

## Relay - MATSUSHITA (Panasonic), APAN3124

### ■ Coil specifications

All values in the table are measured at 20 °C with a tolerance of ±10 %.

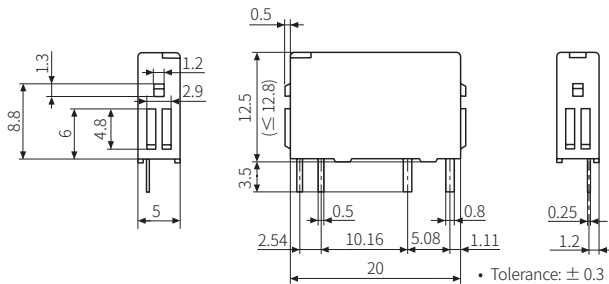
Rated voltage	Operate voltage	Release voltage	Rated current	Coil resistance	Power consumption
24 VDC≐	≥ 70 % of rated voltage	≤ 5 % of rated voltage	7.5 mA	3,200 Ω	180 mW

### ■ Contact specifications

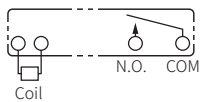
Manufacture	MATSUSHITA (Panasonic)
Contact arrangement	1 Form A (SPST-1a)
Contact material	Au-clad AgNi type
Contact resistance (initial)	30 mΩ (6 VDC≐ 1 A)
Rated load	5 A 250 VAC~ / 5 A 30 VDC≐
Max. switching capacity	1,250 VA / 150 W
Min. switching capacity	100 mVDC≐ 100 uA
Max. switching voltage	250 VAC~ / 110 VDC≐
Max. switching current	5 A
Insulation resistance	≥ 1,000 MΩ (500 VDC≐ megger)
Dielectric strength (contact-coil)	3,000 VAC~ 50/60 Hz for 1 minute
Dielectric strength (open contacts)	1,000 VAC~ 50/60 Hz for 1 minute
Surge voltage	6,000 V
Operate time	≤ 10 ms
Release time	≤ 5 ms
Vibration	3.5 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour
Vibration (malfunction)	2.5 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minute
Shock	980 m/s <sup>2</sup> (≈ 100 G) in each X, Y, Z direction for 3 times
Shock (malfunction)	147 m/s <sup>2</sup> (≈ 15 G) in each X, Y, Z direction for 3 times
Mechanical life expectancy	≥ 20,000,000 operations (at 180 operations/min)
Electrical life expectancy	≥ 100,000 operations (3 A 250 VAC~, 30 VDC≐ resistive load) or ≥ 50,000 operations (5 A 250 VAC~, 30 VDC≐ resistive load, at 20 operations/min)
Ambient temperature	-40 to 90 °C (a non freezing or condensation environment)
Ambient humidity	5 to 85 %RH (a non freezing or condensation environment)
Weight	≈ 3 g

### ■ Dimensions

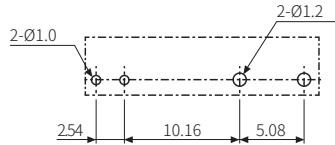
• unit: mm



• Circuit diagram (bottom view)



• PCB pattern



It was written based on the data provided by each manufacturer, but there is room for change, so be sure to check the manufacturer's data.

## Relay - TAKAMISAWA (Fujitsu), NYP24W-K

### ■ Coil specifications

All values in the table are measured at 20 °C with a tolerance of ±10 %.

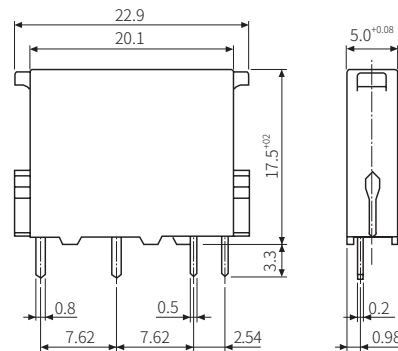
Rated voltage	Operate voltage	Release voltage	Rated current	Coil resistance	Power consumption
24 VDC≐	16.1 VDC≐	2.4 VDC≐	5 mA	4,800 Ω	120 mW

