Power PCB Relay
G2R

- Creepage distance of 8.0 mm min. between coil and contact.
- Dual-winding latching type available.
- Plug-in and quick-connect terminals available (see G2R-S(S) data sheet).
- High sensitivity (360 mW) and high capacity (16 A) types available.
- Highly stable magnetic circuit for latching endurance and excellent resistance to vibration and shock.
- Safety-oriented design assuring high surge resistance: 10,000 V min. between coil and contacts.
- UL recognized / CSA certified. RoHS Complaint

Ordering Information

To order: Select the part number and add the desired coil voltage rating (e.g., G2R-14-*DC12*).

■ Non-Latching

1-Pole - PCB Types

Type	Contact material	Contact form	Construction	Model
General purpose	Ag alloy	SPDT	Semi-sealed	**G2R-1**
			Sealed	**G2R-14**
		SPST-NO	Semi-sealed	**G2R-1A**
			Sealed	**G2R-1A4**
High-capacity		SPDT	Semi-sealed	**G2R-1-E**
		SPST-NO		**G2R-1A-E**
High-sensitivity		SPDT		**G2R-1-H**
			Sealed	**G2R-14-H**
		SPST-NO	Semi-sealed	**G2R-1A-H**
			Sealed	**G2R-1A4-H**

1-Pole - Quick-connect Types

Type	Contact material	Contact form	Terminal	Model
Upper-mount bracket	Ag alloy	SPDT	Quick connect	**G2R-1-T**
		SPST-NO		**G2R-1A-T**

2-Pole - PCB Types

Type	Contact material	Contact form	Construction	Model
General purpose	Ag alloy	DPDT	Semi-sealed	**G2R-2**
			Sealed	**G2R-24**
		DPST-NO	Semi-sealed	**G2R-2A**
			Sealed	**G2R-2A4**
High sensitivity		DPDT	Semi-sealed	**G2R-2-H**
			Sealed	**G2R-24-H**
		DPST-NO	Semi-sealed	**G2R-2A-H**
			Sealed	**G2R-2A4-H**

Note: 1. Bifurcated button available.
2. For individual product agency approvals consult factory.
3. Class B coil insulation available.

■ Latching

Type	Contact form	Construction	Model
Dual coil latching	SPDT	Semi-sealed	**G2RK-1**
	SPST-NO		**G2RK-1A**
	DPDT		**G2RK-2**
	DPST-NO		**G2RK-2A**

Specifications

■ Contact Data

Non-latching, semi-sealed general purpose and upper-mount bracket.

Load	1-pole type		2-pole type	
	Resistive load (p.f. = 1)	**Inductive load (p.f. = 0.4) (L/R = 7 ms)**	**Resistive load (p.f. = 1)**	**Inductive load (p.f. = 0.4) (L/R = 7 ms)**
Rated load	10 A at 250 VAC 10 A at 30 VDC (8A at 250VAC/30VDC)	7.5 A at 250 VAC 5 A at 30 VDC (6A at 250VAC, 4A at 30VDC)	5 A at 250 VAC 5 A at 30 VDC (4A at 250VAC/30VDC)	2 A at 250 VAC 3 A at 30 VDC (1.5A at 250VAC, 2.5A at 30VDC)
Contact material	Ag-Alloy			
Carry current	10 A (8A)		5 A (4A)	
Max. operating voltage	380 VAC, 125 VDC			
Max. operating current	10 A (8A)		5 A (4A)	
Max. switching capacity	2,500 VA, 300 W (2,000 VA, 240W)	1,875 VA, 150 W (1,500 VA, 120W)	1,250 VA, 150 W (1,000 VA, 120 W)	500 VA, 90 W (375 VA, 75 W)
Min permissible load	100 mA, 5 VDC		10 mA, 5 VDC	

Note: Values in parenthesis are for sealed models.

