



SPECIFICATION

宏致電子股份有限公司

桃園縣中壢市東園路13號

No.13, Dongyuan Rd., Zhongli City,

Taoyuan County 320, Taiwan (R.O.C.)

TEL: +886-3-463-2808

FAX: +886-3-463-1800

SPEC. NO.: PS-52527-XXXXX-XXX REVISION: A

PRODUCT NAME: 0.3 mm PITCH EASY ON FPC CONN.

SMT R/A B/C TYPE

PRODUCT NO: 52527 SERIES

PREPARED: Wang, Kai Hung DATE: 2023/05/11	CHECKED: Liu, Yuan Huang DATE: 2023/05/11	APPROVED: Wang, Chun Shung DATE: 2023/05/11
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TITLE: 0.3 PITCH EASY ON FPC TYPE

RELEASE DATE: 2023/05/11

REVISION: A

ECN No: ECN-013185

PAGE: **2** OF **16**

2	SCOPE	4
3	APPLICABLE DOCUMENTS	4
4	REQUIREMENTS	4
5	PERFORMANCE	5
6	INFRARED REFLOW CONDITIO	8
7	PRODUCT QUALIFICATION AND TEST SEQUENCE.....	9
8	CONNECTOR OPERATION	10



Aces P/N: **52527series**

TITLE: **0.3 PITCH EASY ON FPC TYPE**

RELEASE DATE: 2023/05/11

REVISION: A

ECN No: ECN-013185

PAGE: **3** OF **16**

1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
1	ECN-010222	ADD CONNECTOR OPERATION & RELEASE REV-1	JAMESLEN	2021.07.03
A	ECN-013185	REV-A UPATE INFRARED REFLOW CONDITION	JAMESLEN	2023.05.11

TITLE: **0.3 PITCH EASY ON FPC TYPE**

RELEASE DATE: 2023/05/11

REVISION: A

ECN No: ECN-013185

PAGE: **4** OF **16**

2 SCOPE

This specification covers performance, tests and quality requirements for 0.3 mm Pitch Easy On FPC CONN. SMT R/A B/C TYPE.

ACES Part/Number : 52527 SERIES

3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

4 REQUIREMENTS

4.1 Design and Construction

- 4.1.1 Product shall be of design, construction and physical dimensions specified on applicable product drawing.
- 4.1.2 All materials conform to R.o.H.S. and the standard depends on TQ-WI-140101.

4.2 Materials and Finish

- 4.2.1 Contact: High performance copper alloy (Phosphor Bronze)
Finish: (a) Contact Area: Refer to the drawing.
(b) Under plate: Refer to the drawing.
(c) Solder area: Refer to the drawing.
- 4.2.2 Housing: Thermoplastic or Thermoplastic High Temp., UL94V-0
- 4.2.3 Actuator: Thermoplastic or Thermoplastic High Temp., UL94V-0
- 4.2.4 Fitting Nail: Copper Alloy, Finish: Refer to the drawing.

4.3 Ratings

- 4.3.1 Working voltage less than 36 volts AC (per pin)
- 4.3.2 Voltage: 50 Volts AC (per pin)
- 4.3.3 Current: 0.3 Amperes (per pin)
- 4.3.4 Operating Temperature : -55°C to +85°C
- 4.3.5 Operating Humidity: 20~80%RH

4.4

- 4.4.1 Storage Temperature: Connector -20°C to +60°C
Emboss Packing -20°C to +60°C
- 4.4.2 Storage Humidity : 20~85%RH. (Non-condensing)
- 4.4.3 Storage period : Within one year from delivery date, under sealed condition.

