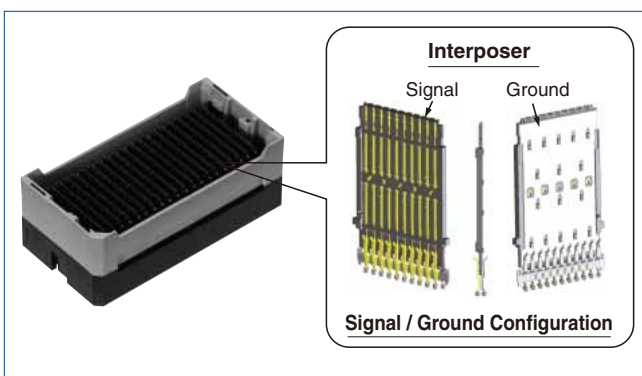


High-Speed(25+Gbps) BGA Mezzanine Connectors

IT5 Series



Flexibility

Hirose's IT5 mezzanine connector system is as comfortable in today's data rates of PCIe and XAUI as it is in tomorrow's 25+Gbps systems.

With the ability to transmit differential, single-ended, and power through one package and being stackable from 14 to 40mm, IT5 can solve your interface needs for both current and future generations.

Mechanical features

- Unique 3-piece structure for flexibility
- Stacking heights from 14 to 40mm
- Staggered 1.5mm × 1.75mm ball grid array
- Number of Contacts: 100, 200, & 300 signals + 110% additional grounds
- Differential, single-ended, and power
- Low mating/extracting forces
- Wide misalignment tolerances for multiple connector use
- Pb-free are available
- Excellent reflow solderability

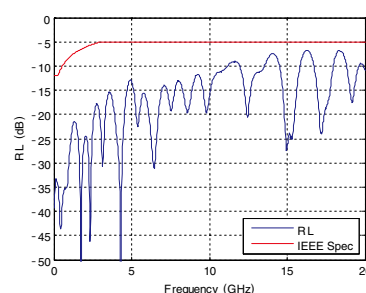
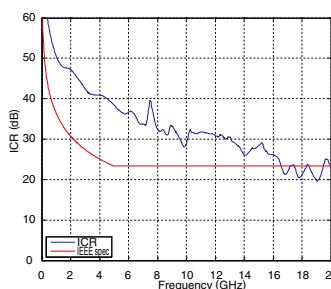
Signal integrity features

● Insertion loss to Crosstalk Ratio (ICR)

The ICR performance meets the extrapolated IEEE 802.3ap specification for 16GHz with fully-populated pin assignment, and 25+Gbps differential data transmission requirement.

● Return Loss

The differential return loss with vias and 1 inch PCB trace meets the extrapolated IEEE 802.3ap specification beyond 20Gbps.



Stacking height variations

Stacking Height Contact Position	14 mm	15 mm	16 mm	18 mm	19 mm	20 mm	22 mm	23 mm	24 mm	25 mm	26 mm	27 mm	28 mm	29 mm	30 mm	32 mm	33 mm	34 mm	35 mm	36 mm	37 mm	38 mm	39 mm	40 mm
100	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
200	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
300	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89

Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81
Россия +7(495)268-04-70

Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Ноябрьск (3496)41-32-12
Новосибирск (3852)67-13-56
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Пермь (342)205-81-47
Казахстан +7(7172)727-132

Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Саранск (8342)22-96-24
Симферополь (3652)67-13-56
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Ставрополь (8652)20-65-13
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Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
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Киргизия +996(312)96-26-47

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Челябинск (351)202-03-61
Череповец (8202)49-02-64
Чита (3022)38-34-83
Якутск (4112)23-90-97
Ярославль (4852)69-52-93

Product Specifications

Rating	Current Rating : 0.2A / pin (Note 1)		Operating Temperature Range : -55°C to +85°C
	Voltage Rating : 50Vrms		Operating Humidity Range : For relative humidity, 90% max (no condensation is permitted)
	Storage Temperature Range : -10°C to +60°C		
Item	Specification	Conditions	
1. Insulation Resistance	1000MΩ min.	100V DC	
2. Withstanding Voltage	No flashover or insulation breakdown	150V duty for 60 seconds (2mA max leak)	
3. Contact Resistance	MATED WITH IT5**-**P-H(**) 50 mΩ MAX (*2) (Height : 14 ~ 16mm) 60 mΩ MAX (*2) (Height : 18 ~ 20mm) 70 mΩ MAX (*2) (Height : 21 ~ 24mm) 80 mΩ MAX (*2) (Height : 25 ~ 28mm) 90 mΩ MAX (*2) (Height : 29 ~ 32mm) 100 mΩ MAX (*2) (Height : 33 ~ 36mm) 110 mΩ MAX (*2) (Height : 37 ~ 40mm) MATED WITH IT3**-**P-H(**) 50 mΩ MAX (*2) (Height : 15 ~ 24mm) 55 mΩ MAX (*2) (Height : 25 ~ 32mm) 60 mΩ MAX (*2) (Height : 33 ~ 40mm)	100mA	
4. Vibration	1) No electrical discontinuity of 1μs or more 2) No damage, crack, or loose part	Frequency : 50 to 2000Hz ; power spectrum density : 0.1G²/Hz for 90 minutes in three directions	
5. Cyclic Temperature and Humidity	1) Contact resistance change : 20mΩ or less 2) No damage, crack or loose part	25°C, 80% RH : 60 min dwell time, 30 min ramp time 65°C, 50% RH : 60 min dwell time under 24 cycles	
6. Durability (Mating/Un-mating)	1) Contact resistance change : 20mΩ or less 2) No damage, crack or loose part	100 cycles (Height : 18 ~ 40mm) 30 cycles (Height : 14 ~ 16mm)	

Note1 : Refer to IT5 derating curves on test report TR636E-20282 for power application.

Note2 : The value of contact resistance includes 2 contact points and the bulk resistance.

Materials / Finish

●Receptacle

Component	Material	Finish & Remarks
Housing (Mounting Side)	LCP	Black , UL 94V-0
Housing (Detachable/Mating Side)	LCP	Gray , UL 94V-0
Locator	LCP	Black , UL 94V-0
Contact	Copper Alloy	Contact Area : Gold (0.76μm) over Nickel (1.5μm) Mounting Area : Gold (0.05μm) over Nickel (1.5μm) Other : Nickel (1.5μm)
Solder Ball	Tin (Pb-Free)	Sn(96.5)-Ag(3)-Cu(0.5)
Tray	Polystyrene	Gray
Pick Up Cap	Stainless steel	300pos
Pick Up Tape	Paper (Nomex)	100pos and 200pos

●Interposer

Component	Material	Finish & Remarks
Guide (Mounting Side)	PBT	Black , UL 94V-0
Guide (Detachable/Mating Side)	LCP	Gray , UL 94V-0
	PBT	Gray , UL 94V-0
Blade (Height : 18 to 40mm)	LCP	Black , UL 94V-0
Contact (Height : 18 to 40mm)	Copper Alloy	Contact Area : Gold (0.76μm) over Nickel (1.5μm)
Ground Shield (Height : 18 to 40mm)	Copper Alloy	Other : Nickel (1.5μm)
Tray	Polypropylene	
PCB (Height : 14 to 16mm)	FR4	Contact Area : Gold (0.76μm) over Nickel (3μm)
		Other : SOLDER RESIST

Product Number Structure

Refer to the chart below when determining the product specifications from the product number.

Please select from the product numbers listed in this catalog when placing orders.

●Receptacle

IT 5 ** - * S - BGA ** (**)**

① ② ③ ④ ⑤ ⑥ ⑦

① Series name: IT5
② Receptacle Type D : Mating Receptacle D* : Mating Receptacle (Customized) HD : Mating Receptacle (+1mm Height) M : Mounting Receptacle M* : Mounting Receptacle (Coustomized) HM : Mounting Receptacle (+1mm Height) Interposer Type Blank : Standard ** : Customized
③ Contact Positions : 100, 200, 300
Connector type
④ S : Receptacle P : Interposer
⑤ BGA : Ball Grid Array

●Interposer

IT 5 ** - * P - ** H ** (**)**

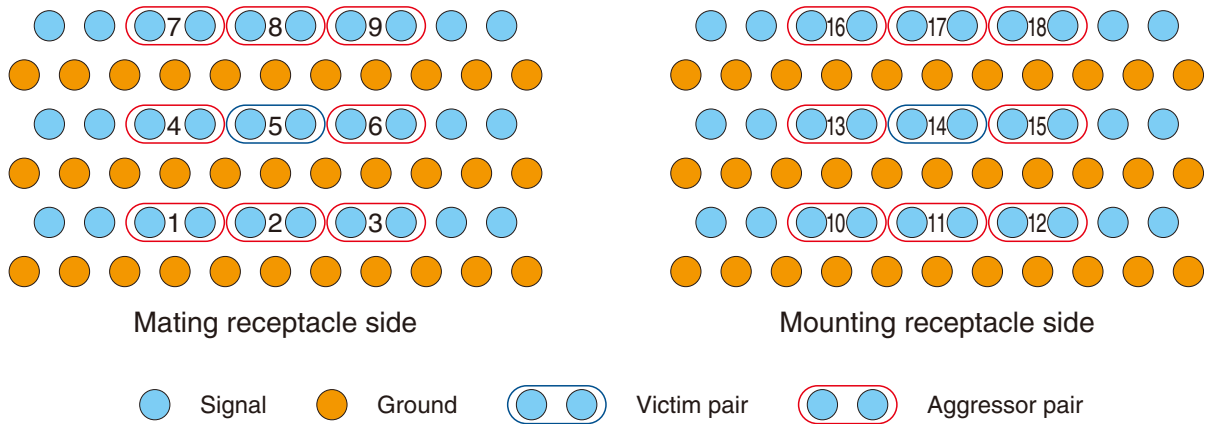
① ② ③ ④ ⑧ ⑥ ⑨

⑥ Package Specification Blank : Standard ** : Customized
⑦ Material and Plating Specification of Mounting Receptacle Housing : Black (37) : Pb-free Solder Sn(96.5)-Ag(3.0)-Cu(0.5) Contact Area : Au(0.76μm)+Ni(1.5μm) Material and Plating Specification of Mating Receptacle Housing : Gray (39) : Pb-free Solder Sn(96.5)-Ag(3.0)-Cu(0.5) Contact Area : Au(0.76μm)+Ni(1.5μm)
⑧ Stacking Height (mm) 14, 18, 22, 25, 28, 32, 35, 38
⑨ Plating Specification of Interposer (03) : Contact Area : Au(0.76μm)+Ni(1.5μm)

Signal Integrity

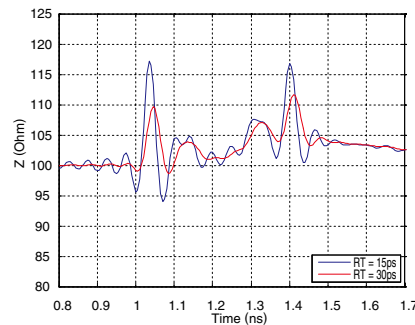
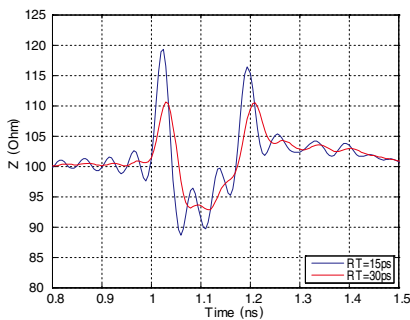
Pin assignment

For the fully-populated pin assignment, adjacent pins are grouped into differential pairs as shown in the figures below. In the following data, one victim pair and eight aggressor pairs are included.



Impedance profile at 15, 30ps rise time (20-80%)

The impedance profiles (of connector only) for the center pair are shown below. The IT5 receptacles are designed with higher impedance to offset the via's low impedance.

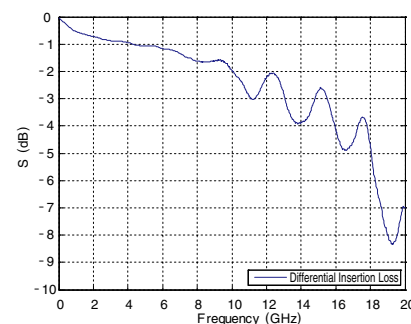
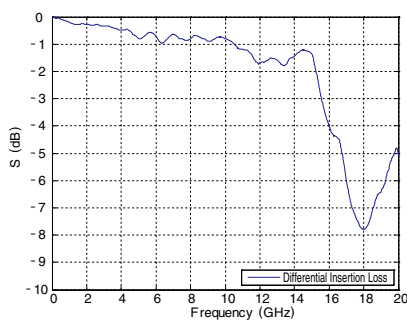


Differential propagation delay

Stacking Height (mm)	18	35
Delay (ps)	112.34	230.64

Differential Insertion Loss

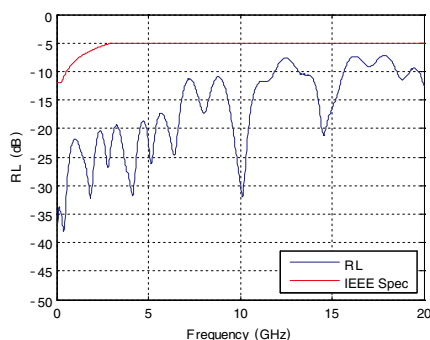
The differential insertion loss is less than -2dB up to 12GHz.



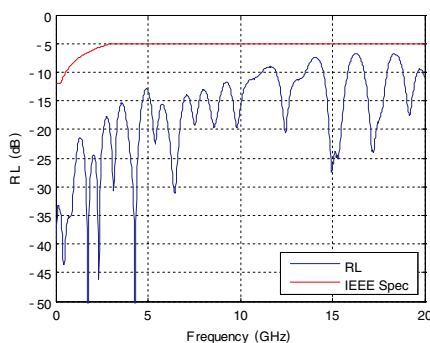
●Differential Return Loss

The differential return loss with vias and 1 inch PCB trace meets the extrapolated IEEE 802.3ap specification beyond 20Gbps.

**18mm
Height**



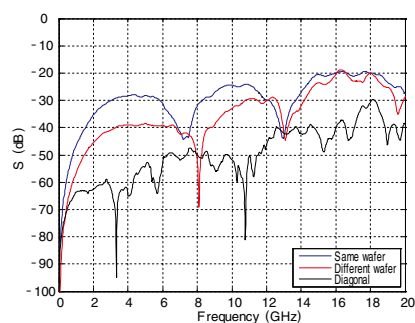
**35mm
Height**



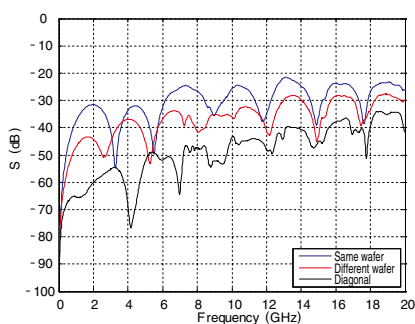
●Differential Near-End Crosstalk (NEXT)

The near-end crosstalk at the center pair from surrounding 3 aggressors is shown below. The NEXT is not as critical because TX and RX can be grouped into separate wafers.

**18mm
Height**



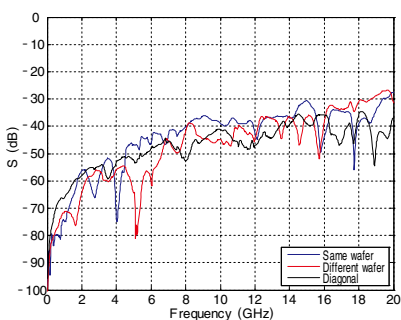
**35mm
Height**



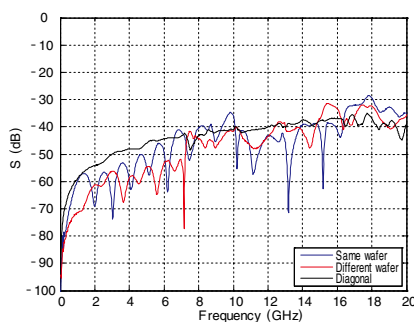
●Differential Far-End Crosstalk (FEXT)

Low far-end crosstalk at the center pair from surrounding 3 aggressors is observed. Even lower crosstalk can be achieved by skipping pins.

**18mm
Height**



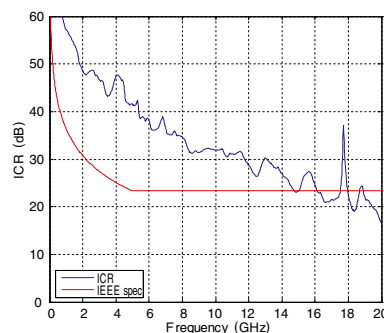
**35mm
Height**



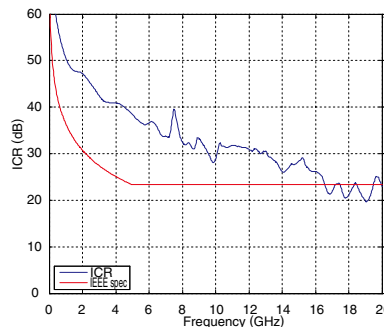
●Insertion-Loss-to-Crosstalk-Ratio (ICR) for FEXT

The insertion-loss-to-crosstalk-ratio (ICR) for 8-aggressor FEXT meets the extrapolated IEEE 802.3ap specification up to 16GHz.

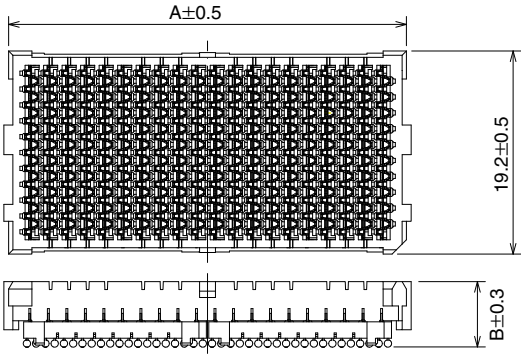
**18mm
Height**



**35mm
Height**



■Receptacle

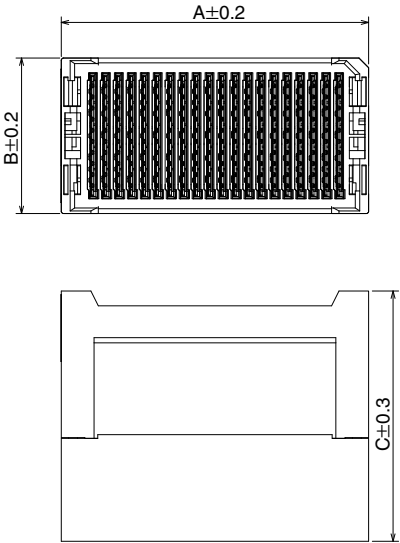
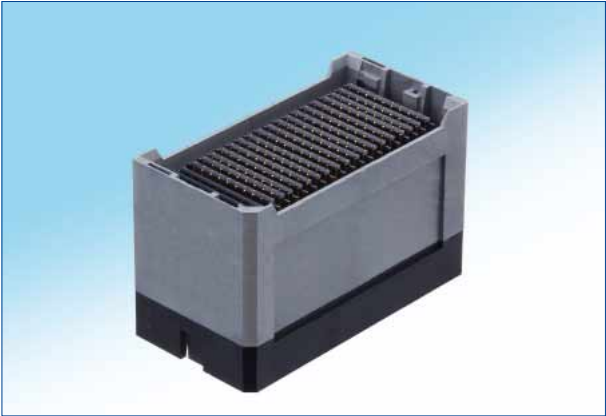


Shown : 200 position mating receptacle, IT5(H)D-200S-BGA(39)

*Unit : mm

Contact Positions	Type	Part No.	HRS No.	A	B
100 (100 signals/110 grounds)	Mating Receptacle	IT5D-100S-BGA(39)	636-1513-0 39	21.0	6
		IT5HD-100S-BGA(39)	636-1521-8 39		7
	Mounting Receptacle	IT5M-100S-BGA(37)	636-1514-2 37		6
		IT5HM-100S-BGA(37)	636-1522-0 37		7
200 (200 signals/220 grounds)	Mating Receptacle	IT5D-200S-BGA(39)	636-1501-0 39	38.5	6
		IT5HD-200S-BGA(39)	636-1523-3 39		7
	Mounting Receptacle	IT5M-200S-BGA(37)	636-1502-3 37		6
		IT5HM-200S-BGA(37)	636-1524-6 37		7
300 (300 signals/330 grounds)	Mating Receptacle	IT5D-300S-BGA(39)	636-1525-9 39	56.0	6
		IT5HD-300S-BGA(39)	636-1503-6 39		7
	Mounting Receptacle	IT5M-300S-BGA(37)	636-1504-9 37		6
		IT5HM-300S-BGA(37)	636-1526-1 37		7

■Interposer

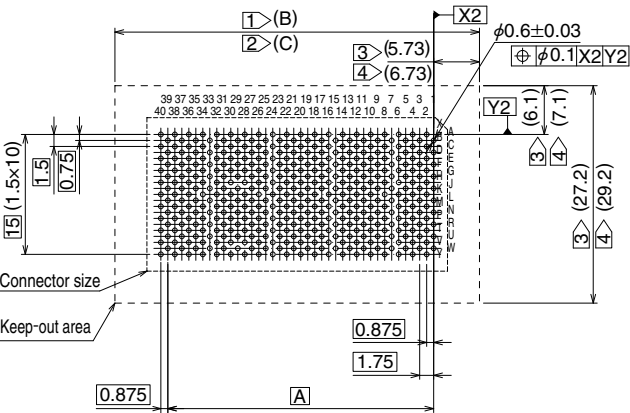


*Unit : mm

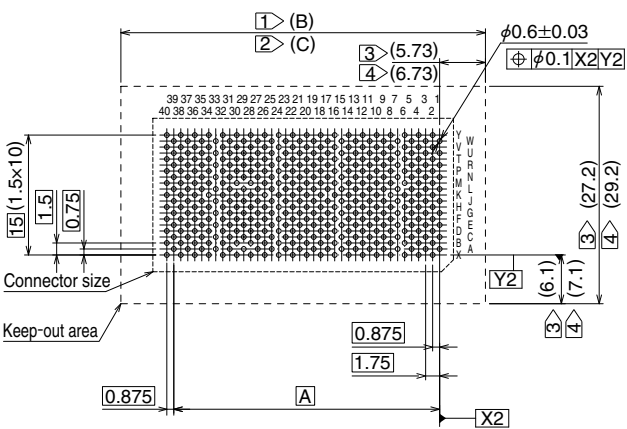
Height (mm)	Part No.	HRS No.	A	B	C	Height (mm)	Part No.	HRS No.	A	B	C
14	IT5M1-100P-14H (03)	636-1041-2 03	24.0	21	12.7	28	IT5-100P-28H (03)	636-1051-6 03	24.0	21	26.8
	IT5M1-200P-14H (03)	636-1062-2 03	41.5	23			IT5-200P-28H (03)	636-1042-5 03	41.5		
	IT5M1-300P-14H (03)	636-1064-8 03	59.0				IT5-300P-28H (03)	636-1052-9 03	59.0		
18	IT5-100P-18H (03)	636-1043-8 03	24.0	21	16.8	32	IT5-100P-32H (03)	636-1055-7 03	24.0	21	30.8
	IT5-200P-18H (03)	636-1044-0 03	41.5				IT5-200P-32H (03)	636-1014-0 03	41.5		
	IT5-300P-18H (03)	636-1045-3 03	59.0				IT5-300P-32H (03)	636-1015-2 03	59.0		
22	IT5-100P-22H (03)	636-1048-1 03	24.0	21	20.8	35	IT5-100P-35H (03)	636-1038-8 03	24.0	21	33.8
	IT5-200P-22H (03)	636-1049-4 03	41.5				IT5-200P-35H (03)	636-1017-8 03	41.5		
	IT5-300P-22H (03)	636-1050-3 03	59.0				IT5-300P-35H (03)	636-1016-5 03	59.0		
25	IT5-100P-25H (03)	636-1035-0 03	24.0	21	23.8	38	IT5-100P-38H (03)	636-1056-0 03	24.0	21	36.8
	IT5-200P-25H (03)	636-1036-2 03	41.5				IT5-200P-38H (03)	636-1057-2 03	41.5		
	IT5-300P-25H (03)	636-1037-5 03	59.0				IT5-300P-38H (03)	636-1029-7 03	59.0		

■PCB footprint

Mounting Receptacle - IT5(H)M



Mating Receptacle - IT5(H)D



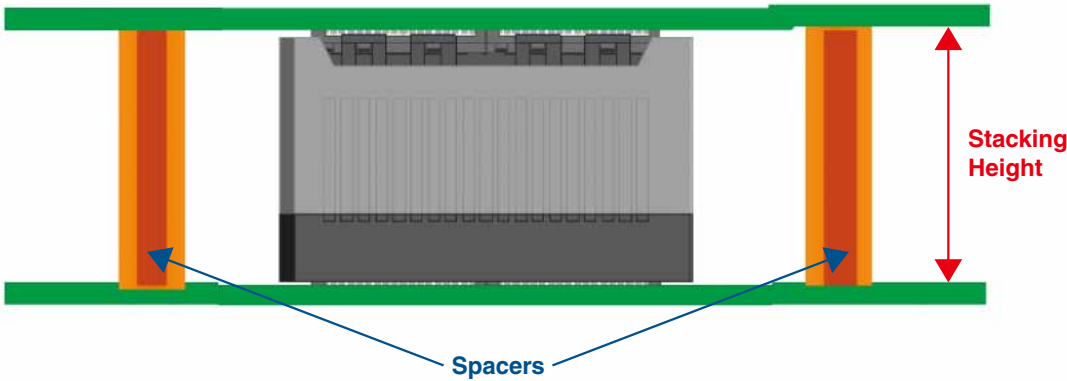
- 1 Minimum clearance for all devices
- 2 Minimum clearance for sensitive devices

Dimension	100	200	300
A	15.75	33.25	50.75
B	28.10	45.60	63.10
C	30.10	47.60	65.10

Note : Refer to "5.1.4 Pin Connections" on page 40 of the IT5 Series Design Notes (ETAD-F0584) for circuit board wiring.

