Panasonic ideas for life

3 GHz MICROWAVE RELAYS Miniature size Lineup includes 50/75Ω type

RS RELAYS (ARS)



RoHS compliant

 $14 \times 8.6 \times 7.2 \text{ mm} .551 \times .339 \times .283 \text{ inch}$

60% OFF in volume

50

RK

(Compared to

RK relay)

FEATURES

(75 Ω type only)

1. Super miniature design

(standard PC board terminal)

2. Lineup includes silent type.

Operation noise (Unit: dB)

30

RS

(Silent type)

3. Excellent high frequency characteristics

Impedance: 50Ω

(Standard PC board terminal)

Frequency	to 900 MHz	to 3 GHz
V. S. W. R. (Max.)	1.20	1.40
Insertion loss (dB, Max.)	0.10	0.35
Isolation (dB, Min.)	60	35

• Impedance: 75Ω (Standard PC board terminal)

Frequency	to 900 MHz	to 3 GHz
V. S. W. R. (Max.)	1.15	1.40
Insertion loss (dB, Max.)	0.10	0.30
Isolation (dB, Min.)	60	30

$\begin{tabular}{ll} \bullet & Impedance: 50\Omega\\ (Surface-mount terminal) \end{tabular}$

Frequency	to 900 MHz	to 3 GHz
V. S. W. R. (Max.)	1.20	1.40
Insertion loss (dB, Max.)	0.20	0.40
Isolation (dB, Min.)	55	30

• Impedance: 75Ω (Surface-mount terminal)

Frequency	to 900 MHz	to 3 GHz	
V. S. W. R. (Max.)	1.20	1.50	
Insertion loss (dB, Max.)	0.20	0.50	
Isolation (dB, Min.)	55	30	

4. Lineup includes surface-mount terminal type

E and Y layouts available.

5. Lineup includes reversed contact type

Great design freedom is possible using reversed contact type in which the positions of the N.O. and N.C. contacts are switched.

TYPICAL APPLICATIONS

1. Broadcasting and video equipment markets

- Digital broadcasting equipment
- STB/tuner, etc.
- 2. Mobile phone base stations

3. Communications market

- Antenna switching
- All types of wireless devices

4. Measurement equipment market

• Spectrum analyzer and oscilloscope, etc.

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

ORDERING INFORMATION

Tube packing (Surface-mount terminal only)

40

RE

ARS RS relays Contact arrangement 1: Standard contact type (1 Form C) 3: Reversed contact type (1 Form C) Operating function 0: Single side stable standard type (Impedance: 75Ω) 1: 1 coil latching type (Impedance: 75Ω) 2: 2 coil latching type (Impedance: 75Ω) 3: Single side stable silent type (Impedance: 75Ω) 4: Single side stable type (Impedance: 50Ω) 5: 1 coil latching type (Impedance: 50Ω) 6: 2 coil latching type (Impedance: 50Ω) Nil: Standard PC board terminal A: Surface-mount terminal, E layout Surface-mount terminal, Y layout Coil voltage, DC 03: 3 V, 4H: 4.5 V, 09: 9 V, 12: 12 V, 24: 24 V (H=0.5) Packing style Nil: Carton packing (Standard PC board terminal only)

X: Tape and reel packing (picked from 2-pin side) (Surface-mount terminal only)
Z: Tape and reel packing (picked from 18-pin side) (Surface-mount terminal only)

750

TYPES

1. Standard PC board terminal and standard contact type

Impedance	Nominal coil	Part No.						
Impedance	voltage	Single side stable type	е	1 coil latching type			2 coil latching type	
	3 V DC	ARS1403		ARS	ARS1503		ARS1603	
	4.5 V DC	ARS144H		ARS	154H		ARS164H	
50Ω	9 V DC	ARS1409		ARS	1509		ARS1609	
	12 V DC	ARS1412		ARS	ARS1512		ARS1612	
	24 V DC	ARS1424		ARS1524			ARS1624	
Naminal adi		Part No.						
Impedance	Nominal coil voltage	Standard		tandard type			Silent type	
		Single side stable type	1 cc	oil latching type	2 coil latching	type	Single side stable type	
	3 V DC	ARS1003		ARS1103	ARS1203		ARS1303	
	4.5 V DC	ARS104H		ARS114H	ARS124H		ARS134H	
75Ω	9 V DC	ARS1009		ARS1109	ARS1209		ARS1309	
	12 V DC	ARS1012		ARS1112	ARS1212		ARS1312	
	24 V DC	ARS1024		ARS1124	ARS1224		ARS1324	

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

2. Standard PC board terminal and reversed contact type

lmnadanaa	Nominal coil	Part No.				
Impedance	voltage	Single side stable type	e 1 coil	latching type	2 coil latching type	
	3 V DC	ARS3403	Д	RS3503	ARS3603	
	4.5 V DC	ARS344H	Д	RS354H	ARS364H	
50Ω	9 V DC	ARS3409	Д	RS3509	ARS3609	
	12 V DC	ARS3412	Д	RS3512	ARS3612	
	24 V DC	ARS3424	A	RS3524	ARS3624	
				Part No.		
Impedance	Nominal coil voltage	Standard type		Silent type		
	voltage	Single side stable type	1 coil latching type	2 coil latching	type Single side stable type	
	3 V DC	ARS3003	ARS3103	ARS3203	ARS3303	
	4.5 V DC	ARS304H	ARS314H	ARS324H	ARS334H	

ARS3109

ARS3112

ARS3124

ARS3209

ARS3212

ARS3224

24 V DC ARS3024
Standard packing: 50 pcs. in an inner package; 500 pcs. in an outer package

9 V DC

12 V DC

3. Surface-mount terminal and standard contact type, E layout

ARS3009

ARS3012

	Nominal coil	Part No.				
mpedance	voltage	Single side stable type	1 coil latching type	2 coil latching type		
	3 V DC	ARS14A03□	ARS15A03□	ARS16A03□		
	4.5 V DC	ARS14A4H□	ARS15A4H□	ARS16A4H□ ARS16A09□		
50Ω	9 V DC	ARS14A09□	ARS15A09□			
	12 V DC	ARS14A12□	ARS15A12□	ARS16A12□		
	24 V DC	ARS14A24□	ARS15A24□	ARS16A24□		
	3 V DC	ARS10A03□	ARS11A03□	ARS12A03□		
	4.5 V DC	ARS10A4H□	ARS11A4H□	ARS12A4H□		
75Ω	9 V DC	ARS10A09□	ARS11A09□	ARS12A09□		
	12 V DC	ARS10A12□	ARS11A12□	ARS12A12□		
	24 V DC	ARS10A24□	ARS11A24□	ARS12A24□		

