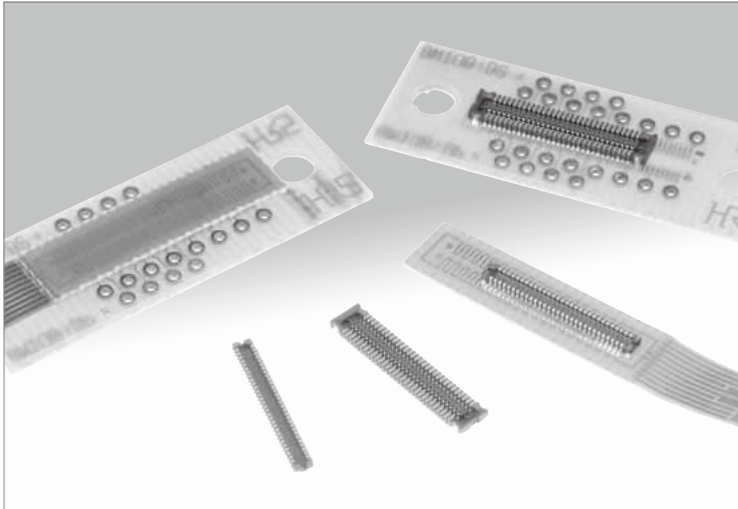


NEW

# 0.4mm Contact Pitch, Stacking Height 0.8mm Board-to-Board / Board-to-FPC Connectors

## BM10 Series



### Decrease in the board-occupied area

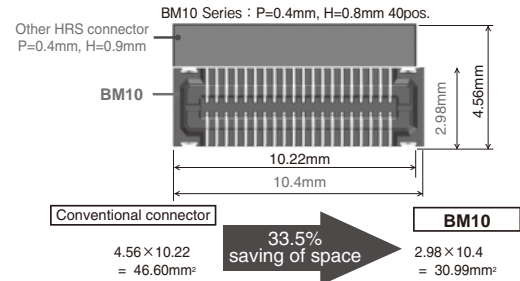


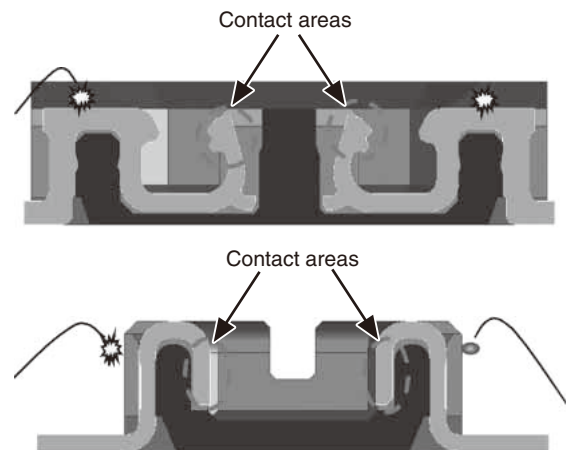
figure.1

### High contact reliability



figure.2

### Splatter protection



Contact areas are not exposed to the outside penetration of the flux or other physical particles.

figure.3

## Features

### 1. Higher density of the board-mounted components

Extremely small board mounting pattern and low above the-board profile makes the connectors ideally suited for small device applications.

Globally unrivalled compact depth : when mated 2.98mm  
Header 2.46mm

Length - world's smallest class : 10.4mm

### 2. Reliable electrical and mechanical connection

Despite its small mated height, unique contact configuration, with a 2-point contacts and effective mating length of 0.2mm (height 0.8mm), assures highly reliable connection while confirming a complete mating with a definite tactile feel.

### 3. Large self-alignment distance

The connectors will self-align within 0.3 mm.

### 4. Built-in shock absorbing feature

The protrusions and indents in the insulator bodies protect the connectors from failures when exposed to sudden impact.

### 5. Solder wicking prevention

Nickel barriers prevent un-intentional solder wicking.

### 6. Contamination protection

Insulator walls protect the contact areas against flux splatter or other physical particles contamination.

### 7. Conducive traces on the PCB can run under the connector

No exposed contacts on the bottom of the connector.

