

# THYRISTOR MODULE

133A / 800V

P A T 6 0 8 A C

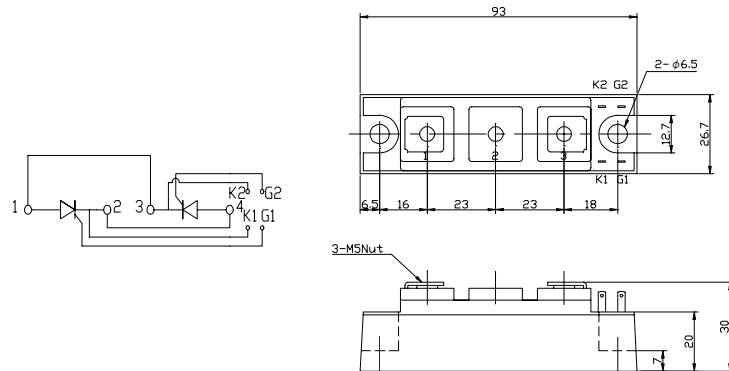
## FEATURES

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

## TYPICAL APPLICATIONS

- \* AC phase control
- \* AC switch

OUTLINE DRAWING



## Maximum Ratings

Approx Net Weight:155g

| Parameter                             | Symbol           | Grade    | Unit |
|---------------------------------------|------------------|----------|------|
|                                       |                  | PAT608AC |      |
| Repetitive Peak Off-State Voltage     | V <sub>DRM</sub> | 800      | V    |
| Non Repetitive Peak Off-State Voltage | V <sub>DSM</sub> | 960      |      |

| Parameter                            |                     | Conditions  | Max Rated Value | Unit             |     |
|--------------------------------------|---------------------|---|-----------------|------------------|-----|
| RMS On-State Current                 | I <sub>T(RMS)</sub> | 50Hz Half Sine Wave condition<br>T <sub>c</sub> =83°C   | 133             | A                |     |
| Surge On-State Current               | I <sub>FSM</sub>    | 50 Hz Half Sine Wave, 1Pulse<br>Non-Repetitive  | 1200            | A                |     |
| I Squared t                          | I <sup>2</sup> t    | 2msec to 10msec   | 7200            | A <sup>2</sup> s |     |
| Critical Rate of Turned-On Current   | di/dt               | V <sub>D</sub> =2/3V <sub>DRM</sub> , I <sub>TM</sub> =2·I <sub>O</sub> , T <sub>j</sub> =125°C<br>I <sub>G</sub> =200mA, di <sub>G</sub> /dt=0.2A/μs | 100             | A/μs             |     |
| Peak Gate Power                      | P <sub>GM</sub>     |   | 5               | W                |     |
| Average Gate Power                   | P <sub>G(AV)</sub>  |   | 1               | W                |     |
| Peak Gate Current                    | I <sub>GM</sub>     |   | 2               | A                |     |
| Peak Gate Voltage                    | V <sub>GM</sub>     |   | 10              | V                |     |
| Peak Gate Reverse Voltage            | V <sub>RGM</sub>    |   | 5               | V                |     |
| Operating Junction Temperature Range | T <sub>jw</sub>     |   | -40 to +125     | °C               |     |
| Storage Temperature Range            | T <sub>stg</sub>    |   | -40 to +125     | °C               |     |
| Isolation Voltage                    | Viso                | Base Plate to Terminals, AC1min   | 2500            | V                |     |
| Mounting torque                      | Case mounting       | F <sub>tor</sub>  | M6 Screw        | 2.4 to 3.5       | N.m |
|                                      | Terminals           |   | M5 Screw        | 2.4 to 2.8       |     |

