



# Automotive Connectors

Advanced technology for next  
generation vehicle challenges



**HRS** HIROSE  
ELECTRIC  
U.S.A.

CONNECTING THE FUTURE

# CONNECTING THE FUTURE AUTOMOTIVE APPLICATIONS

Instrument Cluster • Infotainment • Antenna • Battery/Inverter • ADAS • LiDAR • Lighting



## Infotainment & Cluster



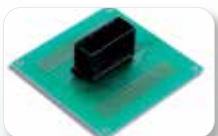
FH41 Series



FH52 Series



FH63A Series



GT25 Series



GT32 Series

## Antenna



GT36 Series



GT21 Series

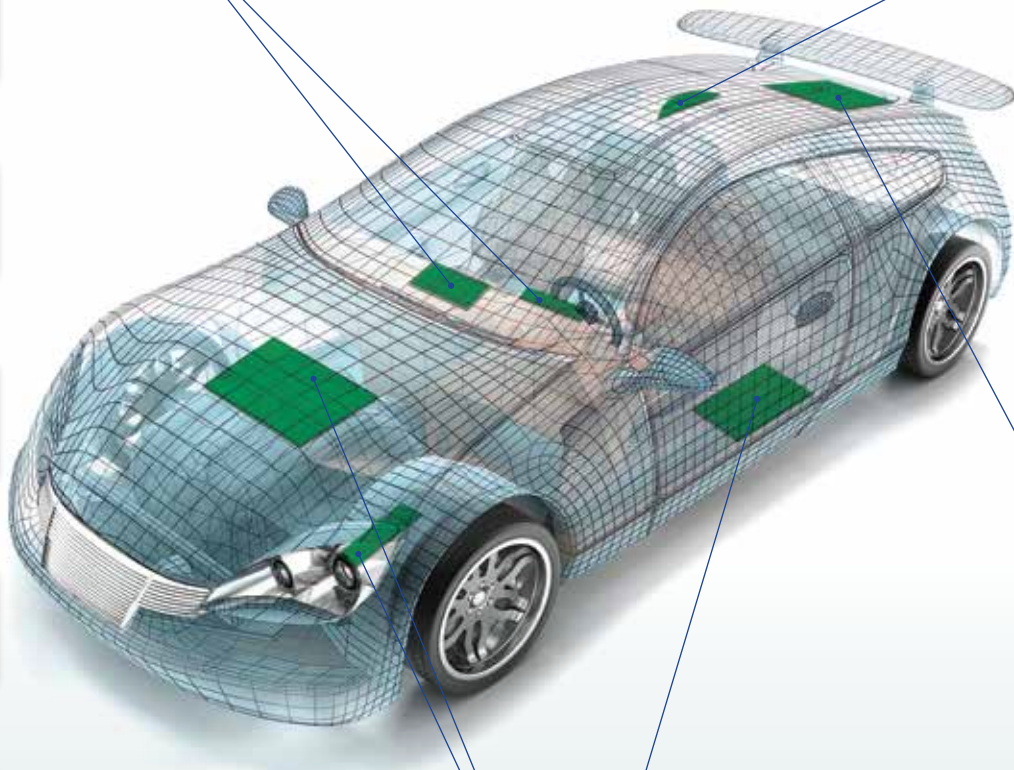
## ADAS/LiDAR



FX23 Series



DF40 Series



## Lighting, Powertrain, EV & Battery Management



ZE05 Series



FX26 Series



HVH-280 Series



ZG05L2 Series

# A WORLD LEADER IN INTERCONNECT TECHNOLOGY

Hirose provides innovative, cutting-edge solutions for your interconnect requirements. We specialize in the design, development & manufacturing of high-performance interconnect solutions supporting the automotive, consumer, medical, and industrial markets. With over 80 years experience, Hirose has established itself as a growing technology leader.

Positioned on the forefront of interconnect technology, Hirose works closely with its customers to develop innovations in miniaturization, high speed data transmission, signal integrity and robust mechanical design.

Hirose is a growing \$1.2 billion company, with approximately 4,000 employees worldwide. Top-tier engineers design high-quality, precision connectors. Customer support is provided through all stages of development.

## HIROSE AUTOMOTIVE

Hirose is a key international supplier in the automotive industry manufacturing rugged, reliable connectors to meet the needs of diverse automotive requirements. Our world-class engineering capabilities combined with cost-effective operations enables us to provide our customers with high-value automotive interconnect solutions and services.