Standard packing: 40 pcs. in an inner package (tube); 1,000 pcs. in an outer package

Standard packing: 500 pcs. in an inner package (tape and reel); 1,000 pcs. in an outer package

Note: The box at the end of a part number shows where packing type is indicated. If there is no indication, tube packing will be used. If "X" or "Z" is added, tape and reel packing will be used. Example: ARS14A03 (tube packing), ARS14A03X (tape and reel packing)

4. Surface-mount terminal and standard contact type, Y layout

manadanaa	Nominal coil	Part No.				
Impedance	voltage	Single side stable type	1 coil latching type	2 coil latching type		
	3 V DC	ARS14Y03□	ARS15Y03□	ARS16Y03□		
	4.5 V DC	ARS14Y4H□	ARS15Y4H□	ARS16Y4H□		
50Ω	9 V DC	ARS14Y09□	ARS15Y09□	ARS16Y09□		
	12 V DC	ARS14Y12□	ARS15Y12□	ARS16Y12□		
	24 V DC	ARS14Y24□	ARS15Y24□	ARS16Y24□		
	3 V DC	ARS10Y03□	ARS11Y03□	ARS12Y03□		
	4.5 V DC	ARS10Y4H□	ARS11Y4H□	ARS12Y4H□		
75Ω	9 V DC	ARS10Y09□	ARS11Y09□ ARS			
	12 V DC	ARS10Y12□	ARS11Y12□	ARS12Y12□		
	24 V DC	ARS10Y24□	ARS11Y24□	ARS12Y24□		

Standard packing: 40 pcs. in an inner package (tube); 1,000 pcs. in an outer package

Standard packing: 500 pcs. in an inner package (tape and reel); 1,000 pcs. in an outer package

Note: The box at the end of a part number shows where packing type is indicated. If there is no indication, tube packing will be used. If "X" or "Z" is added, tape and reel packing will be used. Example: ARS14Y03 (tube packing), ARS14Y03X (tape and reel packing)

ASCTB106E 201202-T

ARS3309

ARS3312

ARS3324

5. Surface-mount terminal and reversed contact type, E layout

Impedance	Nominal coil	Part No.				
impedance	voltage	Single side stable type	1 coil latching type	2 coil latching type		
	3 V DC	ARS34A03□	ARS35A03□	ARS36A03□		
	4.5 V DC	ARS34A4H□	ARS35A4H□	ARS36A4H□		
50Ω	9 V DC	ARS34A09□	ARS35A09□	ARS36A09□		
	12 V DC	ARS34A12□	ARS35A12□	ARS36A12□		
	24 V DC	ARS34A24□	ARS35A24□	ARS36A24□		
	3 V DC ARS30A03□		ARS31A03□	ARS32A03□		
	4.5 V DC	ARS30A4H□	ARS31A4H□	ARS32A4H□		
75Ω	9 V DC	ARS30A09□	ARS31A09□	ARS32A09□		
	12 V DC	ARS30A12□	ARS31A12□	ARS32A12□		
	24 V DC	ARS30A24□	ARS31A24□	ARS32A24□		

Standard packing: 40 pcs. in an inner package (tube); 1,000 pcs. in an outer package

Standard packing: 500 pcs. in an inner package (tape and reel); 1,000 pcs. in an outer package

Note: The box at the end of a part number shows where packing type is indicated. If there is no indication, tube packing will be used.

If "X" or "Z" is added, tape and reel packing will be used. Example: ARS34A03 (tube packing), ARS34A03X (tape and reel packing)

6. Surface-mount terminal and reversed contact type, Y layout

Immedance	Nominal coil	Part No.				
Impedance	voltage	Single side stable type	1 coil latching type	2 coil latching type		
	3 V DC	ARS34Y03□	ARS35Y03□	ARS36Y03□		
	4.5 V DC	ARS34Y4H□	ARS35Y4H□	ARS36Y4H□		
50Ω	9 V DC ARS34Y09□		ARS35Y09□	ARS36Y09□		
	12 V DC	ARS34Y12□	ARS35Y12□	ARS36Y12□		
	24 V DC	ARS34Y24□	ARS35Y24□	ARS36Y24□		
	3 V DC	ARS30Y03□	ARS31Y03□	ARS32Y03□		
	4.5 V DC	ARS30Y4H□	ARS31Y4H□	ARS32Y4H□		
75Ω	9 V DC	ARS30Y09□	ARS31Y09□	ARS32Y09□		
	12 V DC	ARS30Y12□	ARS31Y12□	ARS32Y12□		
	24 V DC	ARS30Y24□	ARS31Y24□	ARS32Y24□		

Standard packing: 40 pcs. in an inner package (tube); 1,000 pcs. in an outer package

Standard packing: 500 pcs. in an inner package (tape and reel); 1,000 pcs. in an outer package

Note: The box at the end of a part number shows where packing type is indicated. If there is no indication, tube packing will be used.

If "X" or "Z" is added, tape and reel packing will be used. Example: ARS34Y03 (tube packing), ARS34Y03X (tape and reel packing)

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 60°C 140°F)
3 V DC			66.7 mA	45 Ω	200 mW	110%V or less of nominal voltage
4.5 V DC	75%V or less of		44.4 mA	101.3Ω		
9 V DC	nominal voltage		22.2 mA	405 Ω		
12 V DC	(Initial)		16.7 mA	720 Ω		
24 V DC			8.3 mA	2,880 Ω		

2) 1 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 60°C 140°F)
3 V DC			66.7 mA	45 Ω		
4.5 V DC		75%V or less of	44.4 mA	101.3Ω		
9 V DC	nominal voltage	nominal voltage	22.2 mA	405 Ω	200 mW	110%V or less of nominal voltage
12 V DC	(Initial)	(Initial)	16.7 mA	720 Ω		Homiliai voitage
24 V DC			8.3 mA	2.880 Ω		

