

LEADED FERRITE BEADS INDUCTORS



WAVE

FEATURES

- Use of high loss ferrite material.
- Easy mounting on PC boards.
- Available in a wide range of values and configurations to suit most applications.

APPLICATIONS

- Waveform correction of digital signals from digital equipment and absorption of high-frequency noise from data lines.

OPERATING TEMP.

- -25°C~85°C

ORDERING CODE

F B A 0 4 H A 4 5 0 B B ○ ○ ○

1 Type

FB	Ferrite Beads
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2 Configuration

A	Axial lead
R	Radial lead

3 Core Dimensions (mm)

03	φ2.5
04	φ3.5
05	5.0
06	6.0
07	7.5

4 Material code

HA	Refer to impedance curves for material difference
VA	

5 Nominal Impedance

example	
850	85
121	120

Excluding 03Type

6 Lead configuration (mm)

AB	Straight lead (26mm lead space) / ammo	SA	Straight lead (FBR05 type) / ammo
BB	Straight lead (52mm lead space) / ammo	SB	Straight lead (FBR07 type) / ammo
KD	Formed lead (10mm pitch) / bulk	TB	Straight lead (FBR07 type) / ammo
KE	Formed lead (12.5mm pitch) / bulk	UB	Radial lead formed / ammo
KF	Formed lead / bulk (15.0mm pitch) / bulk	US	Formed lead (crimped) / bulk
NA	Lead (2.5mm pitch)/bulk (FBR)	VB	Dual side lead formed (crimped) / ammo
	Straight lead / bulk (FBA)	VS	Formed lead / bulk
NB	Formed lead (crimped) / bulk		

7 Internal code

-00	Standard Products
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EXTERNAL DIMENSIONS/STANDARD QUANTITY

Type	Configurations				Dimensions		Standard Quantity (pcs)					
	Taping		Bulk		D	L	Type	Lead Configuration	Bulk	Taped Ammo		
	Straight	Formed	Straight	Formed								
FBA	03HA450 □ -00 03VA450 □ -00					2.5±0.2 (0.098±0.008)	4.5±0.3 (0.177±0.012)	FBA03	NA, KD, US	1000	—	
	04HA450 □ -00 04VA450 □ -00					3.5±0.2 (0.138±0.008)	4.5±0.3 (0.177±0.012)		NA, KD, US	1000	—	
	04HA600 □ -00 04VA600 □ -00					3.5±0.2 (0.138±0.008)	6.0 ^{+0.5} ₋₀ (0.236 ^{+0.020} ₋₀)		FBA04	KE, KF, VS	500	—
	04HA900 □ -00 04VA900 □ -00					3.5±0.2 (0.138±0.008)	9.0±0.5 (0.354±0.020)		UB, VB	—	3000	—
05VA121 □ -00	—		—		5.0 max. (0.197 max.)	7.5 (0.295)	FBR05	NA	1000	—		
06HA850NA-00 06VA850NA-00	—	—	—		6.0±0.5 (0.236±0.020)	5.0 (0.197)	FBR06	NA	1000	—		
06HA121NA-00 06VA121NA-00	—	—	—		7.0 (0.276)	—	—	—	—	—		
07HA850 □ -00 07VA850 □ -00	—		—		7.5±0.5 (0.295±0.020)	5.5 (0.217)	FBR07	NB	1000	—		
07HA121 □ -00 07VA121 □ -00	—		—		7.5 (0.295)	7.5 (0.295)	SB	—	2000	—		

□ Please specify the lead configuration code.

Unit : mm (inch)

Note: Lead diameter (φd) shall fall within a range of 0.65mm±0.05mm, FBR05, and FBR07 types however, will have a lead diameter (φd) range of 0.6mm±0.05mm.

