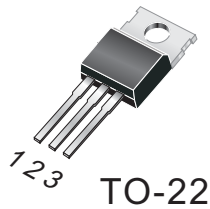
# MCR72

## SCRs

## 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.

| Symbol | Simplified outline |
|---|---|
|   |   TO-220 |

| Pin | Description |
|---|---|
| 1 | Cathode (K) |
| 2 | Anode (A) |
| 3 | Gate(G) |
| 4 | 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 | MCR72-6<br>MCR72-8 | 400<br>600 | V |
| $I_{T(RMS)}$ | On-state rms current | | 8 | A |
| $I_{TSM}$ | Peak non-repetitive surge current | | 100 | A |

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| $R_{\theta JC}$ | Thermal resistance Junction to Case | | - | - | 2.2 | ℃/W |
| $R_{\theta JA}$ | Thermal resistance Junction to am bient | | - | - | 60 | ℃/W |

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

| SYMBOL | PARAMETER | CONDITIONS | MIN | MAX | UNIT |
|---|---|---|---|---|---|
| $V_{DRM}$<br>$V_{RRM}$ | Repetitive peak off-state Voltages | Tj=-40to110℃,Sine Wave, 50to60Hz,Gage open MCR72-6<br>MCR72-8 | - | 400<br>600 | V |
| $I_{T(RMS)}$ | on-state RMS current | TC=83℃ | - | 8 | A |
| $I_{TSM}$ | Peak Non-repetitive surge current | 1/2Cycle.60 Hz, Tj=-40℃to110℃ | - | 100 | A |
| $I^2t$ | Circuit Fusing | T=8.3ms | - | 40 | $A^2S$ |
| $I_{GM}$ | Peak gate current | T<=10us | - | 1.0 | A |
| $V_{GM}$ | Peak gate voltage | T<=10us | - | ±5 | V |
| $P_{GM}$ | Peak gate power | T<=10us | - | 5 | W |
| $P_{G(AV)}$ | Average gate power | | - | 0.75 | W |
| $T_{stg}$ | Storage temperature Range | | -40 | +150 | ℃ |
| $T_j$ | Operating junction Temperature Range | | -40 | +110 | ℃ |

$T_J$=25°C unless otherwise stated

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Static characteristics | | | | | | |
| $I_{GT}$ | Gate trigger current | $V_D$=12V; RL=100Ω | - | 30 | 200 | μA |
| $I_H$ | Holding current | $V_D$=12V,$I_{TM}$=100mA | - | - | 6 | mA |
| $V_{TM}$ | Peak forward on-state voltage | $I_{TM}$=16A peak,pulse width<=1ms | - | 1.7 | 2.0 | V |
| $V_{GT}$ | Gate trigger voltage | $V_D$=12V;RL=100Ω<br>$V_D$=Rated $V_{DRM}$,$R_L$=10kΩ,Tj=110℃ | -<br>0.1 | 0.5<br>- | 1.5<br>- | V |

OFF CHARACTERISTICS

| | | | | | | |
|---|---|---|---|---|---|---|
| $I_{RRM}$,$I_{DRM}$ | Peak Repetitive Forward or Reverse Blocking current(1) ($V_{AK}$=Reted $V_{DRM}$or$V_{RRM}$;$R_{GK}$=1kΩ) TJ=25℃<br>TJ=110℃ | | - | - | 10<br>500 | μA |

Dynamic Characteristics

| | | | | | | |
|---|---|---|---|---|---|---|
| $D_V$/dt | Critical rate of rise of Off-state voltage | $V_D$=Rated $V_{DRM}$, ;Tj=110℃; Exponential waveform; | - | 10 | - | V/μs |
| $t_{gt}$ | Gate controlled turn-on time | $I_{TM}$=16A;$V_D$=Rated $V_{DRM}$,IG=2mA | - | 1 | - | μs |

Description

FIGURE 1 – AVERAGE CURRENT DERATING

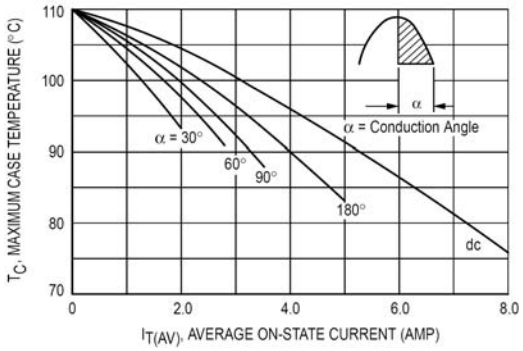



FIGURE 2 – ON-STATE POWER DISSIPATION

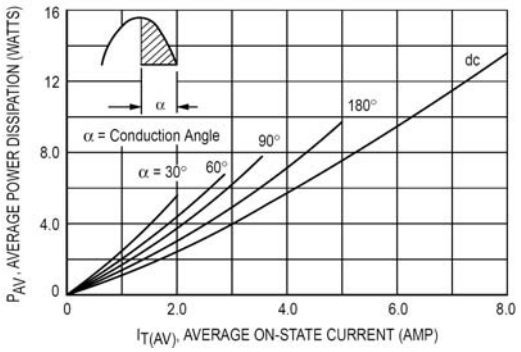



FIGURE 3 – NORMALIZED GATE CURRENT

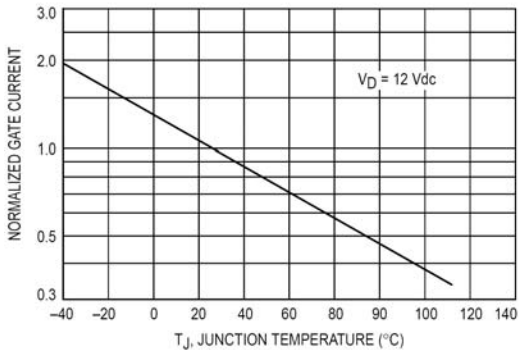
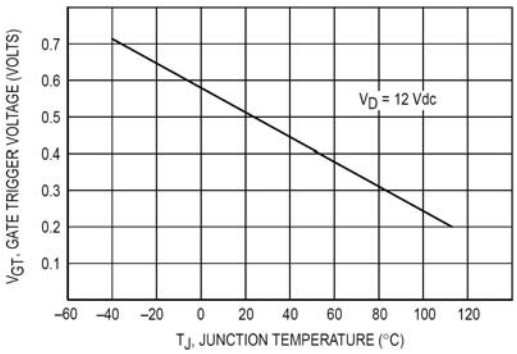



FIGURE 4 – GATE VOLTAGE



MECHANICAL DATA

Dimensions in mm
Net Mass: 2 g