

THYRISTOR MODULE

222A / 1200 to 1600V

PAT10012 PAT10016

PAH10012 PAH10016

FEATURES

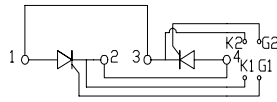
- * Isolated Base
- * Dual Thyristors or Thyristor and Diode Anti-Parallel Circuit
- * High Surge Capability
- * UL Recognized, File No. E187184

OUTLINE DRAWING

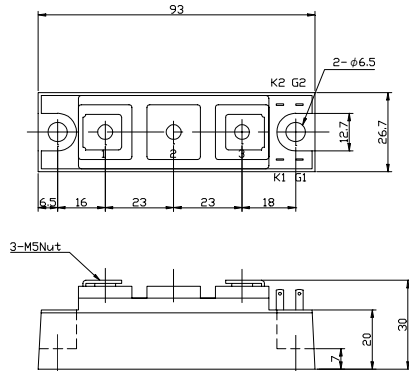
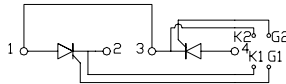
TYPICAL APPLICATIONS

- * AC phase control
- * AC switch

PAT



PAH



Maximum Ratings

Approx Net Weight:155g

| Parameter | Symbol | Grade | | Unit |
|---------------------------------------|-----------|--------------|--------------|------|
| | | PAT/PAH10012 | PAT/PAH10016 | |
| Repetitive Peak Off-State Voltage | V_{DRM} | 1200 | 1600 | V |
| Non Repetitive Peak Off-State Voltage | V_{DSM} | 1300 | 1700 | |

| Parameter | | Conditions | Max Rated Value | Unit | |
|--------------------------------------|---------------|---|-----------------|------------|-----|
| RMS On-State Current | $I_{T(RMS)}$ | 50Hz Half Sine Wave condition $T_c=76^\circ C$ | 222 | A | |
| Surge On-State Current | I_{FSM} | 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 | $V_D=2/3V_{DRM}$, $I_{TM}=2 \cdot I_o$, $T_j=125^\circ C$ $I_G=200mA$, $di_G/dt=0.2A/\mu s$ | 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 | |
| Operating Junction Temperature Range | T_{jw} | | -40 to +125 | $^\circ C$ | |
| Storage Temperature Range | T_{stg} | | -40 to +125 | $^\circ C$ | |
| Isolation Voltage | Viso | Base Plate to Terminals, AC1min | 2500 | V | |
| Mounting torque | Case mounting | Ftor | M6 Screw | 2.4 to 3.5 | N.m |
| | Terminals | | M5 Screw | 2.4 to 2.8 | |

Value per 1 Arm

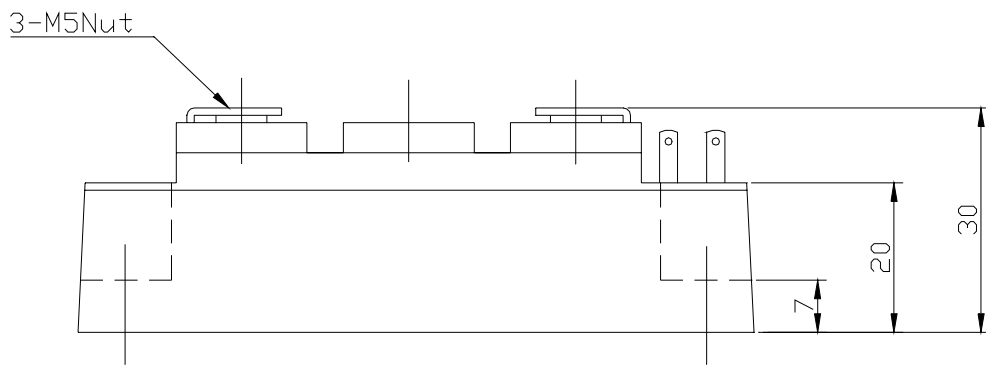
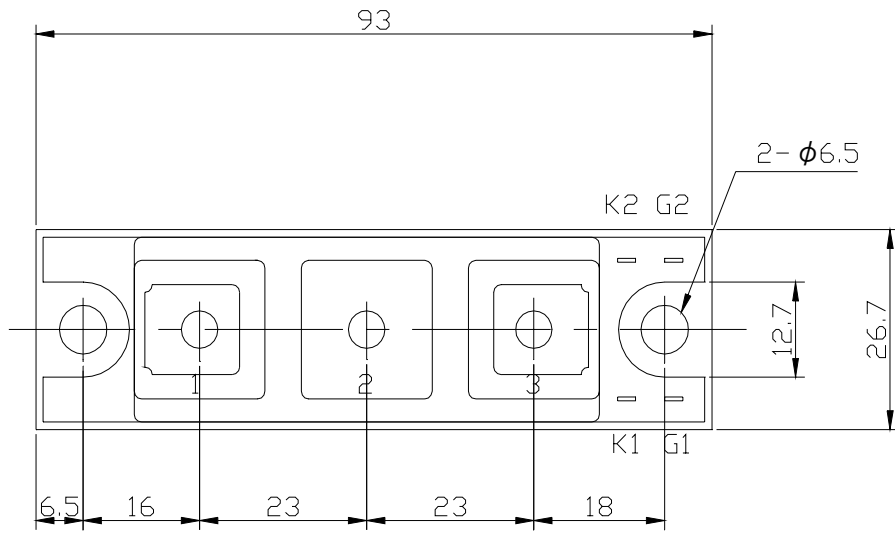
Electrical • Thermal Characteristics

