

7000 Series/High Reliability Reed Relays

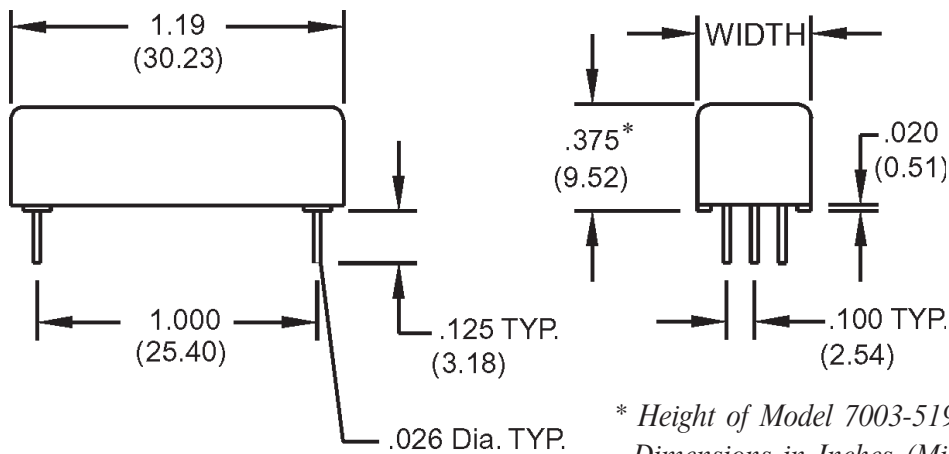


High Reliability Reed Relays

The 7000 Series is ideally suited to the needs of Instrumentation, Data Acquisition, Process Control, Telecommunications and General Purpose requirements. The specification tables allow you to select the appropriate relay for your particular application. These models are specifically designed for high quality and reliability with versatile switching capabilities and contact forms. If your requirements differ, please consult your local representative or Coto's Factory to discuss a custom reed relay.

7000 Series Features

- ◆ Multi-pole contact forms (Form A, B, and C)
- ◆ Wide range of switching capabilities; Low level, High Voltage, Hg wet
- ◆ Hermetically sealed contacts for long life and high reliability
- ◆ High speed switching compared to electromechanical relays
- ◆ Potted in metal shell - Magnetic Shield
- ◆ Optional Electrostatic Shield for reducing capacitive coupling
- ◆ PCB mounting versatility - 1.0" x 0.100" grid
- ◆ Optional coil suppression diode offered to protect coil drivers



| WIDTH | A | B | C | D |
|-----------|-----------------|-----------------|-----------------|-----------------|
| DIMENSION | .410 (10.41) | .500 (12.70) | .660 (16.76) | .760 (19.30) |

Table #1

Ordering Information

| | |
|--------------------------|---|
| Part Number | XXXX-XX-1XXX |
| Model Number | Diode Options ² 0= No Diode 1= Diode Included |
| See Tables (7000 Series) | |
| Coil Voltage | Electrostatic Shield Options 0= No Electrostatic Shield 1= Electrostatic Shield |
| 05=5 volts | |
| 12=12 volts | |
| 24=24 volts | Coil Termination |
| | 0=End to End |
| | 1=Same End |

Note:

Model #7003-5193 represents a complete part number.

7000 Series/High Reliability Reed Relays

| Parameters | Test Conditions | Units | Form A, B, Latch | Form C | Form A ⁴ Hg Wet | Form C ⁴ Hg Wet | Form A High Voltage | Form A Sensor (7003-5193) |
|------------|-----------------|-------|---------------------|--------|-------------------------------|-------------------------------|------------------------|---------------------------------|
|------------|-----------------|-------|---------------------|--------|-------------------------------|-------------------------------|------------------------|---------------------------------|

