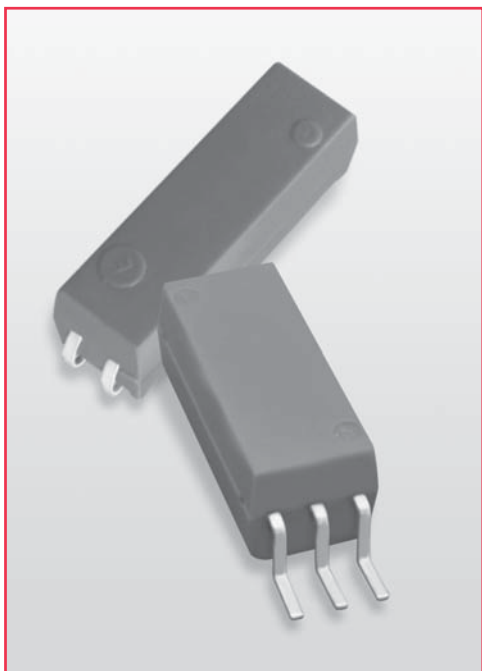


# 9300-9400 Series/Surface Mount Reed Relays



## Surface Mount Reed Relays

Ideally suited to the needs of Automated Test Equipment, Instrumentation and Telecommunications requirements, Coto's 9300 and 9400 Series specification tables allow you to select the appropriate relay for your particular application. If your requirements differ, please consult your local representative or Coto's Factory to discuss a custom design.

### Series Features

- ◆ High Insulation Resistance -  $10^{12} \Omega$  minimum ( $10^{13} \Omega$  Typical)
- ◆ High reliability, hermetically sealed contacts for long life
- ◆ Molded thermoset body on integral lead frame design
- ◆ High speed switching compared to electromechanical relays

### 9300 Series

- ◆ Load switching (15 Watts) and high dielectric strength (500 VDC) between contacts
- ◆ Proven Reliable to switch telephone loads (48V, 100mA)

### 9400 Series

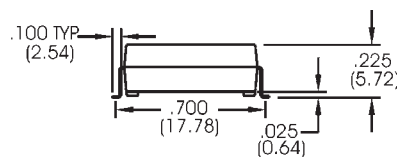
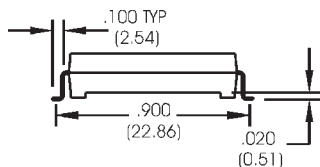
- ◆ Small surface mount package (0.225" x 0.550")
- ◆ Low capacitance (Contact to Shield - 1.1 pF typical)
- ◆ Coaxial shield for 50  $\Omega$  impedance. Excellent for RF and Fast Rise Time Pulse switching (up to 2.0 GHz)

### Model 9300

Dimensions in Inches  
(Millimeters)

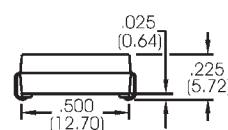
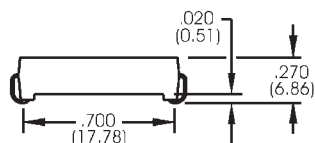
### Model 9400

**Gull Wing**<sup>2</sup>



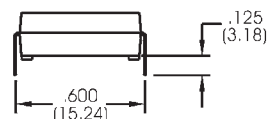
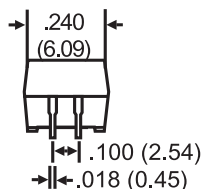
**Gull Wing**<sup>2</sup>

**J-Lead**<sup>2</sup>



**J-Lead**<sup>2</sup>

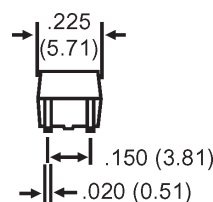
**9301 End View**



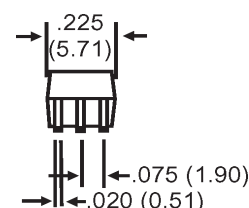
**Radial**

### Ordering Information

| Part Number         | 9XXX-XX-XX           |
|---------------------|----------------------|
| <b>Model Number</b> | <b>Lead Style</b>    |
| 9301 9401 9402      | 00=Gull Wing         |
| <b>Coil Voltage</b> | 20=J-Lead            |
| 05=5 volts          | 30=Radial (9301 N/A) |
| 12=12 volts         |                      |

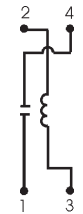
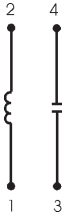
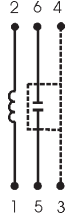