■Spacers

Spacers are required to support the PWB's and protect the BGA solder joints.



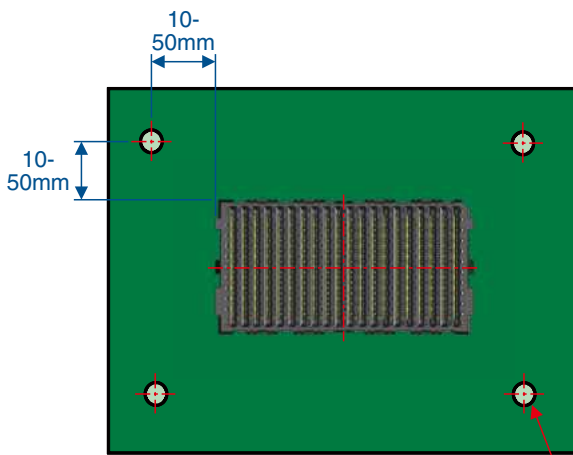
Suggested spacer style is shown below:



Spacer, male-male, M3 thread

The recommended spacer height corresponds to the interposer stacking height as shown in the chart below :

Stacking Height	Recommended Spacer Height	Stacking Height	Recommended Spacer Height
14mm	14+/-0.1mm	28mm	28+/-0.127mm
15mm	15+/-0.1mm	29mm	29+/-0.127mm
16mm	16+/-0.1mm	30mm	30+/-0.127mm
18mm	18+/-0.127mm	32mm	32+/-0.127mm
19mm	19+/-0.127mm	33mm	33+/-0.127mm
20mm	20+/-0.127mm	34mm	34+/-0.127mm
22mm	22+/-0.127mm	35mm	35+/-0.127mm
23mm	23+/-0.127mm	36mm	36+/-0.127mm
24mm	24+/-0.127mm	37mm	37+/-0.127mm
25mm	25+/-0.127mm	38mm	38+/-0.127mm
26mm	26+/-0.127mm	39mm	39+/-0.127mm
27mm	27+/-0.127mm	40mm	40+/-0.127mm



Recommended Spacer Location

φ3.5

Non plated through hole

Two spacers located diagonally are minimally required. Some applications may require 4 spacers. Spacers should be located 10 – 50 mm from the corners of the receptacles to prevent excessive mechanical loading on the interconnections. If assembly will be subjected to vibration, spacers should be located to prevent resonance, and additional spacers may be required.

Interposer installation

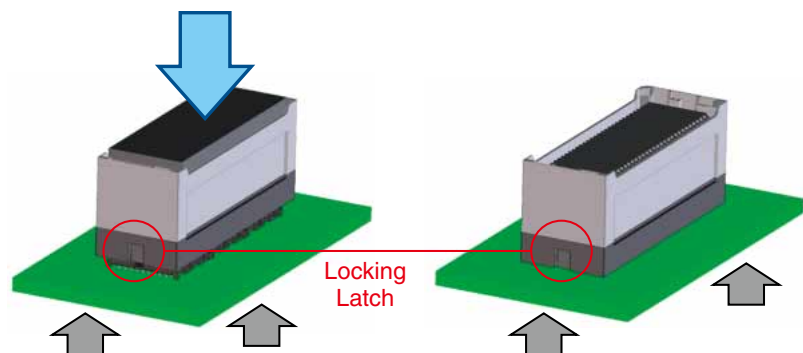
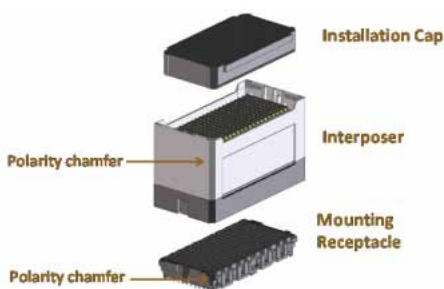
Position interposer directly over mounting receptacle, aligning the polarity chamfers.

If positioned properly, the interposer should slide easily onto the mounting receptacle. Place installation cap onto interposer and push straight down to engage the locking latches.

Manual Installation

*Installation caps are available upon request for manual operation

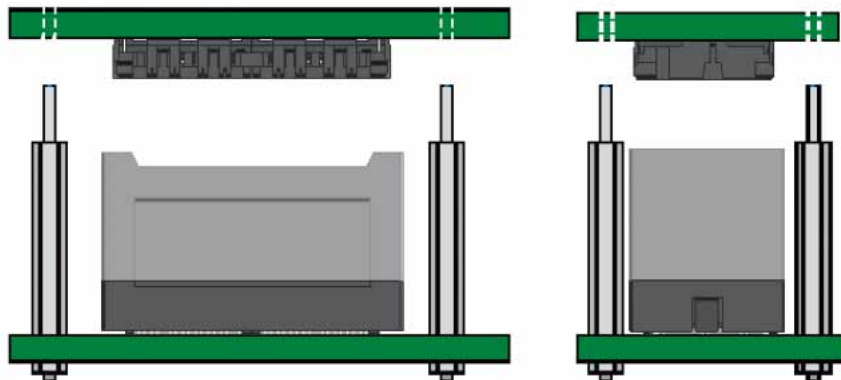
Press firmly on installation cap only, not on wafers or interposer body



Always support PWB from underside to prevent flexing

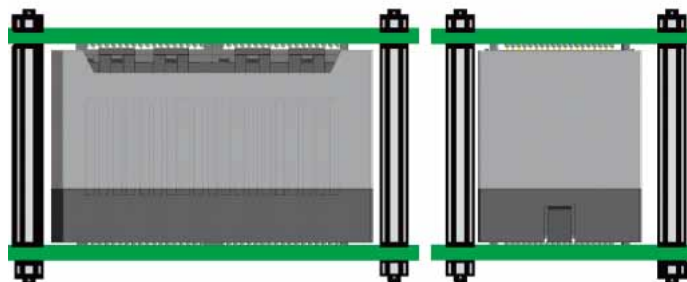
■ Daughter card installation

After the interposer is mounted, install spacers onto motherboard. To install mating receptacle, align the spacer holes in the daughter card with the threads on the spacers.



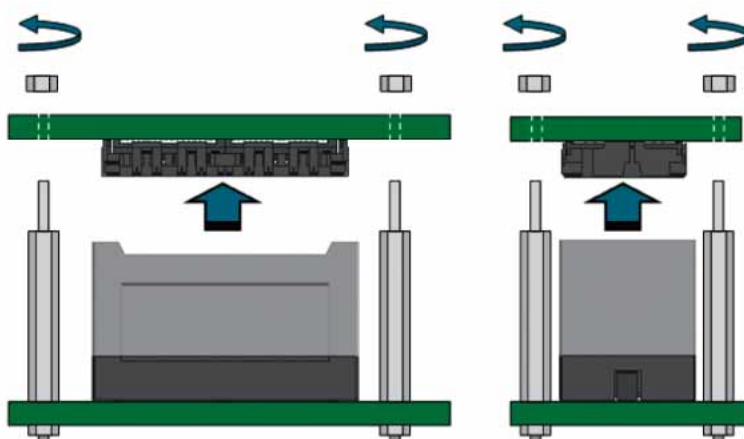
The spacers help align the mating receptacle with the interposer. If positioned correctly, the mating receptacle will slip down into the interposer.

Push directly down on the assembly to lock the mating receptacle in place. Install nuts onto the spacer threads. Tighten nuts to specified torque.



■ Daughter card removal

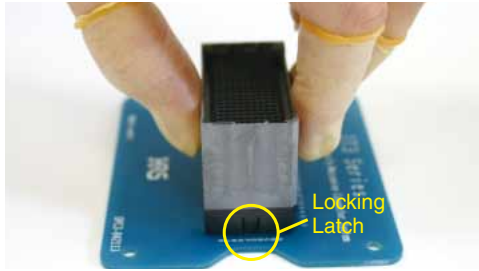
To remove a daughter card, first remove the nuts from the reinforcing spacers, then lift the daughter card straight off the interposers, as shown right.



Interposer removal

Interposer Removal by Hand

- 1) Hold the Interposer Assembly on the walls without locking latches



- 2) Gently rotate one side of the Interposer Assembly laterally 10° maximum

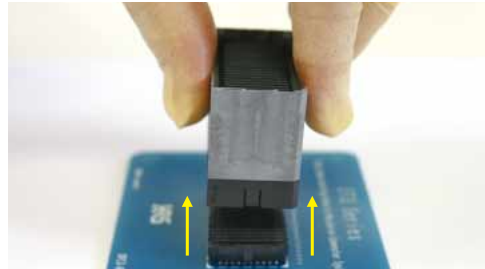


Caution: do not rotate more than 10 degrees

- 3) While gently rotating, pull up on other side of the Interposer Assembly



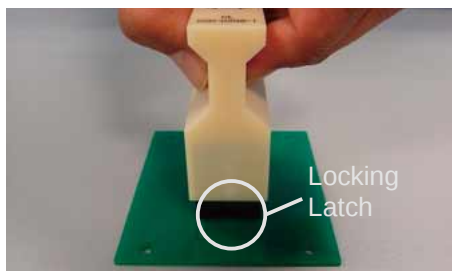
- 4) The Interposer Assembly is removed, and the Mounting Receptacle is ready to accept another Interposer Assembly.



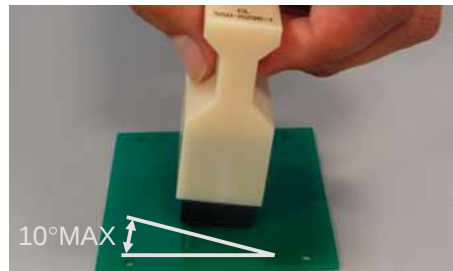
An interposer removal tool is also available. This tool is not an interposer installation cap, so please do not use it to install an interposer. Doing so may damage an interposer.

Interposer Removal with Tool

- 1) Cover the interposer Assembly with the interposer removal tool

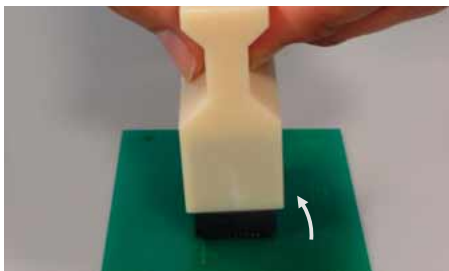


- 2) Gently rotate one side of the Interposer Assembly laterally 10° maximum using the tool

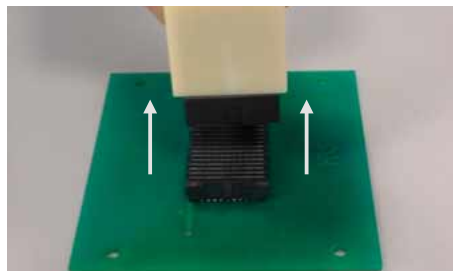


Caution: do not rotate more than 10 degrees

- 3) While gently rotating, pull up on other side of the tool



- 4) The Interposer Assembly is removed, as it is inside the tool



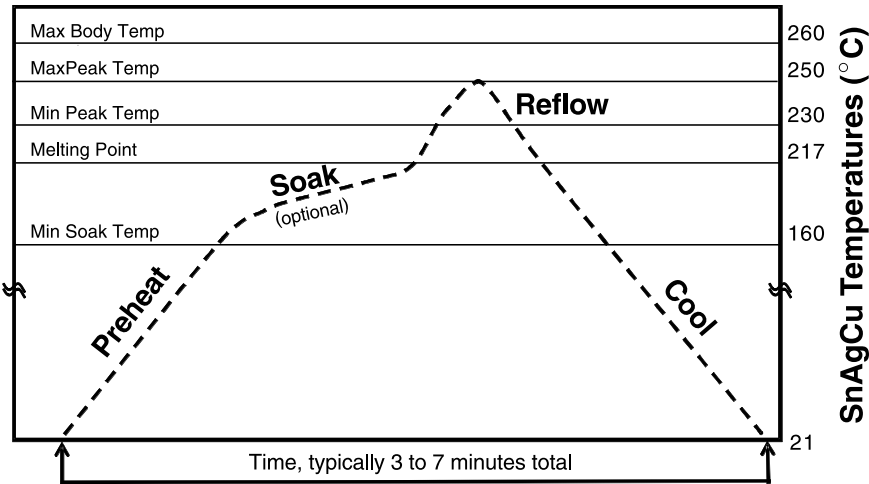
Precaution

Visually inspect the interposer before reinstalling it. Discard if it shows any sign of damage or wear. Do not subject the interposer assembly to more than five removal-reinstallation cycles, even if it appears unaffected. Removal Tools are available upon request for IT5M1-***P-14H(03).

■Assembly reflow soldering profile

Parameters	Pb-Free	Comment
Preheat Ramp Rate	2 - 3℃/sec	Other components may limit ramp rate to 2℃/sec
Soak Time	0 - 120 sec	Soak requirements determined by board design, oven capability, and paste activation requirements
Soak Temperature	160 - 215℃	Caution - "oversoaking" may exhaust flux and affect soldering
Peak Reflow Temperature	230 - 250℃	Cooler peak temperatures may require longer TAL's
Time Above Liquidus (TAL)	45 - 120 sec	Shorter TAL's may require higher peak temperatures
Cooling Rate	>6℃/sec	Faster cooling rates produce finer grain structures and smoother joint appearances
Maximum Package Body Temperature (T)	260℃	Open body design allows for low delta T between package and solder joint
Maximum Delta T between Body and PWB at Liquidus	10℃	Standard practice is easy to achieve with open body design
Package Body Exposure Limit at Maximum Temperature	5 sec	Adjust profile if maximum exposure limit is approached or exceeded

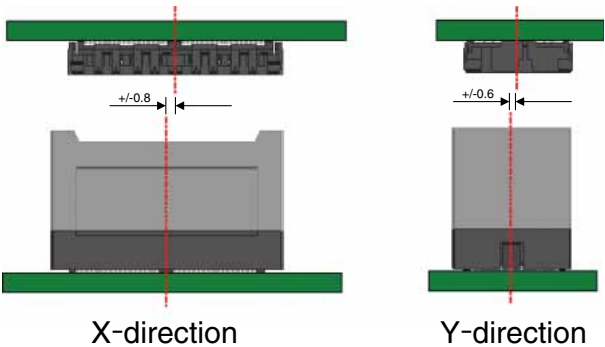
Reflow Profile



Different solder pastes have different thermal performance characteristics. Consult with paste manufacturer for optimum profile settings. Check thermal exposure limits of PWB laminate if processing with Pb-free solder.

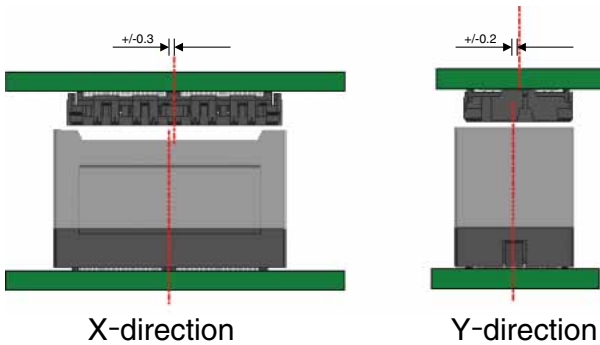
■Mating self alignment

*Unit: mm



■Mating tolerance

Due to its 3-piece design, the IT5 connector system can accept mating tolerances of up to $\pm 0.3\text{mm}$ tolerance in the X-axis and up to $\pm 0.2\text{mm}$ in the Y-axis.



■Packaging information

Please order per box with its Minimum Order Quantity (MOQ) of connectors contained.
The number for each configuration is shown below.

●Receptacles

IT 5* - *S - BGA(**)**

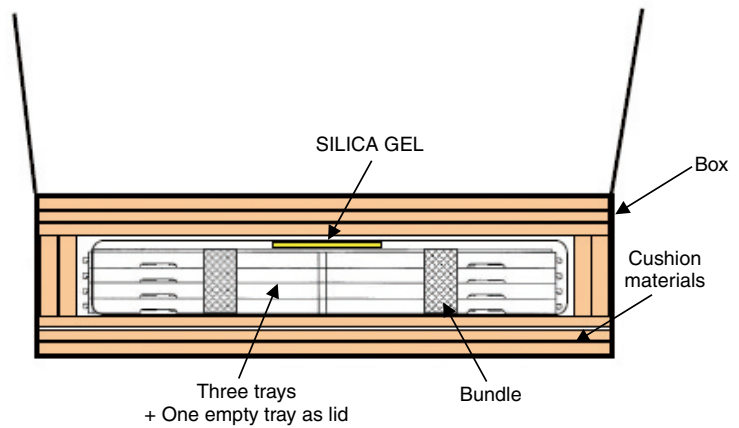
(1) (2)

Unit : pcs

(1) \ (2)	100	200	300
(H)M	120	72	48
(H)D	120	72	48

This is also a packaging quantity,
therefore please multiply integrally
based on this MOQ quantity when you
place more.

Ex.) 240pcs of IT5M-300S-BGA(57)
(= 5 of vacuum packed boxes)



■Packaging information

●Interposers

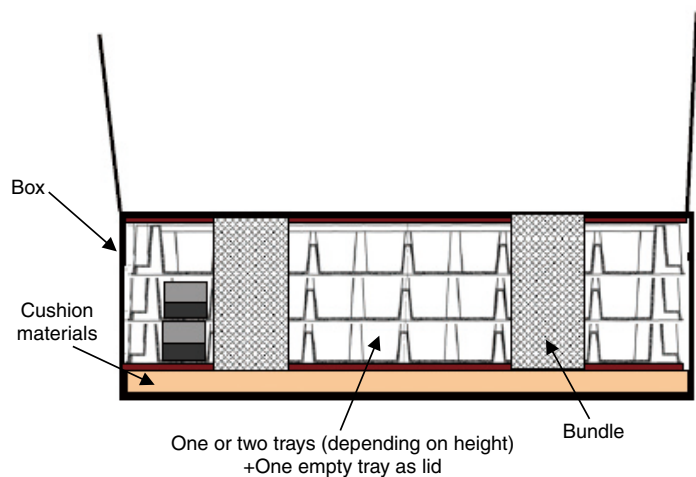
IT5* - *P - **H(**)**

(3) (4)

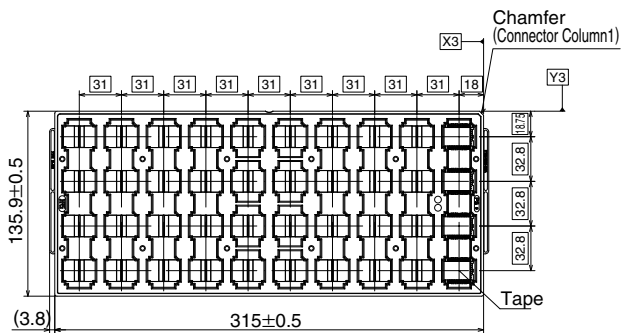
Unit : pcs

(3) \ (4)	100	200	300
14	100	80	60
18	100	80	60
22	100	80	60
25	100	80	60
28	50	40	30
32	50	40	30
35	50	40	30
38	50	40	30

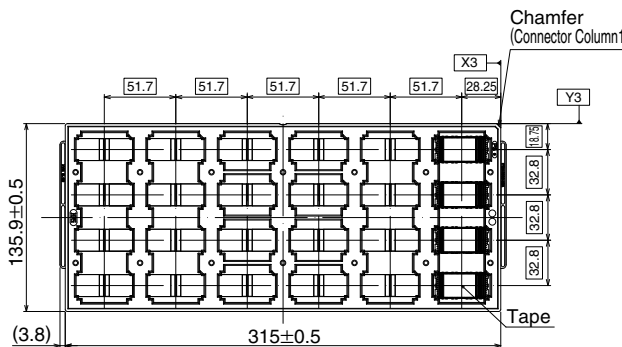
This is also a packaging quantity,
therefore please multiply integrally
based on this MOQ quantity when you
place more.



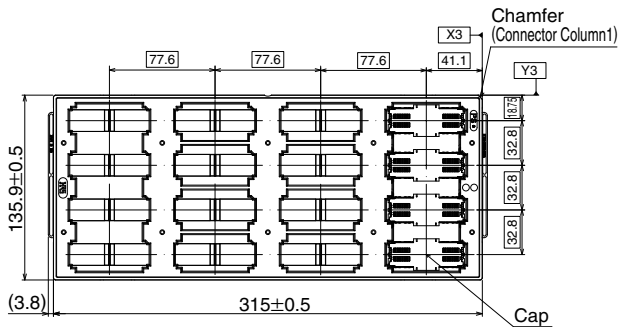
■Tray information



JEDEC Tray for IT5(H)M 100 Position Receptacles

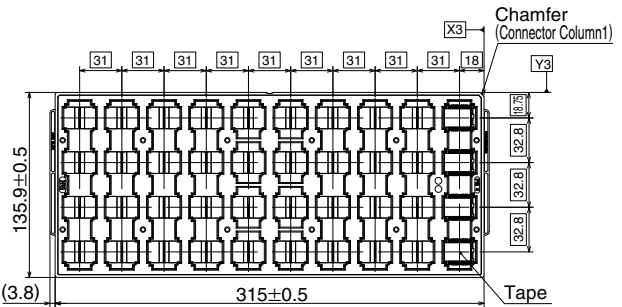


JEDEC Tray for IT5(H)M 200 Position Receptacles

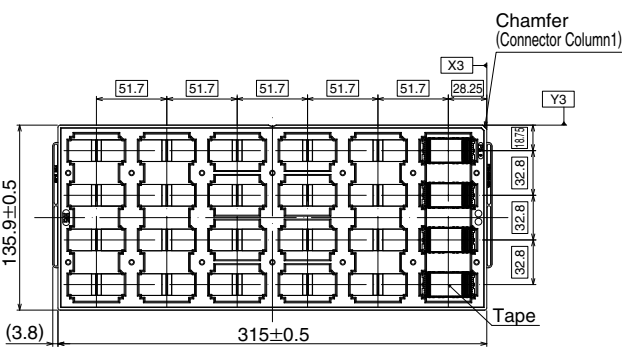


JEDEC Tray for IT5(H)M 300 Position Receptacles

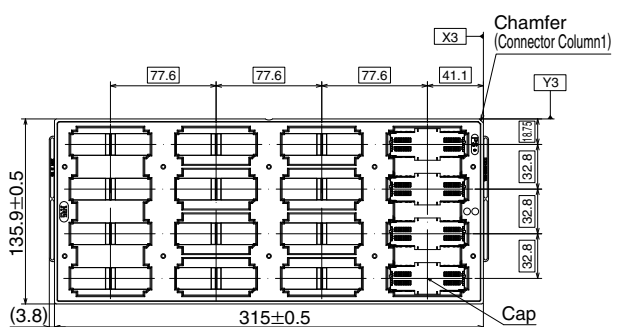
■Tray information (con't)



JEDEC Tray for IT5(H)D 100 Position Receptacles



JEDEC Tray for IT5(H)D 200 Position Receptacles



JEDEC Tray for IT5(H)D 300 Position Receptacles

High-Speed 56⁺Gbps BGA Mezzanine Connectors

IT8 Series



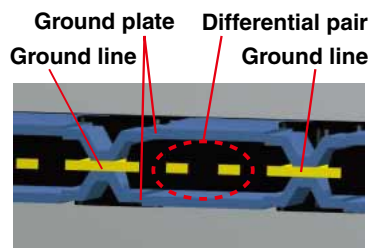
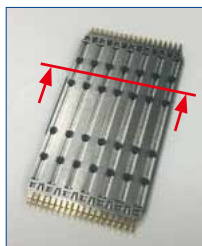
■ Overview

The IT8 mezzanine connector system was developed to enable 56Gbps performance with the highest signal density in the market, featuring Quasi-Coaxial Structure and Polarity-Swap FEXT cancelling technology.

