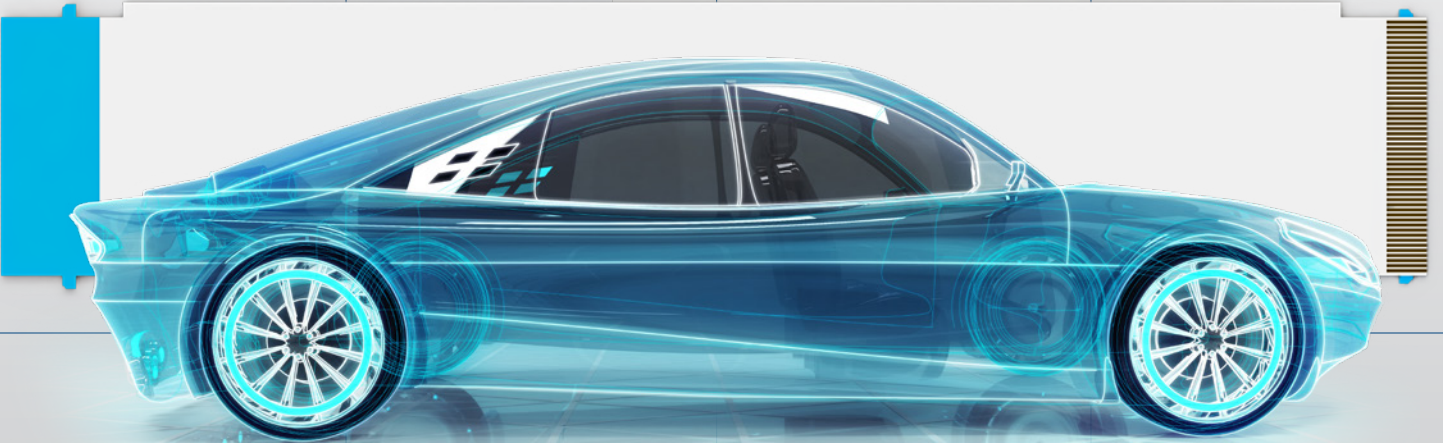
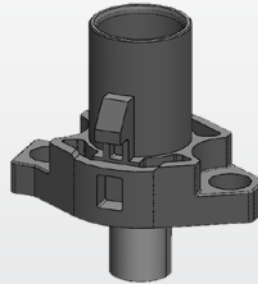
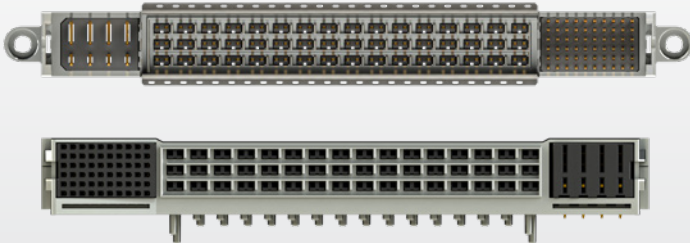
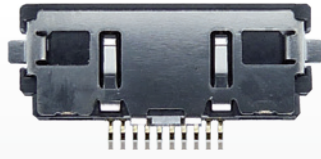


