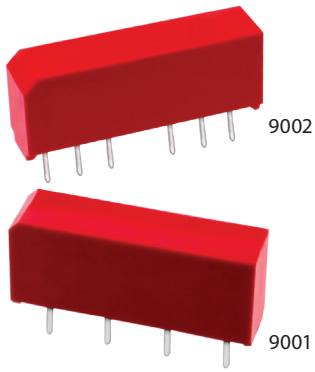
1 Description

The SIP relay is the industry standard when high reliability and consistent performance are desired in a compact package. The 9001 and 9002 are high performance relays ideally suited for Automatic Test Equipment, Instrumentation, RF and Telecommunications applications. The specification tables allow you to select the appropriate relay for your application.

Device Packages



2 Features

- Form A and B contacts available (9001 only)
- High insulation resistance - 10^{12} Ω
- High reliability, hermetically sealed contacts for long life - tested up to 1 Billion Operations
- High dielectric strength available, consult factory
- High speed switching compared to electromechanical relays
- Molded thermoset body on integral lead frame design
- Coaxial shield for 50 Ω and switching of fast rise time digital pulses - 9002 only
- Optional Coil Suppression Diode - protects coil drive circuits
- UL File #E67117, CSA File #028537
- RoHS Compliant

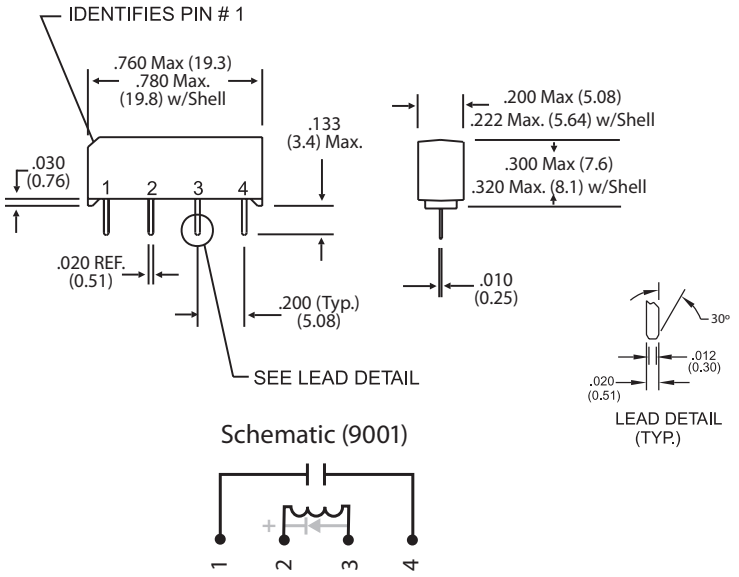
3 Applications

- Automated Test Equipment (ATE)
- Instrumentation
- Telecommunications

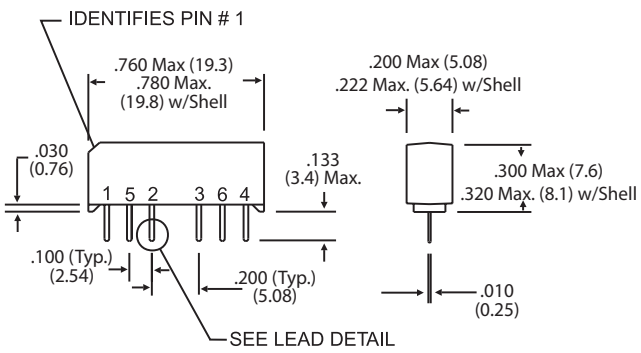
4 Dimensions

In Inches (Millimeters)

9001

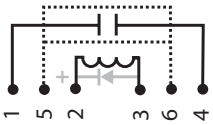


9002



Schematic (9001)

Schematic (9002)



5 Ordering Information

Part Number **90XX-XX-XX**

Model Number
9001 9002

Coil Voltage
05=5 volts
12=12 volts

General Options
0 = No Diode
1 = Diode[2]
2 = Form B

Magnetic Shield Option
0 = No Shield
1 = Shield

6 Parameters - Model Number 9000

Parameters	Test Conditions	Units	9001[2,4]			9002[2,4]	
Relay Configuration			Form B	4 Pin SIP		6 Pin SIP 50Ω Coaxial	
Coil Specs.							
Nom. Coil Voltage		VDC	5.0	5.0	12.0	5.0	12.0
Max. Coil Voltage		VDC	6.5	6.5	15.0	6.5	15.0
Coil Resistance	+/- 10%, 25°C	Ω	500	500	1000	350	750
Operate Voltage	Must Operate By	VDC - Max.	3.75	3.75	9.0	3.75	9.0
Release Voltage	Must Release By	VDC - Min.	0.4	0.4	1.0	0.4	1.0
Contact Ratings							
Switching Voltage[3]	Max DC/Peak AC Resist.	Volts	200	200			
Switching Current	Max DC/Peak AC Resist.	Amps	0.5	0.5			
Carry Current	Max DC/Peak AC Resist.	Amps	1.0	1.5			
Contact Rating	Max DC/Peak AC Resist.	Watts	10.0	10.0			
Life Expectancy - Typical[1]	Signal Level 1.0V, 10mA	x 10^6 Ops.	100	1000			
Static Contact Resistance (Max. Init.)	50mV, 10mA	Ω	0.200	0.150			
Dynamic Contact Resistance (Max. Init.)	0.5V, 50mA at 100Hz, 1.5msec.	Ω	N/A	0.200			
Relay Specifications							
Insulation Resistance (Min.)	Between all Isolated Pins at 100V, 25°C, 40%RH	Ω	10^{12}	10^{12}		10^{12}	
Capacitance - Typical Across Open Contacts	No Shield Shield Floating Shield Guarding	pF	1.4 - -	0.7 - -		- 0.8 0.1	
Open Contact to Coil	No Shield Shield Floating Shield Guarding	pF	- - -	1.4 - -		- 1.4 0.5	
Contact to Shield	Contacts Open, Shield Floating	pF	-	-		0.5	
Dielectric Strength (Min.)	Between Contacts Contacts to Shield Contacts/Shield to Coil	VDC/peak AC	250 - 1500	300 - 1500		300 1500 1500	
Operate Time - Including Bounce - Max.	At Nominal Coil Voltage, 30Hz, Square Wave	msec.	0.50	0.35		0.35	
Release Time - Typical		msec.	0.20	0.1		0.1	

