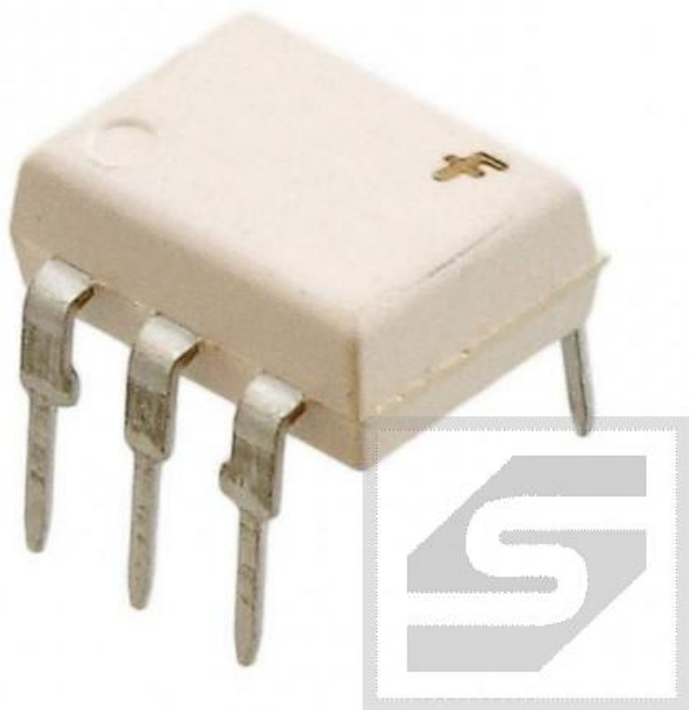




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# Optotriak MOC3010 QTC DIP6 RoHS



## Dane techniczne:

Nazwa: MOC3010

Typ elementu półprzewodnikowego: optotriak

Napięcie izolacji: 7,5kV

Napięcie wyjściowe: 250V

Rodzaj wyjścia: bez układu przełączania w zerze

Obudowa: DIP6

Napięcie wsteczne maksymalne: 3V

Prąd wyzwalań: 8mA

Montaż: THT

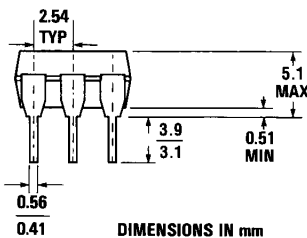
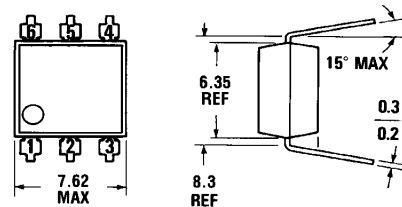
Liczba kanałów: 1

[www.podzespoly-elektroniczne.pl](http://www.podzespoly-elektroniczne.pl)

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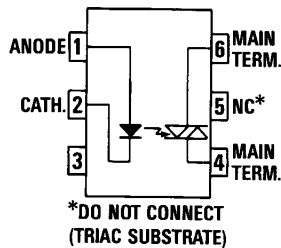
**MOC3009 MOC3010  
MOC3011 MOC3012**

**PACKAGE DIMENSIONS**



DIMENSIONS IN mm  
PACKAGE CODE E

ST1603-02



Equivalent Circuit

C2081

**DESCRIPTION**

The MOC3009, MOC3010, MOC3011 and MOC3012 are optically isolated triac driver devices. These devices contain a GaAs infrared emitting diode and a light activated silicon bilateral switch, which functions like a triac. This series is designed for interfacing between electronic controls and power triacs to control resistive and inductive loads for 120 VAC operations.

**FEATURES**

- Low input current required (typically 5mA—MOC3011)
- High isolation voltage—minimum 7500 VAC peak
- Underwriters Laboratory (UL) recognized—File E90700

**APPLICATIONS**

- Triac driver
- Industrial controls
- Traffic lights
- Vending machines
- Motor control
- Solid state relay

**ABSOLUTE MAXIMUM RATINGS**

**TOTAL PACKAGE**

|                                        |                          |
|----------------------------------------|--------------------------|
| Storage temperature                    | −55°C to 150°C           |
| Operating temperature                  | −40°C to 100°C           |
| Lead temperature<br>(soldering 10 sec) | 260°C                    |
| Withstand test voltage                 | 7500 VAC Peak (50-60 Hz) |

**INPUT DIODE**

|                                                    |            |
|----------------------------------------------------|------------|
| Forward DC current                                 | 50 mA      |
| Reverse voltage                                    | 3 V        |
| Peak forward current<br>(1 $\mu$ s pulse, 300 pps) | 3.0 A      |
| Power dissipation (25°C ambient)                   | 100 mW     |
| Derate linearly (above 25°C)                       | 1.33 mW/°C |

