

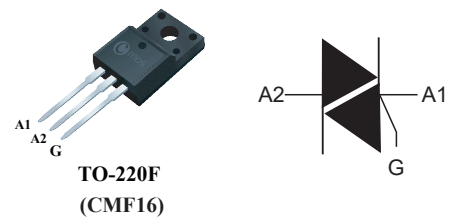
### General Description

The CMF16 triac family are high performance glass passivated PNP devices. These parts are suitable for general purpose applications where gate high sensitivity is required.

### Applications

- General purpose low power motor control
- Home appliances

### TO-220F Pin Configuration



### ABSOLUTE RATINGS (limiting values)

| Symbol       | Parameter                                                                                                    |                               | Rating        | Units                  |
|--------------|--------------------------------------------------------------------------------------------------------------|-------------------------------|---------------|------------------------|
| $I_{T(RMS)}$ | RMS on-state current (360° conduction angle) ( $T_c=80^\circ\text{C}$ )                                      |                               | 16            | A                      |
| $I_{TSM}$    | Non repetitive surge peak on-state current ( $T_j$ initial = $25^\circ\text{C}$ )                            | $t_p=8.3\text{ms}$            | 170           | A                      |
|              |                                                                                                              | $t_p=10\text{ms}$             | 160           |                        |
| $I_{2t}$     | $I_{2t}$ value                                                                                               | $t_p=10\text{ms}$             | 128           | A2s                    |
| $di/dt$      | Critical rate of rise of on-state current<br>Gate supply: $I_g=50\text{mA}$ $diG/dt=0.1\text{A}/\mu\text{s}$ | Repetitive<br>$F=50\text{Hz}$ | 10            | $\text{A}/\mu\text{s}$ |
|              |                                                                                                              | Non Repetitive                | 50            |                        |
| $T_{stg}$    | Storage and operating junction temperature range                                                             |                               | - 40 to + 150 | $^\circ\text{C}$       |
| $T_j$        |                                                                                                              |                               | - 40 to + 125 | $^\circ\text{C}$       |
| $T_I$        | Maximum lead temperature for soldering during 10 s at 4.5 mm from case                                       |                               | 260           | $^\circ\text{C}$       |

| Symbol                 | Parameter                                                      | CMF16... |     |     |     | Unit |
|------------------------|----------------------------------------------------------------|----------|-----|-----|-----|------|
|                        |                                                                | 400      | 600 | 700 | 800 |      |
| $V_{DRM}$<br>$V_{RRM}$ | Repetitive peak off-state voltage<br>$T_j = 110^\circ\text{C}$ | 400      | 600 | 700 | 800 | V    |

## Thermal resistances

| Symbol                   | Parameter                                              | Value | Unit |
|--------------------------|--------------------------------------------------------|-------|------|
| R <sub>th</sub> (j-a)    | Junction to ambient                                    | 60    | °C/W |
| R <sub>th</sub> (j-c) AC | Junction to case for 360° conduction angle ( F= 50 Hz) | 2.1   | °C/W |

## GATE CHARACTERISTICS (maximum values)

P<sub>G</sub> (AV) = 1W P<sub>GM</sub> = 10W (tp = 20 μs) I<sub>GM</sub> = 4A (tp = 20 μs) V<sub>GM</sub> = 16V (tp = 20 μs).

