

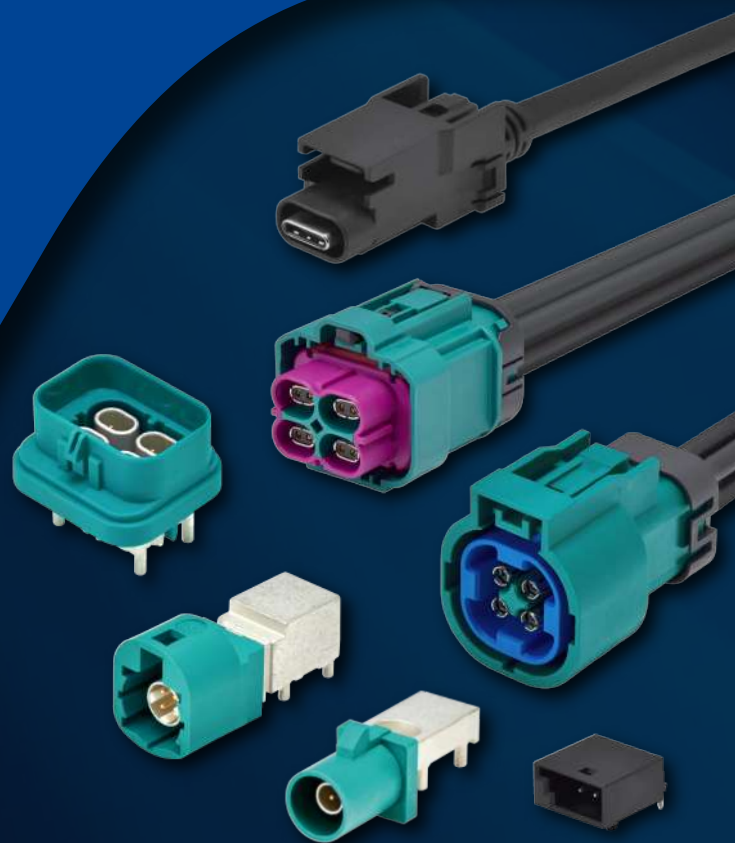


CHANT SINCERE CO., LTD.



# Automotive

- ▾ FAKRA
- ▾ Mini FAKRA
- ▾ CAR Ethernet
- ▾ HSD
- ▾ Type C
- ▾ MQSHeader



## Table Of Contents

About Chant Sincere .....	03
Quality Systems .....	05
Competencies & Technology .....	07
FAKRA Series .....	09
FAKRA Connector	
FAKRA Cable	
Mini FAKRA Series .....	33
Mini FAKRA Connector	
Mini FAKRA Cable	
CAR EtherNet Series .....	71
CAR EtherNet Connector	
CAR EtherNet Cable	
HSD Series .....	99
HSD Connector	
HSD Cable	
Automotive Type C .....	111
Automotive Type C Connector	
Automotive Type C Cable	
MQSHeader .....	117
MQSHeader Connector	





## About Chant Sincere

**Chant Sincere Co., Ltd.** was set up in 1985, with the management concept of "Integrity, Innovative, Quality, Sustainability" to design and manufacture connector and cable. Keep developing new innovative products and integrating vertically from R&D, tooling, assembly and quality control to meet the demands (quality-cost/delivery) from customers. Chant Sincere Co., Ltd. has been constructing several of product families to provide a total solution to customers.

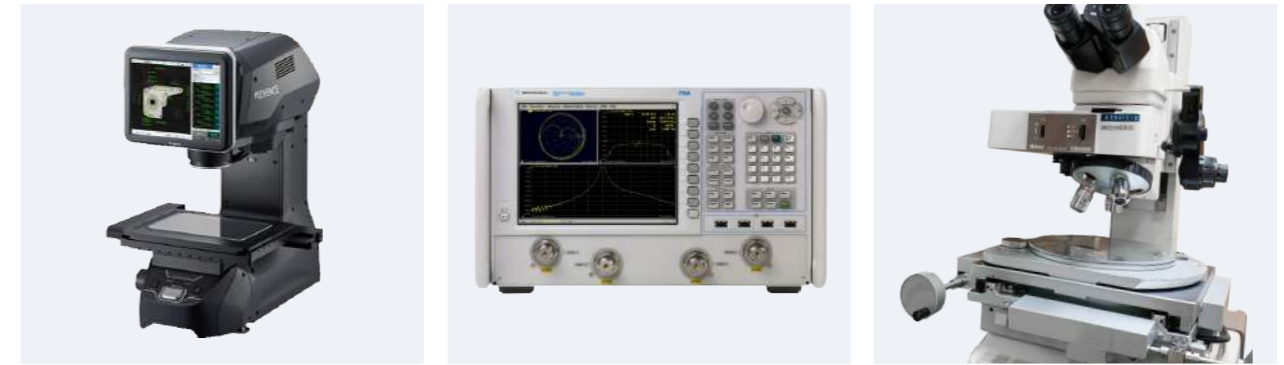
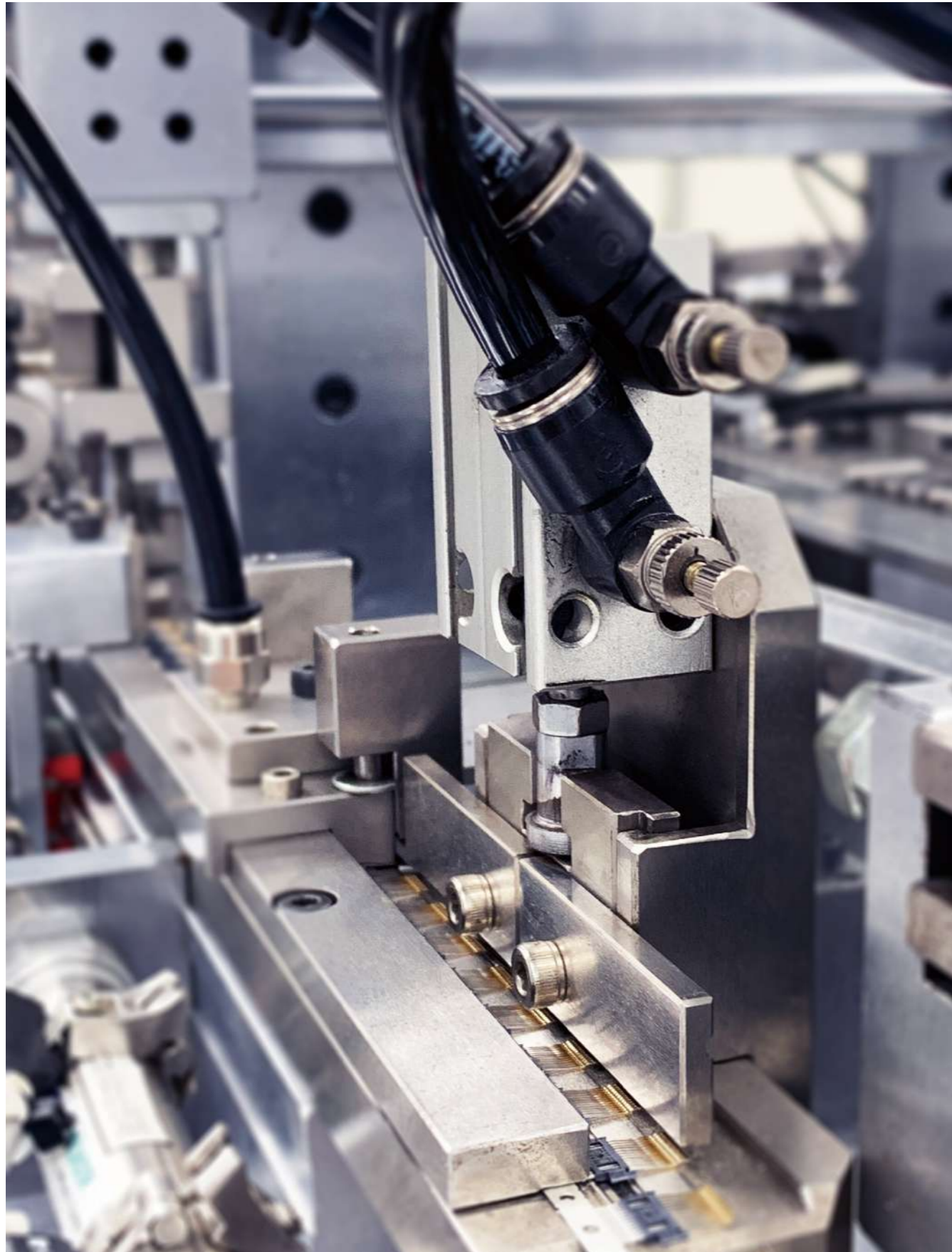
The connector and cable products are widely used in many different applications, such as Computing, Industrial & Automation, Telecommunication, Automotive, Waterproof, Consumer and Medical Industry.

**Chant Sincere** won the "National Bedrock Award" & "Small Giant Award" from Taiwan Connector maker competition and got many "Best Supplier Awards" from Global customers. We are focusing on improving our design and manufacture technology, and we have been applying for a lot of international patents for our products including I/O connector, Board to Board Connector, Waterproof Connector, Industrial Connector, Automotive Connector, Memory Card Connector and Adaptor, High Speed connector/cable (USB3.1), Audio & Video connector and cable (HDMI, DisplayPort)...etc.

Chant Sincere Co., Ltd. has been growing up as a global professional manufacturer for connector and cable.

### **The Core Competence of Chant Sincere Co.,Ltd. including.**

- Over 41 Years Manufacture Experience
- National Awards Rising Sun Awards/Best Supplier Awards
- Vertical Integration (Design, Tooling, Manufacturing, Test)
- Automation Capability
- Precise Tooling Center
- Wide Range of Product Line
- ODM/OEM Capability
- Customized Capability
- Quality System (ISO, IATF)
- Systematic Testing Process



## Quality Systems

Chant Sincere (hereinafter referred to as C.S.) Quality Assurance department meets our customers' quality requirements by practicing continual improvement in our quality assurance processes and increasing customers' satisfaction in the quality of our products.

The effectiveness of QA operation is certified by well-known organizations such as ISO9001 Quality Assurance Management System, ISO 14001 Environmental Management System, ISO/IATF 16949 for Automobile Industry Quality Management System, and ISO13485 Medical Devices Quality Management System, C.S. integrated supply chain and devoted staff has enabled us to build a solid foundation and core capability to better serve our customers. It is principal to always meet and exceed customer expectation by providing superior products and services. Our ultimate goal is to create value for our customers by building collaborative and mutually beneficial relationships.



ISO 14064-1 / ISO 9001 / ISO 14001 / IATF 16949 / ISO 13485



## Competencies & Technology

The R&D Center at Chant Sincere leads the industry in research, design, and manufacturing of numerous key parts. This center has successfully developed for both wired and wireless solutions for computer peripherals, communication systems, and automobiles/industrial/medical equipment. Our solid R&D team formed a strong foundation in advance manufacturing technology and superior quality control that also enabled high value adding service for customers.

USB type C connector is an example of the fruits of our research. This miniature and unidirectional interface provides many useful functions such as lighting data transfer rate up to 10 Gbps, DP ALT Mode high-definition video signal support, and brilliant 100W charging capability. Chant Sincere advanced the research further into higher specs such as USB 3.2 and USB 4.0 and offers customized solution for several of industrial applications. We delivered comprehensive solutions in bridging the diverse need for new interface and solve on-going product design issues for customers.

QSFP-DD is an ultra-fast interface that transmits data at 400Gbps speed.

At this speed, stringent requirement for signal integrity and operating temperature is inevitable which imposed huge challenges for the industry. At Chant Sincere, we implemented comprehensive computational software, state of art measuring equipment and eminent R&D capability to aid the solution delivering process. The analysis process includes simulation under CST MSW (Time Domain Simulation), ANSYS HFSS (Frequency Domain Simulation) for signal integrity as well as real-time measurement using test boards and PNA (up to 43.5GHz) to deliver quality reports for signal integrity (S-parameter, Gain compression, conversion gain/loss, noise level). We further performed simulation of its operating temperature using Icepak (Heat transfer and fluid flow simulator). This enabled the performance optimization for heat dissipation solution. With the above R&D skills we successfully delivered the desired professional service within the shortest time frame for our customers.



# FAKRA

## FAKRA Product Overview

The FAKRA Connectors are specially designed for automotive applications. They are based on the SMB Connector interface and comply with the standard for a uniform connector system established by FAKRA ( Automobile Expert Group ). Due to their special standardized locking system FAKRA Connector fulfill the high functional and safety requirements of today's automotive industry. The Coaxial connectors meet the specification of USCAR-18 and ISO 20860-1.

