PRODUCT CATALOG

HIROSE ELECTRIC CO.,LTD.

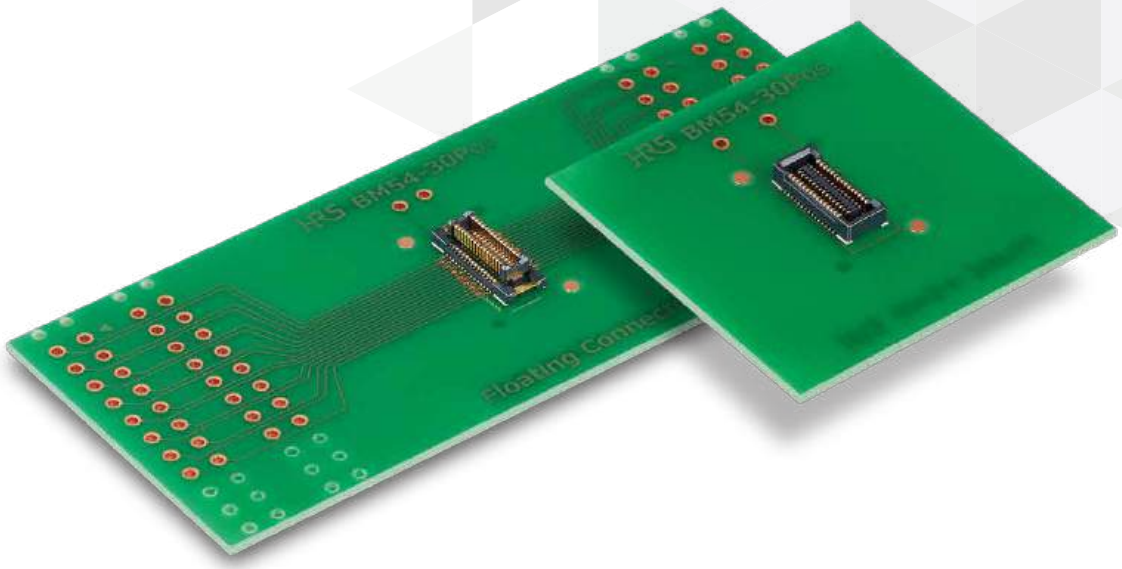
BM54 Series

Small Floating Board-to-Board Connector, 125°C Heat Resistance, For Automotive Applications

Compact

Floating

125℃ High Temp



NEW

Product Page
https://www.hirose.com/en/product/series/BM54

Jun. 2025

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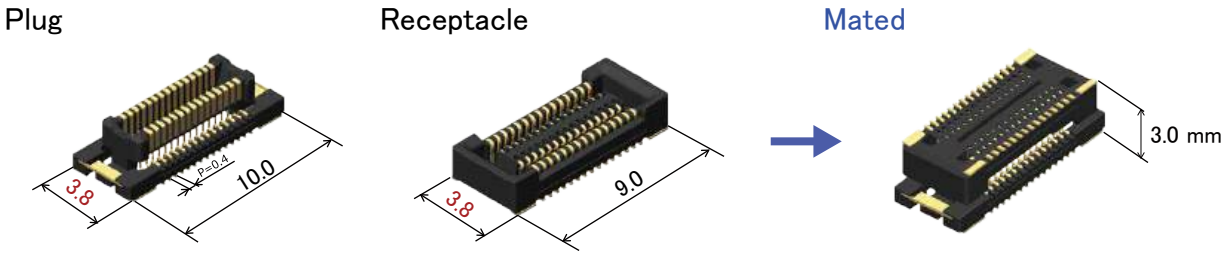
Features

1. Stacking Height 3.0 to 4.5mm, Floating Range ±0.4mm, World's Smallest Width Class in Floating Board-to-Board Connectors

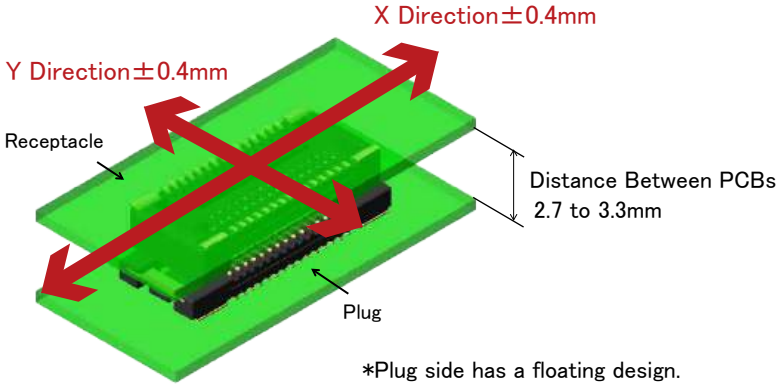
0.4mm Pitch, 3.8mm Width, it contributes to making board design space-saving. Significantly reduces the area occupied on mounting part.



e.g. Stacking Height: 3.0mm, 30pos.

