

FFC / FPC Connectors

ZenShield®

Full EMI Shield

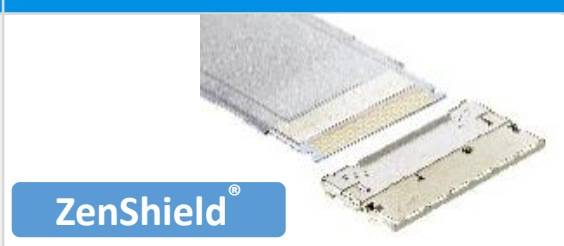







High temp. (105-125°C)



Robot ready

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

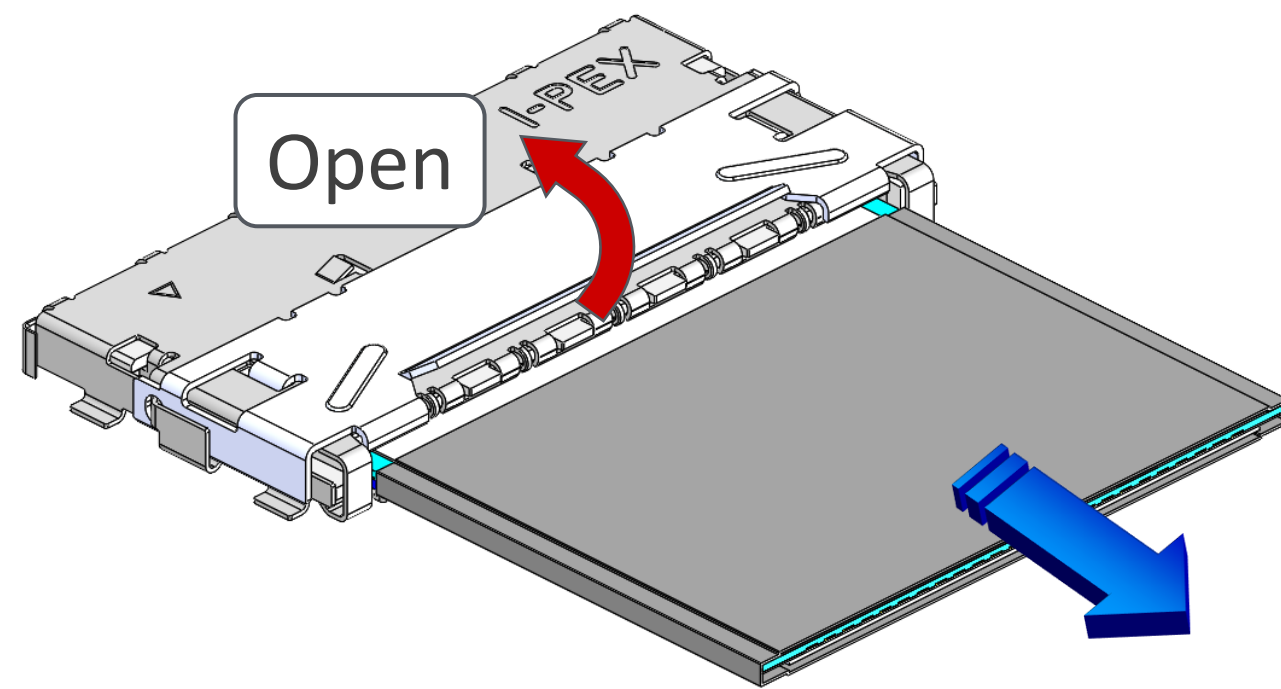
Product Name		EVAFLEX® 5-HD	EVAFLEX® 5-SE-G VT	EVAFLEX® 5-SE-G HT	EVAFLEX® 5-VS		EVAFLEX® 5-SE	EVAFLEX® 5-SE VT	
Feature									
		Full-Shielded High-speed (10+Gbps) FFC/FPC connector	One hand operation, Auto-locking connector Hold down (ground) for high-speed (4 Gbps)		PC panel industry standard footprint Shielded / Non-shielded High-speed (8+Gbps)		Non-shielded Horizontal mate	Non-shielded Vertical mate	
Part number		20952	20799	20899	20535	20720 (TYPE CH)	20526	20539	
Un-lock mechanism		Open top cover	Press the release button	Push on top	Push down on the shell		Push down 2 buttons	Press the release button	
Mating Type		Horizontal	Vertical	Horizontal	Horizontal		Horizontal	Vertical	
Pitch (mm)		0.5							
Pin count	Range	10 - 40	20 - 60		10 - 50		10 - 60	10 - 80	
	Available	24	20, 30, 40, 50, 60	30, 50	10, 15, 20, 24, 30, 40, 50		10, 15, 22, 30, 40, 45, 50, 60	16, 22, 24, 26, 30, 40, 45, 50, 60, 80	
Size (mm)	Height	2.00 +/- 0.20	6.6 +/- 0.30	3.65 +/- 0.20	1.90 +/- 0.10		2.40 +/- 0.20	6.00 +/- 0.30	
	Width formula	5.2 + (0.5*?p)	8.00 + (0.5*?p)	8.00 + (0.5*?p)	6.25 + (0.5*?p)		13.10 + (0.5*?p)	11.5 + (0.5*?p)	
	Depth	8.43 +/- 0.30	3.90 +/- 0.20	7.00 +/- 0.30	4.95 +/- 0.20		5.90 +/- 0.20	4.50 +/- 0.20	
Wiping length (mm)		1.00	1.20		1.10		1.45	1.20	
FFC/FPC insertion depth (mm)		4.30	5.35		3.30		3.80	4.20	
FFC/FPC type		Shielded FFC	Shielded FFC, Non-shielded FFC/FPC				Non-shielded FFC/FPC		
FFC/FPC thickness (mm)		0.33 +/- 0.03	0.30 +/- 0.03		0.33 +/- 0.03		FPC : 0.30 +/- 0.03 FFC : 0.30 +/- 0.05	0.30 +/- 0.05	
Contact point		Top	Signal contact tail side	Bottom	Top		Top	Signal contact tail side	
Compatibility (Footprint pattern)		Original			CABLIN®-VS		Original		
Current rating		0.30A/pin	0.35A/pin		0.30A/pin		0.35A/pin		
Performance (Reference only)		USB4 (20 Gbps/lane) USB 3.1 Gen 2 (10 Gbps) USB 3.1Gen 1 (5 Gbps) V-By-One HS 1.4 (4 Gbps)	eDP HBR (5.4 Gbps) V-By-One HS 1.4 (4 Gbps)		USB 3.1 Gen 1 (5 Gbps) eDP HBR (8.1 Gbps) HDMI 2.0 (6 Gbps) V-By-One HS 1.4 (4 Gbps) MiPi standards		LVDS		
Operating condition		233~358K (-40°C~+85°C) 85%RH max.	233~398K (-40°C ~ +125°C) 85%RH max.		233~358K (-40°C~+85°C) 85%RH max.	233~378k (-40°C~+105°C) 85%RH max	233~398K (-40°C~+125°C) 85%RH max.	233~358K (-40°C~+85°C) 85%RH max.	
Automotive Standards			USCAR-2 (*)			USCAR-2 (*)			

Note : (*) 40P tested. 2.5.6 Vibration & Shock V1 evaluation passed.