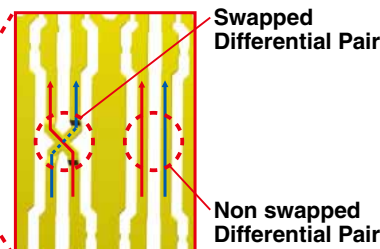
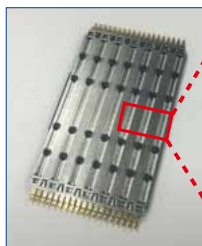
IT8 delivers the most reliable and flexible solution for your current and future needs to design high speed systems.

Patented

■ Quasi-Coaxial Structure



■ Polarity-Swap FEXT cancelling technology



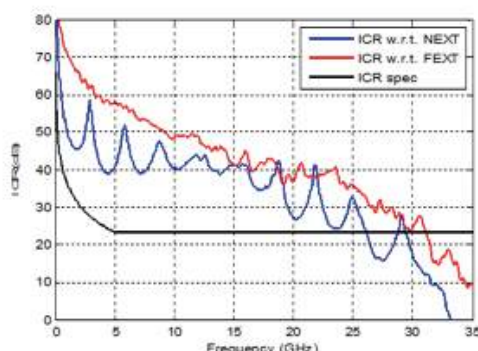
■ Mechanical Features

- **Stack heights :**
 - 10 to 13mm (Two-piece type)
 - 14 to 46mm (Three-piece type)
- **Number of Contacts :** 120, 192, 288 signals
- **Multiple mating capability**
 - Floating amount : +/-0.2mm in X,Y
- **Mating alignment :** +/-1.5mm
- **1.0x5.5mm BGA interface optimizes routing and SI performance**
- **BGA attachment with “Pin in Ball” ensures reliable solder joints with high SMT processing yields**
- **Excellent reflow solderability with superior BGA coplanarity control**
- **Compatible with double-sided and inverted reflow soldering**

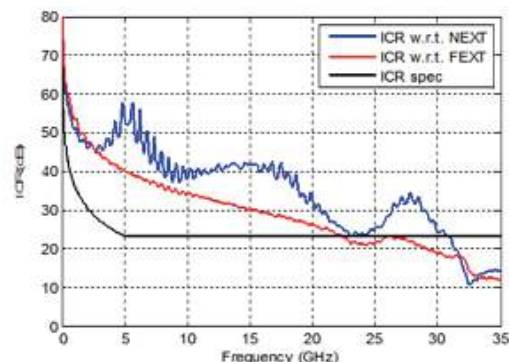
■ Signal Integrity Features

- **SI capability**
 - 56⁺Gbps (18 to 46mm), 28⁺Gbps (10 to 16mm)
 - 92ohm impedance (suitable for both 100ohm & 85ohm system)
- **Unique Polarity-Swap FEXT cancelling technology**
- **Quasi-Coaxial Structure to prevent noise emission to adjacent lines**
- **Insertion loss to Crosstalk Ratio (ICR)**

ICR (18 to 46mm) **56⁺Gbps**



ICR (10 to 16mm) **28⁺Gbps**

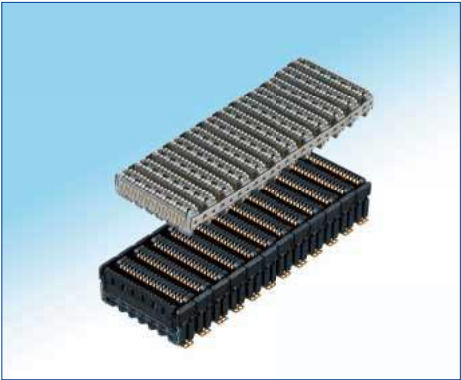


■Stacking Height Variations

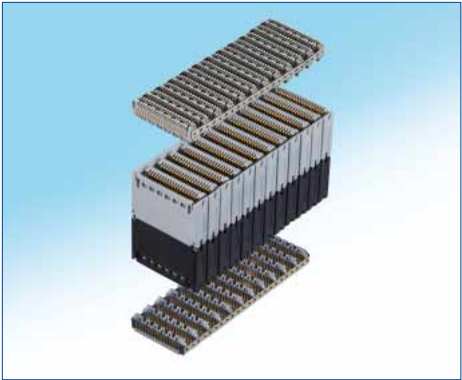
		Two-piece type				Three-piece type																
Contact Position	Stacking Height	10 mm	11 mm	12 mm	13 mm	14 mm	15 mm	16 mm	17 mm	18 mm	19 mm	20 mm	21 mm	22 mm	23 mm	24 mm	25 mm	26 mm	27 mm	28 mm	29 mm	30 mm
	120	✓	✓	✓	✓	✓	✓	✓	*	✓	✓	✓	*	✓	✓	✓	✓	✓	✓	✓	✓	✓
	192	✓	✓	✓	✓	✓	✓	✓	*	✓	✓	✓	*	✓	✓	✓	✓	✓	✓	✓	✓	✓
	288	✓	✓	✓	✓	✓	✓	✓	*	✓	✓	✓	*	✓	✓	✓	✓	✓	✓	✓	✓	✓

Stacking Height Contact Position	Three-piece type															
	31 mm	32 mm	33 mm	34 mm	35 mm	36 mm	37 mm	38 mm	39 mm	40 mm	41 mm	42 mm	43 mm	44 mm	45 mm	46 mm
120	*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
192	*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
288	*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ Available / * Please contact us



Stacking Height 10mm to 13mm
Two-piece type



Stacking Height 14mm to 46mm
Three-piece type

■Product Specifications

Rating	Operating Temperature Range : -55°C to +85°C		Storage Temperature Range : -10°C to +60°C	
	Voltage Rating : 50Vrms		Operating Humidity Range : For relative humidity, 90% max (No dew condensation is permitted)	
	Current Rating : 0.5A / pin (Signal)			
Item	Specification		Conditions	
1. Contact Resistance (Note1)	50mΩ MAX (Height : 10 to 19mm) 60mΩ MAX (Height : 20 to 29mm) 70mΩ MAX (Height : 30 to 39mm) 80mΩ MAX (Height : 40 to 46mm)		100mA	
2. Insulation Resistance	1000MΩ min.		100V DC	
3. Withstanding Voltage	No flashover or insulation breakdown		150V duty for 60 seconds	
4. Mechanical Operation (Mating/Un-mating)	1) Contact resistance change : 20mΩ or less 2) No damage, crack or loose part		100 cycles	
5. Random Vibration	1) No electrical discontinuity of 1μs or more 2) No damage, crack or loose part		Frequency : 50 to 2000Hz ; power spectrum density : 0.1G²/Hz for 120 minutes in three directions	
6. Cyclic Temperature and Humidity	1) Contact resistance change : 20mΩ or less 2) No damage, crack or loose part		25°C, 80% RH : 60 min dwell time, 30 min ramp time 65°C, 50% RH : 60 min dwell time under 24 cycles	

Note1 : The value of contact resistance includes the bulk resistance.

■Materials / Finish

●Receptacle

Part	Material	Finish	Remarks
Housing	PPS	Black	UL94V-0
Blade	LCP	Black	UL94V-0
Contact	Copper Alloy	Contact Area : Gold (0.76μm min) over Nickel (1.27μm min) Other : Nickel (1.27μm min)	—
Ground Shield	Stainless Steel	—	—
Ground Shield	Stainless Steel	—	—
Retention Peg	Copper Alloy	Gold (0.03μm min) over Nickel (1.0μm min)	—
Solder Ball	Tin (Pb-Free)	Sn(96.5)-Ag(3)-Cu(0.5)	—
Pick Up Tape	Heat Resistant Tape	Polyamide	—
Tray	HIPS	Black	—

●Interposer

Part	Material	Finish	Remarks
Housing (Detachable Side)	PPS	Gray	UL94V-0
Housing (Mounting Side)	PPS	Black	UL94V-0
Guide Plate	Stainless Steel	———	———
Blade	LCP	Black	UL94V-0
Contact	Copper Alloy	Contact Area : Gold (0.76μm min) over Nickel (1.27μm min) Other : Nickel (1.27μm min)	———
Ground Shield	Stainless Steel	———	———
Ground Shield	Stainless Steel	———	———
Tray	HIPS	Not shown in the customer drawing	———

●Plug

Part	Material	Finish	Remarks
Ground Shield	Copper Alloy	Nickel (1.27μm min)	———
Housing	LCP	Black or Gray	UL94V-0
Contact	Copper Alloy	Contact Area : Gold (0.76μm min) over Nickel (1.27μm min) Other : Nickel (1.27μm min)	———
Solder Ball	Tin	Sn(96.5)-Ag(3)-Cu(0.5)	———
Pick Up Cap	PA-M	Black	UL94V-0
Tray	HIPS	———	———

■Product Number Structure

Refer to the chart below when determining the product specifications from the product number.

Please select from the product numbers listed in this catalog when placing orders.

●Plug Mounting Side

IT8 M - * P - BGA - *H**

① ② ③ ④ ⑤ ⑥

●Interposer

IT8 - * S - **H**

① ③ ④ ⑥

●Plug Detachable Side

IT8 D - * P - BGA - *H**

① ② ③ ④ ⑤ ⑥

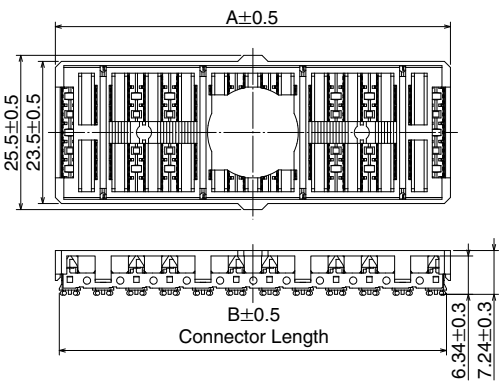
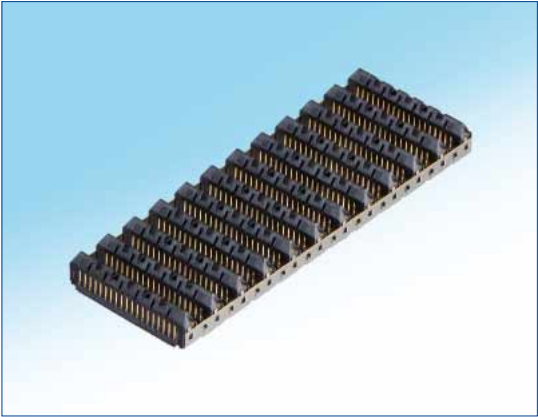
●Mounting Receptacle

IT8 MB - * S - BGA - *H**

① ② ③ ④ ⑤ ⑥

① Series Name : IT8
No Further Designation
② Connector Type
IT8M-xxxP-BGA : Mounting Plug IT8D-xxxP-BGA : Detachable Plug IT8MB-xxxS-BGA : Mounting Receptacle
③ Signal Contact Positions
120, 192, 288
④ Connector Gender
S : Female (Receptacle or Interposer) P : Male (Plug)
⑤ BGA : Ball Grid Array
No Further Designation
⑥ Stacking Height (mm)
Mounting Plug : 0, 1 Detachable Plug : 0, 1 Mounting Receptacle : 10, 12 Interposer : 14, 18, 22, 25, 28, 32, 35, 38, 41, 44 Stacking Height : Calculated based on following formula > Three-piece type ; ⑥ Interposer + ⑥ Mounting Plug + ⑥ Detachable Plug > Two-piece type ; ⑥ Mounting Receptacle + ⑥ Detachable Plug

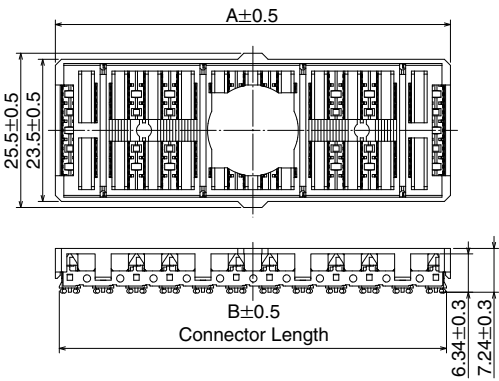
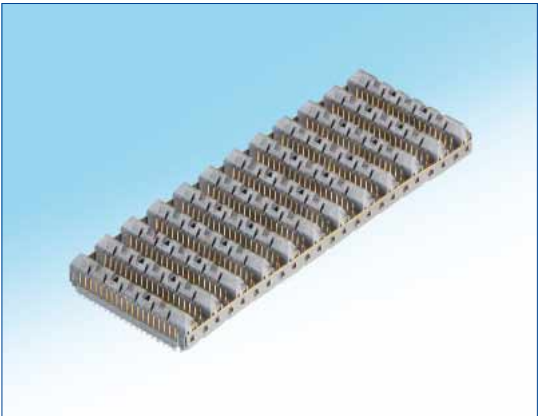
■Plug



Note : Figure shows a product with a mounting cap.
Products are shipped with mounting caps attached.

Unit : mm

Signal contact No.	Type	Part No.	HRS No.	A	B
120 (+70 ground)	Three piece type Mounting side	IT8M-120P-BGA-0H	636-3001-9 00	26.8	25.5
		IT8M-120P-BGA-1H	636-3100-0 00		
192 (+112 ground)		IT8M-192P-BGA-0H	636-3002-1 00	43.3	42
		IT8M-192P-BGA-1H	636-3101-3 00		
288 (+168 ground)		IT8M-288P-BGA-0H	636-3003-4 00	65.3	64
		IT8M-288P-BGA-1H	636-3102-6 00		

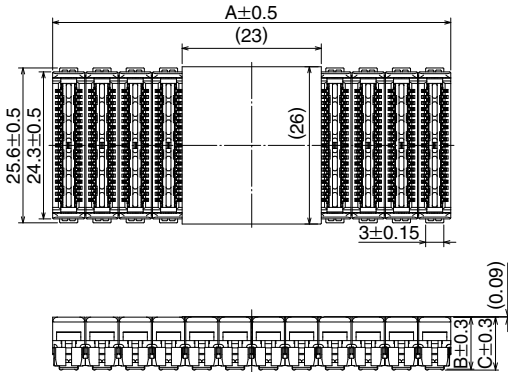
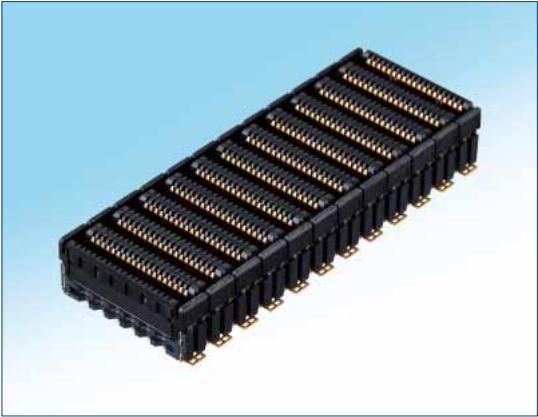


Note : Figure shows a product with a mounting cap.
Products are shipped with mounting caps attached.

Unit : mm

Signal contact No.	Type	Part No.	HRS No.	A	B
120 (+70 ground)	Two / Three piece type Detachable side	IT8D-120P-BGA-0H	636-3200-5 00	26.8	25.5
		IT8D-120P-BGA-1H	636-3300-0 00		
192 (+112 ground)		IT8D-192P-BGA-0H	636-3201-8 00	43.3	42
		IT8D-192P-BGA-1H	636-3301-2 00		
288 (+168 ground)		IT8D-288P-BGA-0H	636-3202-0 00	65.3	64
		IT8D-288P-BGA-1H	636-3302-5 00		

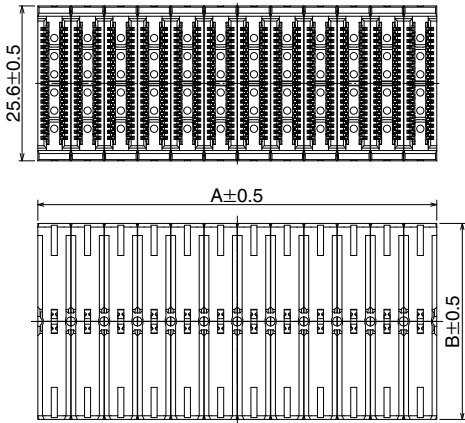
■Receptacle



Note : Figure shows a product with a mounting tape.
Products are shipped with mounting tape attached.

Unit : mm						
Signal contact No.	Type	Part No.	HRS No.	A	B	C
120 (+70 ground)	Two piece type	IT8MB-120S-BGA-10H	636-3804-0 00	27.3	8.6	8.75
192 (+112 ground)		IT8MB-192S-BGA-10H	636-3805-0 00	43.8	8.6	8.75
288 (+168 ground)		IT8MB-288S-BGA-10H	636-3806-0 00	65.8	8.6	8.75
120 (+70 ground)		IT8MB-120S-BGA-12H	636-3906-0 00	27.3	8.6	10.75
192 (+112 ground)		IT8MB-192S-BGA-12H	636-3905-0 00	43.8	8.6	10.75
288 (+168 ground)		IT8MB-288S-BGA-12H	636-3907-0 00	65.8	8.6	10.75

■Interposer



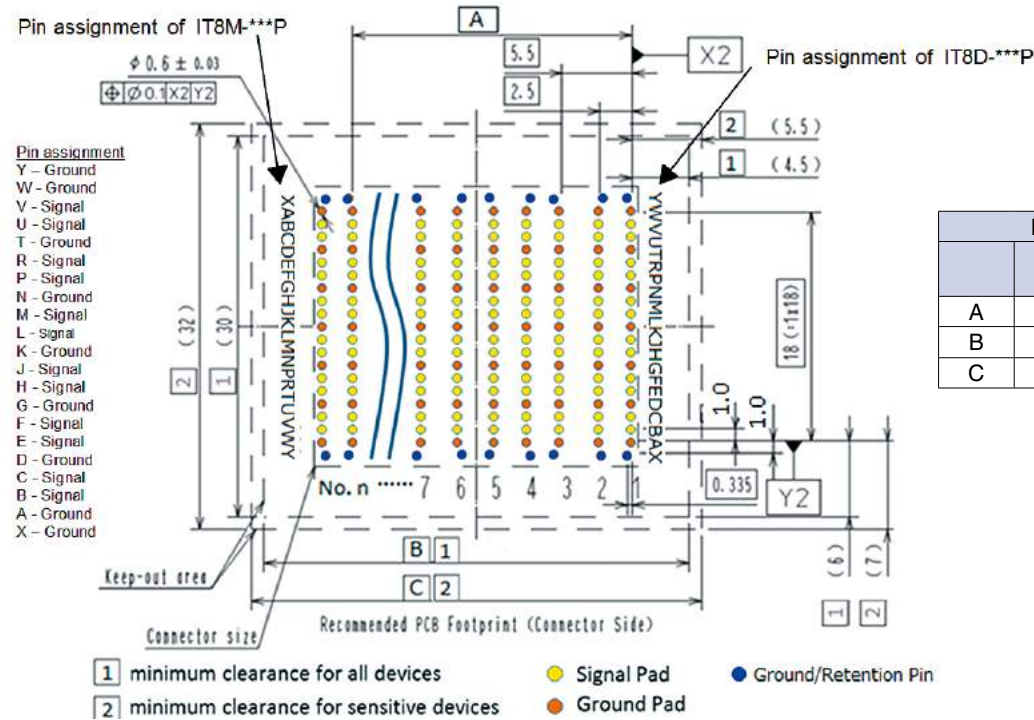
Unit : mm				
Signal contact No.	Part No.	HRS No.	A	B
120 (+70 ground)	IT8-120S-14H	636-3526-0 00	27.44	11.4
	IT8-120S-18H	636-3529-0 00		15.4
	IT8-120S-22H	636-3506-0 00		19.4
	IT8-120S-25H	636-3503-0 00		22.4
	IT8-120S-28H	636-3509-0 00		25.4
	IT8-120S-32H	636-3512-0 00		29.4
	IT8-120S-35H	636-3500-9 00		32.4
	IT8-120S-38H	636-3517-0 00		35.4
	IT8-120S-41H	636-3520-0 00		38.4
	IT8-120S-44H	636-3523-0 00		41.4

Unit : mm				
Signal contact No.	Part No.	HRS No.	A	B
288 (+168 ground)	IT8-288S-14H	636-3528-0 00	65.94	11.4
	IT8-288S-18H	636-3531-0 00		15.4
	IT8-288S-22H	636-3508-0 00		19.4
	IT8-288S-25H	636-3505-0 00		22.4
	IT8-288S-28H	636-3511-0 00		25.4
	IT8-288S-32H	636-3514-0 00		29.4
	IT8-288S-35H	636-3502-4 00		32.4
	IT8-288S-38H	636-3519-0 00		35.4
	IT8-288S-41H	636-3522-0 00		38.4
	IT8-288S-44H	636-3525-0 00		41.4

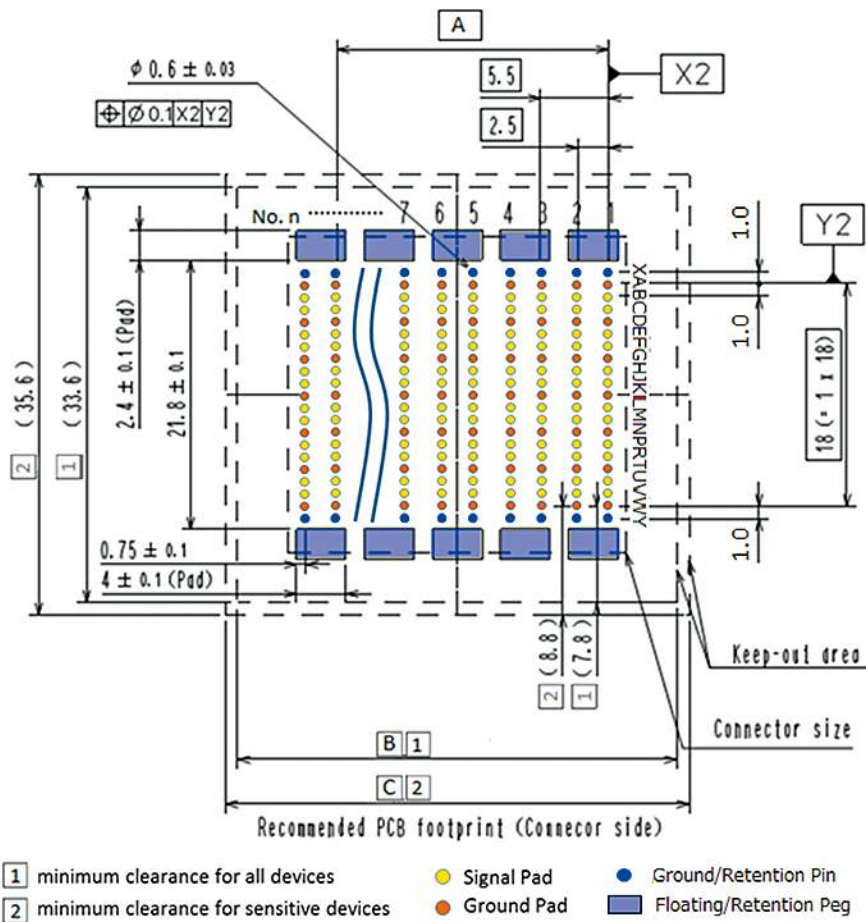
Unit : mm				
Signal contact No.	Part No.	HRS No.	A	B
192 (+112 ground)	IT8-192S-14H	636-3527-0 00	43.94	11.4
	IT8-192S-18H	636-3530-0 00		15.4
	IT8-192S-22H	636-3507-0 00		19.4
	IT8-192S-25H	636-3504-0 00		22.4
	IT8-192S-28H	636-3510-0 00		25.4
	IT8-192S-32H	636-3513-0 00		29.4
	IT8-192S-35H	636-3501-1 00		32.4
	IT8-192S-38H	636-3518-0 00		35.4
	IT8-192S-41H	636-3521-0 00		38.4
	IT8-192S-44H	636-3524-0 00		41.4

◆Recommended Land Pattern Dimension of PCB
(Metal mask thickness : t=0.127 to 0.15mm)

●Plug (IT8M (or D) -***P-BGA-*H)

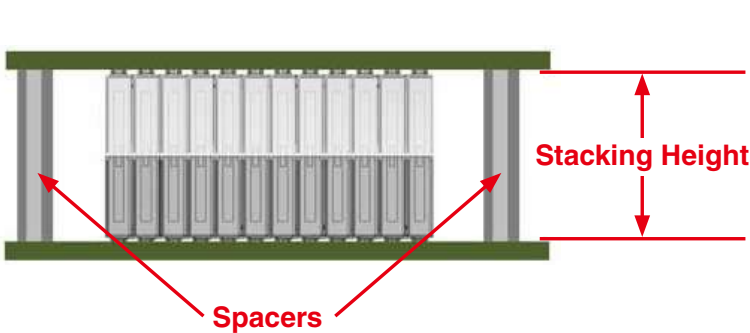


●Receptacle (IT8MB-***S-BGA-*H)



◆Spacers

Spacers are required to support the PWB's and protect the BGA solder joints.



