

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



- ✓ High-data-rate transfer, ideal for Thunderbolt™ 3 (20 Gbps/lane) applications
- ✓ Mechanical locking bar prevents incomplete mating and back-out/un-mating
- ✓ Multiple connector options with I-PEX VS series

Pin counts:

Range	Up to 50
Available	20, 30, 40, 50

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

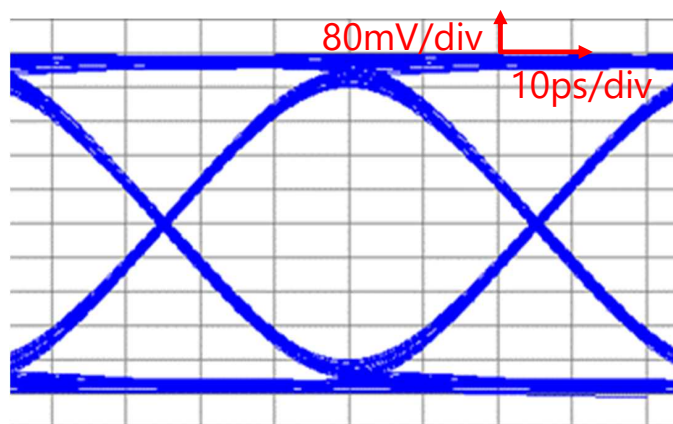
Mating type		Horizontal
Wire (FPC) pitch (mm)		0.5
Board pitch (mm)		0.5
Mated size (mm)	Height	1.0 +/- 0.1
	Width Formula	7.55 + (0.5*?p)
	Depth	5.80
Wiping length (mm)		0.61
Applicable wire (AWG#)	Micro-coax for signals	45Ω : #36 or smaller 50Ω : #38 or smaller
	Twincoax	#40
	Discrete	#32 or smaller
Contact point		Top
Performance (Reference only)		Thunderbolt 3 (20 Gbps/lane) PCIe Gen 4 (16 GT/s) USB 3.1 Gen 2 (10 Gbps) eDP HBR 3 (8.1 Gbps)

High-Data-Rate Transfer, Ideal for Thunderbolt 3 (20 Gbps/lane) Applications

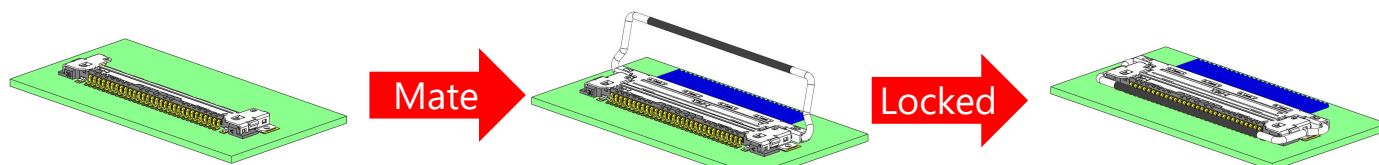
Thunderbolt 3 (20 Gbps/lane)

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.

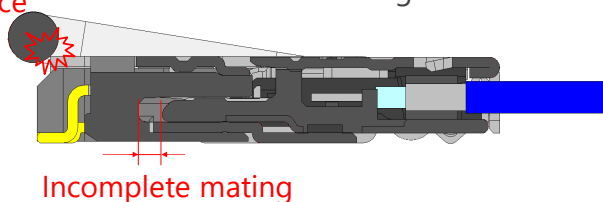


Mechanical Locking Bar Prevents Incomplete Mating and Back-out/Un-mating



Interference

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



Incomplete mating



Complete mating

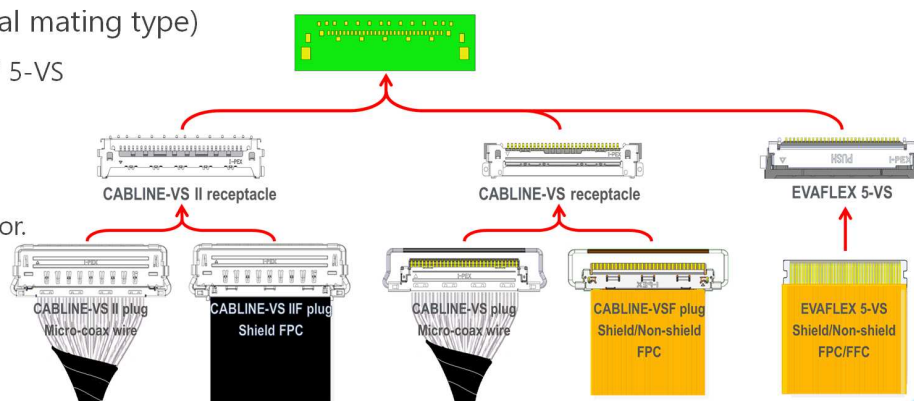
Multiple Connector Options with I-PEX VS Series

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:

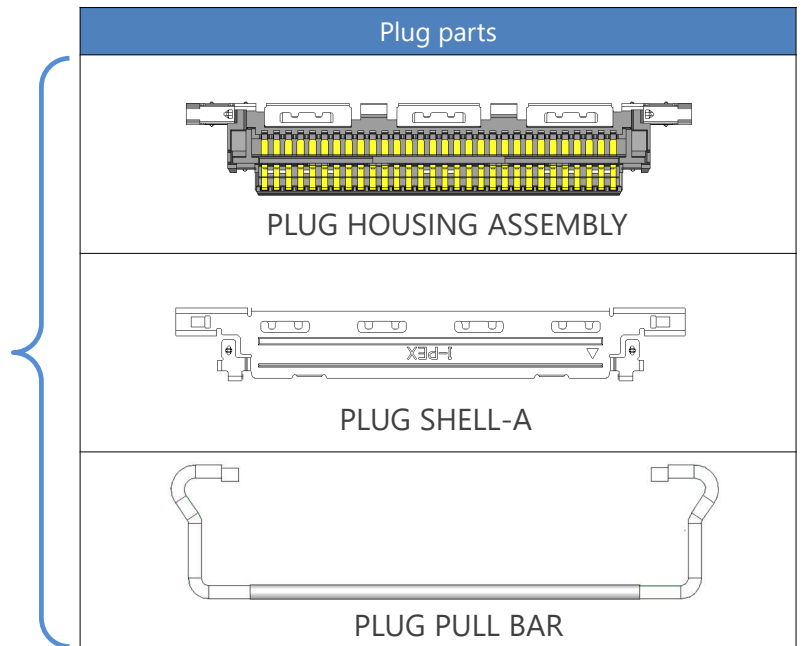
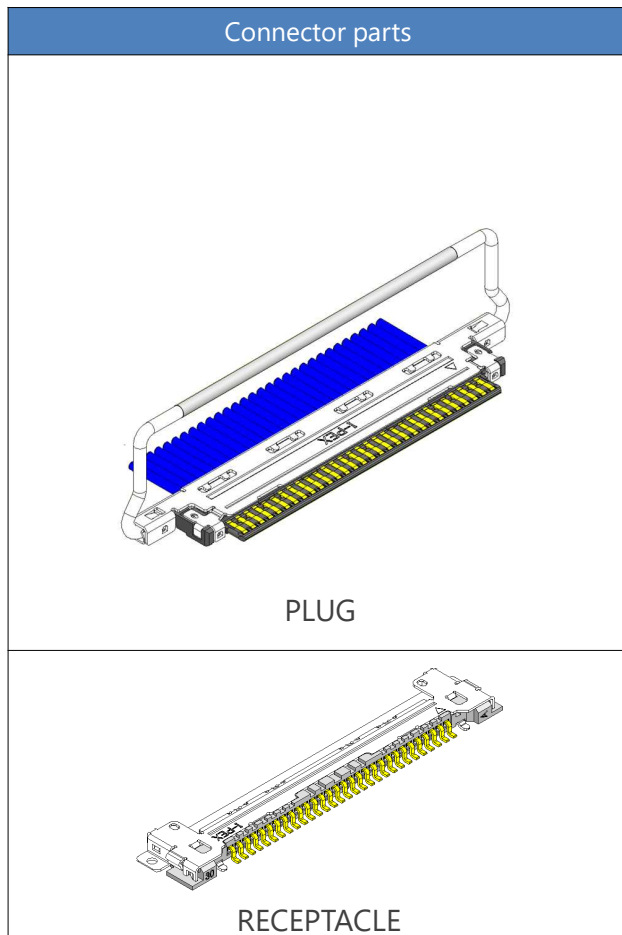
Has #1 share in the Notebook PC panel connector market as VESA standard connector.



CABLINE[®]-VS

Component Parts Detail

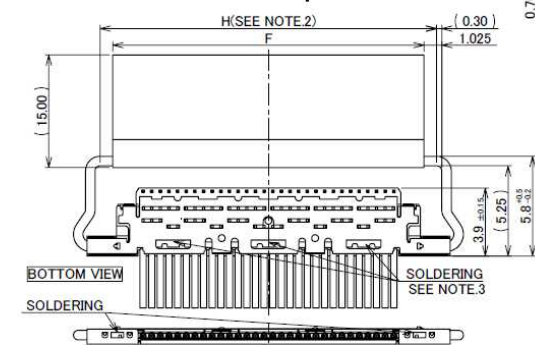
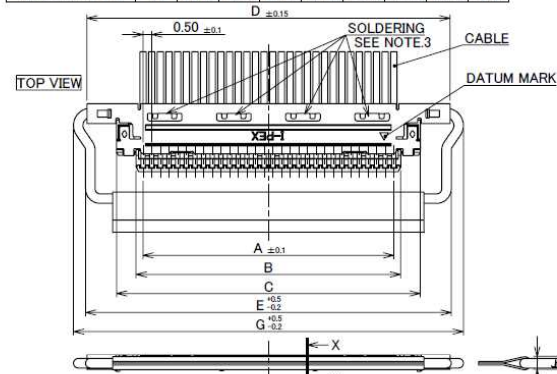
Component Parts:



Plug for Cable Assembly :

Recommended P/N	20453-2**T-03(20P/30P/40P)	20453-250T-03S(50P)
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PART NO.	Pos.	A	B	C	D	E	F	G	H
20453-#30T-#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



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

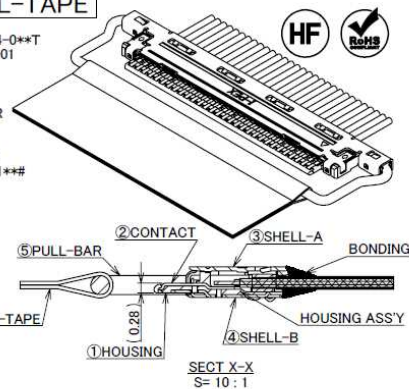
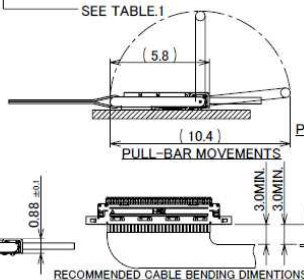
WITH PULL-BAR & PULL-TAPE