Auto-Locking FFC/FPC Connector - EVAFLEX® series -

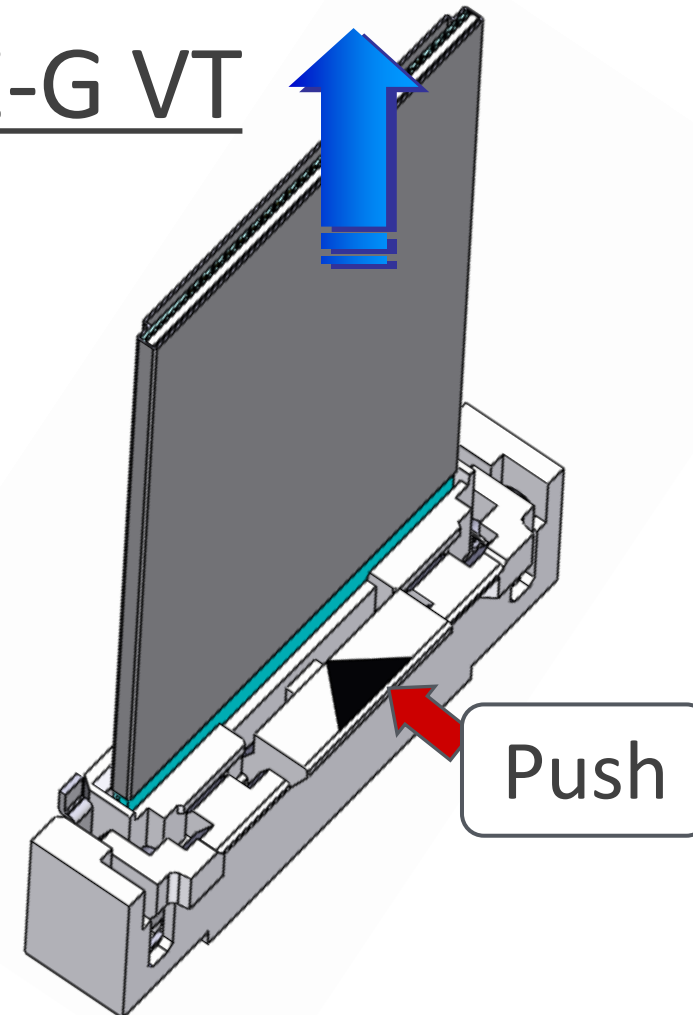
Un-locking methods

EVAFLEX® 5-HD



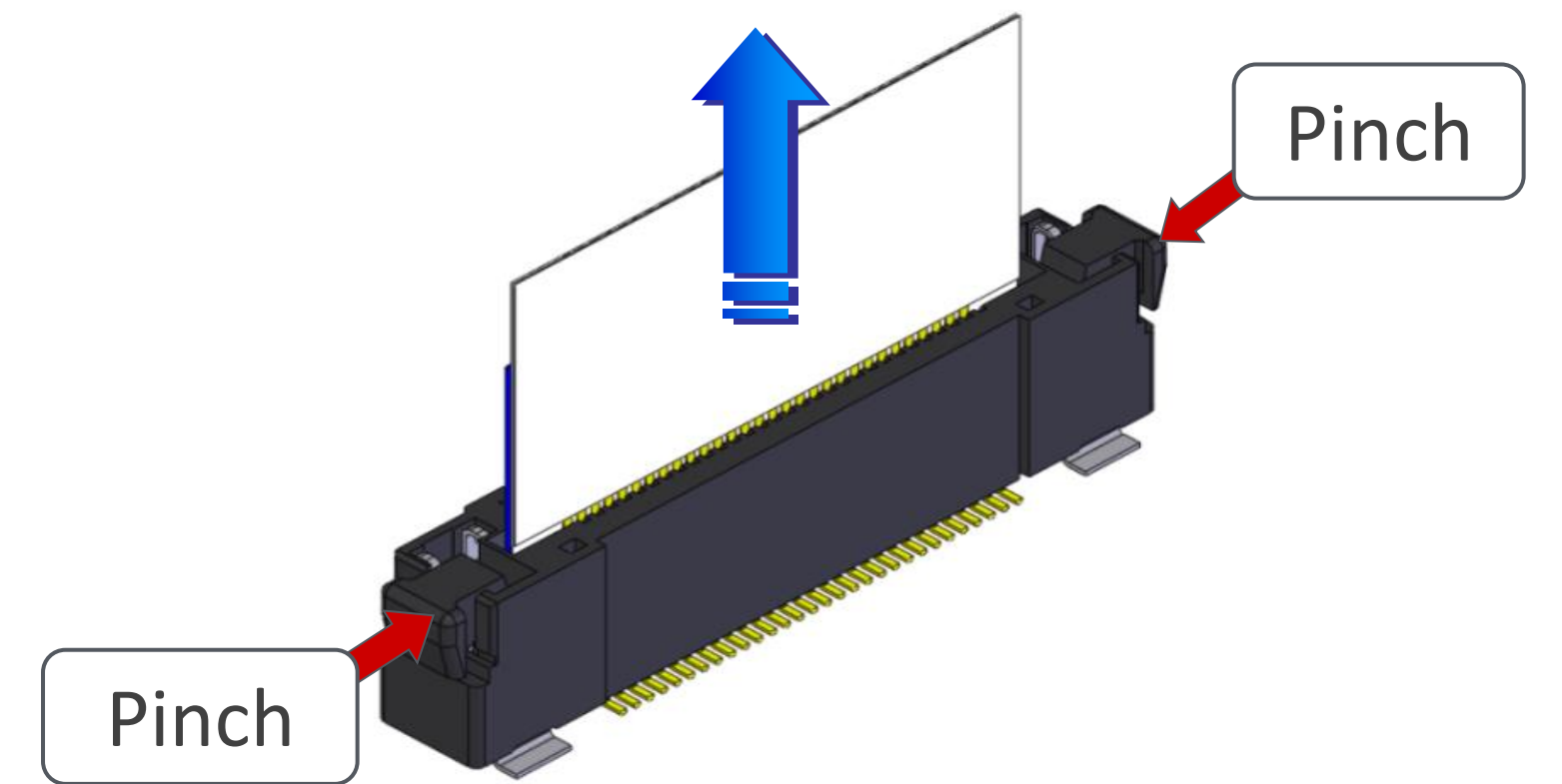
Open the cover and pull FPC/FFC out

EVAFLEX® 5-SE-G VT



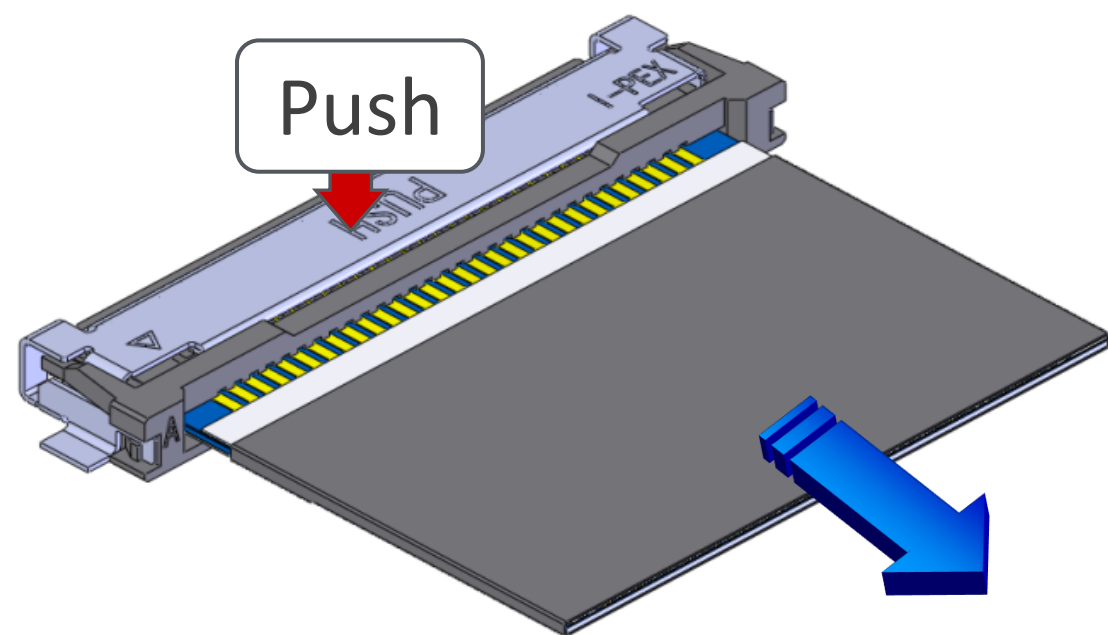
Push center lock release button and pull FPC/FFC out

