

CONNECTIVITY SOLUTIONS FOR AUTOMOTIVE LIDAR AND RADAR

TE Connectivity Enabling Radar and LiDAR Solutions for Vehicle Sensing

LiDAR technology is rapidly evolving toward higher-resolution, solid-state architectures. As data rates increase and packaging becomes more compact, connectivity requirements are also transforming. Solid-state LiDAR will demand fully shielded high-speed interconnects to ensure signal integrity and electromagnetic compatibility. At the same time, tight space constraints, are accelerating the adoption of hybrid data-and-power connectors that can be seamlessly integrated into the LiDAR housing.

Automotive radars are primarily optimized for long-range detection, enabling functions such as adaptive cruise control and collision avoidance. Next-generation radars—including 4D and imaging radar—add significantly higher resolution and sensing dimension, allowing simultaneous detection of range, velocity, and angle. This enhanced sensing capability improves object classification, extends detection range, and supports more precise environmental imaging—critical for advanced safety and automated driving functions.



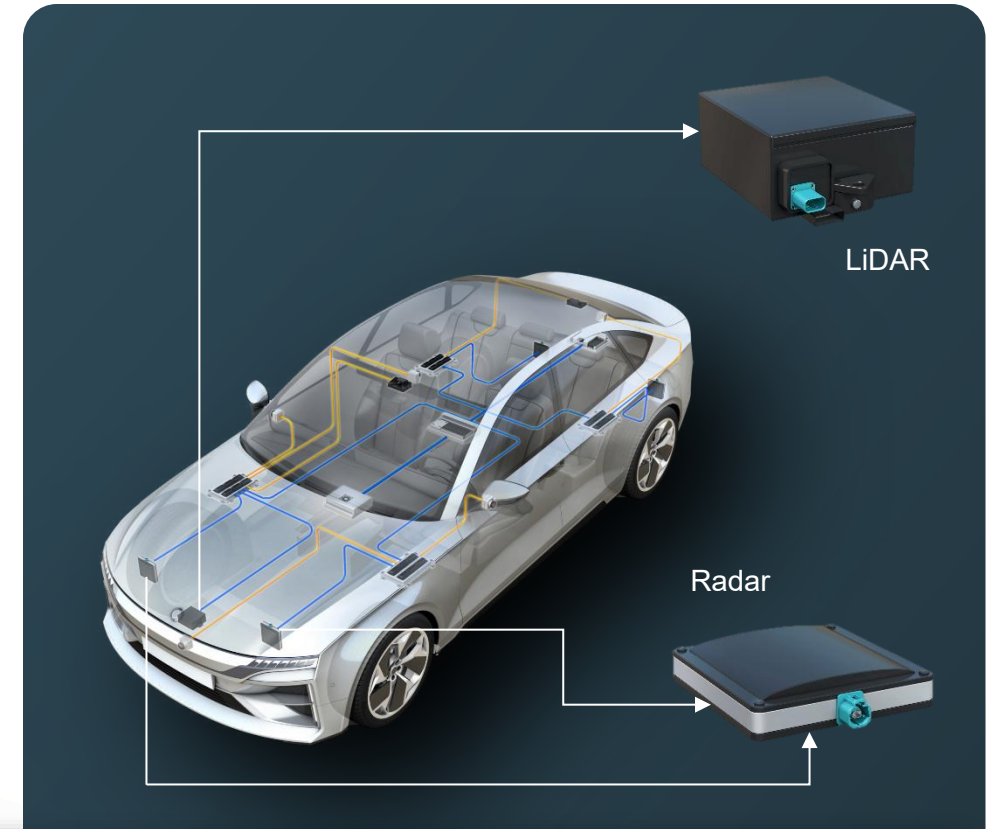
HIGH
DATA RATE



COMPACT
DESIGN



EMI
PERFORMANCE



TE Connectivity (TE) supports both Radar and LiDAR systems with a comprehensive portfolio of automotive-grade connectivity solutions, including high-speed data, signal and power interconnects, PCIe connectivity, and EMI shielding technologies. TE solutions are engineered to deliver high performance, robust signal integrity, and compact packaging, enabling reliable connectivity for both current and next-generation Radar and LiDAR architectures.



