

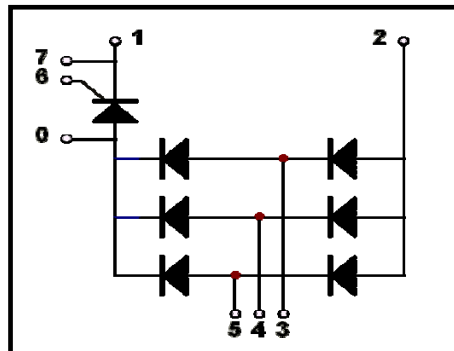
## Features

- Isolated Module Package
- Isolation voltage 3000 V
- Three Phase Bridge and a Thyristor



## Applications

- Current Stabilized Power Supply
- Switching Power Supply
- Inverter For AC or DC Motor Control



## ■ Diode

### ABSOLUTE MAXIMUM RATINGS

 $T_C=25^{\circ}\text{C}$  unless otherwise specified

| Symbol      | Parameter                            | Test Conditions                                          | Max.        | Unit                  |
|-------------|--------------------------------------|----------------------------------------------------------|-------------|-----------------------|
| $V_{RRM}$   | Repetitive Reverse Voltage           |                                                          | 1600        | V                     |
| $I_{D(AV)}$ | Average Forward Current              | $T_C=90^{\circ}\text{C}$ , module                        | 100         | A                     |
| $I_{FSM}$   | Non-Repetitive Surge Forward Current | $T_J=45^{\circ}\text{C}$ , $t=10\text{ms}$ , 50Hz, Sine  | 1250        | A                     |
|             |                                      | $T_J=45^{\circ}\text{C}$ , $t=8.3\text{ms}$ , 60Hz, Sine | 1350        | A                     |
| $I^2t$      | $I^2t$ (For Fusing)                  | $T_J=45^{\circ}\text{C}$ , $t=10\text{ms}$ , 50Hz, Sine  | 7.8         | $\text{KA}^2\text{s}$ |
|             |                                      | $T_J=45^{\circ}\text{C}$ , $t=8.3\text{ms}$ , 60Hz, Sine | 7.5         | $\text{KA}^2\text{s}$ |
| $T_J$       | Junction Temperature                 |                                                          | -40 to +150 | $^{\circ}\text{C}$    |
| $T_{STG}$   | Storage Temperature Range            |                                                          | -40 to +125 | $^{\circ}\text{C}$    |
| $V_{ISOL}$  | Insulation Test Voltage              | AC, 50Hz, $t=1\text{min}$                                | 3000        | V                     |
| Weight      |                                      |                                                          | 215         | g                     |

### ELECTRICAL AND THERMAL CHARACTERISTICS

 $T_C=25^{\circ}\text{C}$  unless otherwise specified

| Symbol          | Parameter                              | Test Conditions                                | Min. | Typ. | Max.  | Unit                        |
|-----------------|----------------------------------------|------------------------------------------------|------|------|-------|-----------------------------|
| $I_{RM}$        | Reverse Leakage Current                | $V_R=1600\text{V}$                             | --   | --   | 500   | $\mu\text{A}$               |
|                 |                                        | $V_R=1600\text{V}$ , $T_J=125^{\circ}\text{C}$ | --   | --   | 5     | mA                          |
| $V_F$           | Forward Voltage                        | $I_F=100\text{A}$                              | --   | 1.15 | --    | V                           |
|                 |                                        | $I_F=100\text{A}$ , $T_J=125^{\circ}\text{C}$  | --   | 1.1  | --    | V                           |
| $R_{\theta JC}$ | Thermal Resistance<br>Junction-to-Case | per diode                                      | --   | --   | 0.84  | $^{\circ}\text{C}/\text{W}$ |
|                 |                                        | per module                                     | --   | --   | 0.14  | $^{\circ}\text{C}/\text{W}$ |
| $R_{\theta CS}$ | Thermal Resistance<br>Case -to-Sink    | per diode                                      | --   | --   | 0.39  | $^{\circ}\text{C}/\text{W}$ |
|                 |                                        | per module                                     | --   | --   | 0.065 | $^{\circ}\text{C}/\text{W}$ |

