

Press Information

KYOCERA Launches 0.5mm-Pitch 5652 Series Electronic Connectors for Automotive Applications

First “FloXY” brand floating board-to-board connector with 16 Gbps high-speed transmission

Kyoto/London, February 17th, 2021. Kyocera has introduced a new 0.5mm-pitch floating board-to-board connector series ($F/P^1 = 170\%$) for high-speed 16Gbps data transmission. Sold under the 5652 Series designation, the new connectors can float within $\pm 0.85\text{mm}$ for easy and accurate mating. They are available now.

Furthermore, the 5652 Series are Kyocera’s first connectors to use the new “FloXY” brand name, and the company plans to gradually expand the lineup in the future.



Product name	“5652 Series” Floating board-to-board connector for high-speed data transmission
Applications	Automotive, Industrial equipment, Communications equipment, etc.

Development Background

Demand for a safer, more secure driving experience is bringing revolutionary change to the automotive market, with rising demand for smart cars, electric vehicles, ADAS (Advanced Driver-Assistance Systems), and AD (Autonomous Driving). Essential to these systems are automotive devices such as Mobility Computers, IVI², and LiDAR, which require connectors that can support high-volume, high-speed data transmission without latency.

Kyocera’s new 5652 Series connectors are the first in the industry³ to comply with USB 3.1

¹ F/P F = Floating amount/P = Pitch

² Next-generation In-Vehicle Information systems / In-Vehicle Infotainment systems

³ Among 0.5mm-pitch floating board-to-board connectors (according to research by Kyocera as of December 2020)



Gen.2 standards for high-speed data transmission, as well as other standards, including PCIe Gen.1 through Gen.4, MIPI D/C-PHY, SATA 3.0, and USB 3.1 Gen.1.

These connectors are available in a wide range of stacking heights, from 14mm to 30mm, enabling more design options. They can withstand the extreme operating temperatures of up to 125° C (257° F) required of in-vehicle equipment.

Kyocera will continue to expand its product lineup and is currently developing other floating board-to-board connectors and high-pin-count (300+) connectors for high-speed data transmission with stacking heights 5.0mm.

Features: 5652 Series Floating Board-to-Board Connector

1. Complies with high-speed transmission standards such as PCIe Gen.4 (16 GT/s) and USB 3.1 Gen.2

The floating board-to-board connector complies with SATA 3.0, PCIe Gen.1 2.5 GT/s through Gen.4 16 GT/s high-speed transmission standard (16 GT/s) and is the industry's first^{*3} to comply with USB 3.1 Gen. 2. The target characteristic impedance ranges from 85Ω to 100Ω, making it possible to meet various high-speed transmission standards.

2. Floating tolerance ±0.85mm

Kyocera's new 5652 Series clicks during stacking to ensure proper mating, with high retention force to resist detaching. The 5652 Series is a floating connector with a 0.5mm pitch that can move ±0.85mm in the X and Y directions to absorb positional and mounting misalignment within the housing. The connector reduces the stress generated during use for long-term reliability and maximizes both electrical and mechanical characteristics.

3. Power terminal options

A dedicated power supply terminal can be assigned separately from the signal terminal according to the desired rated current.

4. Board-to-board mounting height allowance ±0.75mm

Generally, the effective fitting length of a connector contact changes depending on the variation of distance between boards due to accumulated tolerances, which can affect data transmission characteristics. However, Kyocera's 5652 Series can cope with a maximum ±0.75mm height tolerance between boards while still providing high-speed data transmission.



5. Manufactured in a factory compliant with IATF 16949 for automotive applications at high temperatures

These highly heat-resistant products with operating temperatures ranging from -40°C to +125°C are suitable for installation in automotive equipment such as ADAS and infotainment systems. They are also IATF 16949 compliant.

