

G3VM-□AY□/□DY□

MOS FET Relays Small DIP4 package with High dielectric strength type

Small DIP4 package with Dielectric Strength of 5,000 VAC between I/O

- Load voltage 40V/60V/200V/350V/400V/600V
- High-temperature type which can withstand temperatures up to 110°C is added to the product lineup



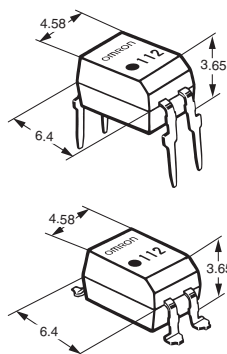
Note: The actual product is marked differently from the image shown here.

Refer to "Common Precautions".

Application Examples

- Smart meter
- PLC
- Security equipment
- Communication equipment

Package (Unit : mm, Average)



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

Model Number Legend

G3VM-□□□□□
1 2 3 4 5

1. Load Voltage

4: 40V
6: 60V
20: 200V
35: 350V
40: 400V
60: 600V

2. Contact form

1: 1a (SPST-NO)

3. Package type

A: DIP4 pin PCB terminals
D: DIP4 pin Surface-mounting Terminals

4. Additional functions

Y: Dielectric strength between I/O above 2,500V type

5. Other informations

When specifications overlap, serial code is added in the recorded order.

Ordering Information

Standard Type

Package type	Contact form	Load voltage (peak value) *	Continuous load current (peak value) *	Packing/Tube			Packing/Tape & reel	
				Model		Minimum package quantity	Model	Minimum package quantity
				PCB terminals	Surface-mounting Terminals		Surface-mounting Terminals	
DIP4	1a	40V	2000mA	G3VM-41AY1	G3VM-41DY1	100 pcs.	G3VM-41DY1(TR05)	500 pcs.
		60V	500mA	G3VM-61AY1	G3VM-61DY1		G3VM-61DY1(TR05)	
		200V	250mA	G3VM-201AY1	G3VM-201DY1		G3VM-201DY1(TR05)	
		350V	100mA	G3VM-351AY1	G3VM-351DY1		G3VM-351DY1(TR05)	
		400V	120mA	G3VM-401AY1	G3VM-401DY1		G3VM-401DY1(TR05)	
		600V	90mA	G3VM-601AY1	G3VM-601DY1		G3VM-601DY1(TR05)	

High Temperature Type

Package type	Contact form	Load voltage (peak value) *	Continuous load current (peak value) *	Packing/Tube			Packing/Tape & reel	
				Model		Minimum package quantity	Model	Minimum package quantity
				PCB terminals	Surface-mounting Terminals		Surface-mounting Terminals	
DIP4	1a	400V	120mA	G3VM-401AY2	G3VM-401DY2	100 pcs.	G3VM-401DY2(TR05)	500 pcs.
		600V	90mA	G3VM-601AY2	G3VM-601DY2		G3VM-601DY2(TR05)	

Note: To order tape packaging for Relays with surface-mounting terminals, and "(TR05)" to the end of the model number.

* The AC peak and DC value are given for the load voltage and continuous load current.

■Absolute Maximum Ratings (Ta = 25°C)

●Standard Type

Item		Symbol	G3VM-41AY1 G3VM-41DY1	G3VM-61AY1 G3VM-61DY1	G3VM-201AY1 G3VM-201DY1	G3VM-351AY1 G3VM-351DY1	G3VM-401AY1 G3VM-401DY1	G3VM-601AY1 G3VM-601DY1	Unit	Measurement conditions
Input	LED forward current	IF	30						mA	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.3						mA/°C	Ta≥25°C
	LED reverse voltage	VR	5						V	
	Junction temperature	TJ	125						°C	
Output	Load voltage (AC peak/DC)	V _{OFF}	40	60	200	350	400	600	V	
	Continuous load current (AC peak/DC)	Io	2,000	500	250	100	120	90	mA	
	ON current reduction rate	$\Delta I_o/^\circ\text{C}$	-20	-5	-2.5	-1	-1.2	-0.9	mA/°C	Ta≥25°C
	Pulse ON current	Iop	6	1.5	0.75	0.3	0.36	0.27	A	t=100ms, Duty=1/10
	Junction temperature	TJ	125						°C	
Dielectric strength between I/O *		VI-O	5,000						Vrms	AC for 1 min
Ambient operating temperature		Ta	-40~+85						°C	With no icing or condensation
Ambient storage temperature		Tstg	-55~+125						°C	
Soldering temperature		—	260						°C	10s

