Panasonic
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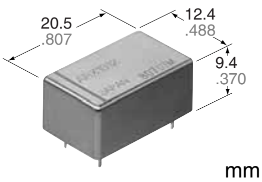
3 GHz SMALL MICROWAVE RELAY

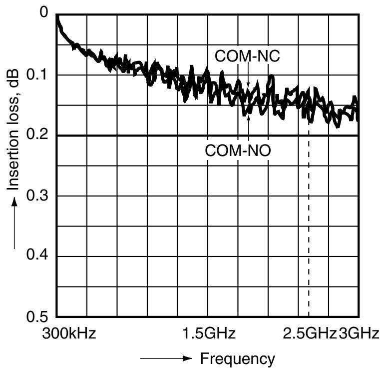
RX RELAYS (ARX)



mm inch

FEATURES

1. Excellent high frequency characteristics (~2.5GHz, Impedance 50W)
- Insertion loss: 0.2 dB or less
- Isolation: 60 dB or more
- Insertion loss



- V.S.W.R./ Return loss: 1.2dB or less/ 20.8dB or more

2. High sensitivity
- Nominal operating power: 200 mW

3. Small size
- Size: 20.5(L) × 12.4(W) × 9.4(H) mm
  .807(L) × .488(W) × .370(H) inch

*Also available for unit support (contact us for more details).

RoHS Directive compatibility information
http://www.nais-e.com/

SPECIFICATIONS

Contact

Arrangement			1 Form C
Contact material			Gold
Initial contact resistance (By voltage drop 10 V DC 10 mA)			Max. 100 mΩ
Rating	Contact rating		10W (2.5 GHz, Impedance 50 Ω, V.S.W.R.≦1.2) 10mA 24V DC (resistive load)
	Contact carrying power		Max. 20W (at 40°C, V.S.W.R.≦1.2, Average)
	Max. switching voltage		30 V DC
	Max. switching current		0.5 A DC
High frequency characteristics (Initial) (~2.5GHz, Impedance 50Ω)	V.S.W.R. (Return loss)		Max. 1.2 (Min. 20.8dB)
	Insertion loss		Max. 0.2 dB
	Isolation		Min. 60 dB
	Input power		Max. 20W (at 40°C, V.S.W.R.≦1.2, Average)
Expected life (min. operations)	Mechanical (at 180 cpm)		5×10^6
	Electrical	10mA 24 V DC (resistive load)	3×10^5
		10W 2.5 GHz, Impedance 50Ω, V.S.W.R.≦1.2	10^5

Coil (at 20°C, 68°F)

	Nominal operating power
Single side stable	200 mW
1 coil latching	200 mW
2 coil latching	400 mW

Characteristics

Initial insulation resistance*1		Min. 100 MΩ (at 500 V DC)
Initial breakdown voltage*2	Between open contacts	500 Vrms
	Between contact and coil	1,000 Vrms
	Between contact and earth terminal	500 Vrms
Operate time [Set time]*3 (at 20°C)		Max. 10ms (Approx. 6ms) [Max. 10ms (Approx. 5ms)]
Release time (without diode) [Reset time]*3		Max. 6ms (Approx. 3ms) [Max. 10ms (Approx. 5ms)]
Temperature rise (at 20°C)*4		Max. 60°C
Shock resistance	Functional*5	Min. 200 m/s² {20 G}
	Destructive*6	Min. 1,000 m/s² {100 G}
Vibration resistance	Functional*7	10 to 55 Hz at double amplitude of 3 mm
	Destructive	10 to 55 Hz at double amplitude of 5 mm
Conditions for operation, transport and storage*8 (Not freezing and condensing at low temperature)	Ambient temp.	–40°C to 70°C –40°F to 158°F
	Humidity	5 to 85% R.H.
Unit weight		Approx. 5 g .18 oz

Remarks
*1 Measurement at same location as "Initial breakdown voltage" section.
*2 Detection current: 10mA
*3 Nominal operating voltage applied to the coil, excluding contact bounce time.
*4 By resistive method, nominal voltage applied to the coil: Contact carrying power: 20W, at 2.5GHz, Impedance 50Ω, V.S.W.R.≦1.2
*5 Half-wave pulse of sine wave: 11ms, detection time: 10µs.
*6 Half-wave pulse of sine wave: 6ms
*7 Detection time: 10µs
*8 Refer to 6. Conditions for operation, transport and storage conditions in NOTES

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TYPICAL APPLICATIONS

- Cellular phone base station (W-CDMA, FPLMTS, IMT-2000, PCS, DCS)
- Cellular phone-related measurement devices (SP3T/SP4T switches, etc)
- Wireless LAN
- Wireless Local Loop

ORDERING INFORMATION

Ex. A RX 1 0 12

Product name	Contact arrangement	Operating function	Coil voltage, V DC
RX	1: 1 Form C	0: Single side stable 1: 1 coil latching 2: 2 coil latching	03: 3 09: 9 4H: 4.5 12: 12 06: 6 24: 24

Note: Standard packing; Carton: 50 pcs. Case 500 pcs.

