

MOS FET Relays

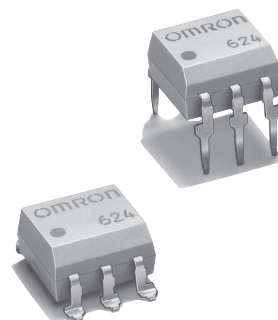
G3VM-351B/E

MOS FET Relay Series with 350-V Load Voltage

- Upgraded G3VM-3 Series.
- Continuous load current of 120 mA.
- Dielectric strength of 2,500 Vrms between I/O.
- Operating time of 0.3 ms (typical).
- RoHS Compliant.

Application Examples

- Measurement devices
- Security systems
- Amusement machines



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

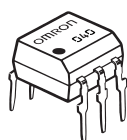
List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	350 VAC	G3VM-351B	50	---
	Surface-mounting terminals		G3VM-351E		
			G3VM-351E(TR)	---	1,500

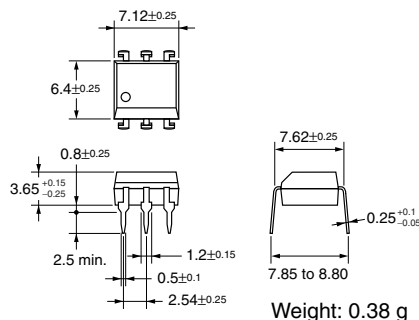
Dimensions

Note: All units are in millimeters unless otherwise indicated.

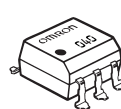
G3VM-351B



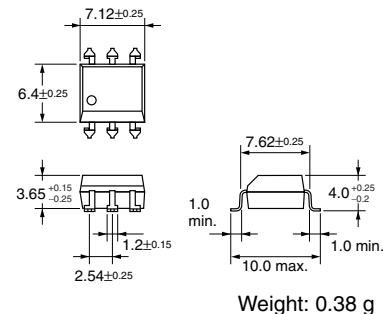
Note: The actual product is marked differently from the image shown here.



G3VM-351E

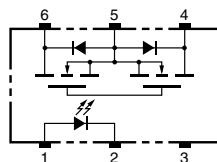


Note: The actual product is marked differently from the image shown here.

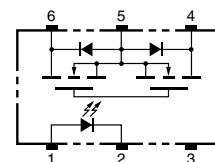


Terminal Arrangement/Internal Connections (Top View)

G3VM-351B

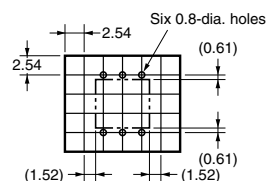


G3VM-351E



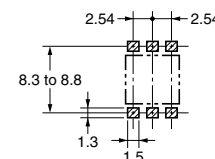
PCB Dimensions (Bottom View)

G3VM-351B



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-351E

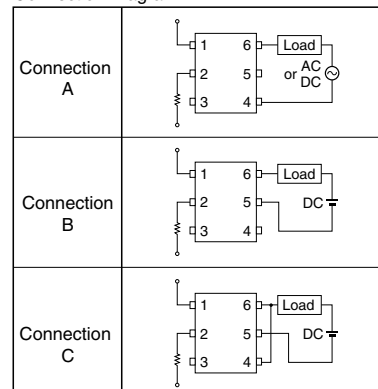


■ Absolute Maximum Ratings (Ta = 25°C)

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	Load voltage (AC peak/DC)	V_{OFF}	350	V	
	Continuous load current	Connection A I_O	120	mA	
		Connection B	120		
		Connection C	240		
	ON current reduction rate	Connection A $\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
		Connection B	-1.2		
		Connection C	-2.4		
	Connection temperature	T_j	125	°C	
Dielectric strength between input and output (See note 1.)		V_{I-O}	2,500	V_{rms}	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.

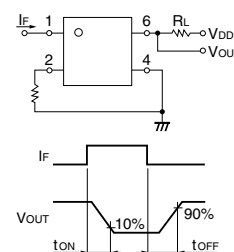
Connection Diagram



■ 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	$I_O = 120$ mA
Output	Maximum resistance with output ON	Connection A R_{ON}	---	25	35	Ω	$I_F = 5$ mA, $I_O = 120$ mA, $t < 1$ s
			---	35	50	Ω	$I_F = 5$ mA, $I_O = 120$ mA
		Connection B	---	28	40	Ω	$I_F = 5$ mA, $I_O = 120$ mA
		Connection C	---	14	20	Ω	$I_F = 5$ mA, $I_O = 240$ mA
	Current leakage when the relay is open	I_{LEAK}	---	0.0015	1.0	μ A	$V_{OFF} = 350$ V
	Capacity between terminals A Connection	C_{OFF}	---	30	---	pF	$V = 0$, $f = 1$ MHz
	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	$V_{I-O} = 500$ VDC, $R_{OH} \leq 60\%$
Turn-ON time		t_{ON}	---	0.3	1.0	ms	$I_F = 5$ mA, $R_L = 200$ Ω , $V_{DD} = 20$ V (See note 2.)
Turn-OFF time		t_{OFF}	---	0.1	1.0	ms	