Non-latching high capacity 1-pole type

Load	Resistive load (p.f. = 1)	Inductive load (p.f. = 0.4) (L/R = 7 ms)
Rated load	16 A at 250 VAC 16 A at 30 VDC	8 A at 250 VAC 8 A at 30 VDC
Contact material	Ag-Alloy	
Carry current	16 A	
Max. operating voltage	380 VAC, 125 VDC	
Max. operating current	16 A	
Max. switching capacity	4,000 VA, 480 W	2,000 VA, 240 W
Min. permissible load	100 mA, 5 VDC	

Non-latching high-sensitivity

Load	1-pole type		2-pole type	
	Resistive load (p.f. = 1)	**Inductive load (p.f. = 0.4) (L/R = 7 ms)**	**Resistive load (p.f. = 1)**	**Inductive load (p.f. = 0.4) (L/R = 7 ms)**
Rated load	5 A at 250 VAC 5 A at 30 VDC	2 A at 250 VAC 3 A at 30 VDC	3 A at 250 VAC 3 A at 30 VDC	1 A at 250 VAC 1.50 A at 30 VDC
Contact material	Ag-Alloy			
Carry current	5 A		3 A	
Max. operating voltage	380 VAC, 125 VDC			
Max. operating current	5 A		3 A	
Max. switching capacity	1,250 VA, 150 W	500 VA, 90 W	750 VA, 90 W	250 VA, 45 W
Min permissible load	100 mA, 5 VDC		10 mA, 5 VDC	

Note: 1. P standard: $\lambda_{50} = 0.10 \times 10^{-6}$ operation, for all models

2. For individual product agency approvals consult factory.

Latching

Load	1-pole type		2-pole type	
	Resistive load (p.f. = 1)	Inductive load (p.f. = 0.4) (L/R = 7 ms)	Resistive load (p.f. = 1)	Inductive load (p.f. = 0.4) (L/R = 7 ms)
Rated load	5 A at 250 VAC 5 A at 30 VDC	3.50 A at 250 VAC 2.50 A at 30 VDC	3 A at 250 VAC 3 A at 30 VDC	1.50 A at 250 VAC 2 A at 30 VDC
Contact material	Ag-Alloy			
Carry current	5 A		3 A	
Max. operating voltage	380 VAC, 125 VDC			
Max. operating current	5 A		3 A	
Max. switching capacity	1,250 VA, 150 W	875 VA, 75 W	750 VA, 90 W	375 VA, 60 W
Min permissible load	100 mA, 5 VDC		10 mA, 5 VDC	

Note: 1. P standard: $\lambda_{50} = 0.10 \times 10^{-6}$ operation for all models

2. For individual product agency approvals consult factory.

■ Coil Data

Non-latching DC coil

Rated voltage (VDC)	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Pick-up voltage	Dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
3	176	17	0.07	0.14	70% max.	15% min.	110% max. at 70°C (158°F)	Approx. 530
5	106	47	0.20	0.39				
6	88.20	68	0.28	0.55				
12	43.60	275	1.15	2.29				
24	21.80	1,100	4.27	8.55				
48	11.50	4,170	13.86	22.71				
100	5.30	18,860	67.20	93.20				
110	4.80	22,900	81.50	110.60				

Non-latching AC coil

Rated voltage (VAC)	Rated current (mA)(at 60Hz)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Pick-up voltage	Dropout voltage	Maximum voltage	Power consumption (VA)
			Armature OFF	Armature ON	% of rated voltage			
6	150	16	0.05	0.10	80% max.	30% min.	110% max. at 70°C (158°F)	Approx. 0.9
12	75	65	0.19	0.39				
24	37.50	260	0.81	1.55				
50	18	1,130	3.25	6.73				
100/(110)	9/(10.60)	4,600	13.34	26.84				
120	7.50	6,500	21	42				
200/(220)	4.5/(5.3)	20,200	51.3	102				
220	4.1	25,000	57.5	117				
240	3.80	30,000	65.50	131				

Non-latching high-sensitivity DC coil

Rated voltage (VDC)	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Pick-up voltage	Dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
3	120	25	0.13	0.26	70% max.	15% min.	110% max. at 70°C (158°F)	Approx. 360
5	71.40	70	0.37	0.75				
6	60	100	0.53	1.07				
12	30	400	2.14	4.27				
24	15	1,600	7.80	15.60				
48	7.50	6,400	31.20	62.40				

Latching dual coil type - Set coil

Rated voltage (VDC)	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Pick-up voltage	Dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
3	227	10.80	0.026	0.052	70% max.	70% max.	110% max. at 70°C (158°F)	Approx. 850
5	167	30	0.073	0.146				
6	138	43.50	0.104	0.208				
12	70.60	170	0.42	0.83				
24	34.60	694	1.74	3.43				

Latching dual coil type - Reset coil

Rated voltage (VDC)	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Pick-up voltage	Dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
3	200	15	0.001	0.002	70% max.	70% max.	110% max. at 70°C (158°F)	Approx. 600
5	119	42	0.003	0.006				
6	100	60	0.005	0.009				
12	50	240	0.018	0.036				
24	25	960	0.079	0.148				

Note: 1. The rated current and coil resistance are measured at a coil temperature of 23°C (73°F) with a tolerance of ±10%.

