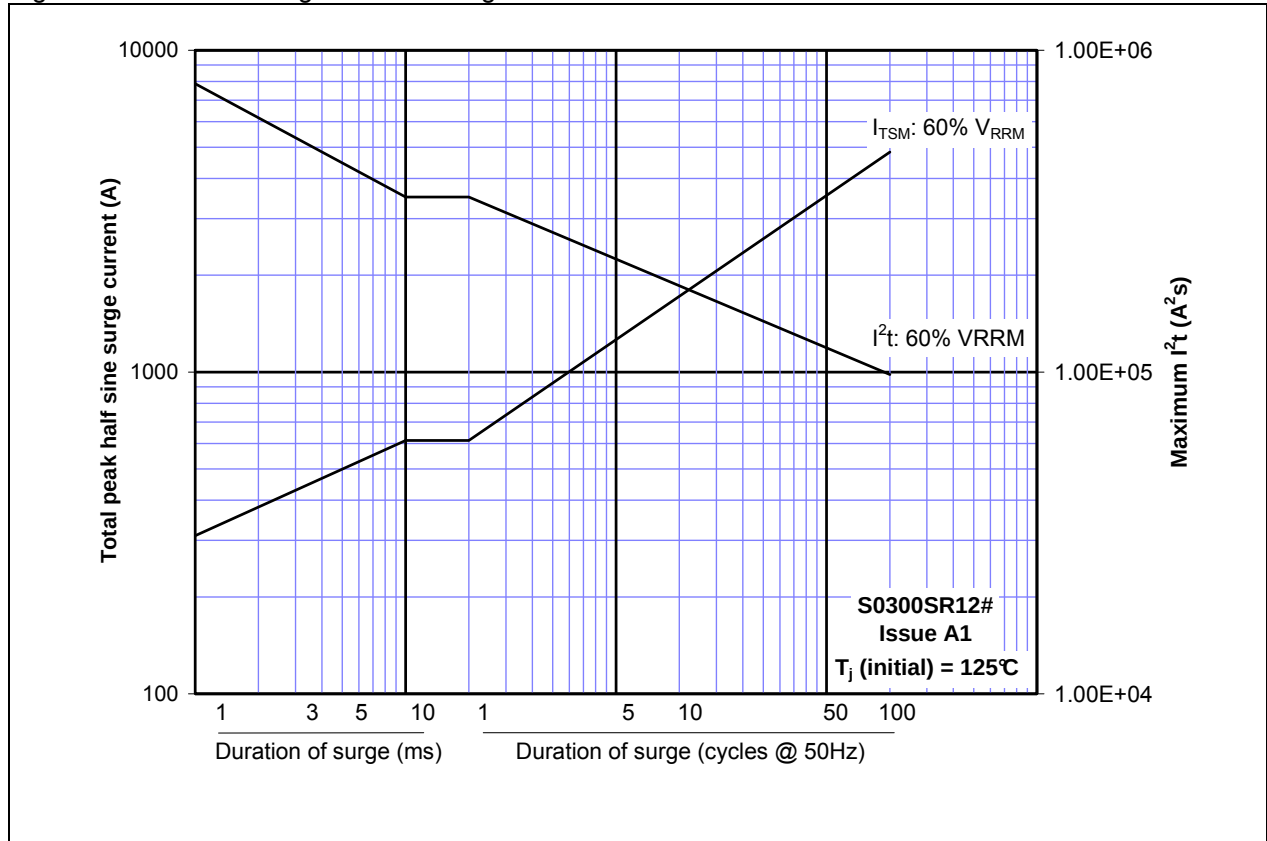
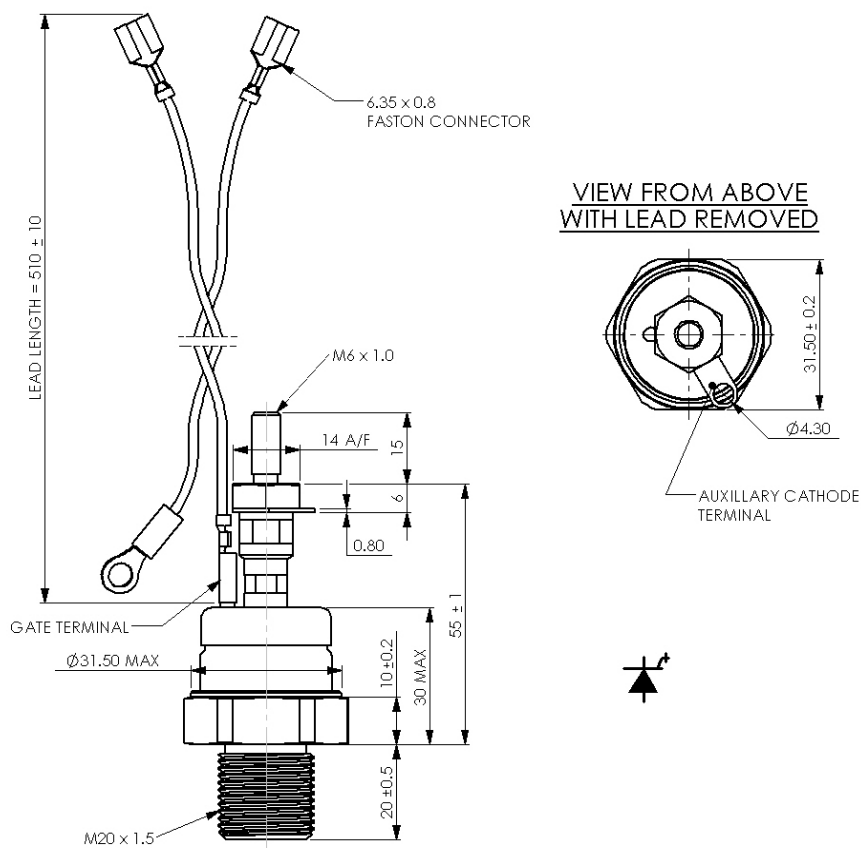


