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
- Standard type: Trigger LED forward current 3mA (max.)
- High sensitive type: Trigger LED forward current 2mA (max.)

RoHS Compliant

⚠ Refer to "*Common Precautions*".

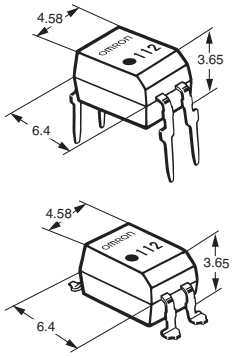
NEW

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

■Application Examples

- Electrical power unit
- Test & measurement equipment
- Security equipment
- Industrial equipment
- Medical 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)	

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

●High sensitive 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-41AY	G3VM-41DY	100 pcs.	G3VM-41DY(TR)	1,500 pcs.
		60V	500mA	G3VM-61AY	G3VM-61DY		G3VM-61DY(TR)	
		200V	250mA	G3VM-201AY	G3VM-201DY		G3VM-201DY(TR)	
		350V	100mA	G3VM-351AY	G3VM-351DY		G3VM-351DY(TR)	
		400V	120mA	G3VM-401AY	G3VM-401DY		G3VM-401DY(TR)	
		600V	90mA	G3VM-601AY	G3VM-601DY		G3VM-601DY(TR)	

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

■Absolute Maximum Ratings (Ta = 25°C)

●Standard type, High senstive type

Item		Symbol	G3VM-41AY1 G3VM-41DY1 G3VM-41AY G3VM-41DY	G3VM-61AY1 G3VM-61DY1 G3VM-61AY G3VM-61DY	G3VM-201AY1 G3VM-201DY1 G3VM-201AY G3VM-201DY	G3VM-351AY1 G3VM-351DY1 G3VM-351AY G3VM-351DY	G3VM-401AY1 G3VM-401DY1 G3VM-401AY G3VM-401DY	G3VM-601AY1 G3VM-601DY1 G3VM-601AY G3VM-601DY	Unit	Measurement conditions
Input	LED forward current	I_F	30						mA	
	Repetitive peak LED forward current	I_{FP}	1						A	100 μs pulses, 100 pps
	LED forward current reduction rate	ΔI_F/°C	–0.3						mA/°C	Ta≥25°C
	LED reverse voltage	V_R	5						V	
	Connection temperature	T_J	125						°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	40	60	200	350	400	600	V	
	Continuous load current (AC peak/DC)	I_O	2,000	500	250	100	120	90	mA	
	ON current reduction rate	ΔI_O/°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
	Connection temperature	T_J	125						°C	
Dielectric strength between I/O (See note 1.)		V_{I-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

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.

■Electrical Characteristics (Ta = 25°C)

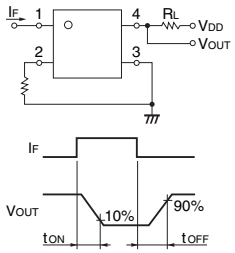
●Standard type

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	VF	Minimum	1.1						V	IF=10mA
			Typical	1.27							
			Maximum	1.4							
	Reverse current	IR	Maximum	10						μA	VR=5V
	Capacity between terminals	CT	Typical	50						pF	V=0, f=1MHz
	Trigger LED forward current	IFT	Minimum	0.5	0.6				0.5	mA	G3VM-41AY1/DY1 : IO=1A Others : IO=Continuous load current ratings
			Maximum	3							
	Release LED forward current	IFC	Minimum	0.1						mA	IOFF=10μA
Output	Maximum resistance with output ON	RON	Typical	0.09(0.06)	0.6	5	35(25)	22(17)	45(30)	Ω	IF=5mA, IO=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	ILEAK	Maximum	1						μA	VOFF=Load voltage ratings
	Capacity between terminals	COFF	Typical	300	130	90	30	80	75	pF	V=0, f=1MHz
Capacity between I/O terminals		CI-O	Typical	0.8						pF	f=1MHz, VS=0V
Insulation resistance between I/O terminals		RI-O	Minimum	1000						MΩ	VI-O=500VDC, RoH≤60%
			Typical	10^8							
Turn-ON time		tON	Typical	2.8	1		0.3	0.6	0.5	ms	G3VM-41AY1/DY1 : RL=200Ω, IF=10mA, VDD=20V G3VM-601AY1/DY1 : RL=200Ω, IF=5mA, VDD=10V Others : RL=200Ω, IF=5mA, VDD=20V (See note 2.)
			Maximum	5	3		2				
Turn-OFF time		tOFF	Typical	0.3	0.2	0.1		0.2			
			Maximum	1							

