

RJ Series Slim Power Relays PC Board Terminal

Compact power relays. High switching capacity up to 16A.

- Contact configurations:
SPDT, SPST-NO, DPDT, DPST-NO.
SPDT, SPST-NO are available in high capacity type.
- Compact housing—only 12.7-mm wide.
- High contact rating
RJ1V (1-pole): 12A, 16A
RJ2V (2-pole): 8A
- IDEC's unique spring return mechanism ensures long electrical and mechanical life.
Electrical life: 200,000 operations (AC load)
Mechanical life: 30 million operations (AC coil, SPDT, DPDT)
- Flux-tight structure
- Environmentally friendly, RoHS directive compliant (EU directive 2002/95/EC). Contains no lead, cadmium, mercury, hexavalent chromium, PBB, or PBDE).



Standard	Mark	Certification Organization / File No.
UL508		UL recognized File No. E55996
CSA C22.2 No. 14		CSA File No. LR35144
EN61810-1		VDE No. 40015055
		EU Low Voltage Directive

PC Board Terminal

No. of Poles	Style	Contact	Part No.	Coil Voltage Code	Package Quantity
1	Plain	SPDT	RJ1V-C-*	Specify a coil voltage code in place of * in the Part No.	1
		SPST-NO	RJ1V-A-*		
	High Capacity	SPDT	RJ1V-CH-*		
		SPST-NO	RJ1V-AH-*		
2	Plain	DPDT	RJ2V-C-*		
		DPST-NO	RJ2V-A-*		

Coil Voltage Code *

Code	Rated Coil Voltage
A12	12V AC
A24	24V AC
A110	110V AC
A115	115V AC
A120	120V AC
A220	220V AC
A230	230V AC
A240	240V AC
D5	5V DC
D6	6V DC
D12	12V DC
D24	24V DC
D48	48V DC
D100	100-110V DC

Note: Specify a coil voltage code in place of * in the Part No.

Contact Ratings

No. of Poles	Style	Contact	Allowable Contact Power		Rated Load			Allowable Switching Current	Allowable Switching Voltage	Minimum Applicable Load (reference value)
			Resistive Load	Inductive Load	Voltage	Resistive Load	Inductive Load $\cos \phi = 0.3$ L/R = 7 ms			
1	Plain	NO	3000VA AC 360W DC	1875VA AC 180W DC	250V AC 30V DC	12A 12A	7.5A 6A	12A	250V AC 125V DC	5V DC, 100 mA
		NC	3000VA AC 180W DC	1875VA AC 90W DC	250V AC 30V DC	12A 6A	7.5A 3A			
	High Capacity	NO	4000VA AC 480W DC	2000VA AC 240W DC	250V AC 30V DC	16A 16A	8A 8A	16A	250V AC 125V DC	
		NC	4000VA AC 240W DC	2000VA AC 120W DC	250V AC 30V DC	16A 8A	8A 4A			
2	Plain	NO	2000VA AC 240W DC	1000VA AC 120W DC	250V AC 30V DC	8A 8A	4A 4A	8A	250V AC 125V DC	
			NC	2000VA AC 120W DC	1000VA AC 60W DC	250V AC 30V DC	8A 4A			4A 2A
		2000VA AC 120W DC	1000VA AC 60W DC	250V AC 30V DC	8A 4A	4A 2A				

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Standard Ratings

UL ratings

Voltage	Resistive					
	RJ1 (plain)		RJ2 (plain)		RJ1 (high capacity)	
	NO	NC	NO	NC	NO	NC
AC250V	12A	6A	8A	4A	16A	8A
30V DC	12A	6A	8A	4A	16A	8A

VDE ratings

Voltage	Resistive			AC-15, DC-13 (Note)	
	RJ1 (plain)	RJ2 (plain)	RJ1 (high capacity)	RJ1 (plain)	RJ2 (plain)
	NO	NO	NO	NO	NO
AC250V	12A	8A	16A	6A	3A
30V DC	12A	8A	16A	2.5A	2A

Note: The operational current represents the classification by making and breaking currents (IEC 60947-5-1.)

