

APPLICATION NOTE

Bourns® Modular Contacts



70AA Series
(male/female)



70AB Series
(male/female)



70AD Series
(male/female)

BACKGROUND

Bourns has led the electronics industry for over 75 years in the design, manufacture and sale of electronic components and subsystems. The Company's components are used in a broad range of applications in medical* (low to medium risk), computer, telecommunications, automotive, industrial, portable, mobile electronics and in many other market segments. Bourns, Inc. offers RoHS compliant** and halogen free*** spring connectors from two to six contacts in one contact increments. These spring connectors are called Modular Contacts, due to their flexibility and use in various applications. Modular Contacts are available as headers or receptacles.

The Bourns® Model 70 Series Modular Contacts offer 3 different pitch sizes for your convenience: 70AB - 1.25 mm, 70AA - 2.54 mm, and 70AD - 4.00 mm.

Bourns® Modular Contacts offer symmetrical pad layout, auto-centering, end-to-end stackability, pick and place compatibility, and high cycle life. These features give your design a durable contact with the flexibility to be used in your specific applications.

INTRODUCTION

Spring connectors are traditionally used as electrical connections between a battery pack and a PCB, also known as a board-to-battery connection. Spring connectors are the preferred choice due to their low profile, low cost and floating contact points. Modular Contacts can be used as board-to-battery connectors, but their design allows for use in a variety of other applications, such as board-to-device and board-to-board connectors. Typical applications are:

Board-to-battery connection in mobile electronic devices

- Cellphones
- Battery chargers
- Laptops, tablets
- Any portable device requiring a rechargeable battery or floating contacts

Board-to-device connection in docking stations and removable electronic devices

- Mobile EFT-POS terminals
- Electronic waiter pads
- Cordless bar code scanners
- Removable front panel/displays
- Position contacts

Board-to-board connection

- Subsystem to system

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THE BOURNS SOLUTION

Bourns® Modular Contacts allow for horizontal, unidirectional and vertical engagement and are available off-the-shelf as headers and receptacles with two to six contacts. Additionally, the contact pitch of the Bourns® Model 70AA and 70AD Series is maintained over multiple parts placed end-to-end on a board as shown in Figure 1. This permits multiple part number solutions to be used for a given contact count.

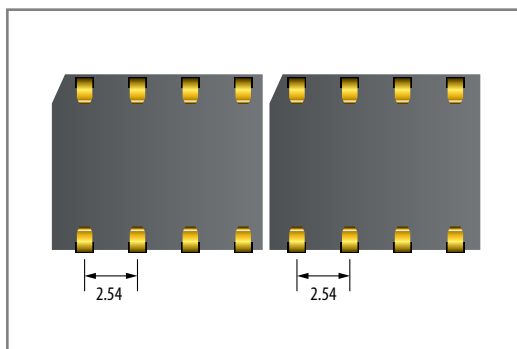


Figure 1 - Stackable pitch

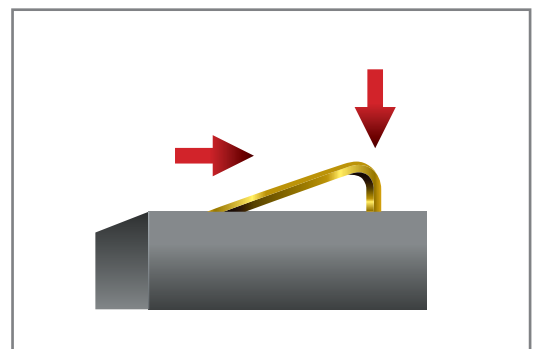


Figure 2 - Horizontal and vertical
contact engagement

Bourns® Modular Contacts are selectively gold plated, providing low contact resistance, good current handling capability, and greater durability. These components also have captured spring ends, which prevent inadvertent damage. This feature is achieved by using tabs at the end of the spring, which are restrained by the inner housing wall.

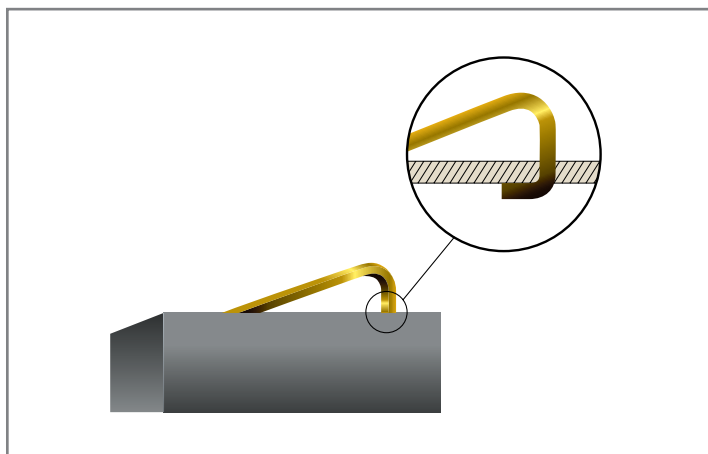


Figure 3 - Captured spring ends

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THE BOURNS SOLUTION (Continued)

In-line terminations or *twin hot contacts* on the 70AA and 70AB models are another key feature. Each contact has two symmetrical terminations positioned on the connector housing. This offers design engineers the option to route PCB tracks to either one termination or both (for parallel connection, redundancy or track crossing).