## ■ Specifications

Ratings	Current rating	0.3A	Operating temperature range	-35°C to +85°C (Note 1)	Storage temperature range	-10°C to +60°C (Note 2)
	Voltage rating	30V AC, DC	Operating humidity range	RH 20% to 80%	Storage humidity range	RH 40% to 70% (Note 2)

Item	Specification	Conditions
1. Insulation resistance	50MΩ min	100V DC
2. Withstanding voltage	No flashover or insulation breakdown	100V AC / 1minute
3. Contact resistance	100mΩ max.	20mV AC, 1kHz, 1mA
4. Vibration	No electrical discontinuity of 1μs or longer No damage or parts dislocation	Frequency : 10 to 55 Hz, 5min, single amplitude of 0.75 mm, 10cycles, for each directions.
5. Humidity	Contact resistance : 100mΩ max., Insulation resistance : 25MΩ min.	96hours at 40 ±2°C and humidity of 90 to 95% No damage or parts dislocation
6. Temperature cycle	Contact resistance : 100mΩ max., Insulation resistance : 50MΩ min. No damage or parts dislocation	-55°C → 5 to 35°C → 85°C → 5 to 35°C Time : 30min. → 10min. → 30min. → 10min. 5cycles
7. Durability	Contact resistance : 100mΩ max.	10cycles
8. Resistance to soldering heat	No deformation of components affecting performance	Reflow : At the recommended temperature profile Manual soldering : 350°C for 3 seconds

Note 1 : Includes temperature rise caused by current flow.

Note 2 : The term "storage" here refers to products stored for a long period prior to board mounting and use.

The operating temperature and humidity range covers the non-conducting condition of connectors after board mounting and the temporary storage conditions of transportation, etc.

Note 3 : Information contained in this catalog represents general requirements for this Series. Contact us for the drawings and specifications for a specific part number shown.

## ■ Material

Product	Part	Material	Finish	Remarks
Receptacle	Insulator	LCP	Color:Black	UL94V-0
Header	Contacts	Phosphor bronze	Gold plated	—

## ■ Ordering information

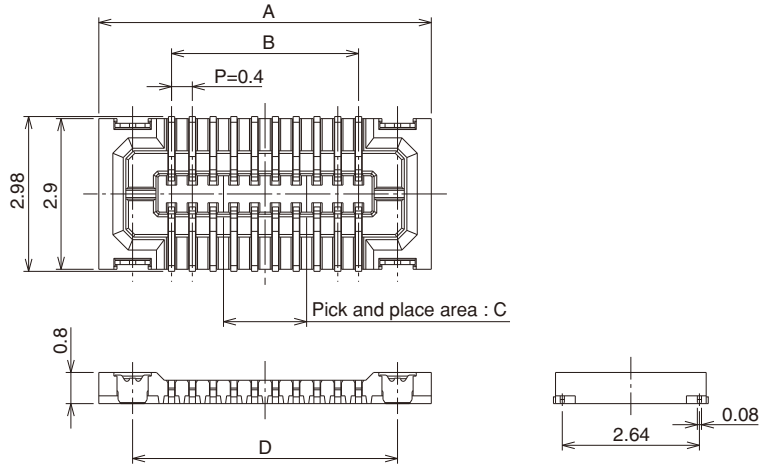
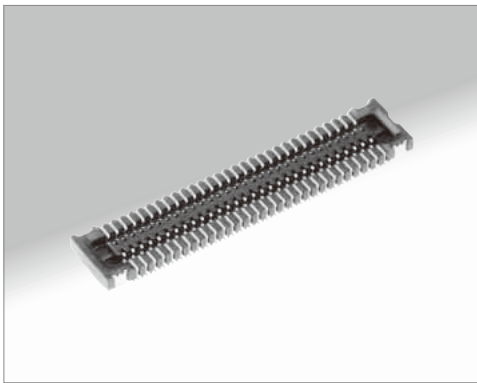
### ● Receptacles / Headers

**BM 10 # (0.8) - \* DS - 0.4 V (\*\*)**

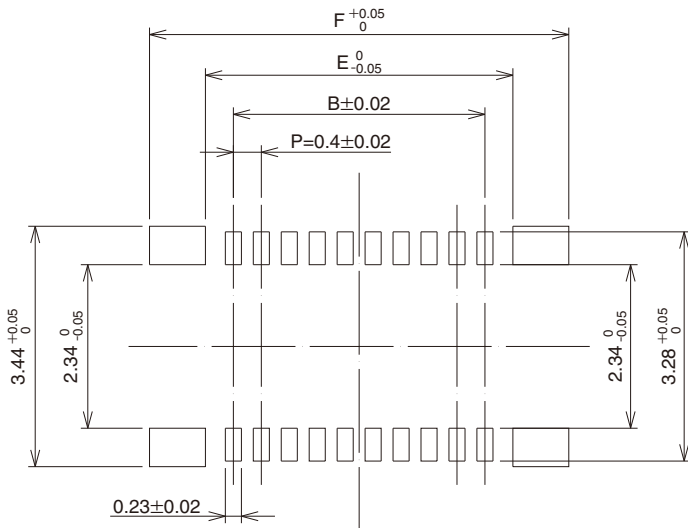
①    ②    ③    ④    ⑤    ⑥    ⑦    ⑧    ⑨

