

# MRT320.16

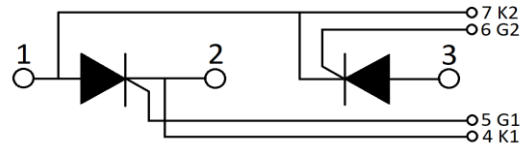
## Thyristors module

### Features:

- Chip soldered on direct copper bonded  $\text{Al}_2\text{O}_3$  ceramic
- Full blocking capability over wide temperature range
- Heat transfer through aluminium oxide ceramic isolated metal baseplate
- Simple mounting

### Typical applications:

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

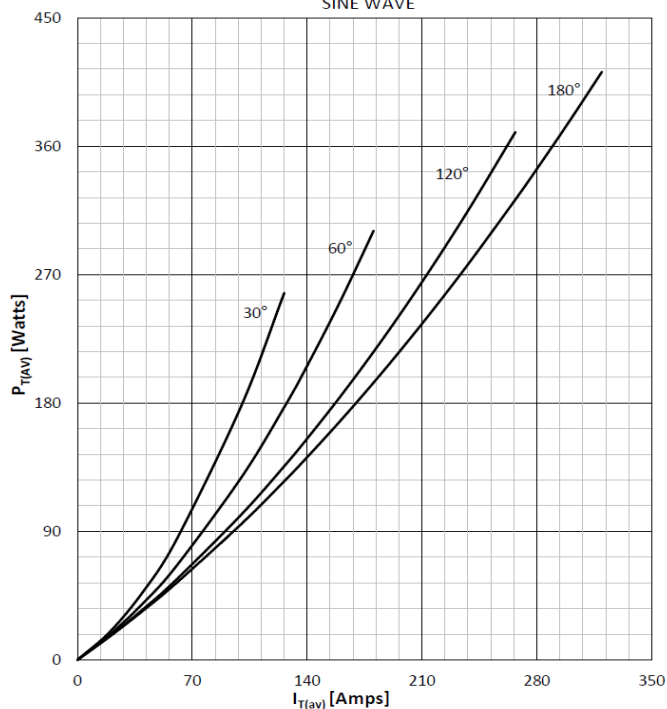


| Symbol                 | Characteristics                                 | Test Conditions                                                         | Value |      |       | Unit                      |
|------------------------|-------------------------------------------------|-------------------------------------------------------------------------|-------|------|-------|---------------------------|
|                        |                                                 |                                                                         | Min   | Typ  | Max   |                           |
| $V_{RSM/DSM}$          | Non-repetitive reverse/forward blocking voltage | $T_j = 130^\circ\text{C}$                                               |       |      | 1700  | V                         |
| $V_{RRM/DRM}$          | Repetitive reverse/forward blocking voltage     | $T_j = 130^\circ\text{C}$                                               |       |      | 1600  | V                         |
| $I_{T(AV)}$            | Mean on-state current                           | 180° half sine wave 50Hz                                                |       |      | 320   | A                         |
| $I_{T(RMS)}$           | RMS on-state current                            | $T_c = 85^\circ\text{C}$                                                |       |      | 502   | A                         |
| $I_{RRM}$<br>$I_{DRM}$ | Repetitive peak current                         | at $V_{DRM}/V_{RRM}$<br>$T_j = 130^\circ\text{C}$                       |       |      | 100   | mA                        |
| $I_{TSM}$              | Surge non repetitive current                    | 10ms half sine wave, without reverse voltage, $T_j = 25^\circ\text{C}$  |       |      | 9500  | A                         |
|                        |                                                 | 10ms half sine wave, without reverse voltage, $T_j = 130^\circ\text{C}$ |       |      | 8500  | A                         |
| $I^2 t$                | $I^2 t$ for fusing coordination                 | 10ms half sine wave, without reverse voltage, $T_j = 25^\circ\text{C}$  |       |      | 451   | $\text{kA}^2\text{s}$     |
|                        |                                                 | 10ms half sine wave, without reverse voltage, $T_j = 130^\circ\text{C}$ |       |      | 361   | $\text{kA}^2\text{s}$     |
| $V_{TO}$               | Threshold voltage                               | $T_j = 130^\circ\text{C}$                                               |       |      | 0.80  | V                         |
| $r_T$                  | On-state slope resistance                       | $T_j = 130^\circ\text{C}$                                               |       |      | 0.62  | $\text{m}\Omega$          |
