

EVAFLEX[®] 5-VS

Auto-locking, high temperature option (105°C), high-speed, horizontal mate, 0.5 mm pitch shielded FFC/FPC connector



Product Specifications:

Board Pitch (mm)	0.5	
Wiping Length (mm)	1.1	
Size (mm)	Height	1.90 +/- 0.10
	Width	Formula: 6.25 + (0.5*?p)
	Depth	4.95 +/- 0.20
Pin counts	Range	10 – 50
	Available	10, 15, 20, 24, 30, 40, 50

Applicable FPC/FFC:

FPC/FFC Type	Shielded FFC, Non-shielded FFC/FPC
FPC/FFC Contact Point	Top
FPC/FFC Thickness (mm)	0.33 +/- 0.03

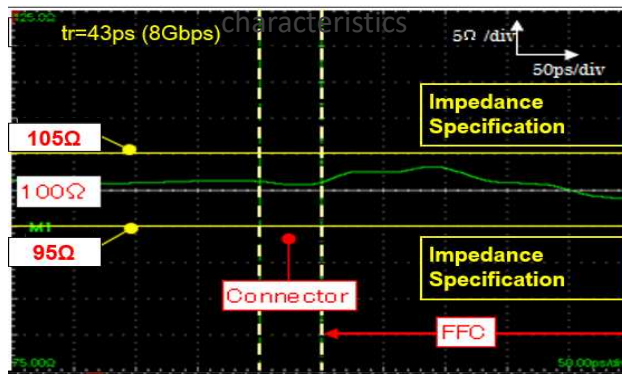
Applicable Standards (Reference Only):

USB 3.1 Gen 1 (5 Gbps) eDP HBR 3 (8.1 Gbps) eDP HBR 2 (5.4 Gbps) eDP (2.7 Gbps) HDMI 2.0 (6 Gbps) V-By-One HS 1.4 (4 Gbps) MIPI standards
USCAR II Vibration & Shock V1

* Please inquire for pin counts not listed or outside of the pin count range.

Supports 8+ Gbps high-speed signal

Input rising time (tr) vs. Impedance

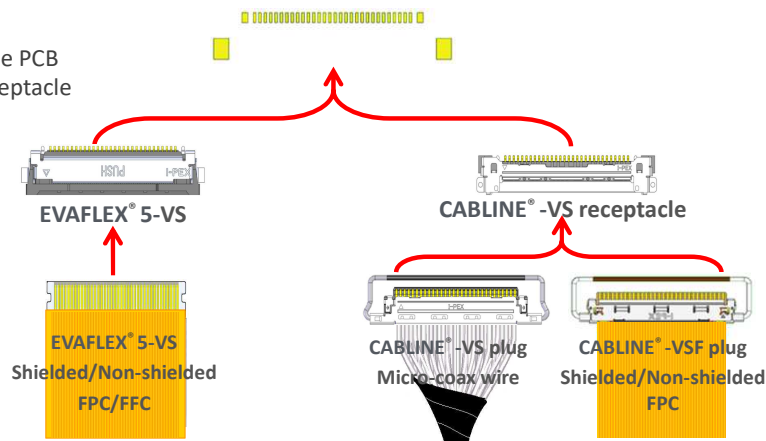


Test condition:
Double-sided shielded FFC
(100 ohm matching)

PCI Express[®] 3.0 (8 Gbps)

Low height design and foot pattern compatible with CABLINE[®]-VS/VESA standard notebook PC LCD connector

EVAFLEX[®] 5-VS can be mounted to the same PCB layout with VESA standard CABLINE-VS receptacle



Scalable EVAFLEX[®] family : Auto-lock connector with many other options available

