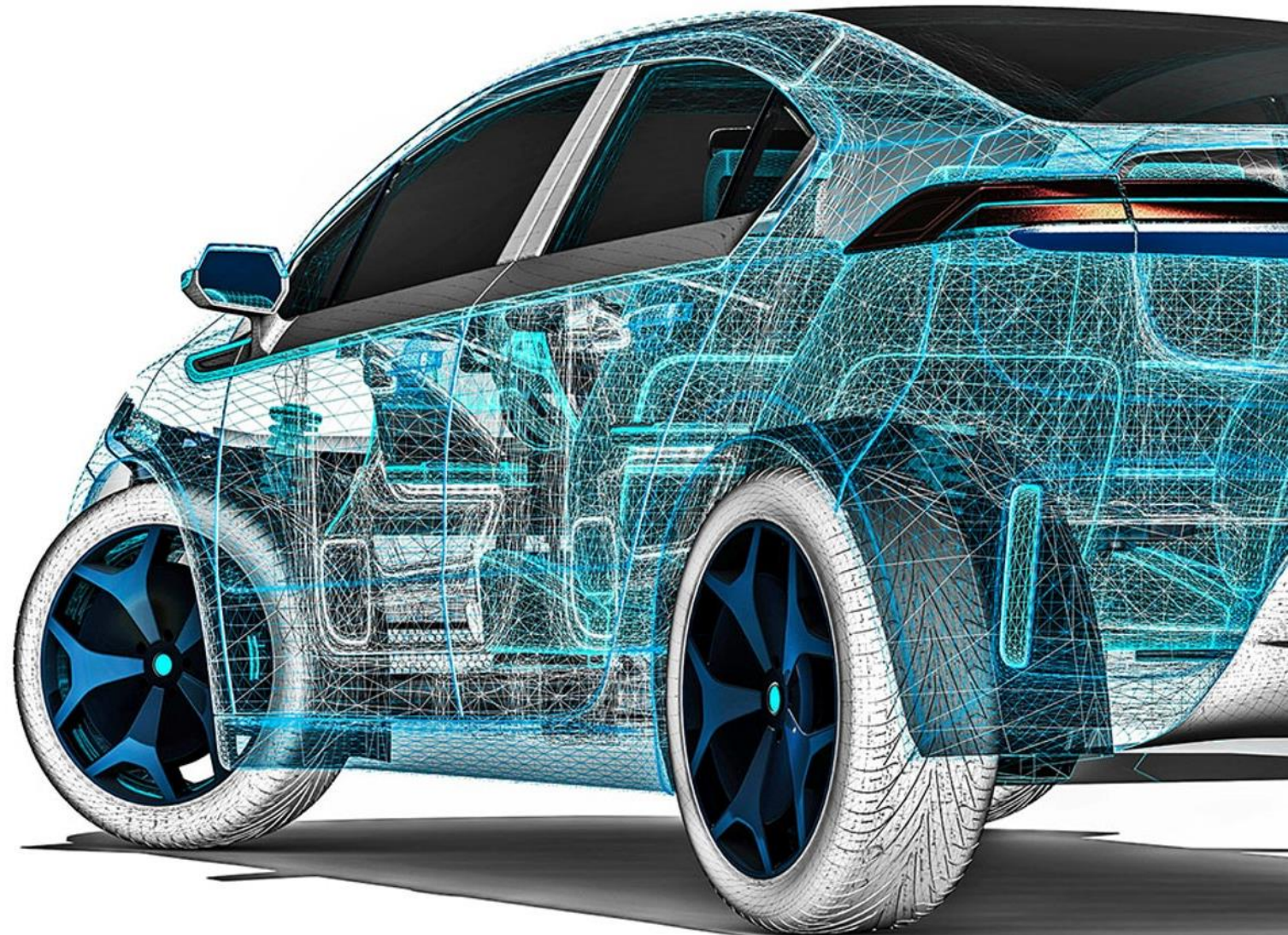


GEMnet

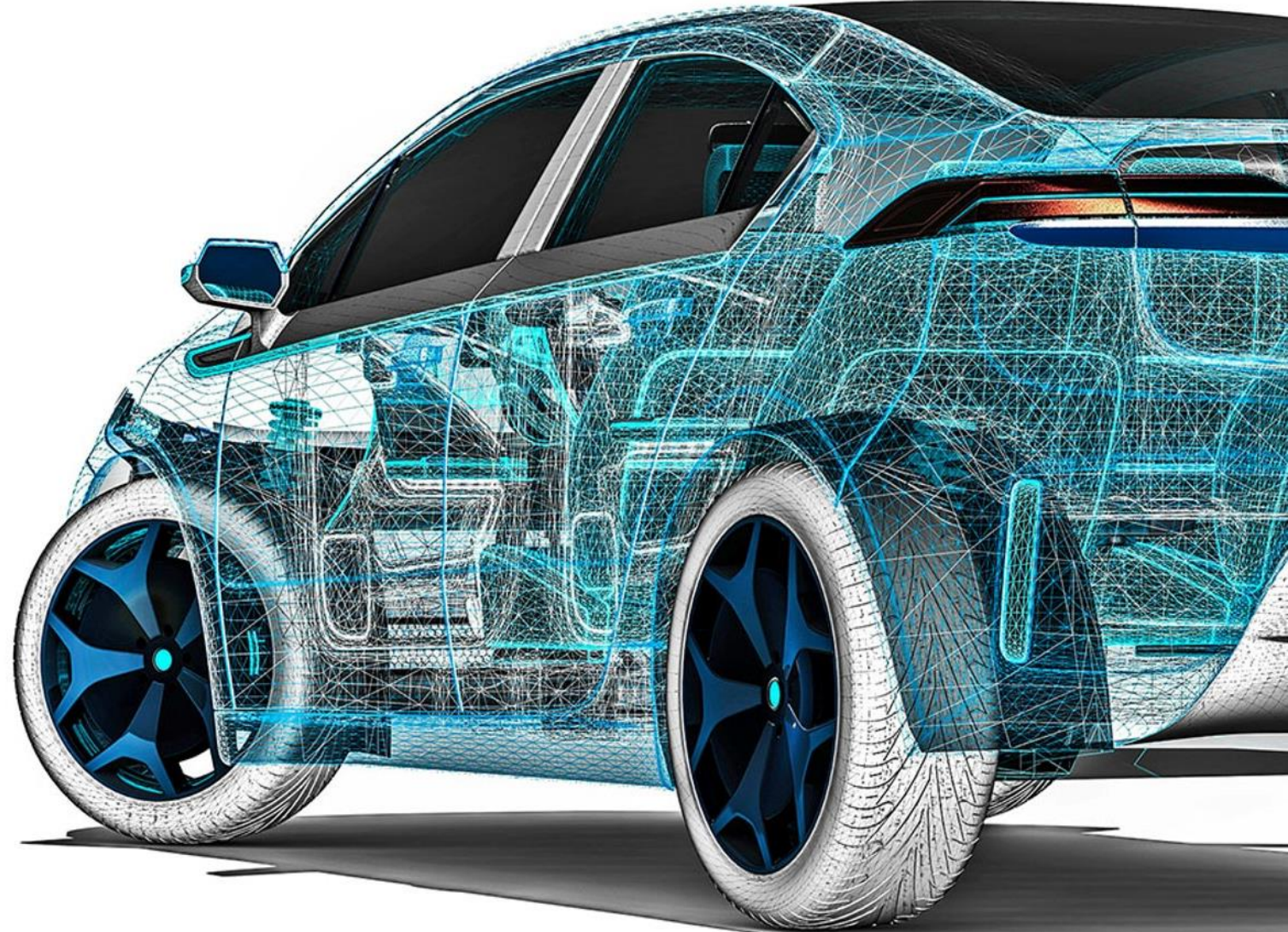
Multi-gigabit Differential Data
Connectivity System

