

Axial Lead Ceramic Capacitors

Series: **ECB**

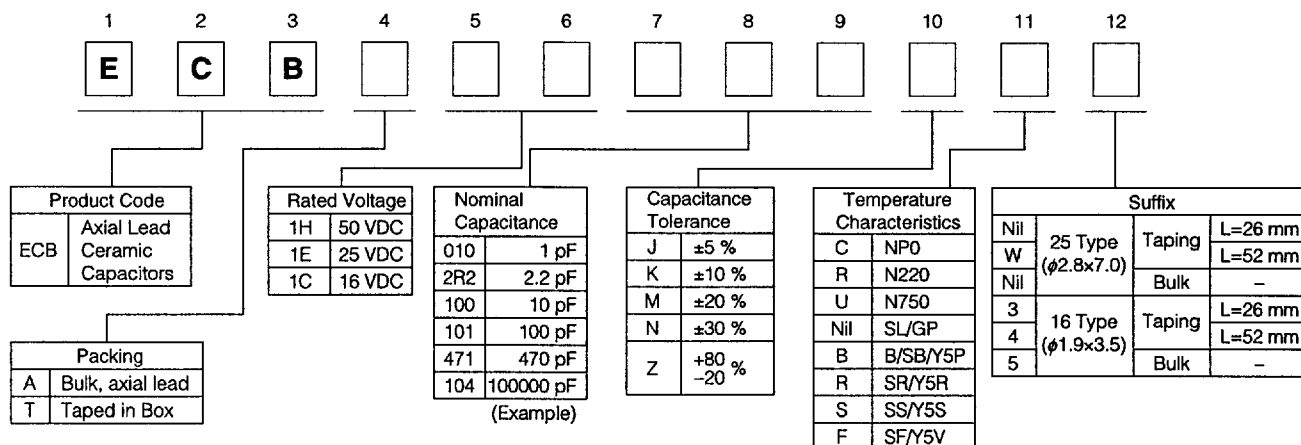
■ Features

- Two standard sizes cover wide capacitance range
16 type: 1 to 22000 pF
25 type: 1 to 100000 pF
- Excellent frequency stability
- Easy classification or assortment by body color and color code
- Available as other cylindrical type components for automatic insertion machine

■ Recommended Applications

- [Class 1]: For temperature compensation of resonant circuit and filters
- [Class 2 and Class 3]: For coupling and by-pass, where low losses and high stability of capacitance are not so important

■ Explanation of Part Numbers



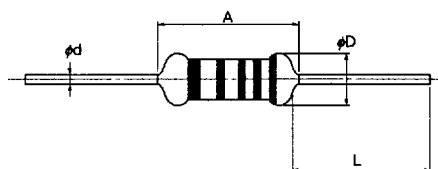
■ Specifications (Axial Lead Type)

Characteristics	Specifications		
	Class 1	Class 2	Class 3
Operating Temp. Range	-25 to 85 °C		
Rated Voltage	50 VDC, 25 VDC or 16 VDC		
Withstanding Voltage (For 1 to 5 seconds)	Rated Voltage ×3	Rated Voltage ×2.5	Rated Voltage ×1.5 (50 V, 25 V) Rated Voltage ×1.13 (16 V)
Capacitance	● Within specified tolerance		
	Measured at 1 MHz, 1 Vrms and 20 °C	Measured at 1 kHz, 1 Vrms and 20 °C	
Q or Dissipation Factor (tan δ)	16 type ● Cap. ≥ 33 pF Q ≥ 500 ● Cap. ≤ 30 pF Q $\geq 400+20 \times C$ 25 type ● Cap. ≥ 33 pF Q ≥ 1000 ● Cap. ≤ 30 pF Q $\geq 400+20 \times C$	● D.F. (tan δ) ≤ 0.025 (D.F. (tan δ) ≤ 0.075 Char. SF/Y5V only)	
	Insulation Resistance		10000 M Ω min.
Temperature Characteristics	[Temperature Coefficient] (ppm/°C)		1000 M Ω min.
	[Temperature Characteristics] ● Temp. Range: -25 to 85 °C ● Reference Temp.: 20 °C		
	NPO: 0 \pm 60	T.C.	Cap. Change
	N220: -220 \pm 60	B/Y5P/2B4	± 10 % max.
	N750: -750 \pm 120 and SL/GP	SB/Y5P/2B4	± 10 % max.
		SR/Y5R	± 15 % max.
		SS/Y5S	± 22 % max.
		SF/Y5V	+30, -85 % max.

