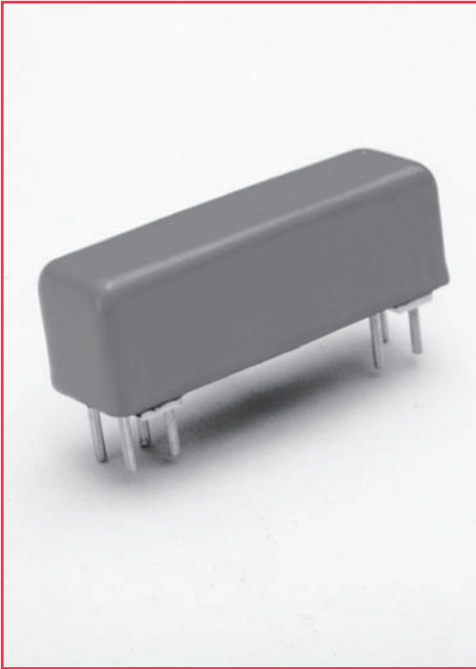


# 2900 Series Reed Relays

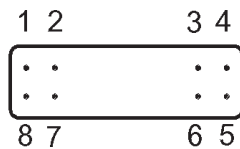
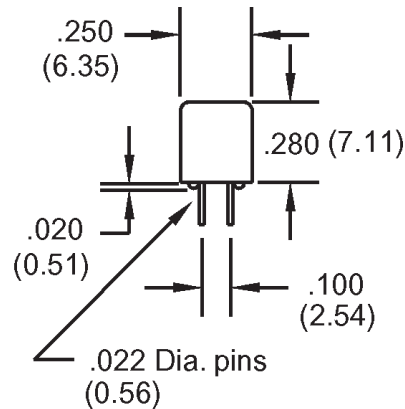
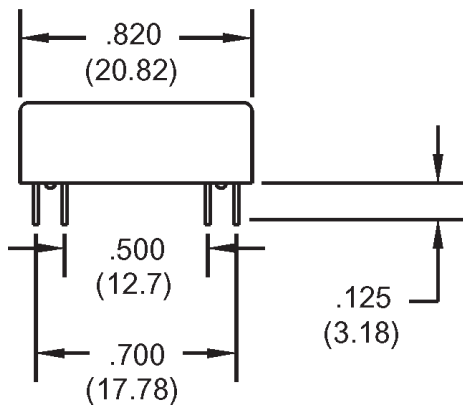


## 2900 Series Reed Relays

Ideally suited to the needs of Automated Test Equipment and RF requirements. The specification tables allow you to select the appropriate relay for your particular application. Slightly larger than the 2200 Series; these relays provide maximum versatility with options such as a Form C with electrostatic or co-axial shielding. If your requirements differ, please consult your local representative or Coto's Factory.

## 2900 Series Features

- ◆ Very small (0.20 in<sup>2</sup>), high reliability reed relays
- ◆ High Insulation Resistance -  $10^{12} \Omega$  offered on some models
- ◆ High speed switching compared to electromechanical relays
- ◆ Hermetically sealed contacts for long life
- ◆ Epoxy coated steel shell provides magnetic shielding
- ◆ Optional Electrostatic Shield for reducing capacitive coupling
- ◆ Optional Coaxial Shield for 50  $\Omega$  impedance and switching of fast rise time digital pulses



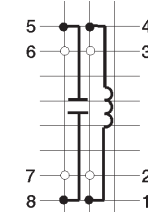
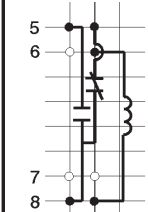
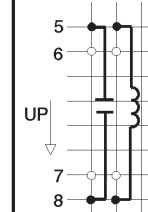
**Bottom View**

*Dimensions in Inches (Millimeters)*

## Ordering Information

| Part Number                                                                   |               | 29XX-XX-XX1 | Shielding Options <sup>2</sup> |
|-------------------------------------------------------------------------------|---------------|-------------|--------------------------------|
| Model Number                                                                  | Coil Voltage  |             |                                |
| 2904                                                                          | 05 = 5 volts  |             | 0 = No Shield                  |
| 2911                                                                          | 12 = 12 volts |             | 1 = Electrostatic Shield       |
| 2920                                                                          |               |             | 2 = Co-axial Shield            |
| <b>Coil Options</b>                                                           |               |             |                                |
| 1 = Use for Model #2920 (5 & 12 volt coil)                                    |               |             |                                |
| 3 = Use for Model #2904 (12 volt coil) and for Model #2911 (5 & 12 volt coil) |               |             |                                |
| 4 = Use for Model #2904 (5 volt coil)                                         |               |             |                                |