EVERY CONNECTION COUNTS



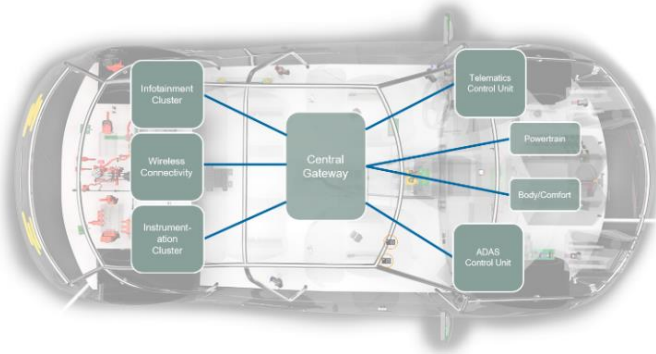
Market and Technology Trends

EVERY CONNECTION COUNTS

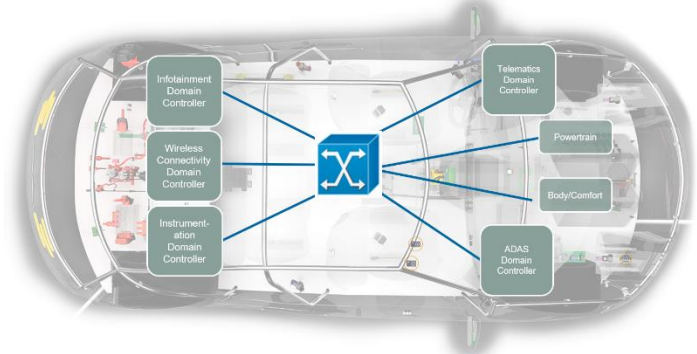


Automotive Architectural Evolution

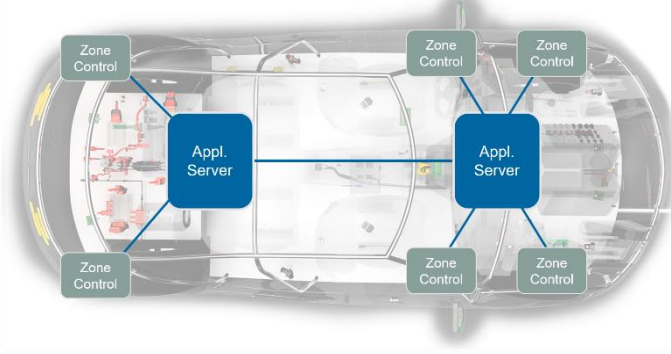
LEGACY Functional Domain Based



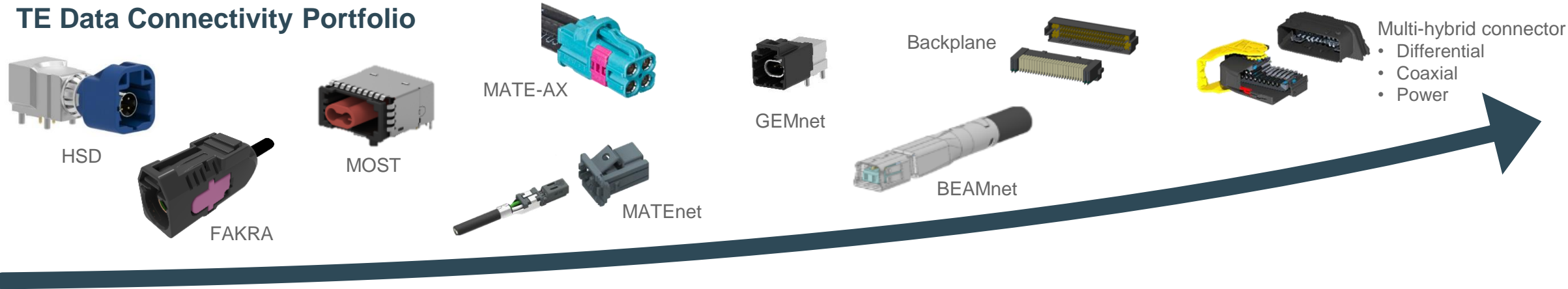
STATE-OF-THE-ART Switch Based Domain Controlled



