

mm inch

FEATURES

1. High frequency characteristics (Impedance 50Ω, ~1.0GHz)

- Insertion loss; Max. 0.3dB
- Isolation; Min. 20dB (Between open contacts)
Min. 30dB (Between contact sets)

- V.S.W.R.; Max. 1.2

2. Surface mount terminal

This relay is a surface-mounted model with excellent high-frequency properties. In addition, it can use a microstrip line in the base circuit design which spares the labor of machining the base.

3. Low profile small type

9.7(W)×14.7(L)×5.9(H) mm

.382(W)×.579(L)×.232(H) inch

4. High sensitivity: 140 mW nominal operating power

5. High contact reliability

Electrical life: Min. 10⁷ (10mA 10V DC)

TYPICAL APPLICATIONS

• Measurement instruments

Oscilloscope attenuator circuit

SPECIFICATIONS

Contact

Arrangement	2 Form C		
Contact material	Gold-clad silver alloy		
Initial contact resistance	Max. 75mΩ		
Rating	Contact rating (resistive)	10mA 10 V DC 1A 30 V DC	
	Contact carrying power	Max. 3W (at 1.0GHz, impedance 50Ω, V.S.W.R. max.1.2)	
	Max. switching voltage	30 V DC	
	Max. switching current	1A	
High frequency characteristics (~1GHz, Impedance 50Ω)	Isolation	Between open contacts	Min. 20dB
		Between contact sets	Min. 30dB
	Insertion loss	Max. 0.3dB	
	V.S.W.R.	Max. 1.2	
Nominal operating power	Single side stable	140mW (1.5 to 12V) 200mW (24V) 300mW (48V)	
	1 coil latching	70 mW (1.5 to 12V) 100mW (24V)	
	2 coil latching	140mW (1.5 to 12V) 200mW (24V)	
Expected life (min. operation)	Mechanical (at 180 cpm)	10 ⁸	
	Electrical (at 20 cpm)	10mA 10 V DC (resistive load)	10 ⁷
		1A 30 V DC (resistive load)	10 ⁵

Characteristics

Initial insulation resistance *1		Min. 100 MΩ (at 500 V DC)
Initial breakdown voltage *2	Between open contacts	750 Vrms for 1 min.
	Between contact sets	1,000 Vrms for 1 min.
	Between contact and coil	1,000 Vrms for 1 min.
	Between contact and earth terminal	1,000 Vrms for 1 min.
Operate time [Set time] *3 (at 20°C)		Max. 4ms (Approx. 2ms) [Max. 4ms (Approx. 2ms)]
Release time (without diode) [Reset time] *3 (at 20°C)		Max. 4ms (Approx. 1ms) [Max. 4ms (Approx. 2ms)]
Temperature rise (at 20°C) *4		Max. 60°C
Shock resistance	Functional *5	Min. 500 m/s ²
	Destructive *6	Min. 1,000 m/s ²
Vibration resistance	Functional *7	10 to 55 Hz at double amplitude of 3mm
	Destructive	10 to 55 Hz at double amplitude of 5mm
Conditions for operation, transport and storage *8 (Not freezing and condensing at low temperature)	Ambient temp	-40°C to +85°C -40°F to +185°F
	Humidity	5 to 85% R.H.
Unit weight		Approx. 2g .07oz

Remarks

- * Specifications will vary with foreign standards certification ratings.
- *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: 3W contact carrying power: at 1.0GHz, Impedance 50Ω, V.S.W.R. Max.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 mentioned in AMBIENT ENVIRONMENT.

RA (ARA)

ORDERING INFORMATION

Ex. A RA 2 0 0 A 03

Product name	Contact arrangement	Operating function	Type of operation	Terminal shape	Coil voltage, V DC	Packing style
RA	2: 2 Form C	0: Single side stable 1: 1 coil latching 2: 2 coil latching	0: Standard type (B.B.M)	A: Surface-mount terminal	1H: 1.5 09: 9 03: 3 12: 12 4H: 4.5 24: 24 05: 5 48: 48 06: 6	Nil: Tube packing X: Tape and reel packing (picked from 1/2/3 pin side) Z: Tape and reel packing (picked from 8/9/10 pin side)