2. Absorption of Misalignment

X and Y Directions: Floating Range ±0.4mm
Z Direction: Effective Mating Length
±0.3mm (3.0mm Stacking Height)
±0.4mm (3.5, 4.0, 4.5mm Stacking Height)
The board mounting misalignment can be absorbed by the connector.



e.g. Stacking Height: 3.0mm

3. 125°C Heat Resistance for Automotive Specifications

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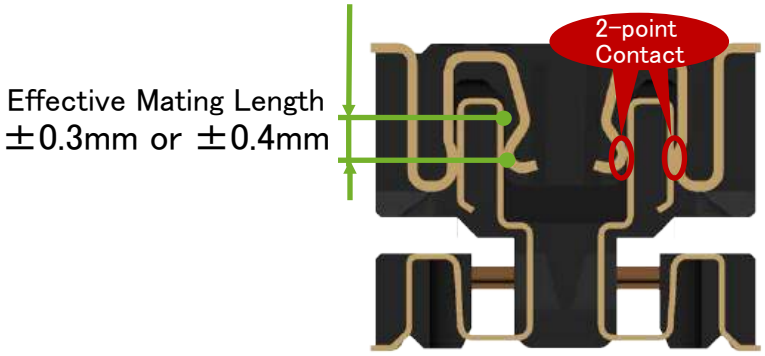
4. High Contact Reliability with Two-Point Contact

Industry's First Two-Point Contact Design of Low-Profile Floating Board to Board Connector



5. Supports PCI-ex Gen4 (16Gbps) and MIPI D-PHY Ver.2.1

PCI-ex Gen4 (16Gbps)		MIPID-PHY Ver.2.1 (4.5Gbps)	
Pin Assign	GGGSSGSSGGG	Pin Assign	GGSGSGSGSGG
Reference Impedance	85Ω	Reference Impedance	100Ω

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Applications

It can be used in in-vehicle applications for front cameras, Rear/Side Cameras, Millimeter-Wave Radar, LiDAR and other devices that require misalignment absorption of the substrate by small size floating.
It can also be used in devices that require absorption of the substrate misalignment for consumer and industrial equipment.

Product Specifications

Rated Current	0.3A	Operating Temperature (Note 1)(Note 2)	-55 to +125℃
Rated Voltage	50V AC/DC	Storage Temperature (Note 3)	-10 to +60℃

Item	Standards	Condition
Contact Resistance	Initial: 80mΩ Max. After the Test: 100mΩ Max.	Measured at 20mV AC, 1kHz, 1mA
Insulation Resistance	100MΩ Min.	Measured at 100V DC
Withstanding Voltage	No flashover or dielectric breakdown	100V AC rms for 1 min.
Mating Durability	Contact Resistance: 100mΩ Max. No damage, cracks, or parts dislocation	10 times
Vibration Resistance	No electrical discontinuity of 1 μs or more	Frequency 10 to 500Hz, Acceleration 49m/s^2 Swept speed 1oct/min 8 hours each of 3-axis direction
Heat Resistance	Contact Resistance: 100mΩ Max. Insulation Resistance: 100MΩ Min.	Left for 1000 hours at temperature 125± 2℃
Humidity Resistance	Contact Resistance: 100mΩ Max. Insulation Resistance: 50MΩ Min.	Temperature -10→ +65℃, RH In 90 to 96% Left for 10 cycles (240 hours)
Temperature Cycle	Contact Resistance: 100mΩ Max. Insulation Resistance: 100MΩ Min.	Temperature -55℃ : 30 min. → +125℃ : 30 min., 1000 cycles (Tank transfer time: 2 to 3 min.)
Solder Heat Resistance	No deformation in appearance or significant damage to contacts	Reflow: See recommended temperature profile Manual soldering: 350℃ within 3 seconds

Note 1: Includes the temperature rise due to current flow.
Note 2: Use without condensation.
Note 3: Storage refers to long-term storage of unused items before they are mounted on the PCB.
Operating temperature and humidity range apply when the product is not powered after PCB mounting and when temporarily stored during transportation.

Materials/Finish

Component	Material	Color/Finish	Remarks
Insulator	LCP	Black	-
Contact	Copper Alloy	Gold Plating (nickle underplating)	-
Retention Tab	Copper Alloy	Gold Plating (nickle underplating)	-

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Product Number Structure

Please utilize the below part number chart when selecting.

■ 3.0mm Stacking Height

●Plug

BM54 F ## - ## DP - 0.4 V (##)
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

●Receptacle

BM54 B ## - ## DS - 0.4 V (##)
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

❶ Series Name	BM54	❺ Connector Type	DP: Double Row Plug DS: Double Row Receptacle
❷ Shape Symbol	B: With Retention Tab F: Floating	❻ Contact Pitch	0.4mm
❸ Stacking Height	3.0mm	❼ Contact Type	V: Straight SMT
❹ No. of Pos.	20, 30, 40	❽ Packaging Type	(51): Embossed Packaging BM54F 3,000pcs/Reel BM54B 4,000pcs/Reel (53): Embossed Packaging 500pcs/Reel (For trial production)

■ 3.5, 4.0, 4.5mm Stacking Height

● Plug

BM54 MF - ## DP - 0.4 V (##)
❶ ❷ ❹ ❺ ❻ ❼ ❽

● Receptacle

BM54 MB ## - ## DS - 0.4 V (##)
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