## ■ Thyristor

**ABSOLUTE MAXIMUM RATINGS** $T_C=25^{\circ}\text{C}$  unless otherwise specified

| Symbol      | Test Condition                                                            | Value         | Unit                  |
|-------------|---------------------------------------------------------------------------|---------------|-----------------------|
| $V_{RRM}$   |                                                                           | 1600          | V                     |
| $I_{T(AV)}$ | $T_C=90^{\circ}\text{C}$ , 180° conduction, half sine wave;               | 100           | A                     |
| $I_{TSM}$   | $T_J=45^{\circ}\text{C}$ , $t=10\text{ms}$ (50Hz), sine, $V_R=V_{RRM}$ ;  | 1550          | A                     |
|             | $T_J=45^{\circ}\text{C}$ , $t=8.3\text{ms}$ (60Hz), sine, $V_R=V_{RRM}$ ; | 1650          |                       |
| $I^2t$      | $T_J=45^{\circ}\text{C}$ , $t=10\text{ms}$ (50Hz), sine, $V_R=V_{RRM}$ ;  | 12.0          | $\text{KA}^2\text{s}$ |
|             | $T_J=45^{\circ}\text{C}$ , $t=8.3\text{ms}$ (60Hz), sine, $V_R=V_{RRM}$ ; | 11.3          |                       |
| $dV/dt$     | $T_J=125^{\circ}\text{C}$ , exponential to 67% rated $V_{DRM}$            | 1000          | V/us                  |
| $dI/dt$     | $T_J=125^{\circ}\text{C}$ , $I_{TM}=300\text{A}$ , rated $V_{DRM}$        | 150           | A/us                  |
| $V_{ISOL}$  | 50Hz, all terminals shorted, $t=1\text{s}$ , $I_{ISOL}\leq 1\text{mA}$ ;  | 3000          | V~                    |
| $T_J$       | Max. junction operating temperature range                                 | $-40\sim 125$ | $^{\circ}\text{C}$    |
| $T_{STG}$   | Max. storage temperature range                                            | $-40\sim 125$ | $^{\circ}\text{C}$    |
|             | Mounting torque(M6)                                                       | 3 to 5        | N·m                   |
|             | Terminal connection torque(M5)                                            | 2.5 to 5      | N·m                   |

**ELECTRICAL AND THERMAL CHARACTERISTICS** $T_C=25^{\circ}\text{C}$  unless otherwise specified

| Symbol            | Test Condition                                                | Min. | Typ. | Max. | Unit |
|-------------------|---------------------------------------------------------------|------|------|------|------|
| $I_{DRM}/I_{RRM}$ | $T_J=125^{\circ}\text{C}$ , $V_D=V_R=1600\text{V}$ ;          |      |      | 20   | mA   |
| $V_{TM}$          | $I_{TM}=314\text{A}$ , $t_d=10\text{ms}$ , half sine;         |      | 1.54 |      | V    |
| $V_{GT}$          | $V_A=6\text{V}$ , $R_A=1\Omega$ , $T_J=-40^{\circ}\text{C}$ ; |      |      | 4    | V    |
|                   | $V_A=6\text{V}$ , $R_A=1\Omega$ ;                             |      |      | 2.5  |      |
|                   | $V_A=6\text{V}$ , $R_A=1\Omega$ , $T_J=125^{\circ}\text{C}$ ; |      |      | 1.7  |      |
| $I_{GT}$          | $V_A=6\text{V}$ , $R_A=1\Omega$ , $T_J=-40^{\circ}\text{C}$ ; |      |      | 270  | mA   |
|                   | $V_A=6\text{V}$ , $R_A=1\Omega$ ;                             |      |      | 150  |      |
|                   | $V_A=6\text{V}$ , $R_A=1\Omega$ , $T_J=125^{\circ}\text{C}$ ; |      |      | 80   |      |
| $P_{GM}$          | $t_p\leq 5\text{ms}$ , $T_J=125^{\circ}\text{C}$ ;            |      |      | 12   | W    |
| $P_{GM(AV)}$      | $f=50\text{Hz}$ , $T_J=125^{\circ}\text{C}$ ;                 |      |      | 3    | W    |
| $R_{thjc}$        | Thermal Resistance , Junction-to-Case                         |      |      | 0.24 | K/W  |
| $R_{THCS}$        | Thermal Resistance, Case -to-Sink                             |      |      | 0.12 | K/W  |

