

Prospective Data

Medium Voltage Thyristor

Type K1000M#600 to K1000M#650

Development Type No. KX283M#600-650

Absolute Maximum Ratings

	VOLTAGE RATINGS	MAXIMUM LIMITS	UNITS
V_{DRM}	Repetitive peak off-state voltage, (note 1)	6000-6500	V
V_{DSM}	Non-repetitive peak off-state voltage, (note 1)	6000-6500	V
V_{RRM}	Repetitive peak reverse voltage, (note 1)	6000-6500	V
V_{RSM}	Non-repetitive peak reverse voltage, (note 1)	6100-6600	V

	OTHER RATINGS	MAXIMUM LIMITS	UNITS
$I_{T(AV)M}$	Maximum average on-state current, $T_{sink}=55^{\circ}C$, (note 2)	1000	A
$I_{T(AV)M}$	Maximum average on-state current. $T_{sink}=85^{\circ}C$, (note 2)	695	A
$I_{T(AV)M}$	Maximum average on-state current. $T_{sink}=85^{\circ}C$, (note 3)	410	A
$I_{T(RMS)}$	Nominal RMS on-state current, $T_{sink}=25^{\circ}C$, (note 2)	1950	A
$I_{T(d.c.)}$	D.C. on-state current, $T_{sink}=25^{\circ}C$, (note 4)	1735	A
I_{TSM}	Peak non-repetitive surge $t_p=10ms$, $V_{rm}=60\%V_{RRM}$, (note 5)	12.5	kA
I_{TSM2}	Peak non-repetitive surge $t_p=10ms$, $V_{rm}\leq 10V$, (note 5)	13.7	kA
I^2t	I^2t capacity for fusing $t_p=10ms$, $V_{rm}=60\%V_{RRM}$, (note 5)	781×10^3	A^2s
I^2t	I^2t capacity for fusing $t_p=10ms$, $V_{rm}\leq 10V$, (note 5)	938×10^3	A^2s
$(di/dt)_{cr}$	Critical rate of rise of on-state current, (Note 6)	continuous, 50Hz	100
		repetitive, 50Hz, 60s	200
		non-repetitive	700
V_{RGM}	Peak reverse gate voltage	5	V
$P_{G(AV)}$	Mean forward gate power	2	W
P_{GM}	Peak forward gate power	30	W
$T_{j op}$	Operating temperature range	-40 to +125	$^{\circ}C$
T_{stg}	Storage temperature range	-40 to +150	$^{\circ}C$

Notes:-

- De-rating factor of 0.13% per $^{\circ}C$ is applicable for T_j below $25^{\circ}C$.
- Double side cooled, single phase; 50Hz, 180° half-sinewave.
- Cathode side cooled, single phase; 50Hz, 180° half-sinewave.
- Double side cooled.
- Half-sinewave, $125^{\circ}C$ T_j initial.
- $V_D=67\% V_{DRM}$, $I_{FG}=2A$, $t_r\leq 0.5\mu s$, $T_{case}=125^{\circ}C$.

Characteristics

	PARAMETER	MIN.	TYP.	MAX.	TEST CONDITIONS (Note 1)	UNITS
V _{TM}	Maximum peak on-state voltage	2.05	-	2.25	I _{TM} =1000A	V
V _{TM}	Maximum peak on-state voltage	-	-	3.97	I _{TM} =3000A	V
V _{T0}	Threshold voltage	-	-	1.39		V
r _T	Slope resistance	-	-	0.86		mΩ
(dv/dt) _{cr}	Critical rate of rise of off-state voltage	1000	-	-	V _D =80% V _{DRM} , linear ramp, gate o/c	V/μs
I _{DRM}	Peak off-state current	-	-	100	Rated V _{DRM}	mA
I _{RRM}	Peak reverse current	-	-	100	Rated V _{RRM}	mA
V _{GT}	Gate trigger voltage	-	-	1.80	T _j =25°C. V _D =10V, I _T =3A	V
I _{GT}	Gate trigger current	-	-	300		mA
V _{GD}	Gate non-trigger voltage	-	-	0.25		Rated V _{DRM}
I _H	Holding current	-	-	1000	T _j =25°C	mA
t _{gd}	Gate-controlled turn-on delay time	-	0.5	1.5	V _D =67% V _{DRM} , I _T =2000A, di/dt=10A/μs, I _{FG} =2A, t _r =0.5μs, T _j =25°C	μs
t _{gt}	Turn-on time	-	2.0	5.0		μs
Q _{rr}	Recovered charge	6000	-	7000	I _{TM} =2000A, t _p =1000μs, di/dt=10A/μs, V _r =100V	μC
Q _{ra}	Recovered charge, 50% chord	-	3250	-		μC
I _{rm}	Reverse recovery current	160	-	180		A
t _{rr}	Reverse recovery time, 50% chord	-	40	-		μs
t _q	Turn-off time	700	-	-	I _{TM} =2000A, t _p =1000μs, di/dt=10A/μs, V _r =100V, V _{dr} =27%V _{DRM} , dV _{dr} /dt=20V/μs	μs
		1000	-	-	I _{TM} =2000A, t _p =1000μs, di/dt=10A/μs, V _r =100V, V _{dr} =67%V _{DRM} , dV _{dr} /dt=200V/μs	
R _{thJK}	Thermal resistance, junction to heatsink	-	-	0.020	Double side cooled	K/W
		-	-	0.038	Anode side cooled	K/W
		-	-	0.043	Cathode side cooled	K/W
F	Mounting force	25	-	31		kN
W _t	Weight	-	550	-	Housing option MA	g
		-	730	-	Housing option ME	g