2. The operating characteristics are measured at a coil temperature of 23°C (73°F).

■ Characteristics

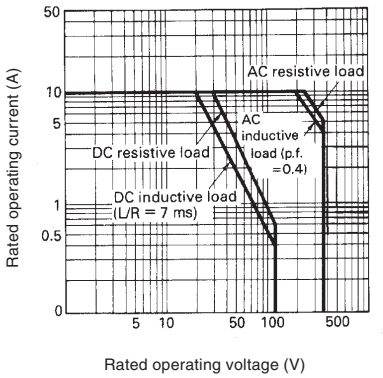
Item		Non-latching	Latching
Contact resistance		100 mΩ	
Operate (set) time		15 ms. max.	20 ms max.
Release (reset) time		AC: 10 ms max.; DC: 5 ms max.	20 ms max.
Bounce time	Operate	---	Mean value approx. 3 ms
	Release	---	Mean value approx. 8 ms
Operating frequency	Mechanical	18,000 operations/hour	
	Electrical	1,800 operations/hour (under rated load)	
Insulation resistance		1,000 MΩ min. (at 500 VDC)	
Dielectric strength		5,000 VAC, 50/60 Hz for 1 minute between coil and contacts	
		1,000 VAC, 50/60 Hz for 1 minute across contacts of same pole	
		3,000 VAC, 50/60 Hz for 1 minute between contact sets, 2-pole non-latching	
		1,000 VAC, 50/60 Hz for 1 minute between set and reset coils of dual coil latching	
Vibration	Mechanical durability	10 to 55 Hz; 1.50 mm (0.06) double amplitude	
	Malfunction durability	10 to 55 Hz; 1.50 mm (0.06) double amplitude	
Shock	Mechanical durability	1,000 m/s^2 (approx. 100G)	
	Malfunction durability	200 m/s^2 (approx. 20 G) when energized 100 m/s^2 (approx. 10 G) when de-energized	500 m/s^2 (approx. 50 G) at set (1-pole) 200 m/s^2 (approx 20G) at set (2-pole) 100 m/s^2 (approx. 10 G) at reset
Ambient temperature		-40 to 70°C (-40 to 158°F)	
Humidity		5% to 85% RH	
Service life	Mechanical	10,000,000 operations min. DC: 20,000,000 operations min. (at 18,000 operations/hour)	10,000,000 operations min. (at 18,000 operations/hour)
	Electrical	100,000 operations min. (at 1,800 operations /hr) at rated load. See “Characteristics Data”	
Weight		Approx. 17 g (0.60 oz.)	Approx. 17 g. (Approx 20g for quick-connect type)

Note: Data shown are of initial value.

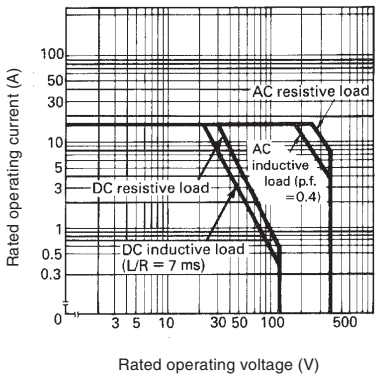
■ Characteristic Data

Maximum Switching Capacity - Non-latching Types

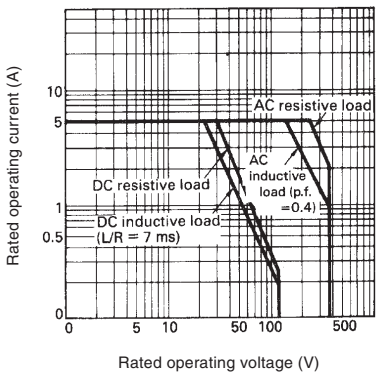
PCB: Single-pole general purpose Semi-sealed
Quick-connect: Single-pole single button



