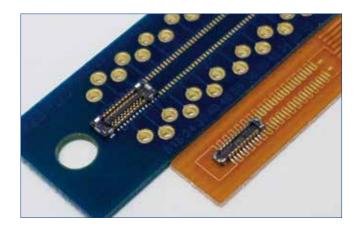
# 0.35mm Pitch, 0.6 and 0.8mm Height, Board to Board or Board to FPC Connectors

### **BM23FR Series**



### ■Features

### 1. Space-saving design

Compact design ideal for mobile devices (See Fig.1)
-Pitch: 0.35mm, Width: 1.98mm, Stacking height: 0.6/0.8mm

### 2. Robust [Breaking Strength: 90N]

Metal guides prevent housing damage due to incorrect mating. (See Fig.2)

### 3. Highly reliable contact design

2-point contact design for signal contact ensures high reliability. (See Fig.3)

### 4. Good mating operation

Wide self alignment range with metal guides offers enhanced mating operation.

(0.4mm in pitch direction, 0.35mm in width direction) Furthermore, a clear tactile click generated by the unique locking contact design insures complete mating.

### 5. Supports USB 3.1 Gen.2 (10Gbps) transmission

Signal contacts support USB3.1 Gen.2 transmission speed.

### Environmental

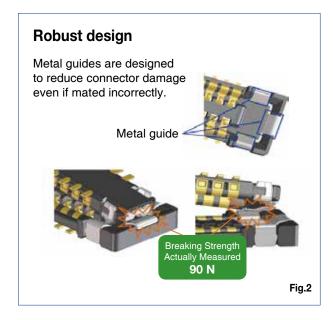
· Halogen-free\*

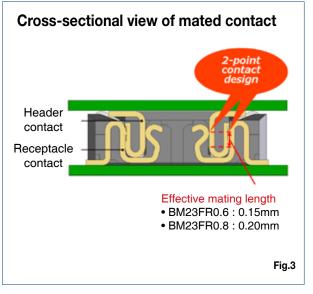
As defined by IEC 61249-2-21

Br: 900ppm max., Cl: 900ppm max.

Br+Cl: 1,500ppm max.

# Space-saving Dimension Example: 24 Pos. Receptacle Header Narrow width design allows for use in small spaces. Fig.1





# **■**Product Specifications

Detings	Rated current	0.3A	Operating temperature range	-55°C to 85°C (Note1)	Storage temperature range	-10°C to 60°C (Note2)
Ratings	Rated voltage	30V AC/DC	Operating humidity range	20% to 80%	Storage humidity range	40% to 70% (Note2)

Items	Specifications	Conditions
1. Contact resistance	100mΩ max.	Measured at 20mV AC, 1kHz, and 1mA
2. Insulation resistance	50MΩ min.	Measured at 100V DC
3. Withstanding voltage	No flashover or insulation breakdown	100V AC for 1 minute
4. Durability	Contact resistance: 100mΩ max.	10 mating cycles
5. Vibration	No electrical discontinuity for more than 1µs.	Frequency: 10 to 55Hz, single amplitude: 0.75mm in 3 axis directions for 5 minutes, 10 cycles
6. Shock resistance	No electrical discontinuity of 1µs or more.	Acceleration : 490m/s², duration of pulse : 11ms at 3 times for 3 directions
7. Humidity	Contact resistance : $100m\Omega$ max. Insulation resistance : $25m\Omega$ min.	96 hours at temperature of 40±2°C and a humidity range from 90 to 95%
8. Temperature cycle	Contact resistance: $100 \text{m}\Omega$ max. Insulation resistance: $50 \text{M}\Omega$ min.	-55°C for 30 minutes → 85°C for 30 minutes, 5 cycles
Soldering heat resistance	No dissolution or melting of the resin that will affect the performance.	Reflow: with recommended temperature profile; Hand soldering at soldering iron temperature of 350°C for 3 seconds max.

Note 1: Includes temperature rise caused by current flow.

Note 2 : Storage refers to long-term-storage of unused items before they are mounted on the PCB.