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PART NUMBERS

Ordering code	EHS (Environmental Hazardous Substances)	Impedance [Ω] min.	Measuring frequency [MHz]		Rated Current [A] max.		
			Material		Material		
			HA	VA	HA	VA	
FBA	03 \triangle 450 \square -00	RoHS	35.0	50	100	7.0	7.0
	04 \triangle 450 \square -00	RoHS	45.0	50	100	7.0	7.0
	04 \triangle 600 \square -00	RoHS	60.0	50	100	7.0	7.0
	04 \triangle 900 \square -00	RoHS	90.0	50	100	7.0	7.0
FBR	05 VA 121 \square -00	RoHS	120.0	-	100	-	7.0
	06 \triangle 850 NA-00	RoHS	85.0	50	100	7.0	7.0
	06 \triangle 121 NA-00	RoHS	120.0	50	100	7.0	7.0
	07 \triangle 850 \square -00	RoHS	85.0	50	100	7.0	7.0
	07 \triangle 121 \square -00	RoHS	120.0	50	100	7.0	7.0

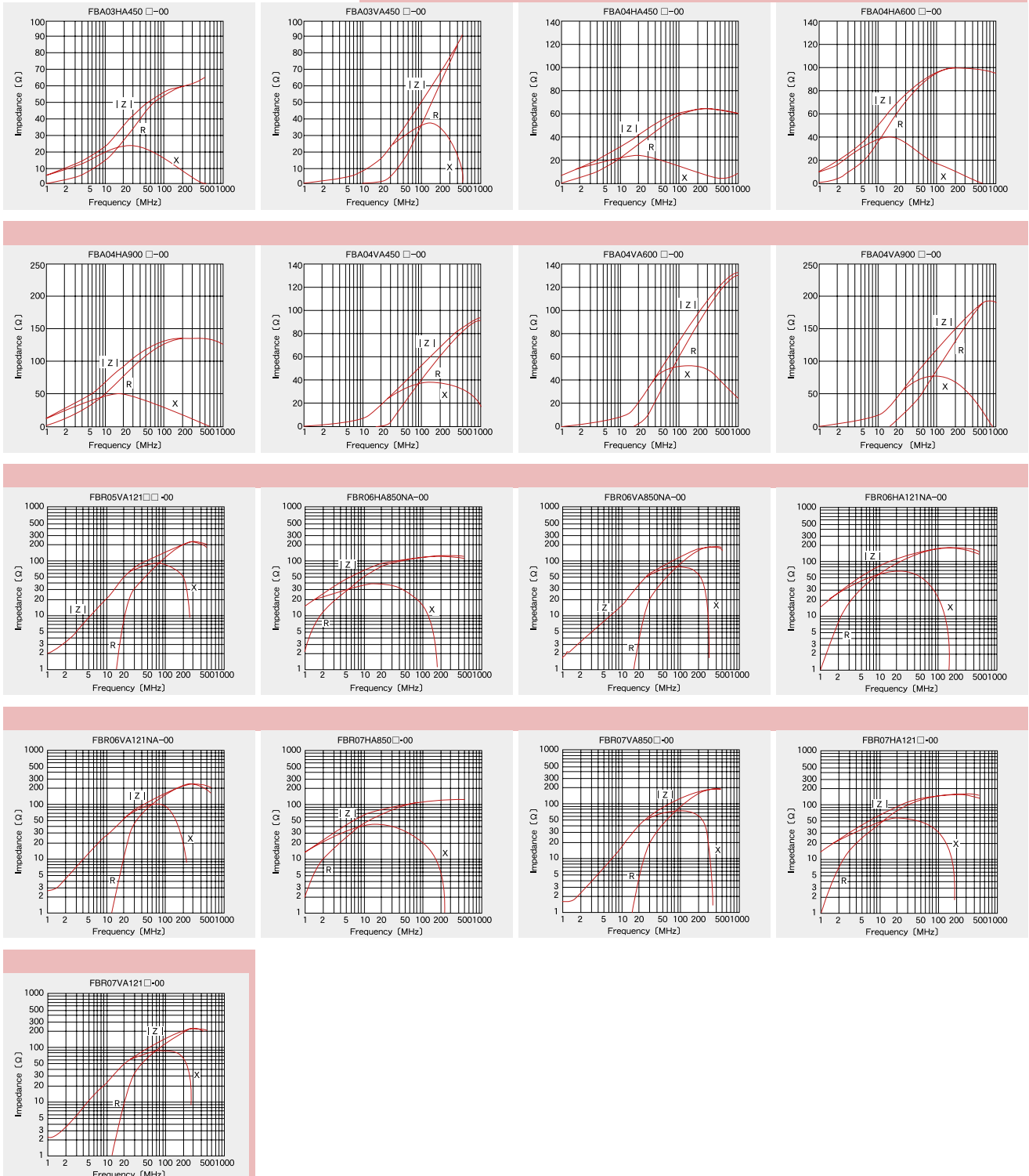
\triangle Please specify material codes (HA,VA) and \square lead configuration code.

