

# CABLINE® - VS

VESA standard connector, Suitable for high-data-rate transfer (20 Gbps/lane), Mechanical locking bar, 0.5 mm pitch, Horizontal mating type micro-coaxial connector

**Product Specifications:**

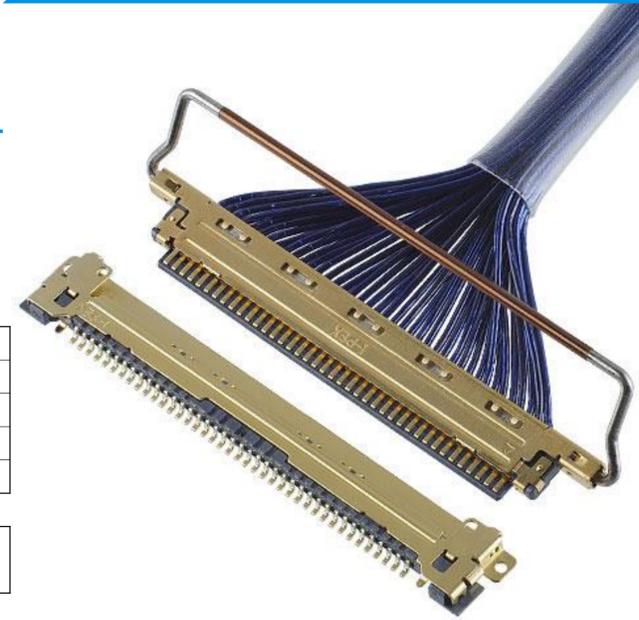
Mating type	Horizontal	
Board Pitch (mm)	0.5	
Wiping Length (mm)	0.61	
Mated size (mm)	Height	1.0 +/- 0.1
	Width	Formula: 7.55 + (0.5*?p)
	Depth	5.8
Pin Counts	Range	Up to 50
	Available	20, 30, 40, 50

**Applicable Cable Size:**

Maximum O.D. (mm)	0.5
Micro-Coaxial for Signal (AWG)	45 ohm: #36 or smaller
	50 ohm: #38 or smaller
Twinax (AWG)	#40
Discrete (AWG)	#32 or smaller

**Applicable Standards (Reference Only):**

USB4 Gen3 /Thunderbolt 4 (20 Gbps/lane), PCIe (16 GT/s), eDP (8.1 Gbps)



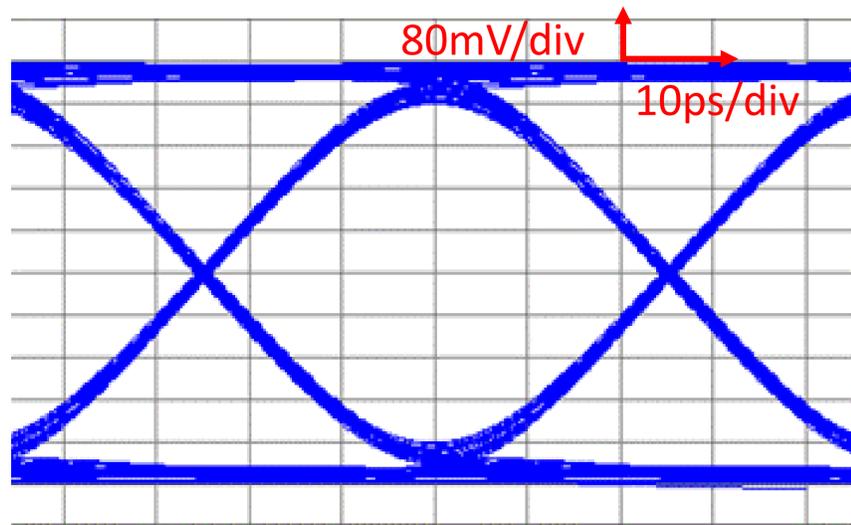
\* Please inquire for pin counts not listed or outside of the pin count range.

## High-Data-Rate Transfer, Ideal for USB4 Gen3/Thunderbolt 4 (20 Gbps/lane) Applications

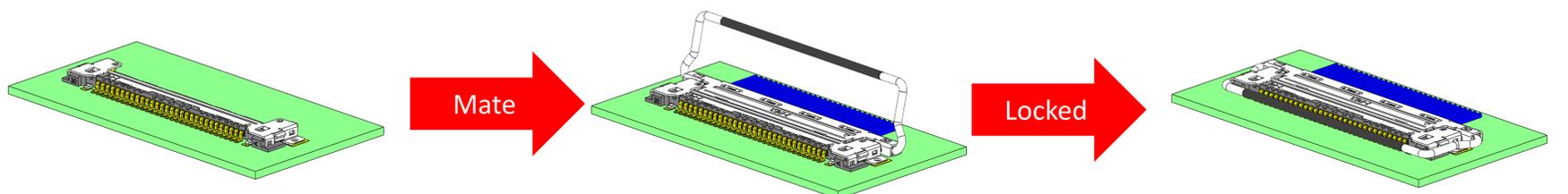
USB4 Gen3/Thunderbolt 4 (20 Gbps/lane)

Eye pattern (Differential)  
 Bit rate : 20 Gbps  
 Rise time : 30ps (10-90%)  
 Input voltage : 800mVp-p

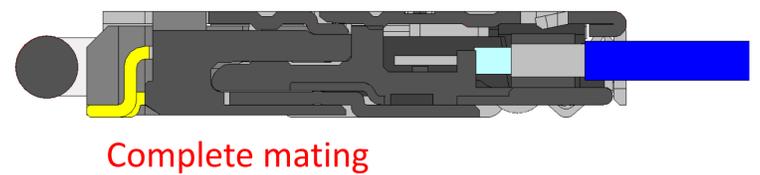
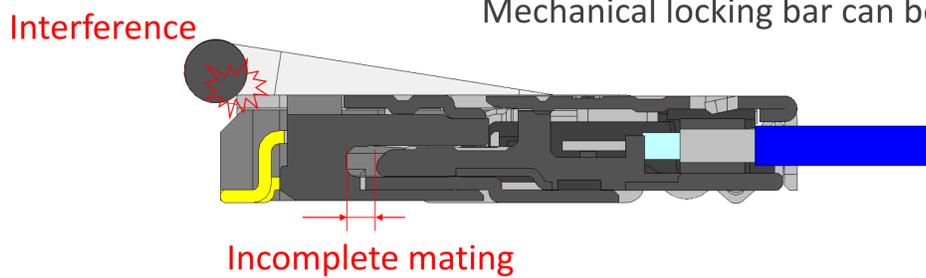
\*Please contact I-PEX Connectors for more test details.



## Mechanical Locking Bar Prevents Incomplete Mating and Back-out/Un-mating



Mechanical locking bar can be locked only when plug is fully mated to receptacle.

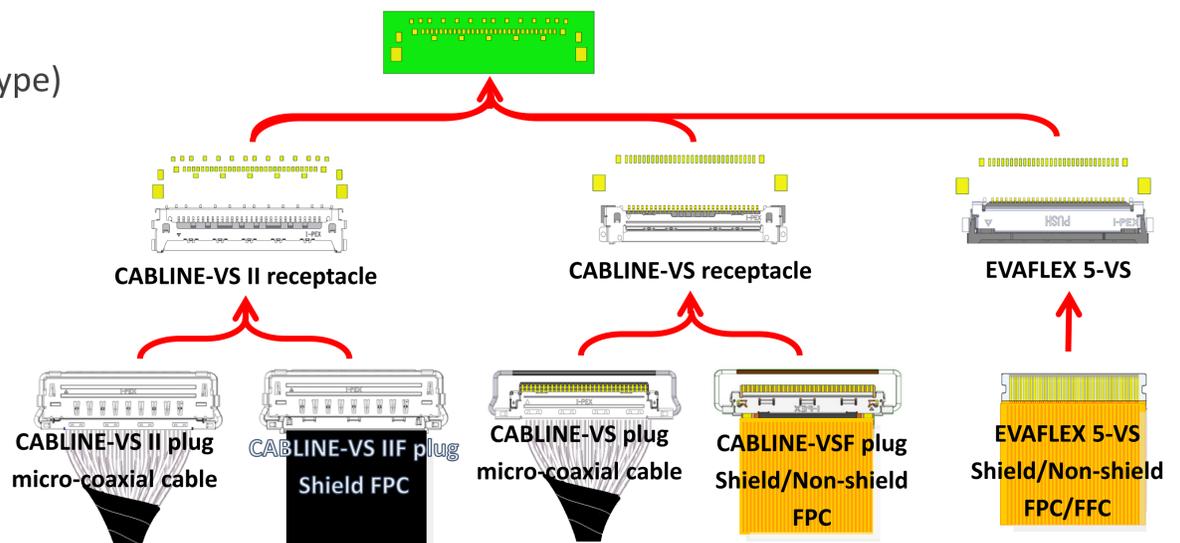


## Multiple Connector Options with I-PEX VS Series

I-PEX VS series (0.5 mm pitch, horizontal mating type)