3) 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 60°C 140°F)
3 V DC	75%V or less of nominal voltage (Initial)	75%V or less of nominal voltage (Initial)	133.3 mA	22.5Ω	400 mW	110%V or less of nominal voltage
4.5 V DC			88.9 mA	50.6Ω		
9 V DC			44.4 mA	202.5Ω		
12 V DC			33.3 mA	360 Ω		
24 V DC			16.7 mA	1,440 Ω		

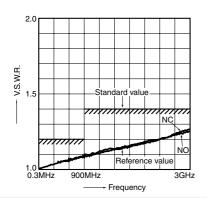
2. Specifications

Contact carrying power Max. 10W (at 3GHz, Impedance: 50/75Ω, V.S.W.R.: Max. 1.4)			Item	Specifications	
Contact resistance (Initial)		Arrangement		1 Form C	
Anninal switching capacity 1W (at 3 GHz, Impedance: 507:50, V.S.W.R.: Max. 1.4), 10 ma 24 V DC (resist Conduct carrying power Max. 10W (at 3 GHz, Impedance: 507:50, V.S.W.R.: Max. 1.4)	Contact	Contact material		Gold plating	
Contact carrying power Max. 10W (at 3GHz, Impedance: 50/75Ω, V.S.W.R.: Max. 1.4)	(Contact resist	ance (Initial)	Max. 100 mΩ (By voltage drop 10 V AC 10mA)	
Max. switching outside 30 V DC	1	Nominal switching capacity		1W (at 3 GHz, Impedance: 50/75Ω, V.S.W.R.: Max. 1.4), 10 mA 24 V DC (resistive load)	
Max. switching current 0.5 A DC Nominal poperating power 2 coll atching type 200mW 2 coll atching type 200mW 3 coll atching type 2 coll	(Contact carry	ing power	Max. 10W (at 3GHz, Impedance: 50/75Ω, V.S.W.R.: Max. 1.4)	
Nominal operating 1 coll latching type 200mW	Ī	Max. switching	g voltage	30 V DC	
Operating power 2 coll latching type 200mW 2 coll latching type 400mW 2 coll latching type 400mW 2 coll latching type 400mW	Rating	Max. switching	g current	0.5 A DC	
Departing power Departing power Departing power Depart Departing power Departing power Departing power Department De		Nominal	Single side stable type	200mW	
V.S.W.R. Max. 1.20/900MHz, Max. 1.40/3GHz (Standard PC board terminal) Max. 1.20/900MHz, Max. 0.40GB/3GHz (Standard PC board terminal) Max. 0.20/GB/900MHz, Max. 0.40GB/3GHz (Standard PC board terminal) Max. 0.20/GB/900MHz, Max. 0.40GB/3GHz (Standard PC board terminal) Max. 0.20/GB/900MHz, Min. 30dB/3GHz (Standard PC board terminal) Max. 1.20/900MHz, Max. 1.40/3GHz (Standard PC board terminal) Max. 1.20/900MHz, Max. 0.40GB/3GHz (Standard PC board terminal) Max. 0.40GB/900MHz, Max			1 coil latching type	200mW	
High frequency characteristics Insertion loss (without D.U.T. board's loss) Max. 1.20/900MHz, Max. 1.40/3GHz (Surface-mount terminal) Max. 0.20dB/900MHz, Max. 0.40dB/3GHz (Standard PC board terminal) Max. 0.20dB/900MHz, Max. 0.40dB/3GHz (Standard PC board terminal) Min. 565dB/900MHz, Min. 30dB/3GHz (Standard PC board terminal) Min. 120/900MHz, Min. 30dB/3GHz (Standard PC board terminal) Min. 30dB/3GHz (S	ı	power	2 coil latching type	400mW	
Insertion loss (without D.U.T. board's loss) Max. 0.10dB/900MHz, Max. 0.40dB/30dHz (Sufance-mount terminal) Min. 60dB/900MHz, Min. 35dB/3GHz (Sufandard PC board terminal) Min. 60dB/900MHz, Min. 35dB/3GHz (Sufandard PC board terminal) Min. 55dB/900MHz, Min. 35dB/3GHz (Sufandard PC board terminal) Max. 1.15/900MHz, Max. 1.40/3GHz (Standard PC board terminal) Max. 1.15/900MHz, Max. 1.50/3GHz (Standard PC board terminal) Max. 1.20/900MHz, Max. 1.50/3GHz (Standard PC board terminal) Max. 0.20dB/900MHz, Max. 0.50dB/3GHz (Standard PC board terminal) Max. 0.20dB/900MHz, Max. 0.50dB/3GHz (Standard PC board terminal) Insulation restance (Initial) Insulation					
Isolation Min. 55dB/900MHz, Min. 30dB/3GHz (Surface-mount terminal)	characteristics, Impedance: 50Ω	Insertion loss	(without D.U.T. board's loss)		
High frequency characteristics insertion loss (without D.U.T. board's loss) Insertion loss (without D.U.T. board's loss) Max. 0.10dB/900MHz, Max. 0.50dB/3GHz (Standard PC board terminal) insertion loss (without D.U.T. board's loss) Max. 0.10dB/900MHz, Max. 0.50dB/3GHz (Standard PC board terminal) insertion loss (Initial) Isolation Min. 50dB/900MHz, Min. 30dB/3GHz (Standard PC board terminal) insertion resistance (Initial) Breakdown voltage (Initial) Breakdown voltage (Initial) Breakdown voltage (Initial) Breween contact and earth terminal So0 Vrms for 1min. (Detection current: 10mA) Electrical characteristics Electrical characteristics Femperature rise (at 20°C 68°F) Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time (at 20°C 68°F) Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time) (without diode) Poperate time (at 20°C 68°F) Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time) (without diode) Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time) (without diode) Poperation noise Mechanical characteristics Functional Destructive Min. 196 m/s² (Half-wave pulse of sine wave: 1 ms, detection time: 10μs) Estandard type Silent type (75Ω, PC board terminal type only) Single side stable standard type Min. 590 m/s² (4180 cpm) Latching type Min. 10° (at 180 cpm) Min. 10° (at 180 cpm) Min. 10° (14180 cpm) Min. 30° (10° C 40° F to 188° F to 20° C 100° F to 188° F to 20° C 40° F to 188° F to 20	(Initial)	Isolation			
characteristics, Impedance: 75Ω (Initial) Insertion loss (without D.U.T. board's loss) Insertion loss (without learning) Insertion least stance (initial) Insertion loss (without learning) Insertion loss (without learning) Insertion loss (without learning) Insertion loss (without learning) Insertion least stance (initial) Insertion loss (without learning) Insertion loss (without learning) Insertion loss (without learning) Insertion loss (without learning) Insertion loss (Inserting) Inse	High frequency _	V.S.W.R.			