High-speed and full EMI shield : EVAFLEX[®] 5-HD

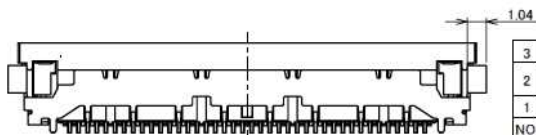
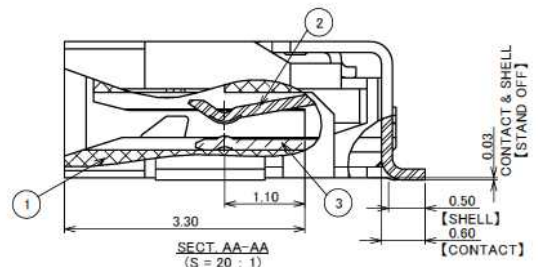
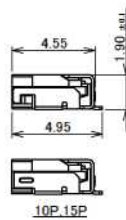
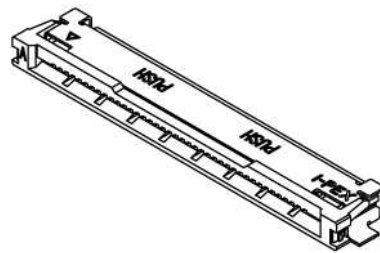
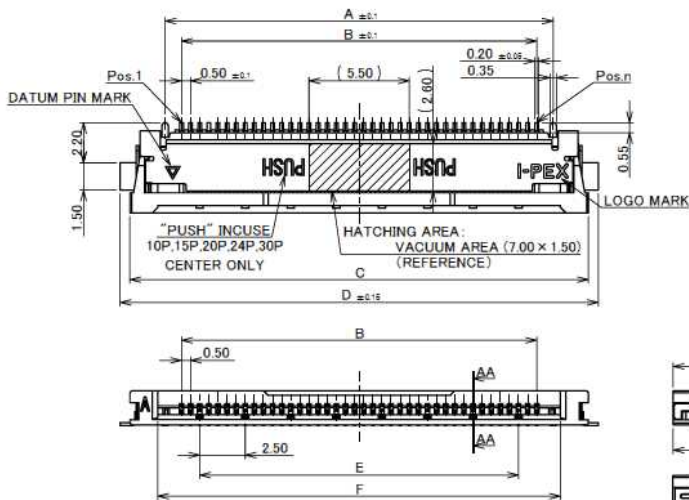
	EVAFLEX [®] 5-HD
Height (mm)	2.00 +/- 0.2
Reference Performance	USB4 (20 Gbps)
Special Feature	360-degree fully-shielded with multi-point grounds to prevent EMI leakage



Component Parts Detail

Connector Assembly

Recommended P/N		20535-0**E-02					
PART No.	POS.	A	B	C	D	E	F
20535-010E-02	10P	6.30	4.50	10.17	11.25	2.50	7.10
20535-015E-02	15P	8.80	7.00	12.67	13.75	5.00	9.60
20535-020E-02	20P	11.30	9.50	15.17	16.25	7.50	12.10
20535-024E-02	24P	13.30	11.50	17.17	18.25	7.50	14.10
20535-030E-02	30P	16.30	14.50	20.17	21.25	12.50	17.10
20535-040E-02	40P	21.30	19.50	25.17	26.25	17.50	22.10

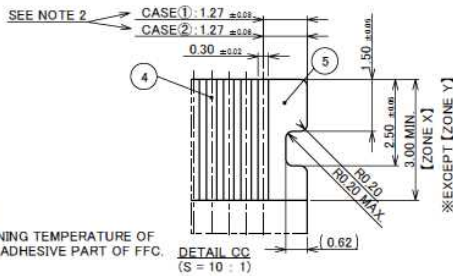
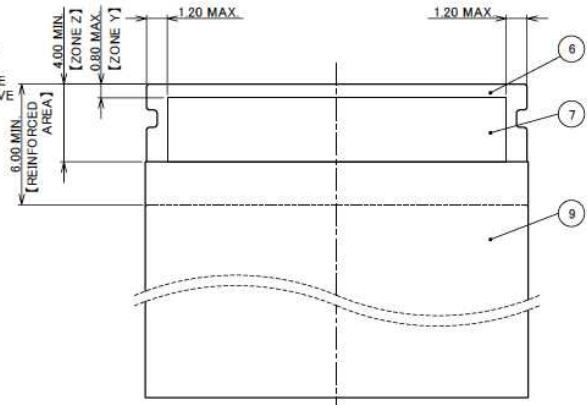
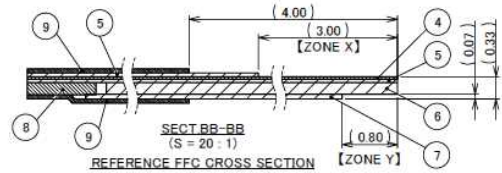
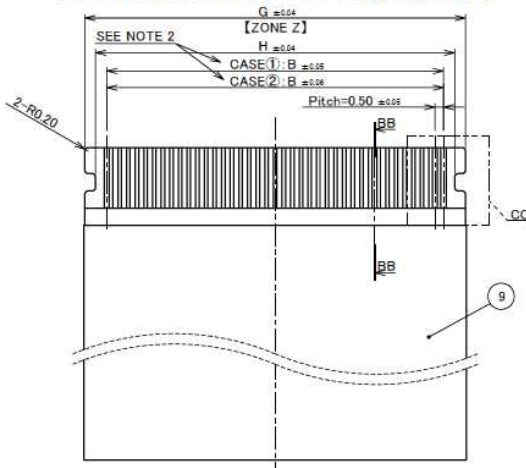


