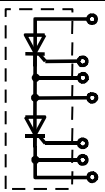
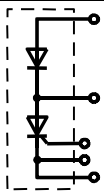
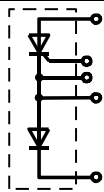


Thyristor/Diode Modules M## 320

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, $V_{RM} \leq 10\text{V}$ 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, $V_{RM} \leq 10\text{V}$ 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
V_{ISOL}	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.
- $V_D = 67\% V_{DRM}$, $I_{FG} = 2\text{A}$, $t_r \leq 0.5\mu\text{s}$, $T_C = 125^\circ\text{C}$.
- AC RMS voltage, 50 Hz, 1 minute test
- AC RMS voltage, 50 Hz, 1 second test

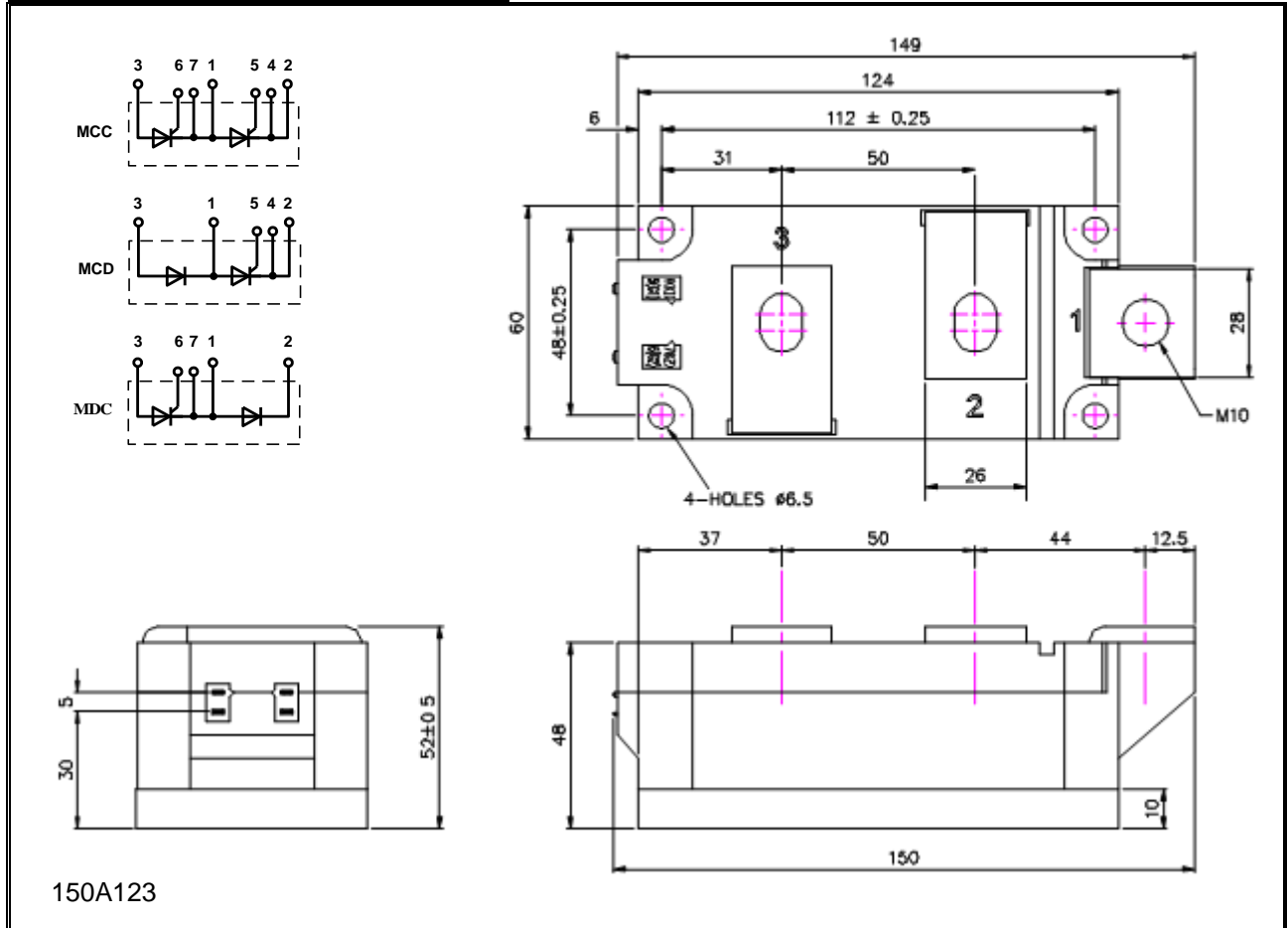
Characteristics

	PARAMETER	MIN.	TYP.	MAX.	TEST CONDITIONS ¹⁾	UNITS
V_{TM}	Maximum peak on-state voltage	-	-	2.20	$I_{TM} = 785 \text{ A}$, $T_{vj} = 25^\circ\text{C}$	V
V_{TO}	Threshold voltage	-	-	1.15		V
r_T	Slope resistance	-	-	0.80		m Ω
$(dv/dt)_{cr}$	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	$T_{vj} = 25^\circ\text{C}$, $V_D = 12 \text{ V}$, $I_T = 3 \text{ A}$	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	$V_D = 12 \text{ V}$, $T_{vj} = 25^\circ\text{C}$	mA
I_H	Holding current	-	-	300	$V_D = 12 \text{ V}$, $T_{vj} = 25^\circ\text{C}$	mA
t_{gd}	Gate controlled turn-on delay time	-	-	3.0	$I_{FG} = 2 \text{ A}$, $di_g/dt = 1 \text{ A}/\mu\text{s}$, $V_D = 40\% V_{DRM}$, $I_{TM} = 320 \text{ A}$, $di/dt = 10 \text{ A}/\mu\text{s}$, $T_{vj} = 25^\circ\text{C}$	μs
t_q	Turn-off time	-	-	320	$I_{TM} = 320 \text{ A}$, $di/dt = 10 \text{ A}/\mu\text{s}$, $V_R = 100 \text{ V}$, $V_{DR} = 67\% V_{DRM}$, $dV_{DR}/dt = 50 \text{ V}/\mu\text{s}$	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 $T_{vj}=125^\circ\text{C}$.
- 2) Screws must be lubricated.

Outline Drawing & Ordering Information



150A123

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/μs o = Typical turn-off time	Fixed Version Code

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

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