Note: 2. Turn-ON and Turn-OFF Times



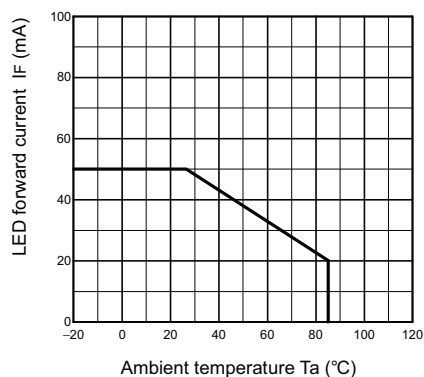
■ Recommended Operating Conditions

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

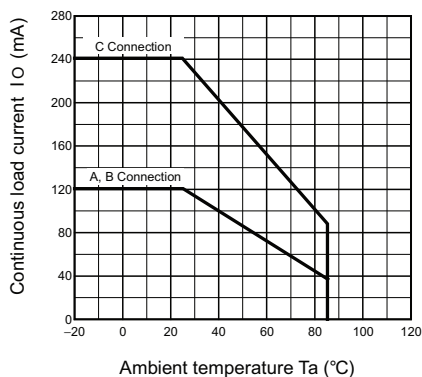
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	280	V
Operating LED forward current	I_F	5	10	25	mA
Continuous load current (AC peak/DC)	I_O	---	---	100	mA
Operating temperature	T_a	-20	---	65	°C

■ Engineering Data

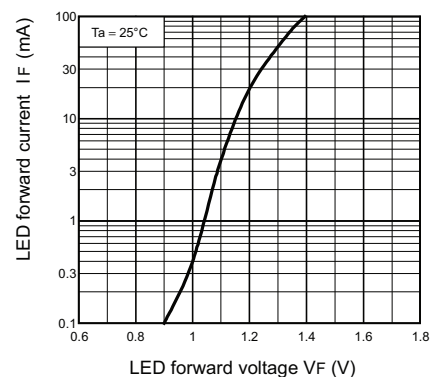
LED forward current vs. Ambient temperature
 $I_F - T_a$



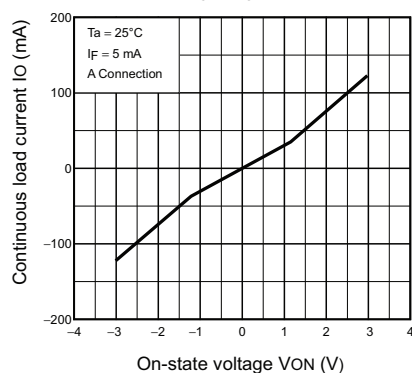
Continuous load current vs. Ambient temperature
 $I_O - T_a$



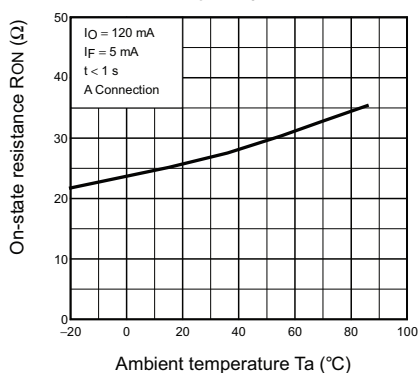
LED forward current vs. LED forward voltage
 $I_F - V_F$



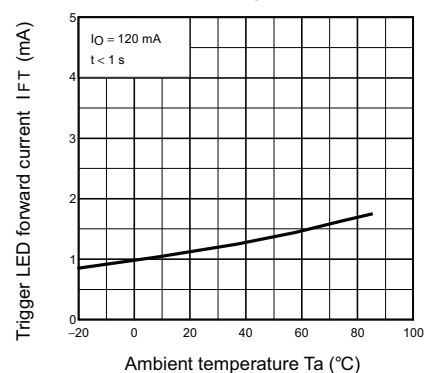
Continuous load current vs. On-state voltage
 $I_O - V_{ON}$



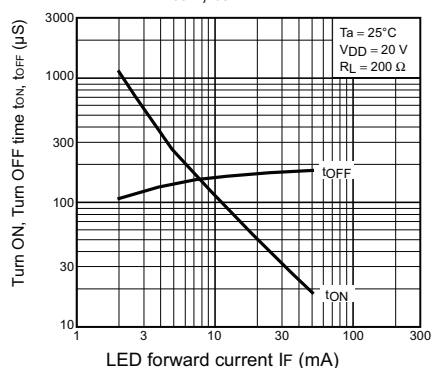
On-state resistance vs. Ambient temperature
 $R_{ON} - T_a$



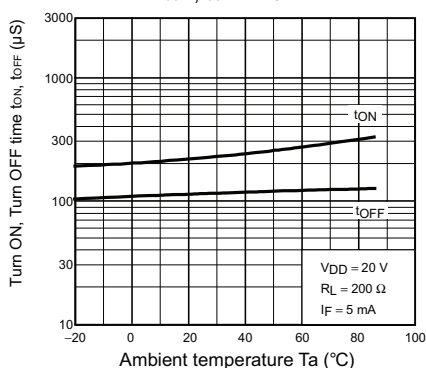
Trigger LED forward current vs. Ambient temperature
 $I_{FT} - T_a$



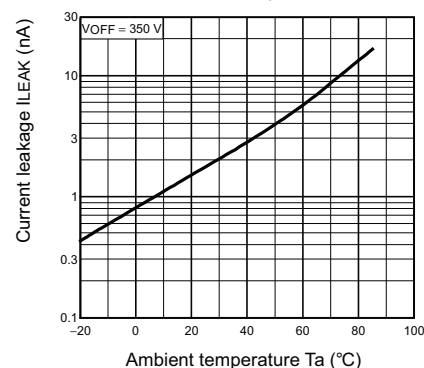
Turn ON, Turn OFF time vs. LED forward current
 $t_{ON}, t_{OFF} - I_F$



Turn ON, Turn OFF time vs. Ambient temperature
 $t_{ON}, t_{OFF} - T_a$



Current leakage vs. Ambient temperature
 $I_{LEAK} - T_a$



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