Notes:-

- 1) Unless otherwise indicated T_j=125°C.
- 2) For other clamp forces consult factory.

Curves

Figure 1 – On-state characteristics of Limit device

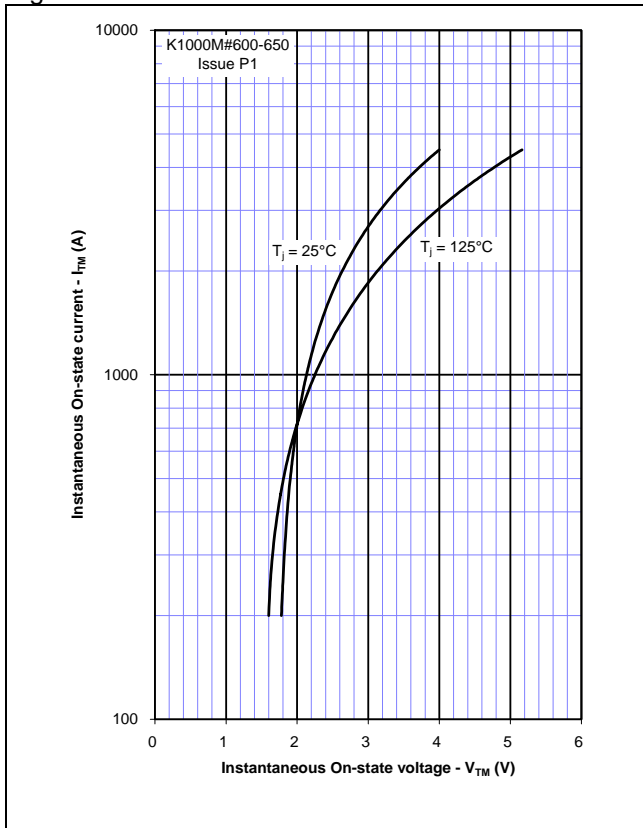


Figure 2 – Transient thermal impedance

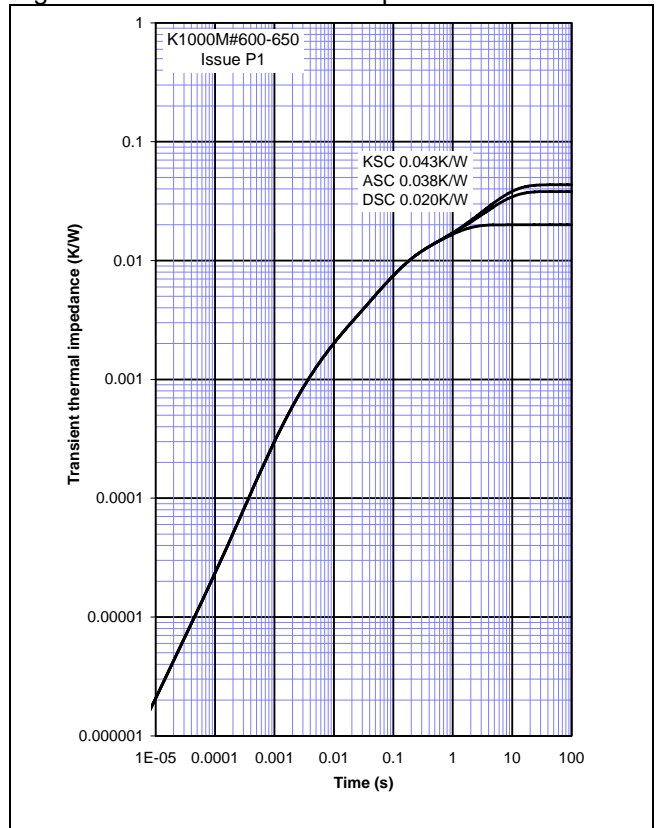
