
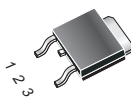


HAOPIN MICROELECTRONICS CO.,LTD.

Description

Glass passivated, sensitive gate thyristors in a plastic envelope, intended for use in general purpose switching and phase control applications. These devices are intended to be interfaced directly to microcontrollers, logic integrated circuits and other low power gate trigger circuits.

| <p>Symbol</p>  | | <p>Simplified outline</p>  <p>TO-252</p> | |
|---|-------------|---|--|
| Pin | Description | | |
| 1 | Cathode | | |
| 2 | anode | | |
| 3 | gate | | |
| TAB | anode | | |

Applications:

- ◆ Motor control
- ◆ Industrial and domestic lighting
- ◆ Heating
- ◆ Static switching

Features

- ◆ Blocking voltage to 600 V
- ◆ On-state RMS current to 8 A
- ◆ Ultra low gate trigger current

| SYMBOL | PARAMETER | Value | Unit |
|-------------|---|-------|------|
| V_{DRM} | Repetitive peak off-state voltages | 600 | V |
| $I_T (RMS)$ | RMS on-state current (full sine wave) | 8 | A |
| I_{TSM} | Non-repetitive peak on-state current (full cycle, T_j initial=25°C) | 83 | A |

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNIT |
|---------------|---|-------------|-----|-----|-----|------|
| $R_{th j-mb}$ | Thermal resistance Junction to mounting base | | - | - | 2.0 | K/W |
| $R_{th j-a}$ | Thermal resistance Junction to ambient | In free air | - | 70 | - | K/W |

HAOPIN MICROELECTRONICS CO.,LTD.

Limiting values in accordance with the Maximum system(IEC 134)

| SYMBOL | PARAMETER | CONDITIONS | MIN | Value | UNIT | |
|--------------|--|--|-----|--------|------------------|---|
| V_{DRM} | Repetitive peak off-state Voltages | | - | 600 | V | |
| $I_{T(RMS)}$ | RMS on-state current | Full sine wave; $T_c \leq 110^\circ\text{C}$ | - | 8 | A | |
| I_{TSM} | Non repetitive surge peak on-state current | | - | F=50Hz | 83 | A |
| | | | | F=60Hz | 100 | A |
| I^2t | I^2t for fusing | $T_p=10\text{ms}$ | - | 41 | A ² S | |
| Di/dt | | | - | 100 | A/ μ s | |
| I_{GM} | Peak gate current | | - | 1 | A | |
| I_{DRM} | $V_{DRM}=V_{RRM}$ | $T_c=25^\circ\text{C}$ | - | 5 | μ A | |
| I_{RRM} | $V_{DRM}=V_{RRM}$ | $T_c=110^\circ\text{C}$ | - | 250 | μ A | |
| $P_{G(AV)}$ | Average gate power | | - | 0.1 | W | |
| P_{GM} | | | - | 1 | W | |
| T_{stg} | Storage temperature | | -40 | 150 | $^\circ\text{C}$ | |
| T_j | Junction temperature | | -40 | 150 | $^\circ\text{C}$ | |

