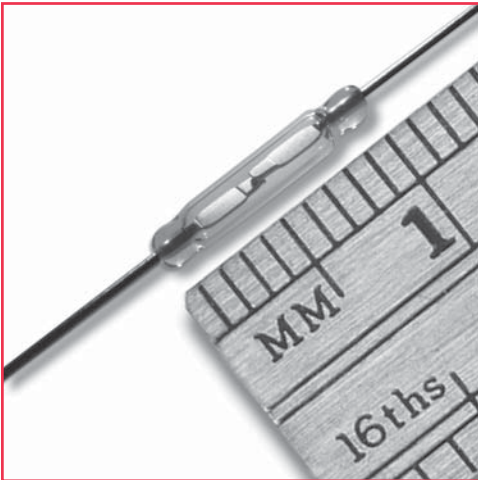


# RI-60 Series Dry Reed Switch



## RI-60 Series

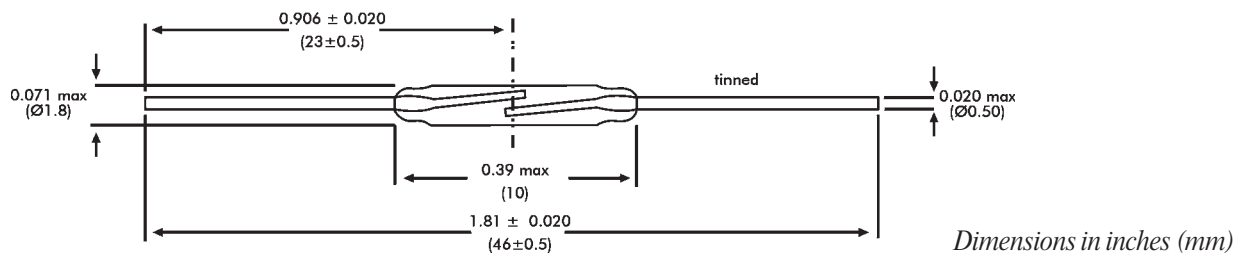
Ultra-miniature dry-reed switch hermetically sealed in a gas-filled glass envelope. Single-pole, single-throw (SPST) type, having normally open contacts, and containing two magnetically actuated reeds.

The switch is of the double-ended type and may be actuated 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, refer to the *Reed Switch Technical & Application Information* Section of this catalog.

### 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  $> 2$ 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  $> 1$  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%.

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 90 mg; and can be mounted in any position.

# RI-60 Series Dry Reed Switch

Model Number		RI-60	
Parameters	Test Conditions	Units	
<b>Operating Characteristics</b>			
Operate Range		AT	7-21
Release Range		AT	3-16
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 $\Omega$	125 (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>

## 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.

## Vibration

The switches are tested in accordance with “IEC 68-2-26”, test Fc (acceleration 10G; below cross-over frequency 57 to 62 Hz; amplitude 0.75 mm; frequency range 10 to 2000 Hz; duration 90 minutes.) Such a vibration will not cause an open switch (no magnetic field present) to close, nor a switch kept closed by an 80 AT coil to open.

## 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° 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.