**9401 End View**  
(J Lead Shown)



**9402 End View**  
(J Lead Shown)

# 9300-9400 Series/Surface Mount Reed Relays

| Model Number                                                       |                                                    |                        | 9301                                                                                 | 9401                                                                                  | 9402                                                                                  |
|--------------------------------------------------------------------|----------------------------------------------------|------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Parameters                                                         | Test Conditions                                    | Units                  | 1 Form A                                                                             | 1 Form A                                                                              | 1 Form A<br>50 $\Omega$ Coaxial                                                       |
| <b>COIL SPECS.</b>                                                 |                                                    |                        |                                                                                      |                                                                                       |                                                                                       |
| Nom. Coil Voltage                                                  |                                                    | VDC                    | 5 12                                                                                 | 5 12                                                                                  | 5 12                                                                                  |
| Max. Coil Voltage                                                  |                                                    | VDC                    | 6.5 15.0                                                                             | 6.2 15.0                                                                              | 6.2 15.0                                                                              |
| Coil Resistance                                                    | +/- 10%, 25° C                                     | $\Omega$               | 350 1000                                                                             | 200 825                                                                               | 200 825                                                                               |
| Operate Voltage                                                    | Must Operate by                                    | VDC - Max.             | 3.75 9.0                                                                             | 3.75 9.0                                                                              | 3.75 9.0                                                                              |
| Release Voltage                                                    | Must Release by                                    | VDC - Min.             | 0.4 1.0                                                                              | 0.4 1.0                                                                               | 0.4 1.0                                                                               |
| <b>CONTACT RATINGS</b>                                             |                                                    |                        |                                                                                      |                                                                                       |                                                                                       |
| Switching Voltage                                                  | Max DC/Peak AC Resist.                             | Volts                  | 200                                                                                  | 200                                                                                   | 200                                                                                   |
| Switching Current                                                  | Max DC/Peak AC Resist.                             | Amps                   | 0.5                                                                                  | 0.5                                                                                   | 0.5                                                                                   |
| Carry Current                                                      | Max DC/Peak AC Resist.                             | Amps                   | 1.5                                                                                  | 1                                                                                     | 1                                                                                     |
| Contact Rating                                                     | Max DC/Peak AC Resist.                             | Watts                  | 15                                                                                   | 10                                                                                    | 10                                                                                    |
| Life Expectancy-Typical <sup>1</sup>                               | Signal Level 1.0V,10mA                             | x 10 <sup>6</sup> Ops. | 250                                                                                  | 250                                                                                   | 250                                                                                   |
| Static Contact Resistance (max. init.)                             | 50mV, 10mA                                         | $\Omega$               | 0.150                                                                                | 0.125                                                                                 | 0.125                                                                                 |
| Dynamic Contact Resistance (max. init.)                            | 0.5V, 50mA<br>at 100 Hz, 1.5 msec                  | $\Omega$               | 0.200                                                                                | 0.150                                                                                 | 0.150                                                                                 |
| <b>RELAY SPECIFICATIONS</b>                                        |                                                    |                        |                                                                                      |                                                                                       |                                                                                       |
| Insulation Resistance (minimum)                                    | Between all Isolated Pins<br>at 100V, 25°C, 40% RH | $\Omega$               | 10 <sup>12</sup>                                                                     | 10 <sup>12</sup>                                                                      | 10 <sup>12</sup>                                                                      |
| Capacitance - Typical<br>Across Open Contacts                      | No Shield                                          | pF                     | 0.7                                                                                  | 0.2                                                                                   | -                                                                                     |
|                                                                    | Shield Floating                                    | pF                     | -                                                                                    | -                                                                                     | 0.4                                                                                   |
|                                                                    | Shield Guarding                                    | pF                     | -                                                                                    | -                                                                                     | 0.1                                                                                   |
| Open Contact to Coil                                               | No Shield                                          | pF                     | 1.4                                                                                  | 1.1                                                                                   | -                                                                                     |
|                                                                    | Shield Floating                                    | pF                     | -                                                                                    | -                                                                                     | 1.1                                                                                   |
|                                                                    | Shield Guarding                                    | pF                     | -                                                                                    | -                                                                                     | 0.1                                                                                   |
| Contact to Shield                                                  | Contacts Open,<br>Shield Floating                  | pF                     | -                                                                                    | -                                                                                     | 1.1                                                                                   |
|                                                                    |                                                    |                        |                                                                                      |                                                                                       |                                                                                       |
| Dielectric Strength (minimum)                                      | Between Contacts                                   | VDC/peak AC            | 500 <sup>3</sup>                                                                     | 300                                                                                   | 300                                                                                   |
|                                                                    | Contacts to Shield                                 | VDC/peak AC            | -                                                                                    | -                                                                                     | 1500                                                                                  |
|                                                                    | Contacts/Shield to Coil                            | VDC/peak AC            | 1500                                                                                 | 1500                                                                                  | 1500                                                                                  |
| Operate Time - including bounce - Typical                          | At Nominal Coil Voltage,<br>30 Hz Square Wave      | msec.                  | 0.40                                                                                 | 0.40                                                                                  | 0.40                                                                                  |
| Release Time - Typical                                             | Zener-Diode Suppression <sup>4</sup>               | msec.                  | 0.10                                                                                 | 0.20                                                                                  | 0.20                                                                                  |
| Top View:<br>Dot stamped on top of relay refers to pin #1 location |                                                    |                        |  |  |  |

## Notes:

<sup>1</sup>Consult factory for life expectancy at other switching loads.

<sup>2</sup>Surface mount component processing temperature:  
500°F / 260°C max for 1 minute dwell time. Temperature measured on leads where lead exits molded package.

<sup>3</sup>Higher dielectric strength available, consult factory.

<sup>4</sup>Consists of 56V Zener diode and 1N4148 diode in series, connected in parallel with coil.

## Environmental Ratings:

Storage Temp: -35°C to +100°C;

Operating Temp: -20°C to +85°C

The operate and release voltage and the coil resistance are specified at 25°C. These values vary by approximately 0.4% / °C as the ambient temperature varies.

Vibration: 20 G's to 2000 Hz; Shock: 50 G's