**OUTPUT DRIVER**

|                                                        |           |
|--------------------------------------------------------|-----------|
| Off-state output terminal voltage                      | 250 volts |
| On-state RMS current $T_A=25^\circ\text{C}$            | 100 mA    |
| (Full cycle, 50 to 60 Hz) $T_A=70^\circ\text{C}$       | 50 mA     |
| Peak nonrepetitive surge current<br>(PW=10 ms, DC=10%) | 1.2 A     |
| Total power dissipation @ $T_A=25^\circ\text{C}$       | 300 mW    |
| Derate above 25°C                                      | 4.0 mW/°C |



## NON-ZERO-CROSSING TRIACS

### ELECTRO-OPTICAL CHARACTERISTICS (25°C Temperature Unless Otherwise Specified)

#### INDIVIDUAL COMPONENT CHARACTERISTICS

| CHARACTERISTIC                          | SYMBOL           | MIN. | TYP. | MAX. | UNITS         | TEST CONDITIONS                           |
|-----------------------------------------|------------------|------|------|------|---------------|-------------------------------------------|
| <b>INPUT DIODE</b>                      |                  |      |      |      |               |                                           |
| Forward voltage                         | $V_F$            |      | 1.2  | 1.50 | V             | $I_F = 10 \text{ mA}$                     |
| Junction capacitance                    | $C_J$            |      | 50   |      | pF            | $V_F = 0 \text{ V}$ , $f = 1 \text{ MHz}$ |
| Reverse leakage current                 | $I_R$            |      |      | 100  | $\mu\text{A}$ | $V_R = 3.0 \text{ V}$                     |
| <b>OUTPUT DETECTOR</b>                  |                  |      |      |      |               |                                           |
| Peak blocking current, either direction | $I_{\text{DRM}}$ | —    |      | 100  | nA            | $V_{\text{DRM}} = 250 \text{ V}$ , Note 1 |
| Peak on-state voltage, either direction | $V_{\text{TM}}$  | —    | 2.0  | 3.0  | Volts         | $I_{\text{TM}} = 100 \text{ mA Peak}$     |

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

#### TRANSFER CHARACTERISTICS

| DC CHARACTERISTICS                                        | SYMBOL                  | MIN. | TYP. | MAX. | UNITS         | TEST CONDITIONS                                     |
|-----------------------------------------------------------|-------------------------|------|------|------|---------------|-----------------------------------------------------|
| LED trigger current<br>(current required to latch output) | MOC3009 $I_{\text{FT}}$ | —    | 15.0 | 30   | mA            | Main terminal<br>voltage = 3.0 V, $R_L = 150\Omega$ |
|                                                           | MOC3010 $I_{\text{FT}}$ | —    | 10.0 | 15   | mA            |                                                     |
|                                                           | MOC3011 $I_{\text{FT}}$ | —    | 5    | 10   | mA            |                                                     |
|                                                           | MOC3012 $I_{\text{FT}}$ | —    | —    | 5    | mA            |                                                     |
| Holding current                                           | $I_H$                   | —    | 100  | —    | $\mu\text{A}$ | Either direction                                    |

#### TRANSFER CHARACTERISTICS

| CHARACTERISTICS                              | SYMBOL | MIN. | TYP. | MAX. | UNITS            | TEST CONDITIONS                                                        |
|----------------------------------------------|--------|------|------|------|------------------|------------------------------------------------------------------------|
| <b>AC dv/dt RATING</b>                       |        |      |      |      |                  |                                                                        |
| Critical rate of rise of off-state voltage   | dv/dt  | —    | 12.0 | —    | V/ $\mu\text{s}$ | Static dv/dt (see Fig. 4)                                              |
| Critical rate of rise of commutating voltage | dv/dt  | —    | 0.2  | —    | V/ $\mu\text{s}$ | Commutating dv/dt<br>$I_{\text{LOAD}} = 15 \text{ mA}$<br>(see Fig. 4) |

#### ISOLATION CHARACTERISTICS

| CHARACTERISTICS       | SYMBOL           | MIN.      | TYP. | MAX. | UNITS                | TEST CONDITIONS                               |
|-----------------------|------------------|-----------|------|------|----------------------|-----------------------------------------------|
| Isolation voltage     | $V_{\text{ISO}}$ | 5300      |      |      | $V_{\text{AC RMS}}$  | $I_{\text{IO}} \leq 1 \mu\text{A}$ , 1 Minute |
|                       | $V_{\text{ISO}}$ | 7500      |      |      | $V_{\text{AC PEAK}}$ | $I_{\text{IO}} \leq 1 \mu\text{A}$ , 1 Minute |
| Isolation resistance  | $R_{\text{ISO}}$ | $10^{11}$ |      |      | ohms                 | $V_{\text{IO}} = 500 \text{ VDC}$             |
| Isolation capacitance | $C_{\text{ISO}}$ |           | 0.5  |      | pF                   | $f = 1 \text{ MHz}$                           |