### Characteristic curves

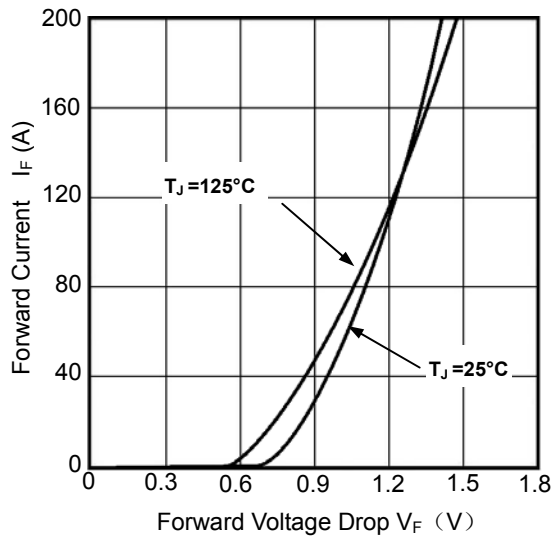


Figure1. Diode Forward Voltage Drop vs Forward Current

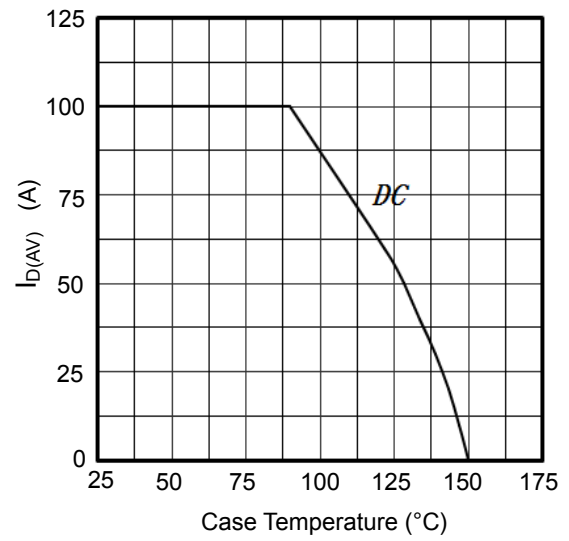


Figure 2. Diode  $I_{D(AV)}$  vs Case Temperature

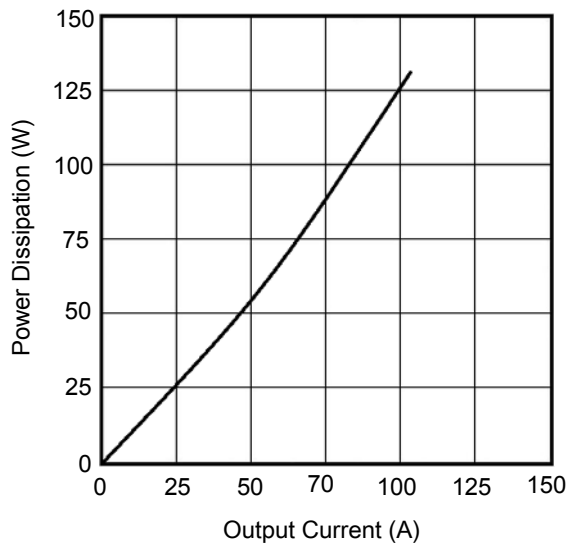


Figure 3. SCR Output Current vs Power Dissipation

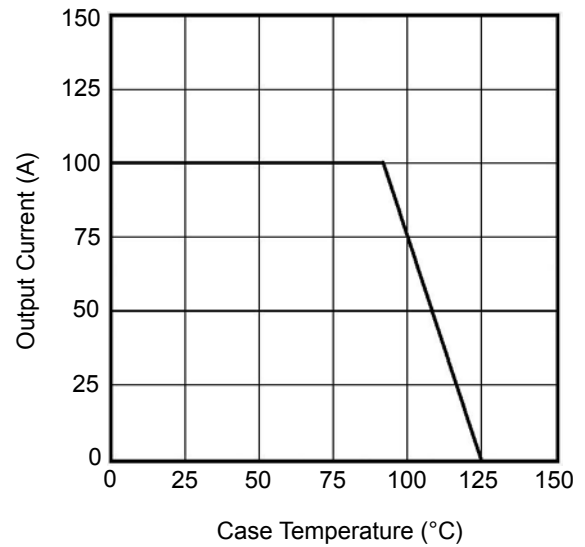