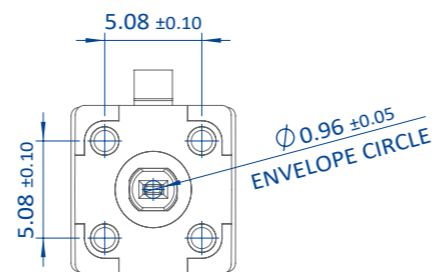
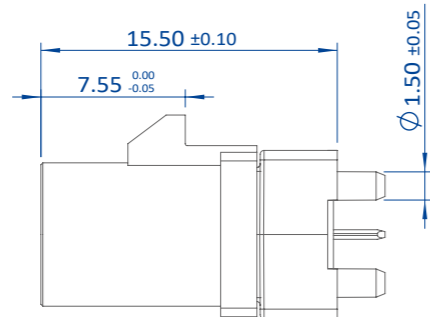
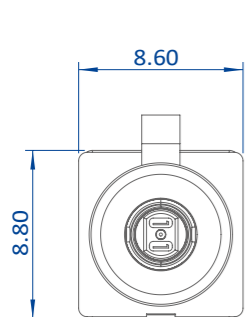
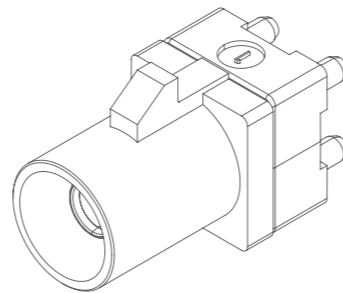
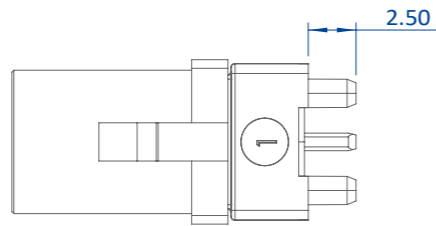
## Application

- GPS antenna
- Engine management system
- Analog / Digital radio
- Auxiliary heating
- TV / Video-displays
- Antenna
- Distributor box
- Accident data analysis
- Cellular Phone
- Remote control keyless entry
- Distance control
- Amplifier
- Air pressure control
- Navigation system

## Product Characteristics

- Mature mechanical and color coding system
- Highest possible mounting safety
- Efficient automated capabilities for further processing
- Rotating coaxial inert and cable in plastic housing

# FAKRA Plug



## Specification

Part No.	5410X0XXXXX
Contact	1-2
<b>Material</b>	
Housing	Thermoplastic, Black
Contact	Copper Alloy
Shell	Zinc Alloy
<b>Contact Plating</b>	
Under Plating	80 ~ 160u" Nickel
Contact Area	6u" Selective Gold
Solder Tails Area	100 ~ 200u" Tin(Lead Free)
<b>Electrical</b>	
Impedance	50 Ω
Operating Frequency	Up to 4 GHz
Return Loss ( typical )	≥ 29dB, DC to 1.0 GHz ≥ 26dB, 1.0 to 2.0 GHz ≥ 16dB, 2.0 to 4.0 GHz
Insertion Loss	≤ 0.1 dB
RF Leakage	> 55 dB
Insulation Resistance	1000 MΩ Min. @100 VDC
Center Contact Resistance	≤ 5 mΩ
Outer Contact Resistance	≤ 2.5 mΩ
Contact Current Max. ( DC )	≤ 1.0 ADC
Withstanding Voltage	Min. 750 V
Operating Voltage	≤ 335 V Max.
<b>Mechanical Characteristics</b>	
Engagement Force ( typical )	≤ 25 N
Separating Force ( typical )	Min. 2 N Max. 25 N
Mating Cycles	≥ 50
Retention Force Locked System	≥ 100 N
<b>Environmental</b>	
Operating Temp. Range	-40°C to +105°C
Temperature Change	SAE / USCAR-2
Vibration	USCAR-17
Shock	DIN IEC 60068-2-27
Humidity ( Cyclic )	SAE / USCAR-2

# FAKRA Plug Series

Product List	Description	Part no.	
	FAKRA Plug, Right Angle, PCB Center Height=0.24mm Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	Key Up	5410201001X
		Key Down	5410201002X
		Key Left	5410201003X
		Key Right	5410201004X
		FAKRA Plug, Right Angle, PCB Center Height=0.33mm Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	Key Up
	Key Down		5410301002X
	Key Left		5410301003X
	Key Right		5410301004X

# FAKRA Plug Series

Product List	Description	Part no.	
	FAKRA Plug, Vertical, PCB H=15.50mm Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	Solder 0.96mm	5410102001X
		Solder 0.50mm	5410103001X
	FAKRA Plug, Right Angle, PCB Center Height=0.28mm Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	Key Left	5410401001X
	FAKRA Twin Plug, Right Angle, PCB Center Height=0.33mm Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	Key Up	5410302XXXX
		Key Down	5410302XXXX
	FAKRA Plug, Right Angle, 1x1, PCB CH=14.4mm (Stacked Type) Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z		5410501001X
	FAKRA Plug, Right Angle, 1x2, PCB CH=14.4mm (Stacked Type) Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z		5410502001X

X : Coding option refer to page 18 - 22

# FAKRA Plug Series

Product List	Description	Part no.
	SMB-CM Board Mount FAKRA Connector	51802010010
	SMB Jack 15.86mm DIP	51803010010
	FAKRA Floating Socket SMT	541110100X0
 IP Rating	SMB-CM to FAKRA Plug Adapter Mated Waterproof Coding:A,F,Z	7014101001X
 IP Rating	SMB-CM to FAKRA Plug Adapter Un-Mated Waterproof Coding:A,F,Z	7014102001X



## FAKRA Plug Coding

Coding	Vertical Plug	Right Angle Plug	Color	RAL
A			Jet Black	sim.9005
B			Cream White	sim.9001
C			Signal Blue	sim.5005
D			Claret Violet	sim.4004
E			Leaf Green	sim.6002
F			Nut Brown	sim.8011
G			Blue Gray	sim.7031

## FAKRA Plug Coding

Coding	Vertical Plug	Right Angle Plug	Color	RAL
H			Heather Violet	sim.4003
I			Beige	sim.1001
K			Curry	sim.1027
L			Camine Red	sim.3002
M			Pastel Orange	sim.2003
N			Pastel Green	sim.6019
Z			Water Blue	sim.5021

## FAKRA Plug Coding

Coding	Twin Right Angle Plug	Color	RAL
A		Black	sim.9005
B		White	sim.9001
C		Blue	sim.5005
D		Bordeaux	sim.4004
E		Green	sim.6002
F		Brown	sim.8011
G		Grey	sim.7031

## FAKRA Plug Coding

Coding	Twin Right Angle Plug	Color	RAL
H		Violet	sim.4003
I		Beige	sim.1001
K		Curry	sim.1027
L		Carmine Red	sim.3002
M		Pastel Orange	sim.2003
N		Pastel Green	sim.6019
Z		Water Blue	sim.5021

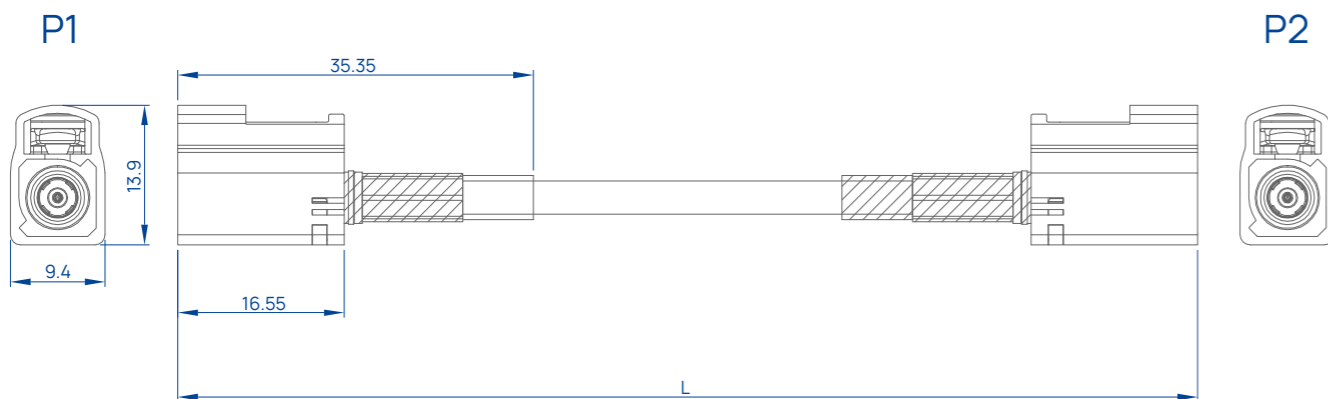
## FAKRA Plug Coding

Coding	Right Angle Plug 1x1	Right Angle Plug 1x2	Color	RAL
A			Jet Black	sim.9005
B			Cream White	sim.9001
C			Signal Blue	sim.5005
D			Claret Violet	sim.4004
E			Leaf Green	sim.6002
F			Nut Brown	sim.8011
G			Blue Gray	sim.7031

## FAKRA Plug Coding

Coding	Right Angle Plug 1x1	Right Angle Plug 1x2	Color	RAL
H			Heather Violet	sim.4003
I			Beige	sim.1001
K			Curry	sim.1027
L			Camine Red	sim.3002
M			Pastel Orange	sim.2003
N			Pastel Green	sim.6019
Z			Water Blue	sim.5021

# FAKRA Jack/Plug Cable



## Specification

Part No.	141XX0XXXXX
Contact	1-2
<b>Material</b>	
Insulator	PBT
Contact	Cu-Ni-Si Alloy
Outer Contact	Ziue Alloy / SUS
<b>Contact Plating</b>	
Contact Area	30u" Selective Gold
<b>Electrical</b>	
Impedance	50 Ω
Frequency	DC to 3 GHz
Insertion Loss	≤ -2 dB @ 3.0 GHz (Depence on Cable Type)
Insulation Resistance	≥ 100 MΩ
Resistance	≤ 10 mΩ
<b>Mechanical</b>	
Mating Cycles	≥ 25 Cycles
Engagement Force	≤ 25 N
Disengagement Force	≥ 2 N
Retention Force Latch	≥ 110 N
Coding Efficiency	≥ 80 N
Temperature Range	-40°C to +105°C

## FAKRA Cable Series


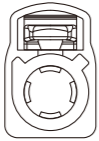





Product List	Description	Part no.
	FAKRA, Jack Cable, Straight Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1410301XXXX
	FAKRA, Jack Cable, Straight (High Reliability) Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1410303XXXX
	FAKRA, Jack Cable, Right Angle (High Reliability) Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1410801XXXX
	FAKRA, Jack Cable, Straight to Right Angle Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1410201XXXX
	FAKRA, Jack to Plug Cable, Straight Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1410503XXXX
	FAKRA, Jack to Plug Cable, Straight (Long Body) Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1410504XXXX
	FAKRA, Jack to Plug 1x2 Cable, Straight (Long Body) Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1410505XXXX
	FAKRA, Jack 1x2 to Jack Cable, Straight Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1410304XXXX
	FAKRA, Jack 1x2 to Plug Cable, Straight Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1410507XXXX

## FAKRA Cable Series ( IP Rating )

Product List	Description	Part no.
	FAKRA, Jack Cable, Straight Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1410102XXXX
	FAKRA, Jack Cable, Right Angle Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1413501XXXX
	FAKRA, Jack Cable, Straight to Right Angle Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1413301XXXX
	FAKRA, Jack to Plug Cable, Straight Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1413201XXXX
	FAKRA, Plug to I-Pex MHF Cable, Straight Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1413101XXXX
	FAKRA, Plug to I-Pex MHF 4L Cable Straight Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1413102XXXX
	FAKRA, Plug (Front Screw) to I-Pex MHF Cable, Straight Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1413105XXXX

X : Coding option refer to page 27 - 31

## FAKRA Cable Coding

Coding	Jack	Color	RAL
A		Jet Black	sim.9005
B		Cream White	sim.9001
C		Signal Blue	sim.5005
D		Claret Violet	sim.4004
E		Leaf Green	sim.6002
F		Nut Brown	sim.8011
G		Blue Grey	sim.7031

## FAKRA Cable Coding

Coding	Jack	Color	RAL
H		Heather Violet	sim.4003
I		Beige	sim.1001
K		Curry	sim.1027
L		Camine Red	sim.3002
M		Pastel Orange	sim.2003
N		Pastel Green	sim.6019
Z		Water Blue	sim.5021

## FAKRA Cable Coding (Long Body)

Coding	Plug 1x1	Plug 1x2	Color	RAL
A			Jet Black	sim.9005
B			Cream White	sim.9001
C			Signal Blue	sim.5005
D			Claret Violet	sim.4004
E			Leaf Green	sim.6002
F			Nut Brown	sim.8011
G			Blue Gray	sim.7031

## FAKRA Cable Coding (Long Body)

Coding	Plug 1x1	Plug 1x2	Color	RAL
H			Heather Violet	sim.4003
I			Beige	sim.1001
K			Curry	sim.1027
L			Camine Red	sim.3002
M			Pastel Orange	sim.2003
N			Pastel Green	sim.6019
Z			Water Blue	sim.5021

# FAKRA Cable Coding (Long Body)

Coding	Jack 1x1	Jack 1x2	Color	RAL
A			Jet Black	sim.9005
B			Cream White	sim.9001
C			Signal Blue	sim.5005
D			Claret Violet	sim.4004
H			Heather Violet	sim.4003
I			Beige	sim.1001
N			Pastel Green	sim.6019
Z			Water Blue	sim.5021





# Mini FAKRA

## Mini FAKRA Product Overview

Mini FAKRA is the High Performing System of Coaxial interface for the automotive industry. For frequencies up to 9 GHz ( 20 Gbps ) per lan , Its innovative design addresses the growing requirement for cost savings as well as reduced weight and size.

The space savings of up to 80 % compared to conventional FAKRA connectors, the Mini FAKRA connector system allows various modules to be accommodated in the smallest possible footprint.

Best cost is based on fully stamped and formed manufacturing processes and automated connector mounting and cable assembly. With Mini FAKRA the customer can count on an interface that accommodates future vehicle networks, applications and protocols.

The priority of autonomous driving and driver assistance systems is to ensure safety. It is required to determine exact positions, to continuously calculate routes and to detect and classify objects. High data volumes from several cameras, diverse sensors and navigation sources must be combined and transported for this purpose – in real time.

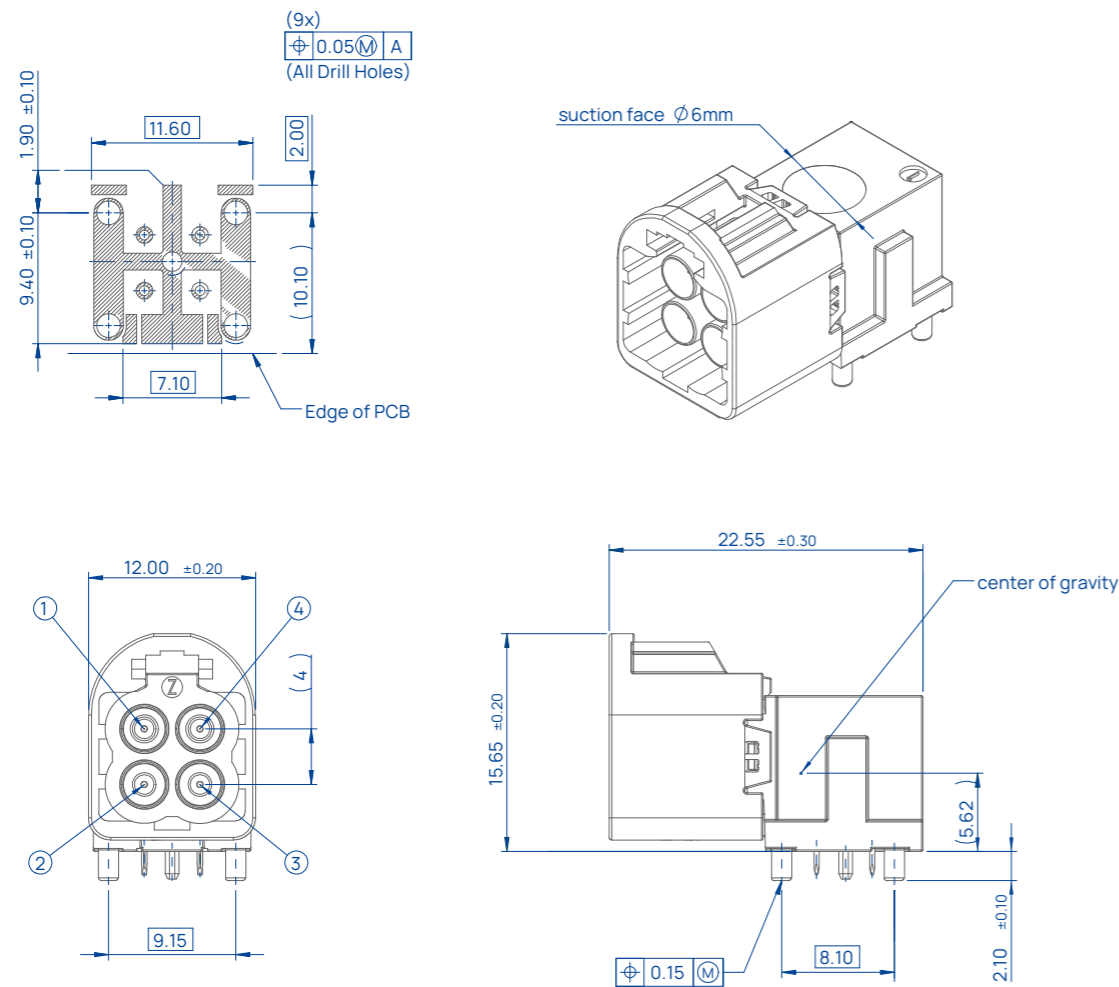
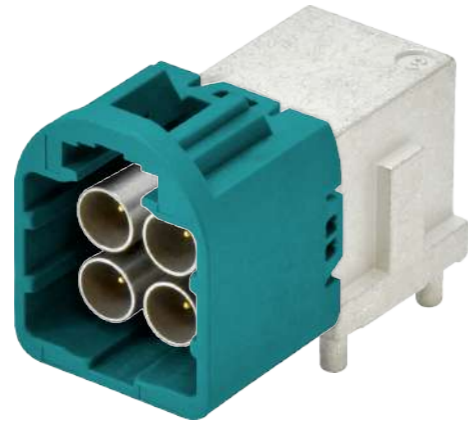
## Application

