

# THYRISTOR MODULE

# PGH508AM

50A / 800V

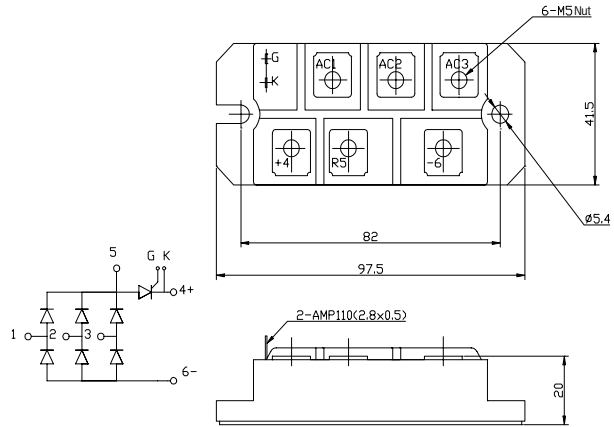
OUTLINE DRAWING

## 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<br>Tc=110°C(Non-Bias)<br>Tc=85°C(Biased) | 50              | A    |
| Operating JunctionTemperature Range | Tjw           | Tj>125°C, Can not be Biased for Thyristor.                           | -40 to +150     | °C   |
| Storage Temperature Range           | Tstg          |  | -40 to +125     | °C   |
| Isoration Voltage                   | Viso          | Base Plate to Terminals, AC1min.                                     | 2000            | V    |
| Mounting torque                     | Case mounting | Ftor   | Greased         | N.m  |
|                                     | Terminals     |  | M5 Screw        |      |
|                                     |               | 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           | °C/W |

## Part of Diode Bridge (6 dies)

### Maximum Ratings

| Parameter                              | Symbol    | Grade    | Unit |
|--|-----------|----------|------|
|  |           | PGH508AM |      |
| Repetitive Peak Reverse Voltage *1     | $V_{RRM}$ | 800      | V    |
| Non Repetitive Peak Reverse Voltage *1 | $V_{RSM}$ | 900      |      |

| Parameter                     | Symbol    | Conditions                                  | Max Rated Value | Unit             |
|-------------------------------|-----------|---|-----------------|------------------|
| Surge Forward Current *1      | $I_{FSM}$ | 50 Hz Half Sine Wave,1Pulse, Non-Repetitive | 600             | A                |
| I Squared t *1                | $I^2t$    | 2msec to 10msec                             | 1800            | A <sup>2</sup> s |
| Allowable Operating Frequency | f         |   | 400             | Hz               |

\*1 Value Per 1 Arm

**Electrical • Thermal Characteristics**

| Characteristics         | Symbol        | Test Conditions                      | Maximum Value. |      |      | Unit          |
|-------------------------|---------------|--------------------------------------|----------------|------|------|---------------|
|                         |               |                                      | Min.           | Typ. | Max. |               |
| Peak Reverse Current *1 | $I_{RM}$      | $V_{RM}= V_{RRM}, T_j= 125^{\circ}C$ |                |      | 10   | mA            |
| Peak Forward Voltage *1 | $V_{FM}$      | $I_{FM}= 50A, T_j=25^{\circ}C$       |                |      | 1.15 | V             |
| Thermal Resistance      | $R_{th(j-c)}$ | Junction to Case (Total)             |                |      | 0.27 | $^{\circ}C/W$ |