**YAMAICHI
ELECTRONICS**

ENGINEERED TO CONNECT



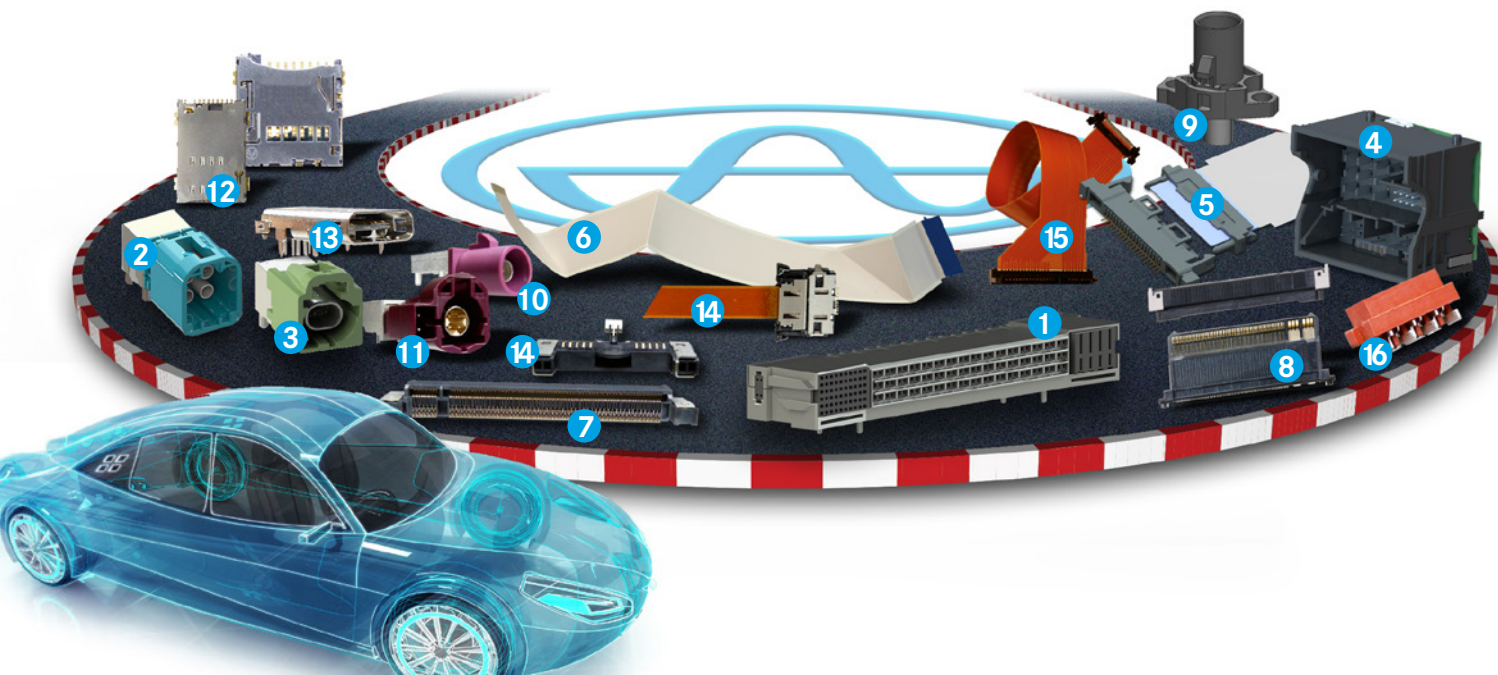
**AUTOMOTIVE
SOLUTIONS**

YAMAICHI ELECTRONICS AUTOMOTIVE PRODUCTS

Based on our wide product range Yamaichi Electronics offers many solutions which are dedicated to automotive applications. Products which have a reliable design and functionality especially for the rough environmental and mechanical conditions in automotive use.

The range of our products is going from non-ZIF connectors, like the Y-Lock connector system, to connectors which can also match high-speed requirements. Connectors for internal use are the BEC-series or the Floating Board-to-Board series HF311 or the Y-CCC Car Computing Connector series for the next generation applications. For I/O applications Yamaichi is not only able to supply a big choice of card connectors, but also standardised interfaces like Minifakra, High-Speed Data Ethernet or Fakra/HSD connections. The Y-Quad connector for Quadlock connection boxes belongs as well to the connector family. For all the different connector systems Yamaichi Electronics is able to develop and supply also the suitable test adapter for the production lines.

YAMAICHI ELECTRONICS OFFERS THE FOLLOWING SOLUTIONS



1. Y-CCC - Car Computing Connector	9. Y-CMC Camera Module Connector
2. Y-MFC - Minifakra	10. FAKRA
3. Y-HDE - High-Speed Data Ethernet	11. HSD
4. Y-Quad - Automotive I/O	12. Card Connectors
5. Y-Lock - non-ZIF Pullforce Connector	13. Customer Interfaces (USB, HDMI etc.)
6. Y-FFC - Flexible Flat Cables	14. High-Speed FFC/FPC Connector
7. BEC - Board Edge Connector Series	15. Y-Flex High-Speed FPC
8. Floating High-Speed BTB Connector	16. Internal standard connectors

REFERENCE APPLICATIONS

- Head units for infotainment systems
- Camera systems
- Battery management system
- I/O connections for antenna, TV, radio, etc...
- Car computing
- Dashboard applications
- Navigation displays
- Connectivity module, e.g. USB hub
- Electronic control units
- Radar/Lidar System
- Gear knob

EUROPEAN DESIGN CENTER

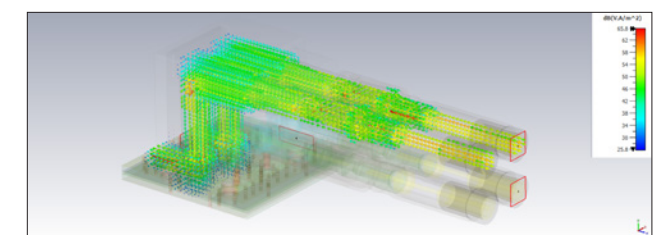
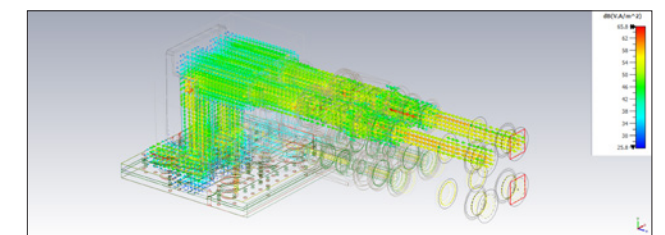
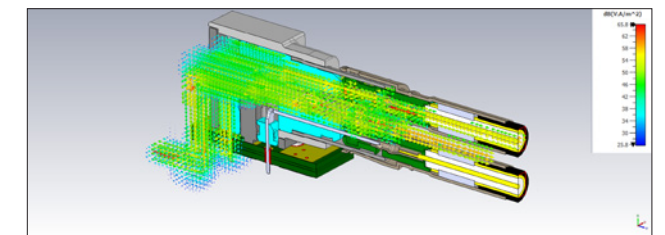
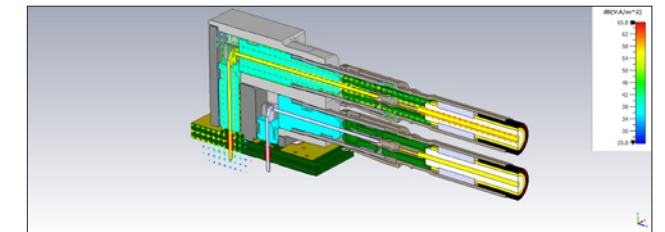
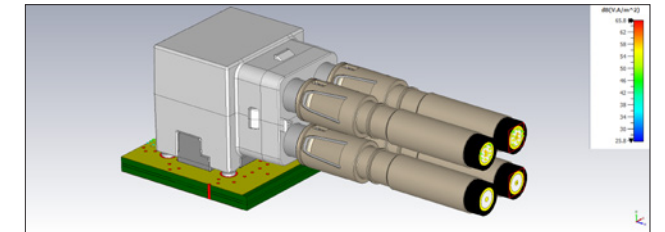
The European design center can offer any kind of customised connector solutions. The final design respects all customer specific requirements and objectives. The product can be optimised and designed for production locations around the world.

- About 100 engineers are working in the two design centers in Munich and Sousse (Tunisia)
- Approximately 400 designs are done per year
- In average 12 patents are applied per year
- Highest level of soft- and hardware is used, e.g.

