mCONNECT™ is a next generation feedthrough that leverages a proprietary High Temperature Co-Fired Ceramic (HTCC) forming method to create a robust and reliable technology platform for supporting advancements in neurostimulators, cardiac rhythm systems and other novel devices. This technology enables miniaturized devices that can handle thousands of data channels and allows for production efficiencies with its reduced development lead-time.

Take a leap forward – big or small – in device innovation with a custom mCONNECT™ solution. Our experts are ready to help.

mCONNECT’s technology enables two new innovative feedthrough platforms.

- **Traditional full lead-wire** – Today’s industry standard offering a drop in replacement solution with custom designed lead-wires.
- **Hemi-leadless** – Compatible with existing header attachment methods, while eliminating lead wire on device side.
- **Leadless** – Eliminates traditional lead wire and offers significant reduction in footprint, while supporting increased channel counts.

**MINIATURIZATION**
Enabling the development of less invasive implantable devices.

**HIGHER CHANNEL DENSITY**
Enhancing therapy delivery, sensing and monitoring capabilities.

**CUSTOMIZABLE**
Optimizing to your application and requirements.
The mCONNECT™ Advantage

**Design Flexibility**

mCONNECT feedthrough technology supports endless possibilities in design shape and size.

- Significant decrease in size of feedthrough for device miniaturization.
  - As much as 75% volumetrically smaller feedthrough

- Increase in channel density to improve therapy delivery, sensing and monitoring.
  - Supporting hundreds if not thousands of channels

- Enables unique and complex geometric shapes and sizes.
  - Flexibility to route conductive path in the x, y and z plane of the feedthrough

**Channel Density Comparison**

<table>
<thead>
<tr>
<th></th>
<th>Current ¹</th>
<th>mConnect ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channels</td>
<td>10</td>
<td>171</td>
</tr>
<tr>
<td>Pitch ²</td>
<td>70</td>
<td>12</td>
</tr>
<tr>
<td>Via ²</td>
<td>15</td>
<td>6</td>
</tr>
</tbody>
</table>

¹ ½” by ¼” feedthrough configuration
² thousandths of an inch

**Production Efficiencies**

The benefits of eliminating leadwires are the opportunity to **reduce** precious metal requirements and **improve** labor efficiencies.

**Rapid Prototyping**

mCONNECT’s multi-layer ceramic process allows for up to 10 weeks shorter development lead-times.

- Unfiltered feedthrough with 16 pins

**Current**

28 Weeks

**mConnect™**

18 Weeks

**Size vs Material & Labor Efficiencies**

[Diagram showing size vs material & labor efficiencies]
mCONNECT™
Proprietary Co-Fired Feedthrough Technology

Proven Technology
All performance characteristics, including hermeticity, biocompatibility, thermal shock, vibration, insulation resistance and corrosion testing, have been proven to be equivalent or better than standard Au brazed feedthroughs.

Proven Hermeticity
Four-point bend test is used to validate the strength of the critical bond between Pt and Al₂O₃.

Technology Overview
- mCONNECT’s High Temperature Co-Fired Ceramic (HTCC) focuses on monolithic construction of a feedthrough using a multi-layer ceramic processing and co-fire platinum metal inside alumina to create a hermetic feedthrough.
- Integer uses a high purity platinum conductor that is the same purity or higher when compared to what is being used for standard platinum pin feedthroughs.
- The proprietary forming method for the co-fired platinum/aluminum oxide technology enables the creation of smaller vias and less aluminum oxide ceramic between vias.
- HTCC technology demonstrates perfect alignment layer-to-layer and a very consistent conductor diameter ensuring electrical performance and providing flexibility in attachment methods.

Corrosion Testing
Results indicate that mCONNECT provides the most corrosion resistance based on open circuit potential testing.

Corrosion Tendency¹

Test stops when corrosion rate approaches zero.

¹. Results based on internal modeling and benchmark testing.
mCONNECT™
Compatible with Traditional and New Device Designs

Attachment Options

Solder Bump (Device Side Only)
Offers the highest strength – pull resistance and robustness.

Wire/Ribbon Bonding
Ideal for low heat environments, smaller tighter spacing and supports wide range of wire materials.

Laser welding
Ideal for smaller tighter spacing with support for a wide range of wire materials.

Filtered Feedthrough

Proprietary Filter Mounting

- Filter surface mounted directly on the feedthrough to prevent EMI penetration into the device’s circuitry.
- Filter bonded to non-oxidizing noble metals (gold braze and precious metal lead wires) to prevent performance degradation over time.
- Compact filter packaging on the Feedthrough reduces spatial requirements.
- Support for traditional and hemi-leadless form factors.