

# MINIFLEX® 3-BFN LK

Mechanical lock, low profile (Height = 0.9 mm), 0.3 mm pitch, horizontal, backflip

Product Specifications:		Short Actuator	Long Actuator
Board Pitch (mm)		0.3	
Wiping Length (mm)	Contact A:	0.9	
	Contact B:	0.45	
Size (mm)	Height	0.90 +/- 0.10	
	Width	Formula: 2.1 + (0.3*p)	
	Depth	Open: 2.55	Close: 3
Pin counts	Range	9-37 (odd)	29-71 (odd)
	Available	9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37	51, 53, 57, 61, 71

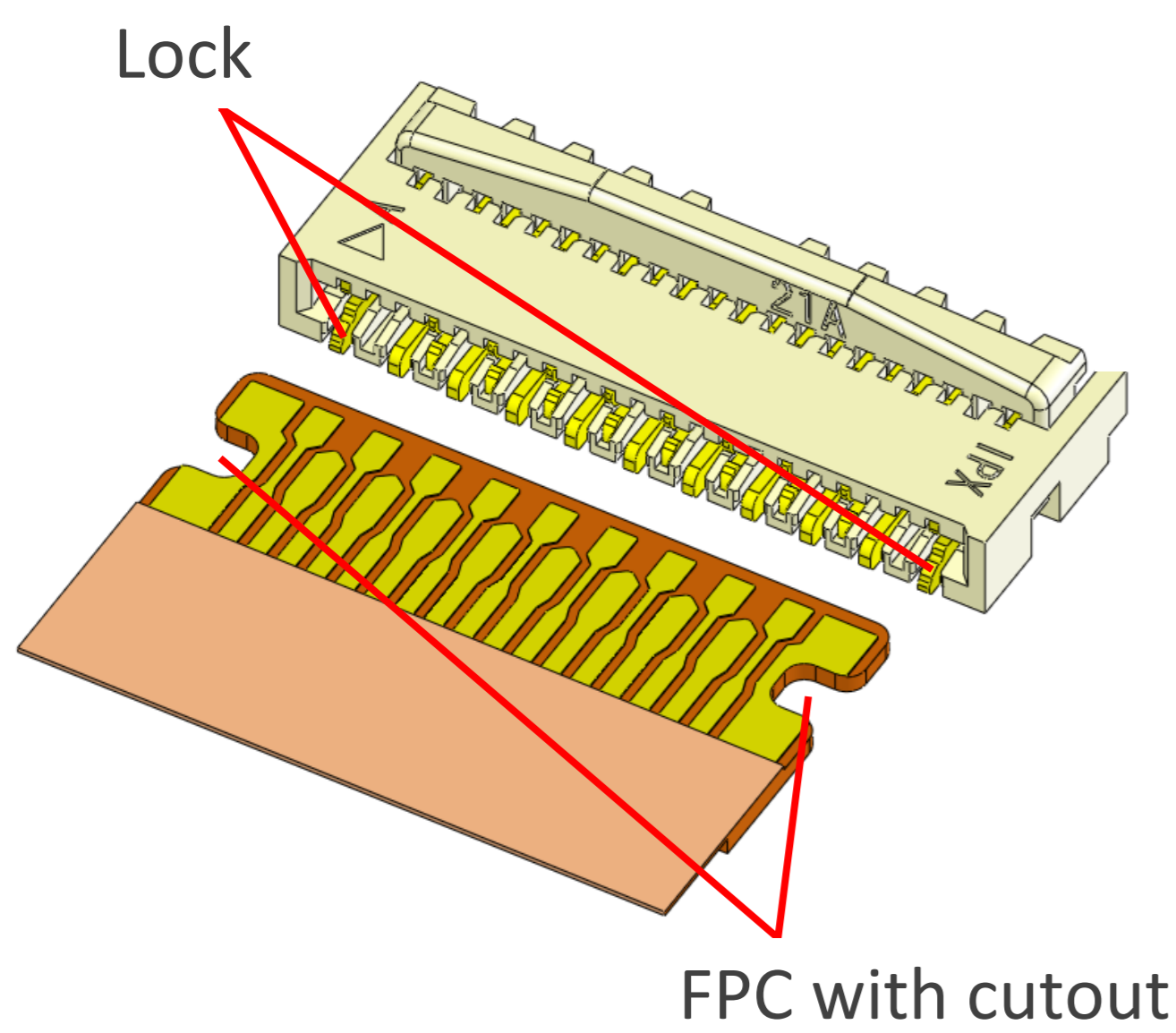
**Applicable FPC/FFC:**

FPC/FFC Contact Pitch	0.3
FPC/FFC Contact Point	Top and Bottom
FPC/FFC Thickness (mm)	0.2 +/- 0.03

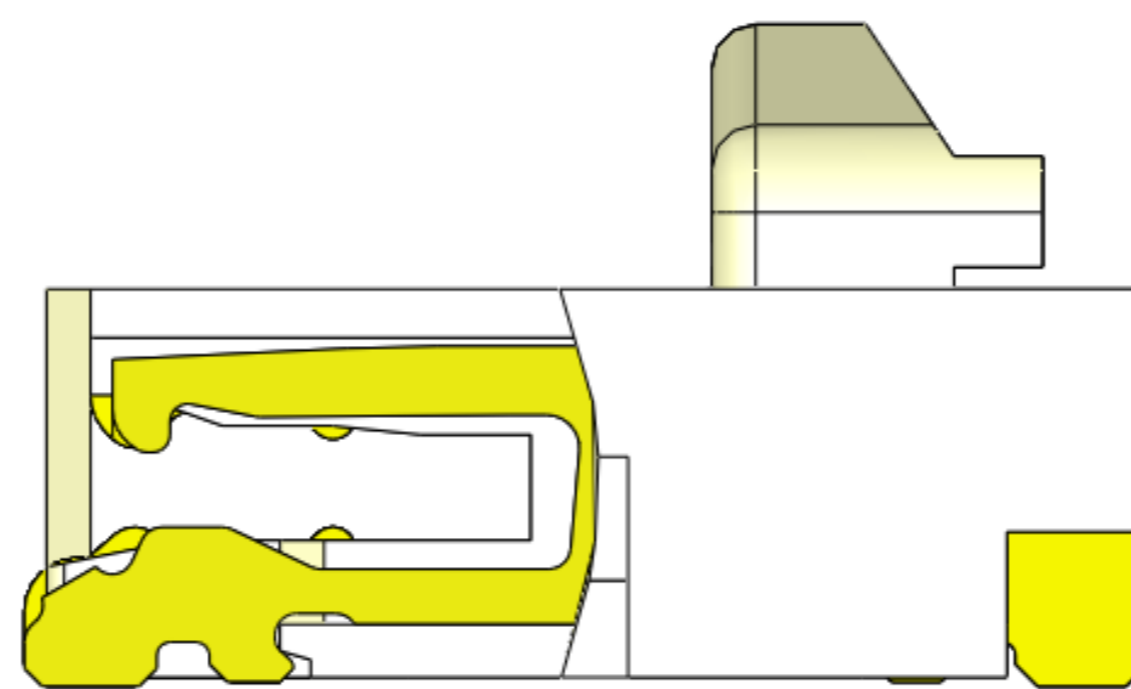


\* Please inquire for pin counts not listed or outside of the pin count range.

## ▶ High FPC retention force with additional mechanical lock



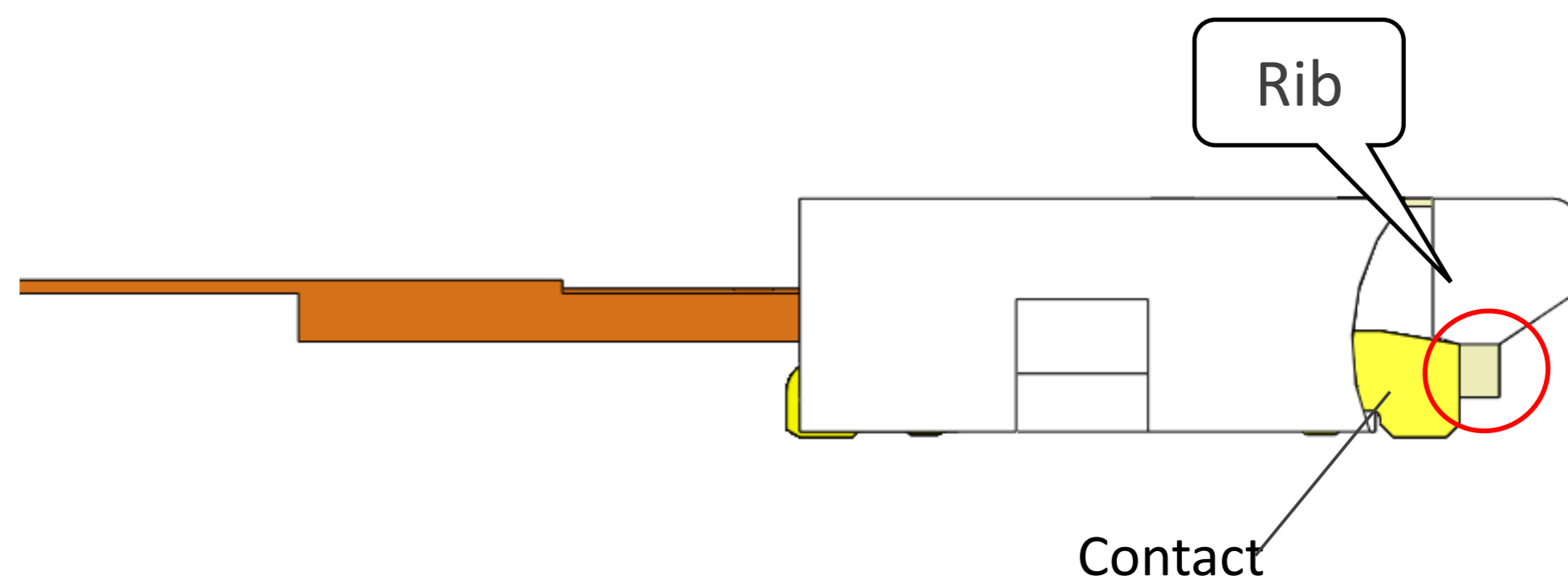
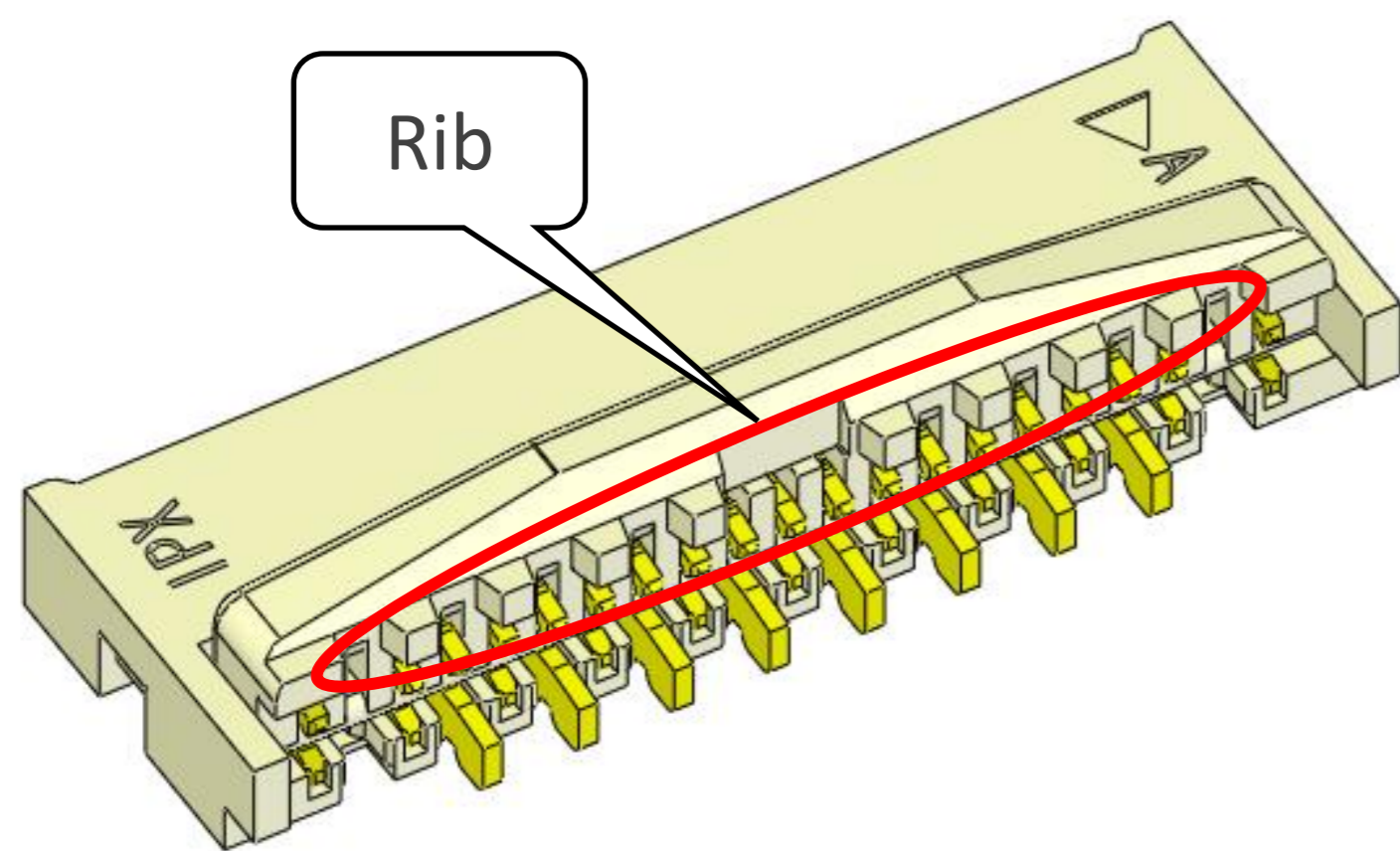
FPC LOCK mechanism maintains high FPC retention force