① Series name : BM	⑥ Connector style DS : Double-row receptacle DP : Double-row header
② Series No. : 10	
③ Configuration B : With metal fittings NB : With metal fittings	⑦ Contact pitch : 0.4mm
	⑧ Termination type V...SMT vertical mount
④ Stacking Height : 0.8mm	⑨ Packaging (51) : Embossed tape packaging (8,000 pieces per reel) (53) : Embossed tape packaging (1,000 pieces per reel)
⑤ Number of contacts. 10 to 60	

### ■ H=0.8mm Receptacles (With metal fittings)



### ■ Recommended PCB mounting pattern



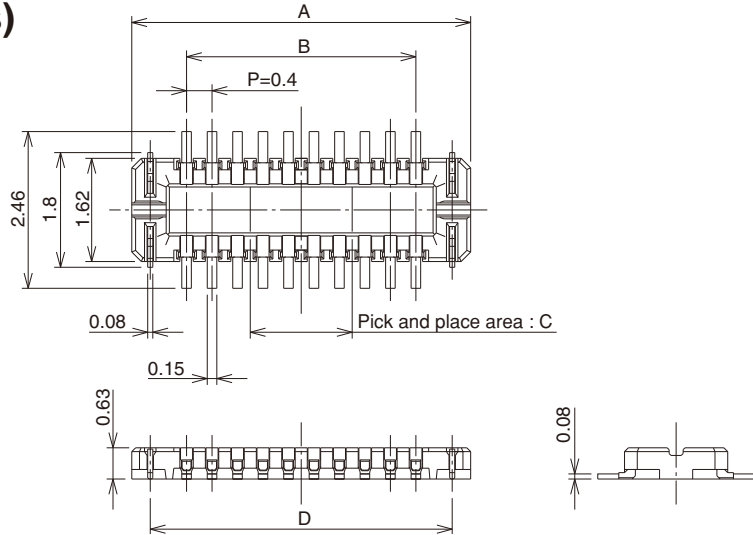
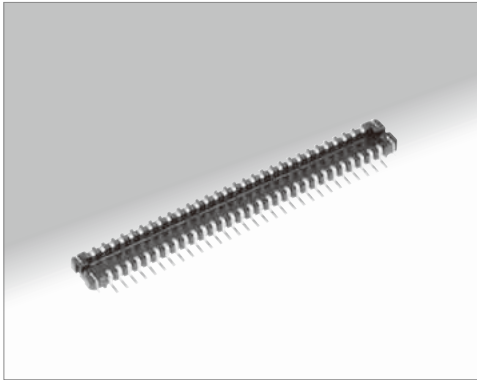
All dimensions : mm

Part Number	HRS No.	Number of Contacts	A	B	C	D	E	F
BM10NB(0.8)-10DS-0.4V(51)	684-6100-0 51	10	4.4	1.6	0.8	3.1	2.18	4.02
BM10NB(0.8)-16DS-0.4V(51)	684-6110-4 51	16	5.6	2.8	1.6	4.3	3.38	5.22
BM10NB(0.8)-20DS-0.4V(51)	684-6105-4 51	20	6.4	3.6	1.6	5.1	4.18	6.02
BM10NB(0.8)-24DS-0.4V(51)	684-6101-3 51	24	7.2	4.4	2	5.9	4.98	6.82
BM10NB(0.8)-30DS-0.4V(51)	684-6106-7 51	30	8.4	5.6	2	7.1	6.18	8.02
BM10NB(0.8)-34DS-0.4V(51)	684-6108-2 51	34	9.2	6.4	2.4	7.9	6.98	8.82
BM10NB(0.8)-40DS-0.4V(51)	684-6107-0 51	40	10.4	7.6	2.4	9.1	8.18	10.02
BM10NB(0.8)-44DS-0.4V(51)	684-6109-5 51	44	11.2	8.4	2.8	9.9	8.98	10.82
BM10NB(0.8)-50DS-0.4V(51)	684-6102-6 51	50	12.4	9.6	2.8	11.1	10.18	12.02
BM10NB(0.8)-60DS-0.4V(51)	684-6103-9 51	60	14.4	11.6	3.2	13.1	12.18	14.02