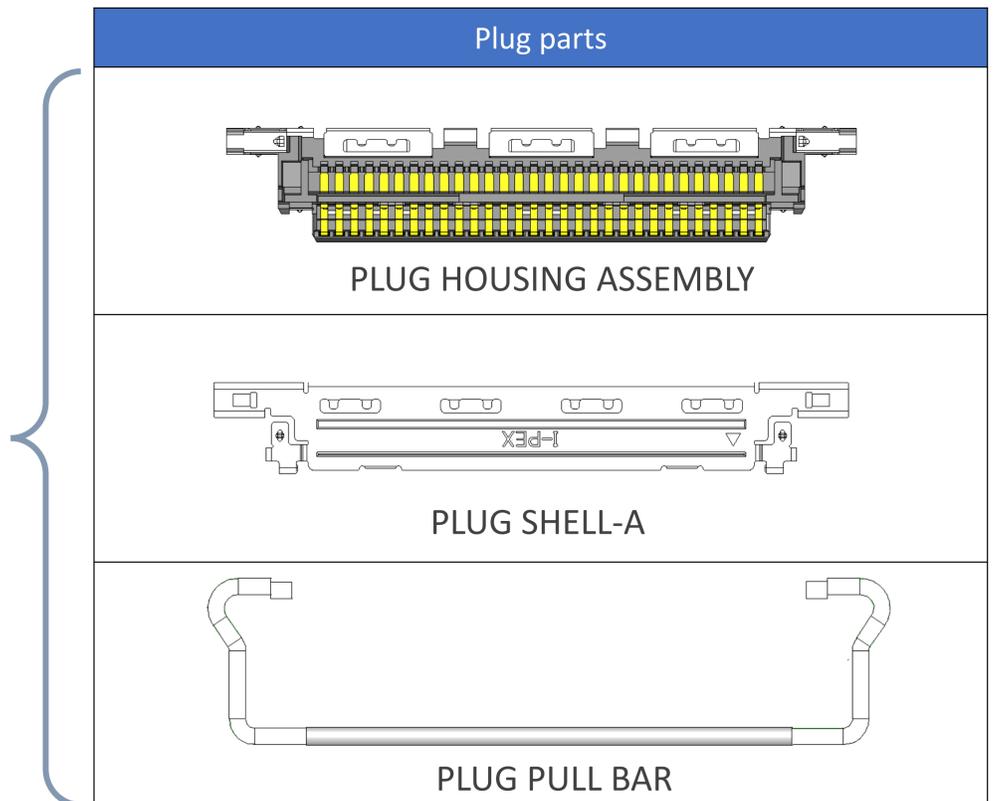
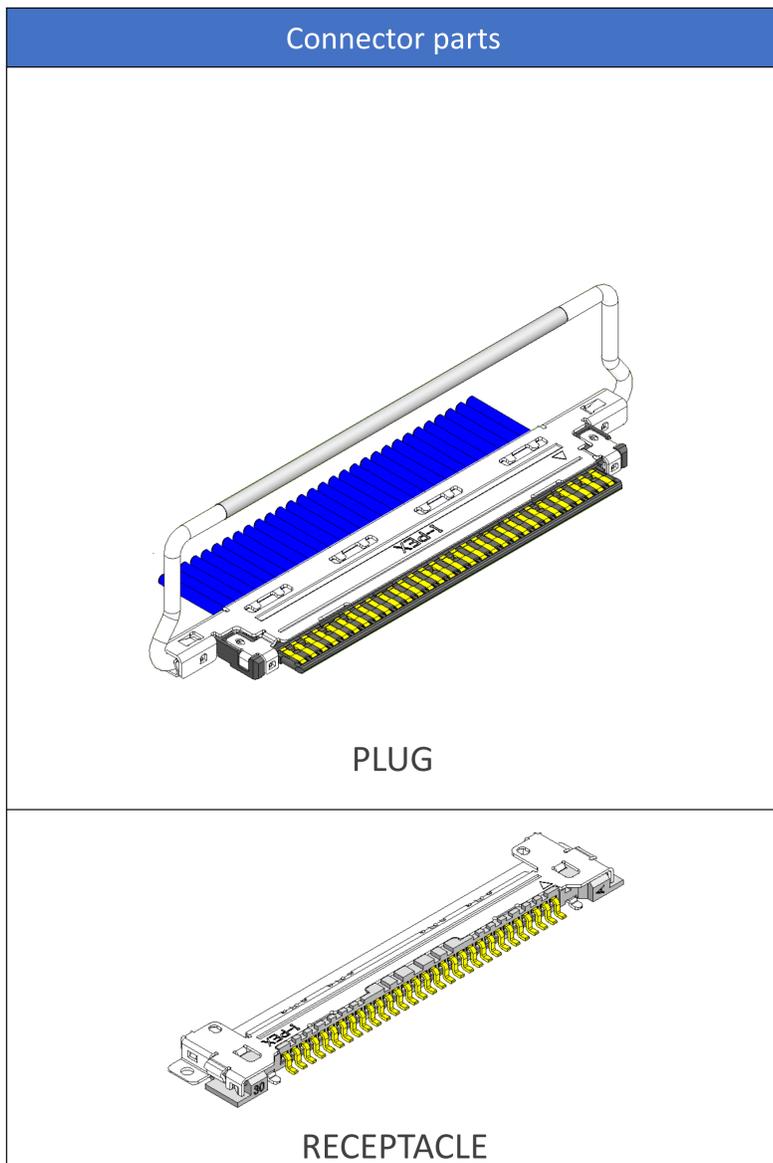
CABLINE-VS, VS II receptacles and EVAFLEX® 5-VS can be mounted to the same PCB layout.

CABLINE-VS Receptacle:  
 Has #1 share in the Notebook PC panel connector market as VESA standard connector.



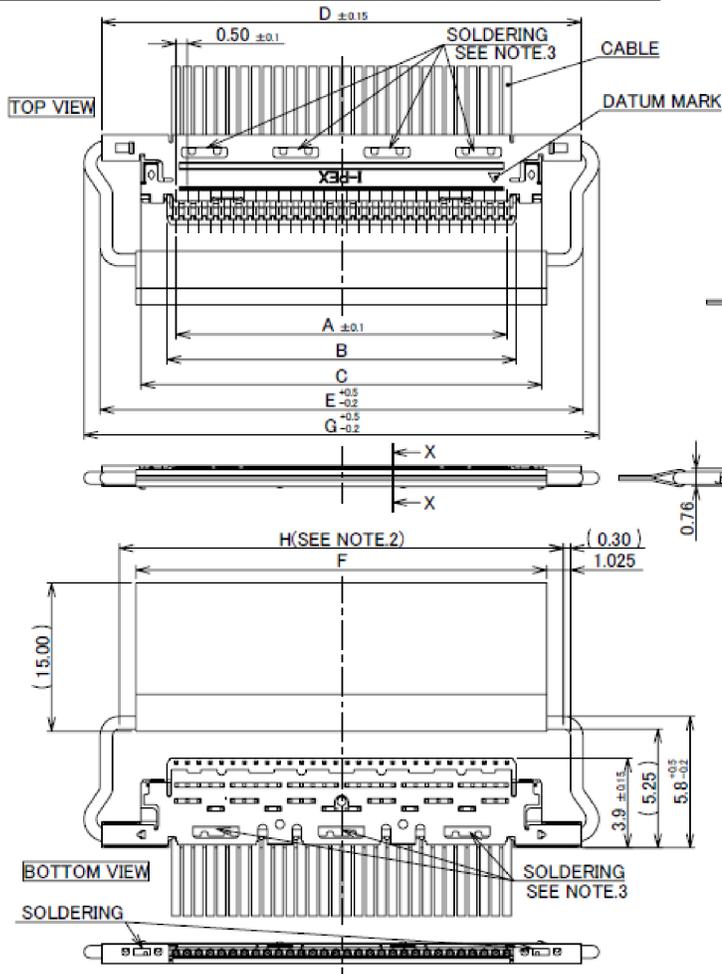
# Component Parts Details

## Component Parts



# Plug for Cable Assembly

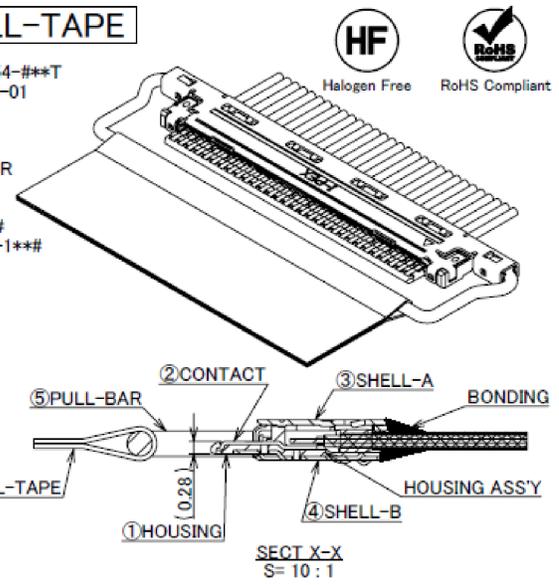
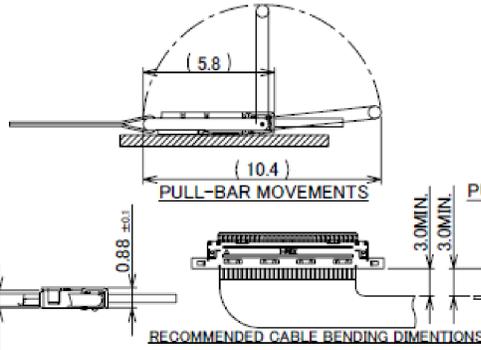
Recommended P/N		20453-2**T-03(20P/30P/40P)							20453-250T-03S(50P)	
PART NO.	Pos.	A	B	C	D	E	F	G	H	
20453-#20T-#1	20	9.50	10.30	12.56	16.00	16.15	13.00	17.55	14.45	
20453-#30T-#1	30	14.50	15.30	17.56	21.00	21.15	18.00	22.55	19.45	
20453-#40T-#1	40	19.50	20.30	22.56	26.00	26.15	23.00	27.55	24.45	
20453-#50T-#1S	50	24.50	25.30	27.56	31.00	31.15	28.00	32.55	29.45	



