



**OPTICALLY COUPLED BILATERAL  
SWITCH NON-ZERO CROSSING  
TRIAC**

**APPROVALS**

- UL recognised, File No. E91231

**'X' SPECIFICATION APPROVALS**

- VDE 0884 in 3 available lead forms : -
  - STD
  - G form
  - SMD approved to CECC 00802

**DESCRIPTION**

The MOC302\_ series are optically coupled isolators consisting of a Gallium Arsenide infrared emitting diode coupled with a light activated silicon bilateral switch performing the functions of a triac mounted in a standard 6 pin dual-in-line package.

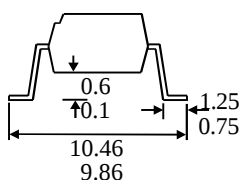
**FEATURE**

- Options :-
  - 10mm lead spread - add G after part no.
  - Surface mount - add SM after part no.
  - Tape&reel - add SMT&R after part no.
- High Isolation Voltage ( $5.3\text{kV}_{\text{RMS}}, 7.5\text{kV}_{\text{PK}}$ )
- 400V Peak Blocking Voltage
- All electrical parameters 100% tested
- Custom electrical selections available

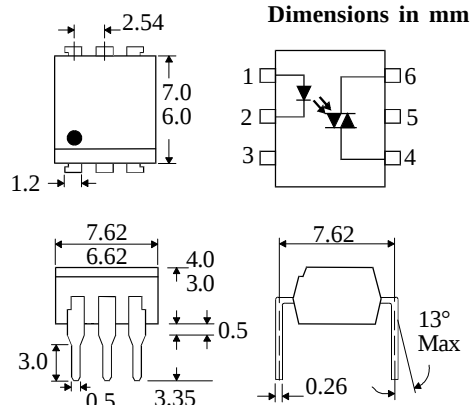
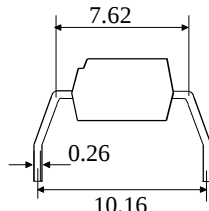
**APPLICATIONS**

- CRTs
- Power Triac Driver
- Motors
- Consumer appliances
- Printers

**OPTION SM  
SURFACE MOUNT**



**OPTION G**



**ABSOLUTE MAXIMUM RATINGS  
(25 °C unless otherwise noted)**

Storage Temperature \_\_\_\_\_ -55°C - +150°C  
Operating Temperature \_\_\_\_\_ -40°C - +100°C  
Lead Soldering Temperature \_\_\_\_\_ 260°C  
(1.6mm from case for 10 seconds)  
Input-to-output Isolation Voltage (Pk) \_\_\_\_\_ 7500 Vac  
(60 Hz , 1sec. duration)

**INPUT DIODE**

Forward Current \_\_\_\_\_ 50mA  
Reverse Voltage \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 70mW  
(derate linearly 0.93mW/°C above 25°C)

**OUTPUT PHOTO TRIAC**

Off-State Output Terminal Voltage \_\_\_\_\_ 400V  
RMS Forward Current \_\_\_\_\_ 100mA  
Forward Current (Peak) \_\_\_\_\_ 1A  
Power Dissipation \_\_\_\_\_ 300mW  
(derate linearly 4.0mW/°C above 25°C)

**POWER DISSIPATION**

Total Power Dissipation \_\_\_\_\_ 330mW  
(derate linearly 4.4mW/°C above 25°C)

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**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