NO.	DISCRIPTION	MATERIAL	FINISH . REMARKS
3	SHELL	PHOSPHOR BRONZE	Sn 1.00 μ m MIN. OVER Ni 1.00 μ m MIN. PLATING
2	CONTACT	PHOSPHOR BRONZE	Au OVER Ni PLATING CONTACT AREA: Au 0.03 μ m MIN. OVER Ni 1.00 μ m MIN.
1	HOUSING	LCP	UL94V-0. BLACK

Connector Assembly

Recommended P/N		20535-0**E-02		
PART No.	POS.	B	G	H
20535-010E-02	10P	4.50	7.04	5.80
20535-015E-02	15P	7.00	9.54	8.30
20535-020E-02	20P	9.50	12.04	10.80
20535-024E-02	24P	11.50	14.04	12.80
20535-030E-02	30P	14.50	17.04	15.80
20535-040E-02	40P	19.50	22.04	20.80

RECOMMENDED FFC DIMENSION

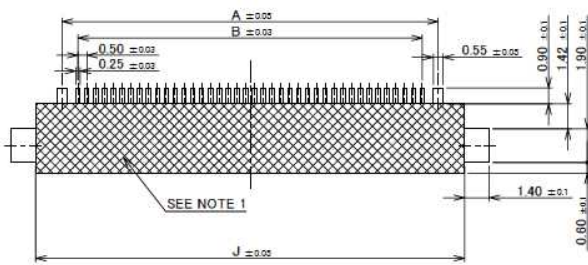


NO.	DISCRIPTION	MATERIAL	FINISH . REMARKS
9	SHIELD TAPE	METALIC FILM	-
8	INTERLAYER	ARBITRARY	-
7	GROUND PLATE	METARIC FILM	POLISH or HALF POLISH Sn PLATING
6	REINFORCED TAPE	ARBITRARY	-
5	INSULATION FILM	ARBITRARY	-
4	CONDUCTOR	COPPER ALLOY	CONTACT AREA: Au 0.05 μm MIN. OVER Ni 0.5 μm MIN.

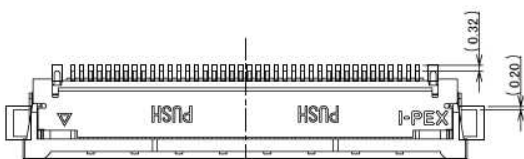
- NOTES
1. DIFFERENTIAL IMPEDAMCE : 100 Ω
 2. MANUFACTURE CASE ① or CASE ②
 3. SELECT A MATERIAL WITH A SOFTENING TEMPERATURE OF 85°C OR HIGHER FOR THE PATTERN ADHESIVE PART OF FFC.

Rev.14

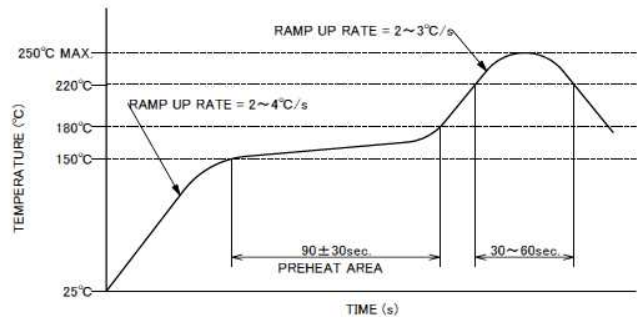
Recommended P/N		20535-0**E-02		
PART No.	POS.	A	B	J
20535-010E-02	10P	6.30	4.50	9.30
20535-015E-02	15P	8.80	7.00	11.80
20535-020E-02	20P	11.30	9.50	14.30
20535-024E-02	24P	13.30	11.50	16.30
20535-030E-02	30P	16.30	14.50	19.30
20535-040E-02	40P	21.30	19.50	24.30



RECOMMENDED PCB & METAL MASK LAYOUT
METAL MASK THICKNESS: t=0.12



CONNECTOR ON RECOMMENDED FOOTPRINT PATTERN



REFLOW TEMPERATURE PROFILE
SENJU METAL INDUSTRY CO., LTD. M705-SHF(Sn96.5 Ag3.0 Cu0.5)

NOTE
1. SOLDER RESIST MUST BE APPLIED TO THIS AREA.