※DC Resistance : 0.01 Ω max., Insulation resistance : 1.0M Ω min.

ELECTRICAL CHARACTERISTICS

IMPEDANCE-vs-FREQUENCY CHARACTERISTICS

(Measured by HP4191A)



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PACKAGING

① Minimum Quantity

● Axial lead (FBA)

Type	Lead Configuration	Standard quantity [pcs]	
		Bulk	Taped Ammo
FBA03	NA, KD, US	1000	—
	KE, KF, VS	500	—
	AB, BB	—	2000
	UB, VB	—	3000
FBA04	NA, KD, US	1000	—
	KE, KF, VS	500	—
	AB, BB	—	1000
	VB, UB	—	3000

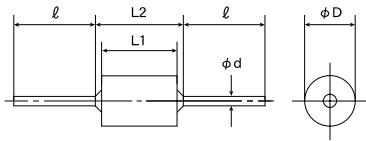
● Radial lead (FBR)

Type	Lead Configuration	Standard quantity [pcs]	
		Bulk	Taped Ammo
FBR05	NA	1000	—
	SA	—	2000
FBR06	NA	1000	—
FBR07	NB	1000	—
	SB	—	2000

② Bulk dimensions

Axial lead (FBA)

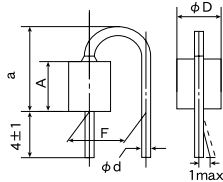
● NA



Type	Dimensions				
	φD	L1	L2	φd	ℓ
FBA03□450	2.5±0.2 (0.098±0.008)	4.5±0.3 (0.177±0.012)	6.5 max. (0.256 max.)	0.65±0.05 (0.026±0.002)	18 min. (0.709 min.)
FBA04□450	3.5±0.2 (0.138±0.008)	4.5±0.3 (0.177±0.012)	6.5 max. (0.256 max.)		
FBA04□600	3.5±0.2 (0.138±0.008)	6.0 ^{+0.5} ₋₀ (0.236 ^{+0.020} ₋₀)	8.5 max. (0.335 max.)		
FBA04□900	3.5±0.2 (0.138±0.008)	9.0±0.5 (0.354±0.020)	11.0 max. (0.433 max.)		

Unit : mm (inch)

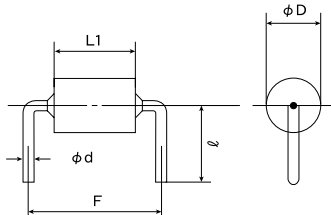
● US



Type	Dimensions				
	φD	A	a	F	φd
FBA03□450	2.5±0.2 (0.098±0.008)	4.5±0.3 (0.177±0.012)	9.0 max. (0.354 max.)	5.0±1.0 (0.197±0.039)	0.65±0.05 (0.026±0.002)
FBA04□450	3.5±0.2 (0.138±0.008)	4.5±0.3 (0.177±0.012)	9.0 max. (0.354 max.)	—	—

Unit : mm (inch)

