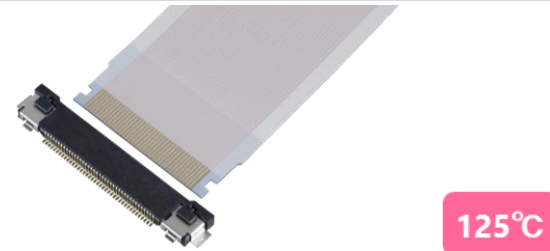


FPC / FFC Connectors

105°C 125°C Operating Temperature

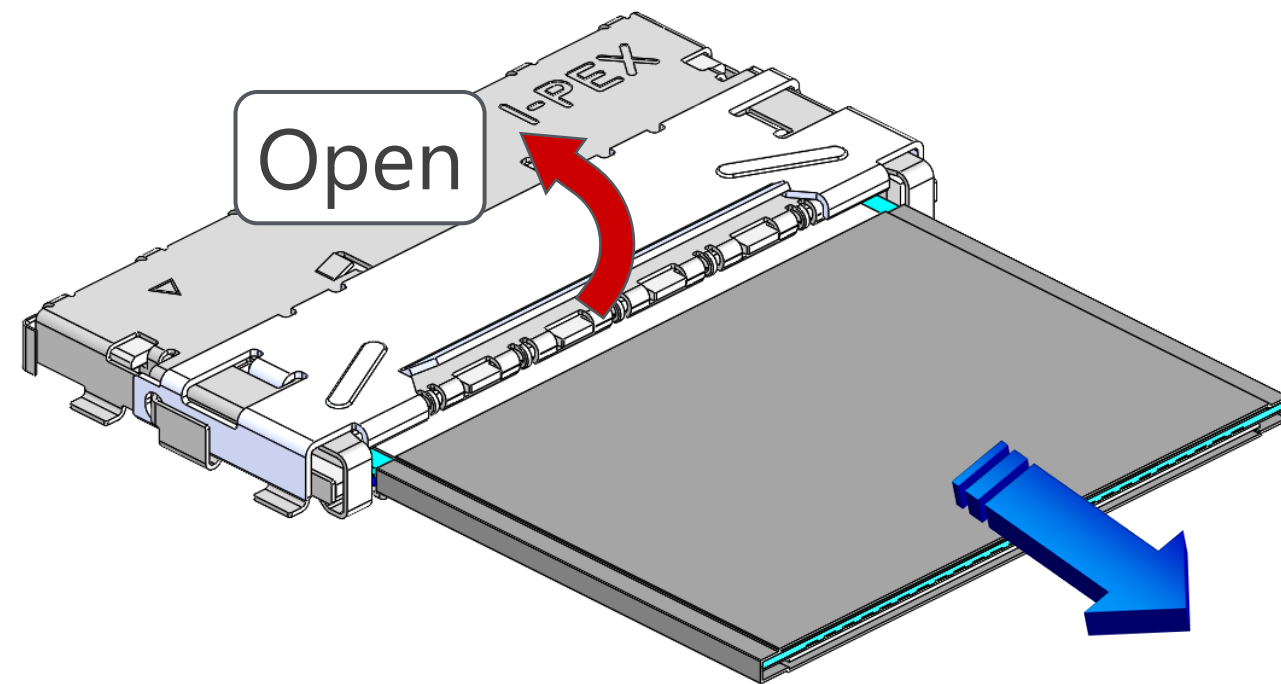
ZenShield® Full EMI Shield

All EVAFLEX® series designed by **Mechanical Lock** and **Hold Down**
Click on each product information to jump to the web.

Product Name		EVAFLEX® 5-HD	EVAFLEX® 5-VS		EVAFLEX® 5-SE	EVAFLEX® 5-SE-G VT	EVAFLEX® 5-SE VT
Appearance							
Feature		Full-Shielded Auto-locking connector Up to 24 Gbps	Shielded PC panel industry standard footprint Up to 8 Gbps		Auto-locking connector Shared FFC with EVAFLEX® 5-SE VT	One hand operation Auto-locking connector Up to 4 Gbps	Auto-locking connector Shared FFC with EVAFLEX® 5-SE
Part Number		20952	20535	20720 (TYPE CH)	20526	20799	20539
Un-lock Mechanism		Open top cover	Push down on the shell		Push down 2 buttons	Press the release button	Press the release button
Mating Type / Direction		Horizontal	Horizontal		Horizontal	Vertical	Vertical
Contact Pitch		0.5 mm	0.5 mm		0.5 mm	0.5 mm	0.5 mm
Pin Count	Available	24	10, 15, 20, 24, 30, 40, 50		10, 15, 22, 30, 40, 45, 50, 60	20, 30, 40, 50, 60	16, 22, 24, 26, 30, 40, 45, 50, 60, 80
	Note	Please inquire for pin counts not listed above					
Size	Height	1.55 +/- 0.2 mm	1.9 +/- 0.1 mm		2.4 +/- 0.2 mm	6.6 +/- 0.3 mm	6.0 +/- 0.2 mm
	Width	5.2 + (0.5 x pin count) mm	6.25 + (0.5 x pin count) mm		13.1 + (0.5 x pin count) mm	8.00 + (0.5 x pin count) mm	11.5 + (0.5 x pin count) mm
	Depth	8.43 mm	4.95 mm		5.9 mm	3.9 mm	4.5 mm
Contact Mating Length		1.0 mm	1.1 mm		1.45 mm	1.2 mm	1.2 mm
FPC / FFC Insertion Depth		4.3 mm	3.3 mm		3.8 mm	5.35 mm	4.2 mm
FPC / FFC Type		FPC / FFC: Shielded	FPC: Non-shielded, FFC: Shielded/Non-shielded		FPC / FFC: Non-shielded	FPC: Non-shielded, FFC: Shielded/Non-shielded	FPC / FFC: Non-shielded
FPC / FFC Thickness		Contact Area: 0.3 +/- 0.03 mm, Ground Aea: 0.5 +/- 0.03 mm	0.33 +/- 0.03 mm		FPC: 0.3 +/- 0.03 mm, FFC: 0.3 +/- 0.05 mm	0.3 +/- 0.03 mm	0.3 +/- 0.05 mm
Contact Point		Top	Top		Top	Signal contact tail side	Signal contact tail side
Footprint Pattern Compatibility		Original	CABLINE® -VS		Original	Original	Original
Current Rating		Signal: 0.3 A/pin	Signal: 0.3 A/pin		Signal: 0.35 A/pin	Signal: 0.35 A/pin	Signal: 0.35 A/pin
Applicable Standards (Reference Only)		FPC: USB4 (20 Gbps/lane), Thunderbolt3 (20 Gbps/lane), FFC: USB3.2 Gen2 (10 Gbps), USB3.1 Gen1 (5 Gbps), V-By-One HS 1.4 (4 Gbps)	USB3.1 Gen 1 (5 Gbps/Lane), eDP HBR3 (8.1 Gbps/Lane), eDP HBR2 (5.4 Gbps/Lane), eDP (2.7 Gbps), HDMI 2.0 (6 Gbps/Lane), V-By-One HS 1.4 (4 Gbps), MiPi standards, USCAR II Vibration & Shock V1		LVDS	eDP HBR 2 (5.4 Gbps), eDP (2.7 Gbps), V-By-One HS 1.4 (4 Gbps), USCAR II Vibration & Shock V1	LVDS
Operating Temperature		-40 to 85°C (233 to 358K)	-40 to 85°C (233 to 358K)	-40 to 105°C (233 to 378 K)	-40 to 125°C (233 to 398K)	-40 to 125°C (233 to 398K)	-40 to 85°C (233 to 358K)

