

THYRISTOR MODULE

PDT40012 PDT40016

400A/1200V/1600V

FEATURES

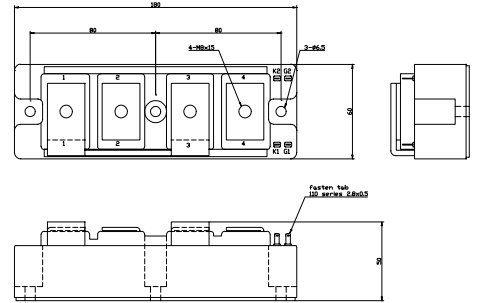
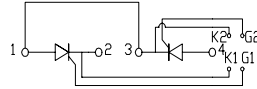
- * Isolated Base
- * Dual Thyristors Cascaded Circuit
- * High Surge Capability
- * UL Recognized, File No. E187184

TYPICAL APPLICATIONS

- * Rectified For General Use

OUTLINE DRAWING

PDT



Maximum Ratings

Approx Net Weight:1350g

| Parameter | Symbol | Grade | | Unit |
|---------------------------------------|-----------|----------|----------|------|
| | | PDT40012 | PDT40016 | |
| Repetitive Peak Off-State Voltage | V_{DRM} | 1200 | 1600 | V |
| Non Repetitive Peak Off-State Voltage | V_{DSM} | 1300 | 1700 | V |
| Repetitive Peak Reverse Voltage | V_{RRM} | 1200 | 1600 | V |
| Non Repetitive Peak Reverse Voltage | V_{RSM} | 1300 | 1700 | V |

| Parameter | Symbol | Conditions | Max Rated Value | Unit | |
|--------------------------------------|---------------|---|-----------------|-------------|-----|
| Average Rectified Output Current | $I_{O(AV)}$ | 50Hz Half Sine Wave condition $T_c=61^\circ C$ | 400 | A | |
| RMS On-State Current | $I_{T(RMS)}$ | | 630 | A | |
| Surge On-State Current | I_{TSM} | 50 Hz Half Sine Wave, 1Pulse Non-Repetitive | 7200 | A | |
| I Squared t | I^2t | 2msec to 10msec | 259000 | A^2s | |
| Critical Rate of Turned-On Current | di/dt | $V_D=2/3V_{DRM}$, $I_{TM}=2 \cdot I_O$, $T_j=125^\circ C$ $I_G=300mA$, $di_G/dt=0.2A/\mu s$ | 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 | 2.5 to 3.5 | N.m |
| | Terminals | | M8 Screw | 9.0 to 10.0 | |

