# RI-46 Series Dry Reed Switch

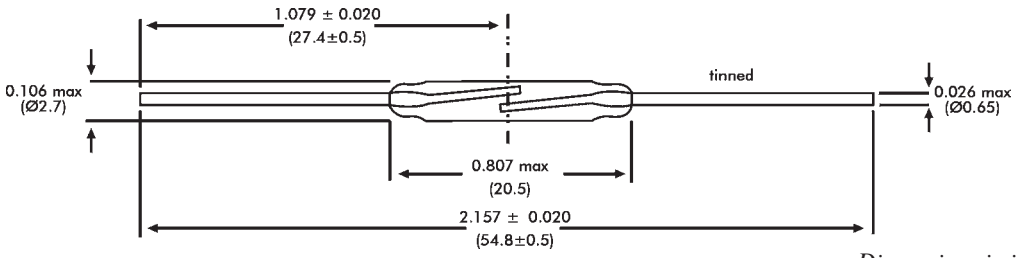
## RI-46 Series

Micro 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-46 Series Features

- Can switch main voltage
- Can handle up to 40 W load
- Contact layers: Gold, sputtered ruthenium
- Superior glass-to-metal seal and blade alignment
- Excellent life expectancy and reliability




*Dimensions in inches (mm)*

## General data for all models RI-46

### 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 "*Application Notes*" in 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 1.5 times the published maximum operate value for each type in the RI-46 series.

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

Life expectancy: min. $10^8$ operations with a failure rate of less than $10^{-9}$ with a confidence level of 90%.

End of life criteria:
Contact resistance > 1Ω after 2 ms
Release time > 2 ms (latching or contact sticking).

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

### RI-46AA

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

End of life criteria:
Contact resistance > 2Ω after 2.5 ms
Release time > 2.5 ms (latching or contact sticking).

### RI-46A; RI-46B; RI-46C

Life expectancy: min. 2.5 x $10^7$ operations with a failure rate of less than $10^{-8}$ with a confidence level of 90%.

End of life criteria:
Contact resistance > 2Ω 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.

# RI-46 Series Dry Reed Switch

| Model Number | | | RI-46AA | RI-46A | RI-46B | RI-46C |
|---|---|---|---|---|---|---|
| **Parameters** | **Test Conditions** | **Units** | | | | |
| **Operating Characteristics** | | | | | | |
| Operate Range | | AT | 10.5-19 | 15-28 | 24-51 | 46-70 |
| Release Range | | AT | 4-12 | 5-16 | 8-20.5 | 12-22.5 |
| Operate Time - including bounce (typ.) | (energization) | ms | 0.35 (24 AT) | 0.35 (35 AT) | 0.35 (64 AT) | 0.35 (87.5 AT) |
| Bounce Time (typ.) | (energization) | ms | 0.15 (24 AT) | 0.15 (35 AT) | 0.15 (64 AT) | 0.15 (87.5 AT) |
| Release Time (max) | (energization) | $\mu$s | 30 (24 AT) | 30 (35 AT) | 30 (64 AT) | 30 (87.5 AT) |
| Resonant Frequency (typ.) | | Hz | 3200 | 3200 | 3200 | 3200 |
| **Electrical Characteristics** | | | | | | |
| Switched Power (max) | | W | 30 | 30 | 40 | 40 |
| Switched Voltage DC (max) | | V | 200 | 200 | 200 | 200 |
| Switched Voltage AC, RMS value (max) | | V | 200 | 200 | 250 | 250 |
| Switched Current DC (max) | note 1 | mA | 750 | 1000 | 1000 | 1000 |
| Switched Current AC, RMS value (max) | note 1 | mA | 750 | 1000 | 1000 | 1000 |
| Carry Current DC; AC, RMS value (max) | | A | 2 | 2.5 | 3 | 3 |
| Breakdown Voltage (min) | | V | 300 | 400 | 580 | 780 |
| Contact Resistance (initial max) | (energization) | m Ω | 90 (27 AT) | 90 (27 AT) | 90 (36AT) | 90 (36 AT) |
| Contact Resistance (initial typ.) | (energization) | m Ω | 60 (27 AT) | 60 (27 AT) | 60 (36 AT) | 60 (36 AT) |
| Contact Capacitance (max) | without test coil | pF | 0.2 | 0.2 | 0.2 | 0.2 |
| Insulation Resistance (min) | RH ≤ 45% | M Ω | $10^6$ | $10^6$ | $10^6$ | $10^6$ |

*Note 1: Switching higher currents is possible depending on signature of the load.*

### Mechanical Data
Contact arrangement is normally open; lead finish is tinned; net mass is approximately 280 mg; and can be mounted in any position.

### Shock
The switches are tested in accordance with "IEC 68-2-27", test Ea (peak acceleration 500 G, half sinewave; duration 11 ms). Such a shock will not cause an open switch (no magnetic field present) to close, nor a switch kept closed by an 80 AT coil to open.

### Vibration
The switches are tested in accordance with "IEC 68-2-6", test Fc (acceleration 10 G; 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 $Ua_1$ (load 40 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 ±10°C for 3.5 ±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.

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