G5RL-U/-K

PCB Power Relay

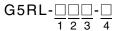
16 A High Switching Current, General-purpose Latching Relay

- Creepage distance 8 mm between coil and contacts.
- 10 kV Impulse withstand voltage.
- Ambient Operating Temperature 85°C
- Suitable for TV-8 rating. (SPST-NO (1a))

RoHS Compliant



■Model Number Legend



Relay Function
 Single-winding latching
 Double-winding latching
 Number of poles
 Contact Form
 None: SPDT (1c)
 A : SPST-NO (1a)
 Classification

1 : 1-Pole E : High-capacity

■Application Examples

- · Housing equipments
- Building Automation
- UPS, FA equipment
- Electric power meter

■Ordering Information

Classification	Terminal Shape	Shape Contact form	Enclosure rating	Single-winding latching		Double-winding latching		Minimum
Classification	Terminal Shape	Tilliai Shape Contact form		Model	Rated coil voltage	Model	Rated coil voltage	packing unit
High-capacity PCB termi	DOD :	SPST-NO (1a)	Flux protection	G5RL-U1A-E	3 VDC 5 VDC 6 VDC 12 VDC 24 VDC	G5RL-K1A-E	5 VDC 12 VDC 24 VDC	100 pcs/tray
	PCB terminals	SPDT (1c)		G5RL-U1-E		G5RL-K1-E		

Note. When ordering, add the rated coil voltage to the model number.

Example: G5RL-U1A-E 5 VDC

Rated coil voltage

■Ratings

●Coil

Single-winding Latching Type

Rated Voltage	Rated current (mA)	Coil resistance (Ω)	Must set voltage	Must reset voltage	Max voltage	Power consumption	
	(IIIA)			(W)			
3 VDC	200	15					
5 VDC	120	41.7		70% max.	130% (at 23°C)	Approx. 0.6	
6 VDC	100	60	70% max.				
12 VDC	50	240					
24 VDC	25	960					

Double-winding Latching Type

Rated Voltage	Rated current (mA)		Coil resistance (Ω)		Must set voltage	Must reset voltage	Max voltage	Power consumption (W)	
	Set coil	Reset coil	Set coil	Reset coil	c c	% of rated voltage	Э	Set coil	Reset coil
5 VDC	15	50	33.3 192					Approx. 0.75	
12 VDC	62	2.5			70% max.	70% max. 130% (at 23°C)			
24 VDC	3	35	686				(4. 25 0)	Appro	x. 0.84

Note. The rated current and resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.

●Contacts

Load	Resistive load				
Contact form	SPST-NO (1a)	SPDT (1c)			
Contact type	Single				
Contact material	Ag Alloy (Cd free)				
Rated load	16 A at 250 VAC 16 A at 24 VDC	16 A at 250 VAC (N.O) 5 A at 250 VAC (N.C) 16 A at 24 VDC (N.O) 5 A at 24 VDC (N.C)			
Rated carry current	16 A	16 A (N.O), 5A (N.C)			
Max. switching voltage	250 VAC, 24 VDC				
Max. switching current	16 A	16 A (N.O), 5 A (N.C)			

■Characteristics

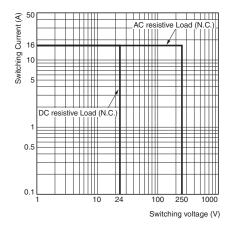
Classification		SPST-NO (1a), SPDT (1c)				
Item Relay function		Single-winding Latching, Double-winding Latching				
Contact resistance *1		100 m Ω max.				
Set time		15 ms max.				
Reset time		15 ms max.				
Minimum pulse width	*2	30 ms				
Maximum pulse width	n *2	1 min				
Insulation resistance	*3	1,000 M Ω min.				
Between coil and contacts		6,000 VAC, 50/60 Hz for 1 min				
Dielectric strength	Between contacts of the same polarity	1,000 VAC, 50/60 Hz for 1 min				
Impulse withstand Between coil and voltage contacts		10 kV (1.2 × 50 μs)				
Destruction		10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude)				
Vibration sesistanse	Malfunction	10 to 45 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) at Set status 10 to 32 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) at Reset status (Except SPST-NO)				
	Destruction	1,000 m/s ²				
Shock resistance Malfunction		150 m/s ² at Set status 50 m/s ² at Reset status (Except SPST-NO)				
Durability	Mechanical *4	5,000,000 operations min.				
Durability	Electrical *4	50,000 operations min.				
Ambient operating temperature		-40° to 85°C (with no icing or condensation)				
Ambient operating hu	ımidity	5% to 85%				
Weight		Approx. 10 g				

