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	✓	✓				✓	✓	✓	
			Bottom	5	10	✓	✓				✓			
	1.15	502598	Top	5	10	✓	✓				✓			
			Bottom	5	10	✓	✓				✓			
0.50	0.80	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		✓							
	1.90	505110	Bottom	5	10		✓							
		505278	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

molex

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	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		✓							
	4.46	200485	Right-Angle	20	40	✓	✓				✓		✓	
			Right-Angle with Ground	20	40	✓	✓				✓		✓	
	4.85	501864	Bottom	5	10									
	5.60	200485	Vertical	20	40	✓	✓				✓			
			Vertical with Ground	20	40	✓	✓				✓			
	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									

*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

Ordering No. 987652-0193 Rev. 1
APN/0k/GF/2021.06