Value per 1 Arm

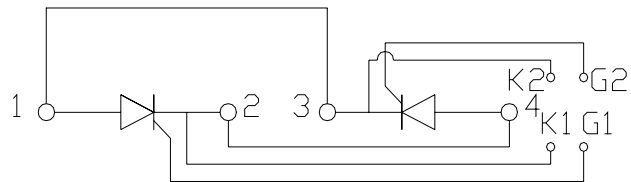
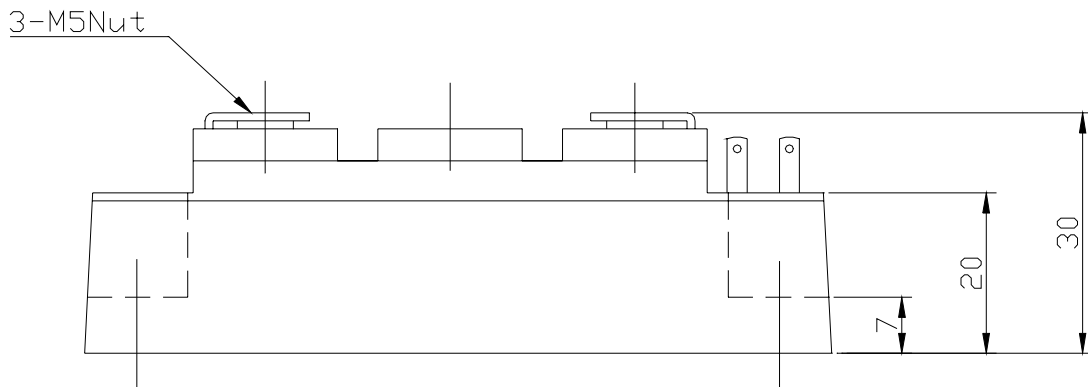
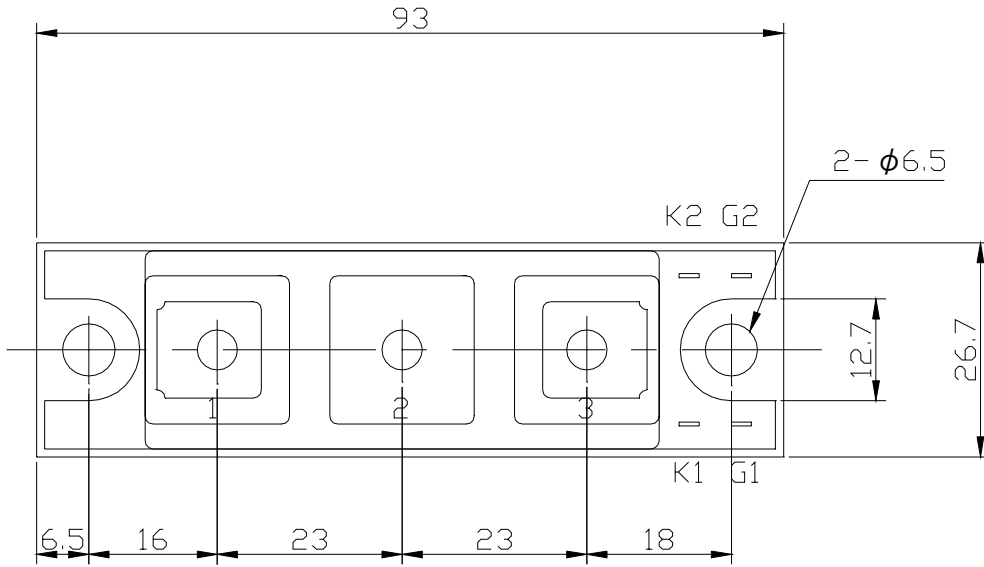
**Electrical • Thermal Characteristics**

| 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 On-State Voltage                      | $V_{TM}$      | $I_{TM} = 180\text{A}, T_j = 25^\circ\text{C}$  |                           |      | 1.38 | V                         |
| Gate Current to Trigger                    | $I_{GT}$      | $V_D = 6\text{V}, I_T = 1\text{A}$  | $T_j = -40^\circ\text{C}$ |      | 200  | mA                        |
|  |               |   | $T_j = 25^\circ\text{C}$  |      | 100  |                           |
|  |               |   | $T_j = 125^\circ\text{C}$ |      | 50   |                           |
| Gate Voltage to Trigger                    | $V_{GT}$      | $V_D = 6\text{V}, I_T = 1\text{A}$  | $T_j = -40^\circ\text{C}$ |      | 4    | V                         |
|  |               |   | $T_j = 25^\circ\text{C}$  |      | 2.5  |                           |
|  |               |   | $T_j = 125^\circ\text{C}$ |      | 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                               | $t_{gt}$      | $T_j = 25^\circ\text{C}, I_{TM} = I_{T(RMS)}$   |                           | 6    |      | $\mu\text{s}$             |
| Delay Time                                 | $t_d$         | $V_D = 100\text{V}, I_G = 200\text{mA}$   |                           | 2    |      | $\mu\text{s}$             |
| Rise Time                                  | $t_r$         | $di/dt = 0.2\text{A}/\mu\text{s}$   |                           | 4    |      | $\mu\text{s}$             |
| Latching Current                           | $I_L$         | $T_j = 25^\circ\text{C}$  |                           | 100  |      | mA                        |
| Holding Current                            | $I_H$         | $T_j = 25^\circ\text{C}$  |                           | 50   |      |                           |
| Thermal Resistance *1                      | $R_{th(j-c)}$ | Junction to Case  |                           |      | 0.25 | $^\circ\text{C}/\text{W}$ |
|  | $R_{th(c-f)}$ | Base Plate to Heat Sink with Thermal Compound   |                           |      | 0.1  |                           |