\*1 Value Per 1 Arm

**Part of Thyristor (1 die)**
**Maximum Ratings**

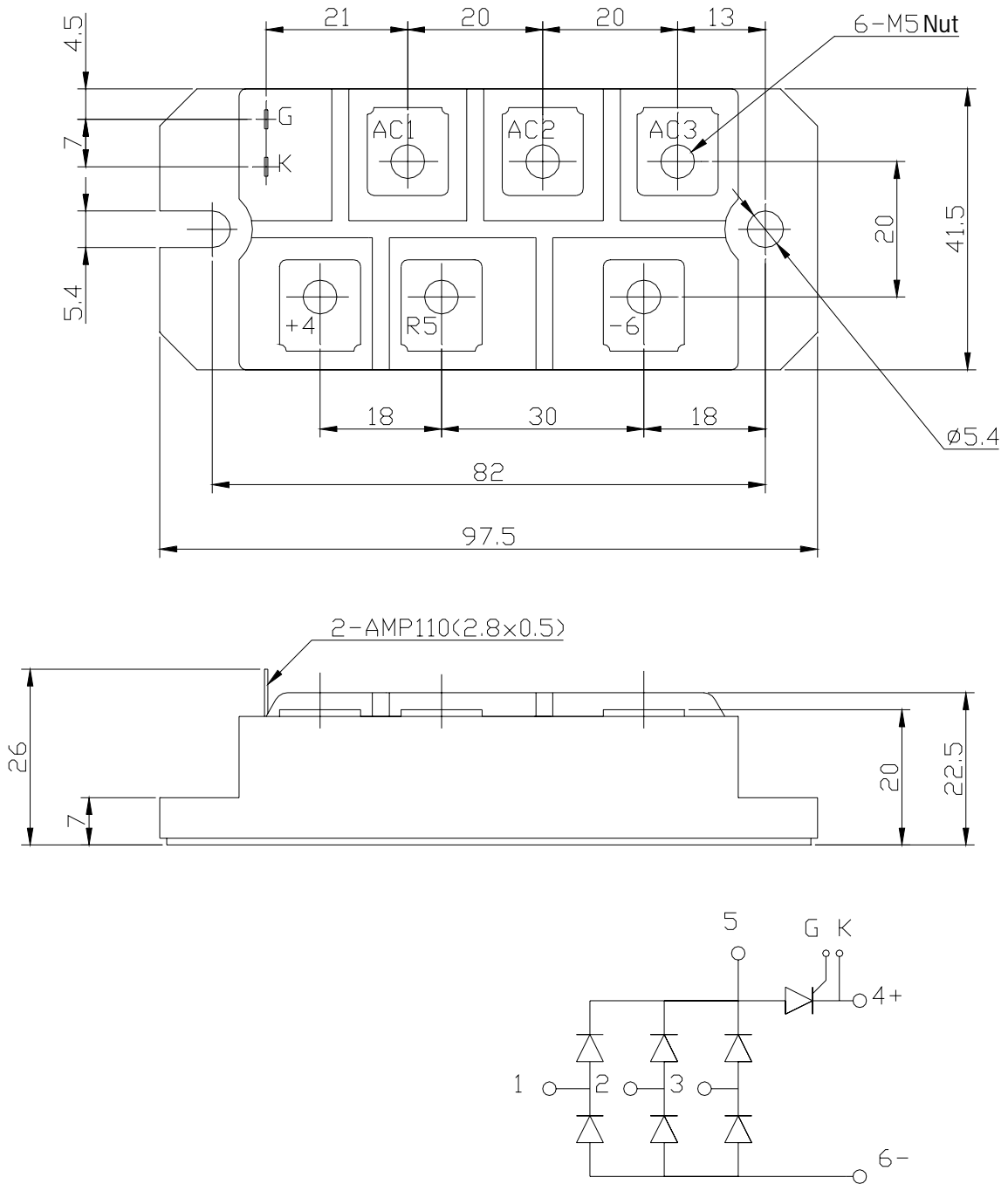
| Parameter                             | Symbol    | Grade    |  | Unit |
|---------------------------------------|-----------|----------|--|------|
|                                       |           | PGH508AM |  |      |
| Repetitive Peak Off-State Voltage     | $V_{DRM}$ | 800      |  | V    |
| Non Repetitive Peak Off-State Voltage | $V_{DSM}$ | 900      |  |      |
| Repetitive Peak Reverse Voltage       | $V_{RRM}$ | 800      |  | V    |
| Non Repetitive Peak Reverse Voltage   | $V_{RSM}$ | 900      |  |      |

| Parameter                          | Symbol      | Conditions  | Max Rated Value | Unit      |
|------------------------------------|-------------|---|-----------------|-----------|
|                                    |             |   |                 |           |
| I Squared t                        | $I^2t$      | 2msec to 10msec   | 1800            | $A^2s$    |
| Critical Rate of Turned-On Current | $di/dt$     | $V_D=2/3V_{DRM}, I_{TM}=2 \cdot I_O, T_j=125^{\circ}C$<br>$I_G=200mA, di_G/dt=0.2A/\mu s$ | 100             | $A/\mu s$ |
| 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         |