- 3D-CAD-construction software Solid Works
- FEM-calculation software (Finite Element Method) Cosmos (non-linear force / strength calculation)
- 3D-FEM-calculation software CST (high frequency/speed, thermal air and creep distances)
- Solid Works stream simulation (for liquids)
- Altium designer, PCB design software
- Circuit simulation with SPICE (ADS)
- Matlab (data analysis)
- Moldflow 2011 (molding simulation)
- High definition 3D prototype printer for plastic and metal parts
- SEM (scanning electron microscope)
- CT Scanner
- Climatic Chamber
- Shock and Vibration Chamber
- Etc...

- All products are qualified and tested in our own laboratories. The laboratories are well equipped and capable to execute the required tests

High frequency simulation



INTERNAL CONNECTORS – BOARD-TO-CABLE

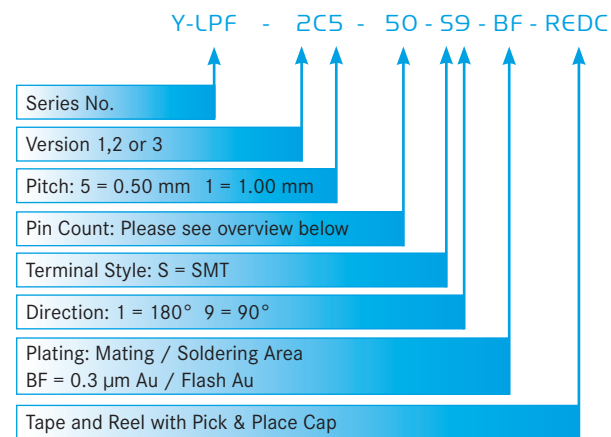


Y-LPF SERIES

The Y-Lock connector family is combining a space saving and process securing design with smart and reliable technology. The connector system is designed for applications with tough requirements. Now available in three different versions, Y-Lock is able to fulfill a large spectrum of tasks in regard to mechanical, climatic and electrical specifications.

SPECIAL FEATURES

- Non-ZIF Board-to-Cable system
- FFC has just to be pushed in (one push lock) and can be pulled out (pullforce) without any further action
- Quick and easy assembly
- Poka-Yoke system
- Pitches: 0.5 and 1.0 mm
- 90° and 180° versions
- Various pin counts available
- Automatic assembly of FFC is possible
- RoHS2011/65/EU



Y-FFC

FLEXIBLE FLAT CABLES – MADE IN GERMANY



In order to complete the product family of different FFC connectors, Yamaichi Electronics offers FFC from its own production line – Made in Germany.

The FFC are produced with latest state of the art production facilities and are fulfilling the requirements of Automotive standards.

Customised* pin count, pitch, length, mating shape and foldings are available.



Y-LOCK PULLFORCE	Y-LOCK VERSION 1	Y-LOCK VERSION 2	Y-LOCK VERSION 3
Explanation	Locking function between the supporting tape on the FFC and the connector. Small hooks on the inner housing of the connector insulator ensure the locking function between the FFC and connector.	Additional stiffener is assembled mechanically on the FFC. Locking function between stiffener and connector. Poka-Yoke system prevents the FFC from being inserted in the wrong direction. The use of the stiffener is guiding the FFC during insertion.	Same as version 2 but with double locking function based on frontal and lateral hooks.
Version & Pin Count	1 mm pitch in 90° and 180° with 12, 14, 16, 18, 20, 22, 24, 26, 28, 30 pins 0.5 mm pitch in 90° and 180° with 30 pins	0.5 mm Pitch, 180° with 18 or 50 pins	1 mm pitch, 90° with 20 pins or 2 mm pitch, 90° with 10 pins



* MOQ may occur depending on the version

INTERNAL CONNECTORS – BOARD-TO-CABLE

FFC AND FPC

Our different ZIF/Non-ZIF connectors are able to be used with standard FFC, High-speed FFC (Flexible Flat Cable) or YFLEX (high-speed FPC = Flexible Printed Circuit). The usage of the different cables is depending on the transfer rate.

Standard FFC can transfer up to 480 Mbps, high-speed FFC's can transfer up to 3 Gbps and YFLEX is able to transfer up to 20 Gbps.

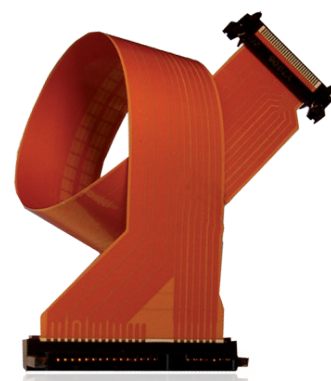
Connector Type	FFC/YFlex to be used with the different connector types		
	Standard FFC	High-speed FFC	YFLEX
Y-Lock Series	x		
HF601-**-02/12	x	x	
HF601-**-03		x	x
HF509-10-03			x
HF513-**-01/11		x	x

YFLEX *HIGH SPEED*

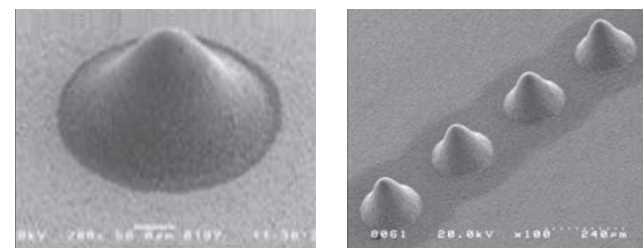
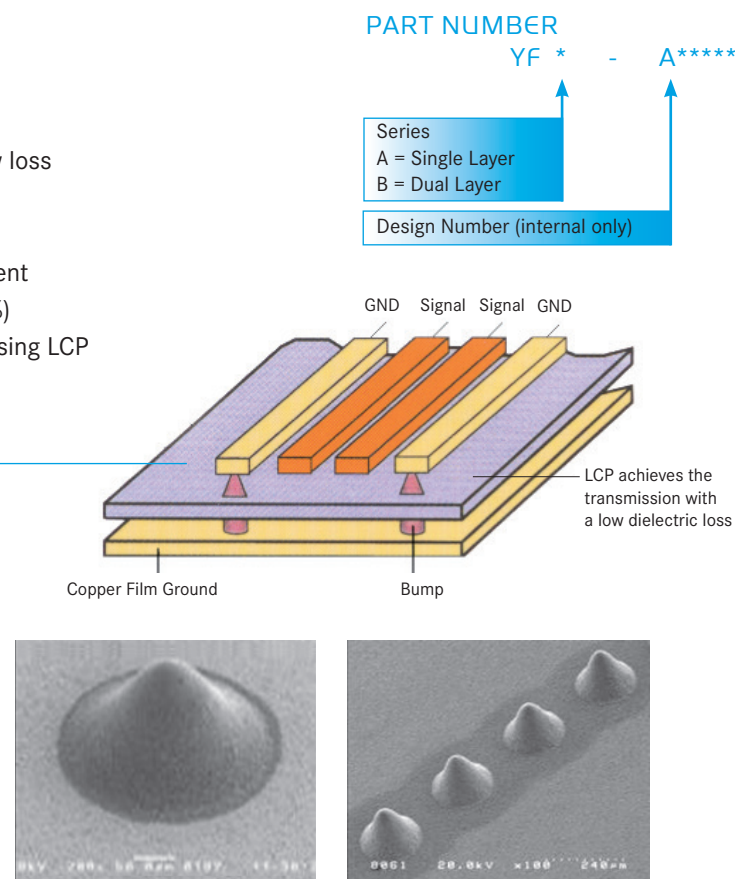
FEATURES