Suggested spacer style is shown below :

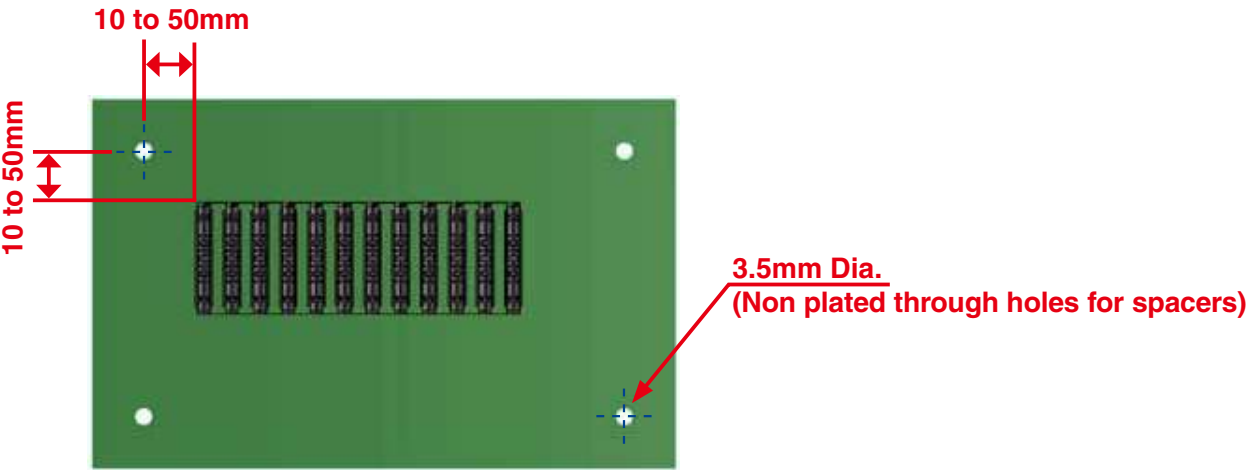


Spacer, male-male, M3 thread

The spacer heights must correspond to the stacking heights as shown below.

Stacking Height	Spacer Height
XXmm	XX +/-0.127mm

Note : XX is the value of stacking height.



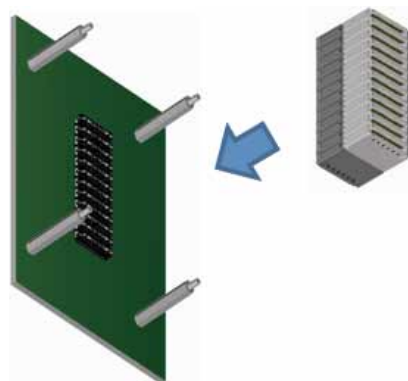
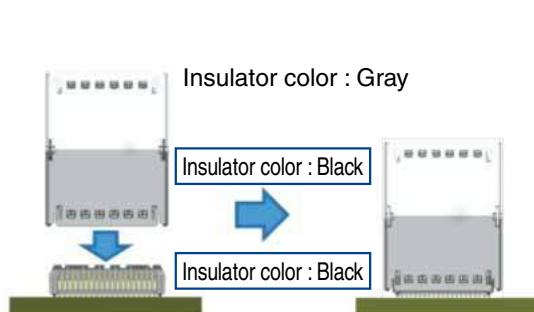
Four spacers located rectangularly or simmler are required. Spacers should be located 10 to 50mm from the corners of the plugs or receptacles to prevent excessive mechanical loading on the interconnections.

If assembly will be subjected to vibration, spacers should be located to prevent resonance, and additional spacers may be required.

◆ Interposer Installation

Mate black side of the interposer with the black mounting plug, otherwise signal pin-out will change and cause a system error.

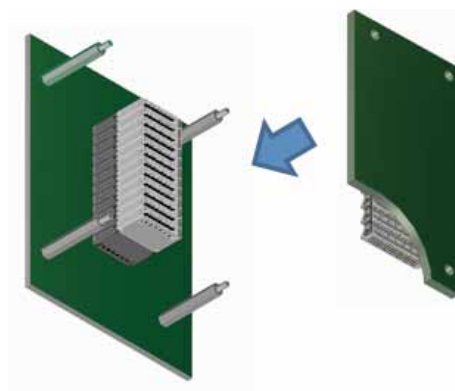
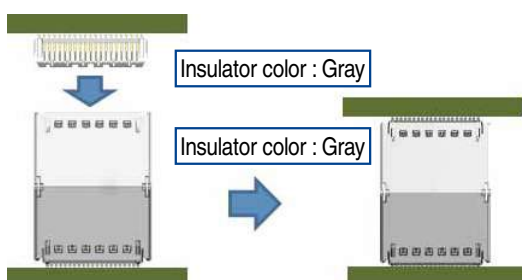
The interposer snaps onto the mounting plug as shown below.



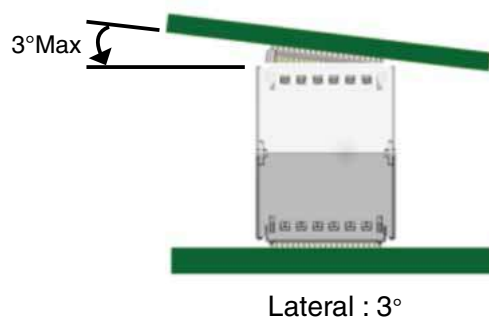
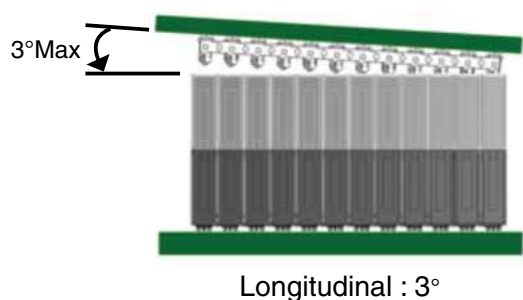
◆ Daughter Card Installation

Insulator color of the detachable plug is gray, and the detachable plug must mate with the gray side of the interposer.

The spacers should be installed prior to the operation. The detachable plug shall be aligned with the interposer and pressed on as shown below.

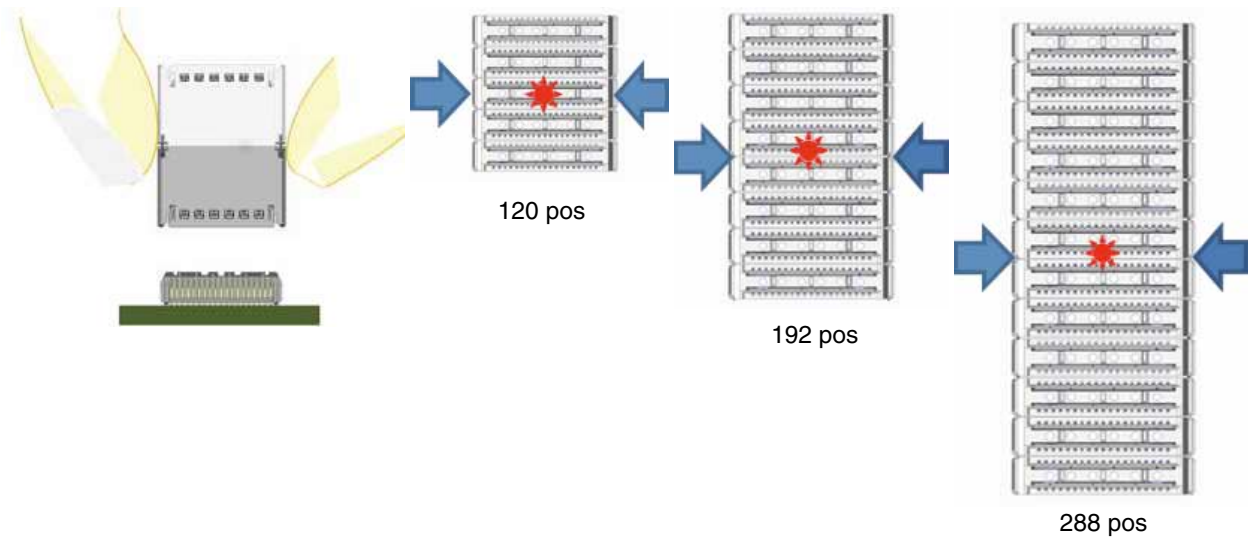


In mating operation, 0° for following angles are preferred. In case keeping 0° is difficult, following maximum angles should not be exceeded during manual installation of the daughter card as shown below :



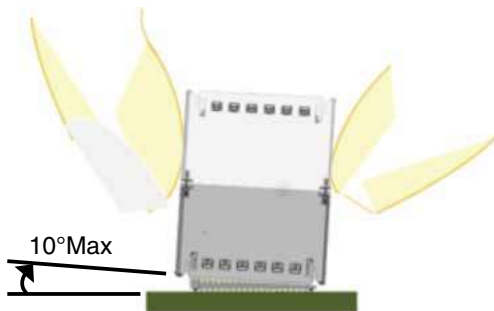
◆Interposer Removal

The removal of interposer shall be 5 times max. For removal, hold the Interposer on the walls as shown below. Also, please grab the walls close to the gravity center of the interposer to prevent tilting of the interposer during removal operation.



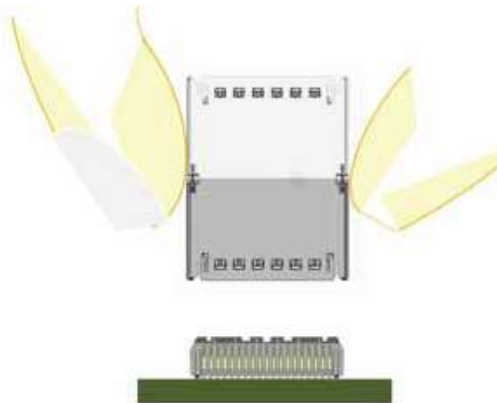
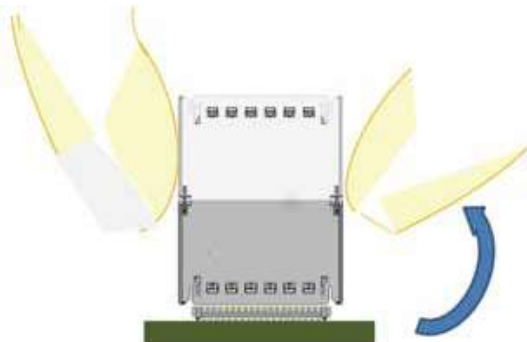
1) Hold the Interposer on the walls.

2) Gently rotate one side of the Interposer laterally 10° maximum



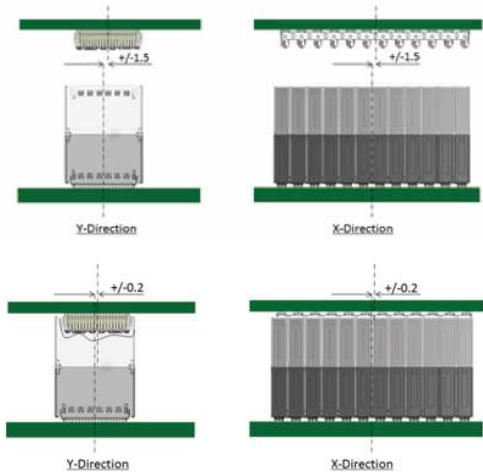
3) While gently rotating, pull up on other side of the Interposer.

4) The Interposer is removed, and the Mounting Plug is ready to accept another Interposer.



◆Mating Self Alignment

IT8 connector system have wide guiding taper for self alignment so that IT8 accept $\pm 1.5\text{mm}$ tolerance in the both X-direction and Y-direction



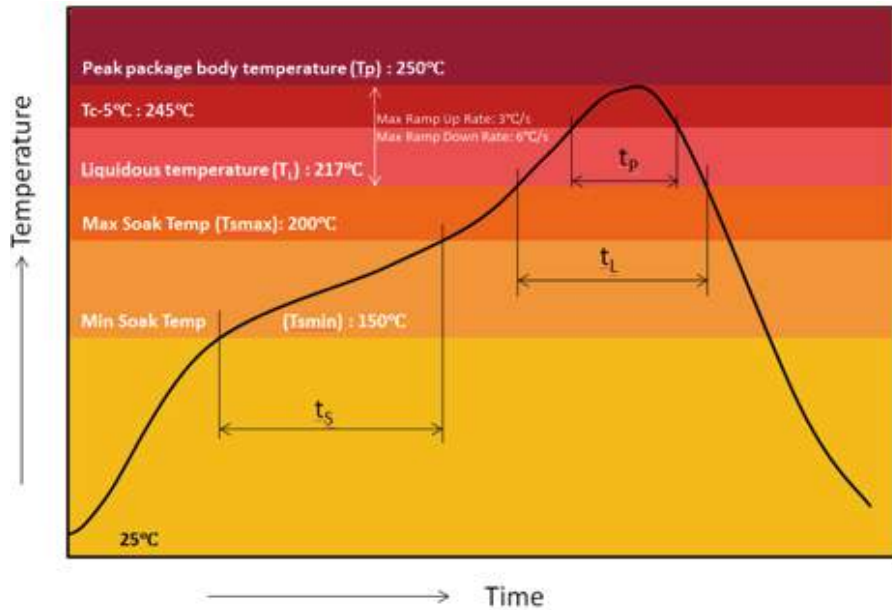
◆Mating Tolerance

Due to its unique floating structure design, the IT8 connector system can accept mating tolerances of up to $\pm 0.2\text{mm}$ tolerance in the both X-direction and Y-direction for multiple connector use.

◆Assembly Relow Soldering Profile

Profile Feature	Condition	Note
Preheat/Soak Temperature Min (T _{smin}) Temperature Max (T _{smax}) Time (ts) from (T _{smin} to T _{smax})	150°C 200°C 60 to 120 seconds	Soak requirements determined by board design, oven capability, and paste activation requirements. Caution- "oversoaking" may exhaust flux and affect soldering.
Ramp-up rate (TL to Tp)	3°C/second max.	Other components may limit ramp rate to 2°C/sec.
Liquidous temperature (TL) Time (t _L) maintained above TL	217°C 60 to 150 seconds	Shorter t _L may require higher peak temperature.
Peak package body temperature (Tp)	250°C max.	Cooler peak temperatures may require longer t _L . For users Tp must not exceed the Classification temp (Tc) of 250°C.
Time (tp)* within 5°C of the specified classification temperature (Tc)	30 seconds max.	
Ramp-down rate (Tp to TL)	6°C/second max.	
Package Body Exposure Limit at Maximum Temperature	5 seconds	Adjust profile if maximum exposure limits approached or exceeded.

All temperatures refer to the center of the connector body, measured on the connector body surface that is facing up during assembly reflow.
Reflow profiles in this document are basically according to IPC/JEDEC J-STD-020D. 1 and are for preconditioning.
Actual board assembly profiles should be developed based on specific process needs and board designs and should not exceed the parameters in upper Table.



Different solder pastes have different thermal performance characteristics.Consult with paste manufacturer for optimum profile setting.

◆Packaging Information

Please order per box with its Minimum Order Quantity (MOQ) of connectors contained.
The number for each configuration is shown below.

(Receptacle) IT8MB-*S-BGA-***H**
(Plug) IT8M (or D) -*P-BGA-***H**

Part No.	Quantity per Tray	Quantity per Box (3 trays + 1 rid *1)
IT8*-120P (or S) -BGA-***H	36pcs	108pcs
IT8*-192P (or S) -BGA-***H	24pcs	72pcs
IT8*-288P (or S) -BGA-***H	16pcs	48pcs

*1 : The lid is an empty Tray or a specialized lid.

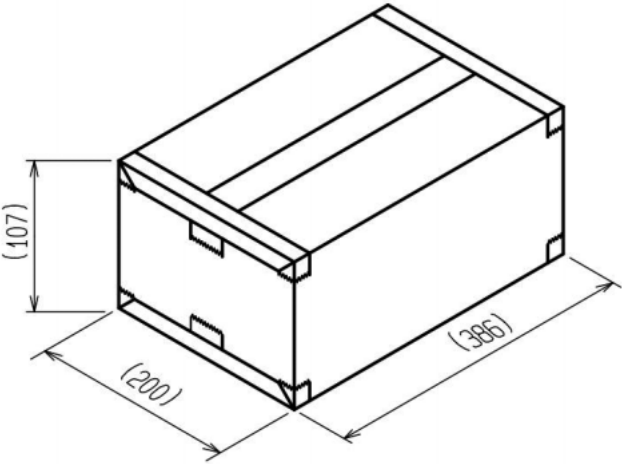
(Interposer) IT8-*S-***H**

No. of Contacts	Quantity per Tray
120pos	36pcs
192pos	24pcs
288pos	16pcs

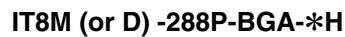
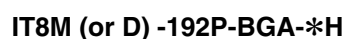
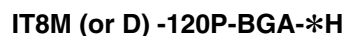
No. of Contacts	Quantity per Box (28 to 44H type) (1 trays + 1 rid *2)	Quantity per Box (14 to 25H type) (2 trays + 1 rid *2)
120pos	36pcs	72pcs
192pos	24pcs	48pcs
288pos	16pcs	32pcs

*2 : The lid is a specialized lid.

◆Final Appearance of Packaging

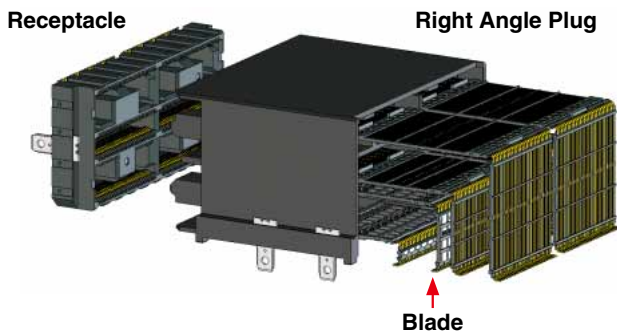


● Receptacle



32⁺Gbps 0.5mm pitch Board to Board Connector

IT9 Series



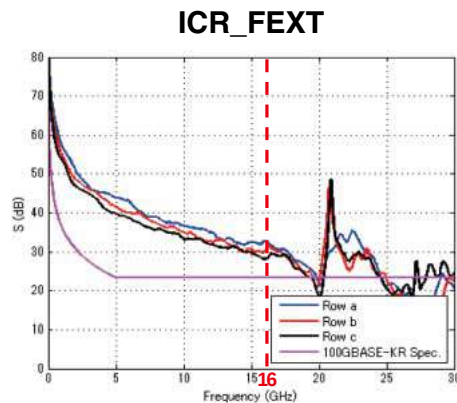
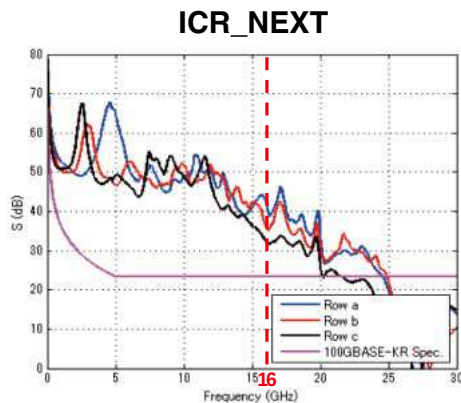
Mechanical features

- 3row or 4row 0.5mm pitch SMT array
- Number of contacts : 84pos, 152pos, 224pos.
- Mating length : 2.0mm
- High density
 - 50 Differential pairs / linear inch (224pos.)
- Blade variation
 - Differential signal blade (GSSGSSG...)
 - Power & low signal blade (SSSS...)
- Large mating guide ± 1.6 mm
- Multiple connectors are allowed on the same PCB
- Robustness (Large retention pegs)

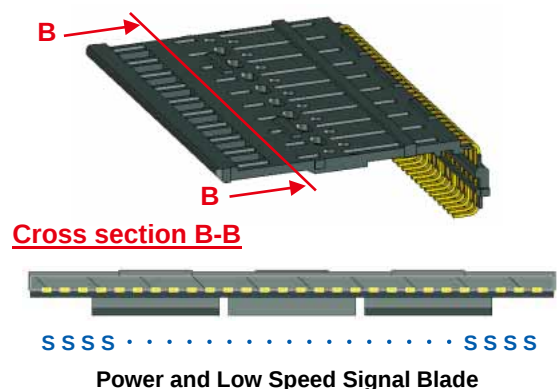
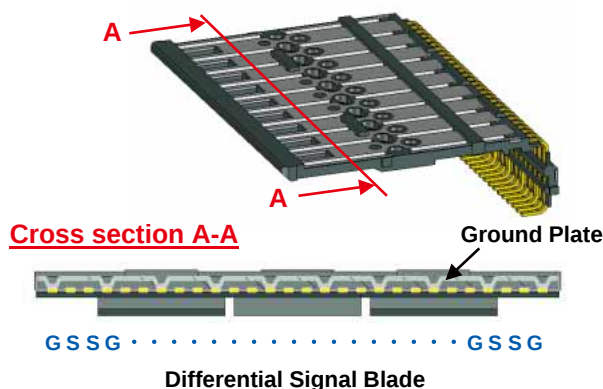
Signal integrity features

● Insertion Loss-to-Crosstalk-Ratio (ICR)

The insertion loss-to-crosstalk ratio (ICR) with 5-aggressor differential FEXT meets the IEEE802.3ap specification for 32Gbps with plenty of margins.