By partnering with customers early in the design stage, we provide optimum products, expertise & world-class solutions:

- ▶ Advanced Products
- ▶ High Performance
- ▶ Quality Management – continuous monitoring and evaluations within our manufacturing process

## APPLICATIONS

Your products demand quality, and Hirose connectors provide the manufacturing precision, durability, and design intelligence that allows you to increase efficiency during installation, decrease costs, and improve your overall operations.

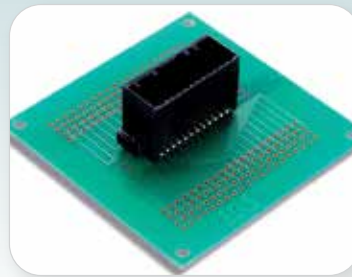
With expertise in infotainment, ECU, and lighting, Hirose provides wide selection of connectors for navigation systems, LED, HID, instrument clusters, antennas, and inverter/ battery management. Continually on the forefront of emerging technologies, Hirose's connectors are designed for use in contemporary products such as hybrid/electric vehicles.



### ZE05 Series

- Oper. Temp. -40C to +125C
- 20-22 AWG
- 5A max rated current
- 250 VAC
- 30 Durability (mating cycles)
- Contact positions: 2, 4, 8, 12 (16, 20, 24)

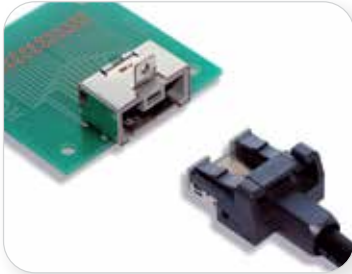
High vibration resistance. 0.5mm terminal, 2mm pitch.



### GT25H2 Series

- Oper. Temp. -40C to +105C
- 20-22 and 24-28 AWG
- 3A max rated current
- 250 VAC
- 30 Durability (mating cycles)
- Contact positions: 8, 12, 16, 20, 24, 32, 40

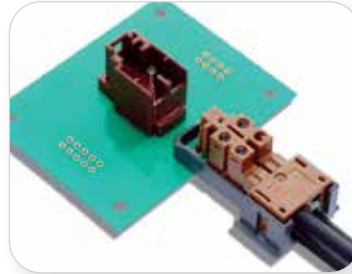
SMT compatible



### GT32 Series

- Oper. Temp. -40C to +105C
- 24-28 AWG
- 1A max rated current
- 30 VAC
- 30 Durability (mating cycles)
- Contact positions: 4, 10, 19

Pin-in-paste reflow method, 2-point contact, Panel mounting screw optional



### GT36 Series

- Oper. Temp. -40C to +105C
- 1.5 or less (DC to 2.5 GHz)
- 30 Durability (mating cycles)
- Contact positions: 1, 4

Clear click feeling, High vibration resistance



### HVH280 Series

- Oper. Temp. -40C to +120C
- 12-14 AWG
- 30A max rated current
- 600 VAC
- 30 Durability (mating cycles)
- Contact positions: 2

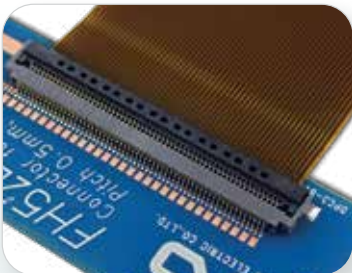
Clear "click feeling" to prevent incomplete insertion. Retainer on harness side to secure terminal insertion (TPA, Secondary lock) WaterProof & Non WaterProof available



### U.FL Series

- Oper. Temp. -40C to +90C
- 1.3 or less (DC to 6GHz)
- 30 Durability (mating cycles)
- Characteristic impedance 50
- Mated height (mm): 1.9, 2.3, 2.4

Standard connector for W-LAN, Only available as a cable assembly. Cable dia: Ø0.81, Ø0.95, Ø1.13, Ø1.32, Ø1.37mm



### FH52E Series

- Oper. Temp. -40C to +105C
- 2.0mm Height
- 0.5A max rated current
- 50 VAC
- 20 Durability (mating cycles)
- Contact positions: 8, 10, 15, 18, 20, 22, 24, 25, 30, 40, 50, 60, 64, 68

Long metal fittings type, Robust design, PCB patterning space underneath, Bottom contact, Halogen-free (IEC61249-2-21)



### FH63A Series

- Oper. Temp. -55C to +105C
- 2.8mm Height
- 0.5A max rated current
- 50 VAC
- 10 Durability (mating cycles)
- Contact positions: 10, 30, 40