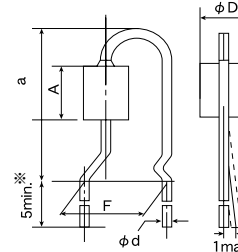
● KD/KE/KF



Type	Lead Symbol	Dimensions				
		φD	F	L1	φd	ℓ
FBA03□450	KD	2.5±0.2 (0.098±0.008)	10.0±1.0 (0.394±0.040)	4.5±0.3 (0.177±0.012)	0.65±0.05 (0.026±0.020)	7.0±2.0 (0.276±0.079)
FBA04□450		3.5±0.2 (0.138±0.008)	10.0±1.0 (0.394±0.040)	4.5±0.3 (0.177±0.012)		7.5±2.0 (0.295±0.079)
FBA04□600		3.5±0.2 (0.138±0.008)	10.0±1.0 (0.394±0.040)	6.0 ^{+0.5} ₋₀ (0.236 ^{+0.020} ₋₀)		7.5±2.0 (0.295±0.079)
FBA03□450	KE	2.5±0.2 (0.098±0.008)	12.5±1.0 (0.492±0.004)	4.5±0.3 (0.177±0.012)	0.65±0.05 (0.026±0.020)	7.0±2.0 (0.276±0.079)
FBA04□450		3.5±0.2 (0.138±0.008)	12.5±1.0 (0.492±0.004)	4.5±0.3 (0.177±0.012)		7.5±2.0 (0.295±0.079)
FBA04□600		3.5±0.2 (0.138±0.008)	12.5±1.0 (0.492±0.004)	6.0 ^{+0.5} ₋₀ (0.236 ^{+0.020} ₋₀)		7.5±2.0 (0.295±0.079)
FBA04□900		3.5±0.2 (0.138±0.008)	12.5±1.0 (0.492±0.004)	9.0±0.5 (0.354±0.020)		7.5±2.0 (0.295±0.079)
FBA03□450	KF	2.5±0.2 (0.098±0.008)	15.0±1.0 (0.591±0.004)	4.5±0.3 (0.177±0.012)	0.65±0.05 (0.026±0.020)	7.0±2.0 (0.276±0.079)
FBA04□450		3.5±0.2 (0.138±0.008)	15.0±1.0 (0.591±0.004)	4.5±0.3 (0.177±0.012)		7.5±2.0 (0.295±0.079)
FBA04□600		3.5±0.2 (0.138±0.008)	15.0±1.0 (0.591±0.004)	6.0 ^{+0.5} ₋₀ (0.236 ^{+0.020} ₋₀)		7.5±2.0 (0.295±0.079)
FBA04□900		3.5±0.2 (0.138±0.008)	15.0±1.0 (0.591±0.004)	9.0±0.53 (0.354±0.020)		7.5±2.0 (0.295±0.079)

Unit : mm (inch)

● VS



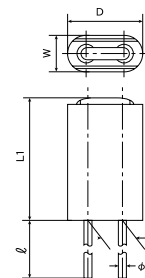
※5±1 for 900 type only

Type	Dimensions				
	φD	A	a	F	φd
FBA03□450	2.5±0.2 (0.098±0.008)	4.5±0.3 (0.177±0.012)	12.5 max. (0.492 max.)	5.0±1.0 (0.197±0.039)	0.65±0.05 (0.026±0.002)
FBA04□450	3.5±0.2 (0.138±0.008)	4.5±0.3 (0.177±0.012)	12.5 max. (0.492 max.)	5.0±1.0 (0.197±0.039)	0.65±0.05 (0.026±0.002)
FBA04□600	3.5±0.2 (0.138±0.008)	6.0 ^{+0.5} ₋₀ (0.236 ^{+0.020} ₋₀)	12.5 max. (0.492 max.)	5.0±1.0 (0.197±0.039)	0.65±0.05 (0.026±0.002)
FBA04□900	3.5±0.2 (0.138±0.008)	9.0±0.5 (0.354±0.020)	16.0 max. (0.630 max.)	5.0±1.0 (0.197±0.039)	0.65±0.05 (0.026±0.002)

Unit : mm (inch)

Radial lead (FBR)