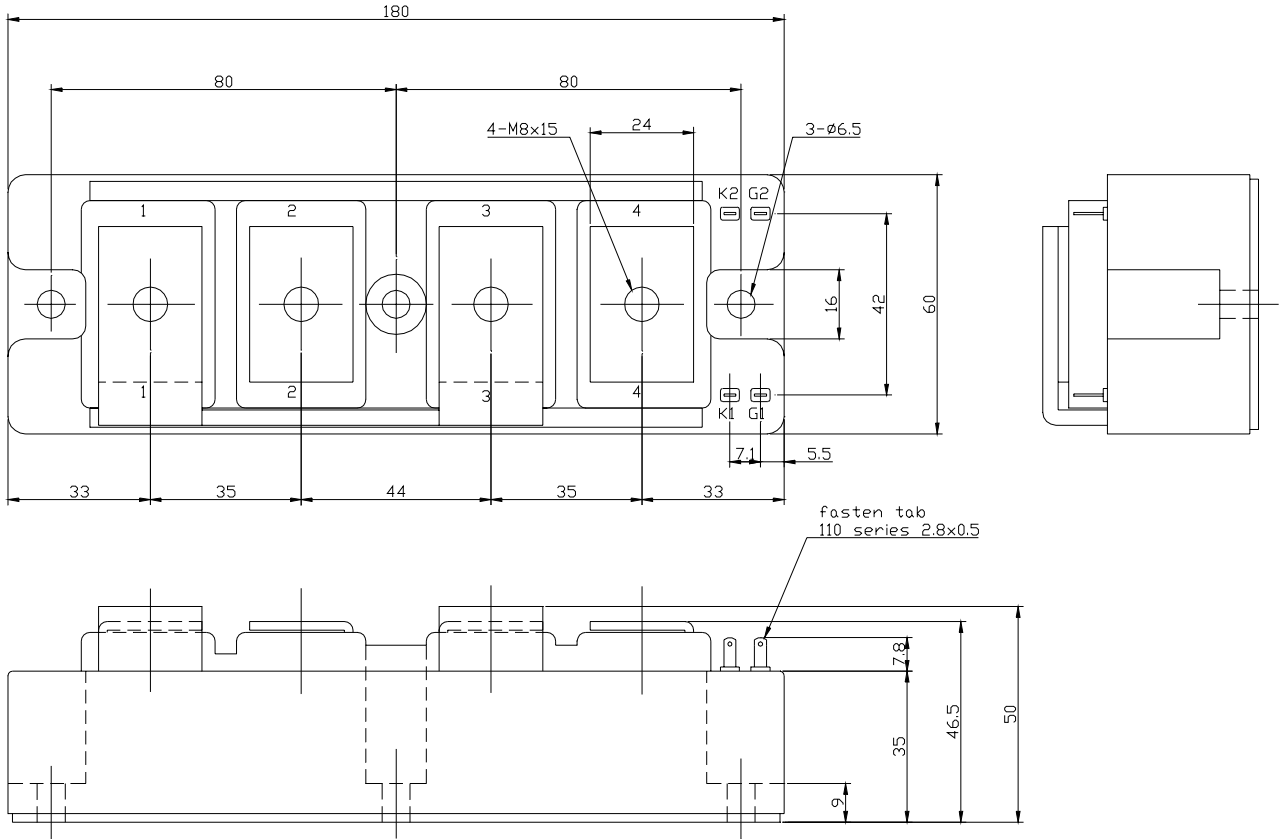
Value per 1 Arm

Electrical • Thermal Characteristics

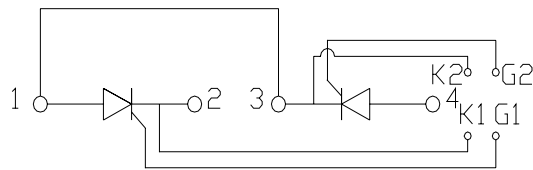
| Characteristics | Symbol | Test Conditions | Maximum Value. | | | Unit |
|--|----------|---|---------------------------|------|------|---------------------------|
| | | | Min. | Typ. | Max. | |
| Peak Off-State Current | I_{DM} | $V_{DM} = V_{DRM}, T_j = 125^\circ\text{C}$ | | | 100 | mA |
| Peak Reverse Current | I_{RM} | $V_{RM} = V_{RRM}, T_j = 125^\circ\text{C}$ | | | 100 | mA |
| Peak Forward Voltage | V_{TM} | $I_{TM} = 1300\text{A}, T_j = 25^\circ\text{C}$ | | | 1.52 | 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/ μs |
| Turn-Off Time | tq | $I_{TM} = I_O, V_D = 2/3V_{DRM}$ $dv/dt = 20\text{V}/\mu\text{s}, V_R = 100\text{V}$ $-di/dt = 20\text{A}/\mu\text{s}, T_j = 125^\circ\text{C}$ | | 100 | | μs |
| Turn-On Time | tgt | $V_D = 2/3V_{DRM}, T_j = 125^\circ\text{C}$ $I_G = 300\text{mA}, di_G/dt = 0.2\text{A}/\mu\text{s}$ | | 6 | | μs |
| Delay Time | td | | | 2 | | μs |
| Rise Time | tr | | | 4 | | μs |
| Latching Current | I_L | $T_j = 25^\circ\text{C}$ | | 150 | | mA |
| Holding Current | I_H | $T_j = 25^\circ\text{C}$ | | 60 | | |
| Thermal Resistance | Rth(j-c) | Junction to Case | | | 0.11 | $^\circ\text{C}/\text{W}$ |
| | Rth(c-f) | Base Plate to Heat Sink with Thermal Compound | | | 0.05 | |

