

MITSUBISHI THYRISTOR MODULES  
**TM25DZ/CZ-24,-2H**

HIGH VOLTAGE MEDIUM POWER GENERAL USE  
 INSULATED TYPE

TM25DZ/CZ-24,-2H



- **IT (AV)** Average on-state current ..... **25A**
- **VRRM** Repetitive peak reverse voltage  
 ..... **1200/1600V**
- **VDRM** Repetitive peak off-state voltage  
 ..... **1200/1600V**
- **DOUBLE ARMS**
- **Insulated Type**
- **UL Recognized**

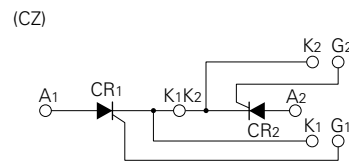
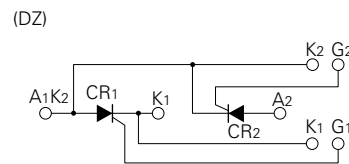
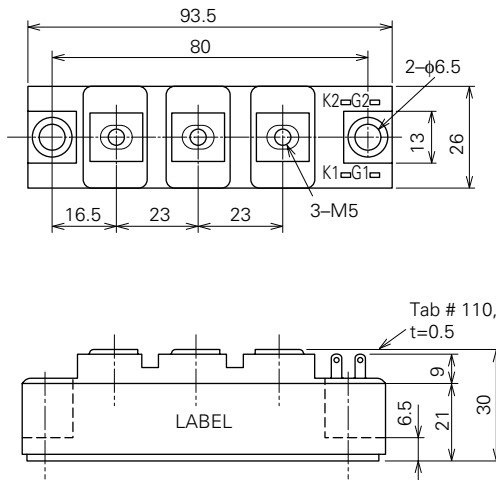
Yellow Card No. E80276 (N)  
 File No. E80271

**APPLICATION**

DC motor control, NC equipment, AC motor control, Contactless switches,  
 Electric furnace temperature control, Light dimmers

**OUTLINE DRAWING & CIRCUIT DIAGRAM**

Dimensions in mm



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## ABSOLUTE MAXIMUM RATINGS

| Symbol  | Parameter                             | Voltage class |      | Unit |
|---------|---------------------------------------|---------------|------|------|
|         |                                       | 24            | 2H   |      |
| VRRM    | Repetitive peak reverse voltage       | 1200          | 1600 | V    |
| VRSM    | Non-repetitive peak reverse voltage   | 1350          | 1700 | V    |
| VR (DC) | DC reverse voltage                    | 960           | 1280 | V    |
| VDRM    | Repetitive peak off-state voltage     | 1200          | 1600 | V    |
| VDSM    | Non-repetitive peak off-state voltage | 1350          | 1700 | V    |
| VD (DC) | DC off-state voltage                  | 960           | 1280 | V    |

| Symbol           | Parameter                                 | Conditions                                       | Ratings               | Unit             |
|------------------|---|--|-----------------------|------------------|
| IT (RMS)         | RMS on-state current                      |  | 39                    | A                |
| IT (AV)          | Average on-state current                  | Single-phase, half-wave 180° conduction, Tc=87°C | 25                    | A                |
| ITSM             | Surge (non-repetitive) on-state current   | One half cycle at 60Hz, peak value               | 500                   | A                |
| I <sup>2</sup> t | I <sup>2</sup> t for fusing               | Value for one cycle of surge current             | 1.0 × 10 <sup>3</sup> | A <sup>2</sup> s |
| di/dt            | Critical rate of rise of on-state current | VD=1/2VDRM, IG=0.5A, Tj=125°C                    | 100                   | A/μs             |
| PGM              | Peak gate power dissipation               |  | 5.0                   | W                |
| PG (AV)          | Average gate power dissipation            |  | 0.5                   | W                |
| VFGM             | Peak gate forward voltage                 |  | 10                    | V                |
| VRGM             | Peak gate reverse voltage                 |  | 5.0                   | V                |
| IFGM             | Peak gate forward current                 |  | 2.0                   | A                |
| Tj               | Junction temperature                      |  | -40~+125              | °C               |
| Tstg             | Storage temperature                       |  | -40~+125              | °C               |
| Viso             | Isolation voltage                         | Charged part to case                             | 2500                  | V                |
| —                | Mounting torque                           | Main terminal screw M5                           | 1.47~1.96             | N·m              |
|                  |   |  | 15~20                 | kg·cm            |
|                  |   | Mounting screw M6                                | 1.96~2.94             | N·m              |
|                  |   |  | 20~30                 | kg·cm            |
| —                | Weight                                    | Typical value                                    | 160                   | g                |