| $V_{TM}$               | Peak on-state voltage                           | $T_j = 25^\circ\text{C}$ ; $I_T=600\text{A}$                            |       |      | 1.25  | V                         |
| $dv/dt$                | Critical rate of rise of off-state voltage      | $V_{DM} = 67\% V_{DRM}$ , $T_j = 130^\circ\text{C}$                     |       |      | 1000  | $\text{V}/\mu\text{s}$    |
| $di/dt$                | Critical rate of rise of off-state current      | $T_j = 130^\circ\text{C}$                                               |       |      | 150   | $\text{A}/\mu\text{s}$    |
| $I_{GT}$               | Gate trigger current                            | $V_D = 6\text{V}$ , $T_j = 25^\circ\text{C}$                            |       | 200  |       | mA                        |
| $V_{GT}$               | Gate trigger voltage                            | $V_D = 6\text{V}$ , $T_j = 25^\circ\text{C}$                            |       | 3.0  |       | V                         |
| $I_H$                  | Holding current                                 | $V_D = 6\text{V}$ , $T_j = 25^\circ\text{C}$ , gate open circuit        |       | 600  |       | mA                        |
| $I_L$                  | Latching current                                | $V_D = 6\text{V}$ , $T_j = 25^\circ\text{C}$                            |       | 1000 |       | mA                        |
| $R_{th(j-c)}$          | Thermal resistance junction to case, sin 180°   | Single side cooled per chip                                             |       |      | 0.11  | $^\circ\text{C}/\text{W}$ |
| $R_{th(j-c)}$          | Thermal resistance junction to case, rec 120°   | Single side cooled per chip                                             |       |      | 0.12  | $^\circ\text{C}/\text{W}$ |
| $R_{th(c-s)}$          | Thermal resistance case to sink                 | Single side cooled per chip                                             |       |      | 0.050 | $^\circ\text{C}/\text{W}$ |
| $V_{ISO}$              | Isolation voltage                               | 50Hz, RMS, $t = 1\text{min}$                                            | 3000  |      |       | V                         |
| $F_M$                  | Mounting torque - copper plate (M5)             |                                                                         | 4.5   |      | 5.5   | $\text{N}\cdot\text{m}$   |
|                        | Mounting torque - terminal (M8)                 |                                                                         | 7.5   |      | 9.5   | $\text{N}\cdot\text{m}$   |
| $T_{stg}$              | Storage Temperature                             |                                                                         | -40   |      | 125   | $^\circ\text{C}$          |
| $T_j$                  | Operating Temperature                           |                                                                         | -40   |      | 130   | $^\circ\text{C}$          |
| $W_t$                  | Weight                                          |                                                                         |       | 410  |       | g                         |



