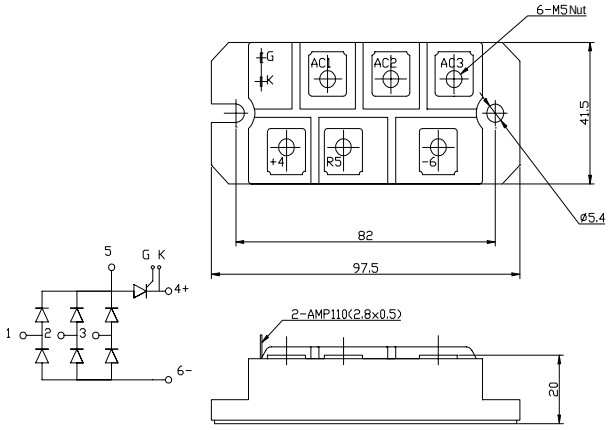
Nihon Inter Electronics Corporation

THYRISTOR MODULE

PGH10016AM

100A / 1600V

OUTLINE DRAWING



FEATURES

* Isolated Base
* 3 Phase Converter with Rush-Current Controllable Thyristor
* High Surge Capability
* UL Recognized, File No. E187184

TYPICAL APPLICATIONS

* Converter For UPS , VVVF and Servo Motor Drive Amplifier

Approx Net Weight:200g

Pert of Diode Bridge and Thyristor

Maximum Ratings

Parameter			Conditions		Max Rated Value	Unit
Average Rectified Output Current		$I_{O(AV)}$	3 Phase Full Wave Rectified	Tc=95℃(Non-Bias) Tc=70℃(Biased)	100	A
Operating JunctionTemperature Range		Tjw	Tj>125℃, Can not be Biased for Thyristor		-40 to +150	℃
Storage Temperature Range		Tstg			-40 to +125	℃
Isoration Voltage		Viso	Base Plate to Terminals, AC1min.		2500	V
Mounting torque	Case mounting	Ftor	Greased	M5 Screw	2.4 to 2.8	N•m
	Terminals			M5 Screw	2.4 to 2.8	

Thermal Characteristics

Characteristics	Symbol	Test Conditions	Maximum Value.	Unit
Thermal Resistance	Rth(c-f)	Case to Fin,Total,Greased	0.06	℃/W

Part of Diode Bridge (6 dies)

Maximum Ratings

Parameter	Symbol	Grade	Unit
		PGH10016AM	
Repetitive Peak Reverse Voltage *1	V_{RRM}	1600	V
Non Repetitive Peak Reverse Voltage *1	V_{RSM}	1700	

Parameter	Symbol	Conditions	Max Rated Value	Unit
Surge Forward Current *1	I_{FSM}	50 Hz Half Sine Wave,1Pulse, Non-Repetitive	1200	A
I Squared t *1	I^2t	2msec to 10msec	7200	A^2s
Allowable Operating Frequancy	f		400	Hz

*1 Value Per 1 Arm

Electrical • Thermal Characteristics

Characteristics	Symbol	Test Conditions	Maximum Value.			Unit
Peak Reverse Current *1	I_{RM}	V_{RM}= V_{RRM}, Tj= 125℃			20	mA
Peak Forward Voltage *1	V_{FM}	I_{FM}= 100A, Tj=25℃			1.20	V
Thermal Resistance	Rth(j-c)	Junction to Case (Total)			0.24	℃/W

*1 Value Per 1 Arm

Part of Thyristor (1 die)