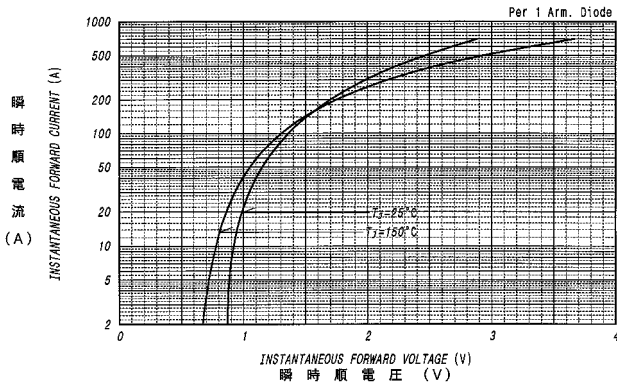
**Electrical • Thermal Characteristics**

| Characteristics                            | Symbol        | Test Conditions   | Maximum Value.     |      |      | Unit          |
|--|---------------|---|--------------------|------|------|---------------|
|  |               |   | Min.               | Typ. | Max. |               |
| Peak Off-State Current                     | $I_{DM}$      | $V_{DM}= V_{DRM}, T_j= 125^{\circ}C$  |                    |      | 15   | mA            |
| Peak Reverse Current                       | $I_{RM}$      | $V_{RM}= V_{RRM}, T_j= 125^{\circ}C$  |                    |      | 15   | mA            |
| Peak On-State Voltage                      | $V_{TM}$      | $I_{TM}= 50A, T_j=25^{\circ}C$  |                    |      | 1.10 | V             |
| Gate Current to Trigger                    | $I_{GT}$      | $V_D=6V, I_T=1A$  | $T_j=-40^{\circ}C$ |      | 200  | mA            |
|  |               |   | $T_j=25^{\circ}C$  |      | 100  |               |
|  |               |   | $T_j=125^{\circ}C$ |      | 50   |               |
| Gate Voltage to Trigger                    | $V_{GT}$      | $V_D=6V, I_T=1A$  | $T_j=-40^{\circ}C$ |      | 4    | V             |
|  |               |   | $T_j=25^{\circ}C$  |      | 2.5  |               |
|  |               |   | $T_j=125^{\circ}C$ |      | 2    |               |
| Gate Non-Trigger Voltage                   | $V_{GD}$      | $V_D=2/3V_{DRM}, T_j=125^{\circ}C$  | 0.25               |      |      | V             |
| Critical Rate of Rise of Off-State Voltage | $dv/dt$       | $V_D=2/3V_{DRM}, T_j=125^{\circ}C$  | 500                |      |      | $V/\mu s$     |
| Turn-Off Time                              | $t_q$         | $I_{TM}=I_O, V_D=2/3V_{DRM}$<br>$dv/dt=20V/\mu s, V_R=100V$<br>$-di/dt=20A/\mu s, T_j=125^{\circ}C$ |                    | 150  |      | $\mu s$       |
| Turn-On Time                               | $t_{gt}$      | $V_D=2/3V_{DRM}, T_j=125^{\circ}C$<br>$I_G=200mA, di_G/dt=0.2A/\mu s$                               |                    | 6    |      | $\mu s$       |
| Delay Time                                 | $t_d$         |   |                    | 2    |      | $\mu s$       |
| Rise Time                                  | $t_r$         |   |                    | 4    |      | $\mu s$       |
| Latching Current                           | $I_L$         | $T_j=25^{\circ}C$   |                    | 100  |      | mA            |
| Holding Current                            | $I_H$         | $T_j=25^{\circ}C$   |                    | 80   |      |               |
| Thermal Resistance                         | $R_{th(j-c)}$ | Junction to Case  |                    |      | 0.8  | $^{\circ}C/W$ |

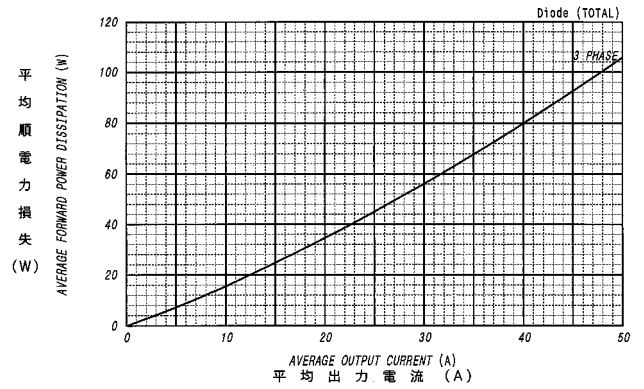
PGH508AM OUTLINE DRAWING (Dimensions in mm)