Isolation Iso	characteristics, Impedance: 75Ω	Insertion loss (without D.U.T. board's loss)			
Breakdown voltage (Initial) Between contact and earth terminal So0 Vrms for 1min. (Detection current: 10mA)		Isolation			
Between contact and earth terminal So0 Vrms for 1min. (Detection current: 10mA)	1	Insulation resi	istance (Initial)	Min. 100M Ω (at 500V DC, Measurement at same location as "Breakdown voltage" section.	
Comparation noise Expected life Electrical life Fox Page	1	Breakdown	Between open contacts	500 Vrms for 1min. (Detection current: 10mA)	
Electrical characteristics Temperature rise (at 20°C 68°F) Max. 40°C 140°F (By resistive method, nominal voltage applied to the coil, excluding contact bounce time (at 20°C 68°F) Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time) (without diode) Max. 6 ms (Nominal voltage applied to the coil, excluding contact bounce time) (without diode) Set time and Reset time (at 20°C 68°F) Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time) (without diode) Set time and Reset time (at 20°C 68°F) Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time) (without diode) Set time and Reset time (at 20°C 68°F) Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time) (without diode) Set time and Reset time (at 20°C 68°F) Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time) (without diode) Shock resistance Destructive Min. 196 m/s² (Half-wave pulse of sine wave: 11 ms, detection time: 10µs) Min. 196 m/s² (Half-wave pulse of sine wave: 6 ms) Min. 196 m/s² (Half-wave pulse of sine wave: 6 ms) Min. 10µs (Standard type Destructive Approx. 40dB Approx. 40dB Min. 55 Hz at double amplitude of 5 mm Min. 40dB Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude of 5 mm Min. 55 Hz at double amplitude o			Between contact and earth terminal	500 Vrms for 1min. (Detection current: 10mA)	
Temperature rise (at 20°C 68°F) Operate time (at 20°C 68°F) Release time (at 20°C 68°F) Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time (at 20°C 68°F) Set time and Reset time (at 20°C 68°F) Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time (without diode) Nechanical characteristics Mechanical characteristics Shook resistance Destructive Min. 980 m/s² (Half-wave pulse of sine wave: 11 ms, detection time: 10μs) Poperation noise* Mechanical characteristics Operation noise* Mechanical life Expected life Expected life Finctional 10 to 55 Hz at double amplitude of 3 mm (Detection time: 10μs) Approx. 40dB Approx. 40dB Single side stable standard type Min. 5×10° (at 180 cpm) Min. 10° (at 180 cpm) Min. 10° (at 180 cpm) Min. 10° (Standard PC board terminal), Min. 3×10° (Surface-mount terminal) (10V DC 10mA resistive load) Min. 3×10° (Surface-mount terminal) (10V DC 10mA resistive load) Min. 3×10° (Surface-mount terminal) (10V DC 10mA resistive load) Min. 3×10° (Surface-mount terminal) (10V DC 10mA resistive load) Min. 3×10° (10mA 24V DC resistive load) Min. 3×10° (10mA 24V DC resistive load) Min. 3×10° (10mA 24V DC resistive load) Min. 3×10° (10mA 24V DC resistive load) Min. 3×10° (10mA 24V DC resistive load) Min. 3×10° (10mA 3GHz, Impedance: 75Ω, V.S.W.R: Max. 1.4) (at 20 cpm)	((Initial)	Between contact and coil	1,000 Vrms for 1min. (Detection current: 10mA)	
Release time (at 20°C 68°F) Max. 6 ms (Nominal voltage applied to the coil, excluding contact bounce time) (without diode) Set time and Reset time (at 20°C 68°F) Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time) Shock		Temperature rise (at 20°C 68°F)		Max. 60°C 140°F (By resistive method, nominal voltage applied to the coil, contact carrying current: 10mA)	
Mechanical characteristics Shock resistance Destructive Destructive Min. 196 m/s² (Half-wave pulse of sine wave: 11 ms, detection time: 10μs)	(Operate time	(at 20°C 68°F)	Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time)	
Shock resistance Destructive Min. 196 m/s² (Half-wave pulse of sine wave: 11 ms, detection time: 10μs)	I	Release time (at 20°C 68°F)			
Mechanical characteristics resistance Destructive Min. 980 m/s² (Half-wave pulse of sine wave: 6 ms) Operation noise* Functional pestructive 10 to 55 Hz at double amplitude of 3 mm (Detection time: 10μs) Operation noise* Standard type Approx. 40dB Expected life Single side stable standard type only) Approx. 30dB Mechanical life Single side stable standard type Min. 5×10° (at 180 cpm) Expected life Single side stable silent type Min. 10° (at 180 cpm) Min. 10° (standard PC board terminal), Min. 3×10° (Surface-mount terminal) (10V DC 10mA resistive load)/Min. 3×10° (24V DC 10mA resistive load)/Min. 10° (Standard PC board terminal), Min. 3×10° (Surface-mount terminal) (1W, at 3GHz, Impedance: 50Ω, V.S.W.R: Max. 1.4) (at 20 cpm) 75Ω type Min. 3×10° (10mA 24V DC resistive load)/Min. 3×10° (1V, at 3GHz, Impedance: 75Ω, V.S.W.R: Max. 1.4) (at 20 cpm) Ambient temperature: -40 to 70°C -40°F to 158°F (Single side stable standard and Latching tyre)	;	Set time and I	Reset time (at 20°C 68°F)	Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time)	