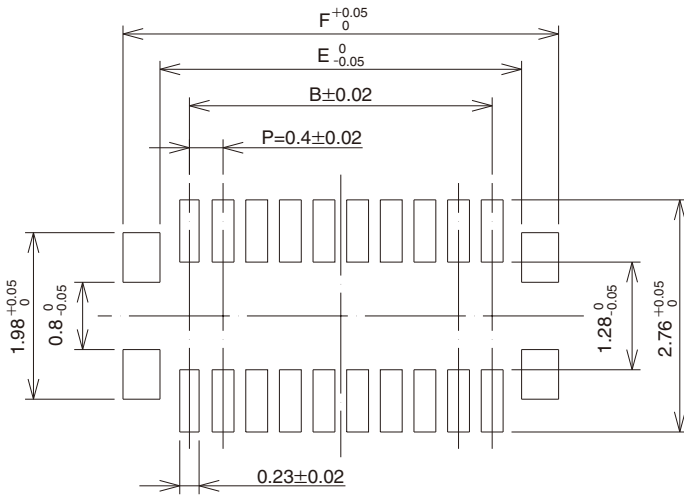
Note 1 : Order by number of reels.

Note 2 : This connector is NOT polarized.

### ■Headers (With metal fittings)



### ■Recommended metal mask dimensions



All dimensions : mm

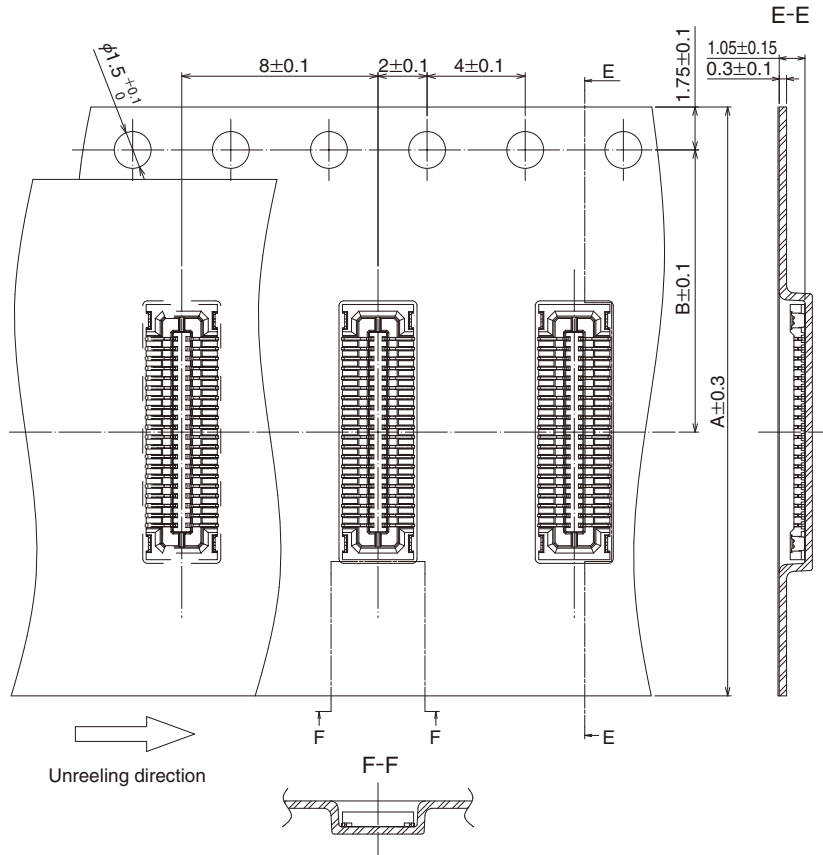
Part Number	HRS No.	Number of Contacts	A	B	C	D	E	F
BM10B(0.8)-10DP-0.4V(51)	684-6007-5 51	10	3.32	1.6	0.8	2.74	2.3	3.18
BM10B(0.8)-16DP-0.4V(51)	684-6047-0 51	16	4.52	2.8	1.6	3.94	3.5	4.38
BM10B(0.8)-20DP-0.4V(51)	684-6009-0 51	20	5.32	3.6	1.6	4.74	4.3	5.18
BM10B(0.8)-24DP-0.4V(51)	684-6011-2 51	24	6.12	4.4	2	5.54	5.1	5.98
BM10B(0.8)-30DP-0.4V(51)	684-6013-8 51	30	7.32	5.6	2	6.74	6.3	7.18
BM10B(0.8)-34DP-0.4V(51)	684-6015-3 51	34	8.12	6.4	2.4	7.54	7.1	7.98
BM10B(0.8)-40DP-0.4V(51)	684-6003-4 51	40	9.32	7.6	2.4	8.74	8.3	9.18
BM10B(0.8)-44DP-0.4V(51)	684-6039-1 51	44	10.12	8.4	2.8	9.54	9.1	9.98
BM10B(0.8)-50DP-0.4V(51)	684-6017-9 51	50	11.32	9.6	2.8	10.74	10.3	11.18
BM10B(0.8)-60DP-0.4V(51)	684-6001-9 51	60	13.32	11.6	3.2	12.74	12.3	13.18

