MT75DT-L1

Three Phase Bridge + Thyristor

V_{RRM} / V_{DRM}   800 to 1800V
I_{FAV} / I_{TAV}   75A
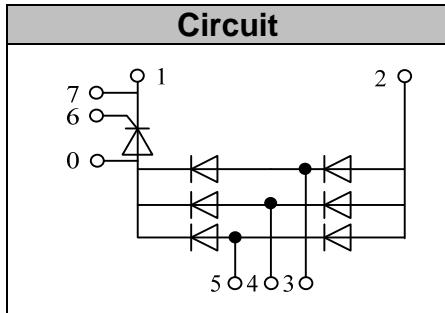
Features
- Blocking voltage:800 to 1800V
- Three Phase Bridge and a Thyristor
- Isolated Module package

Applications
- Inverter for AC or DC motor control
- Current stabilized power supply
- Switching power supply
- UL recognized applied for file no. E360040

Circuit

Module Type

TYPE	V_{RRM} /V_{DRM}	V_{RSM}
MT75DT08L1	800V	900V
MT75DT12L1	1200V	1300V
MT75DT16L1	1600V	1700V
MT75DT18L1	1800V	1900V

◆Diode

Maximum Ratings

Symbol	Item	Conditions	Values	Units
I_D	Output Current(D.C.)	Tc=101℃ Three phase full wave	75	A
I_{FSM}	Surge forward current	t=10mS Tvj =45℃	920	A
i^2t	Circuit Fusing Consideration		4200	A^2s
Visol	Isolation Breakdown Voltage(R.M.S)	a.c.50HZ;r.m.s.;1min	3000	V
Tvj	Operating Junction Temperature		-40 to +150	℃
Tstg	Storage Temperature		-40 to +125	℃
Mt	Mounting Torque	To terminals(M5)	3±15%	Nm
Ms		To heatsink(M5)	3±15%	Nm
Weight		Module（Approximately）	210	g

Thermal Characteristics

Symbol	Item	Conditions	Values	Units
$R_{th(j-c)}$	Thermal Impedance, max.	Junction to Case(TOTAL)	0.20	℃/W
Rth(c-s)	Thermal Impedance, max.	Case to Heatsink	0.10	℃/W

Electrical Characteristics

Symbol	Item	Conditions	Values	Units
V_{FM}	Forward Voltage Drop, max.	T=25℃ I_F =100A	1.40	V
I_{RRM}	Repetitive Peak Reverse Current, max.	Tvj =25℃ VRD=VRRM Tvj =150℃ VRD=VRRM	≤0.5 ≤6	mA mA

◆**Thyristor**
Maximum Ratings

Symbol	Item	Conditions	Values	Units
I_{TAV}	Average On-State Current	Tc=99℃, Single Phase half wave 180° conduction	75	A
I_{TSM}	Surge On-State Current	TVJ=45℃ t=10ms (50Hz), sine VR=0	920	A
i^2t	Circuit Fusing Consideration		4200	A^2s
Visol	Isolation Breakdown Voltage(R.M.S)	a.c.50HZ;r.m.s.;1 min	3000	V
Tvj	Operating Junction Temperature		-40 to +125	℃
Tstg	Storage Temperature		-40 to +125	℃
Mt	Mounting Torque	To terminals(M5)	3±15%	Nm
Ms		To heatsink(M5)	3±15%	Nm
di/dt	Critical Rate of Rise of On-State Current	$T_{VJ}=T_{VJM}$, $V_D=1/2V_{DRM}$,I_G =100mA d_{iG}/d_t=0.1A/μs	150	A/μs
dv/dt	Critical Rate of Rise of Off-State Voltage, min.	$T_J=T_{VJM}$,$V_D=2/3V_{DRM}$,linear voltage rise	500	V/μs

Electrical and Thermal Characteristics

| Symbol	Item	Conditions	Values			Units
			Min.	Typ.	Max.	
V_{TM}	Peak On-State Voltage, max.	T=25℃ I_T =100A			1.30	V
I_{RRM}/I_{DRM}	Repetitive Peak Reverse Current, max. / Repetitive Peak Off-State Current, max.	$T_{VJ}=T_{VJM}$,$V_R=V_{RRM}$,$V_D=V_{DRM}$			20	mA
V_{GT}	Gate Trigger Voltage, max.	T_{VJ} =25℃ , V_D =6V			3	V
I_{GT}	Gate Trigger Current, max.	T_{VJ} =25℃ , V_D =6V			150	mA
Rth(j-c)	Thermal Impedance, max.	Junction to Case			0.30	℃/W
Rth(c-s)	Thermal Impedance, max.	Case to Heatsink			0.10	℃/W

