

6R1TI30Y-080

DIODE & THYRISTOR MODULE

800V / 30A

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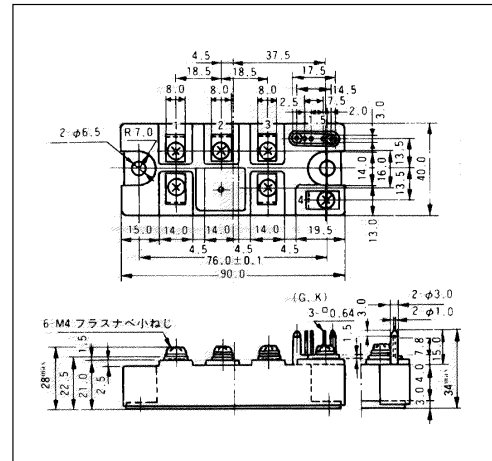
■ Features

- Glass Passivation Chip
- Easy Connection
- Insulated Type
- Large di/dt
- Large dv/dt

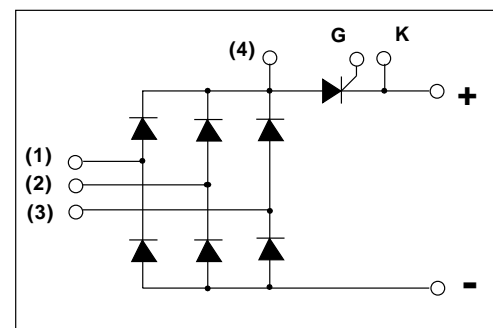
■ Applications

- Dynamic braking of AC Motors

■ Outline Drawings, mm



■ Inner Circuit Schematic



■ Maximum ratings and characteristics

● Absolute maximum ratings

Item	Symbol	Conditions	Rating	Unit	
Repetitive peak reverse voltage	V_{RRM}		800	V	
Repetitive peak off voltage	V_{DRM}		800	V	
Non-repetitive peak reverse voltage	V_{RSM}		900	V	
Average output current	I_O	50/60Hz Sine wave, $T_c=75^\circ\text{C}$	30	A	
Surge current	I_{FSM}	From rated load, Sine wave 8.3ms	300	A	
I^2t	I^2t	From rated load, 8.3ms	375	A^2s	
Operating junction temperature	T_j		-40 to +125	$^\circ\text{C}$	
Storage temperature	T_{stg}		-40 to +125	$^\circ\text{C}$	
Isolation voltage	V_{is}	AC 1min.	2000	V	
Screw torque	Moumting	M5	3.0 *1	N·m	
	Terminals	M4	1.7 *2	N·m	
Thyristor	di/dt	$T_j=125^\circ\text{C}$, $f=50\text{Hz}$, $V_D=1/2V_{DRM}$ $I_{TM}=60\text{A}$, $I_{GM}=0.3\text{A}$, $di_G/dt=0.3\text{A}/\mu\text{s}$	100	$\text{A}/\mu\text{s}$	
	Forward peak gate current	I_{FGM}	100 μs max	2	A
	Peak gate power	P_{GM}	100 μs max	5	W
	Average gate power	$P_{G(AV)}$		0.5	W
	Peak reverse gate voltage	V_{RGM}		5	V

*1: Recommendable value : 2.0 to 3.0 N·m(M5)

*2: Recommendable value : 1.3 to 1.7 N·m(M4)

●Electrical characteristics (Ta=25°C Unless otherwise specified)

	Item	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Thyristor	Forward voltage drop	V _{FM}	T _j =25°C, I _{FM} =30A			1.40	V	
	Reverse current	I _{RRM}	T _j =125°C, V _R =V _{RRM}			4	mA	
	Off current	I _{DRM}	T _j =125°C, V _R =V _{DRM}			4	mA	
	Gate trigger current	I _{GT}	T _j =25°C, V _D =6V I _T =1A			80	mA	
	Gate trigger voltage	V _{GT}				2.5	V	
	Gate non-trigger voltage	V _{GD}	T _j =125°C, V _D =1/2V _{DRM}	0.2			V	
		I _H				150	mA	
		dv/dt	T _j =125°C, V _D =2/3V _{DRM}	500			V/μs	
		Turn-on time	t _{gt}	T _j =25°C, V _D =1/2V _{DRM} I _{TM} =60A I _{GM} =0.3A diG/dt=0.3A/μs		3		μs
		Turn-off time	T _q	T _j =125°C, I _{TM} =30A -di/dt=5A/μs V _R =>50v V _D =1/2V _{DRM}		100		μs
Diode	Forward voltage drop	V _{FM}	T _j =25°C, I _{FM} =30A			1.40	V	
	Reverse current	I _{RRM}	T _j =125°C, V _R =V _{RRM}			3	mA	

