



# RUNAU

Jiangsu Runau Electronics Manufacturing Co.,Ltd

## TT300

1200-2000V<sub>RRM</sub>

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### GENERAL PURPOSE THYRISTOR MODULE

#### Features:

- . Electrical insulation between chip and base plate, 2500V AC insulation
- . Compress structure
- . Excellent temperature characteristics and power cycling capability
- . Small size & light weight

#### Typical application:

- . AC / DC motor control
- . Various rectification power supplies
- . Frequency converter



### ELECTRICAL CHARACTERISTICS AND RATINGS

| Symbol                               | Parameter                                                            | Conditions                                                                                                                           | Tj(°C) | Value |     |       | Unit                             |
|--------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------|-------|-----|-------|----------------------------------|
|                                      |                                                                      |                                                                                                                                      |        | Min   | Typ | Max   |                                  |
| I <sub>T(AV)</sub>                   | Mean on-state current                                                | Sinewave 180°, 50Hz<br>Single side cooling, T <sub>c</sub> =85°C                                                                     | 125    |       |     | 300   | A                                |
| I <sub>T(RMS)</sub>                  | RMS on-state current                                                 |                                                                                                                                      | 125    |       |     | 471   | A                                |
| V <sub>DRM</sub><br>V <sub>RRM</sub> | Repetitive peak off-state voltage<br>Repetitive peak reverse voltage | V <sub>DRM</sub> &V <sub>RRM</sub> tp=10ms<br>V <sub>DSM</sub> &V <sub>RSM</sub> =V <sub>DRM</sub> &V <sub>RRM</sub> +200V           | 25     | 1200  |     | 2000  | V                                |
| I <sub>DRM</sub>                     | Repetitive peak off-state current                                    | V <sub>DM</sub> = V <sub>DRM</sub>                                                                                                   | 125    |       |     | 25    | mA                               |
| I <sub>RRM</sub>                     | Repetitive peak reverse current                                      | V <sub>RM</sub> = V <sub>RRM</sub>                                                                                                   |        |       |     |       |                                  |
| I <sub>TSM</sub>                     | Surge on-state current                                               | 10ms bottom width, half sine wave                                                                                                    | 125    |       |     | 9.30  | KA                               |
| I <sup>2</sup> t                     | I squared t                                                          | V <sub>R</sub> =0.6V <sub>RRM</sub>                                                                                                  |        |       |     | 432   | A <sup>2</sup> s*10 <sup>3</sup> |
| V <sub>TO</sub>                      | On-state threshold voltage                                           |                                                                                                                                      | 125    |       |     | 0.80  | V                                |
| r <sub>T</sub>                       | Slope resistance                                                     |                                                                                                                                      |        |       |     | 0.72  | mΩ                               |
| V <sub>TM</sub>                      | Peak on-state voltage                                                | I <sub>TM</sub> =900A                                                                                                                | 25     |       |     | 1.45  | V                                |
| dv/dt                                | Critical rise rate of off-state voltage                              | V <sub>DM</sub> =67%V <sub>DRM</sub>                                                                                                 | 125    |       |     | 1000  | V/μs                             |
| di/dt                                | Critical rise rate of on-state current                               | I <sub>TM</sub> =600A<br>Amplitude of gate trigger current<br>I <sub>GM</sub> = 1.5A<br>Gate current rise time t <sub>r</sub> ≤0.5 s | 125    |       |     | 100   | A/μs                             |
| I <sub>GT</sub>                      | Gate trigger current                                                 | V <sub>O</sub> =12V, R <sub>L</sub> =3Ω                                                                                              | 25     | 30    |     | 120   | mA                               |
| V <sub>GT</sub>                      | Gate trigger voltage                                                 |                                                                                                                                      |        | 0.8   |     | 2.5   | V                                |
| I <sub>H</sub>                       | Holding current                                                      |                                                                                                                                      |        | 20    |     | 150   | mA                               |
| I <sub>L</sub>                       | Latching Current                                                     |                                                                                                                                      |        |       |     | 1000  | mA                               |
| V <sub>GD</sub>                      | Gate non-trigger voltage                                             | V <sub>DM</sub> =67%V <sub>DRM</sub>                                                                                                 | 125    | 0.2   |     |       | V                                |
| R <sub>th(j-c)</sub>                 | Thermal impedance(junction to case)                                  | 180° sine wave,<br>single side heat dissipation                                                                                      |        |       |     | 0.100 | °C /W                            |
| R <sub>th(c-h)</sub>                 | Thermal impedance(case to heatsink)                                  | 180° sine wave,<br>single side heat dissipation                                                                                      |        |       |     | 0.04  | °C /W                            |
| V <sub>iso</sub>                     | Insulation voltage                                                   | 50Hz, R.M.S, t=1min, I <sub>iso</sub> : 1mA(MAX)                                                                                     |        | 2500  |     |       | V                                |
| F <sub>m</sub>                       | Electrode mounting torque (M6)                                       |                                                                                                                                      |        |       | 12  |       | N·m                              |
|                                      | Base plate mounting torque (M6)                                      |                                                                                                                                      |        |       | 6   |       | N·m                              |
| T <sub>stg</sub>                     | Storage temperature                                                  |                                                                                                                                      |        | -40   |     | 125   | °C                               |
| W <sub>t</sub>                       | Weight                                                               |                                                                                                                                      |        |       | 870 |       | g                                |