CSA ratings

Voltage	Resistive						Inductive					
	RJ1 (plain)		RJ2 (plain)		RJ1 (high capacity)		RJ1 (plain)		RJ2 (plain)		RJ1 (high capacity)	
	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC
AC250V	12A	12A	8A	8A	16A	16A	7.5A	7.5A	4A	4A	8A	8A
30V DC	12A	6A	8A	4A	16A	8A	6A	3A	4A	2A	8A	4A

Coil Ratings

Rated Voltage	Coil Voltage Code	Rated Current (mA) ±15% (at 20°C)		Coil Resistance (Ω) ±10% (at 20°C)	Operating Characteristics (against rated values at 20°C)			Power Consumption
		50 Hz	60 Hz		Minimum Pickup Voltage (initial value)	Dropout Voltage (initial value)	Maximum allowable voltage (Note)	
		AC 50/60 Hz						
12V	A12	43.9	37.5	243				
110V	A110	9.6	8.2	5270				
115V	A115	9.1	7.8	6030				
120V	A120	8.8	7.5	6400				
220V	A220	4.8	4.1	21530				
230V	A230	4.6	3.9	24100				
240V	A240	4.3	3.7	25570				
DC		106		47.2	70% maximum	10% minimum	170%	Approx. 0.53W to 0.64W
5V	D5	88.3		67.9				
6V	D6	44.2		271				
12V	D12	22.1		1080				
24V	D24	11.0		4340				
100-110V	D100	5.3-5.8		18870				
						160%		

Note: Maximum allowable voltage is the maximum voltage that can be applied to relay coils.

Specifications

Model	RJ1V Plain	RJ1V High Capacity	RJ2V Plain
Number of Poles	1-pole	1-pole	2-pole
Contact Configuration	SPDT, SPST-NO	SPDT, SPST-NO	DPDT, DPST-NO
Contact Material	Ag-Ni	Ag-Sn-In	Ag-Ni
Enclosure Ratings	Flux-tight		
Contact Resistance (initial value) (*1)	50 mΩ maximum		
Operate Time (*2)	15 ms maximum		
Release Time (*2)	10 ms maximum		
Impulse Withstand Voltage	10,000V (between contact and coil)		
Dielectric Strength	Between contact and coil	5000V AC, 1 minute	
	Between contacts of the same pole	1000V AC, 1 minute	
	Between contacts of different poles	—	
Vibration Resistance	Operating extremes	10 to 55 Hz, amplitude 0.75 mm	
	Damage limits	10 to 55 Hz, amplitude 0.75 mm	
Shock Resistance	Operating extremes	NO contact: 200 m/s ² (20G), NC contact: 100 m/s ² (10G)	
	Damage limits	1000 m/s ² (100G)	
Mechanical Life (no load)	AC coil: 30 million operations minimum (SPDT/DPDT, operation frequency 18,000 operations per hour) 10 million operations minimum (SPST-NO/DPST-NO, operation frequency 18,000 operations/h) DC coil: 50 million operations minimum (SPDT/DPDT, operation frequency 18,000 operations per hour) 20 million operations minimum (SPST-NO/DPST-NO, operation frequency 18,000 operations/h)		
Electrical Life (rated load)	AC load: 200,000 operations minimum (operation frequency 1,800 operations per hour) DC load: 100,000 operations minimum (operation frequency 1,800 operations per hour)		
Operating Temperature (*3)	-40 to +70°C (no freezing)		
Operating Humidity	5 to 85% RH (no condensation)		
Weight (approx.)	SPDT: 17g SPST-NO: 16g	SPDT: 17g SPST-NO: 16g	DPDT: 17g DPST-NO: 16g

*1: Measured using 5V DC, 1A voltage drop method.

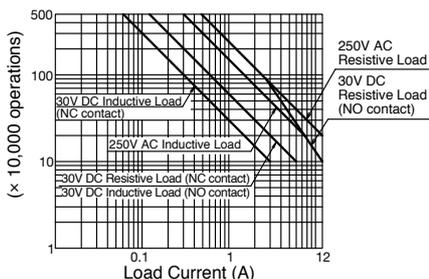
*2: Measured at the rated voltage (at 20°C), excluding contact bounce time.

*3: 100% rated voltage.