NOTHING : HOUSING ASS'Y P/N 20454-0**T
S : HOUSING ASS'Y P/N 20454-0**T-01

1 : WITH PULL-BAR P/N 2576-0***
2 : WITHOUT PULL-BAR
3 : WITH INSULATION COAT PULL-BAR P/N 2576-1***

0 : WITH DATUM MARK P/N 2574-0***
1 : WITHOUT DATUM MARK P/N 2574-1***

SEE TABLE.1



PART NO.			
CABLE ASSY PART NO.	HOUSING ASSY PART NO.	SHELL-A PART NO.	PULL-BAR PART NO.
20453-0**T-#1*	20454-0**T-##	2574-***	2576-0***
20453-2**T-#1*	20454-2**T-##	2574-***2	2576-0***

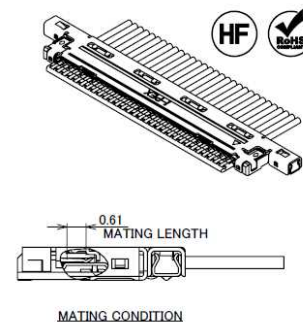
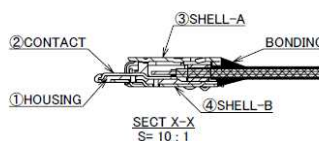
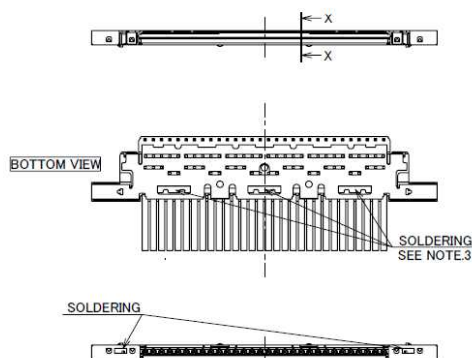
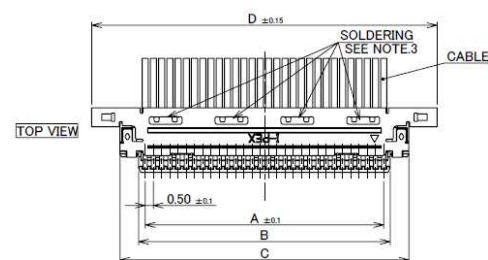
TABLE.1

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.	TOP SIDE Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	TOP SIDE Au 0.015 μm MIN. OVER Ni 1.00 μm MIN.
	SOLDERING AREA Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	BOTTOM 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.	TOP SIDE Au 0.03 μm MIN. OVER Ni 1.00 μm MIN.	TOP SIDE Ni 1.00 μm MIN.(THERE IS THE POSSIBILITY THAT Au ATTACHES RANDOMLY)
	SOLDERING AREA Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	BOTTOM 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.
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	
NO.	DISCRIPTION	MATERIAL	FINISH, REMARKS

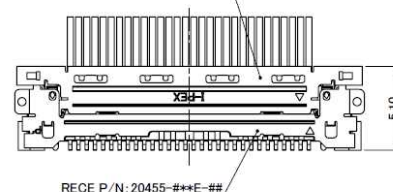
Rev.31

Recommended P/N	20453-2**T-03(20P/30P/40P)	20453-250T-03S(50P)
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WITHOUT PULL-BAR



