

## Omron Electronic Components: The Quality, Flexibility and Global Support You Need

### An Experienced Partner

With over 70 years experience and 5.5 billion US dollars in sales, Omron is one of the world's largest suppliers of electronic controls and components. Our extensive investment in research, and our commitment to developing innovative products based on the latest technologies has established our position as a global market leader.

### Quality First: Our Commitment, Your Benefit

Omron Quality is a mandate, not an option. We 100% test each product and examine every physical, mechanical, and electrical parameter on the manufacturing line before it leaves the factory. All products are fully RoHS compliant.

### World Recognized Flexibility and Support

Omron offers over 300,000 products, product customization, and co-development options. We also provide a complete network of global and local sales and technical support to assist you from design to delivery.

### For More Detailed Information...

#### Visit Us Online: [www.components.omron.com](http://www.components.omron.com)

- Browse Omron's full range of Product information and selection guides.
- Download PDF's – datasheets, brochures, and more.
- Find Omron solutions for competitive products.
- Locate a Distributor and search for available inventory.

#### Call Us:

1-847-882-2288 Monday through Friday,  
7:30 a.m. to 6:00 p.m. Central Time (CT)

#### Email Us:

[components@omron.com](mailto:components@omron.com)

#### REQUIRED PRECAUTIONS

It is the buyer's sole responsibility to ensure that any omron product is fit and sufficient for use in a motorized vehicle application. Buyer shall be solely responsible for determining appropriateness of the particular product with respect to the buyer's application, end product, or system. Buyer shall take the application responsibility in all cases, but the following is a non-exhaustive list of applications for which particular attention must be given:

- Outdoor use; uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
- Use in consumer products or any use in significant quantities.
- Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Never use the product for an application involving serious risk to life or property or in large quantities without ensuring that the end product as a whole has been designed to address relevant risks, and that the omron product is properly rated and installed for its intended use.

#### OMRON ELECTRONIC COMPONENTS LLC

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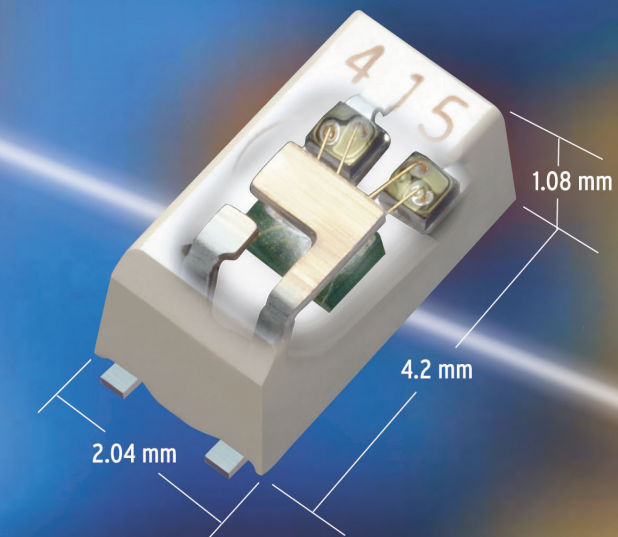


[www.components.omron.com/G3VM.shtm](http://www.components.omron.com/G3VM.shtm)

# G3VM Series MOS FET Relays

## Electronic Components

# 2.5pF·Ω



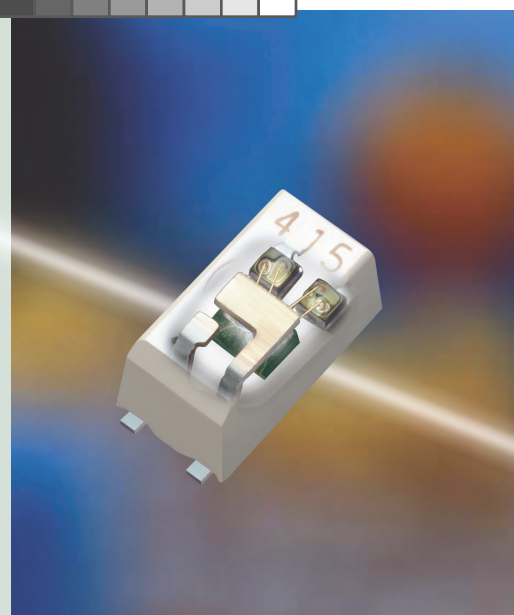
Omron *lowers the bar* by having the lowest CxR in the industry

Lowest CxR relay → 2.5pF·Ω  
Smallest SSOP MOS FET Relay in the world  
Fully RoHS compliant

J02C-E-02  
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Printed in U.S.A. 3/07

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# 2.5pF·Ω

## Omron lowers the bar... lowest CxR in the Industry!

### LR Series Key Features:

- Lowest ON-Resistance and Output Capacitance available.
- Smallest SSOP package in the world: 1.8mm H x 4.2mm L x 2.04mm W.
- Incredibly long life - Hundreds of millions of operations.
- Wide range of models available.