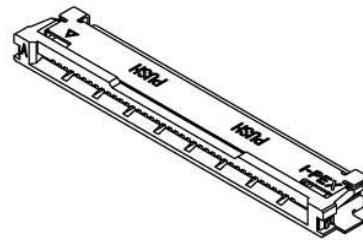
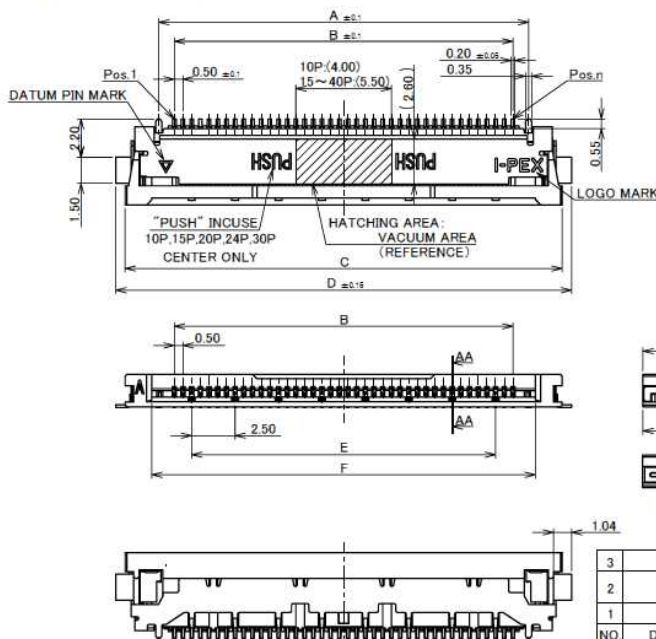
Rev.14

Connector Assembly

ITEMS	SPECIFICATION
RATING VOLTAGE	200V AC/DC (PER CONTACT PIN)
RATING AMPERAGE (FOR CONTACT)	0.3A AC/DC (PER CONTACT PIN) IN CASE OF APPLYING 0.5A PER CONTACT PIN, THE TOTAL CURRENT OF THE WHOLE CONNECTOR SHALL BE 15.0A OR LOWER.
OPERATING TEMPERATURE	233~358K(-40°C~+85°C)
OPERATING HUMIDITY	85% MAX.(NON-CONDENSING)
CONTACT RESISTANCE (FOR SIGNAL CONTACT)	INITIAL : 60mohm MAX. / AFTER TEST : Δ 40mohm MAX.
INSULATION RESISTANCE	INITIAL : 100Mohm MIN. / AFTER TEST : 100Mohm MIN.
DIELECTRIC WITHSTANDING VOLTAGE	AC250V 1min
DURABILITY	30 CYCLES
MATING FORCE (INITIAL / AFTER TEST)	10P : 6.0N MAX. 15P : 9.0N MAX. 20P : 12.0N MAX. 24P : 14.4N MAX. 30P : 18.0N MAX. 40P : 24.0N MAX.
UNMATING FORCE (INITIAL / AFTER TEST)	10P : 1.0N MIN. 15P : 1.5N MIN. 20P : 2.0N MIN. 24P : 2.4N MIN. 30P : 3.0N MIN. 40P : 4.0N MIN.
COPLANARITY	0.10 MAX.
PRODUCT SPECIFICATION	PRS-1670
TEST REPORT	TR-12108
PACKING STANDARD	300-997
INSTRUCTION MANUAL	HIM-12003
APPEARANCE CRITERIA No.	QLS-A***

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Recommended P/N	20720-0**E-02						
PART NO.	POS.	A	B	C	D	E	F
20720-010E-02	10P	6.30	4.50	10.17	11.25	2.50	7.10
20720-015E-02	15P	8.80	7.00	12.67	13.75	5.00	9.60
20720-020E-02	20P	11.30	9.50	15.17	16.25	7.50	12.10
20720-024E-02	24P	13.30	11.50	17.17	18.25	7.50	14.10
20720-030E-02	30P	16.30	14.50	20.17	21.25	12.50	17.10
20720-040E-02	40P	21.30	19.50	25.17	26.25	17.50	22.10