●High Temperature Type

Item		Symbol	G3VM-401AY2 G3VM-401DY2	G3VM-601AY2 G3VM-601DY2	Unit	Measurement conditions
Input	LED forward current	I _F	30		mA	
	LED forward current reduction rate	ΔI _F /°C	-1.2		mA/°C	Ta≥100°C
	LED reverse voltage	V _R	6		V	
	Junction temperature	T _J	125		°C	
Output	Load voltage (AC peak/DC)	V _{OFF}	400	600	V	
	Continuous load current (AC peak/DC)	I _o	120	90	mA	
	ON current reduction rate	ΔI _o /°C	-1.2	-0.9	mA/°C	Ta≥25°C
	Pulse ON current	I _{op}	0.36	0.27	A	t=100ms, Duty=1/10
	Junction temperature	T _J	125		°C	
	Dielectric strength between I/O *	V _{I-O}	5,000		Vrms	AC for 1 min
	Ambient operating temperature	T _a	-40~-+110		°C	With no icing or condensation
	Ambient storage temperature	T _{stg}	-55~-+125			
	Soldering temperature	-	260			

* 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.

■Electrical Characteristics (Ta = 25°C)

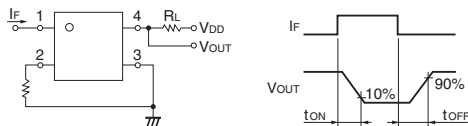
●Standard Type

Item			Symbol		G3VM-41AY1 G3VM-41DY1	G3VM-61AY1 G3VM-61DY1	G3VM-201AY1 G3VM-201DY1	G3VM-351AY1 G3VM-351DY1	G3VM-401AY1 G3VM-401DY1	G3VM-601AY1 G3VM-601DY1	Unit	Measurement conditions	
Input	LED forward voltage	V _F	Minimum	1.1							V	I _F =10mA	
			Typical	1.27									
			Maximum	1.4									
	Reverse current	I _R	Maximum	10							μA	V _R =5V	
	Capacitance between terminals	C _T	Typical	50							pF	V=0V, f=1MHz	
	Trigger LED forward current	I _{FT}	Typical	0.5	0.6				0.5	mA	G3VM-41AY1/DY1 : I _o =1A Others : I _o =Continuous load current ratings		
Maximum			3										
	Release LED forward current	I _{FC}	Minimum	0.1							mA	I _{OFF} =10μA	
Output	Maximum resistance with output ON	R _{ON}	Typical	0.09(0.06)	0.6	5	35(25)	22(17)	45(30)	Ω	I _F =5mA, I _o =Continuous load current ratings (value at t<1s)		
			Maximum	0.15(0.10)	2	8	50(35)	35(28)	60(40)				
	Current leakage when the relay is open	I _{LEAK}	Maximum	1							μA	V _{OFF} =Load voltage ratings	
	Capacitance between terminals	C _{OFF}	Typical	300	130	90	30	80	75	pF	V=0V, f=1MHz		
Capacitance between I/O terminals			C _{I-O}	Typical	0.8							pF	V _s =0V, f=1MHz
Insulation resistance between I/O terminals			R _{I-O}	Minimum	1000							MΩ	V _{I-O} =500VDC, R _{oH} ≤60%
				Typical	10 ⁸								
Turn-ON time			t _{ON}	Typical	2.8	1		0.3	0.6	0.5	ms	G3VM-41AY1/DY1 : R _L =200Ω, I _F =10mA, V _{DD} =20V G3VM-601AY1/DY1 : R _L =200Ω, I _F =5mA, V _{DD} =10V Others : R _L =200Ω, I _F =5mA, V _{DD} =20V *	
				Maximum	5	3		2					
Turn-OFF time			t _{OFF}	Typical	0.3	0.2	0.1		0.2				
				Maximum	1								