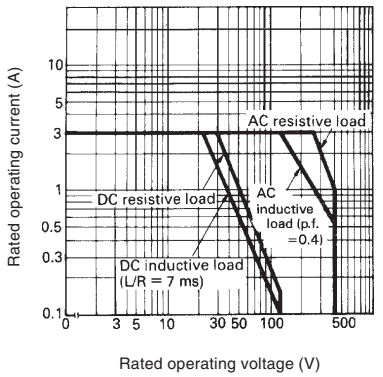
High capacity



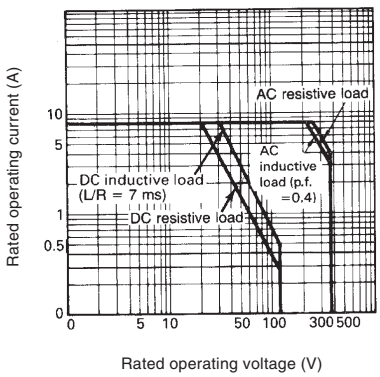
PCB: Single-pole high sensitivity Two-pole general purpose



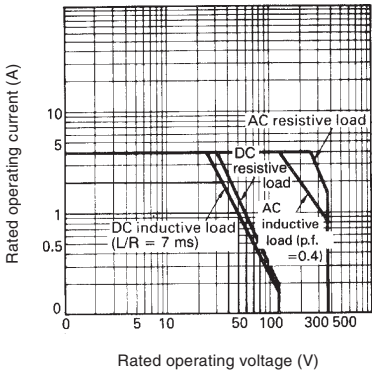
PCB: Two-pole high sensitivity



PCB: Single-pole general purpose Sealed

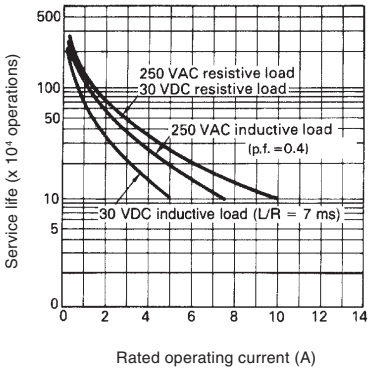


PCB: Two-pole general purpose Sealed

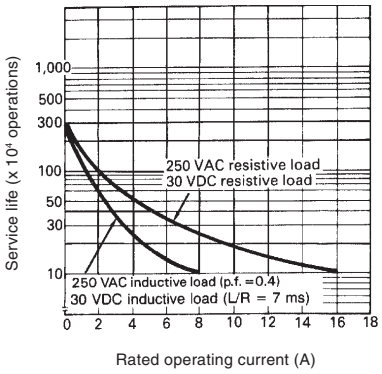


Electrical Service Life - Non-latching Types

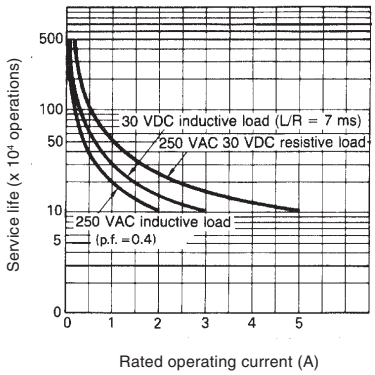
PCB: Single-pole general purpose
Semi-sealed
Quick-connect: Single-pole single button



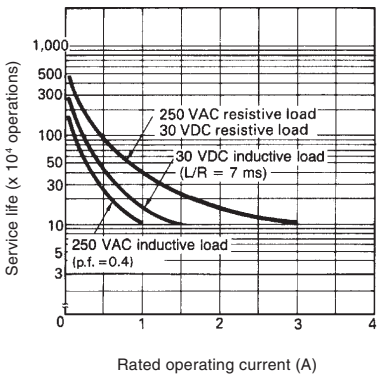
High capacity



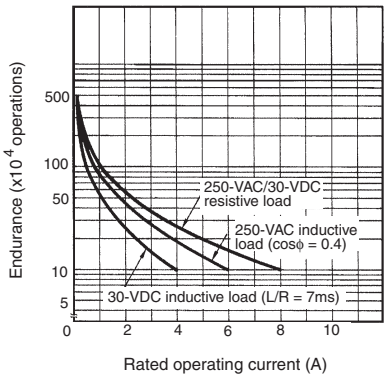
PCB: Single-pole high sensitivity
Two-pole general purpose