| Characteristics | Symbol | Test Conditions | Maximum Value. | | | Unit |
|--|---------------|---|---------------------------|------|-------|---------------------------|
| | | | Min. | Typ. | Max. | |
| Peak Off-State Current | I_{DM} | $V_{DM} = V_{DRM}, T_j = 125^\circ\text{C}$ | | | 40 | mA |
| Peak On-State Voltage | V_{TM} | $I_{TM} = 300\text{A}, T_j = 25^\circ\text{C}$ | | | 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/ μs |
| Turn-Off Time | t_q | $I_{TM} = I_O, V_D = 2/3V_{DRM}$ $dv/dt = 20\text{V}/\mu\text{s}, V_R = 100\text{V}$ $-di/dt = 20\text{A}/\mu\text{s}, T_j = 125^\circ\text{C}$ | | 100 | | μs |
| Turn-On Time | t_{gt} | $T_j = 25^\circ\text{C}, I_{TM} = I_{T(RMS)}$ | | 6 | | μs |
| Delay Time | t_d | $V_D = 100\text{V}, I_G = 200\text{mA}$ | | 2 | | μs |
| Rise Time | t_r | $di/dt = 0.2\text{A}/\mu\text{s}$ | | 4 | | μs |
| 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 | | | 0.175 | $^\circ\text{C}/\text{W}$ |
| | $R_{th(c-f)}$ | Base Plate to Heat Sink with Thermal Compound | | | 0.1 | |

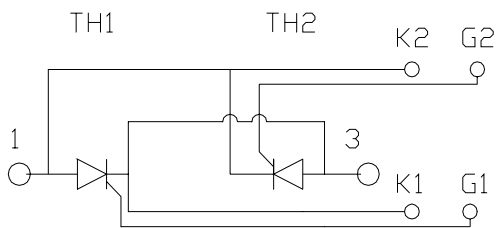
Value Per 1Arm

*1: Value Per Module

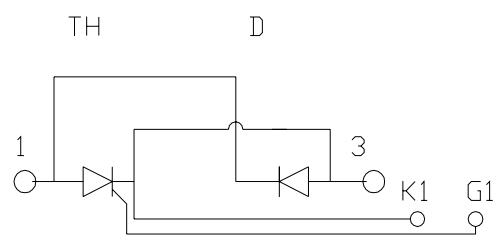
PAT/PAH1001x OUTLINE DRAWING (Dimensions in mm)



