

MOS FET Relays

G3VM-355C/CR/F/FR

New MOS FET Relay with Both SPST-NO and SPST-NC Contacts Incorporated in a Single DIP Package

General-purpose Series Added

- SPST-NO/SPST-NC models now included in the 350-V load voltage series.
- Continuous load current of 120 mA (90 mA).
- Dielectric strength of 2,500 Vrms between I/O.
- General-purpose series (high ON-resistance) added.

Caution

Refer to "Common Precautions" on page 2.

Application Examples

- Measurement devices
- Security systems
- Amusement machines

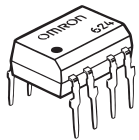
List of Models

| Contact form | Terminals | Load voltage (peak value) | Model | Minimum packaging unit | | |
|-----------------|----------------------------|---------------------------|----------------|------------------------|-----------------|-------|
| | | | | Number per stick | Number per tape | |
| SPST-NO/SPST-NC | PCB terminals | 350 V AC | G3VM-355CR | 50 | --- | |
| | | | G3VM-355C | | | |
| | | | G3VM-355FR | | | |
| | Surface-mounting terminals | | G3VM-355F | --- | | 1,500 |
| | | | G3VM-355FR(TR) | | | |
| | | | G3VM-355F(TR) | | | |

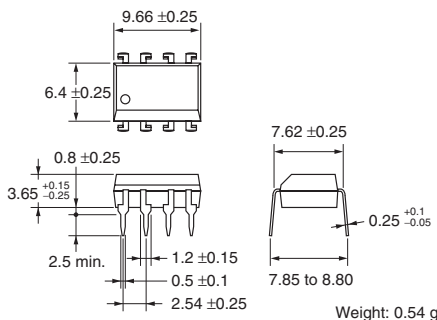
Dimensions

Note: All units are in millimeters unless otherwise indicated.

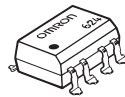
G3VM-355C/CR



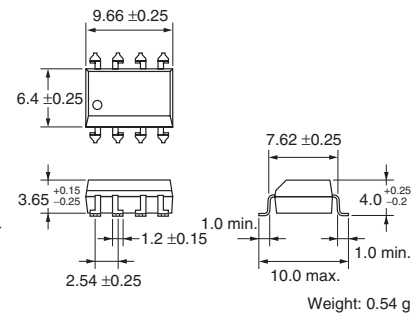
Note: The actual product is marked differently from the image shown here.



G3VM-355F/FR

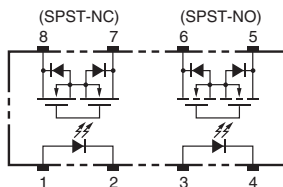


Note: The actual product is marked differently from the image shown here.

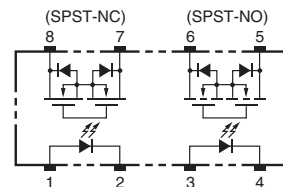


Terminal Arrangement/Internal Connections (Top View)

G3VM-355C/CR

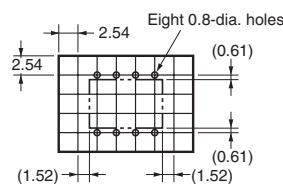


G3VM-355F/FR



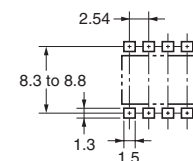
PCB Dimensions (Bottom View)

G3VM-355C/CR



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-355F/FR



■ Absolute Maximum Ratings (Ta = 25°C)

| Item | Symbol | Rating | Unit | Measurement Conditions | |
|--|-------------------------------------|--------------------------------|------------|------------------------|-------------------------------|
| Input | LED forward current | I_F | 50 | mA | |
| | Repetitive peak LED forward current | I_{FP} | 1 | A | 100 μ s pulses, 100 pps |
| | LED forward current reduction rate | $\Delta I_F/^\circ\text{C}$ | -0.5 | mA/°C | Ta \geq 25°C |
| | LED reverse voltage | V_R | 5 | V | |
| | Connection temperature | T_J | 125 | °C | |
| Output | Output dielectric strength | V_{OFF} | 350 | V | |
| | Continuous load current | I_O | 120 (100) | mA | |
| | ON current reduction rate | $\Delta I_{ON}/^\circ\text{C}$ | -1.2 (-1) | mA/°C | Ta \geq 25°C |
| | Connection temperature | T_J | 125 | °C | |
| Dielectric strength between input and output (See note 1.) | | $V_{I,O}$ | 2,500 | Vrms | AC for 1 min |
| Operating temperature | | T_a | -40 to 85 | °C | With no icing or condensation |
| Storage temperature | | T_{stg} | -55 to 125 | °C | With no icing or condensation |
| Soldering temperature (10 s) | | --- | 260 | °C | 10 s |