●High sensitive type

Item		Symbol		G3VM-41AY G3VM-41DY	G3VM-61AY G3VM-61DY	G3VM-201AY G3VM-201DY	G3VM-351AY G3VM-351DY	G3VM-401AY G3VM-401DY	G3VM-601AY G3VM-601DY	Unit	Measurement conditions
Input	LED forward voltage	VF	Minimum	1.45						V	IF=10mA
			Typical	1.63							
			Maximum	1.75							
	Reverse current	IR	Maximum	10						μA	VR=5V
	Capacity between terminals	CT	Typical	40						pF	V=0, f=1MHz
	Trigger LED forward current	IFT	Minimum	0.3						mA	G3VM-41AY/DY : IO=1A Others : IO=Continuous load current ratings
			Maximum	2							
	Release LED forward current	IFC	Minimum	0.1						mA	IOFF=10μA
Output	Maximum resistance with output ON	RON	Typical	0.09(0.06)	0.6	5	35(25)	22(17)	45(30)	Ω	IF=5mA, IO=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	ILEAK	Maximum	1						μA	VOFF=Load voltage ratings
	Capacity between terminals	COFF	Typical	300	130	90	30	80	75	pF	V=0, f=1MHz
Capacity between I/O terminals		CI-O	Typical	0.8						pF	f=1MHz, VS=0V
Insulation resistance between I/O terminals		RI-O	Minimum	1000						MΩ	VI-O=500VDC, RoH≤60%
			Typical	10^8							
Turn-ON time		tON	Typical	2	0.5		0.1	0.2		ms	G3VM-601AY/DY : RL=200Ω, IF=5mA, VDD=10V Others : RL=200Ω, IF=5mA, VDD=20V (See note 2.)
			Maximum	5	1						
Turn-OFF time		tOFF	Typical	0.3	0.2						
			Maximum	1							

Note: 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, so it is not simultaneously satisfy several conditions.

●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	Ta	Minimum	–20						°C
		Maximum	65						

●High sensitive type

Item	Symbol		G3VM-41AY G3VM-41DY	G3VM-61AY G3VM-61DY	G3VM-201AY G3VM-201DY	G3VM-351AY G3VM-351DY	G3VM-401AY G3VM-401DY	G3VM-601AY G3VM-601DY	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	32	48	160	280	320	480	V
Operating LED forward current	I_F	Minimum	3						mA
		Typical	5						
		Maximum	15		20				
Continuous load current (AC peak/DC)	I_O	Maximum	2000	500	250	100	120	90	
Ambient operating temperature	Ta	Minimum	–20						°C
		Maximum	65						

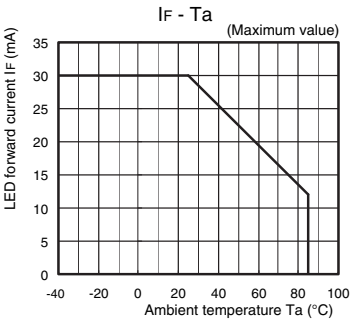
■Spacing and Insulation

●Standard type and High sensitive type

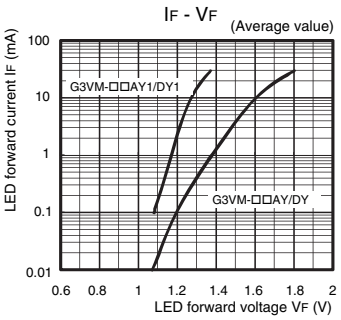
Item		Standard	Unit
Creepage distances	Minimum	7.0	mm
Clearance distances	Minimum	7.0	
Internal isolation thickness	Minimum	0.4	

