

**PCB Signal Relay – G5V-2**

**Miniature Relay for Signal Circuits**

- ROHS compliant.
- Wide switching power of 10 μA to 2 A.
- High dielectric strength coil-contacts:1,000 VAC; open contacts: 750 VAC.
- Conforms to FCC Part 68 requirements.
- Ag (Au alloy) bifurcated crossbar contacts and fully sealed for high contact reliability.
- New 150-mW relays with high-sensitivity.



**Ordering Information**

Classification	Contact form	Contact type	Contact material	Enclosure Rating	Model	High-sensitivity	
						Standard	DPDT
			Ag (Au alloy)	Fully sealed	G5V-2		
					G5V-2-H1		

**Note:** When ordering, add the rated coil voltage to the model number.  
 Example: G5NB-1A-E 12 VDC

**Model Number Legend**

G5V - □ - □ - □ - □ - □ VDC  
 1 2 3

1. Contact Form
2. DPDT
2. Classification
3. Rated Coil Voltage

H1: High-sensitivity

**Specifications**

**Coil Rating**

Rated voltage	Rated current	Coil resistance (W)	Coil inductance		Must operate voltage	Must release voltage	Max. voltage	Power consumption
			Armature OFF	Armature ON				
3 VDC	166.7 mA	18 Ω	0.04	0.09	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW
5 VDC	100 mA	50 Ω	0.16	0.31	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW
6 VDC	83.3 mA	72 Ω	0.47	0.98	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW
9 VDC	55.6 mA	162 Ω	1.98	4.07	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW
12 VDC	41.7 mA	288 Ω	7.23	16.7	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW
24 VDC	20.8 mA	1,152 Ω	28.46	67.0	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW
48 VDC	12 mA	4,000 Ω	100.0	216.0	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW

Standard Models

**Contact Ratings**

Item	Standard models	High sensitivity models
Load	Resistive load (cosφ = 1)	
Rated load	0.5 A at 125 VAC; 2 A at 30 VDC	0.5 A at 125 VAC; 1 A at 24 VDC
Contact material	Ag (Au alloy)	
Rated carry current	2 A	
Max. switching voltage	125 VAC, 125 VDC	
Max. switching current	2 A	1 A
Max. switching power	62.5 VA, 60 W	62.5 VA, 24 W
Failure rate (reference value)	0.01 mA at 10 mVDC	

**Note:** P level: λ<sub>60</sub> = 0.1 x 10<sup>-6</sup>/operation  
 This value was measured at a switching frequency of 120 operations/min and the criterion of contact resistance is 100Ω. This value may vary depending on the switching frequency and operating environment. Always double-check relay suitability under actual operating conditions.

**PCB Signal Relay – G5V-2**

**High Sensitivity Models**

Rated voltage	Rated current	Coil resistance	Coil inductance		Must operate voltage	Must release voltage	Max. voltage	Power consumption
			Armature OFF	Armature ON				
3 VDC	50 mA	60 Ω	0.18	0.46	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW
5 VDC	30 mA	166.7 Ω	0.70	1.67	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW
6 VDC	25 mA	240 Ω	1.67	2.90	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW
9 VDC	16.7 mA	540 Ω	6.72	11.76	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW
12 VDC	12.5 mA	960 Ω	10.08	15.68	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW
24 VDC	6.25 mA	2,880 Ω	36.24	54.72	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW
48 VDC	3.125 mA	7,680 Ω	108.72	163.44	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW

**Note:** 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.  
 2. Operating characteristics are measured at a coil temperature of 23°C.  
 3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

Signal Relays

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- Conforms to FCC Part 68 requirements.
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- New 150-mW relays with high-sensitivity.