### ■ Contact specifications

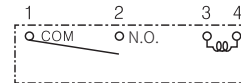
Manufacture	TAKAMISAWA (Fujitsu)
Contact arrangement	1 Form A (SPST-1a)
Contact material	Gold overlay silver alloy
Contact resistance (initial)	≤ 30 mΩ (6 VDC≐ 1 A)
Rated load	3 A 250 VAC~ / 3 A 30 VDC≐
Max. switching capacity	750 VA / 90 W
Min. switching capacity	5 VDC≐ 1 mA
Max. switching voltage	270 VAC~ / 150 VDC≐
Max. switching current	5 A
Insulation resistance	≥ 1,000 MΩ (500 VDC≐ megger)
Dielectric strength (contact-coil)	3,000 VAC~ 50/60 Hz for 1 minute
Dielectric strength (open contacts)	750 VAC~ 50/60 Hz for 1 minute
Surge voltage	5,080 V
Operate time	≤ 10 ms
Release time	≤ 5 ms
Vibration	5.0 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour
Vibration (malfunction)	1.5 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minute
Shock	1,000 m/s <sup>2</sup> (≈ 100 G) in each X, Y, Z direction for 3 times
Shock (malfunction)	100 m/s <sup>2</sup> (≈ 10 G) in each X, Y, Z direction for 3 times
Mechanical life expectancy	≥ 20,000,000 operations (at 180 operations/min)
Electrical life expectancy	≥ 100,000 operations (3 A 250 VAC~, 30 VDC≐ resistive load) or ≥ 50,000 operations (5 A 250 VAC~, 30 VDC≐ resistive load, at 20 operations/min)
Ambient temperature	-40 to 90 °C (a non freezing or condensation environment)
Ambient humidity	35 to 80 %RH (a non freezing or condensation environment)
Weight	≈ 3.5 g

### ■ Dimensions

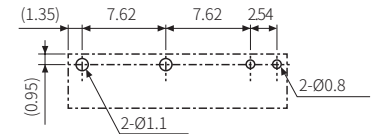
• unit: mm



• Circuit diagram (bottom view)



• PCB pattern



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## Relay - MATSUSHITA (Panasonic), PQ1a-24V

### ■ Coil specifications

All values in the table are measured at 20 °C with a tolerance of ±10 %.

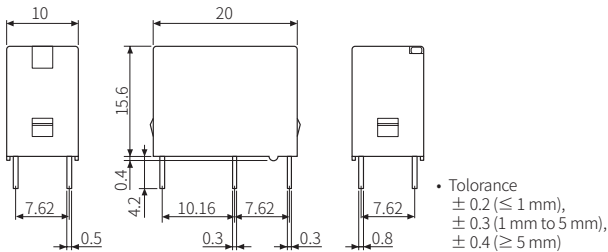
Rated voltage	Operate voltage	Release voltage	Rated current	Coil resistance	Power consumption
24 VDC≐	≥ 75 % of rated voltage	≤ 5 % of rated voltage	8.3 mA	2,880 Ω	200 mW

### ■ Contact specifications

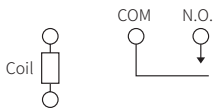
Manufacture	MATSUSHITA (Panasonic)				
Contact arrangement	1 Form A (SPST-1a)				
Contact material	Au-clad Ag/Ni type				
Contact resistance (initial)	50 mΩ (6 VDC≐ 1 A)				
Rated load (with resistive load)	5 A 250 VAC~				5 A 30 VDC≐
Max. switching capacity (with resistive load)	1,250 VA				150 W
Max. switching voltage	250 VAC~				110 VDC≐
Max. switching current	5 A				
Insulation resistance (initial)	≥ 1,000 MΩ (500 VDC≐ megger)				
Dielectric strength (contact-coil)	4,000 VAC~ 50/60 Hz for 1 minute				
Dielectric strength (open contacts)	1,000 VAC~ 50/60 Hz for 1 minute				
Surge voltage	8,000 V				
Operate time (at rated voltage)	≤ 20 ms				
Release time (at rated voltage)	≤ 10 ms				
Vibration	3.5 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour				
Vibration (malfunction)	2.5 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minute				
Shock	980 m/s <sup>2</sup> (≈ 100 G) X, Y, Z in each X, Y, Z direction for 3 times				
Shock (malfunction)	294 m/s <sup>2</sup> (≈ 30 G) X, Y, Z in each X, Y, Z direction for 3 times				
Mechanical life expectancy	≥ 20,000,000 operations (at 180 operations/min)				
Electrical life expectancy	≥ 100,000 operations (5 A 250 VAC~, 30 VDC≐ resistive load)				
Ambient temperature	-40 to 70 °C (a non freezing or condensation environment)				
Ambient humidity	5 to 85 %RH (a non freezing or condensation environment)				
Weight	≈ 7 g				