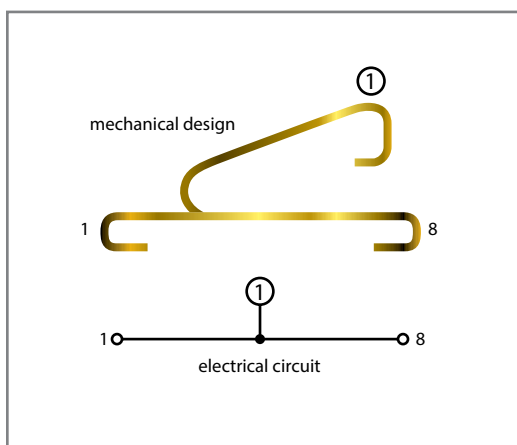


Figure 4 - Twin hot contacts

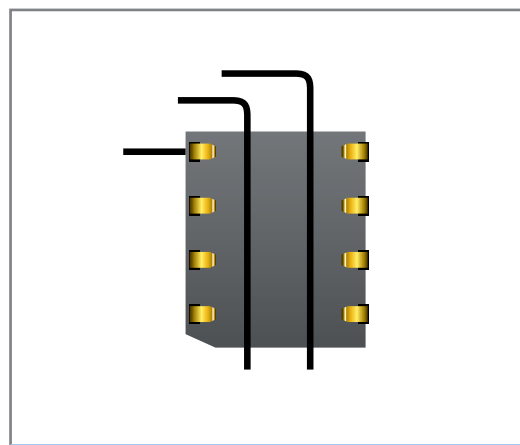


Figure 5 - Possible board routing under the Model 70AA

The symmetrical pad layout allows the end user to place the Modular Contact in a 180° orientation while maintaining the original pad layout. This feature provides great flexibility in the design of the end product.

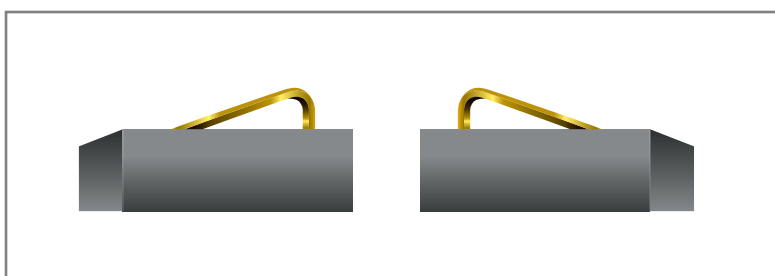


Figure 6 - Possible 180° change while maintaining the same pad layout

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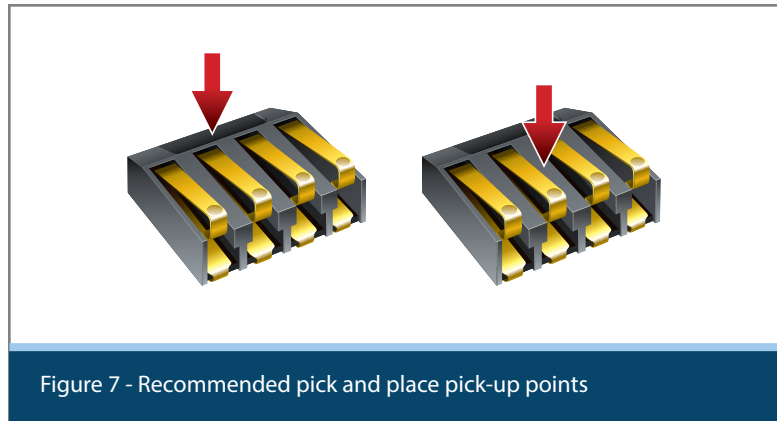
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THE BOURNS SOLUTION *(Continued)*

The Modular Contact easily lends itself to pick and place automated equipment. Figure 7 outlines two recommended pick-up points.



These features result in the all-important reduced time-to-market and elimination of custom tooling charges. Bourns® Modular Contacts offer a robust design, captured spring ends to prevent inadvertent damage, as well as a sturdy spring design offering 50,000 deflection cycles. All of these factors give you the flexibility to confidently place Modular Contacts in your application. Bourns® Connectors are ready for your next design!

*Bourns® products have not been designed for and are not intended for use in "lifesaving," "life-critical" or "life-sustaining" applications nor any other applications where failure or malfunction of the Bourns® product may result in personal injury or death. See Legal Disclaimer Notice <http://www.bourns.com/docs/legal/disclaimer.pdf>.

**RoHS Directive 2015/863, Mar 31, 2015 and Annex.

***Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

www.bourns.com

BOURNS®

Americas: Tel +1-951-781-5500
Email americus@bourns.com

EMEA: Tel +36 88 885 877
Email eurocus@bourns.com

Asia-Pacific: Tel +886-2 256 241 17
Email asiacus@bourns.com