Figure 3 – Maximum surge and I^2t Ratings

Outline Drawing & Ordering Information**ORDERING INFORMATION**

(Please quote 10 digit code as below)

S0300	SR	12	#
Fixed Type Code	Fixed Outline Code	Fixed Voltage Code $V_{DRM}/100$ 25	V_{RRM} Code D=960V, Y=100V

Typical order code: S0300SR12Y – $V_{DRM} = 1200V$ & $V_{RRM} = 960V$.

IXYS Semiconductor GmbH
 Edisonstraße 15
 D-68623 Lampertheim
 Tel: +49 6206 503-0
 Fax: +49 6206 503-627
 E-mail: marcom@ixys.de

WESTCODE
 An IXYS Company

Westcode Semiconductors Ltd
 Langley Park Way, Langley Park,
 Chippenham, Wiltshire, SN15 1GE.
 Tel: +44 (0)1249 444524
 Fax: +44 (0)1249 659448
 E-mail: WSL.sales@westcode.com

IXYS Corporation
 1590 Buckeye Drive
 Milpitas CA 95035-7418
 Tel: +1 (408) 457 9000
 Fax: +1 (408) 496 0670
 E-mail: sales@ixys.net

www.westcode.comwww.ixys.net

IXYS Long Beach
 IXYS Long Beach, Inc
 2500 Mira Mar Ave, Long Beach
 CA 90815
 Tel: +1 (562) 296 6584
 Fax: +1 (562) 296 6585
 E-mail: service@ixyslongbeach.com

The information contained herein is confidential and is protected by Copyright. The information may not be used or disclosed except with the written permission of and in the manner permitted by the proprietors Westcode Semiconductors Ltd.

© Westcode Semiconductors Ltd.

In the interest of product improvement, Westcode reserves the right to change specifications at any time without prior notice.

Devices with a suffix code (2-letter, 3-letter or letter/digit/letter combination) added to their generic code are not necessarily subject to the conditions and limits contained in this report.