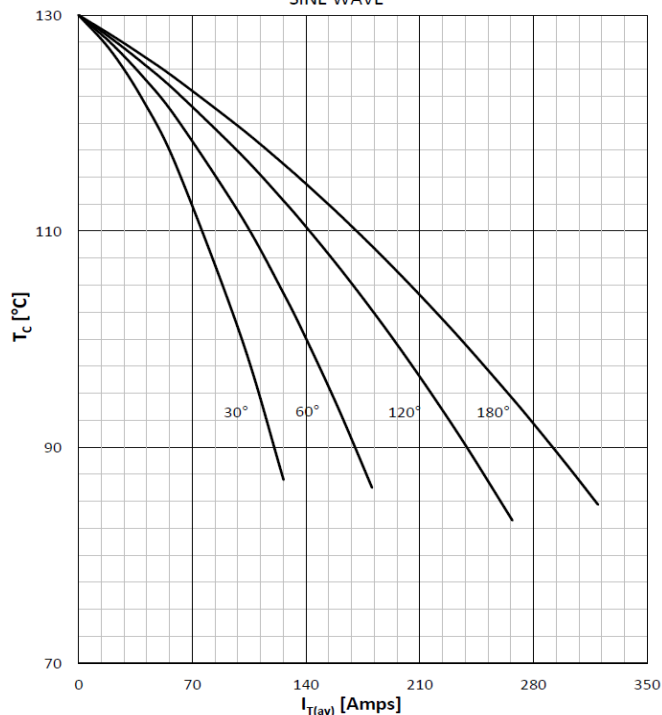
DISSIPATION CHARACTERISTICS

SINE WAVE



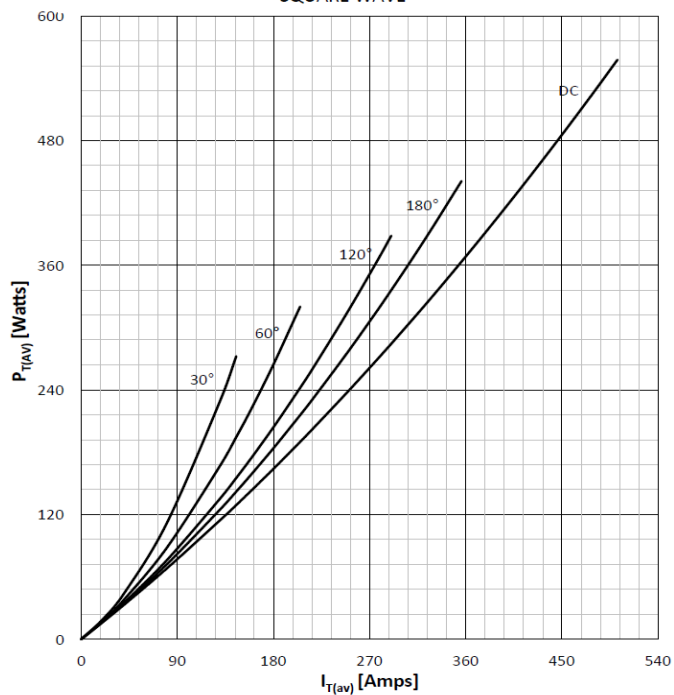
ON STATE CURRENT DERATING CURVE

SINE WAVE



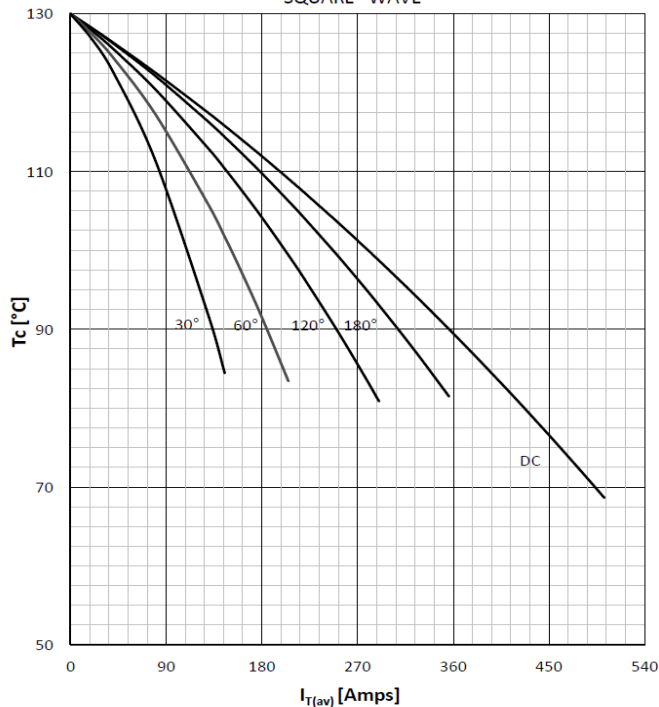
DISSIPATION CHARACTERISTICS

SQUARE WAVE

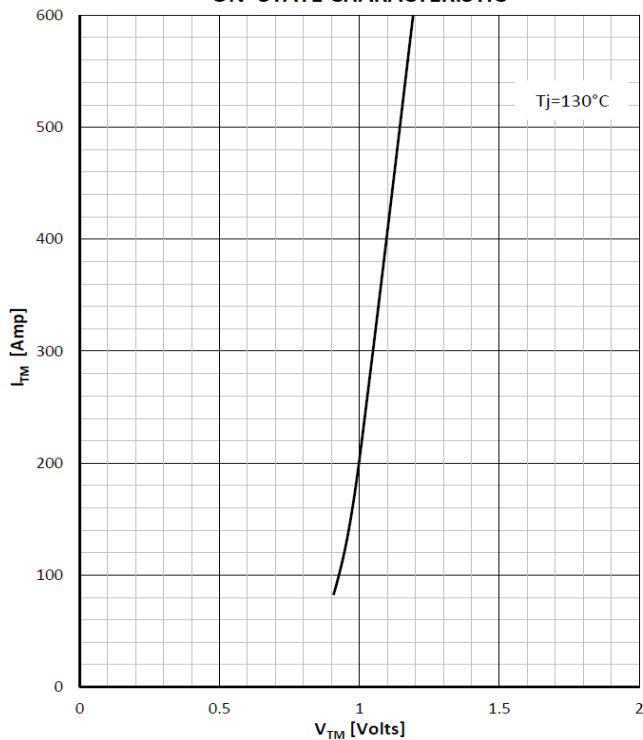