Maximum Ratings

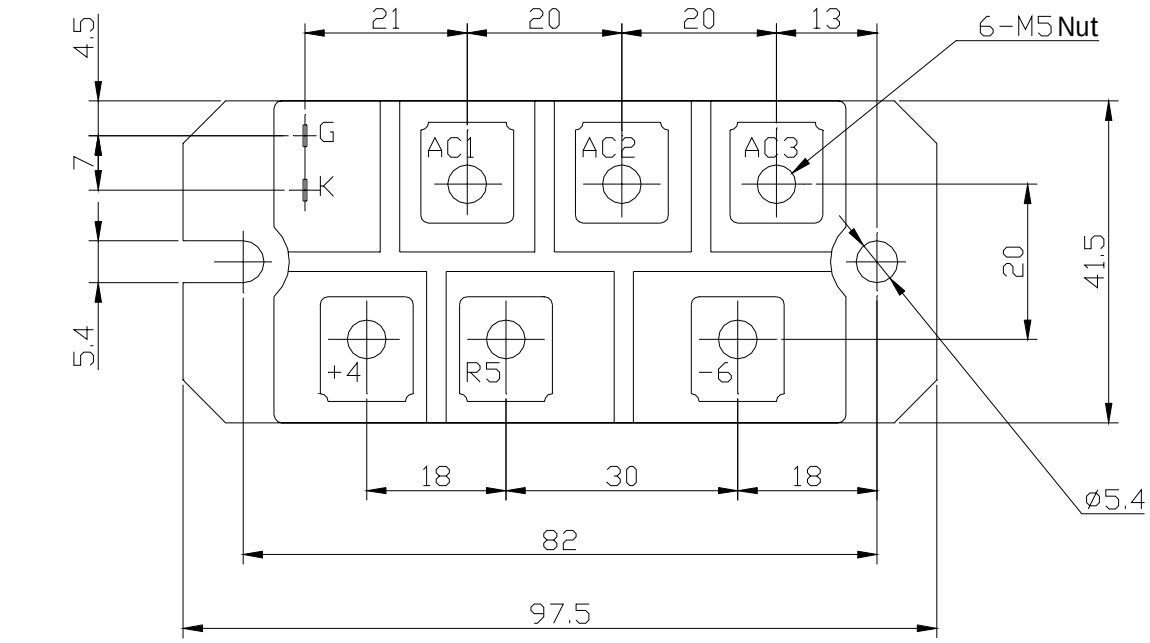
Parameter	Symbol	Grade	Unit
		PGH10016AM	
Repetitive Peak Off-State Voltage	V_{DRM}	1600	V
Non Repetitive Peak Off-State Voltage	V_{DSM}	1700	
Repetitive Peak Reverse Voltage	V_{RRM}	1600	V
Non Repetitive Peak Reverse Voltage	V_{RSM}	1700	

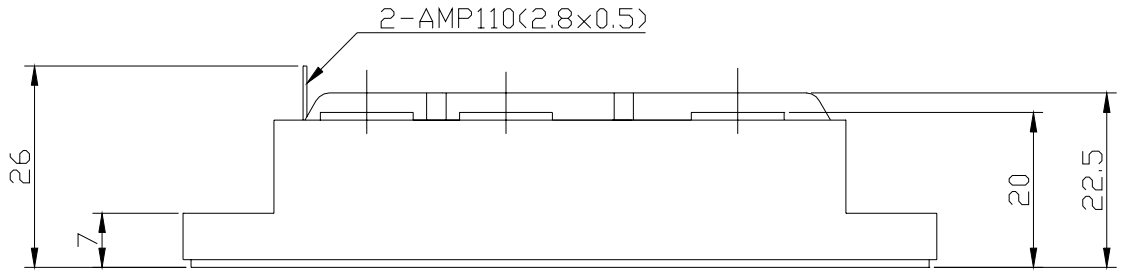
Parameter		Conditions	Max Rated Value	Unit
Surge On-State Current	I_{TSM}	50 Hz Half Sine Wave,1Pulse Non-Repetitive	2000	A
I Squared t	I^2t	2msec to 10msec	20000	A^2s
Critical Rate of Turned-On Current	di/dt	V_D=2/3V_{DRM}, I_{TM}=2·I_O, Tj=125℃ I_G=200mA, di_G/dt=0.2A/μs	100	A/μs
Peak Gate Power	P_{GM}		5	W
Average Gate Power	$P_{G(AV)}$		1	W
Peak Gate Current	I_{GM}		2	A
Peak Gate Voltage	V_{GM}		10	V
Peak Gate Reverse Voltage	V_{RGM}		5	V