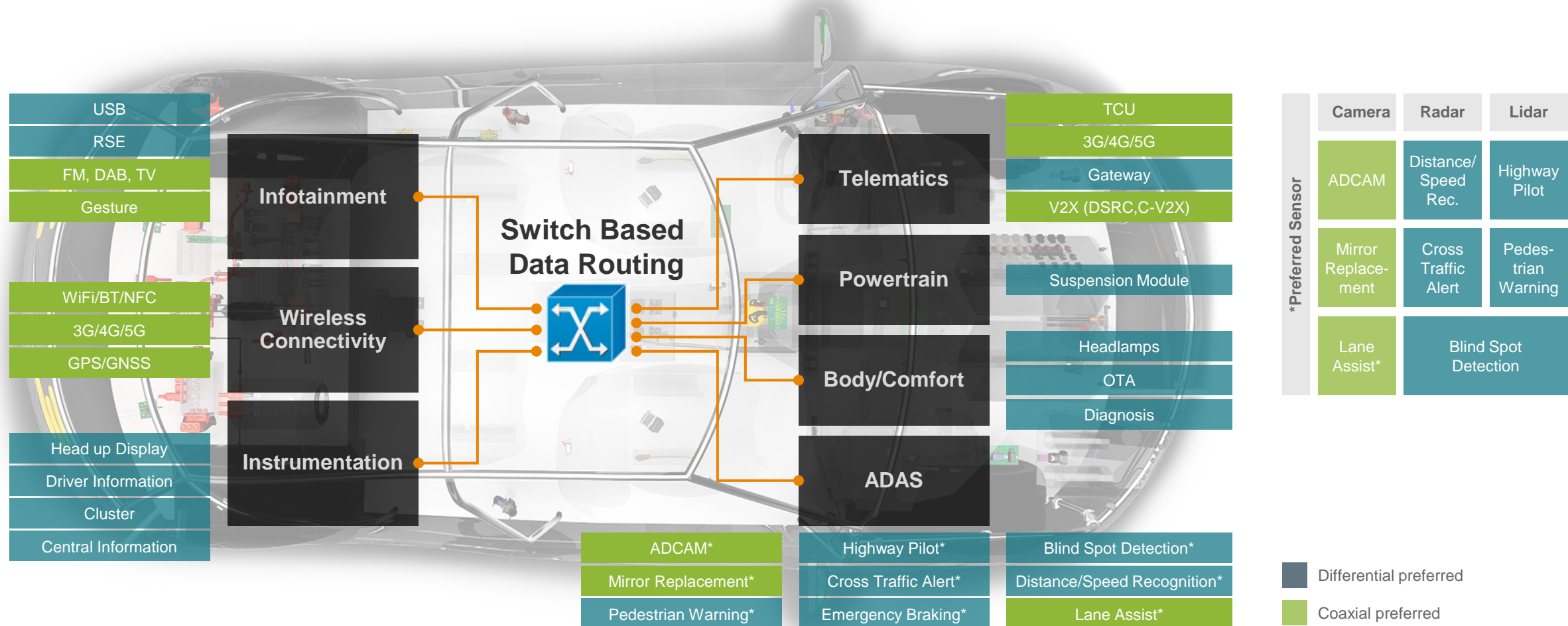
FUTURE Zonal Domains






TE Data Connectivity Portfolio



Current Application Landscape



High Performance Automotive Grade Porfolio

COAXIAL		DIFFERENTIAL				HYBRID
FAKRA Coaxial connector system supporting frequencies up to 6 GHz	MATE-AX Miniaturized coaxial connector system for high-end multi-Gigabit applications and high frequency radio signals up to 15 GHz	HSD/HSL Star-Quad fully shielded connector system, supports up to 6 Gbps	MATenet Scalable and modular connector system for high volume applications (e.g., 100/1000BASE-T1)	GEMnet High performance differential connector system for high-end multi-Gigabit applications up to 56 Gbps	BEAMnet Miniaturized high performance differential connector system for high-end multi-Gigabit applications up to 56 Gbps	NET-AX+* Supports high performance coaxial and differential connectivity (up to 56Gbps) for Ethernet, SerDes and other protocols and can integrate signal and power connections
						
						*SOP mm/yy


Primary Design Drivers							
Performance		●	●		●	●	●
Miniaturization		●	●		●		●
Robustness	●	●	●	●	●	●	●

GEMnet – Industry Compatible Robust Multi-Gigabit Automotive Connectors with 90° and 180° Terminals

PERFORMANCE	CONFORMANCE
<ul style="list-style-type: none"> 25 Gbps 15 GHz 100 Ohm impedance 	<ul style="list-style-type: none"> OPEN Alliance TC9, IEEE802.3ch USCAR interface standards
KEY FEATURES	
<ul style="list-style-type: none"> Robust automotive design High cable retention force Scoop proof 	<ul style="list-style-type: none"> Anti-stubbing features CPA ≥ 25 mating cycles

TYPICAL APPLICATIONS	Automotive Ethernet: 100BASE-T1, 1000BASE-T1, 2.5/5/10GBASE-T1
	SerDes: GMSL, APIX, GVIF, FPD-Link, ASA Motion Link, MiPi, HDBase-T
	Others: USB, PCIe





90° / 180° TERMINALS				
Housing Portfolio	180° male and female housing (sealed & unsealed)			
	1 port	2 port	4 port	6 port
	90° female (sealed & unsealed)			
	1 port	2 port	4 port	
Header Portfolio	90° & 180° header (sealed & unsealed)			
	1 port	2 port	4 port	6 port



*Hybrid Housing and Headers on demand

GEMnet – Connector Portfolio
































Terminals

	90° female S/F 2390999 EMEA		90° female Diecast 2405986 APAC		180° female 2394484 EMEA		180° male 2394485 EMEA
2024		2024		2023		2023	

Housings

Unsealed

Sealed

Female		1p 90° 2391002 APAC		2p 90° 2400802 TBD						1p 180° 1802794 EMEA		4p 180° 2411017 APAC
	 2024		 On request						 2023		 2023	
		1p 180° 2368022 APAC		2p 180° 2386612 APAC		4p 180° 2386629 APAC		6p 180° 2399595 AMER				
	 2022		 2022		 2022		 2022					
Male		1p 180° 2368003 APAC		2p 180° 2386606 APAC		4p 180° 2386622 TBD						
	 2022		 2022		 On request							
		1p 180° 2368033 APAC		2p 180° 2386608 APAC		4p 180° 2386625 TBD						
	  2022		  2022		  On request							

Shielded








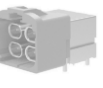
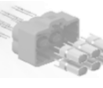
CPA Available