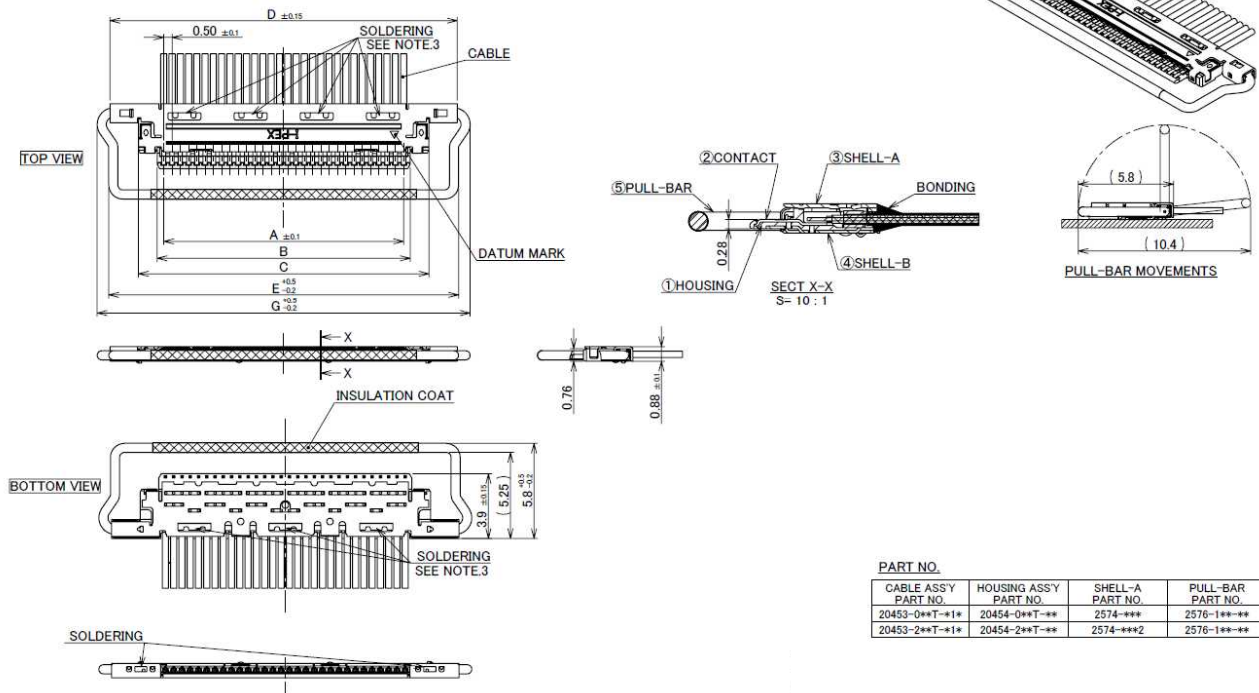
PLUG P/N:20453-#**T-#2#



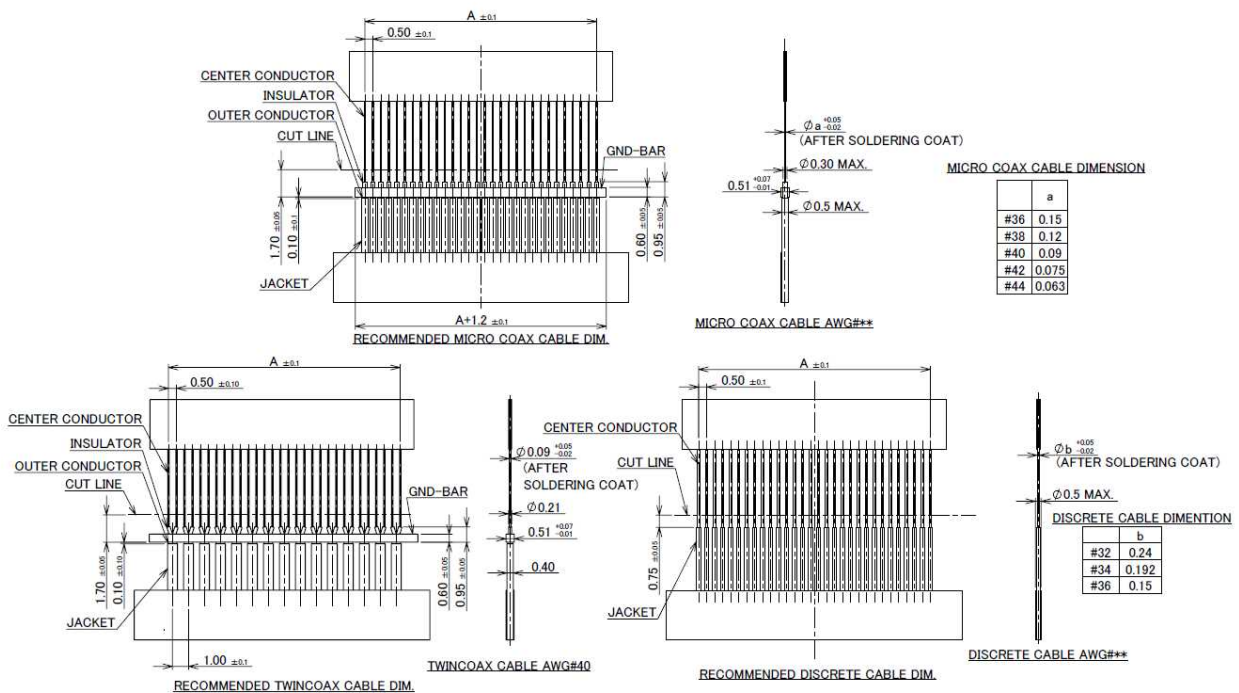
PART NO.			
CABLE ASS'Y PART NO.	HOUSING ASS'Y PART NO.	SHELL-A PART NO.	PULL-BAR PART NO.
20453-0**T-#2*	20454-0**T-#*	2574-***	-
20453-2**T-#2*	20454-2**T-#*	2574-***2	-