Note. Values in the above table are initial values.

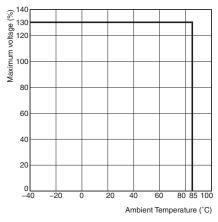
- 1. The contact resistance is measured with 1 A applied at 5 VDC using a fall-of-potential method.
- *2. These are measured at a coil temperature of 23°C and rated coil voltage.
- Pulse duty factor should be 10% MAX.
- 3. The insulation resistance is measured between coil and contacts and between contacts of same polarity at 500 VDC.
- *4. Operated with input pulse width "30 ms".

■Engineering Data

Maximum Switching Power

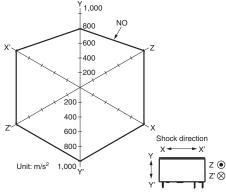


Ambient Temperature vs. Maximum Coil Voltage



Note. Maximum voltage of Set pulse and Reset pulse at duty factor 10%.

●Malfunction Shock



Sample: G5RL-K1A-E 12VDC

No. of relays: 5 pcs

Test Conditions: Shock is applied in $\pm X$, $\pm Y$, and $\pm Z$

directions three times each with Set and Reset status to check the number

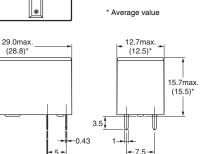
 $f contact \ malfunctions. \\ Standard \ value:50 \ m/s^2 \ with \ Set \ status \\ 100 \ m/s^2 \ with \ Reset \ status \\$

G5RL-U1A-E

■Dimensions

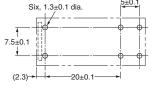


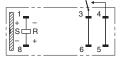
□0.5



PCB Mounting Holes (BOTTOM VIEW)

Terminal Arrangement/ **Internal Connections** (BOTTOM VIEW)



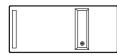


Note. Check carefully the coil polarity of the Relay.

Note. Orientation marks are indicated as follows: 🗒 🏻

G5RL-U1-E



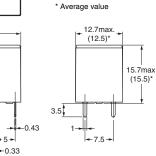


29.0max

20

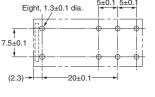
- 20

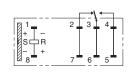
-0.33



PCB Mounting Holes (BOTTOM VIEW)

Terminal Arrangement/ **Internal Connections** (BOTTOM VIEW)

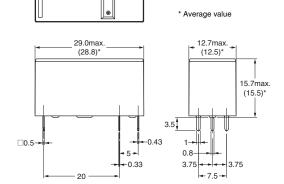




Note. Check carefully the coil polarity of the Relay.

Note. Orientation marks are indicated as follows: \square

G5RL-K1A-E



PCB Mounting Holes (BOTTOM VIEW)

20±0.1

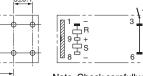
7.5±0.1

7.5±0.1

3.75±0.1

(2.3)

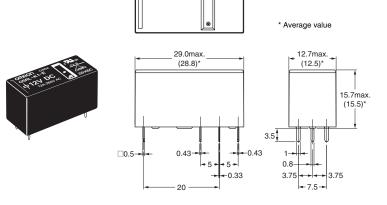




Note. Check carefully the coil polarity of the Relay.