6. RoHS compliant and halogen-free

Specifications

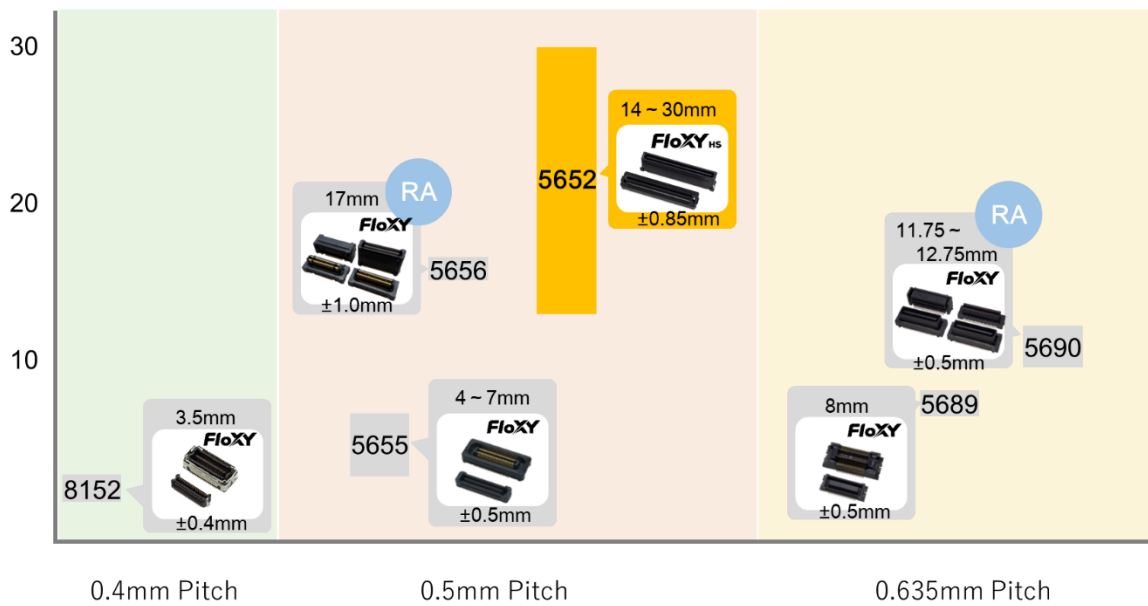
No. of pins	10 ~ 180 Pins	Operating temperature range	-40 deg. C to +125 deg. C
Pitch	0.5mm	Rated current	DC 0.6A/Contact DC 3A/Power pin *Total 50A MAX./Connector
Stacking height	14mm to 30mm	Rated voltage	DC 50V/Contact
D.W. voltage	AC 500V, 1min.	Materials	Copper alloy/ heat-resistant resin
Floating Amount	+/-0.85 mm in X and Y directions	Halogen-free	Compliant
Height allowance	+/-0.75 mm in the Z direction	RoHS	Compliant
Shield	Available		
High-speed transmission standard	PCIe Gen.1 2.5 GT/s through Gen.4 16 GT/s USB 3.1 Gen.1/Gen.2 MIPI D/C-PHY SATA 3.0, etc.		

About FloXY

FloXY

FloXY is a brand within Kyocera's floating board-to-board connector series. By moving in the X and Y directions and absorbing substrate mounting and fitting misalignments (offset), FloXY offers high reliability required in the automotive and industrial machinery markets. Because Kyocera's 5652 Series connectors are compatible with the high-speed transmission standard of 16Gbps or more, the letters "HS" are displayed next to the FloXY brand logo.

Stack. Height (mm)



RA: Right Angle Type Available



For more information on Kyocera: www.kyocera.co.uk

About Kyocera

Headquartered in Kyoto, Japan, KYOCERA Corporation is one of the world's leading manufacturers of fine ceramic components for the technology industry. The strategically important divisions in the KYOCERA Group, which is comprised of 298 subsidiaries (as of March 31, 2020), are information and communications technologies, products which increase quality of life, and environmentally friendly products. The technology group is also one of the most experienced producers of smart energy systems worldwide, with more than 40 years of know-how in the industry.

The company is ranked #549 on Forbes magazine's 2020 "Global 2000" listing of the world's largest publicly traded companies. With a global workforce of over 75,500 employees, Kyocera posted sales revenue of approximately €13,33 billion in fiscal year 2019/2020. The products marketed by the company in Europe include printers, digital copying systems, semiconductor-, fine ceramic-, automotive- and electronic components as well as printing devices and ceramic kitchen products. The KYOCERA Group has two independent companies in the United Kingdom: KYOCERA Fineceramics Ltd. and KYOCERA Document Solutions Ltd.

The company also takes an active interest in cultural affairs. The Kyoto Prize, a prominent international award, is presented each year by the Inamori Foundation — established by Kyocera founder Dr. Kazuo Inamori — to individuals worldwide who have contributed significantly to the scientific, cultural, and spiritual betterment of humankind (converted at approximately €828,000 per prize category).

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