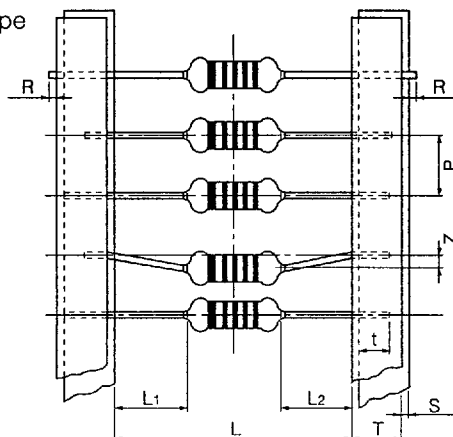
*Q: Q ≥ 500 at 16 pF and 18 pF of characteristics N220, 16 type.

■ Dimensions in mm (not to scale)

● Bulk



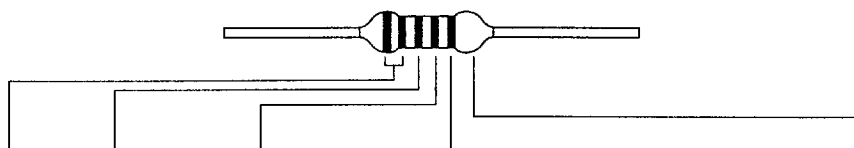
● Taped type



Symbol	Dimensions in mm	
	25 Type	16 Type
A	7.1 max.	3.5 max.
ϕD	2.8 max.	1.9 max.
ϕd	0.55 \pm 0.05	0.45 \pm 0.05
L	20 min.	20 min.

Symbol	Dimensions in mm			
	25 Type		16 Type	
L	26.0 ^{+1.5} ₀	52 ⁺² ₋₁	26.0 ^{+0.5} ₀	52 ⁺² ₋₁
P	5.0 \pm 0.5		5.0 \pm 0.5	
L ₁ -L ₂	1.0 max.		1.0 max.	
Z	0.8 max.	1.2 max.	0.8 max.	1.2 max.
R	0 max.		0 max.	
T	6.0 \pm 1.0		6.0 \pm 1.0	
t	3.2 min.		3.2 min.	
S	0.8 max.		0.8 max.	

■ Color Code Marking



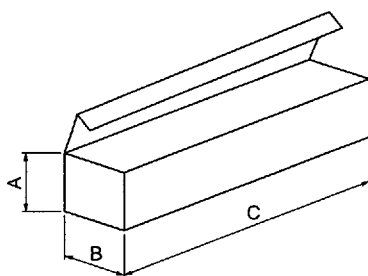
Bar Color	Nominal Capacitance (pF)			Temperature Characteristics
	First and second Figure	Multiplier	Tolerance	
Black	0	1	±20 %	C (NP0)
Brown	1	10	—	SS (Y5S)
Red	2	100	—	—
Orange	3	1000	—	—
Yellow	4	10000	—	R (N220)
Green	5	—	—	—
Blue	6	—	—	—
Purple	7	—	—	U (N750)
Gray	8	—	±30 %	SR (Y5R)
White	9	—	+80, -20 %	SL/GP*
Gold	—	0.1	±5 %	—
Silver	—	0.01	±10 %	B (Y5P)

Body Color	Rated Voltage
Yellow green	50 V
Pink	25 V, 16 V

* SL/GP: For general purpose capacitor with temperature coefficient of +350 to -1000 ppm/°C

■ Packaging Specifications

● Box for Taped Version



Dimensions in mm

Symbol		Dimensions in mm
A	16 Type (4000 pcs./box)	70±3
	25 Type (2000 pcs./box)	55±3
B	Taping width L=26 mm	50±3
	Taping width L=52 mm	75±3
C		255±3

● Standard Packing Quantity

Type of Product	Packing Style	
	Taped in Box	Bulk
16 Type	4000 pcs./box	500 pcs./bag
25 Type	2000 pcs./box	200 pcs./bag