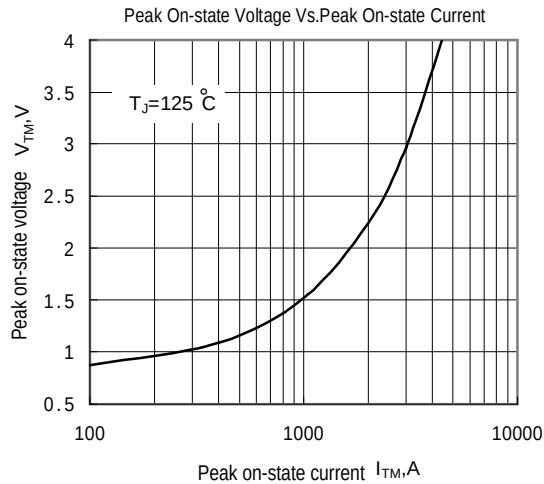


Fig.1 On-state Volt-ampere Characteristic

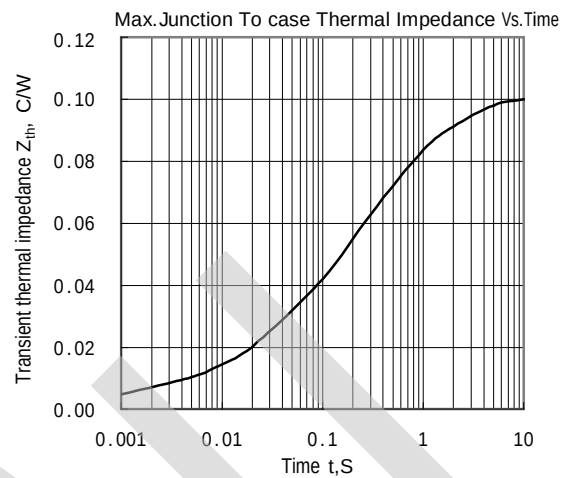


Fig.2 Transient Thermal Impedance of Junction to Case

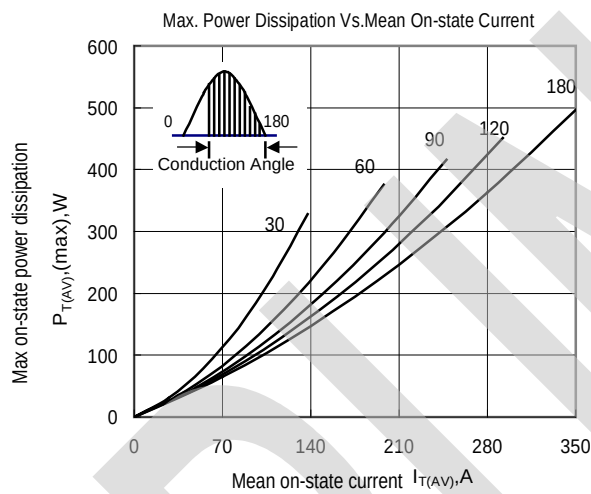


Fig.3 Max Power Dissipation Vs. Mean On-state Current

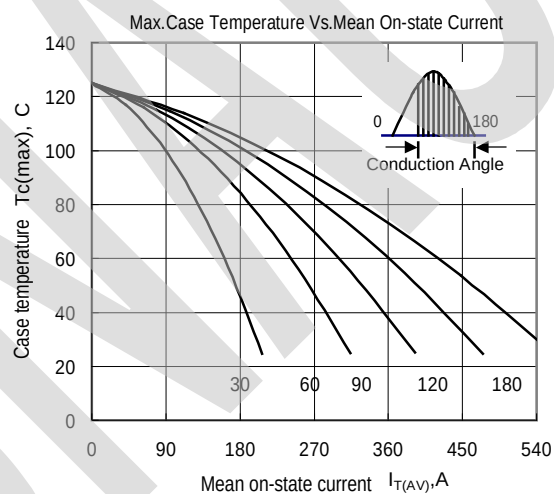