TYPES ANE COIL DATA (at 20°C 68°F)

• Single side stable type

Part No.	Nominal voltage, V DC	Pick-up voltage, V DC (max.)(initial)	Drop-out voltage, V DC (min.)(initial)	Coil resistance, Ω (±10%)	Nominal operating current, mA (±10%)	Nominal operating power, mW	Max. allowable voltage, V DC (at 60°C 140°F)
ARX1003	3	2.25	0.3	45	66.7	200	3.3
ARX104H	4.5	3.375	0.45	101	44.4	200	4.95
ARX1006	6	4.5	0.6	180	33.3	200	6.6
ARX1009	9	6.75	0.9	405	22.2	200	9.9
ARX1012	12	9	1.2	720	16.7	200	13.2
ARX1024	24	18	2.4	2,880	8.3	200	26.4

• 1 coil latching type

Part No.	Nominal voltage, V DC	Set voltage, V DC (max.)(initial)	Reset voltage, V DC (max.)(initial)	Coil resistance, Ω (±10%)	Nominal operating current, mA (±10%)	Nominal operating power, mW	Max. allowable voltage, V DC (at 60°C 140°F)
ARX1103	3	2.25	2.25	45	66.7	200	3.3
ARX114H	4.5	3.375	3.375	101	44.4	200	4.95
ARX1106	6	4.5	4.5	180	33.3	200	6.6
ARX1109	9	6.75	6.75	405	22.2	200	9.9
ARX1112	12	9	9	720	16.7	200	13.2
ARX1124	24	18	18	2,880	8.3	200	26.4

• 2 coil latching type

Part No.	Nominal voltage, V DC	Set voltage, V DC (max.)(initial)	Reset voltage, V DC (max.)(initial)	Coil resistance, Ω (±10%)	Nominal operating current, mA (±10%)	Nominal operating power, mW	Max. allowable voltage, V DC (at 60°C 140°F)
ARX1203	3	2.25	2.25	22.5	133.3	400	3.3
ARX124H	4.5	3.375	3.375	50.6	88.9	400	4.95
ARX1206	6	4.5	4.5	90	66.7	400	6.6
ARX1209	9	6.75	6.75	202.5	44.4	400	9.9
ARX1212	12	9	9	360	33.3	400	13.2
ARX1224	24	18	18	1,440	16.7	400	26.4

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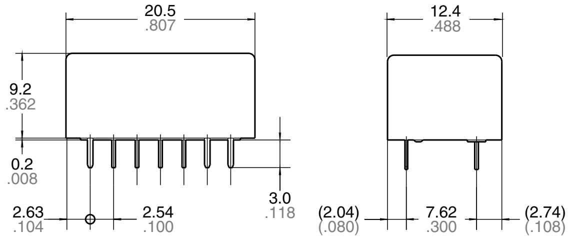
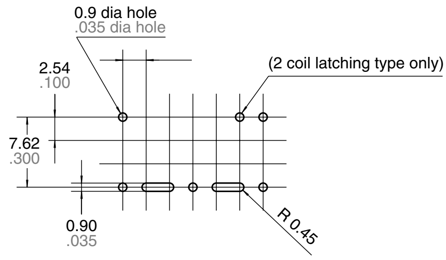
DIMENSIONS

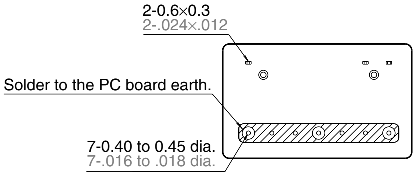
mm inch



PC board pattern (Bottom view)



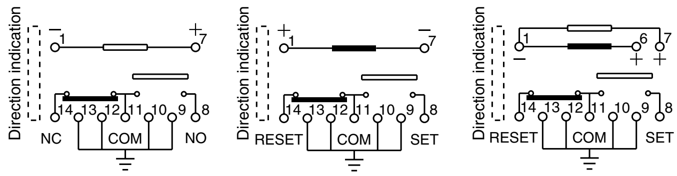
Tolerance: ±0.1 ±.004



General tolerance: ±0.3 ±.012

Schematic (Bottom view)

