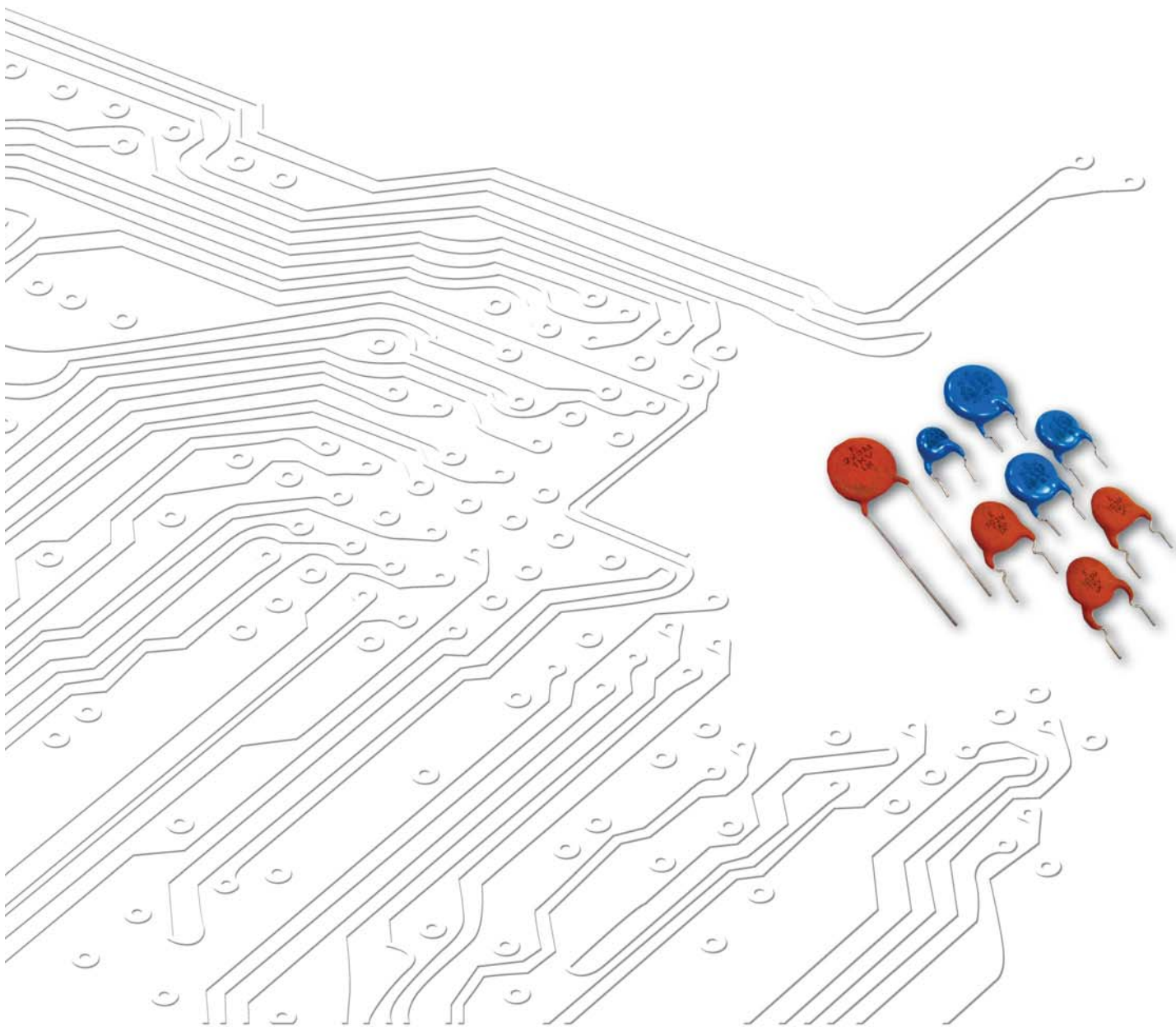


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# 2013 **D**isc Capacitors

## Product catalog





# Product Portfolio



**Multilayer Ceramic Capacitors (MLCC)**



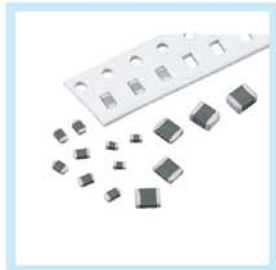
**Chip-Resistor**



**Disc Capacitors**



**RF Device and High Frequency Inductors**



**Varistors and SMD-Varistors**

## IEC-63 Nominal Resistance / Capacitance

<b>E1</b>	100																							
<b>E3</b>	100			220			470																	
<b>E6</b>	100	150	220	330	470	680																		
<b>E12</b>	100	120	150	180	220	270	330	390	470	560	680	820												
<b>E24</b>	100	110	120	130	150	160	180	200	220	240	270	300	330	360	390	430	470	510	560	620	680	750	820	910
<b>E96</b>	100	102	121	124	147	150	178	182	215	221	261	267	316	324	383	392	464	475	562	576	681	698	825	845
	105	107	127	130	154	158	187	191	226	232	274	280	332	340	402	412	487	499	590	604	715	732	866	887
	110	113	133	137	162	165	196	200	237	243	287	294	348	357	422	432	511	523	619	634	750	768	909	931
	115	118	140	143	169	174	205	210	249	255	301	309	365	374	442	453	536	549	649	665	787	806	953	976

E6:  $\sqrt[6]{10} \approx 1.46$  E12:  $\sqrt[12]{10} \approx 1.21$   
 E1 series resistance: 1Ω, 10Ω, 100Ω, 1000Ω, 10000Ω, 100000Ω

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\*The specifications are subject to change or our products may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.

\*This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please ask for details before ordering.

# CERAMIC DISC CAPACITOR

## SAP Part Number Explanation

■ To order, please also specify Part No. as the following example for SAP system :

YP	500	102	K	040	B	20	C	7	B
Dielectric Code	Voltage Code	Capacitance Code	Tolerance Code	Diameter Code	Lead Style	Length or Packing	Length Tolerance	Pitch	Coating
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