EVAFLEX® 5-SE VT



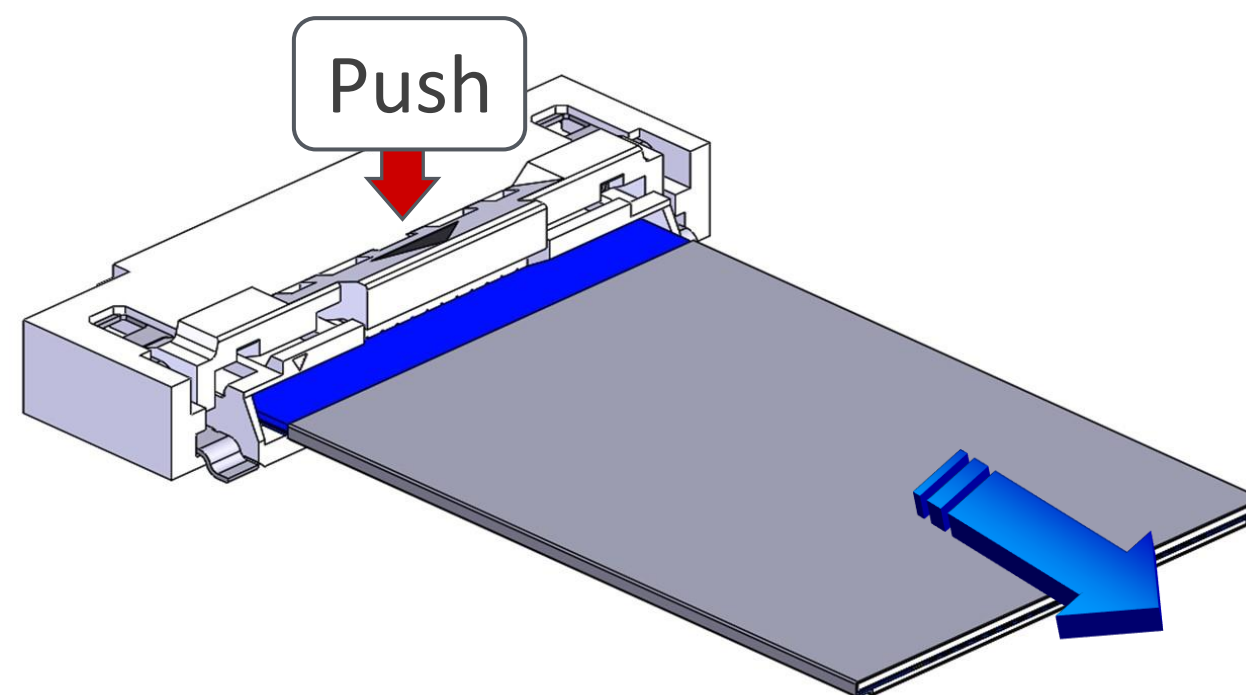
Hold both sides lock release button and pull FPC/FFC out

EVAFLEX® 5-VS



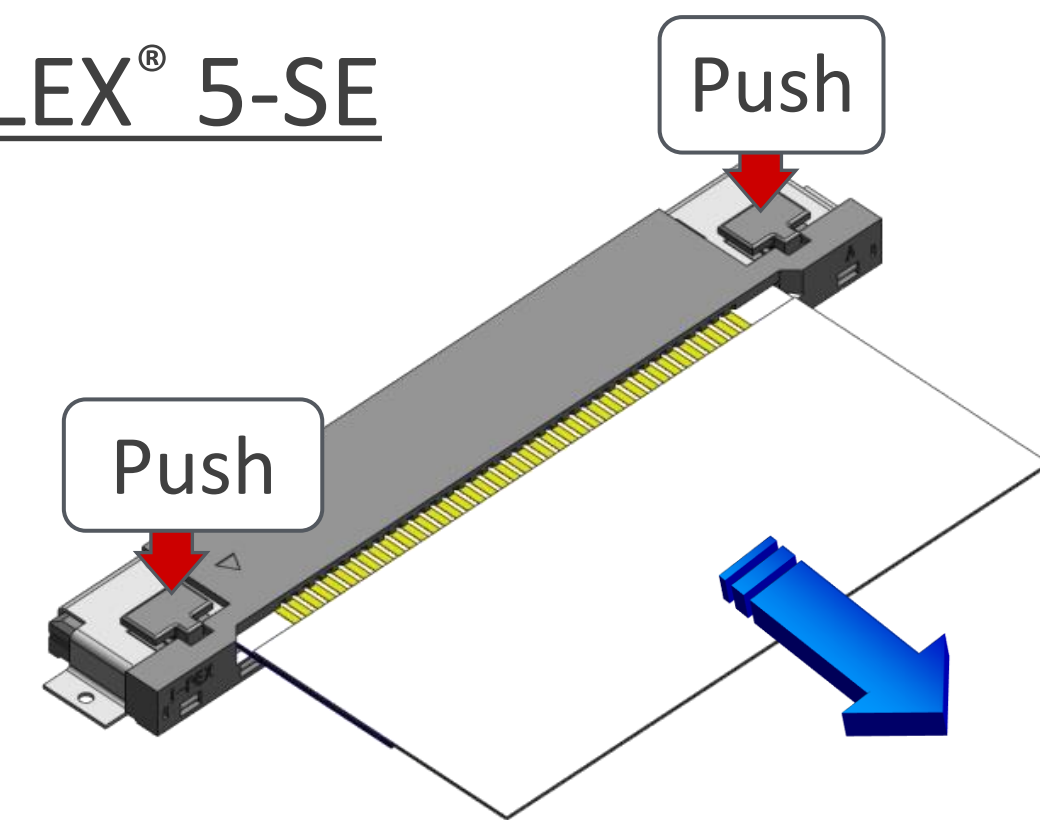
Push down on the shell and pull FPC/FFC out