TITLE: **0.3 PITCH EASY ON FPC TYPE**

RELEASE DATE: 2023/05/11

REVISION: A

ECN No: ECN-013185

PAGE: **5** OF **16**

5 Performance

5.1. Test Requirements and Procedures Summary

Item	Requirement	Standard
Examination of Product	Product shall meet requirements of applicable product drawing and specification.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Item	Requirement	Standard
Low Level Contact Resistance	100 m Ω Max. (initial)per contact 50 m Ω Max. Change allowed	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)
Insulation Resistance	50 M Ω Min.	Unmated connectors, apply 500 V DC between adjacent terminals. (EIA-364-21)
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. Current leakage: 2 mA max.	200 VAC Min. at sea level for 1 minute. Test between adjacent contacts of unmated connectors. (EIA-364-20)
Temperature rise	30°C Max. Change allowed	Mate connector: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25°C (EIA-364-70, METHOD1,CONDITION1)

TITLE: 0.3 PITCH EASY ON FPC TYPE

RELEASE DATE: 2023/05/11

REVISION: A

ECN No: ECN-013185

PAGE: **6** OF **16**

MECHANICAL		
Item	Requirement	Standard
Durability	10 cycles.	The sample should be mounted in the tester and fully mated and unmated the number of cycles specified at the rate of 25.4 ± 3mm/min. (EIA-364-09)
Actuator locking force (Actuator insertion force)	Slider insertion force : 0.3 N Max./per pin. Insertion & separation time: 10 cycles.	The sample should be mounted in the tester and fully mated and unmated the number of cycles specified at the rate of 25.4 ± 3mm/min. (EIA-364-09)
Actuator unlocking force (Actuator separation force)	Slider separation force : 0.01~0.3N Max. /per pin. Insertion & separation time: 10 cycles..	The sample should be mounted in the tester and fully mated and unmated the number of cycles specified at the rate of 25.4 ± 3mm/min. (EIA-364-09)
FPC Retention Force	0.13N/pin Min.(Without Lock) 0.13N/pin+2 N Min.(With Lock)	A connector shall be soldered on a board and insert the actuator, pull the FPC at the speed rate of 25.4 ± 3 mm/min.
Terminal /Housing Retention Force	0.1 N MIN.	Operation Speed : 25.4 ± 3 mm/minute. Measure the contact retention force with Tensile strength tester.
Fitting Nail /Housing Retention Force	0.1N MIN.	Operation Speed : 25.4 ± 3 mm/minute. Measure the contact retention force with Tensile strength tester.
Vibration	1 μs Max.	The electrical load condition shall be 100 mA maximum for all contacts. Subject to a simple harmonic motion having amplitude of 0.76mm (1.52mm maximum total excursion) in frequency between the limits of 10 and 55 Hz. The entire frequency range, from 10 to 55 Hz and return to 10 Hz, shall be traversed in approximately 1 minute. This motion shall be applied for 2 hours in each of three mutually perpendicular directions. (EIA-364-28 Condition I)

TITLE: 0.3 PITCH EASY ON FPC TYPE

RELEASE DATE: 2023/05/11

REVISION: A

ECN No: ECN-013185

PAGE: **7** OF **16**

Shock (Mechanical)	1 μ s Max.	Subject mated connectors to 50 G's (peak value) half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks). The electrical load condition shall be 100mA maximum for all contacts. (EIA-364-27, test condition A)
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ENVIRONMENTAL

Item	Requirement	Standard
Resistance to Reflow Soldering Heat	See Product Qualification and Test Sequence Group 10 (Lead Free)	Pre Heat : 150°C~180°C , 60~120sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C Max, 10sec Max.
Thermal Shock	See Product Qualification and Test Sequence Group 4	Mate module and subject to follow condition for 5 cycles. 1 cycles: -55 +0/-5 °C, 30 minutes Transfer time 5 minutes Max. +85 +3/-0 °C, 30 minutes Transfer time, 5minutes Max. (EIA-364-32, test condition I)
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40°C , 95% RH,96 hours. (EIA-364-31,Condition A, Method II)
Temperature life	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at 85°C for 96 hours. (EIA-364-17, Test condition A)
Temperature life(heat)	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at 85°C±2°C for 96 hours. (EIA-364-17, Test condition A)
Temperature life(cold)	See Product Qualification and Test Sequence Group 11	Subject mated connectors to temperature life at -40°C±3°C for 48 hours. (EIA-364-17, Test condition A)
Salt Spray (Only For Gold Plating)	See Product Qualification and Test Sequence Group 6	Subject mated/unmated connectors to 5% salt-solution concentration, 35 °C (I) Gold flash for 8 hours (II) Gold plating 3 u" for 48 hours (III)Gold plating \geq 5 u" for 96 hours. (EIA-364-26)