## WITH PULL-BAR & PULL-TAPE

- P/N:20453-#\*\*T-###
- NOTHING : HOUSING ASS'Y P/N 20454-##\*T  
S : HOUSING ASS'Y P/N 20454-##\*T-01
- 1 : WITH PULL-BAR P/N 2576-0\*\*-00  
2 : WITHOUT PULL-BAR  
3 : WITH INSULATION COAT PULL-BAR P/N 2576-1\*\*-00  
0 : WITH DATUM MARK P/N 2574-0\*\*##  
1 : WITHOUT DATUM MARK P/N 2574-1\*\*##

SEE TABLE.1



CABLE ASS'Y PART NO.	HOUSING ASS'Y PART NO.	SHELL-A PART NO.	PULL-BAR PART NO.
20453-0**T-#1#	20454-0**T-##	2574-##*	2576-0**-00
20453-2**T-#1#	20454-2**T-##	2574-##*2	2576-0**-00

TABLE.1

PART NO.	CONTACT FINISH	SHELL-A FINISH	SHELL-B FINISH
20453-0**T-###	CONTACT AREA : Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA : Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	TOP SIDE : Au 0.05 μm MIN. OVER Ni 1.00 μm MIN. BOTTOM SIDE : Au 0.015 μm MIN. OVER Ni 1.00 μm MIN.	TOP SIDE : Au 0.015 μm MIN. OVER Ni 1.00 μm MIN. BOTTOM SIDE : Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.
20453-2**T-###	CONTACT AREA : Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA : Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	TOP SIDE : Au 0.03 μm MIN. OVER Ni 1.00 μm MIN. BOTTOM SIDE : Ni 1.00 μm MIN.(THERE IS THE POSSIBILITY THAT Au ATTACHES RANDOMLY)	TOP SIDE : Ni 1.00 μm MIN.(THERE IS THE POSSIBILITY THAT Au ATTACHES RANDOMLY) BOTTOM SIDE : Au 0.03 μm MIN. OVER Ni 1.00 μm MIN.

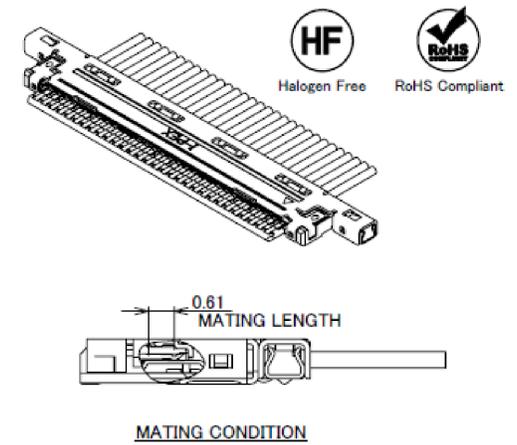
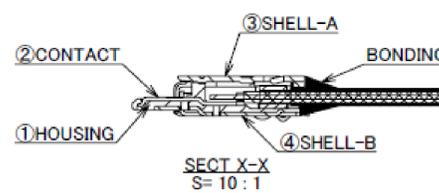
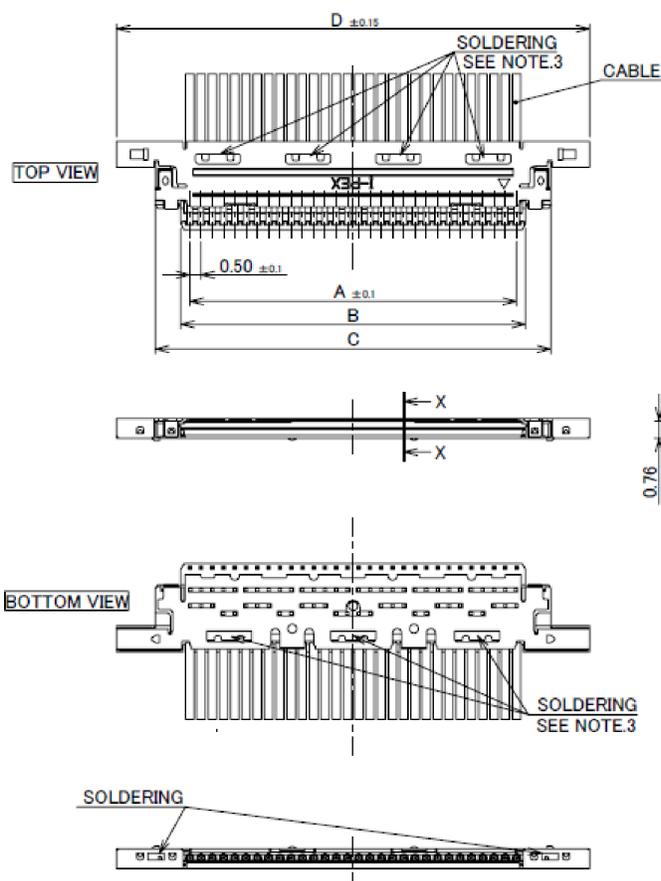
NO.	DISCRIPTION	MATERIAL	FINISH, REMARKS
5	PULL-BAR	SUS	
4	SHELL-B	PHOSPHOR BRONZE	SEE ABOVE TABLE.1
3	SHELL-A	PHOSPHOR BRONZE	SEE ABOVE TABLE.1
2	CONTACT	PHOSPHOR BRONZE	SEE ABOVE TABLE.1
1	HOUSING	LCP	UL94V-0, BLACK

- NOTES.
- 1.RECOMMENDED PULL-TAPE  
PULL-TAPE : TERAOKA'S INSULATION TAPE No.650S(#50) t=0.08  
2.PULL-TAPE CAN BE PUT WITHIN THE RANGE OF "H"(STRAIGHT AREA)  
3.SOLDERING IS ONLY A CASE WITH GND-BAR

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Recommended P/N		20453-2**T-03(20P/30P/40P)				20453-250T-03S(50P)	
PART NO.	Pos.	A	B	C	D		
20453-#20T-#2	20	9.50	10.30	12.56	16.00		
20453-#30T-#2	30	14.50	15.30	17.56	21.00		
20453-#40T-#2	40	19.50	20.30	22.56	26.00		
20453-#50T-#2S	50	24.50	25.30	27.56	31.00		

## WITHOUT PULL-BAR



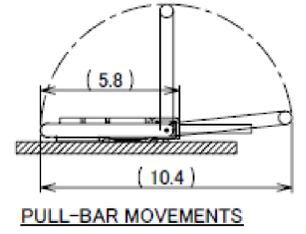
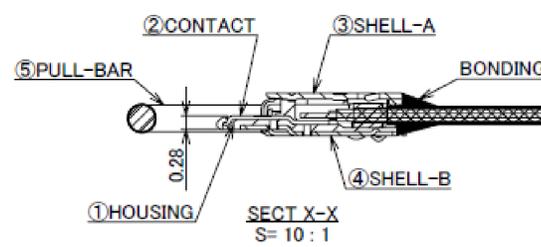
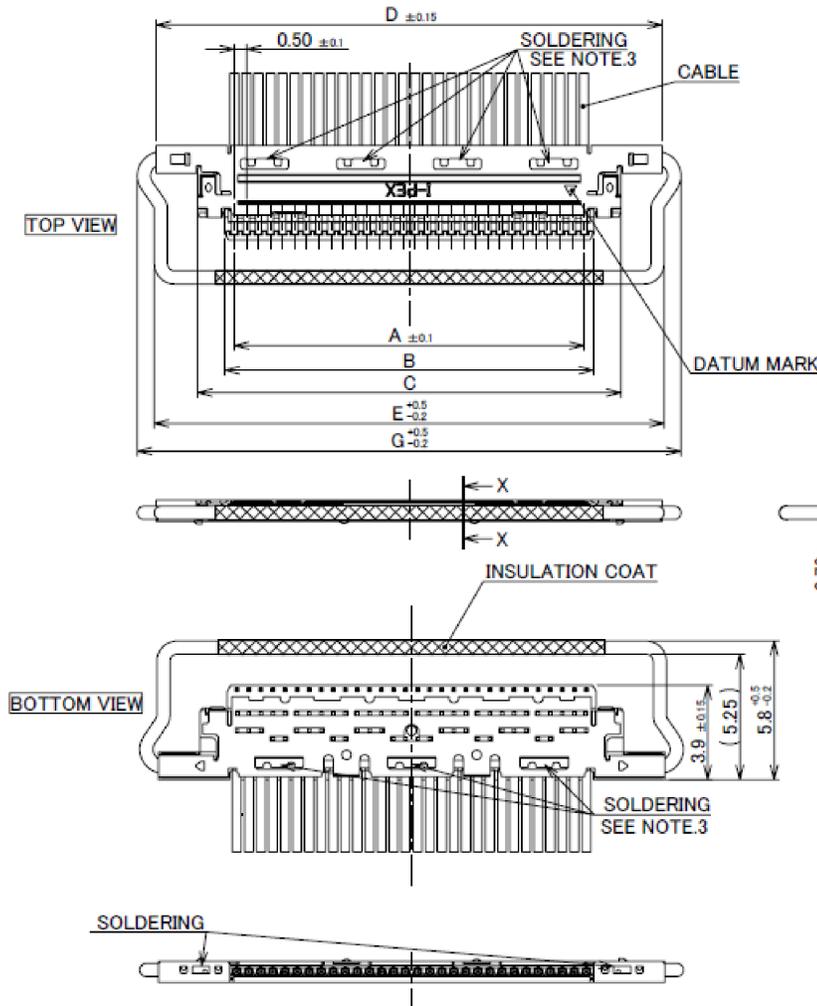
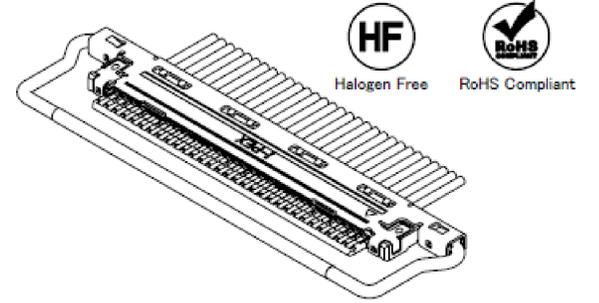
CABLE ASS'Y PART NO.	HOUSING ASS'Y PART NO.	SHELL-A PART NO.	PULL-BAR PART NO.
20453-0**T-#2#	20454-0**T-##	2574-##*	-