Rev.31

WITH INSULATION COAT PULL-BAR

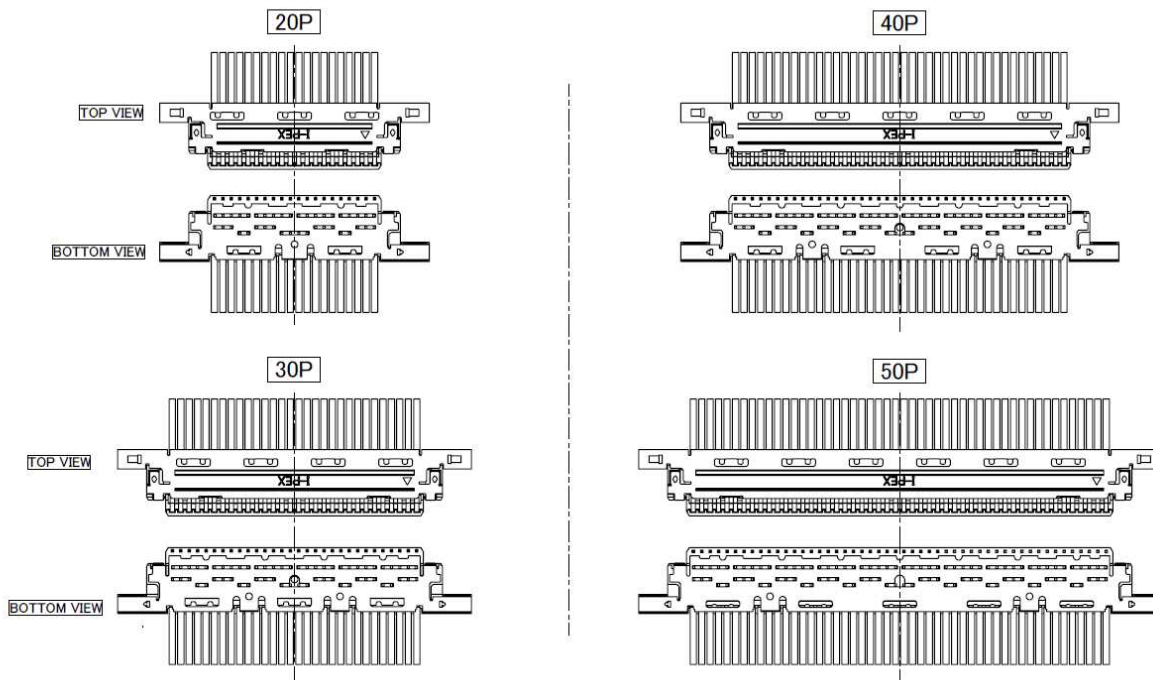


Rev.31



Rev.31

THE EXTERNAL APPEARANCE



Rev.31

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

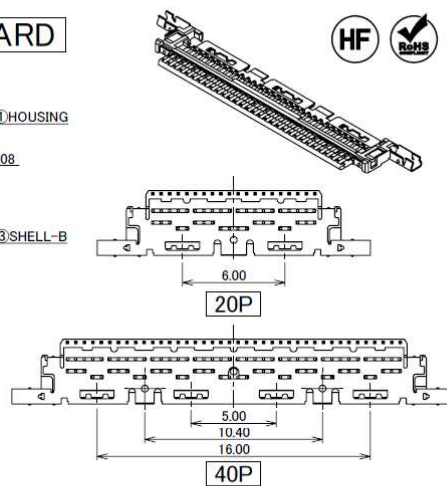
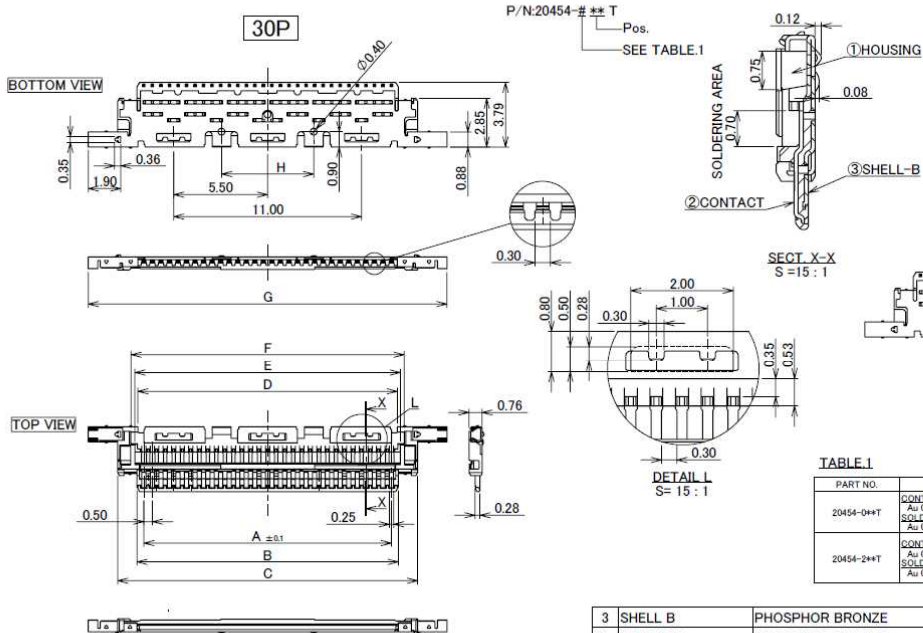


TABLE.1

PART NO.	CONTACT FINISH	SHELL-B FINISH
20454-04H7	CONTACT AREA Au 0.15 μ m MIN. OVER N 1.00 μ m MIN. SOLDERING AREA Au 0.05 μ m MIN. OVER N 1.00 μ m MIN.	TOP SIDE Au 0.015 μ m MIN. OVER N 1.00 μ m MIN. BOTTOM SIDE Au 0.05 μ m MIN. OVER N 1.00 μ m MIN.
20454-29H7	CONTACT AREA Au 0.1 μ m MIN. OVER N 1.00 μ m MIN. SOLDERING AREA Au 0.05 μ m MIN. OVER N 1.00 μ m MIN.	TOP SIDE N 1.00 μ m MIN. (THERE IS THE POSSIBILITY THAT AU ATTACHES RANDOMLY) BOTTOM SIDE Au 0.05 μ m MIN. OVER N 1.00 μ m MIN.