Value Per 1Arm

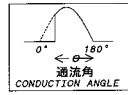
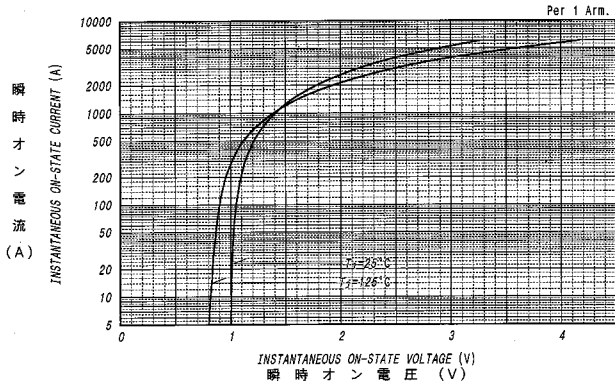
PDT4001x OUTLINE DRAWING (Dimensions in mm)



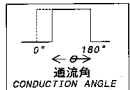
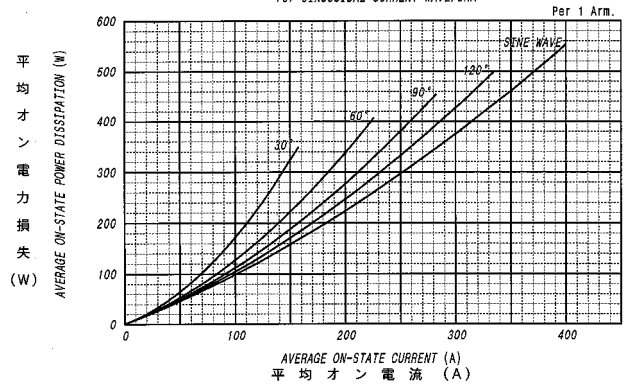
PDT



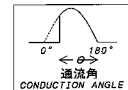
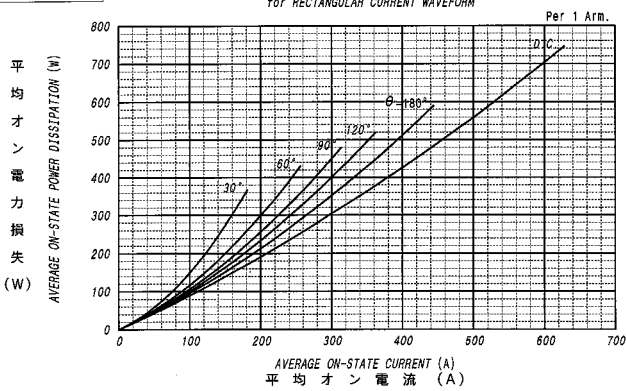
オン電圧特性
ON-STATE CURRENT VS. VOLTAGE



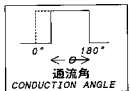
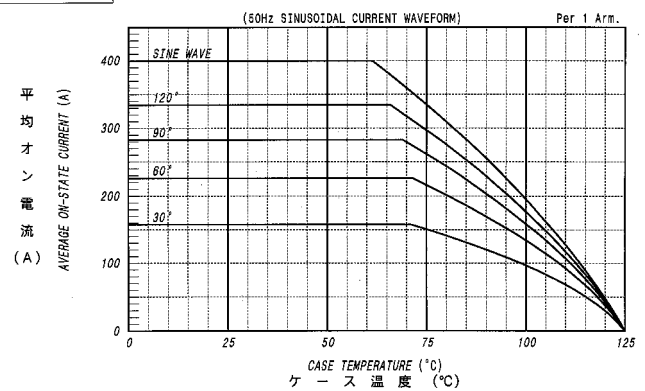
平均オン電力損失特性
AVERAGE ON-STATE POWER DISSIPATION