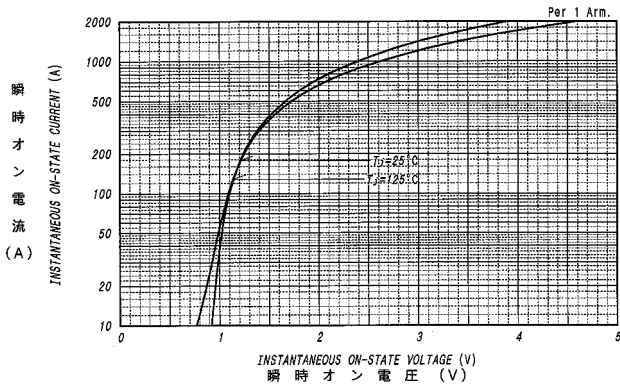
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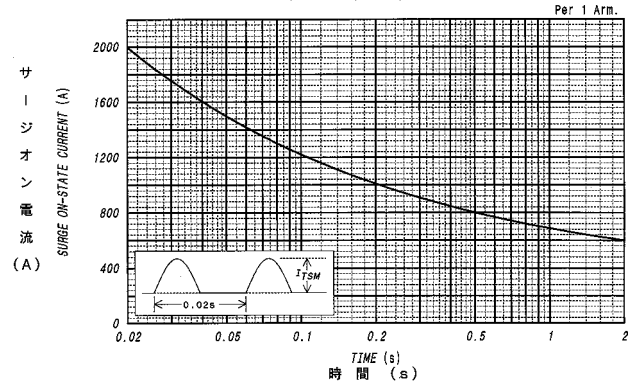


オン電圧特性
ON-STATE CURRENT VS. VOLTAGE

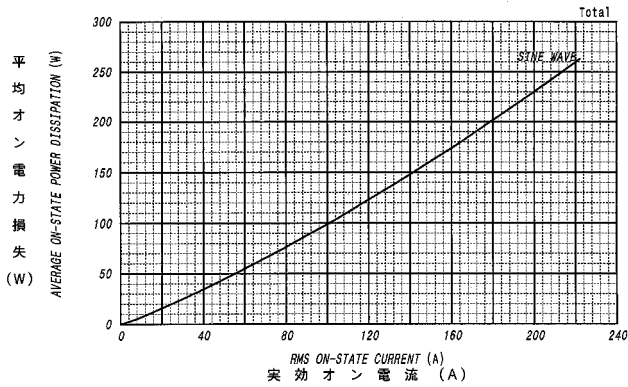


サージオン電流定格
SURGE CURRENT RATINGS

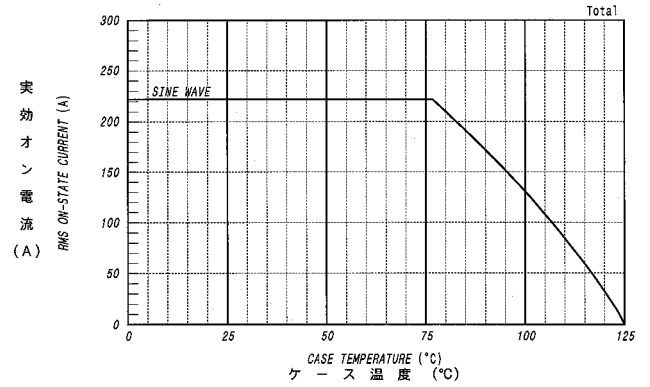
f=50Hz, Sine Wave, Non-Repetitive, Tj=125°C



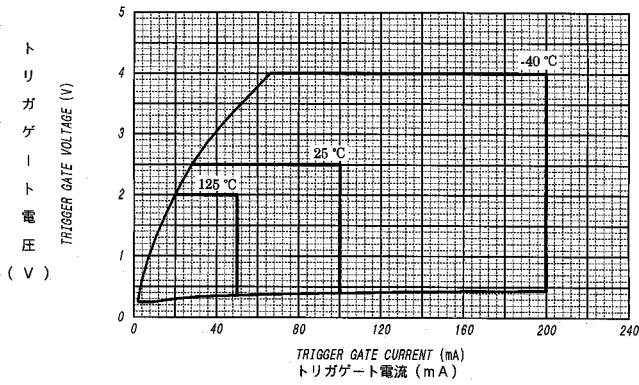
平均オン電力損失特性
AVERAGE ON-STATE POWER DISSIPATION



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

