OMRON

Middle Power PCB Relay for Automotive and DC 12 V/24 V Applications

G8G Relay

Middle Load Relay for Motor/Heater Control Applications

- Can replace Micro ISO Plug-in type relay
- Small size & High heat resistance enable for usage in engine room
- Can support 40 A Fuse
- PIP reflow compliant
- Temperature range -40°C to +125°C
- DC24V Model for the applications of commercial vehicle also avaiable

■Model Number Legend

G8G-□□□□
1 2 3 4

1. Number of Contact Poles/Structure
1A: SPST (1 Form A)
1 : SPDT (1 Form C)

2. Protective structure
Blank or 4: Plastic sealed (RT III IEC61810)
7 : Flux tight (Open vent hole) (RT II IEC61810)

3. Characteristics
Blank: Standard
S : Low operating voltage

4. Special function
R: Pin in paste compliant type
V: DC24V Model

■Application Examples

- DC motor/resistive application control
- Automotive DC applications (Smart Junction Box, Blower fan, PTC heater, Seat heater, Power for accessory, A/C magnet clutch, Motor control for Commercial vehicle, etc.)

■Ordering Information

Classification	Contact form	Protective structure	Rated coil voltage (V)	Model	Minimum Packing unit (Tube packing)
Standard	SPST 1 Form A	Flux tight (open vent hole) (RT II IEC61810)	DC12	**G8G-1A7R DC12**	1920 pcs. / box (64 pcs. × 30 tubes)
	SPDT 1 Form C			**G8G-17R DC12**	
Low operation voltage	SPST 1 Form A			**G8G-1A7SR DC12**	
	SPDT 1 Form C			**G8G-17SR DC12**	
DC24V Model	SPDT 1 Form C	Plastic sealed (RT III IEC61810)	DC24	**G8G-1SV DC24**	

Note. Above models are not certificated for the safety standards of UL or CSA, etc.

■Ratings

●Coil

Rated voltage (V)	Rated current (mA)	Coil resistance (Ω)	Must-operate voltage (V)	Must-release voltage (V)	Permissible voltage Range (V)	Rated Power consumption (mW)	Model
DC12	40.0	300	6.5 Max.	0.5 Min.	10 to 16	480	**G8G-1A7R DC12**
							G8G-17R DC12
	53.3	225	5.5 Max.			640	**G8G-1A7SR DC12**
							G8G-17SR DC12
DC24	106.7	225	14.4 Max.	1 Min.	18.2 to 32	2560	**G8G-1SV DC24**

Note 1. The rated current and coil resistance are measured at a coil temperature of 20°C with a tolerance of ±10%.
Note 2. The operating characteristics are measured at a coil temperature of 20°C.

●Contacts

Item \ Classification / Model		Standard **G8G-1A7R DC12 G8G-17R DC12**	Low operating voltage **G8G-1A7SR DC12 G8G-17SR DC12**	DC24V Model **G8G-1SV DC24**
Contact material		Silver-alloy		
	at 85°C	-	-	5 A
	at 110°C	20 A	15 A	-
	at 125°C	15 A	10 A	-
Max. switching current		84 A Inrush / 35 A Break (N.O.)		20 A Inrush / 14 A Break (N.O.)
Max. carrying current *1	20 A fuse 200%	-	-	40 A at DC28V for 10 mins
	30 A slow fuse 135%	40.5 A at DC14V for 60 mins		-
	40 A blade fuse 135%	54 A at DC14V for 2 mins		-
Min. switching current		DC12V, 1 A		

*1. The value is applicable at an ambient temerature 20°C. This does not guarantee repeated condition. Also depends on the connecting conditions. Please contact our sales representative if you have specific conditions.

