

# MITSUBISHI THYRISTOR MODULES

## TM25RZ/EZ-24,-2H

HIGH VOLTAGE MEDIUM POWER GENERAL USE  
INSULATED TYPE

### TM25RZ/EZ-24,-2H



- **IT (AV)** Average on-state current ..... **25A**
- **IF (AV)** Average forward current ..... **25A**
- **VRRM** Repetitive peak reverse voltage  
..... **1200/1600V**
- **VDRM** Repetitive peak off-state voltage  
..... **1200/1600V**
- **MIX DOUBLE ARMS**
- **Insulated Type**
- **UL Recognized**

Yellow Card No. E80276 (N)

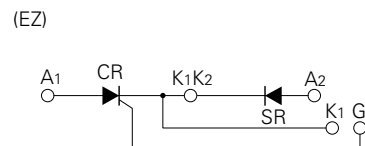
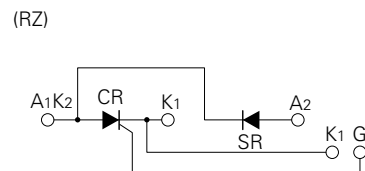
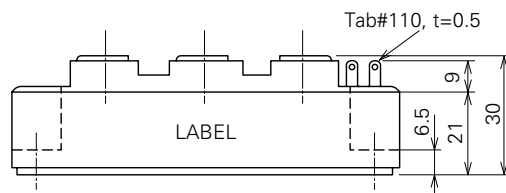
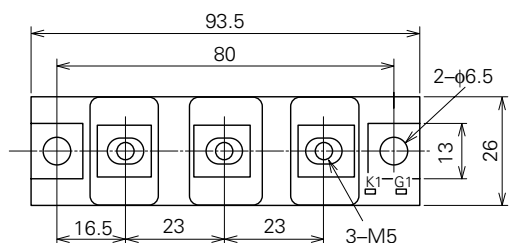
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### APPLICATION

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

### OUTLINE DRAWING & CIRCUIT DIAGRAM

Dimensions in mm



Feb.1999



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## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Voltage class		Unit
		24	H	
VRRM	Repetitive peak reverse voltage	1200	1600	V
VRSM	Non-repetitive peak reverse voltage	1350	1700	V
VR (DC)	DC reverse voltage	960	1280	V
VDRM	Repetitive peak off-state voltage	1200	1600	V
VDSM	Non-repetitive peak off-state voltage	1350	1700	V
VD (DC)	DC off-state voltage	960	1280	V

Symbol	Parameter	Conditions	Ratings	Unit
IT (RMS), IF (RMS)	RMS current		39	A
IT (AV), IF (AV)	Average current	Single-phase, half-wave 180° conduction, Tc=87°C	25	A
ITSM, IFSM	Surge (non-repetitive) current	One half cycle at 60Hz, peak value	500	A
I <sup>2</sup> t	I <sup>2</sup> t for fusing	Value for one cycle of surge current	1.0 × 10 <sup>3</sup>	A <sup>2</sup> s
di/dt	Critical rate of rise of on-state current	V <sub>D</sub> =1/2V <sub>DRM</sub> , I <sub>G</sub> =1.0A, T <sub>j</sub> =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
T <sub>j</sub>	Junction temperature		-40~125	°C
T <sub>stg</sub>	Storage temperature		-40~125	°C
V <sub>iso</sub>	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 M6	1.96~2.94	N·m
			20~30	kg·cm
—	Weight	Typical value	160	g

## ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IRRM	Repetitive peak reverse current	T <sub>j</sub> =125°C, VRRM applied	—	—	10	mA
IDRM	Repetitive peak off-state current	T <sub>j</sub> =125°C, VDRM applied	—	—	10	mA
V <sub>TM</sub> , V <sub>FM</sub>	Forward voltage	T <sub>j</sub> =125°C, I <sub>TM</sub> =I <sub>FM</sub> =75A, instantaneous meas.	—	—	1.8	V
dv/dt	Critical rate of rise of off-state voltage	T <sub>j</sub> =125°C, V <sub>D</sub> =2/3V <sub>DRM</sub>	500	—	—	V/μs
V <sub>GT</sub>	Gate trigger voltage	T <sub>j</sub> =25°C, V <sub>D</sub> =6V, R <sub>L</sub> =2Ω	—	—	3.0	V
V <sub>GD</sub>	Gate non-trigger voltage	T <sub>j</sub> =125°C, V <sub>D</sub> =1/2V <sub>DRM</sub>	0.25	—	—	V
I <sub>GT</sub>	Gate trigger current	T <sub>j</sub> =25°C, V <sub>D</sub> =6V, R <sub>L</sub> =2Ω	10	—	50	mA
R <sub>th (j-c)</sub>	Thermal resistance	Junction to case (per 1/2 module)	—	—	0.8	°C/W
R <sub>th (c-f)</sub>	Contact thermal resistance	Case to fin, conductive grease applied (per 1/2 module)	—	—	0.20	°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	$i^2t$	di/dt
							IF (RMS)	IF (AV)	IFSM		
Thyristor	○	○	○	○	○	○	○	○	○	○	○
Diode	○	○	○	—	—	—	○	○	○	○	—