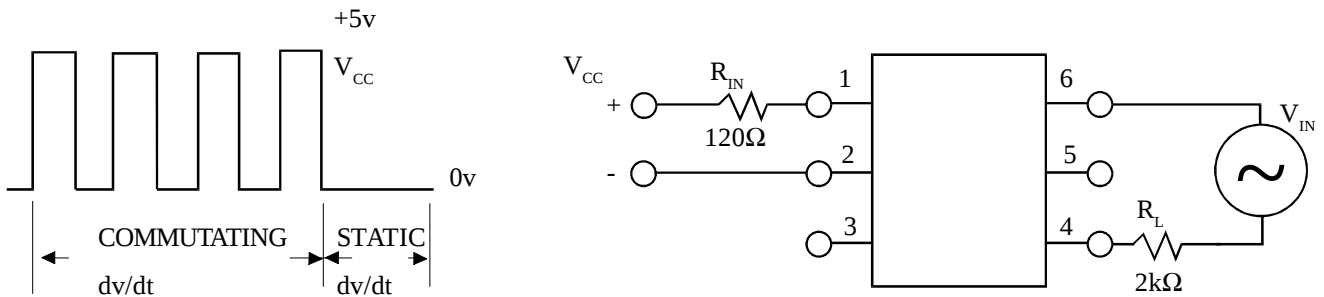
| PARAMETER |                                                                                                                                                                                                                                                                                     | MIN | TYP              | MAX                 | UNITS                                                                                | TEST CONDITION                                                                                                                                                                                            |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------------|---------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input     | Forward Voltage ( $V_F$ )<br>Reverse Current ( $I_R$ )                                                                                                                                                                                                                              |     | 1.2              | 1.5<br>100          | V<br>$\mu\text{A}$                                                                   | $I_F = 10\text{mA}$<br>$V_R = 6\text{V}$                                                                                                                                                                  |
| Output    | Peak Off-state Current ( $I_{\text{DRM}}$ )<br>Peak Blocking Voltage ( $V_{\text{DRM}}$ )<br>On-state Voltage ( $V_{\text{TM}}$ )<br>Critical rate of rise of off-state<br>Voltage ( $dv/dt$ ) ( note 1 )<br>Critical rate of rise of commutating<br>Voltage ( $dv/dt$ ) ( note 1 ) | 400 | 1.5<br>10<br>0.1 | 100<br>3.0          | nA<br>V<br>V<br>$\text{V}/\mu\text{s}$<br>$\text{V}/\mu\text{s}$                     | $V_{\text{DRM}} = 400\text{V}$ (note 1)<br>$I_{\text{DRM}} = 100\text{nA}$<br>$I_{\text{TM}} = 100\text{mA}$ ( peak )<br><br>$I_{\text{load}} = 15\text{mA}$ ,<br>$V_{\text{IN}} = 30\text{V}$ ( fig 1. ) |
| Coupled   | Input Current to Trigger ( $I_{\text{FT}}$ ) (note 2 )<br>MOC3020<br>MOC3021<br>MOC3022<br>MOC3023<br><br>Holding Current , either direction ( $I_H$ )<br><br>Input to Output Isolation Voltage $V_{\text{ISO}}$                                                                    |     |                  | 30<br>15<br>10<br>5 | mA<br>mA<br>mA<br>mA<br><br>$\mu\text{A}$<br><br>$V_{\text{RMS}}$<br>$V_{\text{PK}}$ | $V_D = 3\text{V}$ ( note 2 )<br><br><br><br><br><br>See note 3<br>See note 3                                                                                                                              |

Note 1. Test voltage must be applied within  $dv/dt$  rating.

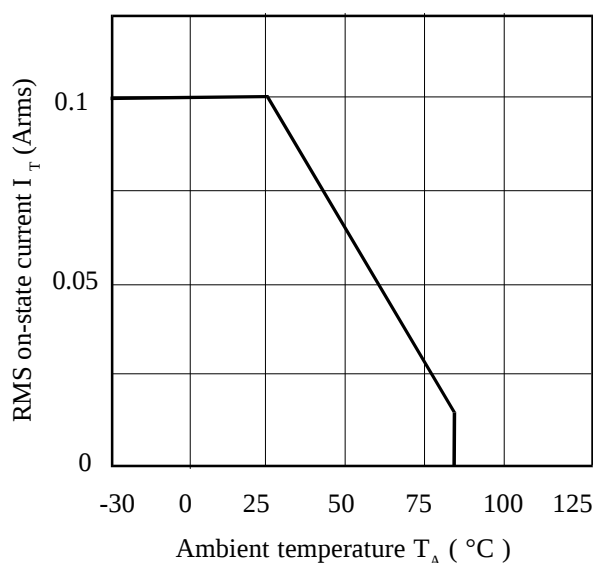
Note 2. Guaranteed to trigger at an  $I_F$  value less than or equal to max.  $I_{\text{FT}}$ , recommended  $I_F$  lies between Rated  $I_{\text{FT}}$  and absolute max.  $I_{\text{FT}}$ .

Note 3. Measured with input leads shorted together and output leads shorted together.