■Characteristics

Item			**G8G-1A7R DC12 G8G-17R DC12**	**G8G-1A7SR DC12 G8G-17SR DC12**	**G8G-1SV DC24**
Contact resistance (See *1.)			Typ.3.0 mΩ max.20 mΩ		
Operate time			10 ms max. (DC12V not including bounce time)		10 ms max. (DC24V not including bounce time)
Release time			5 ms max. (DC12V not including bounce time)		5 ms max. (DC24V not including bounce time)
Insulation resistance (See *2.)	Between coil and contacts		100 MΩ min.		
	Between contacts of the same polarity		100 MΩ min.		
Dielectric strength	Between coil and contacts		AC500V 1 min		
	Between contacts of the same polarity		AC500V 1 min		
Vibration resistance	Destruction		33 Hz, 45 m/s²		
	Malfunction		10 to 200 Hz, 45 m/s² (detection time: 10 μs)		
Shock resistance	Destruction		1,000 m/s² (pulse duration: 6 ms)		
	Malfunction		100 m/s² (pulse duration: 11 ms detection time: 10 μs)		
Mechanical endurance (See *3.)			1,000,000 ops. min.		
Electrical endurance (See *4.)		Resistive Load	DC14V, N.O. 35 A / N.C. 15 A, 1.0 s ON/9.0 s OFF, 100,000 ops.		DC28V, N.O. 14 A / N.C. 5 A, 1.0 s ON/1.0 s OFF, 100,000 ops.
		Lamp Load	DC14V, 84 A Inrush / 12 A Break, 1.0 s ON/9.0 s OFF, 100,000 ops.		DC28V, 20 A Inrush / 2 A Steady, 1.0 s ON/1.2 s OFF, 100,000 ops.
		Motor Load	DC14V, 32 A, 0.25 mH, Motor locked, 0.25 s ON/9.75 s OFF, 100,000 ops.		DC28V, 12 A, 3 mH, Motor locked, 0.25 s ON/4.75 s OFF, 100,000 ops.
Ambient operating temperature			-40 to 125°C (without freezing or condensation)		-40 to 85°C (without freezing or condensation)
Ambient operating humidity			35% to 85% RH		
Weight			Approx. 5.2 g		Approx. 6.0 g

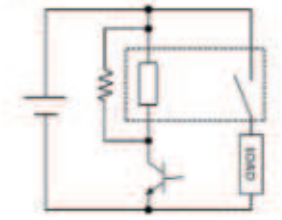
Note. The above values are initial values at an ambient temperature of +20°C unless otherwise specified.
*1. The contact resistance was measured with 1 A at DC5V using the voltage drop method.
*2. The insulation resistance was measured with a DC500V megohmmeter.
*3. The mechanical endurance was measured at a switching frequency of 18,000 operations/hr.
*4. Please connect N.O. terminal to the +BATT side on Electrical use and connect surge suppression element in parallel with between coil based on recommended circuit.

Recommended circuit: (a), (b), (c)

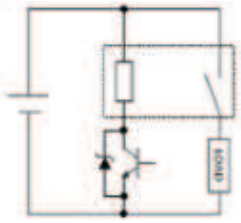
Not-recommended circuit: (d)

Note:
OMRON recommends coil driver circuit (b) and (c) for coil surge suppression. However the circuit (d) is not recommended because it may negatively affect the durability performance.

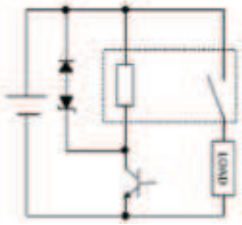
(a)



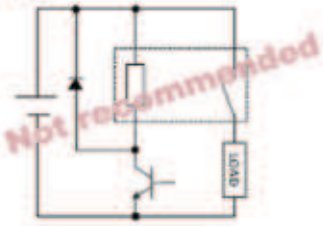
(b)



(c)



(d)