Clip Slot Available

Multiple Clip Slot Options

202x: Planned SOP

GEMnet – Header Portfolio

Header									
Unsealed					Sealed				
	1p 90°		2p 90°		4p 90°		6p 90°		1p 90°
2374901	2374902	2374900	2397129	2397207	TBD	2397207	TBD	2397137	2397322
China	China	China	AMER	APAC	On request	AMER		AMER	China
	1p 180°		2p 180°		4p 180°		6p 180°		
2397137	2409685	2408290	2390045						
AMER	AMER	China	AMER						

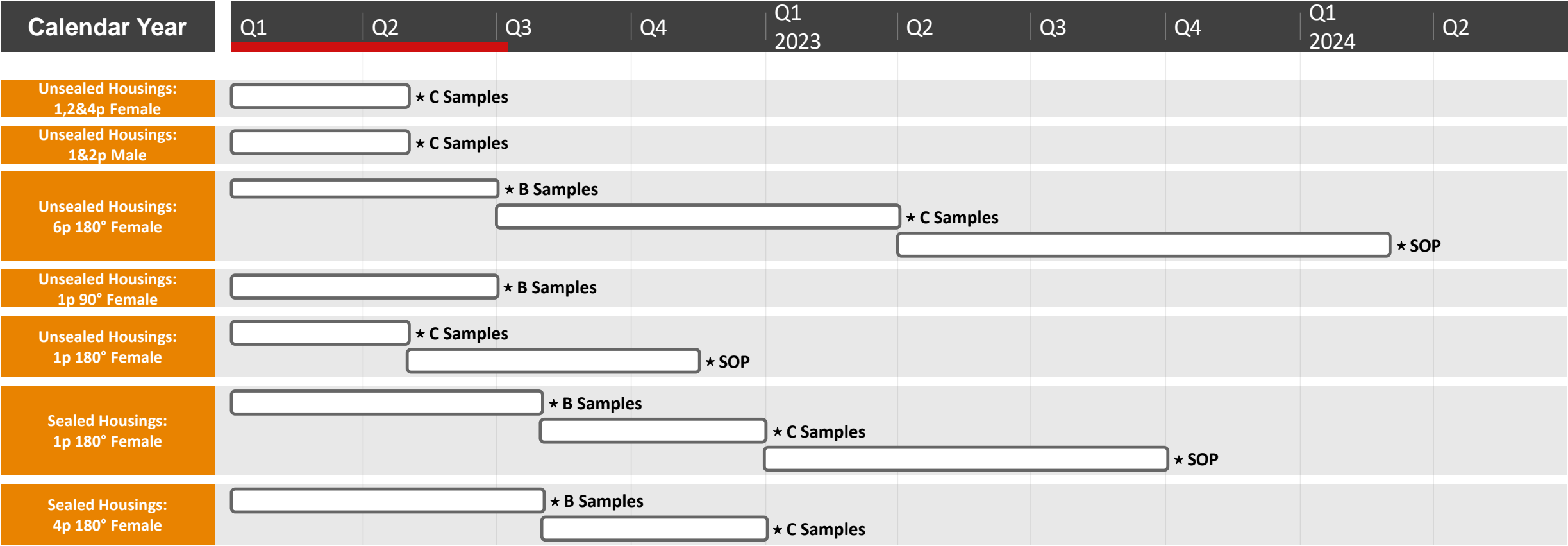


202x: Planned SOP

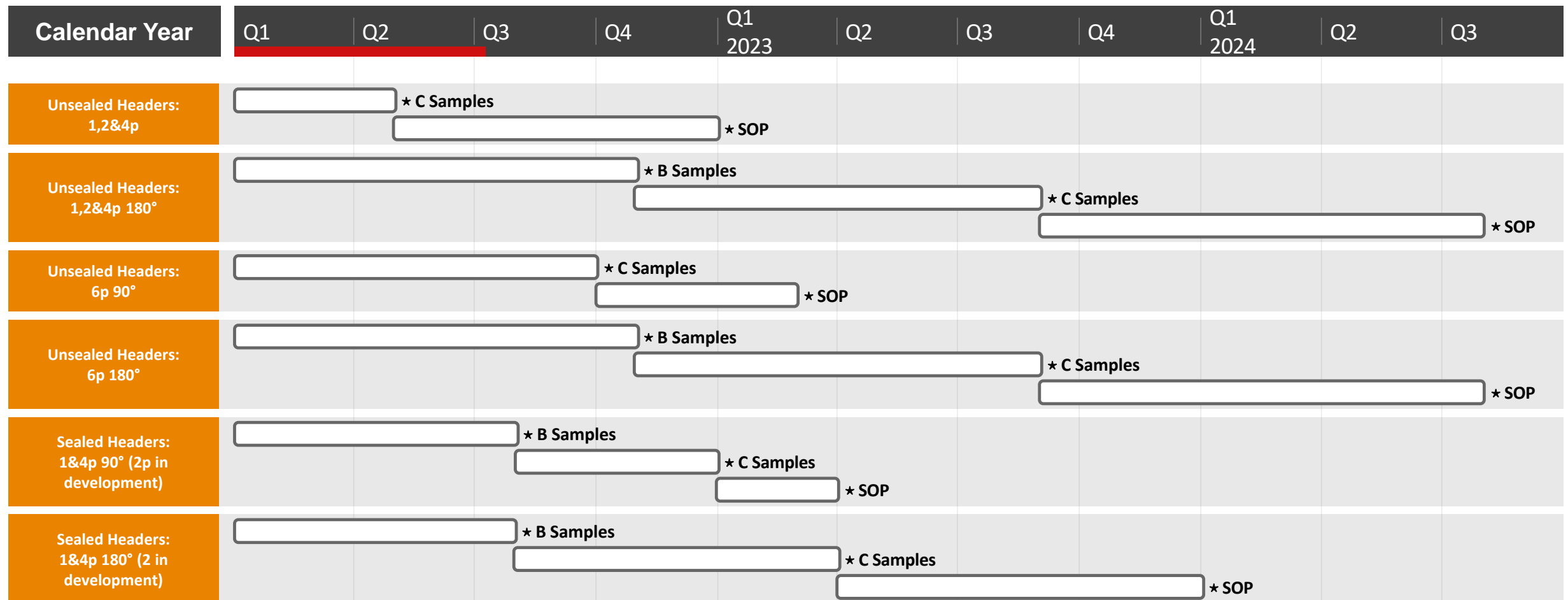
GEMnet Product Line Roadmap – Connectors: Terminals

