

# THYRISTOR MODULE

# PHT608C

**60A / 800V**

## FEATURES

- \* Compatible with Isolated Base SOT227
- \* Single Thyristor
- \* High Surge Capability

OUTLINE DRAWING

See the Next Page

## TYPICAL APPLICATIONS

- \* AC phase control

## Maximum Ratings

Approx Net Weight:35g

| Parameter                             | Symbol    | Grade   | Unit |
|---------------------------------------|-----------|---------|------|
|                                       |           | PHT608C |      |
| Repetitive Peak Off-State Voltage     | $V_{DRM}$ | 800     | V    |
| Non Repetitive Peak Off-State Voltage | $V_{DSM}$ | 960     |      |
| Repetitive Peak Reverse Voltage       | $V_{RRM}$ | 800     | V    |
| Non Repetitive Peak Reverse Voltage   | $V_{RSM}$ | 960     |      |

| Parameter                           | Symbol        | Conditions                                                                                        | Max Rated Value | Unit             |
|-------------------------------------|---------------|---------------------------------------------------------------------------------------------------|-----------------|------------------|
| Average Rectified Output Current *1 | $I_{O(AV)}$   | 50Hz Half Sine Wave condition<br>Tc=To Be Determined                                              | 60              | A                |
| RMS On-State Current                | $I_{T(RMS)}$  |                                                                                                   | 94              | A                |
| Surge Forward Current               | $I_{FSM}$     | 50 Hz Half Sine Wave,1cycle<br>Non-Repetitive                                                     | 600             | A                |
| I Squared t                         | $I^2t$        | 2msec to 10msec                                                                                   | 1800            | A <sup>2</sup> s |
| 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                |
| Operating JunctionTemperature Range | $T_{jw}$      |                                                                                                   | -40 to +125     | °C               |
| Storage Temperature Range           | $T_{stg}$     |                                                                                                   | -40 to +125     | °C               |
| Isolation Voltage                   | Viso          | Base Plate to Terminals, AC1min                                                                   | 2500            | V                |
| Mounting torque                     | Case mounting | Ftor                                                                                              | M4 Screw        | N.m              |
|                                     | Terminals     |                                                                                                   | M4 Screw        |                  |

Value per 1 Arm

**Electrical • Thermal Characteristics**

| Characteristics                            | Symbol   | Test Conditions                                                                                                                                       | Maximum Value.            |      |      | Unit                      |
|--------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------|------|---------------------------|
|                                            |          |                                                                                                                                                       | Min.                      | Typ. | Max. |                           |
| Peak Off-State Current                     | $I_{DM}$ | $V_{DM} = V_{DRM}, T_j = 125^\circ\text{C}$                                                                                                           |                           |      | 15   | mA                        |
| Peak Reverse Current                       | $I_{RM}$ | $V_{RM} = V_{RRM}, T_j = 125^\circ\text{C}$                                                                                                           |                           |      | 15   | mA                        |
| Peak On-State Voltage                      | $V_{TM}$ | $I_{TM} = 180\text{A}, T_j = 25^\circ\text{C}$                                                                                                        |                           |      | 1.43 | 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                              | tq       | $I_{TM} = I_O, V_D = 2/3V_{DRM}$<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                               | tgt      | $T_j = 25^\circ\text{C}, I_{TM} = I_{T(RMS)}$                                                                                                         |                           | 6    |      | $\mu\text{s}$             |
| Delay Time                                 | td       | $V_D = 2/3V_{DRM}, I_G = 200\text{mA}$                                                                                                                |                           | 2    |      | $\mu\text{s}$             |
| Rise Time                                  | tr       | $di_G/dt = 0.2\text{A}/\mu\text{s}$                                                                                                                   |                           | 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                      | Rth(j-c) | Junction to Case                                                                                                                                      |                           |      | 0.95 | $^\circ\text{C}/\text{W}$ |
|                                            | Rth(c-f) | Base Plate to Heat Sink with Thermal Compound                                                                                                         |                           |      | 0.3  |                           |

Value Per 1Arm

\*1: Value Per Module

PHT608C OUTLINE DRAWING (Dimensions in mm)