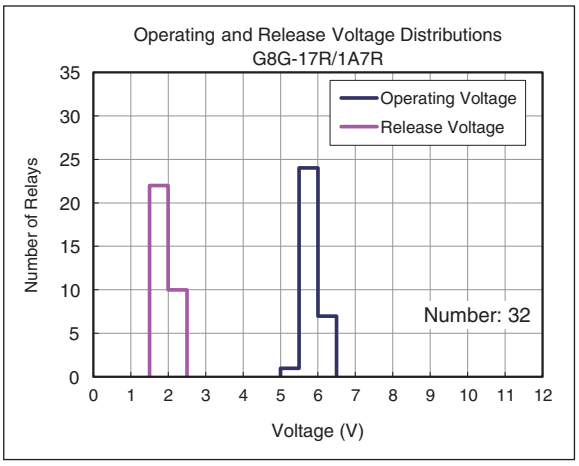


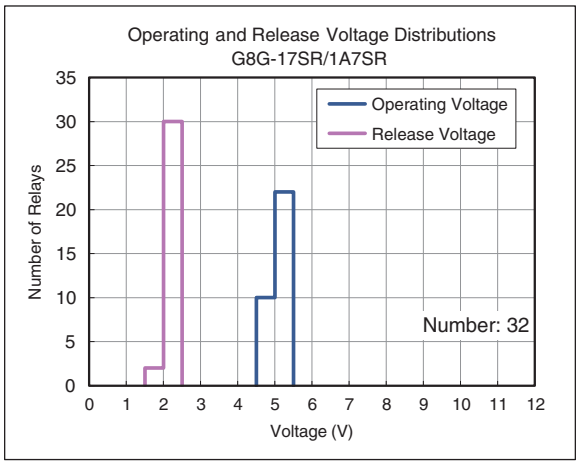
■Reference Technical Data

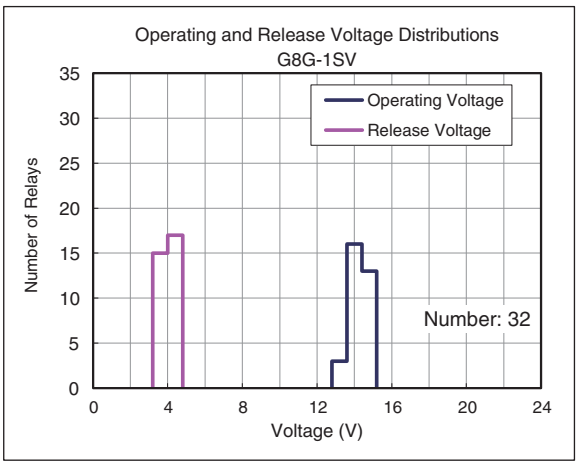
●Actual Electrical performance (reference)

Model	Application	Load voltage	Inrush	Steady state	Switching off	Inductance	Ambient temperature	Switching frequency		Required Cycles (min)
		(V)	(A)	(A)	(A)	(mH)	(°C)	On (s)	Off (s)	Total
G8G-17R DC12	N.O. Inductive	14	60	12		0.5	-40°C to +125°C	3.0	5.0	250,000
G8G-17R DC12	Wiper On Off	14	32.4	4.33	22	1	-40°C to +105°C	2.0	2.0	700,000
G8G-1A7R DC12	Blower Fan	14	46.6	22		0.5	-40°C to +85°C	3.0	5.0	150,000
G8G-1A7R DC12	A/C clutch	14	3.8	3.8		14	-40°C to +110°C	1.0	1.0	2,000,000
G8G-1SV DC24	Motor lock	28			12	3	25	0.25	4.75	100,000
G8G-1SV DC24	Motor free	28	15	2.5		0.25	25	1.0	4.0	100,000
G8G-1SV DC24	N.O. Resistive	28		14			25	1.0	1.0	100,000
G8G-1SV DC24	N.C. Resistive	28		5			25	1.0	1.0	100,000
G8G-1SV DC24	N.O. Lamp	28	20	2			25	1.0	1.2	100,000

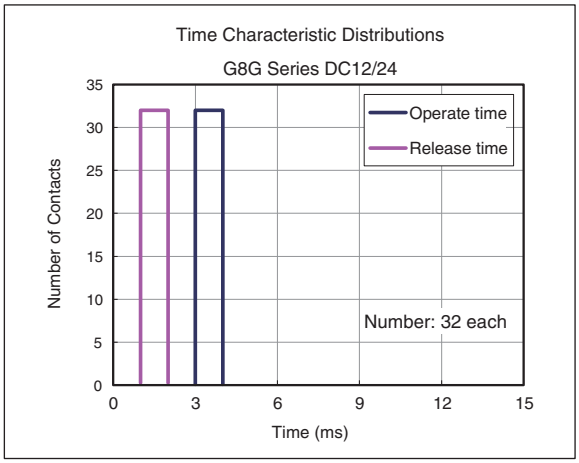
●Operating Voltage and Release Voltage Distributions (Number of Relays × Percentage of Rated Voltage)