EVAFLEX® 5-SE-G HT



Push center lock release button and pull FPC/FFC out

EVAFLEX® 5-SE

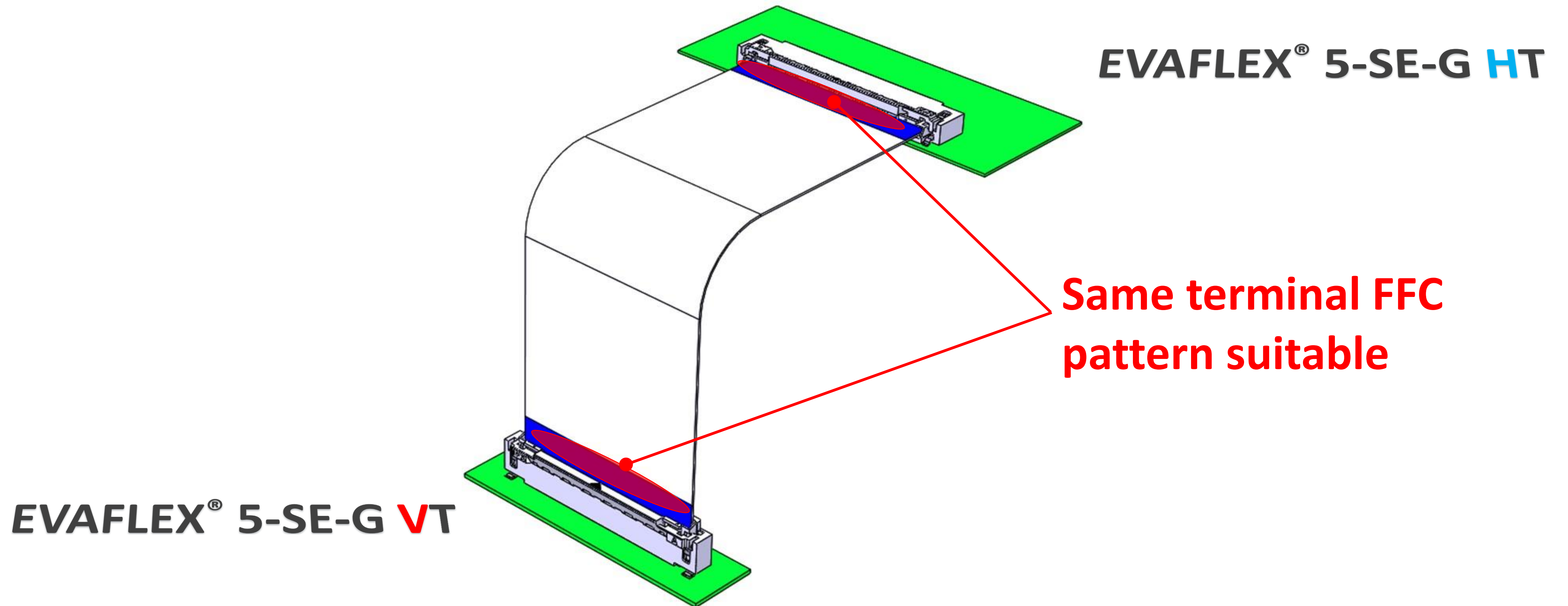


Push both ends lock release button and pull FPC/FFC out

EVAFLEX[®] 5-SE-G VT and GHT identified same FFC pattern

Same terminal FFC pattern can be installed on Vertical and Horizontal

✘Applicable for shielded FFC, non-Shielded FFC



FFC manufacturers supporting EVAFLEX[®] 5 series

Sumitomo Electric Industries, Ltd.

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

Proterial, Ltd.

<https://www.proterial.com/e/>

BANDO DENSEN Co., Ltd.

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

Alysium-Tech GmbH

http://www.alysium-tech.com/product/components/ffc_-_fpc_connectors

FFC / FPC Connectors

Click on each product information to jump to the web.



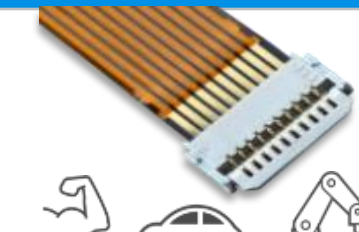







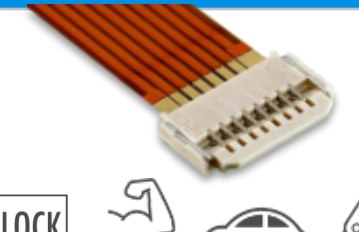










Product Name	MINIFLEX® 175-ST	MINIFLEX® 2-BF	MINIFLEX® 3-BFN						MINIFLEX® 3-BFNH			
			Standard	L	L-HD	LK	L-LK	L-LK-HD	Standard	L	L-HD	
Feature												
	0.52mm Super low profile Mechanical lock	Up to 120 positions with only 0.9 mm height	One of the smallest at 0.3 mm pitch	Easy operation with long actuator	Easy operation with long actuator Robust type	Easy operation with Mechanical lock	Easy operation with long actuator Mechanical lock	Mechanical lock Robust type	Common footprint pattern compatible with industry standard products	Easy operation with Long actuator	Easy operation with long actuator Robust type	
Part Number	20622	20617	20527	20538	20982	20599	20584	20655	20613	20605	20660	
Contact Pitch (mm)	0.175	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Board Pitch (mm)	0.35	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	
Pin Count	Range	7-31 (odd)	80-120 (even)	13-41 (odd)	33-65 (odd)	15-75 (odd)	9-37 (odd)	29-71 (odd)	11-57 (odd)	7-71 (odd)	33-71 (odd)	7-71 (odd)
	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
* Please inquire for pin counts not listed as available or outside of the pin count range.												
Height (mm)	0.52+/-0.05	0.90+/-0.10	0.90+/-0.10	0.90+/-0.10	0.90+/-0.10	0.90+/-0.10	0.90+/-0.10	0.90+/-0.10	0.90+/-0.10	0.90+/-0.10	0.90+/-0.10	
Width Formula (mm)	1.915+(0.175*?p)	1.5+(0.2*?p)	0.9+(0.3*?p)	0.9+(0.3*?p)	1.5 + (0.3*?p)	2.1 + (0.3*?p)	2.1 + (0.3*?p)	2.7 + (0.3*?p)	1.5+(0.3*?p)	1.5+(0.3*?p)	2.1 + (0.3*?p)	
Depth (mm)	Actuator Open	2.65	3.30	2.55	2.55	2.55	2.55	2.55	2.55	2.95	2.95	2.95
	Actuator Close	3.0	4.5	3.0	3.5	3.5	3.0	3.5	3.5	3.15	3.5	3.5
Wiping Length (mm)	Contact A	0.85	0.95	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0
	Contact B	0.40	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
FPC Insertion Depth (mm)	1.05	1.4	1.1	1.1	1.1	1.1	1.1	1.1	1.35	1.35	1.35	
FPC Thickness (mm)	0.12+/-0.03	0.2+/-0.03	0.2+/-0.03	0.2+/-0.03	0.2+/-0.03	0.2+/-0.03	0.2+/-0.03	0.2+/-0.03	0.2+/-0.03	0.2+/-0.03	0.2+/-0.03	
Current Rating	0.3A/pin	0.2A/pin	0.3A /pin	0.3A /pin	0.3A /pin	0.3A /pin	0.3A /pin	0.3A /pin	0.3A /pin	0.3A /pin	0.3A /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	
Footpattern compatibility	Original	Original	Original	Original	Original	Original	Original	Original	Panasonic Y3B	Panasonic Y3B	Original	

FFC / FPC Connectors

 Mechanical lock
  Hold down
  High temp. (105-125°C)
  Robot ready

FF Front flip type
 * All connectors are back flip type unless otherwise specified.

Click on each product information to jump to the web.