Figure 4. SCR Output Current vs Case Temperature

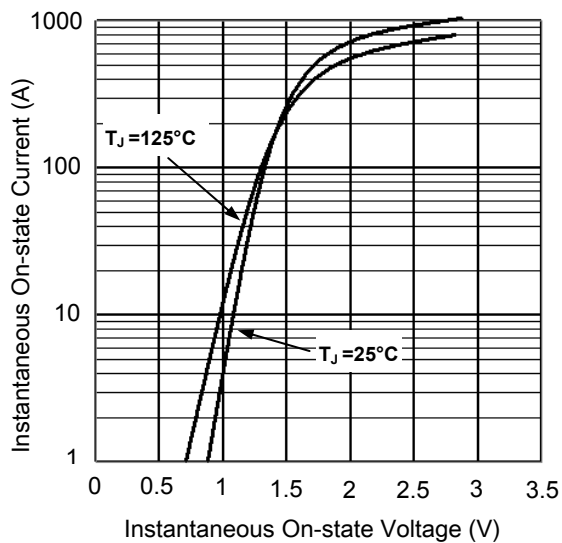


Figure 5. SCR On State Voltage Drop

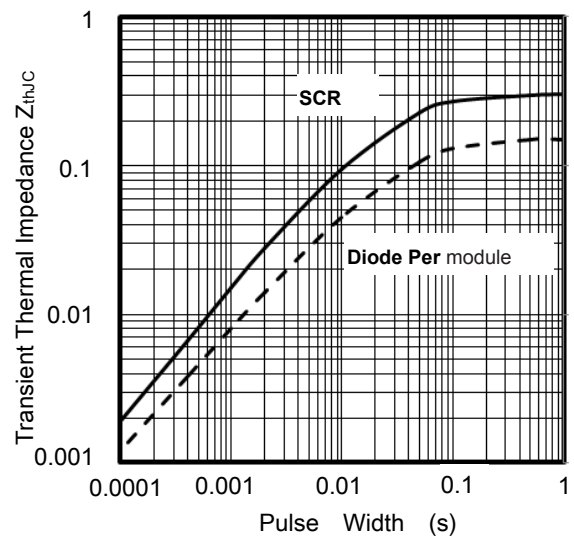


Figure 6. Diode and SCR Thermal Impedance  $Z_{thJC}$

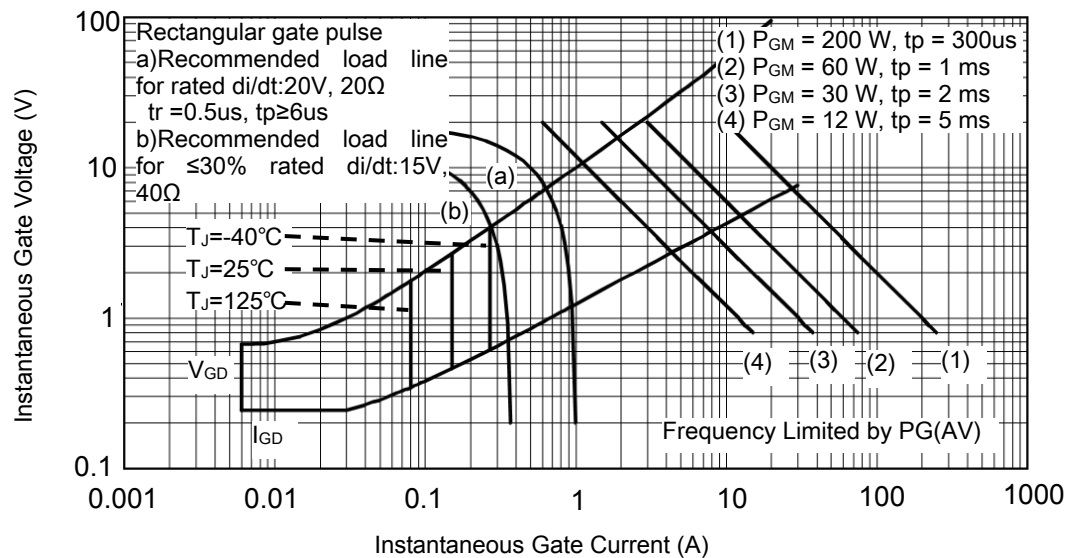


Figure 7. Gate Characteristics

### Package Outline (Dimensions in mm)

