B41 4-CHANNEL RF REED RELAYS

B41 Series Ball Grid Array 4-Channel Relays

The B41 contains four independent form A channels in one planar quad package. Coto's Ball Grid Array (BGA) construction offers a breakthrough in reed relay performance. This patented technology[1] 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 four-in-one BGA packaging allows relays to be integrated easily on boards designed for surface mount processing.

B41 Series Features

- Planar BGA Surface Mount
- Ability to switch GHz signals
- Rise time < 45 ρSec
- ~50Ω Characteristic Impedance
- Low Capacitance
- Patented Design[1]
- RoHS compliant solder (optional)*

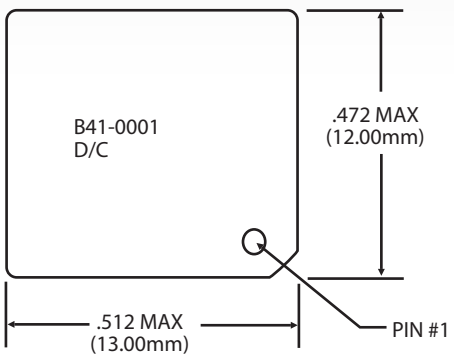
APPLICATIONS

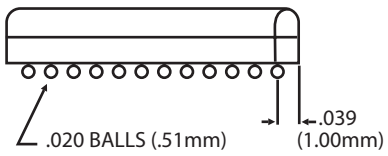
- IC Testers
- In-Line Relay Testers
- Memory Testers
- Mixed Signal Testers
- High Bandpass Applications

DIMENSIONS

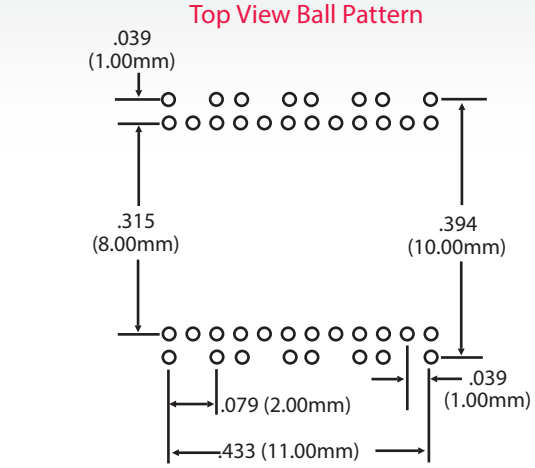
in Inches (Millimeters), Metric Dimensions Govern

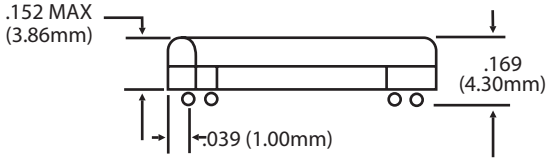
Top View



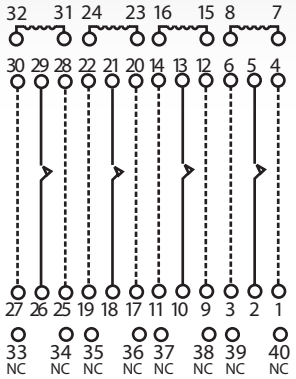


Top View Ball Pattern



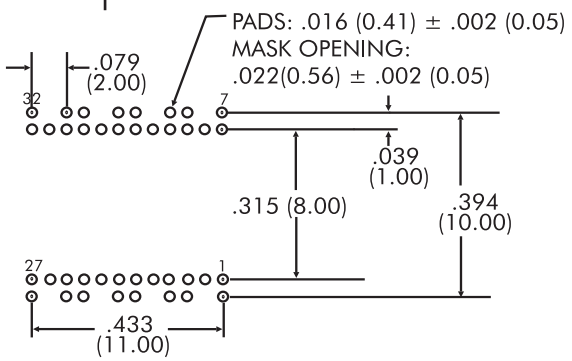


Top View Schematic



General Dimensional Tolerance:
± .006 (0.15)
** Dimensions shown are before soldering.*

