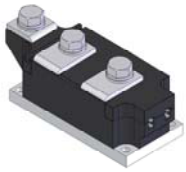
IXYS



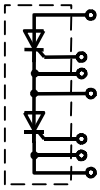
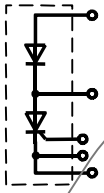
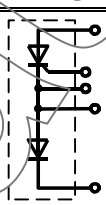
Date: 06.09.2010

Data Sheet Issue: 1

Advanced Data

Thyristor/Diode Modules M## 320

Absolute Maximum Ratings

V_{RRM} V_{DRM} [V]	 MCC	 MCD	 MDC
3000	320-30io1	320-30io1	320-30io1
3200	320-32io1	320-32io1	320-32io1
3400	320-34io1	320-34io1	320-34io1
3600	320-36io1	320-36io1	320-36io1

	VOLTAGE RATINGS	MAXIMUM LIMITS	UNITS
V_{DRM}	Repetitive peak off-state voltage [1]	3000 - 3600	V
V_{DSM}	Non-repetitive peak off-state voltage [1]	3100 - 3700	V
V_{RRM}	Repetitive peak reverse voltage [1]	3000 - 3600	V
V_{RSM}	Non-repetitive peak reverse voltage [1]	3100 - 3700	V

	OTHER RATINGS	MAXIMUM LIMITS	UNITS
$I_{T(AV)M}$	Maximum average on-state current, T_C = 85°C [2]	327	A
$I_{T(AV)M}$	Maximum average on-state current. T_C = 100°C [2]	229	A
$I_{T(RMS)M}$	Nominal RMS on-state current, T_C = 55°C [2]	765	A
$I_{T(d.c.)}$	D.C. on-state current, T_C = 55°C	624	A
I_{TSM}	Peak non-repetitive surge t_p = 10 ms, V_{RM} = 60%V_{RRM} [3]	5.0	kA
I_{TSM2}	Peak non-repetitive surge t_p = 10 ms, $V_{RM} \leq$ 10V [3]	5.5	kA
I^2t	I^2t capacity for fusing t_p = 10 ms, V_{RM} = 60%V_{RRM} [3]	125×10^3	A^2s
I^2t	I^2t capacity for fusing t_p = 10 ms, $V_{RM} \leq$ 10 V [3]	150×10^3	A^2s
$(di/dt)_{cr}$	Critical rate of rise of on-state current (non-repetitive) [4]	400	A/µs
V_{RGM}	Peak reverse gate voltage	5	V
$P_{G(AV)}$	Mean forward gate power	4	W
V_{ISOL}	Isolation Voltage [5]	3000	V
	Isolation Voltage [6]	3600	V
$T_{vj\,op}$	Operating temperature range	-40 to 125	°C
T_{stg}	Storage temperature range	-40 to 125	°C

Notes:

1) De-rating factor of 0.13% per °C is applicable for Tv_j below 25°C.
2) Single phase; 50 Hz, 180° half-sinewave.
3) Half-sinewave, 125°C T_{vj} initial.
4) V_D = 67% V_{DRM}, I_{FG} = 2 A, $t_r \leq$ 0.5µs, T_C = 125°C.
5) AC RMS voltage, 50 Hz, 1 minute test
6) AC RMS voltage, 50 Hz, 1 second test