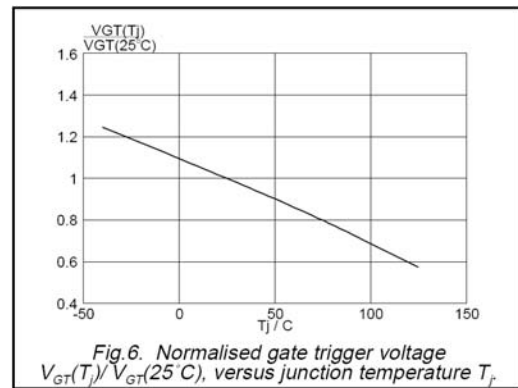
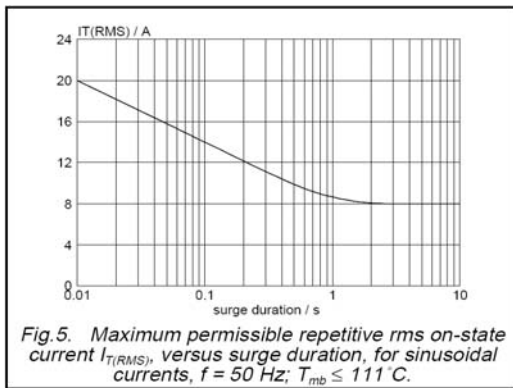
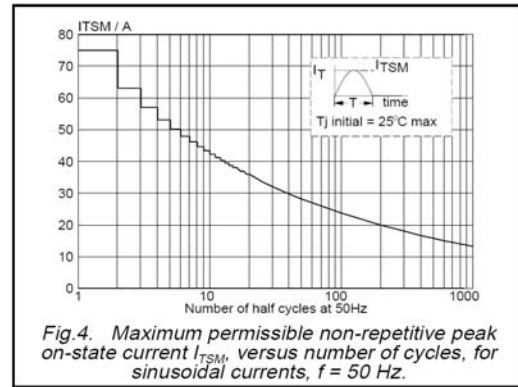
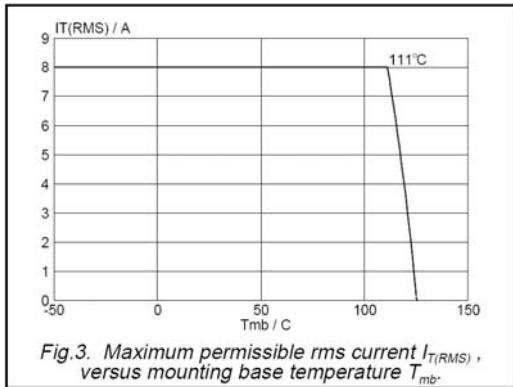
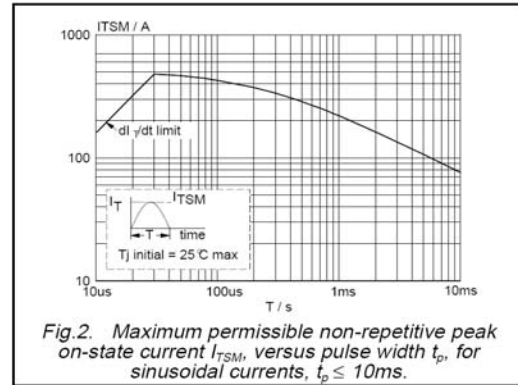
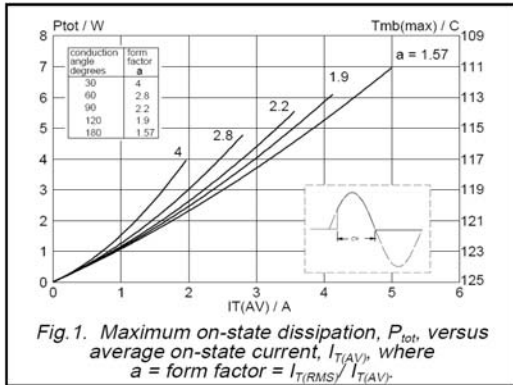
$T_j=25^\circ\text{C}$ unless otherwise stated

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNIT | |
|------------------------|----------------------|--|-----|-----|-------------------------|------------|---|
| Static characteristics | | | | | | | |
| I_{GT} | Gate trigger current | $T_a=25^\circ\text{C}, V_D=6\text{V}, I_T=0.1\text{A}$ | - | - | 200 | μ A | |
| V_{GT} | Gate trigger voltage | | - | - | $T_c=-40^\circ\text{C}$ | 1 | V |
| | | | | | $T_c=25^\circ\text{C}$ | 0.8 | |
| | | | | | $T_c=110^\circ\text{C}$ | 0.25 | |
| I_H | Holding current | $T_j=25^\circ\text{C}, V_D=12\text{V}, R_{GK}=1\text{K}\Omega$ | - | - | 6 | mA | |
| V_{GRM} | | | 6 | - | - | V | |
| dV/dt | | | - | 8 | - | V/ μ s | |