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

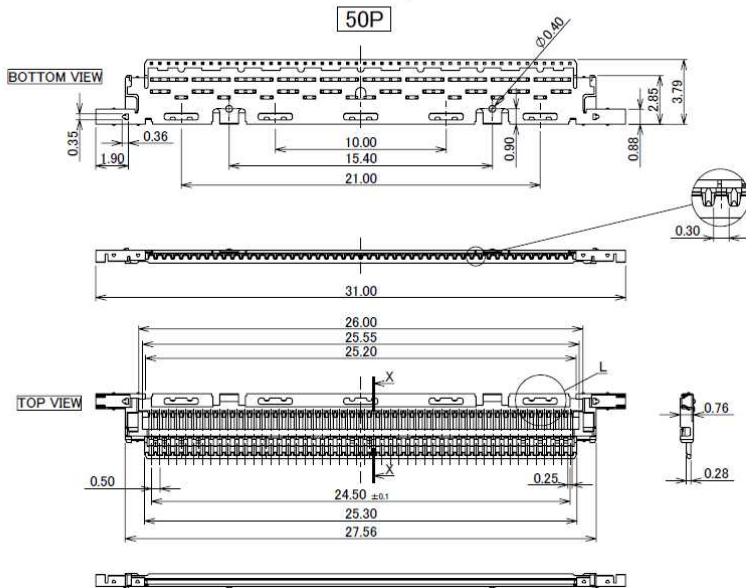
NOTES.

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:2699-4#) 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.19

Recommended P/N		20454-250T-01
PART NO.	Pos.	
20454-#50T-01	50	

20454-#50T-01 : TYPE-i



P/N:20454-#50 T-01
Pos.
SEE TABLE 2

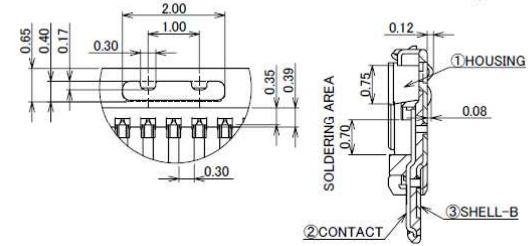


TABLE 2

PART NO.	CONTACT FINISH	SHELL-B FINISH
20454-0**T-01	CONTACT AREA Au 0.1 μm MIN. OVER Ni 1.00 μm MIN.	TOP SIDE Au 0.013 μm MIN. OVER Ni 1.00 μm MIN.
	SOLDERING AREA Au 0.05 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.	TOP SIDE Ni 1.00 μm MIN. (THERE IS THE POSSIBILITY THAT Au ATTACHES RANDOMLY)
	SOLDERING AREA Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	BOTTOM SIDE Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.

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

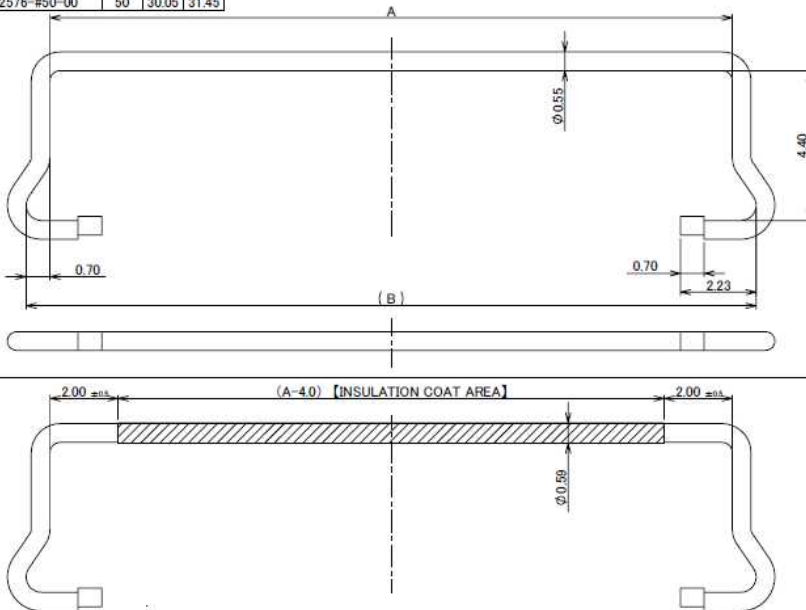
Rev.19

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

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

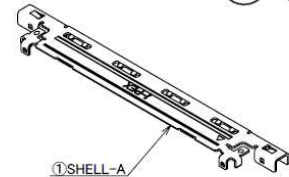
Rev.14

Shell-A :

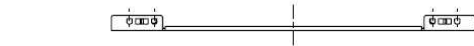
Recommended P/N		2574-0**2			
PART NO.	Pos.	A	B	C	D
2574-#20#	20	9.78	12.56	16.00	8.00 [= 4.0 × (3-1)]
2574-#30#	30	14.78	17.56	21.00	12.00 [= 4.0 × (4-1)]
2574-#40#	40	19.78	22.56	26.00	16.00 [= 4.0 × (5-1)]
2574-#50#	50	24.78	27.56	31.00	20.00 [= 4.0 × (6-1)]



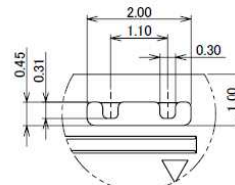
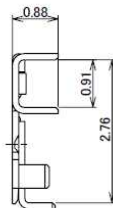
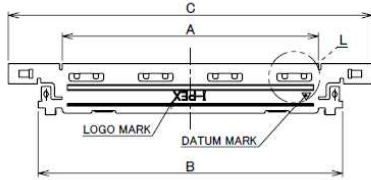
P/N:2574-#**#
SEE TABLE.1
Pos.
0 : WITH DATUM MARK
1 : WITHOUT DATUM MARK



①SHELL-A



TOP VIEW



DETAIL L
S= 15 : 1



BOTTOM VIEW

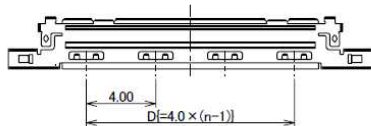


TABLE.1

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)