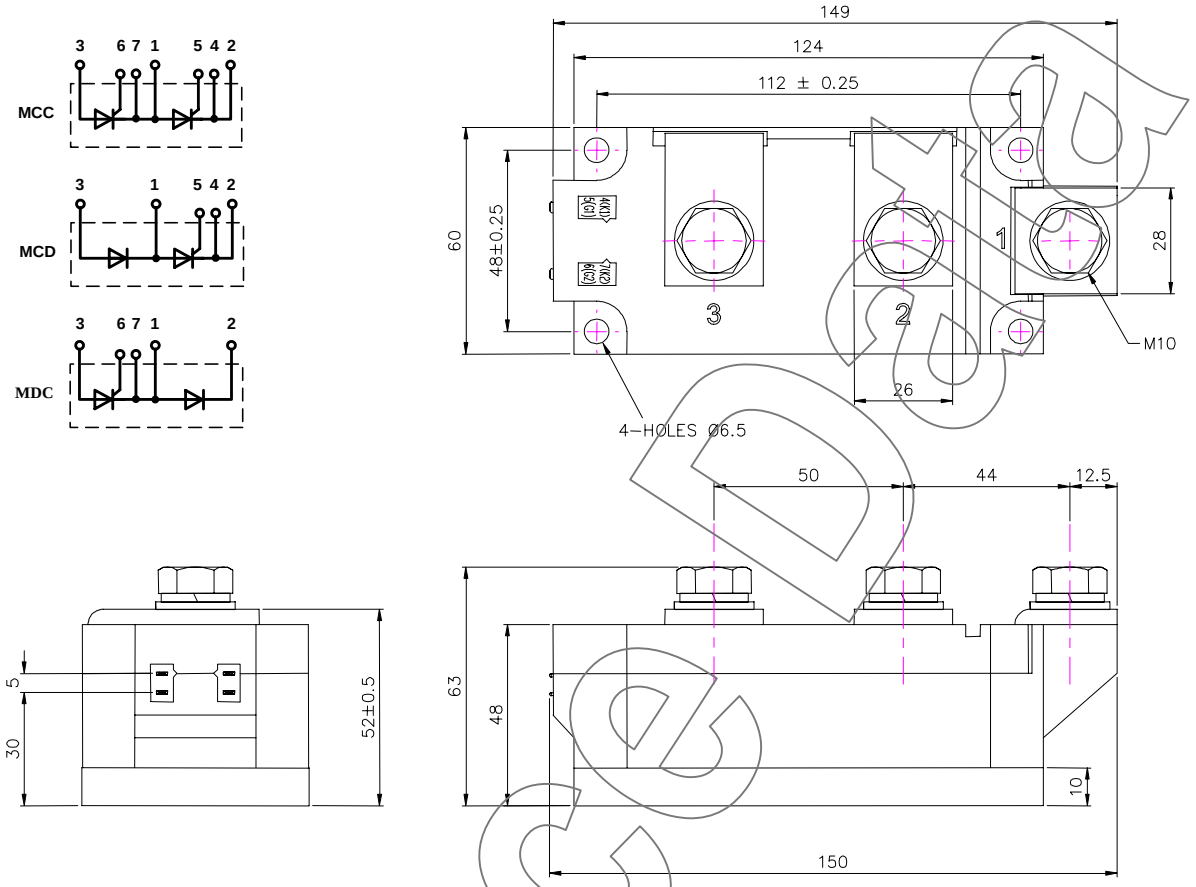
Characteristics

	PARAMETER	MIN.	TYP.	MAX.	TEST CONDITIONS [1]	UNITS
V_{TM}	Maximum peak on-state voltage	-	-	2.20	I_{TM} = 785 A, T_{vj} = 25°C	V
V_{T0}	Threshold voltage	-	-	1.15		V
r_T	Slope resistance	-	-	0.80		mΩ
$(dv/dt)_{cr}$	Critical rate of rise of off-state voltage	1000	-	-	V_D = 67% V_{DRM}, linear ramp, Gate o/c	V/µs
I_{DRM}	Peak off-state current	-	-	200	Rated V_{DRM}	mA
I_{RRM}	Peak reverse current	-	-	200	Rated V_{RRM}	mA
V_{GT}	Gate trigger voltage	-	-	2.50	T_{vj} = 25°C, V_D = 12 V, I_T = 3 A	V
I_{GT}	Gate trigger current	-	-	250		mA
V_{GD}	Gate non-trigger voltage	0.35	-	-	67% V_{DRM}	V
I_{GD}	Gate non-trigger current	15	-		67% V_{DRM}	mA
I_L	Latching current	-	-	1000	V_D = 12 V, T_{vj} = 25°C	mA
I_H	Holding current	-	-	300	V_D = 12 V, T_{vj} = 25°C	mA
t_{gd}	Gate controlled turn-on delay time	-	-	3.0	I_{FG} = 2 A, di_g/dt = 1 A/µs, V_D = 40%V_{DRM}, I_{TM} = 320 A, di/dt = 10 A/µs, T_{vj} = 25°C	µs
t_q	Turn-off time	-	-	320	I_{TM} = 320 A, di/dt = 10 A/µs, V_R = 100 V, V_{DR} = 67%V_{DRM}, dv_{DR}/dt = 50 V/µs	µs
R_{thJC}	Thermal resistance, junction to case	-	-	0.0650	Per arm	K/W
		-	-	0.0325	Whole Module	K/W
R_{thCH}	Thermal resistance, case to heatsink	-	-	0.0200	Per arm	K/W
		-	-	0.0100	Whole Module	K/W
F_1	Mounting force (to heatsink)	5.1	-	6.9	[2]	Nm
F_2	Mounting force (to terminals)	10.8	-	13.2		Nm
W_t	Weight	-	1.5	-		kg

Notes:

1) Unless otherwise indicated T_{vj}=125°C.
2) Screws must be lubricated.

Outline Drawing & Ordering Information



ORDERING INFORMATION			(Please quote 11 digit code as below)		
M	**##**	**320**	**♦♦**	**io**	**1**
Fixed Type Code	Configuration code CC, CD or DC	Fixed Type Code	Voltage code V_{RRM}/100 30-36	i = Critical dv/dt 1000 V/µs o = Typical turn-off time	Fixed Version Code

Typical order code: MCC320-36o1– MCC configuration, 3600V V_{RRM}

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