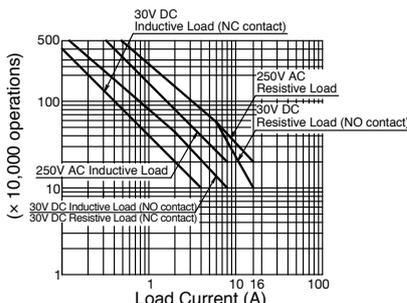
RJ Series Slim Power Relays PC Board Terminal

Electrical Life Curve

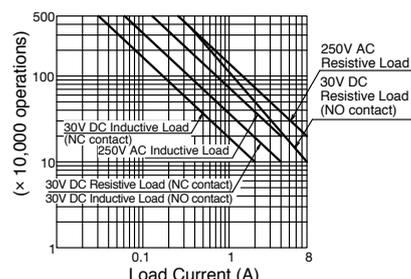
RJ1V Plain



RJ1V High Capacity

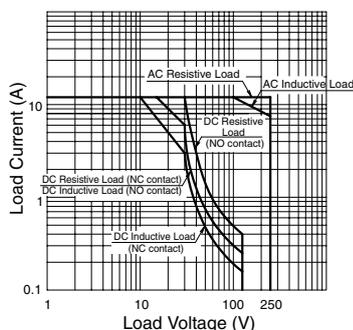


RJ2V Plain

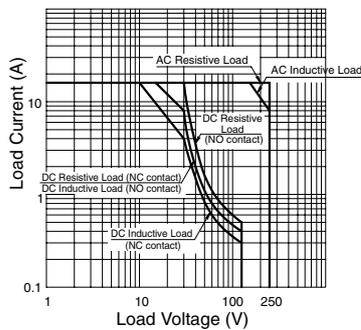


Maximum Switching Current

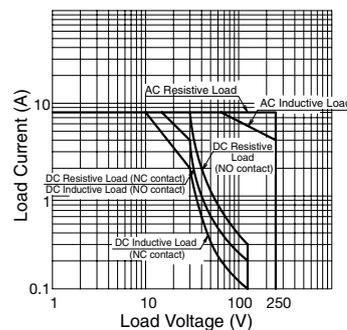
RJ1V Plain



RJ1V High Capacity

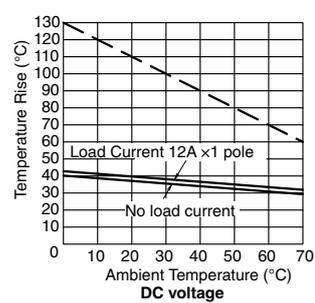
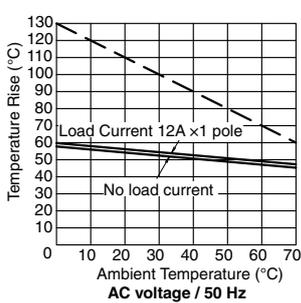
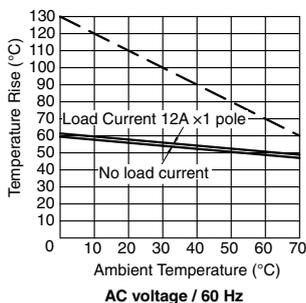


RJ2V Plain

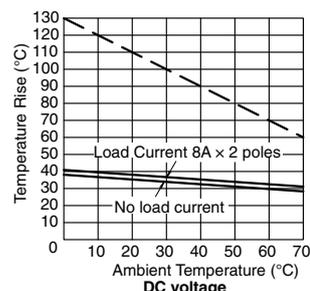
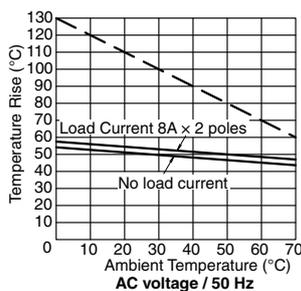
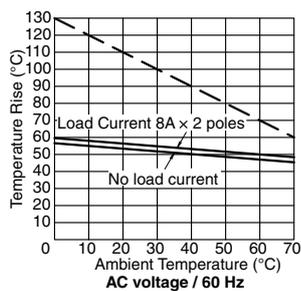


Ambient Temperature vs. Temperature Rise Curves

RJ1V Plain



RJ2V Plain



The above temperature rise curves show the characteristics when 100% of the rated coil voltage is applied. The slant dashed line indicates the allowable temperature rise for the coil at different ambient temperatures.