HIGH
PERFORMANCE

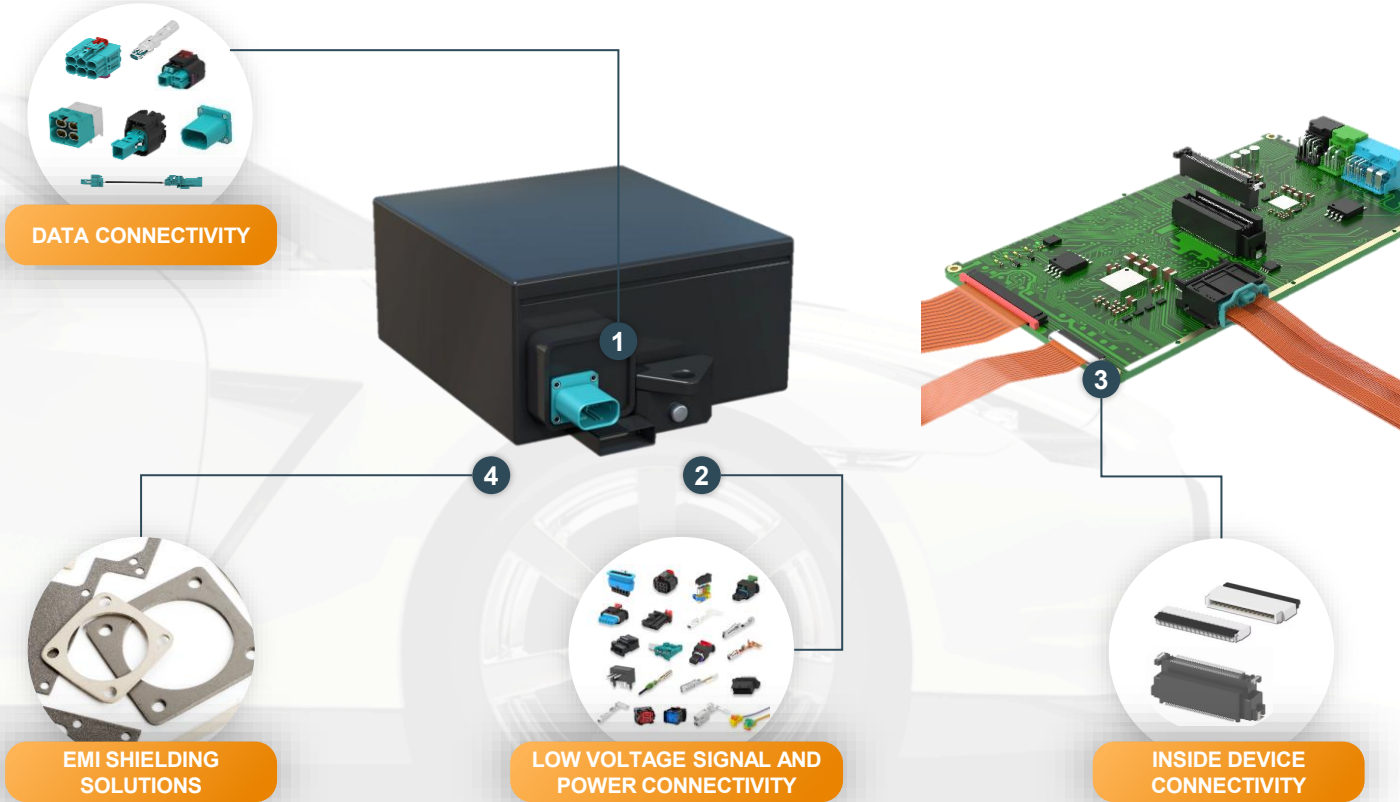


INTEGRATED



MINIATURIZATION

CONNECTIVITY SOLUTIONS FOR AUTOMOTIVE LIDAR AND RADAR



KEY CONNECTIVITY SOLUTIONS

CLICK AND JUMP TO

- 1 DATA CONNECTIVITY**
- 2 LOW VOLTAGE SIGNAL AND POWER CONNECTIVITY**
- 3 INSIDE DEVICE CONNECTIVITY**
- 4 EMI SHIELDING SOLUTIONS**