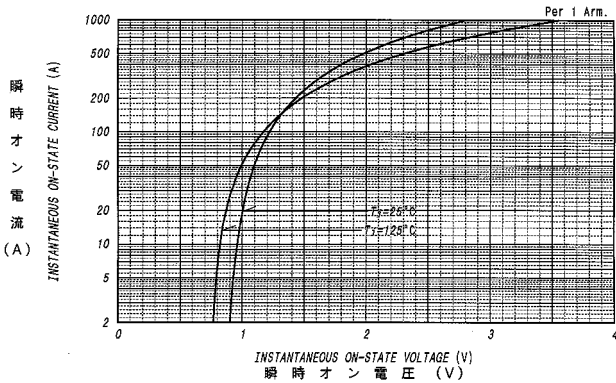
Value Per 1Arm

\*1: Value Per Module

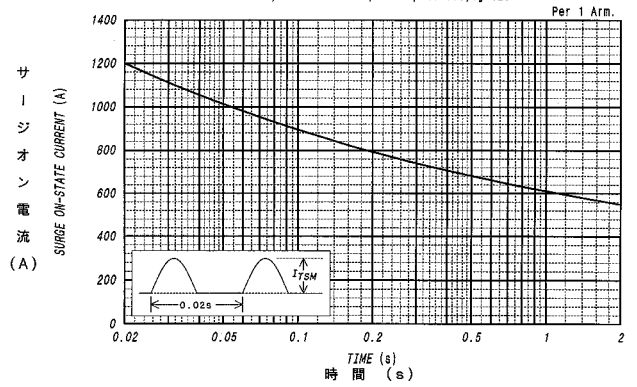
PAT608AC OUTLINE DRAWING (Dimensions in mm)



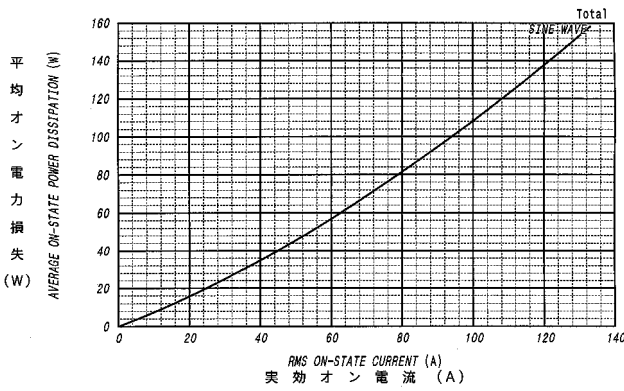
オン電圧特性  
ON-STATE CURRENT VS. VOLTAGE



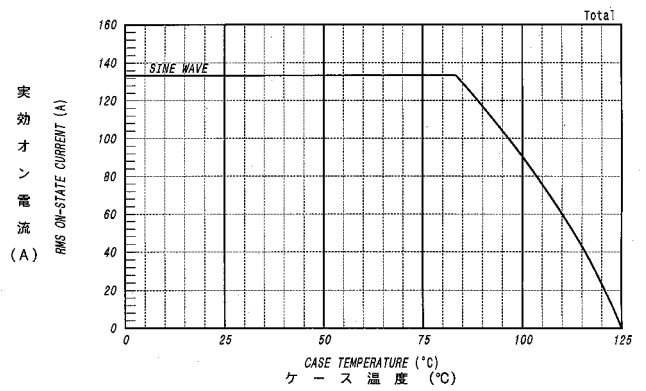
サージオン電流定格  
SURGE CURRENT RATINGS



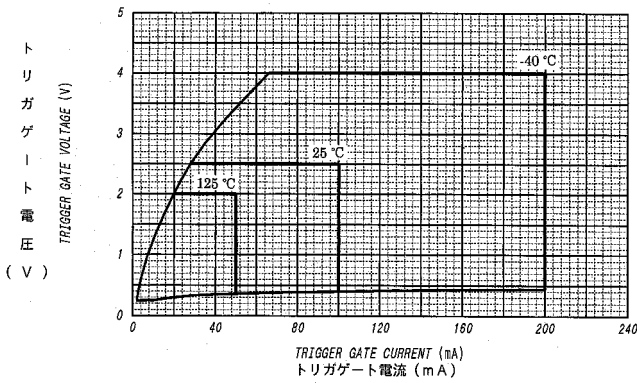
平均オン電力損失特性  
AVERAGE ON-STATE POWER DISSIPATION



実効オン電流-ケース温度定格  
RMS ON-STATE CURRENT VS. CASE TEMPERATURE



ゲート特性  
GATE CHARACTERISTICS



ゲート定格  
GATE RATINGS