Performance Curves
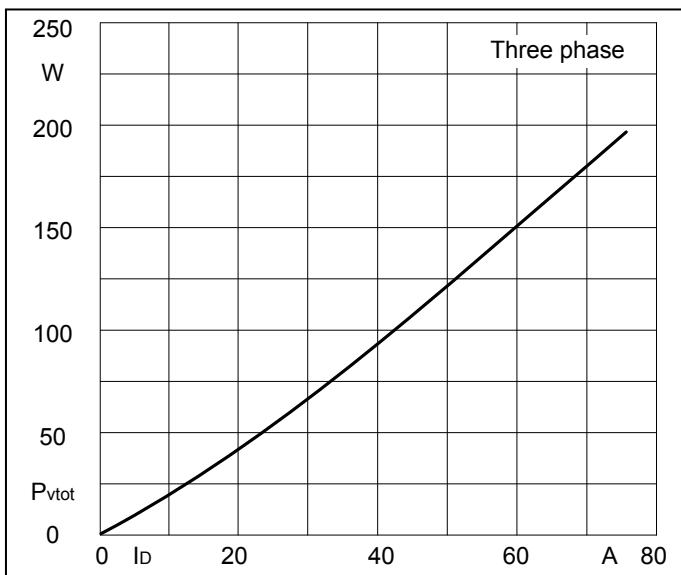

Fig1. Power dissipation
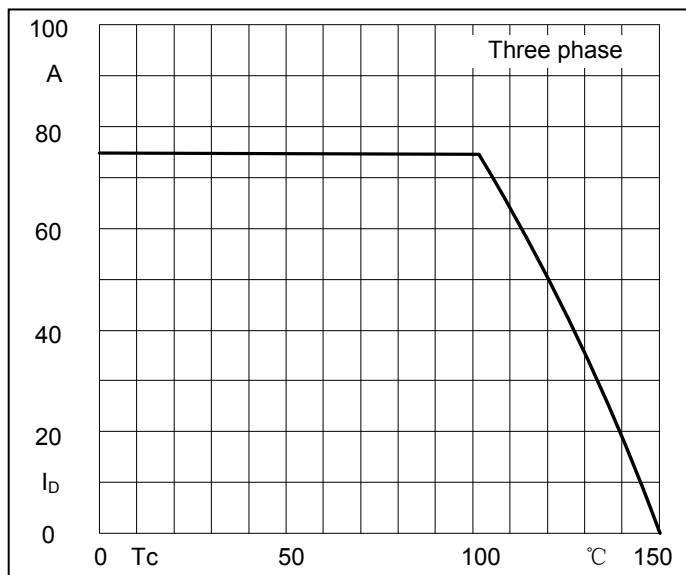

Fig2. Forward Current Derating Curve
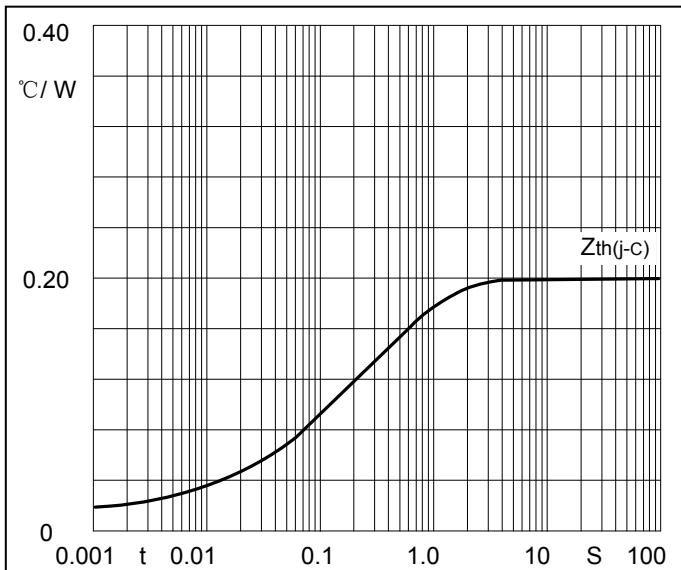
**Fig3. Transient thermal impedance**
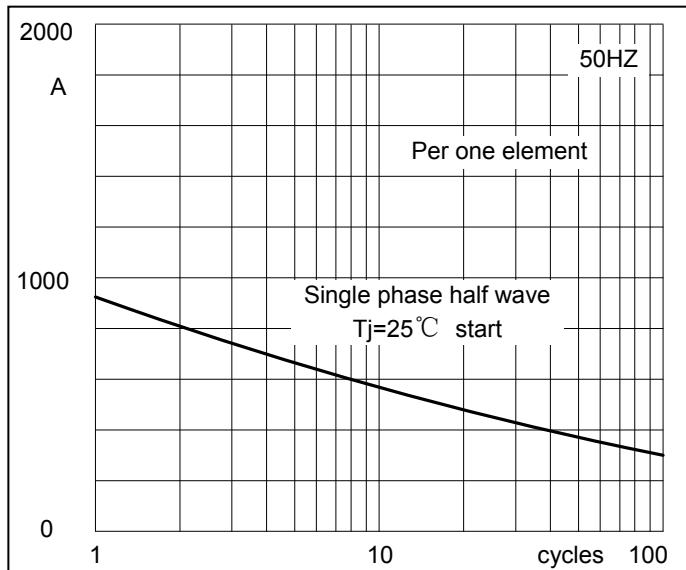
Fig4. Max Non-Repetitive Forward Surge Current
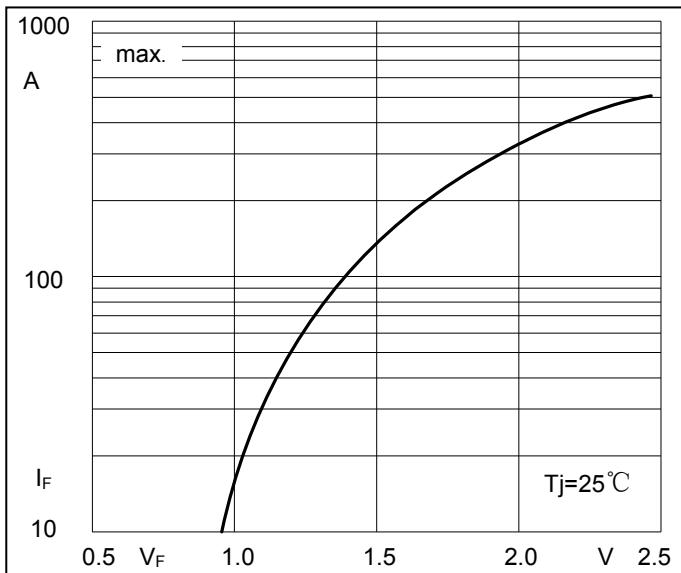