Calendar Year	Q1	Q2	Q3	Q4	Q1 2023	Q2	Q3	Q4	Q1 2024	Q2
Terminals: 180°	<input type="checkbox"/> * C Samples									
Terminals: 90° Die-Cast										
Terminals: 90° S&F										

GEMnet Product Line Roadmap – Connectors: Housings



GEMnet Product Line Roadmap – Headers



Technical slides

Differential: GEMnet

April 2022

EVERY CONNECTION COUNTS



HMTE Terminals

Pin (HEADER) Terminal

Outer contact pin
(outer terminals + dielectric)

Center
contact pin

Ferrule

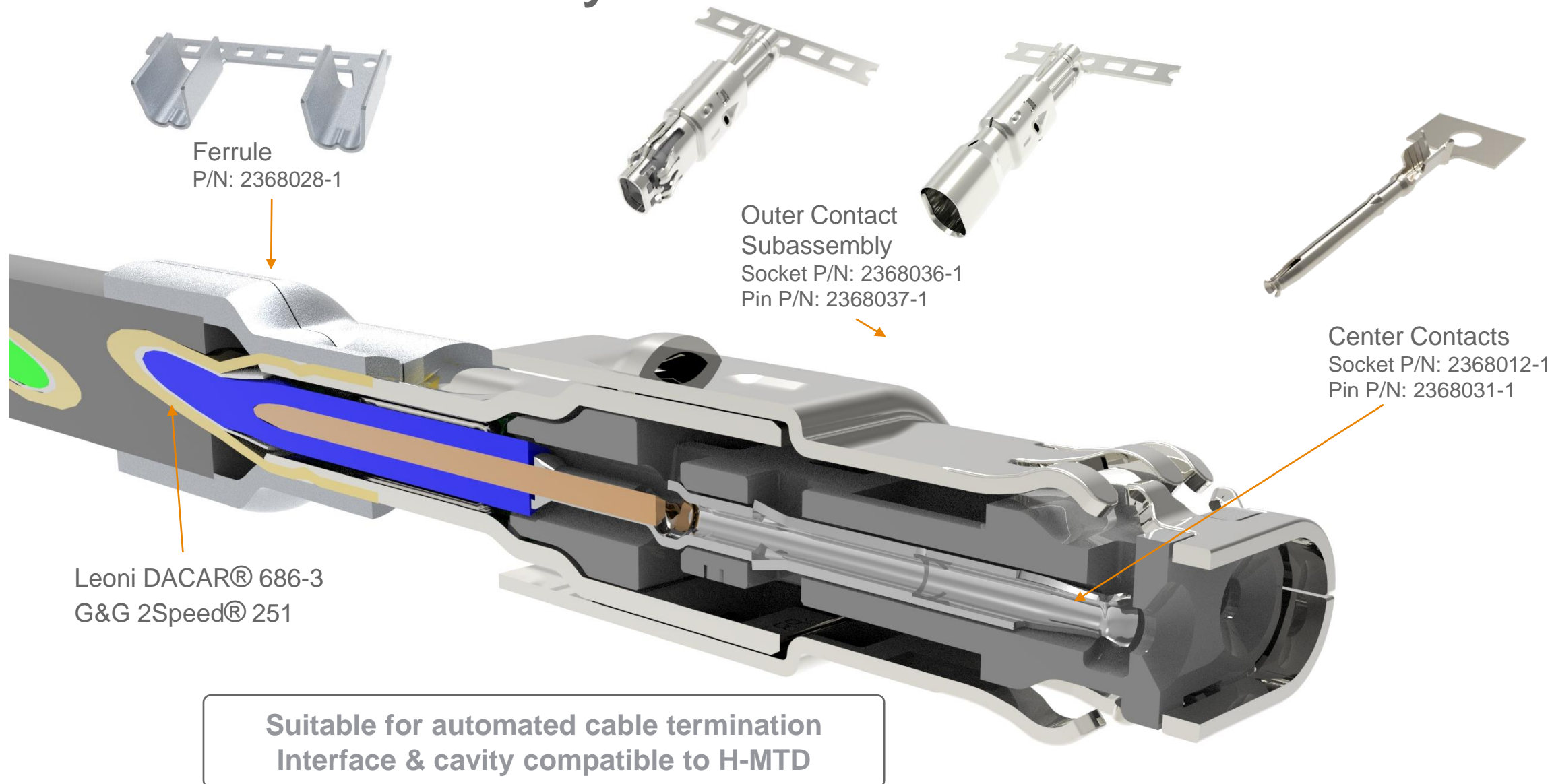
Female (PLUG) Terminal

Center
contact socket

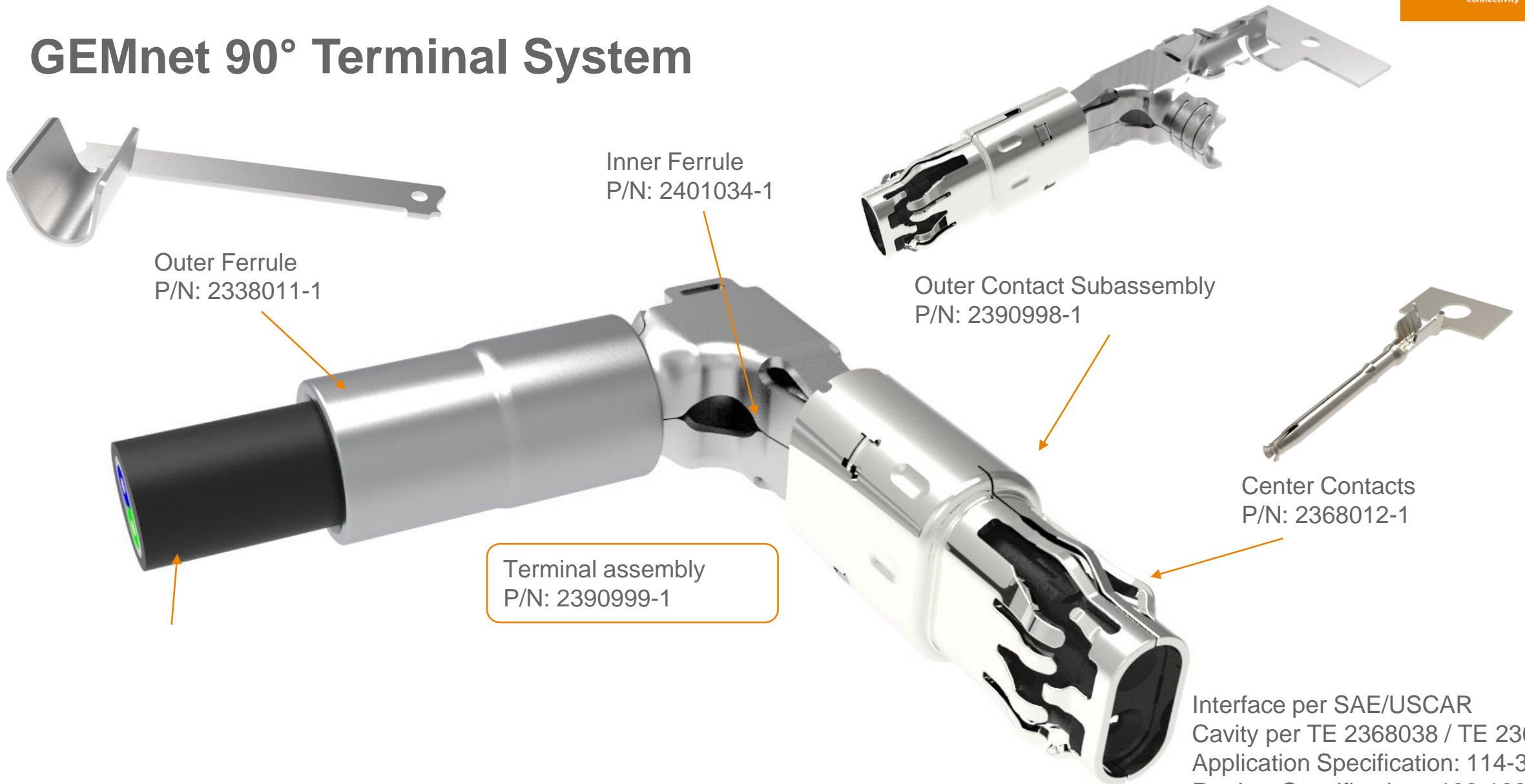
Outer contact plug
(outer terminals + dielectric)

Suitable for
automated cable
termination
Interface & cavity
compatible to
H-MTD

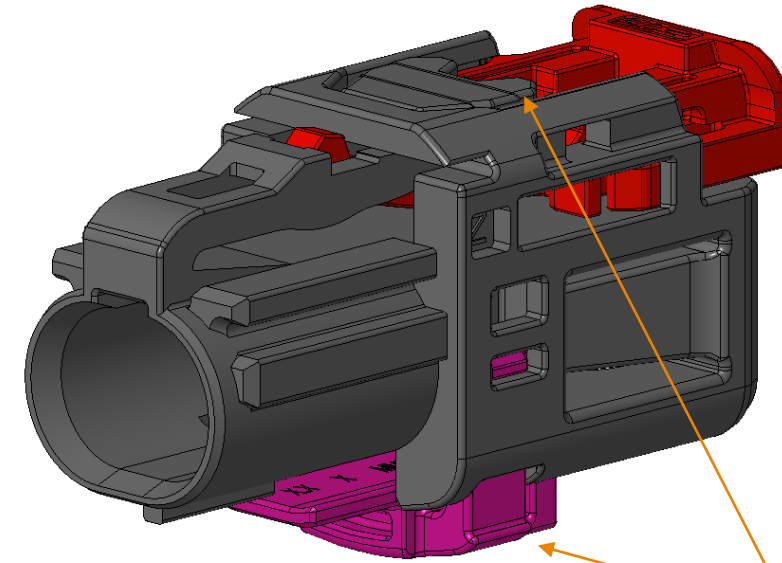
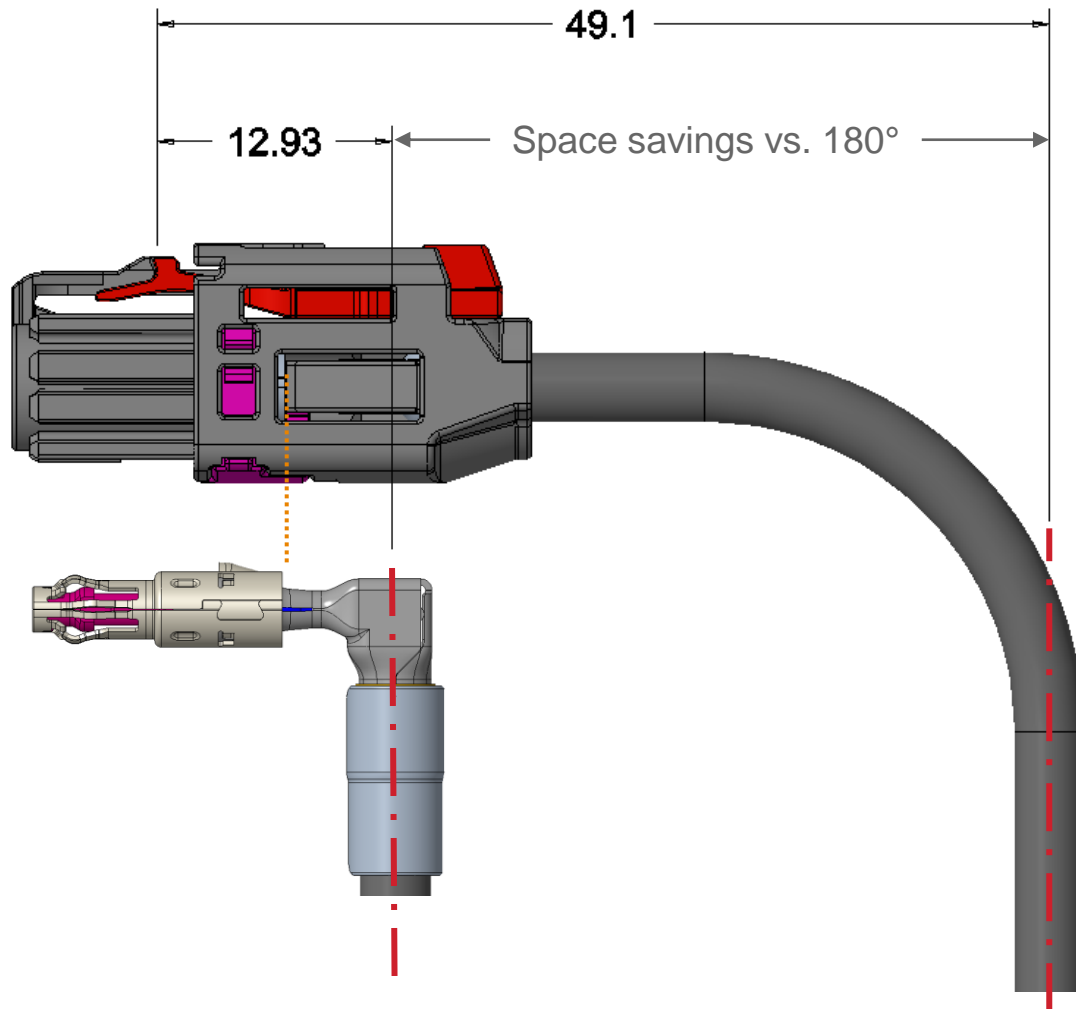
GEMnet 180° Terminal System