● Part Numbers

Type of Product	Taped in Box		Bulk
	L=26 mm	L=52 mm	
16 Type	ECBT□□□□□□3	ECBT□□□□□□4	ECBA□□□□□□5
25 Type	ECBT□□□□□□	ECBT□□□□□□W	ECBA□□□□□□

■ Ratings and Characteristics (16 Type)

● Bulk

<div> <div>Temperature Characteristics</div> <div>Rated Voltage (VDC)</div> <div>Cap. (pF)</div> <div>Tol. (%)</div> </div>			NP0	N220	N750	SL/GP	B/Y5P	SB/Y5P	SR/Y5R	SS/Y5S	SF/Y5V
1.0	±20	50	ECBA1H010MC5	ECBA1H010MR5		ECBA1H010M5					
1.2	±20	50	ECBA1H1R2MC5	ECBA1H1R2MR5		ECBA1H1R2M5					
1.5	±20	50	ECBA1H1R5MC5	ECBA1H1R5MR5		ECBA1H1R5M5					
1.8	±20	50	ECBA1H1R8MC5	ECBA1H1R8MR5		ECBA1H1R8M5					
2.2	±10	50	ECBA1H2R2KC5	ECBA1H2R2KR5	ECBA1H2R2KU5	ECBA1H2R2K5					
2.7	±10	50	ECBA1H2R7KC5	ECBA1H2R7KR5	ECBA1H2R7KU5	ECBA1H2R7K5					
3.3	±10	50	ECBA1H3R3KC5	ECBA1H3R3KR5	ECBA1H3R3KU5	ECBA1H3R3K5					
3.9	±10	50	ECBA1H3R9KC5	ECBA1H3R9KR5	ECBA1H3R9KU5	ECBA1H3R9K5					
4.7	±10	50	ECBA1H4R7KC5	ECBA1H4R7KR5	ECBA1H4R7KU5	ECBA1H4R7K5					
5.6	±10	50	ECBA1H5R6KC5	ECBA1H5R6KR5	ECBA1H5R6KU5	ECBA1H5R6K5					
6.8	±10	50	ECBA1H6R8KC5	ECBA1H6R8KR5	ECBA1H6R8KU5	ECBA1H6R8K5					
8.2	±10	50	ECBA1H8R2KC5	ECBA1H8R2KR5	ECBA1H8R2KU5	ECBA1H8R2K5					
10	±5	50	ECBA1H100JC5	ECBA1H100JR5	ECBA1H100JU5	ECBA1H100J5					
12	±5	50	ECBA1H120JC5	ECBA1H120JR5	ECBA1H120JU5	ECBA1H120J5					
15	±5	50	ECBA1H150JC5	ECBA1H150JR5	ECBA1H150JU5	ECBA1H150J5					
18	±5	50	ECBA1H180JC5	ECBA1H180JR5	ECBA1H180JU5	ECBA1H180J5					
22	±5	50			ECBA1H220JU5	ECBA1H220J5					
27	±5	50			ECBA1H270JU5	ECBA1H270J5					
33	±5	50				ECBA1H330J5					
39	±5	50				ECBA1H390J5					
47	±5	50				ECBA1H470J5					
56	±5	50				ECBA1H560J5					
68	±5	50				ECBA1H680J5					
82	±10	50					ECBA1H820KB5				
100	±10	50					ECBA1H101KB5				
120	±10	50					ECBA1H121KB5				
150	±10	50					ECBA1H151KB5				
180	±10	50					ECBA1H181KB5				
220	±10	50					ECBA1H221KB5				
270	±10	50					ECBA1H271KB5				
330	±10	50					ECBA1H331KB5				
390	±10	50					ECBA1H391KB5				
470	±10	50					ECBA1H471KB5				
560	±10	50					ECBA1H561KB5				
680	±10	50					ECBA1H681KB5				
820	±10	50						ECBA1H821KB5			
1000	±10	50						ECBA1H102KB5			
1200	±20	16							ECBA1C122MR5		
1500	±20	16							ECBA1C152MR5		
1800	±20	16							ECBA1C182MR5		
2200	±20	16							ECBA1C222MR5		
2700	±20	16							ECBA1C272MR5		
3300	±20	16							ECBA1C332MR5		
3900	±20	16							ECBA1C392MR5		
4700	±20	16							ECBA1C472MR5		
5600	±20	16							ECBA1C562MR5		
6800	±20	16							ECBA1C682MR5		
10000	±30	16								ECBA1C103NS5	
10000	+80, -20	25									ECBA1E103ZF5
22000	+80, -20	25									ECBA1E223ZF5