TITLE: 0.3 PITCH EASY ON FPC TYPE

RELEASE DATE: 2023/05/11

REVISION: A

ECN No: ECN-013185

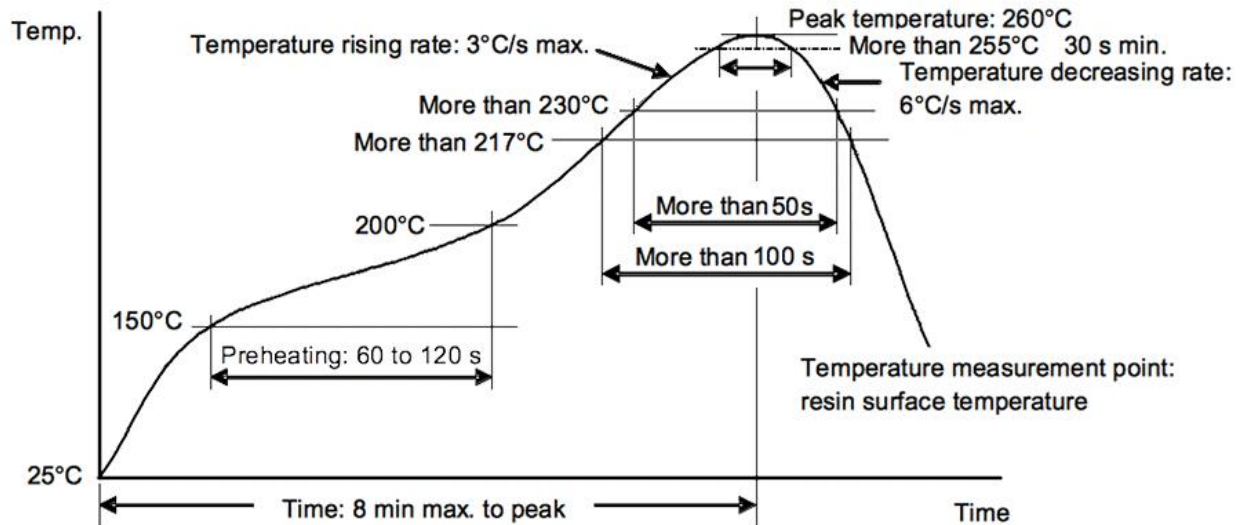
PAGE: **8** OF **16**

Solder ability	Tin plating: Solder able area shall have minimum of 95% solder coverage. Gold plating: Solder able area shall have minimum of 75% solder coverage	And then into solder bath, Temperature at $245 \pm 5^{\circ}\text{C}$, for 4-5 sec. (EIA-364-52)
Hand Soldering Temperature Resistance	Appearance: No damage	$T \geq 350^{\circ}\text{C}$, 3sec at least.

Note. Flowing Mixed Gas shall be conduct by customer request.

6 INFRARED REFLOW CONDITIO

TEMPERATURE CONDITION GRAPH
(TEMPERATURE ON BOARD PATTERN SIDE)



TITLE: **0.3 PITCH EASY ON FPC TYPE**

RELEASE DATE: 2023/05/11

REVISION: A

ECN No: ECN-013185

PAGE: **9** OF **16**

7 PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group											
	1	2	3	4	5	6	7	8	9	10	11	12
	Test Sequence											
Examination of Product				1、7	1、6	1、4	1、3		1	1、3	1、6	1、3
Low Level Contact Resistance		1、5	1、4	2、10	2、9	2、5			3		2、9	
Insulation Resistance				3、9	3、8						3、8	
Dielectric Withstanding Voltage				4、8	4、7						4、7	
Temperature rise	1											
Durability		3										
Actuator insertion force												2
Actuator separation force												2
Vibration			2									
Shock (Mechanical)			3									
Thermal Shock				5								
Humidity				6								
Temperature life(heat)					5							
Temperature life(Cold)											5	
Salt Spray(Only For Gold Plating)						3						
Solder ability							1					
FPC Retention Force		2、4										
Terminal / Housing Retention Force								1				
Fitting Nail/Housing Retention Force								2				
Resistance to Soldering Heat									2			
Hand Soldering Temperature Resistance										2		
Sample Size	2	4	4	4	4	4	4	4	4	2	4	4