### ① Dielectric Code

CLASS I:		
CODE	T.C.(ppm/°C)	
CH	CH (0±60)	
SL	SL (+350~-1000)	
CLASS II:		
CODE	T.C.( ΔC%)	
YP	Y5P(±10%)	
ZU	Z5U(+22 ~ -56%)	
ZV	Z5V(+22 ~ -82%)	
YU	Y5U(+22 ~ -56%)	
YV	Y5V(+22 ~ -82%)	
CLASS III:		
CODE	T.C.( ΔC%)	
FY	Y5V(+22 ~ -82%)	
Low DF:		
CODE	D.F.	T.C.( ΔC%)
LR	≤0.2%	Y5R ±15%(-25°C to +85°C) +15/-30% (85°Cto+125°C)
LB	≤0.5%	Y5P(±10%)

### ② Voltage Code

CODE	WV
160	16 VDC
250	25 VDC
500	50 VDC
501	500VDC
102	1K VDC
202	2K VDC
302	3K VDC
602	6KVDC

### ③ Capacitance Code

CODE	Capacitance	CODE	Tolerance
0R5	0.5 pF	C	± 0.25pF
010	1 pF	D	± 0.5pF
100	10 pF	J	± 5%
472	4700 pF	K	± 10%
103	0.01uF	M	± 20%
104	0.1uF	Z	-20 ~ +80 %

### ④ Tolerance Code

### ⑤ Diameter Code

CODE	Diameter max
040	Refer to the product diameter D max
050	
060	
070	
080	
090	
100	
110	
120	
130	
140	

### ⑥ Lead Style - Reference Lead Style

### ⑦ Packing / Pitch Lead Length

Taping(ex)	
CODE	Packing & Pitch
AF	Box & Pitch 15.0 mm
AN	Box & Pitch 12.7 mm
AM	Box & Pitch 25.4 mm
Bulk (ex)	
CODE	Length
3E	3.5mm
04	4.0mm
4E	4.5mm
05	5.0mm
20	20.0mm

### ⑧ Length Tolerance

CODE	Length Tolerance
A	± 0.5 mm(Only for short kink lead type)
B	± 1.0 mm
C	Min.
D	Tapping & Special Purpose

### ⑨ Pitch

CODE	Length Pitch
2	2.5±0.8mm
5	5.0±0.8mm (for Bulk)
5	5.0+0.8-0.2mm (for Taping)
7	7.5 ± 1mm
0	10.0 ± 1mm

### ⑩ Coating Type

CODE	Coating
P	Phenolic resin-Pb free, W.V.≤1KV
A	Phenolic resin-Halogen free and Pb free, W.V.≤1KV
B	Epoxy resin -Pb Free, W.V.≥2KV
H	Epoxy resin-Halogen free and Pb free, W.V.≥2KV



# CERAMIC DISC CAPACITOR

Class I 50V,100V,500V,1KV,2KV,3KV,6KV, Temperature Compensation Type

## Features:

- Capacitance has linear temperature coefficient
- Capacitance high stability
- Epoxy Coating for 2KV, 3KV,6KV parts (equivalent to UL94V-0 standards)
- RoHS Compliance
- Halogen free products are available
- Low loss at a wide range of frequencies