Single side stable | 1 coil latching | 2 coil latching



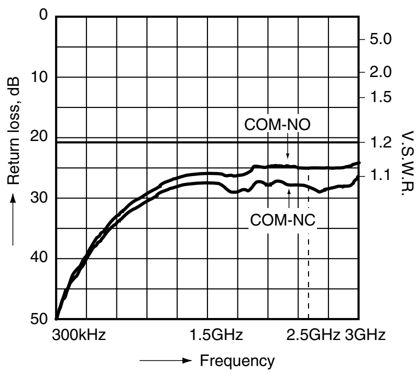
(Deenergized condition) | (Reset condition) | (Reset condition)

REFERENCE DATA

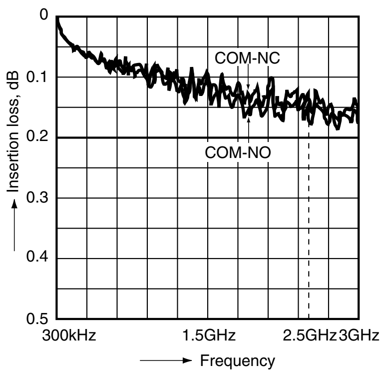
1. High frequency characteristics
Sample: ARX1012
Measuring method: Measured with HP network analyzer (HP8753C).

The details for the high frequency characteristics and the measurement procedures and conditions are listed in the RX relay test report.

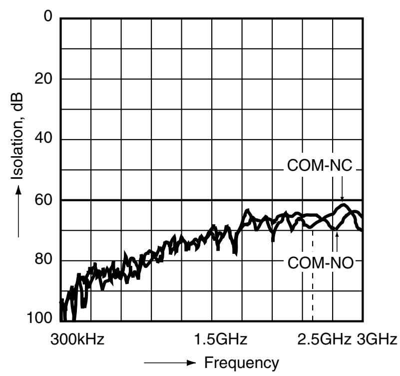
• V.S.W.R. (Return loss)



• Insertion loss



• Isolation



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NOTES

1. Coil operating power
Pure DC current should be applied to the coil. The wave form should be rectangular. If it includes ripple, the ripple factor should be less than 5%.
However, check it with the actual circuit since the characteristics may be slightly different. The nominal operating voltage should be applied to the coil for more than 30 ms to set/reset the latching type relay.

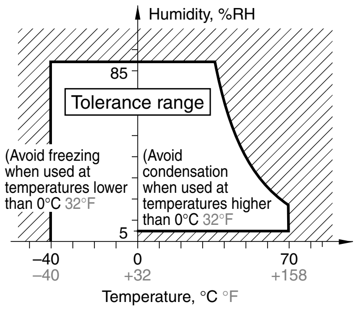
2. Coil connection
When connecting coils, refer to the wiring diagram to prevent mis-operation or malfunction.

3. External magnetic field
Since RX relays are highly sensitive polarized relays, their characteristics will be affected by a strong external magnetic field. Avoid using the relay under that condition.

4. Cleaning
For automatic cleaning, the boiling method is recommended. Avoid ultrasonic cleaning which subjects the relays to high frequency vibrations, which may cause the contacts to stick.
It is recommended that a fluorinated hydrocarbon or other alcoholic solvents be used.

5. Soldering
The manual soldering shall be performed under following condition.
Max. 260°C 500°F 10s
Max. 350°C 662°F 3s
In addition, when soldering the case to the PC board, the plating may swell depending on the soldering conditions.

6. Conditions for operation, transport and storage conditions
1) Ambient temperature, humidity, and atmospheric pressure during usage, transport, and storage of the relay:
(1) Temperature:
–40 to +70°C –40 to +158°F
(2) Humidity: 5 to 85% RH
(Avoid freezing and condensation.)
The humidity range varies with the temperature. Use within the range indicated in the graph below.
(3) Atmospheric pressure: 86 to 106 kPa
Temperature and humidity range for usage, transport, and storage:



2) Condensation
Condensation forms when there is a sudden change in temperature under high temperature and high humidity conditions. Condensation will cause deterioration of the relay insulation.
3) Freezing
Condensation or other moisture may freeze on the relay when the temperature is lower than 0°C 32°F. This causes problems such as sticking of movable parts or operational time lags.
4) Low temperature, low humidity environments
The plastic becomes brittle if the relay is exposed to a low temperature, low humidity environment for long periods of time.

7. Latching relay
In order to assure proper operating regardless of changes in the ambient usage temperature and usage conditions, nominal operating voltage should be applied to the coil for more than 30 ms to set/reset the latching type relay.

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