Transmission blade variation



Product Specifications

Rating	Current Rating : 0.3A (Note 3) (Differential signal blade) 0.5A (Power and low speed signal blade) Voltage Rating : AC/DC 50V	Operating Temperature Range : -55~+85°C (Note 1) Storage Temperature Range : -10~+60°C (Note 2)
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Item	Specification	Conditions
1. Contact Resistance	Row a : 60mΩ max Row b : 70mΩ max Row c : 80mΩ max Row d : 90mΩ max	100mA
2. Insulation Resistance	100MΩ min	100V DC
3. Voltage Proof	No flashover or insulation breakdown	150V AC / 1min
4. Durability (mating/unmating)	Contact resistance change : 10mΩ or less No damage, crack or looseness of parts	100 cycles
5. Vibration	No electrical discontinuity of 1μs or more No damage, crack or looseness of parts	Frequency : 20 to 500Hz, Power spectral density : 0.02G ² /Hz for 60 min in 3 directions
6. Thermal Shock	Contact resistance change : 10mΩ or less No damage, crack or looseness of parts	Temperature -55°C→20~35°C→85°C→20~35°C Time(min) 30 → 5MAX → 30 → 5MAX Under 10 cycles
7. Cyclic Temperature and Humidity	Contact resistance change : 10mΩ or less No damage, crack or looseness of parts	25°C, 90-95% RH : 120 min Dwell time ↑ ↓ 120 min Ramp time 65°C, 90-95% RH : 120 min Dwell time Under 60 cycles
8. Dry Heat	Contact resistance change : 10mΩ or less No damage, crack or looseness of parts	105°C, 300 hours
9. Dust	Contact resistance change : 10mΩ or less	Unmated 1 hour
10. Mixed Flow Gas	Contact resistance change : 10mΩ or less No heavy corrosions	30°C 70% RH, Mated 10days Cl ₂ : 10ppb, NO ₂ : 200ppb, H ₂ S : 10ppb, SO ₂ : 100ppb

Note 1 : Includes temperature rise caused by current flow.

Note 2 : "Storage" means a long-term storage state for the unused product before assembly to PCB.

Note 3 : The rated current applies to per contact.

Note 4 : Information contained in this catalog represents general requirements for this Series. Contact us for the drawings and specifications for a specific part number shown.

Materials / Finish

●Receptacle

Part	Material	Finish & Remarks
Housing	LCP	Black, UL94V-0
Contact	Copper alloy	Contact area : Gold Mount area : Gold
Retention peg	Copper alloy	Tin plating

●Right Angle Plug

Part	Material	Finish & Remarks
Housing	LCP	Black, UL94V-0
Contact	Copper alloy	Contact area : Gold Mount area : Gold
Blade	LCP	Black, UL94V-0
Ground plate	Stainless steel	—
Retention peg	Copper alloy	Tin plating

Product Number Structure

Refer to the chart below when determining the product specifications from the product number.

Please select from the product numbers listed in this catalog when placing orders.

●Straight Receptacle

IT9M* - * S - 0.5 SV * (**)**

① ② ③ ④ ⑤ ⑥ ⑦

●Right Angle Plug

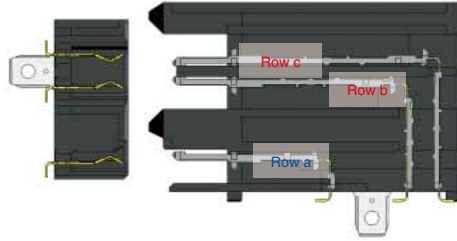
IT9M* - * P - 0.5 SH * (**)**

① ② ③ ④ ⑤ ⑥ ⑦

① Series Name	IT9M2, IT9M3
② Number of Positions	84, 224 : IT9M2 152 : IT9M3
③ Connector Type	S : Receptacle P : Plug
④ Contact Pitch	0.5 mm
⑤ Contact Type	SV : Straight Type SH : Right Angle Type
⑥ Row Count	3 : 3Rows 4 : 4Rows
⑦ Plating Specification	Blank : Contact Area : Gold(0.76μm)+Ni(3μm)

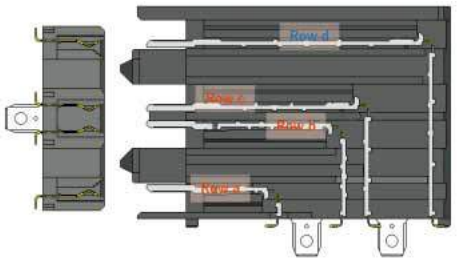
Pin Assignment

84pos. : IT9M2-84P-0.5SH3 – IT9M2-84S-0.5SV3



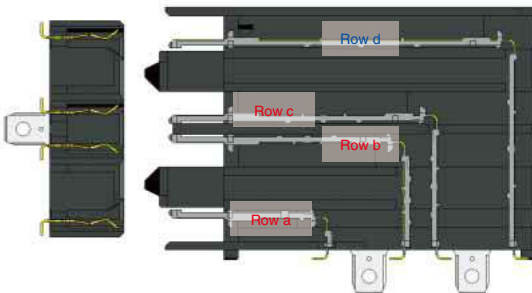
Number of Contacts	Column	Pin Number																											
		28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
84	Row c	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G
	Row b	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G
	Row a	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
	Row c : For High Speed Signal Row b : For High Speed Signal Row a : For Power and Low Speed Signal														S : Differential Signal Pin (36 Pins / 18 Pairs) G : Dedicated Ground Pin (20 Pins) U : Universal Pin (28 Pins)														

152pos. : IT9M3-152P-0.5SH4 – IT9M3-152S-0.5SV4



Number of Contacts	Column	Pin Number																														
																					10	9	8	7	6	5	4	3	2	1		
152	Row d																				U	U	U	U	U	U	U	U	U	U	U	U
	Row c																				U	U	U	U	U	U	U	U	U	U	U	U
	Row b																				U	U	U	U	U	U	U	U	U	U	U	U
	Row a																				U	U	U	U	U	U	U	U	U	U	U	U
	Column	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11			
	Row d	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G			
	Row c	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G			
	Row b	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G			
	Row a	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G			
1 to 10 Pin : For Power and Low Speed Signal 11 to 38 Pin : For High Speed Signal																S : Differential Signal Pin (72 Pins / 36 Pairs) G : Dedicated Ground Pin (40 Pins) U : Universal Pin (40 Pins)																

224pos. : IT9M2-224P-0.5SH4 – IT9M2-224S-0.5SV4

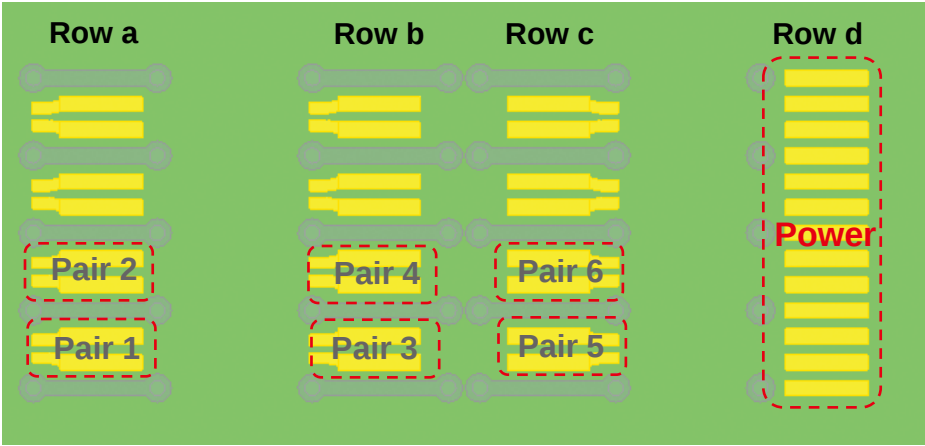


Number of Contacts	Column	Pin Number																											
		28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
224	Row d	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
	Row c	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G
	Row b	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G
	Row a	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G
	Column	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29
	Row d	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
	Row c	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G
	Row b	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G
	Row a	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G	S	S	G
	Row d : For Power and Low Speed Signal Row c : For High Speed Signal Row b : For High Speed Signal Row a : For High Speed Signal														S : Differential Signal Pin (108 Pins / 54 Pairs) G : Dedicated Ground Pin (60 Pins) U : Universal Pin (56 Pins)														

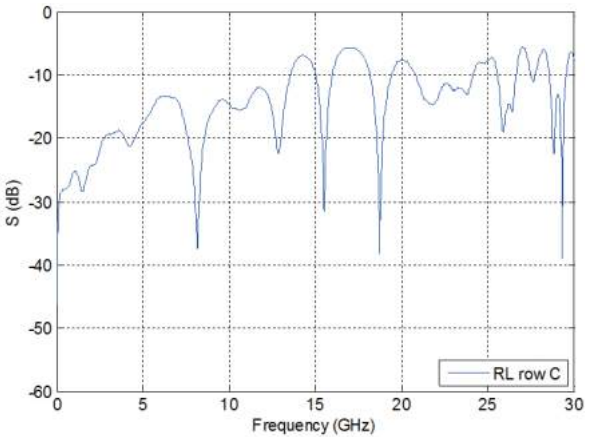
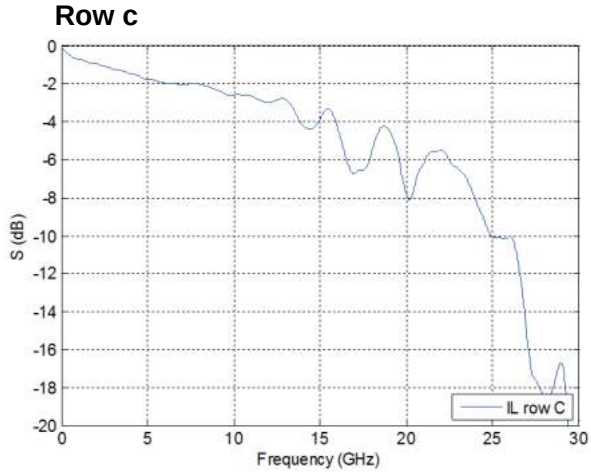
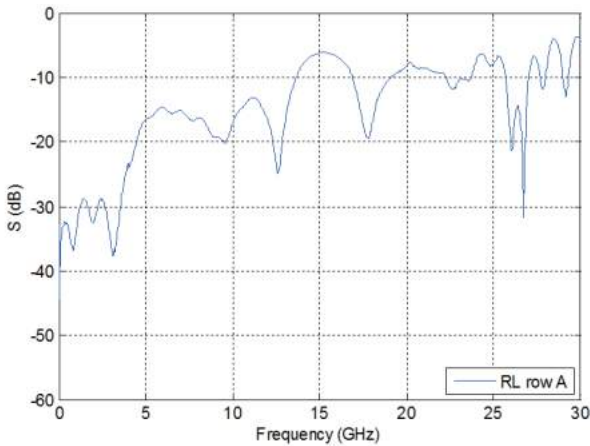
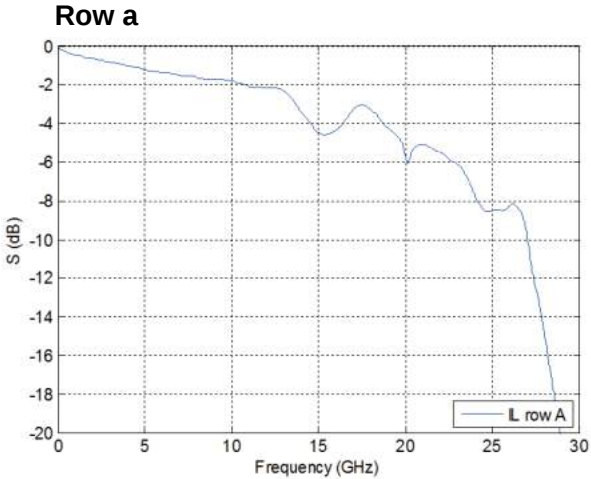
■Signal Integrity

●Pin assignment

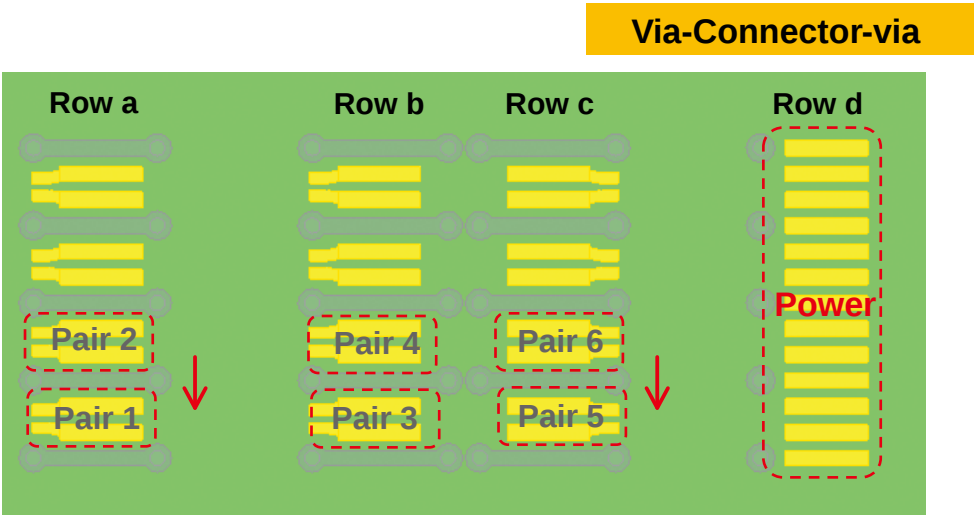
Via-Connector-via



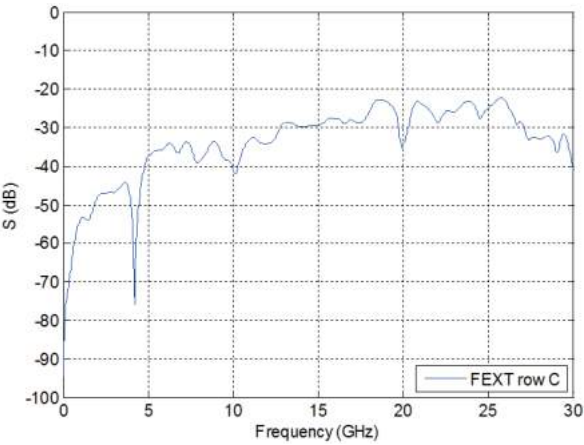
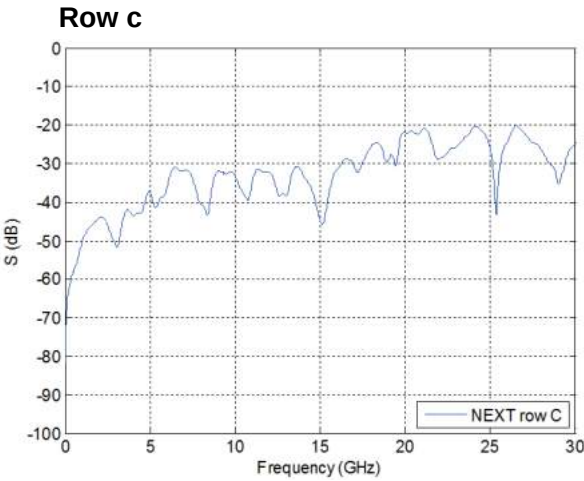
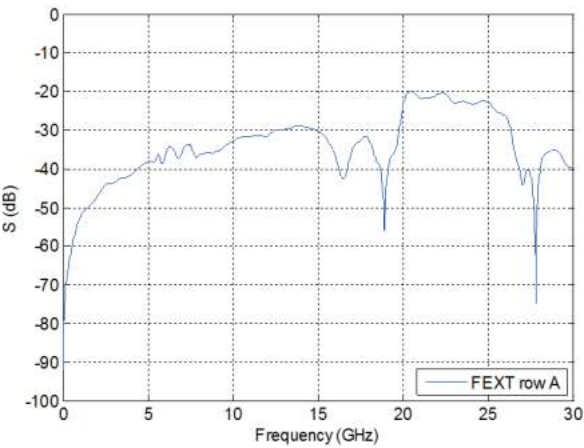
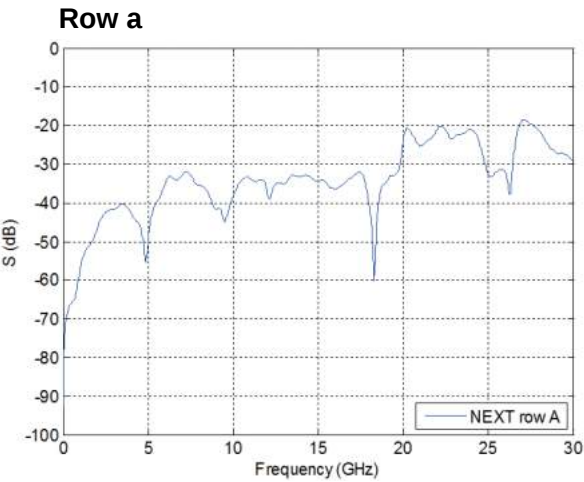
●Insertion Loss and Return Loss



●Pin assignment

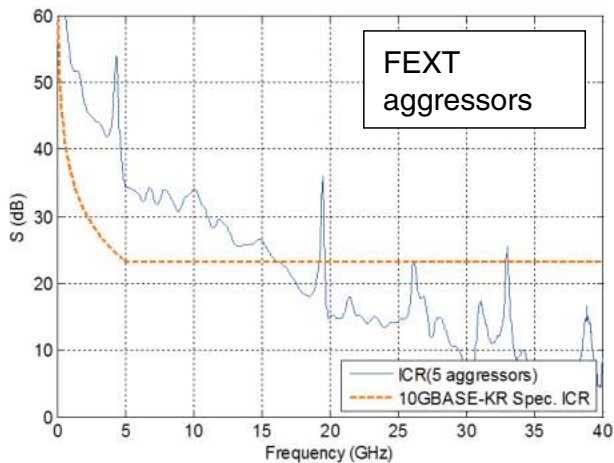
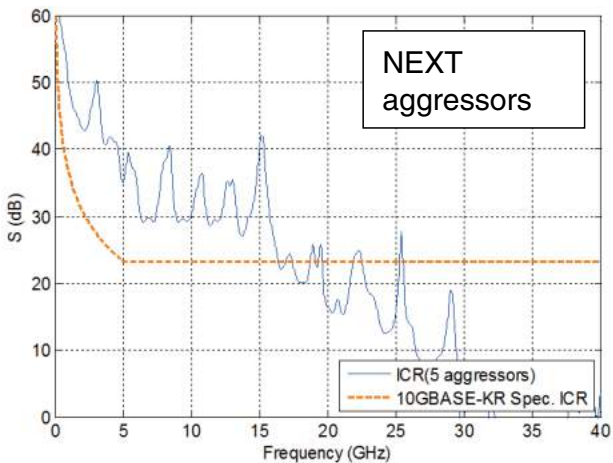
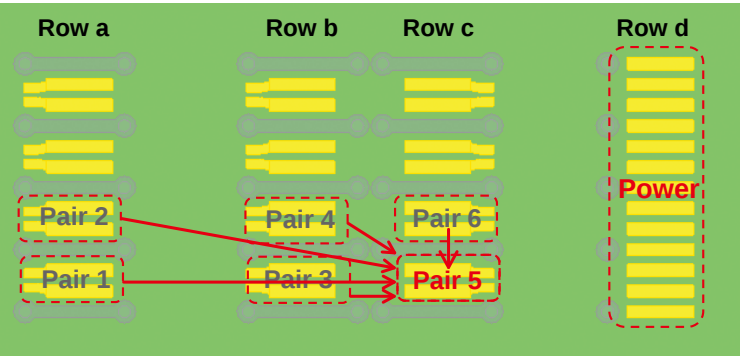
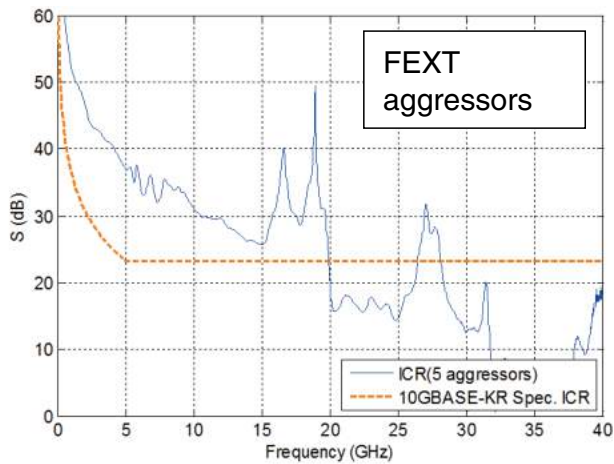
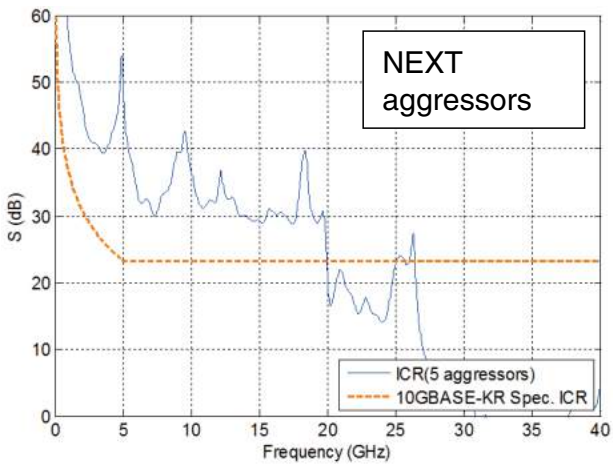
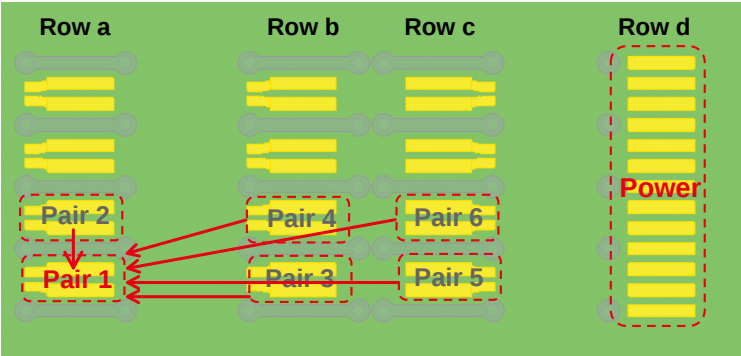


●Crosstalk



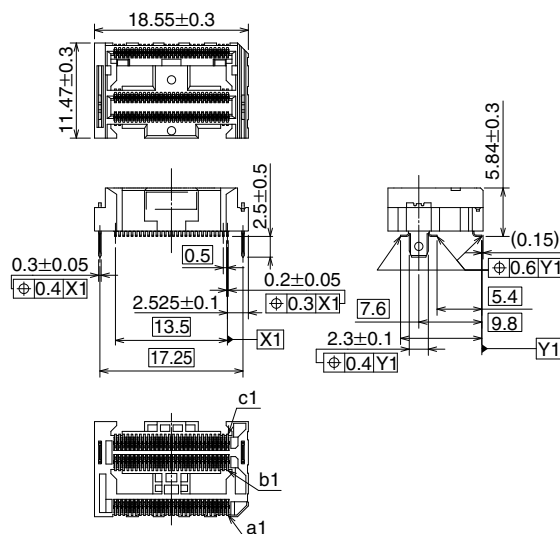
●Insertion-loss-to-crosstalk ratio (ICR)

The insertion-loss-to-crosstalk ratio (ICR) with 5-aggressor meets the extrapolated IEEE 802.3ap specification to 16GHz with plenty of margins.