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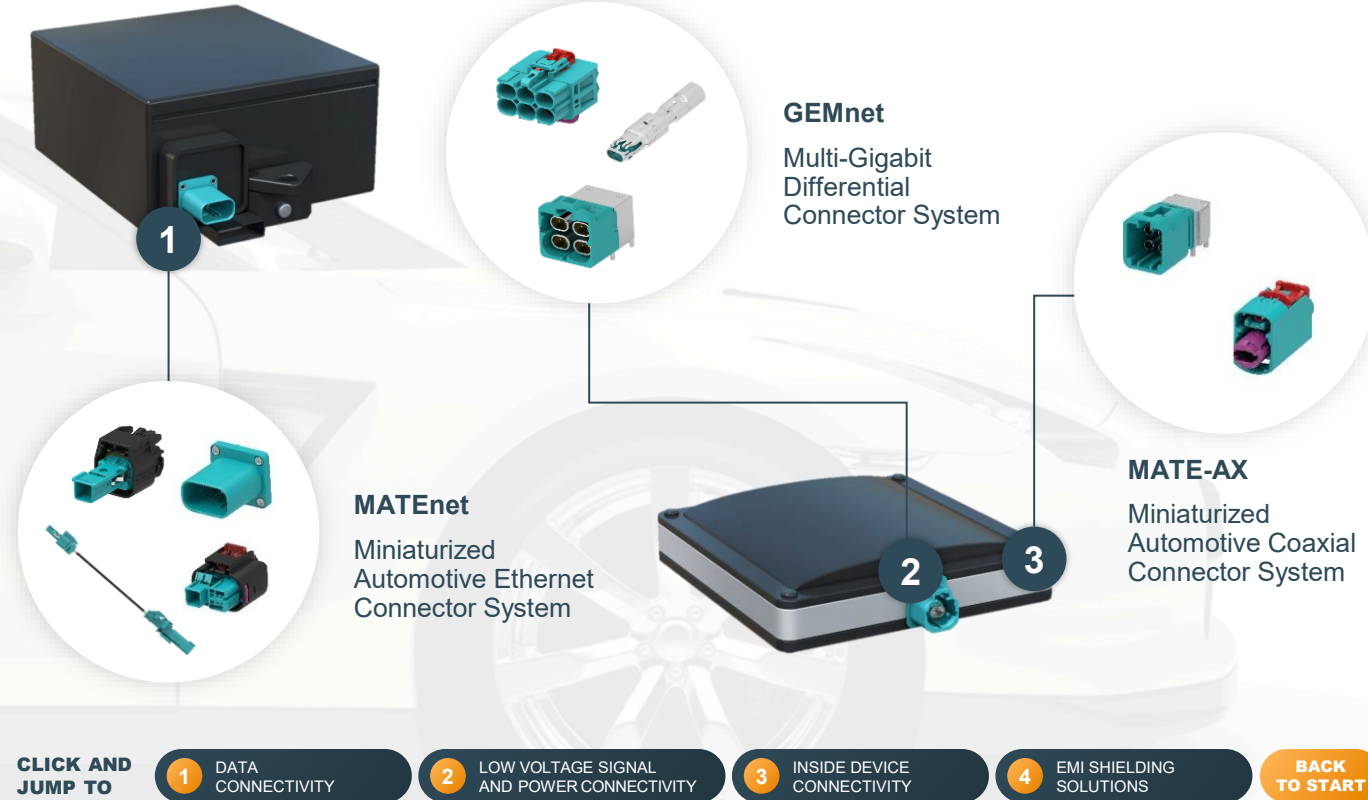
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DATA CONNECTIVITY

CLICK ON THE IMAGE TO LEARN MORE!