- Able to transmit high-speed up to 20 Gbps with low loss
- Effective to use at harshest temperature, humidity and EMI condition
- Customised depending on the layout and requirement
- Stable differential impedance of 100 Ohm (+/- 10%)
- Different structure compared to standard FPC by using LCP insulation and silver bumps for interconnection

STRUCTURE TO ACHIEVE HIGH-SPEED TRANSMISSION



GND and copper film ground are connected with silver bumps which also protect from EMI



INTERNAL CONNECTORS – BOARD-TO-CABLE

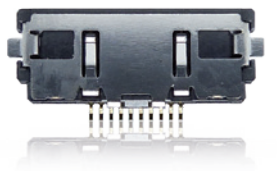
HIGH SPEED

Yamaichi Electronics offers a range of standard ZIF and non-ZIF connectors which are fulfilling special requirements, e.g. for high-speed transmission. All connectors conform to RoH2011/65/EU.

HF509 NON-ZIF TYPE

This connector series is notable for its special space saving design with a height of only 2 mm. The non-ZIF connector is providing a special side locking function.

HF509S - 10 - 03

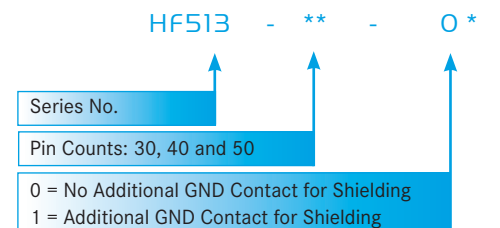


FEATURES

- Up to 5 Gbps
- Pitch: 0.5 mm
- Non-ZIF connector with side locking function
- 10 pins, 90°
- To be used with YFLEX cable and adapter
- Shielded version

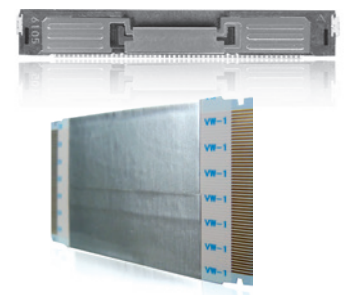
HF513 NON-ZIF TYPE

Direct mating type, the locking function ensures a reliable position of the cable with the connector. The HF513 series is available with or without shielding and ground contacts.



FEATURES

- 30, 40 and 50 pins at 90° available, further versions on request
- Pitch: 0.5 mm
- Up to 20 Gbps data transfer rate (if used with YFLEX cable)
- Push-in locking
- With and without additional shielding pins

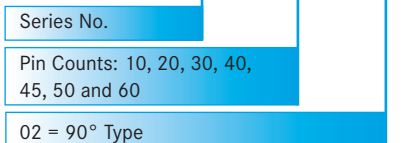


HF601 ZIF TYPE

The HF601 ZIF series is a very smart connector family. It combines very small design with highly sophisticated technical features. The standard version is able to transmit up to 1 Gbps, the high-speed version up to 5 Gbps. For an improved locking function the connector can be used with an FFC equipped with ears.

1) HF601 - 22 - 03

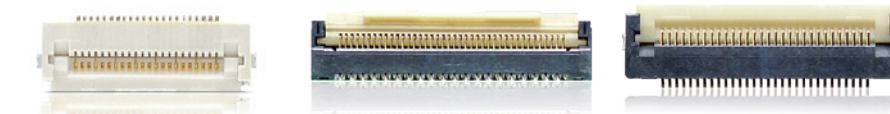
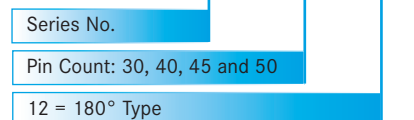
2) HF601 - ** - 02



FEATURES

- High-speed function 1Gbps
- Pitch: 0.5 mm
- Special types can transmit up to 5 Gbps
- FFC with or without ears for additional locking
- Various pin counts in 90° and 180°

3) HF601 - ** - 12



1) 22 Pin type (up to 5 Gbps) 2) 90° Type (up to 1 Gbps) 3) 180° Type (up to 1 Gbps)

