

# THYRISTOR MODULE

PAT2008 PAH2008

200A / 800V

## FEATURES

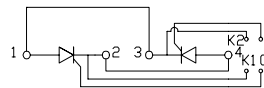
- \* Isolated Base
- \* Dual Thyristors or Thyristor and Diode Anti-Parallel Circuit
- \* High Surge Capability
- \* UL Recognized, File No. E187184

## TYPICAL APPLICATIONS

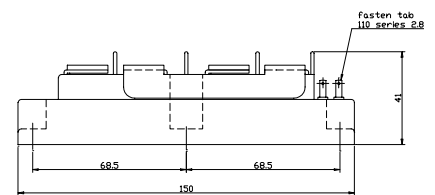
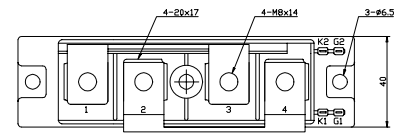
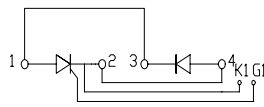
- \* Rectified For General Use

OUTLINE DRAWING

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## Maximum Ratings

Approx Net Weight:500g

| Parameter                             | Symbol    | Grade       | Unit |
|---------------------------------------|-----------|-------------|------|
|                                       |           | PAT/PAH2008 |      |
| 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                            |               | Conditions  | Max Rated Value | Unit                   |
|--------------------------------------|---------------|---|-----------------|------------------------|
| Average Rectified Output Current     | $I_{O(AV)}$   | 50Hz Half Sine Wave condition<br>$T_c=65^\circ\text{C}$   | 200             | A                      |
| RMS On-State Current                 | $I_{T(RMS)}$  |   | 314             | A                      |
| Surge On-State Current               | $I_{TSM}$     | 50 Hz Half Sine Wave, 1Pulse<br>Non-Repetitive  | 4000            | A                      |
| I Squared t                          | $I^2t$        | 2msec to 10msec   | 8000            | $\text{A}^2\text{s}$   |
| Critical Rate of Turned-On Current   | $di/dt$       | $V_D=2/3V_{DRM}$ , $I_{TM}=2 \cdot I_O$ , $T_j=125^\circ\text{C}$<br>$I_G=300\text{mA}$ , $di/dt=0.2\text{A}/\mu\text{s}$ | 100             | $\text{A}/\mu\text{s}$ |
| 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                      |
| Operating Junction Temperature Range | $T_{jw}$      |   | -40 to +125     | $^\circ\text{C}$       |
| Storage Temperature Range            | $T_{stg}$     |   | -40 to +125     | $^\circ\text{C}$       |
| Isolation Voltage                    | Viso          | Base Plate to Terminals, AC1min   | 2000            | V                      |
| Mounting torque                      | Case mounting | Ftor  | M6 Screw        | N.m                    |
|                                      | Terminals     |   | M8 Screw        |                        |