Dynamic Characteristics

| | | | | | | |
|----------|--------------------------------|--|---|---|----|---------------|
| t_{gt} | Gate controlled turn-on time | $I_{TM}=10\text{A}; V_D=V_{DRM(max)}; I_G=5\text{mA}; DI_G/dt=0.2\text{A}/\mu\text{s}$ | - | 4 | - | μs |
| t_q | Crcuit commutated tum-off time | $V_{DM}=67\% V_{DRM(max)}; T_j=150^\circ\text{C}; I_{TM}=12\text{A}; V_R=24\text{V}; dI_{TM}/dt=10\text{A}/\mu\text{s}; dV_D/dt=2\text{V}/\mu\text{s}; R_{GK}=1\text{k}\Omega$ | - | - | 50 | μs |

Description



Description

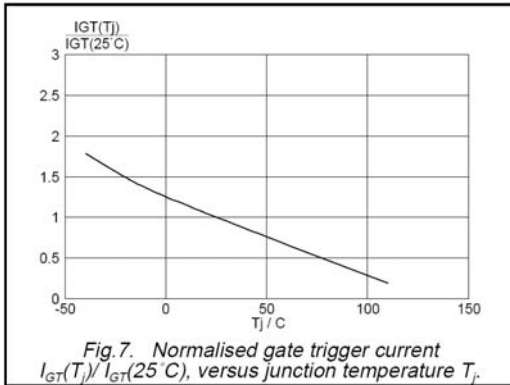


Fig. 7. Normalised gate trigger current $I_{GT}(T_J) / I_{GT}(25^\circ\text{C})$, versus junction temperature T_J .

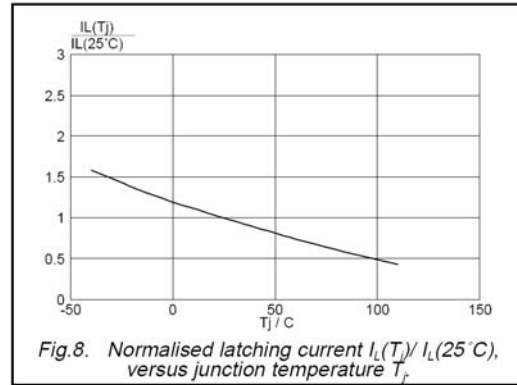


Fig. 8. Normalised latching current $I_L(T_J) / I_L(25^\circ\text{C})$, versus junction temperature T_J .

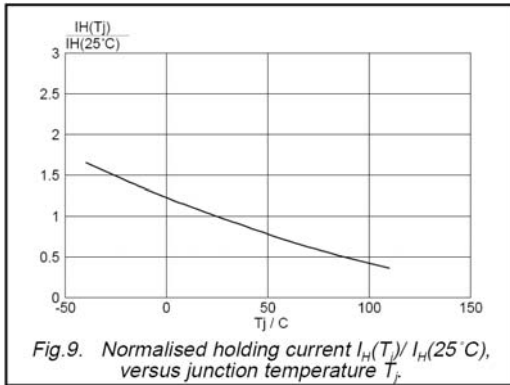


Fig. 9. Normalised holding current $I_H(T_J) / I_H(25^\circ\text{C})$, versus junction temperature T_J .

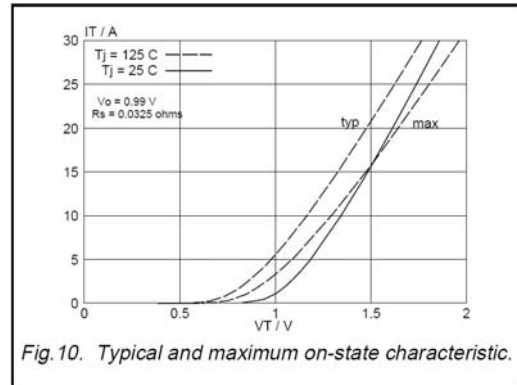


Fig. 10. Typical and maximum on-state characteristic.