❶ Series Name	BM54	❺ Connector Type	DP: Double Row Plug DS: Double Row Socket
❷ Shape Symbol	B: With Retention Tab F: Floating M: Middle Height	❻ Contact Pitch	0.4mm
❸ Stacking Height	3.5, 4.0, 4.5mm	❼ Contact Type	V: Straight SMT
❹ No. of Pos.	10, 20, 30, 40, 50	❽ Packaging Type	(51): Embossed Packaging 3,000pcs/Reel (53): Embossed Packaging 500pcs/Reel

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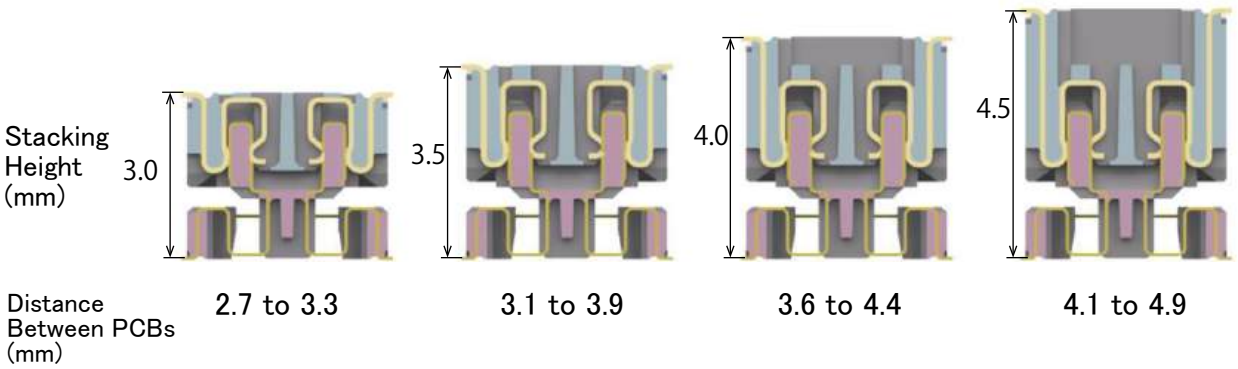
Combinations



Unit : mm

Receptacle / Plug	BM54F3.0-##DP-0.4V	BM54MF-##DP-0.4V
BM54B3.0-##DS-0.4V	3.0	-
BM54MB3.5-##DS-0.4V	-	3.5（Note）
BM54MB4.0-##DS-0.4V	-	4.0
BM54MB4.5-##DS-0.4V	-	4.5（Note）

Note: These item are under planning. Please contact a Hirose representative regarding questions on pin count variation development.

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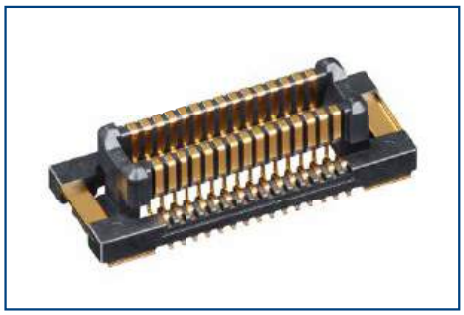
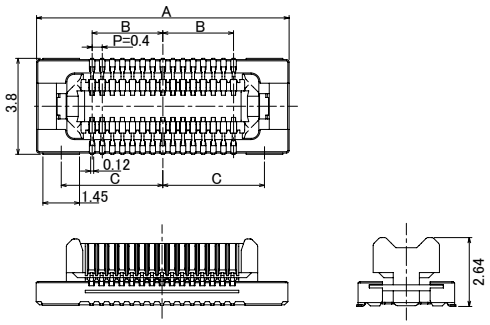
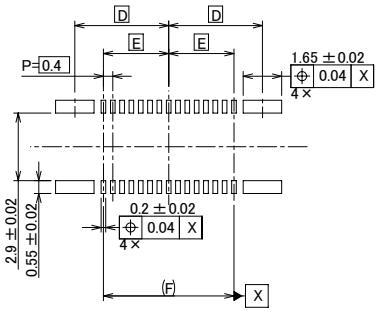
BM54 Plug (3.0mm Stacking Height)





●Recommended PCB Layout



Unit : mm

Part No.	HRS No.	No. of Pos.	A	B	C	D	E	F	Purchase Unit (##) : (51)	Purchase Unit (##) : (53)
BM54F3.0-20DP-0.4V(##)	Under Planning (Note1)	20	8	1.8	3.025	3.025	1.8	3.6	3,000pcs per reel	500pcs per reel
BM54F3.0-30DP-0.4V(##)	CL0684-4603-0-##	30	10	2.8	4.025	4.025	2.8	5.6		
BM54F3.0-40DP-0.4V(##)	CL0684-4615-0-##	40	12	3.8	5.025	5.025	3.8	7.6		

Note 1: Contact positions without HRS No. are currently under planning.
Please contact a Hirose representative regarding questions on pin count variation development.
Note 2: This connector has no polarity.

