

MITSUBISHI THYRISTOR MODULES

TM15T3A-M,-H

MEDIUM POWER GENERAL USE
INSULATED TYPE

TM15T3A-M,-H



- **I_o** DC output current **30A**
- **V_{RRM}** Repetitive peak reverse voltage **400/800V**
- **V_{DRM}** Repetitive peak off-state voltage **400/800V**
- **3 Phase Mix Bridge**
- **Insulated Type**
- **UL Recognized**

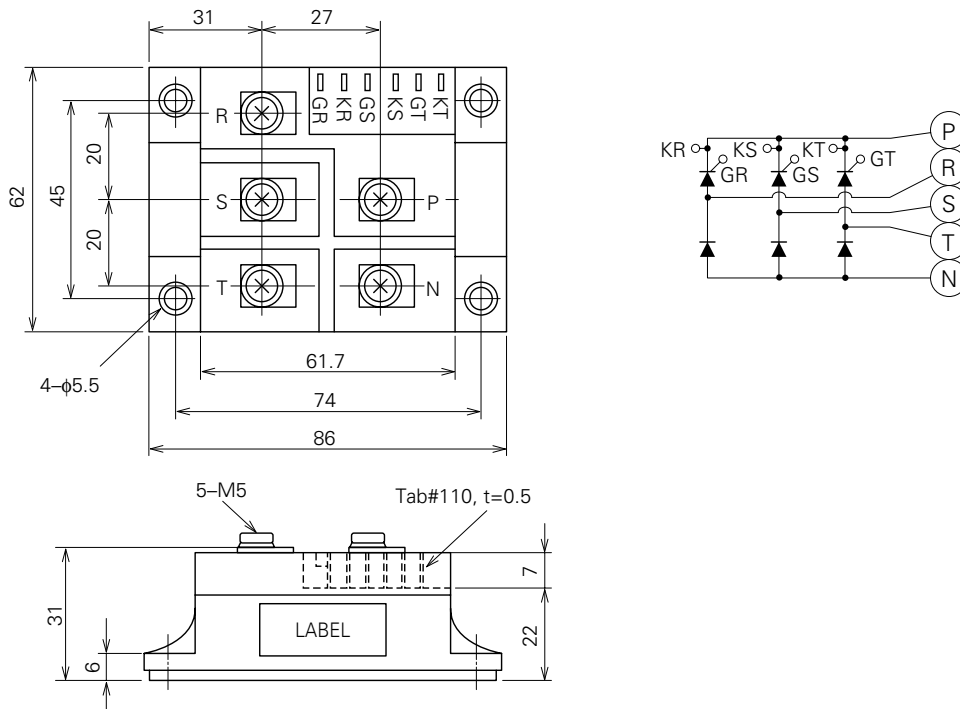
Yellow Card No. E80276 (N)
File No. E80271

APPLICATION

DC motor control, NC equipment, AC motor control, contactless switches, electric furnace temperature control, light dimmers

OUTLINE DRAWING & CIRCUIT DIAGRAM

Dimensions in mm



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ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Voltage class		Unit
		M	H	
VRRM	Repetitive peak reverse voltage	400	800	V
VRSM	Non-repetitive peak reverse voltage	480	960	V
VR (DC)	DC reverse voltage	320	640	V
VDRM	Repetitive peak off-state voltage	400	800	V
VDSM	Non-repetitive peak off-state voltage	480	960	V
VD (DC)	DC off-state voltage	320	640	V

Symbol	Parameter	Conditions	Ratings	Unit
Io	DC output current	3-phase fullwave rectified, TC=104°C	30	A
ITSM, IFSM	Surge (non-repetitive) current	One half cycle at 60Hz, peak value	300	A
I ² t	I ² t for fusing	Value for one cycle of surge current	3.8 × 10 ²	A ² s
di/dt	Critical rate of rise of on-state current	VD=1/2VDRM, IG=0.5A, Tj=125°C	100	A/μs
PGM	Peak gate power dissipation		5.0	W
PG (AV)	Average gate power dissipation		0.5	W
VFGM	Peak gate forward voltage		10	V
VRGM	Peak gate reverse voltage		5.0	V
IFGM	Peak gate forward current		2.0	A
Tj	Junction temperature		-40~125	°C
Tstg	Storage temperature		-40~125	°C
Viso	Isolation voltage	Charged part to case	2500	V
—	Mounting torque	Main terminal screw M5	1.47~1.96	N·m
			15~20	kg·cm
		Mounting screw M5	1.47~1.96	N·m
			15~20	kg·cm
—	Weight	Typical value	310	g

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I _{RRM}	Repetitive peak reverse current	Tj=125°C, VRRM applied	—	—	4.0	mA
I _{DRM}	Repetitive peak of off-state	Tj=125°C, VDRM applied	—	—	4.0	mA
V _{TM} , V _{FM}	current	Tj=125°C, ITM=IFM=75A, instantaneous meas.	—	—	1.5	V
dv/dt	Forward voltage	Tj=125°C, Vd=2/3VDRM	500	—	—	V/μs
V _{GT}	Critical rate of rise of off-state voltage	Tj=25°C, Vd=6V, RL=2Ω	—	—	2.0	V
V _{GD}	Gate trigger voltage	Tj=125°C, Vd=1/2VDRM	0.25	—	—	V
I _{GT}	Gate non-trigger voltage	Tj=25°C, Vd=6V, RL=2Ω	10	—	50	mA
R _{th (j-c)}	Gate trigger current	Junction to case (per 1/6 module)	—	—	1.8	°C/W
R _{th (c-f)}	Thermal resistance	Case to fin, Conductive grease applied (per 1/6 module)	—	—	0.36	°C/W
—	Contact thermal resistance Insulation resistance	Measured with a 500V megohmmeter between main terminal and case	10	—	—	MΩ

Note: Items of the above table applies to the Thyristor part and the Diode part as circled in the following tables.