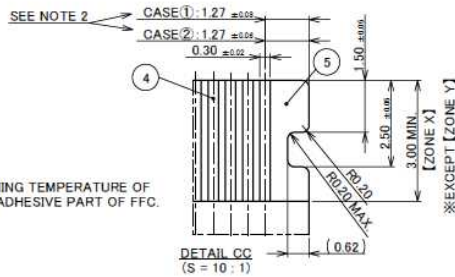
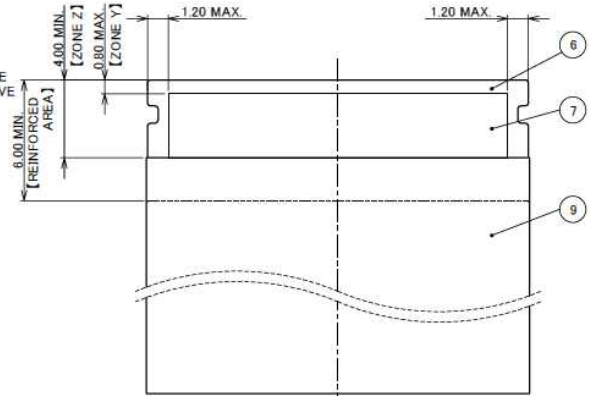
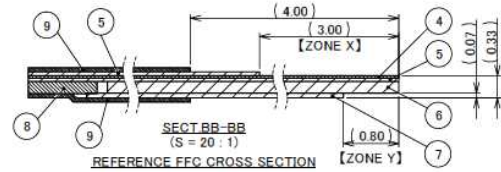
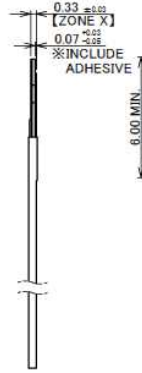
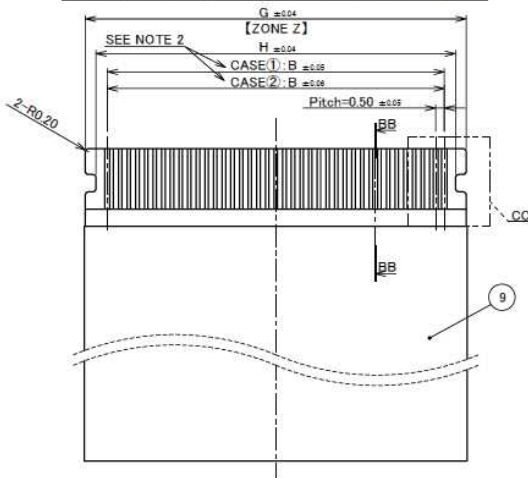
3	SHELL	PHOSPHOR BRONZE	Sn OVER Ni PLATING
2	CONTACT	CORSON ALLOY	Au OVER Ni PLATING
1	HOUSING	LCP	CONTACT AREA: Au 0.03 μ m MIN. OVER Ni 1.00 μ m MIN.
NO.	DISCRIPTION	MATERIAL	FINISH , REMARKS
			UL94V-0, BLACK

Rev.7

Connector Assembly

Recommended P/N		20720-0**E-02		
FOR	POS.	B	G	H
20720-010E-02	10P	4.50	7.04	5.80
20720-015E-02	15P	7.00	9.54	8.30
20720-020E-02	20P	9.50	12.04	10.80
20720-024E-02	24P	11.50	14.04	12.80
20720-030E-02	30P	14.50	17.04	15.80
20720-040E-02	40P	19.50	22.04	20.80

RECOMMENDED FFC DIMENSION

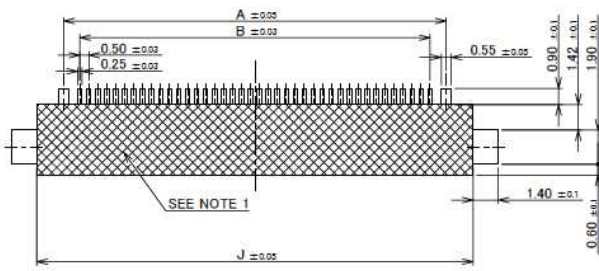


- NOTES
1. DIFFERENTIAL IMPEDANCE : 100Ω
 2. MANUFACTURE CASE① or CASE②
 3. SELECT A MATERIAL WITH A SOFTENING TEMPERATURE OF 85°C OR HIGHER FOR THE PATTERN ADHESIVE PART OF FFC.

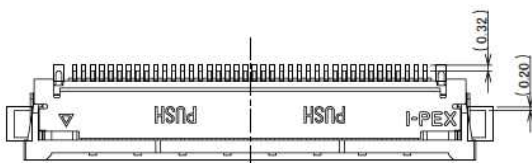
NO.	DISCRIPTION	MATERIAL	FINISH . REMARKS
9	SHIELD TAPE	METALIC FILM	-
8	INTERLAYER	ARBITRARY	-
7	GROUND PLATE	METARIC FILM	POLISH or HALF POLISH Sn PLATING
6	REINFORCED TAPE	ARBITRARY	-
5	INSULATION FILM	ARBITRARY	-
4	CONDUCTOR	COPPER ALLOY	CONTACT AREA Au 0.05 μm MIN. OVER Ni 0.5 μm MIN.