FPC retention force comparison (19 p)

MINIFLEX® 3-BFN LK	MINIFLEX® 3-BFN
11.34 N	6.7 N

## ▶ Designed to prevent contact distortion

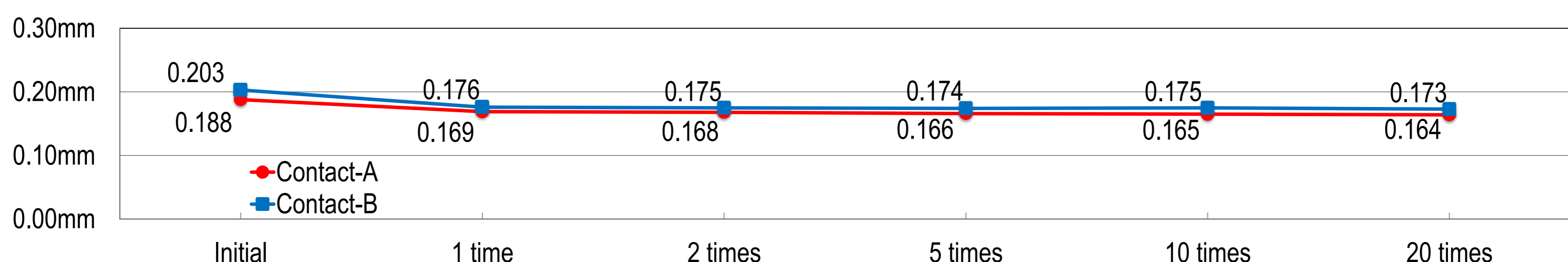


When opening the actuator, the ribs will prevent the contacts from being pulled up.

## ▶ Usability for closing actuator without FPC

The connector will still function even if the actuator is accidentally closed without the FPC being inserted after the SMT process.

- Connector will still function reliably (contact gap graph 35 pins before and after operating actuator without FPC inserted)

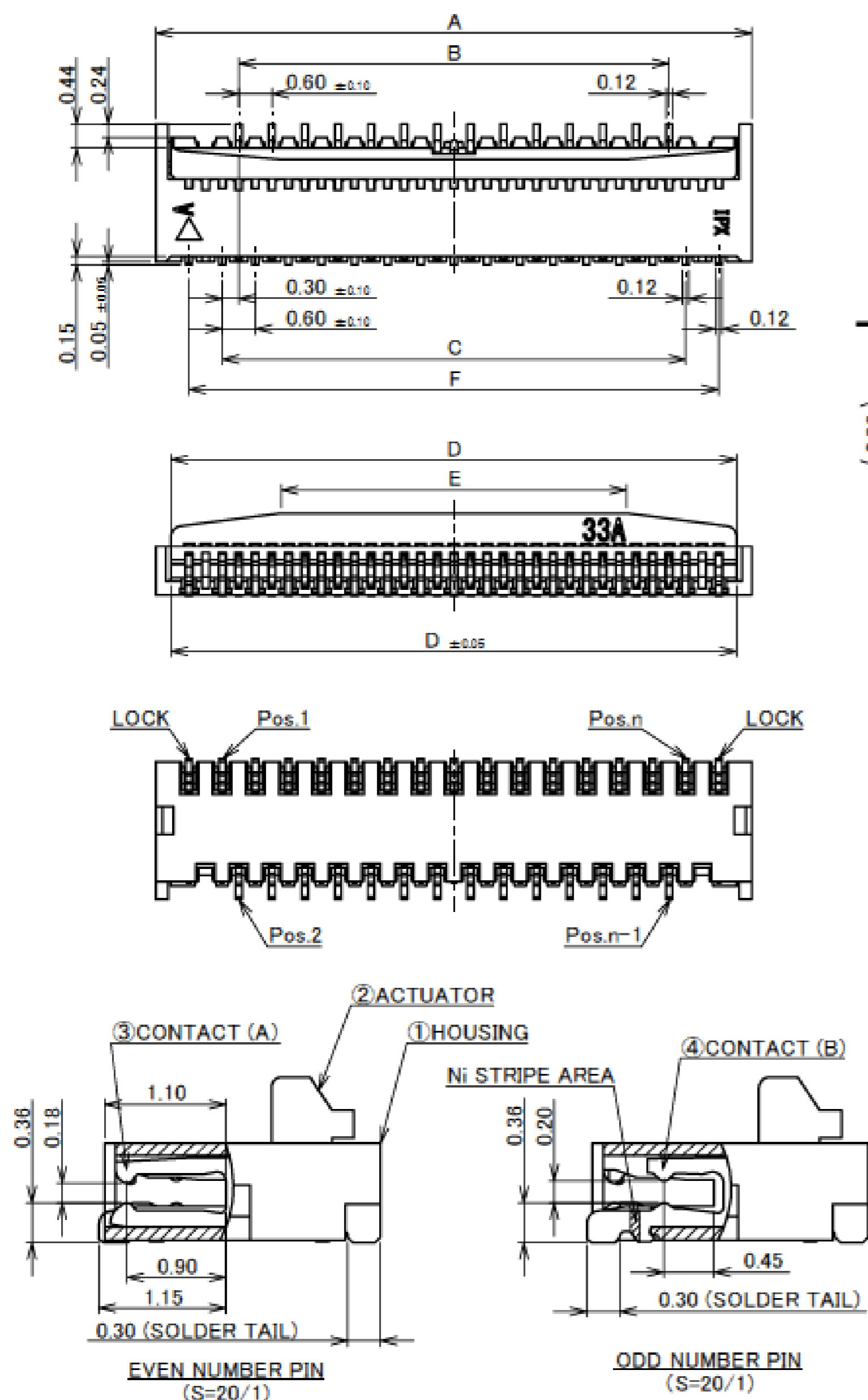


- Insertion force of connector goes up
- Retention force of connector does not change greatly

# Component Parts Details

## Connector Assembly

Recommended P/N 20599-0\*\*E-01



PART NO.	Pos.	A	B	C	D	E	F
20599-009E-01	9P	4.80	1.80	2.40	4.25	2.25	3.60
20599-011E-01	11P	5.40	2.40	3.00	4.85	2.85	4.20
20599-013E-01	13P	6.00	3.00	3.60	5.45	3.45	4.80
20599-015E-01	15P	6.60	3.60	4.20	6.05	4.05	5.40
20599-017E-01	17P	7.20	4.20	4.80	6.65	4.65	6.00
20599-019E-01	19P	7.80	4.80	5.40	7.25	5.25	6.60
20599-021E-01	21P	8.40	5.40	6.00	7.85	5.85	7.20
20599-023E-01	23P	9.00	6.00	6.60	8.45	6.45	7.80
20599-025E-01	25P	9.60	6.60	7.20	9.05	7.05	8.40
20599-027E-01	27P	10.20	7.20	7.80	9.65	7.65	9.00
20599-029E-01	29P	10.80	7.80	8.40	10.25	8.25	9.60
20599-031E-01	31P	11.40	8.40	9.00	10.85	8.85	10.20
20599-033E-01	33P	12.00	9.00	9.60	11.45	9.45	10.80
20599-035E-01	35P	12.60	9.60	10.20	12.05	10.05	11.40
20599-037E-01	37P	13.20	10.20	10.80	12.65	10.65	12.00

NOTES  
1. CONTACT POINT: TOP AND BOTTOM CONTACT

CAUTION VISIT OUR WEBSITE FOR LATEST VERSIONS OF INSTRUCTION MANUAL NO. HIM-12007 TO HANDLE THE PRODUCT PROPERLY AND SAFELY.