Bottom contact, Satisfies severe automotive requirements, One action lock, Supports USB 3.0, Embedded Display Port 1.3, HDMI 1.4a, V-by-One HS, Halogen-free (IEC61249-2-21)



### FX23 Series

- Pitch: 0.5mm
- 0.5A (signal), 3A (power4 pin) max rated current
- 50 VAC/ 200 VDC
- Contact positions: 20/40/60/80/100/120 for signal + 4 for power source
- Stacking height (mm) 15, 20, 25, 30

SMT, Floating structure stacking and vertical versions, 8 Gbps High Speed transmission



### DF40T Series

- Oper. Temp. -55C to +125C
- 0.3A max rated current
- 30 VAC
- 30 Durability (mating cycles)
- 1.5, 2.0, 2.5, 3.0, 3.5, 4.0 Height
- Contact positions: 10, 20, 30, 40

Supports USB3.1 Gen 2, 10Gbps transmission

# HIROSE USA, AUTOMOTIVE CONNECTORS, QUICK REFERENCE SHEET

Series	Type	Contacts (Pins)	Pitch (mm)	Height (mm)	Temp Range (°C)	Current (A/pin)	Voltage (V AC)	Speed (Gbps)	Termination	Features
<b>FPC Connectors</b>										
FH12-SH	FPC/FFC	4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,22,24,26,28,30,32,33,34,35,36,40,45,50,53	0.5, 1	2	-40 to 85	0.5	50	-	SMT	Wide variety, top or bottom contact options, 0.5 and 1mm pitch options
FH12-SV	FPC/FFC	6,7,8,10,12,13,15,16,17,18,20,22,24,26,30,32,33,34,36,40,45,49,50,60	0.5, 1	4.85	-40 to 85	0.5	50	-	SMT	0.5 and 1mm pitch options
FH28K	FPC/FFC	50, 60, 68, 80	0.5	2.55	-40 to 125	0.5	50	-	SMT	Heat resistance FH28
FH40	FPC/FFC	10,20,24,30,40,45,50,60,64,80	0.5	5.8	-40, 105	0.5	50	-	SMT	Vertical
FH41	FFC	15,20,28,30,31,40,50,60,68	0.5	2.5	-40, 105	0.5	50	3.75	SMT	Shielded, compatible with FH48, halogen free
FH48	FFC	20, 21, 30, 31, 40, 50, 68	0.5	6.68	-40 to 85	0.5	50	-	SMT	Shielded, compatible with FH41, halogen free. V-by-One HS
FH49F	FPC	96	0.4	4	-40 to 85	0.3	50	-	SMT	Wiping structure (dust reduction)
FH52	FPC/FFC	6,8,10,11,12,15,16,18,20,22,24,25,26,28,30,32,40,42,45,50,60,64,68	0.5, 1	2	-40, 105	0.5	50	-	SMT	Halogen free, increased retention force
FH52E	FPC/FFC	8,10,15,18,20,22,24,25,30,40,50,60,64,68	0.5, 1	2	-40, 105	0.5	50	-	SMT	Long metal fittings
FH52K	FPC/FFC	6,8,10,20,32,34,68	0.5	2	-40, 125	0.5	50	-	SMT	Long metal fittings and increased heat resistance
FH52T	FPC/FFC	10,24,32,50	0.5	2	-40, 105	0.5	50	-	SMT	Long metal fittings and 2point contact
FH55	FPC	10, 22, 31, 40	0.4, 0.5	1.5	-55 to 85	0.5 (0.5mm pitch) or 0.4 (0.4mm pitch)	50 (0.5mm pitch) or 40 (0.4mm pitch)	5	SMT	High speed, impedance matched, halogen free
FH63A	FPC/FFC	10,30,40	0.5	2.8	-55, 105	0.5	50	5.4	SMT	One action lock, bottom contact, shielded, halogen free, horizontal Embedded Display Port 1.3 HDMI 1.4a, USB 3.0, V-by-One HS
FH65	FPC/FFC	40	0.5	2.8	-55, 105	0.5	50	-	SMT	Space Saving, Low Profile, High heat resistance, halogen free
<b>Board to Board Connectors</b>										
DF17	B to B	20, 26, 30, 40, 50, 60, 70, 80	0.5	4, 5, 5.5, 6, 6.5, 7, 8	-35 to 85	0.3	50	-	SMT	Wide variations of stacking height, robust
DF40	B to B	10, 12, 20, 24, 30, 34, 40, 44, 48, 50, 60, 70, 80, 90, 100	0.4	1.5, 2, 2.5, 3, 3.5, 4	-35 to 85	0.3	30	5	SMT	Fine pitch and shock resistant