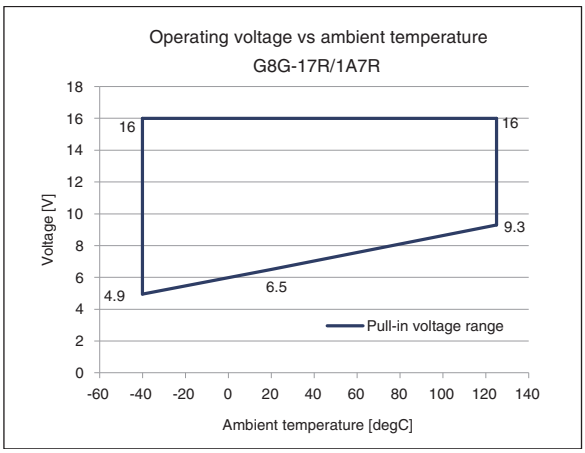


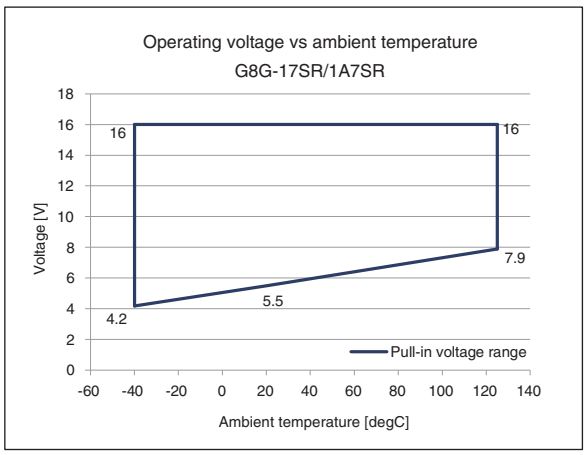


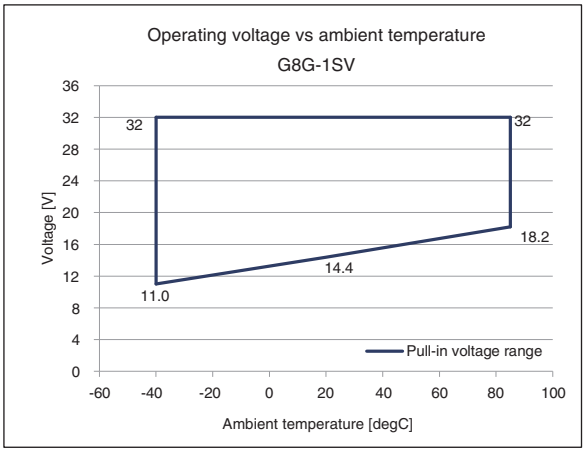
●Time Characteristic Distributions (Number of Contacts × Time (ms))



●Operating voltage vs ambient temperature (Cold start)

