SOLID STATE OPTRONICS

# M250



1 Form A
Solid State Relay

RoHS compliant

## DESCRIPTION

The M250 is a bi-directional, single-pole, single-throw, normally open multipurpose solid-state relay in a 4-pin miniature small outline package. It is designed to replace electromechanical and reed relays in special applications that call for very fast switching rates. The relay consists of an integrated circuit that drives two special source-to-source enhancement type DMOS transistors with extremely low output capacitance and leakage current. The IC is optically coupled to a light emitting diode which controls its switching. The design of the circuit makes it ideal for switching high frequency signals.

## FEATURES

- Fast turn-on (50us TYP)
- Low output capacitance
- Ultra miniature 4-pin small outline package
- Low input control power consumption
- 35mA maximum continuous load current
- 300 ohms maximum on-resistance
- High input-to-output isolation (1.5kV MIN)
- Long life/high reliability

## APPLICATIONS

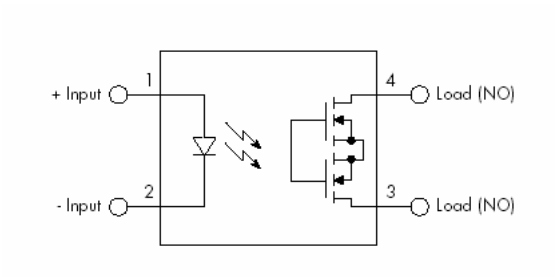
- Multiplexers
- Meter reading systems
- Data Acquisition
- Medical equipment
- Battery monitoring
- Home/Safety security systems

## OPTIONS/SUFFIXES*

- -TR Tape and Reel (2,000 pcs/reel)

NOTE: Suffixes listed above are not included in marking on device for part number identification.

## SCHEMATIC DIAGRAM




## ABSOLUTE MAXIMUM RATINGS*

| PARAMETER | UNIT | MIN | TYP | MAX |
|---|---|---|---|---|
| Storage Temperature | °C | -55 | | 125 |
| Operating Temperature | °C | -40 | | 125 |
| Continuous Forward Current | mA | | | 50 |
| Peak Forward Current (1us) | A | | | 1 |
| Reverse Input Control Voltage | V | | | 5 |
| Output Power Dissipation | mW | | | 400 |

*The values indicated are absolute stress ratings. Functional operation of the device is not implied at these or any conditions in excess of those defined in electrical characteristics section of this document. Exposure to Absolute Ratings may cause permanent damage to the device and may adversely affect reliability.

## APPROVALS

- UL / C-UL File # E201932

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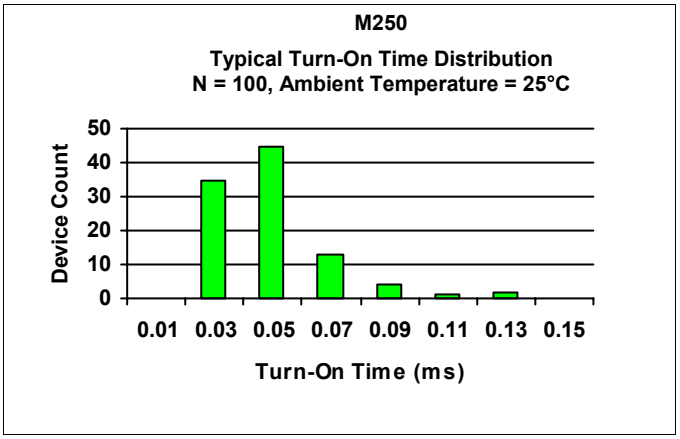