1. MATEnet

Miniaturized Automotive Ethernet Connector System

- Enabling up to 1 Gbps (100BASE-T1 and 1000BASE-T1) and 4 Gbps with alternative technologies
- Modular and Scalable solution: The standardized core module can be assembled into various housing frames
- Protocols: 100BASE-T1 (100Mbps – IEEE802.3bw) and 1000BASE-T1 (1 Gbps – IEEE802.3bp PoDL / Class 3-48 Volt); A2B; HDBaseT



2. GEMnet

Multi-Gigabit Differential Connector System

- Enabling 15 GHz and up to 56 Gbps
- Automotive-grade design: Leads-in, anti-stubbing, lower mating forces
- Protocols: 100BASE-T1, 1000BASE-T1, 2.5/5/10GBASE-T1;
- GMSL, APiX, GVIF, FPD-Link, ASA Motion Link, MiPi, HDBase-T; USB, PCIe



3. MATE-AX

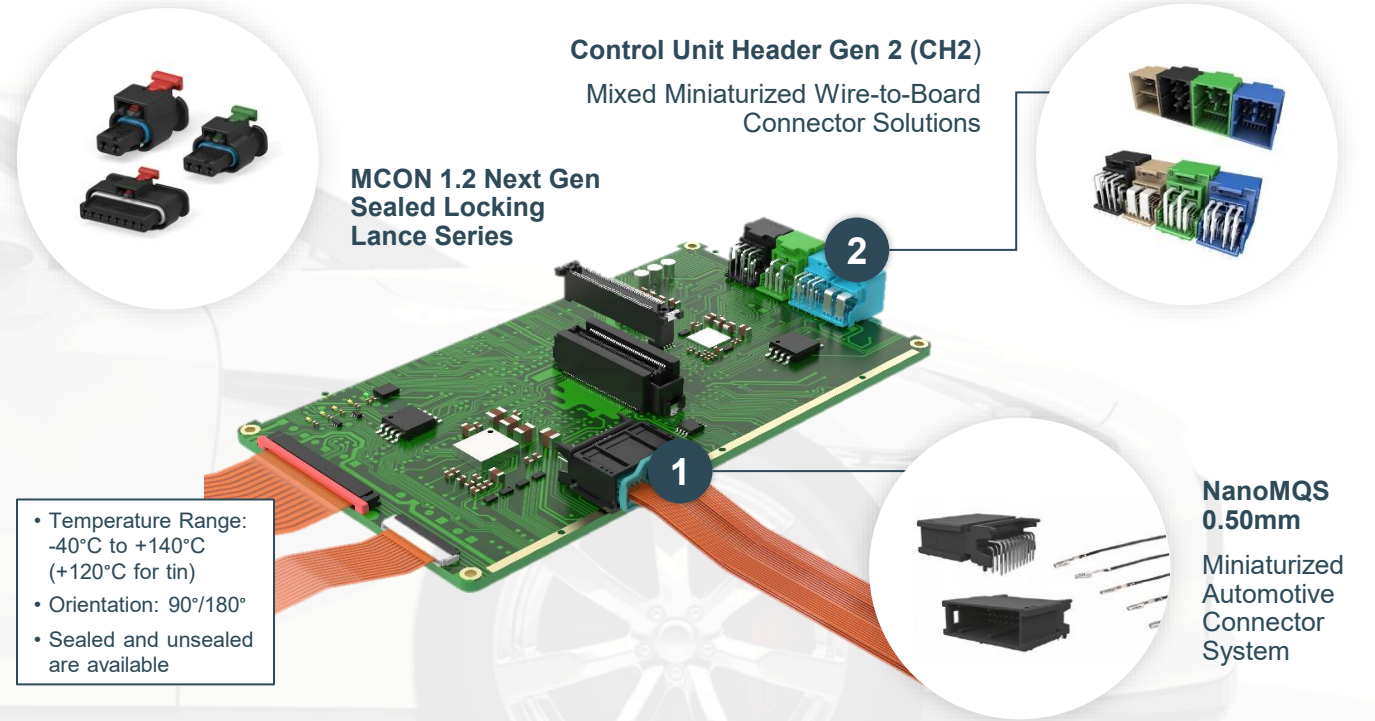
Miniaturized Automotive Coaxial Connector System