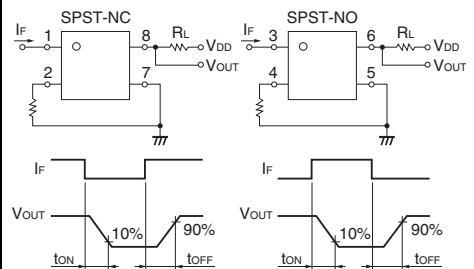
Note 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

Values inside parentheses () are for G3VM-355C/F.

■ Electrical Characteristics (Ta = 25°C)

| Item | Symbol | Minimum | Typical | Maximum | Unit | Measurement conditions | |
|--------------------------------|--|------------|---------|---------|---------|------------------------|--|
| Input | LED forward voltage | V_F | 1.0 | 1.15 | 1.3 | V | $I_F = 10$ mA |
| | Reverse current | I_R | --- | --- | 10 | μ A | $V_R = 5$ V |
| | Capacity between terminals | C_T | --- | 30 | --- | pF | V = 0, f = 1 MHz |
| | Trigger LED forward current | I_{FT} | --- | 1 | 3 | mA | SPST-NO: $I_O = 120$ mA SPST-NC: $I_{OFF} = 10$ μ A |
| Output | Maximum resistance with output ON | R_{ON} | --- | 15 (40) | 25 (50) | Ω | SPST-NO: $I_F = 5$ mA, $I_O = 120$ mA SPST-NC: $I_F = 0$ mA, $I_O = 120$ mA |
| | Current leakage when the relay is open | I_{LEAK} | --- | --- | 1.0 | μ A | $V_{OFF} = 350$ V |
| Capacity between I/O terminals | | $C_{I,O}$ | --- | 0.8 | --- | pF | f = 1 MHz, $V_S = 0$ V |
| Insulation resistance | | $R_{I,O}$ | 1,000 | --- | --- | M Ω | $V_{I,O} = 500$ V DC, $R_{OH} \leq 60\%$ |
| Turn-ON time | SPST-NO | t_{ON} | --- | (0.3) | 1.0 | ms | $I_F = 5$ mA, $R_L = 200$ Ω , $V_{DD} = 20$ V (See note 2.) |
| | SPST-NC | t_{ON} | --- | (0.25) | 1.0 | ms | |
| Turn-OFF time | SPST-NO | t_{OFF} | --- | (0.15) | 1.0 | ms | |
| | SPST-NC | t_{OFF} | --- | (0.5) | 3.0 (1) | ms | |

Note 2. Turn-ON and Turn-OFF Times



Values inside parentheses () are for G3VM-355C/F.

■ Recommended Operating Conditions

Use the G3VM under the following conditions so that the Relay will operate properly.

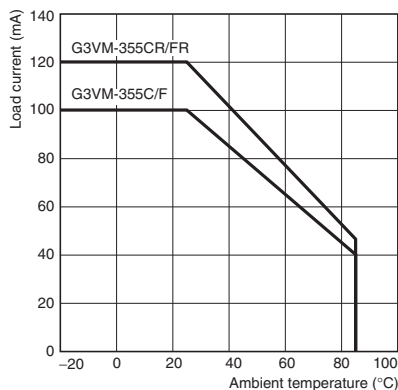
| Item | Symbol | Minimum | Typical | Maximum | Unit |
|-------------------------------|----------|---------|---------|-----------|------|
| Output dielectric strength | V_{DD} | --- | --- | 280 | V |
| Operating LED forward current | I_F | 5 | --- | 25 | mA |
| Continuous load current | I_O | --- | --- | 120 (100) | mA |
| Operating temperature | T_a | -20 | --- | 65 | °C |

Values inside parentheses () are for G3VM-355C/F.

■ Engineering Data

Load Current vs. Ambient Temperature

G3VM-355C/F
G3VM-355CR/FR



■ Safety Precautions

Refer to page 2 for precautions common to all G3VM models.