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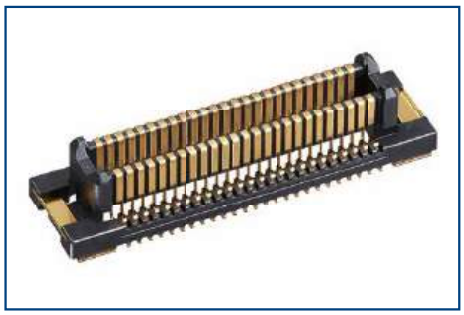
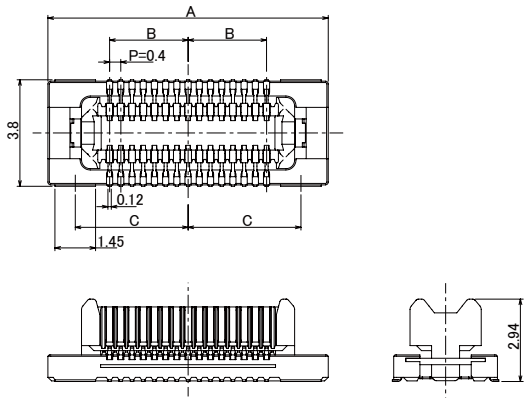
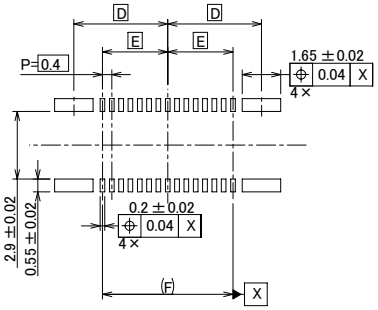
BM54 Plug (3.5, 4.0, 4.5mm Stacking Height)





● Recommended PCB Layout



Unit : mm

Part No.	HRS No.	No. of Pos.	A	B	C	D	E	F	Purchase Unit (##): (51)	Purchase Unit (##): (53)
BM54MF-20DP-0.4V(##)	Under Planning (Note1)	20	8	1.8	3.025	3.025	1.8	3.6	3,000pcs per reel	500pcs per reel
BM54MF-30DP-0.4V(##)	Under Planning (Note1)	30	10	2.8	4.025	4.025	2.8	5.6		
BM54MF-40DP-0.4V(##)	Under Planning (Note1)	40	12	3.8	5.025	5.025	3.8	7.6		
BM54MF-50DP-0.4V(##)	CL0684-4619-0-##	50	14	4.8	6.025	6.025	4.8	9.6		

Note 1: Contact positions without HRS No. are currently under planning.
Please contact a Hirose representative regarding questions on pin count variation development.
Note 2: This connector has no polarity.

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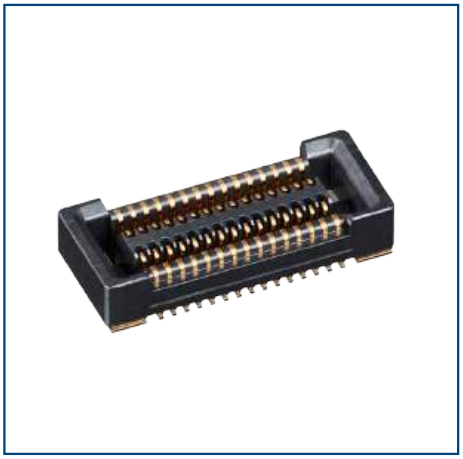
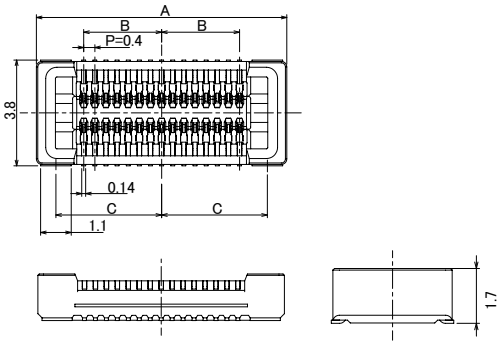
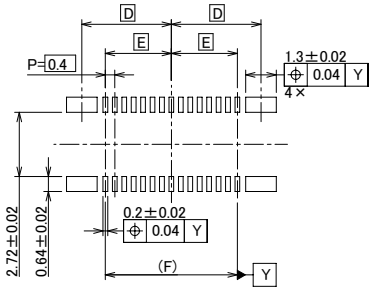
BM54 Receptacle (3.0mm Stacking Height)





●Recommended PCB Layout



Unit : mm

Part No.	HRS No.	No. of Pos.	A	B	C	D	E	F	Purchase Unit (##) : (51)	Purchase Unit (##) : (53)
BM54B3.0-20DS-0.4V(##)	Under Planning (Note1)	20	7	1.8	2.8	2.8	1.8	3.6	4,000pcs per reel	500pcs per reel
BM54B3.0-30DS-0.4V(##)	CL0684-4602-0-##	30	9	2.8	3.8	3.8	2.8	5.6		
BM54B3.0-40DS-0.4V(##)	CL0684-4616-0-##	40	11	3.8	4.8	4.8	3.8	7.6		

Note 1: Contact positions without HRS No. are currently under planning.
Please contact a Hirose representative regarding questions on pin count variation development.
Note 2: This connector has no polarity.