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# Plug for Cable Assembly

Recommended P/N		20453-2**T-03(20P/30P/40P)						20453-250T-03S(50P)	
PART NO.	Pos.	A	B	C	D	E	G		
20453-#20T-#3	20	9.50	10.30	12.56	16.00	16.15	17.55		
20453-#30T-#3	30	14.50	15.30	17.56	21.00	21.15	22.55		
20453-#40T-#3	40	19.50	20.30	22.56	26.00	26.15	27.55		
20453-#50T-#3S	50	24.50	25.30	27.56	31.00	31.15	32.55		

WITH INSULATION COAT PULL-BAR

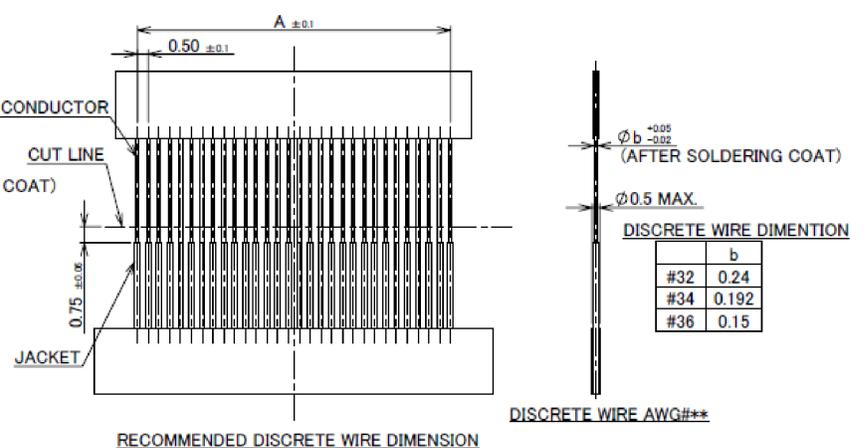
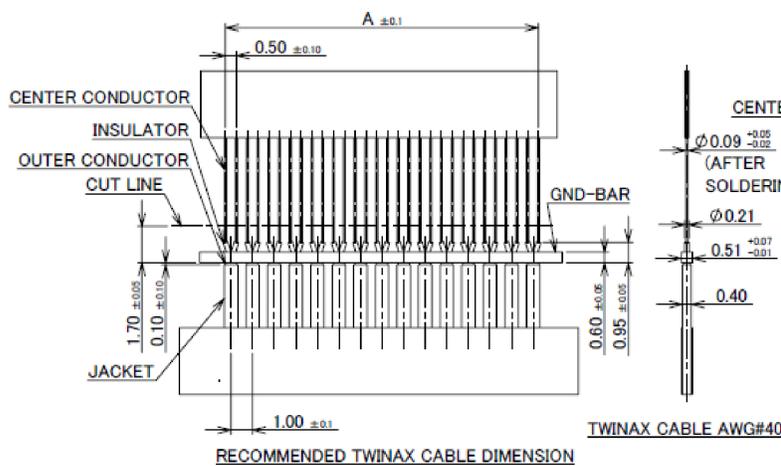
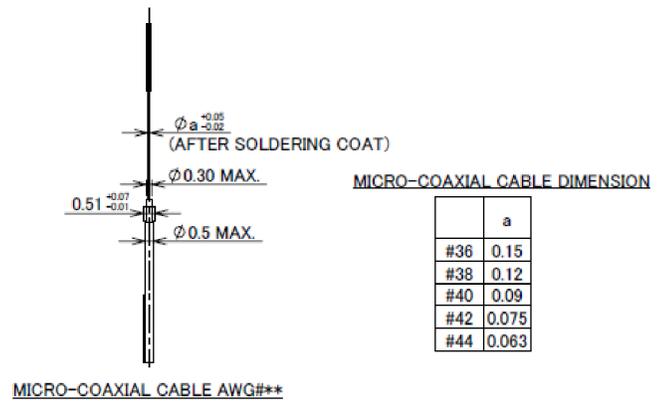
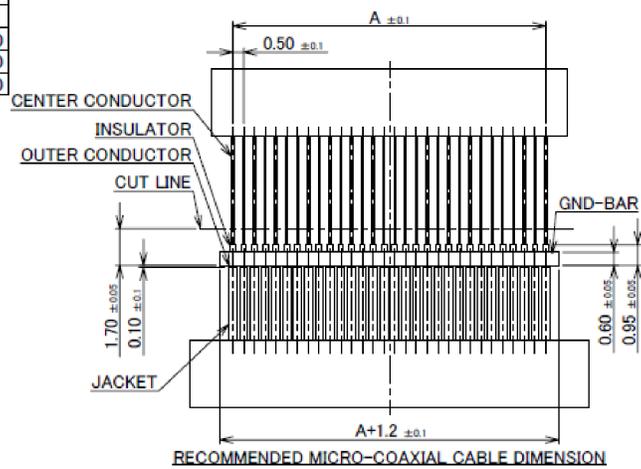


PART NO.

CABLE ASS'Y PART NO.	HOUSING ASS'Y PART NO.	SHELL-A PART NO.	PULL-BAR PART NO.
20453-0**T-#3#	20454-0**T-##	2574-##*	2576-1**00
20453-2**T-#3#	20454-2**T-##	2574-##*2	2576-1**00

Rev.34

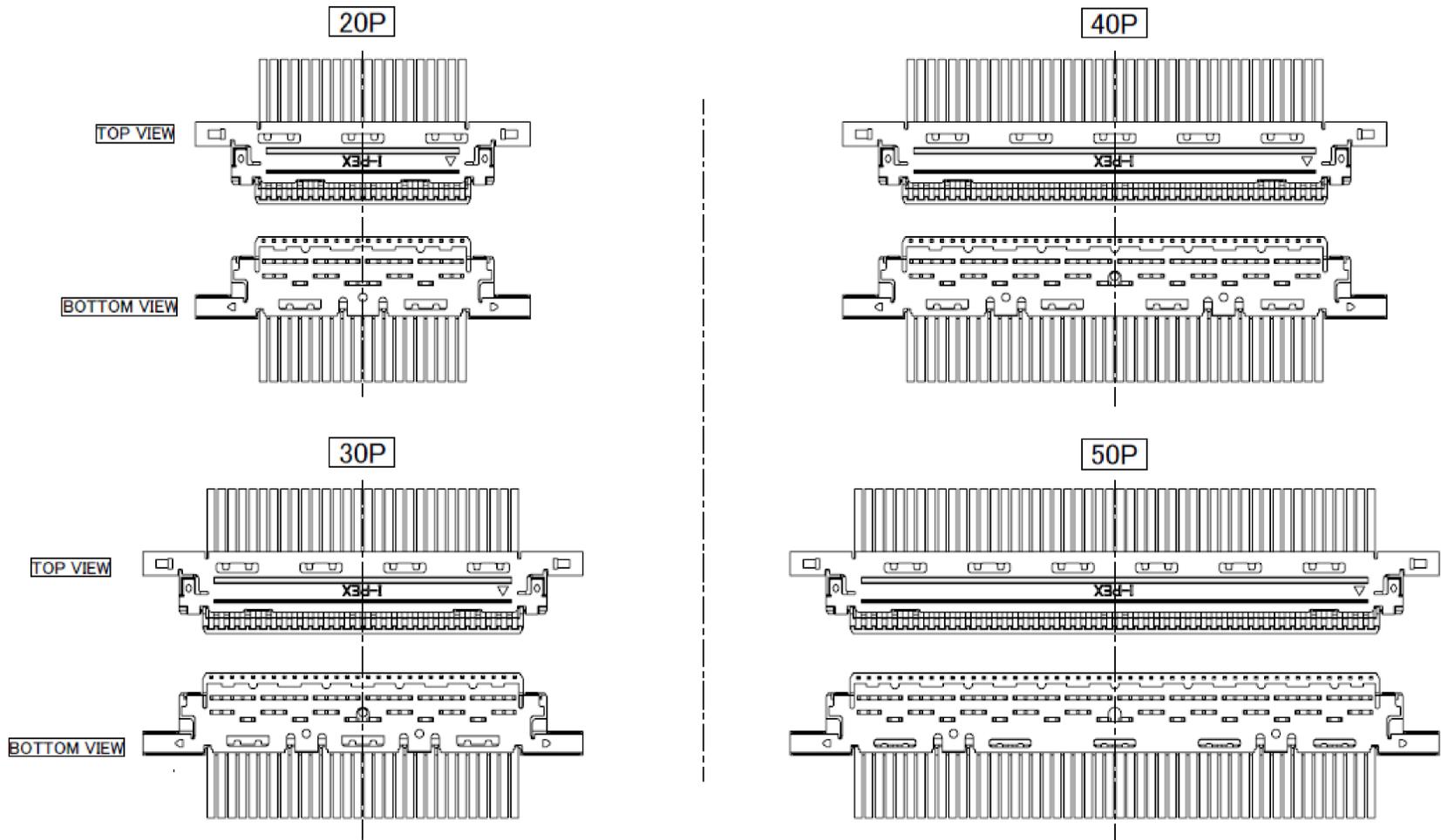
PART NO.	Pos.	A
20453-#20T-##	20	9.50
20453-#30T-##	30	14.50
20453-#40T-##	40	19.50
20453-#50T-##S	50	24.50



