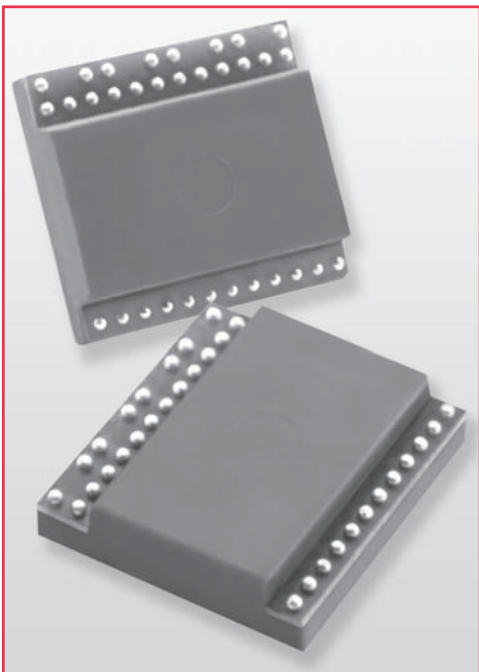


## B40 4-Channel RF Relays



## Ball Grid Array 4-Channel Relays

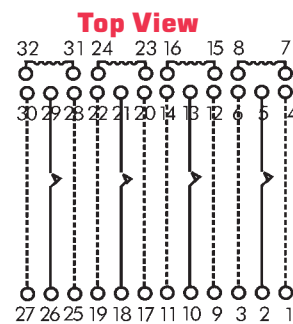
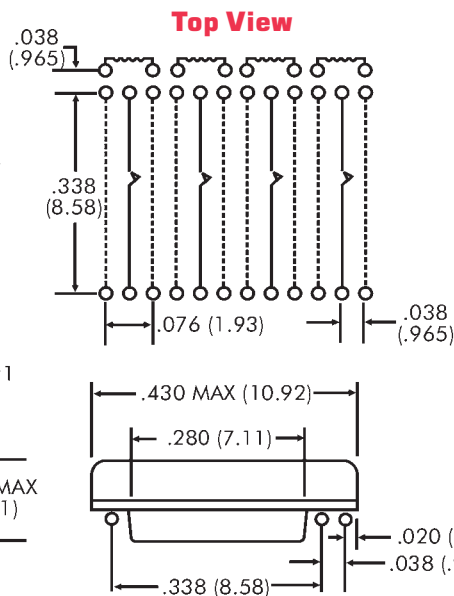
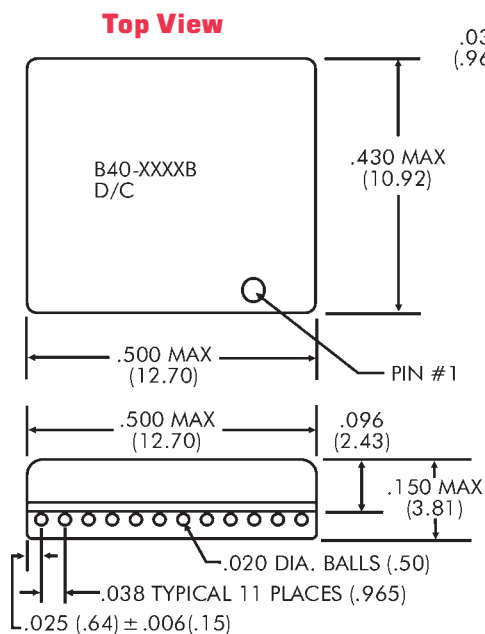
The B40 is four independent form A channels in one quad package. Coto's Ball Grid Array (BGA) construction offers a breakthrough in reed relay performance. This patented technology<sup>1</sup> allows for shorter RF paths in a controlled 50  $\Omega$  environment to minimize signal attenuation. The designer 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

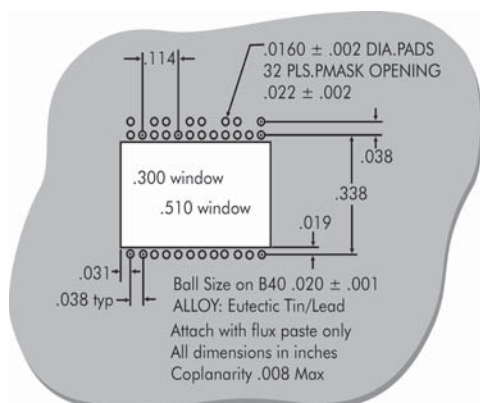
- ◆ BGA Surface Mount
- ◆ Ability to pass GHz signals
- ◆ Rise time < 40pSec
- ◆ 50Ω Characteristic Impedance
- ◆ Low Capacitance
- ◆ Patented Design<sup>1</sup>

## Applications

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



*Dimensions in Inches*  
(*Millimeters*)



## Ordering Information

**B40-0002**

## Basic Model

(0001 - 9999)  
Spec. Details

### Notes:

<sup>1</sup> Protected by one or more of the following U.S. patents or patents pending: 6025768, 6052045, 6294971; and other foreign patents.

# B40 4-Channel RF Relays

Test Parameters		Conditions <sup>1,2</sup>	Min	B40 Typ	Max	Units	
Coil Resistance		3.3V Coil  B40-0002	49.5	55.0	60.5	Ω	
Nominal Voltage				3.3	4.0	Volts DC	
Must Operate Voltage					2.4	Volts DC	
Must Release Voltage				0.4		Volts DC	
Coil Resistance		5V Coil  B40-0003	149.4	166.0	182.6	Ω	
Nominal Voltage				5.0	6.0	Volts DC	
Must Operate Voltage					3.8	Volts DC	
Must Release Voltage				0.4		Volts DC	
Switching Voltage		Max DC/Peak AC			125	Volts	
Switching Current		Switch and Shield Resistive Load			0.25	Amps	
Carry Current (Continuous)					0.5	Amps	
Contact Rating (Resistive Load)					3.0	Watts	
Life Expectancy	Signal Switching <sup>3</sup>				1VDC / 10mA	1000	x 10 <sup>6</sup> Ops
	Resistive Load <sup>3</sup>				12VDC / 10mA	1	x 10 <sup>6</sup> Ops
	Other Load Conditions <sup>3</sup>				Consult Factory		
Static Contact Resistance (initial)		0.05VDC / 10mA			10 <sup>-10</sup>	10 <sup>-12</sup>	0.125
Dynamic Contact Resistance (initial)		0.5V / 50mA 100 Hz, 1.5 mSec	0.150	Ω			
Insulation Res	All Isolated Pins	100VDC		Ω			
Capacitance	Across Contacts	Shield Guarding	0.2	pF			
Capacitance	Open Contact to Coil	Shield Guarding	0.3	pF			
Capacitance	Closed Contact to Coil	Shield Guarding	0.5	pF			
Dielectric Strength	Across Contacts	100 μA		150		V (DC/Pk AC)	
	Contact to Coil	100 μA		1000		V (DC/Pk AC)	
	Contact To Shield	100 μA		1000		V (DC/Pk AC)	
Operate Time	(including bounce)	Nominal Voltage coil drive @ 30 Hz, square wave		100	200	μSec	
Release Time	(Si diode damped)			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.