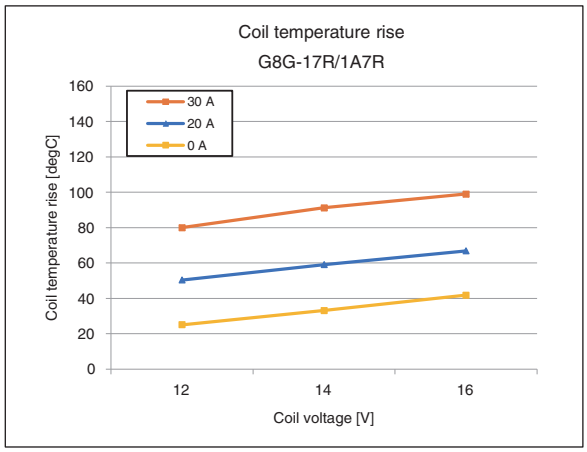


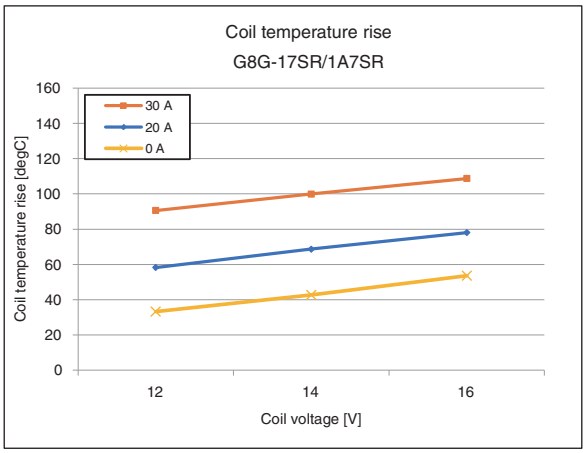


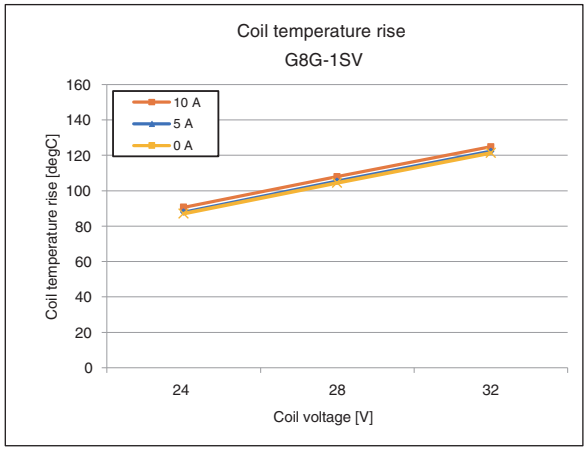


●Coil temperature rise [degC] at 20°C

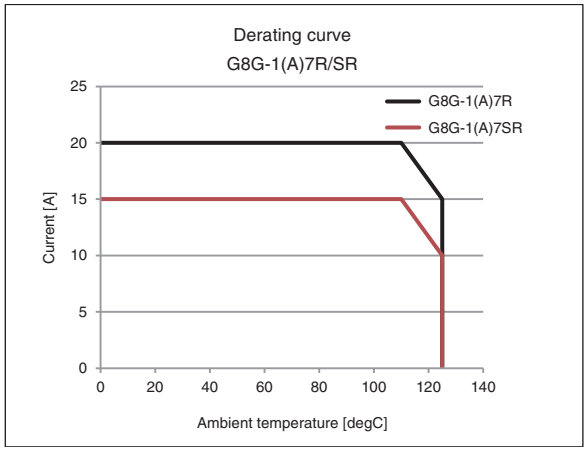
(For using under a higher ambient temperature, please select the proper current carrying condition to avoid a possible excessive temperature rising.)