### ■ Dimensions

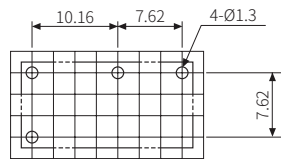
• unit: mm



• Circuit diagram (bottom view)



• PCB pattern



• Tolerance: ±0.1

It was written based on the data provided by each manufacturer, but there is room for change, so be sure to check the manufacturer's data.

## Relay - OMRON, G6B-1174P-FD-US

### ■ Coil specifications

All values in the table are measured at 23 °C with a tolerance of ±10 %.

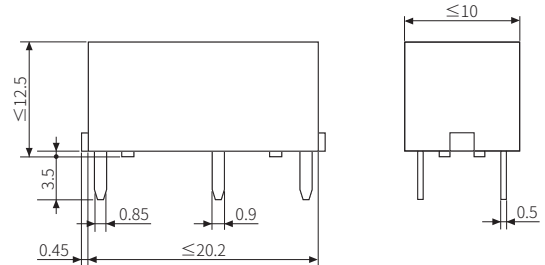
Rated voltage	Operate voltage	Release voltage	Rated current	Coil resistance	Power consumption
24 VDC≐	≥ 70 % of rated voltage	≤ 10 % of rated voltage	8.3 mA	2,880 Ω	200 mW

### ■ Contact specifications

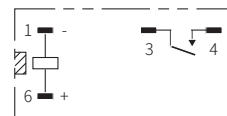
Manufacture	OMRON				
Contact arrangement	1 Form A (SPST-1a)				
Contact material	Ag3SnIn type				
Contact resistance (initial)	30 mΩ (5 VDC≐ 1 A)				
Rated load (with resistive load)	5 A 250 VAC~				5 A 30 VDC≐
Max. switching capacity (with resistive load)	1,250 VA				150 W
Max. switching voltage	380 VAC~				125 VDC≐
Max. switching current	5 A				
Insulation resistance (initial)	≥ 1,000 MΩ (500 VDC≐ megger)				
Dielectric strength (contact-coil)	3,000 VAC~ 50/60 Hz for 1 minute				
Dielectric strength (open contacts)	1,000 VAC~ 50/60 Hz for 1 minute				
Surge voltage	6,000 V				
Operate time (at rated voltage)	≤ 10 ms				
Release time (at rated voltage)	≤ 10 ms				
Vibration	1.5 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour				
Vibration (malfunction)	1.5 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minute				
Shock	1,000 m/s <sup>2</sup> (≈ 100 G) in each X, Y, Z direction for 3 times				
Shock (malfunction)	100 m/s <sup>2</sup> (≈ 10 G) in each X, Y, Z direction for 3 times				
Mechanical life expectancy	≥ 50,000,000 operations (at 300 operations/min)				
Electrical life expectancy	≥ 100,000 operations (5 A 250 VAC~, 30 VDC≐ resistive load, at 30 operations/min)				
Ambient temperature	-25 to 70 °C (a non freezing or condensation environment)				
Ambient humidity	5 to 85 %RH (a non freezing or condensation environment)				
Weight	≈ 5 g				

