

Easy-On FFC/FPC Connectors Guide for Hardware Interface Standard

| Standard | | | | | | MIPI D-PHY | MIPI M-PHY | USB 3.1 Gen 2 Type-C | USB 3.1 Gen 2 | USB 3.1 Gen 1 | HDMI 2.0 | DisplayPort 1.4 | Serial ATA 3.0 | PCI Express 3.0 |
|------------------------------|-----------------------|------------------------|------------------|--------------------------------|------------------|----------------|----------------|----------------------|---------------|---------------|----------------|-----------------|----------------|-----------------|
| Impedance (Ω) | | | | | | 80 to 125 | 80 to 110 | 85±9 | 90±10 | 90±10 | 100±15 | 100±10 | 100±15 | 85±15 |
| Rise Time [picosecond (%)] | | | | | | 100 (20 to 80) | 200 (10 to 90) | 40 (20 to 80) | 40 (20 to 80) | 50 (20 to 80) | 200 (10 to 90) | 130 (20 to 80) | 70 (20 to 80) | 35 (10 to 90) |
| Pitch (mm) | Height (mm) | Series No. | Contact Position | Maximum Usable Frequency (GHz) | Data Rate (Gbps) | | | | | | | | | |
| 0.20 | 0.95 | 504070 | Top | 5 | 10 | ✓ | ✓ | | | | ✓ | ✓ | | |
| | | | Bottom | 5 | 10 | ✓ | ✓ | | | | ✓ | | | |
| 0.25 | 1.00 | 502078 | Bottom | 5 | 10 | ✓ | ✓ | | | | ✓ | | | |
| | 1.20 | 503300 | Top | 5 | 10 | | ✓ | | | | ✓ | | | |
| | 1.65 | 503320 | Bottom | 5 | 10 | ✓ | ✓ | | | | ✓ | ✓ | | |
| 0.30 | 0.75 | 504754 | Top | 10 | 20 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | | Bottom | 5 | 10 | ✓ | ✓ | | | | ✓ | ✓ | ✓ | |
| | 0.95 | 503566 | Bottom | 5 | 10 | ✓ | ✓ | | | | ✓ | ✓ | | |
| | | 504740 | Top | 5 | 10 | ✓ | ✓ | | | | ✓ | ✓ | ✓ | |
| | 1.15 | 502598 | Top | 5 | 10 | ✓ | ✓ | | | | ✓ | | | |
| | | | Bottom | 5 | 10 | ✓ | ✓ | | | | ✓ | | | |
| 0.50 | 0.8 | 501461 | Bottom | 20 | 40 | ✓ | ✓ | | | | ✓ | ✓ | ✓ | |
| | 1.00 | 503480 | Top | 20 | 40 | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | | Bottom | 20 | 40 | ✓ | ✓ | | | | ✓ | ✓ | ✓ | |
| | 1.20 | 51281 | Top | 15 | 30 | ✓ | ✓ | | | | ✓ | | | |
| | | | Bottom | 10 | 20 | ✓ | ✓ | | | | ✓ | | | |
| | | 54548 | Bottom | 15 | 30 | ✓ | ✓ | | | | ✓ | | | |
| | 54550 | Top | 10 | 20 | ✓ | ✓ | | | | ✓ | | | | |
| | 1.50 | 104075 | Bottom | 10 | 20 | ✓ | ✓ | | | | ✓ | | | |
| | | 104083 | Bottom | 10 | 20 | ✓ | ✓ | | | | ✓ | | | |
| | | 104114 | Bottom | 10 | 20 | ✓ | ✓ | | | | ✓ | | | |
| 104234 | | Bottom | 10 | 20 | ✓ | ✓ | | | | ✓ | | | | |
| 104267 | | Bottom | 10 | 20 | | ✓ | | | | | | | | |

*This chart was produced from simulation results. The conformance to the standards is based on the impedance requirements in each specification.