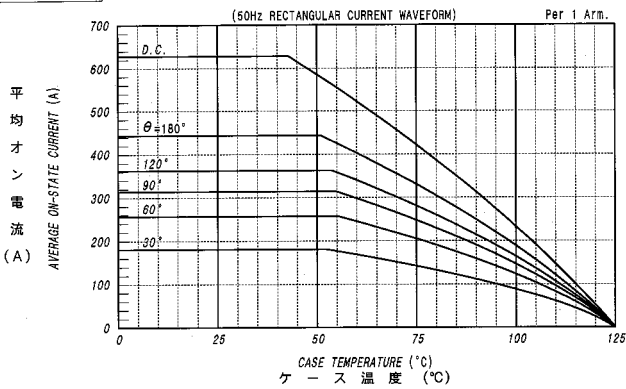
平均オン電力損失特性
AVERAGE ON-STATE POWER DISSIPATION



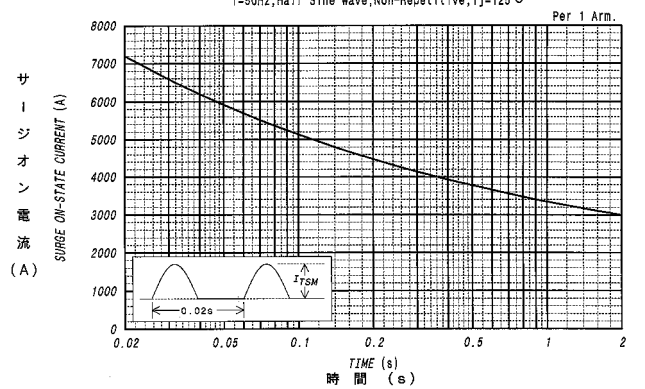
平均オン電流 - ケース温度定格
AVERAGE ON-STATE CURRENT VS. CASE TEMPERATURE



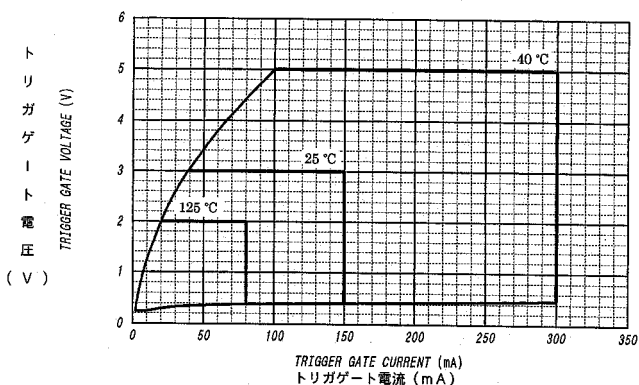
平均オン電流 - ケース温度定格
AVERAGE ON-STATE CURRENT VS. CASE TEMPERATURE



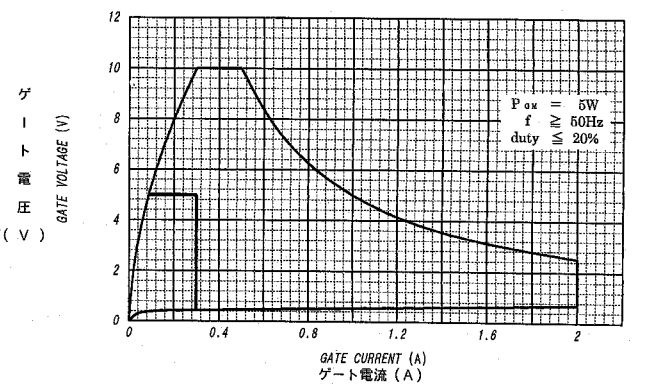
サージオン電流定格
SURGE CURRENT RATINGS



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.