- Autonomous driving
- Driver assistance systems
- Navigation
- Infotainment
- Rear seat entertainment
- Wireless Gigabit

## Product Characteristics

- High frequency data transfer
- Small dimensions – optimized used of space
- Highest mechanical robustness
- Modular system – saving installation space by as much as 80%
- Cost optimized
- Real-time data transmission

# Mini FAKRA Plug







## Specification

Part No.	542010XXXXX
Contact	1-4
<b>Material</b>	
Dielectric	LCP
Housing	PA
Center Contacts	Brass
Outer Contact	Interface: Stainless Steel PCB: Zamak Sheet: Brass
<b>Contact Plating</b>	
Contact Area	6 ~ 30u" Au
Solder Tails Area	80 ~ 160u" Tin(Matte)
<b>Electrical</b>	
Impedance	50 Ω
Frequency	DC to 9 GHz
Return Loss	≥ 25 dB, DC to ≤ 3GHz; ≥ 20 dB, > 3GHz to ≤ 6GHz; ≥ 12 dB, > 6GHz to ≤ 9GHz
Insertion Loss	≤ 0.1 × √f(GHz) dB
Insulation Resistance	≥ 1000 MΩ
Signal Contact Resistance	≤ 10 mΩ
<b>Mechanical Characteristics</b>	
Mating Cycles	≥ 25 Cycles
Engagement Force	≤ 45 N
Disengagement Force	≥ 5 N
Retention Force Latch	≥ 110 N
Coding Efficiency	≥ 150 N
Temperature Range	-40°C to +105°C

## Mini FAKRA Plug Series A Type

Product List	Description	Part no.	
	Mini FAKRA Plug, A Type, Right Angle, 1x1, PCB Coding: A,B,C,D,E,F,G,H,J,K,N,Z	Key Up	5420101001X
		Key Left	5420101002X
		Key Down	5420101003X
		Key Right	5420101004X
	Mini FAKRA Plug, A Type, Right Angle, 1x2, PCB Coding: A,B,C,D,E,F,G,H,J,K,N,Z	Key Up	5420103001X
		Key Down	5420103002X

## Mini FAKRA Plug Series A Type

Product List	Description	Part no.	
	Mini FAKRA Plug, A Type, Right Angle, 2x2, PCB Coding: A,B,C,D,E,F,G,Z	Key Up	5420102001X
		Key Left	5420102002X
		Key Down	5420102003X
		Key Right	5420102004X



X : Coding option refer to page 41 - 43

## Mini FAKRA Plug Series A Type

Product List	Description	Part no.
	Mini FAKRA Plug, A Type, Vertical, 1x1, PCB Coding:A,B,C,D,E,F,G,H,J,K,N,Z	5420203001X
	Mini FAKRA Plug, A Type, Vertical, 1x2, PCB Coding:A,B,C,D,E,F,G,H,J,K,N,Z	5420204001X
	Mini FAKRA Plug, A Type, Vertical, 2x2, PCB Coding:A,B,C,D,E,F,G,Z	5420201001X
		5420205001X
	Mini FAKRA Plug, A Type, Vertical, 1x1 +MQS 2Pin, PCB Coding:A,B,C,D,E,F,G,H,J,K,N,Z	5420501001X
	Mini FAKRA Plug, A Type, Right Angle, 1x1 +MQS 2Pin, PCB Coding:A,B,C,D,E,F,G,H,J,K,N,Z	5420502001X


X : Coding option refer to page 41 - 44

## Mini FAKRA Plug Series B Type

Product List	Description	Part no.	
	Mini FAKRA Plug, B Type, Right Angle, 1x2, PCB Coding:A,B,C,D,E,F,Z	Key Up With Metal Plate	5422603001X
		Key Down With Metal Plate	5422603002X
		Key Up W/O Metal Plate	5422603003X
		Key Down W/O Metal Plate	5422603004X
	Mini FAKRA Plug, B Type, Right Angle, 2x2, PCB Coding:A,B,C,D,E,F,Z	Key Up	5422601001X
		Key Down	5422601002X







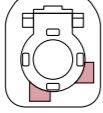
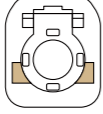



X : Coding option refer to page 45 - 46

## Mini FAKRA Plug Series A Type ( IP Rating )

Product List	Description	Part no.
 IP Rating	Mini FAKRA Plug, A Type, Vertical, 2x2, PCB Coding:A,B,C,D,E,F,G,H,J,K,N,Z	5420202001X

X : Coding option refer to page 47 - 48


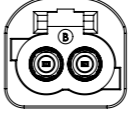




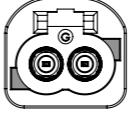

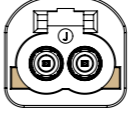
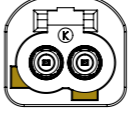
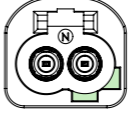
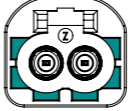
## Mini FAKRA Plug Coding

Coding	Vertical / Right Angle A Type 1x1	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Platinum Grey	sim.7036
H		Light Pink	sim.3015
J		Beige	sim.1001
K		Curry	sim.1027
N		Yellow Green	sim.6019
Z		Water Blue	sim.5021

### Supported Protocols

- GMSL / GMSL2 / GMSL3
- MIPI
- FPD-Link
- APIX3

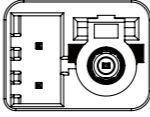
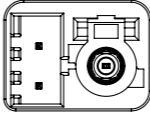
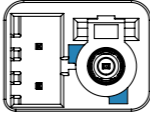
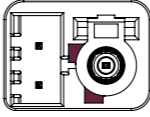
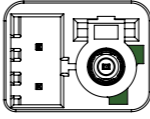
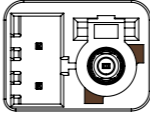
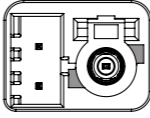
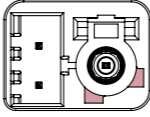
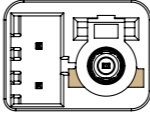
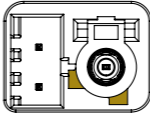
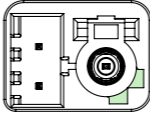
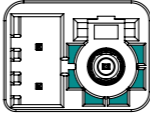
## Mini FAKRA Plug Coding

Coding	Vertical / Right Angle A Type 1x2	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Platinum Grey	sim.7036
H		Light Pink	sim.3015
J		Beige	sim.1001
K		Curry	sim.1027
N		Pastel Green	sim.6019
Z		Water Blue	sim.5021

## Mini FAKRA Plug Coding

Coding	Vertical / Right Angle A Type 2x2	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Platinum Grey	sim.7036
Z		Water Blue	sim.5021

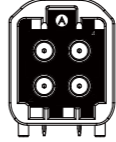
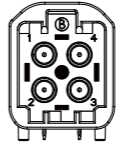
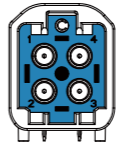
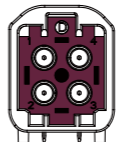
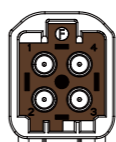
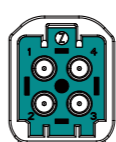
## Mini FAKRA Plug Coding

Coding	Vertical / Right Angle A Type 1x1+MQS 2Pin	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Platinum Grey	sim.7036
H		Light Pink	sim.3015
J		Beige	sim.1001
K		Curry	sim.1027
N		Pastel Green	sim.6027
Z		Water Blue	sim.5021

## Mini FAKRA Plug Coding

Coding	Right Angle B Type 1x2	Color	RAL
A		Black	sim.9005
B		White	sim.9010
C		Blue	sim.5012
D		Bordeaux Violet	sim.4004
E		Green	sim.6017
F		Brown	sim.8011
Z		Water Blue	sim.5021

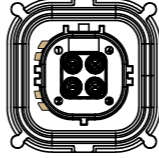
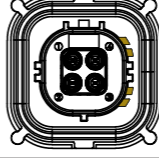
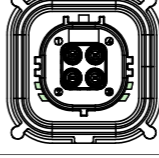
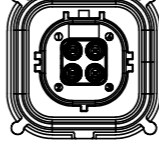
## Mini FAKRA Plug Coding

Coding	Right Angle B Type 2x2	Color	RAL
A		Black	sim.9005
B		White	sim.9010
C		Blue	sim.5012
D		Bordeaux Violet	sim.4004
E		Green	sim.6017
F		Brown	sim.8011
Z		Water Blue	sim.5021

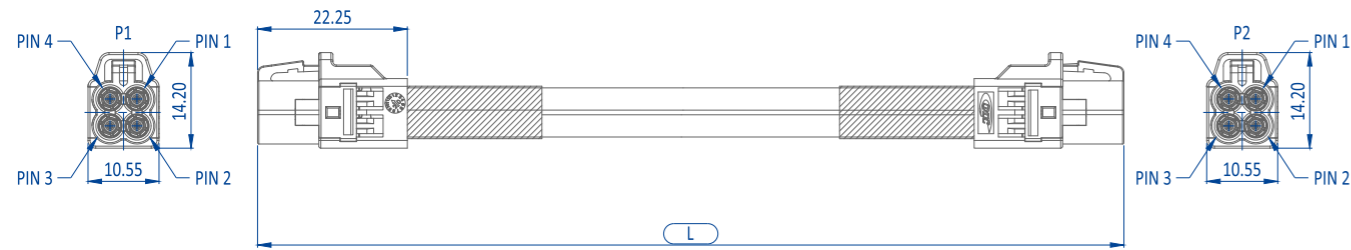
## Mini FAKRA Plug Coding ( IP Rating )

Coding	Sealed Vertical A Type 2x2	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Platinum Grey	sim.7036
H		Light Pink	sim.3015

## Mini FAKRA Plug Coding ( IP Rating )

Coding	Sealed Vertical A Type 2x2	Color	RAL
J		Beige	sim.1001
K		Curry	sim.1027
N		Pastel Green	sim.6027
Z		Water Blue	sim.5021

# Mini FAKRA Jack/Plug Cable



## Specification

Part No.	142XXXXXXXXX
Contact	1-4
<b>Material</b>	
Insulator	PA / PBT
Contact	Cu-Ni-Si Alloy
Outer Contact	Cu-Ni-Si Alloy
<b>Contact Plating</b>	
Contact Area	30u" Selective Gold
<b>Electrical</b>	
Impedance	50 Ω
Frequency	DC to 9.0 GHz
Insertion Loss	Depence On Customer Define
Insulation Resistance	≥ 100 MΩ
Resistance	≤ 10 mΩ
<b>Mechanical</b>	
Mating Cycles	≥ 25 Cycles
Engagement Force	≤ 25 N
Disengagement Force	≥ 2 N
Retention Force Latch	≥ 110 N
Coding Efficiency	≥ 40 N
Temperature Range	-40°C to +105°C

## Mini FAKRA Cable Series A Type

Product List	Description	Part no.
	Mini FAKRA, A Type Jack Cable, Straight, 2x2 Coding:A,B,C,D,E,F,Z	1420104XXXX
	Mini FAKRA, A Type, Jack to FAKRA Jack x4 Cable, Straight Mini FAKRA Coding:A,B,C,D,E,F,Z FAKRA Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1420401XXXX
	Mini FAKRA, A Type, Jack to FAKRA Plug x4 Cable, Straight Mini FAKRA Coding:A,B,C,D,E,F,Z FAKRA Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1420501XXXX
	Mini FAKRA, A Type, Jack to SMA Male Plug x4 Cable, Straight Mini FAKRA Coding:A,B,C,D,E,F,Z	1420201XXXX
	Mini FAKRA, A Type, Jack to SMA Female Plug x4 Cable, Straight Mini FAKRA Coding:A,B,C,D,E,F,Z	1420301XXXX

## Mini FAKRA Cable Series A Type

Product List	Description	Part no.
	Mini FAKRA, A Type, Jack to Jack Cable, Straight, 1x1 Coding:A,B,C,D,E,F,G,H,J,K,Z	1420102XXXX
	Mini FAKRA, A Type, Jack to FAKRA Jack Cable, Straight, 1x1 Mini FAKRA Coding:A,B,C,D,E,F,G,H,J,K,Z FAKRA Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1420405XXXX
	Mini FAKRA, Double A Type Jack to FAKRA Jack x2 Cable, Straight Mini FAKRA Double Coding:A,B,C,D,E,F,G,H,J,K,N,Z FAKRA Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1420404XXXX
	Mini FAKRA, A Type Jack Cable, 1x1 +MQS 2Pin, Straight Coding:A,B,C,D,E,F,G,H,J,K,Z	1420801XXXX
	Mini FAKRA, A Type Plug Cable, 2x2 +Clip Slot, Straight Coding:A,B,C,D,E,F,G,Z	1422101XXXX
	Mini FAKRA Cable, A Type, Plug to Jack, 1x1, Straight Coding:A,B,C,D,E,F,G,H,J,K,Z	1421307XXXX
	Mini FAKRA Cable, A Type, Plug to Jack, 1x2, Straight Coding:A,B,C,D,E,F,G,H,J,K,Z	1421306XXXX