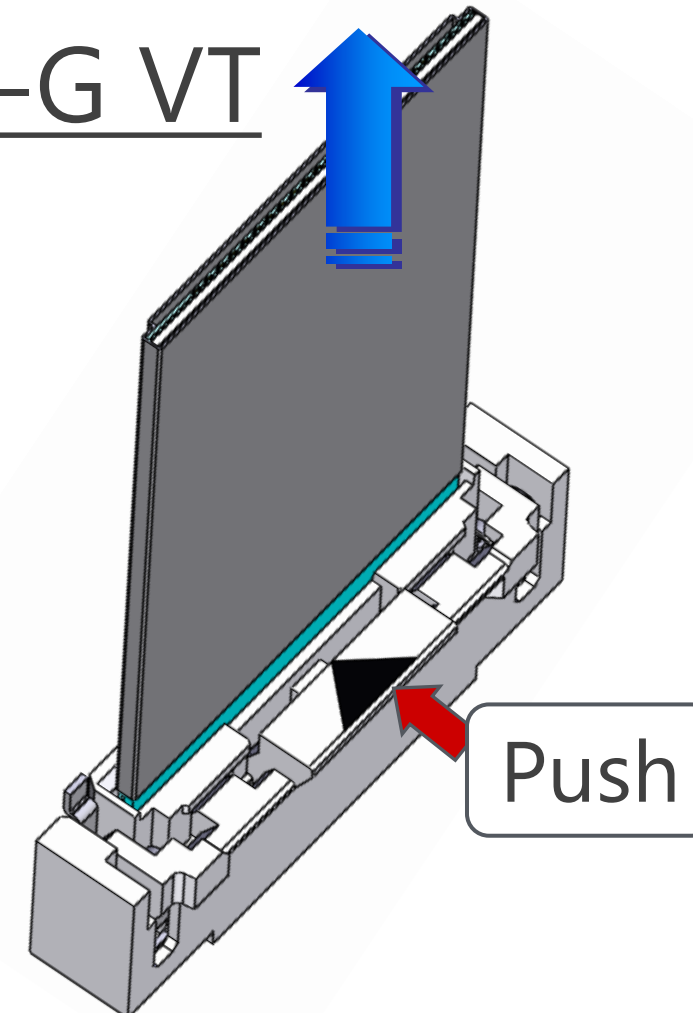
Auto-Locking FFC/FPC Connector - EVAFLEX® series - Un-locking methods

EVAFLEX® 5-HD



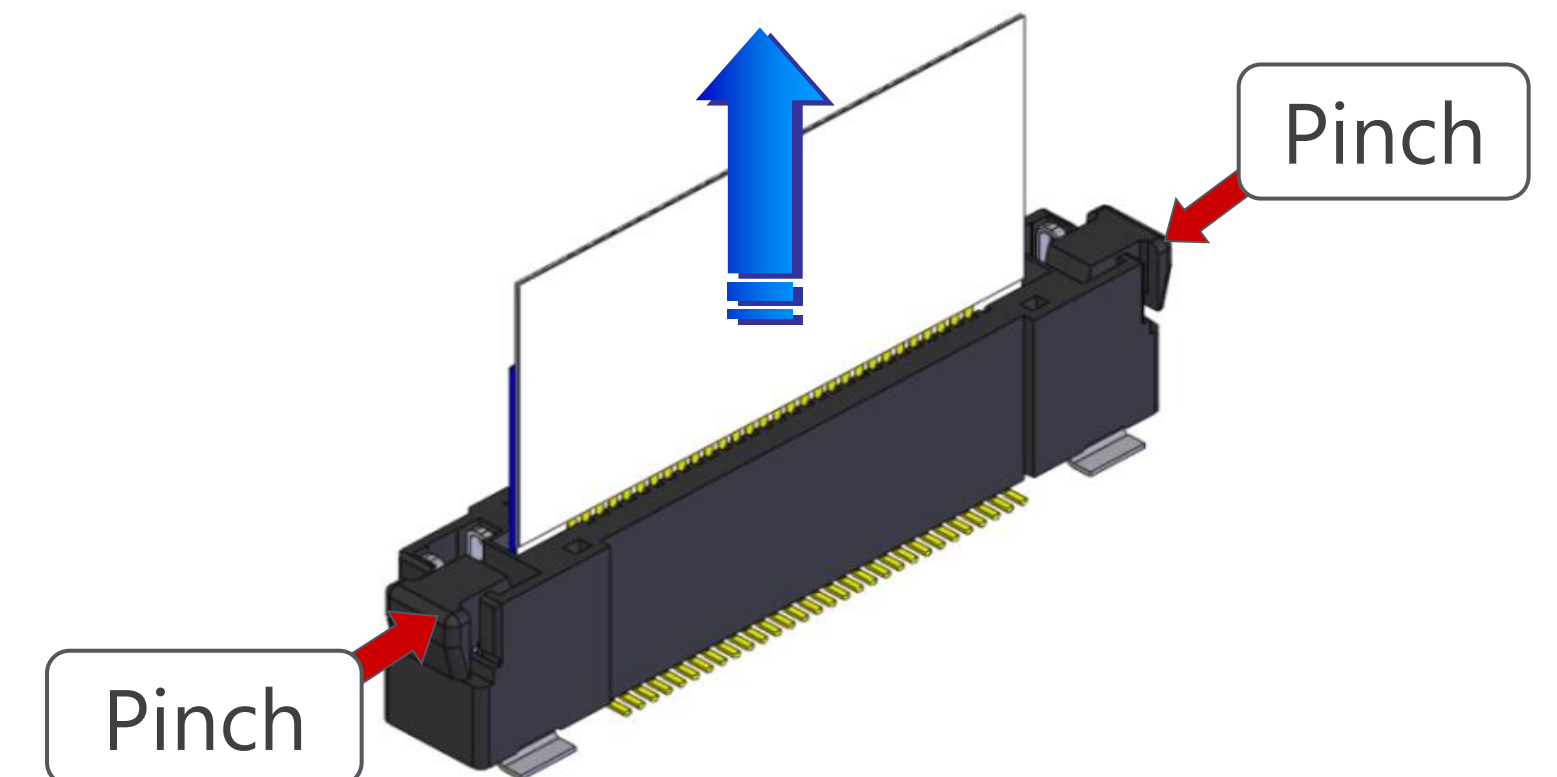
Open the cover and pull FPC/FFC out

EVAFLEX® 5-SE-G VT



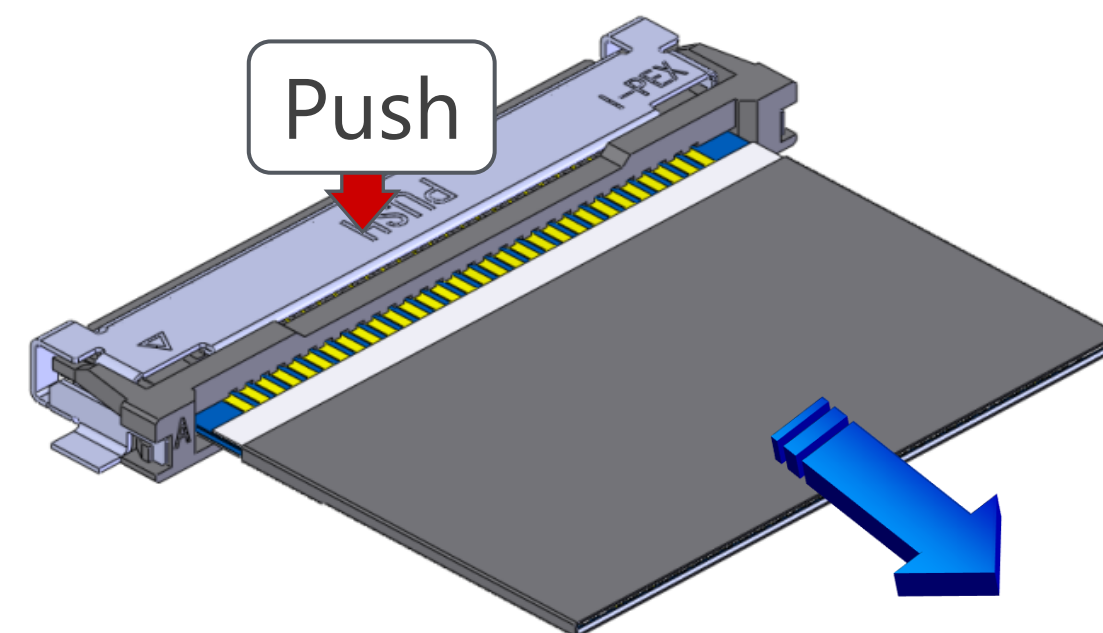
Push center lock release button and pull FPC/FFC out