■Engineering Data

●LED forward current vs. Ambient temperature

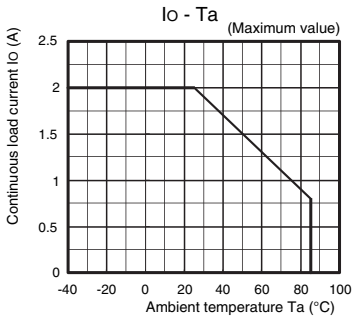


●LED forward current vs. LED forward voltage

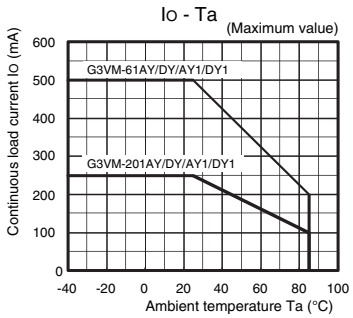


●Continuous load current vs. Ambient temperature

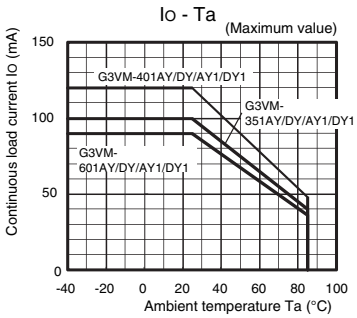
G3VM-41AY/DY/AY1/DY1



G3VM-61AY/DY/AY1/DY1
G3VM-201AY/DY/AY1/DY1

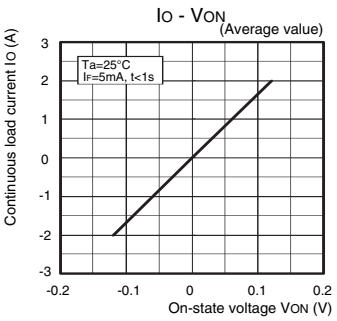


G3VM-351AY/DY/AY1/DY1
G3VM-401AY/DY/AY1/DY1
G3VM-601AY/DY/AY1/DY1

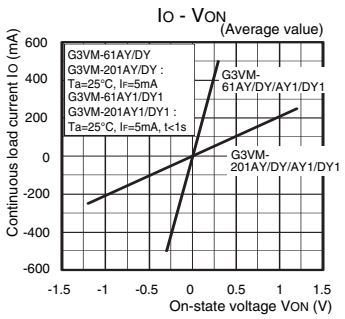


●Continuous load current vs. On-state voltage

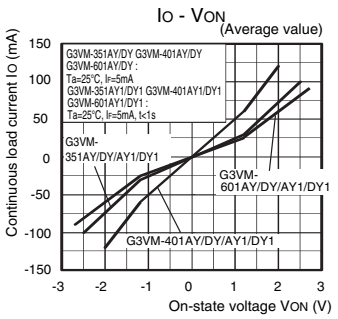
G3VM-41AY/DY/AY1/DY1



G3VM-61AY/DY/AY1/DY1