CAR COMPUTING CONNECTOR SYSTEM *HIGH SPEED*

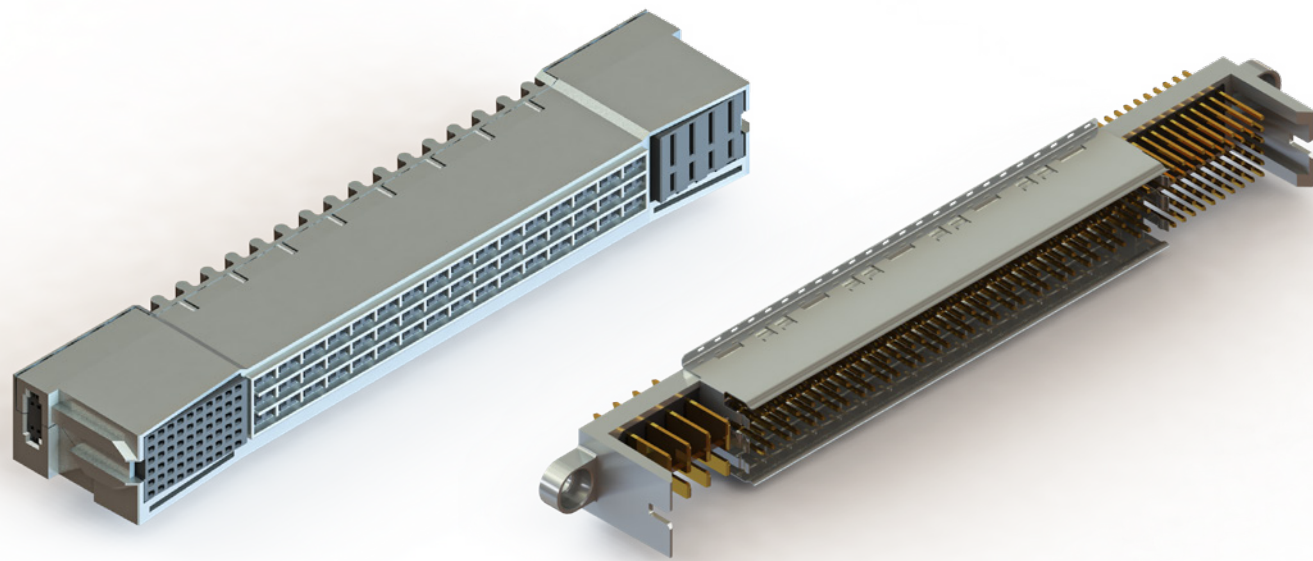
Y-CCC SERIES

Yamaichi Electronics is creating the future for the connectivity of car computing systems with its innovative Y-CCC. This backplane connector system fulfills the high requirements of data, signal and power transmission combined with robustness and functionality. Contact us for more details about the Y-CCC system.

FEATURES

- 56 Single ended contacts
- 48 Differential pairs for high-speed transmission up to PCIe 4.0
- 8 Power pins up to 20 A
- THR soldering version
- Screwing fixation for backplane connector

Y-CCC
S E R I E S



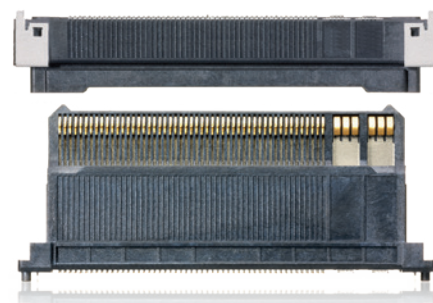
FLOATING BOARD TO BOARD HIGH-SPEED CONNECTOR

HF311 SERIES *HIGH SPEED*

This connector system is the perfect solution to connect two boards. The floating mechanism enables smooth functioning also during shock and vibrations.

FEATURES

- Floating function between 0.5 and 1 mm in X, Y, Z direction
- High-speed transmission rate up to 5 Gbps
- Stacking height up to 22 mm
- Different pin counts and pitch available on request
- Power pins available on request
- First-Mate/Last-Break for ESD protection
- Poka-Yoke mating system
- RoHS2011/65/EU



INTERNAL CONNECTORS – BOARD-TO-BOARD

BOARD EDGE CONNECTOR SERIES

The BEC series is available in two different versions: standard type and high-speed version with the capability to transmit up to 5 Gbps and to support signals like USB3.0, HDMI, PCIe2.0 and Sata.

FEATURES

- Connector ensures reliable contact in applications with vibrations due to the contact shape and form of insulator
- Improved mechanical stability due to enlarged SMT tabs
- Additional fixation of the module card in the connector ensures stable positioning over lifetime
- Improved EMI protection with additional ground connection
- Automatic assembly of module card is possible
- Mating area compatible with QSEVEN and MXM 1.0 standard cards
- RoHS2011/65/EU

STANDARD BEC WITH 230 PINS

BEC-0.5-230-59-*F-R-EDC

- Capable for signals such as USB2.0, PCIe1.3



HIGH-SPEED BEC WITH 230 PINS

BECH5-0.5-230-59-*F-R-EDC

- Capable for signals such as USB3.0, HDMI, PCIe2.0, Sata

HIGH SPEED



HIGH-SPEED BEC WITH 314 PINS

CN113-314-2201-VE

- MXM3.1 / SMARC2.0
- High speed transmission 10 Gbps
- Connector ensures reliable contact with vibrations due to the nut and screwing structure with latch.



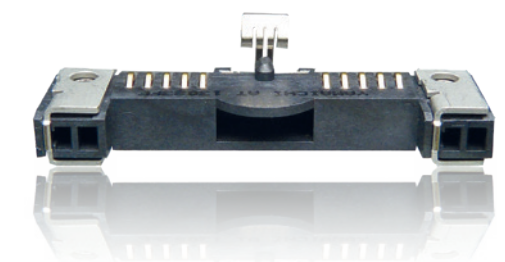
POWER CONNECTOR

BECPOW-1.5-10-59-*F-R-EDC

Optionally the power connector can be used together with the BEC/HS BEC. It supports the system with 10 pins. Each pin can transfer 1.5 A. Another function is the fixing support of the module during mounting. The module is held down by a spring in the middle of the connector. This enables an easier module fixation by screws on the flanges.

