

# Photon Coupled Isolator MOC3020-MOC3023

Ga As Infrared Emitting Diode & Light Activated Triac Driver

The GE Solid State MOC3020-MOC3023 series consists of a gallium arsenide infrared emitting diode coupled with a light activated silicon bilateral switch, which functions like a triac, in a dual-in-line package.

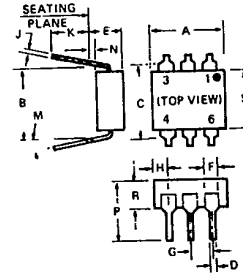
These devices are especially designed for triggering power triacs while maintaining dielectric isolation from the trigger control circuit. They are mounted in dual-in-line packages. These devices are also available in Surface-Mount packaging.



absolute maximum ratings: (25°C)

| INFRARED EMITTING DIODE                                 |      |            |
|---|------|------------|
| Power Dissipation                                       | *100 | milliwatts |
| Forward Current (Continuous)                            | 50   | milliamps  |
| Forward Current (Peak)<br>(Pulse width 1 μsec, 300 pps) | 3    | amperes    |
| Reverse Voltage   | 3    | volts      |

\*Derate 1.33mW/°C above 25°C ambient.



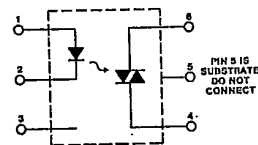
| OUTPUT DRIVER   |       |            |
|---|-------|------------|
| Off-State Output Terminal Voltage                           | 400   | Volts      |
| On-State RMS Current<br>(Full Cycle Sine Wave, 50 to 60 Hz) | 100   | milliamps  |
| Peak Nonrepetitive Surge Current<br>(PW = 10 ms, DC = 10%)  | 1.2   | amperes    |
| Total Power Dissipation @ T <sub>A</sub> = 25°C             | **300 | milliwatts |

\*\*Derate 4.0 mW/°C above 25°C ambient.

| SYMBOL | MILLIMETERS |      | INCHES    |      | NOTES |
|--------|-------------|------|-----------|------|-------|
|        | MIN.        | MAX. | MIN.      | MAX. |       |
| A      | 8.38        | 8.89 | .330      | .350 | 1     |
| B      | 7.62 REF.   | —    | .300 REF. | —    |       |
| C      | —           | 8.64 | —         | .340 | 2     |
| D      | .406        | .508 | 0.16      | .020 |       |
| E      | —           | 5.08 | —         | .200 | 3     |
| F      | 1.01        | 1.78 | .040      | .070 |       |
| G      | 2.28        | 2.80 | .090      | .110 | 4     |
| H      | —           | 2.16 | —         | .085 |       |
| J      | .203        | .305 | .008      | .012 | 4     |
| K      | 2.54        | —    | .100      | —    |       |
| M      | —           | 15°  | —         | 15°  | 4     |
| N      | .381        | —    | .015      | —    |       |
| P      | —           | 9.53 | —         | .375 | 4     |
| R      | 2.92        | 3.43 | .115      | .135 |       |
| S      | 6.10        | 6.86 | .240      | .270 |       |

- NOTES  
 1. INSTALLED POSITION LEAD CENTERS.  
 2. OVERALL INSTALLED DIMENSION.  
 3. THESE MEASUREMENTS ARE MADE FROM THE SEATING PLANE.  
 4. FOUR PLACES.

| TOTAL DEVICE                                  |   |
|---|---|
| Storage Temperature                           | -55°C to +150°C   |
| Operating Temperature                         | -40°C to +100°C   |
| Lead Soldering Time (at 260°C)                | 10 seconds  |
| Isolation Surge Voltage:<br>(Input to Output) | 7500VAC<br>(Peak AC Voltage, 60 Hz,<br>5 second duration) |



Covered under U.L. component recognition program, reference file E51868

T 41-87

Individual electrical characteristics (25°C)

| EMITTER                                       | SYMBOL | TYP. | MAX. | UNITS      |
|---|--------|------|------|------------|
| Forward Voltage<br>( $I_F = 10 \text{ mA}$ )  | $V_F$  | 1.2  | 1.5  | volts      |
| Reverse Current<br>( $V_R = 3 \text{ V}$ )    | $I_R$  | —    | 100  | microamps  |
| Capacitance<br>( $V = 0, f = 1 \text{ MHz}$ ) | $C_j$  | 50   | —    | picofarads |

| DETECTOR See Note 1  | SYMBOL    | TYP. | MAX. | UNITS                    |
|--|-----------|------|------|--------------------------|
| Peak Off-State Current $V_{DRM} = 400 \text{ V}$                     | $I_{DRM}$ | —    | 100  | nanoamps                 |
| Peak On-State Voltage $I_{TM} = 100 \text{ mA}$                      | $V_{TM}$  | 2.5  | 3.0  | volts                    |
| Critical Rate-of-Rise of Off-State Voltage $T_A = 85^\circ \text{C}$ | $dv/dt$   | 12.0 | —    | volts/ $\mu\text{sec}$ . |

coupled electrical characteristics (25°C)

|  | SYMBOL  | TYP.     | MAX. | UNITS        |
|--|---------|----------|------|--------------|
| IRED Trigger Current, Current Required to Latch Output<br>(Main Terminal Voltage = 3.0 V, $R_L = 150 \Omega$ ) | MOC3020 | $I_{FT}$ | —    | 30 milliamps |
|  | MOC3021 | $I_{FT}$ | —    | 15 milliamps |
|  | MOC3022 | $I_{FT}$ | —    | 10 milliamps |
|  | MOC3023 | $I_{FT}$ | —    | 5 milliamps  |
| Holding Current, Either Direction  | $I_H$   | 100      | —    | microamps    |

NOTE 1: Ratings apply to either polarity of Pin 6 — referenced to Pin 4.  
Voltages must be applied within  $dv/dt$  rating.