- Enabling up to 9 GHz RF performance
- Up to 75 % space reduction
- Up to 34 % weight reduction
- (4x 1pos. FAKRA connector vs. 4pos. MATE-AX connector)
- Protocols: MIPI, ASA (Automotive SerDes Alliance), GMSL2/3, FPD-Link

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LOW VOLTAGE SIGNAL AND POWER CONNECTIVITY

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1. NanoMQS 0.50mm

Miniaturized Automotive Connector System

- Wire size: 0.13 mm² – 0.35 mm² or 0.014 to 0.42 mm² foil
- 1.8mm pin pitch;
- Current: 6 Amps
- 2-32 positions; single- or double-row; 90° or 180° orientation
- Side & Top-Latch Plugs, SMD & TH Headers
- Receptacle & tab terminals for round wires
- FFC/FPC terminal for flat flexible/printed cables
- Operating temperature: -40° C to +170° C (Ag) (+105° foil)
- Vibration: SG4; LV214/ USCAR



2. Control Unit Header Gen 2 (CH2)

Mixed Miniaturized Wire-to-Board Connector Solutions

- Wire Size: 0.13mm² – 6.0 mm²
- NanoMQS 0.50, MCON 1.2, AMP MCP 2.8 and 6.3mm
- Current levels 6A to 52 Amps
- 90° orientation, PIP/wave Soldering; Reflow compatible up to 260° C peak
- Stackable multi-bay concept with multiple mixed pin variants: 12, 23, 28, 29, 52 and 73 positions
- USCAR/LV214*



