

8 GHz max. capable,  
150 W carrying power (at 2 GHz),  
compact SMD type,  
50Ω impedance and 1 Form C relays

## RN RELAYS (ARN)



Protective construction: Flux-resistant type

**RoHS compliant**

### FEATURES

1. 150 W carrying power possible (at 2GHz)
2. Excellent high frequency characteristics, 6 GHz capable  
Low insertion loss: Max. 0.12 dB (at 2GHz)
3. Miniature size and Surface mount (SMD) type  
L: 9.6 × W: 14.6 × H: 10 mm  
L: .378 × W: .575 × H: .394 inch

### TYPICAL APPLICATIONS

- Base stations market  
Mobile phone, transmitter section of terrestrial digital base stations, etc.
  - Measuring equipment market  
Spectrum analyzer and oscilloscope, etc.
  - Other applications  
High-frequency amp switching in wireless devices, etc.
- If you consider using applications with low level loads or with high frequency switching, please consult us.

### ORDERING INFORMATION

ARN   A

Contact arrangement

- 1: 1 Form C standard contact type  
3: 1 Form C reversed contact type (single side stable type only)

Operating function

- 0: Single side stable type  
2: 2 coil latching type

Terminal shape

- A: Surface mount terminal

Coil voltage, DC\*

- 4H: 4.5 V, 12: 12 V, 24: 24 V (H=0.5)

\* For 28 V type, please consult us.

Packing style

- Nil: Carton packing  
X: Tape and reel packing (picked from 1 pin side)  
Z: Tape and reel packing (picked from 13 pin side)

### TYPES

#### 1. Single side stable type

Contact arrangement	Nominal coil voltage	Part No.	
		Standard contact type	Reversed contact type
1 Form C	4.5 V DC	ARN10A4H	ARN30A4H
	12 V DC	ARN10A12	ARN30A12
	24 V DC	ARN10A24	ARN30A24

Standard packing: 50 pcs. in an inner package (carton); 500 pcs. in an outer package

#### 2. 2 coil latching type

Contact arrangement	Nominal coil voltage	Part No.
		Standard contact type
1 Form C	4.5 V DC	ARN12A4H
	12 V DC	ARN12A12
	24 V DC	ARN12A24

Standard packing: 50 pcs. in an inner package (carton); 500 pcs. in an outer package

## 3. Single side stable type

Contact arrangement	Nominal coil voltage	Part No.	
		Standard contact type	Reversed contact type
1 Form C	4.5 V DC	ARN10A4H□	ARN30A4H□
	12 V DC	ARN10A12□	ARN30A12□
	24 V DC	ARN10A24□	ARN30A24□

Standard packing: 400 pcs. in an inner package (tape and reel); 800 pcs. in an outer package

\* Please add an X (picked from 1 pin side) or Z (picked from 13 pin side) at the end of the part number when ordering.

\* Packing style symbol "X", "Z" is not marked on the relay.

## 4. 2 coil latching type

Contact arrangement	Nominal coil voltage	Part No.	
		Standard contact type	
1 Form C	4.5 V DC	ARN12A4H□	
	12 V DC	ARN12A12□	
	24 V DC	ARN12A24□	

Standard packing: 400 pcs. in an inner package (tape and reel); 800 pcs. in an outer package

\* Please add an X (picked from 1 pin side) or Z (picked from 13 pin side) at the end of the part number when ordering.

\* Packing style symbol "X", "Z" is not marked on the relay.

## RATING

### 1. Coil data

#### 1) Single side stable type

Nominal coil voltage	Pick-up voltage (at 20°C 68°F)	Drop-out voltage (at 20°C 68°F)	Nominal operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power	Max. applied voltage (at 85°C 185°F)
4.5 V DC	75%V or less of nominal voltage (Initial)	10%V or more of nominal voltage (Initial)	71.1 mA	63.3 Ω	320 mW	110%V of nominal voltage
12 V DC			26.7 mA	450 Ω		
24 V DC			13.3 mA	1,800 Ω		

