

## MRT500.22-416F3

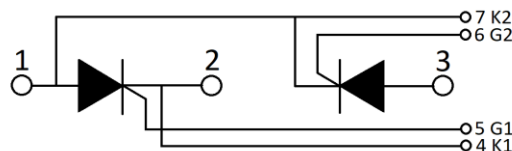
### Thyristors module

#### Features:

- Pressure contact technology with increased power cycling capability
- Glass passivated chip
- Simple mounting
- UL recognized, file no. E312789

#### Typical applications:

- Power converters
- Lighting control
- DC motor control and drives
- Heat and temperature control



| Symbol                 | Characteristics                                 | Test Conditions                                                                                               | Value |      |       | Unit                  |
|------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-------|------|-------|-----------------------|
|                        |                                                 |                                                                                                               | Min   | Typ  | Max   |                       |
| $V_{RSM/DSM}$          | Non-repetitive reverse/forward blocking voltage | $T_j = 25^{\circ}\text{C}$                                                                                    |       |      | 2300  | V                     |
| $V_{RRM/DRM}$          | Repetitive reverse/forward blocking voltage     | $T_j = 25^{\circ}\text{C}$                                                                                    |       |      | 2200  | V                     |
| $I_{T(AV)}$            | Mean on-state current                           | 180° half sine wave 50Hz                                                                                      |       |      | 500   | A                     |
| $I_{T(RMS)}$           | RMS on-state current                            | $T_c = 85^{\circ}\text{C}$                                                                                    |       |      | 785   | A                     |
| $I_{RRM}$<br>$I_{DRM}$ | Repetitive peak current                         | at $V_{DRM}/V_{RRM}$<br>$T_j = 125^{\circ}\text{C}$                                                           |       |      | 40    | mA                    |
| $I_{TSM}$              | Surge non repetitive current                    | 10ms half sine wave<br>$V_R = 60\% V_{RRM}$<br>$T_j = 125^{\circ}\text{C}$                                    |       |      | 13    | kA                    |
| $I^2 t$                | $I^2 t$ for fusing coordination                 |                                                                                                               |       |      | 845   | $\text{kA}^2\text{s}$ |
| $V_{TO}$               | Threshold voltage                               | $T_j = 125^{\circ}\text{C}$                                                                                   |       |      | 0.85  | V                     |
| $r_T$                  | On-state slope resistance                       | $T_j = 125^{\circ}\text{C}$                                                                                   |       |      | 0.35  | mΩ                    |
| $V_{TM}$               | Peak on-state voltage                           | $T_j = 25^{\circ}\text{C}$ ; $I_T=1500\text{A}$                                                               |       |      | 1.92  | V                     |
| $dv/dt$                | Critical rate of rise of off-state voltage      | $V_{DM} = 67\% V_{DRM}$ , $T_j = 125^{\circ}\text{C}$ ,<br>linear voltage rise                                |       |      | 1000  | V/μs                  |
| $di/dt$                | Critical rate of rise of off-state current      | $T_j = 125^{\circ}\text{C}$ , Gate source 1,5A,<br>$I_{TM} = 500\text{A}$ , $T_r < 0,5\mu\text{s}$ Repetitive |       |      | 200   | A/μs                  |
| $I_{GT}$               | Gate trigger current                            | $V_A = 12\text{V}$ , $I_A = 1\text{A}$ , $T_j = 25^{\circ}\text{C}$                                           | 30    |      | 200   | mA                    |
| $V_{GT}$               | Gate trigger voltage                            |                                                                                                               | 0.7   |      | 3.0   | V                     |
| $I_H$                  | Holding current                                 |                                                                                                               | 10    |      | 200   | mA                    |
| $V_{GD}$               | Non-trigger gate voltage                        | $V_{DM} = 67\% V_{DRM}$ , $T_j = 125^{\circ}\text{C}$                                                         |       |      | 0.2   | V                     |
| $R_{th(j-c)}$          | Thermal resistance junction to case             | Single side cooled per chip                                                                                   |       |      | 0.065 | $^{\circ}\text{C/W}$  |
| $R_{th(c-s)}$          | Thermal resistance case to sink                 | Single side cooled per chip                                                                                   |       |      | 0.040 | $^{\circ}\text{C/W}$  |
| $V_{ISO}$              | Isolation voltage                               | 50Hz, RMS, $t = 1\text{min}$ ,<br>$I_{ISO} : 1\text{mA (MAX)}$                                                | 3000  |      |       | V                     |
| $F_M$                  | Mounting torque - copper plate (M6)             |                                                                                                               |       | 6.0  |       | N·m                   |
|                        | Mounting torque - terminal (M10)                |                                                                                                               |       | 12.0 |       | N·m                   |
| $T_{stg}$              | Storage Temperature                             |                                                                                                               | -40   |      | 125   | $^{\circ}\text{C}$    |
| $T_j$                  | Operating Temperature                           |                                                                                                               | -40   |      | 125   | $^{\circ}\text{C}$    |
| $W_t$                  | Weight                                          |                                                                                                               |       | 1540 |       | g                     |
| Outline                | 416F3                                           |                                                                                                               |       |      |       |                       |