MCON 1.2mm

Automotive Low Power Connector System

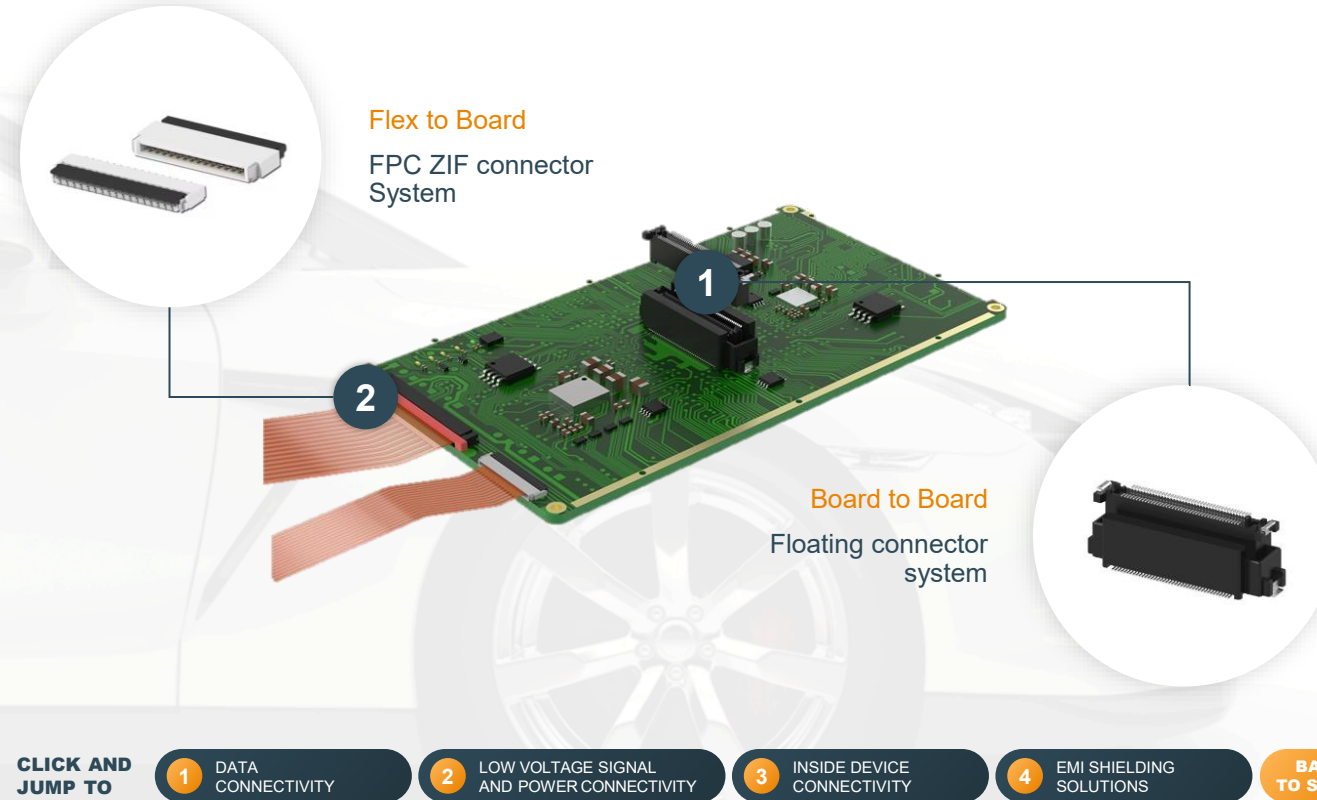
- Wire Size: 0.5 mm² – 1.5 mm²
- Current: 17 Amps
- 2-8 positions
- Sealed and Unsealed
- Vibration: SG4; LV214/ USCAR
- 48V & Automation-Ready

* CH2 is currently under validation testing

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INSIDE DEVICE CONNECTIVITY

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BOARD TO BOARD SOLUTIONS



1. Floating Connector System*

- Current: signal only; signal and power
- Temperature: -55- 125 °C
- No. of Pins: 20-180 Max**
- Pitch: 0.5mm

* The product is not SOP yet, if you get any question, please [contact us](#)

FLEX TO BOARD SOLUTIONS



2. FPC ZIF Connector System

- Current Rating: 1A
- Temperature Rating: -55°C to +85°C
- Pitch: 1mm (1.25mm)

- Position: 3 - 30
- Configuration: Vertical (180°) / Horizontal (90°)



ERNI Microbridge Flexfoil Connector System

- Current: up to 12 A (depends on cable)
- Temperature: -40- 150 °C
- No. of Pins: 8 / 20 (single-row)
- Pitch: 0.5 x 0.4mm pins with 1.27mm pitch

- Standard: LV 214
- Terminal technology: Male connectors SMT Female connectors piecing

WIRE TO BOARD SOLUTIONS



2.0mm Signal GRACE INERTIA Connectors

- Current: up to 3A
- Temperature: -40°C to +105°C
- Pitch: 2.00mm
- Position: 2 to 10P

- Configuration: Vertical (180°) / Horizontal (90°)
- Termination: Male SMT / TH & Female Crimp / IDC

