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MITSUBISHI THYRISTOR MODULES

TM10T3B-M,-H

MEDIUM POWER GENERAL USE
INSULATED TYPE

TM10T3B-M,-H



- **Io** DC output current **20A**
- **VRRM** Repetitive peak reverse voltage **400/800V**
- **VDRM** Repetitive peak off-state voltage **400/800V**
- **3 Phase Mix Bridge**
- **Insulated Type**
- **UL Recognized**

Yellow Card No. E80276 (N)

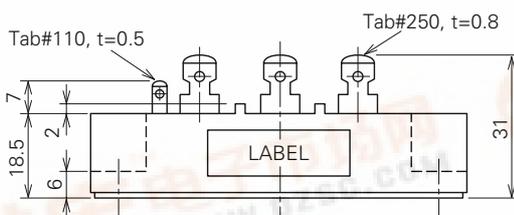
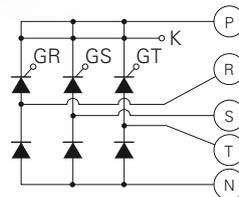
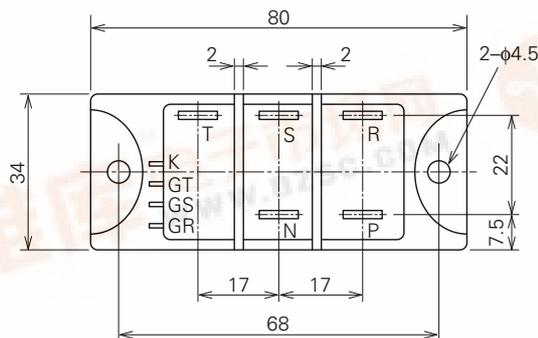
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APPLICATION

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
I _o	DC output current	3-phase fullwave rectified, TC=79°C	20	A
I _{TSM} , I _{FSM}	Surge (non-repetitive) current	One half cycle at 60Hz, peak value	200	A
I ² _t	I ² _t for fusing	Value for one cycle of surge current	1.7 × 10 ²	A ² s
di/dt	Critical rate of rise of on-state current	V _D =1/2V _{DRM} , I _G =0.5A, T _j =125°C	50	A/μs
P _{GM}	Peak gate power dissipation		5.0	W
P _{G (AV)}	Average gate power dissipation		0.5	W
V _{FGM}	Peak gate forward voltage		10	V
V _{RGM}	Peak gate reverse voltage		5.0	V
I _{FGM}	Peak gate forward current		2.0	A
T _j	Junction temperature		-40~125	°C
T _{stg}	Storage temperature		-40~125	°C
V _{iso}	Isolation voltage	Charged part to case	2500	V
—	Mounting torque	Mounting screw M4	0.98~1.47	N·m
—	Weight	Typical value	10~15	kg·cm
—	Weight	Typical value	130	g

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I _{RRM}	Repetitive peak reverse current	T _j =125°C, V _{RRM} applied	—	—	4.0	mA
I _{DRM}	Repetitive peak off-state current	T _j =125°C, V _{DRM} applied	—	—	4.0	mA
V _{TM} , V _{FM}	Forward voltage	T _j =125°C, I _{TM} =I _{FM} =20A, instantaneous meas.	—	—	1.3	V
dv/dt	Critical rate of rise of off-state voltage	T _j =125°C, V _D =2/3V _{DRM}	500	—	—	V/μs
V _{GT}	Gate trigger voltage	T _j =25°C, V _D =6V, R _L =2Ω	—	—	2.0	V
V _{GD}	Gate non-trigger voltage	T _j =125°C, V _D =1/2V _{DRM}	0.25	—	—	V
I _{GT}	Gate trigger current	T _j =25°C, V _D =6V, R _L =2Ω	10	—	50	mA
R _{th (j-c)}	Thermal resistance	Junction to case (per 1/6 module)	—	—	4.5	°C/W
R _{th (c-f)}	Contact thermal resistance	Case to fin, Conductive grease applied (per 1/6 module)	—	—	0.6	°C/W
—	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^2_t	di/dt
							IF (RMS)	IF (AV)	IFSM		
Thyristor	○	○	○	○	○	○	○	○	○	○	○
Diode	○	○	○	—	—	—	○	○	○	○	—