X : Coding option refer to page 57 - 61

# Mini FAKRA Cable Series B Type

Product List	Description	Part no.
	Mini FAKRA, B Type Jack Cable, Straight, 2x2 Coding:A,B,C,D,E,F,Z	1424104XXXX
	Mini FAKRA, B Type, Jack to FAKRA Jack x4 Cable, Straight Mini FAKRA Coding:A,B,C,D,E,F,Z FAKRA Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1424502XXXX
	Mini FAKRA, B Type, Jack to FAKRA Plug x4 Cable, Straight Mini FAKRA Coding:A,B,C,D,E,F,Z FAKRA Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	1424402XXXX
	Mini FAKRA, B Type, Jack to SMA Male Plug x4 Cable, Straight Mini FAKRA Coding:A,B,C,D,E,F,Z	1424601XXXX
	Mini FAKRA, B Type, Jack to SMA Female Plug x4 Cable, Straight Mini FAKRA Coding:A,B,C,D,E,F,Z	1424302XXXX

X : Coding option refer to page 62



## Mini FAKRA Cable Series A Type ( IP Rating )

Product List	Description	Part no.
 IP Rating	Mini FAKRA, A Type Jack Cable, Straight, 2x2 Coding:A,B,C,D,E,F,G,H,J,K,N,Z	1422001XXXX
 IP Rating	Mini FAKRA, A Type Plug Cable, Straight, 2x2 Coding:A,B,C,D,E,F,G,H,J,K,N,Z	1422101XXXX
 IP Rating	Mini FAKRA, A Type, Jack to Plug Cable, Straight, 2x2 Coding:A,B,C,D,E,F,G,H,J,K,N,Z	1420108XXXX
 IP Rating	Mini FAKRA, A Type Plug For Panel Cable, Straight, 2x2 Coding:A,B,C,D,E,F,G,H,Z	1422201XXXX

X : Coding option refer to page 63 - 66

## Mini FAKRA Cable Series B Type ( IP Rating )


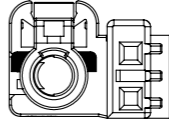

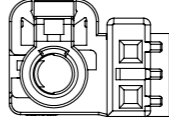
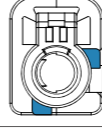
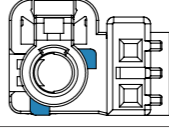
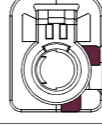
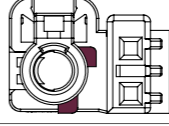
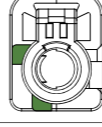
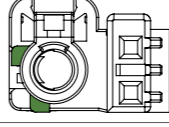
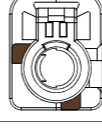
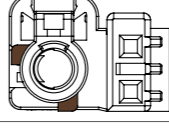
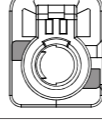
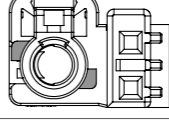
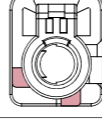
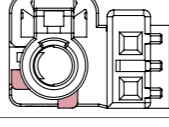
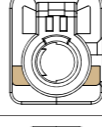
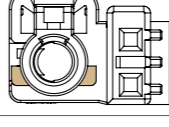
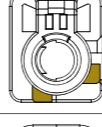
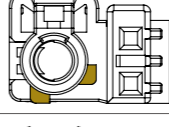
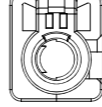
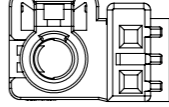
Product List	Description	Part no.
 IP Rating	Mini FAKRA, B Type Jack Cable, Straight, 2x2 Coding:A,B,C,D,E,F,G,H,Z	1423301XXXX
 IP Rating	Mini FAKRA, B Type Plug Cable, Straight, 2x2 Coding:A,B,C,D,E,F,G,H,Z	1423201XXXX
 IP Rating	Mini FAKRA, B Type, Jack to Plug Cable, Straight, 2x2 Coding:A,B,C,D,E,F,G,H,Z	1423101XXXX
 IP Rating	Mini FAKRA, B Type Plug For Panel Cable, Straight, 2x2 Coding:A,B,C,D,E,F,G,H,Z	1422801XXXX

X : Coding option refer to page 67 - 69

## Mini FAKRA Cable Coding

Coding	Jack A Type 2x2	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
Z		Water Blue	sim.5021

## Mini FAKRA Cable Coding

Coding	Jack A Type 1x1	Jack A Type 1x1 + MQS 2Pin	Color	RAL
A			Jet Black	sim.9005
B			Pure White	sim.9010
C			Light Blue	sim.5012
D			Bordeaux Violet	sim.4004
E			May Green	sim.6017
F			Nut Brown	sim.8011
G			Platinum Grey	sim.7036
H			Light Pink	sim.3015
J			Beige	sim.1001
K			Curry	sim.1027
Z			Water Blue	sim.5021

## Mini FAKRA Cable Coding

Coding	Jack A Type 1x2	Color	RAL
A		Black	sim.9005
B		White	sim.9010
C		Blue	sim.5012
D		Claret Violet	sim.4004
E		Green	sim.6017
F		Brown	sim.8011
G		Grey	sim.7036
H		Light Pink	sim.3015
J		Beige	sim.1001
K		Curry	sim.1027
N		Pastel Green	sim.6019
Z		Water Blue	sim.5021

## Mini FAKRA Cable Coding

Coding	Plug A Type 1x1	Plug A Type 1x2	Color	RAL
A			Jet Black	sim.9005
B			Pure White	sim.9010
C			Light Blue	sim.5012
D			Bordeaux Violet	sim.4004
E			May Green	sim.6017
F			Nut Brown	sim.8011
G			Platinum Grey	sim.7036
H			Light Pink	sim.3015
J			Beige	sim.1001
K			Curry	sim.1027
Z			Water Blue	sim.5021

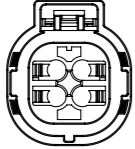
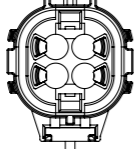
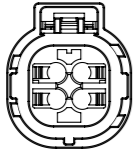
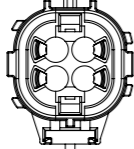
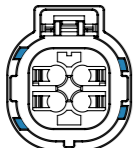
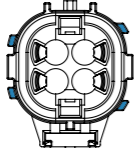
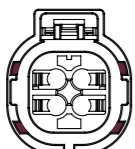
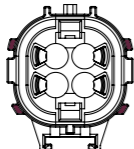
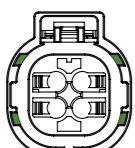
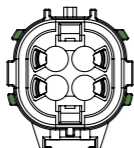

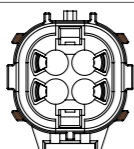
## Mini FAKRA Cable Coding

Coding	Plug A Type 2x2	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Platinum Grey	sim.7036
Z		Water Blue	sim.5021

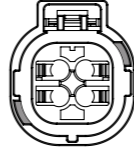
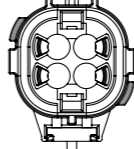
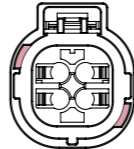
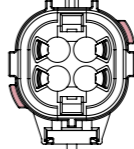
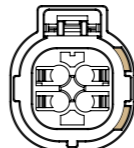
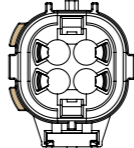
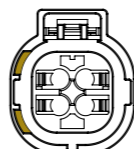
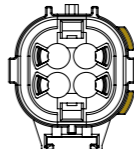
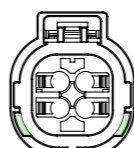
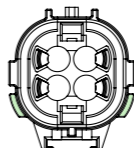
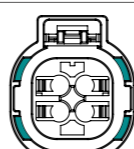
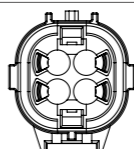
## Mini FAKRA Cable Coding

Coding	Jack B Type 2x2	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
Z		Water Blue	sim.5021

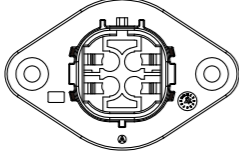
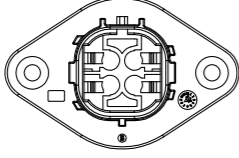
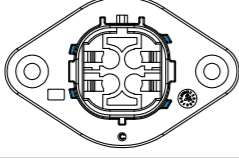
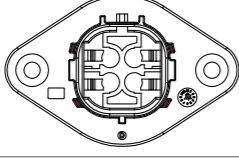
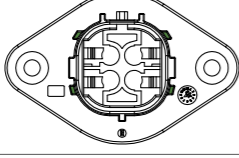
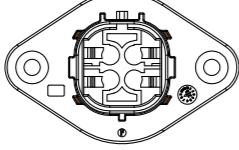
## Mini FAKRA Cable Coding ( IP Rating )

Coding	Sealed Jack A Type 2x2	Sealed Plug A Type 2x2	Color	RAL
A			Jet Black	sim.9005
B			Pure White	sim.9010
C			Light Blue	sim.5012
D			Claret Violet	sim.4004
E			May Green	sim.6017
F			Nut Brown	sim.8011

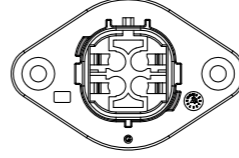
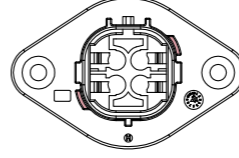
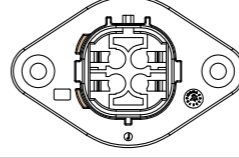
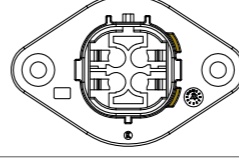
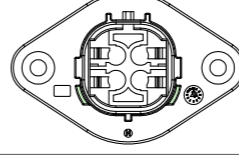
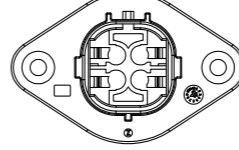
## Mini FAKRA Cable Coding ( IP Rating )

Coding	Sealed Jack A Type 2x2	Sealed Plug A Type 2x2	Color	RAL
G			Platinum Grey	sim.7036
H			Light Pink	sim.3015
J			Beige	sim.1001
K			Curry	sim.1027
N			Pastel Green	sim.6019
Z			Water Blue	sim.5021

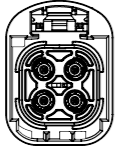
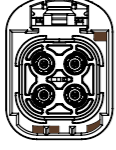
## Mini FAKRA Cable Coding ( IP Rating )

Coding	Sealed Plug A Type 2x2 For Panel	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011

## Mini FAKRA Cable Coding ( IP Rating )

Coding	Sealed Plug A Type 2x2 For Panel	Color	RAL
G		Platinum Grey	sim.7036
H		Light Pink	sim.3015
J		Beige	sim.1001
K		Curry	sim.1027
N		Pastel Green	sim.6019
Z		Water Blue	sim.5021

## Mini FAKRA Cable Coding ( IP Rating )

Coding	Sealed Jack B Type 2x2	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Blue Grey	sim.7031
H		Heather Violet	sim.4003
Z		Water Blue	sim.5021

## Mini FAKRA Cable Coding ( IP Rating )

Coding	Sealed Plug B Type 2x2	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Blue Grey	sim.7031
H		Heather Violet	sim.4003
Z		Water Blue	sim.5021

## Mini FAKRA Cable Coding ( IP Rating )

Coding	Sealed Plug B Type 2x2 For Panel	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Blue Grey	sim.7031
H		Heather Violet	sim.4003
Z		Water Blue	sim.5021





# CAR EtherNet

## CAR EtherNet Characteristic

CAR EtherNet is a full shielded differential solution designed for high speed automotive Ethernet. This new interface is capable of transmitting high speed data up to 15GHz (20Gbps) in a robust automotive grade connection. The high performance modular design of the system enables more flexibility in the quest of providing next generation devices.

## Application

- Autonomous driving
- Camera system 4K
- High-resolution display 4K
- Lidar
- Radar
- Rear seat entertainment

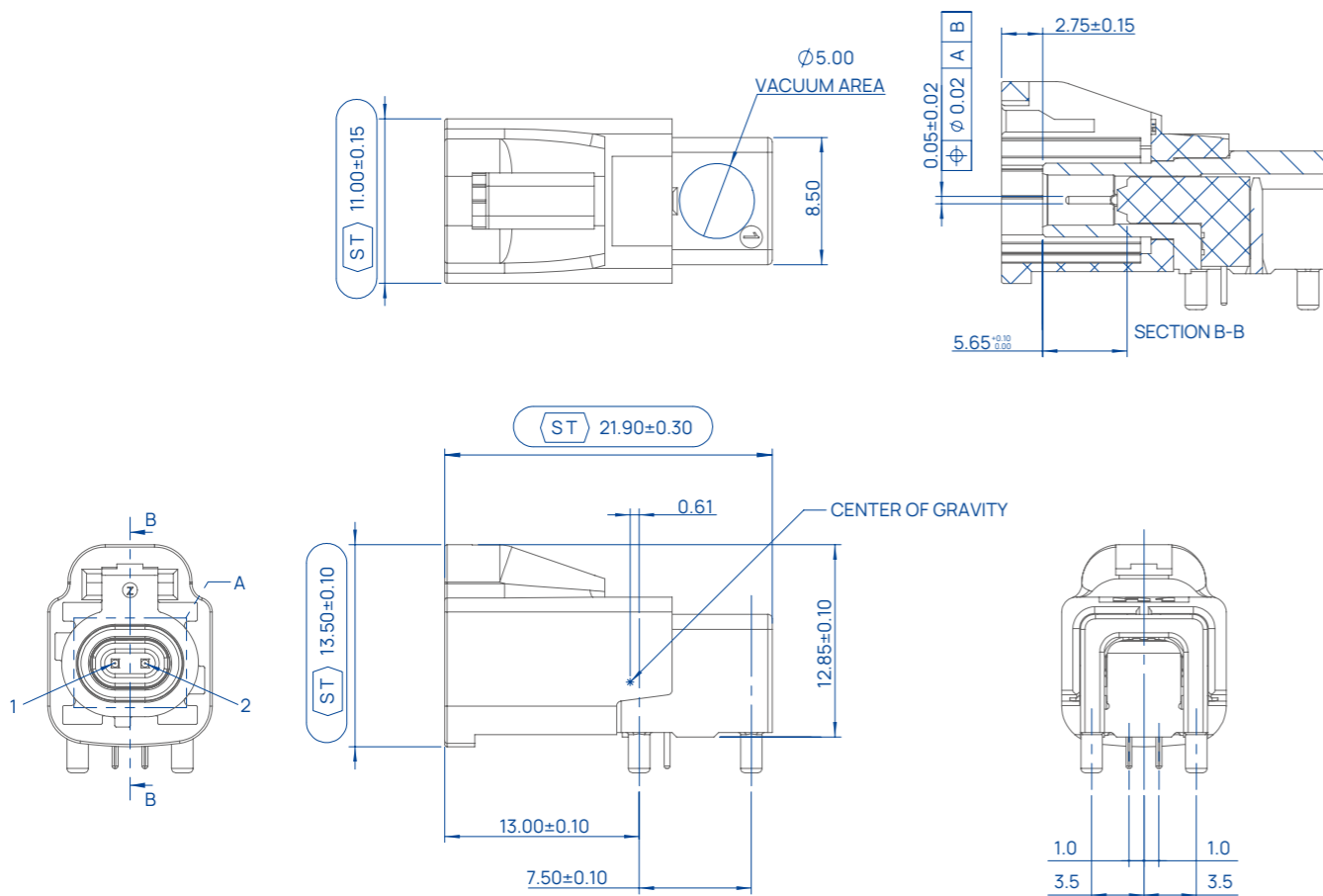
## Protocols

- 100 BASE-T1
- 1000 BASE-T1
- Multi-Gigabit (up to 20Gbps)
- PCIe 4.0
- USB 3.1 Gen 2
- HDBase-T
- APIX 3
- FPD Link 4