### ■ Dimensions

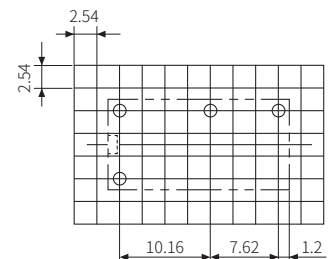
• unit: mm



• Circuit diagram (bottom view)



• PCB pattern



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## Relay - MATSUSHITA (Panasonic), AHN

### ■ Coil specifications

- AHN12024

Rated voltage	Operate voltage	Release voltage	Rated current	Power consumption
24 VDC≒	≥ 70 % of rated voltage	≤ 15 % of rated voltage	22 mA	0.53 W

- AHN110X0

Rated voltage	Operate voltage	Release voltage	Rated current	Power consumption
100/110 VAC~	≥ 80 % of rated voltage	≤ 30 % of rated voltage	50 Hz: 11/13 mA 60 Hz: 9/10.6 mA	50 Hz: 1.1 to 1.4 VA 60 Hz: 0.9 to 1.2 VA

- AHN110Y2

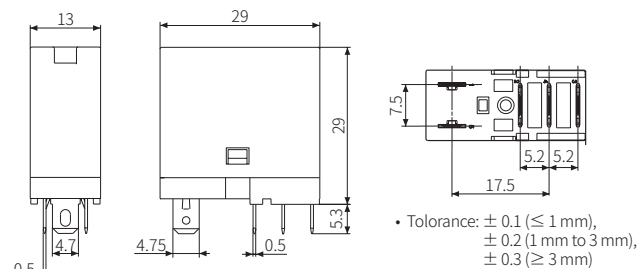
Rated voltage	Operate voltage	Release voltage	Rated current	Power consumption
220 VAC~	≥ 80 % of rated voltage	≤ 30 % of rated voltage	50 Hz: 5.0/5.9 mA 60 Hz: 4.1/4.8 mA	50 Hz: 1.1 to 1.4 VA 60 Hz: 0.9 to 1.2 VA

### ■ Contact specifications

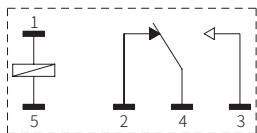
Manufacture	MATSUSHITA (Panasonic)		
Contact arrangement	1 Form C		
Contact material	AgSnO <sub>2</sub> type		
Contact resistance (initial)	≤ 100 mΩ (6 VDC≒ 1 A)		
Rated load (with resistive load)	10 A 250 VAC~	10 A 30 VDC≒	
Max. switching capacity (with resistive load)	4,000 VA	300 W	
Max. switching voltage	250 VAC~	30 VDC≒	
Max. switching current	16 A	10 A	
Insulation resistance (initial)	≥ 1,000 MΩ (500 VDC≒ megger)		
Dielectric strength (contact-coil)	5,000 VAC~ 50/60 Hz for 1 minute		
Dielectric strength (open contacts)	1,000 VAC~ 50/60 Hz for 1 minute		
Operate time (at rated voltage)	≤ 15 ms		
Release time (at rated voltage)	≤ 5 ms		
Vibration	1.5 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour		
Vibration (malfunction)	1.5 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minute		
Shock	1,000 m/s <sup>2</sup> (≈ 100 G) in each X, Y, Z direction for 3 times		
Shock (malfunction)	100 m/s <sup>2</sup> (≈ 10 G) in each X, Y, Z direction for 3 times		
Mechanical life expectancy	<ul style="list-style-type: none"> <li>AHN12024: ≥ 20,000,000 operations (at 300 operations/min)</li> <li>AHN110X0, AHN110Y2: ≥ 10,000,000 operations (at 300 operations/min)</li> </ul>		
Electrical life expectancy	≥ 100,000 operations (at 20 operations/min)		
Ambient temperature	-40 to 70 °C (a non freezing or condensation environment)		
Ambient humidity	5 to 85 %RH (a non freezing or condensation environment)		
Weight	≈ 19 g		

### ■ Dimensions

- unit: mm



- Circuit diagram (bottom view)



It was written based on the data provided by each manufacturer, but there is room for change, so be sure to check the manufacturer's data.