## Electrical characteristics

| Symbol                 | Test Conditions                                                                                             | Quadrant    |     | Value | Unit |
|------------------------|-------------------------------------------------------------------------------------------------------------|-------------|-----|-------|------|
| I <sub>GT</sub>        | V <sub>D</sub> =12V (DC) R <sub>L</sub> =100Ω, T <sub>j</sub> =25°C                                         | I           | MAX | 30    | mA   |
|                        |                                                                                                             | II          | MAX | 50    |      |
|                        |                                                                                                             | III         | MAX | 50    |      |
|                        |                                                                                                             | IV          | MAX | 80    |      |
| V <sub>GT</sub>        | V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω, T <sub>j</sub> =25°C                                          | I-II-III-IV | MAX | 1.5   | V    |
| V <sub>GD</sub>        | V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3kΩ, T <sub>j</sub> =125°C                               | I-II-III-IV | MIN | 0.2   | V    |
| t <sub>gt</sub>        | V <sub>D</sub> =V <sub>DRM</sub> I <sub>G</sub> =500mA<br>dI <sub>G</sub> /dt = 3A/μs, T <sub>j</sub> =25°C | I-II-III-IV | TYP | 2     | μs   |
| I <sub>L</sub>         | I <sub>G</sub> =1.2 I <sub>GT</sub> , T <sub>j</sub> =25°C                                                  | I           | MAX | 50    | mA   |
|                        |                                                                                                             | II          | MAX | 100   |      |
|                        |                                                                                                             | III         | MAX | 50    |      |
|                        |                                                                                                             | IV          | MAX | 50    |      |
| I <sub>H</sub> *       | I <sub>T</sub> = 100mA gate open, T <sub>j</sub> =25°C                                                      |             | MAX | 50    | mA   |
| V <sub>TM</sub> *      | I <sub>TM</sub> = 22.5A, tp= 380μs, T <sub>j</sub> =25°C                                                    |             | MAX | 1.7   | V    |
| I <sub>DRM</sub>       | V <sub>DRM</sub> Rated, T <sub>j</sub> =25°C                                                                |             | MAX | 0.02  | mA   |
| I <sub>RRM</sub>       | V <sub>RRM</sub> Rated, T <sub>j</sub> =125°C                                                               |             | MAX | 2     |      |
| dV/dt *                | Linear slope up to V <sub>D</sub> =67%V <sub>DRM</sub><br>gate open, T <sub>j</sub> =125°C                  |             | MIN | 250   | V/μs |
| (dV/dt) <sub>c</sub> * | (dI/dt) <sub>c</sub> =7A/ms, T <sub>j</sub> =125°C                                                          |             | MIN | 10    | V/μs |

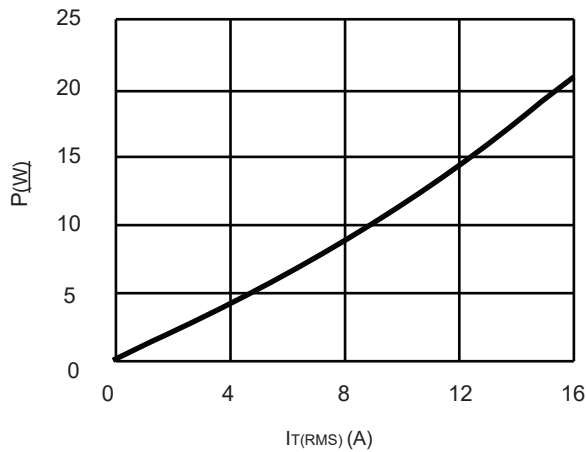
\* For either polarity of electrode A2 voltage with reference to electrode A1.

This product has been designed and qualified for the consumer market.