Note 1 : Order by number of reels.

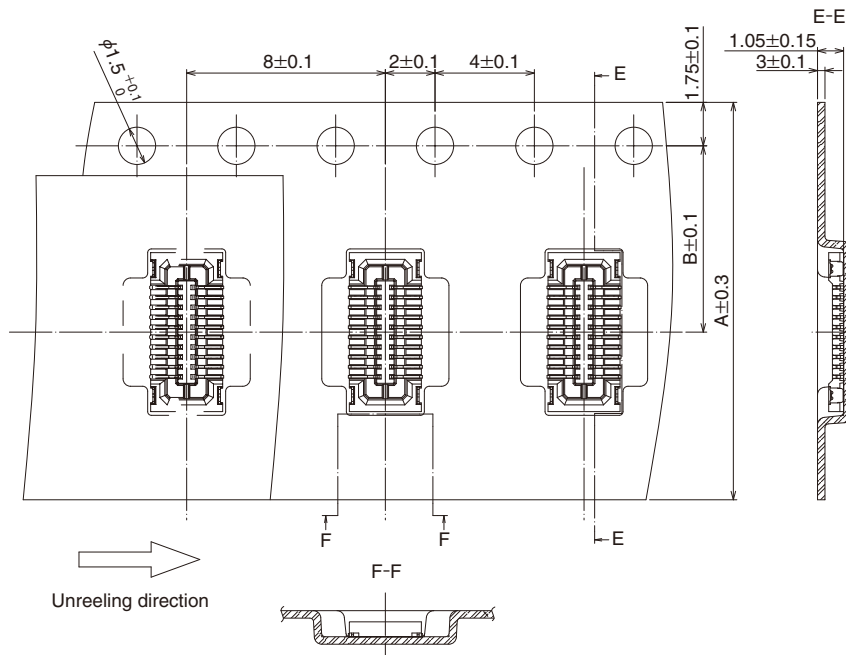
Note 2 : This connector is NOT polarized.

## ■ Embossed Carrier Tape Dimensions

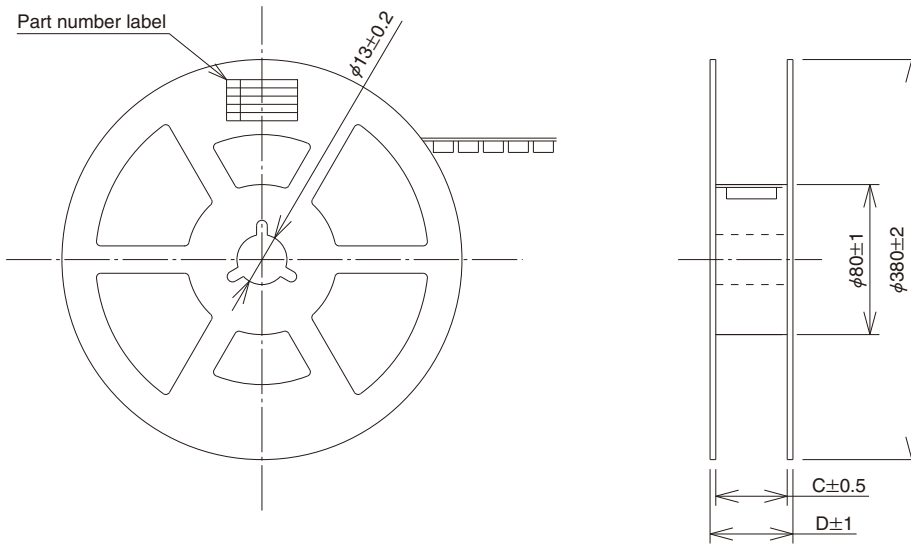
### ● Receptacle (24 and above positions)