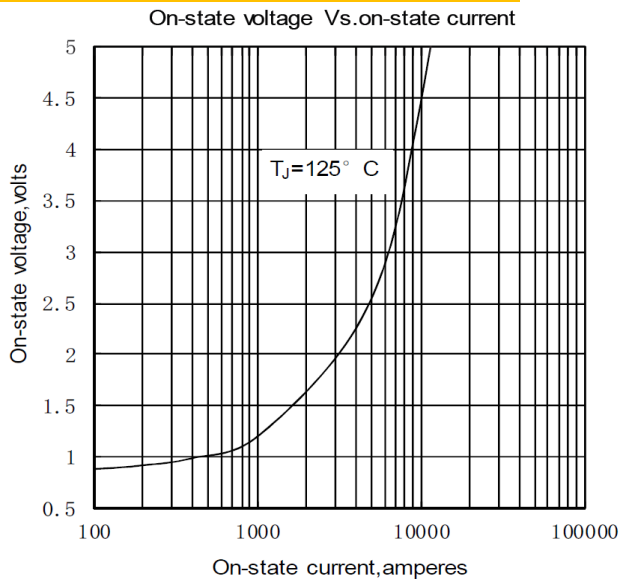


Fig.1

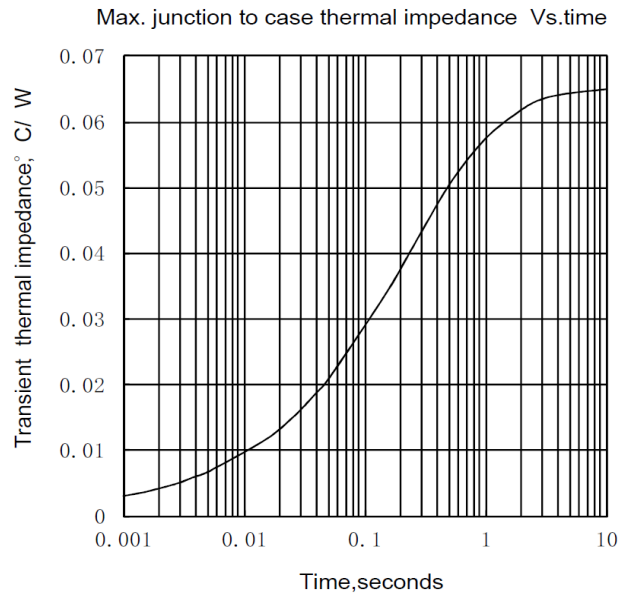


Fig.2

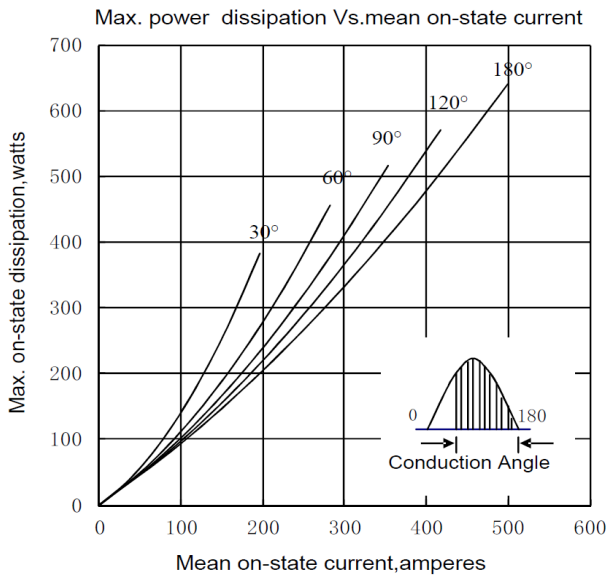


Fig.3

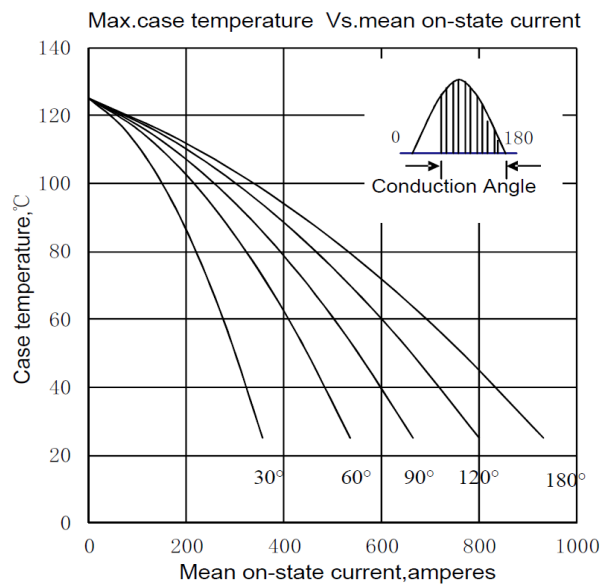