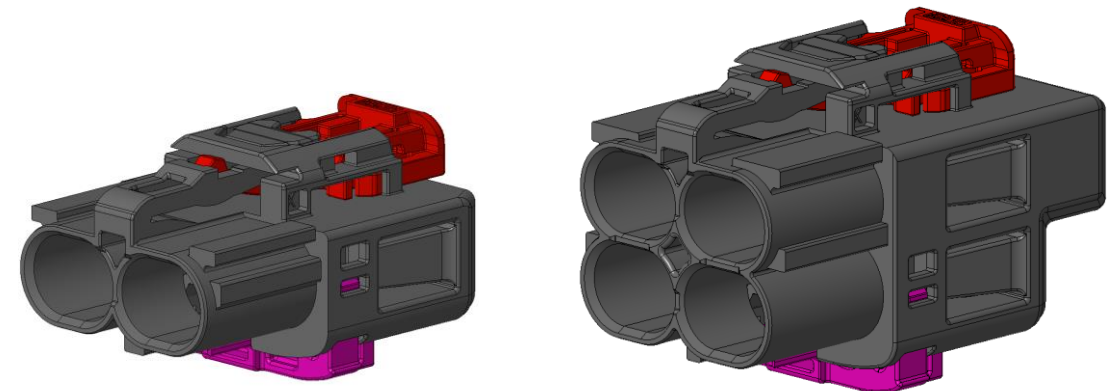
GEMnet 90° Terminal System



GEMnet 90° Connector Packaging



Connector latch, CPA, and TPA shared with GEMnet 180°



GEMnet Design Advantages

1. Forward Stop and Terminal Clocking Feature

1. Terminal & Forward Stop in 12 O-Clock Position
2. TPA cannot be closed when Terminal is in 6 O-Clock Position

2. Integrated Lead-in Terminal Feature

3. Integrated Stub Protection

4. Enhanced proven MATE-AX crimp design

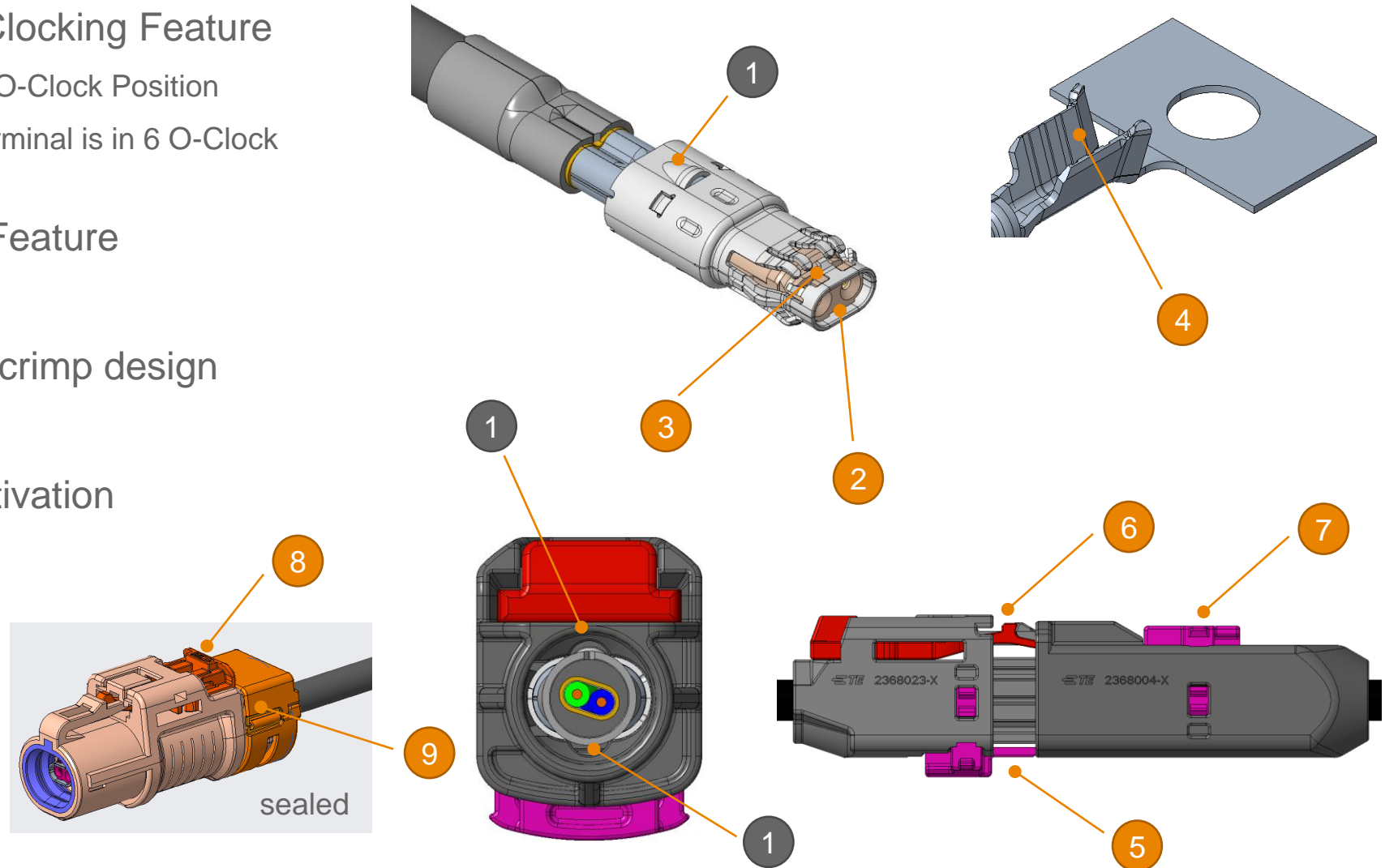
5. Plug TPA Mating Block