●High Temperature Type

Item		Symbol		G3VM-401AY2 G3VM-401DY2		G3VM-601AY2 G3VM-601DY2		Unit	Measurement conditions
Input	LED forward voltage	V _F	Minimum	—		—		V	I _F =10mA
			Typical	1.27					
			Maximum	1.5					
	Reverse current	I _R	Maximum	10				μA	V _R =6V
	Capacitance between terminals	C _T	Typical	50				pF	V=0V, f=1MHz
	Trigger LED forward current	I _{FT}	Typical	0.6		0.5		mA	I _O =Continuous load current ratings
			Maximum	2					
Release LED forward current	I _{FC}	Minimum	0.1				mA	I _{OFF} =10μA	
Output	Maximum resistance with output ON	R _{ON}	Typical	22(17)		45(30)		Ω	I _F =5mA, I _O =Continuous load current ratings (value at t<1s)
			Maximum	35(28)		60(40)			
	Current leakage when relay is open	I _{LEAK}	Maximum	1				μA	V _{OFF} =Load voltage ratings
	Capacitance between terminals	C _{OFF}	Typical	80		75		pF	V=0V, f=1MHz
Capacitance between I/O terminals		C _{I-O}	Typical	0.8				pF	V _S =0V, f=1MHz
Insulation resistance between I/O terminals		R _{I-O}	Minimum	1000				MΩ	V _{I-O} =500VDC, RoH≤60%
			Typical	10 ⁸					
Turn-ON time		t _{ON}	Typical	0.2				ms	G3VM-601AY2/DY2 R _L =200Ω, I _F =5mA, V _{DD} =10V G3VM-401AY2/DY2 R _L =200Ω, I _F =5mA, V _{DD} =20V
			Maximum	1		0.5			
Turn-OFF time		t _{OFF}	Typical	0.2		0.1			
			Maximum	0.5		0.2			

* Turn-ON and Turn-OFF Times



Recommended Operating Conditions

For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.
Each item on this list is an independent condition, it does not satisfy several conditions simultaneously.

Standard Type

Item	Symbol		G3VM-41AY1 G3VM-41DY1	G3VM-61AY1 G3VM-61DY1	G3VM-201AY1 G3VM-201DY1	G3VM-351AY1 G3VM-351DY1	G3VM-401AY1 G3VM-401DY1	G3VM-601AY1 G3VM-601DY1	Unit
Load voltage (AC peak/DC)	V _{DD}	Maximum	32	48	160	280	320	480	V
Operating LED forward current	I _F	Minimum	5						mA
		Typical	7.5						
		Maximum	25						
Continuous load current (AC peak/DC)	I _O	Maximum	2000	500	250	100	120	90	
Ambient operating temperature	T _a	Minimum	−20						°C
		Maximum	65						

High Temperature Type

Item	Symbol		G3VM-401AY2 G3VM-401DY2	G3VM-601AY2 G3VM-601DY2	Unit
Load voltage (AC peak/DC)	V _{DD}	Maximum	320	480	V
Operating LED forward current	I _F	Minimum	5		mA
		Typical	7.5		
		Maximum	25		
Continuous load current (AC peak/DC)	I _o	Maximum	120	90	
Ambient operating temperature	T _a	Minimum	−20		°C
		Maximum	100		

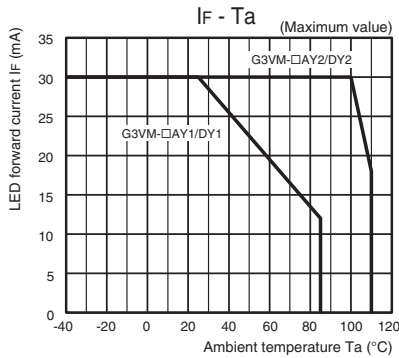
Spacing and Insulation

Standard Type, High Temperature Type

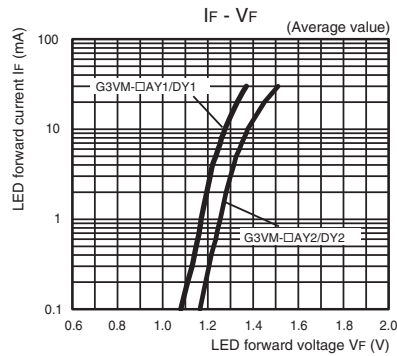
Item		Standard	Unit
Creepage distances	Minimum	7.0	mm
Clearance distances	Minimum	7.0	
Internal isolation thickness	Minimum	0.4	