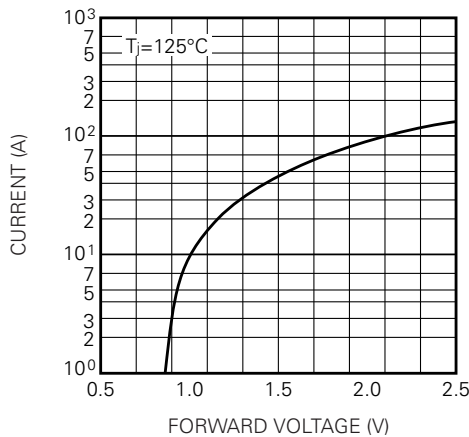
Item	PGM	PG (AV)	VFGM	IFGM	Tj	Tstg
Thyristor	○	○	○	○	○	○
Diode	—	—	—	—	○	○

ELECTRICAL CHARACTERISTICS

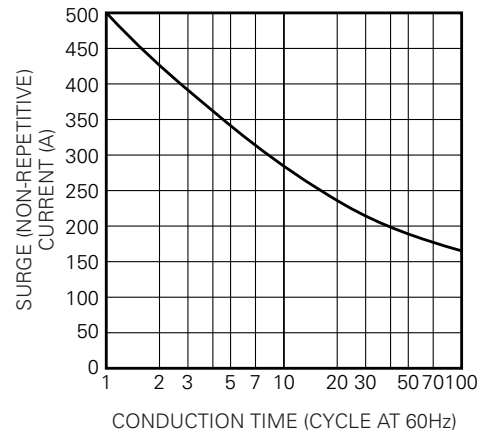
Item	IRRM	IDRM	VTM	dv/dt	VGT	VGD	IGT	Rth (j-c)	Rth (c-f)
			VFM						
Thyristor	○	○	○	○	○	○	○	○	○
Diode	○	—	○	—	—	—	—	○	○

PERFORMANCE CURVES

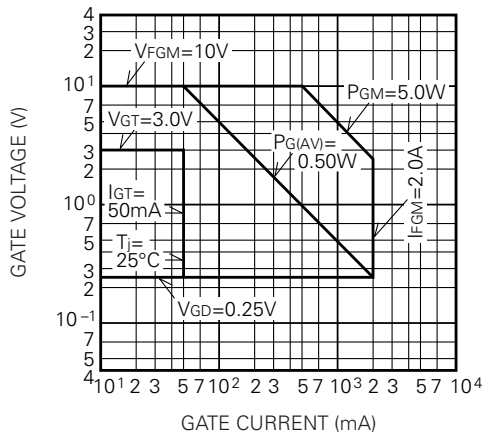
MAXIMUM FORWARD CHARACTERISTIC



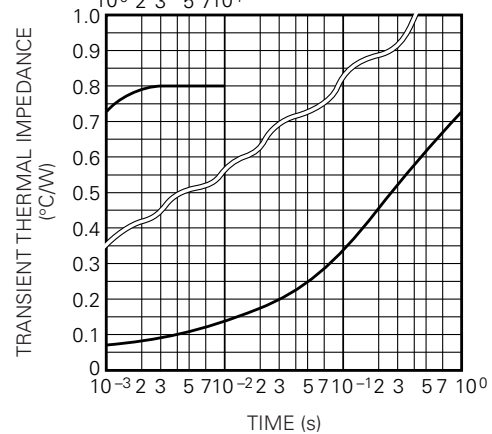
RATED SURGE (NON-REPETITIVE) CURRENT



GATE CHARACTERISTICS



MAXIMUM TRANSIENT THERMAL IMPEDANCE (JUNCTION TO CASE)



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