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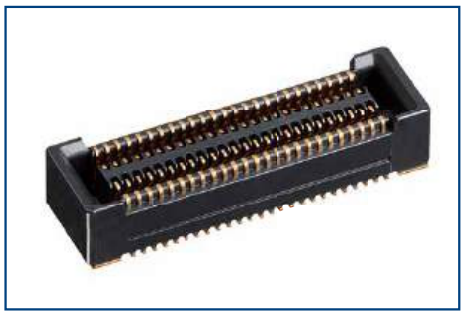
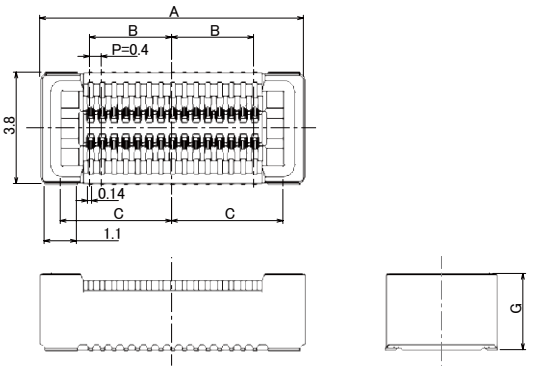
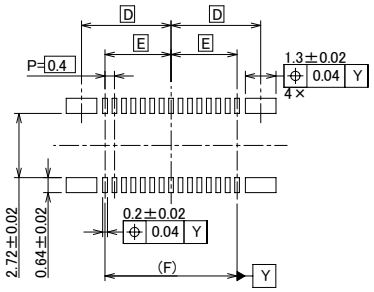
BM54 Receptacle (3.5, 4.0, 4.5mm Stacking Height)





●Recommended PCB Layout



Unit : mm

Part No.	HRS No.	No. of Pos.	A	B	C	D	E	F	G	Purchase Unit (##): (51)	Purchase Unit (##): (53)
BM54MB4.0-20DS-0.4V(##)	Under Planning (Note1)	20	7	1.8	2.8	2.8	1.8	3.6	2.6	3,000pcs per reel	500pcs per reel
BM54MB4.0-30DS-0.4V(##)	Under Planning (Note1)	30	9	2.8	3.8	3.8	2.8	5.6	2.6		
BM54MB4.0-40DS-0.4V(##)	Under Planning (Note1)	40	11	3.8	4.8	4.8	3.8	7.6	2.6		
BM54MB4.0-50DS-0.4V(##)	CL0684-4620-0-##	50	13	4.8	5.8	5.8	4.8	9.6	2.6		

Note 1: Contact positions without HRS No. are currently under planning.
Please contact a Hirose representative regarding questions on pin count variation development.
Note 2: This connector has no polarity.

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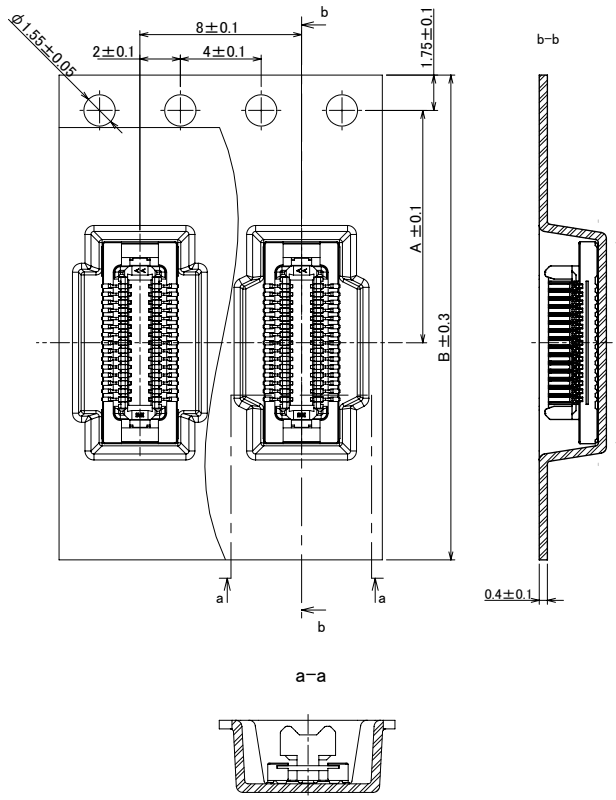
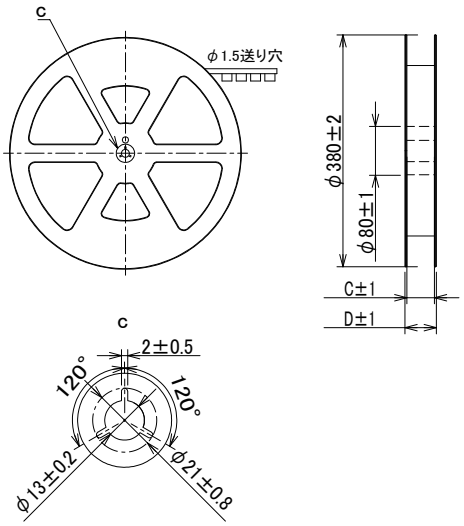
Packaging Specifications Diagram (JIS C 0806, IEC 60286-3 Compliant)