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# Plug for Cable Assembly

## THE EXTERNAL APPEARANCE



Rev.34

# Plug Housing Assembly

Recommended P/N	20454-2**T								
PART NO.	Pos.	A	B	C	D	E	F	G	H
20454-#20T	20	9.50	10.30	12.56	10.20	10.55	11.00	16.00	-
20454-#30T	30	14.50	15.30	17.56	15.20	15.55	16.00	21.00	5.40
20454-#40T	40	19.50	20.30	22.56	20.20	20.55	21.00	26.00	10.40

## 20454-#\*\*T : STANDARD

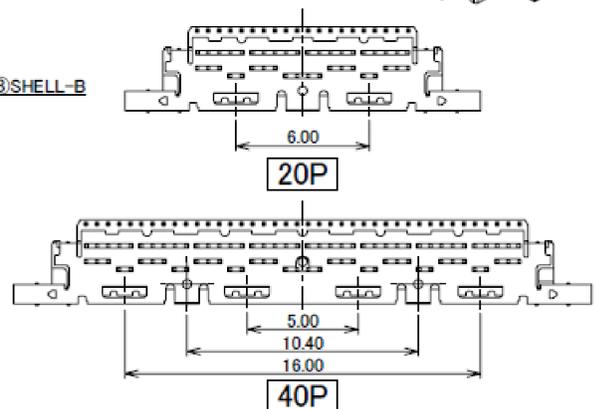
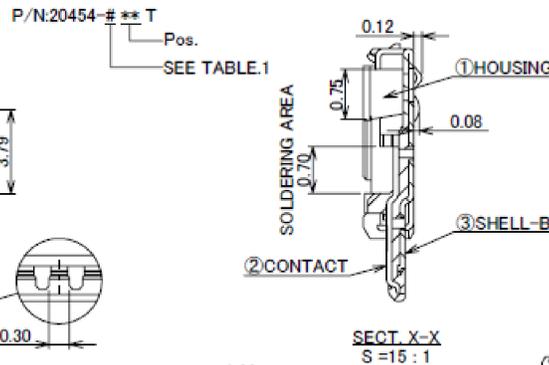
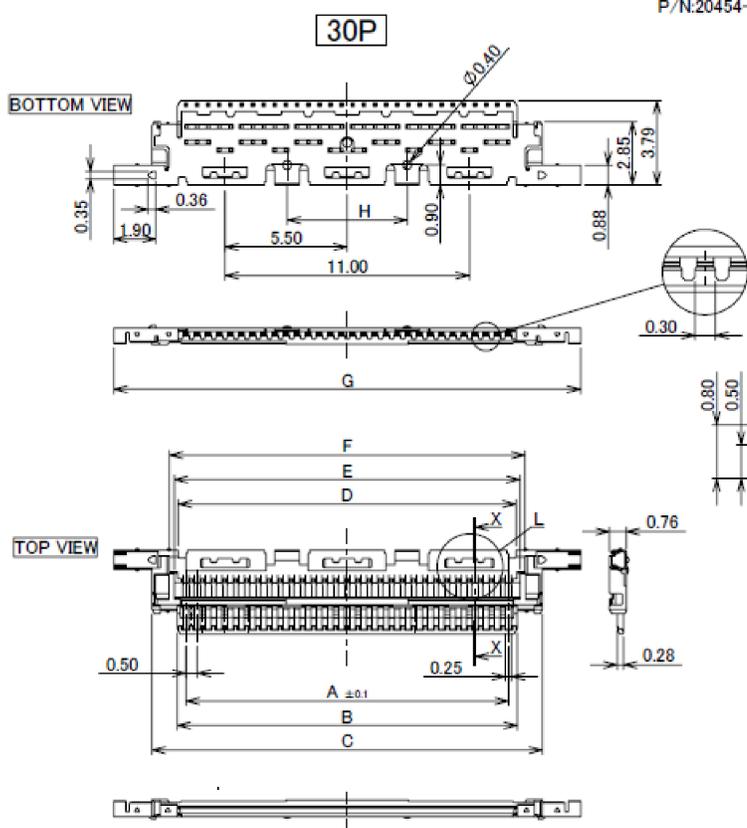


TABLE 1

PART NO.	CONTACT FINISH		SHELL-B FINISH	
	CONTACT AREA	SOLDERING AREA	TOP SIDE	BOTTOM SIDE
20454-0**T	Au 0.1 μm MIN. OVER Ni 1.00 μm MIN.	Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	Au 0.015 μm MIN. OVER Ni 1.00 μm MIN.	Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.
20454-2**T	Au 0.1 μm MIN. OVER Ni 1.00 μm MIN.	Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	Ni 1.00 μm MIN. (THERE IS THE POSSIBILITY THAT Au ATTACHES RANDOMLY)	Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.

NO.	DISCRIPTION	MATERIAL	FINISH , REMARKS
3	SHELL B	PHOSPHOR BRONZE	SEE ABOVE TABLE.1
2	CONTACT	PHOSPHOR BRONZE	SEE ABOVE TABLE.1
1	HOUSING	LCP	UL94V-0, BLACK

NOTES.

1. THIS PART IS ASSEMBLED WITH SHELL-A(P/N:2574-#\*\*) AFTER SOLDERED THE CABLE, AND IT BECOMES P/N:20453-#\*\*T-#\*\*. THIS PART IS ASSEMBLED WITH SHELL-A type-H(P/N:2699-#40) AFTER SOLDERED THE CABLE, AND IT BECOMES P/N:20508-040T-#. THIS PART IS ASSEMBLED WITH SHELL-A(P/N:2574-#\*\*) AND ALIGNMENT COVER(P/N:2658-0\*\*) AFTER SOLDERED THE CABLE, AND IT BECOMES P/N:20492-1\*\*T.

Rev.20

# Plug Housing Assembly

Recommended P/N 20454-250T-01

PART NO.	Pos.
20454-#50T-01	50

20454-#50T-01 : TYPE-i

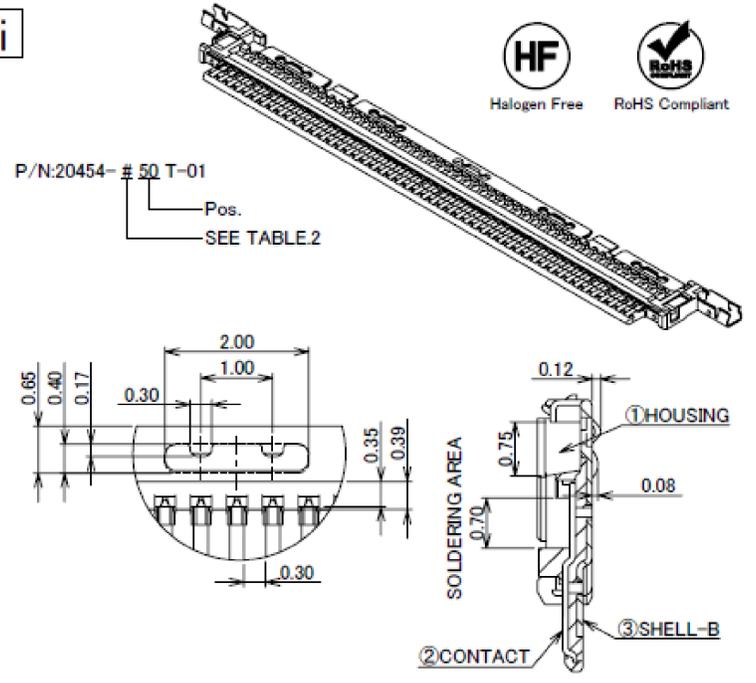
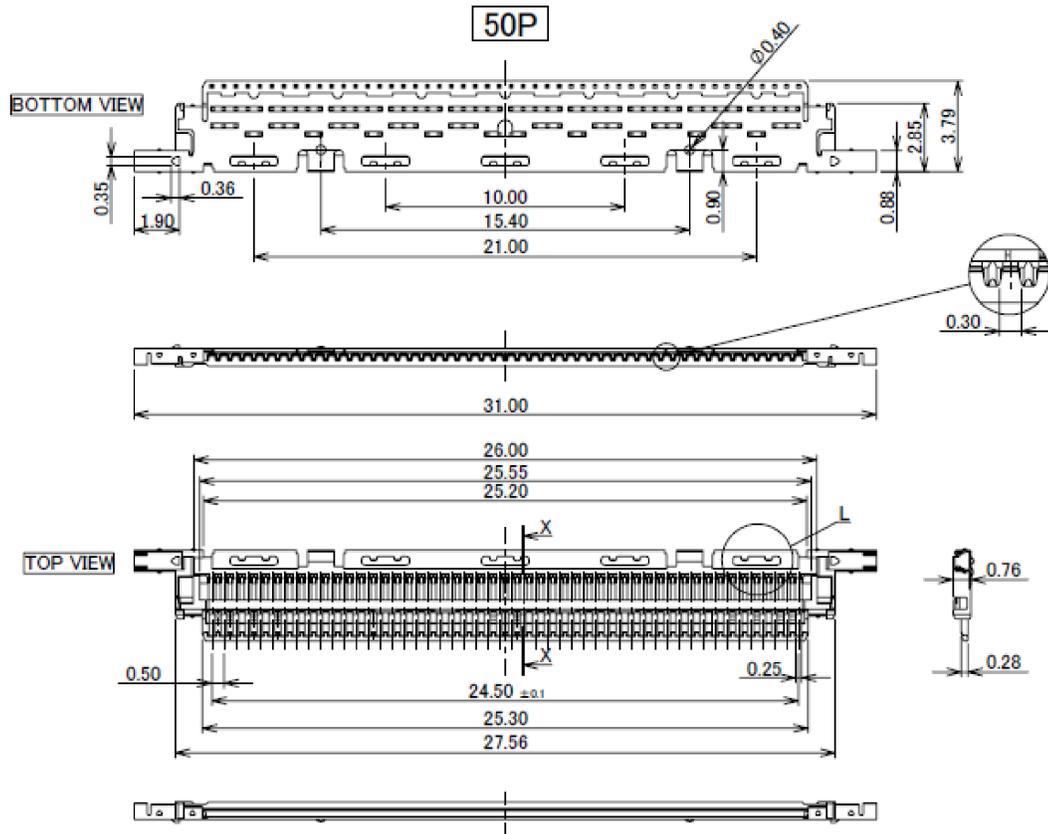