Fig.4

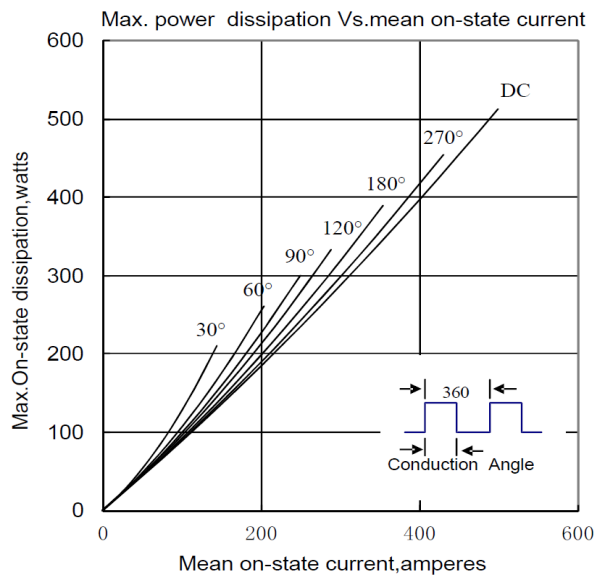


Fig.5

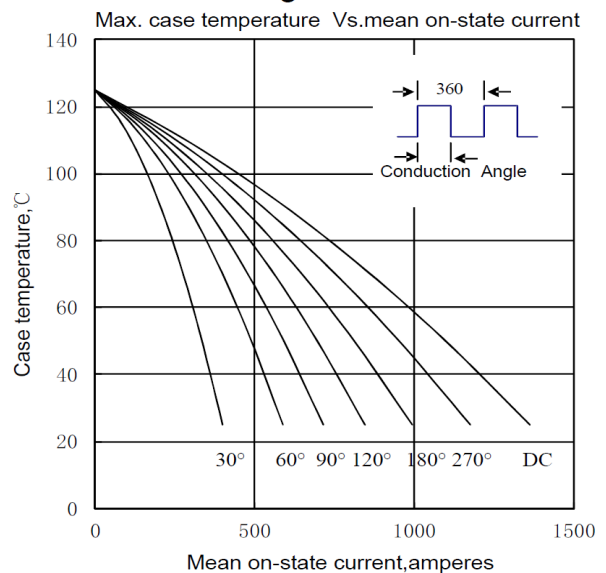


Fig.6

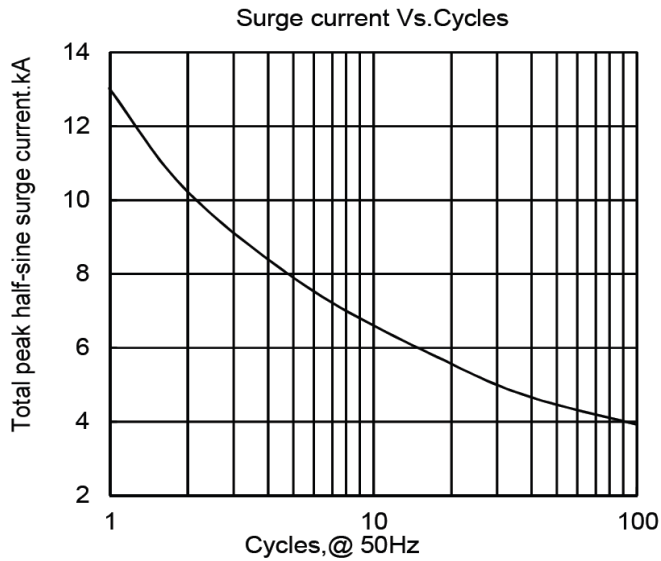


Fig. 7