Engineering Data

LED forward current vs. Ambient temperature

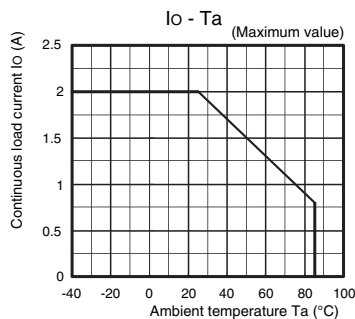


LED forward current vs. LED forward voltage

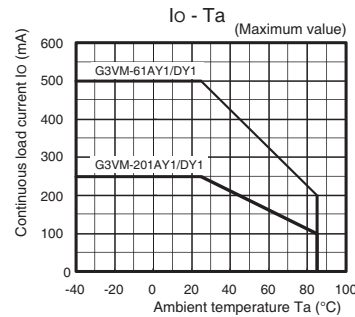


Continuous load current vs. Ambient temperature

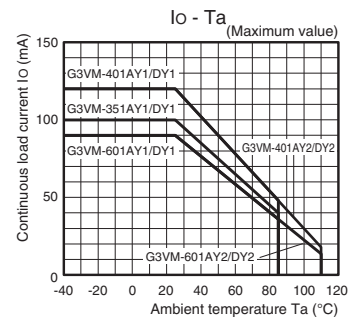
G3VM-41AY1/DY1



G3VM-61AY1/DY1
G3VM-201AY1/DY1

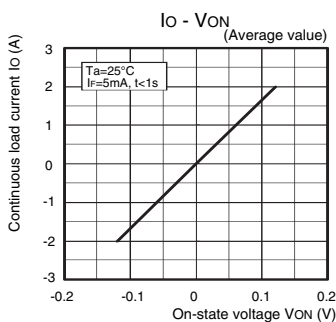


G3VM-351AY1/DY1
G3VM-401AY1/DY1/AY2/DY2
G3VM-601AY1/DY1/AY2/DY2

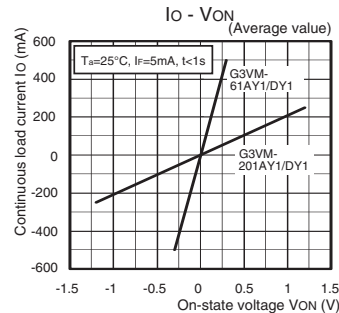


Continuous load current vs. On-state voltage

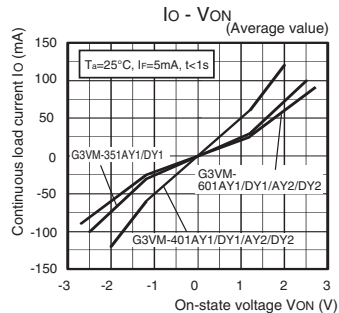
G3VM-41AY1/DY1



G3VM-61AY1/DY1
G3VM-201AY1/DY1

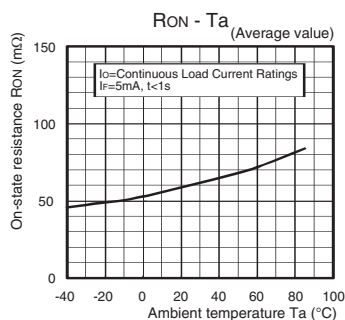


G3VM-351AY1/DY1
G3VM-401AY1/DY1/AY2/DY2
G3VM-601AY1/DY1/AY2/DY2

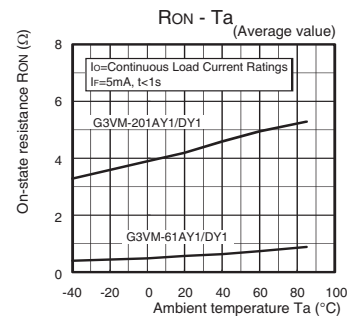


On-state resistance vs. Ambient temperature

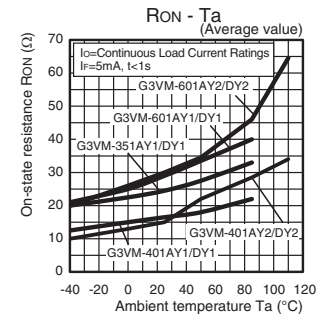
G3VM-41AY1/DY1



G3VM-61AY1/DY1
G3VM-201AY1/DY1



G3VM-351AY1/DY1
G3VM-401AY1/DY1/AY2/DY2
G3VM-601AY1/DY1/AY2/DY2



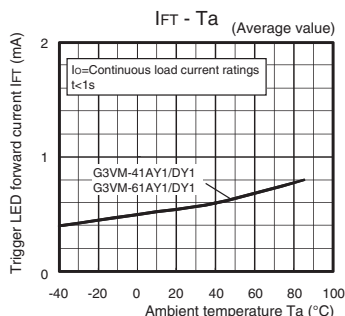
Engineering Data

●Trigger LED forward current vs.