TABLE 2

PART NO.	CONTACT FINISH	SHELL-B FINISH
20454-0**T-01	CONTACT AREA : Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA : Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	TOP SIDE : Au 0.015 μm MIN. OVER Ni 1.00 μm MIN. BOTTOM SIDE : Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.
20454-2**T-01	CONTACT AREA : Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA : Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	TOP SIDE : Ni 1.00 μm MIN. (THERE IS THE POSSIBILITY THAT Au ATTACHES RANDOMLY) BOTTOM SIDE : Au 0.03 μm MIN. OVER Ni 1.00 μm MIN.

NO.	DISCRIPTION	MATERIAL	FINISH , REMARKS
3	SHELL B	PHOSPHOR BRONZE	SEE ABOVE TABLE 2
2	CONTACT	PHOSPHOR BRONZE	SEE ABOVE TABLE 2
1	HOUSING	LCP	UL94V-0, BLACK

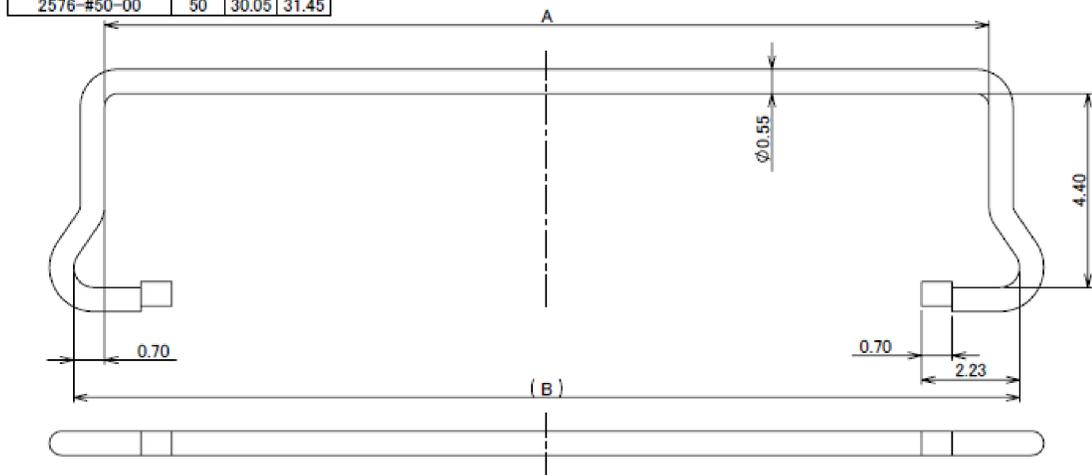
Rev.20

# Pull Bar

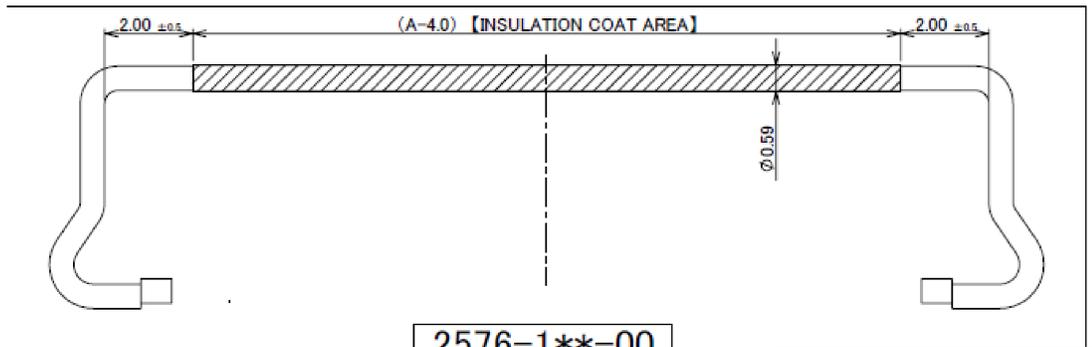
Recommended P/N 2576-1\*\*-00

PART NO.	Pos.	A	B
2576-#20-00	20	15.05	16.45
2576-#30-00	30	20.05	21.45
2576-#40-00	40	25.05	26.45
2576-#50-00	50	30.05	31.45

2576-0\*\*-00



P/N: 2576-#\*\*-00  
 POS.  
 0 : WITHOUT INSULATION COAT  
 1 : WITH INSULATION COAT



2576-1\*\*-00

NO.	DISCRIPTION	MATERIAL	FINISH , REMARKS
1	PULL BAR	SUS	-

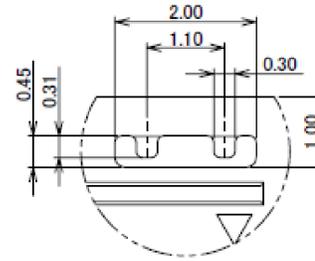
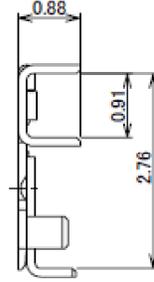
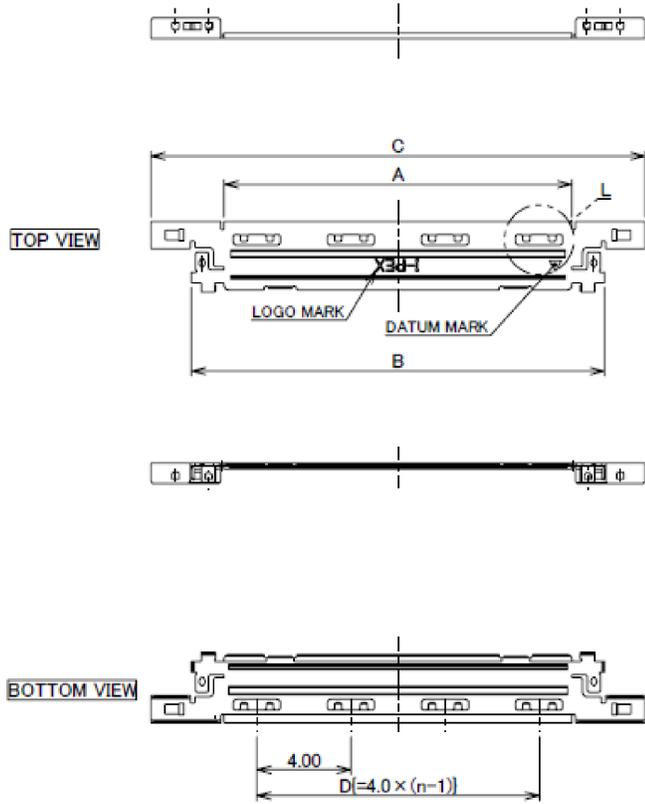
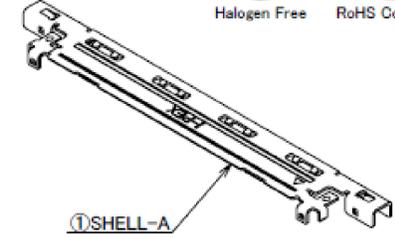
Rev.15

# Shell-A

Recommended P/N		2574-0**2			
PART NO.	Pos.	A	B	C	D
2574-#20#	20	9.78	12.56	16.00	8.00 [= 4.0 × (3-1)]
2574-#30#	30	14.78	17.56	21.00	12.00 [= 4.0 × (4-1)]
2574-#40#	40	19.78	22.56	26.00	16.00 [= 4.0 × (5-1)]
2574-#50#	50	24.78	27.56	31.00	20.00 [= 4.0 × (6-1)]



P/N:2574-#\*\*#  
 SEE TABLE.1  
 Pos.  
 0 : WITH DATUM MARK  
 1 : WITHOUT DATUM MARK



DETAIL L  
S= 15 : 1

TABLE.1

PART NO.	SHELL-A FINISH
2574-***	TOP SIDE : Au 0.05 μm MIN. OVER Ni 1.00 μm MIN. BOTTOM SIDE : Au 0.015 μm MIN. OVER Ni 1.00 μm MIN.
2574-***2	TOP SIDE : Au 0.03 μm MIN. OVER Ni 1.00 μm MIN. BOTTOM SIDE : Ni 1.00 μm MIN. (THERE IS THE POSSIBILITY THAT Au ATTACHES RANDOMLY)

NO.	DISCRIPTION	MATERIAL	FINISH , REMARKS
1	SHELL A	PHOSPHOR BRONZE	SEE ABOVE TABLE.1

Rev.15

# Receptacle Assembly

Recommended P/N		20455-0**E-76 (30P/40P/50P)					20455-A20E-76 (20P)	
PART NO.	Pos.	A	B	C	D	U		
20455-020E-#2	20	9.50	11.30	16.25	14.47	10.20		
20455-030E-##	30	14.50	16.30	21.25	19.47	15.20		
20455-040E-##	40	19.50	21.30	26.25	24.47	20.20		
20455-050E-##	50	24.50	26.30	31.25	29.47	25.20		

P/N:20455-0\*\*E-##  
 SEE TABLE.1  
 Pos.

