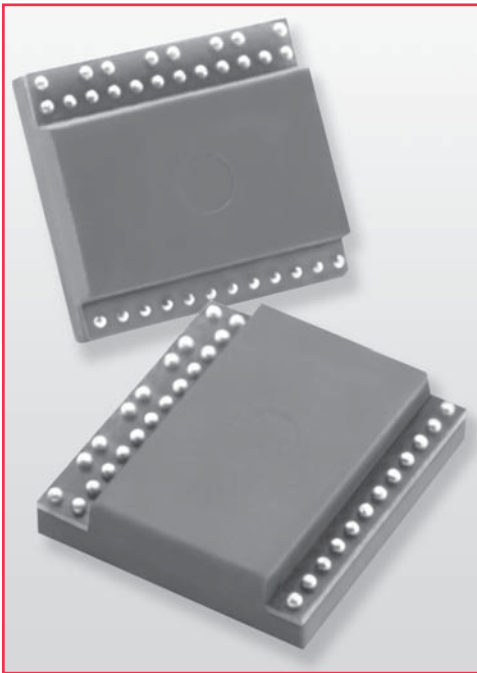


# B40 4-Channel RF Relays



## Ball Grid Array 4-Channel Relays

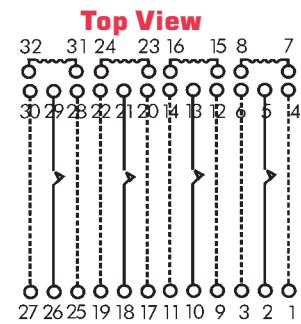
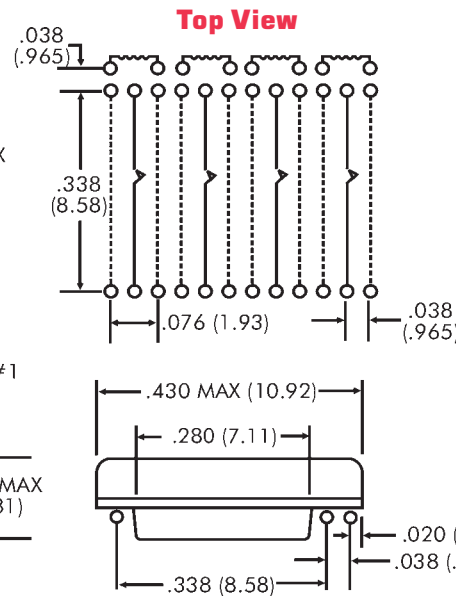
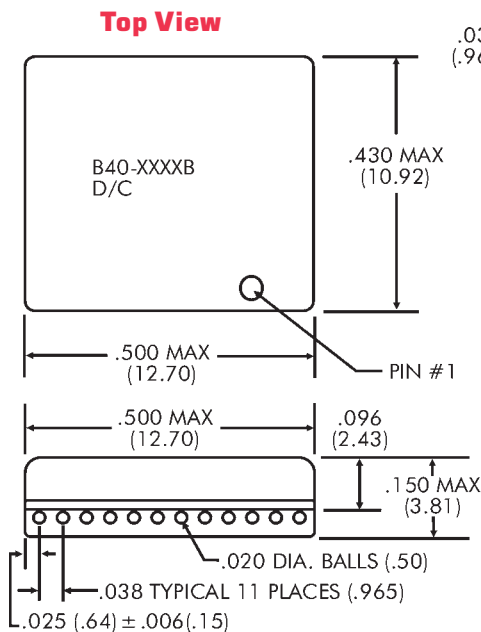
The B40 is four independent form A channels in one quad package. Coto's Ball Grid Array (BGA) construction offers a breakthrough in reed relay performance. This patented technology<sup>1</sup> allows for shorter RF paths in a controlled 50 Ω environment to minimize signal attenuation. The designer is now able to switch or pass signals with wider bandwidth and faster rise time than alternative technologies. This is particularly important in Mixed Signal IC testers. This 4-in-one BGA packaging allows relays to be integrated easily on boards designed for surface mount processing.