The Relay's Solid State design guarantees hundreds of millions of operations and switching speeds in the microseconds. The G3VM Series is cast in white resin for maximum performance and accuracy and requires very little power (3-5mA trigger current).

In addition to the LR series, Omron also offers a wide range of MOS FET relays. The G3VM-61BR/ER can handle a 2.5 Amp current load and has a typical ON-Resistance of 65mΩ. The G3VM-601BY/EY controls loads up to 600V and can withstand 10,000VAC for 1 second. Omron also offers relays with current-limiting options and Form-B configurations.

### Used in a variety of Industries

- With the performance, size and characteristics of the G3VM Series, these relays are used in a variety of industries:
- Test & Measurement
  - ATE Equipment
  - Instrumentation
  - Medical – Diagnostic, Ultrasound
  - Security – Alarms, Video Surveillance, Motion Sensors, Passive Infrared Sensors
  - Telecommunications

## Current Technology vs. The Advantages of Omron's MOS FET Relays

### Reed Relays

#### G3VM Series offers:

- Hundreds of millions of operations
- Lower operate power
- Smaller size/less board space
- Faster switching speed
- Greater resistance to shock/vibration
- Higher isolation voltages

### Photocouplers

#### G3VM Series offers:

- Linear ON-resistance
- High isolation voltage and increased sensitivity
- Capable of switching AC and DC loads
- Much higher voltage control

### Electromechanical Relays

#### G3VM Series offers:

- Hundreds of millions of operations
- Lower pick-up power
- Lower profile and smaller footprint
- High-speed operation
- Greater resistance to shock and vibration
- Higher isolation voltages

### Solid State Relays with Thyristor Output

#### G3VM Series offers:

- Linear ON-resistance
- Capable of switching AC and DC loads
- Capable of switching frequency loads
- No signal distortion

### Solid State Relays with BJT Output

#### G3VM Series offers:

- Lower ON-state offset voltages
- Minimal leakage current
- Better voltage control
- No signal distortion

### Solid State Relays with Triac Output

#### G3VM Series offers:

- Minimal leakage current
- Increased protection, eliminating the need for a snubber circuit
- No signal distortion



50 Relays actual size

### G3VM-LR Series (SSOP MOS FET Relays)

#### Actual Size

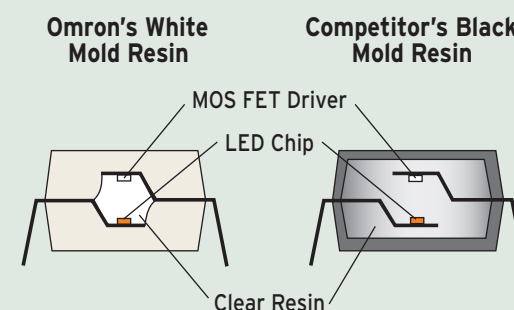
Type	Load Voltage	Load Current	R <sub>ON</sub> (typ)	C <sub>OFF</sub> (typ)	I <sub>LEAK</sub> (max.)	C x R (typ)
21LR10	20V	200mA	3.0Ω	0.8pF	10.0pA	2.4pF*Ω
21LR	20V	160mA	5.0Ω	1.0pF	1.0pA	5.0pF*Ω
21LR1	20V	450mA	1.0Ω	5.0pF	1.0pA	5.0pF*Ω
41LR11	40V	140mA	7.0Ω	0.7pF	10.0pA	4.9pF*Ω
41LR10	40V	120mA	12.0Ω	0.45pF	10.0pA	5.4pF*Ω
61LR	60V	400mA	1.0Ω	20.0pF	1.0uA	20.0pF*Ω
81LR	80V	120mA	7.5Ω	5.0pF	100pA	37.5pF*Ω