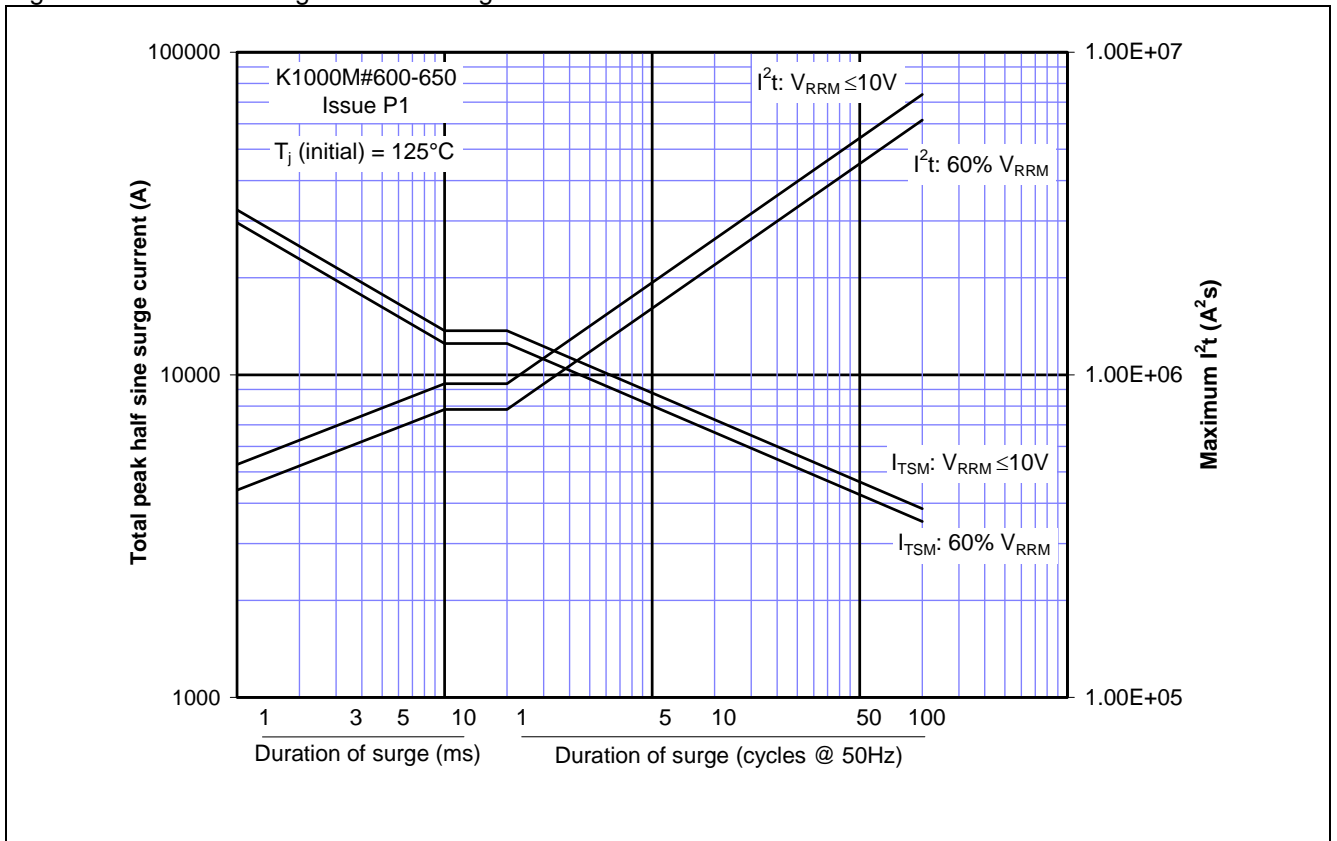
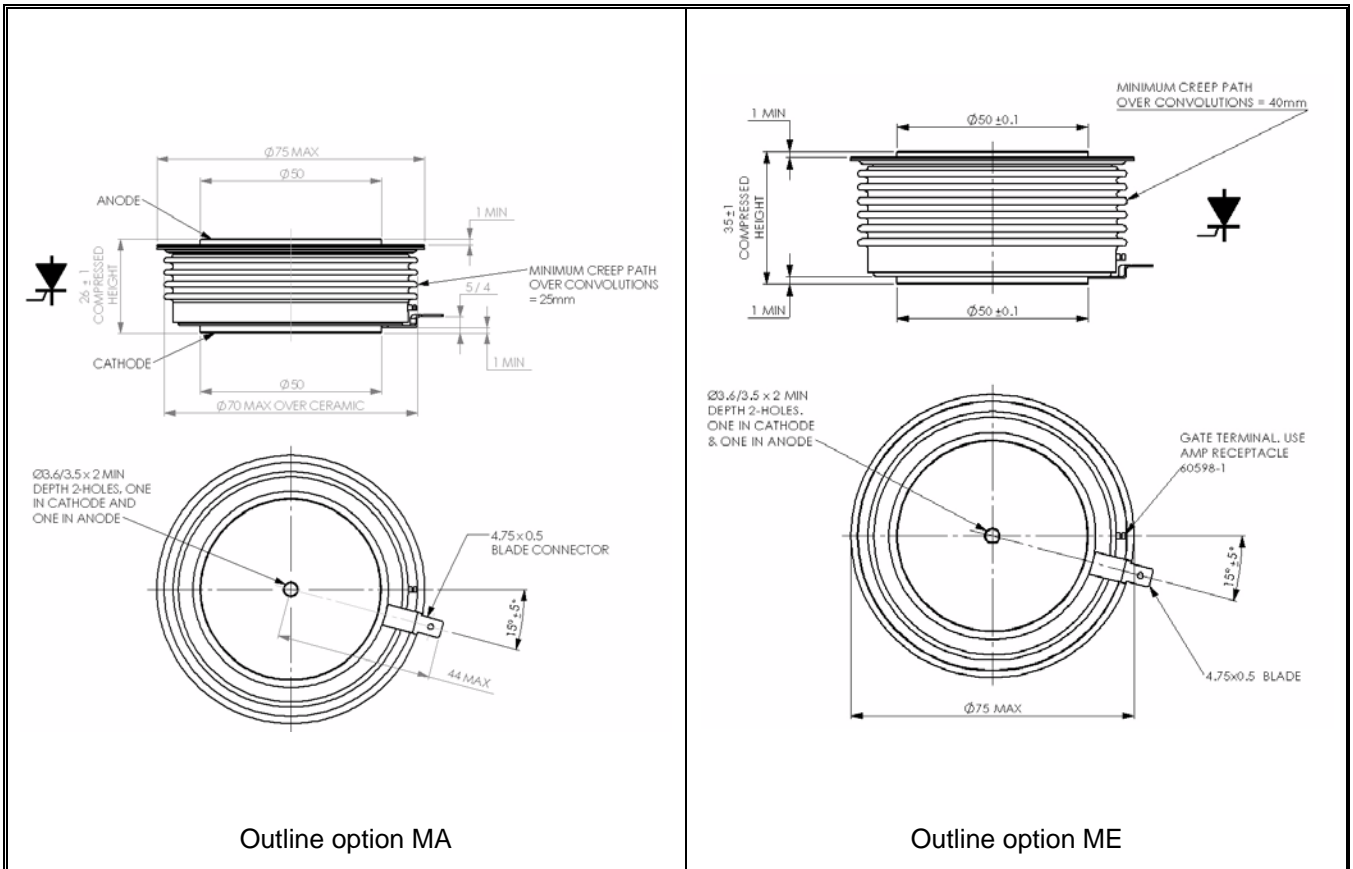


Figure 3 – Maximum surge and I^2t Ratings



Outline Drawing & Ordering Information



ORDERING INFORMATION

(Please quote 10 digit code as below)

K1000	Q#	◆◆	0
Fixed Type Code	Outline Code MA=26mm ME=35mm	Voltage code V _{RRM} /100 60-65	Fixed code

Typical order code: K1000MA650 – 6500V V_{DRM}, V_{RRM}, 26mm clamp height capsule.

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.com

www.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

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