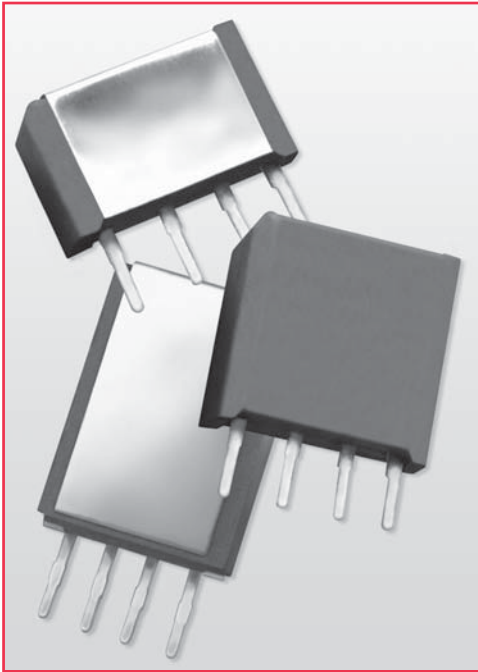


# 9011, 9012 & 9117 Miniature SIP Relays



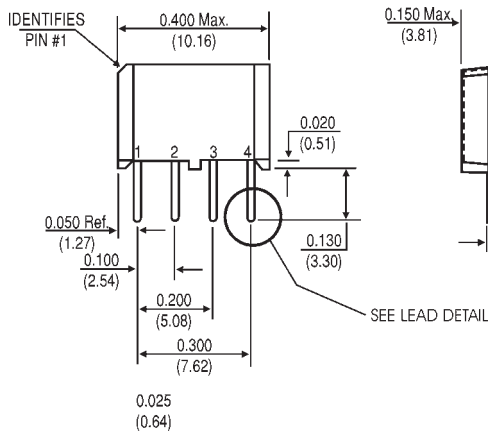
## Miniature Molded SIP Reed Relays

The 9012 package dimensions are 47% smaller than standard 9000 SIPs, yet the relay retains the 10W switch ratings of its larger counterparts. The 9011 package dimensions are 65% smaller than the standard 9000 SIPs and incorporates Coto's 7mm switch rated at 3W. The 9117 goes one step further, reducing package size by 65% from standard 9000 SIPs. This is the smallest SIP footprint with a 3W rating. These miniature SIP relays are ideal for use in ATE applications and other high reliability test, measurement and telecommunications applications where high board density and long life are key requirements.

## Series Features

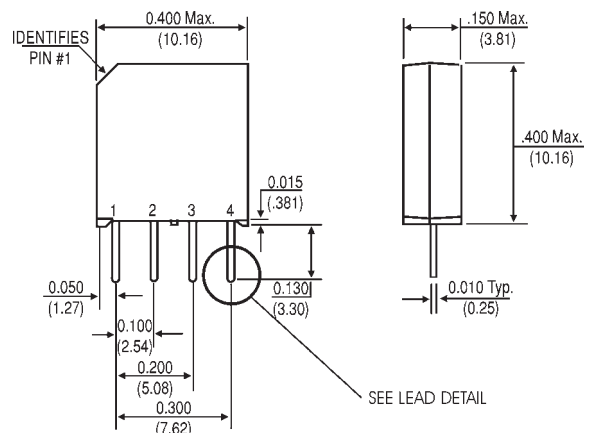
- ◆ 9012 is a 10W SIP relay (.400" x .150" x .400")
- ◆ 9011 is a 3W SIP relay (.400" x .150" x .265")
- ◆ 9117 is the smallest 3W SIP relay (.270" x .150" x .385")
- ◆ Magnetic shielding reduces interaction
- ◆ Optional coil suppression diode protects coil drive circuits
- ◆ UL File # E67117 (9117 UL Pending)
- ◆ High insulation resistance  $10^{12} \Omega$  minimum.
- ◆ High speed switching
- ◆ Molded thermoset body on integral lead frame design
- ◆ High reliability, hermetically sealed contacts for long life