### G3VM-GR Series (SOP MOS FET RELAYS)

#### Actual Size

Type	Load Voltage	Load Current	R <sub>ON</sub> (typ)	C <sub>OFF</sub> (typ)	I <sub>LEAK</sub> (max.)	C x R (typ)
21GR	20V	160mA	8.0Ω	1.0pF	1.0nA	8.0pF*Ω
21GR1	20V	300mA	1.0Ω	5.0pF	1.0nA	5.0pF*Ω
41GR5	40V	250mA	1.0Ω	10.0pF	1.0nA	10.0pF*Ω
41GR6	40V	120mA	15.0Ω	1.0pF	1.0nA	15.0pF*Ω
61GR1	60V	1.0 Amp	0.5Ω	100.0pF	0.2nA	50.0pF*Ω
81GR1	80V	350mA	1.0Ω	50.0pF	0.2nA	50.0pF*Ω
81GR	80V	40mA	16.0Ω	2.5pF	1.0nA	40.0pF*Ω
81GR1	80V	200mA	5.0Ω	6.5pF	1.0nA	32.5pF*Ω

## For best performance – It must be white resin

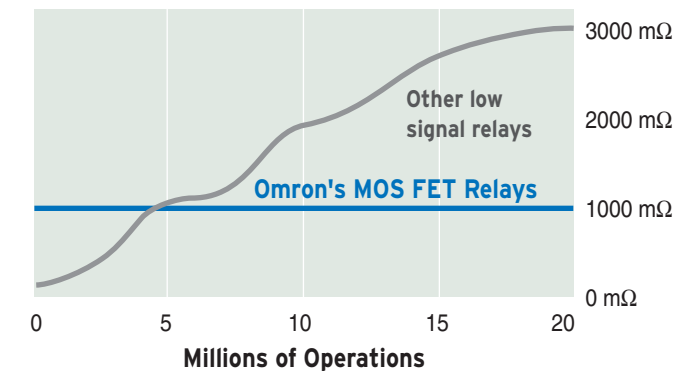


For maximum performance and accuracy, the G3VM is cast in white resin, which reflects more light from the LED chip to the MOS FET driver than black resin, which absorbs light. White resin also helps the relay dissipate heat more effectively.

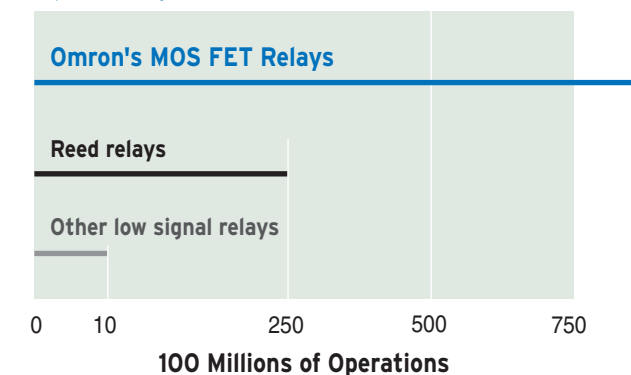
### 100,000 Hours And STILL Going!

An independent firm ran life tests on the only part of the G3VM that might possibly waver in performance – the LED chip. They simulated operation for a total of 100,000 hours (equivalent to more than 11 years!) and the G3VM was still operating successfully.

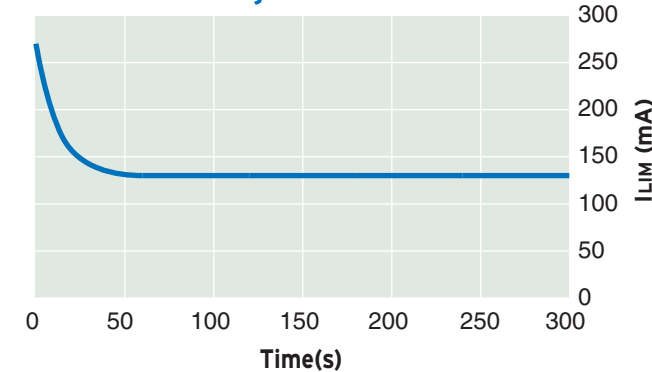
### Contact Resistance



### Operating Life



### Current Limiting Models



For a complete listing of Omron's G3VM Series of MOS FET Relays, visit us at [www.components.omron.com/G3VM.shtm](http://www.components.omron.com/G3VM.shtm) or contact Omron Electronic Components at 847-882-2288 today.