FEATURES

- Transferring power via 10 x 1.5 A
- Supporting assembly of module by additional spring
- Mating height 5 mm
- RoHS2011/65/EU



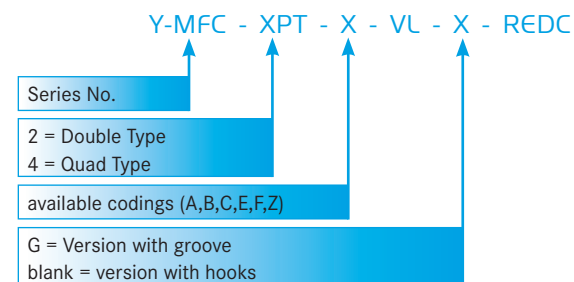
For all Versions: Plating Options (F=AU Flash Plating, B = 15 µinch AU Plating, A =30 µinch AU plating)

MINI-FAKRA CONNECTORS - Y-MFC

Coding	Part Name		Color
A	Y-MFC-4PT-A-VL-REDC		Black
B	Y-MFC-4PT-B-VL-REDC		White
C	Y-MFC-4PT-C-VL-REDC		Blue
E	Y-MFC-4PT-E-VL-REDC		Green
F	Y-MFC-4PT-F-VL-REDC		Brown

FEATURES

- Developed and tested for automotive applications
- High-speed performance
- Space- and weight-saving design
- Two different designs of the insulator available - thus perfect adaptation in the housing is possible
- Different colour and mechanical codings available
- The coding position can be supplied in standard 90° / 180° and 270° versions on customer request
- Quad and Double version available

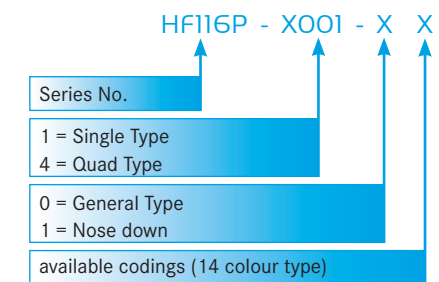


HIGH-SPEED DATA ETHERNET - Y-HDE

Coding	Part Name		Color
A	HF116P-1001-0A-VE		Black
B	HF116P-1001-0B-VE		White
C	HF116P-1001-0C-VE		Purple
E	HF116P-1001-0E-VE		Green
F	HF116P-1001-0F-VE		Brown
Z	HF116P-1001-0Z-VE		Turquoise

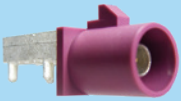
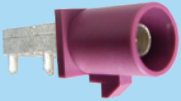

FEATURES

- 7 different codings of the single-type version
- Data transmission up to 20 Gbps
- Weight and space saving design
- Tested and produced for automotive applications
- Single and Quad version available



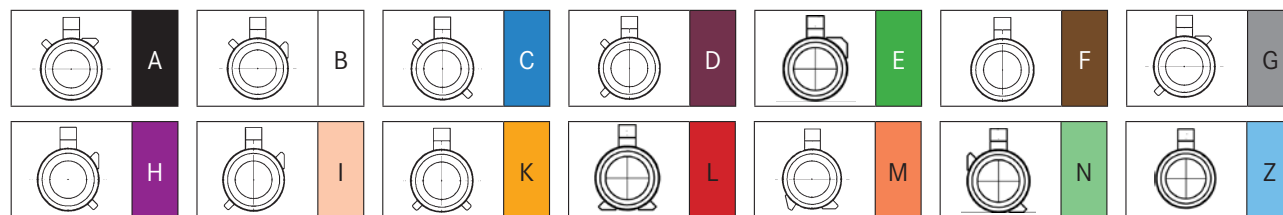
I/O CONNECTORS

FAKRA CONNECTORS














Version	Part Name	
PCB side, male connector, coding nose up	HF106P-0001-0X-VE	
PCB side, male connector, coding nose down	HF111P-0001-1X-VE	
PCB side, male connector, stacked version	HF110P-0001-XX-VE	

COLOUR AND HOUSING CODING

X = available codings



HSD CONNECTORS

Version	Part Name		Colour and housing coding
PCB side, male connector, with 4 power pins	HF112P-0001-0X-VE		 
PCB side, male connector, with 2 power pins	HF108P-0001-0D-VE		
PCB side, male connector, w/o EMI ring	HF109P-0001-0X-VE		  
PCB side, male connector, with EMI ring	HF107P-0001-0X-VE		  