**Fig5. Forward Characteristics**
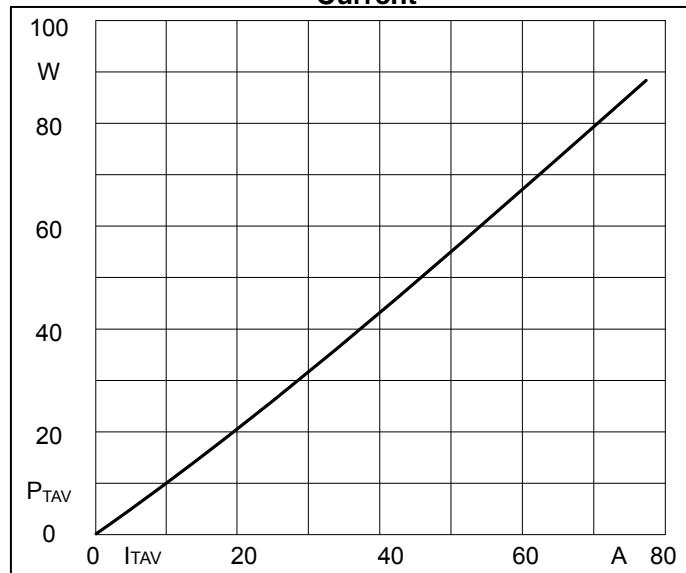


Fig6. SCR Power dissipation
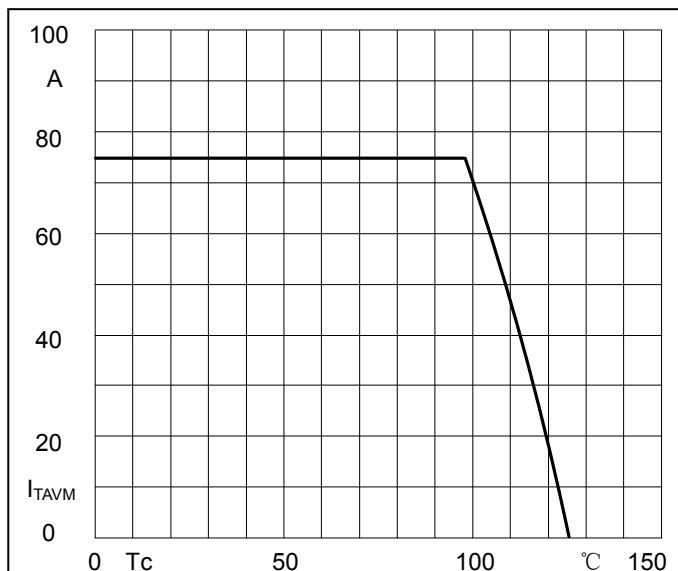
Fig7. SCR Forward Current Derating Curve
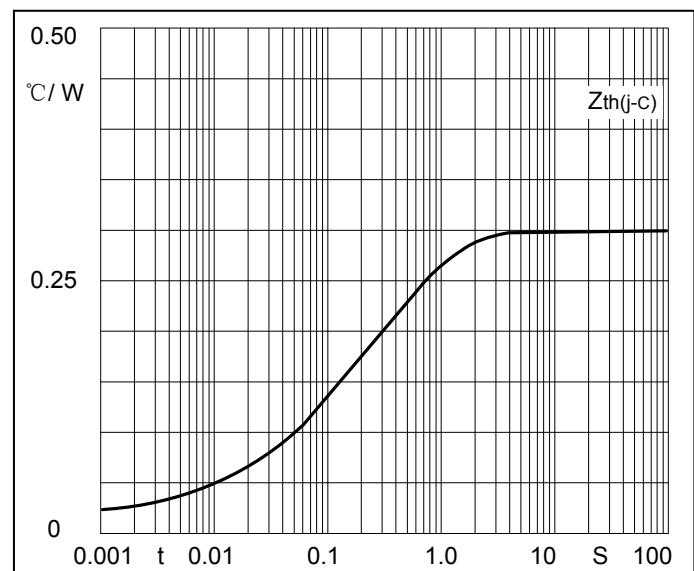