Operating temperature/humidity range applies to the state of temporary storage such as non-powered after mounting on the PCB, and during transportation, etc.

# **■**Materials / Finish

Product	Part	Material	Finish	UL Regulation
	Insulator	LCP	Black	UL94V-0
Receptacle Header	Contact	Copper alloy	Gold plating	
	Metal Fitting	Copper alloy	Gold plating	

# **■**Product Number Structure

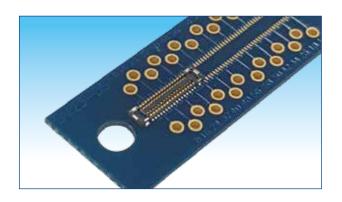
Refer to the chart below when determining the product specifications from the product number. Please select from the product numbers listed in this catalog when placing orders

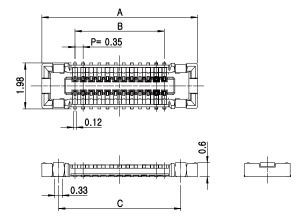
### ● Receptacle / Header

BM 23 FR \*\* - \* DS - 0.35 V (\*\*\*)

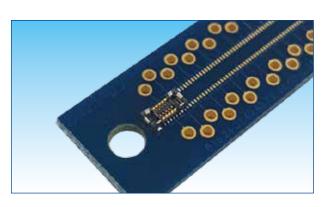
Series Name: BM	6 Connector Type DS: Receptacle DP: Header				
2 Series No. : 23	Contact Pitch : 0.35mm				
Shape Symbols FR: With locking metal fitting	Terminal type     V : Straight SMT				
4 Stacking Height: 0.6mm, 0.8mm	Gold plated specification and packaging status     (51): Gold plate thickness 0.05µm     Embossed tape packaging (10,000pcs/reel)				
Number of Contacts	(895): Gold plate thickness 0.05µm Embossed tape packaging (1,000pcs/reel)				

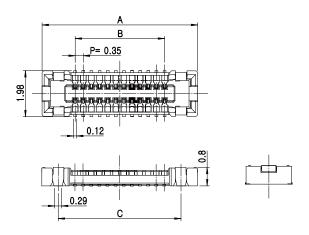
# ■H=0.6mm Receptacle



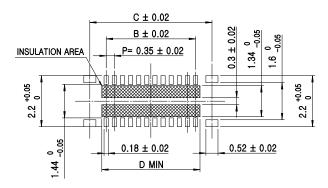


# ■H=0.8mm Receptacle

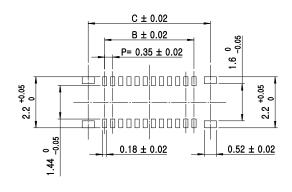




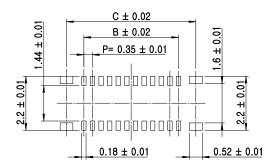
# 



# ♠ Recommended PCB layout [H=0.8 mm]



# Recommended metal mask dimensions (mask thickness: 100μm) [0.6mm and 0.8mm common]



Unit: mm

Part No.	HRS No.	No. of contacts	А	АВ		D
BM23FR0.6-6DS-0.35V(***)	480-0287-0 **	6	3.55	0.70	2.11	1.08
BM23FR0.6-8DS-0.35V(***)	480-0360-0 **	8	3.90	1.05	2.46	1.43
BM23FR0.6-10DS-0.35V(***)	480-0258-0 **	10	4.25	4.25 1.40		1.78
BM23FR0.6-12DS-0.35V(***)	480-0371-0 **	12	4.60 1.75		3.16	2.13
BM23FR0.6-16DS-0.35V(***)	480-0295-0 **	16	5.30	2.45	3.86	2.83
BM23FR0.6-20DS-0.35V(***)	480-0272-0 **	20	6.00	3.15	4.56	3.53
BM23FR0.6-24DS-0.35V(***)	480-0260-0 **	24	6.70	3.85	5.26	4.23
BM23FR0.6-30DS-0.35V(***)	480-0327-0 **	30	7.75	4.90	6.31	5.28
BM23FR0.6-34DS-0.35V(***)	480-0274-0 **	34	8.45	5.60	7.01	5.98
BM23FR0.6-40DS-0.35V(***)	480-0390-0 **	40	9.50	6.65	8.06	7.03
BM23FR0.6-50DS-0.35V(***)	480-0382-0 **	50	11.25	8.40	9.81	8.78
Part No.	HRS No.	No. of contacts	А	-	3	С
BM23FR0.8-10DS-0.35V(***)	480-0298-0 **	10	4.25	4.25 1.40		2.81
BM23FR0.8-18DS-0.35V(***)	480-0469-0 **	18	5.65 2.80		80	4.21