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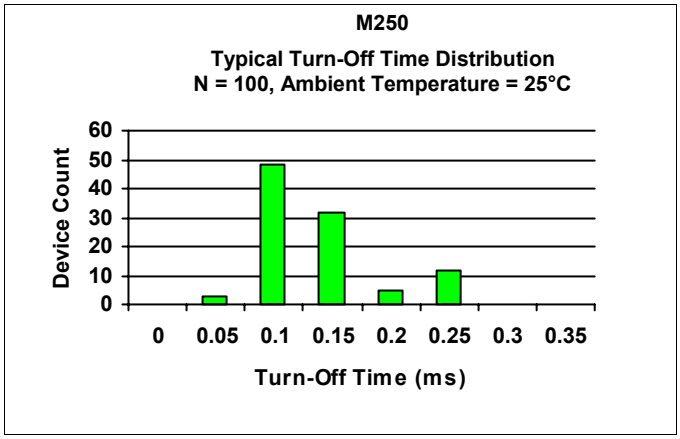
*ELECTRICAL CHARACTERISTICS - 25°C*

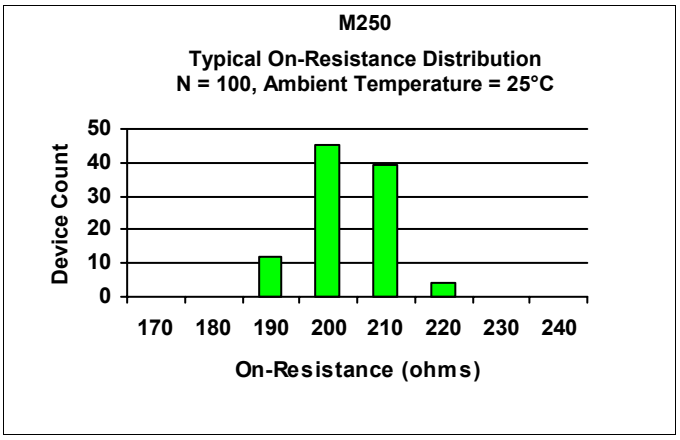
| PARAMETER | UNIT | MIN | TYP | MAX | TEST CONDITIONS |
|---|---|---|---|---|---|
| **INPUT SPECIFICATIONS** | | | | | |
| LED Forward Voltage | V | | 1.2 | 1.5 | If = 10mA |
| LED Reverse Voltage | V | 6 | 12 | | Ir = 10uA |
| Turn-On Current | m A | | 2.5 | 5 | Io = 35mA |
| Turn-Off Current | m A | | 0.5 | | |
| **OUTPUT SPECIFICATIONS** | | | | | |
| Blocking Voltage | V | 250 | | | Io = 1uA |
| Continuous Load Current | m A | | | 35 | If = 5mA |
| On-Resistance | Ω | | 225 | 300 | Io = 35mA |
| Leakage Current | n A | | 10 | 100 | Vo = 250V |
| Output Capacitance | p F | | 1.5 | 3 | Vo = 25V, f = 1.0MHz |
| Offset Voltage | m V | | | 0.2 | If = 5mA |
| **COUPLED SPECIFICATIONS** | | | | | |
| Isolation Voltage | V | 1500 | | | T = 1 minute |
| Turn-On Time | µ s | | 50 | 500 | If = 5mA, Io = 35mA |
| Turn-Off Time | µ s | | 150 | 500 | If = 0mA, Io = 35mA |
| Isolation Resistance | G Ω | 100 | | | |
| Coupled Capacitance | p F | | 3 | | |
| Contact Transient Ratio | V / µ s | 2000 | 7000 | | dV = 50V |