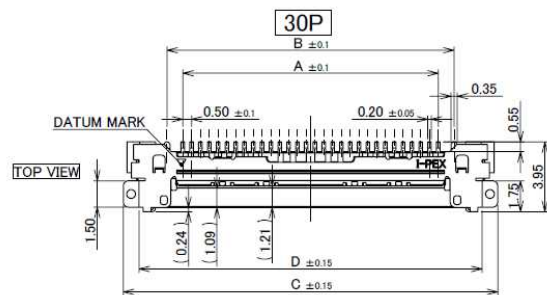
1	SHELL A	PHOSPHOR BRONZE	SEE ABOVE TABLE.1
NO.	DISCRIPTION	MATERIAL	FINISH , REMARKS

Rev.14

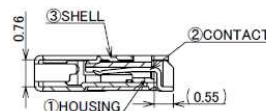
Receptacle Assembly :

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

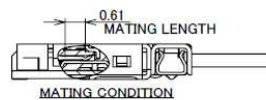
P/N:20455-0**E-##
SEE TABLE.1
Pos.



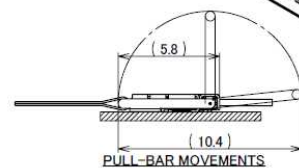
TOP VIEW



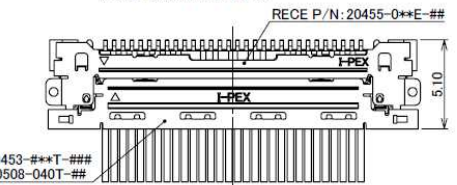
SECT X-X
(S=10:1)



MATING CONDITION



PULL-BAR MOVEMENTS



RECE P/N: 20455-0**E-##

BOTTOM VIEW

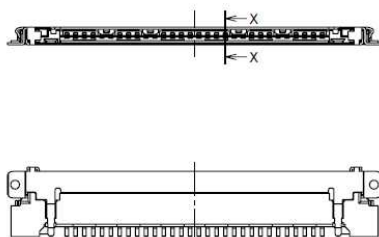


TABLE.1

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-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.
20455-0**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.	Au 0.01 μm MIN. OVER Ni 1.00 μm MIN.

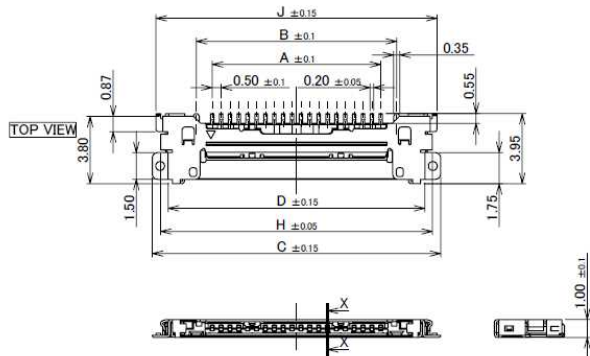
3	SHELL	PHOSPHOR BRONZE	SEE ABOVE TABLE.1
2	CONTACT	PHOSPHOR BRONZE	SEE ABOVE TABLE.1
1	HOUSING	LCP	UL94V-0, BLACK
NO.	DISCRIPTION	MATERIAL	FINISH , REMARKS

Rev.28

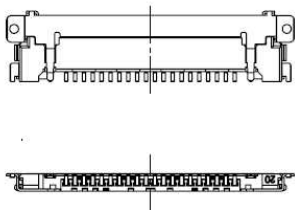
Recommended P/N 20455-0**E-76 (30P/40P/50P) 20455-A20E-76 (20P)

PART NO.	Pos.	A	B	C	D	H	J
20455-A20E-##	20	9.50	11.30	16.25	14.47	15.32	15.84

TYPE-A



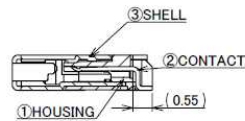
BOTTOM VIEW



P/N:20455-A20E-##

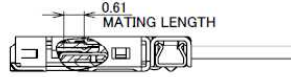
A: TYPE-A

SEE TABLE 2



SECT X-X

S= 10:1

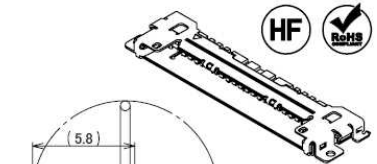


MATING CONDITION

TABLE 2

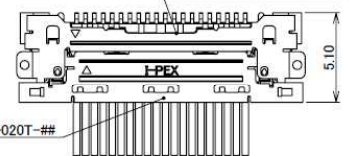
PART NO.	DATUM MARK	CONTACT FINISH	SHELL FINISH
20455-A20E-02	WITH	CONTACT AREA Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA Au 0.05 μm MIN. OVER Ni 1.00 μm MIN.	Au 0.02 μm MIN. OVER Ni 1.00 μm MIN.
20455-A20E-12	WITHOUT	CONTACT AREA Au 0.1 μm MIN. OVER Ni 1.00 μm MIN. SOLDERING AREA Au 0.05 μm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