60

13.00

10.15

11.56

Note 1 : Please place orders in full reel quantities.

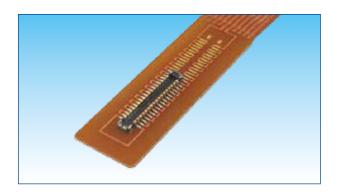
Note 2: This connector has no polarity.

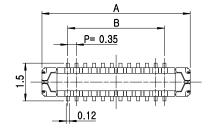
BM23FR0.8-60DS-0.35V(\*\*\*)

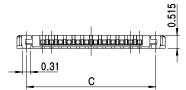
Note 3 : The specification number (895) in the Part No. changes to (95) in the HRS No.

480-0300-0 \*\*

# ■H=0.6mm Header



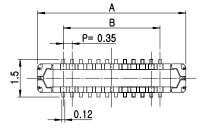


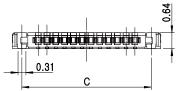




# ■H=0.8mm Header

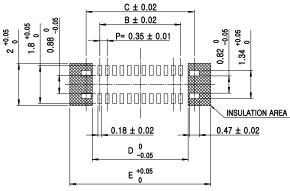




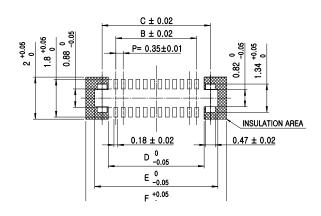




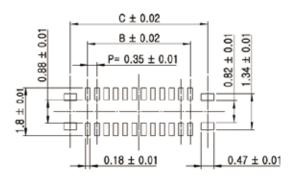
# **▶** Recommended PCB layout [H=0.6mm]



# **▶** Recommended PCB layout [H=0.8mm]



# Recommended metal mask dimensions (mask thickness : 100μm) [0.6mm and 0.8mm common]



Unit: mm

Part No.	HRS No.	No. of contacts	Α	В	(	С		E
BM23FR0.6-6DP-0.35V(***)	480-0286-0 **	6	2.75 0.70		2.	2.00		3.55
BM23FR0.6-8DP-0.35V(***)	480-0361-0 **	8	3.10	1.05	2.	35	1.76	3.90
BM23FR0.6-10DP-0.35V(***)	480-0257-0 **	10	3.45	1.40	2.	70	2.11	4.25
BM23FR0.6-12DP-0.35V(***)	480-0364-0 **	12	3.80	1.75	3.	05	2.46	4.60
BM23FR0.6-16DP-0.35V(***)	480-0290-0 **	16	4.50	2.45	2.45 3.75		3.16	5.30
BM23FR0.6-20DP-0.35V(***)	480-0273-0 **	20	5.20	3.15	3.15 4.45		4.45 3.86	
BM23FR0.6-24DP-0.35V(***)	480-0259-0 **	24	5.90	3.85	5.	15	4.56	6.70
BM23FR0.6-30DP-0.35V(***)	480-0328-0 **	30	6.95	4.90	4.90 6.20		5.61	7.75
BM23FR0.6-34DP-0.35V(***)	480-0275-0 **	34	7.65	5.60	6.	90	6.31	8.45
BM23FR0.6-40DP-0.35V(***)	480-0391-0 **	40	8.70	6.65	7.	95	7.36	9.50
BM23FR0.6-50DP-0.35V(***)	480-0383-0 **	50	10.45	10.45 8.40		70	9.11	11.25
Part No.	HRS No.	No. of contacts	А	В	С	D	Е	F
BM23FR0.8-10DP-0.35V(***)	480-0297-0 **	10	3.45	1.40	2.70	2.11	1 3.4	1 4.25
BM23FR0.8-18DP-0.35V(***)	480-0468-0 **	18	4.85	2.80	4.10	3.51	1 4.8	1 5.65
BM23FR0.8-60DP-0.35V(***)	480-0299-0 **	60	12.20	12.20 10.15		10.8	6 12.1	6 13.00

