

Thyristor/Diode Modules M## 320

Absolute Maximum Ratings

V_{RRM} V_{DRM} [V]	 MCC	 MCD	 MDC
3000	320-30io2	320-30io2	320-30io2
3200	320-32io2	320-32io2	320-32io2
3400	320-34io2	320-34io2	320-34io2
3600	320-36io2	320-36io2	320-36io2

	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, $T_C = 85^\circ\text{C}$ ²⁾	327	A
$I_{T(AV)M}$	Maximum average on-state current. $T_C = 100^\circ\text{C}$ ²⁾	229	A
$I_{T(RMS)M}$	Nominal RMS on-state current, $T_C = 55^\circ\text{C}$ ²⁾	765	A
$I_{T(d.c.)}$	D.C. on-state current, $T_C = 55^\circ\text{C}$	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, $V_{RM} \leq 10$ V 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	$\text{A}/\mu\text{s}$
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	$^\circ\text{C}$
T_{stg}	Storage temperature range	-40 to +125	$^\circ\text{C}$

Notes:

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

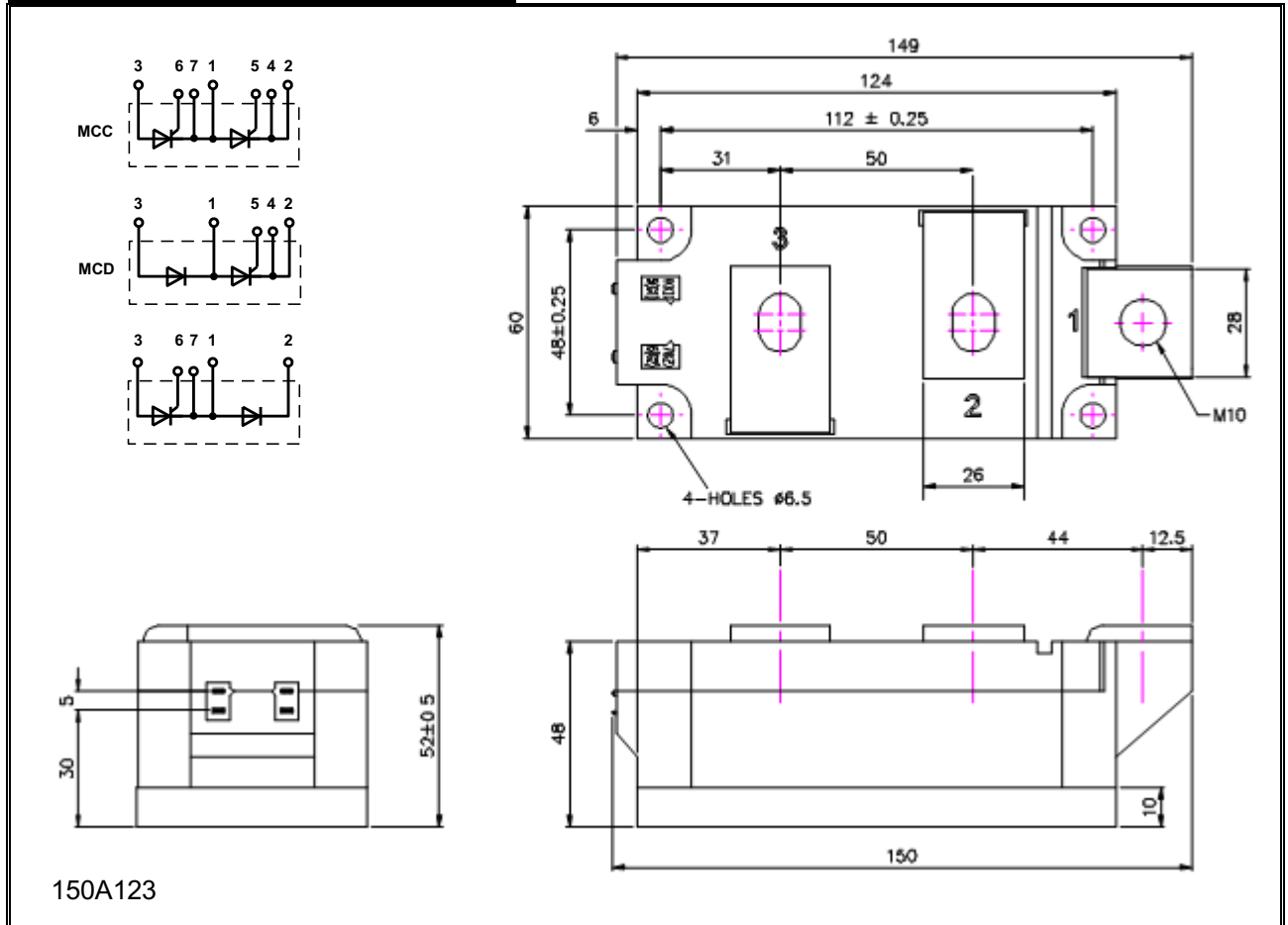
Characteristics

	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) _c	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 _{RDM}	Peak reverse current	-	-	200	Rated V _{RDM}	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		Nm
F ₂	Mounting force (to terminals)	10.8	-	13.2	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	2
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/ μ s o = Typical turn-off time	Fixed Version Code

Typical order code: MCC320-36io2- MCC configuration, 3600V V_{RRM}

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