



2.6 GHz SMALL MICROWAVE RELAYS

FEATURES

• Excellent high frequency characteristics (to 2.6GHz)

	•	•	
Туре	Frequency	900MHz	2.6GHz
	V.S.W.R. (Max.)	1.3	1.7
Impedance 50 Ω	Insertion loss (dB, Max.)	0.2	0.7
	Isolation (dB, Min.)	60	30
	V.S.W.R. (Max.)	1.2	1.5
Impedance 75 Ω	Insertion loss (dB, Max.)	0.2	0.5
	Isolation (dB, Min.)	60	30

• Surface-mount type also available • Compact and slim size

Size: $20.2(L) \times 11.2(W) \times 8.9(H)^*$ mm .795(L) × .441(W) × .350(H) inch *The height of Surface-mount type is

9.6 mm .378 inch size.

RE RELAYS (ARE)

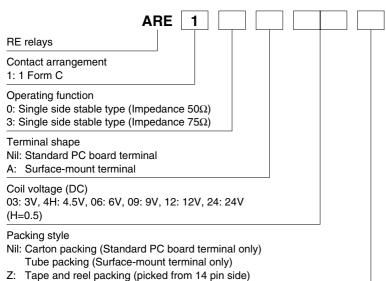
TYPICAL APPLICATIONS

- 1. Broadcasting and video markets.
- Digital broadcasting market
- STB/tuner market, etc.
- 2. Communications market
- Antennae switching
- All types of wireless devices

If you wish to use in applications with low level loads or with high frequency switching, please consult us.

RoHS compliant

ORDERING INFORMATION



TYPES

1. Standard PC board terminal

Nominal coil	Part No.	
voltage	Single side stable type (Impedance 50Ω)	Single side stable type (Impedance 75 Ω)
3 V DC	ARE1003	ARE1303
4.5V DC	ARE104H	ARE134H
6 V DC	ARE1006	ARE1306
9 V DC	ARE1009	ARE1309
12 V DC	ARE1012	ARE1312
24 V DC	ARE1024	ARE1324

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

2. Surface-mount terminal

1) Tube package

Nominal coil	Part No.		
voltage	Single side stable type (Impedance 50Ω)	Single side stable type (Impedance 75Ω)	
3 V DC	ARE10A03	ARE13A03	
4.5V DC	ARE10A4H	ARE13A4H	
6 V DC	ARE10A06	ARE13A06	
9 V DC	ARE10A09	ARE13A09	
12 V DC	ARE10A12	ARE13A12	
24 V DC	ARE10A24	ARE13A24	

Standard packing: 25 pcs. in an inner package (tube); 200 pcs. in an outer package

2) Tape and reel package

Nominal coil	Part No.	
voltage	Single side stable type (Impedance 50Ω)	Single side stable type (Impedance 75 Ω)
3 V DC	ARE10A03Z	ARE13A03Z
4.5V DC	ARE10A4HZ	ARE13A4HZ
6 V DC	ARE10A06Z	ARE13A06Z
9 V DC	ARE10A09Z	ARE13A09Z
12 V DC	ARE10A12Z	ARE13A12Z
24 V DC	ARE10A24Z	ARE13A24Z

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

RATING

1. Coil data

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 70°C 158°F)
3 V DC		75%V or less of 10%V or more of nominal voltage nominal voltage (initial)	66.7mA	45Ω		
4.5V DC			44.4mA	101Ω		
6 V DC			33.3mA	180Ω	200mW	110%V of nominal
9 V DC			22.2mA	405Ω	200111	voltage
12 V DC		16.7mA	720Ω			
24 V DC			8.3mA	2,880Ω		

RE (ARE)