### ● Receptacle (less than 24 positions)



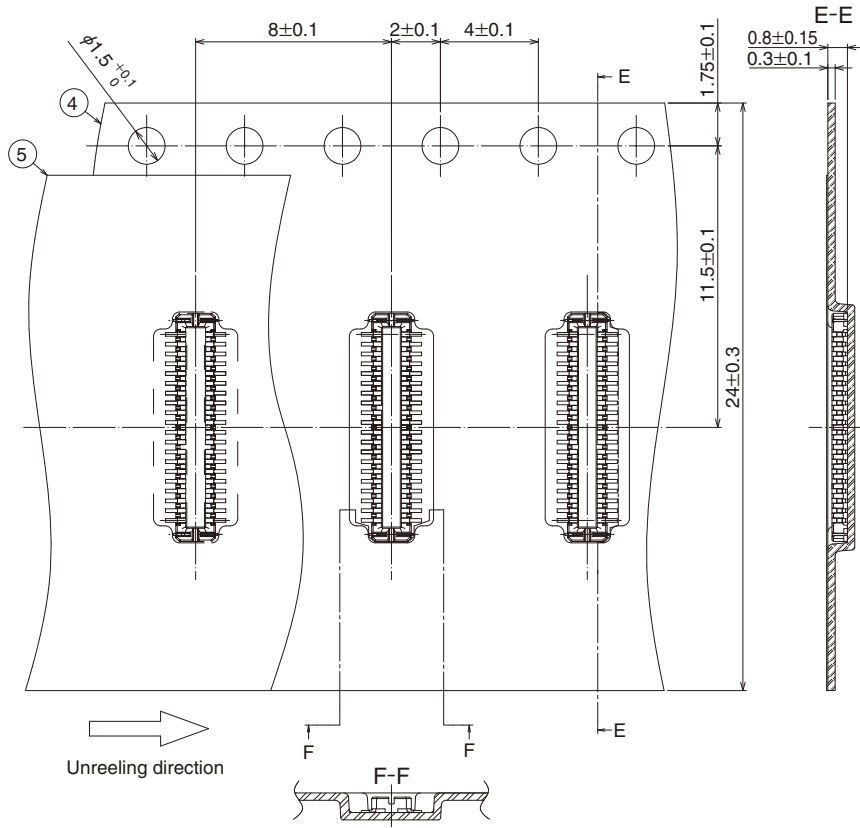
## ■Reel dimensions (Receptacles)