Fig.4 Max case Temperature Vs. Mean on-state Current

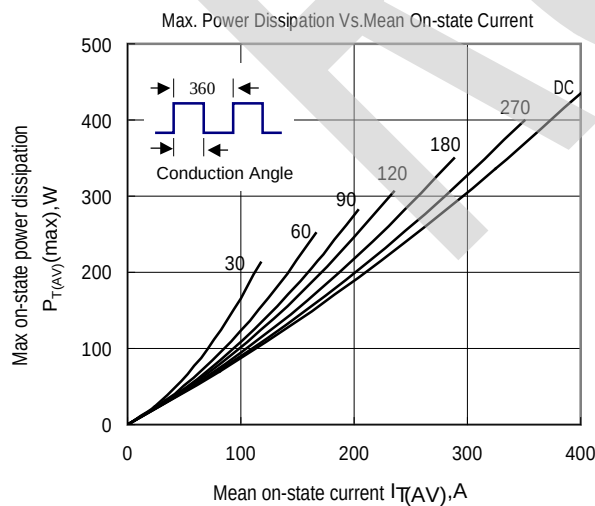


Fig.5 Max Power Dissipation Vs. Mean On-state Current

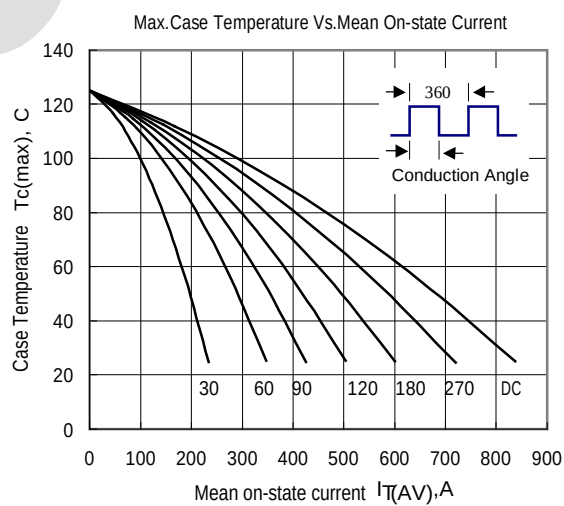


Fig.6 Max Case Temperature Vs. Mean On-state Current

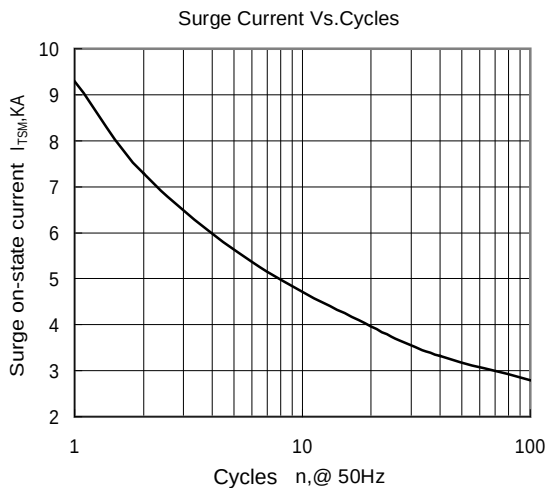