Fig8. SCR Transient thermal impedance
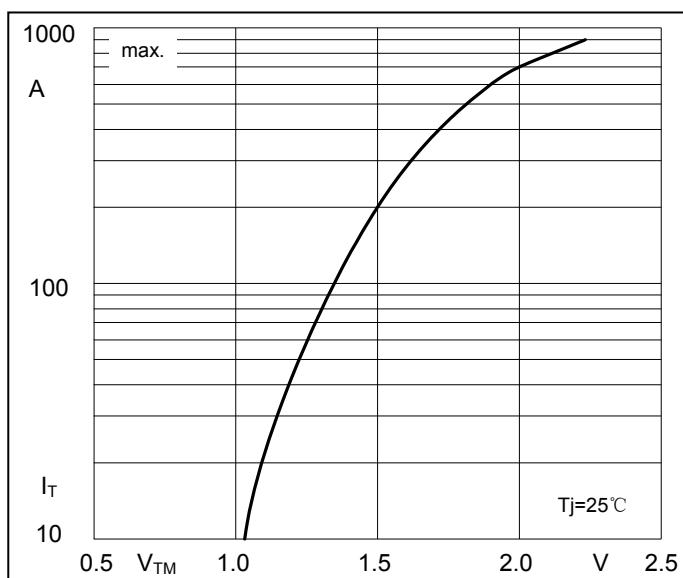
Fig9. SCR Forward Characteristics
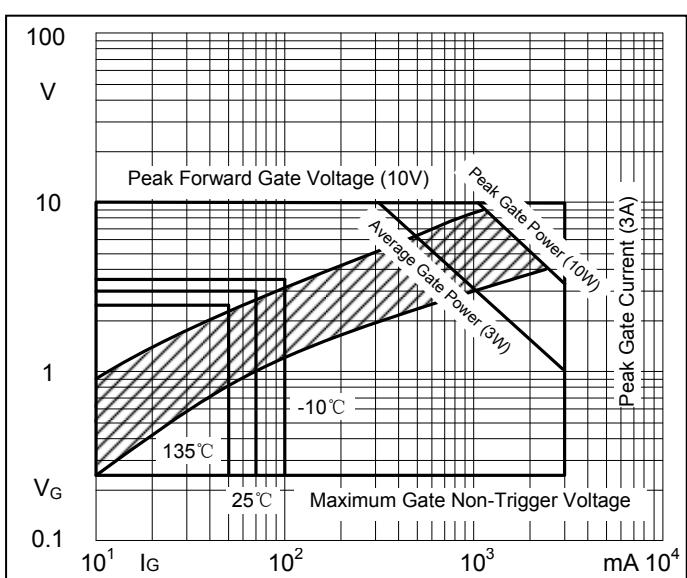
Fig10. Gate trigger Characteristics