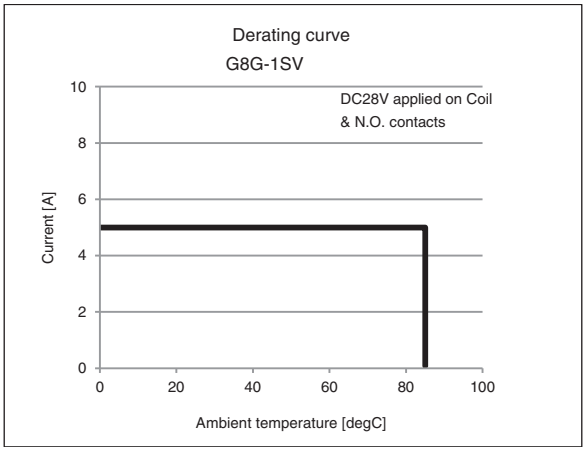






●Derating curve

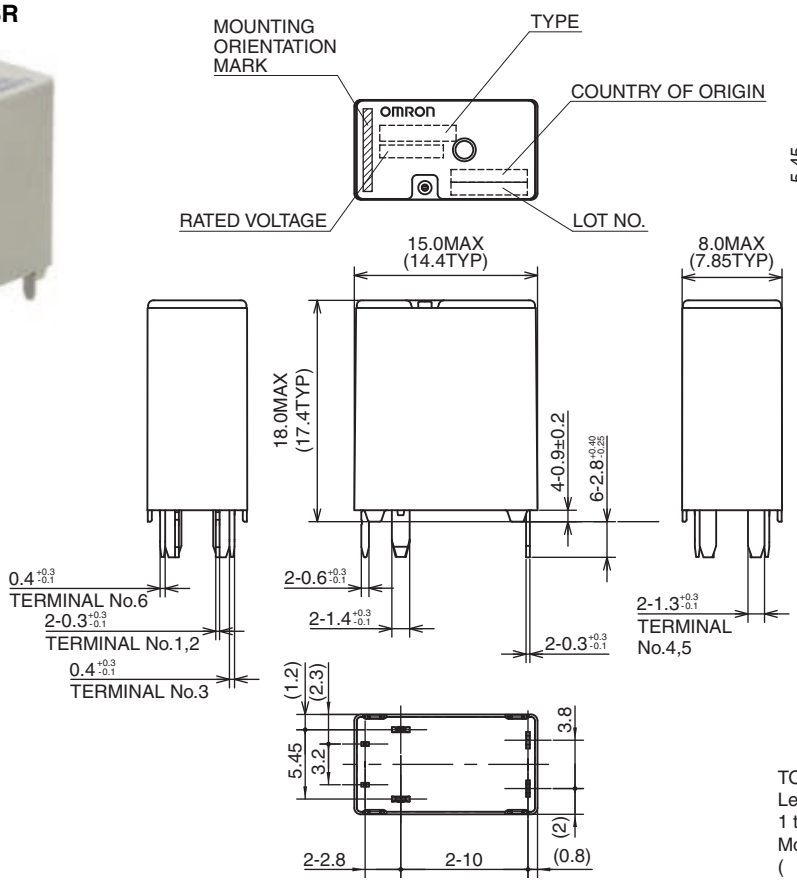




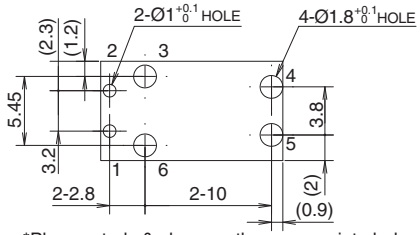
■Dimensions

CAD Data Please visit our website, which is noted on the last page. **(Unit: mm)**

G8G-17R/17SR

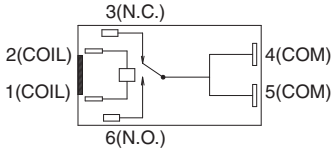


FOR REFERENCE : PCB MOUNTING HOLES (BOTTOM VIEW)



*Please study & choose other appropriate hole diameters if confirmed the diameter values recommended above don't work with the soldering process.

TERMINAL ARRANGEMENT/ INTERNAL CONNECTIONS (BOTTOM VIEW)

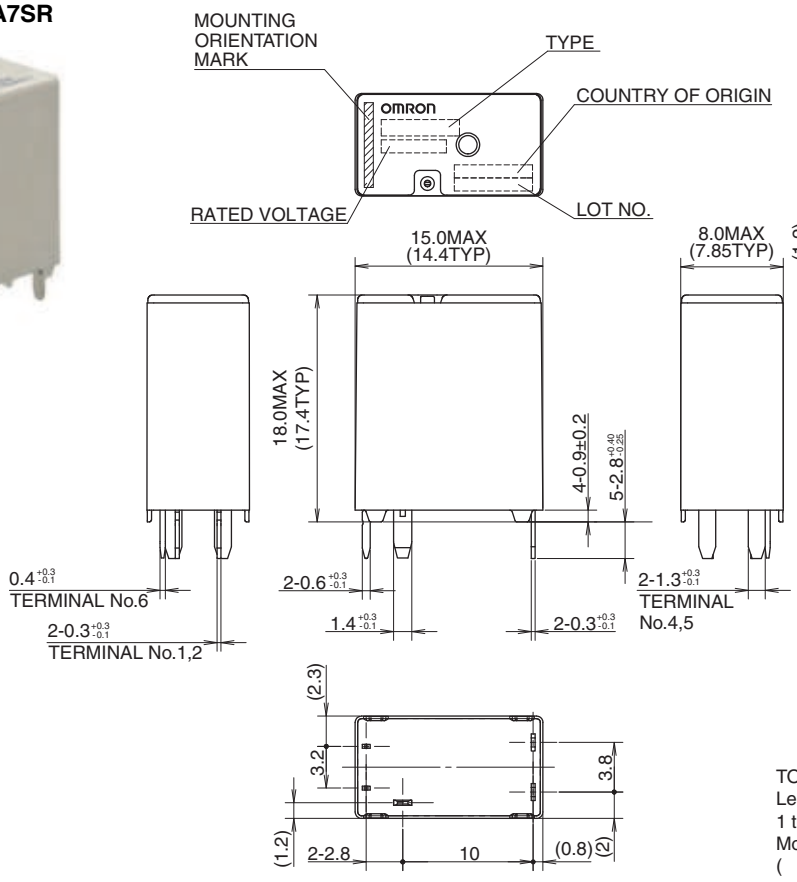


NOTE: *TERMINAL 6 CONNECTS TO +BATT.