| CONTACT RATINGS | | | | | | | | |
|---|--|------------------------|------------------|------------------|------------------|-----------------|------------------|------------------|
| Switching Voltage | Max DC/Peak AC Resist. | Volts | 200 | 150 | 500 | 500 | 500 | 50 |
| Switching Current | Max DC/Peak AC Resist. | Amps | 0.5 | 0.25 | 1.0 | 1.0 | 0.5 | 0.05 |
| Carry Current | Max DC/Peak AC Resist. | Amps | 2.0 | 0.5 | 2.0 | 2.0 | 2.0 | 0.5 |
| Contact Rating | Max DC/Peak AC Resist. | Watts | 10 | 3 | 50 | 50 | 10 | 3 |
| Life Expectancy-Typical ¹ | Signal Level 1.0V,10mA | x 10 ⁶ Ops. | 1000 | 100 | 1000 | 1000 | 100 | 100 |
| Static Contact Resistance (max. init.) | 50mV, 10mA | Ω | 0.100 | 0.150 | 0.075 | 0.100 | 0.100 | 0.200 |
| Dynamic Contact Resistance (max. init.) | 0.5V, 50mA at 100 Hz, 1.5 msec | Ω | 0.150 | 0.200 | 0.100 | 0.150 | 0.150 | N/A |
| RELAY SPECIFICATIONS | | | | | | | | |
| Insulation Resistance (minimum) | Between all Isolated Pins at 100V, 25°C, 40% RH | Ω | 10 ¹² | 10 ¹⁰ | 10 ¹² | 10 ⁹ | 10 ¹² | 10 ¹⁰ |
| Capacitance - Typical Across Open Contacts | No Shield | pF | 1.0 | 2.0 | 1.0 | 2.0 | 1.0 | 1.0 |
| | Shield Guarding | pF | 0.2 | 1.0 | 0.2 | 1.0 | 0.2 | 0.2 |
| Dielectric Strength (minimum) | Between Contacts | VDC/peak AC | 250 | 200 | 1000 | 1000 | 1200 | 200 |
| | Contacts to Shield | VDC/peak AC | 1000 | 1000 | 1000 | 1000 | 1000 | N/A |
| | Contacts/Shield to Coil | VDC/peak AC | 1500 | 1500 | 1500 | 1500 | 1500 | 2850 |
| Operate Time - including bounce - Typical | At Nominal Coil Voltage, 30 Hz Square Wave | msec. | 1.0 | 2.0. | 2.0 | 2.0 | 1.0 | 0.35 |
| Release Time - Typical | Zener-Diode Suppression ³ | msec. | 0.1 | 2.5 | 1.0 | 1.5 | 0.1 | 0.25 |

Dot stamped on top of relay refers to pin #1 location

(See following pages for schematic diagrams and coil data.)

Notes:

¹ Consult factory for life expectancy at other switching loads.

² Optional coil suppression diode Pin #1 is +.

³ Consists of 56V Zener diode and 1N4148 diode in series, connected in parallel with coil.

⁴ Hg Content: Form A, 0.04 grams per capsule; Form C, 0.072 grams per capsule.

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

| Contact Form | Model Number | Nominal Coil Voltage VDC | Must Operate Voltage VDC max. | Must Release Voltage VDC min. | Coil Resistance $\pm 10\%$ @25°C | Width (See Table #1) | Schematic Top View ^{2,8} | |
|-------------------------|--------------|--------------------------|-------------------------------|-------------------------------|----------------------------------|----------------------|-----------------------------------|---------------|
| | | | | | | | End to End Coil | Same End Coil |
| 1A | 7101 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 300 1600 4200 | A | | |
| 2A | 7102 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 150 1000 3500 | B | | |
| 3A | 7103 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 100 800 2400 | C | | |
| 4A | 7104 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 80 550 2000 | D | | |
| 1B ⁵ | 7121 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 150 1000 3500 | B | | |
| 2B ⁵ | 7122 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 100 800 2400 | C | | |
| 1C | 7141 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 175 1100 4200 | A | | |
| 2C | 7142 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 65 490 1550 | C | | |
| 3C | 7143 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 55 300 1350 | D | | |
| 1A Latch ^{5,6} | 7150 | 5 12 | 3.75 9.0 | 0.4 1.0 | 550/550 1750/1750 | B | | |
| 1A1B ^{5,7} | 7160 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 80 550 2000 | D | | |

| Contact Form | Model Number | Nominal Coil Voltage VDC | Must Operate Voltage VDC max. | Must Release Voltage VDC min. | Coil Resistance $\pm 10\%$ @25°C | Width (See Table #1) | Schematic Top View ^{2,8} | |
|------------------------|--------------|--------------------------|-------------------------------|-------------------------------|----------------------------------|----------------------|-----------------------------------|---------------|
| | | | | | | | End to End Coil | Same End Coil |
| 1A Hg wet ⁹ | 7201 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 70 450 1785 | A | | |
| 2A Hg wet ⁹ | 7202 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 60 340 1330 | B | | |
| 3A Hg wet ⁹ | 7203 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 50 300 1200 | C | | |
| 4A Hg wet ⁹ | 7204 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 40 250 960 | D | | |
| 1C Hg wet ⁹ | 7241 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 50 300 1200 | C | | |
| 1A High Voltage | 7301 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 175 1100 4200 | A | | |
| 2A High Voltage | 7302 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 100 640 2450 | B | | |
| 3A High Voltage | 7303 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 65 490 1550 | C | | |
| 4A High Voltage | 7304 | 5 12 24 | 3.75 9.0 18.0 | 0.4 1.0 2.0 | 55 300 1350 | D | | |
| 1A Current Sensor | 7003-5193 | N/A | 13.0 (mA Max) | 5.0 (mA Min) | 8 | C | | |

Notes:

⁵ These relays contain bias magnets. Correct coil polarity must be observed.

⁶ Coil suppression diode is recommended for proper operation. Correct coil polarity must be observed.

⁷ Break before make not guaranteed.

⁸ Dot stamped on top of relay refers to pin #1 location. E-pin indicates Electrostatic shield pin. Unused pins omitted. Pin numbers for reference only.

⁹ All models with Hg wet contacts are position sensitive, must be mounted within 30° of vertical plane. See schematic.