Rev.7

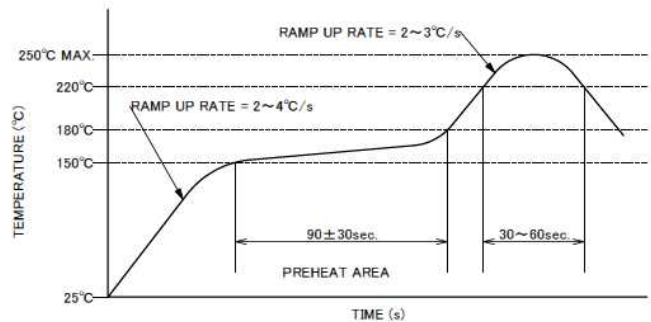
Recommended P/N		20720-0**E-02		
PART NO.	POS.	A	B	J
20720-010E-02	10P	6.30	4.50	9.30
20720-015E-02	15P	8.80	7.00	11.80
20720-020E-02	20P	11.30	9.50	14.30
20720-024E-02	24P	13.30	11.50	16.30
20720-030E-02	30P	16.30	14.50	19.30
20720-040E-02	40P	21.30	19.50	24.30



RECOMMENDED PCB & METALMASK LAYOUT
METALMASK THICKNESS : t=0.12



CONNECTOR ON RECOMMENDED FOOTPRINT PATTERN



REFLOW TEMPERATURE PROFILE
SENJU METAL INDUSTRY CO., LTD. : M705-SHF(Sn96.5 Ag3.0 Cu0.5)

- NOTE
1. SOLDER RESIST MUST BE APPLIED TO THIS AREA.

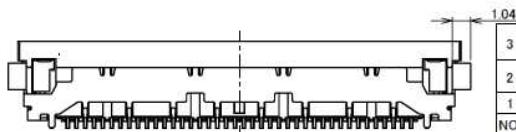
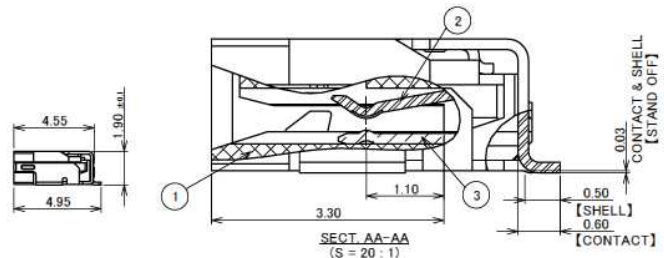
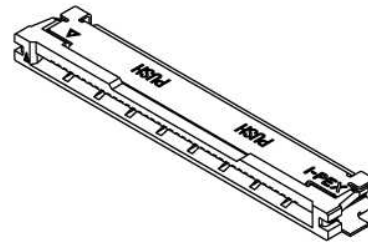
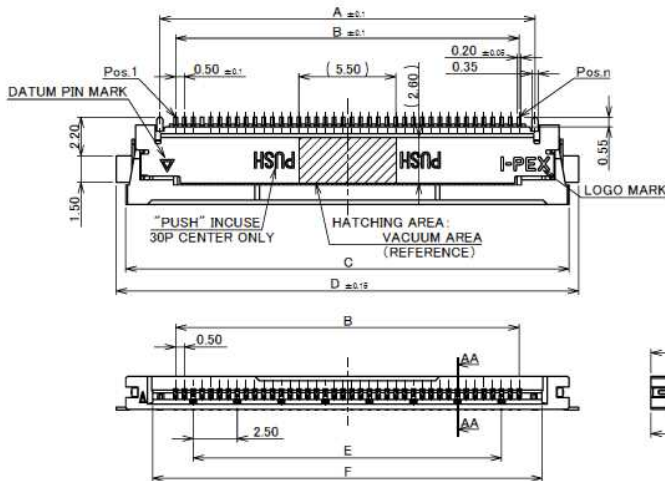
Rev.7

Connector Assembly

ITEMS	SPECIFICATION
RATING VOLTAGE	200V AC/DC (PER CONTACT PIN)
RATING AMPERAGE (FOR CONTACT)	0.3A AC/DC (PER CONTACT PIN) IN CASE OF APPLYING 0.5A PER CONTACT PIN, THE TOTAL CURRENT OF THE WHOLE CONNECTOR SHALL BE 15.0A OR LOWER.
OPERATING TEMPERATURE	233~378K(-40°C~+105°C)
OPERATING HUMIDITY	85% MAX.(NON-CONDENSING)
CONTACT RESISTANCE (FOR SIGNAL CONTACT)	INITIAL : 60mohm MAX. / AFTER TEST : \triangle 40mohm MAX.
INSULATION RESISTANCE	INITIAL : 100Mohm MIN. / AFTER TEST : 100Mohm MIN.
DIELECTRIC WITHSTANDING VOLTAGE	AC250V 1min
DURABILITY	30 CYCLES
MATING FORCE (INITIAL / AFTER TEST)	10P : 6.0N MAX. 15P : 9.0N MAX. 20P : 12.0N MAX. 24P : 14.4N MAX. 30P : 18.0N MAX. 40P : 24.0N MAX.
UNMATING FORCE (INITIAL / AFTER TEST)	10P : 1.0N MIN. 15P : 1.5N MIN. 20P : 2.0N MIN. 24P : 2.4N MIN. 30P : 3.0N MIN. 40P : 4.0N MIN.
COPLANARITY	0.10 MAX.
PRODUCT SPECIFICATION	PRS-2224
TEST REPORT	TR-16039
PACKING STANDARD	300-997
INSTRUCTION MANUAL	HIM-12003
APPEARANCE CRITERIA No.	QLS-A***