## ELECTRICAL CHARACTERISTICS

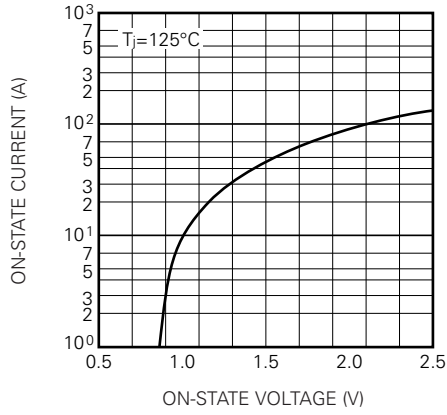
| Symbol    | Parameter                                  | Test conditions   | Limits |      |      | Unit |
|-----------|--|---|--------|------|------|------|
|           |  |   | Min.   | Typ. | Max. |      |
| IRRM      | Repetitive peak reverse current            | Tj=125°C, VRRM applied  | —      | —    | 10   | mA   |
| IDRM      | Repetitive peak off-state current          | Tj=125°C, VDRM applied  | —      | —    | 10   | mA   |
| VTM       | On-state voltage                           | Tj=125°C, ITM=75A, instantaneous meas.                          | —      | —    | 1.8  | V    |
| dv/dt     | Critical rate of rise of off-state voltage | Tj=125°C, VD=2/3VDRM  | 500    | —    | —    | V/μs |
| VGT       | Gate trigger voltage                       | Tj=25°C, VD=6V, RL=2Ω   | —      | —    | 3.0  | V    |
| VGD       | Gate non-trigger voltage                   | Tj=125°C, VD=1/2VDRM  | 0.25   | —    | —    | V    |
| IGT       | Gate trigger current                       | Tj=25°C, VD=6V, RL=2Ω   | 10     | —    | 50   | mA   |
| Rth (j-c) | Thermal resistance                         | Junction to case (per 1/2 module)                               | —      | —    | 0.8  | °C/W |
| Rth (c-f) | Contact thermal resistance                 | Case to fin, conductive grease applied (per 1/2 module)         | —      | —    | 0.2  | °C/W |
| —         | Insulation resistance                      | Measured with a 500V megohmmeter between main terminal and case | 10     | —    | —    | MΩ   |

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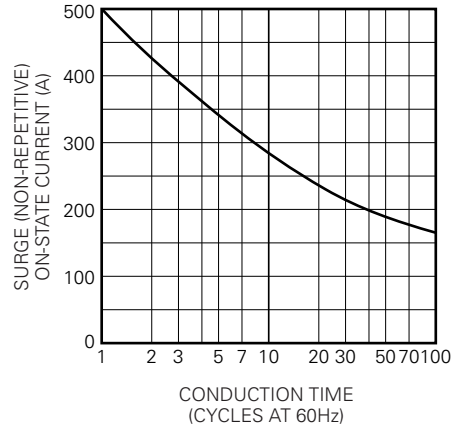
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## PERFORMANCE CURVES

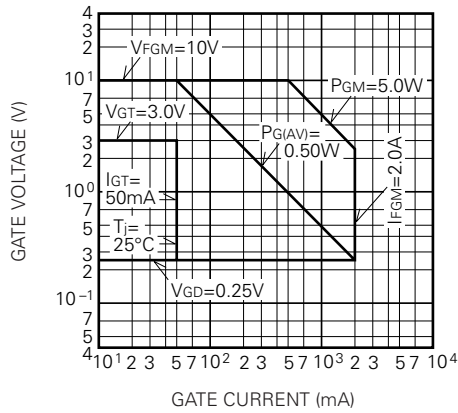
**MAXIMUM ON-STATE CHARACTERISTIC**



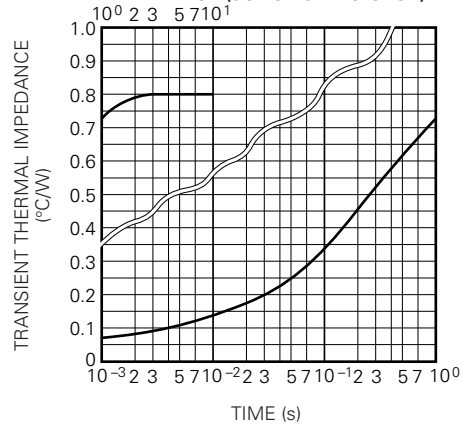
**RATED SURGE (NON-REPETITIVE) ON-STATE CURRENT**



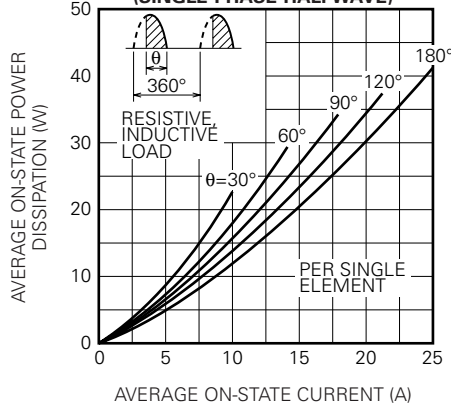
**GATE CHARACTERISTICS**



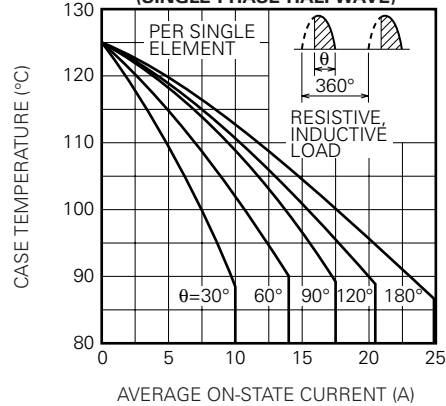
**MAXIMUM TRANSIENT THERMAL IMPEDANCE (JUNCTION TO CASE)**



**MAXIMUM AVERAGE ON-STATE POWER DISSIPATION (SINGLE PHASE HALFWAVE)**



**LIMITING VALUE OF THE AVERAGE ON-STATE CURRENT (SINGLE PHASE HALFWAVE)**



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