## Relay - OMRON, G2R-1-S

### ■ Coil specifications

- G2R-1-S24VDC

Rated voltage	Operate voltage	Release voltage	Rated current	Power consumption
24 VDC≒	≥ 70 % of rated voltage	≤ 15 % of rated voltage	21.8 mA	0.53 W

- G2R-1-S100/(110)VAC

Rated voltage	Operate voltage	Release voltage	Rated current	Power consumption
100/110 VAC~	≥ 80 % of rated voltage	≤ 30 % of rated voltage	50 Hz: 11 mA 60 Hz: 9/10.6 mA	60 Hz: 0.9 VA

- G2R-1-S200/(220)VAC

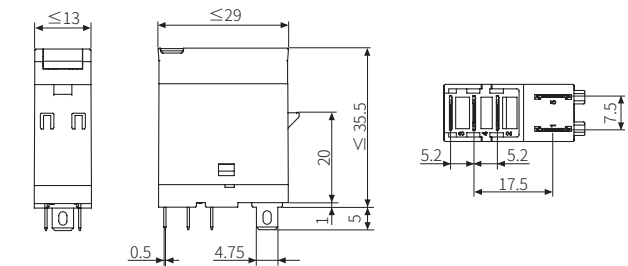
Rated voltage	Operate voltage	Release voltage	Rated current	Power consumption
200/220 VAC~	≥ 80 % of rated voltage	≤ 30 % of rated voltage	50 Hz: 5.5/4 mA 60 Hz: 4.5/5.3 mA	60 Hz: 0.9 VA

### ■ Contact specifications

Manufacture	OMRON		
Contact arrangement	1 Form C		
Contact material	AgCdO type		
Contact resistance (initial)	≤ 100 mΩ		
Rated load (with resistive load)	10 A 250 VAC~	10 A 30 VDC≒	
Max. switching capacity (with resistive load)	2,500 VA	300 W	
Max. switching voltage	380 VAC~	125 VDC≒	
Max. switching current	10 A (with resistive load)		
Insulation resistance (initial)	≥ 1,000 MΩ (500 VDC≒ megger)		
Dielectric strength (contact-coil)	5,000 VAC~ 50/60 Hz for 1 minute		
Dielectric strength (open contacts)	1,000 VAC~ 50/60 Hz for 1 minute		
Operate time (at rated voltage)	≤ 15 ms		
Release time (at rated voltage)	<ul style="list-style-type: none"> <li>G2R-1-S24VDC: ≤ 5 ms</li> <li>G2R-1-S100/(110)VAC, G2R-1-S200/(220)VAC: ≤ 10 ms</li> </ul>		
Vibration	1.5 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour		
Vibration (malfunction)	1.5 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minute		
Shock	1,000 m/s <sup>2</sup> (≈ 100 G) in each X, Y, Z direction for 3 times		
Shock (malfunction)	100 m/s <sup>2</sup> (≈ 10 G) in each X, Y, Z direction for 3 times		
Mechanical life expectancy	<ul style="list-style-type: none"> <li>G2R-1-S24VDC: ≥ 20,000,000 operations (at 300 operations/min)</li> <li>G2R-1-S100/(110)VAC, G2R-1-S200/(220)VAC: ≥ 10,000,000 operations (at 300 operations/min)</li> </ul>		
Electrical life expectancy	≥ 100,000 operations (at 30 operations/min)		
Ambient temperature	-40 to 70 °C (a non freezing or condensation environment)		
Ambient humidity	5 to 85 %RH (a non freezing or condensation environment)		
Weight	≈ 20 g		

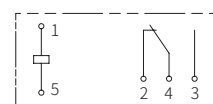
### ■ Dimensions

- unit: mm

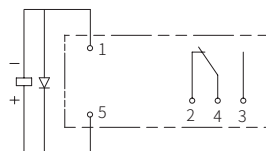


- Circuit diagram (bottom view)

G2R-1-S



G2R-1-SD(DC)



It was written based on the data provided by each manufacturer, but there is room for change, so be sure to check the manufacturer's data.