Relays
RJ
RU
RY
RM
RH
RR
RV8H
RF1V
RF2

Sockets
SJ
DF
SU
SF1V
Relay Sockets

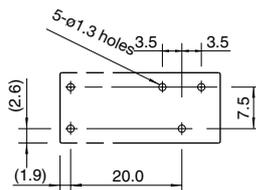
RJ Series Slim Power Relays PC Board Terminal

Dimensions

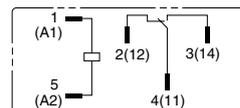
RJ1V-C-*
Plain SPDT



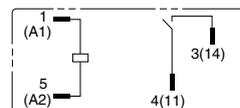
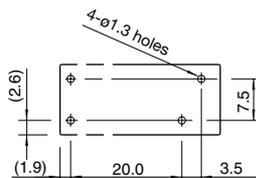
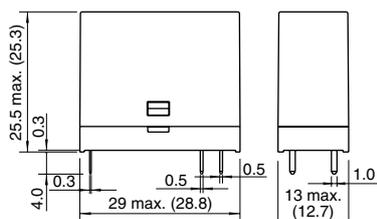
Mounting Hole Layout (Bottom View)



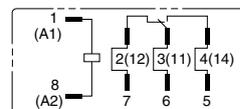
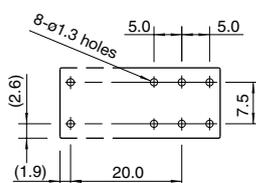
Internal Circuit Diagram (Bottom View)



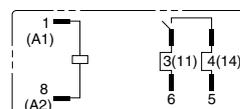
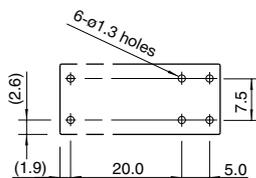
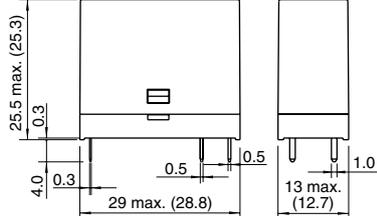
RJ1V-A-*
Plain SPST-NO



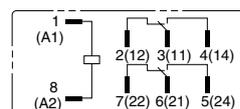
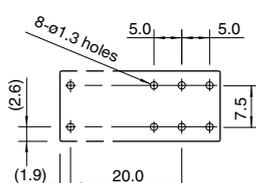
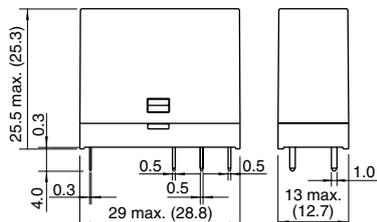
RJ1V-CH-*
High Capacity SPDT



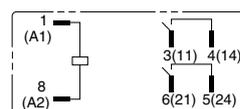
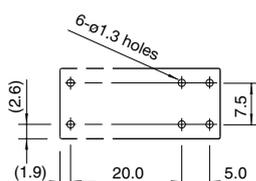
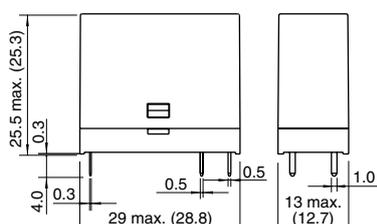
RJ1V-AH-*
High Capacity SPST-NO



RJ2V-C-*
Plain DPDT



RJ2V-A-*
Plain DPST-NO



All dimensions in mm.

Instructions

Notes on PC Board Mounting

- When using two or more RJ relays on a PC board, maintain at least 5mm distance between the relays.
- Manual soldering: Use a soldering iron of 60W (350°C), and quickly complete soldering with approximately 3 seconds. Sn-Ag-Cu is recommended when using lead-free solder.
- Auto-soldering: Solder at 250°C within 4 to 5 seconds.
- Because the terminal part is filled with epoxy resin, do not excessively solder or bend the terminal. Otherwise, air tightness will degrade.
- Avoid the soldering iron from touching the relay cover or the epoxy filled terminal part.
- Use a non-corrosive resin flux.