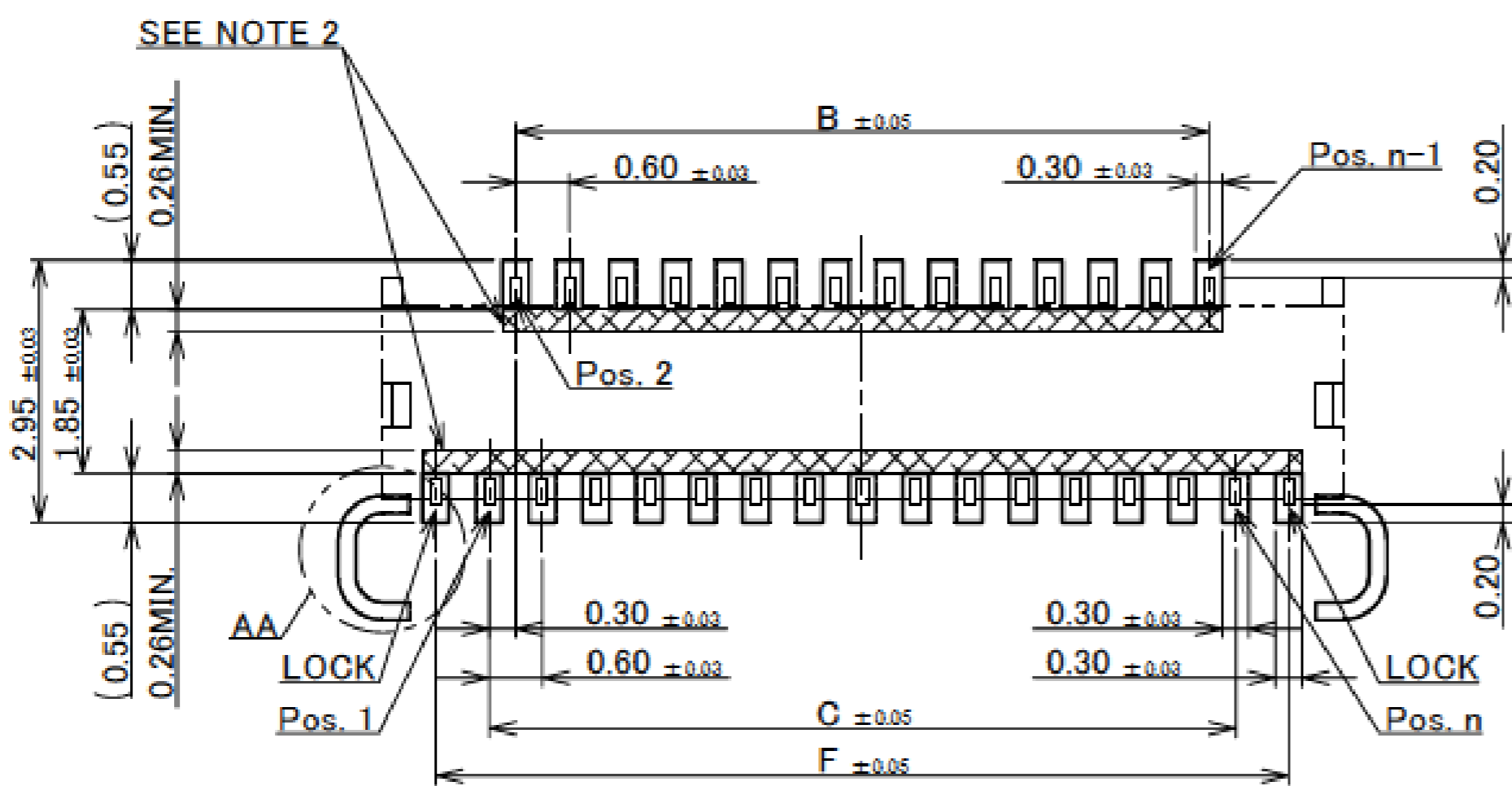
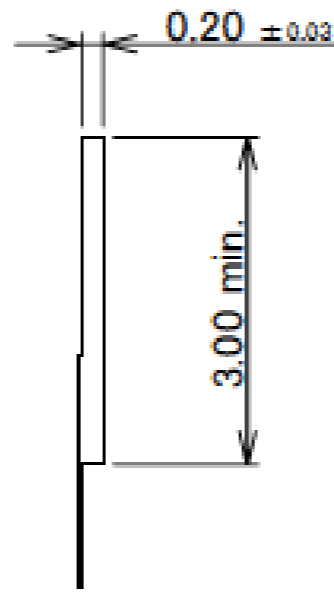
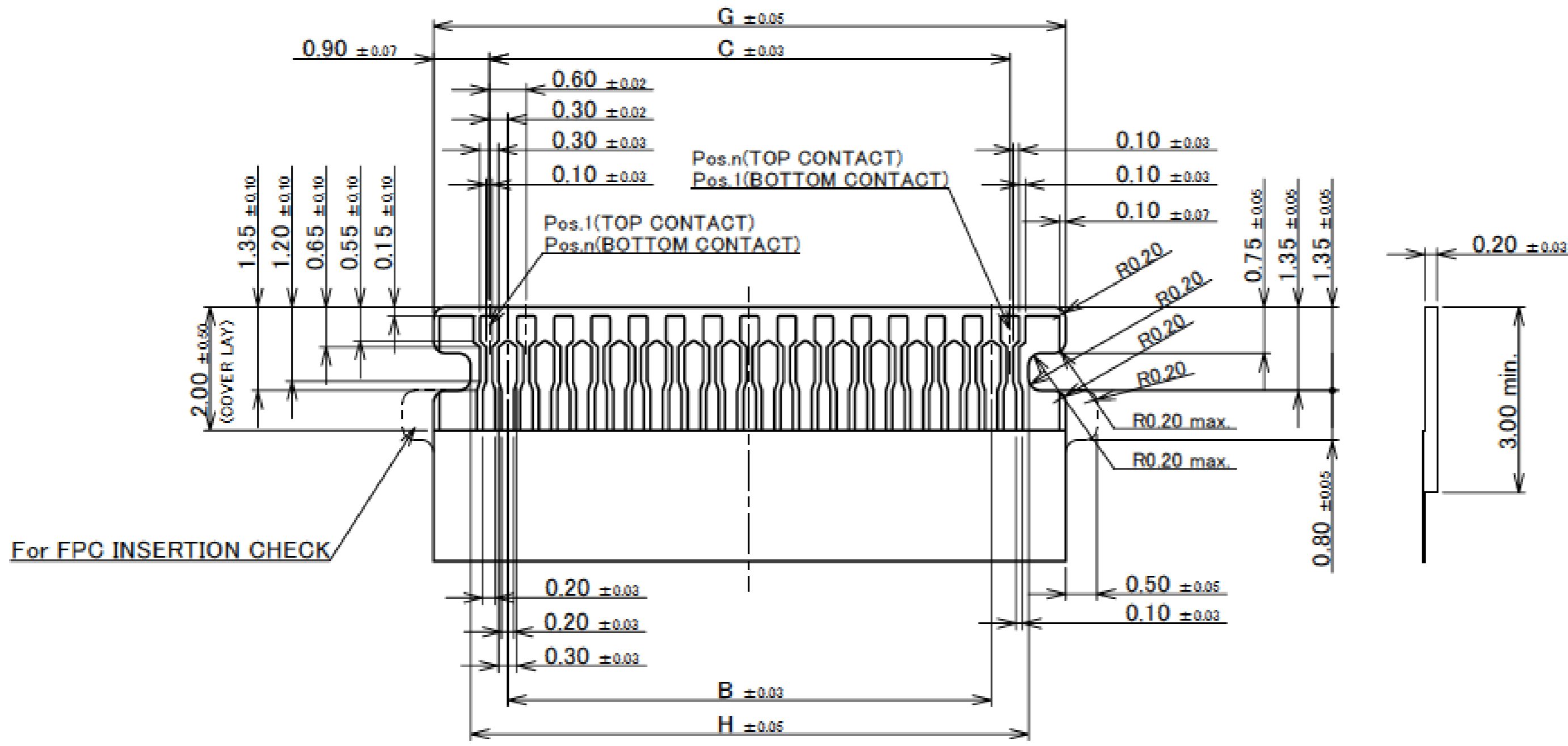
TABLE 1

PART NO.	FINISH		
20599-0**E-01	CONTACT AREA : Au 0.10 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA : Au 0.03 μm MIN. OVER Ni 1.00 μm MIN.		
5	LOCK	PHOSPHOR BRONZE SOLDERING AREA : Au 0.03 μm MIN. OVER Ni 1.00 μm MIN.	
4	CONTACT (B)	PHOSPHOR BRONZE SEE TABLE 1, WITH Ni STRIPE	
3	CONTACT (A)	PHOSPHOR BRONZE SEE TABLE 1	
2	ACTUATOR	LCP UL94V-0, BEIGE	
1	HOUSING	LCP UL94V-0, BEIGE	
NO.	DISCRIPTION	MATERIAL	FINISH, REMARKS

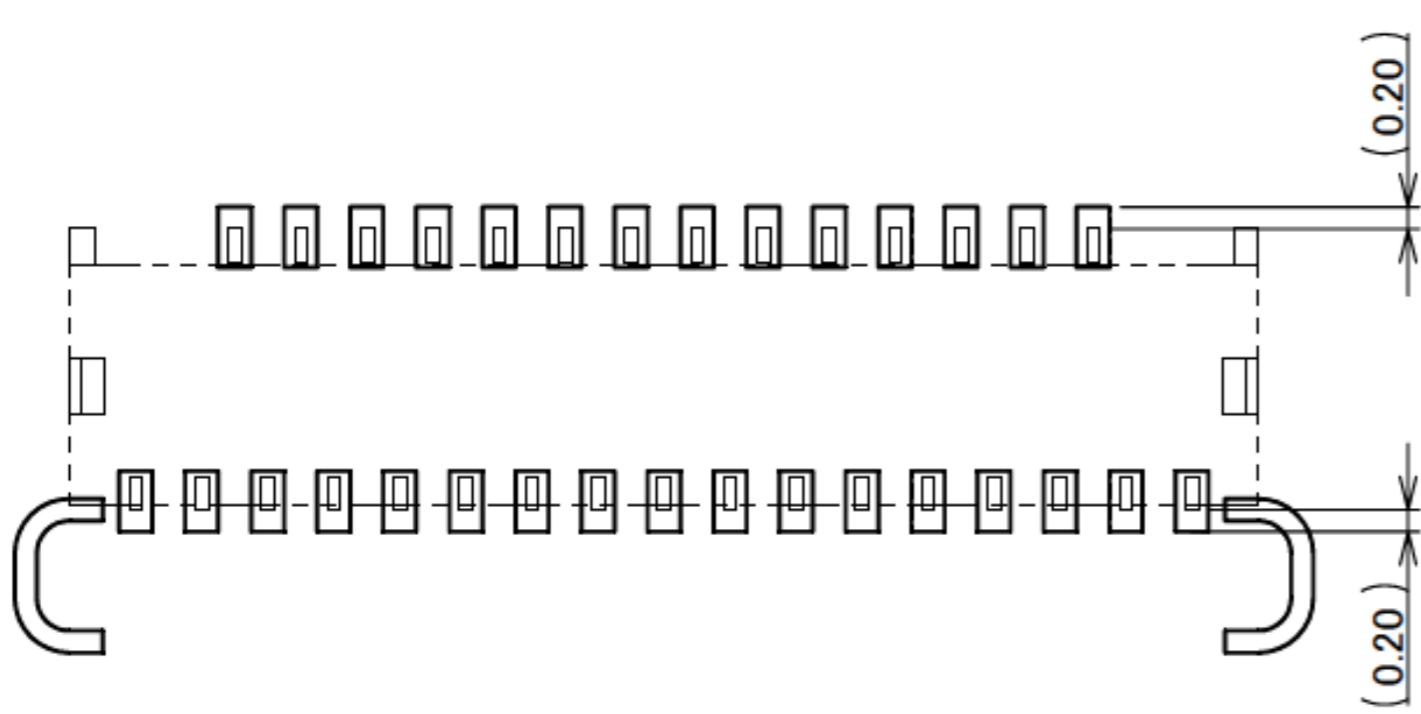
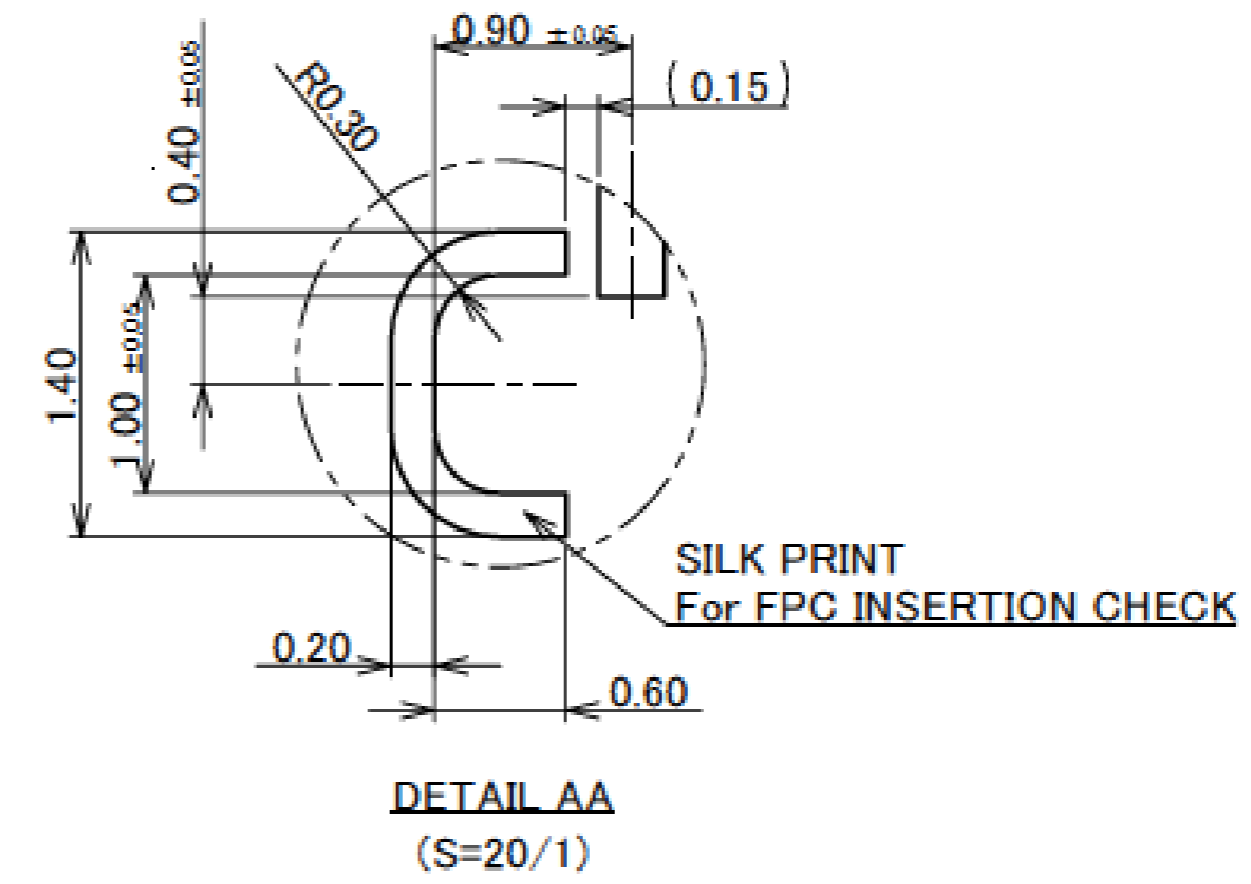
# Connector Assembly

