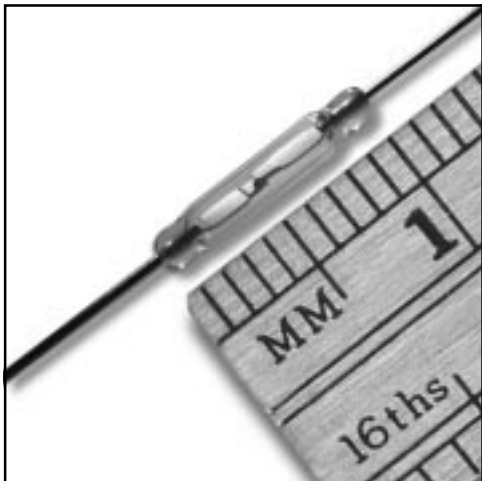


# RI-60 Series



## RI-60 SERIES

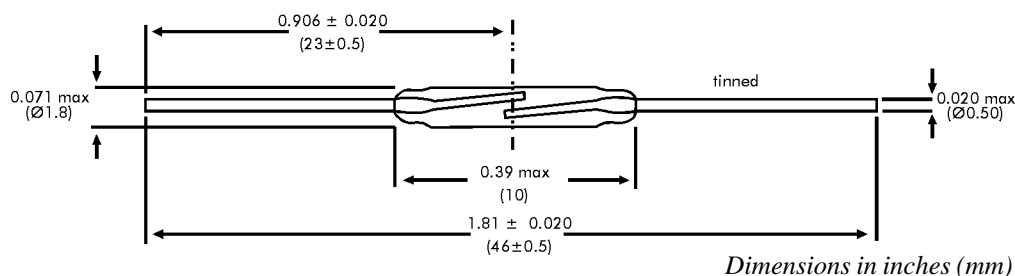
Ultra-miniature dry-reed switch hermetically sealed in a gas-filled glass envelope. Single-pole, single-throw (SPST) type, having normally open contacts, and containing two magnetically actuated reeds.

The switch is of the double-ended type and may be acted by an electromagnet, a permanent magnet or a combination of both.

The device is intended for use in relays, sensors, pulse counters or similar devices.

## RI-60 SERIES FEATURES

- ◆ Ideal for ATE switching
- ◆ Contact layers: Gold, sputtered ruthenium
- ◆ Superior glass-to-metal seal and blade alignment
- ◆ Excellent life expectancy and reliability



## GENERAL DATA FOR ALL MODELS RI-60

### AT-Customization / Preformed Leads

Besides the standard models, customized products can also be supplied offering the following options:

- Operate and release ranges to customer specification
- Cropped and/or preformed leads

### COILS

All characteristics are measured using the Philips standard coil. For definitions of the Philips Standard Coil and the standard MIL Coil, refer to "Application Notes" in the *Reed Switch Technical & Application Information* Section of this catalog.

### Relationship between Philips Standard Coil and the Standard MIL Coil

Operate value of standard MIL Coil = 0.83 x operate value of Philips Standard Coil + 0.30 AT.

Release value of standard MIL Coil = 0.83 x release value of Philips Standard Coil + 0.18 AT.

### LIFE EXPECTANCY AND RELIABILITY

The life expectancy data given below are valid for a coil energized at 1.25 times the published maximum operate value for each type in the RI-60 series.

### No-load conditions (operating frequency: 100 Hz)

Life expectancy: min.  $10^9$  operations with a failure rate of less than  $2 \times 10^{-10}$  with a confidence level of 90%.

End of life criteria:

Contact resistance  $> 1\Omega$  after 2 ms

Release time  $> 2\text{ms}$  (latching or contact sticking).

### Loaded conditions (resistive load: 5 V; 100 mA; operating frequency: 125 Hz)

Life expectancy: min.  $2 \times 10^7$  operations with a failure rate of less than  $10^{-8}$  with a confidence level of 90%.

End of life criteria:

Contact resistance  $> 1\Omega$  after 2.5 ms

Release time  $> 1\text{ms}$  (latching or contact sticking).

### Loaded conditions (resistive load: 20 V; 500 mA; operating frequency: 125 Hz)

Life expectancy: min.  $2 \times 10^7$  operations with a failure rate of  $< 10^{-8}$  with a confidence level of 90%.

# RI-60 Series

Model Number	RI-60		
Parameters	Test Conditions	Units	
<b>Operating Characteristics</b>			
Operate Range		AT	9-21
Release Range		AT	5-16
Operate Time - including bounce (typ.)	(energization)	ms	0.15 (25 AT)
Bounce Time (typ.)	(energization)	ms	0.035 (25 AT)
Release Time (max)	(energization)	$\mu$ s	20 (25 AT)
Resonant Frequency (typ.)		Hz	11300
<b>Electrical Characteristics</b>			
Switched Power (max)		W	10
Switched Voltage DC (max)		V	200
Switched Voltage AC, RMS value (max)		V	140
Switched Current DC (max)		mA	500
Switched Current AC, RMS value (max)		mA	500
Carry Current DC; AC, RMS value (max)		mA	500
Breakdown Voltage (min)		V	230
Contact Resistance (initial max)	(energization)	m $\Omega$	115 (25 AT)
Contact Resistance (initial typ.)	(energization)	m $\Omega$	95 (25 AT)
Contact Capacitance (max)	without test coil	pF	0.25
Insulation Resistance (min)	RH $\leq$ 45%	M $\Omega$	10 <sup>6</sup>

## End of life criteria:

Contact resistance  $> 2\Omega$  after 2.5 ms

Release time  $> 2.5$  ms (latching or contact sticking).

Switching different loads involves different life expectancy and reliability data. Further information is available on request.

## MECHANICAL DATA

Contact arrangement is normally open; lead finish is tinned; net mass is approximately 0.09 g; and can be mounted in any position.

## SHOCK

The switches are tested in accordance with “IEC 68-2-27”, test Ea (peak acceleration 100 G, half sinewave; duration 11 ms). Such a shock will not cause an open switch (no magnetic field present) to close.

## MECHANICAL STRENGTH

The robustness of the terminations is tested in accordance with “IEC 68-2-21”, test Ua<sub>1</sub> (load 10 N).

## OPERATING AND STORAGE TEMPERATURE

Operating ambient temperature; min: -55°C;  
max: +125°C.

Storage temperature; min: -55°C; max: +125°C.

**Note:** Temperature excursions up to 150°C may be permissible. For more information contact your nearest Coto Technology sales office.

## SOLDERING

The switch can withstand soldering heat in accordance with “IEC 68-2-20”, test Tb, method 1B: solder bath at  $350 \pm 10^\circ$  C for  $3.5 \pm 0.5$  s.

Solderability is tested in accordance with “IEC 68-2-20” test Ta, method 3: solder globule temperature 235°C; ageing 1b: 4 hours steam.

## WELDING

The leads can be welded.

## MOUNTING

The leads should not be bent closer than 1 mm to the glass-to-metal seals. Stress on the seals should be avoided. Care must be taken to prevent stray magnetic fields from influencing the operating and measuring conditions.