● NA

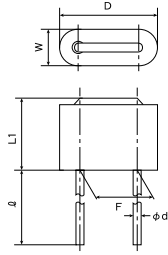


Type	Dimensions					
	D	L1	φd	ℓ	W	F
FBR05VA121	5.0 max. (0.197 max.)	9.0 max. (0.354 max.)	0.65±0.05 (0.026±0.002)	10.0 ⁺³ ₋₅ (0.394 ^{+0.118} _{-0.197})	2.5 max. (0.098 max.)	2.5±1.0 (0.098±0.039)
FBR06□850	6.0±0.5 (0.236±0.020)	7.0 max. (0.276 max.)	0.65±0.05 (0.026±0.002)	10.0 ⁺³ ₋₅ (0.394 ^{+0.118} _{-0.197})	3.0±0.5 (0.118±0.020)	2.5±1.0 (0.098±0.039)
FBR06□121	6.0±0.5 (0.236±0.020)	9.0 max. (0.354 max.)	0.65±0.05 (0.026±0.002)	10.0 ⁺³ ₋₅ (0.394 ^{+0.118} _{-0.197})	3.0±0.5 (0.118±0.020)	2.5±1.0 (0.098±0.039)

Unit : mm (inch)

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● NB

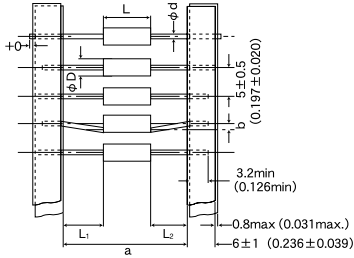


Type	Dimensions					
	D	L1	φd	ℓ	W	F
FBR07□850	7.5±0.5 (0.295±0.020)	7.0 max. (0.276 max.)	0.6±0.05 (0.024±0.002)	5.0 ⁺¹ ₋₂ (0.197 ^{+0.039} _{-0.079})	2.5 max. (0.098 max.)	5.0 ⁺¹ _{-0.5} (0.197 ^{+0.039} _{-0.020})
FBR07□121	7.5±0.5 (0.295±0.020)	9.0 max. (0.354 max.)	0.6±0.05 (0.024±0.002)	5.0 ⁺¹ ₋₂ (0.197 ^{+0.039} _{-0.079})	2.5 max. (0.098 max.)	5.0 ⁺¹ _{-0.5} (0.197 ^{+0.039} _{-0.020})

Unit : mm (inch)

③ Taping Dimensions

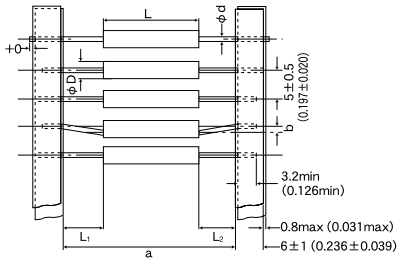
● AB (a:26mm) (1.02inch lead space)



Type	Dimensions						Minimum insertion pitch
	φD	L	a	b	L ₁ -L ₂	φd	
FBA03	2.5±0.2 (0.098±0.008)	4.5±0.3 (0.177±0.012)	26.0 ^{+1.5} ₋₀ (1.02 ^{+0.059} ₋₀)	0.8max (0.031max)	1.0 max (0.039 max)	0.65±0.05 (0.026±0.002)	10.0 (0.394)
FBA04	3.5±0.2 (0.138±0.008)	4.5±0.3 (0.177±0.012)	26.0 ^{+1.5} ₋₀ (1.02 ^{+0.059} ₋₀)	0.8max (0.031max)	1.0 max (0.039 max)	0.65±0.05 (0.026±0.002)	10.0 (0.394)

Unit : mm (inch)

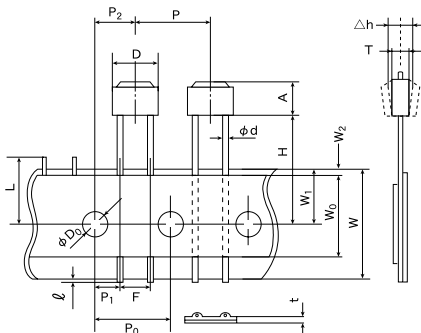
● B□ (a:52mm) (2.05inches lead space)



Type	Dimensions						Minimum insertion pitch
	φD	L	a	b	L ₁ -L ₂	φd	
FBA03	2.5±0.2 (0.098±0.008)	4.5±0.3 (0.177±0.012)	52.0 ⁺² ₋₁ (2.05 ^{+0.079} _{-0.039})	1.2 max (0.047 max)	1.0 max (0.039 max)	0.65±0.05 (0.026±0.002)	10.0 (0.394)
FBA04	3.5±0.2 (0.138±0.008)	4.5±0.3 (0.177±0.012)	52.0 ⁺² ₋₁ (2.05 ^{+0.079} _{-0.039})	1.2 max (0.047max)	1.0 max (0.039 max)	0.65±0.05 (0.026±0.002)	10.0 (0.394)