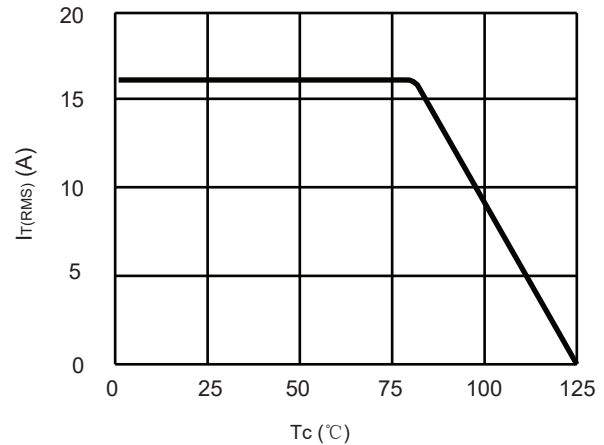
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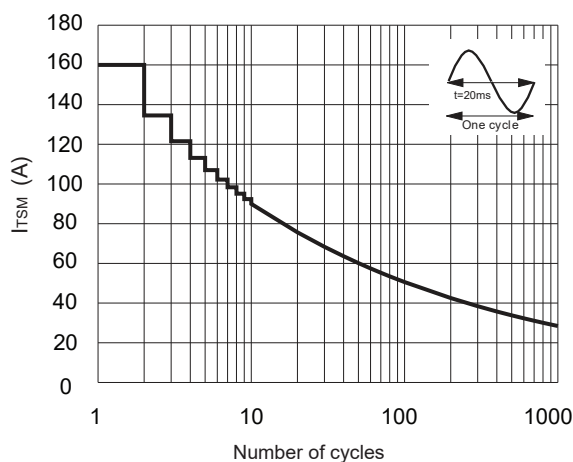
## Typical Characteristics



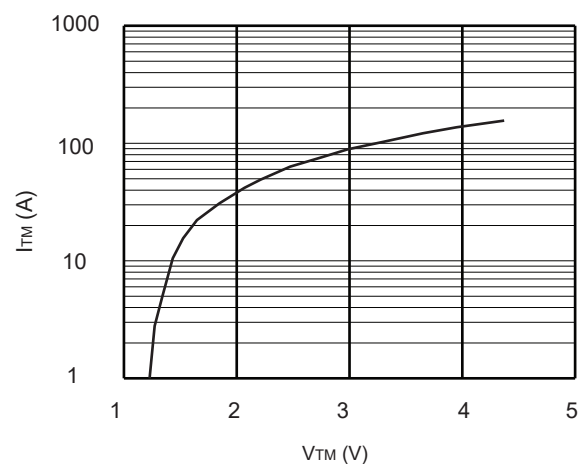
Maximum power dissipation versus RMS on-state current



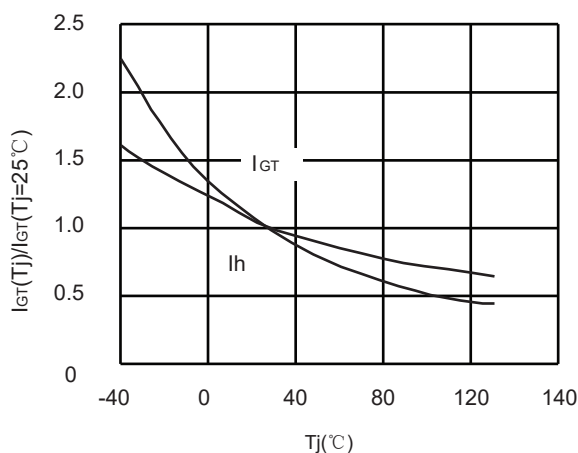
RMS on-state current versus case temperature



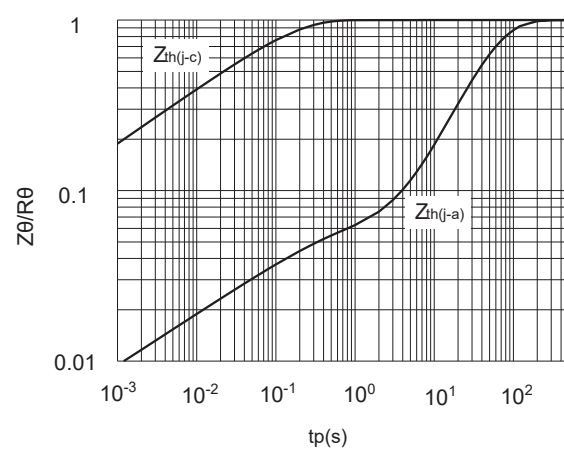
Surge peak on-state current versus number of cycles



On-state characteristics (maximum values).



Relative variation of gate trigger current and holding current versus junction temperature.



Relative variation of thermal impedance versus pulse duration.