## Product Feature

- Automotive grade ethernet solution complied with LV214 / USCAR
- Modular package
- High performance up to 15GHz / 20Gbps
- Waterproof versions
- Power over Ethernet (POE) feature
- STP / UTP / SPP cable possible
- Small and robust package

# CAR EtherNet Plug



## Specification

Part No.	544XXXXXXXXX
Contact	2-12
<b>Material</b>	
Housing	Thermoplastic
Contact	Copper Alloy
Shell	Zinc Alloy
<b>Contact Plating</b>	
Under Plating	80 ~ 160u" Nickel
Contact Area	6u" Gold
Solder Tails Area	Tin Plating
<b>Electrical</b>	
Impedance	100 $\Omega$
Operating Frequency	DC to 10 GHz
Return Loss ( typical )	$\geq 25$ dB up to 1.5GHz , $\geq 20$ dB up to 4GHz , $\geq$ TBD up to 9 GHz
Insertion Loss	TBD
Insulation Resistance	1000 M $\Omega$ Min. @100 VDC
RF Leakage	> 55 dB
Center Contact Resistance	$\leq 15$ m $\Omega$
Outer Contact Resistance	$\leq 25$ m $\Omega$
Contact Current Max. ( DC )	$\leq 1.5$ ADC
Withstanding Voltage	Min. 250 V rms
Operating Voltage	$\leq 60$ VDC
<b>Mechanical Characteristics</b>	
Mating Cycles	$\geq 25$ Cycles
Engagement Force( typical )	$\leq 20$ N
Separating Force( typical )	Min. 5 N Max. 25 N
Coding Retention Force	$\geq 110$ N
<b>Environmental</b>	
Operating Temp. Range	IEC 682-2, -40 up to +105 Degree
Temperature Change	DIN EN 60068-2-14
Vibration	DIN EN 60068-2-64
Shock	DIN EN 60068-2-27
Humidity ( Cyclic )	DIN EN 60068-2-30

## CAR EtherNet Plug Series


Product List	Description	Part no.
	CAR EtherNet Plug, Vertical, 1x1, PCB Coding:A,B,C,D,E,F,G,H,J,K,L,M,O,Z	5440201001AX
	CAR EtherNet Plug, Right Angle, 1x1, PCB Coding:A,B,C,D,E,F,G,H,J,K,L,M,O,Z	5440101001X
 <span style="float: right; font-size: small;">Standard</span>	CAR EtherNet Plug, Right Angle, 1x1, PCB Mid-mount, CH=0.25mm Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	5440401001X
 <span style="float: right; font-size: small;">Reverse</span>	CAR EtherNet Plug, Right Angle, 1x1, PCB Mid-mount, CH=0.25mm Coding:A,B,C,D,E,F,G,H,I,K,L,M,N,Z	5440402001X
	CAR EtherNet Plug, Right Angle, 1x2, PCB Coding:A,B,C,D,E,F,G,H,J,K,L,M,O,Z	5440102001X
	CAR EtherNet Plug, Right Angle, 2x2, PCB Coding:A,B,C,D,E,F,G,H,J,K,L,M,O,Z	5440103001X
	CAR EtherNet Plug, Right Angle, 2x3, PCB Coding:A,B,C,D,E,F,G,H,J,K,L,M,O,Z	5440104001X

## CAR EtherNet Plug Series

Product List	Description	Part no.
	CAR EtherNet Plug, Vertical, 1x1 +MQS 6Pin, PCB Coding:A,B,C,D,E,F,G,H,J,K,L,M,O,Z	5440602001X
	CAR EtherNet Plug, Right Angle, 1x1 +MQS 6Pin, PCB Coding:A,B,C,D,E,F,G,H,J,K,L,M,O,Z	5440301001X
	CAR EtherNet Plug, Vertical, 1x2 +MQS 6Pin, PCB Coding:A,B,C,D,E,F,G,H,J,K,L,M,O,Z	5440601001X
	CAR EtherNet Plug, Right Angle, 1x2 +MQS 6Pin, PCB Coding:A,B,C,D,E,F,G,H,J,K,L,M,O,Z	5440302001X


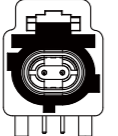
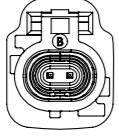
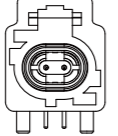
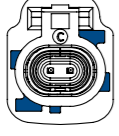
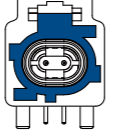
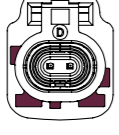
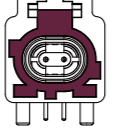
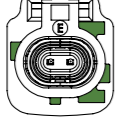
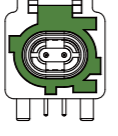
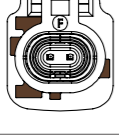
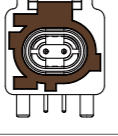
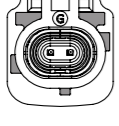
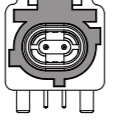
X : Coding option refer to page 77 - 84

## CAR EtherNet Plug Series ( IP Rating )

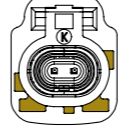
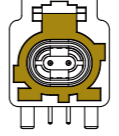
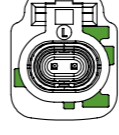
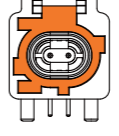
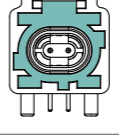
Product List	Description	Part no.
 <span style="float: right; font-size: small;">IPRating</span>	CAR EtherNet Plug, Vertical, 2x2, PCB Coding:A,B,C,D,E,F,G,H,J,K,L,M,O,Z	5445101001X

X : Coding option refer to page 85 - 86

## CAR Ethernet Plug Coding

Coding	Vertical 1x1	Right Angle 1x1	Color	RAL
A			Jet Black	sim.9005
B			Pure White	sim.9010
C			Light Blue	sim.5012
D			Claret Violet	sim.4004
E			May Green	sim.6017
F			Nut Brown	sim.8011
G			Platinum Grey	sim.7036

## CAR Ethernet Plug Coding

Coding	Vertical 1x1	Right Angle 1x1	Color	RAL
H			Light Pink	sim.3015
J			Beige	sim.1001
K			Curry	sim.1027
L			Yellow Green	sim.6018
M			Pastel Orange	sim.2003
O			Light Green	sim.6027
Z			Water Blue	sim.5021

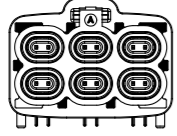
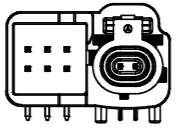
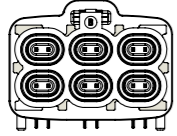
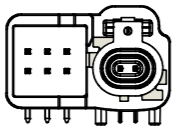
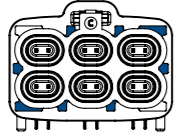
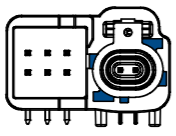
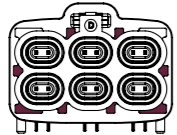
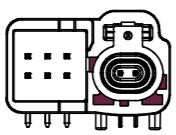
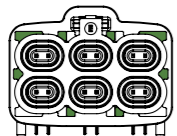
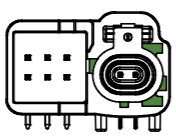
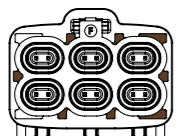
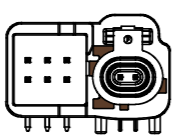
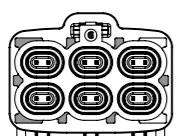
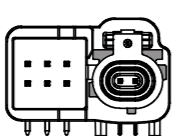
## CAR Ethernet Plug Coding

Coding	Right Angle 1x2	Right Angle 2x2	Color	RAL
A			Jet Black	sim.9005
B			Pure White	sim.9010
C			Light Blue	sim.5012
D			Claret Violet	sim.4004
E			May Green	sim.6017
F			Nut Brown	sim.8011
G			Platinum Grey	sim.7036

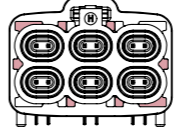
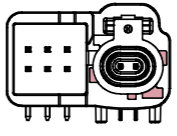
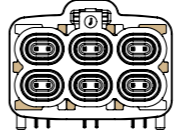
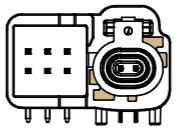
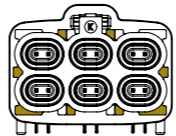
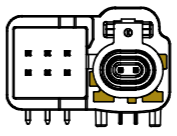
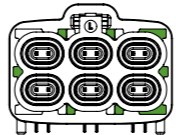
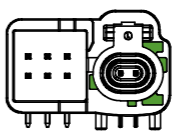
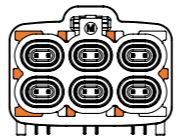
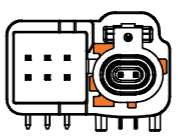
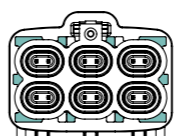
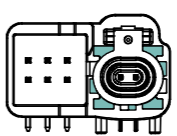
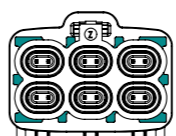
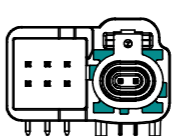
## CAR Ethernet Plug Coding

Coding	Right Angle 1x2	Right Angle 2x2	Color	RAL
H			Light Pink	sim.3015
J			Beige	sim.1001
K			Curry	sim.1027
L			Yellow Green	sim.6018
M			Pastel Orange	sim.2003
O			Light Green	sim.6027
Z			Water Blue	sim.5021

## CAR Ethernet Plug Coding

Coding	Right Angle 2x3	Vertical / Right Angle 1x1 +MQS 6Pin	Color	RAL
A			Jet Black	sim.9005
B			Pure White	sim.9010
C			Light Blue	sim.5012
D			Claret Violet	sim.4004
E			May Green	sim.6017
F			Nut Brown	sim.8011
G			Platinum Grey	sim.7036

## CAR Ethernet Plug Coding

Coding	Right Angle 2x3	Vertical / Right Angle 1x1 +MQS 6Pin	Color	RAL
H			Light Pink	sim.3015
J			Beige	sim.1001
K			Curry	sim.1027
L			Yellow Green	sim.6018
M			Pastel Orange	sim.2003
O			Light Green	sim.6027
Z			Water Blue	sim.5021

## CAR Ethernet Plug Coding

Coding	Vertical / Right Angle 1x2 +MQS 6Pin	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Platinum Grey	sim.7036

## CAR Ethernet Plug Coding

Coding	Vertical / Right Angle 1x2 +MQS 6Pin	Color	RAL
H		Light Pink	sim.3015
J		Beige	sim.1001
K		Curry	sim.1027
L		Yellow Green	sim.6018
M		Pastel Orange	sim.2003
O		Light Green	sim.6027
Z		Water Blue	sim.5021

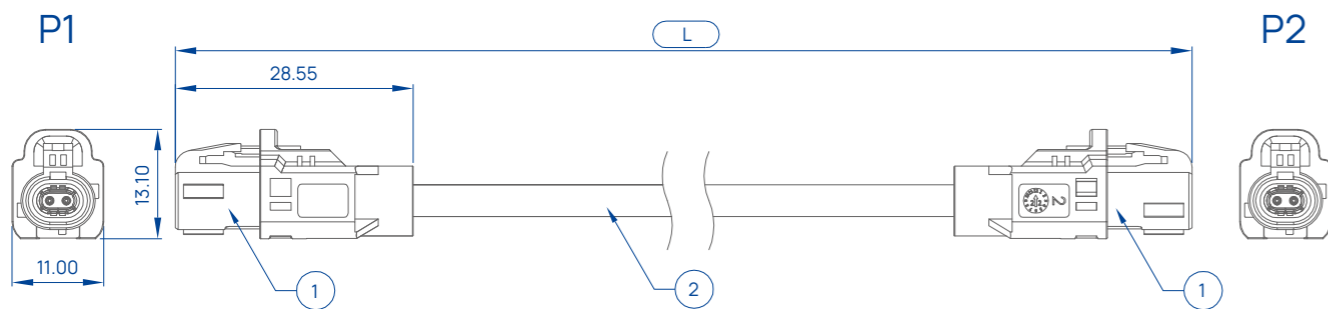
## CAR Ethernet Plug Coding ( IP Rating )

Coding	Sealed Vertical Plug 2x2	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Platinum Grey	sim.7036
H		Light Pink	sim.3015

## CAR Ethernet Plug Coding ( IP Rating )

Coding	Sealed Vertical Plug 2x2	Color	RAL
J		Beige	sim.1001
K		Curry	sim.1027
L		Yellow Green	sim.6018
M		Pastel Orange	sim.2003
N		Pastel Green	sim.6019
P		Carmine Red	sim.3002
R		Signal Blue	sim.5005
Z		Water Blue	sim.5021

# CAR Ethernet Jack/Plug Cable





## Specification

Part No.	144XXXXXXXXX
Contact	2-12
<b>Material</b>	
Insulator	PBT
Contact	Cu-Ni-Si Alloy
Outer Contact	Phosphor Bronze
<b>Contact Plating</b>	
Contact Area	30u" Selective Gold
<b>Electrical</b>	
Impedance	100 Ω
Frequency	DC to 4 GHz (10 G BASE-T1)
Insulation Resistance	≥ 100 MΩ
Resistance	≤ 5 Ω
<b>Mechanical</b>	
Mating Cycles	≥ 25 Cycles
Engagement Force	≤ 75 N
Disengagement Force	≥ 5 N
Retention Force Latch	≥ 110 N
Coding Efficiency	≥ 80 N
Temperature Range	-40°C to +105°C