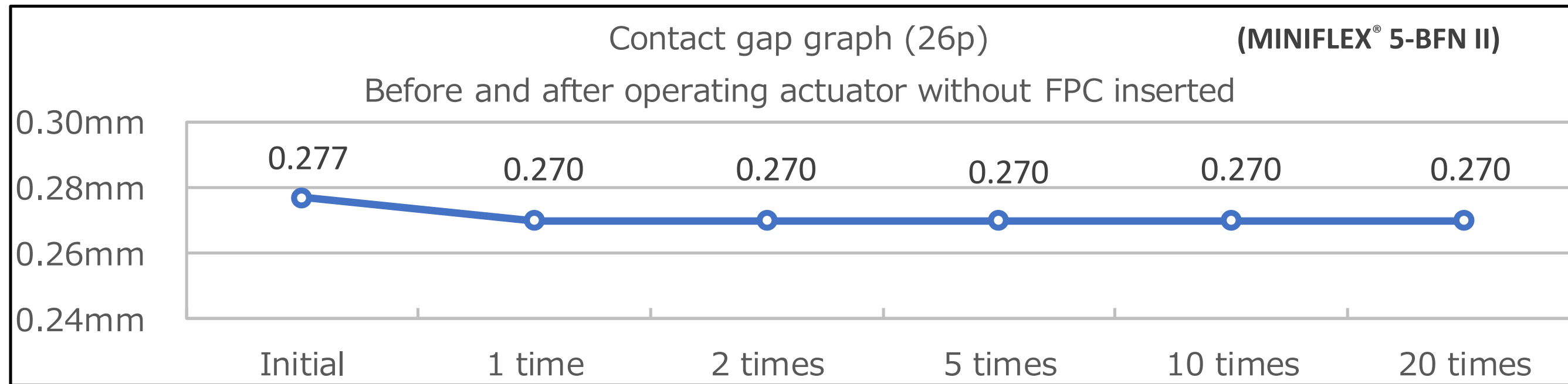
Product Name		MINIFLEX® 4-ST	MINIFLEX® 5-BFN II			DW-5	MINIFLEX® 5-FF
			Standard	L	LK		
Feature		 	   	   	    	  	   FF
		0.4mm Low profile Mechanical lock	For high-temp (125°C)	For high-temp (125°C) Easy operation with long actuator	For high-temp (125°C) Mechanical lock	Hybrid type for FPC and Discrete Wire (AWG#34)	Robust type
Part Number		20588	20542	20586	20600	20597 / 20598	20647
Contact Pitch (mm)		0.4	0.5	0.5	0.5	0.5	0.5
Board Pitch (mm)		0.4	0.5	0.5	0.5	0.5	0.5
Pin Count	Range	4-15	4-30 (even)	32-60 (even)	4-28 (even)	6-20 (even)	10-80 (even)
	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
* Please inquire for pin counts not listed as available or outside of the pin count range.							
Height (mm)		0.50+/-0.05	1.0 +/-0.1	1.0 +/-0.1	1.0 +/-0.1	1.0 +/-0.1	2.55 +/-0.2
Width Formula (mm)		1.9+(0.4*?p)	1.7+(0.5*?p)	1.7+(0.5*?p)	2.7+(0.5*?p)	Rece: 3.7+(0.5*?p) Plug: 3.8+(0.5*?p)	4.9+(0.5*?p)
Depth (mm)	Actuator Open	2.7	3.0	3.0	3.0	Mating FPC : 3.0 Mating PLUG CABLE : 4.9	6.4
	Actuator Close	3.0	3.5	4.0	3.5	Mating FPC : 3.5 Mating PLUG CABLE : 5.39	7.2
Wiping Length (mm)		0.8	1.0	1.0	1.0	1.0	1.4
FPC Insertion Depth (mm)		1.00	1.3	1.3	1.3	1.3	4.15
FPC Thickness (mm)		0.12+/-0.03	0.3+/-0.05	0.3+/-0.05	0.3+/-0.05	0.2+/-0.03	0.3+/-0.05
Current Rating		0.4A /pin (6A/conn.)	0.5A /pin (7A/conn.)	0.5A /pin (7A/conn.)	0.5A /pin (7A/conn.)	FPC:0.5A /pin DW(AWG#34) :0.7A/ pin	0.5A /pin
Contact Point		Top	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom	Bottom
Footpattern compatibility		Original	Original	Original	Original	Original	HRS FH28 Kyocera 6288
Kyocera Automotive Standards							LV214 (*)

Note : (*) 68P tested. Evaluations passed except for PG19 Environmental simulation.

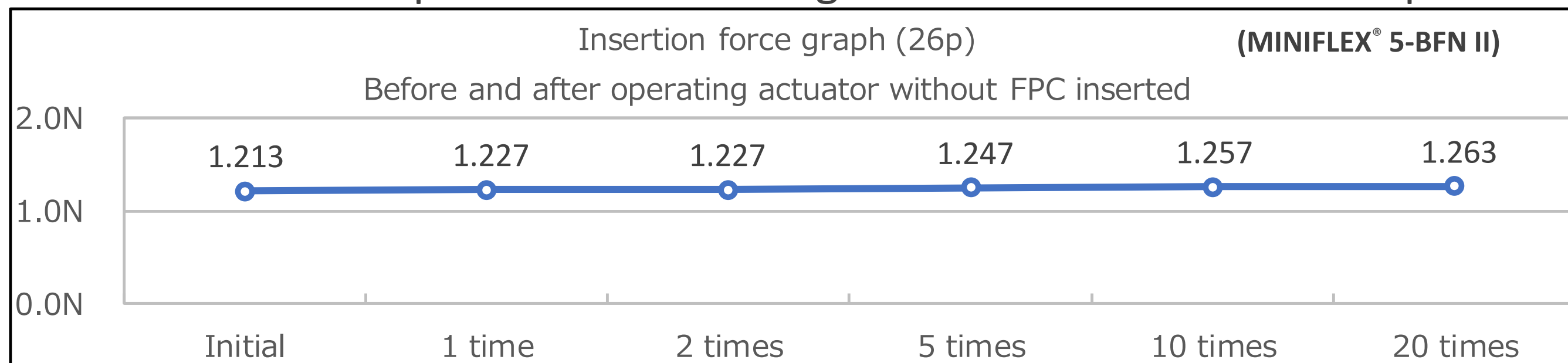
If connector actuator was closed accidentally without FPC inserted...

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.