G3VM-201AY/DY/AY1/DY1

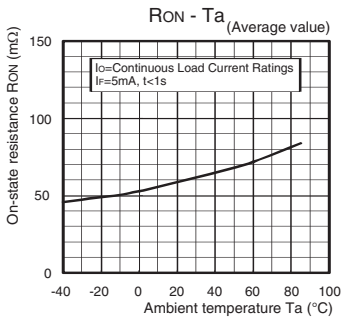


G3VM-351AY/DY/AY1/DY1
G3VM-401AY/DY/AY1/DY1
G3VM-601AY/DY/AY1/DY1

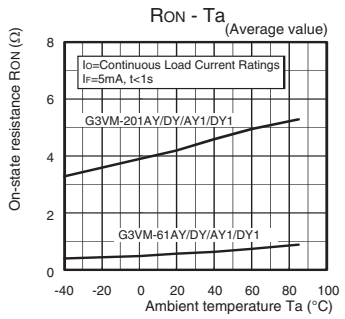


●On-state resistance vs. Ambient temperature

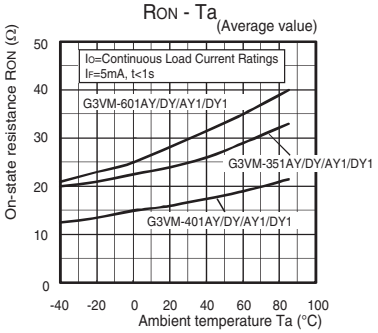
G3VM-41AY/DY/AY1/DY1



G3VM-61AY/DY/AY1/DY1
G3VM-201AY/DY/AY1/DY1



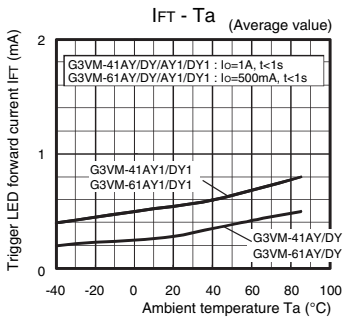
G3VM-351AY/DY/AY1/DY1
G3VM-401AY/DY/AY1/DY1
G3VM-601AY/DY/AY1/DY1



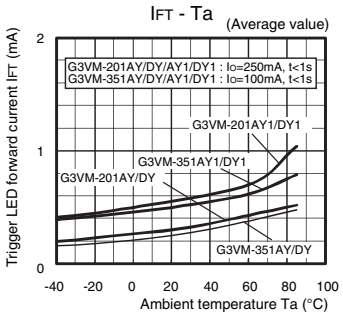
■Engineering Data

●Trigger LED forward current vs. Ambient temperature

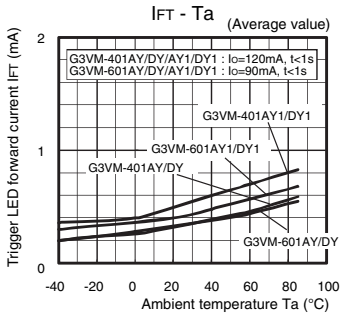
G3VM-41AY/DY/AY1/DY1
G3VM-61AY/DY/AY1/DY1