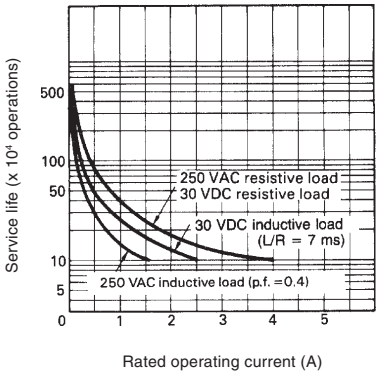
PCB: Two-pole high sensitivity



PCB: Single-pole general purpose
Sealed

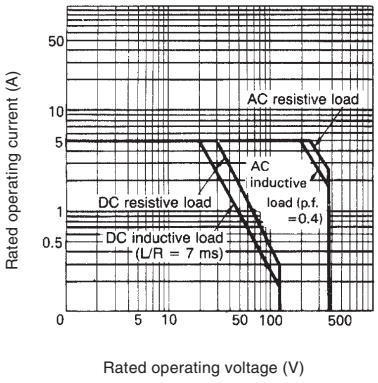


PCB: Two-pole general purpose
Sealed

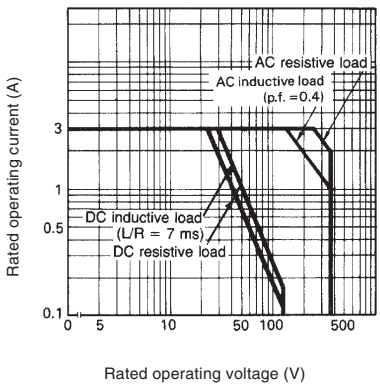


Maximum Switching Capacity - Latching Types

One pole

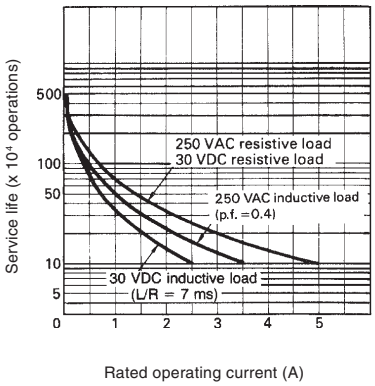


Two-pole

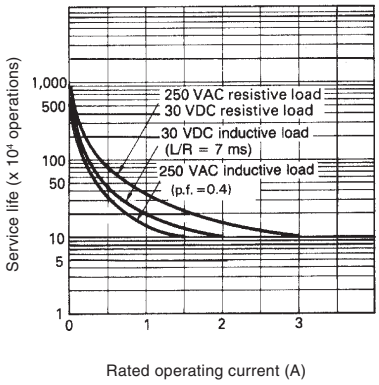


Electrical Service Life - Latching Types

One pole



Two-pole

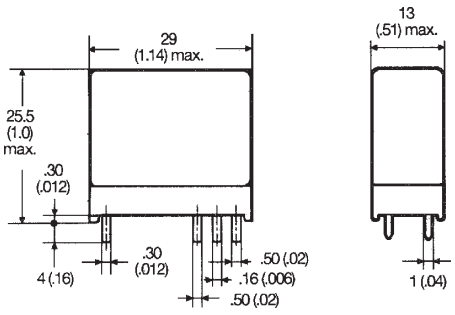


Dimensions

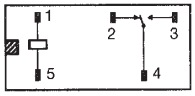
Unit: mm (inch)

■ Non-latching

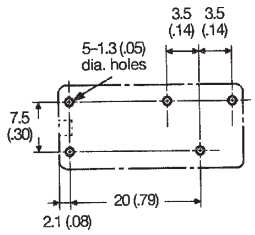
PCB Terminal: SPDT, general purpose & high sensitivity



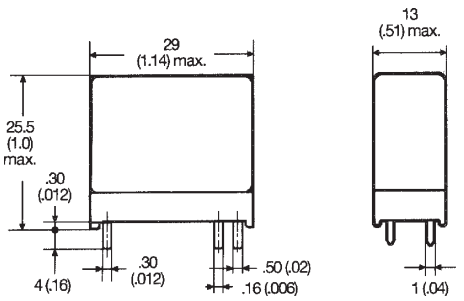
Terminal arrangement/ Internal connections
(Bottom view)



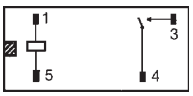
Mounting holes
(Bottom view)



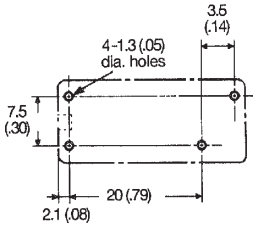
PCB Terminal: SPST-NO, general purpose & high sensitivity



Terminal arrangement/ Internal connections
(Bottom view)