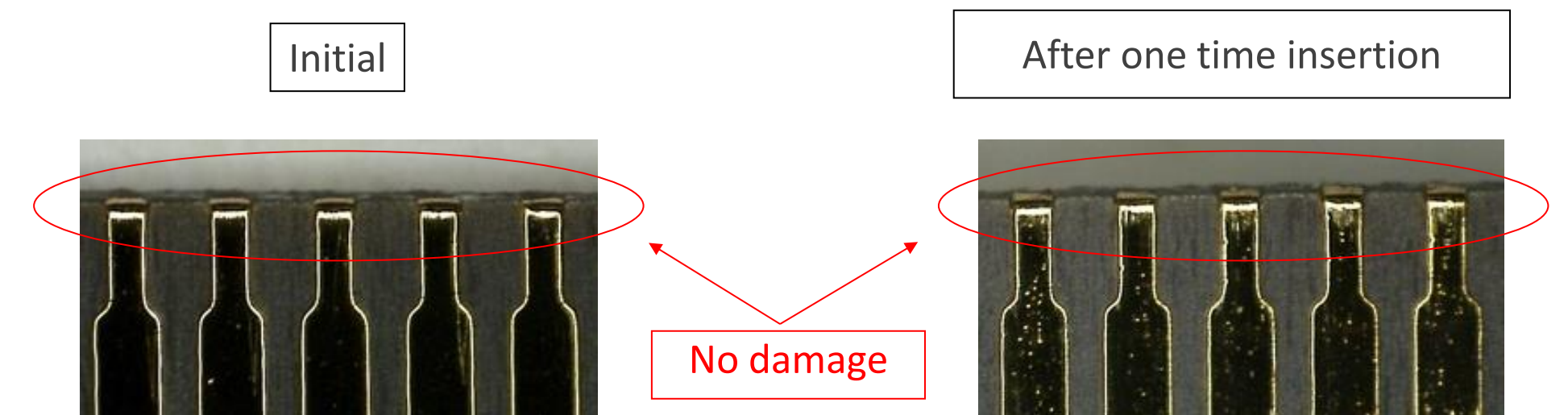
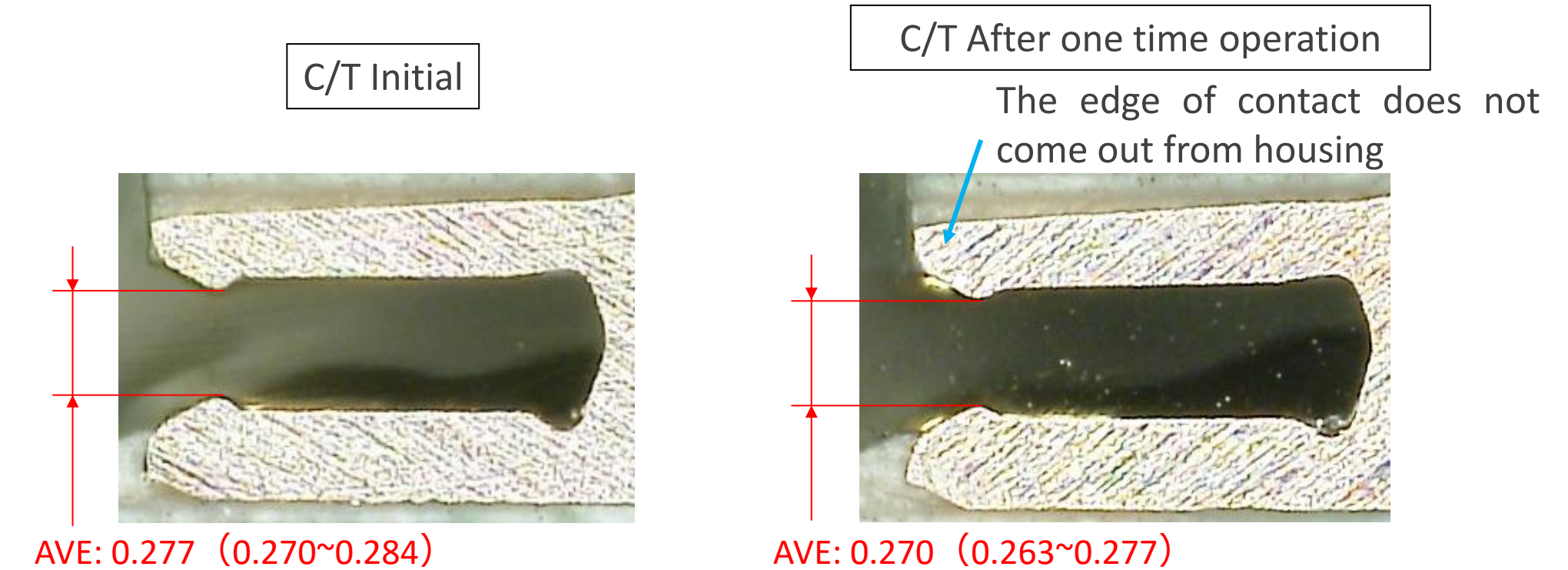
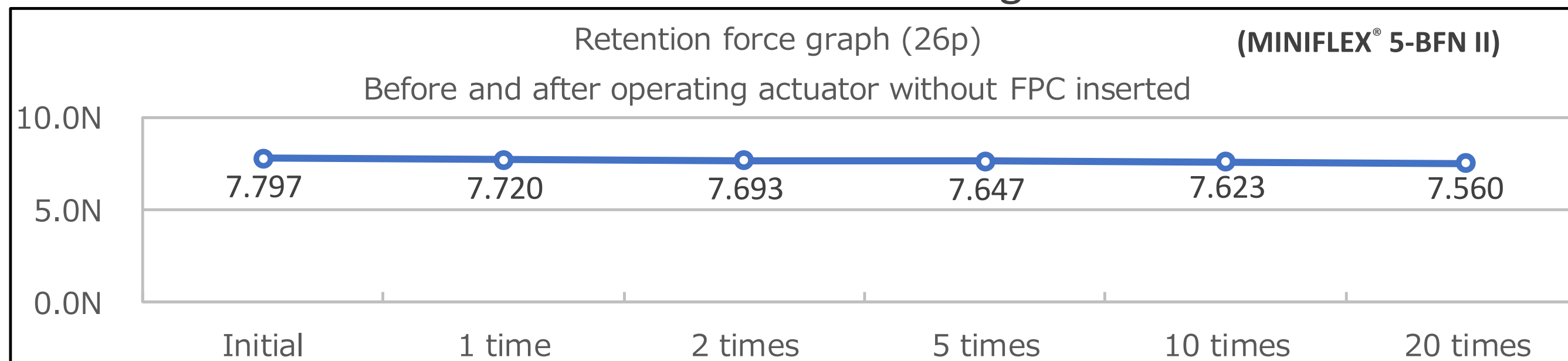
■ Connector will still function reliably



■ Connector still performs even though the insertion force went up



■ Retention force of connector does not change



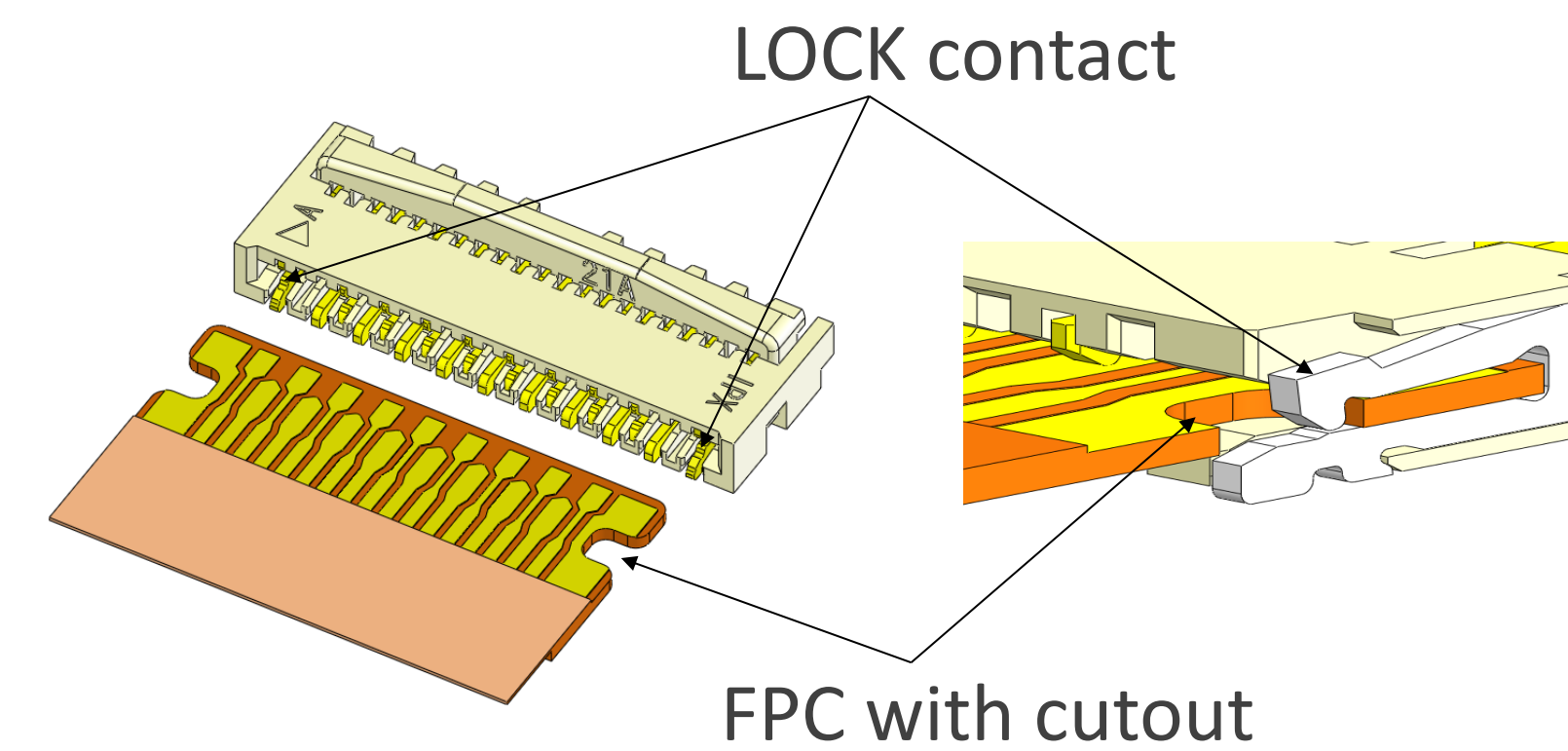
Additional mechanical lock available for higher FPC retention force

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 (19P)	31.33N (100P)	6.70N (19P)	11.37N (19P)	17.95N (51P)	23.45N (51P)	9.32N (23P)	20.97N (51P)
LOCK Contact Retention Force	5.44N (19P)	N/A	N/A	5.50N (19P)	N/A	5.50N (51P)	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 (10P)	51.72N (30P)	7.52N (16P)	14.50N (16P)	11.43N (32P)
LOCK Contact Retention Force	4.60N (10P)	N/A	N/A	6.98N (16P)	N/A



