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# New Product Introduction

July 28, 2010

## ARV Coaxial Switches: 26.5 GHz and Failsafe Versions



### 1. Features:

- 26.5 GHz and Failsafe versions are now available.

• PIN type

	Frequency	8GHz	18GHz	26.5GHz
Operating function				
Failsafe type		New	New	–
Latching type		Available for sale	Available for sale	–

• SMA type

	Frequency	8GHz	18GHz	26.5GHz
Operating function				
Failsafe type		New	New	New
Latching type		Available for sale	Available for sale	New

- Excellent high frequency characteristics (to 8, 18, 26.5GHz, 50Ω)
- Compact size (Approx.85% less volume compared to previous product.\*)  
 PIN type size: L 15.9 x W 15.9 x H 11.2 mm  
 L 0.626 x W 0.626 x H 0.441 inch  
 \*Compared to previous product (ARD coaxial switch) and PIN type ARV coaxial switch.
- Terminal shape options available (PIN and SMA)\*\*  
 \*\*For SMP connector type, please contact us.
- Contact arrangement: SPDT (Standard/Reverse contact)

## 2. Applications:

Compact wireless devices

Compact measuring instrument

All types of inspection equipment

Digital broadcasting

- Broadcasting relay station
- Broadcasting equipment

Mobile communication

- Cellular phone base station

## 3. Effective: July 2010 production basis

## 4. Product Types: PDF datasheet is attached.

### to 8 GHz type

Operating function	Contact terminal shape	Nominal operating voltage	Standard contact type		Reverse contact type	
			No HF datasheet attached	HF datasheet attached	No HF datasheet attached	HF datasheet attached
Failsafe type	PIN type	4.5 V DC	ARV10N4H	ARV10N4HQ	ARV13N4H	ARV13N4HQ
		12 V DC	ARV10N12	ARV10N12Q	ARV13N12	ARV13N12Q
		24 V DC	ARV10N24	ARV10N24Q	ARV13N24	ARV13N24Q
	SMA type	4.5 V DC	ARV10A4H	ARV10A4HQ	ARV13A4H	ARV13A4HQ
		12 V DC	ARV10A12	ARV10A12Q	ARV13A12	ARV13A12Q
		24 V DC	ARV10A24	ARV10A24Q	ARV13A24	ARV13A24Q

### to 18 GHz type

Operating function	Contact terminal shape	Nominal operating voltage	Standard contact type		Reverse contact type	
			No HF datasheet attached	HF datasheet attached	No HF datasheet attached	HF datasheet attached
Failsafe type	PIN type	4.5 V DC	ARV20N4H	ARV20N4HQ	ARV23N4H	ARV23N4HQ
		12 V DC	ARV20N12	ARV20N12Q	ARV23N12	ARV23N12Q
		24 V DC	ARV20N24	ARV20N24Q	ARV23N24	ARV23N24Q
	SMA type	4.5 V DC	ARV20A4H	ARV20A4HQ	ARV23A4H	ARV23A4HQ
		12 V DC	ARV20A12	ARV20A12Q	ARV23A12	ARV23A12Q
		24 V DC	ARV20A24	ARV20A24Q	ARV23A24	ARV23A24Q

### to 26.5 GHz type

Operating function	Contact terminal shape	Nominal operating voltage	Standard contact type		Reverse contact type	
			No HF datasheet attached	HF datasheet attached	No HF datasheet attached	HF datasheet attached
Failsafe type	SMA type	4.5 V DC	ARV30A4H	ARV30A4HQ	ARV33A4H	ARV33A4HQ
		12 V DC	ARV30A12	ARV30A12Q	ARV33A12	ARV33A12Q
		24 V DC	ARV30A24	ARV30A24Q	ARV33A24	ARV33A24Q
Latching type	SMA type	4.5 V DC	ARV32A4H	ARV32A4HQ	–	–
		12 V DC	ARV32A12	ARV32A12Q	–	–
		24 V DC	ARV32A24	ARV32A24Q	–	–

## 5. Rating:

### Coil data

#### 1) Failsafe type (Standard contact and Reverse contact)

Nominal operating 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*1 (Initial)	10%V or more of nominal voltage*1 (Initial)	155.7mA	28.9Ω	700mW	110%V of nominal voltage
12 V DC			58.3mA	205.7Ω		
24 V DC			29.2mA	822.9Ω		

#### 2) Latching type (Standard contact)

Nominal operating 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*1 (Initial)	75%V or less of nominal voltage*1 (Initial)	155.7mA	28.9Ω	700mW	110%V of nominal voltage
12 V DC			58.3mA	205.7Ω		
24 V DC			29.2mA	822.9Ω		

Notes: \*1. Pulse drive (JIS C5442)

\*2. Please inquire regarding use with nominal operating voltage of 28 V DC.