X = available codings

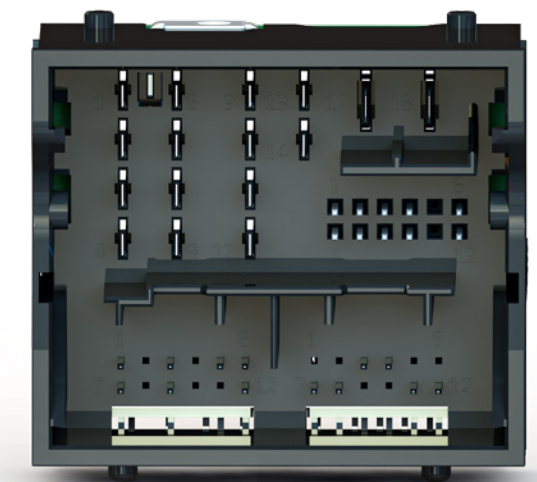
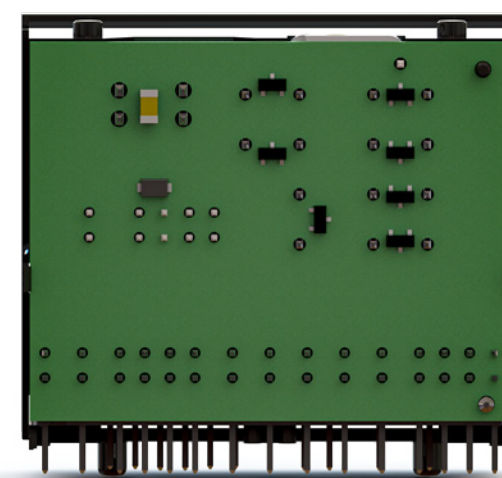
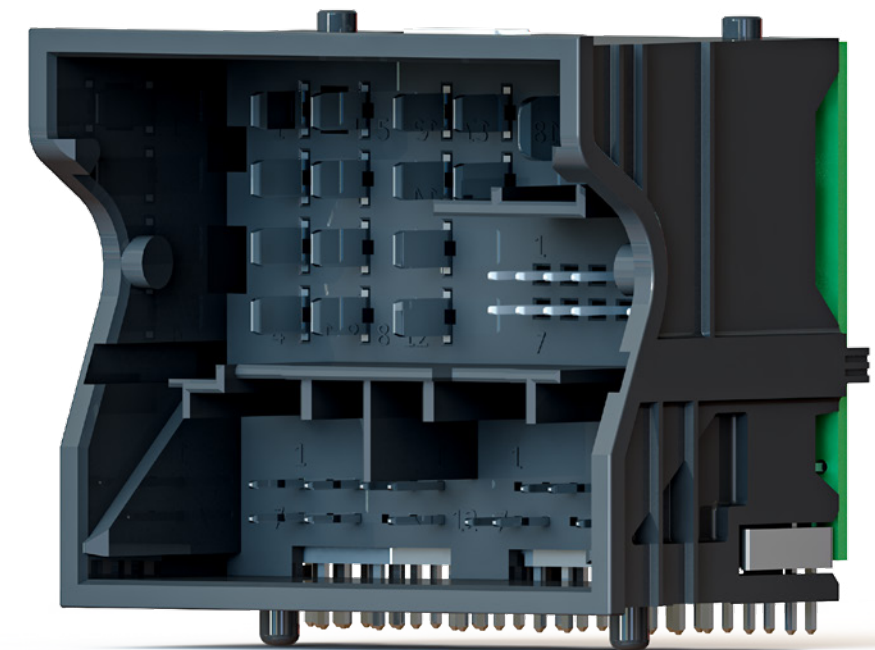
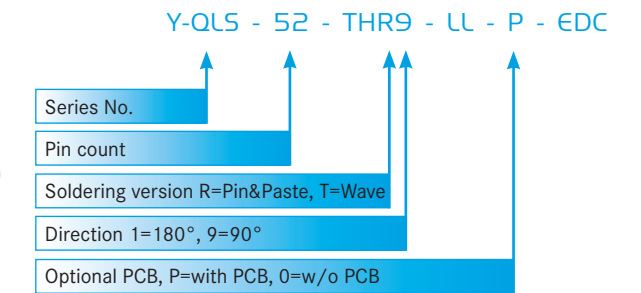
I/O CONNECTORS

Y-QUAD

Y-Quad is the connector series based on Quadlock connector systems. The improved design is ensuring a space saving and easy to assemble product. Further versions like a reflow solderable type, reduced number of pins, version with/without shielding or with/without PCB are available on request.

FEATURES

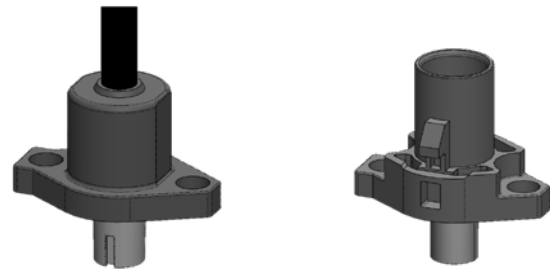
- Space saving design in regards to connector size and PCB layout
- Other pin counts are available on request
- Wave soldering or reflow soldering version (Pin & Paste)
- PCB with assembled components possible
- RoHS2011/65/EU



Yamachi is offering the backside PCB with components assembled on it, like capacitors, LED or resistors.

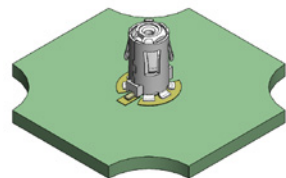
CAMERA MODULE CONNECTOR

COAXIAL TYPE HCO01



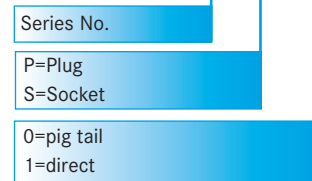
HC001P-0001-0-VE

HC001P-1001-0-VE



HC001S-0001-0-VE

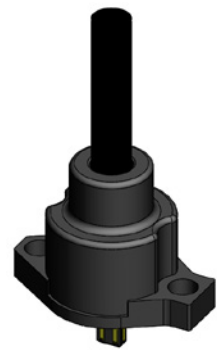
HCO01 x - x 001-0-VE



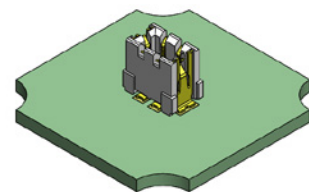
FEATURES

- Plug side connector can be selected according to the application.
- Market smallest size(∅ 3.5) on both board and plug side
- Absorption of misalignment of mating part (mounting tolerance in X, Y, θ direction)
- High-speed transmission (Compatible with 4 GHz)
- Waterproof (IP69K)
- Easy procedure (only by screwing)
- Wire tension min. 100 N

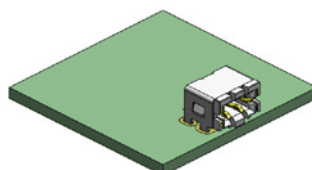
4CORE TYPE HCO04



HC004S-0001-0-VE

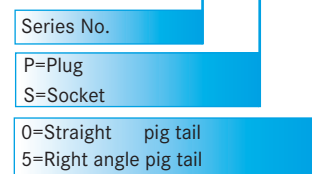


HC004P-0001-0-VE



HC004P-0005-0-VE

HCO04 x - x 00 *-0-VE



FEATURES

- Board side connector can be selected according to the application
- Market smallest size (W4.75×D3.0 mm) on both board and plug side
- Absorption of misalignment of mating part (mounting tolerance in X, Y, direction)
- High-speed transmission (Compatible with 4.8 Gbps)
- Waterproof (IP69K)
- Easy procedure (only by screwing)
- Wire tension min. 100 N

CABLE ASSEMBLIES

Yamaichi Electronics is also providing a wide range of standard BTB and BTC connectors including the fitting cable assemblies. Furthermore we are offering standard customer interfaces like USB connectors, HDMI connectors etc..