TITLE: **0.3 PITCH EASY ON FPC TYPE**

RELEASE DATE: 2023/05/11

REVISION: A

ECN No: ECN-013185

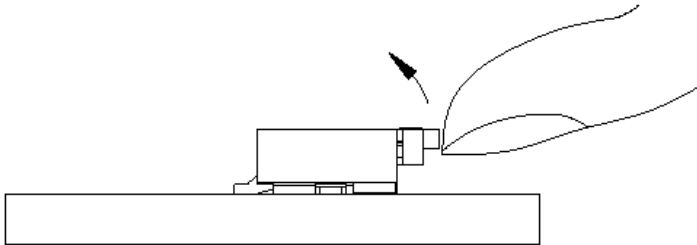
PAGE: **10** OF **16**

8 CONNECTOR OPERATION

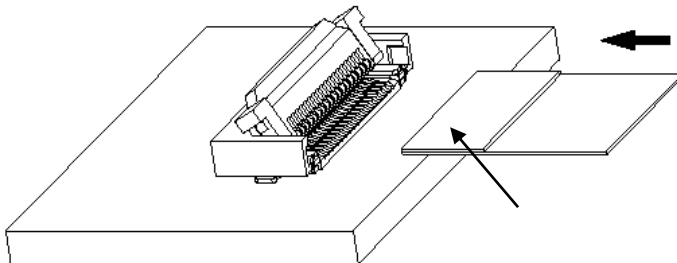
OPERATION

FPC insertion procedure. Connector installed on the board.

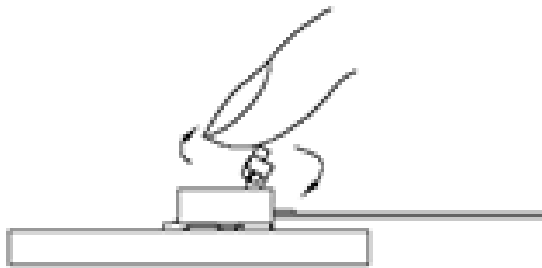
1) Lift up the actuator. Use thumb or index finger.



2) Fully insert the FPC in the connector parallel to mounting surface, with the exposed conductive traces facing down.



3) Rotate down the actuator until firmly closed. It is critical that the inserted FPC is not moved and remains fully inserted.



TITLE: **0.3 PITCH EASY ON FPC TYPE**

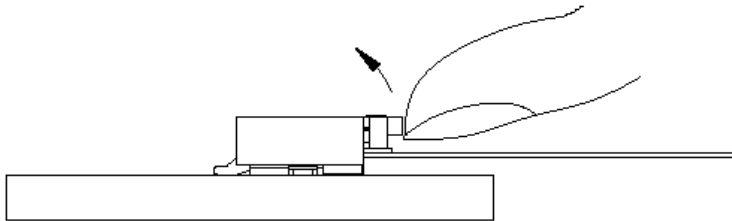
RELEASE DATE: 2023/05/11

REVISION: A

ECN No: ECN-013185

PAGE: **11** OF **16****FPC/FFC Removal**

- 1) Lift up the actuator.
- 2) Carefully remove the FPC/FFC.

**PRECAUTIONS****PC board flexing**

- 1)SPC board connector mounting area

The connectors are straight within 0.1 mm max.

Make sure that the PC board connector mounting area flatness can accept the connector terminals without causing any failure of the solder joints.

- 2)SHandling before mounting on PCB

Insertion of the FPC or operation of the actuator prior to mounting on the PCB is NOT RECOMMENDED.

- 3)SPC Board handling

Exercise caution when handling boards with the connectors installed. Do not apply any forces affecting soldered joints.