Package Outline Information

CASE: L1

Dimensions in mm
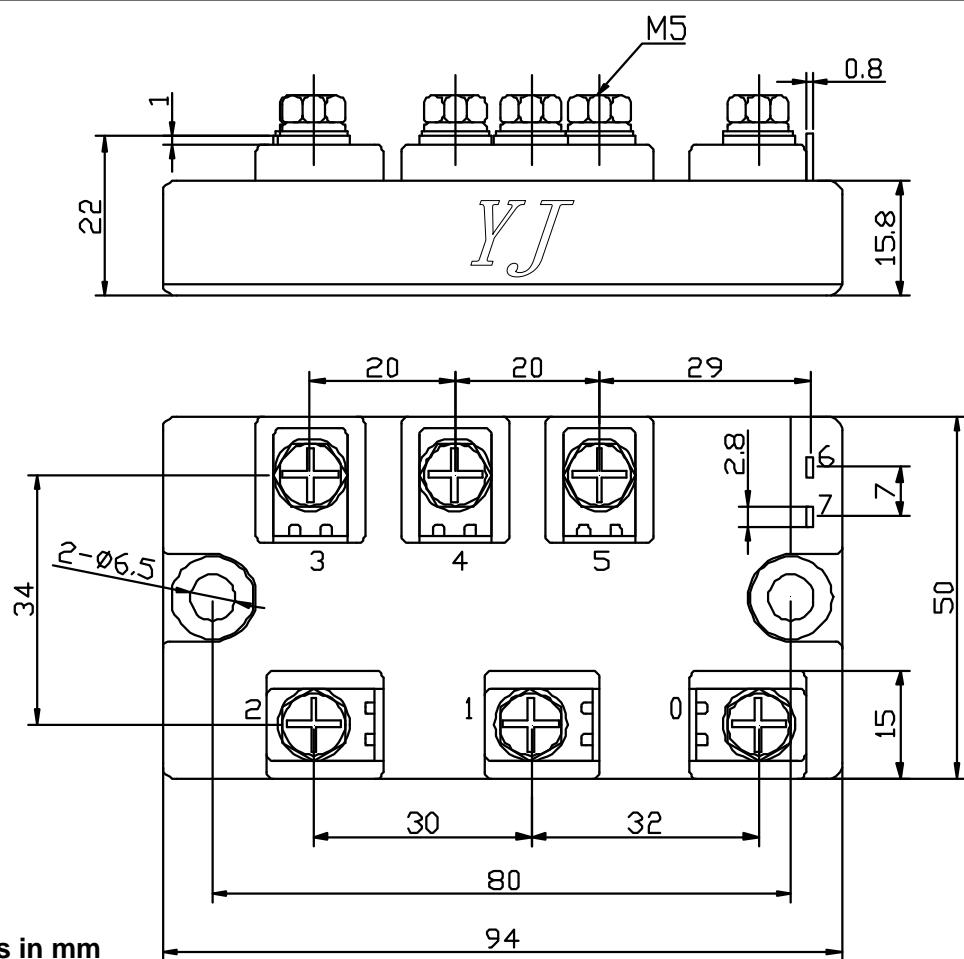
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