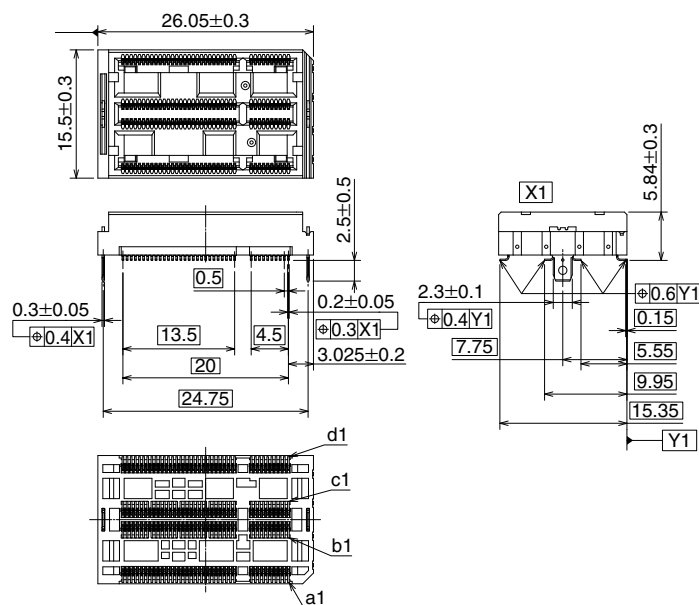


■Receptacle

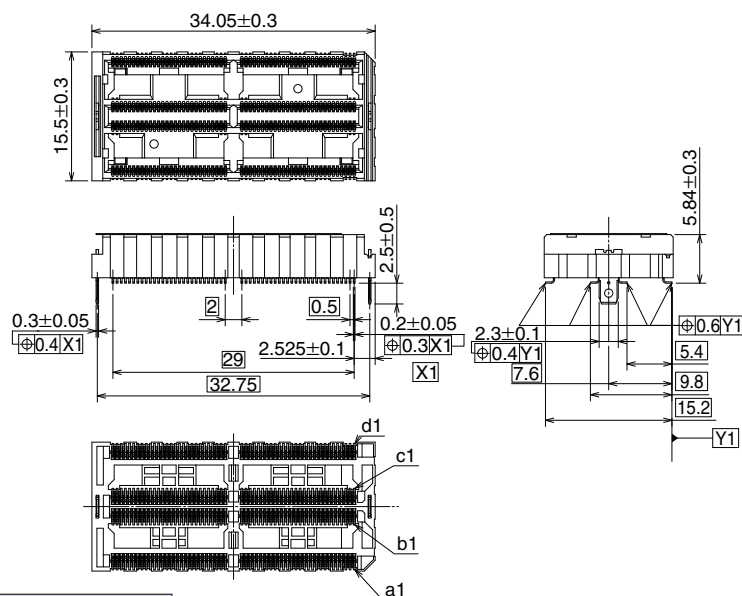
●3row type : IT9M2-84S-0.5SV3



●4row type : IT9M3-152S-0.5SV4



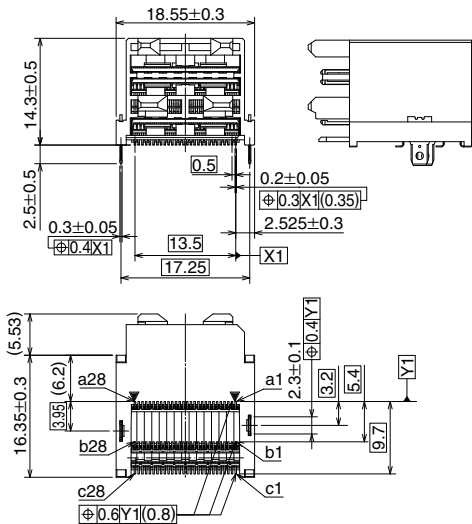
●4row type : IT9M2-224S-0.5SV4



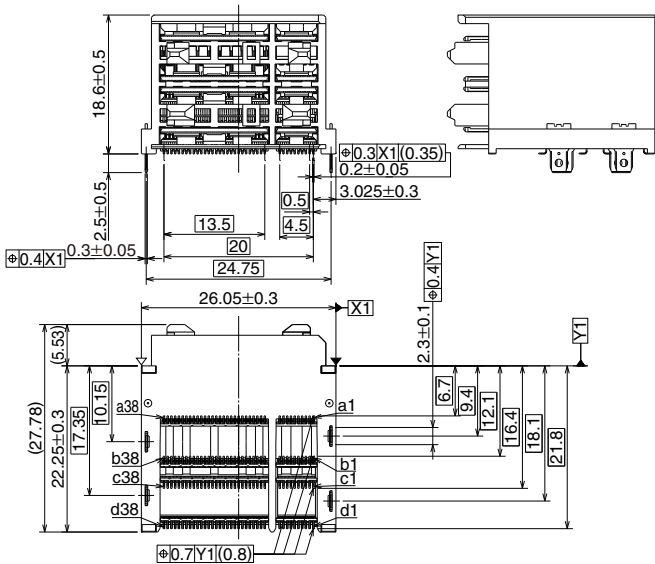
Part No.	HRS No.	No. of Contacts
IT9M2-84S-0.5SV3	636-1610-0	84
IT9M3-152S-0.5SV4	636-1801-0	152
IT9M2-224S-0.5SV4	636-1611-0	224

■Right angle plug

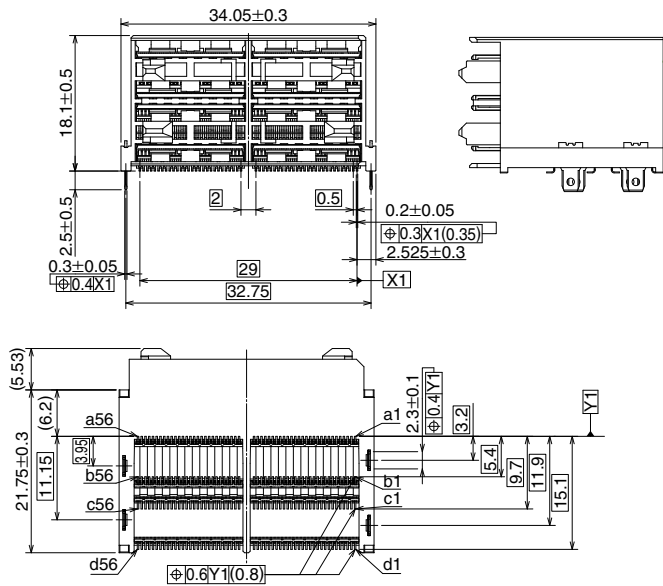
●3row type : IT9M2-84P-0.5SH3



●4row type : IT9M3-152P-0.5SH4



●4row type : IT9M2-224P-0.5SH4



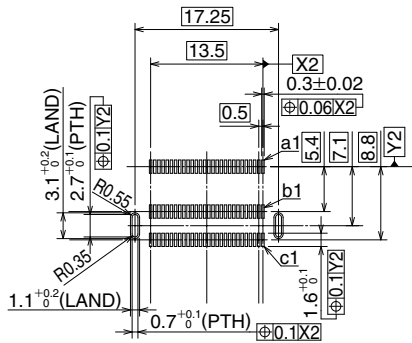
Part No.	HRS No.	No. of Contacts
IT9M2-84P-0.5SH3	636-1606-0	84
IT9M3-152P-0.5SH4	636-1800-0	152
IT9M2-224P-0.5SH4	636-1607-0	224

Recommended PCB Mouting Pattern

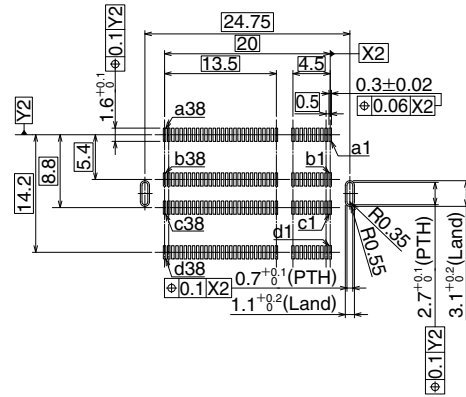
(Stencil thickness : $t=0.13\text{mm}$)

●Receptacle

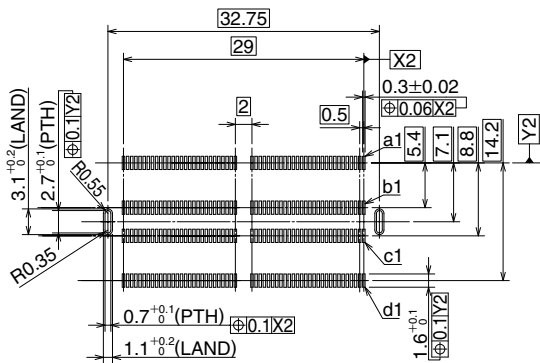
IT9M2-84S-0.5SV3



IT9M3-152S-0.5SV4

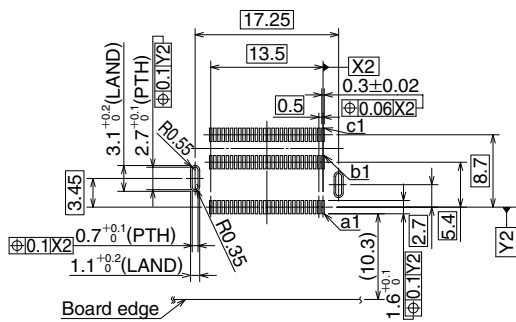


IT9M2-224S-0.5SV4

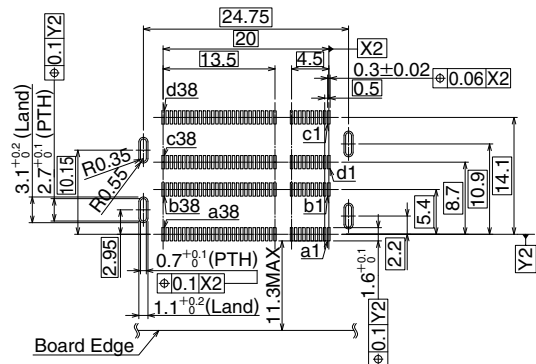


●Right angle plug

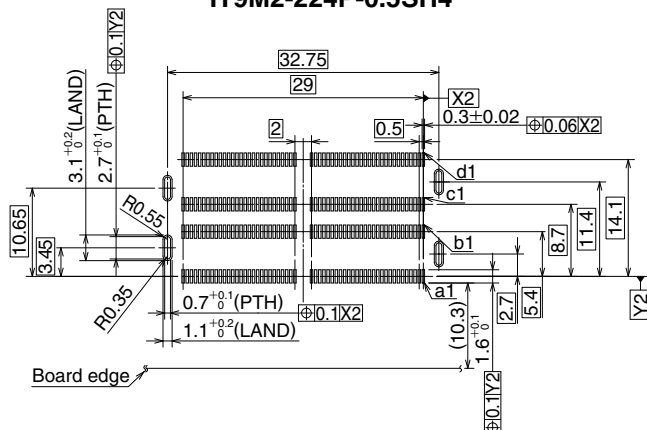
IT9M2-84P-0.5SH3



IT9M3-152P-0.5SH4



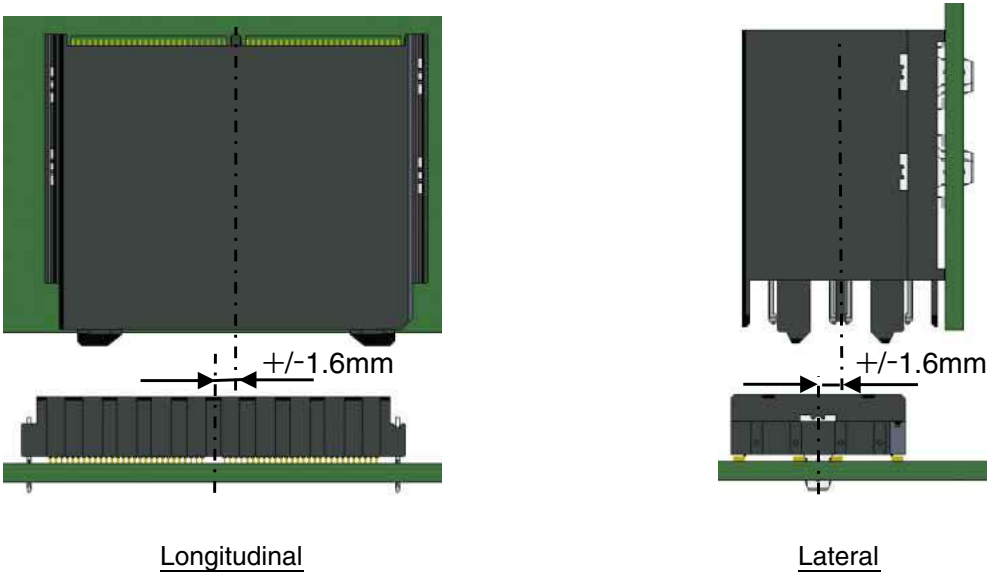
IT9M2-224P-0.5SH4



■Processing recommendations

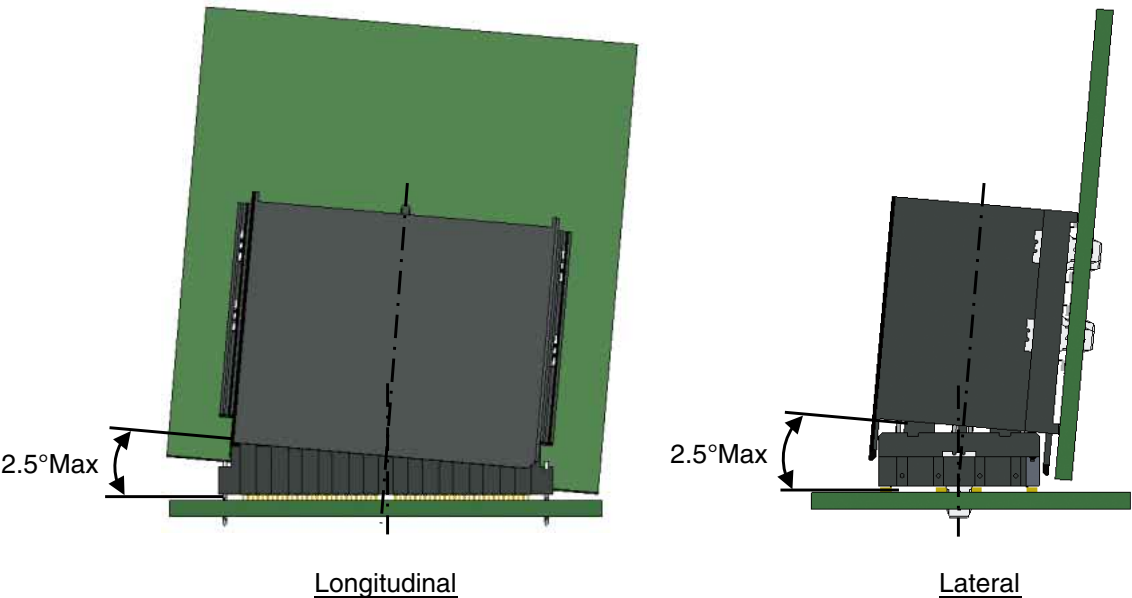
●Mating Alignment Requirements

Maximum mating guidance is up to ±1.6mm in both longitudinal and lateral directions.



These values do not include the influence of misalignment in other axis nor rotation / inclination in the same time, except for the misalignment in the single axis shown in each figure.

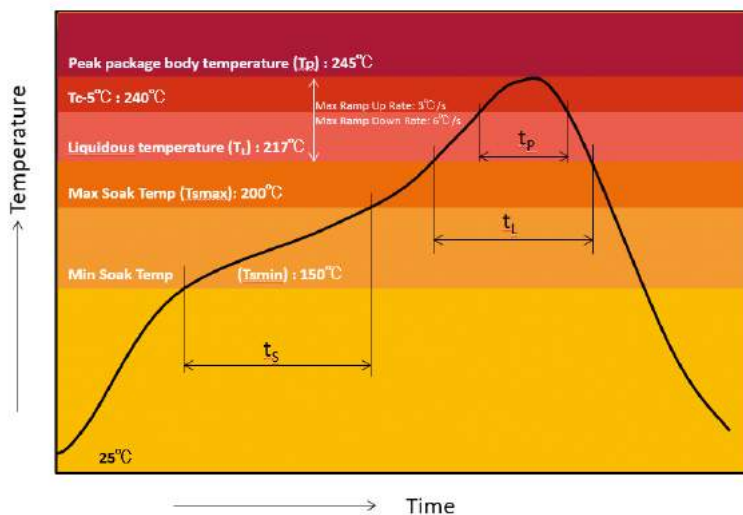
●Mating Angle Requirements



■ Mounting Temperature Profile (Reference)

Profile Feature	Condition	Note
Preheat/Soak Temperature Min (T _{smin}) Temperature Max (T _{smax}) Time (t _s) from (T _{smin} to T _{smax})	150°C 200°C 60-120 seconds	Soak requirements should be determined by board design, oven capability, and paste activation requirements. Caution- "oversoaking" may exhaust flux and affect soldering.
Ramp-up rate (TL to Tp)	3°C/second max.	Other components may limit ramp rate to 2°C/sec.
Liquidous temperature (TL) Time (t _L) maintained above TL	217°C 60-150 seconds	Shorter t _L may require higher peak temperature.
Peak package body temperature (Tp)	245°C max.	Cooler peak temperatures may require longer t _L . For users Tp must not exceed the classification temp (TC) of 250°C.
Time (t _p)* within 5°C of the specified classification temperature (Tc)	30 seconds max.	
Ramp-down rate (Tp to TL)	6°C/second max.	
Package Body Exposure Limit at Maximum Temperature	5 seconds	Adjust profile if maximum exposure limits approached or exceeded.

All temperatures refer to the center of the connector body, measured on the connector body surface that is facing up during assembly reflow. Reflow profiles in this document are based according to IPC/JEDEC J-STD-020D.1 and are for preconditioning. Actual board assembly profiles should be developed based on specific process needs and board designs and should not exceed the parameters in the table above.



Different solder pastes have different thermal performance characteristics. Consult with paste manufacturer for optimum profile setting.



Features

- 1 Molex "Mirror Mezz" Licensed Second Source
- 2 High Speed Transmission (56+Gbps NRZ / 112+Gbps PAM4)
- 3 OAM Specified Connector
- 4 High Pin Count, High Density : 688pos. (172DPs/in²)
- 5 Hermaphroditic Connector
- 6 Stub-less 2-point Contact Design
- 7 Protective Housing that Encapsulates the Contact Tips Prevents Warping During Mating



High-Speed



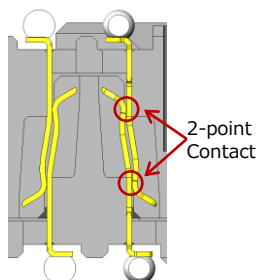
Low Profile



Stacking

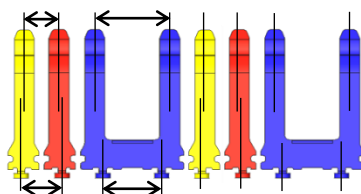
Contact Design

Stub-less Design



- Superior SI Performance
- 2-point Contact for Enhanced Reliability
- Wiping Amount : 1.5mm Max.

Impedance Matching (92Ω Target)

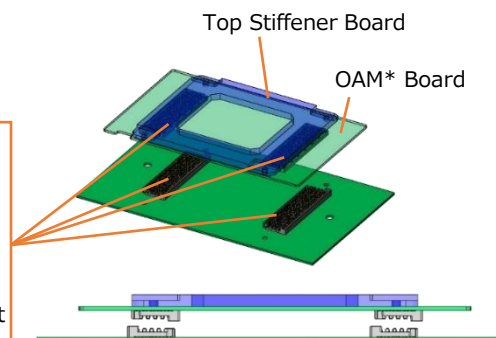


Pitch differs from contact portion and mounted portion for impedance optimization.



IT14:
5mm Stacking Height
(2.5mm + 2.5mm)
688pos.
172 Differential Pairs

Used in OAM* (OCP Accelerator Module)



Specifications

Rated Current	1.2A
Rated Voltage	30V AC/DC
Operating Temperature	-55 to +105°C
Contact Resistance*	30mΩ Max.
Withstanding Voltage	500V DC for 1min.
Insulation Resistance	1000MΩ (500V DC)
Mating Durability	100 times
Impedance	92Ω

*Includes conductor resistance.

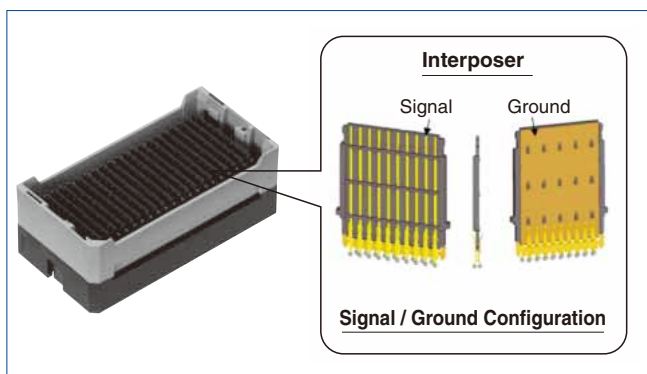
-Cross mates with Molex's Mirror Mezz.

-No. of Pos. : 688pos.

*OAM=OCP (Open Computer Project) Accelerator Module

High-Speed(10⁺Gbps) BGA Mezzanine Connectors

IT3 Series



Flexibility

Hirose's IT3 mezzanine connector system is as comfortable in today's data rates of PCIe and XAUI as it is in tomorrow's 10⁺Gbps systems. With the ability to transmit differential, single-ended, and power through one package and being stackable from 17 to 42mm, IT3 can solve your interface needs for both current and future generations.

Mechanical features

- Unique 3-piece structure for flexibility
- Stacking heights from 17 to 42mm
- Staggered 1.5mm × 1.75mm ball grid array
- Number of Contacts: 100, 200, & 300 signals + 90% additional grounds
- Differential, single-ended, and power
- Low mating/extracting forces
- Wide misalignment tolerances for multiple connector use
- Pb-free are available
- Excellent reflow solderability

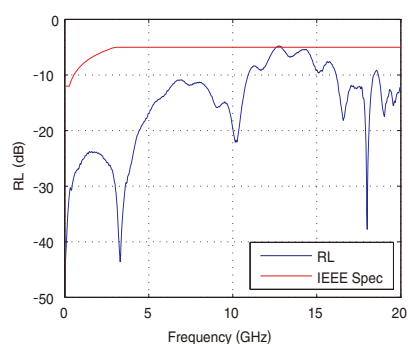
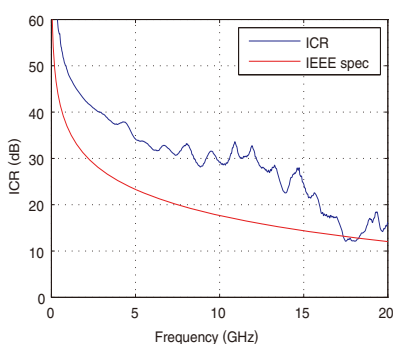
Signal integrity features

Insertion loss to Crosstalk Ratio (ICR)

The ICR performance meets the extrapolated IEEE 802.3ap specification for 6.25Gbps with fully-populated pin assignment, and 10⁺Gbps with skipped pin assignment.

Return Loss

The differential return loss meets the extrapolated IEEE 802.3ap specification up to 12GHz.



Stacking height variations

Stacking Height No. of Pos.	17 mm	18 mm	19 mm*	20 mm	21 mm*	22 mm	23 mm*	24 mm*	25 mm	26 mm	27 mm*	28 mm	29 mm*	30 mm*	31 mm*	32 mm	33 mm*	34 mm*	35 mm	36 mm*	37 mm*	38 mm	39 mm*	40 mm	41 mm*	42 mm*
100	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
200	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
300	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

*Mated with IT5 Series receptacle.

■Product Specifications

Rating	Current Rating : 1.0A / pin (note 1)	Operating Temperature Range : -55°C to +85°C
	Voltage Rating : 50Vrms	Operating Humidity Range : For relative humidity, 90% max (no condensation is permitted)
	Storage Temperature Range : -10°C to +60°C	

Item	Specification	Conditions
1. Insulation Resistance	1000MΩ min.	100V DC
2. Withstanding Voltage	No flashover or insulation breakdown	150V duty for 60 seconds (2mA max leak)
3. Contact Resistance	50mΩ max. (height 17-24mm) (note 2) 55mΩ max. (height 25-32mm) (note 2) 60mΩ max. (height 33-42mm) (note 2)	100mA
4. Vibration	1) No electrical discontinuity of 1μs or more 2) No damage, crack, or loose part	Frequency : 50 to 2000Hz ; power spectrum density : 0.1G ² /Hz for 90 minutes in three directions
5. Cyclic Temperature and Humidity	1) Contact resistance change : 20mΩ or less 2) No damage, crack or loose part	25°C, 80% RH : 60 min dwell time, 30 min ramp time 65°C, 50% RH : 60 min dwell time under 24 cycles
6. Durability (Mating/Un-mating)	1) Contact resistance change : 20mΩ or less 2) No damage, crack or loose part	100 cycles

Note1 : Refer to IT3 derating curves on test report TR636E-20041 for power application.

Note2 : The value of contact resistance includes 2 contact points and the bulk resistance.