## CAR EtherNet Series Cable


Product List	Description	Part no.
	CAR EtherNet, Jack Cable Straight, 1x1 Coding: A,B,C,D,E,F,G,H,J,K,L,M,O,Z	1440101XXXX
	CAR EtherNet, Plug to Jack Cable Straight, 1x1 Coding: A,B,C,D,E,F,G,H,J,K,L,M,O,Z	1445101XXXX
	CAR EtherNet, Plug Cable Straight, 1x1 Coding: A,B,C,D,E,F,G,H,J,K,L,M,O,Z	1442601XXXX
	CAR EtherNet, Jack Cable Straight, 1x2 Coding: A,B,C,D,E,F,G,H,J,K,L,M,O,Z	1440201XXXX
	CAR EtherNet, Jack Cable Straight, 2x2 Coding: A,B,C,D,E,F,G,H,J,K,L,M,O,Z	1440301XXXX
	CAR EtherNet, Jack Cable Straight, 2x3 Coding: A,B,C,D,E,F,G,H,J,K,L,M,O,Z	1440401XXXX

## CAR EtherNet Series Cable

Product List	Description	Part no.
	CAR EtherNet, Jack Cable 1x1 +MQS 6Pin, Straight Coding: A,B,C,D,E,F,G,H,J,K,L,M,O,Z	1447601XXXX
	CAR EtherNet, Jack Cable 1x2 +MQS 6Pin, Straight Coding: A,B,C,D,E,F,G,H,J,K,L,M,O,Z	1440201XXXX

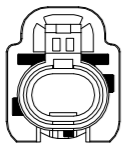

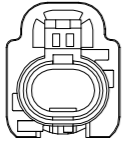
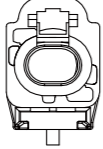
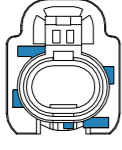
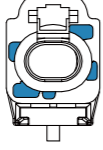
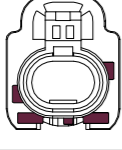
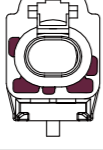
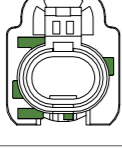
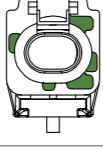
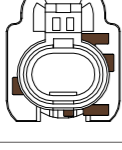
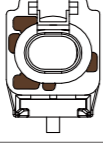
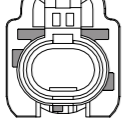
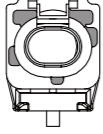
X : Coding option refer to page 91 - 96

## CAR EtherNet Series Cable ( IP Rating )

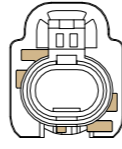
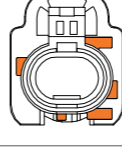
Product List	Description	Part no.
 IP Rating	CAR EtherNet, Jack +Lock Cable Straight, 2x2 Coding: A,B,C,D,E,F,G,H,J,K,L,M,N,P,R,Z	1442001XXXX

X : Coding option refer to page 97 - 98

## CAR Ethernet Cable Coding

Coding	Jack 1x1/ +MQS 6Pin	Plug 1x1	Color	RAL
A			Jet Black	sim.9005
B			Pure White	sim.9010
C			Light Blue	sim.5012
D			Bordeaux Violet	sim.4004
E			May Green	sim.6017
F			Nut Brown	sim.8011
G			Platinum Grey	sim.7036

## CAR Ethernet Cable Coding

Coding	Jack 1x1/ +MQS 6Pin	Plug 1x1	Color	RAL
H			Light Pink	sim.3015
J			Beige	sim.1001
K			Curry	sim.1027
L			Yellow Green	sim.6018
M			Pastel Orange	sim.2003
O			Light Green	sim.6027
Z			Water Blue	sim.5021

## CAR Ethernet Cable Coding

Coding	Jack 1x2/ +MQS 6Pin	Jack 2x2	Color	RAL
A			Jet Black	sim.9005
B			Pure White	sim.9010
C			Light Blue	sim.5012
D			Bordeaux Violet	sim.4004
E			May Green	sim.6017
F			Nut Brown	sim.8011
G			Platinum Grey	sim.7036

## CAR Ethernet Cable Coding

Coding	Jack 1x2/ +MQS 6Pin	Jack 2x2	Color	RAL
H			Light Pink	sim.3015
J			Beige	sim.1001
K			Curry	sim.1027
L			Yellow Green	sim.6018
M			Pastel Orange	sim.2003
O			Light Green	sim.6027
Z			Water Blue	sim.5021

## CAR EtherNet Cable Coding

Coding	Jack 2x3	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Bordeaux Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Platinum Grey	sim.7036

## CAR EtherNet Cable Coding

Coding	Jack 2x3	Color	RAL
H		Light Pink	sim.3015
J		Beige	sim.1001
K		Curry	sim.1027
L		Yellow Green	sim.6018
M		Pastel Orange	sim.2003
O		Light Green	sim.6027
Z		Water Blue	sim.5021

## CAR Ethernet Cable Coding ( IP Rating )

Coding	Sealed Jack 2x2	Color	RAL
A		Jet Black	sim.9005
B		Pure White	sim.9010
C		Light Blue	sim.5012
D		Claret Violet	sim.4004
E		May Green	sim.6017
F		Nut Brown	sim.8011
G		Platinum Grey	sim.7036
H		Light Pink	sim.3015

## CAR Ethernet Cable Coding ( IP Rating )

Coding	Sealed Jack 2x2	Color	RAL
J		Beige	sim.1001
K		Curry	sim.1027
L		Yellow Green	sim.6018
M		Pastel Orange	sim.2003
N		Pastel Green	sim.6019
P		Carmine Red	sim.3002
R		Signal Blue	sim.5005
Z		Water Blue	sim.5021



# HSD

## HSD Application

The digital HSD Connector system enables excellent data transfer through LVDS ( Low Voltage Differential Signaling ) / MHL / Flexray / USB2.0 / USB 3.0 / IEEE1394 / Ethernet / APIX / CAN. The optimized impedance connector system offers a first-class transfer quality ; external source of interference and crosstalk are prevented. The main product characteristic S.S.R. ( Smart Strain Relief ), an intelligent strain relief unit, leaves the soldering points free of stain in circuit board connections.

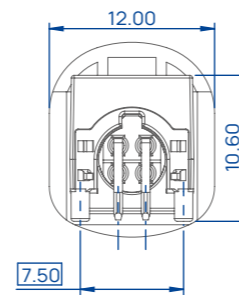
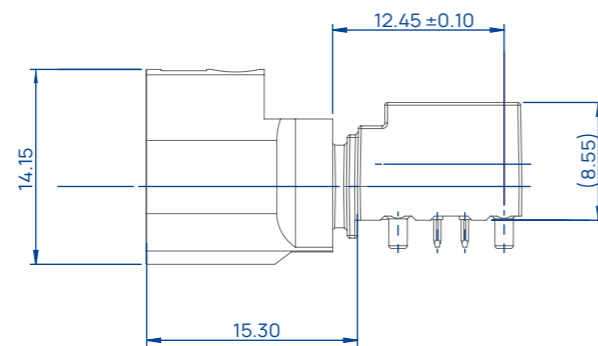
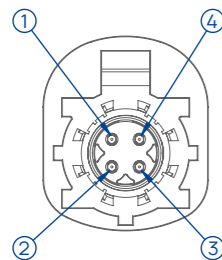
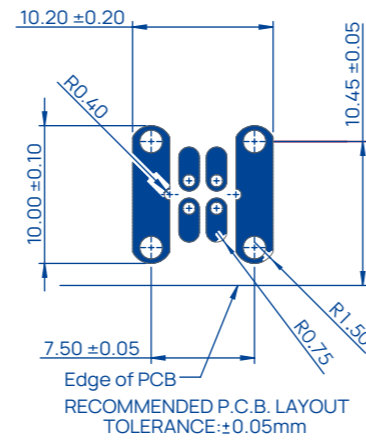
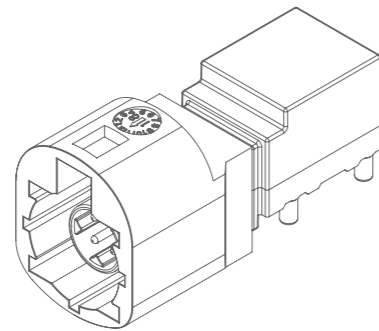
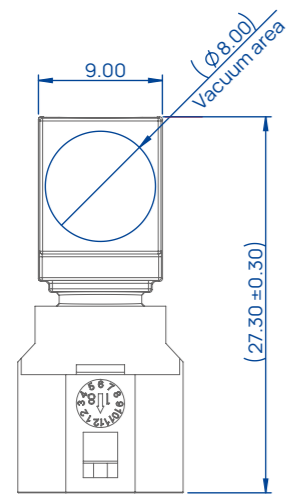
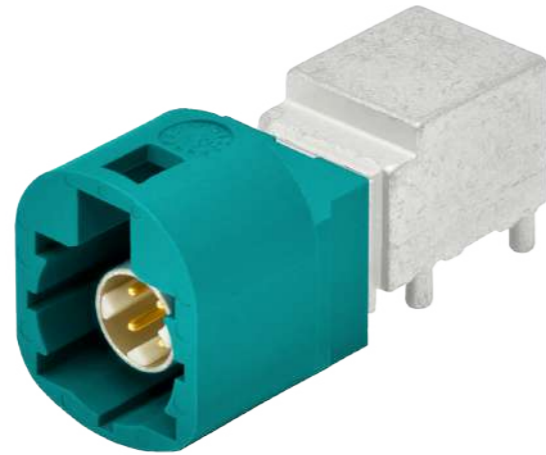
## Application

- Infotainment
- HD-entertainment
- Driver assistance
- Telematics
- LVDS-camera
- GVIF-video transmission
- IEEE 1394, USB2.0, USB3.0, Ethernet-data
- More 100 ohm high speed data Connectors

## Product Characteristics

- S.S.R. enables unstressed solder joints for PCB types
- Tilt safety
- High data bit rate up to 6 Gbits/s
- Excellent resistance against cross-talk and RF EMC
- Mechanical robustness according to automotive requirements
- THR and THT capable for automated assemblies
- Mechanical and color coding prevents mismatching
- Primary and secondary locking mechanism ensures highest interconnection security








# HSD ( High-Speed Data ) Plug



## Specification

Part No.	5430X0X00XX
Contact	4
<b>Material</b>	
Insulator	PA9T
Contact	Brass
Shell	Zinc Alloy
<b>Contact Plating</b>	
Outer Contact	120~ 240u" Tin (Matte) Over 120~240u" Nickel Over 600u"~800u" Cu
Contact Area	6u" Selective Gold
Solder Tails Area	80 ~ 160u" Matte Su (Lead Free)
<b>Electrical</b>	
Impedance	100 Ω Differential Signalling, for One Pair or Quad Cable Shielded
Operating Frequency	Up to 2 GHz
Return Loss ( typical )	≥ 20 dB to 1.0 GHz ; ≥ 17 dB to 2.0 GHz
Insertion Loss	≤ 0.1 dB @ 1.0 GHz
Insulation Resistance	≥ 1000 MΩ
Center Contact Resistance	≤ 10 mΩ
<b>Mechanical Characteristics</b>	
Engagement Force ( typical )	≤ 30 N
Disengagement force	≥ 5 N
Mating Cycles	≥ 25 Cycles
Cording Efficiency	≥ 80 N
Retention Force Latch	≥ 110 N
<b>Environmental</b>	
Operating Temp. Range	-40°C to +105°C
Thermal Shock	USCAR-17
Temp. and Humidity	USCAR-17 ; SAE/USCAR-2
Mechanical Shock	DIN IEC 60068-2-27

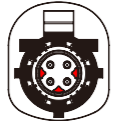

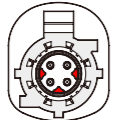
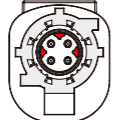







# HSD Plug Series

Product List	Description	Part no.
	HSD Plug, Vertical, PCB Coding:A,B,C,D,E,F,Z	5430201001X
 Standard	HSD Plug, Right Angle, PCB Shell Height=8.55mm Key Up Coding:A,B,C,D,E,F,Z	5430104001X
 Standard	HSD Plug, Right Angle, PCB Shell Height=8.55mm Key Down Coding:G,H,J,K,L,M,O	
 Reverse	HSD Plug, Right Angle, PCB Shell Height=8.55mm Key Down Reverse Coding:A,B,C,D	5430104002X
 Standard	HSD Plug, Right Angle, PCB Shell Height=6.55mm Key Up Coding:A,B,C,D,E,F,Z	5430108001X
 Standard	HSD Plug, Right Angle, PCB Shell Height=6.55mm Key Down Coding:G,H,J,K,L,M,O	
 Reverse	HSD Plug, Right Angle, PCB Shell Height=6.55mm Key Down Reverse Coding:A,B,C,D	5430108002X