EVAFLEX® 5-SE VT



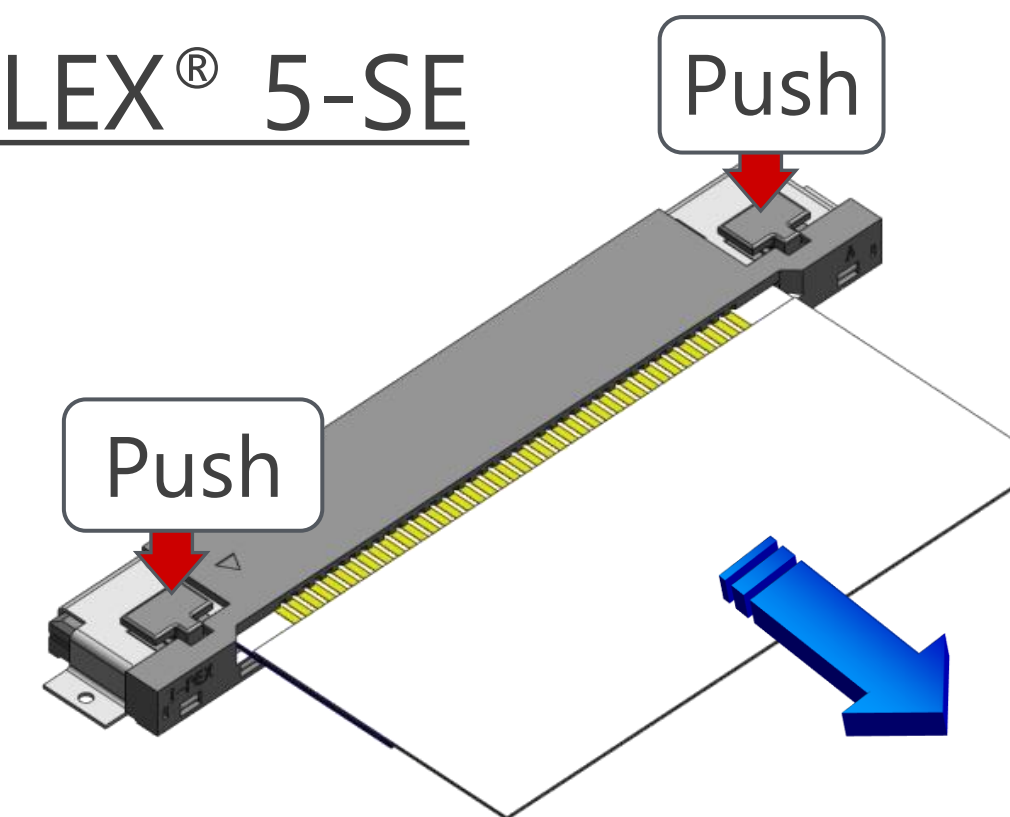
Hold both sides lock release button and pull FPC/FFC out

EVAFLEX® 5-VS



Push down on the shell and pull FPC/FFC out

EVAFLEX® 5-SE



Push both ends lock release button and pull FPC/FFC out

FFC manufacturers supporting EVAFLEX[®] 5 series

Sumitomo Electric Industries, Ltd.

<http://global-sei.com/ewp/E/products/category/fc.html>

BANDO DENSEN Co., Ltd.

<http://www.bew.co.jp/>

HEUNSUNG INDUSTRIAL INC.

<http://eunsung-ind.com/>

LUXSHARE ICT

<https://www.luxshare-ict.com/en/solution/automotive-medical.html>

FPC / FFC Connectors

HD

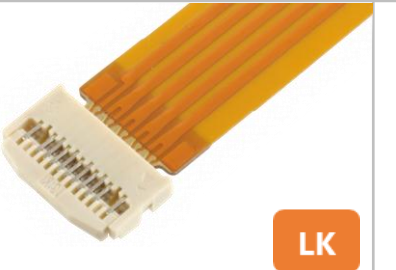
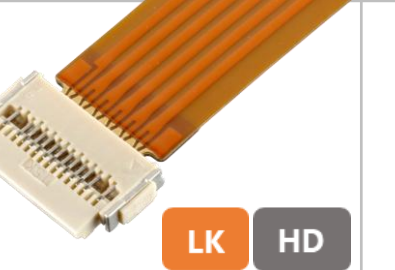
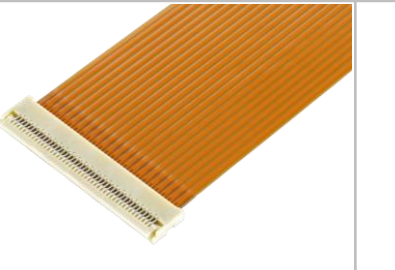
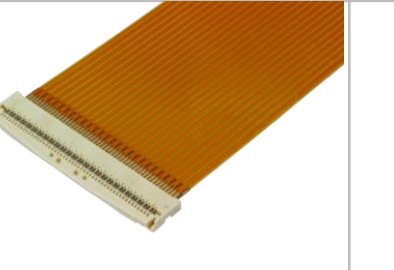
Hold down

LK

Mechanical lock

All connectors are back flip type unless otherwise specified.

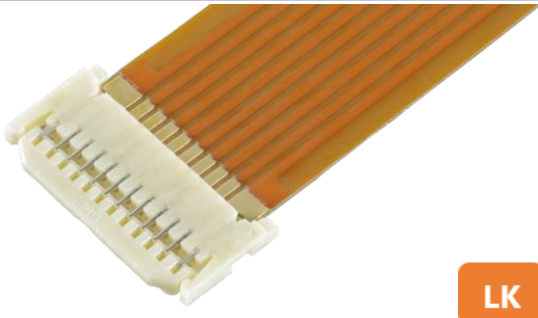
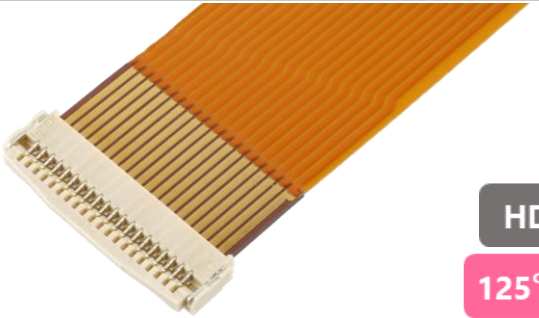
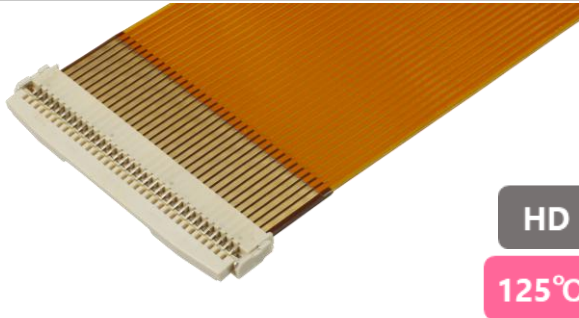
Click on each product information to jump to the web.