2. Specifications

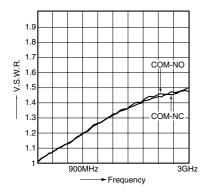
Characteristics	Item		Specifications		
	Arrangement		1 Form C		
Contact	Contact mat	erial	Gold plating		
	Initial contact resistance, max.		Max. 100mΩ (By voltage drop 10V AC 10mA)		
	Contact rating		1W (at 2.6 GHz [Impedance 75Ω;, V.S.W.R. Max.1.5] [Impedance 50Ω, V.S.W.R. Max.1.7]) 10mA 24V DC (resistive load)		
	Contact carrying power		10W (at 2.6GHz [Impedance 75Ω, V.S.W.R. Max.1.5] [Impedance 50Ω, V.S.W.R. Max.1.7])		
Rating	Max. switchi	ng voltage	30V DC		
	Max. switchi	ng current	0.5A DC		
	Nominal ope	rating power	200mW		
High frequency	V.S.W.R.		Max. 1.2 (to 900MHz), Max. 1.5 (to 2.6GHz)		
characteristics (Initial)	Insertion loss		Max. 0.2dB (to 900MHz), Max. 0.5dB (to 2.6GHz)		
(Impedance 75Ω)	Isolation		Min. 60dB (to 900MHz), Min. 30dB (to 2.6GHz)		
High frequency	V.S.W.R.		Max. 1.3 (to 900MHz), Max. 1.7 (to 2.6GHz)		
characteristics (Initial)	Insertion loss		Max. 0.2dB (to 900MHz), Max. 0.7dB (to 2.6GHz)		
(Impedance 50Ω)	Isolation		Min. 60dB (to 900MHz), Min. 30dB (to 2.6GHz)		
	Insulation resistance (Initial)		Min. 100M Ω (at 500V DC) Measurement at same location as "Initial breakdown voltage" section.		
	Breakdown	Between open contacts	500 Vrms for 1min. (Detection current: 10mA)		
	voltage (Initial)	Between contact and coil	1,000 Vrms for 1min. (Detection current: 10mA)		
Electrical		Between contact and earth terminal	500 Vrms for 1min. (Detection current: 10mA)		
characteristics			Max. 60°C (By resistive method, nominal voltage applied to the coil: Contact carrying power: 10W, at 2.6GHz, [Impedance 75Ω , V.S.W.R. ≤ 1.5] [Impedance 50Ω , V.S.W.R. ≤ 1.7])		
	Operate time	e (at 20°C)	Max. 10ms (Nominal operating voltage applied to the coil, excluding contact bounce time.)		
	Release time	e (at 20°C)	Max. 5ms (Nominal operating voltage applied to the coil, excluding contact bounce time.) (without diode)		
	Shock resistance	Functional	Min. 500 m/s ² {50 G} (Half-wave pulse of sine wave: 11ms; detection time: 10µs.)		
Mechanical		Destructive	Min. 1,000m/s ² {100 G} (Half-wave pulse of sine wave: 6ms.)		
characteristics	Vibration	Functional	10 to 55 Hz at double amplitude of 3mm (Detection time: 10μs.)		
	resistance	Destructive	10 to 55 Hz at double amplitude of 5mm		
	Mechanical		Min. 10 ⁶ (at 180 cpm)		
Expected life	Electrical		Min. 3×10^{5} (1W, 2.6GHz, [Impedance 75Ω , V.S.W.R. ≤ 1.5] [Impedance 50Ω , V.S.W.R. ≤ 1.7]) Min. 3×10^{5} (10mA 24V DC (resistive load) (at 20cpm))		
Conditions	Conditions for	or operation, transport and storage*	Ambient temperature: -40°C to +70°C -40°F to +158°F Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)		
Unit weight			Approx. 5 g .18 oz		

Note: * The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value. Refer to [6] AMBIENT ENVIRONMENT in GENERAL APPLICATION GUIDELINES.

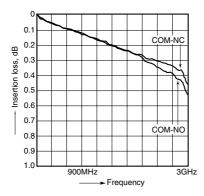
REFERENCE DATA

1-(1). High frequency characteristics (Impedance 50 Ω) (Standard PC board terminal)

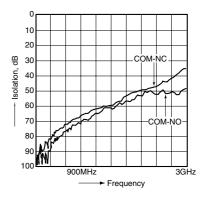
• V.S.W.R. characteristics



• Insertion loss characteristics



• Isolation characteristics



RE (ARE)

1-(2). High frequency characteristics (Impedance 75Ω) (Standard PC board terminal)

COM NC

NIC

3GHz

• V.S.W.R. characteristics

2. 1.9

1.8

1. V.S.W.R. 1.6

1.5

1.4

1.3

1.2

1.1

900MHz

• Insertion loss characteristics

0.