Characteristics Vibration resistance Functional 10 to 55 Hz at double amplitude of 3 mm (Detection time: 10μs) Operation noise* Standard type Approx. 40dB Silent type (75Ω, PC board terminal type only) Approx. 30dB Mechanical life Single side stable standard type Min. 5×10° (at 180 cpm) Expected life Mechanical life Single side stable silent type Min. 10° (at 180 cpm) Expected life Single side stable silent type Min. 10° (at 180 cpm) Expected life Expected life Expected life Expected life Single side stable silent type Min. 10° (at 180 cpm) Min. 10° (standard PC board terminal), Min. 3×10° (Surface-mount terminal) (10V DC 10mA resistive load)/Min. 3×10° (24V DC 10mA resistive load)/Min. 3×10° (24V DC resistive load) Min. 3×10° (Standard PC board terminal), Min. 3×10° (Surface-mount terminal) (1W, at 3GHz, Impedance: 75Ω, V.S.W.R: Max. 1.4) (at 20 cpm) Min. 3×10° (10mA 24V DC resistive load)/Min. 3×10° (24V DC 10mA resistive load)/Min. 3×10° (10mA 24V DC resistive load) Min. 3×10° (10mA 24V DC resistive load) Min. 3×10° (10mA 24V DC resistive load) <t< td=""><td>:</td><td rowspan="2"></td><td>Functional</td><td colspan="2">Min. 196 m/s² (Half-wave pulse of sine wave: 11 ms, detection time: 10μs)</td></t<>	:		Functional	Min. 196 m/s² (Half-wave pulse of sine wave: 11 ms, detection time: 10μs)	
Vibration Persistance Destructive 10 to 55 Hz at double amplitude of 5 mm	Mechanical		Destructive	Min. 980 m/s² (Half-wave pulse of sine wave: 6 ms)	
Standard type Approx. 40dB Silent type (75Ω, PC board terminal type only) Approx. 30dB Mechanical life Single side stable standard type Min. 5×10° (at 180 cpm) Expected life Single side stable silent type Min. 10° (at 180 cpm) Expected life Min. 10° (standard PC board terminal), Min. 3×10° (Surface-mount terminal) (10V DC 10mA resistive load)/Min. 3×10° (24V DC 10mA resistive load)/Min. 10° (Standard PC board terminal), Min. 3×10° (Surface-mount terminal) (1W, at 3GHz, Impedance: 50Ω, V.S.W.R: Max. 1.4) (at 20 cpm) 75Ω type Min. 3×10° (10mA 24V DC resistive load)/Min. 3×10° (10mA 24V DC resist	characteristics	Vibration	Functional	10 to 55 Hz at double amplitude of 3 mm (Detection time: 10μs)	
Silent type (75Ω, PC board terminal type only) Approx. 30dB	1	resistance	Destructive	10 to 55 Hz at double amplitude of 5 mm	
Silent type (75Ω, PC board terminal type only) Approx. 30dB	On a ration i *	Standard type	•	Approx. 40dB	
Mechanical life Single side stable standard type Min. 5×10 ⁶ (at 180 cpm) Expected life Min. 10 ⁶ (at 180 cpm) Min. 10 ⁶ (at 180 cpm) Expected life Min. 10 ⁶ (Standard PC board terminal), Min. 3×10 ⁵ (Surface-mount terminal) (10V DC 10mA resistive load)/Min. 3×10 ⁵ (24V DC 10mA resistive load) Min. 10 ⁶ (Standard PC board terminal), Min. 3×10 ⁵ (Surface-mount terminal) (1W, at 3GHz, Impedance: 50Ω, V.S.W.R: Max. 1.4) (at 20 cpm) 75Ω type Min. 3×10 ⁵ (10mA 24V DC resistive load) Min. 3×10 ⁵ (1W, at 3GHz, Impedance: 75Ω, V.S.W.R: Max. 1.4) (at 20 cpm) Ambient temperature: -40 to 70°C -40°F to 158°F (Single side stable standard and Latching type)	peration noise*			Approx. 30dB	
Mechanical life Single side stable silent type Min. 10 ⁶ (at 180 cpm) Min. 10 ⁶ (Standard PC board terminal), Min. 3×10 ⁵ (Surface-mount terminal) (10V DC 10mA resistive load)/Min. 3×10 ⁵ (24V DC 10mA resistive load) Min. 10 ⁶ (Standard PC board terminal), Min. 3×10 ⁵ (Surface-mount terminal) (1W, at 3GHz, Impedance: 50Ω, V.S.W.R: Max. 1.4) (at 20 cpm) 75Ω type Min. 3×10 ⁵ (10mA 24V DC resistive load) Min. 3×10 ⁵ (1W, at 3GHz, Impedance: 75Ω, V.S.W.R: Max. 1.4) (at 20 cpm) Ambient temperature: -40 to 70°C -40°F to 158°F (Single side stable standard and Latching type)		Mechanical		Min. 5×10 ⁶ (at 180 cpm)	
Expected life Electrical life Electrical life Electrical life Electrical life Electrical life Electrical life T5Ω type Min. 10° (Standard PC board terminal), Min. 3×10° (Surface-mount terminal) (10V DC 10mA resistive load)/Min. 3×10° (24V DC 10mA resistive load) Min. 10° (Standard PC board terminal), Min. 3×10° (Surface-mount terminal) (1W, at 3GHz, Impedance: 50Ω, V.S.W.R: Max. 1.4) (at 20 cpm) Min. 3×10° (10mA 24V DC resistive load) Min. 3×10° (1W, at 3GHz, Impedance: 75Ω, V.S.W.R: Max. 1.4) (at 20 cpm) Ambient temperature: -40 to 70°C -40°F to 158°F (Single side stable standard and Latching type) Min. 3×10° (Single side stable standard and Latching type) Min. 3×10° (Single side stable standard and Latching type) Min. 3×10° (10 mA 24V DC resistive load) Mi			Single side stable silent type		
Expected life Min. 106 (Standard PC board terminal), Min. 3×105 (Surface-mount terminal) (10V DC 10mA resistive load)/Min. 3×105 (24V DC 10mA resistive load) Min. 106 (Standard PC board terminal), Min. 3×105 (Surface-mount terminal) (1W, at 3GHz, Impedance: 50Ω, V.S.W.R: Max. 1.4) (at 20 cpm) T5Ω type Min. 3×105 (10mA 24V DC resistive load) Min. 3×105 (1W, at 3GHz, Impedance: 75Ω, V.S.W.R: Max. 1.4) (at 20 cpm) Ambient temperature: -40 to 70°C -40°F to 158°F (Single side stable standard and Latching type)	'		Latching type	Min. 10 ⁶ (at 180 cpm)	
Min. 3×10 ^s (1W, at 3GHz, Impedance: 75Ω, V.S.W.R: Max. 1.4) (at 20 cpm) Ambient temperature: -40 to 70°C -40°F to 158°F (Single side stable standard and Latching type)	Expected life	Electrical life		Min. 10° (Standard PC board terminal), Min. 3×10° (Surface-mount terminal) (10V DC 10mA resistive load)/Min. 3×10° (24V DC 10mA resistive load) Min. 10° (Standard PC board terminal), Min. 3×10° (Surface-mount terminal)	
(Single side standard and Latching type)			75Ω type	Min. 3×10 ⁵ (10mA 24V DC resistive load)	
Ambient temperature: -40 to 60°C -40°F to 140°F (Single side stable silent typ Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)	Conditions	Conditions for	operation, transport and storage	(Single side stable standard and Latching type) Ambient temperature: -40 to 60°C -40°F to 140°F (Single side stable silent type)	