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Recommended P/N		20893-0**E-02					
PART NO	POS.	A	B	C	D	E	F
20893-030E-02	30P	16.30	14.50	20.17	21.25	12.50	17.10
20893-040E-02	40P	21.30	19.50	25.17	26.25	17.50	22.10
20893-050E-02	50P	26.30	24.50	30.17	31.25	22.50	27.10



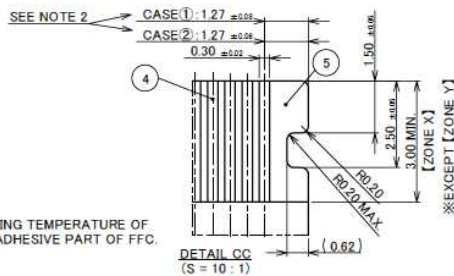
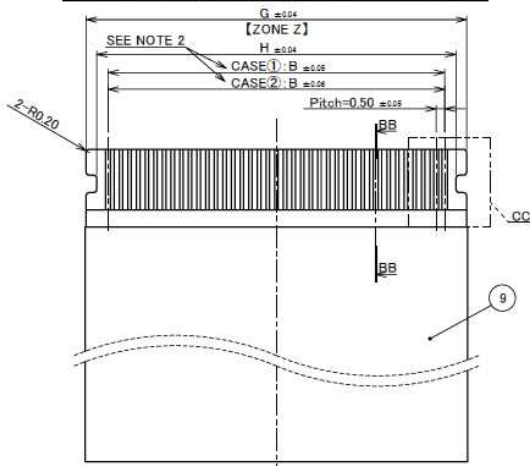
3	SHELL	PHOSPHOR BRONZE	SOLDERING AREA: Sn 3.00 μ m MIN. OVER Ni 1.00 μ m MIN. OTHER AREA: Sn 1.00 μ m MIN. OVER Ni 1.00 μ m MIN.
2	CONTACT	CORSON ALLOY	CONTACT AREA: Au 0.03 μ m MIN. OVER Ni 1.00 μ m MIN. SOLDERING AREA: Au 0.03 μ m MIN. OVER Ni 1.00 μ m MIN.
1	HOUSING	LCP	UL94V-0. BLACK
NO	DISCRIPTION	MATERIAL	FINISH .REMARKS

Rev.3

Connector Assembly

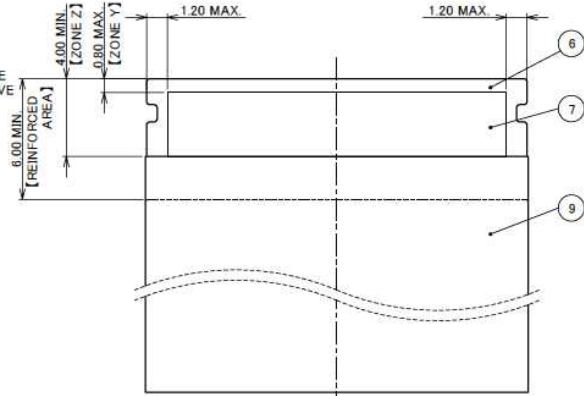
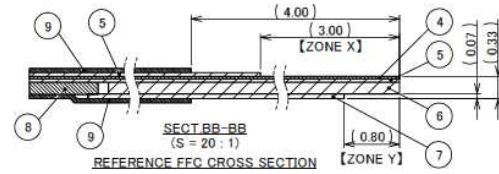
Recommended P/N		20893-0**E-02			
FOR	POS.	B	G	H	
20893-030E-02	30P	14.50	17.04	15.80	
20893-040E-02	40P	19.50	22.04	20.80	
20893-050E-02	50P	24.50	27.04	25.80	