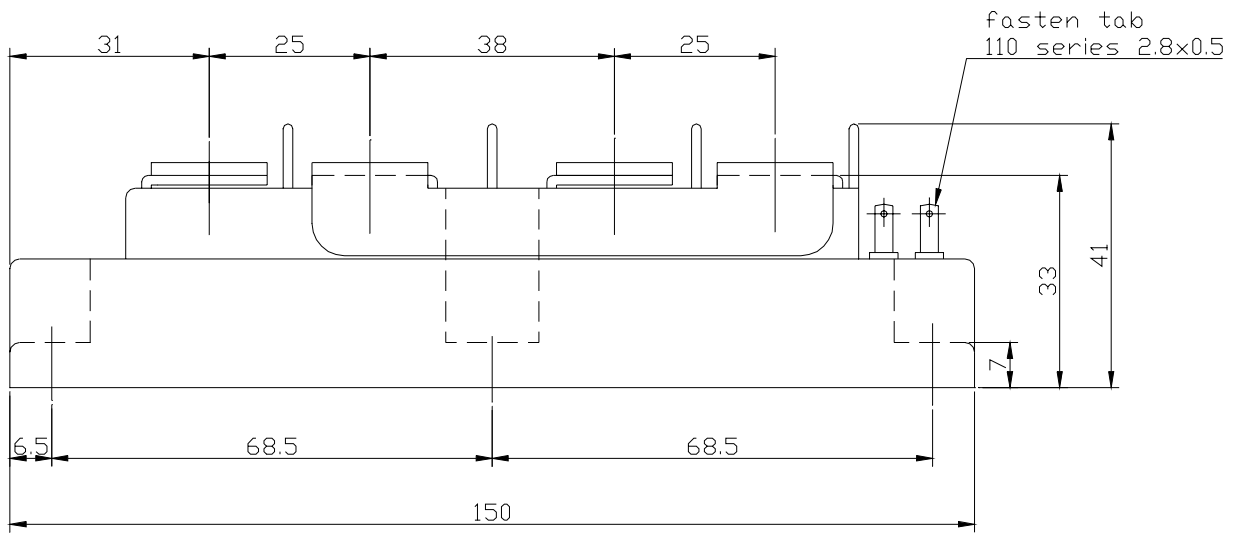
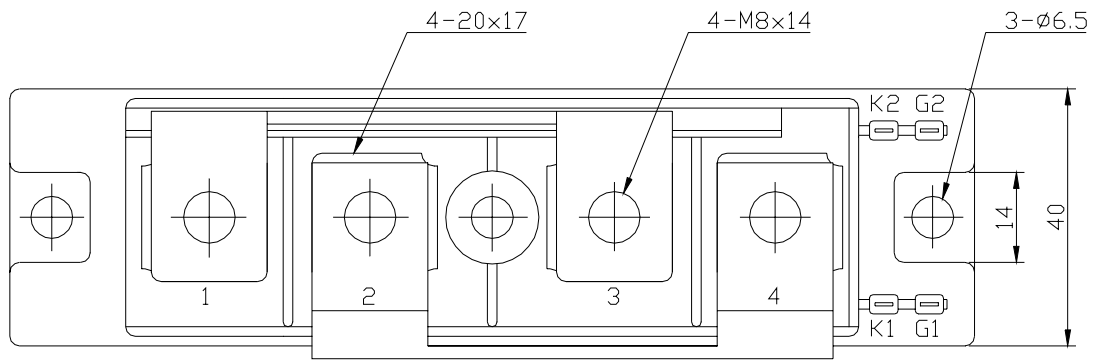
Value per 1 Arm

**Electrical • Thermal Characteristics**

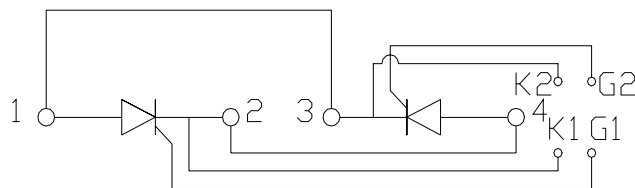
| Characteristics                            | Symbol        | Test Conditions   | Maximum Value.            |      |      | Unit                      |
|--|---------------|---|---------------------------|------|------|---------------------------|
|  |               |   | Min.                      | Typ. | Max. |                           |
| Peak Off-State Current                     | $I_{DM}$      | $V_{DM} = V_{DRM}, T_j = 125^\circ\text{C}$   |                           |      | 30   | mA                        |
| Peak Reverse Current                       | $I_{RM}$      | $V_{RM} = V_{RRM}, T_j = 125^\circ\text{C}$   |                           |      | 30   | mA                        |
| Peak Forward Voltage                       | $V_{TM}$      | $I_{TM} = 600\text{A}, T_j = 25^\circ\text{C}$  |                           |      | 1.34 | V                         |
| Gate Current to Trigger                    | $I_{GT}$      | $V_D = 6\text{V}, I_T = 1\text{A}$  | $T_j = -40^\circ\text{C}$ |      | 300  | mA                        |
|  |               |   | $T_j = 25^\circ\text{C}$  |      | 150  |                           |
|  |               |   | $T_j = 125^\circ\text{C}$ |      | 80   |                           |
| Gate Voltage to Trigger                    | $V_{GT}$      | $V_D = 6\text{V}, I_T = 1\text{A}$  | $T_j = -40^\circ\text{C}$ |      | 5    | V                         |
|  |               |   | $T_j = 25^\circ\text{C}$  |      | 3    |                           |
|  |               |   | $T_j = 125^\circ\text{C}$ |      | 2    |                           |
| Gate Non-Trigger Voltage                   | $V_{GD}$      | $V_D = 2/3V_{DRM}, T_j = 125^\circ\text{C}$   | 0.25                      |      |      | V                         |
| Critical Rate of Rise of Off-State Voltage | $dv/dt$       | $V_D = 2/3V_{DRM}, T_j = 125^\circ\text{C}$   | 500                       |      |      | V/ $\mu\text{s}$          |
| Turn-Off Time                              | $t_q$         | $I_{TM} = I_O, V_D = 2/3V_{DRM}$<br>$dv/dt = 20\text{V}/\mu\text{s}, V_R = 100\text{V}$<br>$-di/dt = 20\text{A}/\mu\text{s}, T_j = 125^\circ\text{C}$ |                           | 100  |      | $\mu\text{s}$             |
| Turn-On Time                               | $t_{gt}$      | $V_D = 2/3V_{DRM}, T_j = 125^\circ\text{C}$<br>$I_G = 300\text{mA}, di_G/dt = 0.2\text{A}/\mu\text{s}$  |                           | 6    |      | $\mu\text{s}$             |
| Delay Time                                 | $t_d$         |   |                           | 2    |      | $\mu\text{s}$             |
| Rise Time                                  | $t_r$         |   |                           | 4    |      | $\mu\text{s}$             |
| Latching Current                           | $I_L$         | $T_j = 25^\circ\text{C}$  |                           | 100  |      | mA                        |
| Holding Current                            | $I_H$         | $T_j = 25^\circ\text{C}$  |                           | 60   |      |                           |
| Thermal Resistance                         | $R_{th(j-c)}$ | Junction to Case  |                           |      | 0.23 | $^\circ\text{C}/\text{W}$ |
|  | $R_{th(c-f)}$ | Base Plate to Heat Sink with Thermal Compound   |                           |      | 0.1  |                           |