**Ordering Information**

Classification	Contact form	Contact type	Contact material	Enclosure Rating	Model	High-sensitivity	
						Standard	DPDT
			Ag (Au alloy)	Fully sealed	G5V-2		
					G5V-2-H1		

**Note:** When ordering, add the rated coil voltage to the model number.  
 Example: G5NB-1A-E 12 VDC

**Model Number Legend**

G5V - □ - □ - □ - □ - □  
 1 2 3  
 VDC

1. Contact Form
2. DPDT
3. Rated Coil Voltage

2. Classification
- H1: High-sensitivity

**Specifications**

**Coil Rating**

Rated voltage	Rated current	Coil resistance (W)	Coil inductance		Must operate voltage	Must release voltage	Max. voltage	Power consumption
			Armature OFF	Armature ON				
3 VDC	166.7 mA	18 Ω	0.04	0.09	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW
5 VDC	100 mA	50 Ω	0.16	0.31	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW
6 VDC	83.3 mA	72 Ω	0.47	0.98	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW
9 VDC	55.6 mA	162 Ω	1.98	4.07	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW
12 VDC	41.7 mA	288 Ω	7.23	16.7	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW
24 VDC	20.8 mA	1,152 Ω	29.1	67.2	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW
48 VDC	12 mA	4,000 Ω	100.0	226.8	75% max. of rated voltage	5% min. of rated voltage	120% of rated voltage at 23°C	Approx. 500 mW

Standard Models

**Contact Ratings**

Item	Standard models	High sensitivity models
Load	Resistive load (cosφ = 1)	
Rated load	0.5 A at 125 VAC; 2 A at 30 VDC	0.5 A at 125 VAC; 1 A at 24 VDC
Contact material	Ag (Au alloy)	
Rated carry current	2 A	
Max. switching voltage	125 VAC, 125 VDC	
Max. switching current	2 A	1 A
Max. switching power	62.5 VA, 60 W	62.5 VA, 24 W
Failure rate (reference value)	0.01 mA at 10 mVDC	

**Note:** P level: λ<sub>60</sub> = 0.1 x 10<sup>-6</sup>/operation  
 This value was measured at a switching frequency of 120 operations/min and the criterion of contact resistance is 100Ω. This value may vary depending on the switching frequency and operating environment. Always double-check relay suitability under actual operating conditions.

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**High Sensitivity Models**

Rated voltage	Rated current	Coil resistance	Coil inductance		Must operate voltage	Must release voltage	Max. voltage	Power consumption
			Armature OFF	Armature ON				
3 VDC	50 mA	60 Ω	0.18	0.46	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW
5 VDC	30 mA	166.7 Ω	0.70	1.67	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW
6 VDC	25 mA	240 Ω	1.67	2.90	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW
9 VDC	16.7 mA	540 Ω	6.72	12.90	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW
12 VDC	12.5 mA	960 Ω	20.1	39.27	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW
24 VDC	6.25 mA	2,880 Ω	79.6	157.1	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW
48 VDC	3.125 mA	9,000 Ω	318.3	628.4	75% max. of rated voltage	5% min. of rated voltage	180% of rated voltage at 23°C	Approx. 150 mW

**Note:** 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.  
 2. Operating characteristics are measured at a coil temperature of 23°C.  
 3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

Signal Relays

**PCB Signal Relay – G5V-2**

**■ Characteristics**

**■ Characteristics**

Item	Standard models	High sensitivity models
Contact resistance (see note 1)	50 mΩ max.	100 mΩ max.
Operate time	7 ms max.	
Release time	3 ms max.	
Max. operating frequency	Mechanical: 36,000 operations/hr Electrical: 1,800 operations/hr (under rated load)	
Insulation resistance (see note 2)	1,000 MΩ min. (at 500 VDC)	
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between coil and contacts 1,000 VAC, 50/60 Hz for 1 min between contacts of different polarity 750 VAC, 50/60 Hz for 1 min between contacts of same polarity	
Impulse withstand voltage	1,00 V (10 x 160 μs) between coil and contacts (conforms to FCC part 68)	
Vibration resistance	Destruction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude) Malfunction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)	
Shock resistance	Destruction: 1,000 m/s <sup>2</sup> (approx. 100G) Malfunction: 200 m/s <sup>2</sup> (approx. 20G)	
Endurance	Mechanical: 15,000,000 operations min. (at 36,000 operations/hr) Electrical: 100,000 operations min. (at 1,800 operations/hr)	
Ambient temperature	Operating: -25°C to 65°C (with no icing) Operating: -25°C to 70°C (with no icing)	
Ambient humidity	Operating: 5% to 85%	
Weight	Approx. 5 g	