PART NO.	Pos.	B	C	F	G	H
20599-009E-01	9P	1.80	2.40	3.60	4.20	3.00
20599-011E-01	11P	2.40	3.00	4.20	4.80	3.60
20599-013E-01	13P	3.00	3.60	4.80	5.40	4.20
20599-015E-01	15P	3.60	4.20	5.40	6.00	4.80
20599-017E-01	17P	4.20	4.80	6.00	6.60	5.40
20599-019E-01	19P	4.80	5.40	6.60	7.20	6.00
20599-021E-01	21P	5.40	6.00	7.20	7.80	6.60
20599-023E-01	23P	6.00	6.60	7.80	8.40	7.20
20599-025E-01	25P	6.60	7.20	8.40	9.00	7.80
20599-027E-01	27P	7.20	7.80	9.00	9.60	8.40
20599-029E-01	29P	7.80	8.40	9.60	10.20	9.00
20599-031E-01	31P	8.40	9.00	10.20	10.80	9.60
20599-033E-01	33P	9.00	9.60	10.80	11.40	10.20
20599-035E-01	35P	9.60	10.20	11.40	12.00	10.80
20599-037E-01	37P	10.20	10.80	12.00	12.60	11.40

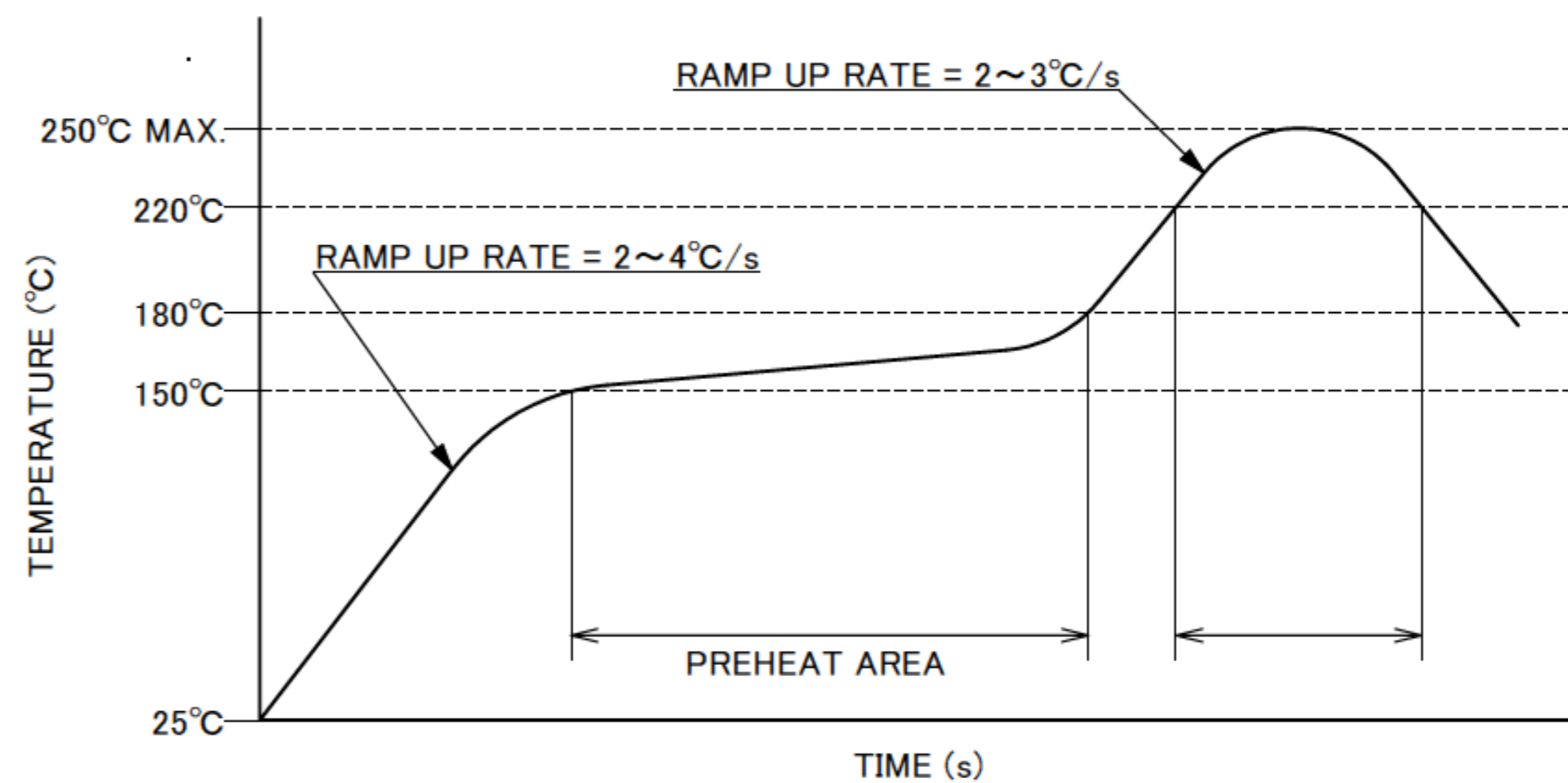
NOTES  
 2. SOLDER RESIST SHALL BE APPLIED TO PREVENT SHORT CIRCUITS WHEN PLACING SIGNAL LINES ON GROUND AREA.



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



CONNECTOR ON RECOMMENDED PCB LAYOUT



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

# Connector Assembly

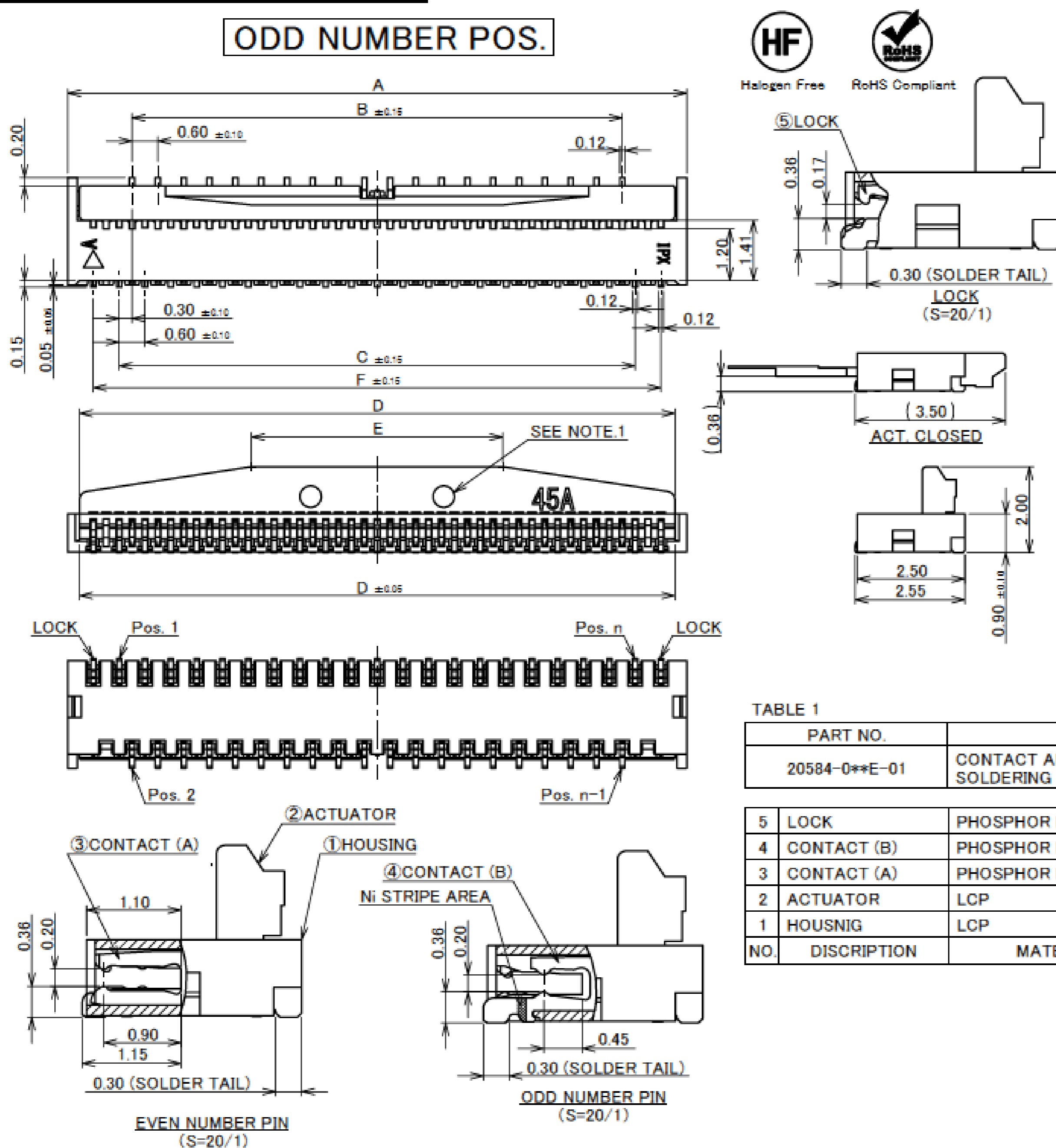
ITEMS	SPECIFICATION
RATING VOLTAGE	50V AC/DC (PER CONTACT)
RATING AMPERAGE	0.3A DC (PER CONTACT)
OPERATING TEMPERATURE	233~358K(-40°C~85°C)
OPERATING HUMIDITY	20~80%RH (NON-CONDENSING)
CONTACT RESISTANCE	INITIAL : 60mohm MAX. / AFTER TEST : $\triangleleft$ 40mohm MAX.
INSULATION RESISTANCE	100Mohm MIN.
DIELECTRIC WITHSTANDING VOLTAGE	AC250V 1min
DURABILITY	20TH CYCLES
ACTUATOR LOCKING FORCE (INITIAL / 20TH CYCLES)	INITIAL / 20TH CYCLES : 0.3N(31gf) $\times$ (n + 2) MAX.
ACTUATOR UNLOCKING FORCE (INITIAL / 20TH CYCLES)	INITIAL / 20TH CYCLES : 0.02N(2gf) $\times$ (n + 2) MIN.
FPC RETENTION FORCE (INITIAL / AFTER TEST)	INITIAL : 0.13N(13gf) $\times$ n + 1.0N MIN. / AFTER TEST : 0.10N(10gf) $\times$ n + 1.0N MIN.
COPLANARITY	0.10 MAX.
PRODUCT SPECIFICATION	PRS-1861
TEST REPORT	TR-13085
PACKING STANDARD	PST-13035
INSTRUCTION MANUAL	HIM-12007
APPEARANCE CRITERIA No.	QLS-A***

※ "n" IS THE NUMBER OF PIN

Rev.13

Recommended P/N 20584-0\*\*E-01

ODD NUMBER POS.



PART NO.	Pos.	A	B	C	D	E	F
◆ 20584-029E-01	29P	10.80	7.80	8.40	10.25	6.25	9.60
◆ 20584-031E-01	31P	11.40	8.40	9.00	10.85	6.85	10.20
◆ 20584-035E-01	35P	12.60	9.60	10.20	12.05	8.05	11.40
◆ 20584-037E-01	37P	13.20	10.20	10.80	12.65	4.65	12.00
◆ 20584-039E-01	39P	13.80	10.80	11.40	13.25	5.25	12.60
◆ 20584-041E-01	41P	14.40	11.40	12.00	13.85	5.85	13.20
◆ 20584-045E-01	45P	15.60	12.60	13.20	15.05	7.05	14.40
◆ 20584-047E-01	47P	16.20	13.20	13.80	15.65	7.65	15.00
◆ 20584-051E-01	51P	17.40	14.40	15.00	16.85	8.85	16.20
◆ 20584-053E-01	53P	18.00	15.00	15.60	17.45	9.45	16.80
◆ 20584-057E-01	57P	19.20	16.20	16.80	18.65	10.65	18.00
◆ 20584-061E-01	61P	20.40	17.40	18.00	19.85	11.85	19.20
◆ 20584-063E-01	63P	21.00	18.00	18.60	20.45	8.45	19.80
◆ 20584-071E-01	71P	23.40	20.40	21.00	22.85	10.85	22.20

◆ MARK MEANS NOT AVAILABLE.

NOTES.

- THIS DENT SHAPE IS PURPOSED FOR GOOD INJECTION QUALITY. THIS DENT SHAPE WILL NOT AFFECT CONNECTR FUNCTION. DENT SHAPE SHOWN ON DRAWING IS JUST FOR REFERENCE. DENT SHAPE AND QUANTITY MIGHT CHABGE FROM DIFFERENT PIN COUNT AND DIFFERENT TOOLING.
- CONTACT POINT: TOP AND BOTTOM CONTACT

CAUTION VISIT OUR WEBSITE FOR LATEST VERSIONS OF INSTRUCTION MANUAL NO. HIM-12007 TO HANDLE THE PRODUCT PROPERLY AND SAFELY.