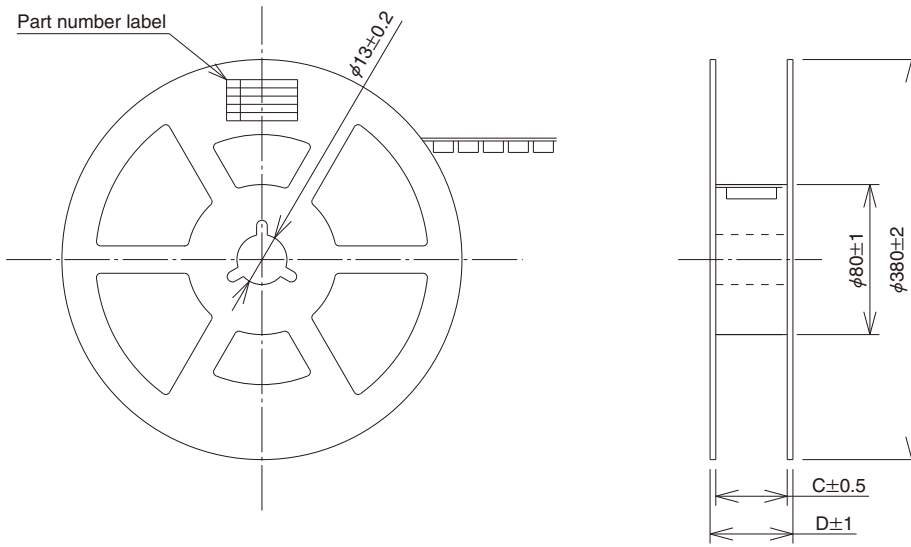
Unit : mm

Part Number	A	B	C	D
BM10#(0.8)-10DS-0.4V(51)	16	7.5	17.5	21.5
BM10#(0.8)-16DS-0.4V(51)	16	7.5	17.5	21.5
BM10#(0.8)-20DS-0.4V(51)	16	7.5	17.5	21.5
BM10#(0.8)-24DS-0.4V(51)	16	7.5	17.5	21.5
BM10#(0.8)-30DS-0.4V(51)	24	11.5	25.5	29.5
BM10#(0.8)-34DS-0.4V(51)	24	11.5	25.5	29.5
BM10#(0.8)-40DS-0.4V(51)	24	11.5	25.5	29.5
BM10#(0.8)-44DS-0.4V(51)	24	11.5	25.5	29.5
BM10#(0.8)-50DS-0.4V(51)	24	11.5	25.5	29.5
BM10#(0.8)-60DS-0.4V(51)	24	11.5	25.5	29.5

● Header



## ■Reel dimensions (Header)

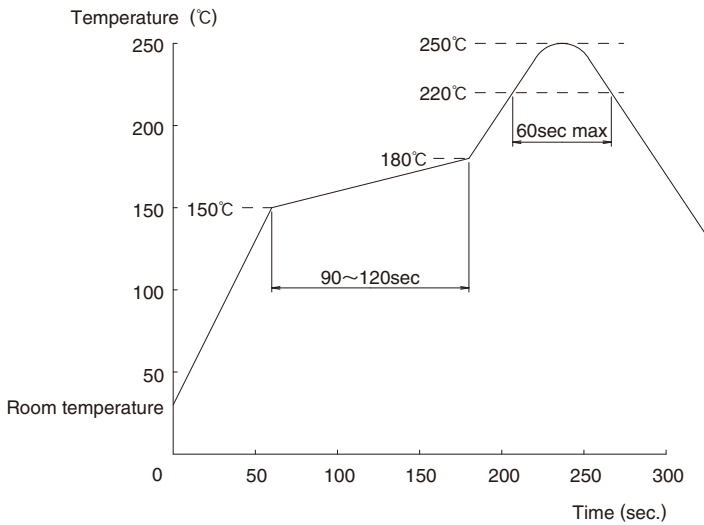


Unit : mm

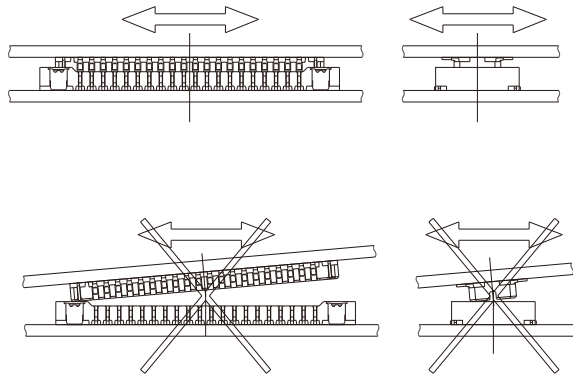
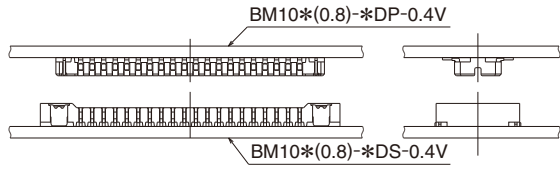
Part Number	A	B	C	D
BM10#(0.8)-10DP-0.4V(51)	12	5.5	13.5	17.5
BM10#(0.8)-16DP-0.4V(51)	16	7.5	17.5	21.5
BM10#(0.8)-20DP-0.4V(51)	16	7.5	17.5	21.5
BM10#(0.8)-24DP-0.4V(51)	16	7.5	17.5	21.5
BM10#(0.8)-30DP-0.4V(51)	16	7.5	17.5	21.5
BM10#(0.8)-34DP-0.4V(51)	16	7.5	17.5	21.5
BM10#(0.8)-40DP-0.4V(51)	24	11.5	25.5	29.5
BM10#(0.8)-44DP-0.4V(51)	24	11.5	25.5	29.5
BM10#(0.8)-50DP-0.4V(51)	24	11.5	25.5	29.5
BM10#(0.8)-60DP-0.4V(51)	24	11.5	25.5	29.5