■ Ratings and Characteristics (16 Type)

● Taped Version

<div> <div>Temperature Characteristics</div> <div>Rated Voltage (VDC)</div> <div>Cap. (pF)</div> <div>Tol. (%)</div> </div>			NP0	N220	N750	SL/GP	B/Y5P	SB/Y5P	SR/Y5R	SS/Y5S	SF/Y5V
1.0	±20	50	ECBT1H010MC	ECBT1H010MR		ECBT1H010M					
1.2	±20	50	ECBT1H1R2MC	ECBT1H1R2MR		ECBT1H1R2M					
1.5	±20	50	ECBT1H1R5MC	ECBT1H1R5MR		ECBT1H1R5M					
1.8	±20	50	ECBT1H1R8MC	ECBT1H1R8MR		ECBT1H1R8M					
2.2	±10	50	ECBT1H2R2KC	ECBT1H2R2KR	ECBT1H2R2KU	ECBT1H2R2K					
2.7	±10	50	ECBT1H2R7KC	ECBT1H2R7KR	ECBT1H2R7KU	ECBT1H2R7K					
3.3	±10	50	ECBT1H3R3KC	ECBT1H3R3KR	ECBT1H3R3KU	ECBT1H3R3K					
3.9	±10	50	ECBT1H3R9KC	ECBT1H3R9KR	ECBT1H3R9KU	ECBT1H3R9K					
4.7	±10	50	ECBT1H4R7KC	ECBT1H4R7KR	ECBT1H4R7KU	ECBT1H4R7K					
5.6	±10	50	ECBT1H5R6KC	ECBT1H5R6KR	ECBT1H5R6KU	ECBT1H5R6K					
6.8	±10	50	ECBT1H6R8KC	ECBT1H6R8KR	ECBT1H6R8KU	ECBT1H6R8K					
8.2	±10	50	ECBT1H8R2KC	ECBT1H8R2KR	ECBT1H8R2KU	ECBT1H8R2K					
10	±5	50	ECBT1H100JC	ECBT1H100JR	ECBT1H100JU	ECBT1H100J					
12	±5	50	ECBT1H120JC	ECBT1H120JR	ECBT1H120JU	ECBT1H120J					
15	±5	50	ECBT1H150JC	ECBT1H150JR	ECBT1H150JU	ECBT1H150J					
18	±5	50	ECBT1H180JC	ECBT1H180JR	ECBT1H180JU	ECBT1H180J					
22	±5	50			ECBT1H220JU	ECBT1H220J					
27	±5	50			ECBT1H270JU	ECBT1H270J					
33	±5	50				ECBT1H330J					
39	±5	50				ECBT1H390J					
47	±5	50				ECBT1H470J					
56	±5	50				ECBT1H560J					
68	±5	50				ECBT1H680J					
82	±10	50					ECBT1H820KB				
100	±10	50					ECBT1H101KB				
120	±10	50					ECBT1H121KB				
150	±10	50					ECBT1H151KB				
180	±10	50					ECBT1H181KB				
220	±10	50					ECBT1H221KB				
270	±10	50					ECBT1H271KB				
330	±10	50					ECBT1H331KB				
390	±10	50					ECBT1H391KB				
470	±10	50					ECBT1H471KB				
560	±10	50					ECBT1H561KB				
680	±10	50					ECBT1H681KB				
820	±10	50						ECBT1H821KB			
1000	±10	50						ECBT1H102KB			
1200	±20	16							ECBT1C122MR		
1500	±20	16							ECBT1C152MR		
1800	±20	16							ECBT1C182MR		
2200	±20	16							ECBT1C222MR		
2700	±20	16							ECBT1C272MR		
3300	±20	16							ECBT1C332MR		
3900	±20	16							ECBT1C392MR		
4700	±20	16							ECBT1C472MR		
5600	±20	16							ECBT1C562MR		
6800	±20	16							ECBT1C682MR		
10000	±30	16								ECBT1C103NS	
10000	+80,-20	25									ECBT1E103ZF
22000	+80,-20	25									ECBT1E223ZF

Note: □: Suffix for taping width; "3" for the dimension of 26 mm or "4" for 52 mm.