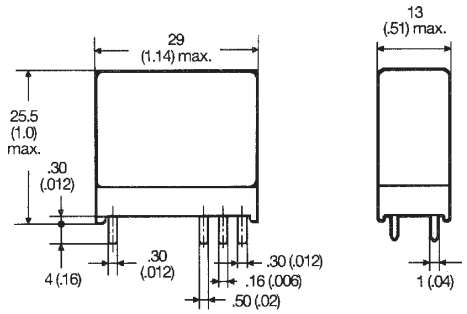


Mounting holes
(Bottom view)

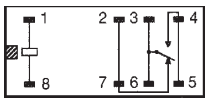


Note: 1. ▨ and [ ] indicate mounting orientation marks.
2. A tolerance of ±0.10 (0.004) applies to the above dimensions.

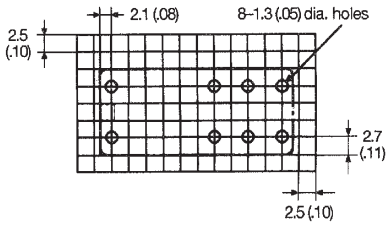
PCB Terminal: SPDT, high capacity



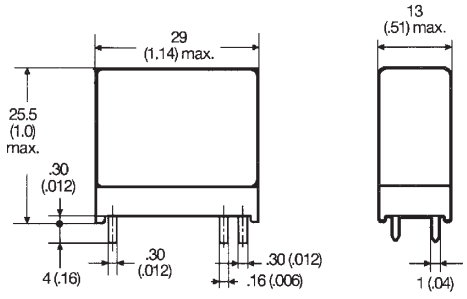
Terminal arrangement/ Internal connections
(Bottom view)



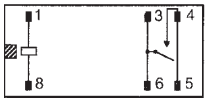
Mounting holes
(Bottom view)



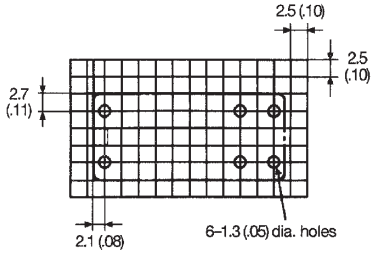
PCB Terminal: SPST-NO, high capacity



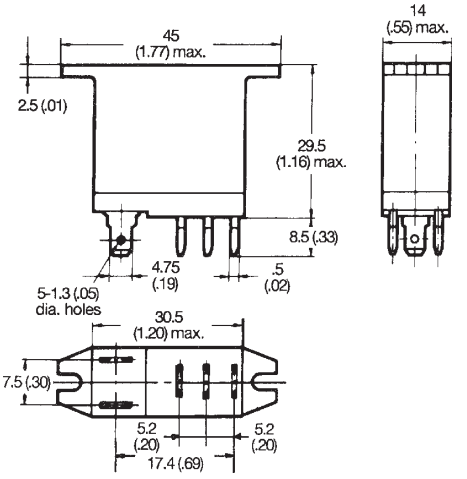
Terminal arrangement/ Internal connections
(Bottom view)



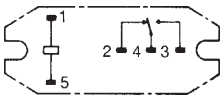
Mounting holes
(Bottom view)



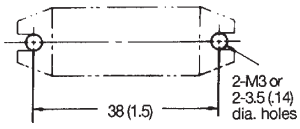
Quick-connect: SPDT



Terminal arrangement/ Internal connections
(Bottom view)

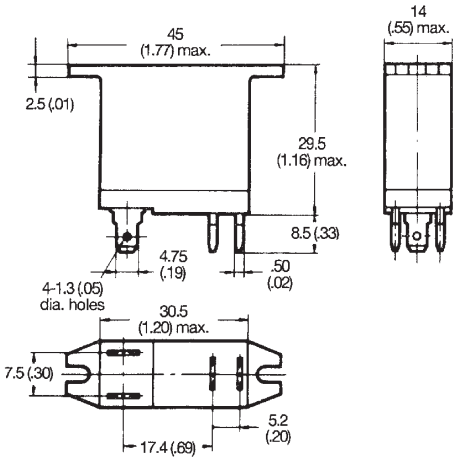


Mounting holes
(Bottom view)

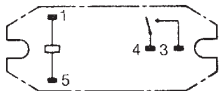


Note: 1. ▨ and [ ] indicate mounting orientation marks.
2. A tolerance of ±0.10 (0.004) applies to the above dimensions.