*Please note that the connector's impedance value is subject to the customer's board design, and conformance to the standards may vary based on that board design.

*The "Usable Frequency" of the connector is determined by the frequency at which the insertion loss starts to exceed -3dB. The data rate is calculated by doubling the "Usable Frequency" in this chart.

*Return loss and crosstalk are not taken into account in these values but must be considered (in addition to insertion loss) when assessing the connector's performance.

*Data is subject to change without notice.

Circuit assignment: GSSGSSG

| Standard | | | | | | MIPI D-PHY | MIPI M-PHY | USB 3.1 Gen 2 Type-C | USB 3.1 Gen 2 | USB 3.1 Gen 1 | HDMI 2.0 | DisplayPort 1.4 | Serial ATA 3.0 | PCI Express 3.0 | |
|------------------------------|------------------------|------------------------|------------------|--------------------------------|------------------|----------------|----------------|----------------------|---------------|---------------|----------------|-----------------|----------------|-----------------|---|
| Impedance (Ω) | | | | | | 80 to 125 | 80 to 110 | 85±9 | 90±10 | 90±10 | 100±15 | 100±10 | 100±15 | 85±15 | |
| Rise Time [picosecond (%)] | | | | | | 100 (20 to 80) | 200 (10 to 90) | 40 (20 to 80) | 40 (20 to 80) | 50 (20 to 80) | 200 (10 to 90) | 130 (20 to 80) | 70 (20 to 80) | 35 (10 to 90) | |
| Pitch (mm) | Height (mm) | Series No. | Contact Position | Maximum Usable Frequency (GHz) | Data Rate (Gbps) | | | | | | | | | | |
| 0.50 | 1.90 | 505110 | Bottom | 5 | 10 | | ✓ | | | | | | | | |
| | | 505278 | Bottom | 10 | 20 | ✓ | ✓ | | | | ✓ | | | | |
| | 2.00 | 52435 | Top | 5 | 10 | | | | | | | | | | |
| | | 52437 | Bottom | 5 | 10 | | | | | | | | | | |
| | | 52745 | Top | 5 | 10 | | | | | | | | | | |
| | | 52746 | Bottom | 5 | 10 | | | | | | | | | | |
| | | 54104 | Top | 5 | 10 | | | | | | | | | | |
| | | 54132 | Bottom | 5 | 10 | | | | | | | | | | |
| | 202497 | Bottom | 5 | 10 | | | ✓ | | | | | | | | |
| | 2.33 | 502244 | Bottom | 10 | 20 | ✓ | ✓ | | | | ✓ | ✓ | | | |
| | 3.75 | 503908 | Bottom | 20 | 40 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 3.90 | 52559 | Vertical | 3 | 6 | | | | | | | | | | |
| | 4.05 | 501951 | Vertical | 5 | 10 | | | ✓ | | | | | | | |
| | 4.10 | 78119 | Vertical | 5 | 10 | | | ✓ | | | | | | | |
| | | 78127 | Vertical | 5 | 10 | | | ✓ | | | | | | | |
| 4.85 | 501864 | Bottom | 5 | 10 | | | | | | | | | | | |
| 6.05 | 502231 | Vertical | 5 | 10 | ✓ | ✓ | | | | ✓ | | | | | |
| 1.00 | 1.50 | 104236 | Bottom | 15 | 30 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| | 1.90 | 200528 | Bottom | 15 | 30 | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| | | 200529 | Bottom | 15 | 30 | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| | 2.70 | 52207 | Top | 5 | 10 | | | ✓ | | | | | | | |
| | 3.00 | 52271 | Bottom | 5 | 10 | ✓ | ✓ | | | | ✓ | | | | |
| | 3.10 | 52793 | Top | 10 | 20 | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | |
| | | 52852 | Bottom | 10 | 20 | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | |
| | 5.10 | 52808 | Vertical | 5 | 10 | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | |
| 5.75 | 52610 | Vertical | 3 | 6 | | | | | | | | | | | |

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