■ Ratings and Characteristics (25 Type)

● Bulk

Temperature Characteristics										
Cap. (pF)	Tol. (%)	Rated Voltage (VDC)	NP0	N220	N750	SL/GP	B/Y5P	SR/Y5R	SS/Y5S	SF/Y5V
1.0	±20	50	ECBA1H010MC			ECBA1H010M				
1.2	±20	50	ECBA1H1R2MC			ECBA1H1R2M				
1.5	±20	50	ECBA1H1R5MC			ECBA1H1R5M				
1.8	±20	50	ECBA1H1R8MC			ECBA1H1R8M				
2.2	±10	50	ECBA1H2R2KC	ECBA1H2R2KR		ECBA1H2R2K				
2.7	±10	50	ECBA1H2R7KC	ECBA1H2R7KR		ECBA1H2R7K				
3.3	±10	50	ECBA1H3R3KC	ECBA1H3R3KR	ECBA1H3R3KU	ECBA1H3R3K				
3.9	±10	50	ECBA1H3R9KC	ECBA1H3R9KR	ECBA1H3R9KU	ECBA1H3R9K				
4.7	±10	50	ECBA1H4R7KC	ECBA1H4R7KR	ECBA1H4R7KU	ECBA1H4R7K				
5.6	±10	50	ECBA1H5R6KC	ECBA1H5R6KR	ECBA1H5R6KU	ECBA1H5R6K				
6.8	±10	50	ECBA1H6R8KC	ECBA1H6R8KR	ECBA1H6R8KU	ECBA1H6R8K				
8.2	±10	50	ECBA1H8R2KC	ECBA1H8R2KR	ECBA1H8R2KU	ECBA1H8R2K				
10	±5	50	ECBA1H100JC	ECBA1H100JR	ECBA1H100JU	ECBA1H100J				
12	±5	50	ECBA1H120JC	ECBA1H120JR	ECBA1H120JU	ECBA1H120J				
15	±5	50	ECBA1H150JC	ECBA1H150JR	ECBA1H150JU	ECBA1H150J				
18	±5	50	ECBA1H180JC	ECBA1H180JR	ECBA1H180JU	ECBA1H180J				
22	±5	50	ECBA1H220JC	ECBA1H220JR	ECBA1H220JU	ECBA1H220J				
27	±5	50	ECBA1H270JC	ECBA1H270JR	ECBA1H270JU	ECBA1H270J				
33	±5	50	ECBA1H330JC	ECBA1H330JR	ECBA1H330JU	ECBA1H330J				
39	±5	50	ECBA1H390JC	ECBA1H390JR	ECBA1H390JU	ECBA1H390J				
47	±5	50			ECBA1H470JU	ECBA1H470J				
56	±5	50			ECBA1H560JU	ECBA1H560J				
68	±5	50			ECBA1H680JU	ECBA1H680J				
82	±5	50				ECBA1H820J				
100	±5	50				ECBA1H101J				
120	±5	50				ECBA1H121J				
150	±10	50					ECBA1H151KB			
180	±10	50					ECBA1H181KB			
220	±10	50					ECBA1H221KB			
270	±10	50					ECBA1H271KB			
330	±10	50					ECBA1H331KB			
390	±10	50					ECBA1H391KB			
470	±10	50					ECBA1H471KB			
560	±10	50					ECBA1H561KB			
680	±10	50					ECBA1H681KB			
820	±10	50					ECBA1H821KB			
1000	±10	50					ECBA1H102KB			
1200	±20	50						ECBA1H122MR		
1500	±20	50						ECBA1H152MR		
1800	±20	50						ECBA1H182MR		
2200	±20	50						ECBA1H222MR		
2700	±20	50						ECBA1H272MR		
3300	±20	50						ECBA1H332MR		
3900	±20	50						ECBA1H392MR		
4700	±20	50						ECBA1H472MR		
5600	±20	50						ECBA1H562MR		
6800	±20	25						ECBA1E682MR		
10000	±20	25						ECBA1E103MR		
15000	±20	25						ECBA1E153MR		
22000	±30	16							ECBA1C223NS	
10000	+80,-20	50								ECBA1H103ZF
22000	+80,-20	50								ECBA1H223ZF
47000	+80,-20	50								ECBA1H473ZF
100000	+80,-20	25								ECBA1E104ZF