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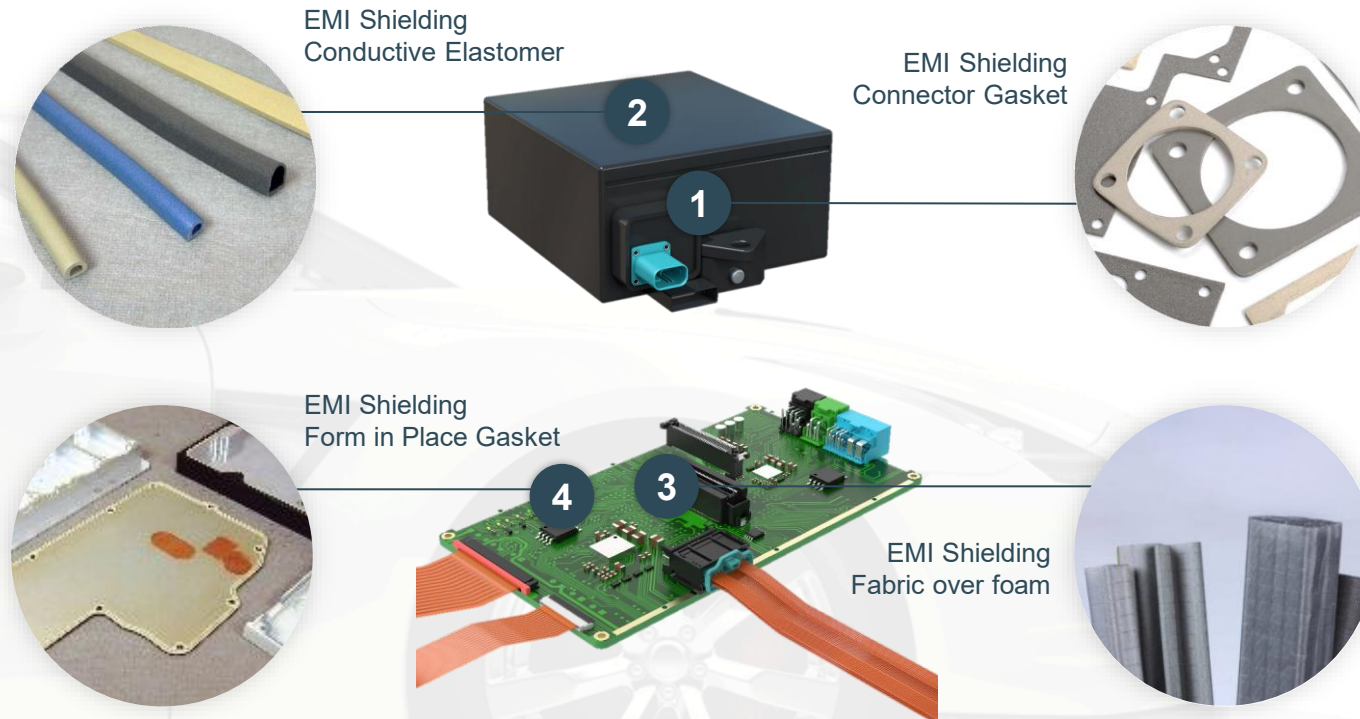
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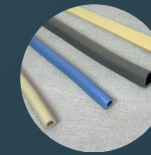
EMI SHIELDING SOLUTIONS

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1. EMI Shielding Connector Gasket

- Meet standard size and common sub D connector gaskets
- The compression stop also provides for additional electrical bonding between the surfaces with a very low contact resistance
- Surface mounted gaskets are to be used where groove mounted gaskets such as O-Rings cannot be accommodated



2. EMI Shielding Conductive Elastomer

- Silicone or fluorosilicate loaded with highly conductive particles providing reliable performance
- EMI shielding performance combined with excellent environmental sealing
- Material options to provide required EMI performance and galvanic compatibility
- Provides low contact resistance between mating surfaces



3. EMI Shielding Fabric Over Foam

- Have fire resistant properties to UL94VO
- Compression between approximately 10% and 70%
- Wide variety of profiles where full EMC screening is required between component parts
- Provide a solid EMI gasket with low compression set
- Robust abrasion resistance for high cycling and wiping applications



4. EMI Shielding Form in Place Gasket

- Elastomer compound dispensed directly onto hardware
- EMI shielding and/or environmental seal for dust and moisture
- Suited to applications where small intricate EMI gasket profiles are required
- Low closure force

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