## ■ Usage Recommendations

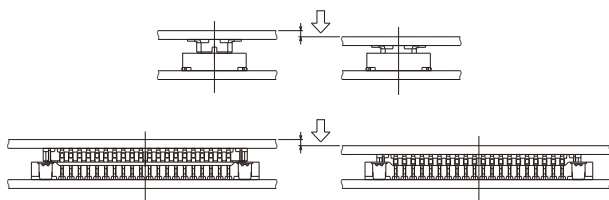
<p>1. Recommended temperature profile</p>	 <p>Note 1 : Up to 2 cycles of Reflow soldering are possible under the same conditions, provided that there is a return to normal temperature between the first and second cycle.</p> <p>Note 2 : The temperature profile indicates the board surface temperature at the point of contacts with the connector terminals.</p>
<p>2. Recommended manual soldering</p>	<p>Manual soldering : <math>340 \pm 10^{\circ}\text{C}</math> for 3 seconds</p>
<p>3. Recommended screen thickness and open area ratio (Pattern area ratio)</p>	<p>Header, Receptacle : Thickness 0.12mm : Open area ratio 100%</p> <p>* When using nitrogen-reflow, 75% only at the header side.</p>
<p>4. Board warpage</p>	<p>Maximum of 0.02mm at the connector center, with both ends of the connector as reference points.</p>
<p>5. Cleaning conditions</p>	<p>Cleaning is not recommended.</p> <p>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.)</p>
<p>6. Precautions</p>	<ul style="list-style-type: none"> <li>■ Be careful when mating/unmating the connector when it is not mounted on the PCB as it may cause damage/deformation to contacts.</li> <li>■ Avoid supporting the PCB only with the connectors. Support it by other means such as bolts, screws, posts, etc.</li> <li>■ Excessive prying during unmating/mating may result in damage.</li> <li>■ In the case of hand soldering, please do not apply any flux which could cause flux wicking.</li> <li>■ This product may have slight color differences due to production lot variability, but this does not affect the performance.</li> <li>■ Please refer to the following page for handling precautions when inserting and removing.</li> <li>■ 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</li> </ul>

## ■ Handling Precautions when Mating Connectors



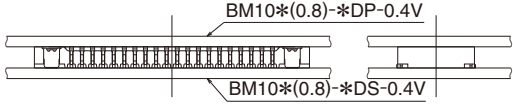
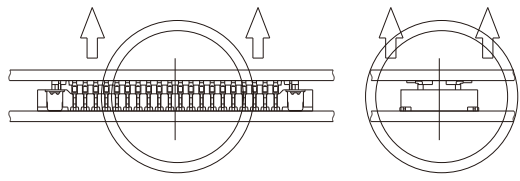
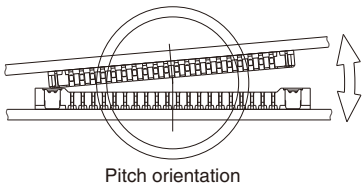
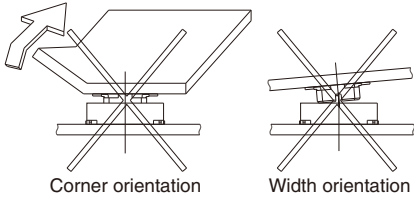
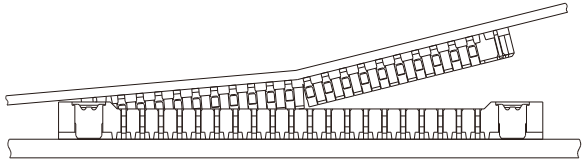
Keep the connectors parallel to each other when positioning. The connectors will self-align in horizontal directions.

Do not attempt to mate the connectors starting at one end or side.



Press-down even until fully mated.

## ■ Handling Precautions When Un-mating Connectors

	<p>Fully mated</p>
	<p>Lift even, keeping both connectors parallel to each other</p>
 <p>Pitch orientation</p>	<p>When handling, circumstances may prevent the connectors from being kept parallel when un-mating. One end may be lifted as shown. However, to use this procedure the connector must be mounted on sufficiently rigid circuit board.</p> <p>Any deflection of the board during this operation may result in damage to the connector or solder joints.</p>
 <p>Corner orientation      Width orientation</p>	<p>Do not attempt to start the un-mating of the connectors from one side or corner.</p> <p>Failure to exercise caution when un-mating the connectors mounted on the non-rigid FPC may also result in connector breakage.</p> <p>It is the responsibility of the user to perform verification of the repeated mating / un-mating cycles with the connectors mounted on the applicable FPC.</p>
	<p>When the rigidity of the FPC is low, there is a risk that the connector could break as illustrated in the diagram at left.</p> <p>Please use the connectors after performing a check of repeated operation with the FPC that the customer will be using.</p> <p>Evaluative results of FPC rigidity and various items are available. Please inquire.</p>

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MEMO :

Dotted lines for memo content.

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