Product Name		MINIFLEX® 175-ST	MINIFLEX® 2-BF	MINIFLEX® 3-BFN		MINIFLEX® 3-BFN L-HD	MINIFLEX® 3-BFN LK		MINIFLEX® 3-BFN L-LK-HD	MINIFLEX® 3-BFNH		MINIFLEX® 3-BFNH L-HD
				Short Actuator	Long Actuator		Short Actuator	Long Actuator		Short Actuator	Long Actuator	
Appearance		 LKHD	 HD			 HD	 LK	 LK	 LKHD			 HD
Feature		0.175 mm pitch 0.52 mm height	0.2 mm pitch	Compact design	Compact design	Compact design Equipped with hold-down	Compact design Equipped with mechanical lock	Compact design Equipped with mechanical lock	Compact design Equipped with hold-down and mechanical lock	Footprint pattern compatible with Y3B	Footprint pattern compatible with Y3B	Footprint pattern compatible with Y3B Equipped with hold-down
Part Number		20622	20617	20527	20538	20982	20599	20584	20655	20613	20605	20660
Contact Pitch		0.175 mm	0.2 mm	0.3 mm	0.3 mm	0.3 mm	0.3 mm	0.3 mm	0.3 mm	0.3 mm	0.3 mm	0.3 mm
Board Pitch		0.35 mm	0.4 mm	0.6 mm	0.6 mm	0.6 mm	0.6 mm	0.6 mm	0.6 mm	0.6 mm	0.6 mm	0.6 mm
Pin Count	Available	16, 19	80, 100, 120	13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41	33, 35, 39, 41, 45, 49, 51, 55, 57, 61, 65	51	9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37	51, 53, 57, 61, 71	11, 40, 45	7, 9, 11, 21, 23, 25, 31, 33, 35, 39, 41, 45	51, 61, 71	39, 61
	Note	Please inquire for pin counts not listed above										
Height		0.52 +/- 0.05 mm	0.9 +/- 0.1 mm	0.9 +/-0.1 mm	0.9 +/-0.1 mm	0.9 +/- 0.1 mm	0.9 +/- 0.1 mm	0.9 +/-0.1 mm	0.9 +/- 0.1 mm	0.9 +/- 0.1 mm	0.9 +/- 0.1 mm	0.9 +/- 0.1 mm
Width		1.915 + (0.175 x pin count) mm	1.5 + (0.2 x pin count) mm	0.9 + (0.3 x pin count) mm	0.9 + (0.3 x pin count) mm	1.5 + (0.3 x pin count) mm	2.1 + (0.3 x pin count) mm	2.1 + (0.3 x pin count) mm	2.7 + (0.3 x pin count) mm	1.5 + (0.3 x pin count) mm	1.5 + (0.3 x pin count) mm	2.1 + (0.3 x pin count) mm
Depth	Actuator Open	2.65 mm	3.3 mm	2.55 mm	2.55 mm	2.55 mm	2.55 mm	2.55 mm	2.55 mm	2.95 mm	2.95 mm	2.95 mm
	Actuator Close	3.0 mm	4.5 mm	3.0 mm	3.5 mm	3.5 mm	3.0 mm	3.5 mm	3.5 mm	3.15 mm	3.5 mm	3.5 mm
Contact Mating Length	Contact A	0.85 mm	0.95 mm	0.9 mm	0.9 mm	0.9 mm	0.9 mm	0.9 mm	0.9 mm	1.0 mm	1.0 mm	1.0 mm
	Contact B	0.4 mm	0.45 mm	0.45 mm	0.45 mm	0.45 mm	0.45 mm	0.45 mm	0.45 mm	0.45 mm	0.45 mm	0.45 mm
FPC Insertion Depth		1.05 mm	1.4 mm	1.1 mm	1.1 mm	1.1 mm	1.1 mm	1.1 mm	1.1 mm	1.35 mm	1.35 mm	1.35 mm
FPC Thickness		0.12 +/- 0.03 mm	0.2 +/- 0.03 mm	0.2 +/- 0.03 mm	0.2 +/- 0.03 mm	0.2 +/- 0.03 mm	0.2 +/- 0.03 mm	0.2 +/- 0.03 mm	0.2 +/- 0.03 mm	0.2 +/- 0.03 mm	0.2 +/- 0.03 mm	0.2 +/- 0.03 mm
Current Rating		Signal: 0.3 A/pin	Signal: 0.2 A/pin	Signal: 0.3 A/pin	Signal: 0.3 A/pin	Signal: 0.3 A/pin	Signal: 0.3 A/pin	Signal: 0.3 A/pin	Signal: 0.3 A/pin	Signal: 0.3 A/pin	Signal: 0.3 A/pin	Signal: 0.3 A/pin
Contact Point		Top	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom
Footprint Pattern Compatibility		Original	Original	Original	Original	Original	Original	Original	Original	Panasonic Y3B	Panasonic Y3B	Original

FPC / FFC Connectors

- FF Front Flip Type
- LK Mechanical lock
- HD Hold down
- 125°C Operating Temperature

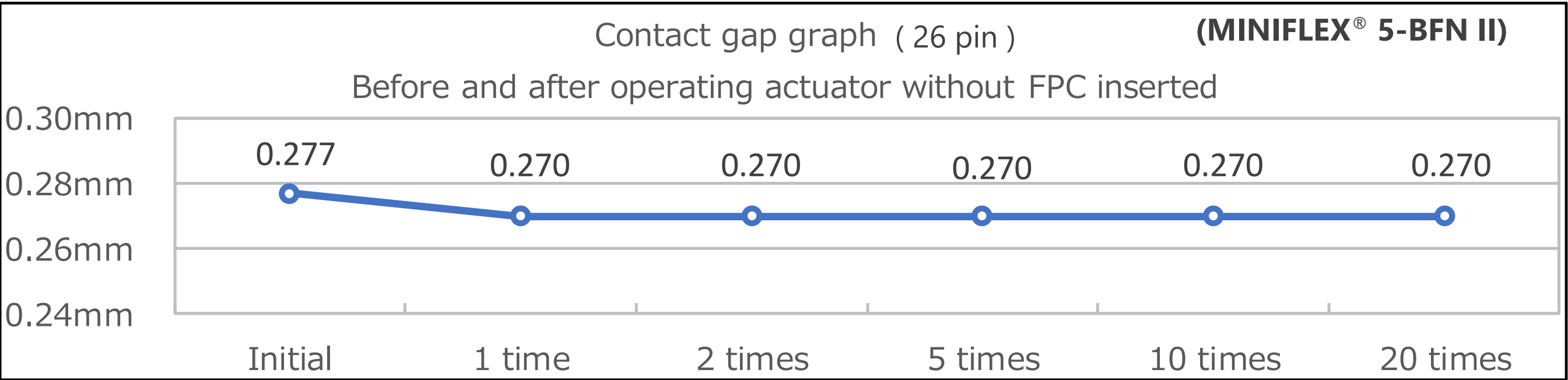
* All connectors are back flip type unless otherwise specified. Click on each product information to jump to the web.