6. CPA protection from false activation

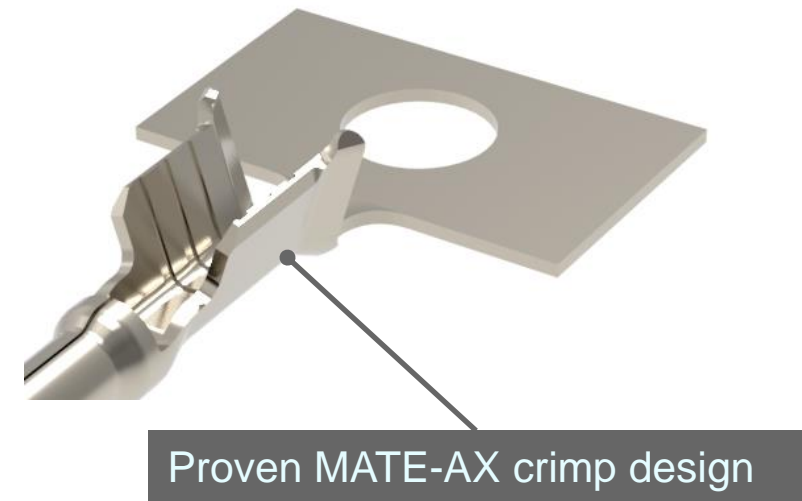
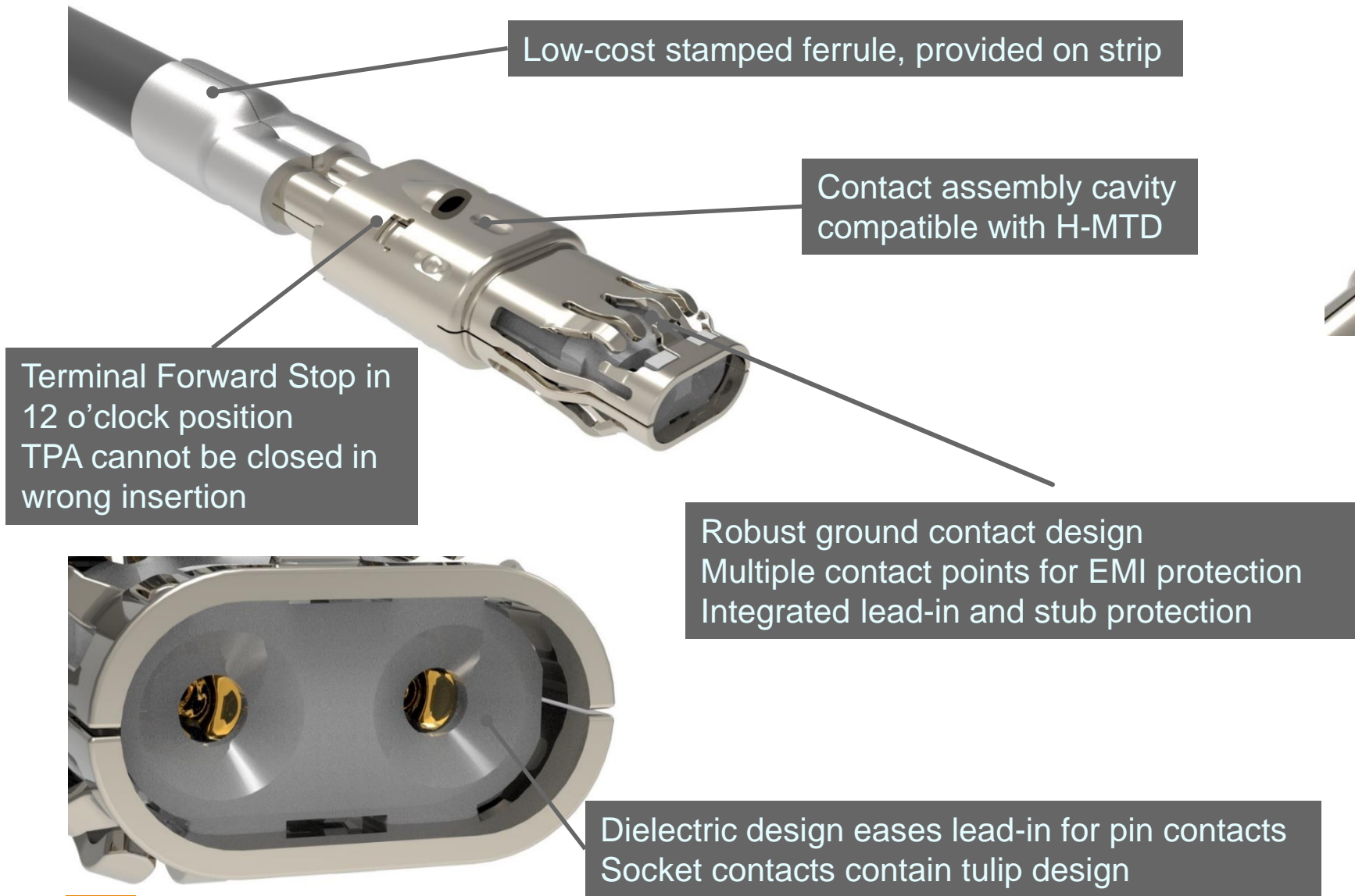
7. TPA function

8. Identical CPA to unsealed

9. Hinge design on rear cover (for maintenance purpose)



GEMnet – Terminal Advantages



Interface per SAE/USCAR
Cavity per TE 2368038 / TE 2368039
Application Specification: 114-32334
Product Specification: 108-160097

GEMnet – Header Portfolio (Tilted View)



1p 90° (2374901)



2p 90° (2374902)



4p 90° (2374900)



6p 90° (2397129)



Sealed 4p 90° (2374902)