General Notes:

1. Consult factory for life expectancy at other switching loads. Contact resistance > 0.5Ω defines end of life.
2. Optional diode is connected to pin #3(cathode) and pin #5 (anode). Correct coil polarity must be observed by connecting the positive terminal of the applied voltage to the cathode pin.
3. For RF graph performance, see "RF Graphs" section of the **Reed Relay Technical & Application Information.**
4. Form B version available in Model 9001 only: Polarity must be observed.

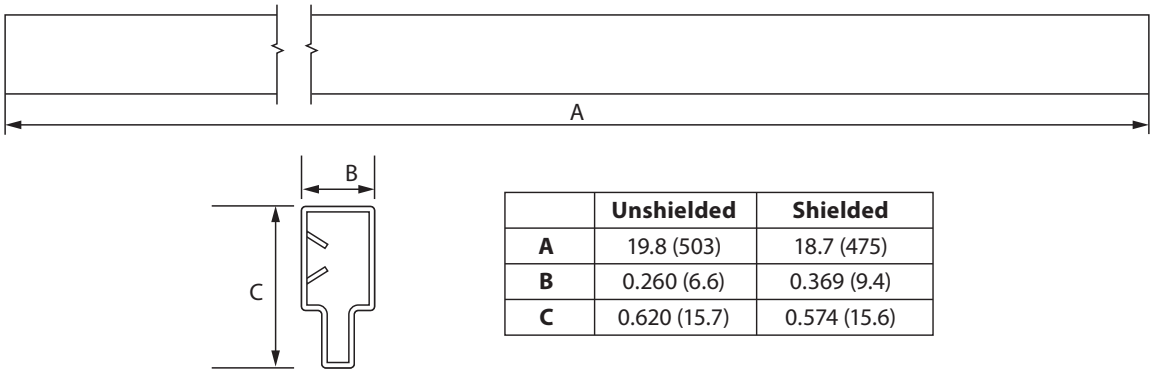
Environmental Ratings:

Storage Temp: -35°C to + 100°C; Operating Temp: -20°C to +85°C
Vibration: 20 G's to 2000 Hz; Shock: 50 G's
All electrical parameters measured at 25°C unless otherwise specified.

7 Package Information

Plastic Tube Dimensions (9001 & 9002)

- 25 relays per tube, when ordered as 900X-XX-0X (not magnetically shielded models)
- 22 relays per tube, when ordered as 900X-XX-1X (magnetically shielded models)



	Unshielded	Shielded
A	19.8 (503)	18.7 (475)
B	0.260 (6.6)	0.369 (9.4)
C	0.620 (15.7)	0.574 (15.6)

8 Relay Processing Notes

8.1 Soldering

Relays can be soldered by hand or by wave solder processing. Coto Technology recommends the maximum wave solder temperature (measured at the relay leads) as 270°C for 10 seconds. Temperature and time in excess of the recommended levels may result in damage to the relay. All our through-hole relays are compatible with either SAC alloy or eutectic soldering process.

8.2 Cleaning

The 9000 series is designed and manufactured to provide an adequate seal from external conditions. However, caution must be taken during the cleaning process not to expose the relays to conditions that will allow moisture to permeate into the package. Caution should be taken with dwell time between reflow and cleaning, high pressure spraying, and time in cleaning solvent/aqueous solutions, as these cleaning process parameters can contribute to moisture permeation. Board level bake out may be required after wash to remove moisture that has been introduced during cleaning operations.

8.3 Relay Storage

Relay parametric specifications are specified at 25°C and 40% RH. Reduced relay performance may result if storage or use environments significantly exceed these conditions. If high insulation resistance is required, Coto Technology recommends that relay storage, processing, and use environments are adequate to achieve the desired results. Relays should be stored in similar environmental conditions as other high-reliability active and passive electronic components. Proper storage of relays is also important to maintain solderability over an extended period of time.

8.4 Handling

Relays should be handled with care. Dropping or mishandling relays may result in damage that can contribute to a direct failure or, even worse, a latent field failure. If relays are dropped, Coto Technology recommends that they should be discarded.

Coto Technology does not recommend use of ultrasonic activated equipment with relays. The use of ultrasonic equipment may change the characteristics of the relay and can contribute to failure.

For more **technical and application information**,
please refer to the following QR code:

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