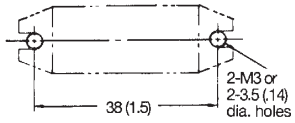
Quick-connect: SPST-NO



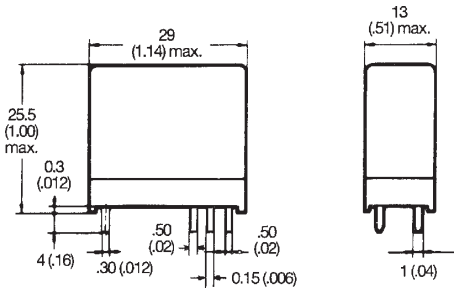
Terminal arrangement/ Internal connections
(Bottom view)



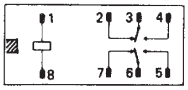
Mounting holes
(Bottom view)



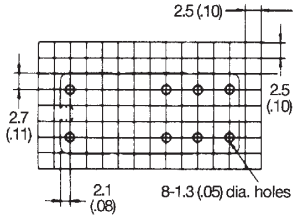
PCB Terminal: DPDT, general purpose & high sensitivity



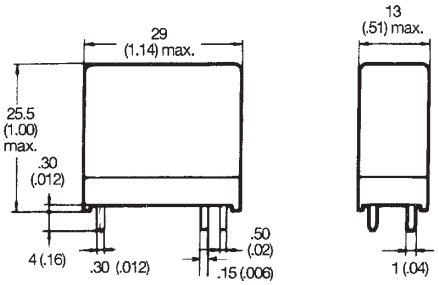
Terminal arrangement/ Internal connections
(Bottom view)



Mounting holes
(Bottom view)

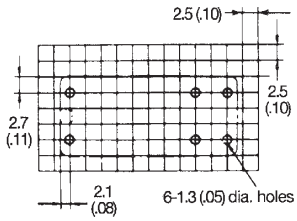


PCB Terminal: DPST-NO, general purpose & high sensitivity



Terminal arrangement/ Internal connections
(Bottom view)

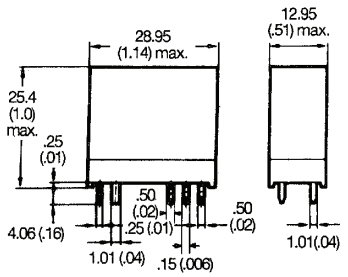
Mounting holes
(Bottom view)



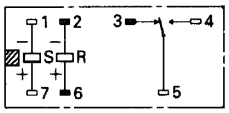
Note: 1. ▨ and [ ] indicate mounting orientation marks.
2. A tolerance of ±0.10 (0.004) applies to the above dimensions.

■ Latching

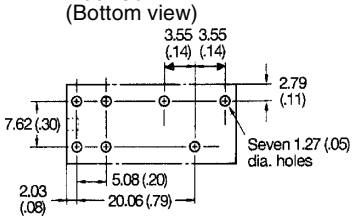
SPDT, Dual coil latching
G2RK-1



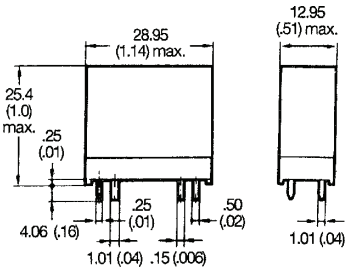
Dual coil
(Bottom view)



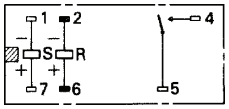
Dual coil
(Bottom view)



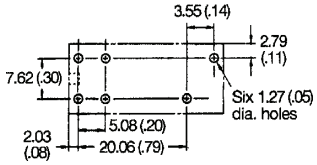
SPST-NO, Dual coil latching
G2RK-1A



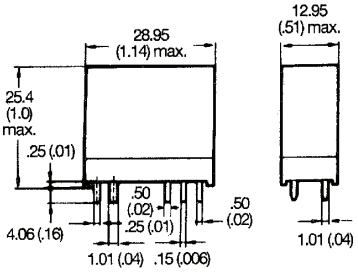
Dual coil
(Bottom view)



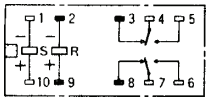
Dual coil
(Bottom view)