G3VM-201AY/DY/AY1/DY1
G3VM-351AY/DY/AY1/DY1

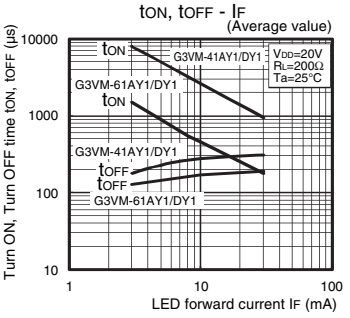


G3VM-401AY/DY/AY1/DY1
G3VM-601AY/DY/AY1/DY1

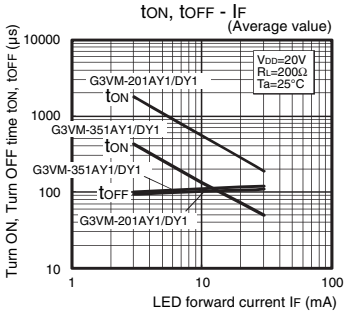


●Turn ON, Turn OFF time vs. LED forward current

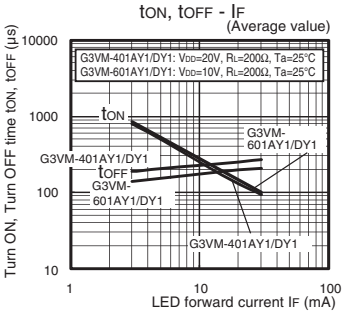
G3VM-41AY1/DY1
G3VM-61AY1/DY1



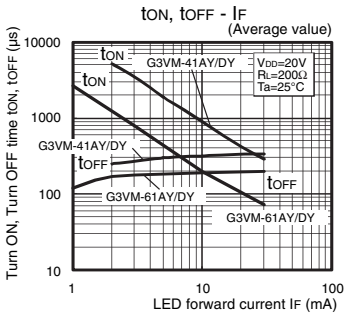
G3VM-201AY1/DY1
G3VM-351AY1/DY1



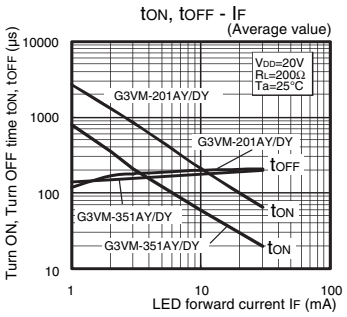
G3VM-401AY1/DY1
G3VM-601AY1/DY1



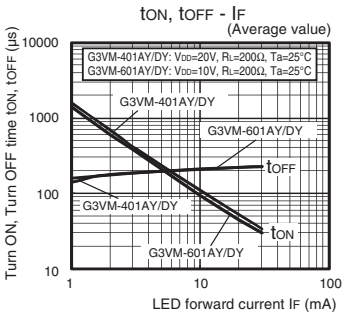
G3VM-41AY/DY
G3VM-61AY/DY



G3VM-201AY/DY
G3VM-351AY/DY

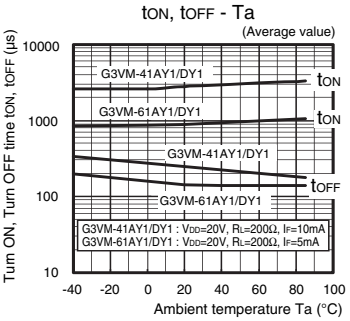


G3VM-401AY/DY
G3VM-601AY/DY

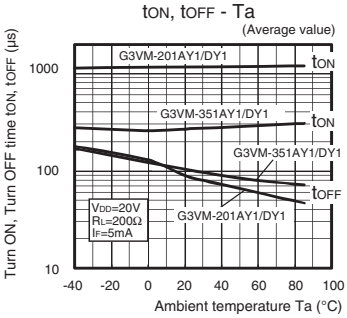


●Turn ON, Turn OFF time vs. Ambient temperature

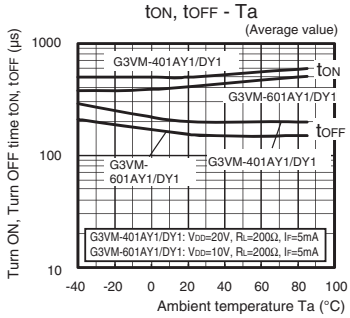
G3VM-41AY1/DY1
G3VM-61AY1/DY1



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



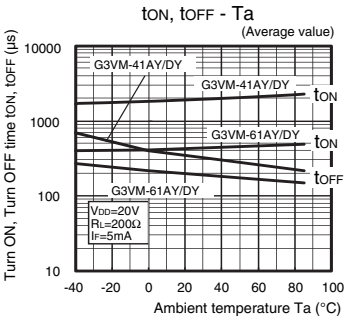
G3VM-401AY1/DY1
G3VM-601AY1/DY1



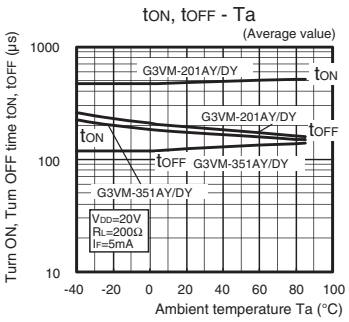
■Engineering Data

●Turn ON, Turn OFF time vs. Ambient temperature

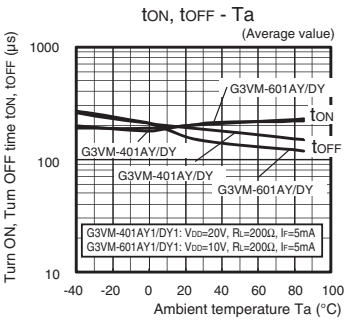
G3VM-41AY1/DY1
G3VM-61AY1/DY1



G3VM-201AY/DY
G3VM-351AY/DY

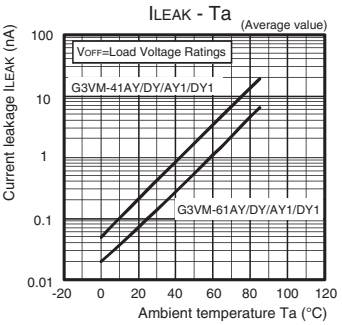


G3VM-401AY/DY
