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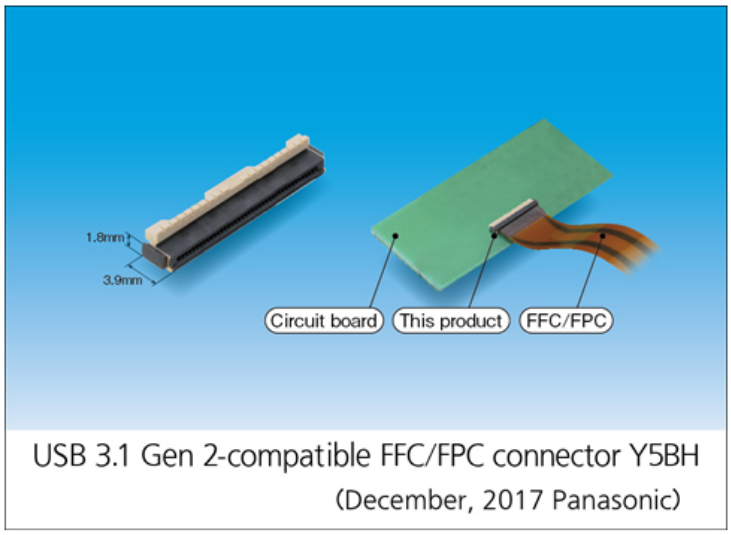
Panasonic Commercializes USB 3.1 Gen 2-compatible FFC/FPC Connectors

Panasonic has commercialized USB 3.1 Gen 2-compatible FFC/FPC connectors. These industry-first FFC connectors achieve a transmission speed of 10 Gbps (USB 3.1 Specification Revision 1.0) and can also be used as FPC connectors.



USB 3.1 Gen 2-compatible FFC/FPC connector Y5BH
(December, 2017 Panasonic)

Osaka, Japan - Panasonic Corporation announced today that it has commercialized USB 3.1[1] Gen 2-compatible FFC[2]/FPC[3] connectors and will start mass production from January 2018. The industry-first*1 USB 3.1 Gen 2-compatible FFC connectors will contribute to the cost reduction*2 of high-speed data communication devices.

The new high-speed data communication standard, USB 3.1 Gen 2, was established in response to the growing demand for higher data capacity and transmission speeds. As the number of compatible devices is anticipated to increase in the future, connectors will become more important since they are key parts in maintaining high transmission speeds and signal quality between boards inside a device. Currently, fine coaxial wire connectors and FPC connectors, which comply with the above standard, are used to connect boards. However, the need for FFC connectors that will enable cost reduction has also become evident. Panasonic commercialized the industry's first*1 USB 3.1 Gen 2-compatible FFC connectors that achieved a transmission speed of 10 Gbps, based on its unique impedance-matching[4] technology. These products can also be used as FPC connectors.

Panasonic's new " FFC/FPC connectors" have the following features:

1.Industry's first*1 USB 3.1 Gen 2-compatible FFC/FPC connectors enable board-to-board high-speed transmission.
- Transmission speed: 10 Gbps
- Differential impedance: 90 Ω, 85 Ω

2.A versatile pitch of 0.5 mm is provided between terminals, facilitating the replacement of existing devices.

3.Pin assignment (terminal allocation) that corresponds to differential GSSG[5] improves the degree of freedom in circuit design.

Notes:

*1: As a 0.5-mm-pitch FFC connector for in-device high-speed data transmission as of December 21, 2017 (Panasonic data)
*2: Comparison against fine coaxial wire connectors and FPC connectors

Suitable applications:

Connection of the input/output and main boards inside electronic devices, such as notebook PCs and tablets

Remarks:

The new connectors will be displayed at the 19th Printed Wiring Boards Expo, which will be held at Tokyo Big Sight from January 17 to 19, 2018.

[Product Features]

1. The industry's first*1 USB 3.1 Gen 2-compatible FFC/FPC connectors enable board-to-board high-speed transmission.

Panasonic commercialized the industry's first USB 3.1 Gen 2-compatible FFC connectors that achieved a transmission speed of 10 Gbps, leveraging its unique impedance-matching technology. This enables board-to-board connection using FFC, which can reduce costs more effectively compared with fine coaxial cables or FPC, contributing to the cost reduction of high-speed data communication devices. These products can also be used as FPC connectors.

2. A versatile pitch of 0.5 mm is provided between terminals, which facilitates replacement in existing devices.

Currently, 0.5-mm-pitch fine coaxial wire connectors and FPC connectors are commonly used for board-to-board high-speed transmission in USB 3.1 Gen 2-compatible devices. This versatile 0.5-mm-pitch FFC connector enables easy replacement of existing connectors without circuit redesign, which also helps reduce the cost of high-speed data communication devices.

3. Pin assignment (terminal allocation) that corresponds to differential GSSG improves flexibility in circuit design.

During high-speed transmission, high-speed and low-speed signals are sent and received within a single connector. Therefore, connectors that support differential GSSG, which allows multiple signal lines, are highly required. With conventional connectors, the pin assignment is predefined and limits the placement of signal lines. Panasonic's part-processing technology, as well as simulations based on its unique transmission analysis technology, has enabled more flexible circuit design using differential GSSG-compatible pin assignments, contributing to improved design flexibility.

Basic specifications: Y5BH

Contact pitch	0.5 mm
Part number	AYF564035 (40 pins)
Compatible FPC/FFC thickness	0.3 mm
Contact structure	Double top and bottom contacts
Installation height	1.8 mm

Width (short side)	5.5 mm (including the lever)
Rated current	0.4 A/Pin contact
Rated voltage	50 V AC/DC
Ambient temperature	-55 to +85˚C
Insertion and removal life	20 times

[Term Descriptions]

[1] USB 3.1
USB 3.1 is the new USB standard, established in July 2013. In addition to the Super Speed (Gen 1) mode that provides a data transmission speed of 5 Gbps, the new Super Speed Plus (Gen 2) mode, which boasts a maximum transmission speed of 10 Gbps, has been added.
[2] FFC
Flexible flat cable
[3] FPC
Flexible printed circuit
[4] Impedance matching
The impedance (voltage-current ratio in an AC circuit) of the connector is adjusted to match the impedance defined in the relevant high-speed transmission standards.
[5] Differential GSSG
This term refers to the method of transmitting one signal using two signal lines. The letters "G" and "S" stand for ground and signal terminals respectively.

About Panasonic

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http://www.panasonic.com/global

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