µPDB SEALED MODULES TAKE POWER OUT OF THE BOX

Innovative Features and Sealing Enable Engineers to Overcome a Multitude of Challenges

Vehicles are continually offering more and more infotainment and comfort features. Additionally, they are becoming increasingly connected to the internet of things (IoT) and offering advanced driver-assistance systems (ADAS) capabilities. However, these trends are creating daunting challenges for automotive engineers that particularly affect power distribution architecture.

CHALLENGE #1: SPACE CONSTRAINTS

As the electrical content within a vehicle increases, the power distribution boxes become crowded and design efforts grow more complicated. Auxiliary power boxes typically include more components than required for specific applications, increasing costs and wasting precious space. Also, when designers try to fit more power and smart capabilities into vehicles, crowded components and the resulting heat threaten performance.

CHALLENGE #2: LOCATION, LOCATION, LOCATION

The lack of sealing in auxiliary power boxes limits where they can be placed in the vehicle. This in turn typically results in more cabling and costs, as boxes need to be placed away from applications that could be exposed to water spray.

CHALLENGE #3: TIME TO MARKET

Going to market with cutting-edge features can be crucial in capturing market share. Sourcing components and subassemblies, however, can increase design and manufacturing time, potentially cutting into profits and market share.

SOLUTIONS

#1: Small Footprint
Molex engineers designed µPDB Sealed Modules to reduce the number of components needed for power distribution, thus creating space savings. In turn, by easing space constraints with a small footprint, the µPDB Sealed Modules may shorten design times and reduce bills of material (BOMs).

#2 Sealed Performance
With an IP6K7 rating, µPDB Sealed Modules provide protection to enable peak performance in harsh environments and mate to the MX150 field-proven technology with the newly released MX150 8-, 9- and 10-way Hybrid Connectors. As a result, engineers have more flexibility to design power-switching and circuit-protection functions outside the main PDB and closer to the specific application.

#3 Off-the-Shelf Options Available
The µPDB portfolio offers 5 off-the-shelf modules available to support customer needs, and each offers short design cycles, providing design flexibility within relatively small time windows.
Key Benefits:
Molex µPDB Sealed Modules offer a cost-effective method to:
• Add additional power switching and circuit protection to vehicle wiring architectures
• Relocate power switching and circuit protection close to devices
• Add power switching and circuit protection redundancy (ADAS/autonomous vehicles)
• Isolate high-current components from the main PDB (e.g., cooling fan relay)
• Integrate most PCB-mounted components

THE MOLEX ADVANTAGE
Molex offers a portfolio of µPDB Sealed Modules for a range of applications:

<table>
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<tr>
<th>µPDB Sealed Modules Part No.</th>
<th>Current Ratings</th>
<th>Application</th>
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| 2003161101                   | 42A @ +110°C, 48A @ +85°C | Any high current switching application (up to 650W @ 13.5V DC +85°C)  
  - Cooling Fans  
  - Blower Motors  
  - Headlights  
  - Convertible car roof controls |
| 2003161102                   | 25A @ +110°C, 30A @ +85°C | Any medium current switching (up to 400W @ 13.5V DC, +85°C) and protection application  
  - All Wheel Drive Modules  
  - Headlights  
  - Front Defoggers  
  - Rear Defoggers  
  - Power Liftgates |
| 2003161103                   | Load 1- 7.5A @ +85°C (De-rates at +110°C)  
  Load 2- 6A @ +85°C (De-rates at +110°C)  
  Load 3- 7.5A @ +85°C (De-rates at +110°C) | Any application where 1, 2 or 3 loads are controlled together  
  - UREA systems (modules, pump heaters, line heaters)  
  - Wiper motors (2 loads)  
  - Tail lights (2 or 3 loads)  
  - Daylight running lights (DRL) |
| 2003161121 (Target: Diesel Market) | Load 1- 7.5A @ +15°C (De-rates at 110°C)  
  Load 2- 7.5A @ +15°C (De-rates at 110°C)  
  Load 3- 7.5A @ +15°C (De-rates at 110°C)  
  Load 4- 7.5A @ +15°C (De-rates at 110°C) | Any application where more than 2 loads are controlled together (up to 4)  
  - 4 circuit-limited-yield (CLY) diesel engine glow plugs can combine multiple modules for 6 and 8 CLYs.  
  - Daylight running light (DRL)  
  - Headlights (2) + tail lights (2) |
| 2003161122 (Target: Diesel Market) | Load 1- 4A at 24V @ +15°C (De-rates at 110°C)  
  Load 2- 4A at 24V @ +15°C (De-rates at 110°C)  
  Load 3- 4A at 24V @ +15°C (De-rates at 110°C)  
  Load 4- 4A at 24V @ +15°C (De-rates at 110°C) | Any application where more than two loads are controlled together (up to 4) at 24V  
  - 4 circuit-limited-yield (CLY) diesel engine glow plugs can combine multiple modules for 6 and 8 CLYs.  
  - Daylight running light (DRL)  
  - Headlights (2) + tail lights (2) |