

PST MFC312

THYRISTOR - DIODE MODULE

Features:

- Electrically isolated base plate
- High surge capability
- Precious metal pressure contacts for high reliability

Typical applications:

- AC motor soft starters
- DC motor control (e.g. for machine tools)
- Temperature control (e.g. for ovens, chemical processes)

ELECTRICAL CHARACTERISTICS AND RATINGS

Reverse blocking - Off-state

| Device Type | V_{RRM} (1) | V_{DRM} (1) | V_{RSM} (1) |
|-------------|---------------|---------------|---------------|
| PST MFC312 | 1600 V | 1600 V | 1700 V |

V_{RRM} = Repetitive peak reverse voltage

V_{DRM} = Repetitive peak off state voltage

V_{RSM} = Non repetitive peak reverse voltage (2)

| | | |
|-------------------------------------------------------|--------------------|---------------------|
| Repetitive reverse and off-state peak leakage current | I_{RRM}, I_{DRM} | 40 mA (3) |
| Critical rate of rise of off-state voltage | dv/dt | 1000 V/ μ s (4) |

Notes:

All ratings are specified for $T_j = 25^\circ\text{C}$ unless otherwise stated.

(1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range -40 to $+140^\circ\text{C}$.

(2) 10 ms max. pulse width

(3) Maximum value for $T_j = T_{jmax}$

(4) Min. value for linear and exponential wave shape to 80% rated V_{DRM} .

Gate open. $T_j = T_{jmax}$

Conducting

| Parameter | Symbol | Min | Max | Typ | Unit | Conditions |
|-------------------------------------------|--------------|-----|------|------|-----------------------|-------------------------------------------------------------------|
| Average value of on-state current | $I_{T(AV)}$ | | 320 | | A | 50 Hz sine wave, 180° conduction, $T_c = 85^\circ\text{C}$ |
| RMS value of on-state current | $I_{T(RMS)}$ | | 500 | | A | 50 Hz sine wave, 180° conduction, $T_c = 85^\circ\text{C}$ |
| Surge non repetitive current | I_{TSM} | | 8 | | kA | 50 Hz sine wave Half cycle |
| I squared t | $I^2 t$ | | 320 | | kA^2s | $V_R = 0$ $T_j = T_{jmax}$ |
| Peak on-state voltage | V_{TM} | | 1.2 | | V | On-state current 600 A, $T_j = T_{jmax}$ |
| Threshold voltage | $V_{T(TO)}$ | | 0.8 | | V | $T_j = T_{jmax}$ |
| On-state slope resistance | r_T | | 0.68 | | $\text{m}\Omega$ | $T_j = T_{jmax}$ |
| Holding current | I_H | | | 500 | mA | $T_j = 25^\circ\text{C}$ |
| Latching current | I_L | | | 2000 | mA | $T_j = 25^\circ\text{C}$ |
| Critical rate of rise of on-state current | di/dt | | 100 | | A/ μ s | $I_G = 5 I_{GT}$, $t_r = 1 \mu\text{s}$, $T_j = T_{jmax}$ |
| RMS isolation voltage | V_{INS} | | 3000 | | V | AC 50 Hz, 60 s |

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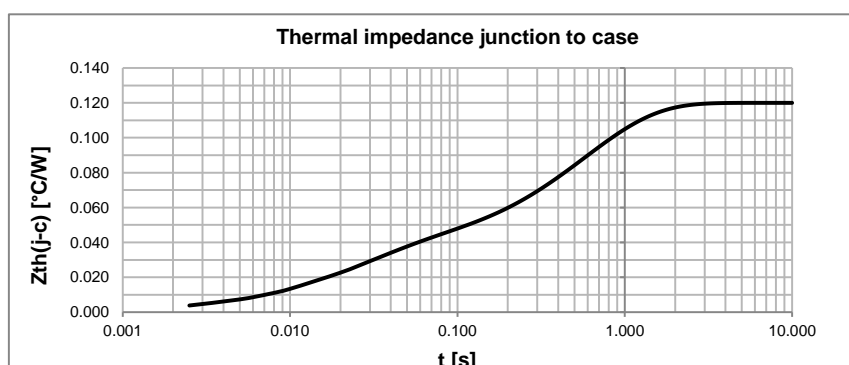
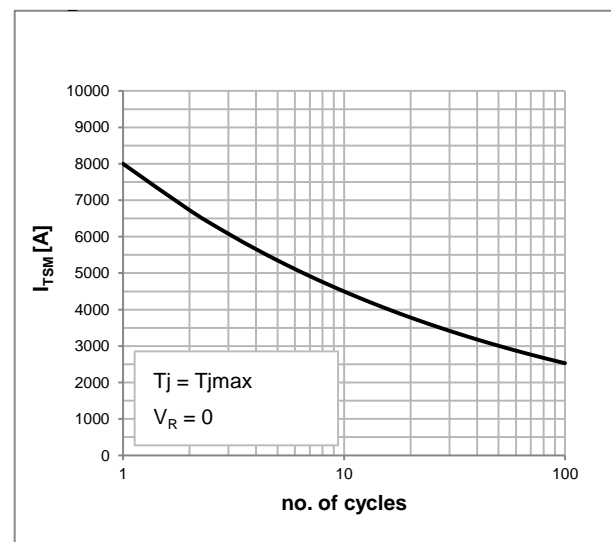
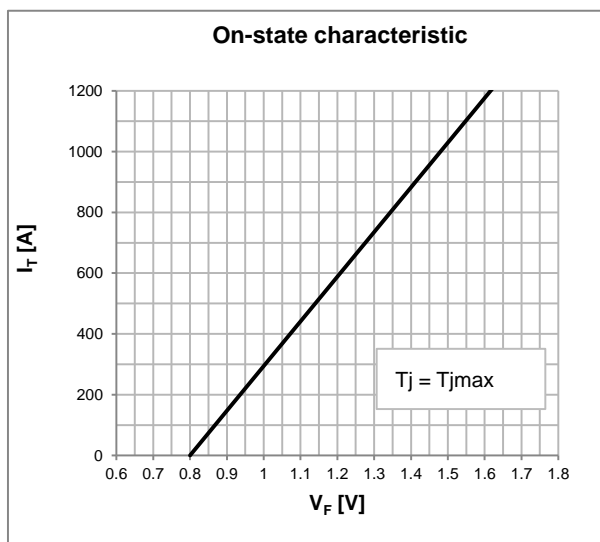
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Triggering