TOLERANCE UNLESS OTHERWISE SPECIFIED
Less than 1 mm :±0.1 mm
1 to 3 mm :±0.2 mm
More than 3 mm :±0.3 mm
( ) is reference dimension

CAD Data

G8G-1A7R/1A7SR



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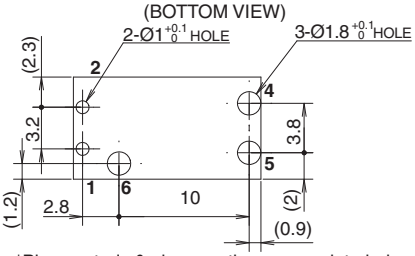

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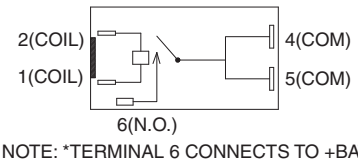

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CAD Data

■Dimensions

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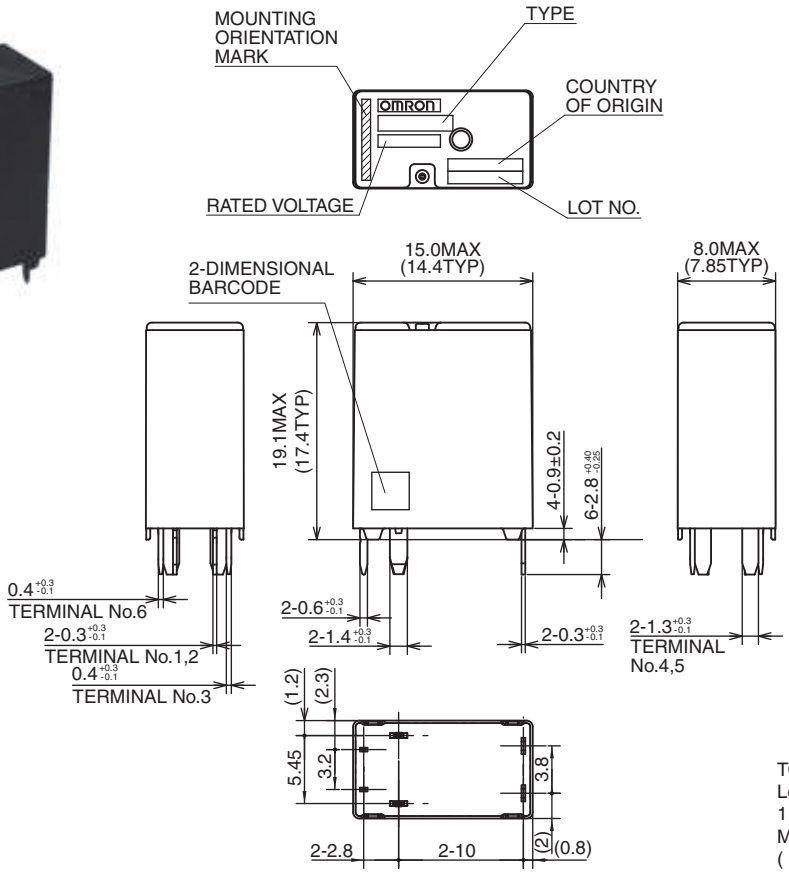
G8G-1SV



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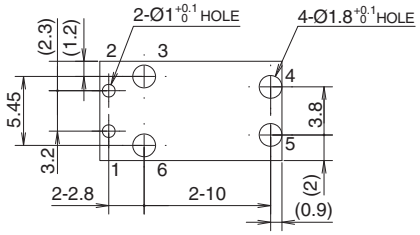

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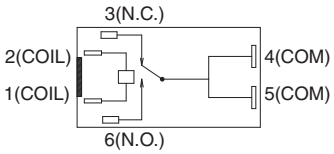

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1 to 3 mm :±0.2 mm
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( ) is reference dimension

CAD Data

■Precautions

●Please refer to “Safety Precautions for All Automotive Relays” for correct use.

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

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