BOURNS®

Bourns® High-Power Modular Contacts

APPLICATION NOTE

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 new High-Power Modular Contacts products are available in 3 different current ratings 5, 6 and 8 Amps per contact, making them ideal for high performance applications while still offering a compact foot print. Bourns® High-Power Modular Contacts offer a symmetrical pad layout, auto-centering, end-to-end stackability, pick and place compatibility, high current rating of up to 8A per contact, and a 50,000 life cycle. They also give your design durability and flexibility. These features give your design a durable contact with the flexibility to be used in your specific applications.

Figure 1. | 75AB Series (male/female)

Figure 2. | 76AA Series (male/female)

Figure 3. | 78AD Series (male/female)

The Bourns® High-Power Modular Contacts offer three different pitch sizes for your convenience:

- 75AB - 1.27 mm
- 76AA - 2.54 mm
- 78AD - 4.00 mm

Introduction

Bourns now expands the series with a new High-Current Rated Modular Contact, engineered for applications requiring elevated power delivery while maintaining the proven compact form factor. This enhanced version provides higher current-carrying capability per contact, supporting demanding environments such as industrial automation, precision instrumentation, handheld equipment, and docking systems. Its robust construction ensures stable and reliable connectivity under mechanical and electrical stress.

Series	Product Image	Current Rating	Cycle Life	Pitch (mm)	Number of Contacts
75AB		5A per contact	50,000 Minimum	1.27	From 2 to 4 contacts
76AA		6A per contact	50,000 Minimum	2.54	From 2 to 6 contacts
78AD		8A per contact	50,000 Minimum	4	From 2 to 6 contacts

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

Board-to-board connection
- Subsystem to system

Board-to-device connection in docking stations and removable electronic devices
- Mobile EFT-POS terminals
- Control panel modules with removable interface blocks
- Cordless bar code scanners
- Removable front panel/ displays
- Position contacts
- Wireless TV

*Bourns® products have not been designed for and are not intended for use in "lifesaving," "life-critical" or "lifesustaining" 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.

Bourns® High-Power Modular Contacts

APPLICATION NOTE

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® 76AA and 78AD Series is maintained over multiple parts placed end-to-end on a board as shown in Figure 4. This permits multiple part number solutions to be used for a given contact count.

Bourns® Modular Contacts are selectively gold plated, providing low contact resistance, excellent 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.

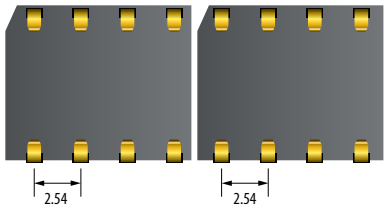

Figure 4. | Stackable pitch

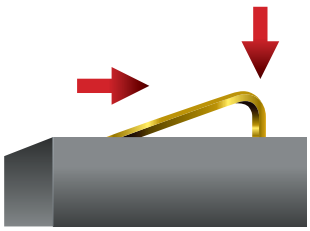

Figure 5. | Horizontal and vertical contact engagement

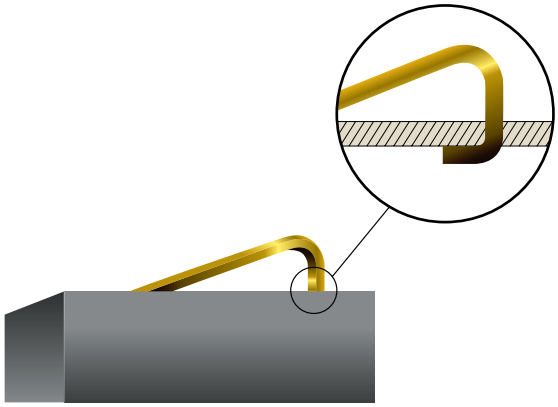

Figure 6. | Captured spring ends

In-line terminations or twin hot contacts on the 76AAand 75AB 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).

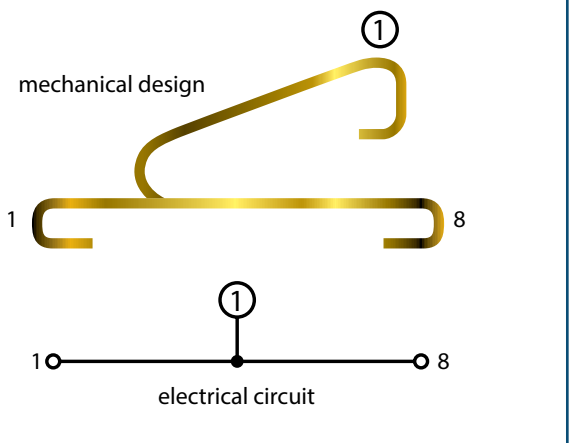

Figure 7. | Twin hot contacts

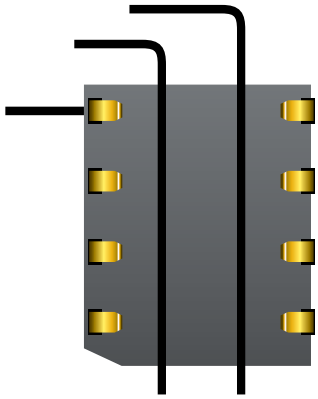

Figure 8. | Possible board routing under the 76AA Series

The Bourns Solution (Continued)

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.

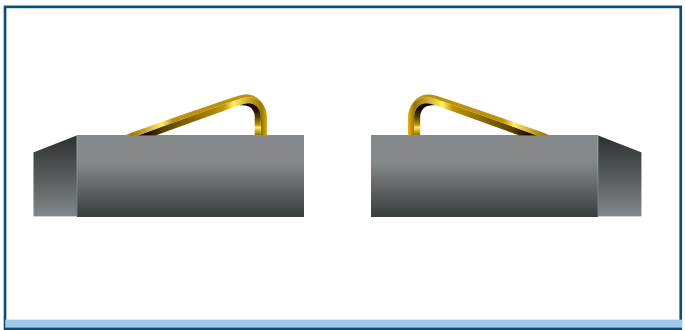

Figure 9. Possible 180 ° change while maintaining pad layout

The Modular Contact easily lends itself to pick and place automated equipment. Figure 10 outlines two recommended pick-up points.

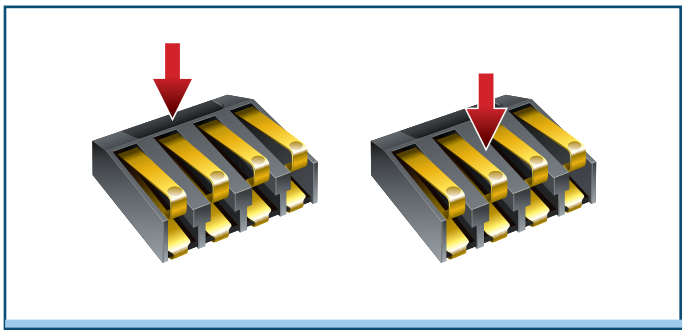

Figure 10. Recommended pick and place pick-up points

These features result in the all-important reduced time-to-market and elimination of custom tooling charges. Bourns® Modular Contacts offer a robust design, along with higher power cabilities and 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!