Note. Orientation marks are indicated as follows: []

G5RL-K1-E

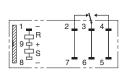


PCB Mounting Holes (BOTTOM VIEW)

Nine, 1.3±0.1 dia. (3.75) ____/____

-20±0.1

Terminal Arrangement/ Internal Connections (BOTTOM VIEW)



Note. Check carefully the coil polarity of the Relay.

Note. Orientation marks are indicated as follows: 🗒 🏻

■Approved Standards

• 🔁 UL Recognized (File No. E41643) and 🌘 CSA Certified (File No. LR31928)

Model	Contact form	Coil ratings	Contact ratings	Number of test operations
		5 to 24 VDC	16 A 277 VAC (Resistive) - NO	50,000
OFFILLIA F	SPST-NO (1a)		TV-5 - NO	25,000
G5RL-U1A-E G5RL-K1A-E			TV-8 - NO	25,000
GSTE-KTA-E			8 A 250 VAC (Ballast) - NO	6,000
			2,000 W 250 VAC (Tungsten)	6,000
	SPDT (1c)		16 A 277 VAC (Resistive) - NO	50,000
G5RL-U1-E			8 A 250 VAC (Ballast) - NO	6,000
G5RL-K1-E			2,000 W 250 VAC (Tungsten)	6,000
			5 A 250 VAC (General) - NC	50,000

• VDE Certified (EN61810-1) (License No. 40007172)

Model	Contact form	Coil ratings	Contact ratings	Number of test operations
G5RL-U1A-E	SPST-NO (1a)		16 A 250 VAC (cosφ=1) - NO	30,000
G5RL-K1A-E	SFSI-NO (Ia)	5, 12, 24 VDC	240 VAC 100 A (0-P) Steady 10 A (rms) - NO	50,000
G5RL-U1-E	SPDT (1c)	5, 12, 24 VDC	16 A 250 VAC (cosφ=1) - NO	30,000
G5RL-K1-E	SEDI (IU)		5 A 250 VAC (cosφ=1) - NC	30,000

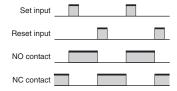
■Precautions

●Please refer to "PCB Relays Common Precautions" for correct use.

Correct Use

●Basic Operation of Latching Relays

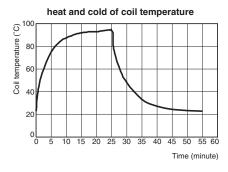
 In these Relays, the input pulse of the set coil causes the operating condition to be maintained magnetically or mechanically, whereas the input pulse to the reset coil side puts the Relay into the reset condition.



●Coil Temperature Rise of long time continuous current to the coil

• When the coil is applied continuous current for a long time, the coil would be heat too much.

Please decide the coil Input pulse width by "heat and cold of coil temperature"



■Wiring of High-capacity Models (-E)

 High-capacity models (-E) have a structure that connects two terminals from one contact. When designing the circuit, use both terminals. If you use only one terminal, the Relay may be unable to satisfy specified performance.

Precautions for Correct Use

- This product is not suitable for vehicles such as automobiles (including two-wheeled vehicles).
- If the product is used in the following applications, consult your OMRON sales representative to check the necessary items according to the specification sheets. Also make sure the product is used within the specified ratings and performance ranges with an ample margin and implement safety measures, such as designing a safety circuit, to minimize danger should the product fail.
 - a. Outdoor use, uses involving potential chemical contamination or electrical interference.
 - b. Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, safety equipment, and equipment that could present a risk to human life or body.
 - c. Equipment requiring a high level of reliability, such as gas, water, or electrical supply systems.

Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
 Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

Contact: www.omron.com/ecb

Note: Do not use this document to operate the Unit.

OMRON Corporation

Electronic and Mechanical Components Company

Cat. No. K265-E1-04 0814(0913)(O)