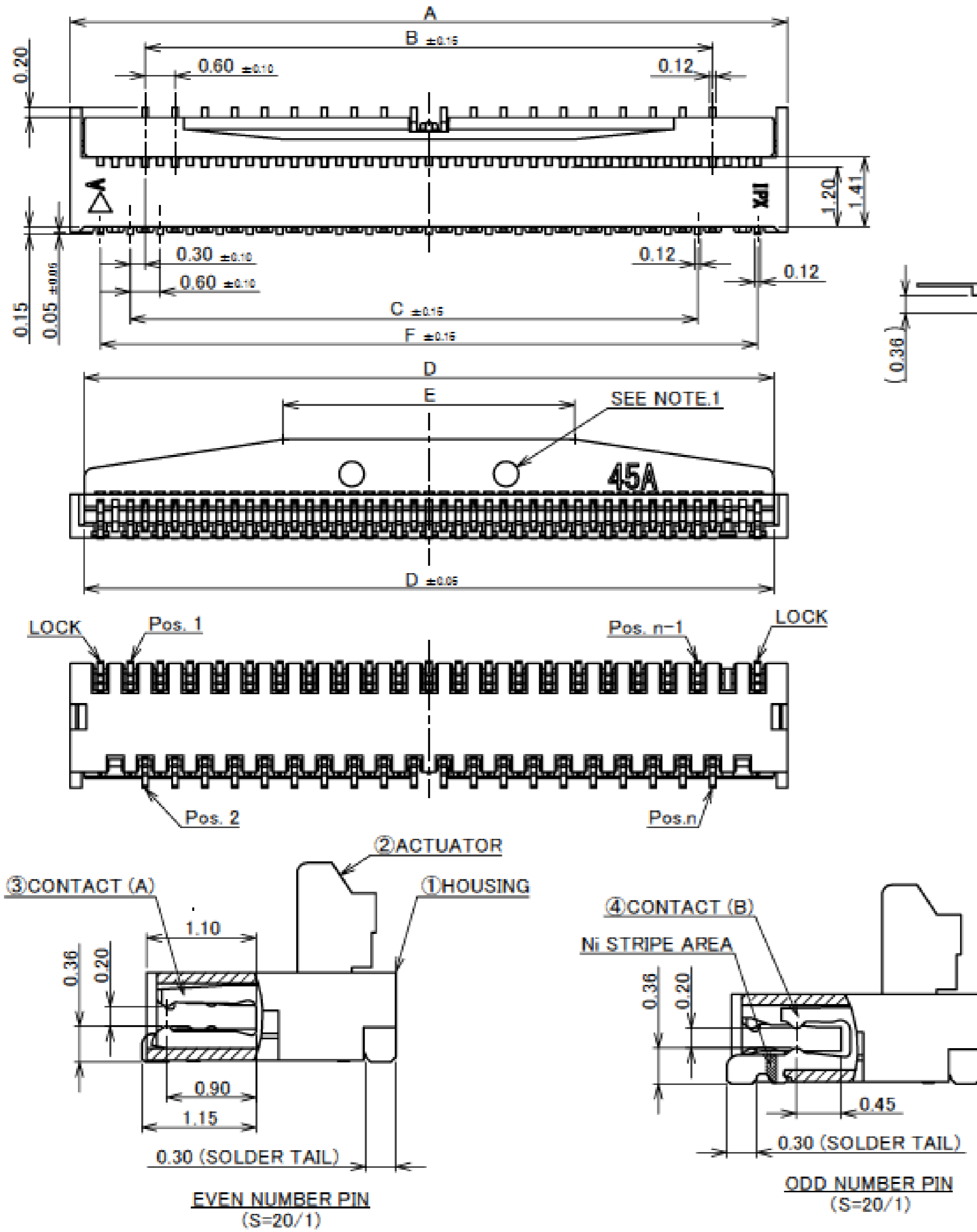
TABLE 1

PART NO.	FINISH	
20584-0**E-01	CONTACT AREA : Au 0.10 $\mu$ m MIN. OVER Ni 1.00 $\mu$ m MIN. SOLDERING AREA : Au 0.03 $\mu$ m MIN. OVER Ni 1.00 $\mu$ m MIN.	
5	LOCK	PHOSPHOR BRONZE SOLDERING AREA : Au 0.03 $\mu$ m MIN. OVER Ni 1.00 $\mu$ m MIN.
4	CONTACT (B)	PHOSPHOR BRONZE SEE TABLE 1, WITH Ni STRIPE
3	CONTACT (A)	PHOSPHOR BRONZE SEE TABLE 1
2	ACTUATOR	LCP UL94V-0, BEIGE
1	HOUSNIG	LCP UL94V-0, BEIGE
NO.	DISCRIPTION	MATERIAL FINISH, REMARKS

Rev.18

# Connector Assembly

## EVEN NUMBER POS.

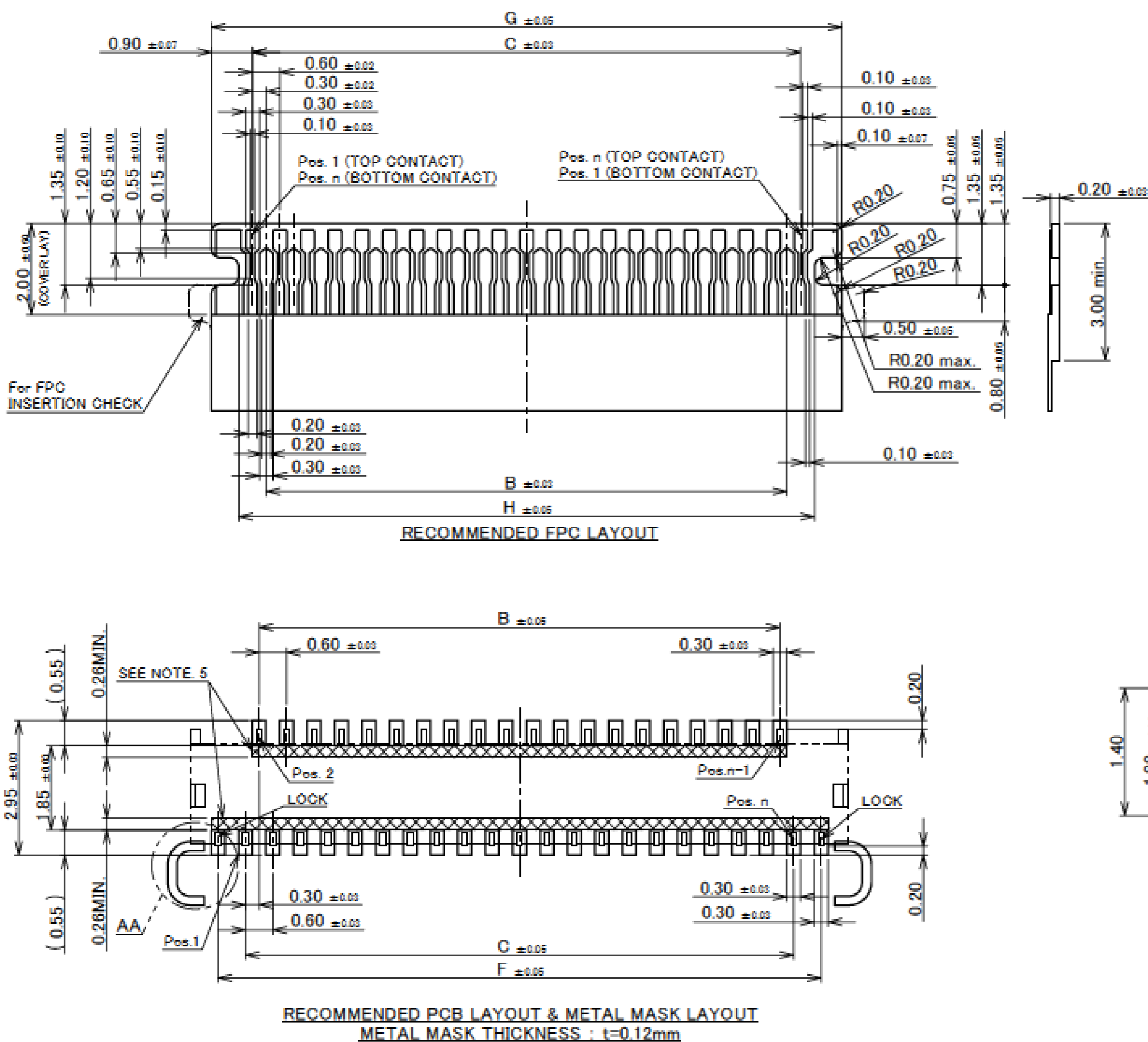


PART NO.	Pos.	A	B	C	D	E	F
◆ 20584-030E-01	30P	11.40	8.40	8.40	10.85	6.85	10.20
◆ 20584-034E-01	34P	12.60	9.60	9.60	12.05	8.05	11.40
◆ 20584-038E-01	38P	13.80	10.80	10.80	13.25	9.25	12.60
◆ 20584-040E-01	40P	14.40	11.40	11.40	13.85	9.85	13.20
◆ 20584-050E-01	50P	17.40	14.40	14.40	16.85	12.85	16.20
◆ 20584-056E-01	56P	19.20	16.20	16.20	18.65	14.65	18.00

◆ MARK MEANS NOT AVAILABLE.

Rev.18

## ODD NUMBER POS.

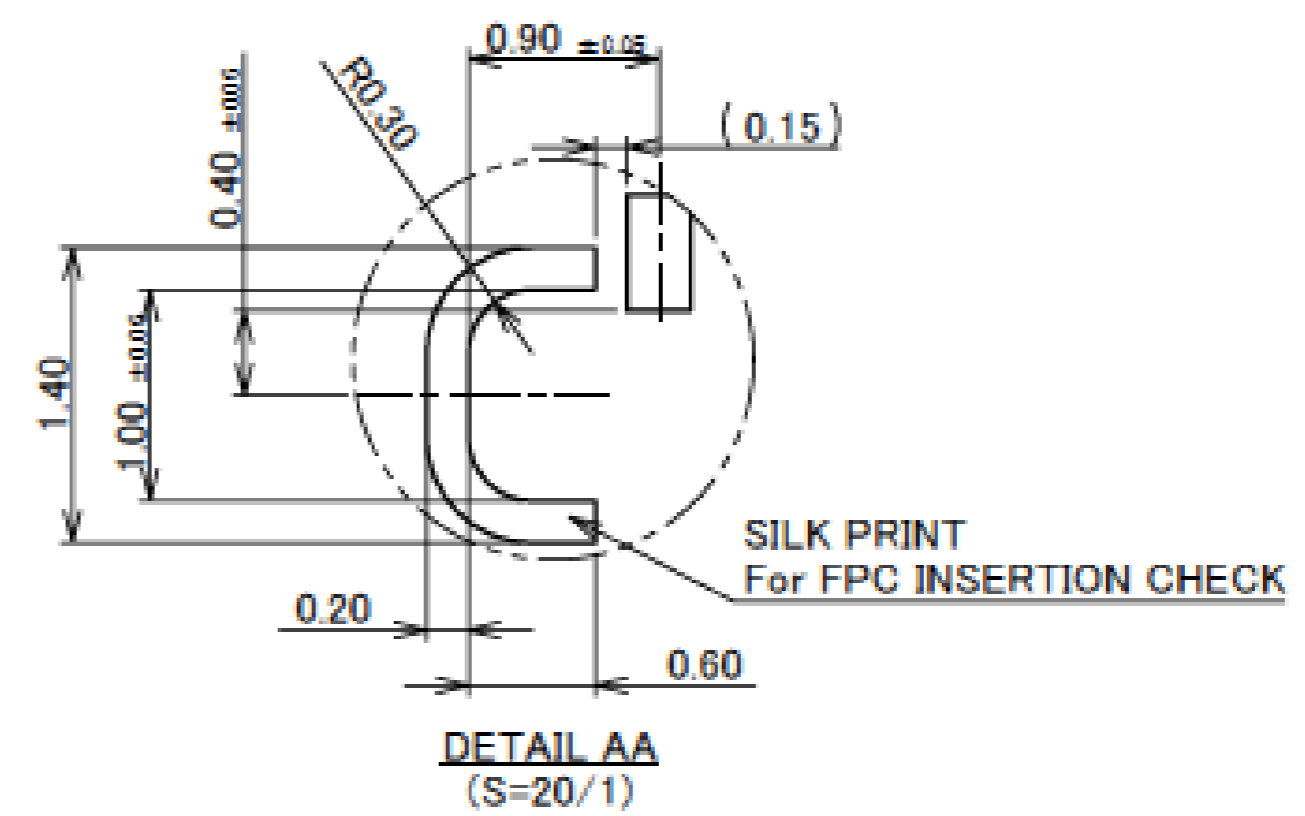


PART NO.	Pos.	B	C	F	G	H
◆ 20584-029E-01	29P	7.80	8.40	9.60	10.20	9.00
◆ 20584-031E-01	31P	8.40	9.00	10.20	10.80	9.60
◆ 20584-035E-01	35P	9.60	10.20	11.40	12.00	10.80
◆ 20584-037E-01	37P	10.20	10.80	12.00	12.60	11.40
◆ 20584-039E-01	39P	10.80	11.40	12.60	13.20	12.00
◆ 20584-041E-01	41P	11.40	12.00	13.20	13.80	12.60
◆ 20584-045E-01	45P	12.60	13.20	14.40	15.00	13.80
◆ 20584-047E-01	47P	13.20	13.80	15.00	15.60	14.40
◆ 20584-051E-01	51P	14.40	15.00	16.20	16.80	15.60
◆ 20584-053E-01	53P	15.00	15.60	16.80	17.40	16.20
◆ 20584-057E-01	57P	16.20	16.80	18.00	18.60	17.40
◆ 20584-061E-01	61P	17.40	18.00	19.20	19.80	18.60
◆ 20584-063E-01	63P	18.00	18.60	19.80	20.40	19.20
◆ 20584-071E-01	71P	20.40	21.00	22.20	22.80	21.60

◆ MARK MEANS NOT AVAILABLE.