Ambient temperature

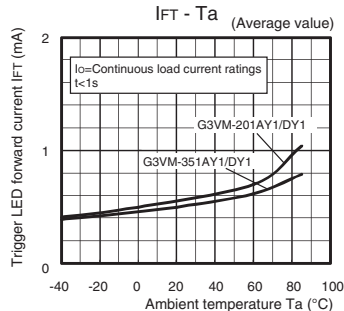
G3VM-41AY1/DY1

G3VM-61AY1/DY1



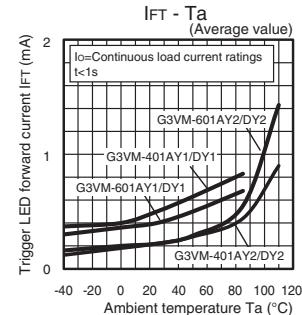
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G3VM-351AY1/DY1



G3VM-401AY1/DY1/AY2/DY2

G3VM-601AY1/DY1/AY2/DY2

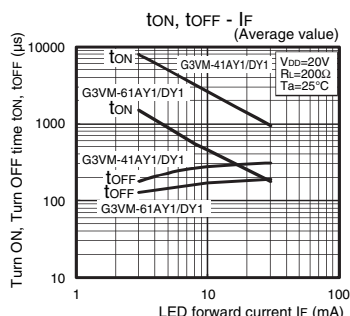


●Turn ON, Turn OFF time vs.

LED forward current

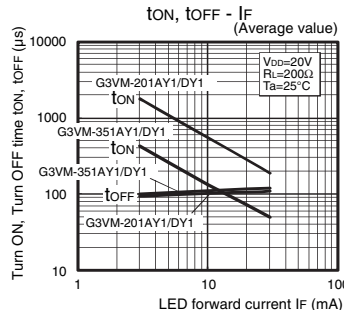
G3VM-41AY1/DY1

G3VM-61AY1/DY1



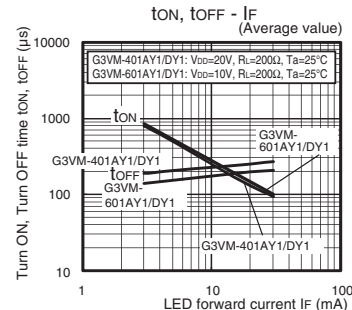
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G3VM-351AY1/DY1



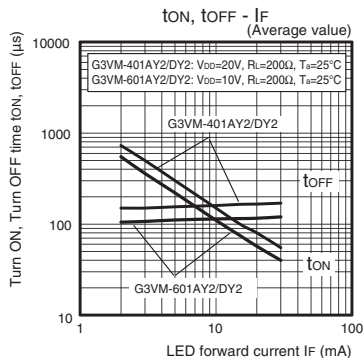
G3VM-401AY1/DY1

G3VM-601AY1/DY1



G3VM-401AY2/DY2

G3VM-601AY2/DY2

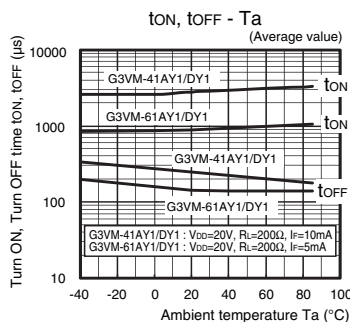


●Turn ON, Turn OFF time vs.