# 2900 Series Reed Relays

| Model Number                                                                                           |                                                 |                        | 2904 <sup>2</sup>                                                                    |      | 2911 <sup>2</sup>                                                                     |      | 2920 <sup>2,3</sup>                                                                   |     |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------|--------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------|-----|
| Parameters                                                                                             | Test Conditions                                 | Units                  | 1 Form A                                                                             |      | 1 Form C                                                                              |      | 1 Form A Hg Wet                                                                       |     |
| COIL RESISTANCE                                                                                        |                                                 |                        |                                                                                      |      |                                                                                       |      |                                                                                       |     |
| Nom. Coil Voltage                                                                                      |                                                 | VDC                    | 5                                                                                    | 12   | 5                                                                                     | 12   | 5                                                                                     | 12  |
| Coil Resistance                                                                                        | +/- 10%, 25° C                                  | Ω                      | 370                                                                                  | 1500 | 230                                                                                   | 1500 | 75                                                                                    | 250 |
| Operate Voltage                                                                                        | Must Operate by                                 | VDC - Max.             | 3.8                                                                                  | 9.0  | 3.8                                                                                   | 9.0  | 3.8                                                                                   | 9.0 |
| Release Voltage                                                                                        | Must Release by                                 | VDC - Min.             | 0.4                                                                                  | 1.0  | 0.4                                                                                   | 1.0  | 0.4                                                                                   | 1.0 |
| CONTACT RATING                                                                                         |                                                 |                        |                                                                                      |      |                                                                                       |      |                                                                                       |     |
| Switching Voltage                                                                                      | Max DC/Peak AC Resist.                          | Volts                  | 200                                                                                  |      | 150                                                                                   |      | 500                                                                                   |     |
| Switching Current                                                                                      | Max DC/Peak AC Resist.                          | Amps                   | 0.5                                                                                  |      | 0.25                                                                                  |      | 1.0                                                                                   |     |
| Carry Current                                                                                          | Max DC/Peak AC Resist.                          | Amps                   | 1.5                                                                                  |      | 1.0                                                                                   |      | 2.0                                                                                   |     |
| Contact Rating                                                                                         | Max DC/Peak AC Resist.                          | Watts                  | 10                                                                                   |      | 3                                                                                     |      | 50                                                                                    |     |
| Life Expectancy-Typical <sup>1</sup>                                                                   | Signal Level 1.0V, 10mA                         | x 10 <sup>6</sup> Ops. | 500                                                                                  |      | 100                                                                                   |      | 1000                                                                                  |     |
| Static Contact Resistance (max. init.)                                                                 | 50mV, 10mA                                      | Ω                      | 0.100                                                                                |      | 0.150                                                                                 |      | 0.075                                                                                 |     |
| Dynamic Contact Resistance (max. init.)                                                                | 0.5V, 50mA at 100 Hz, 1.5 msec                  | Ω                      | 0.200                                                                                |      | 0.200                                                                                 |      | 0.100                                                                                 |     |
| RELAY SPECIFICATIONS                                                                                   |                                                 |                        |                                                                                      |      |                                                                                       |      |                                                                                       |     |
| Insulation Resistance (minimum)                                                                        | Between all Isolated Pins at 100V, 25°C, 40% RH | Ω                      | 10 <sup>12</sup>                                                                     |      | 10 <sup>11</sup>                                                                      |      | 10 <sup>10</sup>                                                                      |     |
| Capacitance - Typical                                                                                  | Shield Floating                                 | pF                     | 1.0                                                                                  |      | 2.0                                                                                   |      | 1.4                                                                                   |     |
| Across Open Contacts                                                                                   | Shield Guarding                                 | pF                     | 0.3                                                                                  |      | 1.0                                                                                   |      | 0.2                                                                                   |     |
| Dielectric Strength (minimum)                                                                          | Between Contacts                                | VDC/peak AC            | 350                                                                                  |      | 200                                                                                   |      | 1000                                                                                  |     |
|                                                                                                        | Contacts to Shield                              | VDC/peak AC            | 350                                                                                  |      | 200                                                                                   |      | 1000                                                                                  |     |
|                                                                                                        | Contacts/Shield to Coil                         | VDC/peak AC            | 1500                                                                                 |      | 1500                                                                                  |      | 1500                                                                                  |     |
| Operate Time - including bounce - Typical                                                              | At Nominal Coil Voltage, 30 Hz Square Wave      | msec.                  | 0.5                                                                                  |      | 1.0                                                                                   |      | 1.5                                                                                   |     |
| Release Time - Typical                                                                                 | Zener-Diode Suppression <sup>4</sup>            | msec.                  | 0.1                                                                                  |      | 2.0                                                                                   |      | 1.0                                                                                   |     |
| Top View:<br>Dot stamped on top of relay refers to pin #1 location<br>Grid = .1"x.1" (2.54mm x 2.54mm) |                                                 |                        |  |      |  |      |  |     |

## Notes:

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

<sup>2</sup>Model 2904, 2911 and 2920, pin #7 is tied to optional electrostatic shield, pins #6 & #7 are tied to optional coaxial shield.

<sup>3</sup>Model 2920 has Hg wet contacts - position sensitive, must be mounted within 30° of vertical plane. See schematic.  
Hg Content per capsule: Form A, 0.04 grams.

<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

Solder Temp: 270°C max; 10 sec. max

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