ON STATE CURRENT DERATING CURVE

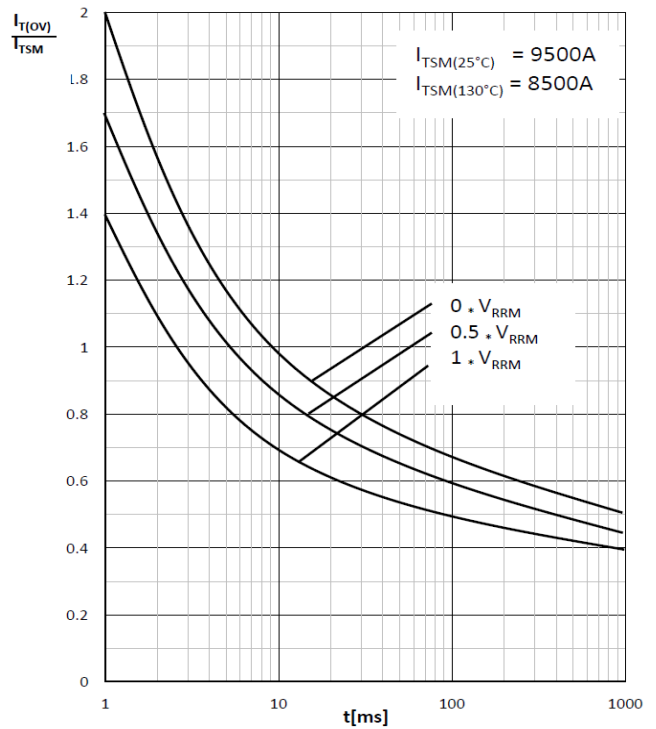
SQUARE WAVE



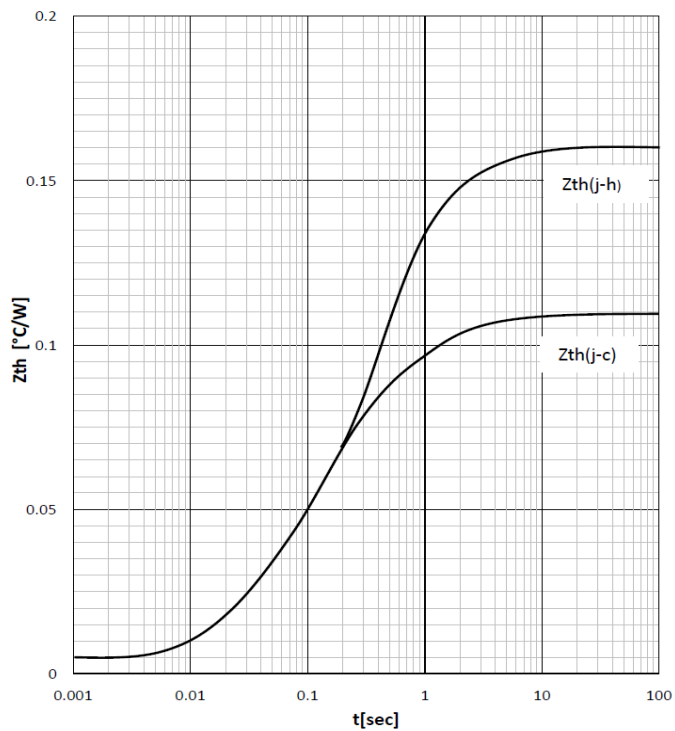
ON -STATE CHARACTERISTIC



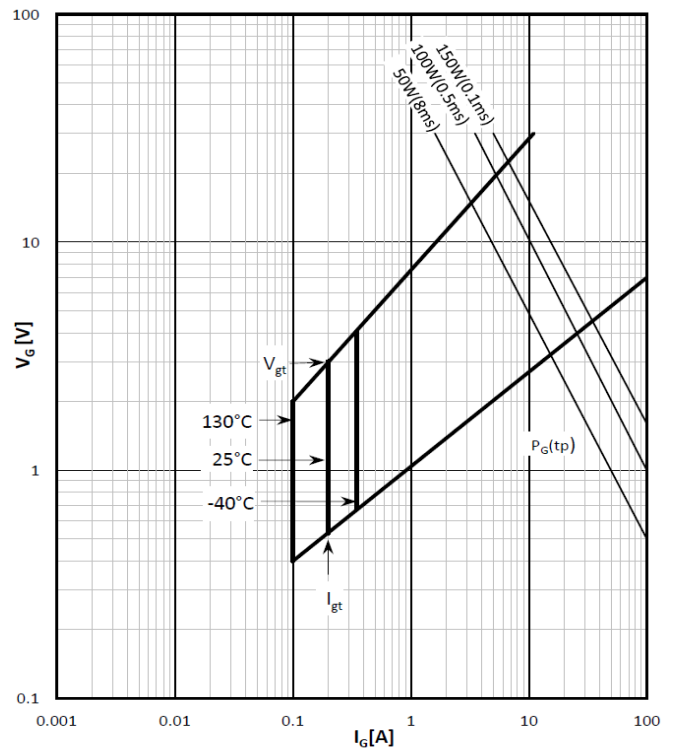
SURGE CHARACTERISTICS

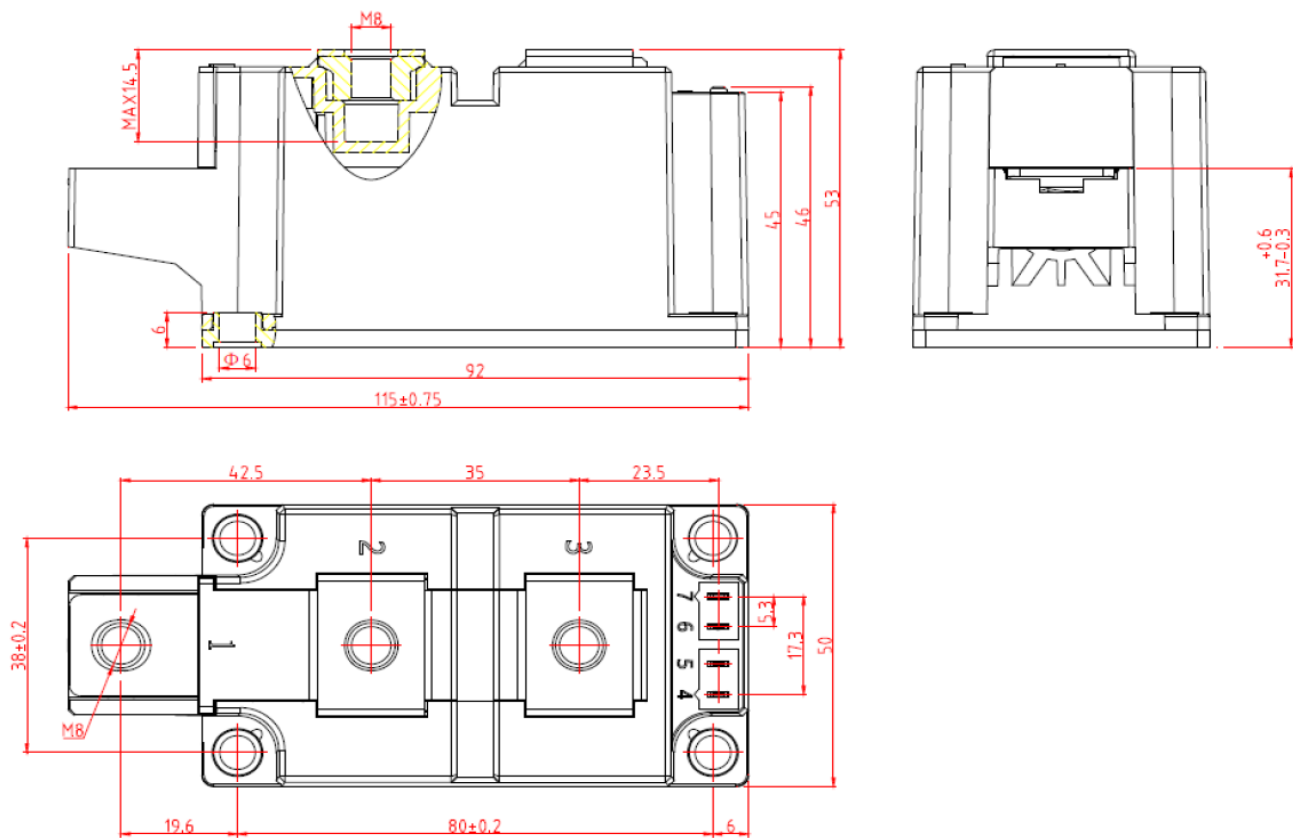


TRANSIENT THERMAL IMPEDANCE, PER ARM



GATE TRIGGER CHARACTERISTICS





(dimensions in mm)

### S.CO.M.E.S. Srl

Via Enrico Mattei, 6/8 - 26283 - Castiglione d'Adda (LO) - Italy

Phone: +39 0377 901243 Fax: +39 0377 900206

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