**TYPICAL ELECTRICAL CHARACTERISTIC CURVES**

(25°C Free Air Temperature Unless Otherwise Specified)

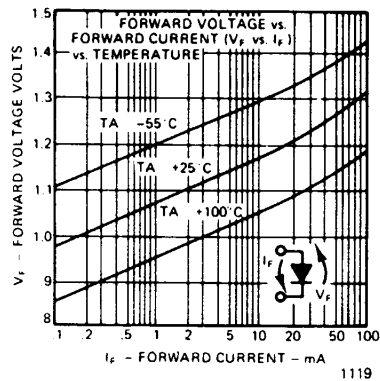


Fig. 1. Forward Voltage Drop vs. Forward Current

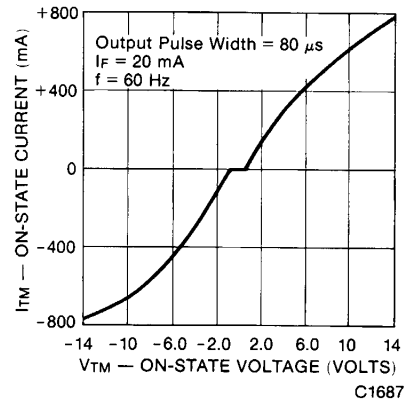


Fig. 2. On-State Characteristics

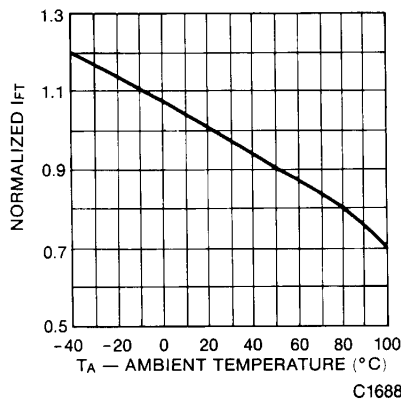


Fig. 3. Trigger Current vs. Temperature

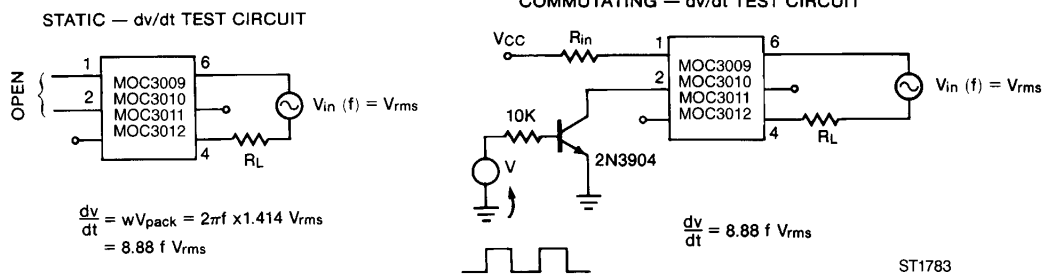
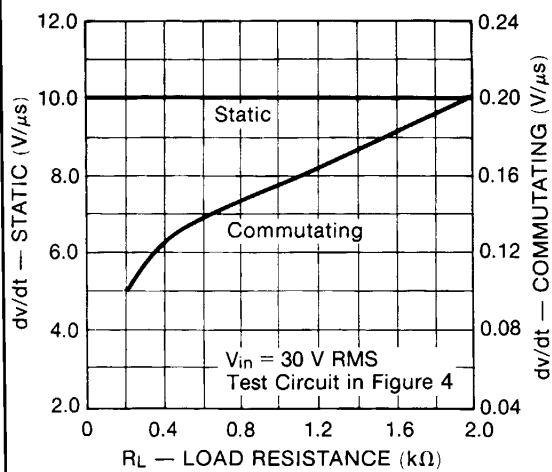