**■ Approved Standards**  
UL (File No. E41515)/CSA C22.2 No.0,  
No.14 (File No. LR24825)

Contact form	3 to 48 VDC	
Coil rating	G5V-2	
Contact rating	G5V-2-H1	

DPDT	3 to 48 VDC	0.6 A, 125 VAC (general use) 0.6 A, 110 VDC (resistive load) 2 A, 30 VDC (resistive load)
		0.5 A, 125 VAC (general use) 0.2 A, 110 VDC (resistive load) 1 A, 24 VDC (resistive load)

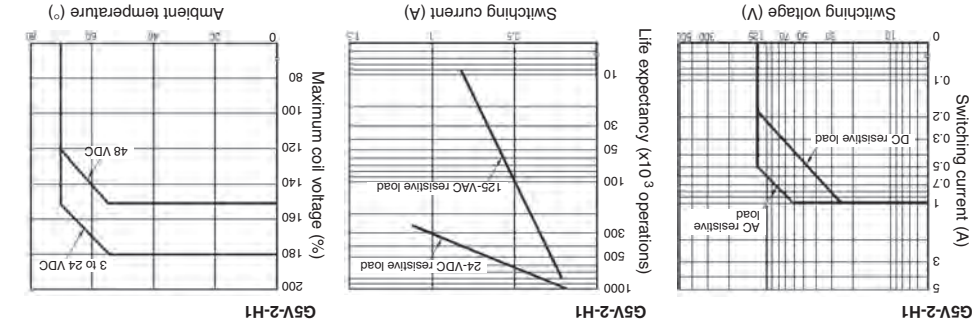
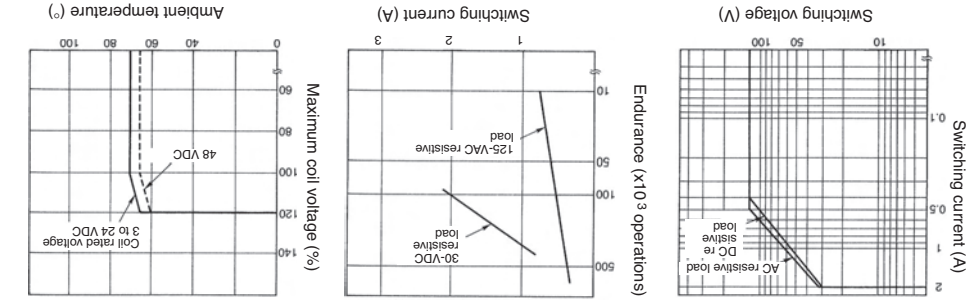
Note: The above values are initial values.  
1. The contact resistance was measured with 10mA at 1VDC with a voltage drop method.  
2. The insulation resistance was measured with a 500VDC megohmmeter applied to the same parts as those used for checking the dielectric strength.

**PCB Signal Relay – G5V-2**

**Engineering Data**

**Engineering Data**

Maximum Switching Power  
Endurance  
G5V-2  
G5V-2  
Ambient Temperature vs. Maximum Coil Voltage