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



PULL-BAR MOVEMENTS

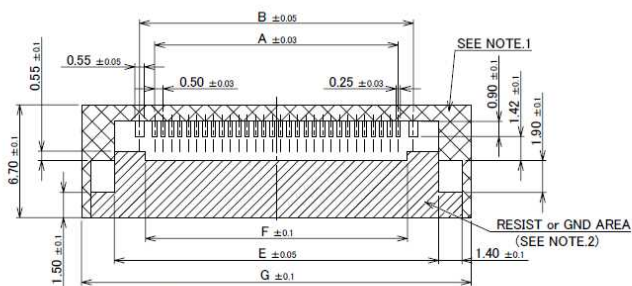
RECE P/N: 20455-A20E-##



PLUG P/N: 20453-020T-##

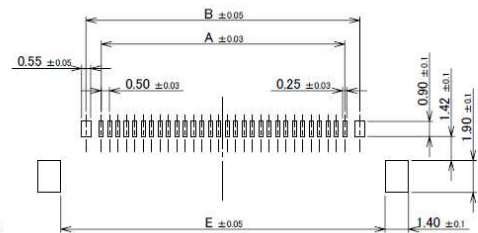
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PART NO.	Pos.	A	B	E	F	G	H	J	K
20455-#20E-##	20	9.50	11.30	14.30	10.60	18.20	15.32	15.84	14.84
20455-#30E-##	30	14.50	16.30	19.30	15.60	23.20	-	-	-
20455-#40E-##	40	19.50	21.30	24.30	20.60	28.20	-	-	-
20455-#50E-##	50	24.50	26.30	29.30	25.60	33.20	-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



RECOMMENDED FOOTPRINT LAYOUT

P/N: 20455-0**E-##

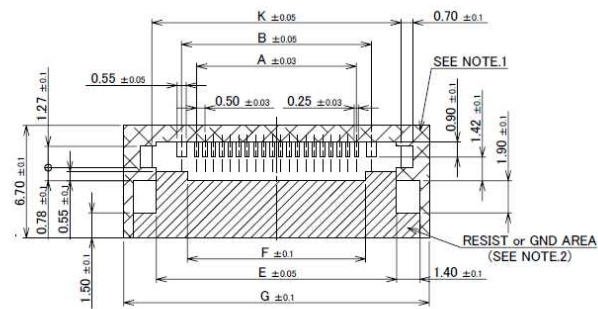


RECOMMENDED METAL MASK LAYOUT

METAL MASK THICKNESS: t = 0.12mm

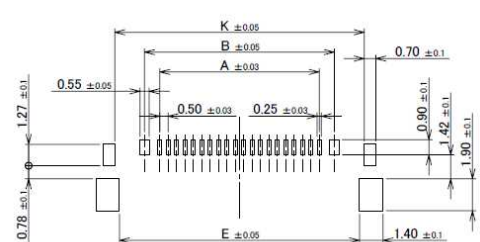
P/N: 20455-0**E-##

TYPE-A



RECOMMENDED FOOTPRINT LAYOUT

P/N: 20455-A20E-##



RECOMMENDED METAL MASK LAYOUT

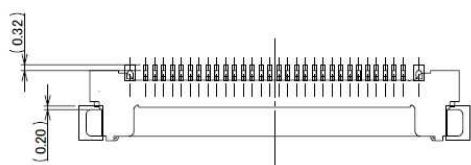
METAL MASK THICKNESS: t = 0.12mm

P/N: 20455-A20E-##

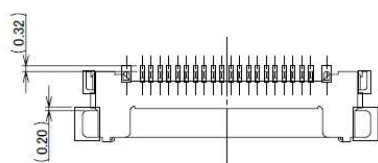
NOTES.

1. IN CASE OF PLUG WITH PULL-BAR.
THIS AREA CANNOT MOUNT ANOTHER COMPONENTS.
2. SOLDER RESIST SHALL BE APPLIED TO PREVENT SHORT CIRCUITS
WHEN PLACING SIGNAL LINES ON GROUND AREA.

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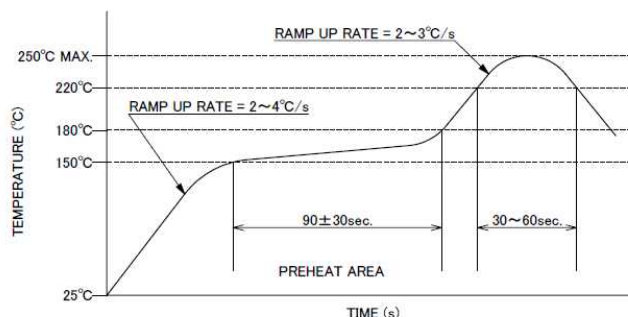


CONNECTOR ON RECOMMENDED FOOTPRINT PATTERN
P/N : 20455-0**E-##



TYPE-A

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



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

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ITEMS	SPECIFICATION
APPLICABLE CABLE	MICRO COAX : AWG# 44, 42, 40, 38, 36 DISCRETE : AWG# 36, 34, 32 TWINCOAX : AWG# 40
RATING VOLTAGE	100V AC (PER CONTACT)
RATING AMPERAGE (FOR CONTACT)	0.1A AC/DC [AWG#44] PER CONTACT/UP TO 50 CONTACTS 0.24A AC/DC [AWG#42] PER CONTACT/UP TO 50 CONTACTS 0.3A AC/DC [AWG#40] PER CONTACT/UP TO 50 CONTACTS 0.5A AC/DC [AWG#38] PER CONTACT/UP TO 14 CONTACTS 0.8A AC/DC [AWG#36] PER CONTACT/UP TO 10 CONTACTS 1.0A AC/DC [AWG#34] PER CONTACT/UP TO 6 CONTACTS 1.0A AC/DC [AWG#32] PER CONTACT/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 : ≤140mohm 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 : ≤140mohm 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

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