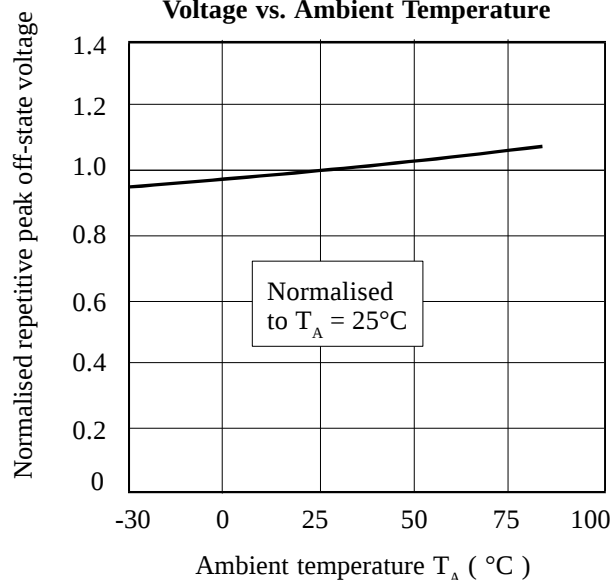
**FIGURE 1**



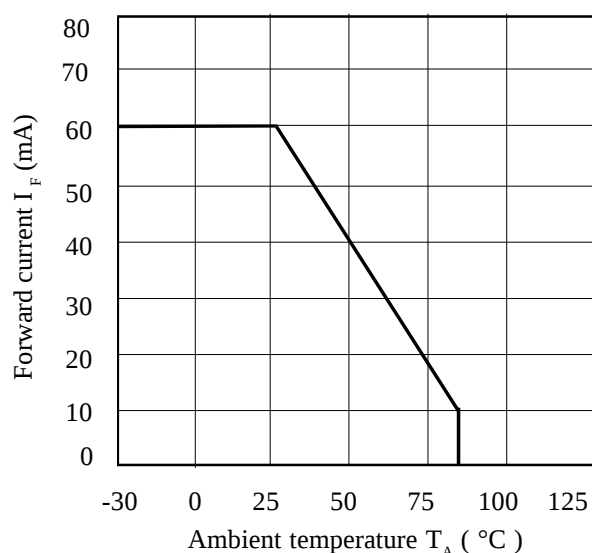
**RMS On-state Current vs. Ambient Temperature**



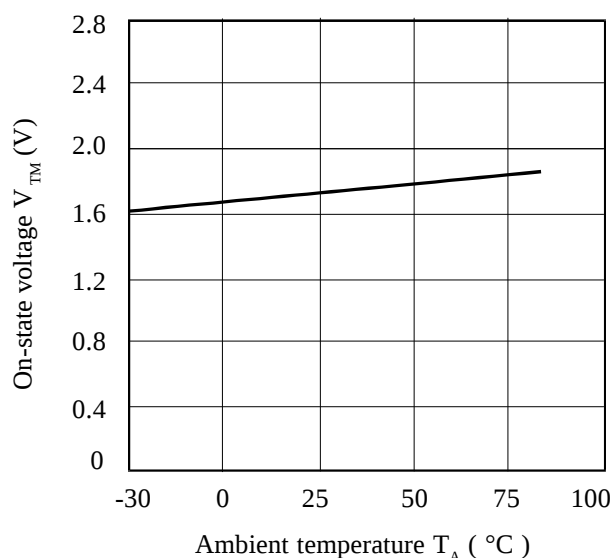
**Normalised Repetitive Peak Off-state Voltage vs. Ambient Temperature**



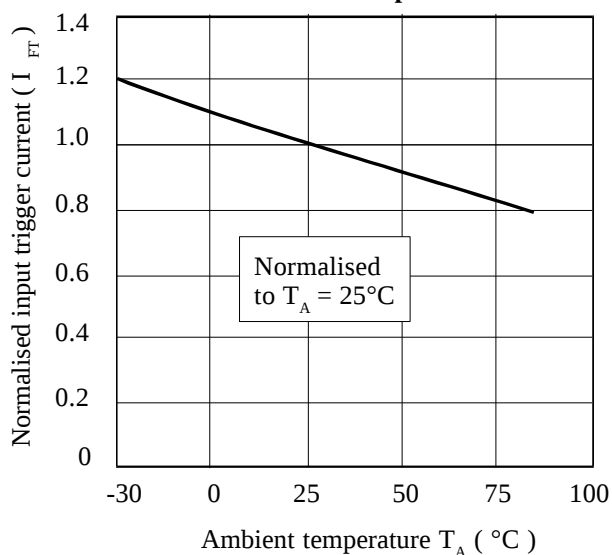
**Forward Current vs. Ambient Temperature**



**On-state Voltage vs. Ambient Temperature**



**Normalised Input Trigger Current vs. Ambient Temperature**



**On-state Current vs. On-state Voltage**