DF40GL	B to B	44	0.4	1.5	-55 to 85	0.4	30	5	SMT	Positive lock, shielded, fine pitch and shock resistant
DF40T	B to B	10,20,30,40	0.4	1.5-4.0	-55, 125	0.3	30	10	SMT	USB 3.1 gen 2
FX23(L)	B to B, Floating	20, 40, 60, 80, 100, 120	0.5	8-30	-55, 105	0.5	50	8	SMT, THT	Floating Range ±0.6 for XY, 4 power pins at 3A each, High Speed
<b>Coax Connectors</b>										
FX16	FFC, B to W (micro coax)	21, 30, 31, 41, 51	0.5	n/a	-55 to 85	0.5	60	6GHz	Soldering/SMT	High speed, FFC flip-lock harness
GT5	W to W	1,2,4	n/a	n/a	-40, 105	1	250	2GHz	Crimp, THT	One step crimp GPS, DTV, AM/FM radio etc
GT13	W to B	1,2,4	n/a	n/a	-40, 105	1	125	1GHz	Crimp, THT	One step crimp, AM/FM etc
GT16(C, G)	W to B, W to W	1	n/a	n/a	-30 to 105	1	250	3, 6GHz	Crimp, SMT	3GHz, 6GHz Satellite radio, Bluetooth, DSRC, Wi-Fi etc
GT19	W to B	1	n/a	n/a	-30 to 105	1	125	2GHz	Crimp, SMT	Low cost, space saving, Glass Antenna
GT21	W to B, W to W	1,2,3,4	n/a	n/a	-40, 105	1	250	2.5GHz	Crimp, THT, SMT	"One step" crimp termination GPS, DTV, AM/FM radio, etc
GT36(A, S)	W to B	1, 4	6	n/a	-40, 105	1	50	2.5, 3, 6GHz	Crimp, THT	Compact Design GPS, DTV, TEL, Bluetooth, DSRC, Wi-Fi, etc
<b>Shielded Connectors</b>										
CX	W to B	16,24	0.5	n/a	-30 to 85	1.25	20	10	SMT	USB Type C
CX90W	W to B	24	0.5	n/a	-40 to 85	1.25	20	10	SMT	IPX8 Water Resistant USB Type C
GT17(V)	W to B	6,8,10	2	n/a	-40, 105	3	250	1	Crimp, THT, SMT	USB2.0, IEEE1394, LVDS, GVIF
GT17H, GT17HN	W to B	4, 16	2	n/a	-40, 105	1	250	1	Crimp, THT, SMT	Low profile, Wide variation (2row, Right Angle, Vertical, etc) USB2.0
GT32	W to B	4,10,19	0.75, 1.5	n/a	-40, 105	1	30	5	Crimp, THT, SMT	USB3.0(10pin), HDMI1.4(19pin), Pin-in-paste reflow
<b>Board to Wire &amp; Wire to Wire Connectors</b>										
DF51	W to B	2, 3, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30	2	n/a	55 to 105	2	250	-	Crimp, TH	Positive lock, polarized, common crimp terminals with DF11 series, pottable (vertical only)
GT8E, GT8EZ, GT8EU	W to B	2-8,10,12,16,20,24	2	n/a	-40, 105	1	250	-	Crimp/SMT, DIP	Positive Lock, Wide Variety Internal Connector
GT25	W to B, W to W	7,8,12,13,20,24,28,32,40	2.2	n/a	-40 to 105	1.3	250	-	Crimp/SMT	Positive Lock, Retainer
ZE05	W to B	2,4,8,12,16,20,24	2	n/a	-40, 125	5	250	-	Crimp, THT, SMT	Small 0.5 terminal, High Temperature
HVH-280	W to W	2	9.5	n/a	-40 to 120	30	600	-	Crimp	30A, CPA, 1Water Proof

For additional information please go to <https://www.hirose.com/product/en/products/industry/automotive/>  
 Specifications herein are subject to change without notice. Contact Hirose for latest specifications, drawings, or availabilities.

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# HIGH SPEED INNOVATION



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RoHS - We are committed to the development and manufacture of world-class products without sacrificing the health of people & the environment. Hirose manufactures products that are compliant with RoHS directives.



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