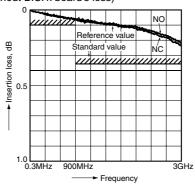
^{*}Measured the operation noise of the relay alone (with diodes at both ends of the coil) 30cm away from top side, by the A-weighted, FAST method while applying the rated voltage. (Reference) Operation noise of RK relay (existing model): Approx. 50dB

REFERENCE DATA

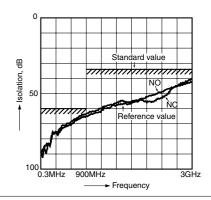
- 1.-(1) High frequency characteristics (Impedance: 50Ω , Standard PC board terminal)
- Sample: ARS144H; Measuring method: Measured with Agilent Technologies network analyzer (E8363B). *For details see No. 7 under "NOTES".
- V.S.W.R. characteristics



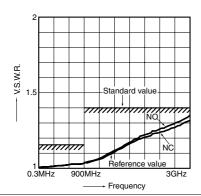
• Insertion loss characteristics (without D.U.T. board's loss)



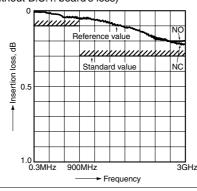
• Isolation characteristics



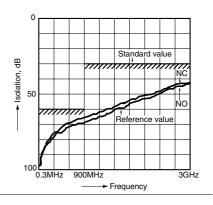
- 1.-(2) High frequency characteristics (Impedance: 75Ω , Standard PC board terminal)
- Sample: ARS104H; Measuring method: Measured with Agilent Technologies network analyzer (£8363B). *For details see No. 7 under "NOTES".
- V.S.W.R. characteristics



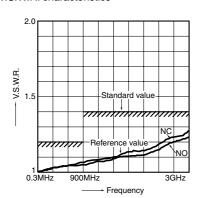
• Insertion loss characteristics (without D.U.T. board's loss)



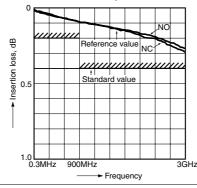
• Isolation characteristics



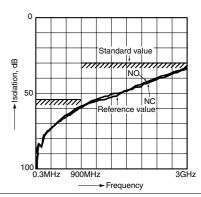
- 1.-(3) High frequency characteristics (Impedance: 50Ω , Surface-mount terminal)
- Sample: ARS14A4H; Measuring method: Measured with Agilent Technologies network analyzer (E8363B). *For details see No. 7 under "NOTES".
- V.S.W.R. characteristics



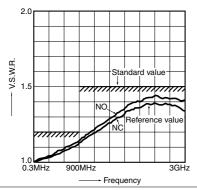
 Insertion loss characteristics (without D.U.T. board's loss)



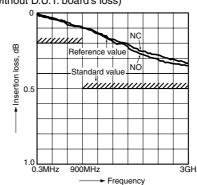
Isolation characteristics



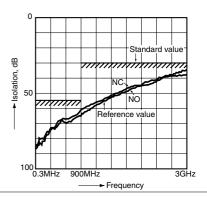
- 1.-(4) High frequency characteristics (Impedance: 75Ω , Surface-mount terminal)
- Sample: ARS10A4H; Measuring method: Measured with Agilent Technologies network analyzer (E8363B). *For details see No. 7 under "NOTES".
- V.S.W.R. characteristics



• Insertion loss characteristics (without D.U.T. board's loss)



• Isolation characteristics



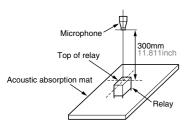
2.-(1) Operation noise distribution

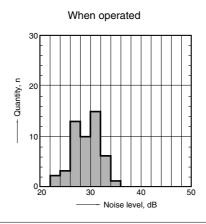
Sample: ARS134H (single side stable silent type), 50 pcs

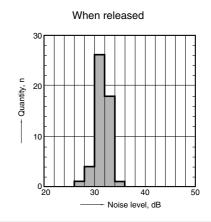
Coil voltage: rated voltage applied (with diode) Equipment setting: A weighted sound pressure level, FAST.

Background noise: approx. 20 dB

Method of measurement: See figure below.





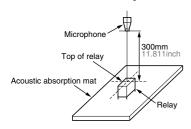


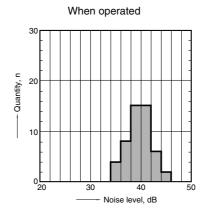
2.-(2) Operation noise distribution

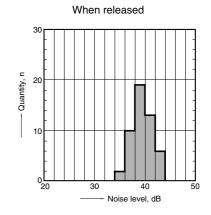
Sample: ARS104H (single side stable standard type),

Coil voltage: rated voltage applied (with diode)
Equipment setting: A weighted sound pressure level, FAST.

Background noise: approx. 20 dB Method of measurement: See figure below.



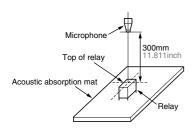




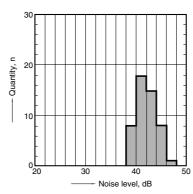
2.-(3) Operation noise distribution

Sample: ARS114H (latching type), 50 pcs. Coil voltage: rated voltage applied (with diode) Equipment setting: A weighted sound pressure level,

Background noise: approx. 20 dB Method of measurement: See figure below.



