



Three Phase Bridge + Thyristor

V_{RRM} / V_{DRM} 800 to 1800V
 I_{FAV} / I_{TAV} 150A

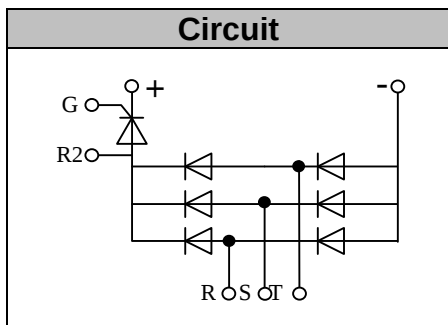
Features

- Blocking voltage:800 to 1800V
- Three Phase Bridge and a Thyristor
- Low Forward Voltage

Applications

- Inverter for AC or DC motor control
- Current stabilized power supply
- Switching power supply
- UL recognized applied for file no. E230084

Circuit



Module Type

TYPE	V_{RRM} / V_{DRM}	V_{RSM}
MT150DT08L2	800V	900V
MT150DT12L2	1200V	1300V
MT150DT16L2	1600V	1700V
MT150DT18L2	1800V	1900V

◆Diode

Maximum Ratings

Symbol	Item	Conditions	Values	Units
I_D	Output Current(D.C.)	$T_c=93^{\circ}\text{C}$ Three phase full wave	150	A
I_{FSM}	Surge forward current	$t=10\text{ms}$ $T_{vj}=45^{\circ}\text{C}$	1500	A
i^2t	Circuit Fusing Consideration		11250	A^2s
V_{isol}	Isolation Breakdown Voltage(R.M.S)	a.c.50HZ;r.m.s.;1min	3000	V
T_{vj}	Operating Junction Temperature		-40 to +150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature		-40 to +125	$^{\circ}\text{C}$
M_t	Mounting Torque	To terminals(M4)	$2 \pm 15\%$	Nm
M_t		To terminals(M6)	$5 \pm 15\%$	Nm
M_s		To heatsink(M6)	$5 \pm 15\%$	Nm
Weight		Module (Approximately)	320	g

Thermal Characteristics

Symbol	Item	Conditions	Values	Units
$R_{th(j-c)}$	Thermal Impedance, max.	Junction to Case(TOTAL)	0.14	$^{\circ}\text{C/W}$
$R_{th(c-s)}$	Thermal Impedance, max.	Case to Heat sink	0.07	$^{\circ}\text{C/W}$

Electrical Characteristics

Symbol	Item	Conditions	Values	Units
V_{FM}	Forward Voltage Drop, max.	$T=25^{\circ}\text{C}$ $I_F=150\text{A}$	1.30	V
I_{RRM}	Repetitive Peak Reverse Current, max.	$T_{vj}=25^{\circ}\text{C}$ $V_{RD}=V_{RRM}$ $T_{vj}=150^{\circ}\text{C}$ $V_{RD}=V_{RRM}$	≤ 2 ≤ 10	mA mA



◆Thyristor Maximum Ratings

Symbol	Item	Conditions	Values	Units
I_{TAV}	Average On-State Current	$T_c=93^{\circ}\text{C}$, Single Phase half wave 180° conduction	150	A
I_{TSM}	Surge On-State Current	$T_{VJ}=45^{\circ}\text{C}$ $t=10\text{ms}$ (50Hz), sine $V_R=0$	1500	A
i^2t	Circuit Fusing Consideration		11250	A^2s
V_{isol}	Isolation Breakdown Voltage(R.M.S)	a.c.50Hz;r.m.s.;1 min	3000	V
T_{vj}	Operating Junction Temperature		-40 to +125	$^{\circ}\text{C}$
T_{stg}	Storage Temperature		-40 to +125	$^{\circ}\text{C}$
M_t	Mounting Torque	To terminals(M4)	2±15%	Nm
M_t		To terminals(M6)	5±15%	
M_s		To heatsink(M6)	5±15%	Nm
di/dt	Critical Rate of Rise of On-State Current	$T_{VJ}=T_{VJM}$, $V_D=1/2V_{DRM}$, $I_G=100\text{mA}$ $di_G/dt=0.1\text{A}/\mu\text{s}$	150	$\text{A}/\mu\text{s}$
dv/dt	Critical Rate of Rise of Off-State Voltage, min.	$T_J=T_{VJM}$, $V_D=2/3V_{DRM}$, linear voltage rise	500	$\text{V}/\mu\text{s}$