Product Name		MINIFLEX® 4-ST	MINIFLEX® 5-BFN II		MINIFLEX® 5-BFN II LK	DW-5	MINIFLEX® 5-FF
			Short Actuator	Long Actuator			
Appearance		 LK	 HD 125°C	 HD 125°C	 LK HD 125°C	 LK HD	 FF HD 125°C
Feature		0.4 mm height Equipped with mechanical lock	Operation temp. 125°C Equipped with hold-down	Operation temp. 125°C Equipped with hold-down	Operation temp. 125°C Equipped with hold-down and mechanical lock	Hybrid connector for FPC and Discrete Wire (AWG 34)	Operation temp. 125°C Footprint pattern compatible with FH28 and 6288 Front flip
Part Number		20588	20542	20586	20600	20597 / 20598	20647
Contact Pitch		0.4 mm	0.5 mm	0.5 mm	0.5 mm	0.5 mm	0.5 mm
Board Pitch		0.4 mm	0.5 mm	0.5 mm	0.5 mm	0.5 mm	0.5 mm
Pin Count	Available	4, 6, 8, 10, 12	4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30	32, 34, 40, 50, 54	4, 6, 8, 10, 12, 14, 16, 18, 20, 24	6, 8, 10	20, 30, 40, 50, 55, 60, 64, 68
	Note	Please inquire for pin counts not listed above					
Height		0.5 +/- 0.05 mm	1.0 +/- 0.1 mm	1.0 +/- 0.1 mm	1.0 +/- 0.1 mm	1.0 +/- 0.1 mm	2.55 +/- 0.2 mm
Width		1.9 + (0.4 x pin count) mm	1.7 + (0.5 x pin count) mm	1.7 + (0.5 x pin count) mm	2.7 + (0.5 x pin count) mm	FPC mated: 3.7 + (0.5 x pin count) mm Discrete wire mated: 3.7 + (0.5 x pin count) mm	4.9 + (0.5 x pin count) mm
Depth	Actuator Open	2.7 mm	3.0 mm	3.0 mm	3.0 mm	FPC mated depth: 3.5 mm Discrete wire mated depth: 5.39 mm	6.4 mm
	Actuator Close	3.0 mm	3.5 mm	4.0 mm	3.5 mm		7.2 mm
Contact Mating Length		0.8 mm	1.0 mm	1.0 mm	1.0 mm	1.0 mm	1.4 mm
FPC Insertion Depth		1.0 mm	1.3 mm	1.3 mm	1.3 mm	1.3 mm	4.15 mm
FPC Thickness		0.12 +/- 0.03 mm	0.3 +/- 0.03 mm	0.3 +/- 0.03 mm	0.3 +/- 0.03 mm	0.2 +/- 0.03 mm	0.3 +/- -0.05 mm
Current Rating		Signal: 0.4 A/pin (6 A/connector)	Signal: 0.5 A/pin (7 A/connector)	Signal: 0.5 A/pin (7 A/connector)	Signal: 0.5 A/pin (7 A/connector)	FPC: 0.5 A/pin, DW (AWG 34): 0.7 A/pin	Signal: 0.5 A/pin
Contact Point		Top	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom	Bottom
Footprint Pattern Compatibility		Original	Original	Original	Original	Original	HRS FH28 Kyocera 6288

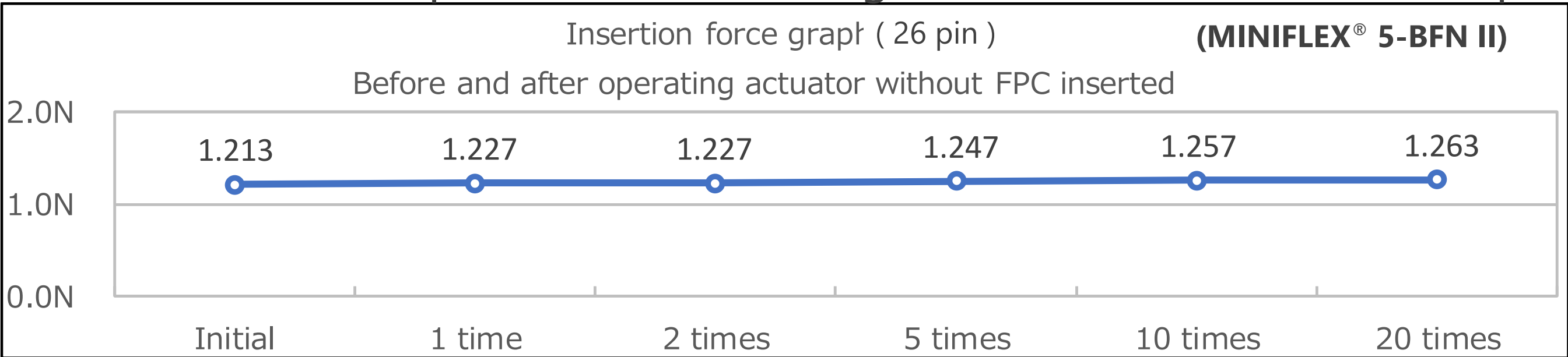
If connector actuator was closed accidentally without FPC inserted...

Do not change the temperature while the actuator is in a closed state. No reflow soldering should be done when the actuator closed state. FPC insertion force remove extra space between force and will increase after first actuator operation without the FPC being inserted. It is strongly recommended to avoid any actuator open / close operation without the FPC being inserted from the beginning.

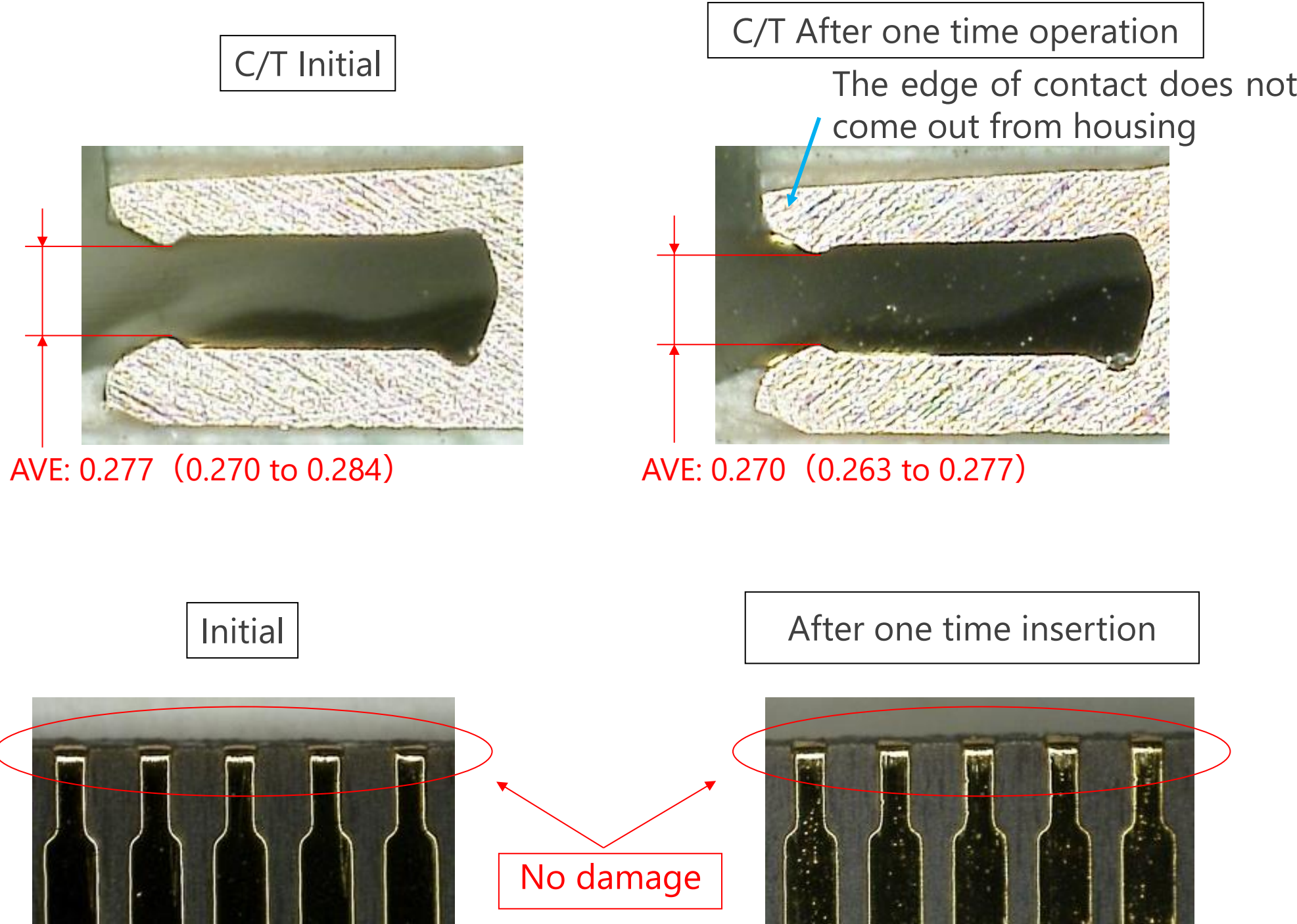
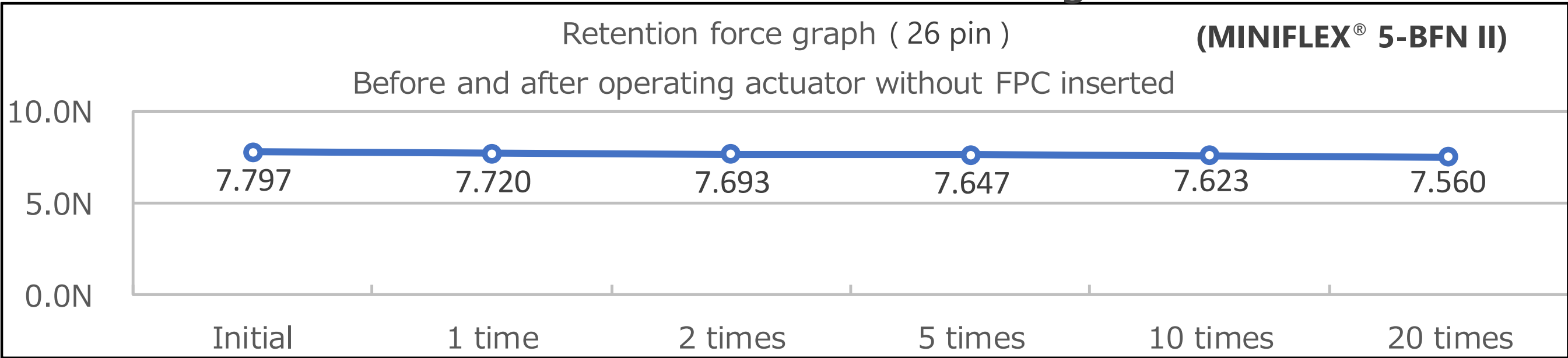
■ Connector will still function reliably