Unit : mm (inch)

● SA (F:2.5mm pitch) (0.098 inches)



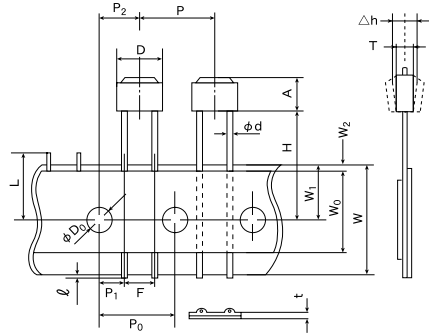
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Type	Symbol	Dimensions	Symbol	Dimensions
FBR05	A	121: 9.0 max. (0.354 max.)	W	18.0 ^{+1.0} _{-0.5} (0.709 ^{+0.039} _{-0.020})
	T	2.5 max. (0.098 max.)	W ₀	12.5 min. (0.492 min.)
	D	5.0 max. (0.197 max.)	W ₁	9.0 ^{+0.75} _{-0.5} (0.354 ^{+0.039} _{-0.020})
	H	18.0 ^{+2.0} ₋₀ (0.709 ^{+0.079} ₋₀)	W ₂	3.0 max. ^{*2} (0.118 max.)
	P	12.7±1.0 (0.500±0.039)	ℓ	1.0 max. (0.039 max.)
	P ₀	12.7±0.3 ^{*1} (0.500±0.039)	φD ₀	4.0±0.3 (0.157±0.012)
	P ₁	5.1±0.7 (0.201±0.028)	φd	0.65±0.05 (0.026±0.002)
	P ₂	6.35±1.3 (0.250±0.051)	L	11.0 max. (0.433 max.)
	F	2.5 ^{+1.0} _{-0.5} (0.098 ^{+0.039} _{-0.020})	t	0.7±0.2 (0.028±0.008)
	△h	0.0±2.0 (0.0±0.079)		

Unit : mm (inch)

※1 Accumulated error for 20 pitches is ±2mm.
※2 Bonding tape must not protrude from the base tape.

● SB/TB (F:5mm pitch) (0.197 inches)

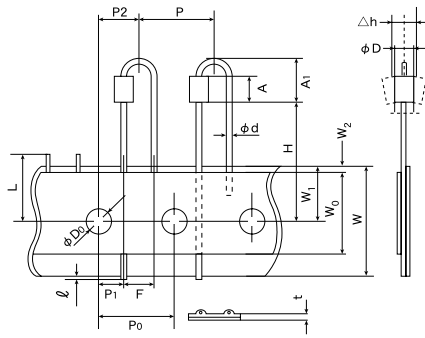


Type	Symbol	Dimensions	Symbol	Dimensions
FBR07	A	121: 9.0 max. (0.354 max.)	△h	0.0±2.0 (0.0±0.079)
		850: 7.0 max. (0.276 max.)	W	18.0 ^{+1.0} _{-0.5} (0.709 ^{+0.039} _{-0.020})
	T	2.5 max. (0.098 max.)	W ₀	12.5 min. (0.492 min.)
	D	7.5±0.5 (0.925±0.020)	W ₁	9.0 ^{+0.75} _{-0.5} (0.354 ^{+0.039} _{-0.020})
	H	SB: 18.0 ^{+2.0} ₋₀ (0.709 ^{+0.079} ₋₀)	W ₂	3.0 max. ^{*2} (0.118 max.)
		TB: 16.0±0.5 (0.630±0.020)	ℓ	1.0 max. (0.039 max.)
	P	12.7±1.0 (0.500±0.039)	φD ₀	4.0±0.3 (0.157±0.012)
	P ₀	12.7±0.3 ^{*1} (0.500±0.012)	φd	0.65±0.05 (0.02±0.002)
	P ₁	3.85±0.8 (0.152±0.028)	L	11.0 max. (0.433 max.)
	P ₂	6.35±1.3 (0.250±0.051)	t	0.7±0.2 (0.028±0.008)
	F	5.0 ^{+1.0} _{-0.5} (0.197 ^{+0.039} _{-0.020})		

Unit : mm (inch)

※1 Accumulated error for 20 pitches is ±2mm.
※2 Bonding tape must not protrude from the base tape.