### Series Features

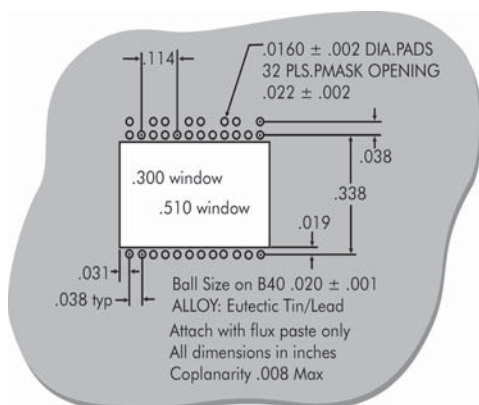
- ◆ BGA Surface Mount
- ◆ Ability to pass GHz signals
- ◆ Rise time < 40pSec
- ◆ 50Ω Characteristic Impedance
- ◆ Low Capacitance
- ◆ Patented Design<sup>1</sup>

### Applications

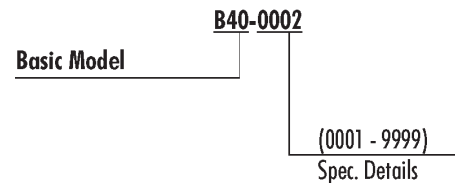
- ◆ IC Testers
- ◆ In-Line Relay Testers
- ◆ Memory Testers
- ◆ Mixed Signal Testers
- ◆ High Bandpass Applications



Dimensions in Inches  
(Millimeters)



### Ordering Information



### Notes:

<sup>1</sup> Protected by one or more of the following  
US Patents: 6025768, 6052045, 6294971,  
6683518, RE38381 and other foreign patents.

# B40 4-Channel RF Relays

Test Parameters	Conditions <sup>1,2</sup>	Min	B40	Max	Units
			Typ		
Coil Resistance		49.5	55.0	60.5	Ω
Nominal Voltage	3.3V Coil		3.3	4.0	Volts DC
Must Operate Voltage				2.4	Volts DC
Must Release Voltage	B40-0002	0.4			Volts DC
Coil Resistance		149.4	166.0	182.6	Ω
Nominal Voltage	5V Coil		5.0	6.0	Volts DC
Must Operate Voltage				3.8	Volts DC
Must Release Voltage	B40-0003	0.4			Volts DC
Switching Voltage	Max DC/Peak AC			125	Volts
Switching Current				0.25	Amps
Carry Current (Continuous)	Switch and Shield			0.5	Amps
Contact Rating (Resistive Load)	Resistive Load			3.0	Watts
Life Expectancy	Signal Switching <sup>3</sup>		1000		x 10 <sup>6</sup> Ops
	Resistive Load <sup>3</sup>		1		x 10 <sup>6</sup> Ops
	Other Load Conditions <sup>3</sup>				
Static Contact Resistance (initial)	0.05VDC / 10mA			0.125	Ω
Dynamic Contact Resistance (initial)	0.5V / 50mA 100 Hz, 1.5 mSec			0.150	Ω
Insulation Res	All Isolated Pins	10 <sup>10</sup>	10 12		Ω
Capacitance	Across Contacts		0.2		pF
Capacitance	Open Contact to Coil		0.3		pF
Capacitance	Closed Contact to Coil		0.5		pF
Dielectric Strength	Across Contacts		150		V (DC/Pk AC)
	Contact to Coil		1000		V (DC/Pk AC)
	Contact To Shield		1000		V (DC/Pk AC)
Operate Time (including bounce)	Nominal Voltage coil drive @ 30 Hz,		100	200	μSec
Release Time (Si diode damped)	square wave		30	50	μSec
RF Insertion Loss <sup>4</sup>	-3 dB roll-off frequency	11.0			GHz
Signal Rise Time (10% - 90%)	Corrected for measurement system response time			40	pSec
Magnetic Interaction <sup>5</sup>	Between Adjacent Channels			16	%

## NOTES:

<sup>1</sup>All parameters specified per EIA/NARM standards for dry reed relays, # RS-421 and RS-436, if a suitable parametric standard exists.

<sup>2</sup>Unless otherwise noted, all parameters are specified at 25°C and 40% RH.

<sup>3</sup>Life expectancies based on characteristic life (63.2% failure) calculated from the 2-parameter Weibull distribution. Contact resistance >2.0Ω defines end of life.

<sup>4</sup>Frequency at which the difference between output and input signal amplitude exceeds -3dB. (Direct wired using 50Ω coaxial cable.)

<sup>5</sup>Maximum increase in operate voltage for any channel when all channel coils are driven at nominal coil voltage and with the same drive polarity.

## ENVIRONMENTAL RATINGS:

Storage Temperature: -35°C to +100°C.

Operating Temperature: -20°C to +85°C.

Vibration: sinusoidal vibration with an amplitude of 10G over a 10Hz to 2000Hz frequency range shall not cause a closed channel activated at the nominal coil voltage to open, not an open channel to close.  
Max Soldering Temperature: 226°C (438°F) max for 1 minute dwell time. Temperature measured at a relay ball termination.