TITLE: 0.3 PITCH EASY ON FPC TYPE

RELEASE DATE: 2023/05/11

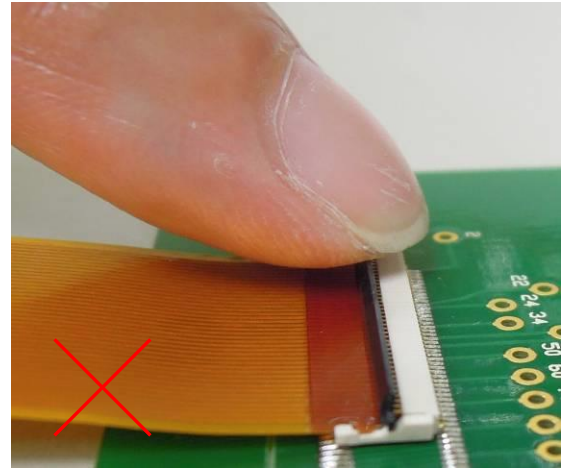
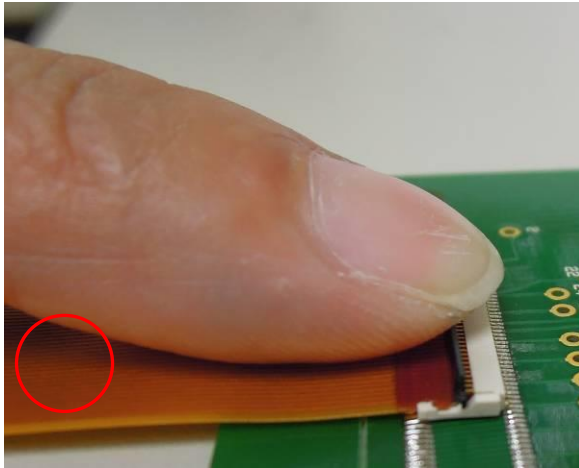
REVISION: A

ECN No: ECN-013185

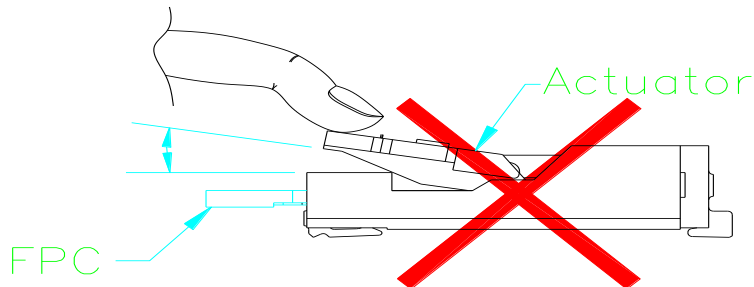
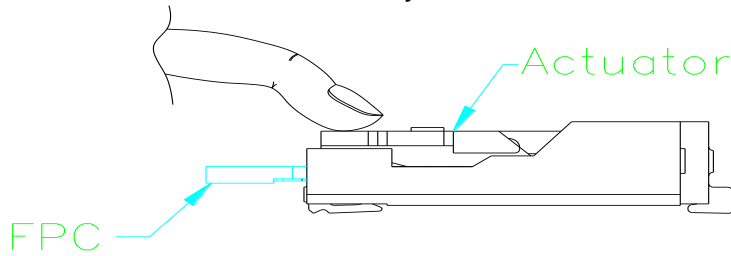
PAGE: **12** OF **16**

A. Locking

After FPC/FFC insertion, rotate the actuator down to a full stop, pushing it at the center.



About the lock operation When you lock, it is recommended what the actuator does as a whole, and the actuator was shut surely.