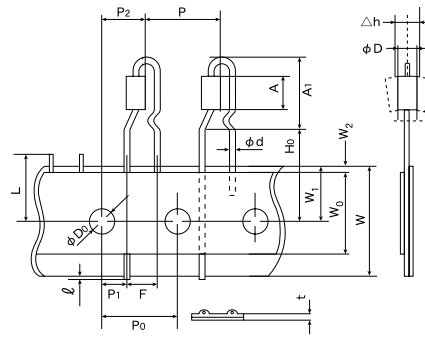
● UB



Type	Symbol	Dimensions	Symbol	Dimensions
FBA03□450 FBA04□450	A	4.5±0.3 (0.177±0.012)	Δh	0.0±2.0 (0.0±0.079)
	A ₁	9.0 max. (0.354 max.)	W	18.0 ^{+1.0} _{-0.5} (0.709 ^{+0.039} _{-0.020})
	φD	03: 2.7 max. (0.106 max.)	W ₀	12.5 min. (0.492 min.)
		04: 3.7 max. (0.146 max.)		W ₁
	H	20.0 ^{+0.5} _{-1.0} (0.787 ^{+0.020} _{-0.039})	W ₂	3.0 max. ^{※2} (0.118 max.)
	P	12.7±1.0 (0.500±0.039)	ℓ	1.0 max. (0.039 max.)
	P ₀	12.7±0.3 ^{※1} (0.500±0.012)	φD ₀	4.0±0.3 (0.157±0.012)
	P ₁	3.85±0.8 (0.152±0.032)	φd	0.65±0.05 (0.026±0.002)
	P ₂	6.35±1.3 (0.250±0.051)	L	11.0 max. (0.433 max.)
F	5.0±1.0 (0.197±0.039)	t	0.7±0.2 (0.028±0.008)	

※1 Accumulated error for 20 pitches is ±2mm. Unit : mm (inch)
 ※2 Bonding tape must not protrude from the base tape.

● VB



Type	Symbol	Dimensions	Symbol	Dimensions
FBA03□450 FBA04□450 FBA04□600 FBA04□900	A	450: 4.5±0.3 (0.177±0.012)	F	5.0±1.0 (0.197±0.039)
		600: 6.0 ^{+0.5} ₋₀ (0.236 ^{+0.020} ₋₀)	Δh	0.0±2.0 (0.0±0.079)
		900: 9.0±0.5 (0.354±0.020)	W	18.0 ^{+1.0} _{-0.5} (0.709 ^{+0.039} _{-0.020})
A ₁	450: 12.5 max. (0.492 max.)	W ₀	12.5 min. (0.492 min.)	
	900: 16.0 max. (0.630 max.)	W ₁	9.0 ^{+0.75} _{-0.5} (0.354 ^{+0.039} _{-0.020})	
φD	3.7 max. (0.146 max.)	W ₂	3.0 max. ^{※2} (0.118 max.)	
H ₀	16.0±0.5 (0.650±0.020)	ℓ	1.0 max. (0.039 max.)	
P	12.7±1.0 (0.500±0.039)	φD ₀	4.0±0.3 (0.157±0.012)	
P ₀	12.7±0.3 ^{※1} (0.500±0.012)	φd	0.65±0.05 (0.026±0.002)	
P ₁	3.85±0.8 (0.152±0.032)	L	11.0 max. (0.433 max.)	
P ₂	6.35±1.3 (0.250±0.051)	t	0.7±0.2 (0.028±0.008)	

※1 Accumulated error for 20 pitches is ±2mm. Unit : mm (inch)
 ※2 Bonding tape must not protrude from the base tape.

* This catalog contains the typical specification only due to the limitation of space. When you consider purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>) or CD catalogs.