Embedded Bud Connector

Overview

Utilizing the efficient high-current design of the PowerBud® contact technology, the EBC (Embedded Bud Connector) carries high power in a small package and is specifically designed for a press-fit connection on bus bars, printed circuit boards, and FusionLug terminations. The PowerBud® patented contact technology features highly redundant points of contact, which efficiently conducts a much higher current with low resistance and lower insertion force than similar-sized contacts. The cycle life has been proven in excess of 10,000 cycles.

Key Specifications

- High current capacity - up to 400A
- Low insertion force
- Low voltage drop
- Low contact resistance
- Low contact wear
- High cycle life
- Available in 5 sizes - 2.4mm, 3.6mm, 5.7mm, 9.1mm, and 12.7mm
- Multiple points of contact - low loss
- RoHS compliant
Embedded Bud Connector

The PowerBud® Contact System

Methode’s PowerBud® power contacts use an innovative, multiple contact point design that creates lower insertion force, lower temperature rise, lower power loss and higher cycle life than conventional power connectors. This unique design uses two rows of performance-engineered copper-alloy conductors arranged one over the other, which creates highly redundant contact points. This feature lowers both contact resistance and normal contact force. The PowerBud’s insertion force is three to five times lower than equivalently rated electrical connectors. Less metal-on-metal wear during mating and unmating translates to a typical 10,000 cycle life. Additionally, PowerBud’s power connector contact resistance is two to three times lower than equivalently-rated power connectors.

How Does It Work?

The PowerBud uses two rows of conductors arranged one over the other. The material of the beams is a proprietary performance-engineered copper alloy which is substantially better than the more commonly used beryllium copper alloy.

Each copper alloy beam includes a slight indentation in the finger tip to create dual contact points, adding to the massively parallel contact points.
Bus Bar-To-Bus Bar Specifications

Materials & Finish

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>MATERIAL</th>
<th>FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector Shroud</td>
<td>Copper Alloy</td>
<td>100 Microinch Min. Silver Over Nickel</td>
</tr>
<tr>
<td>Socket Contacts</td>
<td>Copper Alloy</td>
<td>50 Microinch Min. Silver Over Nickel</td>
</tr>
<tr>
<td>Swage Ferrule</td>
<td>Brass (Stainless Steel for Size 12.7 mm)</td>
<td>Nickel Plate (N/A for size 12.7 mm)</td>
</tr>
<tr>
<td>Pin Contacts</td>
<td>Copper Alloy</td>
<td>100 Microinch Min. Silver Over Nickel</td>
</tr>
</tbody>
</table>

Mechanical

<table>
<thead>
<tr>
<th>SOCKET PART NUMBER</th>
<th>MATING PIN DIAMETER</th>
<th>MATING PIN PART NUMBER</th>
<th>INSERTION FORCE</th>
<th>EXTRACTION FORCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1101-07083-01104</td>
<td>12.7 mm</td>
<td>9104-07086-02104</td>
<td>8.5 N (1.9 lbf)</td>
<td>4.9 N (1.1 lbf)</td>
</tr>
<tr>
<td>1101-06582-01104</td>
<td>9.1 mm</td>
<td>9104-06641-02104</td>
<td>7.6 N (1.7 lbf)</td>
<td>4.9 N (1.1 lbf)</td>
</tr>
<tr>
<td>1101-06630-01104</td>
<td>5.7 mm</td>
<td>9104-06642-02104</td>
<td>4.9 N (1.1 lbf)</td>
<td>2.7 N (0.6 lbf)</td>
</tr>
<tr>
<td>1101-06634-01104</td>
<td>3.6 mm</td>
<td>9104-06643-02104</td>
<td>3.6 N (0.8 lbf)</td>
<td>2.2 N (0.5 lbf)</td>
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<tr>
<td>1101-06638-01104</td>
<td>2.4 mm</td>
<td>9104-06644-02104</td>
<td>5.8 N (1.3 lbf)</td>
<td>1.3 N (0.3 lbf)</td>
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Electrical

<table>
<thead>
<tr>
<th>SOCKET PART NUMBER</th>
<th>MATING PIN DIAMETER</th>
<th>CURRENT AT 30° T-RISE</th>
<th>VOLTAGE DROP AT LISTED CURRENT</th>
<th>BULK RESISTANCE AT LISTED CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1101-07083-01104</td>
<td>12.7 mm</td>
<td>400 A</td>
<td>11.4 mV</td>
<td>29 μΩ</td>
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<tr>
<td>1101-06582-01104</td>
<td>9.1 mm</td>
<td>300 A</td>
<td>12.5 mV</td>
<td>45 μΩ</td>
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<tr>
<td>1101-06630-01104</td>
<td>5.7 mm</td>
<td>240 A</td>
<td>11.1 mV</td>
<td>50 μΩ</td>
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<tr>
<td>1101-06634-01104</td>
<td>3.6 mm</td>
<td>160 A (est)</td>
<td>14.5 mV (est)</td>
<td>90 μΩ</td>
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<tr>
<td>1101-06638-01104</td>
<td>2.4 mm</td>
<td>120 A</td>
<td>14.7 mV</td>
<td>125 μΩ</td>
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PowerBud® Vs. Competitor Mating / Unmating Force, 9.1 mm pin

<table>
<thead>
<tr>
<th></th>
<th>MATE</th>
<th>UNMATE</th>
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</thead>
<tbody>
<tr>
<td>PowerBud®</td>
<td>7.6 N (1.7 lbf)</td>
<td>4.9 N (1.1 lbf)</td>
</tr>
<tr>
<td>Competition</td>
<td>21 N (4.7 lbf)</td>
<td>13 N (2.9 lbf)</td>
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PowerBud® Vs. Competition Cycle Life

<table>
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<tr>
<th></th>
<th>PowerBud®</th>
<th>Competition</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>10,000 Cycles</td>
<td>1,000 Cycles</td>
</tr>
</tbody>
</table>

Electrical Performance

Temperature Rise

Voltage Drop
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**EBC SOCKETS**

2.4 mm Socket  
P/N: 1101-06638-01104

3.6 mm Socket  
P/N: 1101-06634-01104

5.7 mm Socket  
P/N: 1101-06630-01104

9.1 mm Socket,  
P/N: 1101-06582-01104

12.7 mm Socket  
P/N: 1101-07083-01104

EBC SOCKETS

- **2.4 mm Socket**  
P/N: 1101-06638-01104

- **3.6 mm Socket**  
P/N: 1101-06634-01104

- **5.7 mm Socket**  
P/N: 1101-06630-01104

- **9.1 mm Socket**  
P/N: 1101-06582-01104

- **12.7 mm Socket**  
P/N: 1101-07083-01104

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EBC STANDARD PINS*

2.4 mm Pin
P/N: 9104-06644-02104

3.6 mm Pin
P/N: 9104-06643-02104

5.7 mm Pin
P/N: 9104-06642-02104

9.1 mm Pin
P/N: 9104-06641-02104

12.7 mm Pin
P/N: 9104-07086-02104

*CUSTOM PIN LENGTHS ARE ALSO AVAILABLE