

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 |
| | Insulation resistance (Initial) | Min. 1,000 MΩ (at 500V DC, Measurement at same location as "Breakdown voltage" section.) |
| Electrical characteristics | 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 ² (Half-wave pulse of sine wave: 11 ms, detection time: 10 μs) |
| | | Destructive: Min. 980 m/s ² (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 ⁶ (at 180 cpm) |
| | Electrical life (at 20 cpm) | • 1×10 ⁶ ope. at 10mA 10 VDC resistive load, • 1×10 ⁶ ope. at 1W High frequency load (at 2 GHz, Impedance 50Ω, V.S.W.R. Max.1.15), • 1×10 ³ 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.