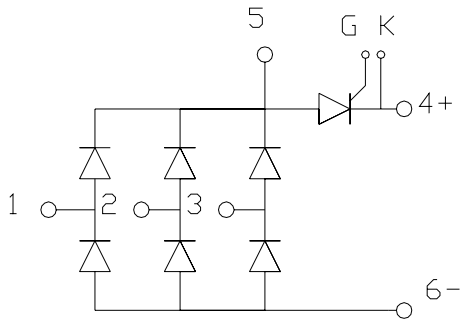
Electrical • Thermal Characteristics

Characteristics	Symbol	Test Conditions		Maximum Value.			Unit
				Min.	Typ.	Max.	
Peak Off-State Current	I_{DM}	V_{DM}= V_{DRM}, Tj= 125℃				20	mA
Peak Reverse Current	I_{RM}	V_{RM}= V_{RRM}, Tj= 125℃				20	mA
Peak On-State Voltage	V_{TM}	I_{TM}= 100A, Tj=25℃				1.10	V
Gate Current to Trigger	I_{GT}	V_D=6V,I_T=1A	Tj=-40℃			200	mA
			Tj=25℃			100	
			Tj=125℃			50	
Gate Voltage to Trigger	V_{GT}	V_D=6V,I_T=1A	Tj=-40℃			4	V
			Tj=25℃			2.5	
			Tj=125℃			2	
Gate Non-Trigger Voltage	V_{GD}	V_D=2/3V_{DRM} Tj=125℃		0.25			V
Critical Rate of Rise of Off-State Voltage	dv/dt	V_D=2/3V_{DRM} Tj=125℃		500			V/μs
Turn-Off Time	tq	I_{TM}=I_O,V_D=2/3V_{DRM} dv/dt=20V/μs, V_R=100V -di/dt=20A/μs, Tj=125℃			150		μs
Turn-On Time	tgt	V_D=2/3V_{DRM} Tj=125℃ I_G=200mA, di_G/dt=0.2A/μs			6		μs
Delay Time	td				2		μs
Rise Time	tr				4		μs
Latching Current	I_L	Tj=25℃			100		mA
Holding Current	I_H	Tj=25℃			80		
Thermal Resistance	Rth(j-c)	Junction to Case				0.5	℃/W

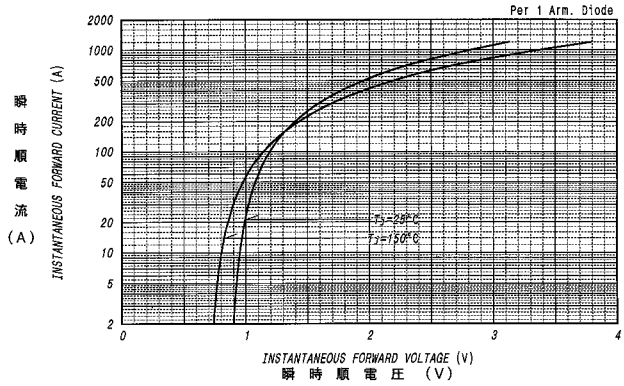
PGH10016AM OUTLINE DRAWING (Dimensions in mm)



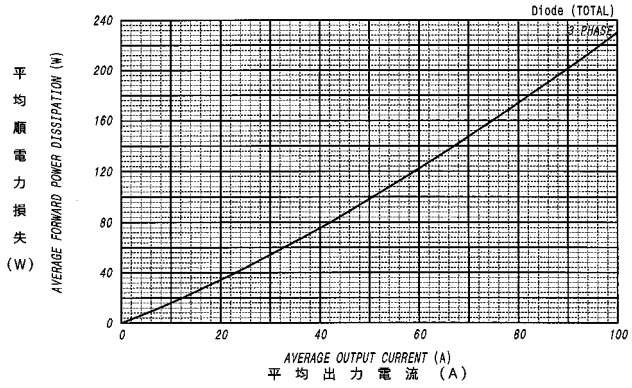




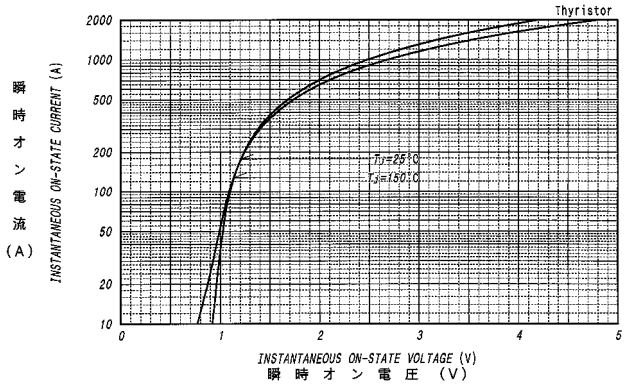
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FORWARD CURRENT VS. VOLTAGE