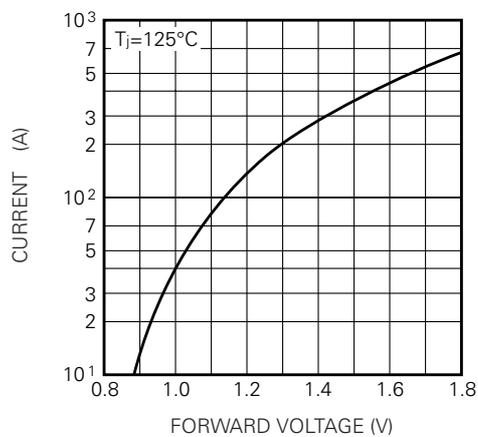
Item	PGM	PG (AV)	VFGM	IFGM	T _j	T _{stg}
Thyristor	○	○	○	○	○	○
Diode	—	—	—	—	○	○

ELECTRICAL CHARACTERISTICS

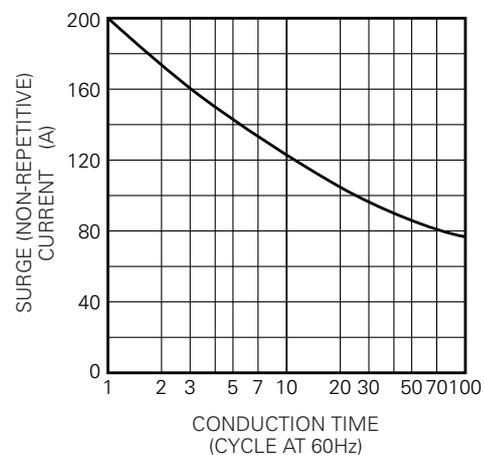
Item	IRR M	IDRM	V _{TM}	dv/dt	V _{GT}	V _{GD}	I _{GT}	R _{th (j-c)}	R _{th (c-f)}
			V _{FM}						
Thyristor	○	○	○	○	○	○	○	○	○
Diode	○	—	○	—	—	—	—	○	○

PERFORMANCE CURVES

MAXIMUM FORWARD CHARACTERISTIC



RATED SURGE (NON-REPETITIVE) CURRENT

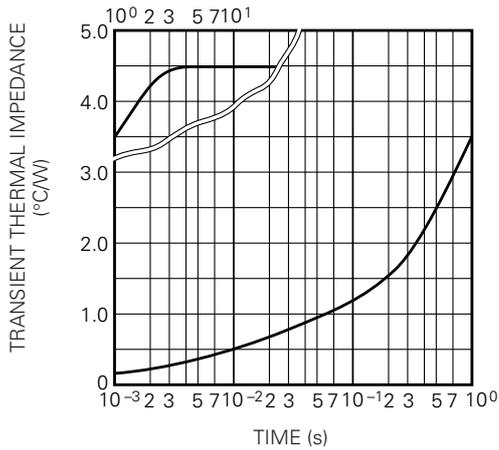


MITSUBISHI THYRISTOR MODULES

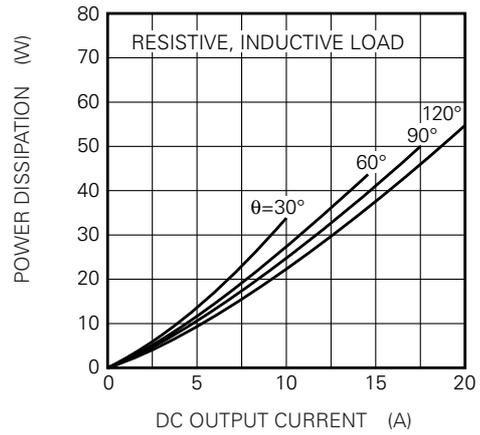
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MEDIUM POWER GENERAL USE
INSULATED TYPE

**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)**