Fig. 4. dv/dt Test Circuits

ST1783

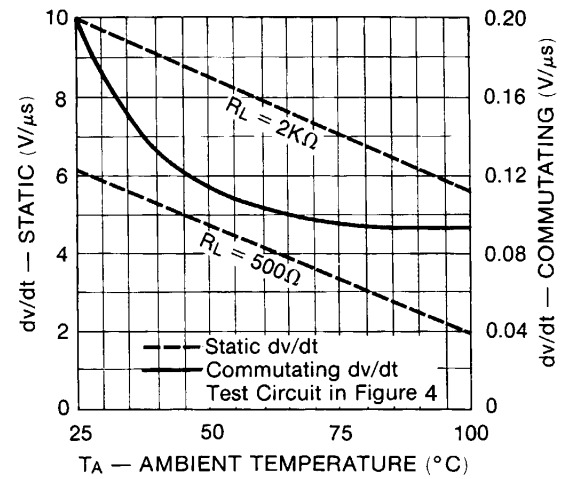
**TYPICAL ELECTRICAL CHARACTERISTIC CURVES**

(25°C Free Air Temperature Unless Otherwise Specified) (Cont'd)



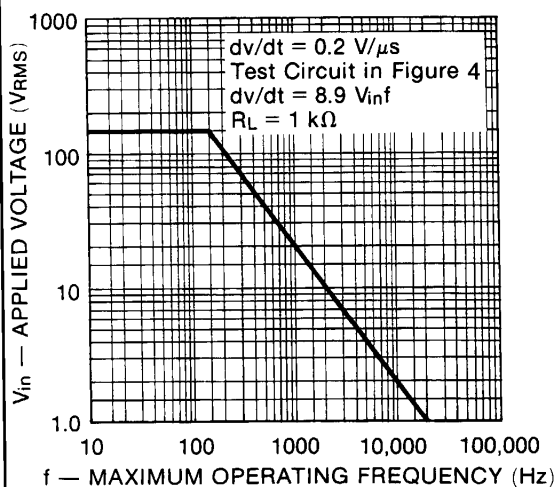
C1690

Fig. 5.  $dV/dt$  vs. Load Resistance



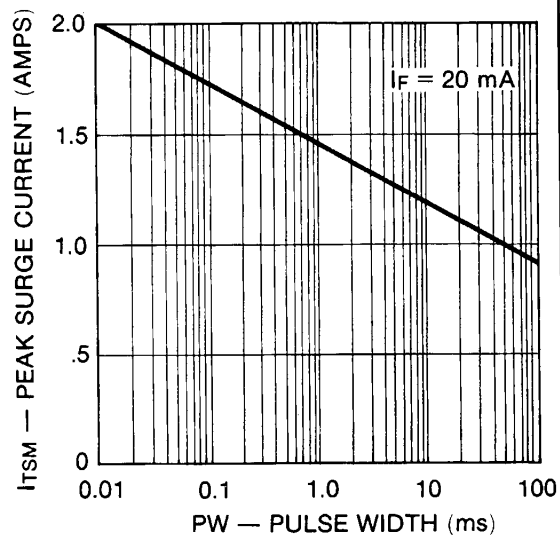
C1691

Fig. 6.  $dV/dt$  vs. Temperature



C1692

Fig. 7. Commutating  $dV/dt$  vs. Frequency



C1696

Fig. 8. Maximum Nonrepetitive Surge Current

**TYPICAL APPLICATION CIRCUITS**

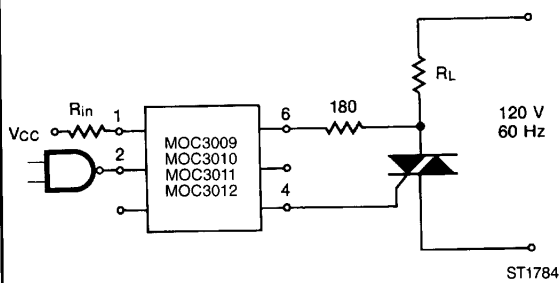


Fig. 9. Resistive Load

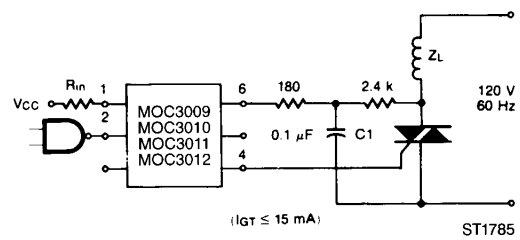


Fig. 10. Inductive Load With Sensitive Gate Triac

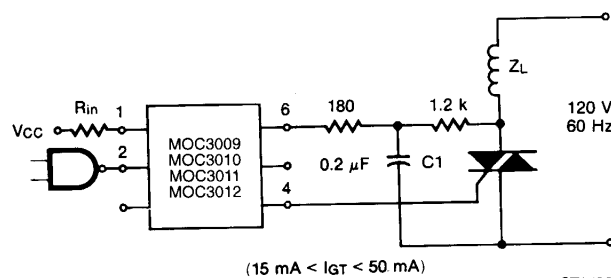


Fig. 11. Inductive Load With Non-Sensitive Gate Triac

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[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.