■BM54 Plug

●Embossed Tape Dimensions



●Reel Dimensions



BM54 Plug (3.0mm Stacking Height)

Unit : mm

Part No.	HRS No.	A	B	C	D	Purchase Unit (##): (51)	Purchase Unit (##): (53)
BM54F3.0-20DP-0.4V(##)	Under Planning (Note1)	11.5	24.0	25.4	29.4	3,000pcs per reel	500pcs per reel
BM54F3.0-30DP-0.4V(##)	CL0684-4603-0-##						
BM54F3.0-40DP-0.4V(##)	CL0684-4615-0-##						

Note: Contact positions without HRS No. are currently under planning.
Please contact a Hirose representative regarding questions on pin count variation development.

BM54 Plug (3.5, 4.0, 4.5mm Stacking Height)

Unit : mm

Part No.	HRS No.	A	B	C	D	Purchase Unit (##): (51)	Purchase Unit (##): (53)
BM54MF-20DP-0.4V(##)	Under Planning (Note1)	11.5	24.0	25.4	29.4	3,000pcs per reel	500pcs per reel
BM54MF-30DP-0.4V(##)	Under Planning (Note1)						
BM54MF-40DP-0.4V(##)	Under Planning (Note1)						
BM54MF-50DP-0.4V(##)	CL0684-4619-0-##						

Note: Contact positions without HRS No. are currently under planning.
Please contact a Hirose representative regarding questions on pin count variation development.

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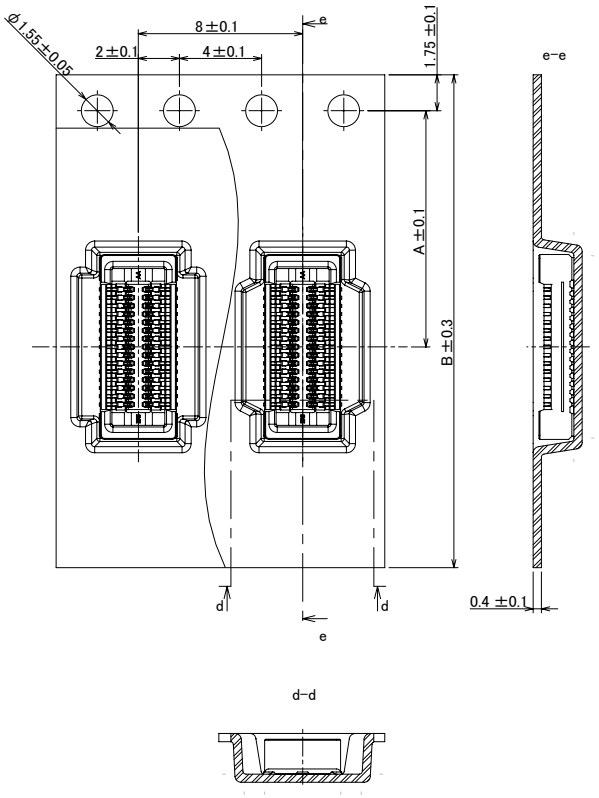
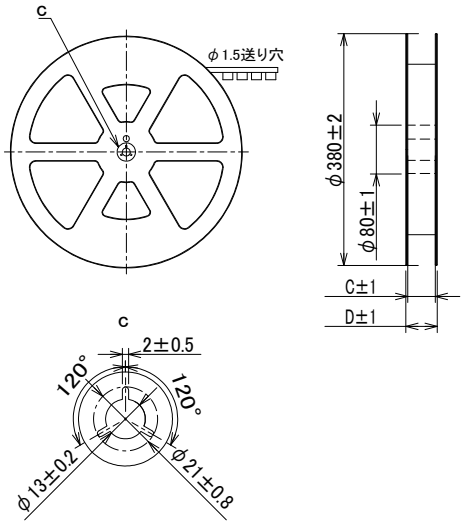
■BM54 Receptacle

●Embossed Tape Dimensions



●Reel Dimensions



BM54 Receptacle (3.0mm Stacking Height)

Unit : mm

Part No.	HRS No.	A	B	C	D	Purchase Unit (##): (51)	Purchase Unit (##): (53)
BM54B3.0-20DS-0.4V(##)	Under Planning (Note1)	11.5	24.0	25.4	29.4	4,000pcs per reel	500pcs per reel
BM54B3.0-30DS-0.4V(##)	CL0684-4602-0-##						
BM54B3.0-40DS-0.4V(##)	CL0684-4616-0-##						

Note: Contact positions without HRS No. are currently under planning.
Please contact a Hirose representative regarding questions on pin count variation development.