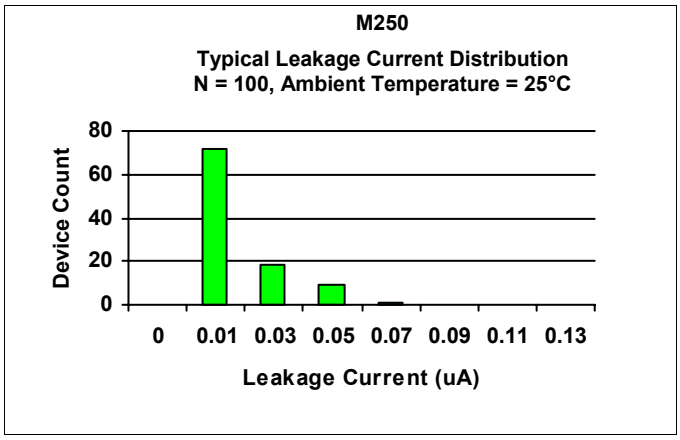
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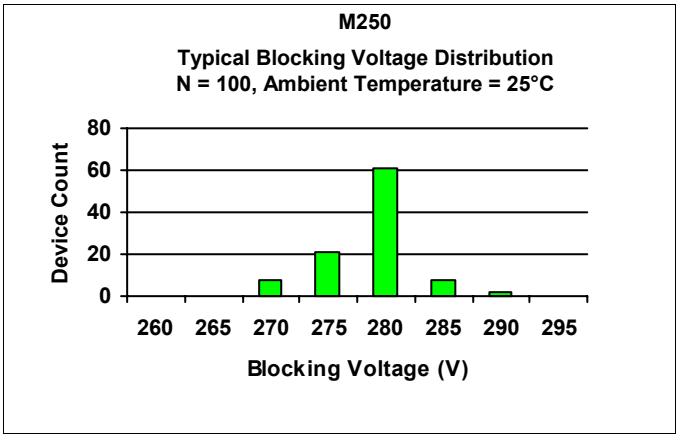
*PERFORMANCE DATA*

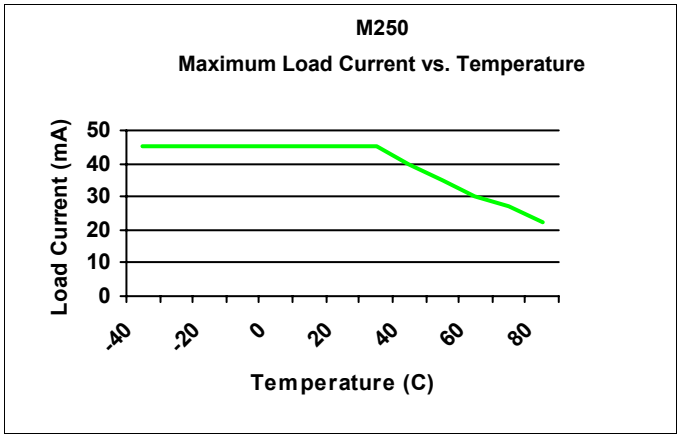


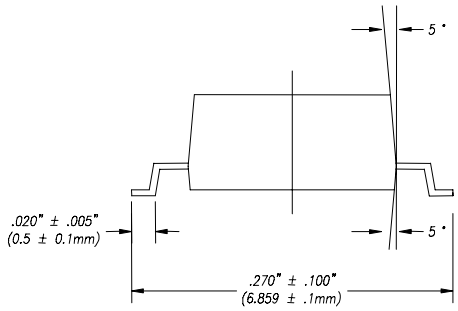



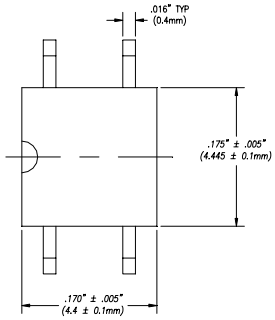



## *MECHANICAL DIMENSIONS*

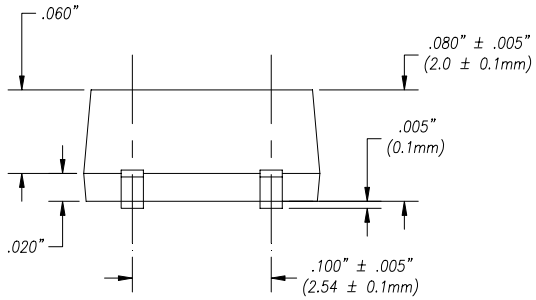
### *4 PIN SMALL OUTLINE PACKAGE*




*END VIEW*




*TOP VIEW*




*BACK VIEW*

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