■ Ratings and Characteristics (25 Type)

● Taped Version

<div> <div>Temperature Characteristics</div> <div>Rated Voltage (VDC)</div> <div>Cap. (pF)</div> <div>Tol. (%)</div> </div>			NP0	N220	N750	SL/GP	B/Y5P	SR/Y5R	SS/Y5S	SF/Y5V
1.0	±20	50	ECBT1H010MC□			ECBT1H010M□				
1.2	±20	50	ECBT1H1R2MC□			ECBT1H1R2M□				
1.5	±20	50	ECBT1H1R5MC□			ECBT1H1R5M□				
1.8	±20	50	ECBT1H1R8MC□			ECBT1H1R8M□				
2.2	±10	50	ECBT1H2R2KC□	ECBT1H2R2KR□		ECBT1H2R2K□				
2.7	±10	50	ECBT1H2R7KC□	ECBT1H2R7KR□		ECBT1H2R7K□				
3.3	±10	50	ECBT1H3R3KC□	ECBT1H3R3KR□	ECBT1H3R3KU□	ECBT1H3R3K□				
3.9	±10	50	ECBT1H3R9KC□	ECBT1H3R9KR□	ECBT1H3R9KU□	ECBT1H3R9K□				
4.7	±10	50	ECBT1H4R7KC□	ECBT1H4R7KR□	ECBT1H4R7KU□	ECBT1H4R7K□				
5.6	±10	50	ECBT1H5R6KC□	ECBT1H5R6KR□	ECBT1H5R6KU□	ECBT1H5R6K□				
6.8	±10	50	ECBT1H6R8KC□	ECBT1H6R8KR□	ECBT1H6R8KU□	ECBT1H6R8K□				
8.2	±10	50	ECBT1H8R2KC□	ECBT1H8R2KR□	ECBT1H8R2KU□	ECBT1H8R2K□				
10	±5	50	ECBT1H100JC□	ECBT1H100JR□	ECBT1H100JU□	ECBT1H100J□				
12	±5	50	ECBT1H120JC□	ECBT1H120JR□	ECBT1H120JU□	ECBT1H120J□				
15	±5	50	ECBT1H150JC□	ECBT1H150JR□	ECBT1H150JU□	ECBT1H150J□				
18	±5	50	ECBT1H180JC□	ECBT1H180JR□	ECBT1H180JU□	ECBT1H180J□				
22	±5	50	ECBT1H220JC□	ECBT1H220JR□	ECBT1H220JU□	ECBT1H220J□				
27	±5	50	ECBT1H270JC□	ECBT1H270JR□	ECBT1H270JU□	ECBT1H270J□				
33	±5	50	ECBT1H330JC□	ECBT1H330JR□	ECBT1H330JU□	ECBT1H330J□				
39	±5	50	ECBT1H390JC□	ECBT1H390JR□	ECBT1H390JU□	ECBT1H390J□				
47	±5	50			ECBT1H470JU□	ECBT1H470J□				
56	±5	50			ECBT1H560JU□	ECBT1H560J□				
68	±5	50			ECBT1H680JU□	ECBT1H680J□				
82	±5	50				ECBT1H820J□				
100	±5	50				ECBT1H101J□				
120	±5	50				ECBT1H121J□				
150	±10	50					ECBT1H151KB□			
180	±10	50					ECBT1H181KB□			
220	±10	50					ECBT1H221KB□			
270	±10	50					ECBT1H271KB□			
330	±10	50					ECBT1H331KB□			
390	±10	50					ECBT1H391KB□			
470	±10	50					ECBT1H471KB□			
560	±10	50					ECBT1H561KB□			
680	±10	50					ECBT1H681KB□			
820	±10	50					ECBT1H821KB□			
1000	±10	50					ECBT1H102KB□			
1200	±20	50						ECBT1H122MR□		
1500	±20	50						ECBT1H152MR□		
1800	±20	50						ECBT1H182MR□		
2200	±20	50						ECBT1H222MR□		
2700	±20	50						ECBT1H272MR□		
3300	±20	50						ECBT1H332MR□		
3900	±20	50						ECBT1H392MR□		
4700	±20	50						ECBT1H472MR□		
5600	±20	50						ECBT1H562MR□		
6800	±20	25						ECBT1E682MR□		
10000	±20	25						ECBT1E103MR□		
15000	±20	25						ECBT1E153MR□		
22000	±30	16							ECBT1C223NS□	
10000	+80, -20	50								ECBT1H103ZF□
22000	+80, -20	50								ECBT1H223ZF□
47000	+80, -20	50								ECBT1H473ZF□
100000	+80, -20	25								ECBT1E104ZF□