Ambient temperature

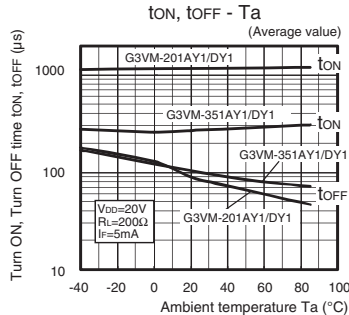
G3VM-41AY1/DY1

G3VM-61AY1/DY1



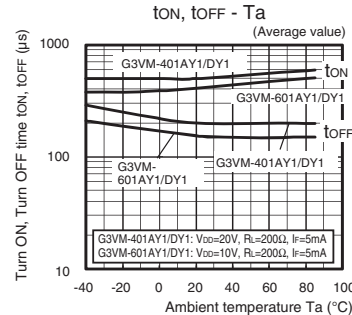
G3VM-201AY1/DY1

G3VM-351AY1/DY1



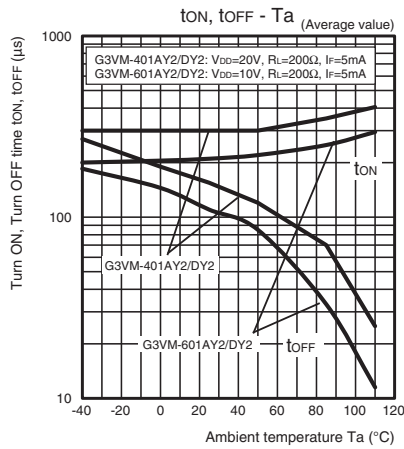
G3VM-401AY1/DY1

G3VM-601AY1/DY1

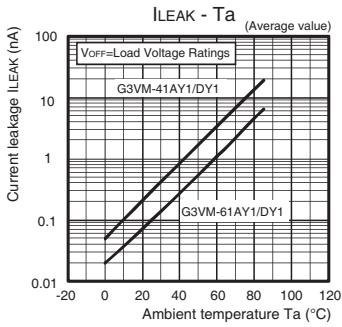


Engineering Data

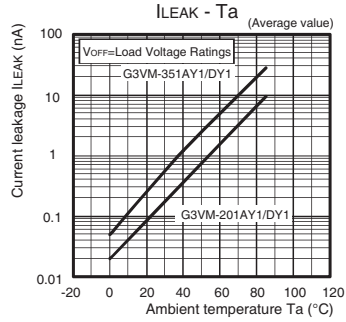
●Turn ON, Turn OFF time vs.
Ambient temperature
G3VM-401AY2/DY2
G3VM-601AY2/DY2



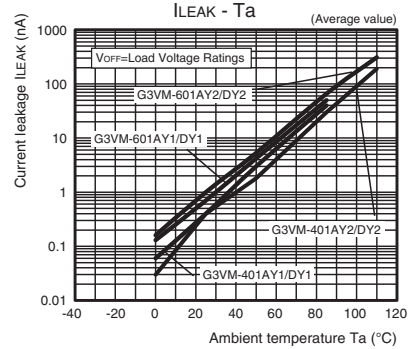
●Current leakage vs.
Ambient temperature
G3VM-41AY1/DY1
G3VM-61AY1/DY1



G3VM-201AY1/DY1
G3VM-351AY1/DY1



G3VM-401AY1/DY1/AY2/DY2
G3VM-601AY1/DY1/AY2/DY2

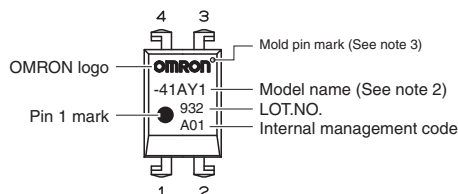


■Apperance/Terminal Arrangement/Internal Connections

■Apperance

DIP (Dual Inline Package)

DIP4

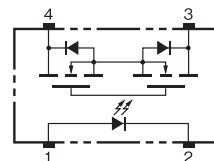


Note 1. The actual product is marked differently from the image shown here.

Note 2. "G3VM" does not appear in the model number on the relay.

Note 3. The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

■ Terminal Arrangement/Internal Connections

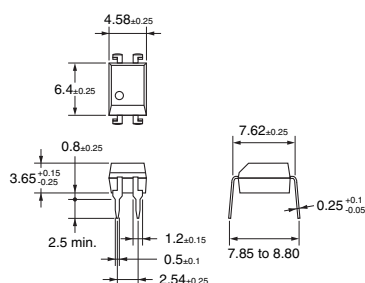


■Dimensions (Unit: mm)



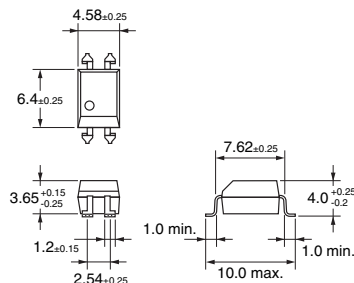
PCB Terminals

Weight: 0.25 g

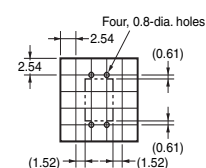


Surface-mounting Terminals

Weight: 0.25 g

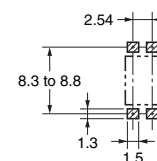


PCB Dimensions (BOTTOM VIEW)



Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)



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

■Approved Standards

UL recognized

●Standard Type, High Temperature Type

Approved Standards	Contact form	File No.
UL recognized	1a (SPST-NO)	E80555

■Safety Precautions

- Refer to "Common Precautions" for all G3VM models.

Please check each region's Terms & Conditions by region website.

OMRON Corporation

Electronic and Mechanical Components Company

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