### NOTES

- MATERIAL  
COVER FILM : PI  
CONDUCTOR : COPPER(RARE)  
BASE FILM : PI  
STIFFENER : PI  
ADHESIVE : THERMOSETTING ADHESIVE
- FINISH  
Au OVER Ni UNDER PLATING.
- SOLDER RESIST SHALL BE APPLIED TO PREVENT SHORT CIRCUITS WHEN PLACING SIGNAL LINES ON GROUND AREA.

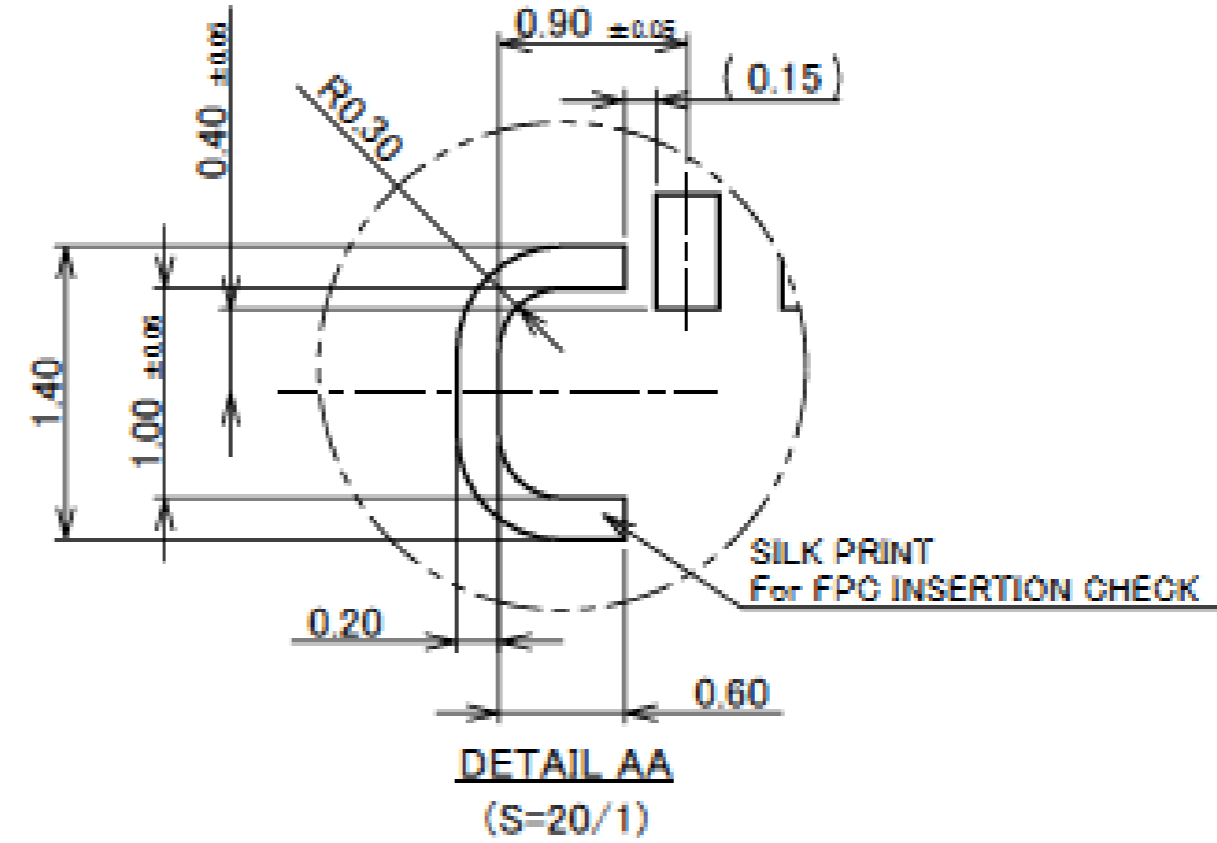
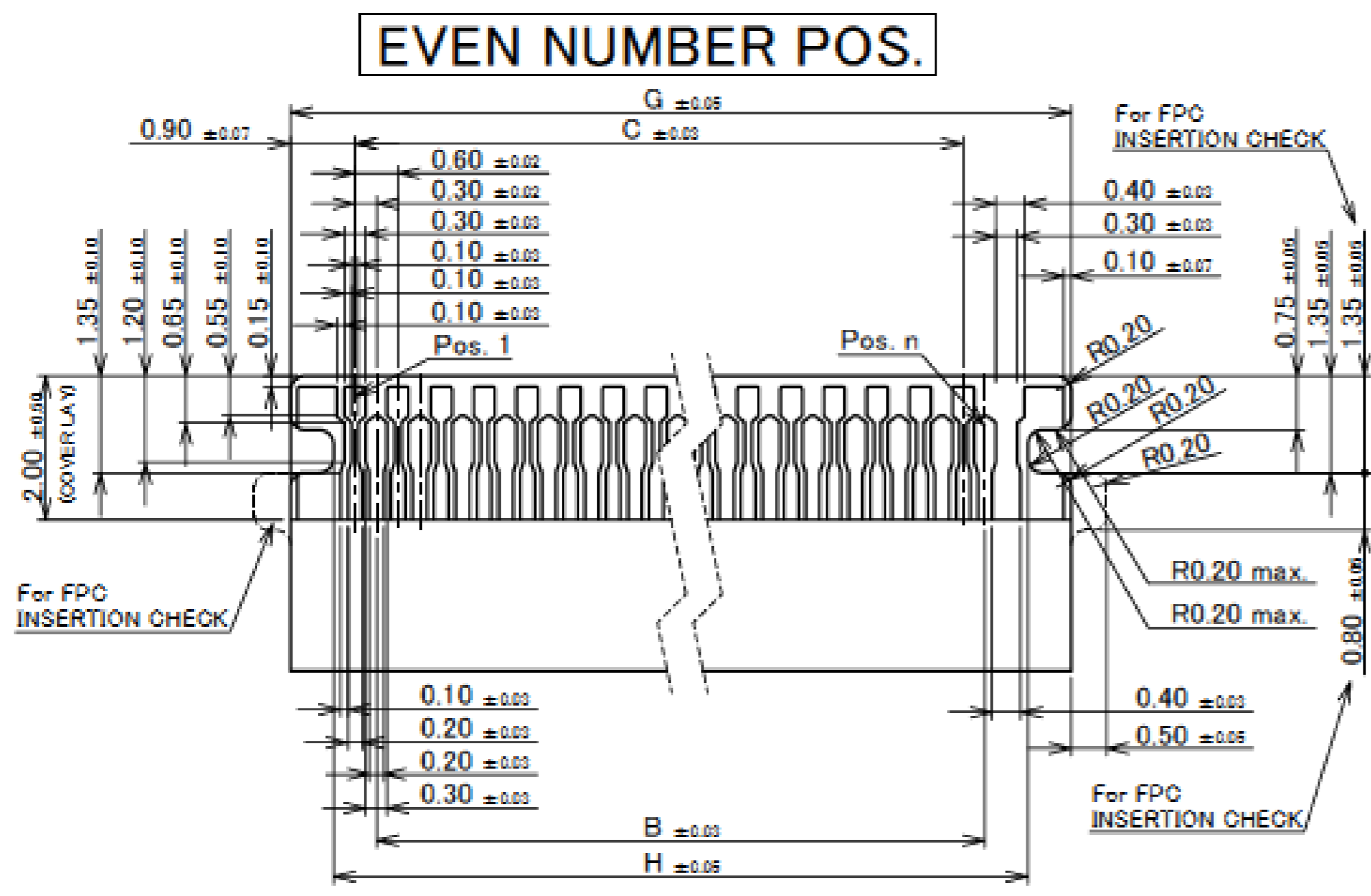


Rev.18

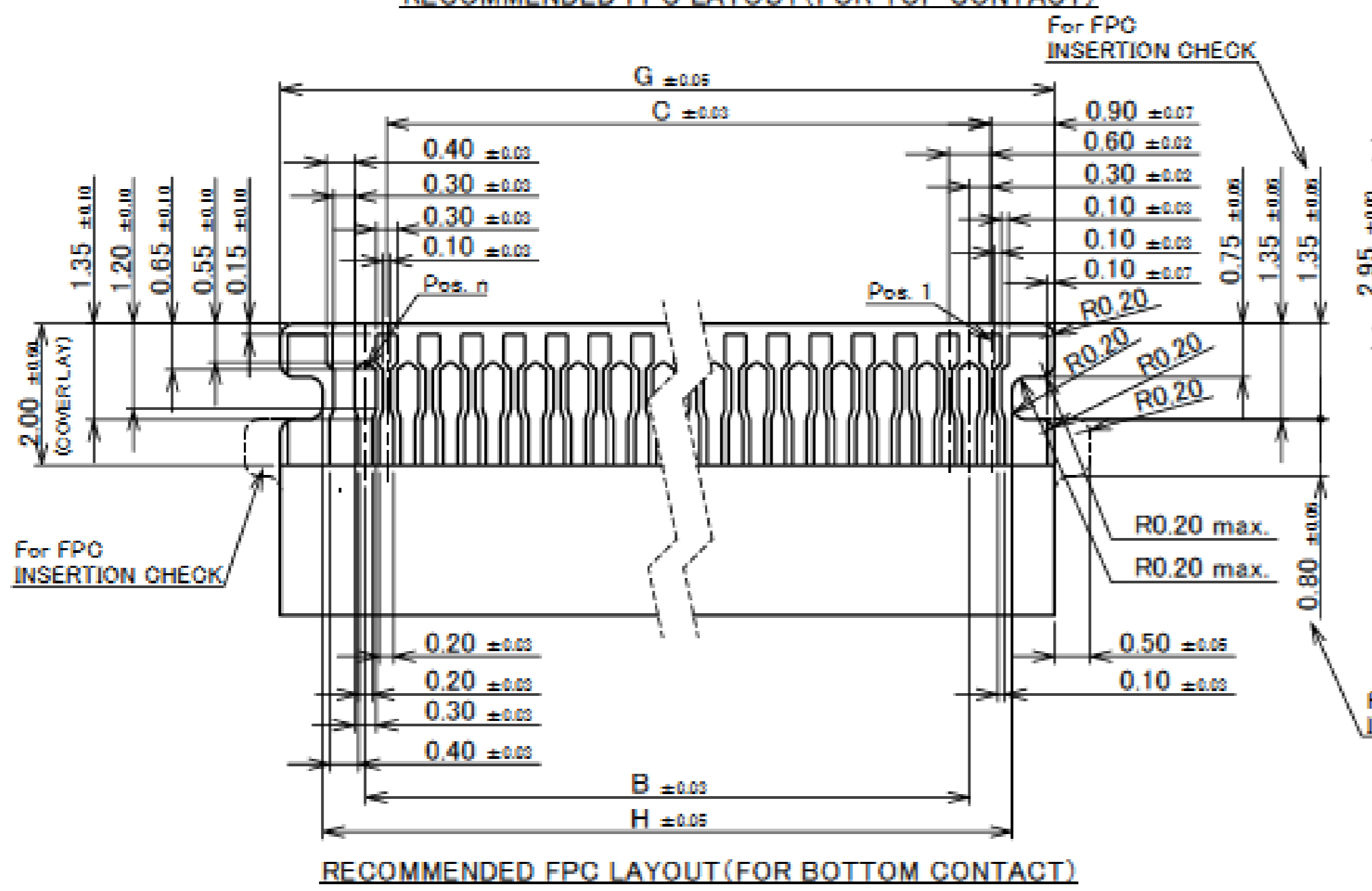
# Connector Assembly

PART NO.	Pos.	B	C	F	G	H
◆ 20584-030E-01	30P	8.40	8.40	10.20	10.80	9.60
◆ 20584-034E-01	34P	9.60	9.60	11.40	12.00	10.80
◆ 20584-038E-01	38P	10.80	10.80	12.60	13.20	12.00
◆ 20584-040E-01	40P	11.40	11.40	13.20	13.80	12.60
◆ 20584-050E-01	50P	14.40	14.40	16.20	16.80	15.60
◆ 20584-056E-01	56P	16.20	16.20	18.00	18.60	17.40