## 6. Specifications:

Characteristics	Item	Specifications	
Contact	Arrangement	SPDT	
	Contact material	Gold plating	
	Contact resistance (Initial)	Max. 100mΩ (By voltage drop 10V AC 10mA)	
Rating	Contact input power (CW)	Max. 50W (at 3GHz) (V.S.W.R. 1.3 or less, no contact switching, ambient temperature 20°C 68°F)*1	
	Nominal operating power	700mW	
High frequency characteristics (Impedance 50Ω)		PIN type*2	
	Frequency	to 4 GHz    4 to 8 GHz    8 to 12.4 GHz*3    12.4 to 18 GHz*3    to 8 GHz    8 to 12.4 GHz*4    12.4 to 18 GHz*4    18 to 26.5 GHz*5	
	V.S.W.R. (max.)	1.3    1.4    1.5    1.7    1.35    1.6    1.7    1.8	
	Insertion loss (dB, max.)	0.3    0.4    0.5    0.7    0.3    0.5    0.7    0.8	
	Isolation (dB, min.)	70    60    50    40    70    60    60    50	
Electrical characteristics	Insulation resistance (Initial)	Min. 1,000 MΩ (at 500 V DC) Measurement at same location as "breakdown voltage (Initial)" section.	
	Breakdown voltage (Initial)	Between open contacts	500 Vrms for 1 min. (Detection current: 10mA)
		Between contact and earth terminal	500 Vrms for 1 min. (Detection current: 10mA)
		Between contact and coil	500 Vrms for 1 min. (Detection current: 10mA)
Between coil and earth terminal		500 Vrms for 1 min. (Detection current: 10mA)	
Time characteristics (at 20°C 68°F)	Operate time (Set time)	Max. 15ms (approx. 5ms) (Nominal operating voltage applied to the coil, excluding contact bounce time.)	
	Release time (Reset time)	Max. 15ms (approx. 5ms) (Nominal operating voltage applied to the coil, excluding contact bounce time.) (without diode, only for Release time)	
Mechanical characteristics	Shock resistance	Functional: Min. 500 m/s <sup>2</sup> (Half-wave pulse of sine wave: 11ms, detection time: 10μs.) Destructive: Min. 1,000 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6ms.)	
	Vibration resistance	Functional: 10 to 55 Hz at double amplitude of 3mm (Detection time: 10μs.) Destructive: 10 to 55 Hz at double amplitude of 5mm/15 to 2,000 Hz [W0 = 2.94 (m/s <sup>2</sup> )/Hz]	
	Expected life	Mechanical: Min. 10 <sup>6</sup> (at 180 cpm) Electrical (Hot switch): Min. 3 × 10 <sup>5</sup> (1W High frequency load, at 3GHz, impedance 50Ω, V.S.W.R.; max. 1.3) (at 20 cpm)	
Conditions	Conditions for operation, transport and storage*6 Ambient temperature: -55°C to +85°C -67°F to +185°F Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature) Air pressure: 86 to 106 kPa		
Unit weight		PIN type: Approx. 12g .42oz    SMA type: Approx. 20g .71oz	

Notes: \*1. Factors such as heating of the connected terminal influence the high frequency characteristics; therefore, please verify under actual conditions of use.

\*2. Measuring method: After installing on dedicated inspection equipment

\*3. 8 to 18GHz characteristics can be applied 18GHz type only.

\*4. 8 to 18GHz characteristics can be applied 18GHz and 26.5GHz types only.

\*5. 18 to 26.5GHz characteristics can be applied 26.5GHz type only.

\*6. The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value. Refer to "NOTES".