X : Coding option refer to page 105 - 106



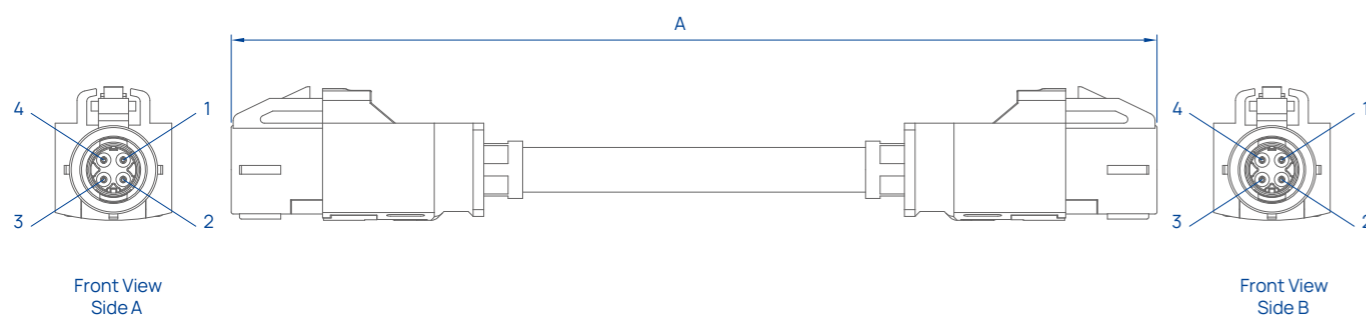
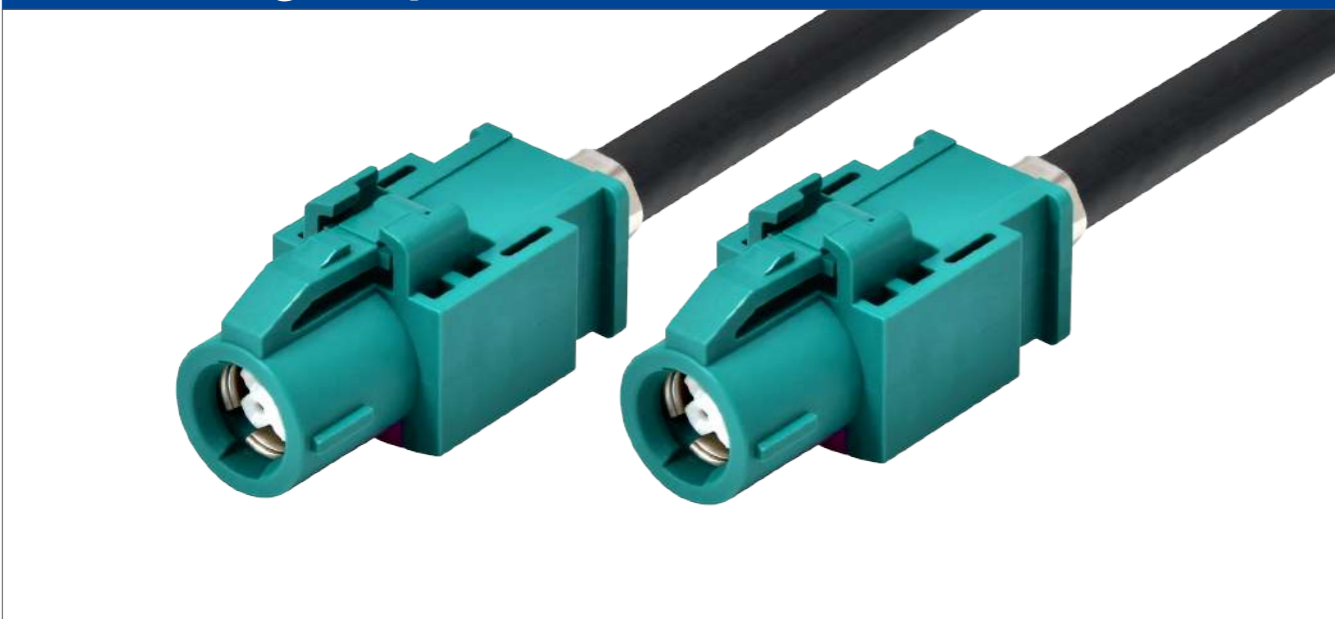
## HSD Plug Coding

Coding	Vertical / Right Angle Plug		Color	RAL
A	 Standard	 Reverse	Black	sim.9005
B	 Standard	 Reverse	White	sim.9001
C	 Standard	 Reverse	Blue	sim.5005
D	 Standard	 Reverse	Bordeaux	sim.4004
E	 Standard		Green	sim.6002
F	 Standard		Brown	sim.8011
Z	 Standard		Water Blue	sim.5021

## HSD Plug Coding

Coding	Vertical / Right Angle Plug		Color	RAL
G	 Standard		Blue Grey	sim.7301
H	 Standard		Heather Violet	sim.4003
J	 Standard		Beige	sim.1001
K	 Standard		Curry	sim.1027
L	 Standard		Yellow Green	sim.6018
M	 Standard		Pastel Orange	sim.2003
O	 Standard		Light Green	sim.6027

# HSD ( High-Speed Data ) Jack Cable



PIN OUT

Side A		Side B
1	BLUE	4
2	ORANGE	3
3	GREEN	2
4	BROWN	1
Shield		Shield

Dimensions(mm)	
Range(length "A")	Tolerance(mm)
200 to 1000	±10
1001 to 5000	±15
5001 to 20000	±20

## Specification

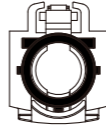
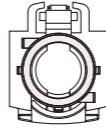

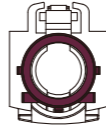
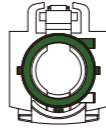
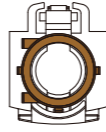
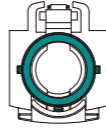
Part No.	143XXXXXXXXX
Contact	4
<b>Material</b>	
Insulator	PA / PBT
Contact	Phosphor Bronze
Contact Sleeve	Phosphor Bronze
Outer Contact	Brass
<b>Contact Plating</b>	
Contact Area	6u" Selective Gold
Solder Tails Area	40u" ~ 150u" Tin (Lead Free)
<b>Electrical</b>	
Impedance	100 Ω
Frequency	DC to 2.0 GHz
Return Loss	≥ 20 dB to 1.0 GHz; ≥ 17 dB to 2.0 GHz
Insertion Loss	≤ 0.1 dB @1.0 GHz
Insulation Resistance	≥ 1000 MΩ
Signal Contact Resistance	≤ 10 mΩ
<b>Mechanical Characteristics</b>	
Mating Cycles	≥ 25 Cycles
Engagement Force	≤ 30 N
Disengagement Force	≥ 5 N
Retention Force Latch	≥ 110 N
Coding Efficiency	≥ 80 N
Temperature Range	-40°C to +105°C
Terminal Engagement Force	Min. 30 N

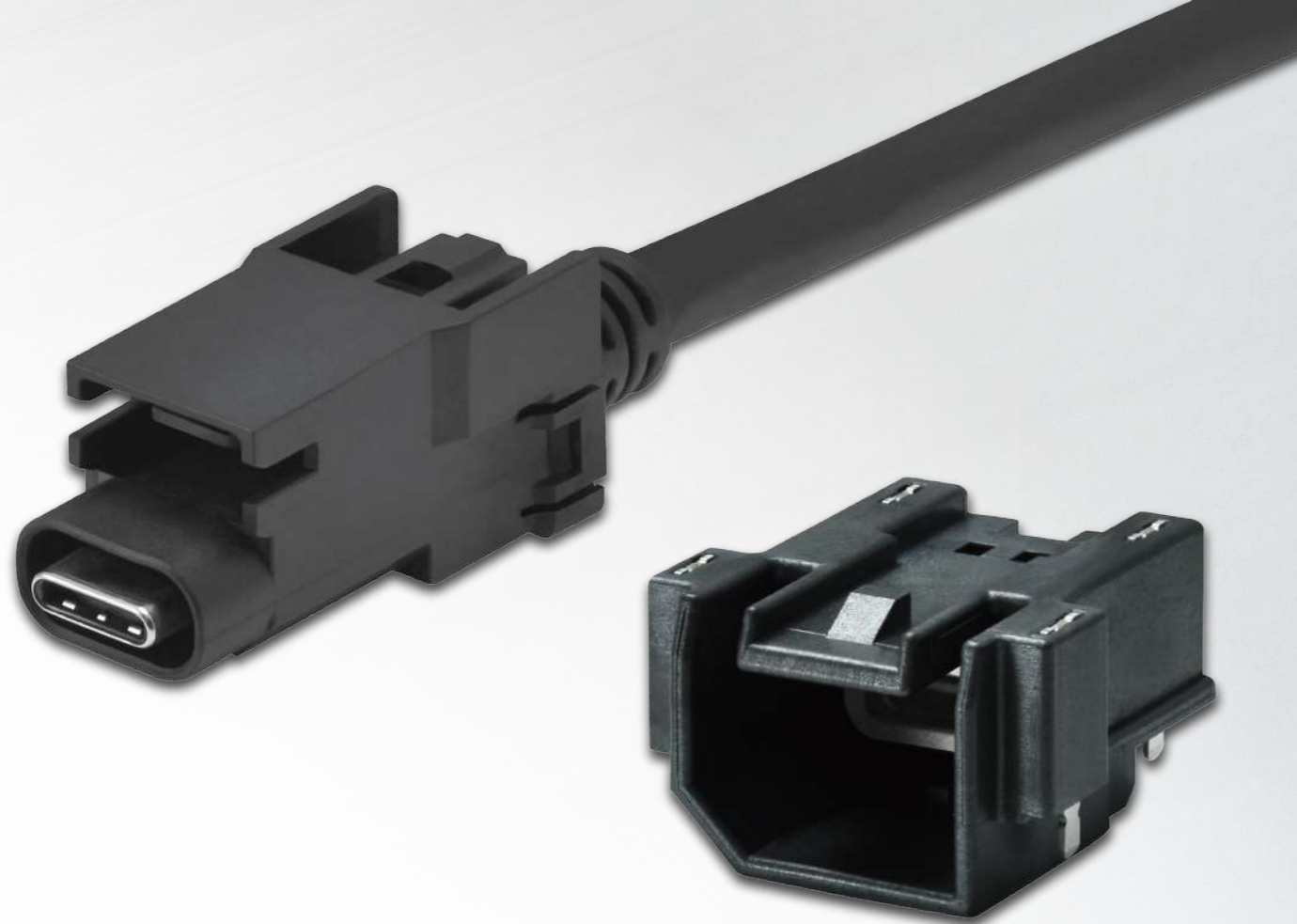
## HSD Jack Cable Series

Product List	Description	Part no.
	HSD, Jack Cable, Straight Coding:A,B,C,D,E,F,Z	1431101XXXX
	HSD, Jack to USB 2.0 AM Cable Straight Coding:A,B,C,D,E,F,Z	1430101XXXX
	HSD, Jack to USB 2.0 AF Cable Straight Coding:A,B,C,D,E,F,Z	1430203XXXX

X : Coding option refer to page 110

## HSD Cable Coding

Coding	Jack	Color	RAL
A		Jet Black	sim.9005
B		Cream	sim.9001
C		Signal Blue	sim.5005
D		Claret Violet	sim.4004
E		Leaf Green	sim.6002
F		Nut Brown	sim.8011
Z		Water Blue	sim.5021



# AUTOMOTIVE TYPE C

## Automotive Type C Application

Automotive Type C connectors are performance tested according to USCAR-2 with USB-C standard interface.

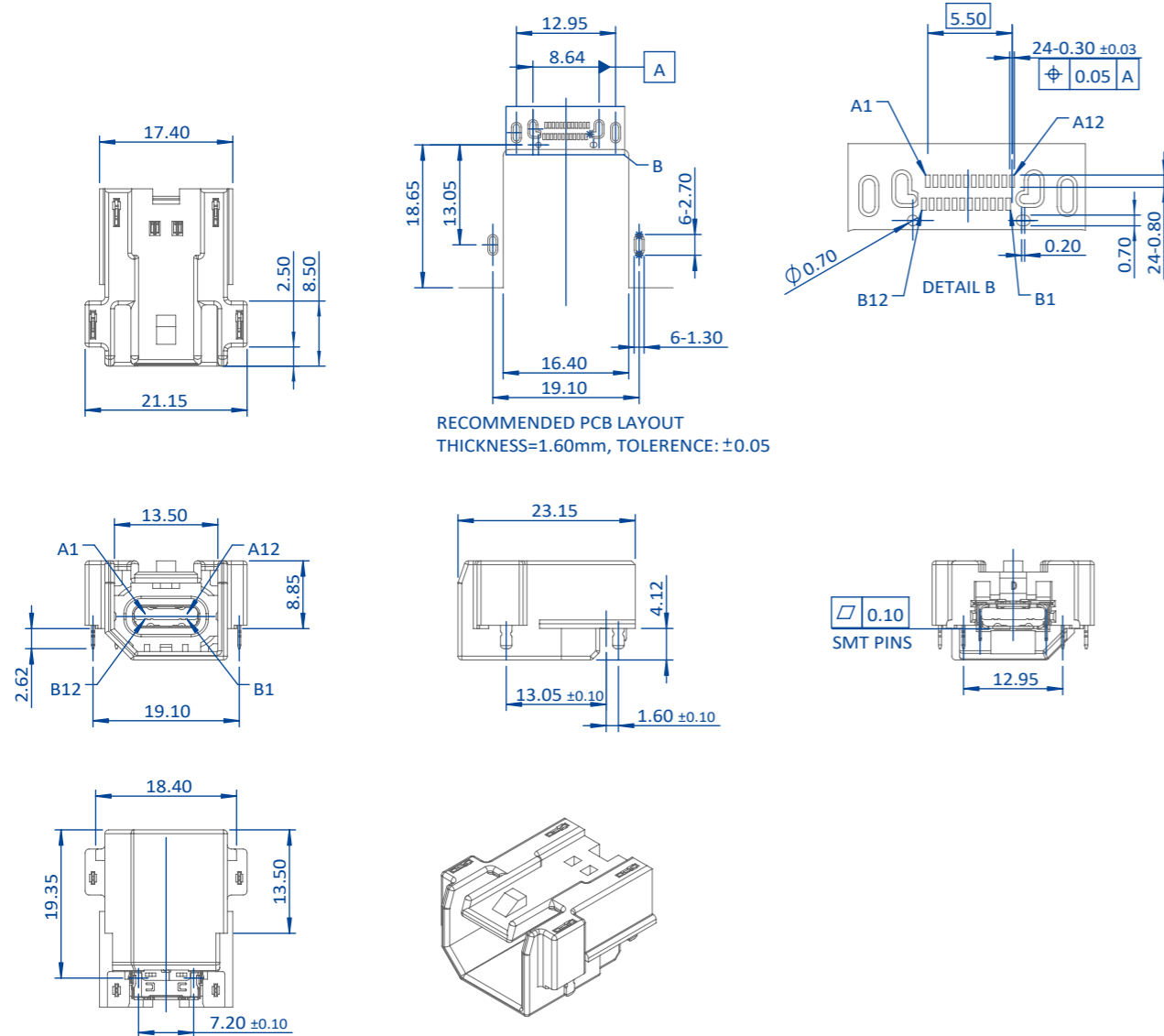
## Application

- Application
- Infotainment
- USBCharger
- USBMedia Hub
- CIC Module(Car Infotainment Computer)
- Car Multimedia

## Product Characteristics

- Support USB2.0/USB3.2/USB4 data transmission
- PD(Power Delivery) up to 240W
- Design meet USCAR-2
- TID Certification on both plug and receptacle connectors
- Mechanical and color coding prevents mismatching