Note: Packing style; Nil: Tube packing 40 pcs. in an inner package, 1,000 pcs. in an outer package
Z: Tape and reel packing 500 pcs. in an inner package, 1,000 pcs. in an outer package

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
ARA200A1H(Z)	1.5	1.125	0.15	16	93.8	140	2.25
ARA200A03(Z)	3	2.25	0.3	64.3	46.7	140	4.5
ARA200A4H(Z)	4.5	3.375	0.45	145	31	140	6.75
ARA200A05(Z)	5	3.75	0.5	178	28.1	140	7.5
ARA200A06(Z)	6	4.5	0.6	257	23.3	140	9
ARA200A09(Z)	9	6.75	0.9	579	15.5	140	13.5
ARA200A12(Z)	12	9	1.2	1,028	11.7	140	18
ARA200A24(Z)	24	18	2.4	2,880	8.3	200	36
ARA200A48(Z)	48	36	4.8	7,680	6.3	300	57.6

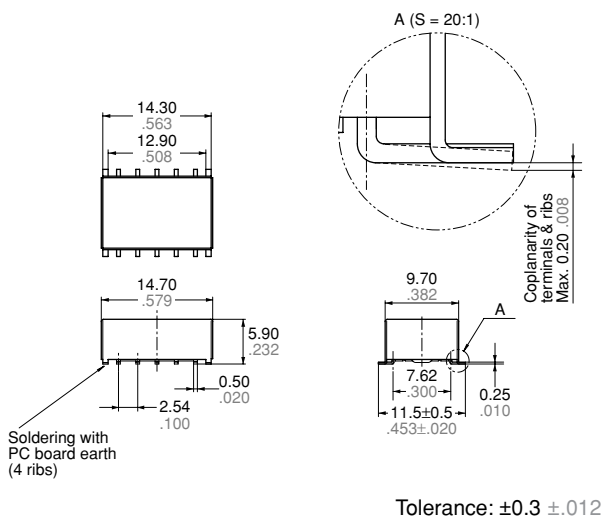
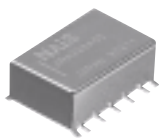
• 1 coil latching type

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
ARA210A1H(Z)	1.5	1.125	1.125	32	46.9	70	2.25
ARA210A03(Z)	3	2.25	2.25	128.6	23.3	70	4.5
ARA210A4H(Z)	4.5	3.375	3.375	289.3	15.6	70	6.75
ARA210A05(Z)	5	3.75	3.75	357	14	70	7.5
ARA210A06(Z)	6	4.5	4.5	514	11.7	70	9
ARA210A09(Z)	9	6.75	6.75	1,157	7.8	70	13.5
ARA210A12(Z)	12	9	9	2,057	5.8	70	18
ARA210A24(Z)	24	18	18	5,760	4.2	100	36

• 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
ARA220A1H(Z)	1.5	1.125	1.125	16	93.8	140	2.25
ARA220A03(Z)	3	2.25	2.25	64.3	46.7	140	4.5
ARA220A4H(Z)	4.5	3.375	3.375	145	31	140	6.75
ARA220A05(Z)	5	3.75	3.75	178	28.1	140	7.5
ARA220A06(Z)	6	4.5	4.5	257	23.3	140	9
ARA220A09(Z)	9	6.75	6.75	579	15.5	140	13.5
ARA220A12(Z)	12	9	9	1,028	11.7	140	18
ARA220A24(Z)	24	18	18	2,880	8.3	200	36

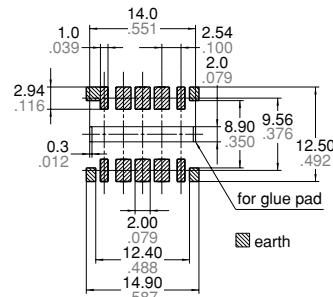
DIMENSIONS



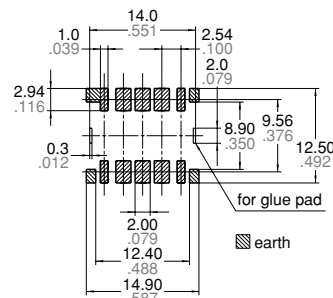
Soldering with PC board earth (4 ribs)