■ Connector still performs even though the insertion force went up



■ Retention force of connector does not change



Additional mechanical lock available for higher FPC retention force

0.175 mm, 0.2 mm, 0.3 mm pitch product FPC retention force

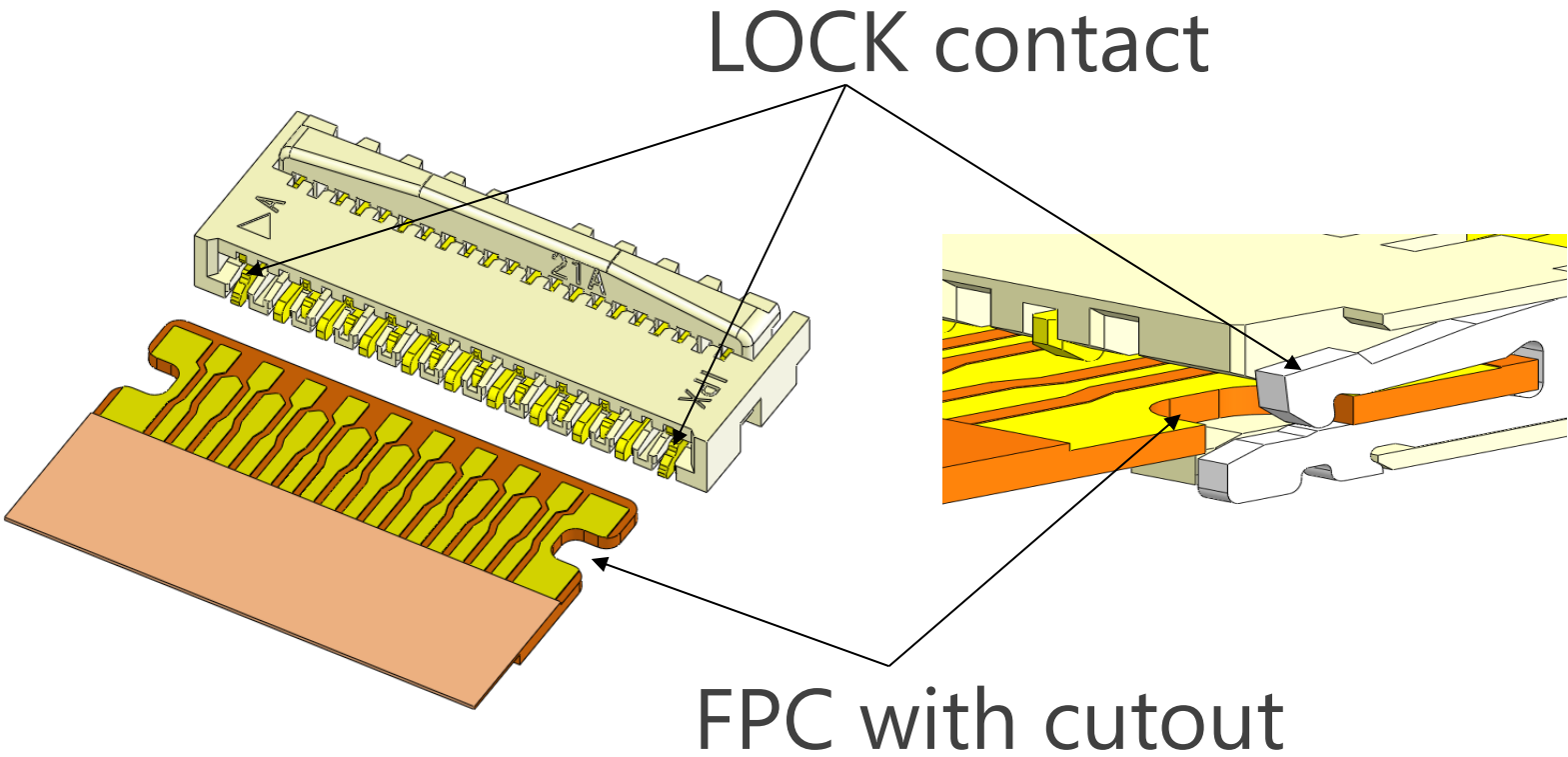
	L 175-ST	2-BF	L 3-BFN	3-BFN LK	L 3-BFN L	3-BFN L LK	3-BFNH	3-BFNH L
FPC Retention Force (Actual)	8.59N (19 pin)	31.33N (100 pin)	6.70N (19 pin)	11.37N (19 pin)	17.95N (51 pin)	23.45N (51 pin)	9.32N (23 pin)	20.97N (51 pin)
LOCK Contact Retention Force	5.44N (19 pin)	N/A	N/A	5.50N (19 pin)	N/A	5.50N (51 pin)	N/A	N/A

0.4 mm, 0.5 mm pitch product FPC retention force comparison

	L 4-ST	5-FF	5-BFN II	L 5-BFN II LK (03)	5-BFN II L
FPC Retention Force (Actual)	5.89N (10 pin)	51.72N (30 pin)	7.52N (16 pin)	14.50N (16 pin)	11.43N (32 pin)
LOCK Contact Retention Force	4.60N (10 pin)	N/A	N/A	6.98N (16 pin)	N/A