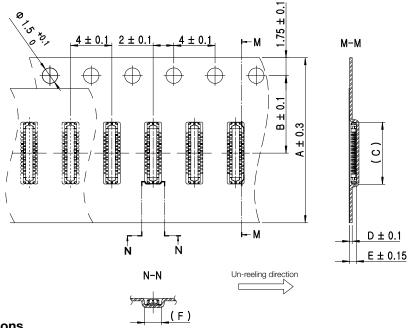
Note 1 : Please place orders in full reel quantities.

Note 2: This connector has no polarity.

Note 3: The specification number(895) in the Part No. changes to(95) in the HRS No.

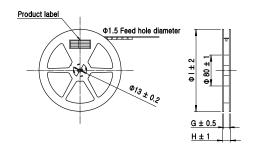
# **♦** Embossed Tape Dimensions (IEC 602286-3, with JIC C 0806)

### Receptacle

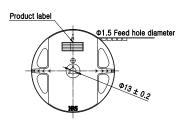


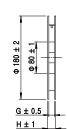
### Reel Dimensions

▶10,000pcs/reel



### ▶1,000pcs/reel





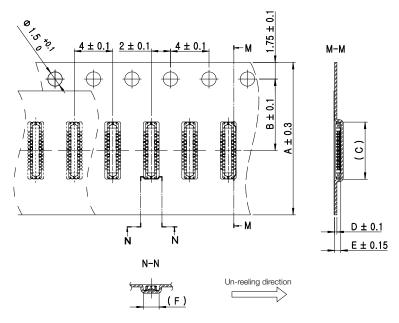
Unit: mm

Part No.	HRS No.	No. of contacts	Α	В	С	D	E	F	G	Н	I
BM23FR0.6-6DS-0.35V(***)	480-0287-0 **	6	12	5.5	3.66	0.25	0.8	2.07	13.5	17.5	330
BM23FR0.6-8DS-0.35V(***)	480-0360-0 **	8	12	5.5	4.01	0.25	0.8	2.07	13.5	17.5	330
BM23FR0.6-10DS-0.35V(***)	480-0371-0 **	10	16	7.5	4.36	0.25	0.8	2.07	17.5	21.5	380
BM23FR0.6-12DS-0.35V(***)	480-0295-0 **	12	16	7.5	4.71	0.25	0.8	2.07	17.5	21.5	330
BM23FR0.6-16DS-0.35V(***)	480-0272-0 **	16	16	7.5	5.41	0.25	0.8	2.07	17.5	21.5	330
BM23FR0.6-20DS-0.35V(***)	480-0260-0 **	20	16	7.5	6.11	0.25	0.8	2.07	17.5	21.5	380
BM23FR0.6-24DS-0.35V(***)	480-0327-0 **	24	16	7.5	6.81	0.25	0.8	2.07	17.5	21.5	380
BM23FR0.6-30DS-0.35V(***)	480-0274-0 **	30	24	11.5	7.86	0.25	0.8	2.07	25.5	29.5	330
BM23FR0.6-34DS-0.35V(***)	480-0390-0 **	34	24	11.5	8.56	0.25	0.8	2.07	25.5	29.5	380
BM23FR0.6-40DS-0.35V(***)	480-0382-0 **	40	24	11.5	9.61	0.25	0.8	2.07	25.5	29.5	330
BM23FR0.6-50DS-0.35V(***)	480-0371-0 **	50	24	11.5	11.36	0.25	0.8	2.07	25.5	29.5	330
Part No.	HRS No.	No. of contacts	Α	В	С	D	Е	F	G	Н	- 1
BM23FR0.8-10DS-0.35V(***)	480-0298-0 **	10	16	7.5	4.36	0.3	1.0	2.07	17.5	21.5	330
BM23FR0.8-18DS-0.35V(***)	480-0469-0 **	18	16	7.5	5.76	0.3	1.0	2.07	17.5	21.5	330
BM23FR0.8-60DS-0.35V(***)	480-0300-0 **	60	24	11.5	13.11	0.3	1.0	2.07	25.5	29.5	330