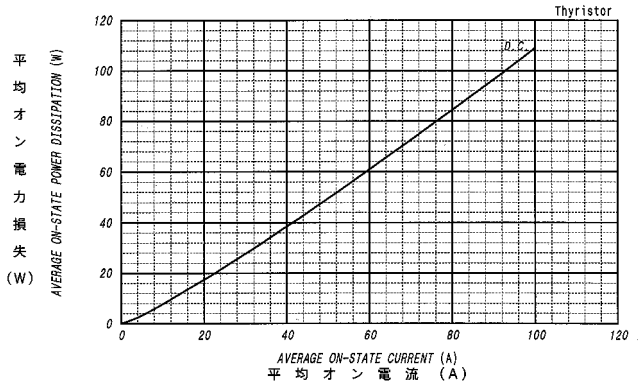
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AVERAGE FORWARD POWER DISSIPATION



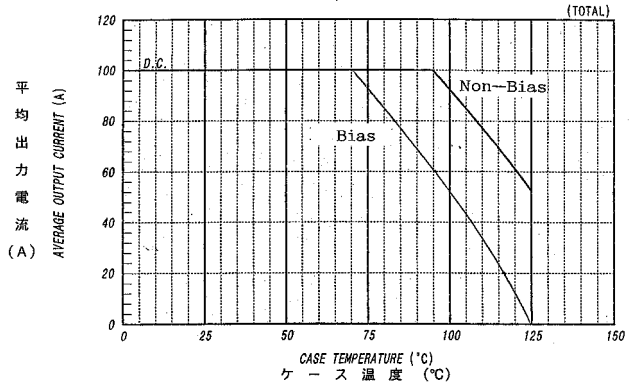
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ON-STATE CURRENT VS. VOLTAGE



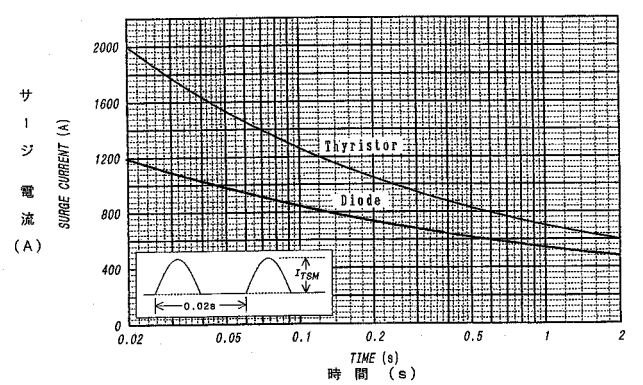
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AVERAGE ON-STATE POWER DISSIPATION



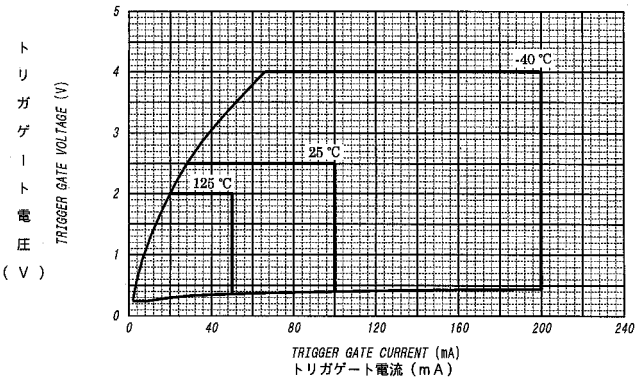
平 均 出 力 電 流 － ケ ー ス 温 度 定 格
AVERAGE OUTPUT CURRENT VS. CASE TEMPERATURE
3-Phase Full Wave, Resistive or Inductive Load



サ ー ジ 電 流 定 格
SURGE CURRENT RATINGS
f=50Hz,Half Sine Wave,Non-Repetitive,On Load



ゲ ー ト 特 性
GATE CHARACTERISTCS



ゲ ー ト 定 格
GATE RATINGS