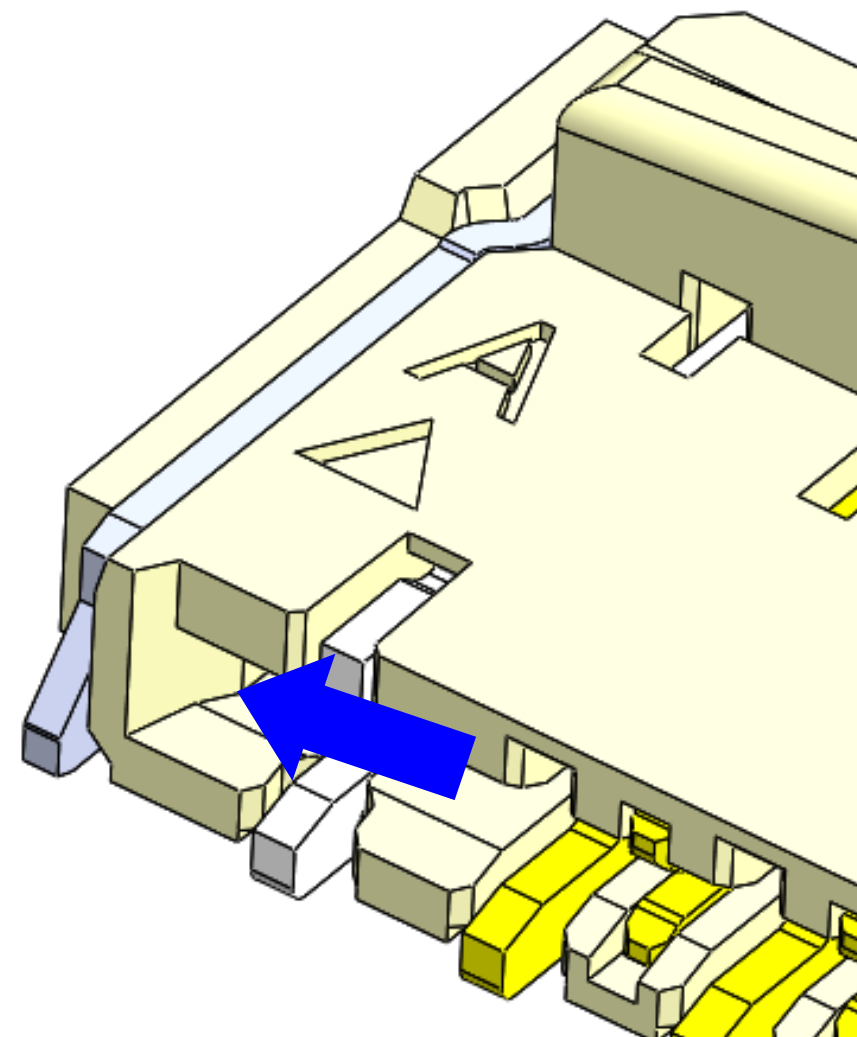
L Mechanical lock with FPC cutout

Hold down

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

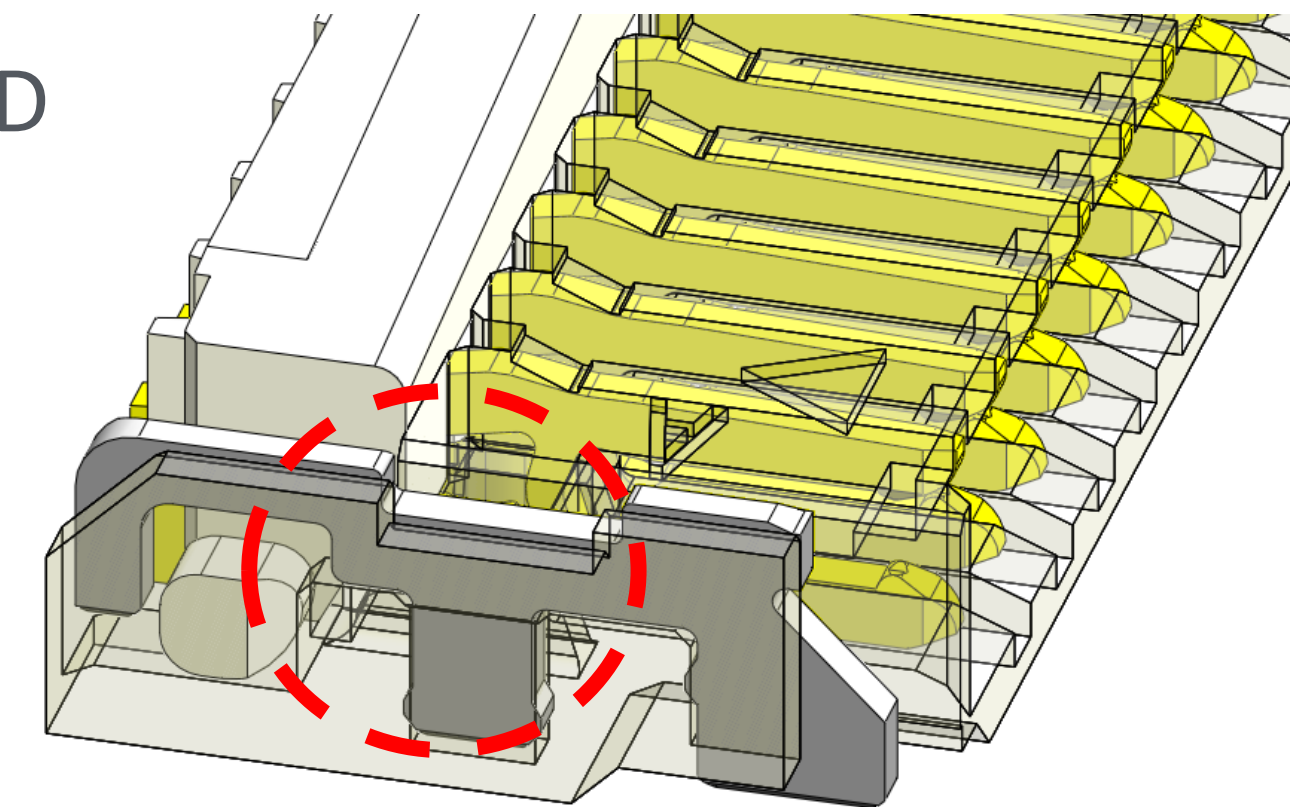
<Strength improvement>

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



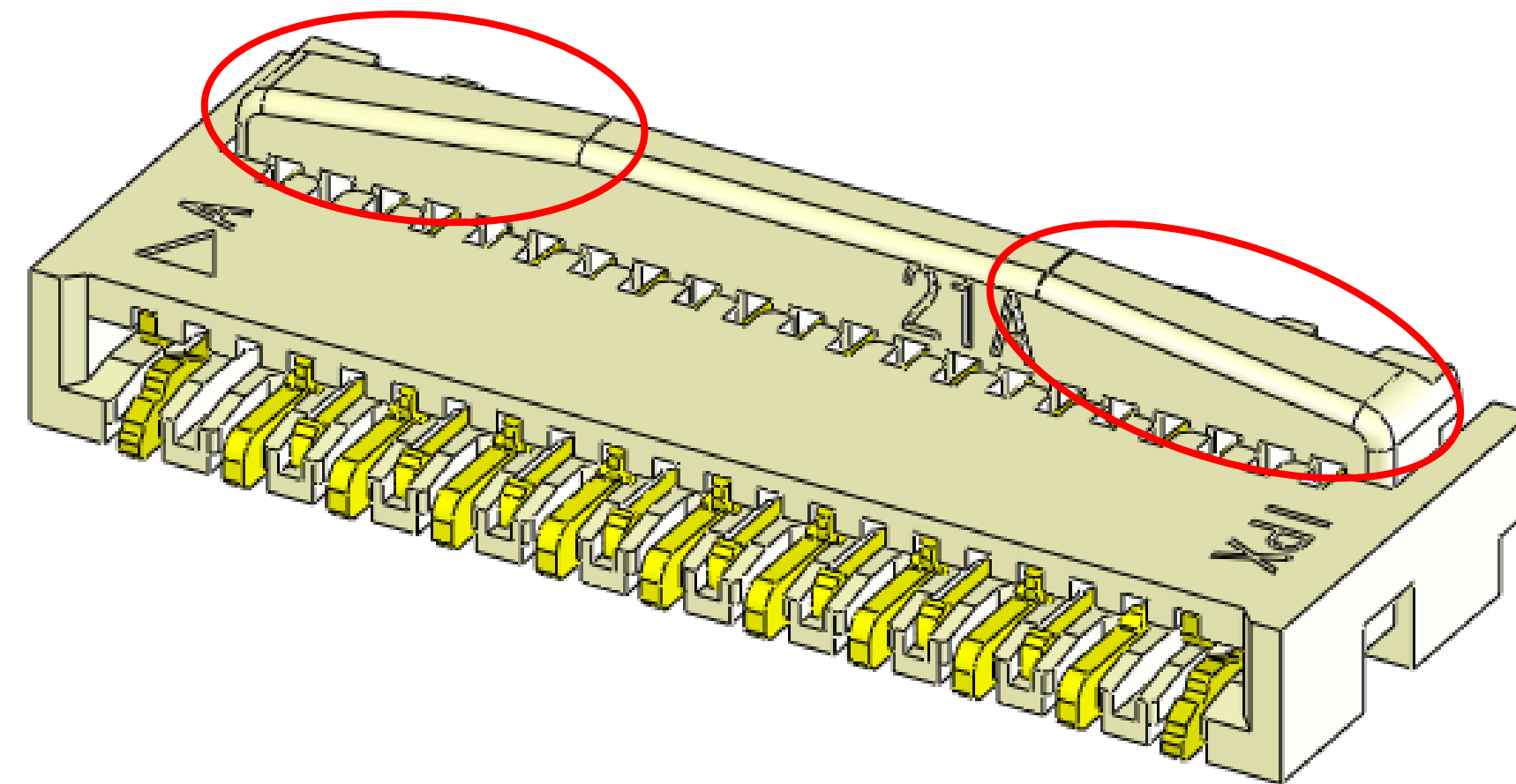
<Designed to prevent actuator drop off>

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



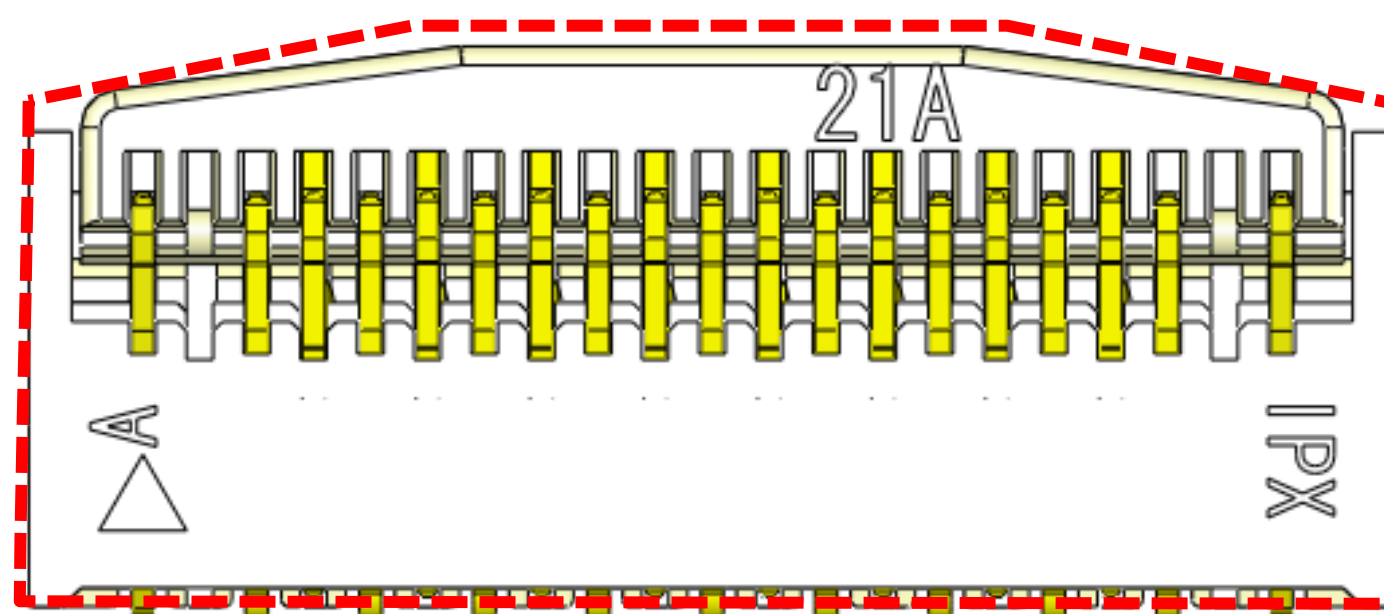
Half-lock prevention with curved actuator design