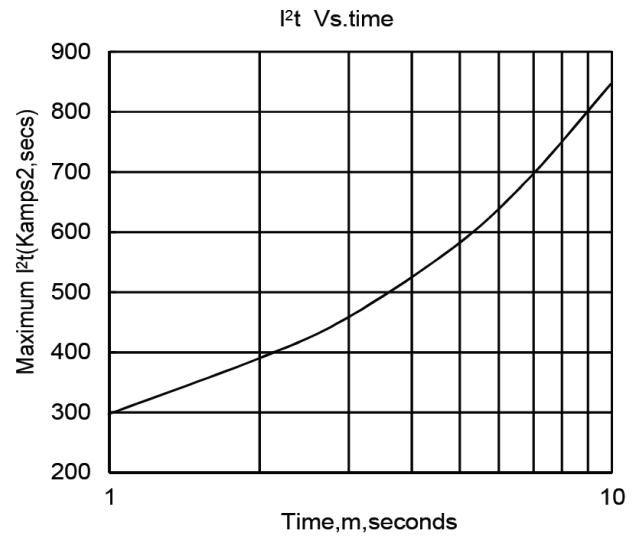


Fig. 8

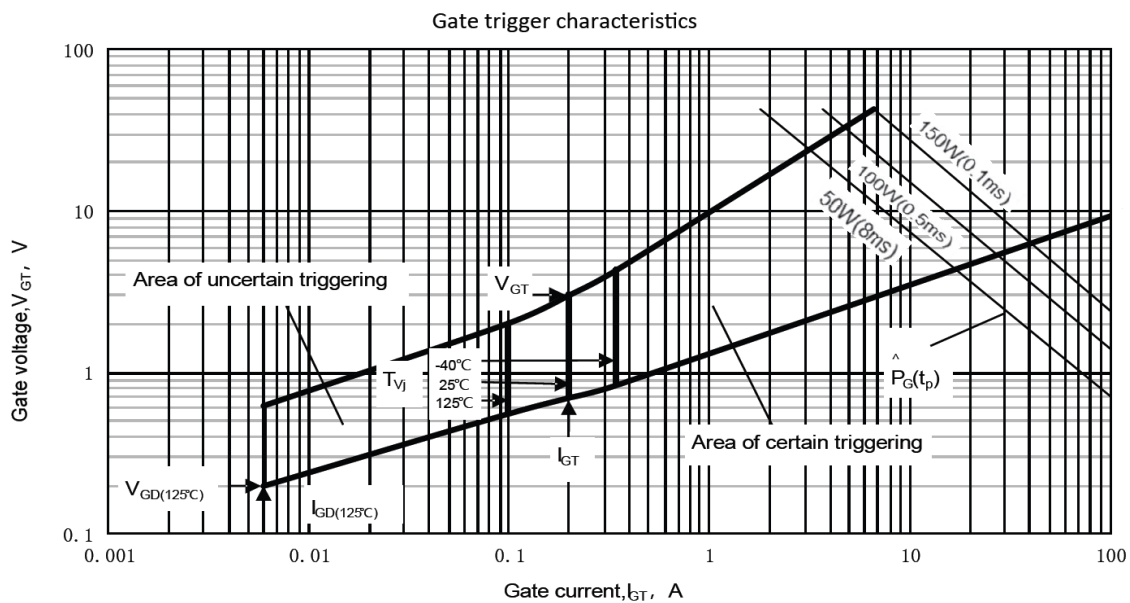
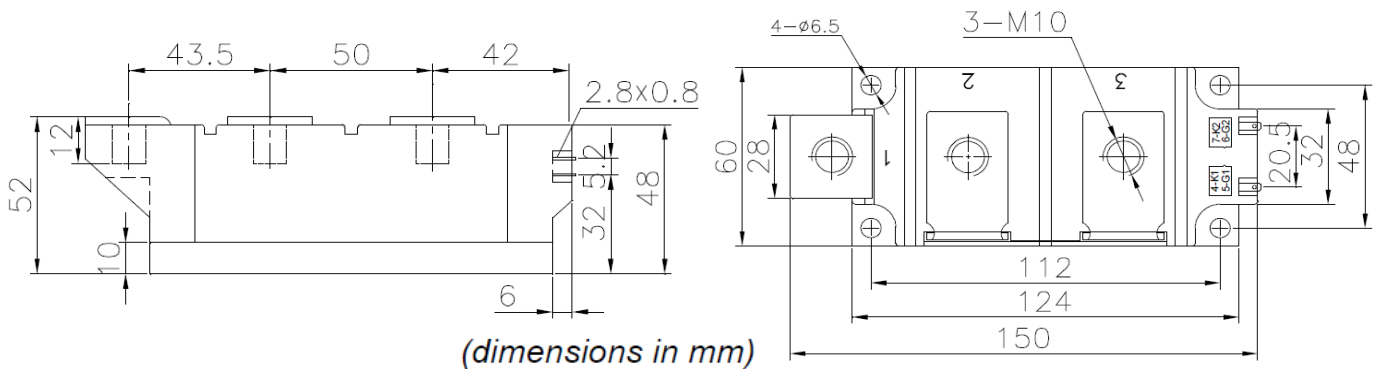


Fig.9



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