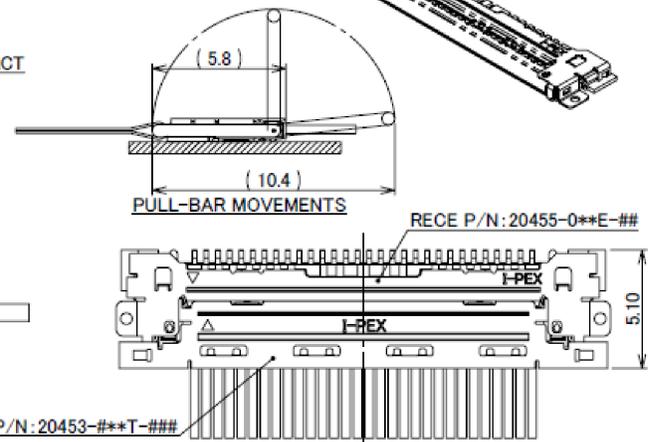
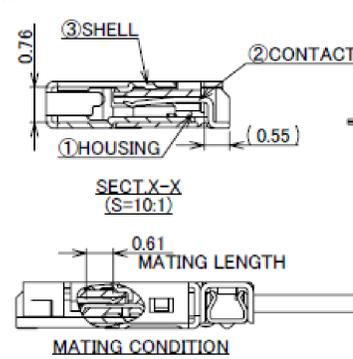
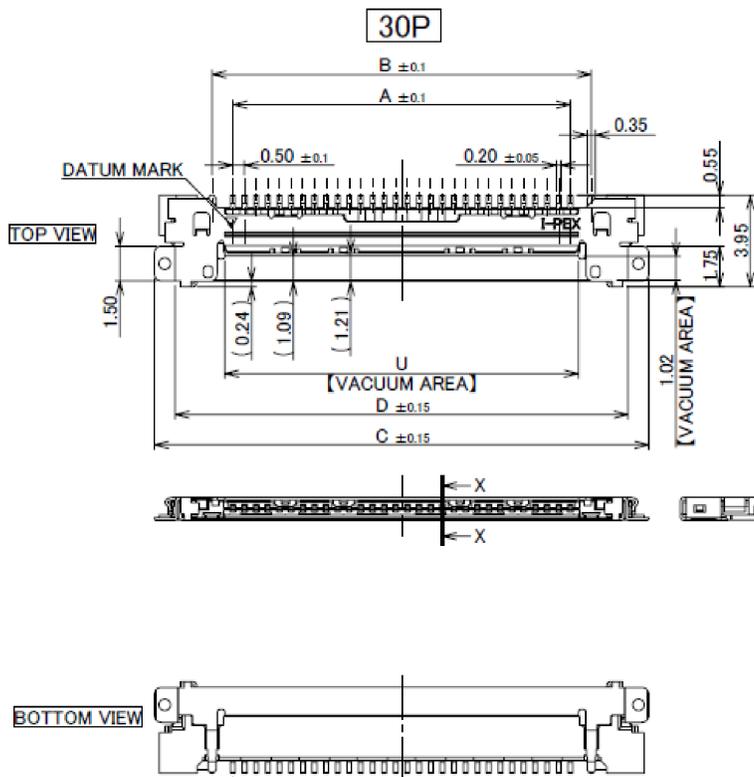


TABLE.1

PART NO.	DATUM MARK	CONTACT FINISH	SHELL FINISH
20455-0**E-02	WITH	CONTACT AREA Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	Au 0.02 μm MIN. OVER Ni 1.00 μm MIN.
20455-0**E-66	WITH	CONTACT AREA Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	Au 0.01 μm MIN. OVER Ni 1.00 μm MIN.
20455-0**E-76	WITHOUT	CONTACT AREA Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	

NO.	DISCRIPTION	MATERIAL	FINISH , REMARKS
3	SHELL	PHOSPHOR BRONZE	SEE ABOVE TABLE.1
2	CONTACT	PHOSPHOR BRONZE	SEE ABOVE TABLE.1
1	HOUSING	LCP	UL94V-0, BLACK

Rev.31

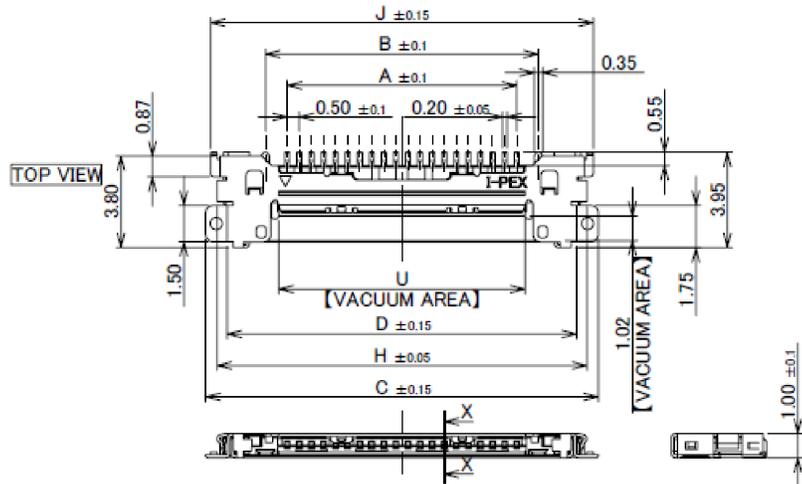
# Receptacle Assembly

Recommended P/N	20455-0**E-76 (30P/40P/50P)								20455-A20E-76 (20P)	
PART NO.	Pos.	A	B	C	D	H	J	U		
20455-A20E-##	20	9.50	11.30	16.25	14.47	15.32	15.84	10.20		

P/N:20455-A20E-##  
A: TYPE-A  
SEE TABLE.2



## TYPE-A



## BOTTOM VIEW

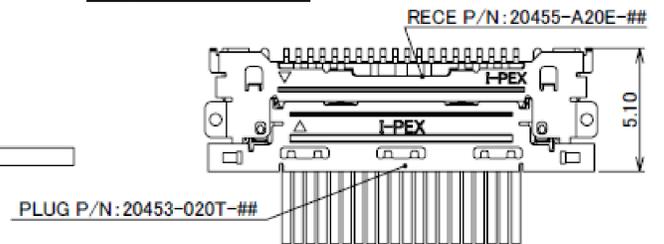
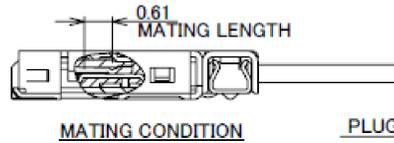
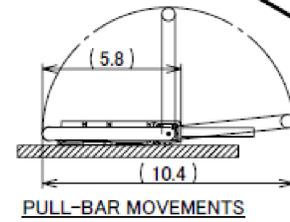
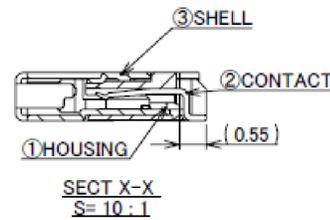
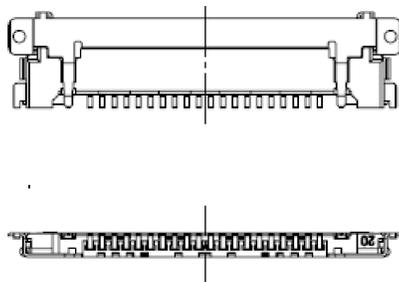


TABLE.2

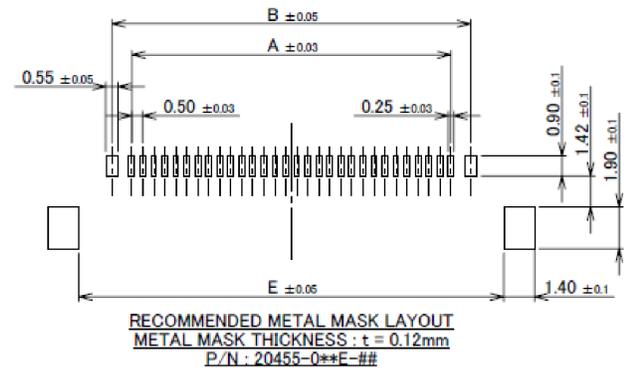
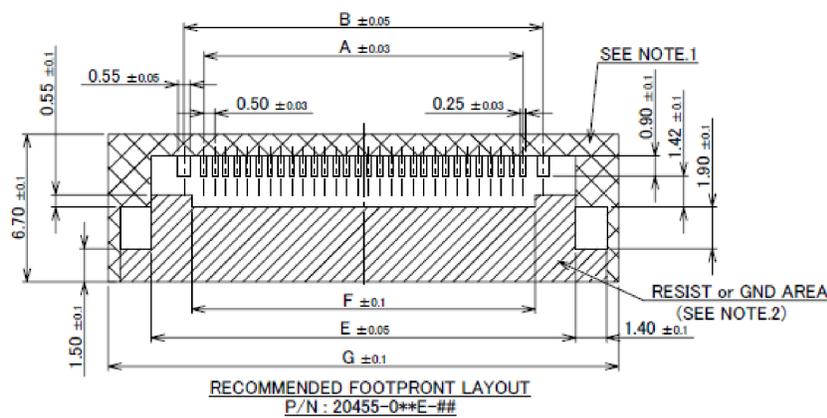
PART NO.	DATUM MARK	CONTACT FINISH	SHELL FINISH
20455-A20E-02	WITH	CONTACT AREA Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	Au 0.02 μm MIN. OVER Ni 1.00 μm MIN.
20455-A20E-12	WITHOUT	CONTACT AREA Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	Au 0.01 μm MIN. OVER Ni 1.00 μm MIN.
20455-A20E-66	WITH	CONTACT AREA Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	Au 0.01 μm MIN. OVER Ni 1.00 μm MIN.
20455-A20E-76	WITHOUT	CONTACT AREA Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	Au 0.01 μm MIN. OVER Ni 1.00 μm MIN.