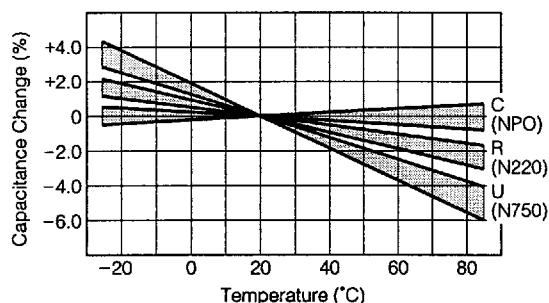
Note: □: Suffix for taping width, "Nil" for the dimension of 26 mm or "W" for 52 mm.

■ Typical Characteristics

● (Typical Temperature Characteristics)

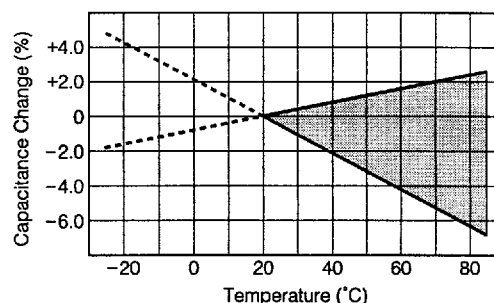
[Class 1]

[Characteristics C(NP0),R(N220),U(N750)]



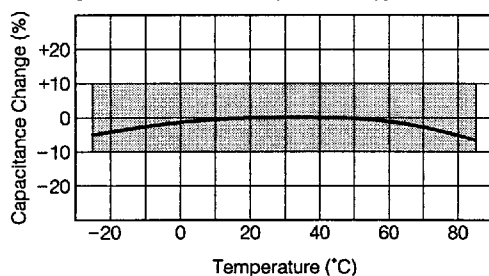
[Class 1]

[Characteristics SL/GP (P350 to N1000)]



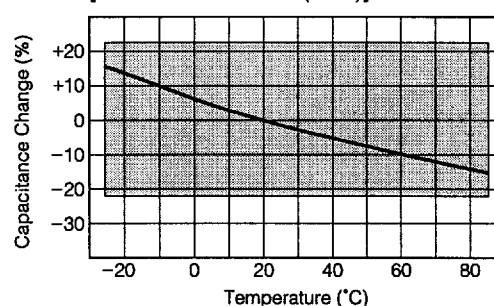
[Class 2]

[Characteristics B (Y5P/2B4)]



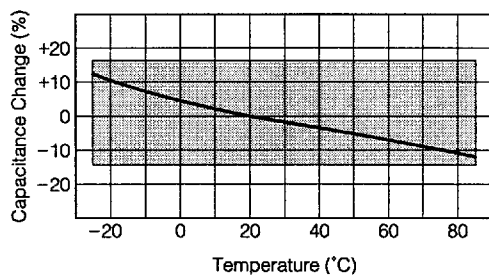
[Class 3]

[Characteristics SS (Y5S)]



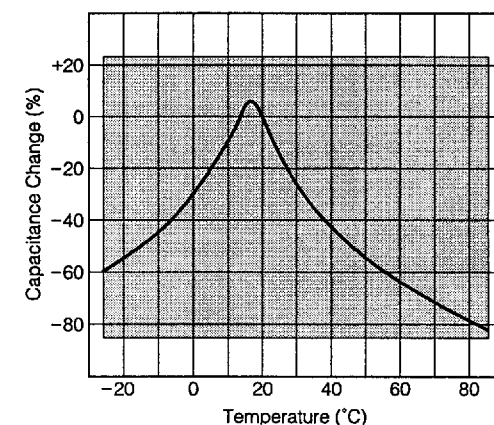
[Class 3]

[Characteristics SR (Y5R)]



[Class 3]

[Characteristics SF (Y5V)]



[Class 3]

[Characteristics SR (Y5R)]