L

 Mechanical lock with FPC cutout

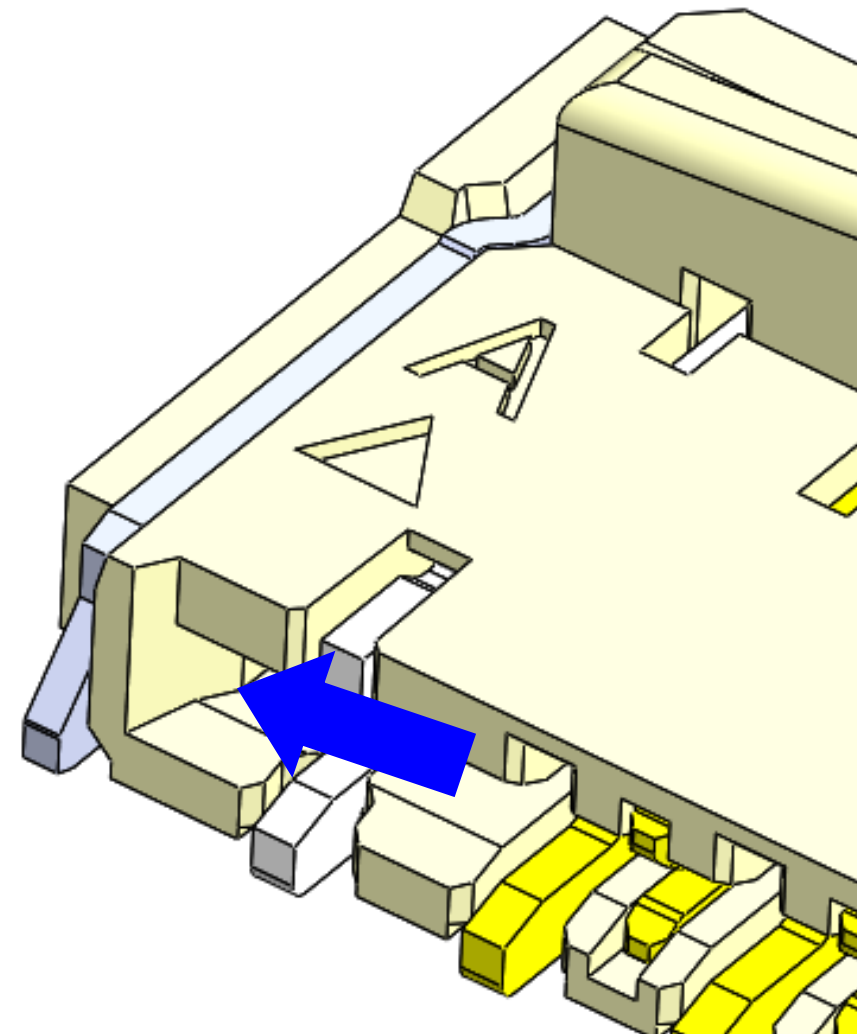


Hold down

Hold down to improve strength of side wall and to prevent actuator drop off

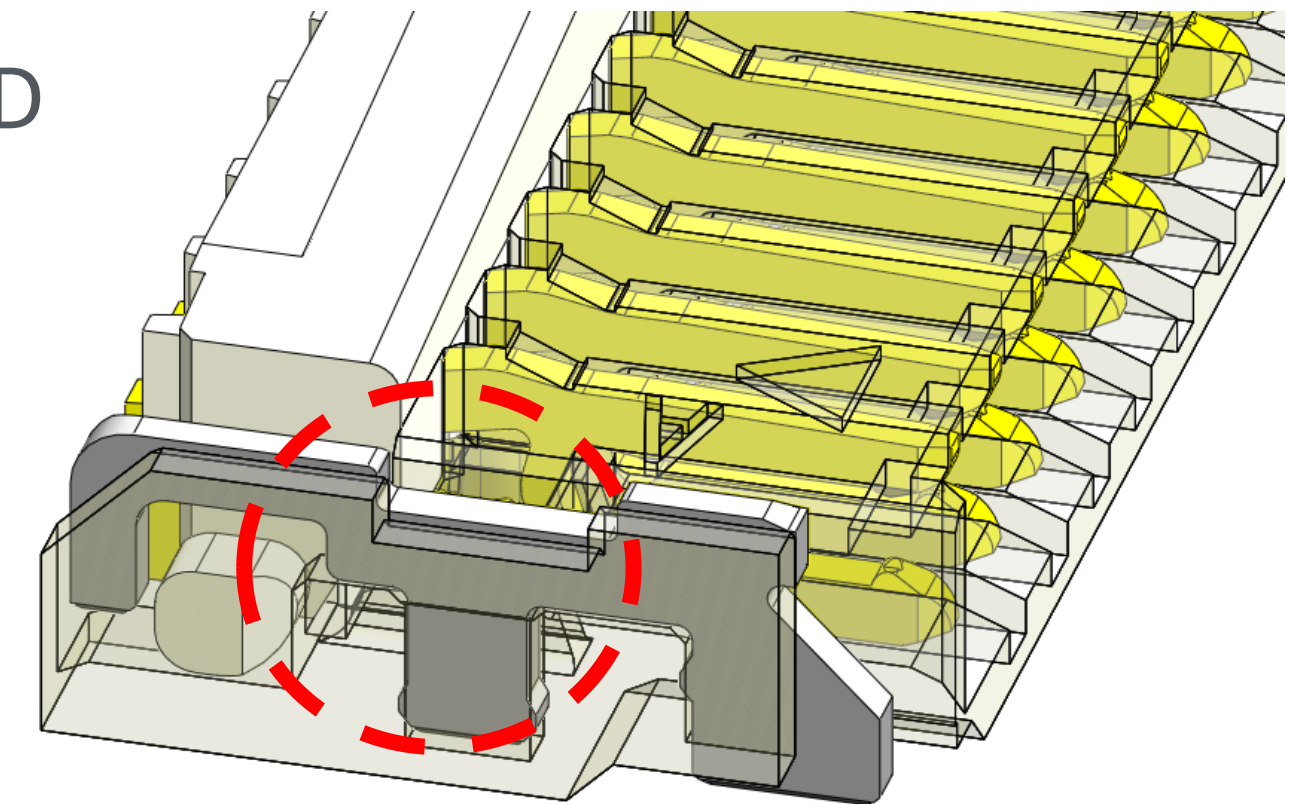
<Strength improvement>

MINIFLEX® 175-ST
MINIFLEX® 2-BF
MINIFLEX® 3-BFN L-HD
MINIFLEX® 3-BFN L-LK-HD
MINIFLEX® 3-BFNH L-HD
MINIFLEX® 5-BFN II



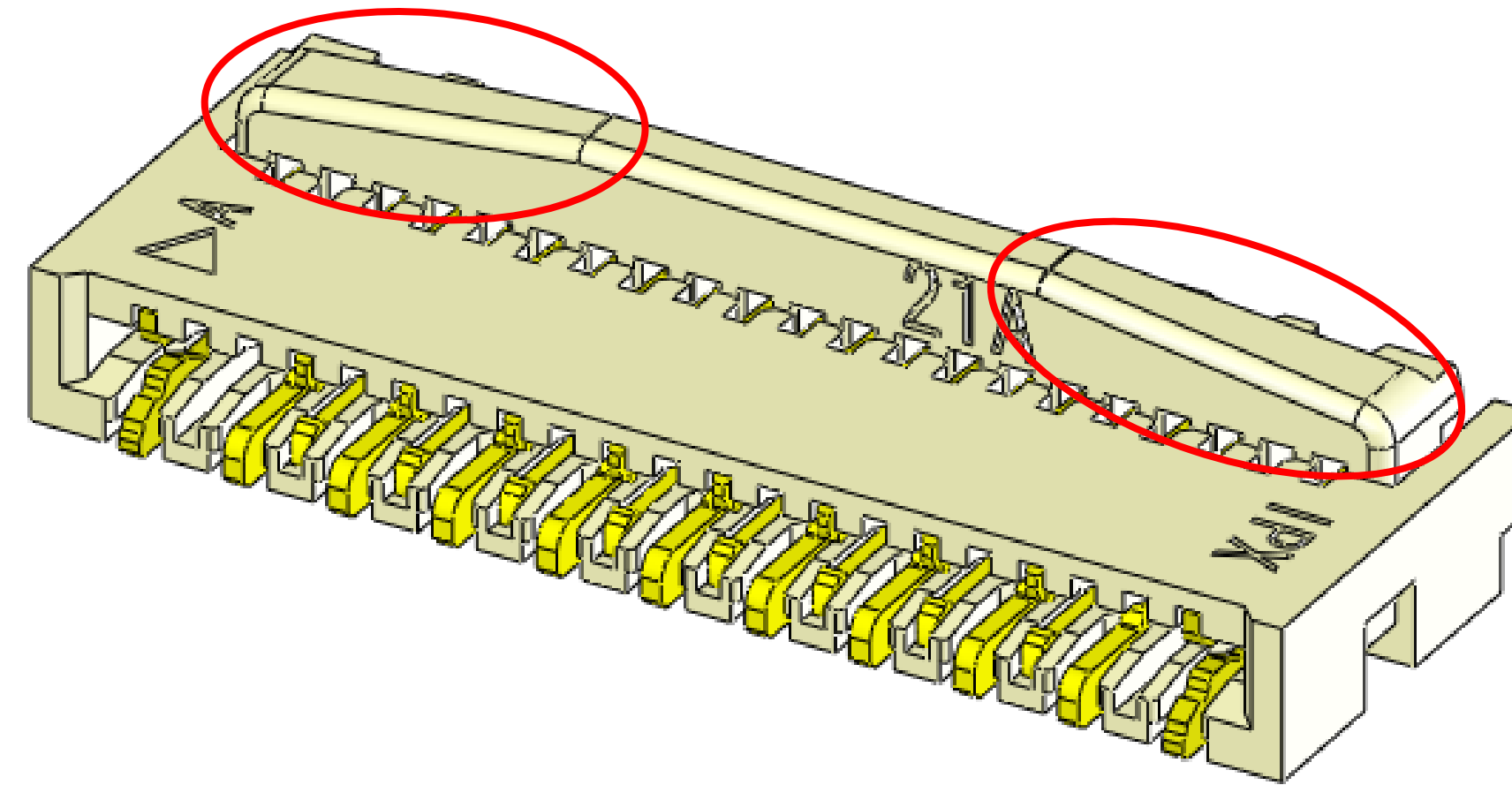
<Designed to prevent actuator drop off>

MINIFLEX® 175-ST
MINIFLEX® 2-BF
MINIFLEX® 3-BFNH L-HD
MINIFLEX® 5-BFN II



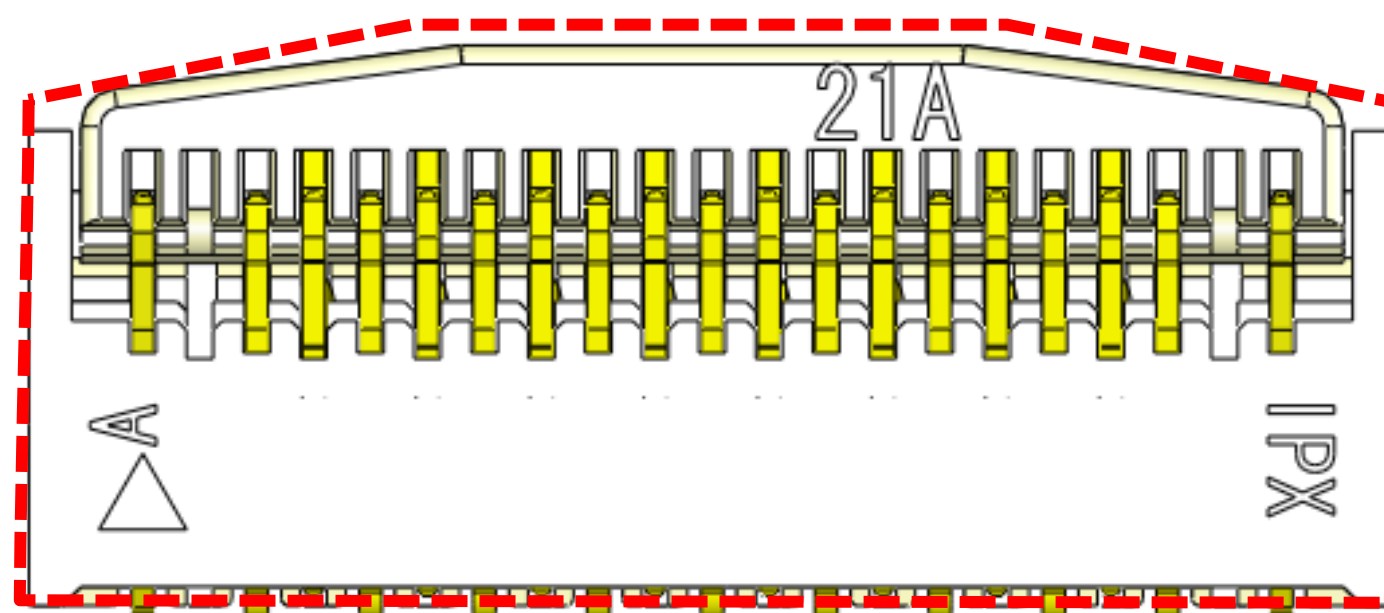
Half-lock prevention with curved actuator design

Curved design guide users to press center of the actuator to prevent half lock