Electrical and Thermal Characteristics

Symbol I	Item	Conditions	Values			Units
			Min.	Typ.	Max.	
V_{TM}	Peak On-State Voltage, max.	$T=25^{\circ}\text{C}$ $I_T=150\text{A}$			1.35	V
I_{RRM}/I_{DRM}	Repetitive Peak Reverse Current, max. / Repetitive Peak Off-State Current, max.	$T_{VJ}=T_{VJM}$, $V_R=V_{RRM}$, $V_D=V_{DRM}$			40	mA
V_{GT}	Gate Trigger Voltage, max.	$T_{VJ}=25^{\circ}\text{C}$, $V_D=6\text{V}$			3	V
I_{GT}	Gate Trigger Current, max.	$T_{VJ}=25^{\circ}\text{C}$, $V_D=6\text{V}$			150	mA
I_L	Latching current	$T_{VJ}=25^{\circ}\text{C}$, $t_P=30\mu\text{s}$; $V_D=6\text{V}$, $I_G=0.5\text{A}$; $di_G/dt=0.5\text{A}/\mu\text{s}$		150	500	mA
I_H	Holding current	$T_{VJ}=25^{\circ}\text{C}$, $V_D=6\text{V}$		100	300	mA
$R_{th(j-c)}$	Thermal Impedance, max.	Junction to Case			0.16	$^{\circ}\text{C}/\text{W}$
$R_{th(c-s)}$	Thermal Impedance, max.	Case to Heatsink			0.07	$^{\circ}\text{C}/\text{W}$