BM54 Receptacle (3.5, 4.0, 4.5mm Stacking Height)

Unit : mm

Part No.	HRS No.	A	B	C	D	Purchase Unit (##): (51)	Purchase Unit (##): (53)
BM54MB4.0-20DS-0.4V(##)	Under Planning (Note1)	11.5	24.0	25.4	29.4	3,000pcs per reel	500pcs per reel
BM54MB4.0-30DS-0.4V(##)	Under Planning (Note1)						
BM54MB4.0-40DS-0.4V(##)	Under Planning (Note1)						
BM54MB4.0-50DS-0.4V(##)	CL0684-4620-0-##						

Note: Contact positions without HRS No. are currently under planning.
Please contact a Hirose representative regarding questions on pin count variation development.

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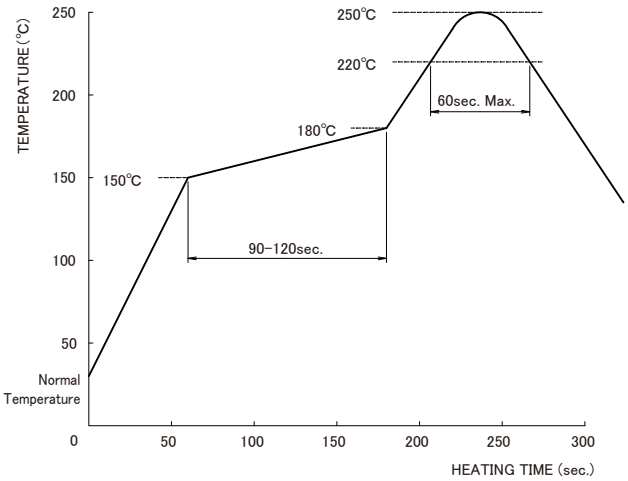
Precautions

Recommended Temperature Profile	 【Conditions】 1. Peak Temperature: 250℃ 2. Heating: 220℃ Min. for 60 sec. Max. 3. Preheating: 150 to 180℃, 90 to 120 sec. 4. Number of Reflow Cycles: 2 cycles Max. * Temperature refers to the surface temperature of the board near the connector lead. We recommend reflow mounting in a nitrogen environment.
Recommended Manual Soldering Conditions	Soldering iron temperature : 340 ± 10℃ , Soldering Time : Within 3 sec.
Recommended Metal Mask Thickness and Open Area to PCB Pattern (Area Ratio)	Thickness : 0.1mm, Aperture Ratio : DS 80% DP 90%
Board Warpage	Max. of 0.02mm at the center in reference to both ends of the connector
Cleaning	Cleaning is not recommended. If you clean this product, please evaluate its performance before using it. (Cleaning may impair the mating/unmating properties and lower resistance to environmental factors.)
Precautions	· Be careful when mating/unmating the connector when it is not mounted on the PCB as it may cause damage/deformation to contacts. · Avoid supporting the PCB only with the connectors. Support it by other means such as bolts, screws, posts, etc. · Excessive prying during unmating/mating may result in damage. · In the case of hand soldering, please do not apply any flux which could cause flux wicking. · This product may have slight color differences due to production lot variability, but this does not affect the performance. · Please refer to the following page for handling precautions when inserting and removing. · Because the product can disengage if dropped (or other impact), or by FPC routing, it is advised to secure the mated connectors to the board with housings and cushioning materials. · Do not use the connector in non-recommended conditions (i.e., rated current, rated voltage, PCB design and operating environment, etc.). Such usage could lead to material outgassing, ignition, or short-circuit, etc. Refer to the specifications and guidelines for board pattern dimensions, board cautions, and connector treatment. Please contact Hirose if connector usage in conditions other than those described in the specifications and the guidelines is being considered.

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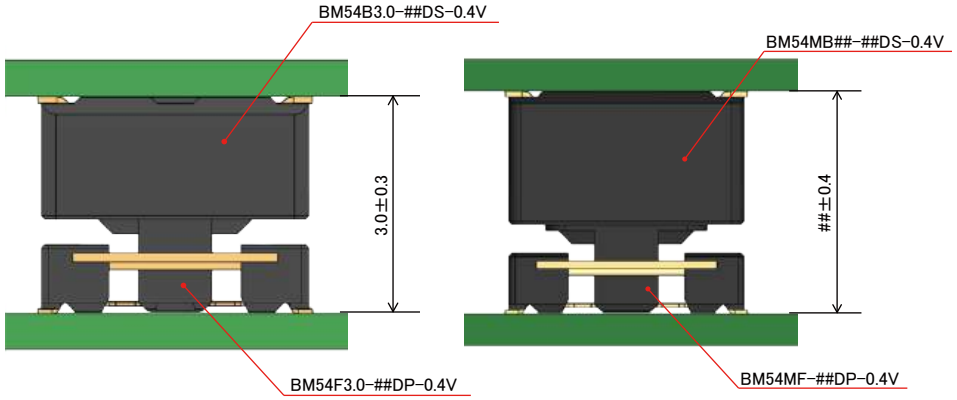
Precautions for Handling During Use

●About Setting The Distance Between PCBs

Use within the specified dimensions between PCBs below.