RECOMMENDED FFC DIMENSION



NOTES

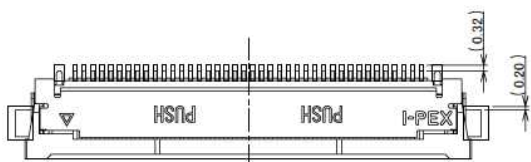
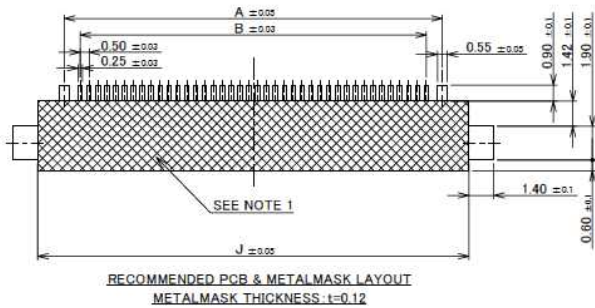
- 1 DIFFERENTIAL IMPEDANCE : 100Ω
- 2 MANUFACTURE CASE 1 or CASE 2
- 3 SELECT A MATERIAL WITH A SOFTENING TEMPERATURE OF 85°C OR HIGHER FOR THE PATTERN ADHESIVE PART OF FFC.



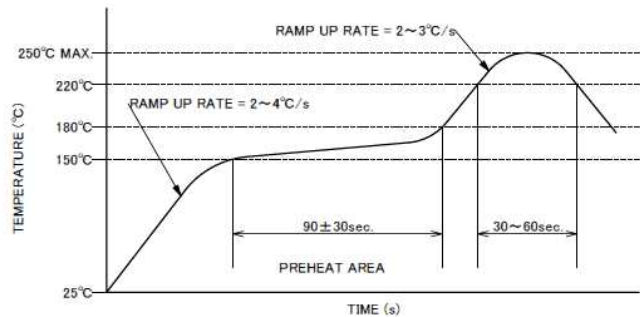
9	SHIELD TAPE	METALIC FILM	-
8	INTERLAYER	ARBITRARY	-
7	GROUND PLATE	METARIC FILM	POLISH or HALF POLISH Sn PLATING
6	REINFORCED TAPE	ARBITRARY	-
5	INSULATION FILM	ARBITRARY	-
4	CONDUCTOR	COPPER ALLOY	CONTACT AREA: Au 0.05 μm MIN. OVER Ni 0.5 μm MIN.
NO	DISCRIPTION	MATERIAL	FINISH, REMARKS

Rev.3

Recommended P/N		20893-0**E-02		
PART NO.	POS.	A	B	J
20893-030E-02	30P	16.30	14.50	19.30
20893-040E-02	40P	21.30	19.50	24.30
20893-050E-02	50P	26.30	24.50	29.30



CONNECTOR ON RECOMMENDED FOOTPRINT PATTERN



REFLOW TEMPERATURE PROFILE
SENJU METAL INDUSTRY CO., LTD. : M705-SHF(Sn96.5 Ag3.0 Cu0.5)

NOTE

1. SOLDER RESIST MUST BE APPLIED TO THIS AREA.

Rev.3

Connector Assembly

ITEMS	SPECIFICATION
RATING VOLTAGE	200V AC/DC (PER CONTACT PIN)
RATING AMPERAGE (FOR CONTACT)	0.3A AC/DC (PER CONTACT PIN) IN CASE OF APPLYING 0.5A PER CONTACT PIN, THE TOTAL CURRENT OF THE WHOLE CONNECTOR SHALL BE 15.0A OR LOWER.
OPERATING TEMPERATURE	233~378K(-40°C~+105°C)
OPERATING HUMIDITY	85% MAX.(NON-CONDENSING)
CONTACT RESISTANCE (FOR SIGNAL CONTACT)	INITIAL : 60mohm MAX. / AFTER TEST : ≤ 140mohm MAX.
INSULATION RESISTANCE	INITIAL : 100Mohm MIN. / AFTER TEST : 100Mohm MIN.
DIELECTRIC WITHSTANDING VOLTAGE	AC250V 1min
DURABILITY	30 CYCLES
MATING FORCE (INITIAL / AFTER TEST)	30P : 18.0N MAX. 40P : 24.0N MAX. 50P : 30.0N MAX.
UNMATING FORCE (INITIAL / AFTER TEST)	30P : 3.0N MIN. 40P : 4.0N MIN. 50P : 5.0N MIN.
COPLANARITY	0.10 MAX.
PRODUCT SPECIFICATION	PRS-2527
TEST REPORT	TR-18083
PACKING STANDARD	300-997
INSTRUCTION MANUAL	HIM-12003
APPEARANCE CRITERIA No.	QLS-A***

Rev.3

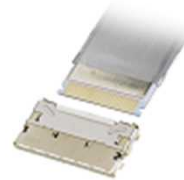
Board to Board



High-Density



Autolocking FPC/FFC



High-Density



FPC/FFC



Micro-Coaxial / Discrete Cable



High-Speed



RF



High-Frequency



Optical Module



High-Speed



Effector



Power



High-Power



I/O (Input/Output)



Quick charge



Inquiry



Custom Connectors Available



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Contact your sales representative or more detailed information.

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