CARD CONNECTORS

Based on customer requirements Yamaichi Electronics offers suitable card connectors for almost all card types, e.g. for Micro-SIM and SIM or MicroSD and SD. The design of the contacts ensures reliability under conditions of vibration and shock. All card connectors conform to RoHS2011/65/EU. This page shows a selection of card connectors out of our large portfolio.

SD - FP5009-2903-0

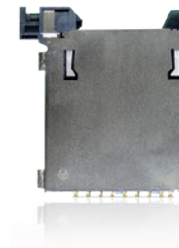


This SD card connector has a closed cover, card fly-out brakes thus making it the perfect solution for automotive applications.

FEATURES

- SD connector, especially for harsh environment
- Connector for both card types SD and MMC
- Card detector
- Soft lock with Push/Push mechanism
- Write protection switch
- EMI prevention with four grounding terminals
- Double spring coil

SD - FP5009-4200-0(03)

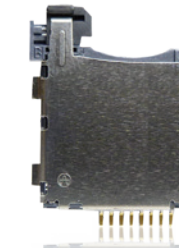


This SD card connector has a special one-push lock function. This means the locking system is working automatically after the insertion of the card. The design allows the highest reliability also under conditions of shock and vibrations.

FEATURES

- Automatic locking function after insertion of SD card
- 2-point contact on all contact terminals to ensure dielectric discontinuity prevention which may be caused by vibration and impact
- Zero sliding contact @100 G shock (X, Y, Z direction)
- Metal shell cover with 4 GNDs (solder tubes) to ensure EMI/ESD prevention performance

MICROSD - PJ5008-4100-0-VE



This MicroSD card connector has a special one-push lock function. This means the locking system is working automatically after the insertion of the card. The design allows the highest reliability also under conditions of shock and vibrations.

FEATURES

- Two-point contact on all contacts
- Inner spring coil ensures card position also under conditions of shock and vibrations
- Metal shell for EMI protection

SIM - FM5006-2610-0



This SIM card connector convinces with its metal shielding, switch and an easy-to-use push-push mechanism.

FEATURES

- Conforms to GSM11.11 standard for the European mobile phone system
- With switch
- Smooth extraction function by Push/Push mechanism

SIM- FM5006-2340-0(VE)



This card connector has a push-lock function. The system is locking the card automatically after insertion. The design allows the highest reliability also under conditions of shock and vibrations.

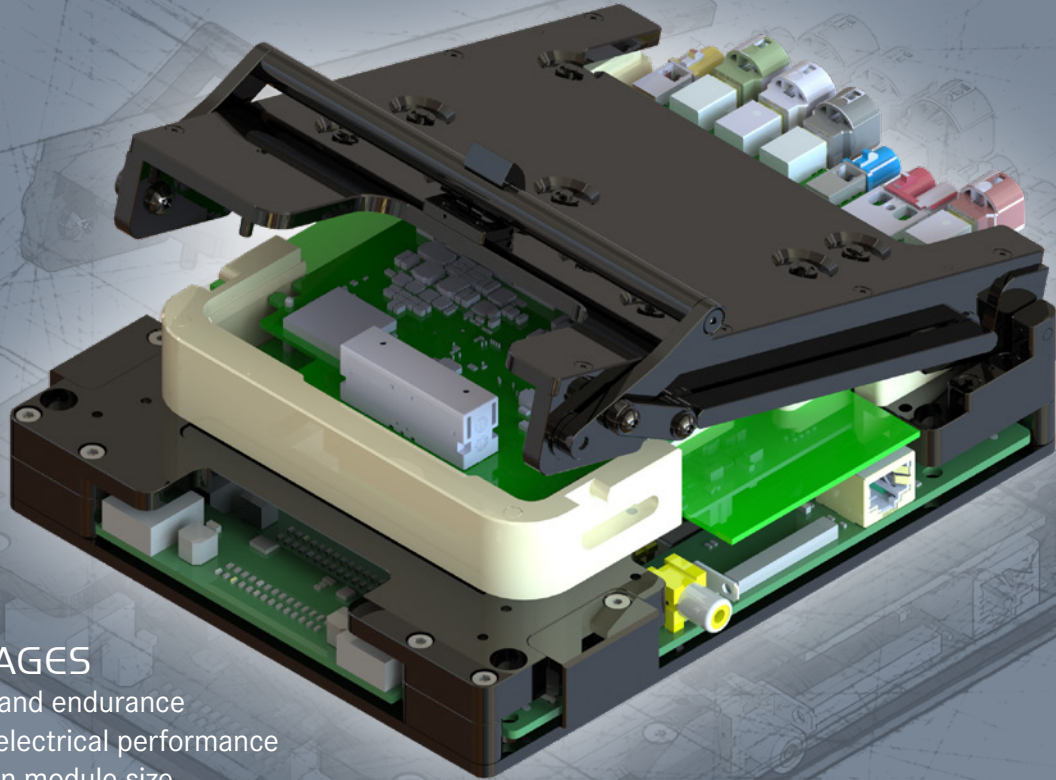
FEATURES

- With switch
- With hard locking function

MODULE TEST ADAPTER

With sophisticated and smart designs, Yamaichi Electronics provides adapter systems that perfectly meet the challenges of maintaining high-speed signal integrity by means of superior and reliable contact design.

Our products include vertical and horizontal test adapters for both burn-in and functional testing. Tailor-made solutions are also available.



ADVANTAGES

- Reliability and endurance
- Very high electrical performance
- Flexibility in module size
- Volume test ready
- In-line volume test

Proven and reliable probe pin technology combined with high-speed components provides a test system with very high electrical transmission properties. The combination of single module tests with one test system gives you the possibility to decrease the test time and costs per module.

AUTOMOTIVE SOLUTIONS

Version November 2021

TECHNICAL DATA ARE SUBJECT TO ALTERATION WITHOUT PRIOR NOTICE

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