When set and reset



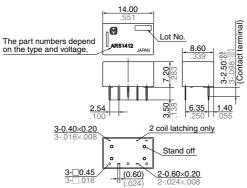
DIMENSIONS (mm inch)

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

<Standard PC board terminal>

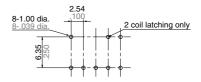
1. 50 Ω type CAD Data

External dimensions



Tolerance: $\pm 0.3 \pm .012$

PC board pattern (Bottom view)



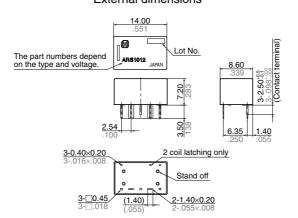
Tolerance: ±0.1 ±.004

2. 75 Ω type

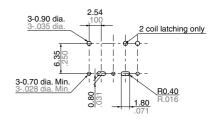
CAD Data



External dimensions



PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Tolerance: $\pm 0.3 \pm .012$

Schematic (Bottom view)

1. Standard contact type

Single side stable type (Deenergized condition)





1 coil latching type

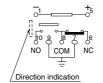


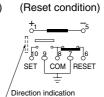
2 coil latching type (Reset condition)



2. Reversed contact type

Single side stable type (Deenergized condition)





1 coil latching type





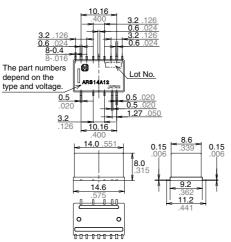
<Surface-mount terminal>

1. Impedance: 50Ω type

1) E layout



External dimensions



Tolerance: $\pm 0.3 \pm .012$

Schematic (Top view)

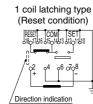
<Standard contact type>

Single side stable type (Deenergized condition) Direction indication

<Reversed contact type>

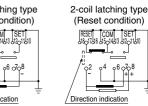
Single side stable type

(Deenergized condition)



1 coil latching type

(Reset condition)





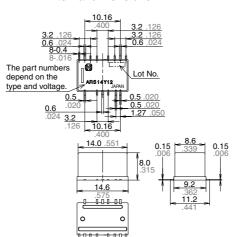
2-coil latching type (Reset condition)





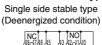


External dimensions



Schematic (Top view)

<Standard contact type>





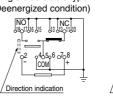
1 coil latching type

2-coil latching type (Reset condition)



<Reversed contact type>

Single side stable type (Deenergized condition)



1 coil latching type (Reset condition)

2-coil latching type (Reset condition)

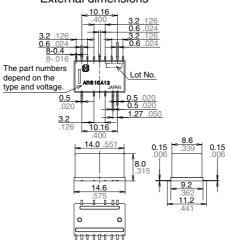
Tolerance: ±0.3 ±.012

2. Impedance: 75 Ω type

1) E layout

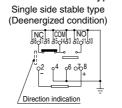




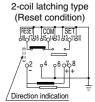


Schematic (Top view)

<Standard contact type>

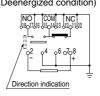


1 coil latching type (Reset condition)



<Reversed contact type>

Single side stable type (Deenergized condition)



1 coil latching type (Reset condition)

Direction indication



2-coil latching type (Reset condition)

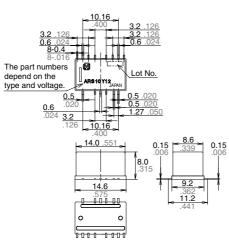


Tolerance: ±0.3 ±.012

2) Y layout



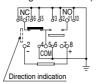
External dimensions



Schematic (Top view)

<Standard contact type>

Single side stable type (Deenergized condition)



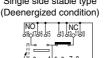


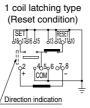




2-coil latching type

<Reversed contact type> Single side stable type





2-coil latching type (Reset condition)



Tolerance: ±0.3 ±.012

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

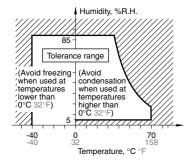
Since RS relays are highly sensitive polarized relays, their characteristics will be affected by a strong external magnetic field. Avoid using the relay under that condition.

4. Cleaning

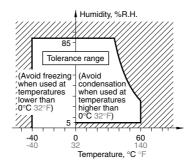
For automatic cleaning, the boiling method is recommended. Avoid ultrasonic cleaning which subjects the relays to high frequency vibrations, which may cause the contacts to stick. It is recommended that alcoholic solvents be used.

5. Conditions for operation, transport and storage conditions

- 1) Temperature
- Single side stable standard and latching type: -40 to 70°C -40 to 158°F
- Single side stable silent type: -40 to 60°C -40 to 140°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: Single side stable standard and latching type



Single side stable silent type



4) 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.

5) 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.

6) Low temperature, low humidity environments

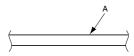
The plastic becomes brittle if the relay is exposed to a low temperature, low humidity environment for long periods of time

- 7) Storage requirements
- Since the relay is sensitive to humidity, the surface-mount type is packaged with tightly sealed anti-humidity packaging. However, when storing, please be careful of the following.
- (1) Please use promptly once the antihumidity pack is opened.
- If relays are left as is after unpacking, they will absorb moisture which will result in loss of air tightness as a result of case expansion due to thermal stress when reflow soldering during the mounting process. (within one day, 30°C and 60%R.H or less)
- (2) When storing for a log period after opening the anti-humidity pack, storage in anti-humidity packaging with an anti-humidity bag to which silica gel has been added, is recommended.
- *Furthermore, if the relay is solder mounted when it has been subjected to excessive humidity, cracks and leaks can occur. Be sure to mount the relay under the required mounting conditions.

6. Soldering

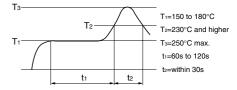
- 1) Please meet the following conditions if this relay is to be automatically soldered.
- (1) Preheating: Max. 120°C 248°F (terminal solder surface) for max. 120 seconds
- (2) Soldering: Max. 260±5°C 500±9°F for max. 6 seconds

- *Relays are influenced by the type of PC board used. Please confirm with the actual PC board you plan to use.
- *Please avoid reflow soldering.
- 2) Surface-mount terminal In case of automatic soldering, the following conditions should be observed
- (1) Position of measuring temperature



A: Surface of PC board where relay is mounted.

(2) IR (infrared reflow) soldering method



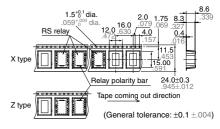
Mounting cautions

Rise in relay temperature depends greatly on the component mix on a given PC board and the heating method of the reflow equipment. Therefore, please test beforehand using actual equipment to ensure that the temperature where the relay terminals are soldered and the temperature at the top of the relay case are within the conditions given above.