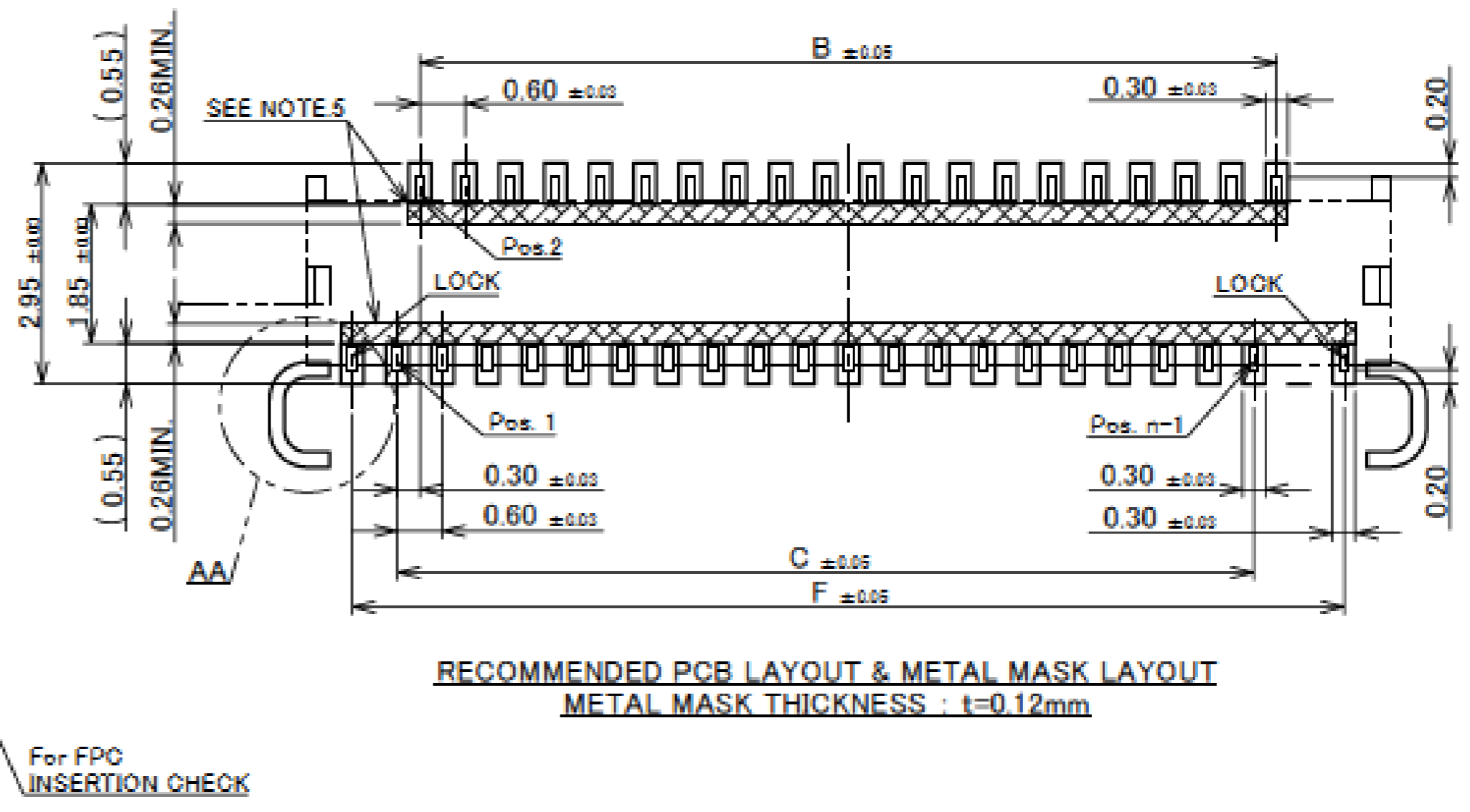
◆ MARK MEANS NOT AVAILABLE.



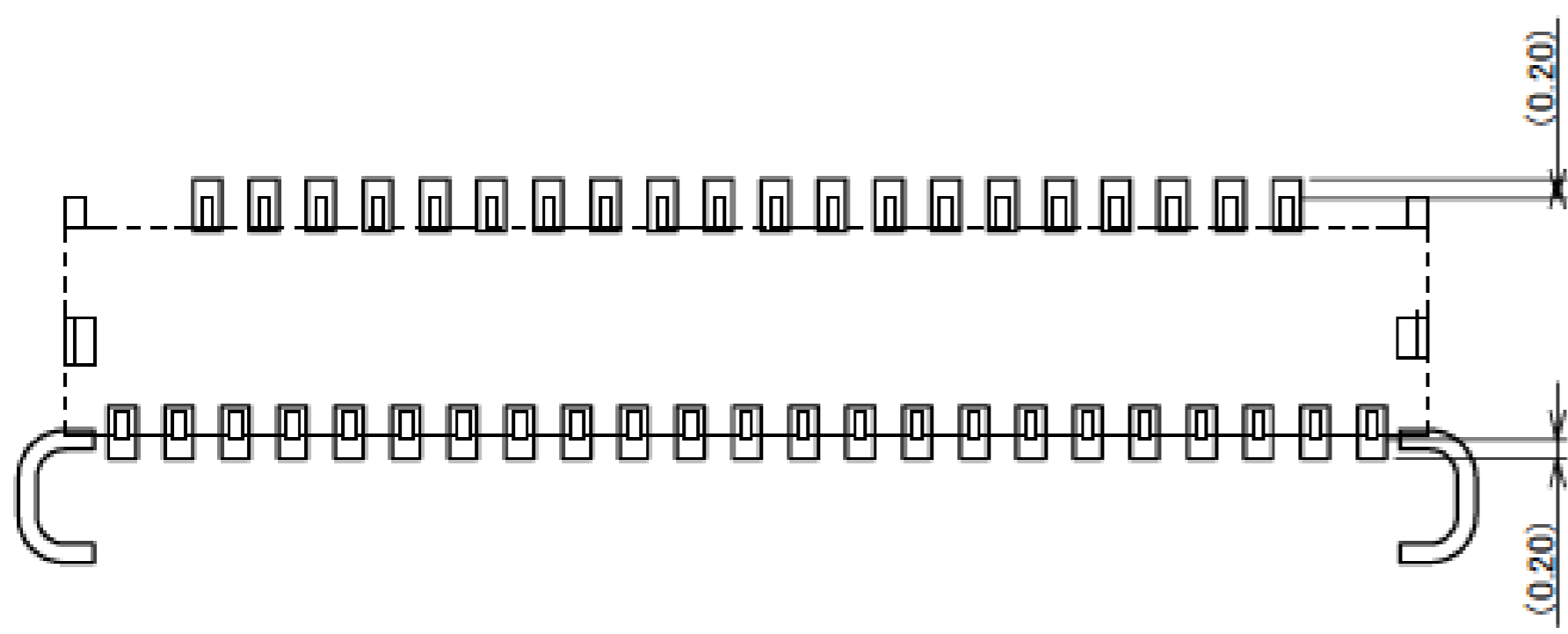
RECOMMENDED FPC LAYOUT (FOR TOP CONTACT)



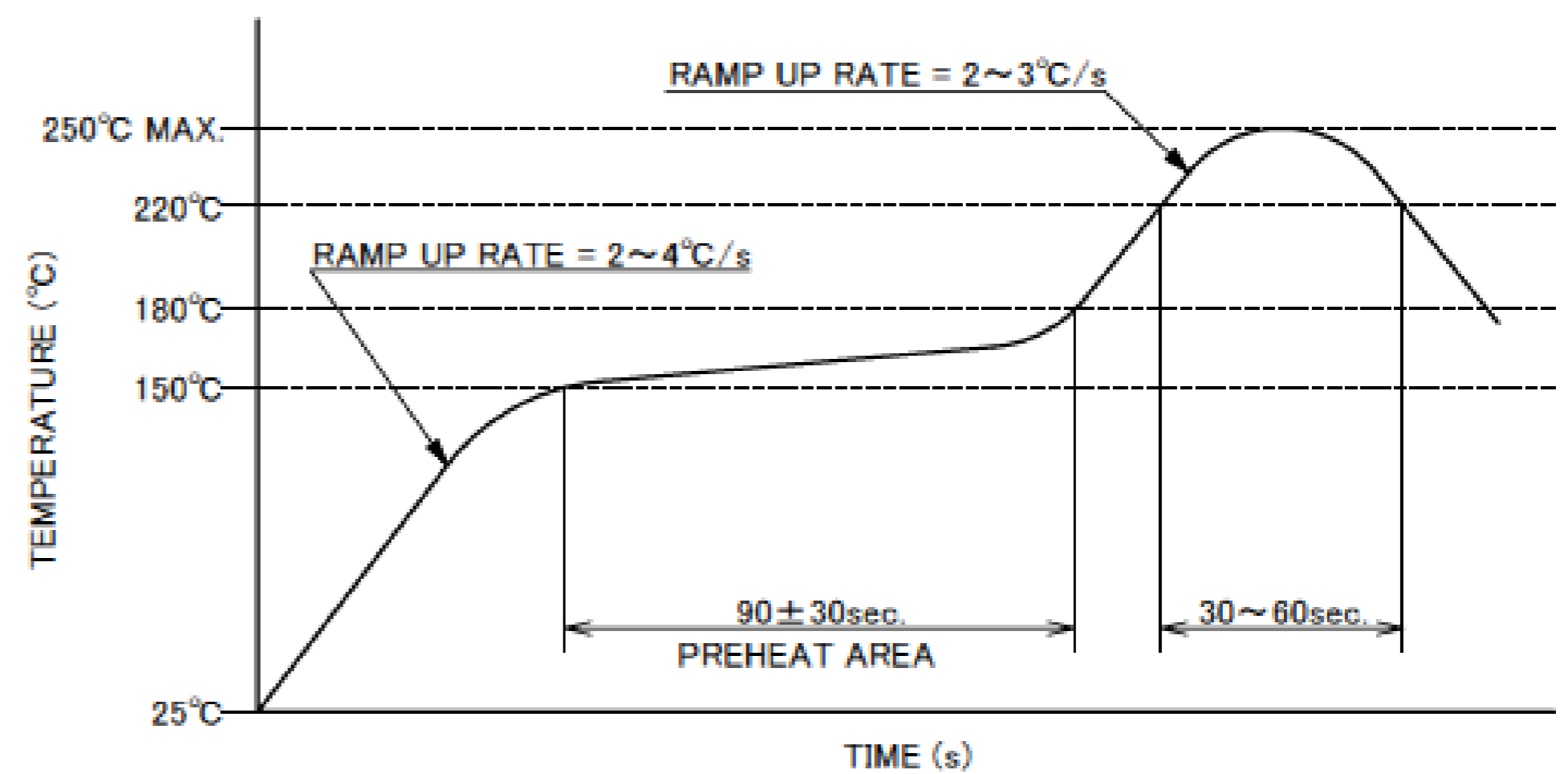
RECOMMENDED FPC LAYOUT (FOR BOTTOM CONTACT)



