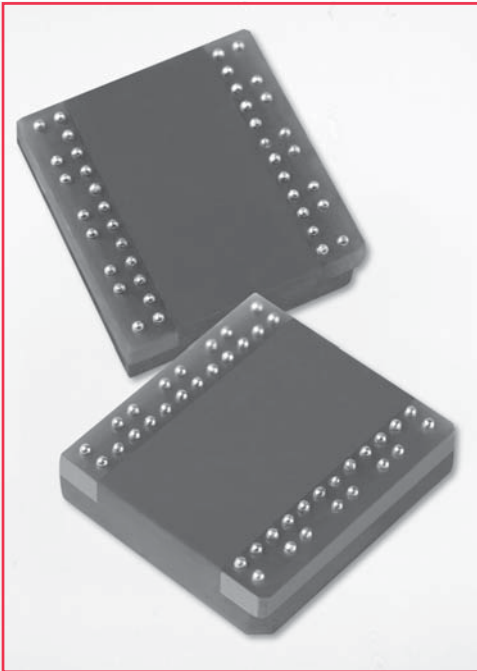


B41 4-Channel RF Relays



Ball Grid Array 4-Channel Relays

The B41 is 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 technology¹ 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.

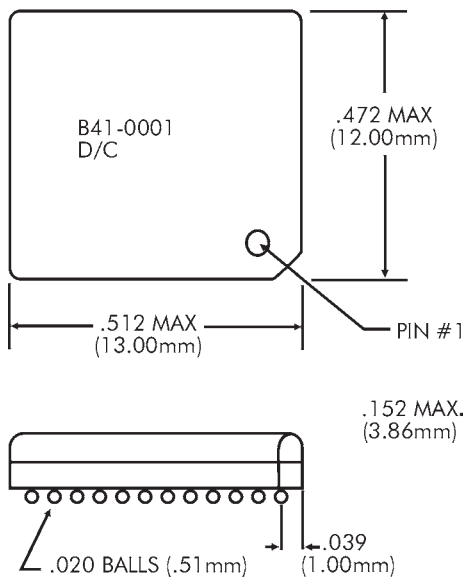
Series Features

- ◆ Planar BGA Surface Mount
- ◆ Ability to pass GHz signals
- ◆ Rise time < 45 pSec
- ◆ ~50 Ω Characteristic Impedance
- ◆ Low Capacitance
- ◆ Patented Design¹

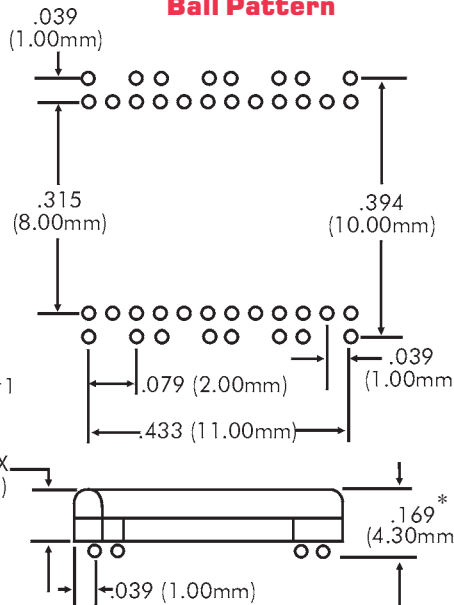
Applications

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

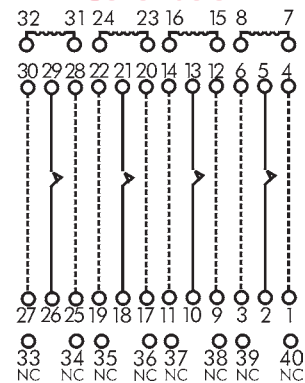
Top View



Top View Ball Pattern



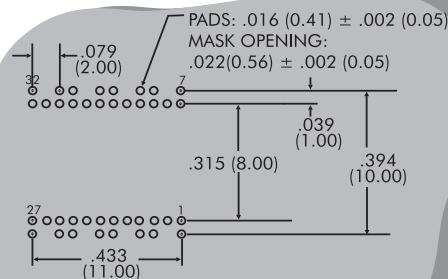
Top View Schematic



Dimensions in Inches (mm)
METRIC DIMENSIONS GOVERN
General Dimensional Tolerance:
± .006 (0.15)

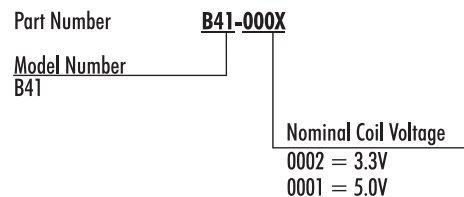
* Dimensions shown are before soldering.

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)

Ordering Information



Notes:

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

B41 4-Channel RF Relays

| Test Parameters | Conditions ^{1,2} | Min | B41 | | Units |
|--------------------------------------|---|------------------|------------------|-------|-----------------------|
| | | | Typ | Max | |
| Coil Resistance | 3.3V Coil | 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 | 144.0 | 160.0 | 176.0 | 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 | | | | 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 ³ | | 1000 | | x 10 ⁹ Ops |
| | Resistive Load ³ | | 1 | | x 10 ⁶ Ops |
| | Other Load Conditions ³ | | | | Consult Factory |
| Static Contact Resistance (initial) | 0.05VDC / 10mA | | | 0.125 | Ω |
| Dynamic Contact Resistance (initial) | 0.5V / 10mA 100 Hz, 1.5 mSec | | | 0.150 | Ω |
| Insulation Res | All Isolated Pins | 10 ¹⁰ | 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) |
| | Between Contacts of | | 1000 | | V (DC/Pk AC) |
| | Adjacent Channels | | 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 ⁴ | -3 dB roll-off frequency | 8.0 | | | GHz |
| RF Inter-Channel Isolation | Signal isolation between adjacent closed channels, 1GHz test signal | 40.0 | | | dB |
| Signal Rise Time (10% - 90%) | | | | 45 | pSec |
| Magnetic Interaction ⁵ | Between adjacent channels | | | 16 | % |

NOTES:

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

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

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

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

⁵Maximum 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 neither cause a closed channel activated at the nominal coil voltage to open, nor an open channel to close. Max Soldering Temperature: 438°F(226°C) for 1 minute dwell time. Temperature measured at a relay ball termination.

Moisture sensitive component. Handle as J-STD-020B level 5a.

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