## 7. Dimensions (mm inch):

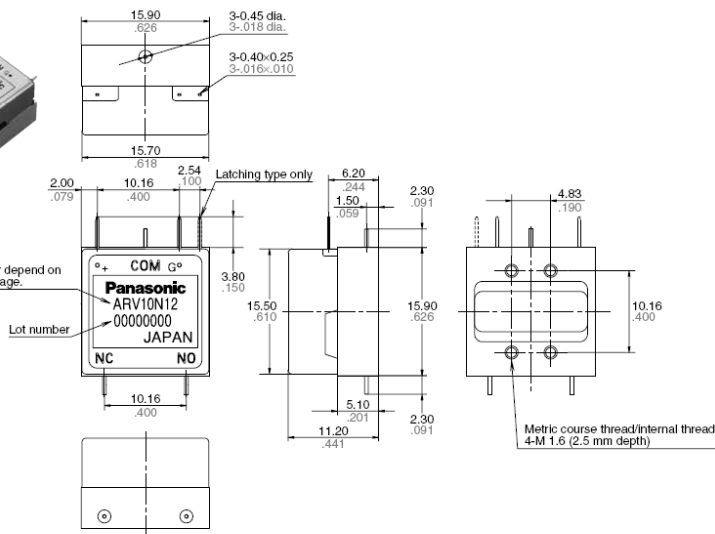
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://panasonic-electric-works.net/ac>

### 1. PIN type

**CAD Data**



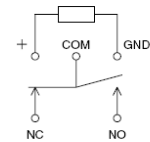
The part number depend on the type and voltage.



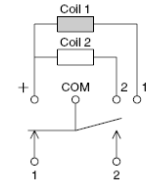
Tolerance:  $\pm 0.3 \pm .012$

Schematic (Top view)

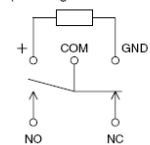
<Standard contact>  
Failsafe type  
(Deenergized condition)



Latching type  
(Reset condition)



<Reverse contact>  
Failsafe type  
(Deenergized condition)

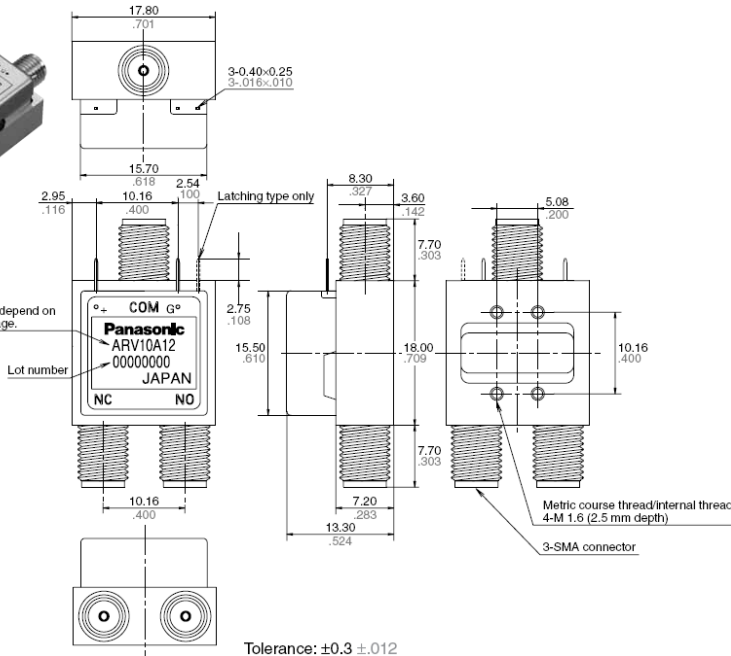


### 2. SMA type

**CAD Data**



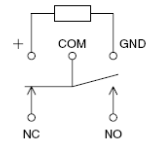
The part number depend on the type and voltage.



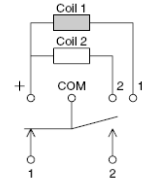
Tolerance:  $\pm 0.3 \pm .012$

Schematic (Top view)

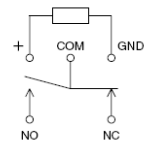
<Standard contact>  
Failsafe type  
(Deenergized condition)



Latching type  
(Reset condition)



<Reverse contact>  
Failsafe type  
(Deenergized condition)



\*For SMP connector type, please consult us.

Any questions, please contact your local Panasonic Electric Works Sales representatives.

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