Value Per 1Arm

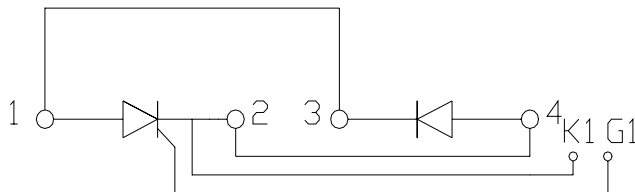
PAT/PAH2008 OUTLINE DRAWING (Dimensions in mm)



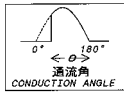
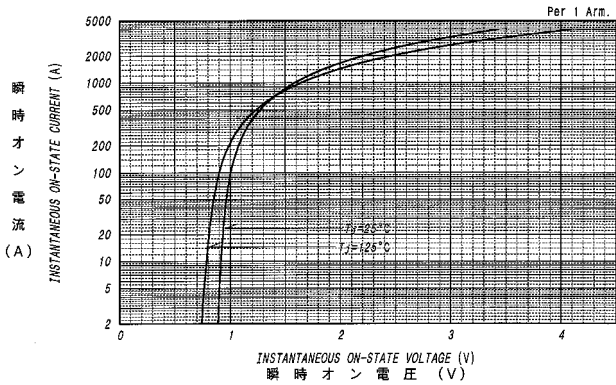
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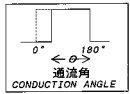
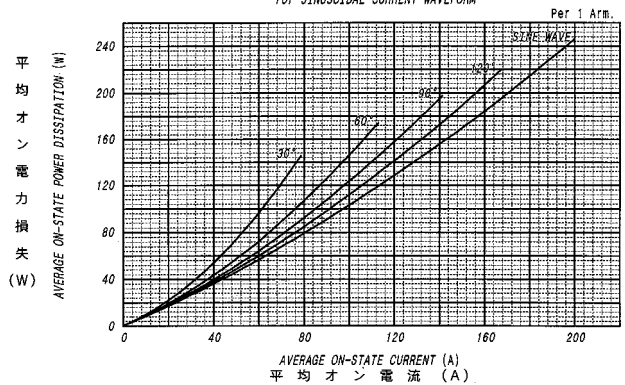
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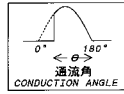
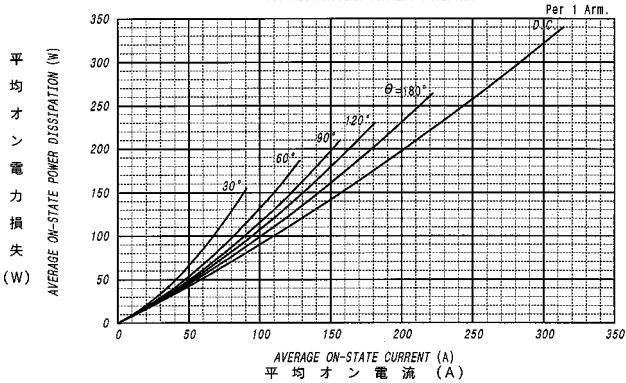
オン電圧特性  
ON-STATE CURRENT VS. VOLTAGE