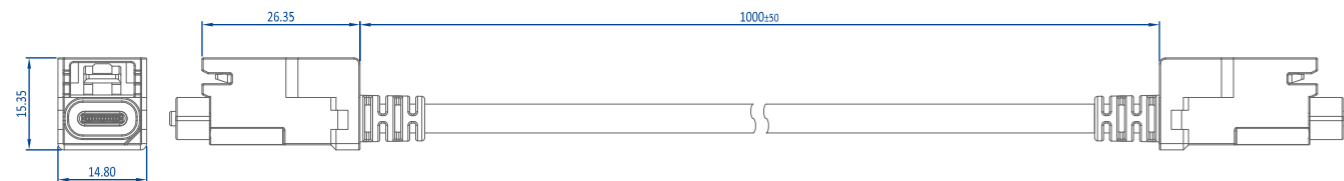
# Automotive Type C Recep. 40G/20G/480M



## Specification

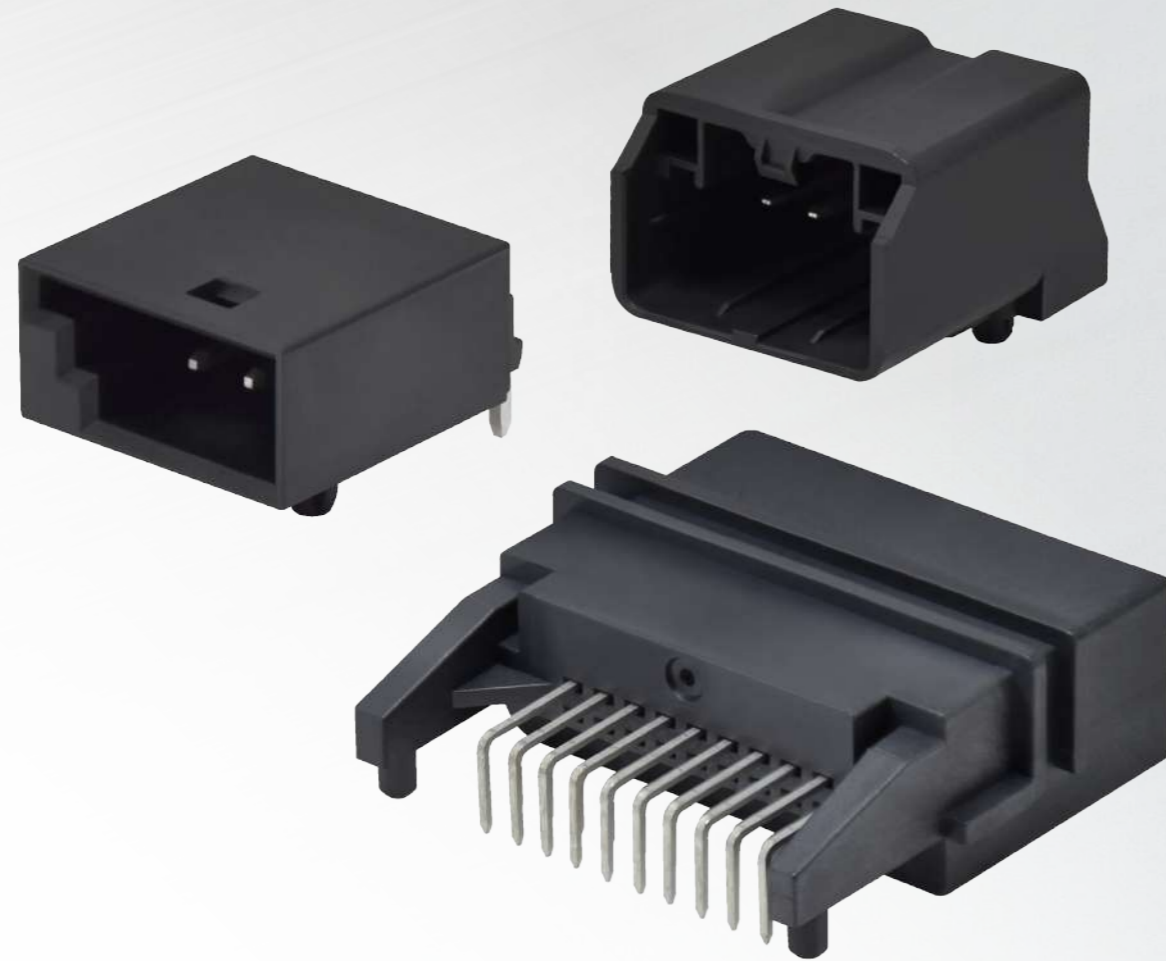
Part No.	5335101001A
Contact	24
<b>Material</b>	
Insulator	PA9T
Contact	Brass
Shell	Stainless Steel
<b>Contact Plating</b>	
Contact Area	80u" Ni Min. Over 30u" Gold
Solder Tails Area	80u" Ni Min. Over 100~200u" Tin (Matte)
<b>Electrical</b>	
Impedance	< 100mA Max. 40mΩ
Operating Frequency	20 GHz
Insulation Resistance	Acceptance Criteria: The Resistance Between Every Combination of Two Adjacent Terminals in the Connection Must Exceed 100mΩ At 500V DC
<b>Mechanical Characteristics</b>	
Extraction Force	1.Un-Mating Force Must Be ≥ 110 N with the Connector Lock Fully Engaged. 2.Un-Mating Force (Lock Fully Disengaged or Disabled) (> 10 N and ≤ 75 N)
Disengagement Force	Un-Mating Force (Lock Fully Disengaged or Disabled) (> 10 N and ≤ 75 N)
Mating Cycles	10 Cycles
<b>Environmental</b>	
Operating Temperature Range	-40°C to +105°C
Thermal Shock	SAE/USCAR-2 5.6.1
Temperature and Humidity	SAE/USCAR-2 5.6.2
Mechanical Shock	SAE/USCAR-2 5.4.6

## Automotive Type C Cable 40G/20G/480M



### Specification

Part No.	1334007001Z
Contact	22
<b>Material</b>	
Insulator	PBT
Contact	Copper
Shell	Stainless Steel
Latch	Stainless Steel
Shielding	Stainless Steel
<b>Contact Plating</b>	
Contact Area	30u" Gold
<b>Electrical</b>	
Current Rating	5 A
Voltage Rating	48 V
Contact Resistance	40 MΩ Max. Initial, 15 MΩ Max. (After) Cable Resistance Depends on the Length of Cable.
Isolation Resistance	100 MΩ Min.
Dielectric Withstanding Voltage	100 V rms AC
Finished Cable 100% Conductivity Test	
<b>Mechanical Characteristics</b>	
Mating Force	≤ 45 N
Un-Mating Force	10 N ≤ X ≤ 75 N
Un-Mating Force (Lock)	≥ 110 N
Durability	10 Cycles
Operating Temperature Range	-40°C to +105°C



# MQSHeader

## MQSHeader Application

The MQSHeader connector is designed for low-current signal and control applications in the automotive industry. Its compact design saves space while providing stable and reliable electrical connections. MQSHeader connectors are widely used in sensors, actuators, and control modules, and they offer excellent vibration resistance and environmental durability for long-term performance in harsh automotive conditions.

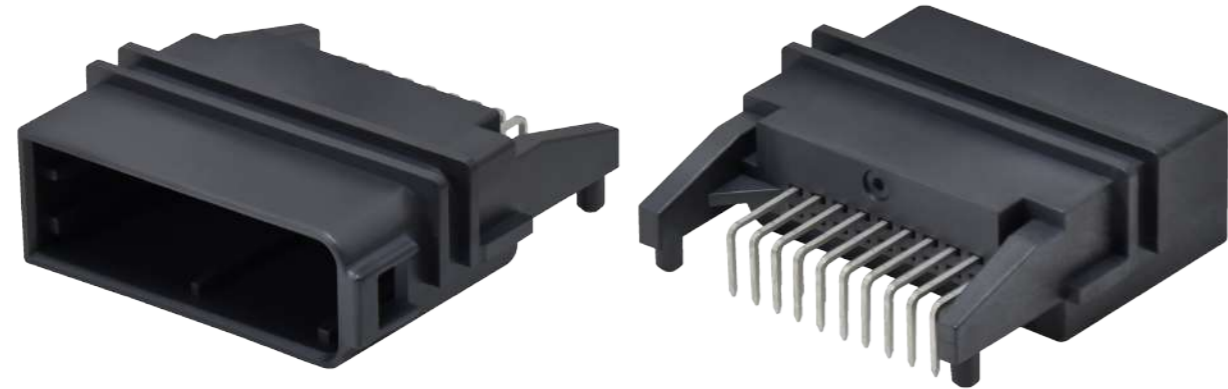
## Application

- Body Control Modules (BCM)
- Sensor and actuator connections
- Interior lighting systems
- HVAC and seat control systems
- Instrument clusters and display control signals
- Safety and comfort systems (e.g. airbags, door locks)
- Low-current signal and control wiring harnesses

## Product Characteristics

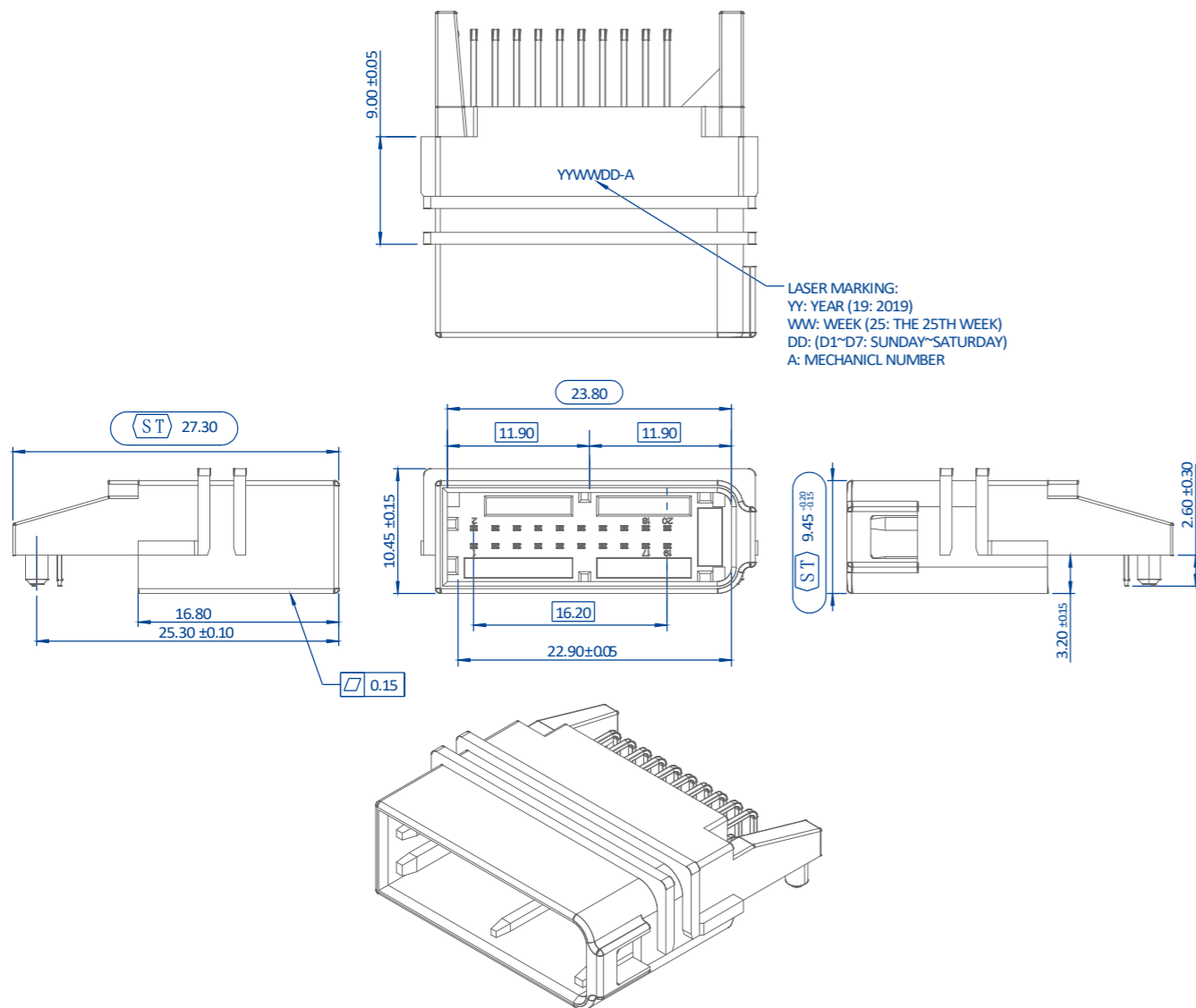
- Designed for low-current signal and control applications
- Compact size for space-saving installation
- High vibration resistance and mechanical stability
- Secure terminal locking mechanism
- Multiple circuit configurations available
- Mechanical keying and color coding to prevent mismatching
- Supports automated crimping and wiring harness assembly
- Resistant to temperature extremes and automotive environments

# MQSHeader 20Pin Connector



## Specification

Part No.	5450101001X
Contact	20
<b>Material</b>	
Insulator	LCP E130i
Contact	Brass
<b>Contact Plating</b>	
Contact Area	3~6μm Sn(MATTE) OVER 1~3μm Ni
Solder Tails Area	3~6μm Sn(MATTE) OVER 1~3μm Ni
<b>Electrical</b>	
Insulation Resistance	Acceptance Criteria: The Resistance Between Every Combination of Two Adjacent Terminals in the Connection Must Exceed 100mΩ At 500V DC
<b>Mechanical Characteristics</b>	
Extraction Force	1.Un-Mating Force Must Be $\geq 110$ N with the Connector Lock Fully Engaged. 2.Un-Mating Force (Lock Fully Disengaged or Disabled) ( $> 10$ N and $\leq 75$ N)
Disengagement Force	Un-Mating Force (Lock Fully Disengaged or Disabled) ( $> 10$ N and $\leq 75$ N)
Mating Cycles	20 Cycles
<b>Environmental</b>	
Operating Temperature Range	-40°C to +105°C
Thermal Shock	PSA B21 7050 : 10.3
Temperature and Humidity	ISO/DIS 8092-2.
Mechanical Shock	PSA B21 7050: 9.5

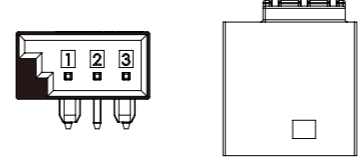
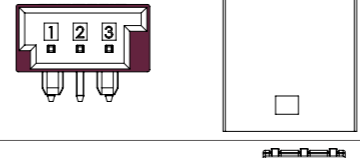
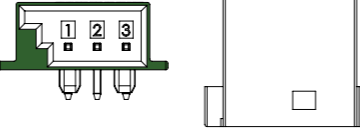


## MQSHeader Connector Series

Product List	Description	Part no.
	MQSHeader, 2Pin, Right Angle Coding:A	5450201001X
	MQSHeader, 3Pin, Right Angle Coding:A,D,E	5450501001X
	MQSHeader, 4Pin, Right Angle Coding:A	5450301001X
	MQSHeader, 20Pin, Right Angle Coding:A	5450101001X

X : Coding option refer to page 122

## MQSHeader Connector Coding

Coding	MQSHeader, 3Pin, Right Angle	Color	RAL
A		Black	sim.9004
D		Bordeaux Violet	sim.4004
E		Green	sim.6002



 **CHANT SINCERE CO., LTD.**

7F-2, No 188, Sec. 3, Datong Road  
Xizhi, New Taipei City 22103, Taiwan

 [www.coxoc.com.tw](http://www.coxoc.com.tw)

 +886-2-8647-1251

 [service@coxoc.com.tw](mailto:service@coxoc.com.tw)



[www.coxoc.com.tw/en](http://www.coxoc.com.tw/en)