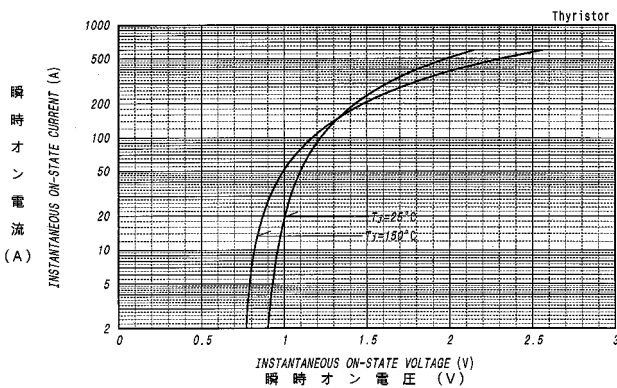
順電圧特性  
FORWARD CURRENT VS. VOLTAGE



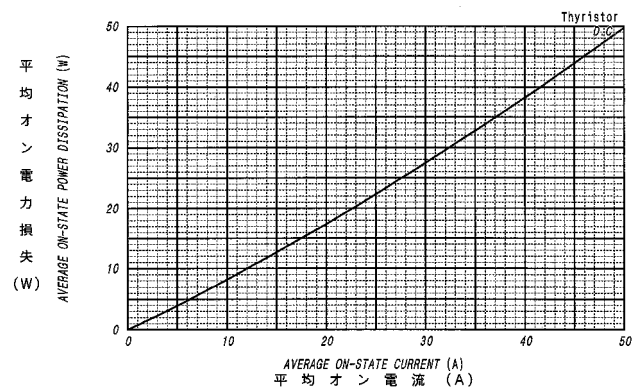
平均順電力損失特性  
AVERAGE FORWARD POWER DISSIPATION



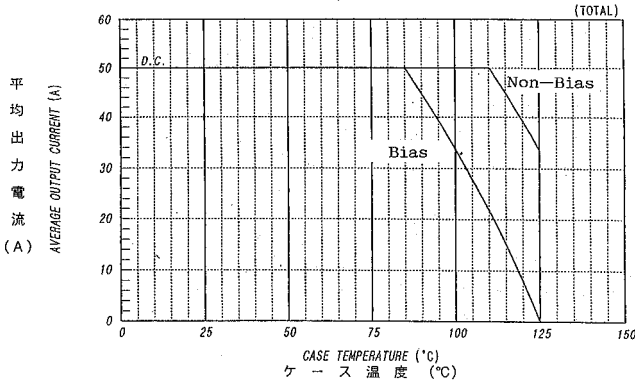
オン電圧特性  
ON-STATE CURRENT VS. VOLTAGE



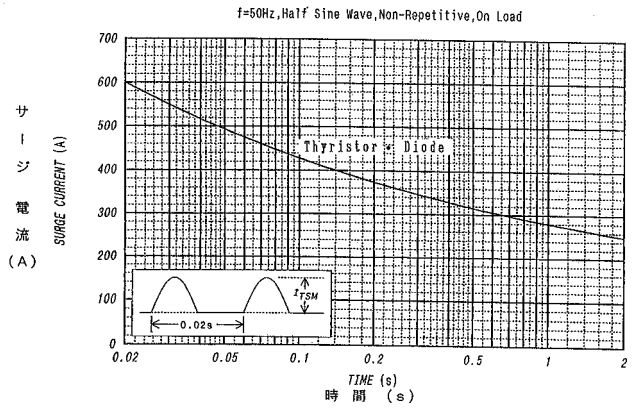
平均オン電力損失特性  
AVERAGE ON-STATE POWER DISSIPATION



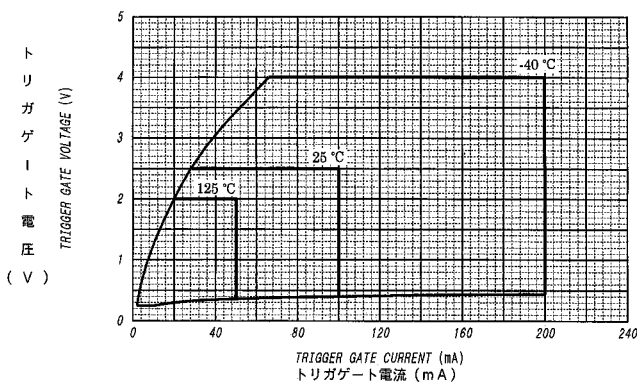
平均出力電流 - ケース温度定格  
AVERAGE OUTPUT CURRENT VS. CASE TEMPERATURE



サージ電流定格  
SURGE CURRENT RATINGS



ゲート特性  
GATE CHARACTERISTICS



ゲート定格  
GATE RATINGS