■Materials / Finish

●Receptacle

Component	Material	Finish & Remarks
Housing(Mounting Side)	LCP	Black , UL 94V-0
Housing(Detachable / Mating Side)	LCP	Gray , UL 94V-0
Locator	LCP	Black , UL 94V-0
Contact	Copper Alloy	Contact Area : Gold (0.76μm) over Nickel (1.5μm) Mounting Area : Gold (0.05μm) over Nickel (1.5μm) Other : Nickel (1.5μm)
Solder Ball	Tin (Pb-Free)	Sn(96.5)-Ag(3)-Cu(0.5)
Tray	Polystyrene	Black
Pick Up Cap	Stainless steel	300pos
Pick Up Tape	Paper (Nomex)	100pos and 200pos

●Interposer

Component	Material	Finish & Remarks
Guide (Mounting Side)	PBT	Black , UL 94V-0
Guide (Detachable/Mating Side)	LCP	Gray , UL 94V-0
	PBT	Gray , UL 94V-0
Blade	LCP	Black , UL 94V-0
Contact	Copper Alloy	Contact Area : Gold (0.76μm) over Nickel (1.5μm) Other : Nickel (1.5μm)
Ground Shield	Copper Alloy	
Tray	Polypropylene	—

Product Number Structure

Refer to the chart below when determining the product specifications from the product number.
Please select from the product numbers listed in this catalog when placing orders.

●Receptacle

IT 3 ** - * S - BGA ** (**)**
① ② ③ ④ ⑤ ⑥ ⑦

●Interposer

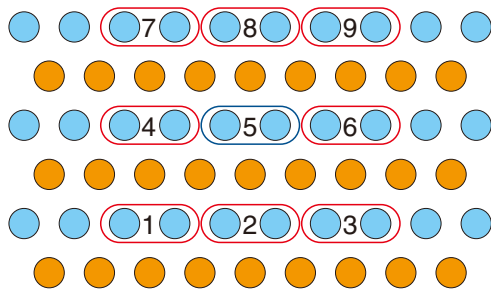
IT 3 ** - * P - ** H ** (**)**
① ② ③ ④ ⑤ ⑥ ⑦

① Series name : IT3	⑦ Material and Plating Specification of Mounting Receptacle Housing : Black (37) : Pb-free Solder Sn(96.5)-Ag(3.0)-Cu(0.5) Contact Area : Au(0.76μm)+Ni(1.5μm) Material and Plating Specification of Mating Receptacle Housing : Glay (39) : Pb-free Solder Sn(96.5)-Ag(3.0)-Cu(0.5) Contact Area : Au(0.76μm)+Ni(1.5μm)
② Receptacle Type D : Mating Receptacle D* : Mating Receptacle (Customized) M : Mounting Receptacle M* : Mounting Receptacle (Customized) Interposer Type Blank : Standard ** : Customized	⑧ Stacking Height (mm) 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42 Interposer : 17 to 40
③ Contact Positions : 100, 200, 300	⑨ Plating Specification of Interposer (03), (04) : Contact Area : Au(0.76μm)+Ni(1.5μm)
④ Connector type S : Receptacle P : Interposer	
⑤ BGA : Ball Grid Array	
⑥ Package Specification Blank : Standard ** : Customized	

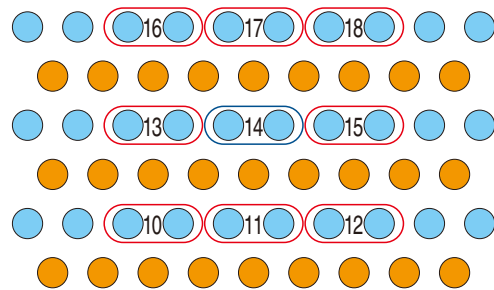
Signal Integrity

●Pin assignment

For the fully-populated pin assignment, adjacent pins are grouped into differential pairs as shown in the figures below. In the following data, one victim pair and eight aggressor pairs are included.



Mating receptacle side



Mounting receptacle side

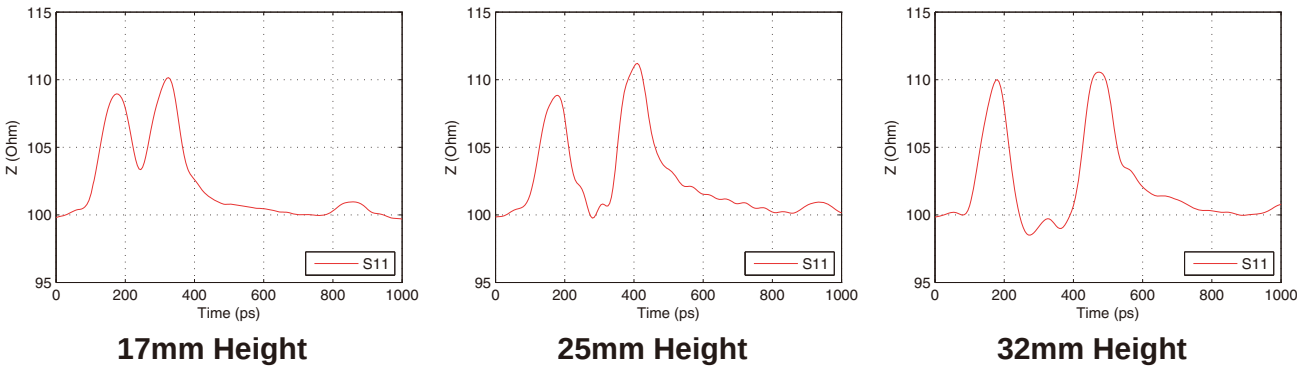
Signal
 Ground

 Victim pair

 Aggressor pair

●Impedance profile at 60ps rise time (20-80%)

The impedance profiles (of connector only) for the center pair are shown below. The IT3 receptacles are designed with higher impedance to offset the via's low impedance.

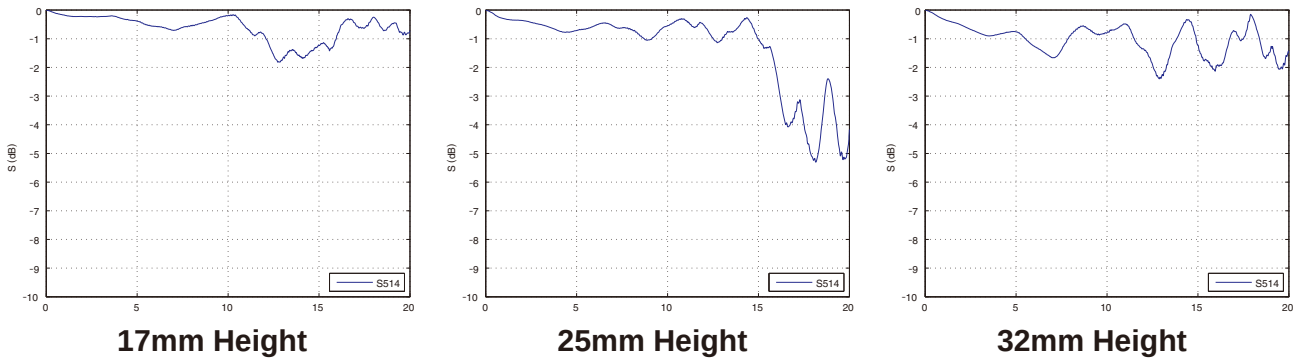


●Differential propagation delay

Stacking Height (mm)	17	25	32
Delay (ps)	101.05	146.69	188.48

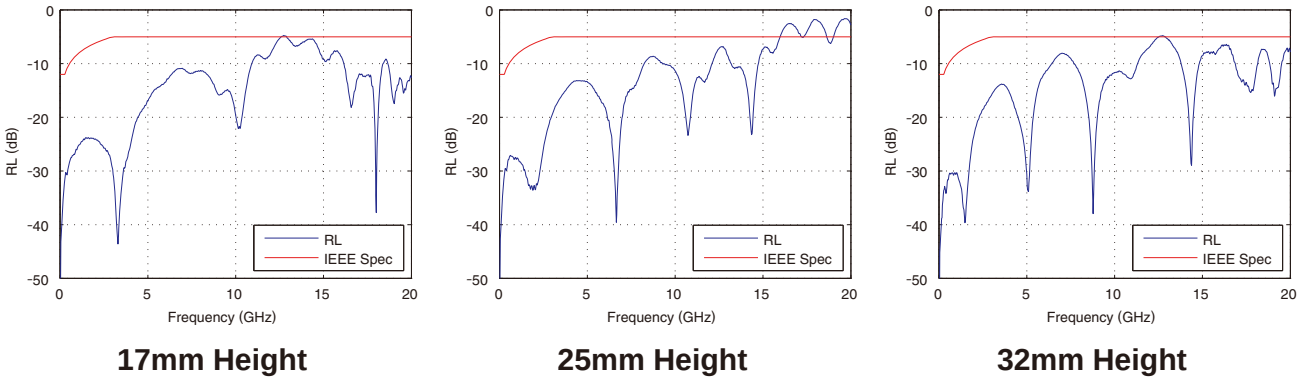
●Differential Insertion Loss

The differential insertion loss is less than -2dB up to 12GHz.



●Differential Return Loss

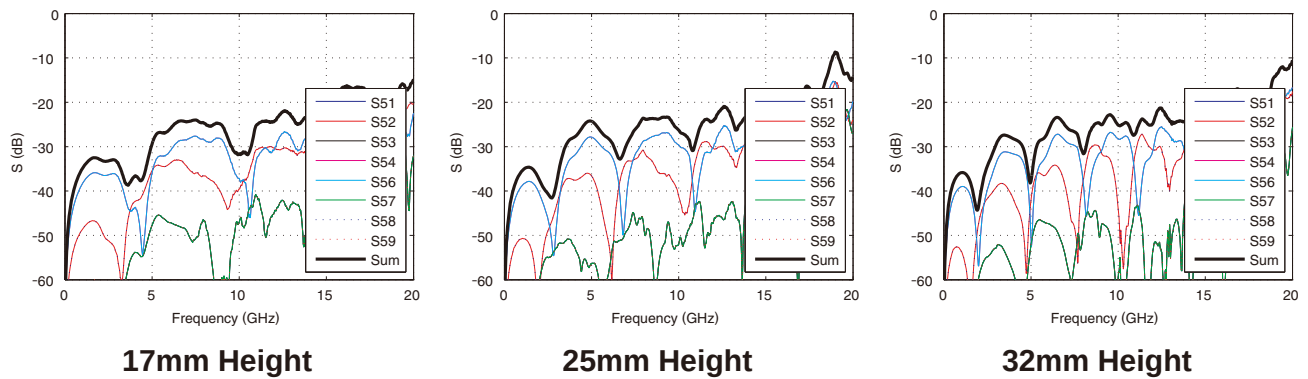
The connector-only differential return loss for the center pair meets the extrapolated IEEE 802.3ap spec up to 12GHz. (The attenuation of PCB traces in the channel will give an even larger margin.)



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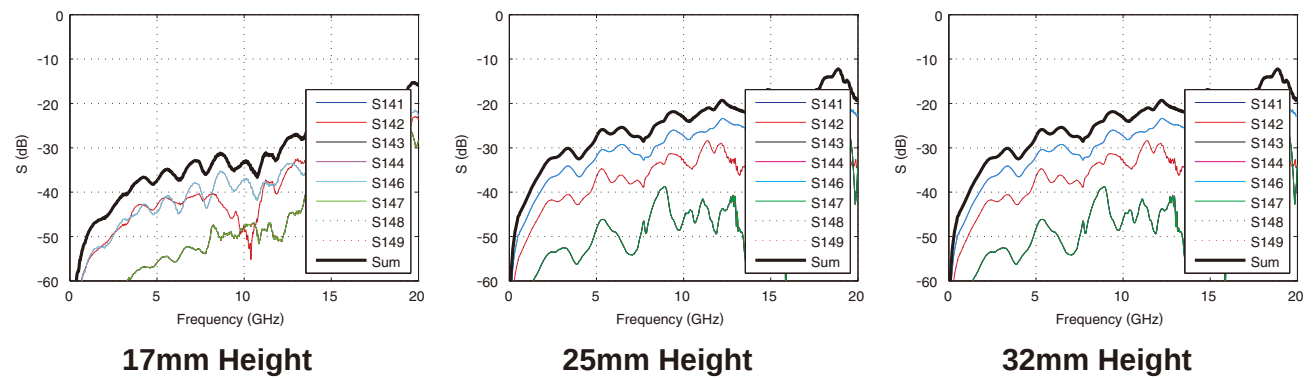
●Differential Near-End Crosstalk (NEXT)

The near-end crosstalk at the center pair from surrounding 8 aggressors is shown below. The NEXT is not as critical because TX and RX can be grouped into separate wafers.



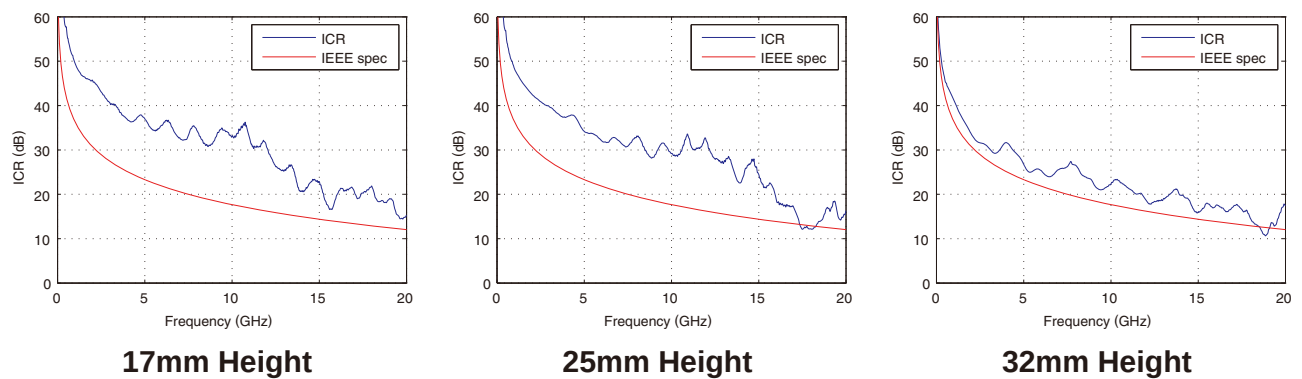
●Differential Far-End Crosstalk (FEXT)

Low far-end crosstalk at the center pair from surrounding 8 aggressors is observed. Even lower crosstalk can be achieved by skipping pins.



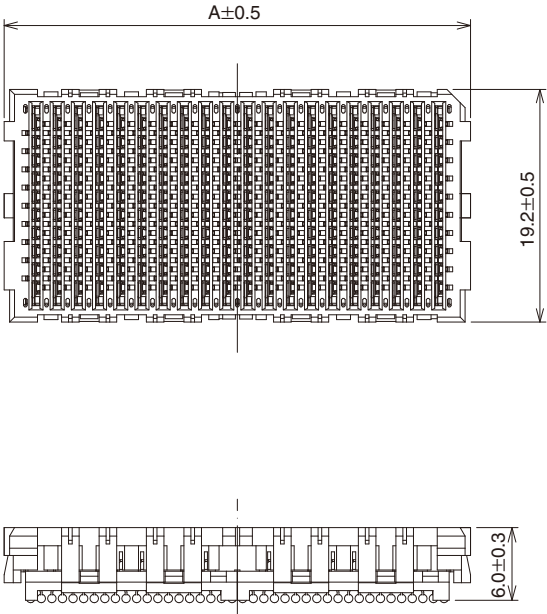
●Insertion-Loss-to-Crosstalk-Ratio (ICR) for FEXT

The insertion-loss-to-crosstalk-ratio (ICR) for 8-aggressor FEXT meets the extrapolated IEEE 802.3ap specification up to 12GHz.



●Refer to IT5 Series for higher density and higher transmission speed needs.

■Receptacle

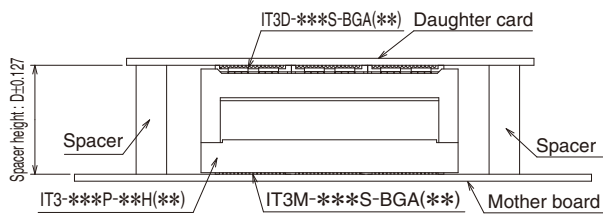
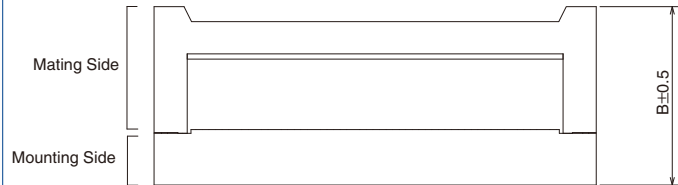
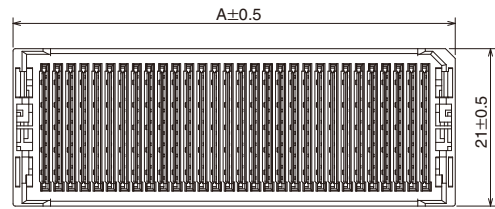


Shown: 200 position mounting receptacle, IT3M-200S-BGA

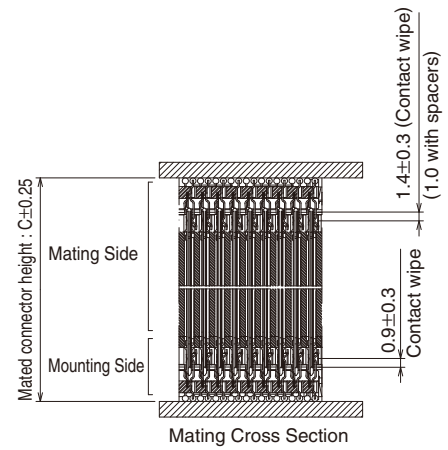
*Unit : mm

Contact Positions	Type	Solder Ball Material	Part No.	HRS No.	A
100 (100 signals/90 grounds)	Mating Receptacle	Pb-free (SAC305) solder	IT3D-100S-BGA(39)	636-0013-1 39	21.0
	Mounting Receptacle	Pb-free (SAC305) solder	IT3M-100S-BGA(37)	636-0014-4 37	
200 (200 signals/180 grounds)	Mating Receptacle	Pb-free (SAC305) solder	IT3D-200S-BGA(39)	636-0003-8 39	38.5
	Mounting Receptacle	Pb-free (SAC305) solder	IT3M-200S-BGA(37)	636-0004-0 37	
300 (300 signals/270 grounds)	Mating Receptacle	Pb-free (SAC305) solder	IT3D-300S-BGA(39)	636-0007-9 39	56.0
	Mounting Receptacle	Pb-free (SAC305) solder	IT3M-300S-BGA(37)	636-0008-1 37	

Interposer



Mating condition with spacers

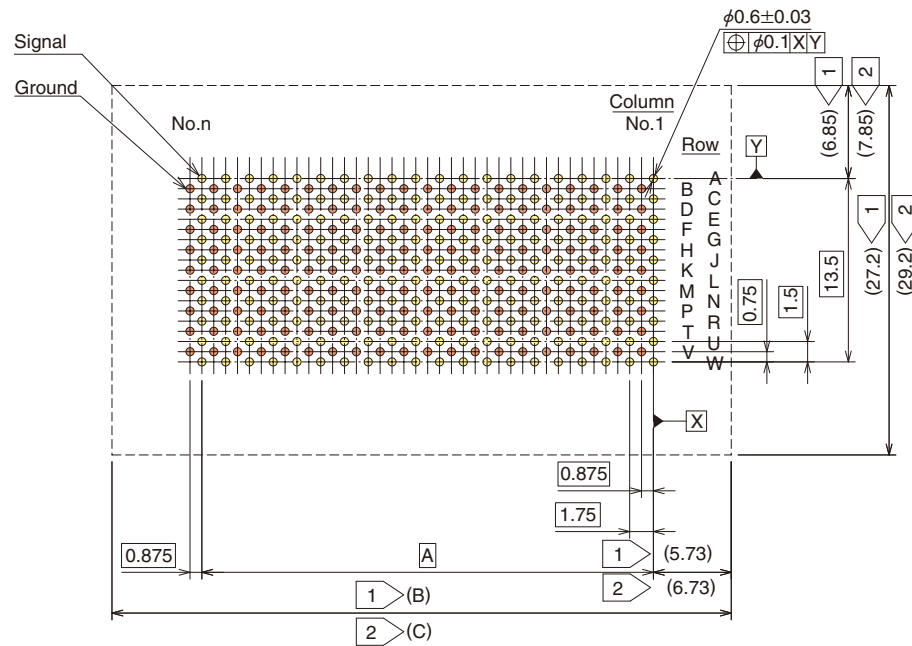


Mating condition without spacers

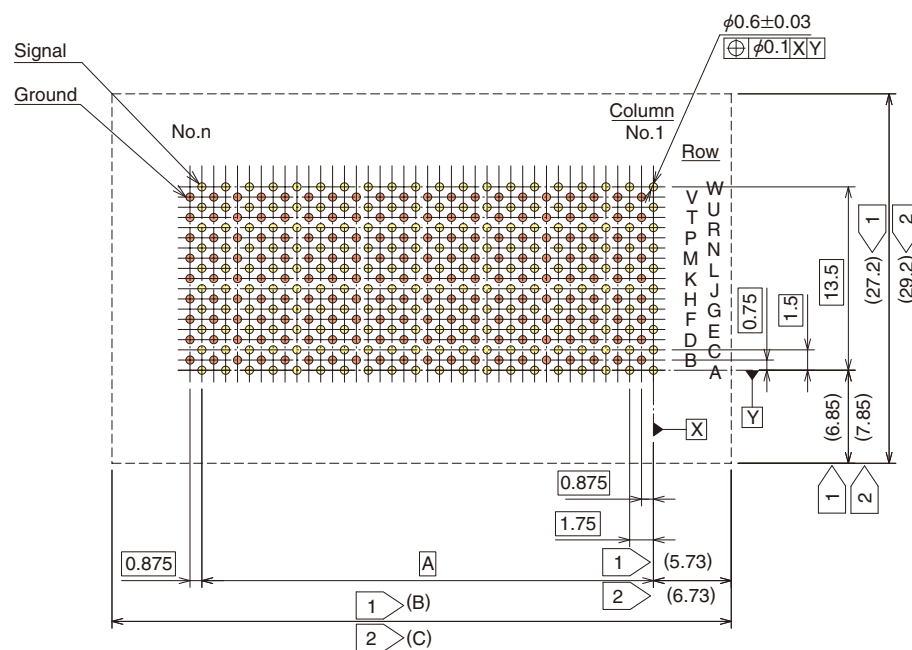
*Unit : mm

Height (mm)	Part No.	HRS No.	A	B	C	D	Height (mm)	Part No.	HRS No.	A	B	C	D
17	IT3-100P-17H(04)	636-0265-4 04	24.0	15.8	16.6	17.0	28	IT3-100P-28H(04)	636-0170-0 04	24.0	26.8	27.6	28.0
	IT3-200P-17H(04)	636-0100-4 04	41.5					IT3-200P-28H(04)	636-0105-8 04	41.5			
	IT3-300P-17H(04)	636-0130-5 04	59.0					IT3-300P-28H(04)	636-0140-9 04	59.0			
18	IT3-100P-18H(03)	636-0250-7 03	24.0	16.8	17.6	18.0	30	IT3-200P-30H(04)	636-0180-3 04	41.5	28.8	29.6	30.0
	IT3-200P-18H(03)	636-0252-2 03	41.5					IT3-300P-30H(04)	636-0185-7 04	59.0			
	IT3-300P-18H(03)	636-0254-8 03	59.0					IT3-100P-32H(04)	636-0266-7 04	24.0			
20	IT3-100P-20H(03)	636-0223-4 03	24.0	18.8	19.6	20.0	32	IT3-200P-32H(04)	636-0115-1 04	41.5	30.8	31.6	32.0
	IT3-200P-20H(03)	636-0224-7 03	41.5					IT3-300P-32H(04)	636-0145-2 04	59.0			
	IT3-300P-20H(03)	636-0225-0 03	59.0					IT3-100P-35H(03)	636-0239-4 03	24.0			
22	IT3-100P-22H(03)	636-0264-1 03	24.0	20.8	21.6	22.0	35	IT3-200P-35H(03)	636-0240-3 03	41.5	33.8	34.6	35.0
	IT3-200P-22H(03)	636-0209-3 03	41.5					IT3-300P-35H(03)	636-0241-6 03	59.0			
	IT3-300P-22H(03)	636-0210-2 03	59.0					IT3-100P-38H(03)	636-0200-9 03	24.0			
25	IT3-100P-25H(04)	636-0150-2 04	24.0	23.8	24.6	25.0	38	IT3-200P-38H(03)	636-0195-0 03	41.5	36.8	37.6	38.0
	IT3-200P-25H(04)	636-0155-6 04	41.5					IT3-300P-38H(03)	636-0190-7 03	59.0			
	IT3-300P-25H(04)	636-0160-6 04	59.0					IT3-100P-40H(03)	636-0230-0 03	24.0			
26	IT3-100P-26H(04)	636-0165-0 04	24.0	24.8	25.6	26.0	40	IT3-300P-40H(03)	636-0175-3 03	59.0	38.8	39.6	40.0
	IT3-200P-26H(04)	636-0110-8 04	41.5										
	IT3-300P-26H(04)	636-0135-9 04	59.0										

◆PCB footprint (mounting foot pattern)



Mounting Receptacle - IT3M Plug



Mating Receptacle - IT3D

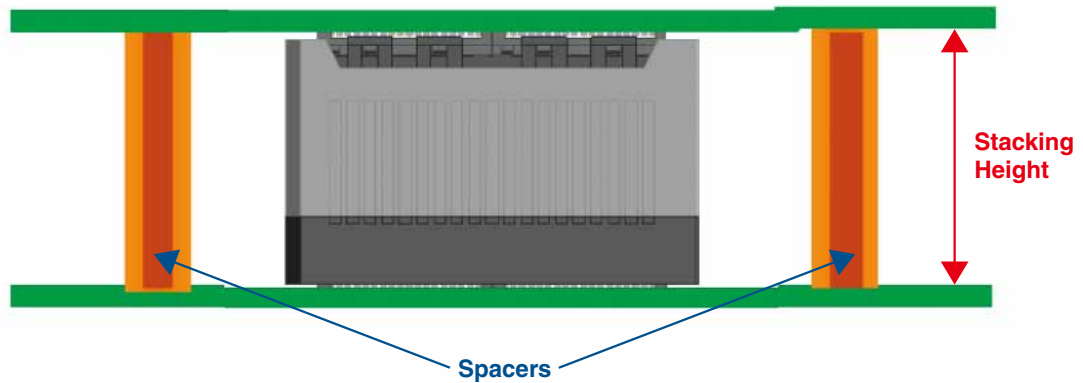
- 1 Minimum clearance for all devices
- 2 Minimum clearance for sensitive devices

*Unit : mm

Dimension	100	200	300
A	15.75	33.25	50.75
B	28.10	45.60	63.10
C	30.10	47.60	65.10

◆ Spacers

Spacers are required to support the PWB's and protect the BGA solder joints.