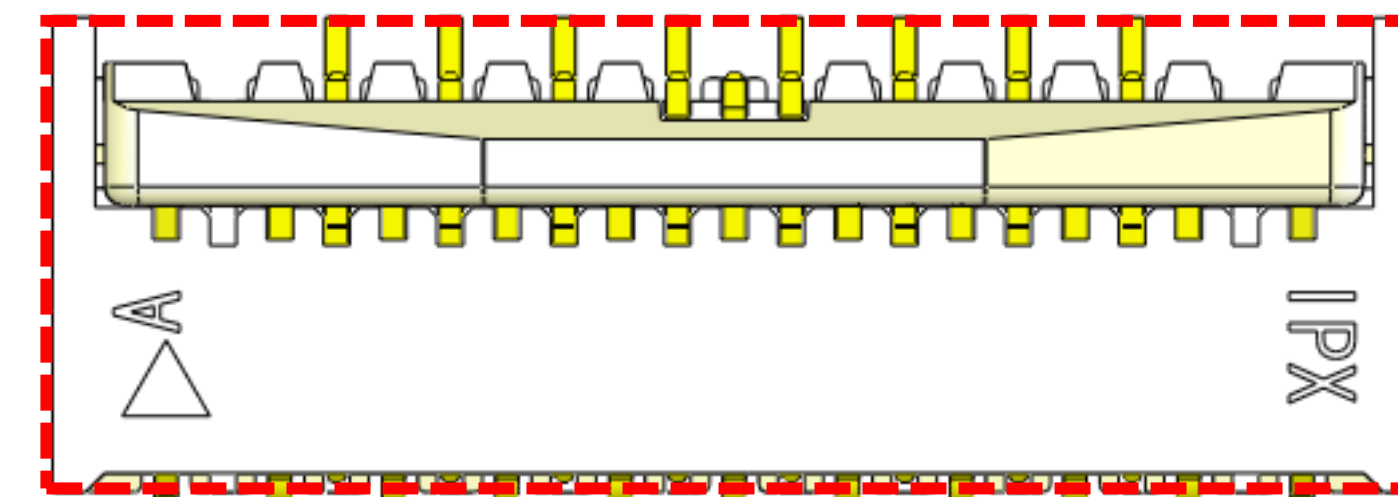


Easy to check Actuator closed position visually from top

Easy confirmation of actuator CLOSE/OPEN state



Actuator
CLOSED



Actuator
OPEN

I-PEX Product Series



MHF[®]
Series
RF Connectors



EVAFLEX[®]
Series
MINIFLEX[®]
Series
FPC/FFC Connectors



AP
Series
Terminals



CABLIME[®]
Series
Micro-Coaxial/
Twinaxial
Connectors



ISH[®]
Series
IARPB[®]
Series
Wire-to-Board
Connectors



MINIDOCK[™]
Series
I/O Connectors



NOVASTACK[®]
Series
Board-to-Board
Connectors



SX
Series
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Connectors



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