Fig.7 Surge Current Vs.Cycles

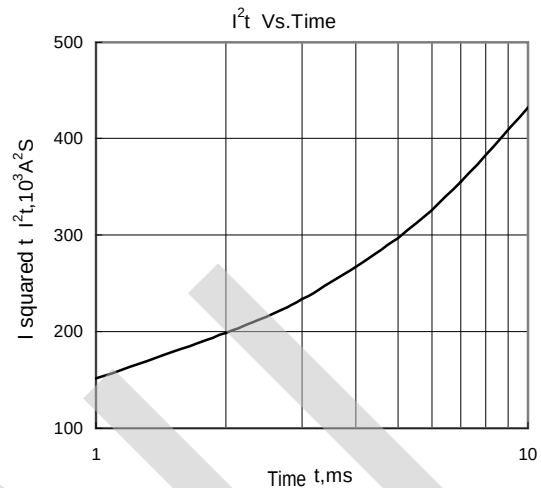


Fig.8  $I^2t$  Vs.Time

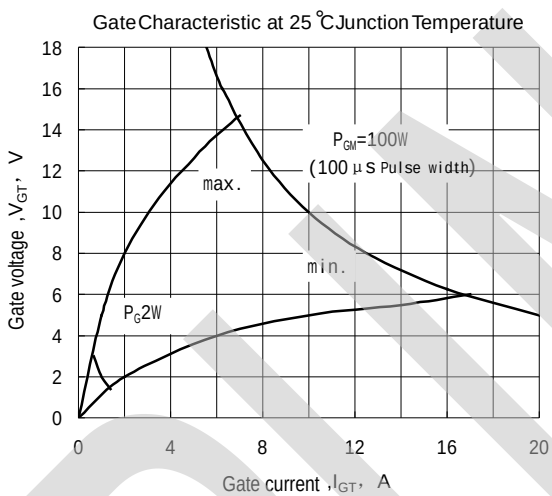


Fig.9 Gate Power Graph

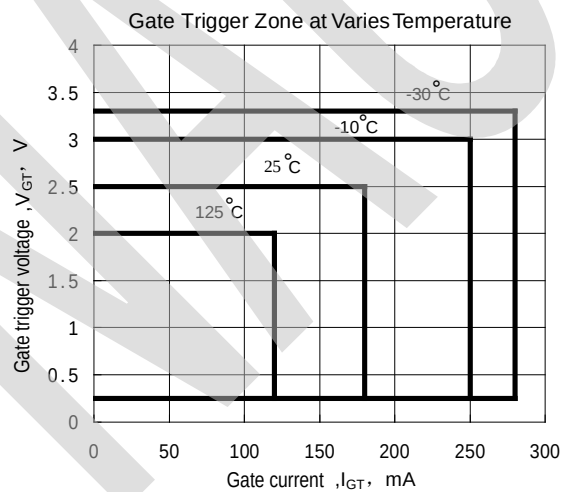
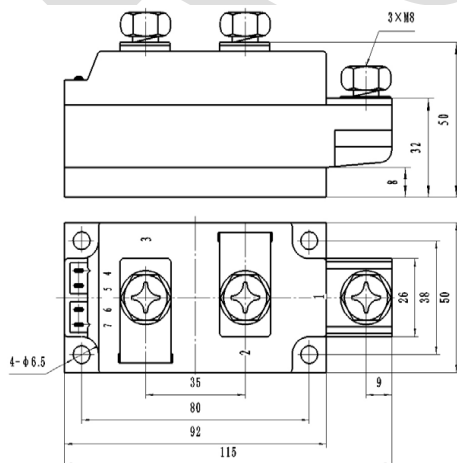


Fig.10 Gate Trigger Characteristic Graph

## OUTLINE



M450F