Note: The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

Signal Relays

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■ Characteristics

Item	Standard models	High sensitivity models
Contact resistance (see note 1)	50 mΩ max.	100 mΩ max.
Operate time	7 ms max.	
Release time	3 ms max.	
Max. operating frequency	Mechanical: 36,000 operations/hr Electrical: 1,800 operations/hr (under rated load)	
Insulation resistance (see note 2)	1,000 MΩ min. (at 500 VDC)	
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between coil and contacts 1,000 VAC, 50/60 Hz for 1 min between contacts of different polarity 750 VAC, 50/60 Hz for 1 min between contacts of same polarity	
Impulse withstand voltage	1,00 V (10 x 160 μs) between coil and contacts (conforms to FCC part 68)	
Vibration resistance	Destruction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude) Malfunction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)	
Shock resistance	Destruction: 1,000 m/s <sup>2</sup> (approx. 100G) Malfunction: 200 m/s <sup>2</sup> (approx. 20G)	
Endurance	Mechanical: 15,000,000 operations min. (at 36,000 operations/hr) Electrical: 100,000 operations min. (at 1,800 operations/hr)	
Ambient temperature	Operating: -25°C to 65°C (with no icing) Operating: -25°C to 70°C (with no icing)	
Ambient humidity	Operating: 5% to 85%	
Weight	Approx. 5 g	

■ Approved Standards  
UL (File No. E41515)/CSA C22.2 No.0,  
No.14 (File No. LR24825)

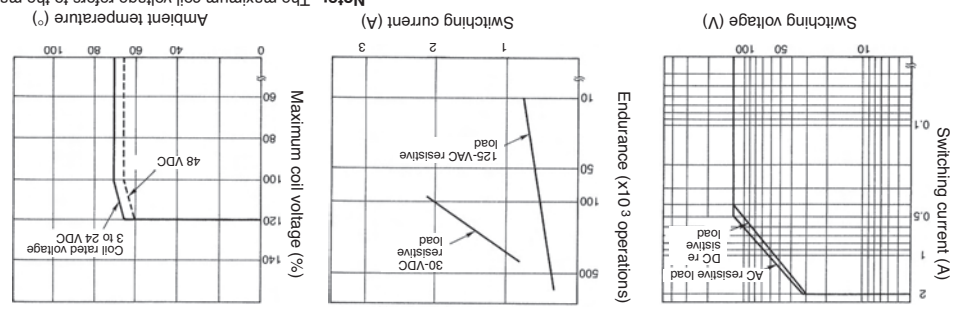
Contact form	Coil rating	Contact rating
DPDT	3 to 48 VDC	G5V-2 G5V-2-H1
		0.6 A, 125 VAC (general use) 0.6 A, 110 VDC (resistive load) 2 A, 30 VDC (resistive load)
		0.5 A, 125 VAC (general use) 0.2 A, 110 VDC (resistive load) 1 A, 24 VDC (resistive load)

Note: The above values are initial values.  
1. The contact resistance was measured with 10mA at 1VDC with a voltage drop method.  
2. The insulation resistance was measured with a 500VDC megohmmeter applied to the same parts as those used for checking the dielectric strength.

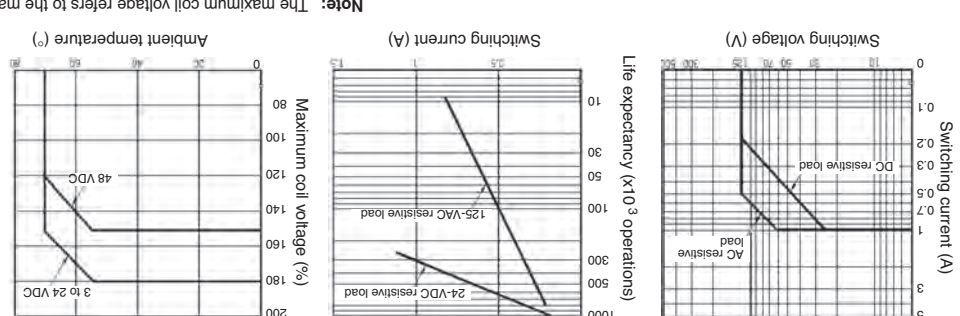
PCB Signal Relay – G5V-2

Engineering Data

Maximum Switching Power  
Endurance  
G5V-2



G5V-2  
Ambient Temperature vs. Maximum Coil Voltage



G5V-2-H1  
Ambient Temperature vs. Maximum Coil Voltage

Signal Relays



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