B41 Receiver Board Pad Layout



Ball Size on B41 .020 (0.51)
ALLOY: Sn 63/Pb 37
Attach with flux paste only
Coplanarity Max: .008 (0.20)

NOTE

- For RF Graph Performance, see "RF Graphs" section of the *Reed Relay Technical & Application Information*

Ordering Information

Part Number **B41-00X X**

Model Number
B41

Solder Alloy
1 = SAC Alloy (RoHS)*
0 = SnPb Eutectic

Nominal Voltage
2 = 3.3V
1 = 5.0V

[1]Protected by one or more of the following US Patents: 6025768, 6052045, 6294971, 6683518, RE38381 and other foreign patents.

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MODEL NUMBER			B41		
Parameters	**Test Conditions[1,2]**	**Units**	**Min**	**Typ**	**Max**
Coil Resistance	3.3V Coil	Ω	49.5	55.0	60.5
Nominal Voltage	3.3V Coil	Volts DC		3.3	4.0
Must Operate Voltage	3.3V Coil	Volts DC			2.4
Must Release Voltage	3.3V Coil	Volts DC	0.4		
Coil Resistance	5V Coil	Ω	144.0	160.0	176.0
Nominal Voltage	5V Coil	Volts DC		5.0	6.0
Must Operate Voltage	5V Coil	Volts DC			3.8
Must Release Voltage	5V Coil	Volts DC	0.4		
Switching Voltage	Max DC/Peak AC Resist.	Volts			125
Switching Current		Amps			0.25
Carry Current (Continuous)	Switch & Shield	Amps			0.5
Contact Rating (Resistive Load)	Resistive Load	Watts			3.0
Life Expectancy Signal Switching[3] Resistive Load[3] Other Load Conditions[3]	1VDC/10mA 12VDC/10mA Consult Factory	x 10^6 Ops. x 10^6 Ops.		1000 1	
Static Contact Resistance (initial)	0.05VDC/10mA	Ω			0.125
Dynamic Contact Resistance (initial)	.5V/10mA 100Hz, 1.5mSec	Ω			0.150
Insulation Resistance - All Isolated Pins	100VDC	Ω	10^{10}	10^{12}	
Capacitance - Across Contacts	Shield	pF		0.2	
Capacitance - Open Contact to Coil	Shield	pF		0.3	
Capacitance - Closed Contact to Coil	Shield	pF		0.5	
Dielectric Strength - Across Contacts	100µA	V (DC/Pk AC)		150	
Dielectric Strength - Contact to Coil	100µA	V (DC/Pk AC)		1000	
Dielectric Strength - Contact to Shield	100µA	V (DC/Pk AC)		1000	
Dielectric Strength - Between Contacts of Adjacent Channels	100µA	V (DC/Pk AC)		1000	
Operate Time (including bounce) Release Time (Si diode damped)	At Nominal Coil Voltage, 30 Hz Square Wave	µsec.		100 30	200 50
RF Insertion Loss[4]	-3 dB roll-off frequency	GHz	8.0		
RF Inter-Channel Isolation	Signal isolation between adjacent closed channels, 1GHz test signal	dB	40.0		
Signal Rise Time (10%-90%)		pSec			45
Magnetic Interaction[5]	Between adjacent channels	%			16

Notes:

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

[2] Unless otherwise noted, all parameters are specified at 25°C and 40% RH.

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

[4] Frequency at which the difference between output and input signal amplitude exceeds -3dB.

[5] 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 Temp: -35°C to +100°C; *Operating Temp:* -20°C to +85°C.

Moisture Sensitivity Level: Handle as J-STD-020B Level 5A.

Consult the Coto Technology website (www.cotorelay.com) for recommended reflow profile for SnPb Eutectic and SAC Alloys.

Vibration Exposure: Sinusoidal vibration with an amplitude of 10g over a 10Hz to 2000Hz frequency range shall not cause damage to relay.

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