TITLE: **0.3 PITCH EASY ON FPC TYPE**

RELEASE DATE: 2023/05/11

REVISION: A

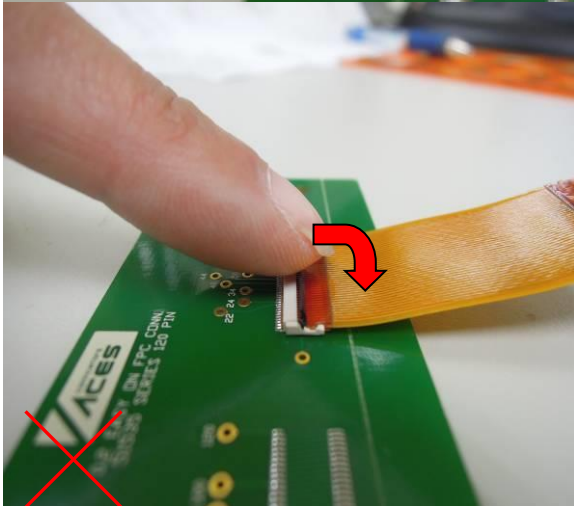
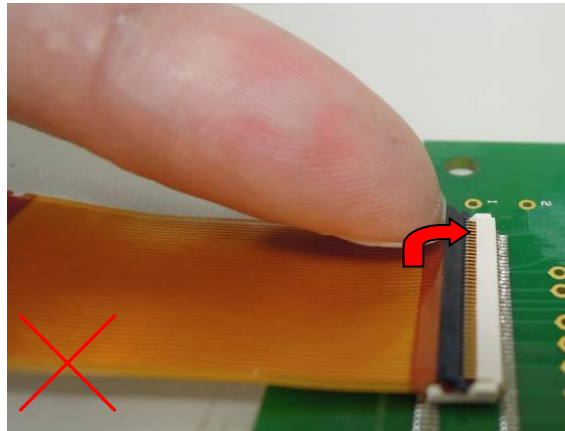
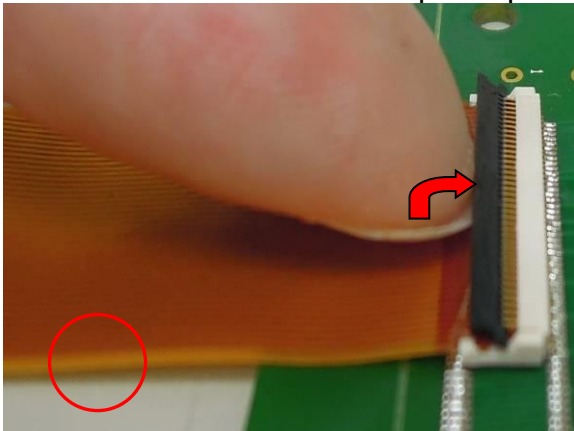
ECN No: ECN-013185

PAGE: **13** OF **16**

B. Lock release

Carefully rotate the actuator up to 90°, lifting it at the center.

- The actuator opens by rotating it in the direction OPPOSITE to the direction of the insertion of the FPC. DO NOT attempt to open it from the same side as the insertion of the FPC.



TITLE: 0.3 PITCH EASY ON FPC TYPE

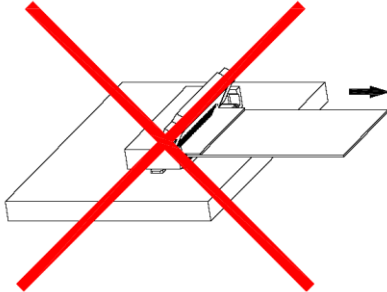
RELEASE DATE: 2023/05/11

REVISION: A

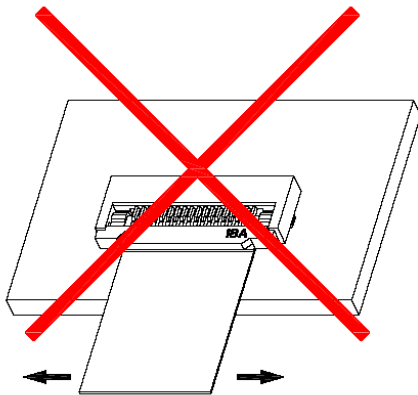
ECN No: ECN-013185

PAGE: **14** OF **16**

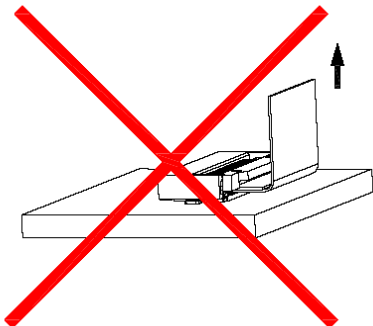
- 1) Do when you pull out mating FPC/FFC with the Actuator opened completely. Confirm whether to Have adhered to the terminal contact part before FPC/FFC is mated with the connector housing when the opening of the actuator is the un-complete and FPC/FFC is pulled out.



- 2) Do not add the load mating FPC/FFC with connector housing.