#### 2) 2 coil latching type

Nominal coil voltage	Set voltage (at 20°C 68°F)	Reset voltage (at 20°C 68°F)	Nominal operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power	Max. applied voltage (at 85°C 185°F)
4.5 V DC	75%V or less of nominal voltage (Initial)	75%V or less of nominal voltage (Initial)	88.9 mA	50.6 Ω	400 mW	110%V of nominal voltage
12 V DC			33.3 mA	360 Ω		
24 V DC			16.7 mA	1,440 Ω		

### 2. Specifications

Characteristics	Item	Specifications	
Contact	Arrangement	1 Form C	
	Contact material	Gold plating	
	Contact resistance (Initial)	Max. 100 mΩ (By voltage drop 10 V AC 10mA)	
Rating	Nominal switching capacity	80W (at 2 GHz, Impedance 50Ω, V.S.W.R. Max.1.15)	
	Contact carrying power (CW)*1	Max.150W (at 20°C 68°F) (at 2 GHz, Impedance 50Ω, V.S.W.R. Max.1.15, with heat sink) Max.100W (at 20°C 68°F) (at 2 GHz, Impedance 50Ω, V.S.W.R. Max.1.15, without heat sink)	
	Nominal operating power	Single side stable type: 320 mW, 2 coil latching type: 400 mW	
High frequency characteristics (to 6 GHz)	V.S.W.R. (Max.)	to 1 GHz: 1.1, 1 to 2 GHz: 1.15, 2 to 3 GHz: 1.2, 3 to 6 GHz: 1.3	
	Insertion loss (without D.U.T. board's loss, dB, Max.)	0.1, 0.12, 0.15, 0.5	
	Isolation (dB, Min.)	60, 55, 45, 30	
Electrical characteristics	Insulation resistance (Initial)	Min. 1,000 MΩ (at 500V DC, Measurement at same location as "Breakdown voltage" section.)	
	Breakdown voltage (Initial)	Between open contacts	500 AC Vrms for 1min. (Detection current: 10mA)
		Between contact and earth terminal	500 AC Vrms for 1min. (Detection current: 10mA)
		Between contact and coil	500 AC Vrms for 1min. (Detection current: 10mA)
Operate time [Set time] (at 20°C 68°F)	Max. 5 ms (Nominal voltage applied to the coil, excluding contact bounce time)		
Release time [Reset time] (at 20°C 68°F)	Single side stable type: Max. 5 ms (Nominal voltage applied to the coil, excluding contact bounce time)*2 2 coil latching type: Max. 5 ms (Nominal voltage applied to the coil, excluding contact bounce time)		
Mechanical characteristics	Shock resistance	Functional	Min. 490 m/s <sup>2</sup> (Half-wave pulse of sine wave: 11 ms, detection time: 10 μs)
		Destructive	Min. 980 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6 ms)
	Vibration resistance	Functional	10 to 55 Hz at double amplitude of 3 mm .118 inch (Detection time: 10 μs)
		Destructive	10 to 55 Hz at double amplitude of 5 mm .197 inch
Expected life	Mechanical life	Min. 1×10 <sup>6</sup> (at 180 cpm)	
	Electrical life (at 20 cpm)	• 1×10 <sup>6</sup> ope. at 10mA 10 VDC resistive load, • 1×10 <sup>6</sup> ope. at 1W High frequency load (at 2 GHz, Impedance 50Ω, V.S.W.R. Max.1.15), • 1×10 <sup>3</sup> ope. at 80 W High frequency load, operating frequency 5.0s ON, 5.0s OFF (at 2 GHz, Impedance 50Ω, V.S.W.R. Max.1.15, at 20°C 68°F, with heatsink)	
Conditions	Conditions for operation, transport and storage	Ambient temperature: -40 to +85°C -40 to +185°F, Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)	
Unit weight		Approx. 2.5 g .088 oz	

Notes: \*1. Since the design of the PC board and heat dispersion conditions affect contact carrying power, please verify under actual conditions.

\*2. Release time will leng then if a diode, etc., is connected in parallel to the coil. Be sure to verify operation under actual conditions.