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

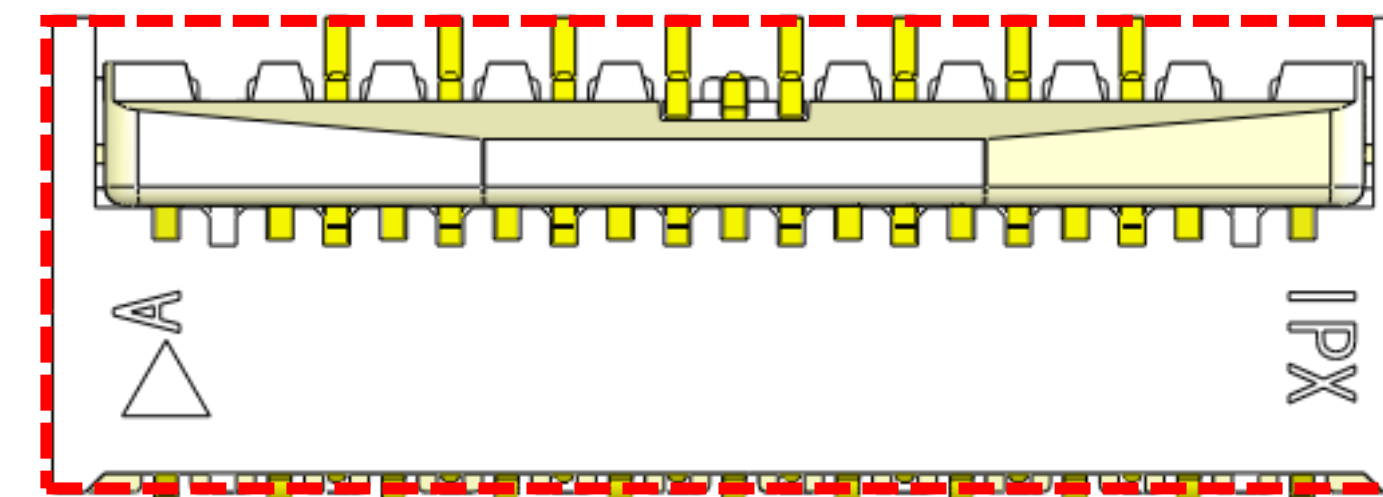


Easy to check Actuator closed position visually from top

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



CABLINE[®]
Series
Micro-Coaxial/ Twinax
Connectors



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



MINIDOCK[™]
Series
I/O Connectors



NOVASTACK[®]
Series
Board-to-Board
Connectors



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