Suggested spacer style is shown below :

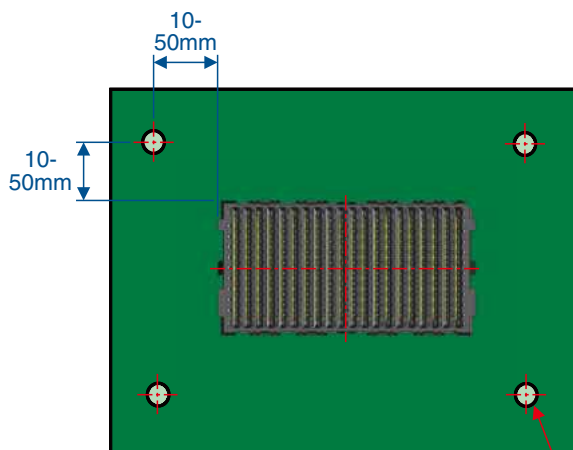


Spacer, male-male, M3 thread

The recommended spacer height corresponds to the interposer stacking height as shown in the chart below :

Stacking Height	Recommended Spacer Height
17 mm	17 $\pm$ 0.127 mm
18 mm	18 $\pm$ 0.127 mm
19 mm	19 $\pm$ 0.127 mm
20 mm	20 $\pm$ 0.127 mm
21 mm	21 $\pm$ 0.127 mm
22 mm	22 $\pm$ 0.127 mm
23 mm	23 $\pm$ 0.127 mm
24 mm	24 $\pm$ 0.127 mm
25 mm	25 $\pm$ 0.127 mm
26 mm	26 $\pm$ 0.127 mm
27 mm	27 $\pm$ 0.127 mm
28 mm	28 $\pm$ 0.127 mm
29 mm	29 $\pm$ 0.127 mm
30 mm	30 $\pm$ 0.127 mm

Stacking Height	Recommended Spacer Height
31 mm	31 $\pm$ 0.127 mm
32 mm	32 $\pm$ 0.127 mm
33 mm	33 $\pm$ 0.127 mm
34 mm	34 $\pm$ 0.127 mm
35 mm	35 $\pm$ 0.127 mm
36 mm	36 $\pm$ 0.127 mm
37 mm	37 $\pm$ 0.127 mm
38 mm	38 $\pm$ 0.127 mm
39 mm	39 $\pm$ 0.127 mm
40 mm	40 $\pm$ 0.127 mm
41 mm	41 $\pm$ 0.127 mm
42 mm	42 $\pm$ 0.127 mm



Recommended Spacer Location

φ3.5
Non plated through hole

Two spacers located diagonally are minimally required. Some applications may require 4 spacers. Spacers should be located 10 – 50 mm from the corners of the receptacles to prevent excessive mechanical loading on the interconnections. If assembly will be subjected to vibration, spacers should be located to prevent resonance, and additional spacers may be required.

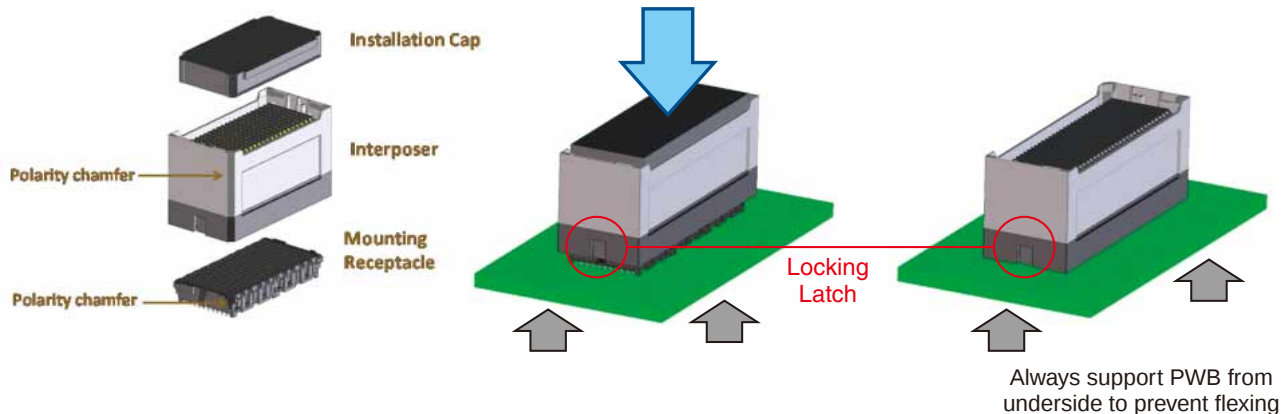
◆ Interposer installation

Position interposer directly over mounting receptacle, aligning the polarity chamfers. If positioned properly, the interposer should slide easily onto the mounting receptacle. Place installation cap onto interposer and push straight down to engage the locking latches.

Manual Installation

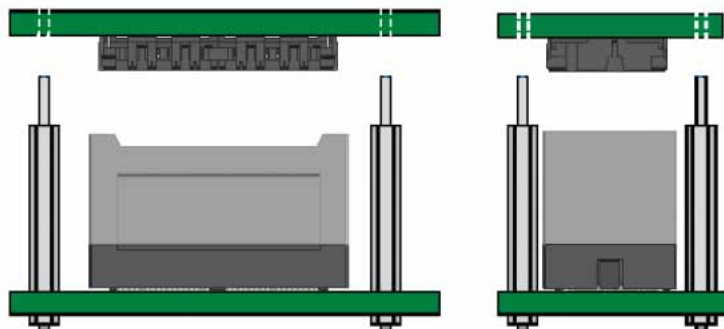
*Installation caps are available upon request for manual operation

Press firmly on installation cap only, not on wafers or interposer body

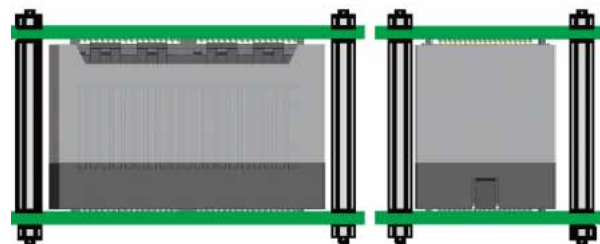


◆ Daughter card installation

After the interposer is mounted, install spacers onto motherboard. To install mating receptacle, align the spacer holes in the daughter card with the threads on the spacers.

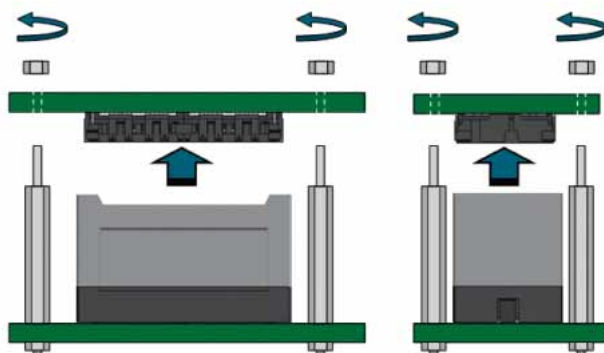


The spacers help align the mating receptacle with the interposer. If positioned correctly, the mating receptacle will slip down into the interposer. Push directly down on the assembly to lock the mating receptacle in place. Install nuts onto the spacer threads. Tighten nuts to specified torque.



◆ Daughter card removal

To remove a daughter card, first remove the nuts from the reinforcing spacers, then lift the daughter card straight off the interposers, as shown right.



◆ Interposer removal

Interposer Removal by Hand

- 1) Hold the Interposer Assembly on the walls without locking latches



- 2) Gently rotate one side of the Interposer Assembly laterally 10° maximum

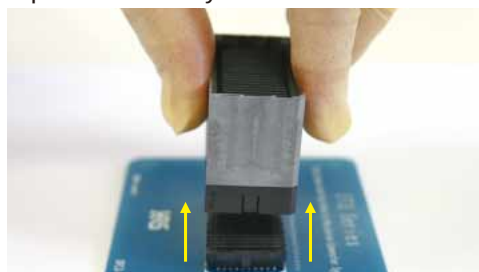


Caution: do not rotate more than 10 degrees

- 3) While gently rotating, pull up on other side of the Interposer Assembly



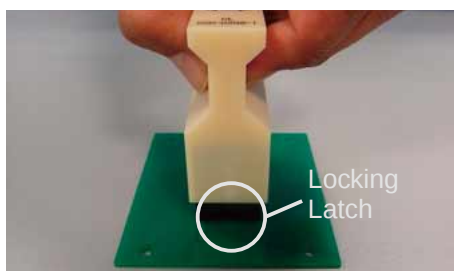
- 4) The Interposer Assembly is removed, and the Mounting Receptacle is ready to accept another Interposer Assembly.



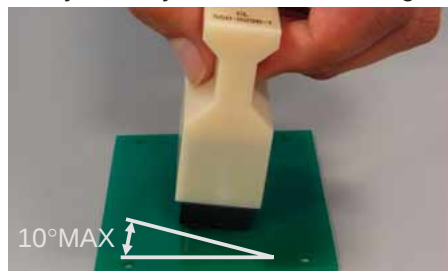
An interposer removal tool is also available. This tool is not an interposer installation cap, so please do not use it to install an interposer. Doing so may damage an interposer.

Interposer Removal with Tool

- 1) Cover the interposer Assembly with the interposer removal tool

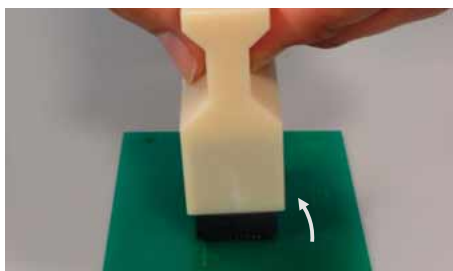


- 2) Gently rotate one side of the Interposer Assembly laterally 10° maximum using the tool

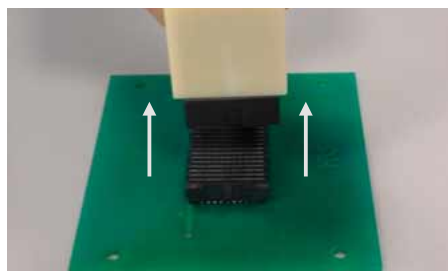


Caution: do not rotate more than 10 degrees

- 3) While gently rotating, pull up on other side of the tool



- 4) The Interposer Assembly is removed, as it is inside the tool



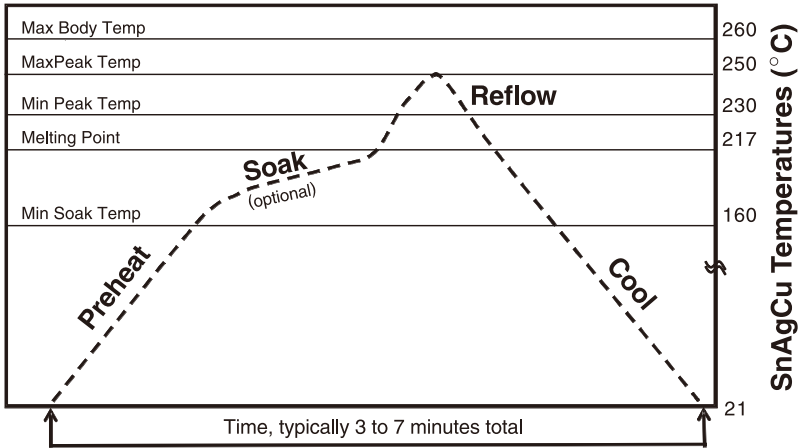
Precaution

Visually inspect the interposer before reinstalling it. Discard if it shows any sign of damage or wear. Do not subject the interposer assembly to more than five removal-reinstallation cycles, even if it appears unaffected.

◆Assembly reflow soldering profile

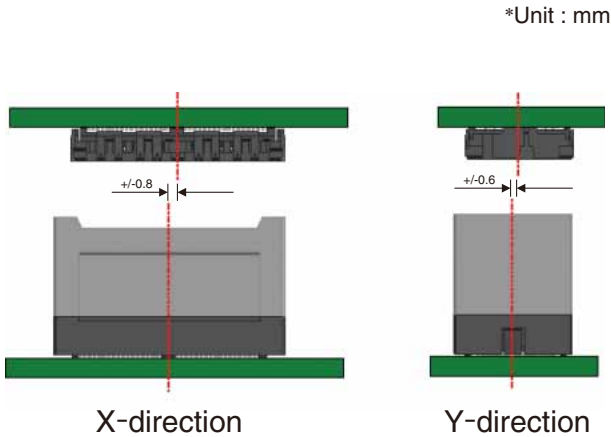
Parameters	Pb-Free	Comment
Preheat Ramp Rate	2 - 3°C/sec	Other components may limit ramp rate to 2°C/sec
Soak Time	0 - 120 sec	Soak requirements determined by board design, oven capability, and paste activation requirements
Soak Temperature	160 - 215°C	Caution - "oversoaking" may exhaust flux and affect soldering
Peak Reflow Temperature	230 - 250°C	Cooler peak temperatures may require longer TAL's
Time Above Liquidus (TAL)	45 - 120 sec	Shorter TAL's may require higher peak temperatures
Cooling Rate	>6°C/sec	Faster cooling rates produce finer grain structures and smoother joint appearances
Maximum Package Body Temperature (T)	260°C	Open body design allows for low delta T between package and solder joint
Maximum Delta T between Body and PWB at Liquidus	10°C	Standard practice is easy to achieve with open body design
Package Body Exposure Limit at Maximum Temperature	5 sec	Adjust profile if maximum exposure limit is approached or exceeded

Reflow Profile



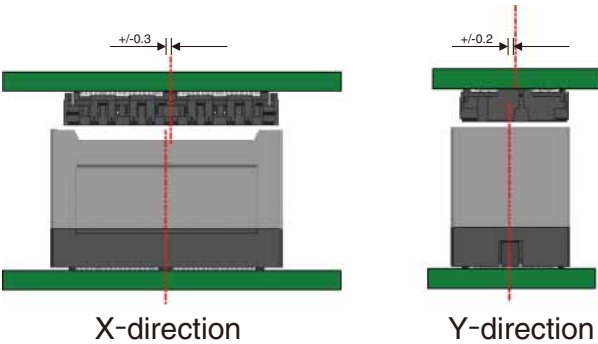
Different solder pastes have different thermal performance characteristics. Consult with paste manufacturer for optimum profile settings. Check thermal exposure limits of PWB laminate if processing with Pb-free solder.

◆Mating self alignment



◆Mating tolerance

Due to its 3-piece design, the IT3 connector system can accept mating tolerances of up to ±0.3mm tolerance in the X-axis and up to ±0.2mm in the Y-axis.



◆Packaging information

Please order per box with its Minimum Order Quantity (MOQ) of connectors contained.
The number for each configuration is shown below.

●Receptacles

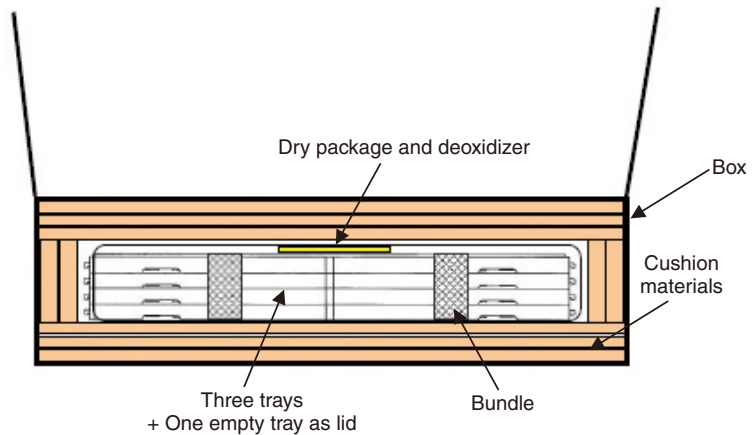
IT 3* - ***S - BGA(**)
(1) (2)

Unit : pcs

(1) \ (2)	100	200	300
M	120	72	48
D	120	72	48

This is also a packaging quantity, therefore please multiply integrally based on this MOQ quantity when you place more.

Ex.) 240pcs of IT3M-300S-BGA(37)
(= 5 of vacuum packed boxes)



◆Packaging information

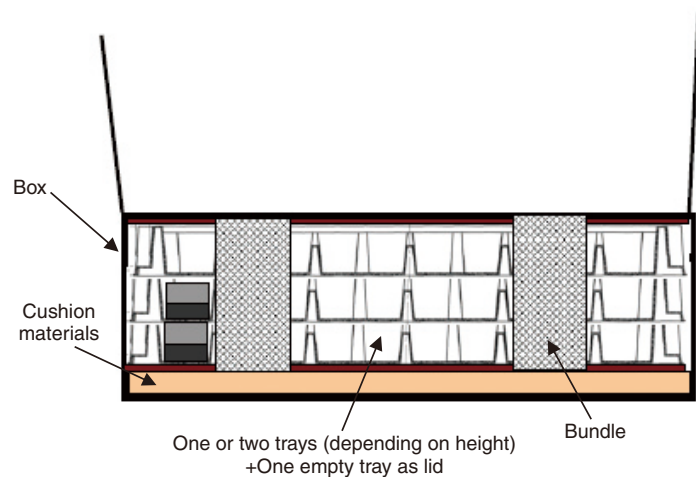
●Interposers

IT 3 - ***P - ***H(**)
(3) (4)

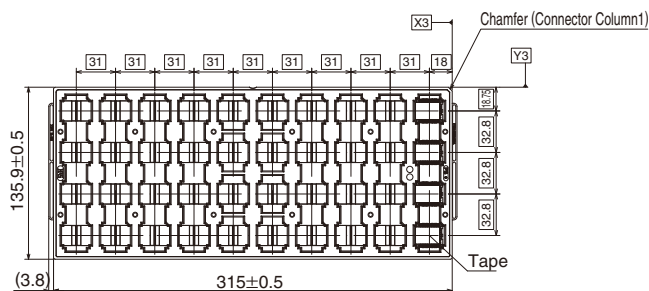
Unit : pcs

(3) \ (4)	100	200	300
17	100	80	60
18	100	80	60
20	100	80	60
22	100	80	60
25	100	80	60
26	100	80	60
28	50	40	30
30	—	40	30
32	50	40	30
35	50	40	30
38	50	40	30
40	50	—	30

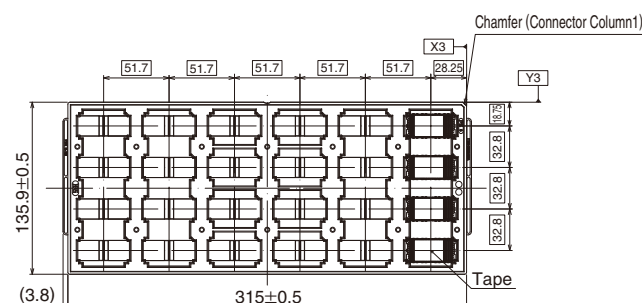
This is also a packaging quantity, therefore please multiply integrally based on this MOQ quantity when you place more.



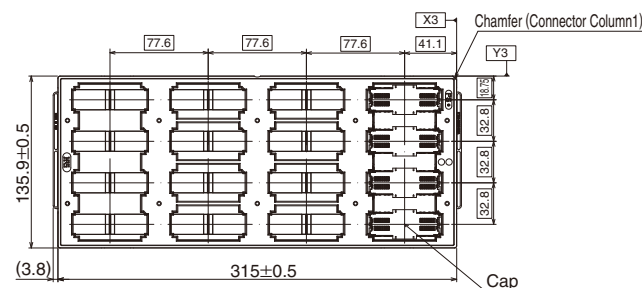
Tray information



JEDEC Tray for IT3M 100 Position Receptacles and plug

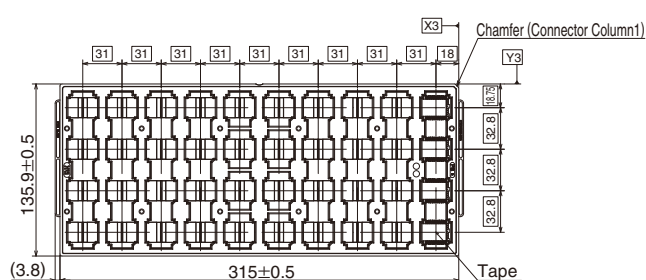


JEDEC Tray for IT3M 200 Position Receptacles and plug

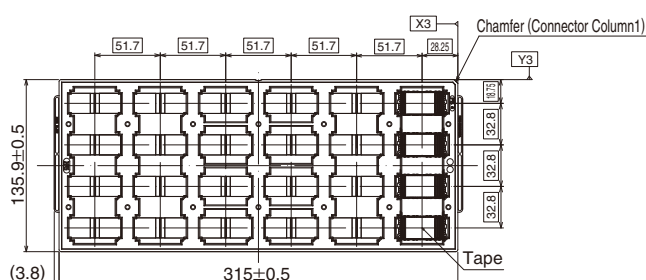


JEDEC Tray for IT3M 300 Position Receptacles and plug

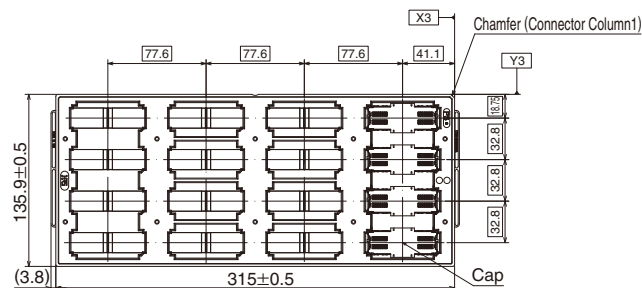
Tray information (con't)



JEDEC Tray for IT3D 100 Position Receptacles



JEDEC Tray for IT3D 200 Position Receptacles



JEDEC Tray for IT3D 300 Position Receptacles

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