Tolerance: ±0.3 ±0.12

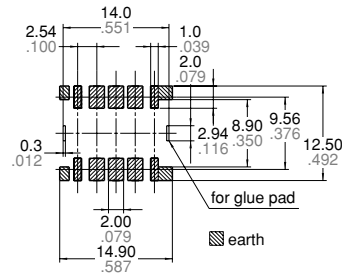
Suggested Mounting Pads (Top view)
Single side stable



1 coil latching

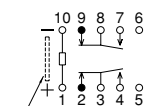


2 coil latching



Tolerance: ±0.1 ±0.04

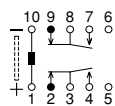
Single side stable



(Deenergized condition)

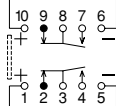
Schematic (Top view)

1 coil latching



(Reset condition)

2 coil latching



(Reset condition)

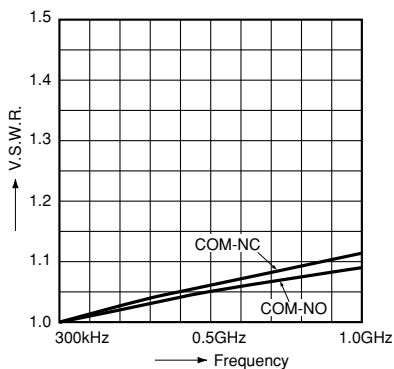
REFERENCE DATA

1-(1). High frequency characteristics (Impedance 50Ω)

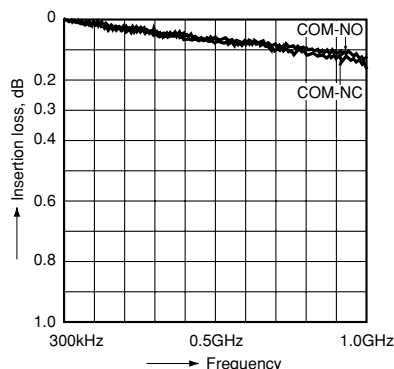
Sample: ARA200A12

Measuring method: Measured with HP network analyzer (HP8753C).

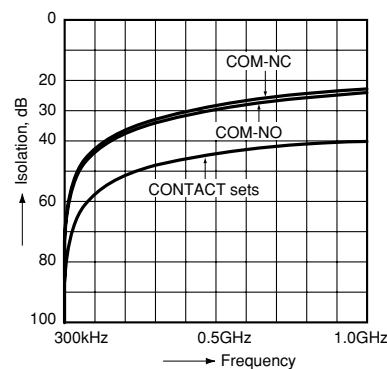
• V.S.W.R.



• Insertion loss



• Isolation



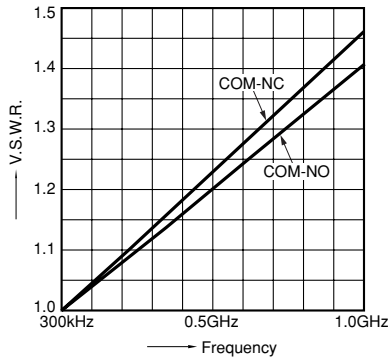
RA (ARA)

1-(2). High frequency characteristics (Impedance 75Ω)

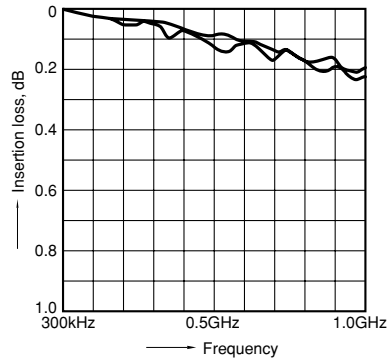
Sample: ARA200A12

Measuring method: Measured with HP network analyzer (HP8753C).

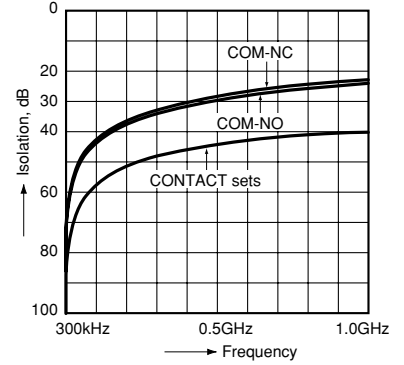
• V.S.W.R.



• Insertion loss



• Isolation



For Cautions for Use, see Relay Technical Information.