Note 1: The specification number(895) in the Part No. changes to(95) in the HRS No.

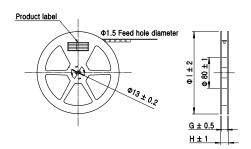
# **♦** Embossed Tape Dimensions (IEC 602286-3, with JIC C 0806)

### Header

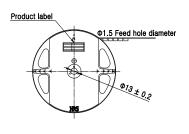


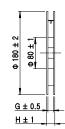
### Reel Dimensions

▶10,000pcs/reel



▶1,000pcs/reel



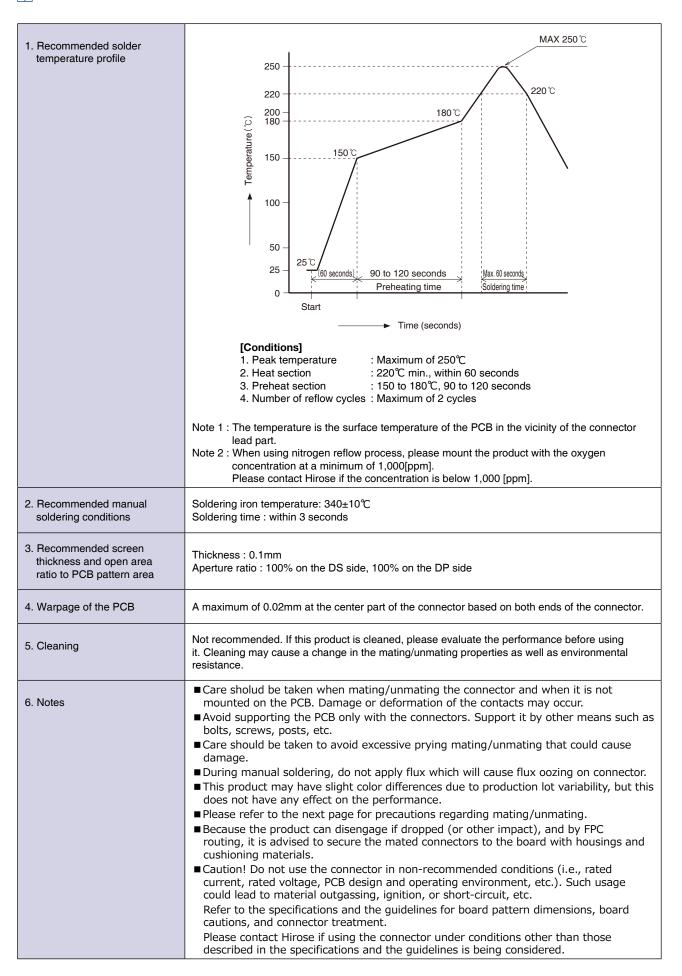


Unit: mm

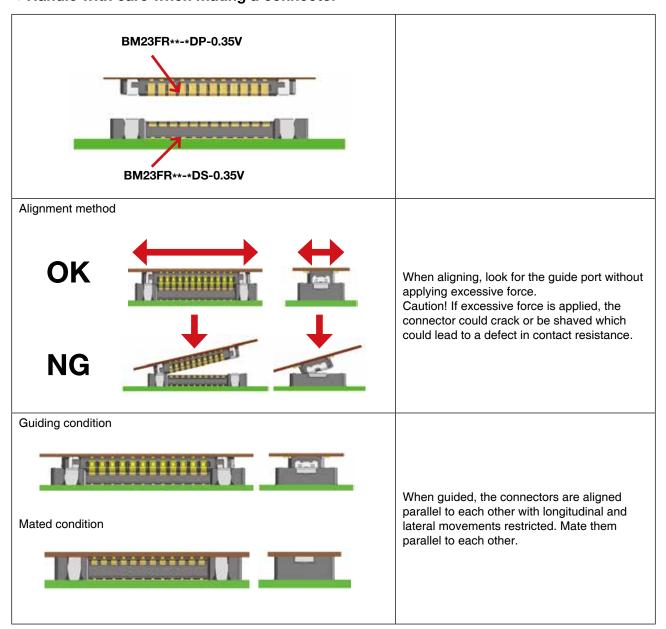
										•	
Part No.	HRS No.	No. of contacts	Α	В	С	D	Е	F	G	Н	I
BM23FR0.6-6DP-0.35V(***)	480-0286-0 **	6	12	5.5	2.85	0.25	0.65	1.58	13.5	17.5	330
BM23FR0.6-8DP-0.35V(***)	480-0361-0 **	8	12	5.5	3.20	0.25	0.65	1.58	13.5	17.5	330
BM23FR0.6-10DP-0.35V(***)	480-0257-0 **	10	12	5.5	3.55	0.25	0.65	1.64	13.5	17.5	380
BM23FR0.6-12DP-0.35V(***)	480-0364-0 **	12	12	5.5	3.90	0.25	0.65	1.64	13.5	17.5	330
BM23FR0.6-16DP-0.35V(***)	480-0290-0 **	16	16	7.5	4.60	0.25	0.65	1.64	17.5	21.5	330
BM23FR0.6-20DP-0.35V(***)	480-0273-0 **	20	16	7.5	5.30	0.25	0.65	1.64	17.5	21.5	380
BM23FR0.6-24DP-0.35V(***)	480-0259-0 **	24	16	7.5	6.00	0.25	0.65	1.64	17.5	21.5	380
BM23FR0.6-30DP-0.35V(***)	480-0328-0 **	30	16	7.5	7.05	0.25	0.65	1.64	17.5	21.5	330
BM23FR0.6-34DP-0.35V(***)	480-0275-0 **	34	16	7.5	7.75	0.25	0.65	1.64	17.5	21.5	380
BM23FR0.6-40DP-0.35V(***)	480-0391-0 **	40	24	11.5	8.80	0.25	0.65	1.64	25.5	29.5	330
BM23FR0.6-50DP-0.35V(***)	480-0383-0 **	50	24	11.5	10.55	0.25	0.65	1.64	25.5	29.5	330