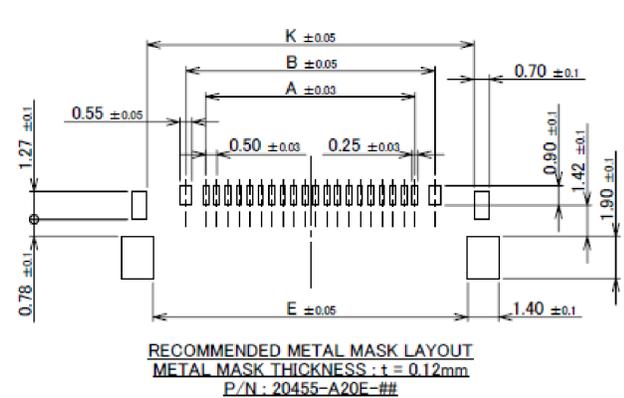
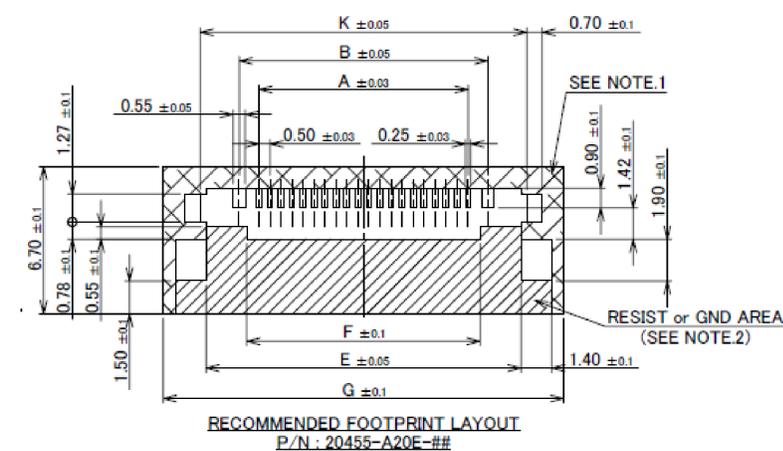
NO.	DISCRIPTION	MATERIAL	FINISH, REMARKS
3	SHELL	PHOSPHOR BRONZE	SEE ABOVE TABLE.1
2	CONTACT	PHOSPHOR BRONZE	SEE ABOVE TABLE.1
1	HOUSING	LCP	UL94V-0, BLACK

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PART NO.	Pos.	A	B	E	F	G	H	J	K
20455-#20E-##	20	9.50	11.30	14.30	10.60	18.20	15.32	15.84	14.84
20455-030E-##	30	14.50	16.30	19.30	15.60	23.20	-	-	-
20455-040E-##	40	19.50	21.30	24.30	20.60	28.20	-	-	-
20455-050E-##	50	24.50	26.30	29.30	25.60	33.20	-	-	-



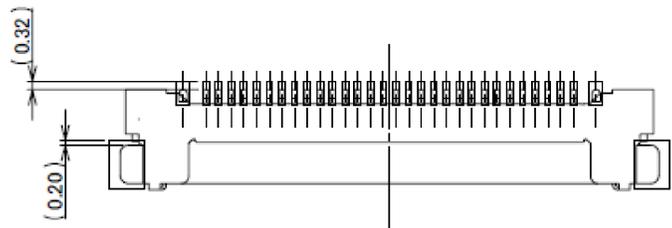
## TYPE-A



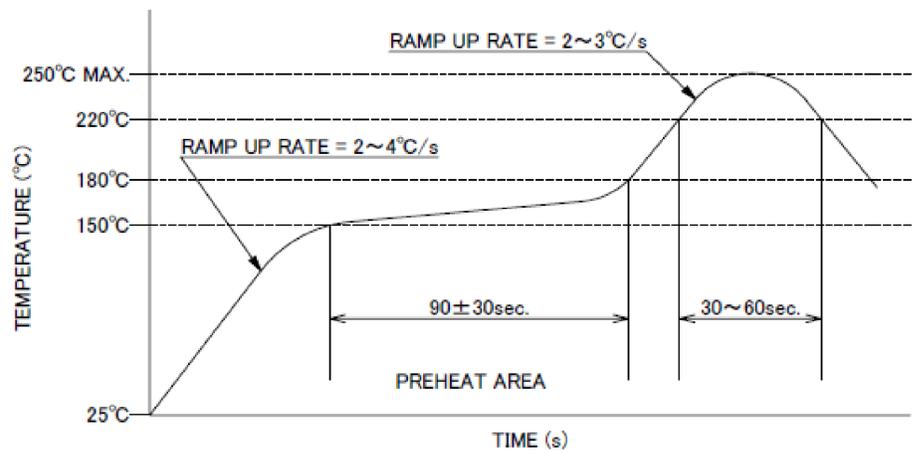
NOTES.  
1. IN CASE OF PLUG WITH PULL-BAR, DO NOT MOUNT ANOTHER COMPONENT IN THIS AREA.  
2. SOLDER RESIST MUST BE APPLIED TO THIS AREA.

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# Receptacle Assembly

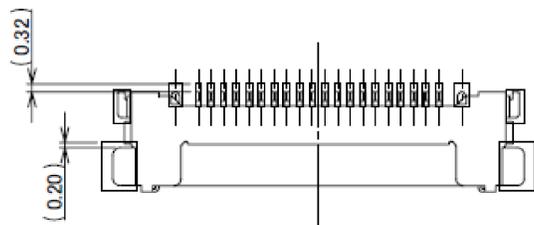


CONNECTOR ON RECOMMENDED FOOTPRINT PATTERN  
P/N : 20455-0\*\*E-##



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

**TYPE-A**



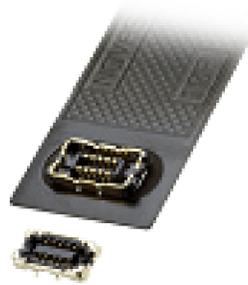
CONNECTOR ON RECOMMENDED FOOTPRINT PATTERN  
P/N : 20455-A20E-##

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ITEMS	SPECIFICATION
APPLICABLE CABLE	MICRO-COAXIAL CABLE : AWG# 44, 42, 40, 38, 36 DISCRETE WIRE : AWG# 36, 34, 32 TWINAX CABLE : AWG# 40
RATING VOLTAGE	100V AC (PER CONTACT PIN)
RATING AMPERAGE (FOR CONTACT)	0.1A AC/DC [AWG#44] PER CONTACT PIN/UP TO 50 CONTACTS 0.24A AC/DC [AWG#42] PER CONTACT PIN/UP TO 50 CONTACTS 0.3A AC/DC [AWG#40] PER CONTACT PIN/UP TO 50 CONTACTS 0.5A AC/DC [AWG#38] PER CONTACT PIN/UP TO 14 CONTACTS 0.8A AC/DC [AWG#36] PER CONTACT PIN/UP TO 10 CONTACTS 1.0A AC/DC [AWG#34] PER CONTACT PIN/UP TO 6 CONTACTS 1.0A AC/DC [AWG#32] PER CONTACT PIN/UP TO 6 CONTACTS TESTING BY A REAL MACHINE IS RECOMMENDED BECAUSE TEMPERATURE RISE MAY AFFECTED BY ACTUAL SITUATION.
OPERATING TEMPERATURE	233~358K(-40°C~+85°C)
OPERATING HUMIDITY	85% R.H. MAX.(NON-CONDENSING)
CONTACT RESISTANCE	INITIAL : 140mohm MAX.(AWG#32) / AFTER TEST : <math>\triangle</math>40mohm MAX. 180mohm MAX.(AWG#34) 275mohm MAX.(AWG#36) 360mohm MAX.(AWG#38) 600mohm MAX.(AWG#40) 700mohm MAX.(AWG#42) 1080mohm MAX.(AWG#44)
GROUND SHELL RESISTANCE	INITIAL : 50mohm MAX. / AFTER TEST : <math>\triangle</math>40mohm MAX.
INSULATION RESISTANCE	INITIAL : 1000Mohm MIN. / AFTER TEST : 500Mohm MIN.
DIELECTRIC WITHSTANDING VOLTAGE	AC250V 1min
DURABILITY	30 CYCLES
MATING FORCE (INITIAL / AFTER TEST)	20P : 9.45N MAX. 30P : 12.15N MAX. 40P : 16.20N MAX. 50P : 20.25N MAX.
UNMATING FORCE (INITIAL / AFTER TEST)	20P : 2.0N MIN. 30P : 3.0N MIN. 40P : 4.0N MIN. 50P : 5.0N MIN.
CABLE RETENTION FORCE	20P : 9.80N MIN. 30P : 14.70N MIN. 40P : 19.60N MIN. 50P : 24.50N MIN.
COPLANARITY	0.10 MAX.
PRODUCT SPECIFICATION	PRS-1427
TEST REPORT	TR-08047 (20455-##E-#2) TR-13084 (20455-##E-#6, 20455-0**E-#8)
PACKING STANDARD	300-643
INSTRUCTION MANUAL	HIM-08004
APPEARANCE CRITERIA NO.	QLS-A**

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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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