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



CONNECTOR ON RECOMMENDED PCB LAYOUT



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

Rev.18

# Connector Assembly

ITEMS	SPECIFICATION
RATING VOLTAGE	50V AC (PER CONTACT)
RATING AMPERAGE	0.3A DC (PER CONTACT)
OPERATING TEMPERATURE	233~358K (-40°C~+85°C)
OPERATING HUMIDITY	20~80%RH
CONTACT RESISTANCE	INITIAL : 60mohm MAX. / AFTER TEST : $\triangle$ 40mohm MAX.
INSULATION RESISTANCE	100Mohm MIN.
DIELECTRIC WITHSTANDING VOLTAGE	AC250V 1min
DURABILITY	20 CYCLES
ACTUATOR LOCKING FORCE (INITIAL / 20 CYCLES)	INITIAL / 20 CYCLES 0.21N (21gf) $\times$ (n + 2) MAX.
ACTUATOR UNLOCKING FORCE (INITIAL / 20 CYCLES)	INITIAL / 20 CYCLES 0.014N (1.4gf) $\times$ (n + 2) MIN.
FPC RETENTION FORCE (INITIAL / AFTER TEST)	INITIAL: 0.13N (13gf) $\times$ n + 1.0N MIN. / AFTER TEST: 0.10N (10gf) $\times$ n + 1.0N MIN.
COPLANARITY	0.10 MAX.
PRODUCT SPECIFICATION	PRS-1789
TEST REPORT	TR-13022
PACKING STANDARD	PST-13013
INSTRUCTION MANUAL	HIM-12007
APPEARANCE CRITERIA No.	QLS-A***

※ "n" IS THE NUMBER OF PIN

Rev.18

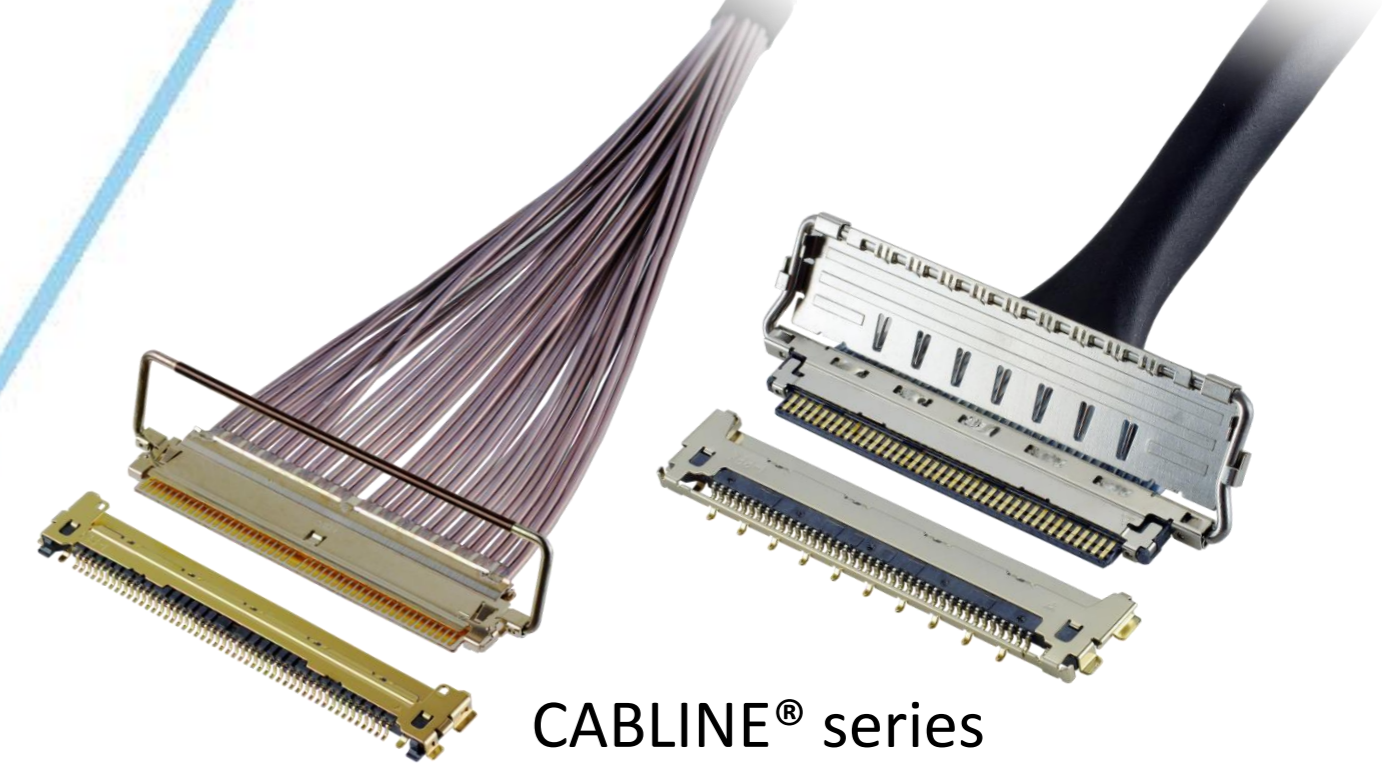
# Custom Products Available

## RF Connector

MHF® series



## Micro-coaxial/Twinax/Discrete Wire Connector



CABLINE® series

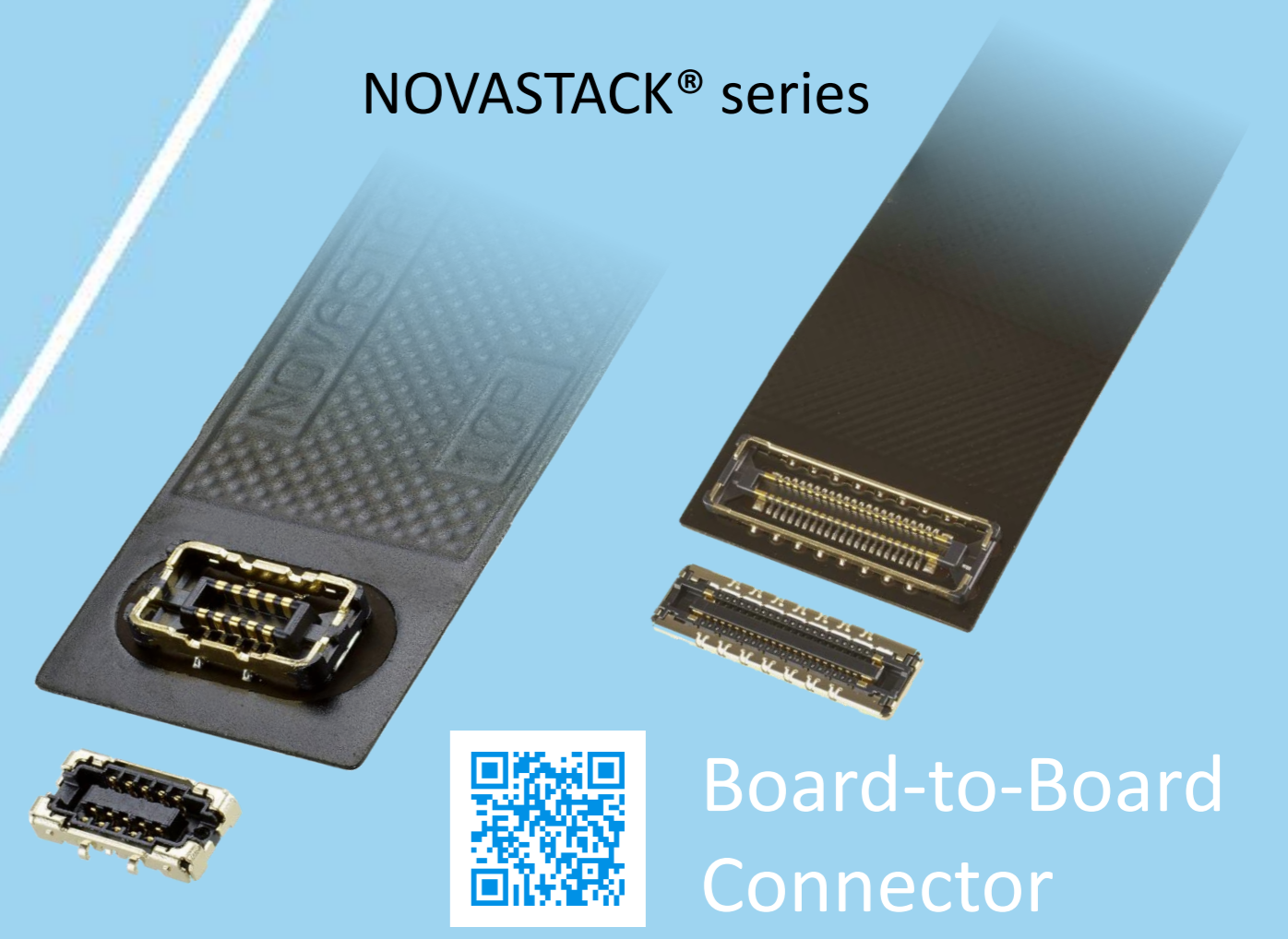


## Optical Module

LIGHTPASS® series



NOVASTACK® series



## Board-to-Board Connector



## Power Connector/Terminal

AP series

ISH® series



MINIFLEX® series

EVAFLEX® series



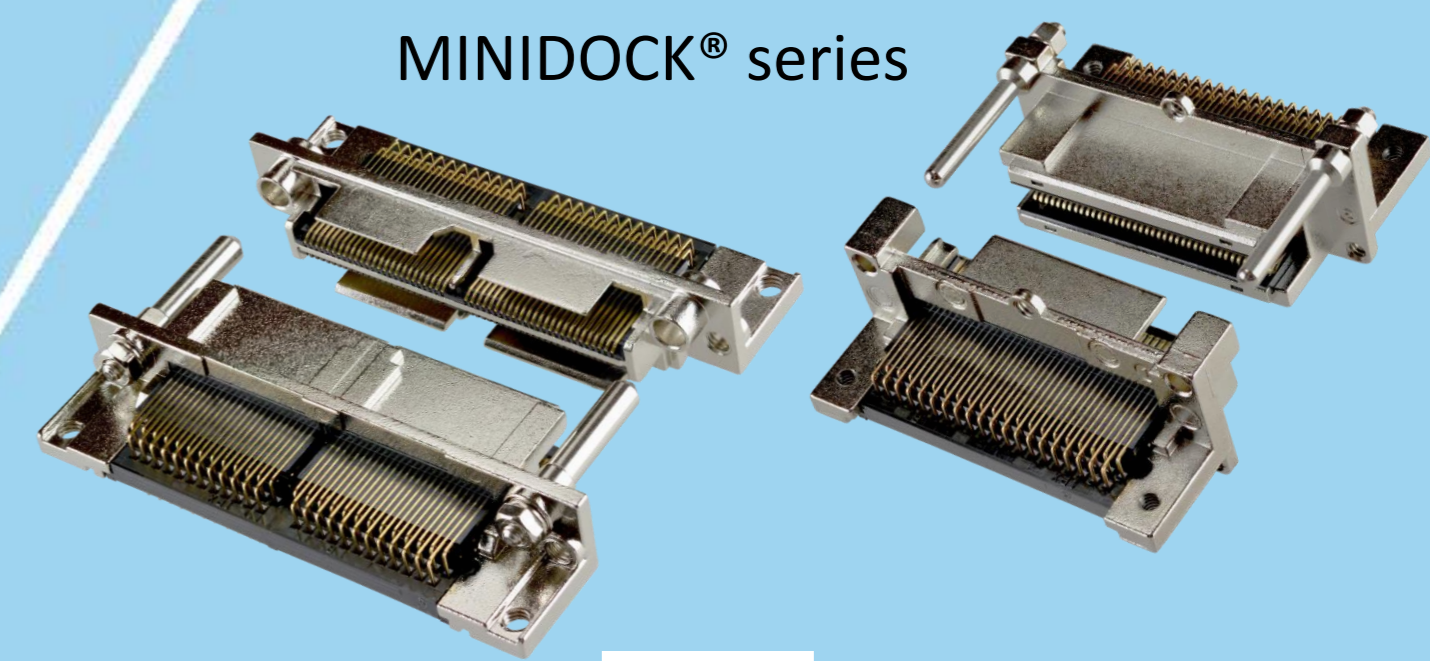
## FPC FFC Connector



Inquiry



MINIDOCK® series

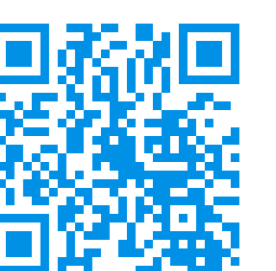


## I/O Connector

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