| Parameter | Symbol | Min | Max | Typ | Unit | Conditions |
|--------------|----------|-----|-----|-----|------|---------------------------------------------------------------------|
| Gate current | I_{GT} | | 200 | | mA | $V_D = 6\text{ V}; R_L = 3\ \Omega; T_j = 25\text{ }^\circ\text{C}$ |
| Gate voltage | V_{GT} | | 3 | | V | $V_D = 6\text{ V}; R_L = 3\ \Omega; T_j = 25\text{ }^\circ\text{C}$ |

Thermal and mechanical characteristics and ratings

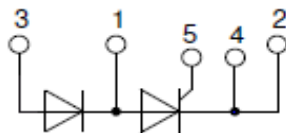
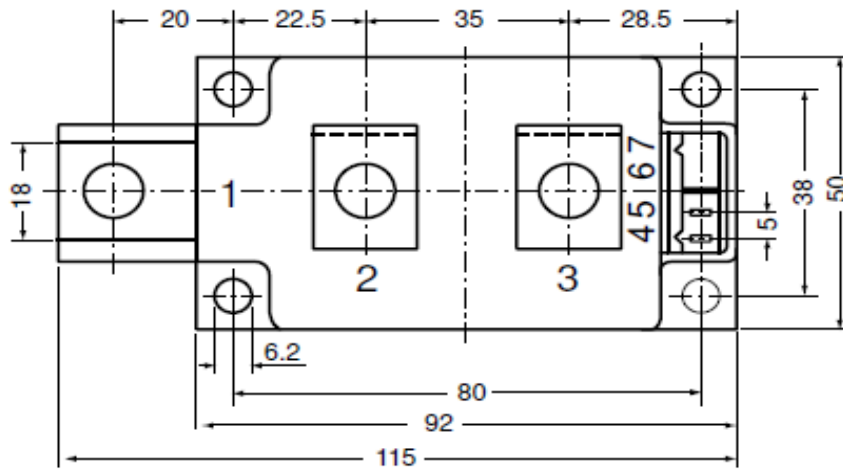
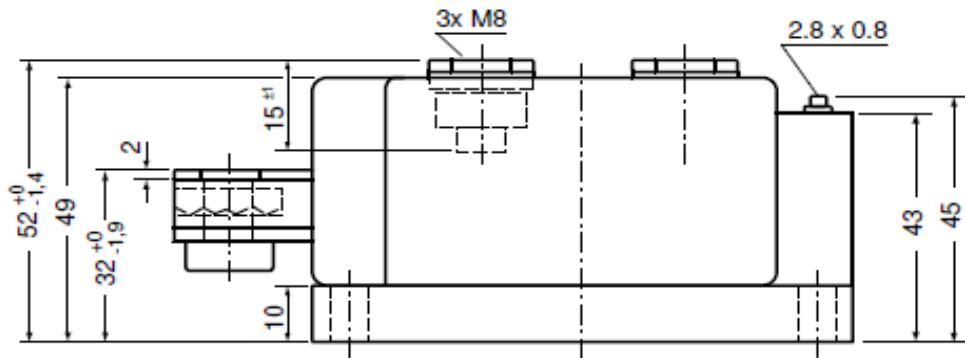
| Parameter | Symbol | Min | Max | Typ | Unit | Conditions |
|--------------------------------------------------|---------------|-----|-------|-----|--------------------|----------------------------------------------------------------|
| Operating temperature | T_j | -40 | 140 | | $^\circ\text{C}$ | |
| Storage temperature | T_{stg} | -40 | 125 | | $^\circ\text{C}$ | |
| Thermal resistance junction to case (per module) | $R_{th(j-c)}$ | | 0.060 | | $^\circ\text{C/W}$ | SIN 180° conduction mounting surfaces smooth, flat and greased |
| Thermal resistance case to sink (per module) | $R_{th(c-s)}$ | | 0.020 | | $^\circ\text{C/W}$ | |
| Mounting torque case-heatsink | T | 4 | 6 | | N·m | |
| Mounting torque busbar-terminals | T | 9 | 11 | | N·m | |
| Weight | W | | | 880 | g | |



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OUTLINE AND DIMENSIONS



(all dimensions in mm)