- 3) Due to the structure of the connectors, they do not have string resistance to upward pulling; therefore, support the FPC/FFC when a pulling force is applied to it.



TITLE: 0.3 PITCH EASY ON FPC TYPE

RELEASE DATE: 2023/05/11

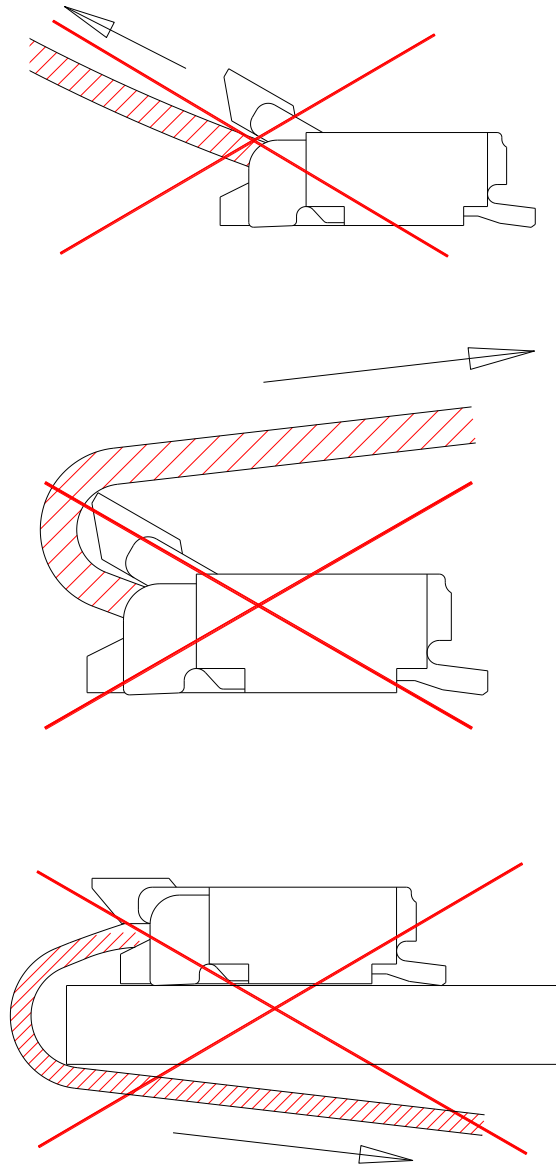
REVISION: A

ECN No: ECN-013185

PAGE: **15** OF **16**

4) This connector is small and thin and requires delicate and careful handling.

Be very careful not to apply any force to the FPC after inserting it.
Otherwise, the connector may become unlocked or the FPC may break.
Fix the FPC, in particular, when loads are applied to it continuously.
Design the FPC layout with care not to bend it sharply near the insertion opening.



TITLE: **0.3 PITCH EASY ON FPC TYPE**

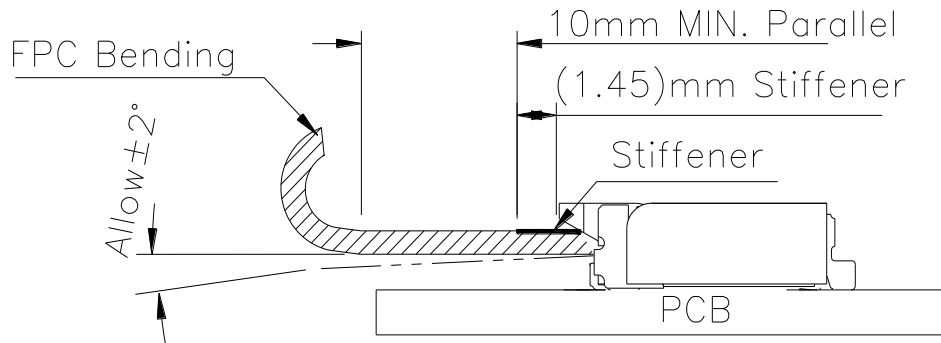
RELEASE DATE: 2023/05/11

REVISION: A

ECN No: ECN-013185

PAGE: **16** OF **16**

FPC Bending Direction: UP



FPC Bending Direction: DOWN