Part No.	HRS No.	No. of contacts	Α	В	С	D	Е	F	G	Н	I
BM23FR0.8-10DP-0.35V(***)	480-0297-0 **	10	12	5.5	3.55	0.3	0.78	1.64	13.5	17.5	330
BM23FR0.8-18DP-0.35V(***)	480-0468-0 **	18	16	7.5	4.95	0.3	0.78	1.64	17.5	21.5	330
BM23FR0.8-60DP-0.35V(***)	480-0299-0 **	60	24	11.5	12.30	0.3	0.78	1.64	25.5	29.5	330

Note 1: The specification number (895) in the Part No. changes to (95) in the HRS No.

# Precautions



# Handle with care when mating a connector



# ● Handle with care when un-mating connectors

ОК		Un-mate connectors parallel to each other.
ОК	Pitch direction	If the connector cannot be un-mated parallel, it can be removed diagonally from the pitch direction, as shown in the left figure. However, the connector can be broken if the FPC is not rigid. Please confirm rigidity of the FPC at the time of trial production.
NG	Corner direction	Do not pull from the corner. If it is pulled from the corner as shown in the left figure, the contact and connector could be damaged.
NG	EGSHISE (ESSENCE)	Please provide a reinforcing plate for the FPC. If the rigidity of the FPC is not sufficient, the connector may break as shown in the left figure. Please check the action of the FPC to be used repeatedly. A reinforcing plate of 0.3mm or thicker made of glass epoxy material, or 0.2mm or thicker stainless steel is recommended

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