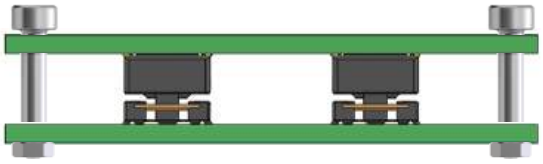


Stacking Height	Specified Dimensions Between PCBs	Plug	Receptacle
3.0mm	2.7 to 3.3mm	BM54F3.0-##DP-0.4V	BM54B3.0-##DS-0.4V
3.5mm	3.1 to 3.9mm	BM54MF-##DP-0.4V	BM54MB3.5-##DS-0.4V
4.0mm	3.6 to 4.4mm		BM54MB4.0-##DS-0.4V
4.5mm	4.1 to 4.9mm		BM54MB4.5-##DS-0.4V

●Securing PCBs

This connector can absorb misalignment between PCBs, but not vibration.
If you support PCBs only with the connectors without taking any fixing measures, the load on the connectors will be excessive and may cause broken or contact failure.
Be sure to secure PCBs except for the connectors as shown below to prevent the board from moving.
This connector connects the board to the board.
When using mounting to FPC, fasten the board and FPC to the case separately.

Fixing PCBs with a Spacer or Case



OK

Do not use the product without fixing PCBs together.

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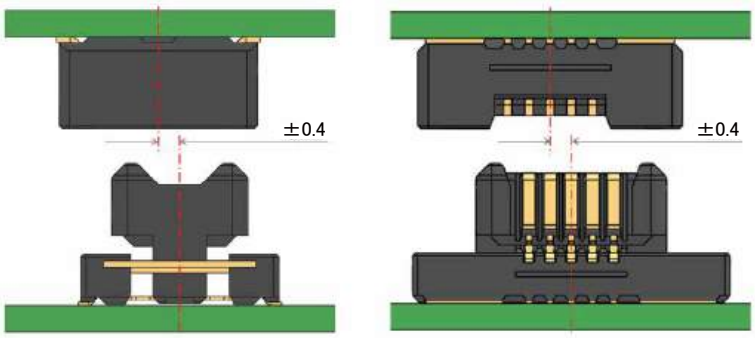
●Mating Precautions

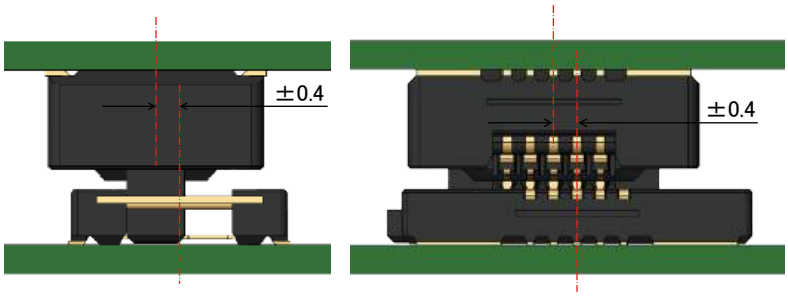
1. Mating

The alignment dimension is ±0.4 mm in the X and Y directions.
After the start of mating, follow the alignment and mate perpendicularly to the board without applying an overloading to the connector.



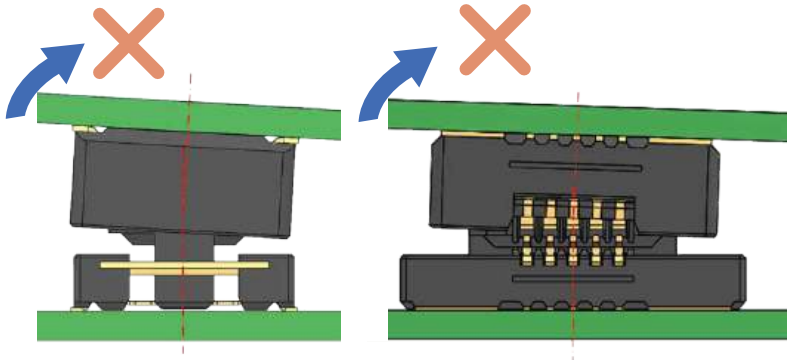
2. Misalignment Allowance in Mated Condition (Floating Range)

Because of floating design, this connector has a ±0.4mm board misalignment tolerance in the X and Y directions when mated. However, it is not suitable for absorption when the range of misalignment constantly changes due to vibration, etc. The number of repetitions of floating movable operations is stipulated to be no more than 10 times.



3. Removing

When removing the connector, pull it out in parallel.
If it is removed in an inclined position, connector may deform.



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While Taking into Consideration

Specifications mentioned in this catalog are reference values.
When considering to order or use this product, please review the Drawing and Product Specifications sheets.
Use an appropriate cable when using the connector in combination with cables.
If considering usage of a non-specified cable, please contact your sales representative.
If assembly process is done by jigs & tools which are not identified by Hirose, the warranty of the product may be affected.
If considering usage for below mentioned applications, please contact your sales representative.
In cases where the application will demand a high level of reliability, such as automotive, medical instruments, public infrastructure, aerospace/defense etc. Hirose must review before assurance of reliability can be given.

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