0.2

0.3

0.4

0.5

0.6

0.7

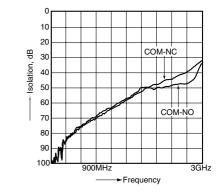
0.8

0.9

1.0

Insertion loss, dB

• Isolation characteristics



DIMENSIONS (mm inch) The CAD data of the products with a CAD Data mark can be downloaded from: http://industrial.panasonic.com/ac/e/

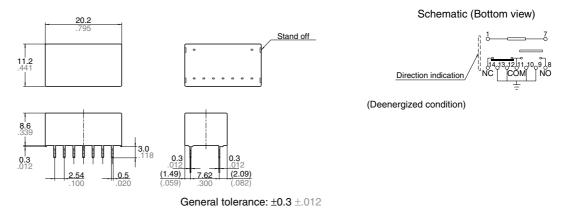
Frequency

900MHz

1. Standard PC board terminal (50 Ω , 75 Ω type)

Frequency

CAD Data



OM

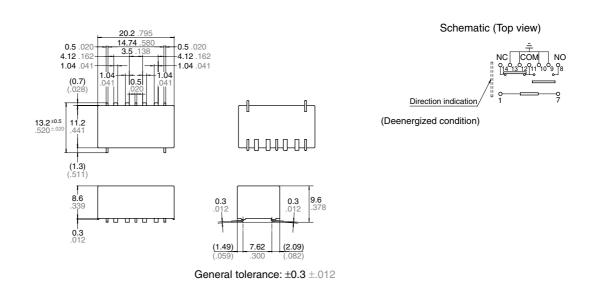
COM-NC

3GHz

2. Surface mount terminal

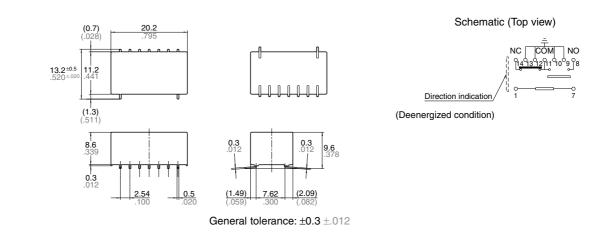






RE (ARE)

• 75 Ω type CAD Data



Note: Please consult us regarding recommended PC board patterns.

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.

2. 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 alcoholic solvents be used.

3. Soldering

(Standard PC board terminal) 1) The manual soldering shall be performed under following condition. Max. 260°C 500°F 10s

The affect of the PCB on the relay will differ depending on the type of PCB used. Please verify the type of PCB to be used.

Preheat according to the following conditions.

Temperature	120°C 248°F or less
Time	Within 2 minute

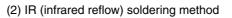
Soldering should be done at $260\pm5^{\circ}C$ $500\pm9^{\circ}F$ within 6 s.

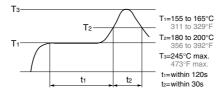
2) In case of automatic soldering, the following conditions should be observed (Surface-mount terminal)

(1) Position of measuring temperature



A: Surface of PC board where relay is mounted.

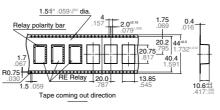




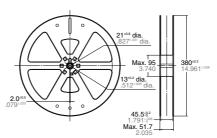
Temperature rise of relay itself may vary according to the mounting level or the heating method of reflow equipment. Therefore, please set the temperature of soldering portion of relay terminal and the top surface of the relay case not to exceed the above mentioned soldering condition.

It is recommended to check the temperature rise of each portion under actual mounting condition before use. **4. Packing style**

1) Tape dimensions



2) Dimensions of plastic reel

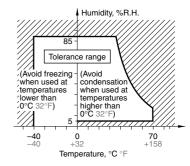


5. Conditions for operation, transport and storage conditions

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.

For general cautions for use, please refer to the "General Application Guidelines".