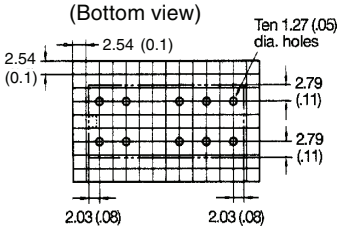
DPDT, Dual coil latching
G2RK-2



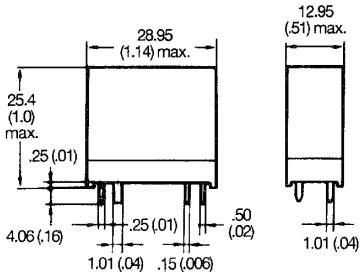
Dual coil
(Bottom view)



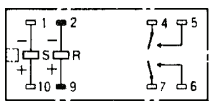
Dual coil
(Bottom view)



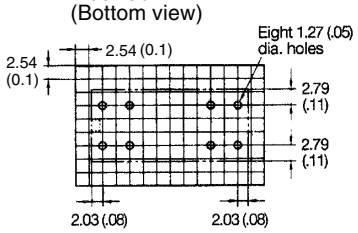
DPST-NO, Dual coil latching
G2RK-2A



Dual coil
(Bottom view)



Dual coil
(Bottom view)



Note: 1. ▨ and [ ] indicate mounting orientation marks.
2. A tolerance of ±0.10 (0.004) applies to the above dimensions.

■ Approvals

UL Recognized (File No. E41643) / CSA Certified (File No. 31928)

Type	Coil rating	Contact ratings	Number of test operations
G2R-1(A) **G2R-1(A)4** **G2R-1(A)-H**	3 to 110 VDC 3 to 240VAC	10A , 30 VDC (Resistive), 40°C	100 x 10^3
		10A , 250 VAC (General purpose), 40°C	
		10A , 277 VAC (General purpose), 40°C	6 x 10^3
		TV-3 , 120 VAC (N.O. contact) , 40°C	
		600WT, 120VAC (Tungsten), 40°C	25 x 10^3
		1/3 HP , 125 VAC (N.O. contact), 70°C	30 x 10^3
		1/2 HP , 277 VAC , 40°C	6 x 10^3
		TV-8 , 120 VAC (N.O. contact , ASI contacts), 40°C	25 x 10^3
		B300 (Poilot duty), 60°C	30 x 10^3
G2R-1(A)-E	3 to 110 VDC 3 to 240VAC	16A , 30 VDC (Resistive), 40°C	6 x 10^3
		16A , 250 VAC (General purpose), 40°C	30 x 10^3
		360 WT , 120 VAC (Tungsten), 40°C	25 x 10^3
		TV-3 , 120 VAC , 40°C	
		1HP , 240 VAC, 40°C	6 x 10^3
		TV-8 , 120 VAC (N.O. contact), 40°C	25 x 10^3
G2R-2(A) **G2R-2(A)4** **G2R-2(A)-H**	3 to 110 VDC 3 to 240VAC	10A , 30 VDC (Resistive), 40°C	50 x 10^3
		10A , 277 VAC (General purpose), 40°C	20 x 10^3
		5A , 250 VAC (General purpose), 70°C	100 x 10^3
		TV-3 , 120 VAC (N.O. contact), 40°C	25 x 10^3
		1/6 HP , 120 VAC, 40°C	6 x 10^3
		1/3 HP , 265 VAC, 40°C	30 x 10^3
		250 VA , 120 VAC (Pilot duty), 70°C	
		B300 (Poilot duty), 40°C	6 x 10^3
G2RK-1(A)	3 to 24 VDC	10A , 30 VDC (Resistive), 40°C	6 x 10^3
		10A , 250 VAC (General use), 40°C	
		TV-3 (N.O. contact), 40°C	25 x 10^3
		1/2 HP , 250 VAC, 40°C	6 x 10^3
		A300 (Pilot duty), 40°C	
G2RK-2(A)	3 to 24 VDC	5A , 30 VDC (Resistive), 40°C	6 x 10^3
		5A , 250 VAC (General use), 40°C	
		TV-3 (N.O. contact), 40°C	25 x 10^3
		1/6 HP , 120 VAC, 40°C	6 x 10^3
		1/3 HP , 240 VAC, 40°C	
		B300 (Pilot duty), 40°C	

Note: 1. The rated values approved by each of the safety standards (e.g., UL and CSA) may be different from the performance characteristics individually defined in this catalog.

2. In the interest of product improvement, specifications are subject to change.

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