Performance Curves

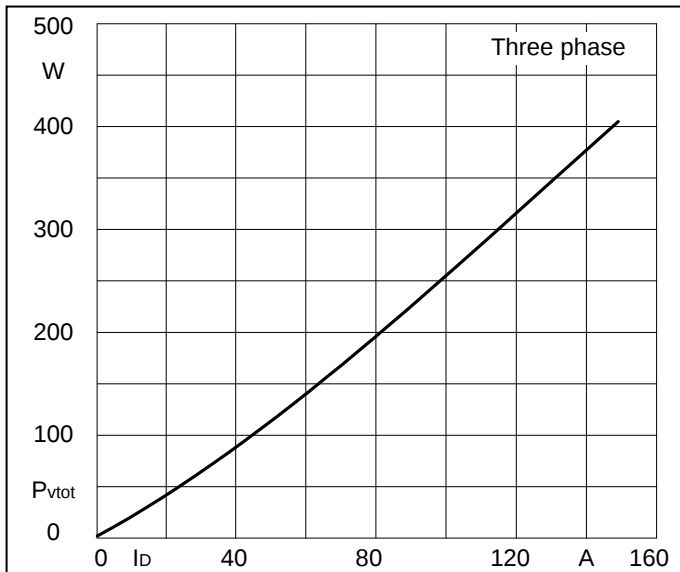


Fig1. Power dissipation

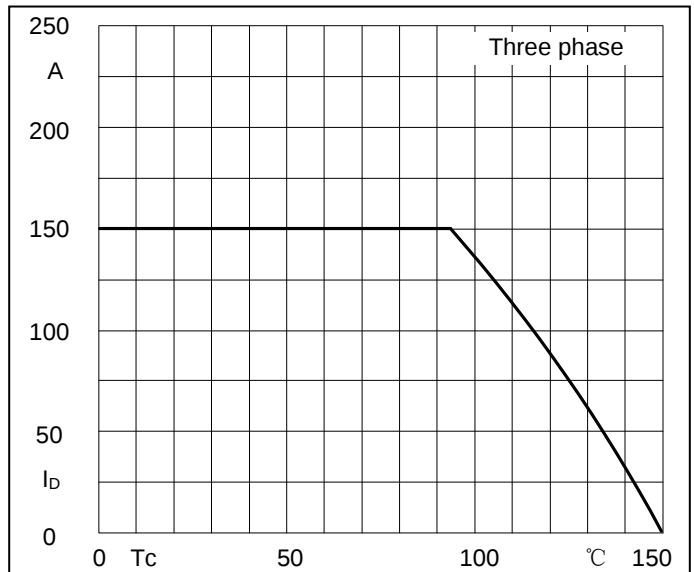


Fig2. Forward Current Derating Curve

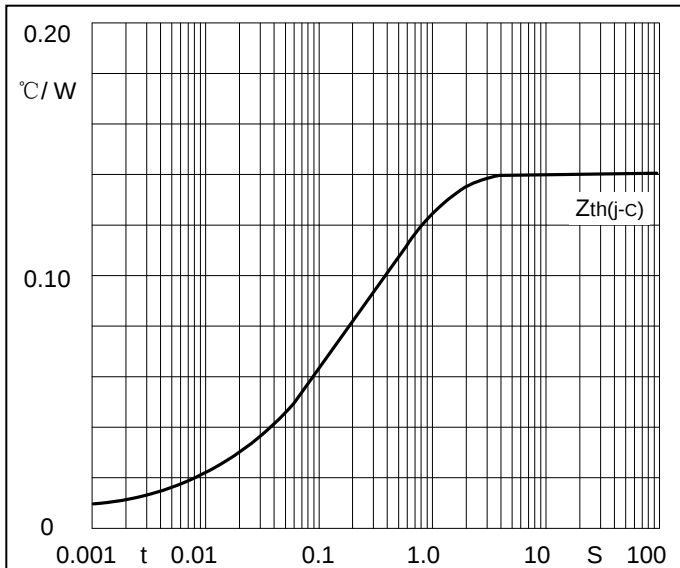


Fig3. Transient thermal impedance

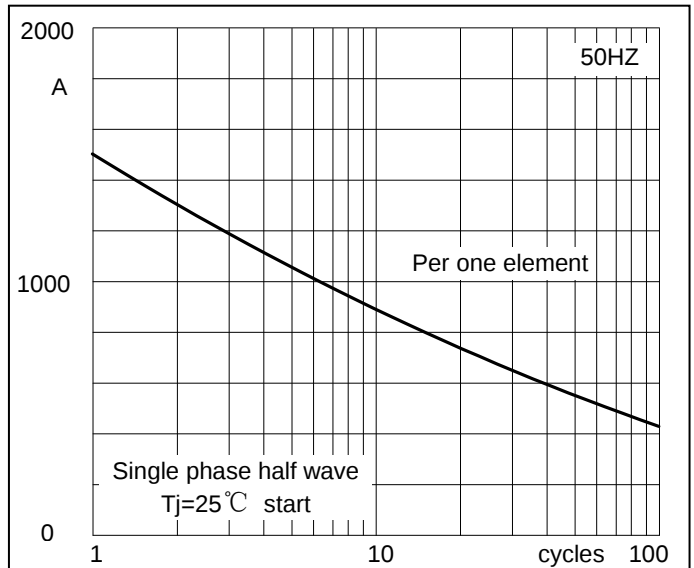


Fig4. Max Non-Repetitive Forward Surge Current

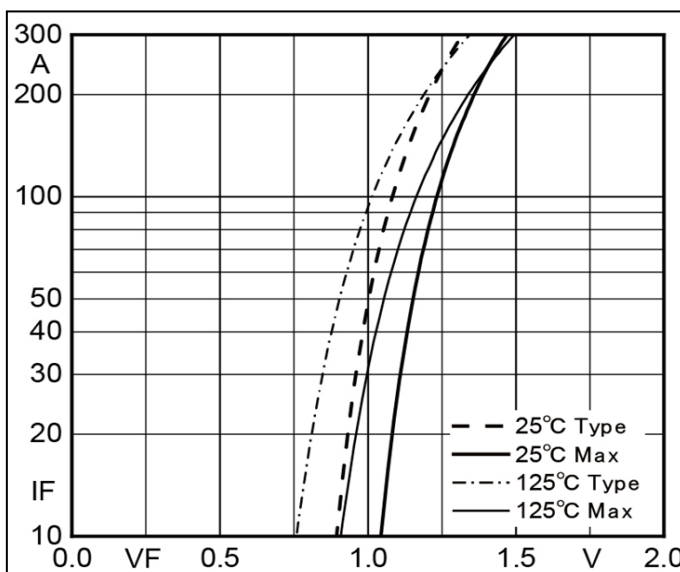


Fig5. Forward Characteristics