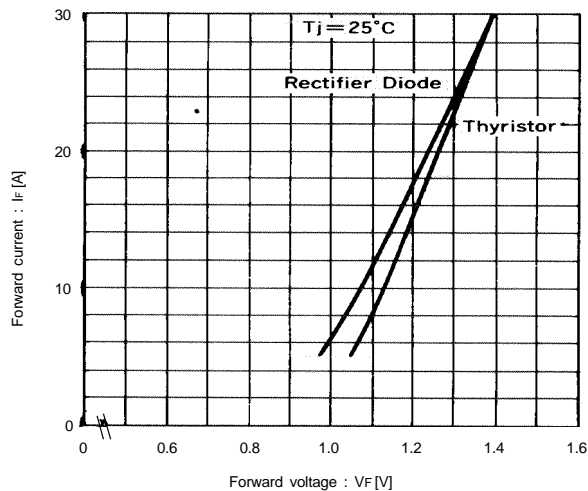
● Thermal Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Thermal resistance	R _{th(j-c)}	Junction to case 1 Chip	Diode			0.6	°C/W
			Thyristor			1.2	
	R _{th(c-f)}	the base to cooling fin *				0.06	°C/W

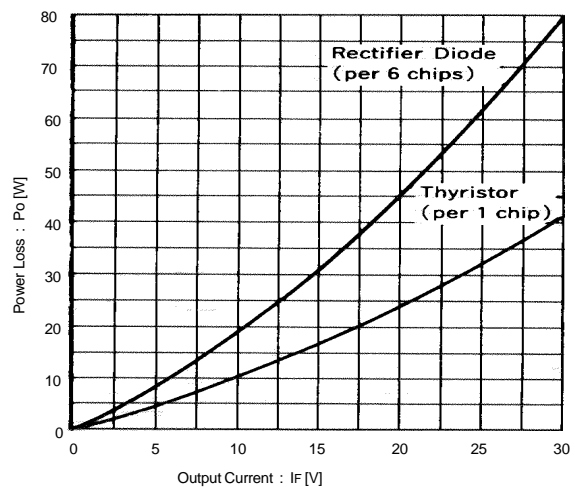
* : With Thermal Compound, Screw torque 2.5N·m

■ Characteristics

Maximum On-State Voltage/Forward Voltage Characteristics (Per 1 chip)

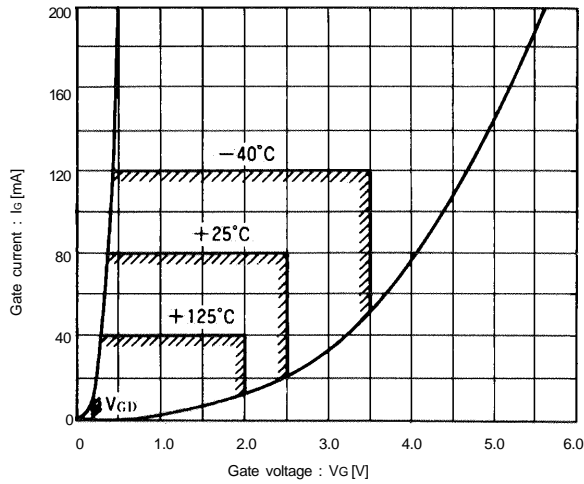


Output Current vs. Power Loss

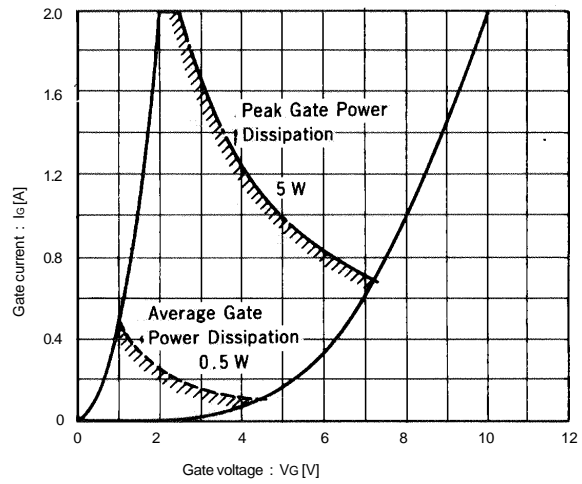


■ Characteristics

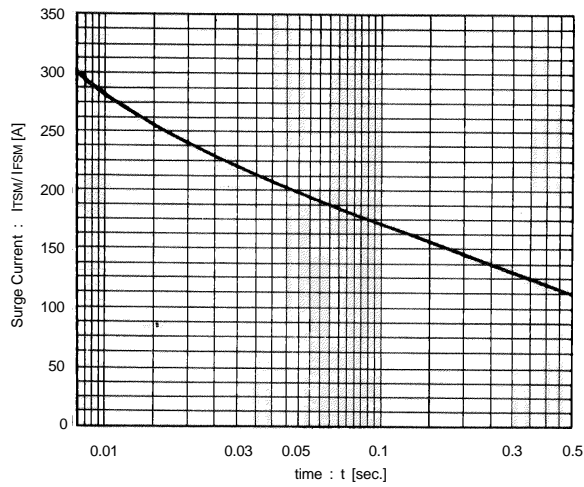
Gate Characteristics



Gate Characteristics



Surge Current



Transient Thermal Impedance
(Per 1 chip, Junction to Case)