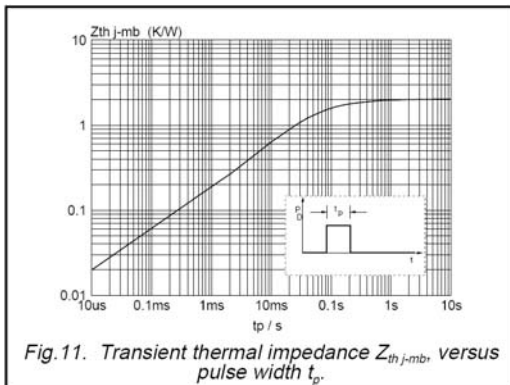


Fig. 11. Transient thermal impedance $Z_{th(j-mb)}$, versus pulse width t_p .

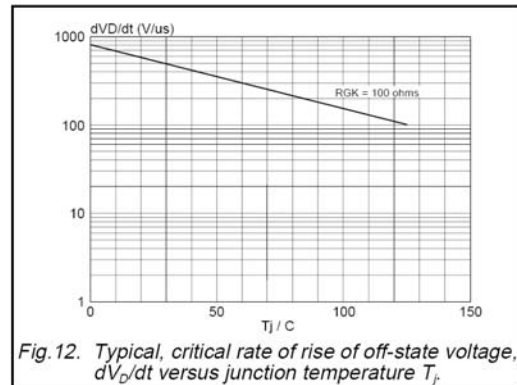


Fig. 12. Typical, critical rate of rise of off-state voltage, dV_D/dt versus junction temperature T_J .

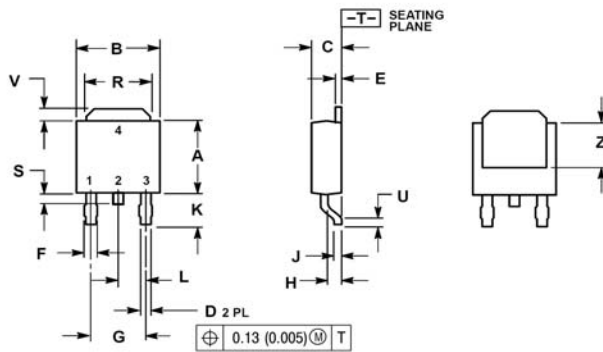
MECHANICAL DATA

Dimensions in mm

Net Mass: 0.3g

TO-252(DPAK)

DPAK
CASE 369C
ISSUE O



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.235 | 0.245 | 5.97 | 6.22 |
| B | 0.250 | 0.265 | 6.35 | 6.73 |
| C | 0.086 | 0.094 | 2.19 | 2.38 |
| D | 0.027 | 0.035 | 0.69 | 0.88 |
| E | 0.018 | 0.023 | 0.46 | 0.58 |
| F | 0.037 | 0.045 | 0.94 | 1.14 |
| G | 0.180 BSC | | 4.58 BSC | |
| H | 0.034 | 0.040 | 0.87 | 1.01 |
| J | 0.018 | 0.023 | 0.46 | 0.58 |
| K | 0.102 | 0.114 | 2.60 | 2.89 |
| L | 0.090 BSC | | 2.29 BSC | |
| R | 0.180 | 0.215 | 4.57 | 5.45 |
| S | 0.025 | 0.040 | 0.63 | 1.01 |
| U | 0.020 | --- | 0.51 | --- |
| V | 0.035 | 0.050 | 0.89 | 1.27 |
| Z | 0.155 | --- | 3.93 | --- |

STYLE 6:

- PIN 1. MT1
- 2. MT2
- 3. GATE
- 4. MT2

SOLDERING FOOTPRINT*