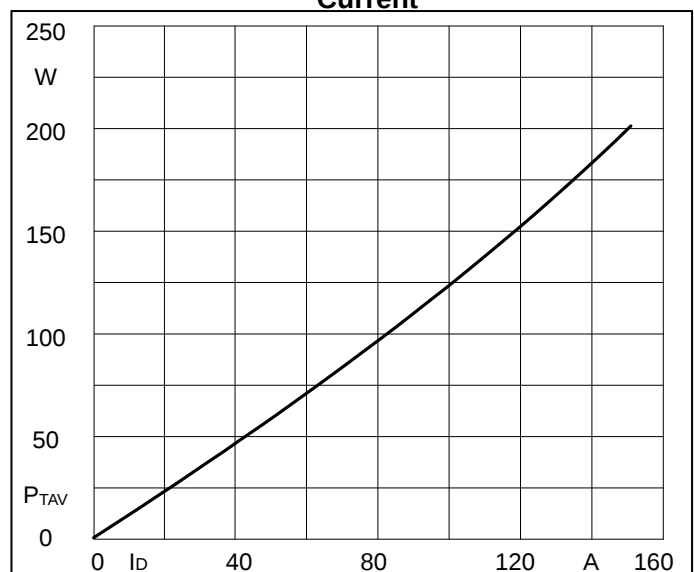


Fig6. SCR Power dissipation

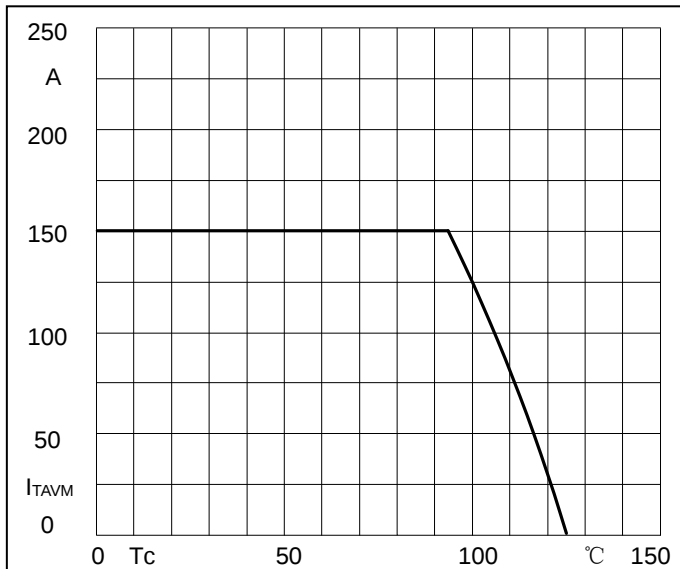


Fig7. SCR Forward Current Derating Curve

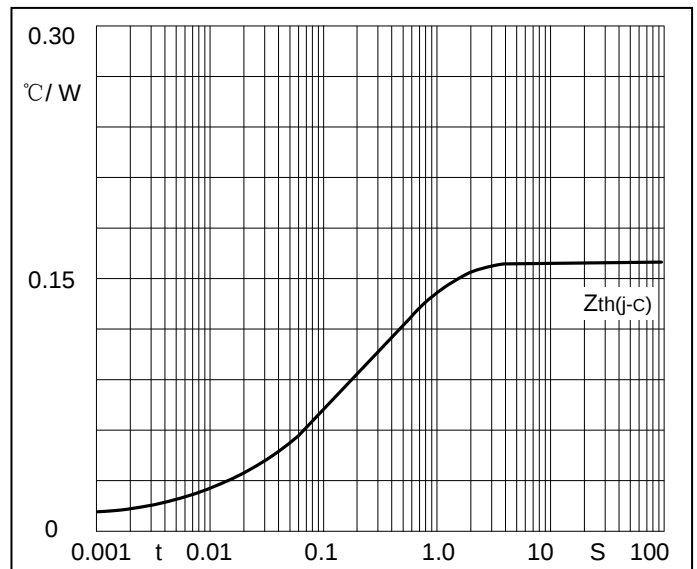


Fig8. SCR Transient thermal impedance

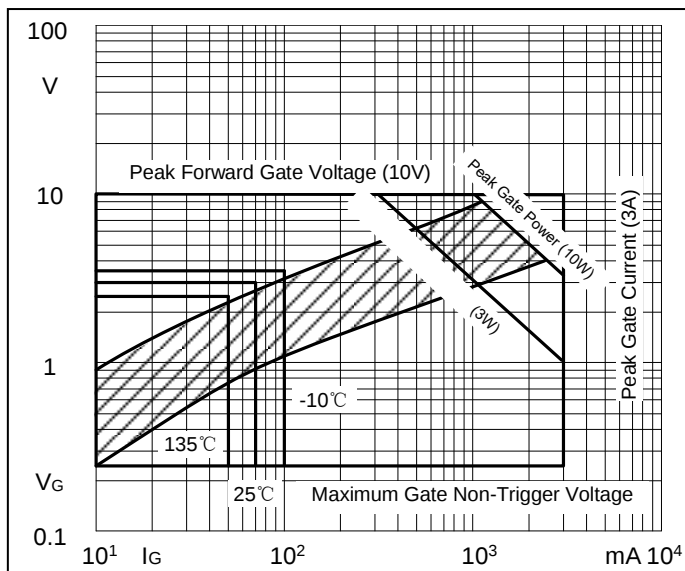
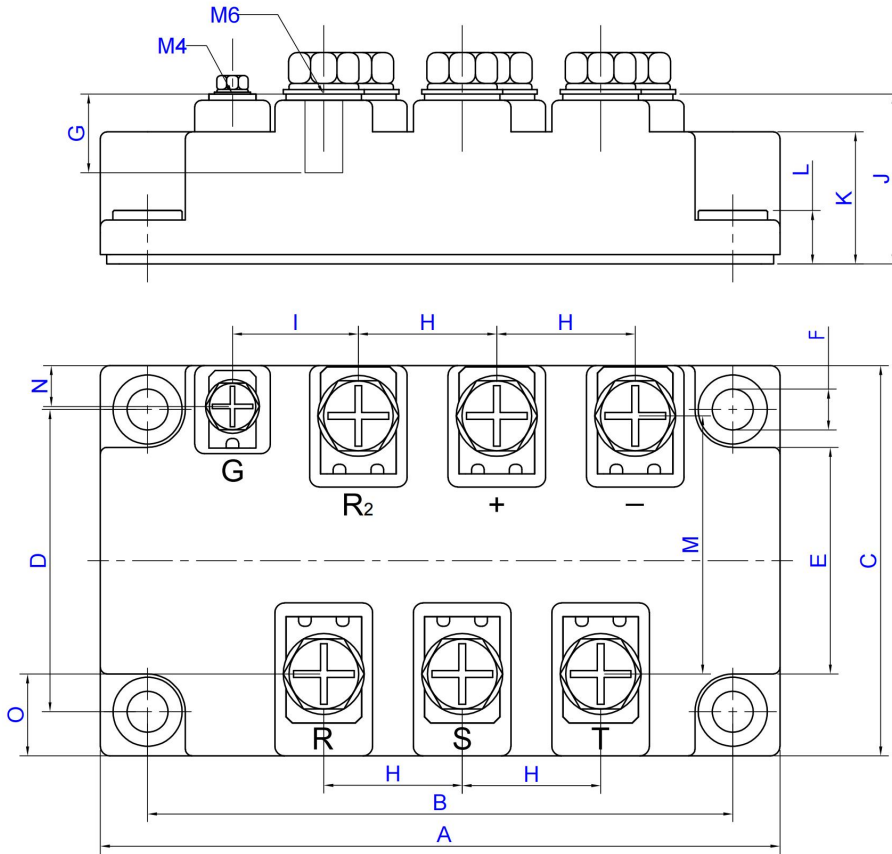


Fig9. Gate trigger Characteristics

Package Outline Information

CASE: L2



DIM	Min (mm)	Max (mm)	Note
A	108	109	
B	92.5	93.5	
C	61.5	62.5	
D	47.5	48.5	
E	35.5	36.5	
F	6.2	6.8	Ø
G	12	13	
H	21.5	22.5	
I	19.5	20.5	
J	26.5	27.5	
K	20.5	21.5	
L	8	9	
M	40.5	41.5	
N	6	7	
O	12.5	13.5	

Packing Standard

Item	Length: A (mm)	Width: B (mm)	Height: C (mm)	Quantity (PCS)
Inner Box	276	258	48	4
Outer Carton	545	295	240	40



Disclaimer

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