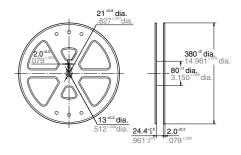
- 3) Please meet the following conditions if this relay is to be soldered by hand.
- (1) 260°C 500°F for max. 10 seconds
- (2) 350°C 662°F for max. 3 seconds The effect on the relay depends on the actual substrate used. Please verify the substrate to be used.
- (3) Avoid ultrasonic cleaning. Doing so will adversely affect relay characteristics. Please use alcohol-based cleaning solvents when cleaning relays.

7. Tape and reel packing

1) Tape dimensions

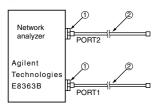


2) Dimensions of plastic reel



8. Measuring method

1) 50Ω type

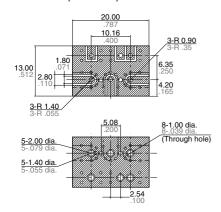


Connect connectors 1 and 2 respectively to PORT 1 and PORT 2. Perform calibration using the 3.5 mm calibration kit (HP85052B).

No.	Product name	Contents
1	Agilent 85130-60011	Adapter 2.4mm-3.5mm female .095inch138inch female
2	SUHNER SUCOFLEX104	Cable 3.5mm-3.5mm male .138inch138inch male

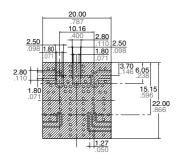
After calibration, connect the D.U.T. board and measure. However, connectors other than those for measurement should be connected with a 50Ω termination resistor.

<Standard PC board terminal> PC board Dimensions (mm inch)



<Surface-mount terminal and E layout>

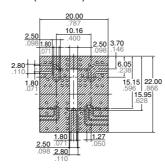
PC board Dimensions (mm inch)



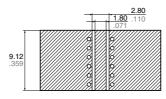
<Surface-mount terminal and Y layout>

PC board

Dimensions (mm inch)



PC board for correction Dimensions (mm inch)



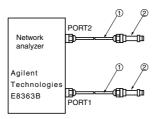
Material: Glass PTFE double-sided through hole PC board R-4737 (Panasonic Corporation)

Board thickness: t = 0.8 mm .031 inch

Copper plating: 18 µm

Connector (SMA type receptacle) Product name: 01K1808-00 (Waka

Manufacturing Co., Ltd.) Insertion loss compensation The insertion loss of relay itself is given by subtracting the insertion loss of shortcircuit the Com and the NC (or NO). (signal path and two connectors) 2) 75Ω type



Connect connectors 1 and 2 respectively to PORT 1 and PORT 2. Perform calibration using the 3.5 mm calibration kit (HP85039B).

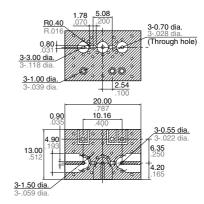
No.	Product name	Contents
1	85134-60003	Test port cable
2	11852B	Conversion adapter; 50Ω N type (female) to 75Ω N type (male)
2	85039-60011	Conversion adapter; 75Ω N type (female) to 75Ω F type (male)

After calibration, connect the D.U.T. board and measure. However, connectors other than those for measurement should be connected with a 75Ω termination resistor.

<Standard PC board terminal>

PC board

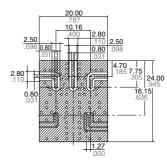
Dimensions (mm inch)



<Surface-mount terminal and E layout>

PC board

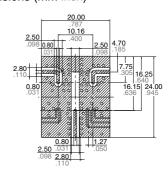
Dimensions (mm inch)



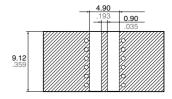
<Surface-mount terminal and Y layout>

PC board

Dimensions (mm inch)



PC board for correction Dimensions (mm inch)



Material: Glass PTFE double-sided through hole PC board R-4737

(Panasonic Corporation)

Board thickness: t = 0.8 mm .031 inch

Copper plating: 18µm

Connector (F type receptacle)
Product name: C05-0236 (Komine
Musen Electric Corporation)

Insertion loss compensation
The insertion loss of relay itself is given by subtracting the insertion loss of shortcircuit the COM and the NC (or NO). (signal path and two connectors)

9. Others

1) The switching lifetime is defined under the standard test condition specified in the JIS* C 5442 standard (temperature 15 to 35°C 59 to 95°F, humidity 25 to 75%). Check this with the real device as it is affected by coil driving circuit, load type, activation frequency, activation phase, ambient conditions and other factors.

Also, be especially careful of loads such as those listed below.

- When used for AC load-operating and the operating phase is synchronous, rocking and fusing can easily occur due to contact shifting.
- When high-frequency opening and closing of the relay is performed with a load that causes arcs at the contacts, nitrogen and oxygen in the air is fused by the arc energy and HNO₃ is formed. This can corrode metal materials.

Three countermeasures for these are listed here.

- (1) Incorporate an arc-extinguishing circuit.
- (2) Lower the operating frequency
- (3) Lower the ambient humidity
- 2) Use the relay within specifications such as coil rating, contact rating and on/ off service life. If used beyond limits, the relay may overheat, generate smoke or catch fire.
- 3) Be careful not to drop the relay. If accidentally dropped, carefully check its appearance and characteristics before use.
- 4) Be careful to wire the relay correctly. Otherwise, malfunction, overheat, fire or other trouble may occur.
- 5) If a relay stays on in a circuit for many months or years at a time without being activated, circuit design should be reviewed so that the relay can remain non-excited. A coil that receives current all the time heats, which degrades insulation earlier than expected. A latching type relay is recommended for such circuits.

- 6) To ensure accurate operation of the latching type amidst surrounding temperature changes and other factors that might affect the set and reset pulse times, we recommend a coil impress set and reset pulse width of at least 30 ms at the rated operation voltage.
- 7) The latching type relay is shipped in the reset position. But jolts during transport or impacts during installation can change the reset position. It is, therefore, advisable to build a circuit in which the relay can be initialized (set and reset) just after turning on the power.

 8) If silicone materials (e.g., silicone rubbers, silicone oils, silicone coating agents, silicone sealers) are used in the vicinity of the relay, the gas emitted from the silicone may adhere to the contacts of the relay during opening and closing and lead to improper contact. If this is the case, use a material other than silicone.

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

单击下面可查看定价,库存,交付和生命周期等信息

>>Panasonic(松下)