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MAXIMUM RATINGS

Item	VRRM	VRSM	VR (DC)	VDRM	VD SM	VD (DC)	IT (RMS)	IT (AV)	ITSM	i^2t	di/dt
							IF (RMS)	IF (AV)	IFSM		
Thyristor	○	○	○	○	○	○	○	○	○	○	○
Diode	○	○	○	—	—	—	○	○	○	○	—

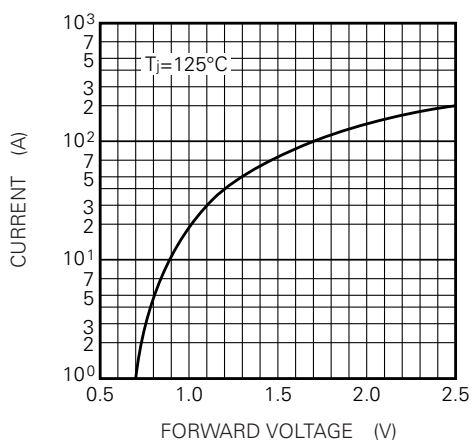
Item	PGM	PG (AV)	VFGM	IFGM	T _j	T _{stg}
Thyristor	○	○	○	○	○	○
Diode	—	—	—	—	○	○

ELECTRICAL CHARACTERISTICS

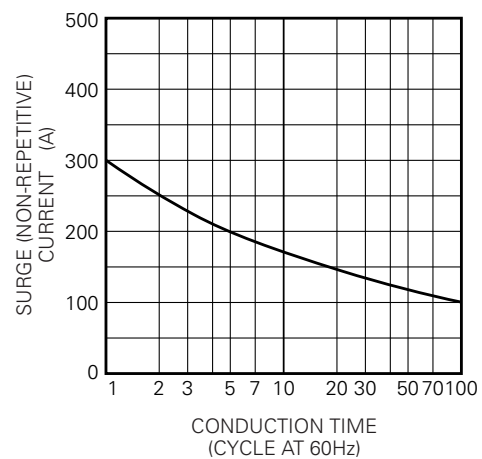
Item	IRR M	IDRM	V _{TM}	dv/dt	V _{GT}	V _{GD}	I _{GT}	R _{th (j-c)}	R _{th (c-f)}
			V _{FM}						
Thyristor	○	○	○	○	○	○	○	○	○
Diode	○	—	○	—	—	—	—	○	○

PERFORMANCE CURVES

MAXIMUM FORWARD CHARACTERISTIC



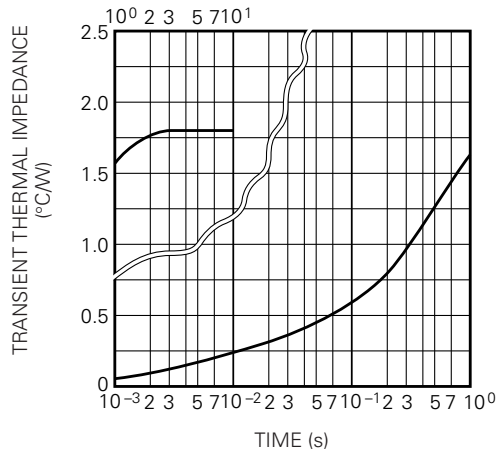
RATED SURGE (NON-REPETITIVE) CURRENT



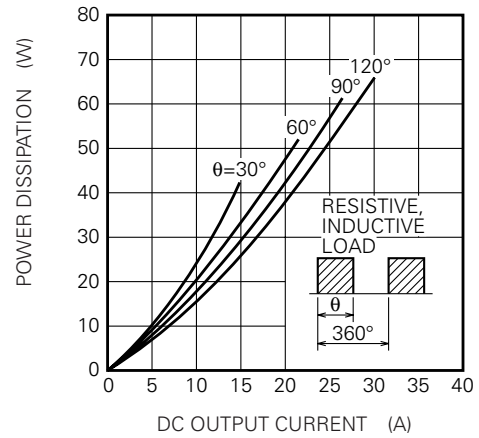
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MEDIUM POWER GENERAL USE
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MAXIMUM TRANSIENT THERMAL IMPEDANCE (JUNCTION TO CASE) (PER SINGLE ELEMENT)



MAXIMUM POWER DISSIPATION (THREE PHASE FULLWAVE RECTIFIED)



LIMITING VALUE OF THE DC OUTPUT CURRENT (THREE PHASE FULLWAVE RECTIFIED)