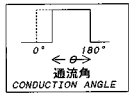
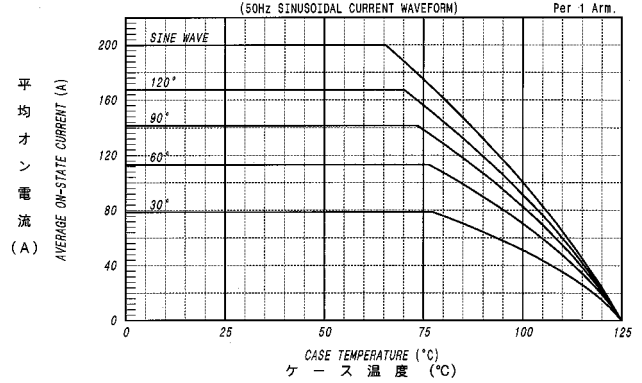
平均オン電力損失特性  
AVERAGE ON-STATE POWER DISSIPATION



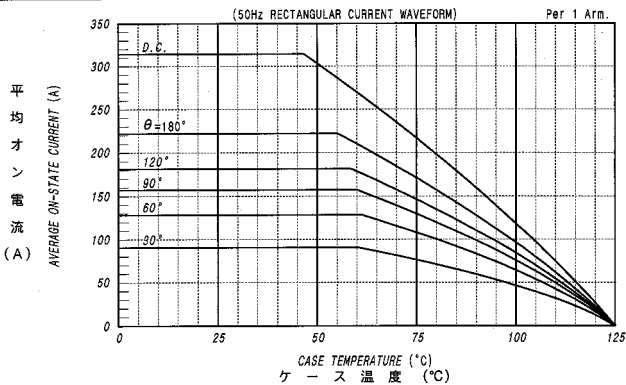
平均オン電力損失特性  
AVERAGE ON-STATE POWER DISSIPATION



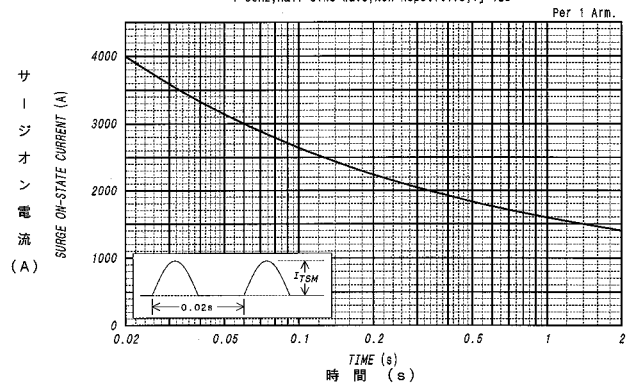
平均オン電流 - ケース温度定格  
AVERAGE ON-STATE CURRENT VS. CASE TEMPERATURE



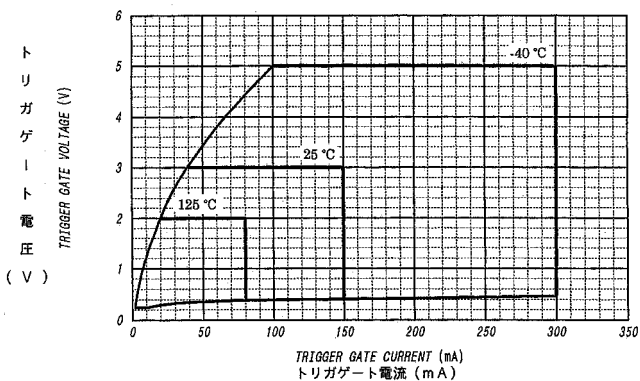
平均オン電流 - ケース温度定格  
AVERAGE ON-STATE CURRENT VS. CASE TEMPERATURE



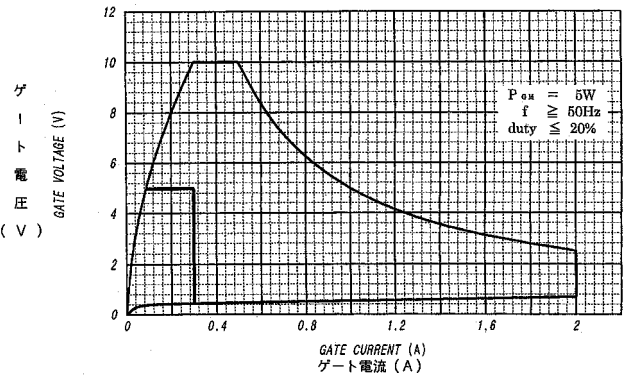
サージオン電流定格  
SURGE CURRENT RATINGS



ゲート特性  
GATE CHARACTERISTICS



ゲート定格  
GATE RATINGS



過渡熱抵抗特性  
MAXIMUM TRANSIENT THERMAL IMPEDANCE

Junction to Case

Per 1 Arm.