### Model 9011

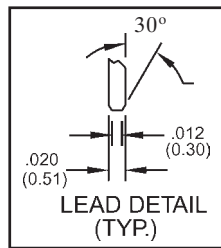
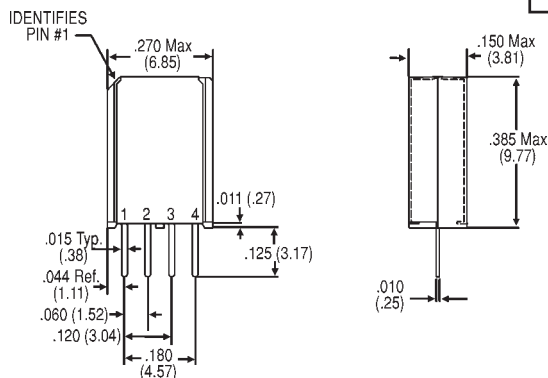


Dimensions in Inches (Millimeters)

### Model 9012



### Model 9117



## Ordering Information

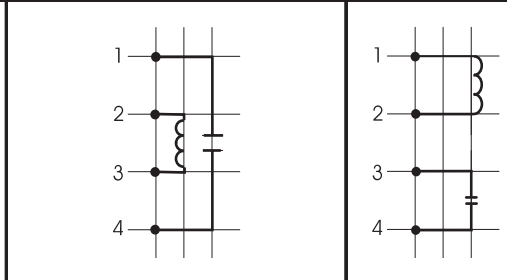
Part Number	90XX-XX-1X
Model Number	9011 9012 9117
Coil Voltage	05 = 5 volts 12 = 12 volts (N/A on 9117)
Magnetic Shield	1 = Mag Shield (External 9011, 9117; Internal 9012)
General Options <sup>2</sup>	0 = No Diode 1 = Diode

# 9011, 9012 & 9117 Miniature SIP Relays

Model Number			9011 <sup>2,4</sup> (3 Watt)	9012 <sup>2,4</sup> (10 Watt)	9117 <sup>2,4</sup> (3 Watt)
Parameters	Test Conditions	Units	4 Pin SIP	4 Pin SIP	Narrow Fit
<b>COIL SPECS.</b>					
Nom. Coil Voltage		VDC	5 12	5 12	5
Max. Coil Voltage		VDC	6.5 15.0	6.5 15.0	6.0
Coil Resistance	+/- 10%, 25° C	Ω	500 750	500 750	400
Operate Voltage	Must Operate by	VDC - Max.	3.75 9.0	3.75 9.0	3.75
Release Voltage	Must Release by	VDC - Min.	0.4 1.0	0.4 1.0	0.5
<b>CONTACT RATINGS</b>					
Switching Voltage	Max DC/Peak AC Resist.	Volts	100	200	100
Switching Current	Max DC/Peak AC Resist.	Amps	0.250	0.5	0.25
Carry Current	Max DC/Peak AC Resist.	Amps	0.5	1.5	0.5
Contact Rating	Max DC/Peak AC Resist.	Watts	3	10	3
Life Expectancy-Typical <sup>1</sup>	Signal Level 1.0V, 10mA	x 10 <sup>6</sup> Ops.	250	1000	250
Static Contact Resistance (max. init.)	50mV, 10mA	Ω	0.150	0.120	0.120
Dynamic Contact Resistance (max. init.)	0.5V, 50mA at 100 Hz, 1.5 msec	Ω	0.200	0.200	0.200
<b>RELAY SPECIFICATIONS</b>					
Insulation Resistance (minimum)	Between all Isolated Pins at 100V, 25°C, 40% RH	Ω	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>
Capacitance - Typical Across Open Contacts		pF	0.7	0.7	0.14
Open Contact to Coil		pF	1.4	1.4	N/A
Dielectric Strength (minimum)	Between Contacts	VDC/peak AC	200	300	150
	Contacts to Coil	VDC/peak AC	1500	1500	1500
Operate Time - including bounce - Typical	At Nominal Coil Voltage, 30 Hz Square Wave	msec.	0.35	0.35	0.2
Release Time - Typical	Zener-Diode Suppression <sup>3</sup>	msec.	0.1	0.1	0.1



Top View:  
Grid = .1"x.1" (2.54mm x 2.54mm)



### Notes:

<sup>1</sup>Consult factory for life expectancy at other switching loads. Resistance >0.5Ω defines end of life or failure to open.

<sup>2</sup>Optional diode is connected to pin #2 (+) and pin #3(-) for 9011 & 9012; pin #1(+) and pin #2(-) for 9117. Correct coil polarity must be observed.

<sup>3</sup>Consists of 20V Zener-diode and 1N1002 diode in series, connected in parallel with coil.

<sup>4</sup>9011 & 9117 external mag shield. 9012 internal mag shield.

### 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