G3VM-601AY/DY

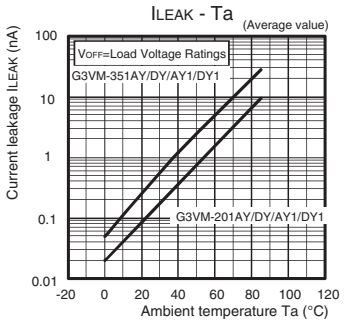


●Current leakage vs. Ambient temperature

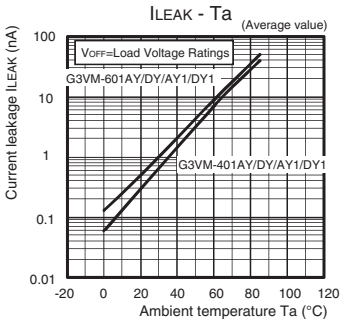
G3VM-41AY/DY/AY1/DY1
G3VM-61AY/DY/AY1/DY1



G3VM-201AY/DY/AY1/DY1
G3VM-351AY/DY/AY1/DY1



G3VM-401AY/DY/AY1/DY1
G3VM-601AY/DY/AY1/DY1

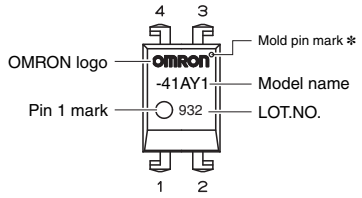


■Apperance/Terminal Arrangement/Internal Connections

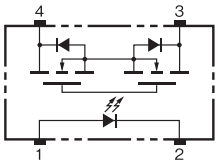
■Apperance

DIP (Dual Inline Package)

DIP4



■ Terminal Arrangement/Internal Connections



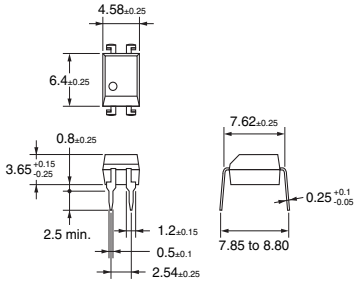
Note: The actual product is marked differently from the image shown here.

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

■Dimensions (Unit: mm)

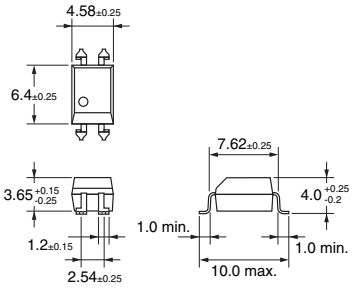
PCB Terminals

Weight: 0.25 g

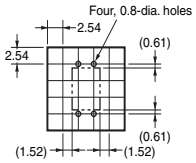


Surface-mounting Terminals

Weight: 0.25 g

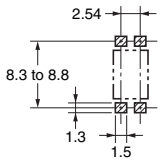


PCB Dimensions (BOTTOM VIEW)



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 and High sensitive type

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

■Safety Precautions

• Refer to "**Common Precautions**" for all G3VM models.

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