## General specification:

Capacitance Range	1pF to 820pF
Capacitance Tolerance	±0.25pF(for 2~5pF), ±0.5pF(for 6~10pF), ±5%(for 12~820pF),
Operating Temperature Range	-25°C ~ +125°C.
Rated Voltage	50,100, 500,1000,2000,3000,6000 VDC
Q Factor @ 1MHz, 1±0.2 Vrms, 25°C	C≥30 pF.....Q≥1,000, C < 30 pF.....Q≥400+20°C
Insulation Resistance (IR) @ 25°C	10,000 MΩ Minimum
Dielectric Strength	50~500VDC:3 times the rated WVDC ; 1K,2K,3KVDC:2 times the rated WVDC; 6KVDC:1.5 times the rated WVDC.
Testing Parameters	1MHz ±20%, 1.0Vrms±0.2Vrms

## Lead style:

Lead type	Lead Code	Lead configuration	Lead type	Lead Code	Lead configuration
Type 1 Straight long lead	B	lead style:B 	Type 4 Inside kink lead	H	lead style:H 
Type 2 Outside kink lead	X	lead style:X 	Type 5 Vertical kink short lead	D	lead style:D 
Type 3 Straight short lead	L	lead style:L 	Type 6 Double outside kink lead	M	lead style:M 

# CERAMIC DISC CAPACITOR

Class I 50V,100V,500V,1KV,2KV,3KV,6KV, Temperature Compensation

**Manufacturing product range  
Cap. Value v.s. Rate voltage, Product diameter & Type**

Photo:



T.C	CH (CLASS I, Temperature:-25°C~+85°C, T.C.C.: 0±60ppm/°C)																
Rate voltage	50V(CH500) & 100V(CH101)								500V(CH501)				1KV(CH102)			2KV(CH202)	
Dφ(Code)	040	050	060	070	080	100	110	120	050	060	070	080	050	060	070	060	080
D max. (mm)	4.5	5.5	6.5	7.5	8.5	10.5	11.5	12.5	5.5	6.5	7.5	8.5	6.0	7.0	8.0	7.5	9.5
T max. (mm)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5
1	010								010								
2	020								020								
3	030								030								
4	040								040							040	
5	050								050							050	
6	060								060							060	
7	070								070							070	
8	080								080				080			080	
10	100								100				100			100	
12	120								120				120			120	
15	150								150				150			150	
18	180								180				180			180	
20	200								200				200			200	
22	220								220				220			220	
24	240								240					240			240
27	270								270					270			270
33	330								330					330			330
36		360								360					360		360
39		390								390					390		390
47		470								470					470		470
51		510								510					510		
56		560								560					560		
62			620								620				620		
68			680								680				680		
75			750								750				750		
82				820							820				820		
100				101							101				101		
120					121							121					
150					151								151				
180						181											
200						201											
220						221											
240						241											
270						271											
300							301										
330							331										
360								361									
390								391									
φd (mm)	0.6±0.06																
Packing	T or B				B				T or B				T or B			T or B	
Coating	Phenolic Resin															Epoxy Resin	

Marking	1. Temperature characteristic	2. Nominal capacitance	3. Rated voltage		4. Capacitance tolerance	5. manufacturer's identification	6. Halogen and Pb free
	Phenolic resin: No marking but recognized by black color presented on the top of product. Epoxy resin: Shall be marked "CH"	Identified by 3-figure code. Ex. 5pF → "5" 100 pF → "101"	50V/100V	Marked as underline	C: ±0.25pF D: ±0.5pF J: ±5%	Shall be marked as " UK ", but Dφ=6.0 mm and less in Dia shall be omitted.	There is a " _ " marking under the code "V" as the coating is Halogen and Pb free Epoxy.
			500V	No marking (is blank)			
			1000V	Marked "1kV"			
			2000V	Marked "2kV"			

P.S.: Packing : T → Packing in taping type. B → Packing in bulk type.



# CERAMIC DISC CAPACITOR

Class I 50V,100V,500V,1KV,2KV,3KV,6KV, Temperature Compensation Type

## Manufacturing product range Cap. Value v.s. Rate voltage, Product diameter & Type

Photo:



SL (CLASS I, Temperature:+20°C~+85°C, T.C.C.: +350 ~ -1000ppm/°C)																						
T.C	50V(SL500);100V(SL101)								500V(SL501)					1KV(SL102)				2KV(SL202)				
Rate voltage																						
Dφ(Code)	040	050	060	070	080	090	100	050	060	070	080	100	050	060	070	080	060	070	080	100	120	
D max. (mm)	4.5	5.5	6.5	7.5	8.5	9.5	10.5	5.5	6.5	7.5	9.0	10.5	6.0	7.0	8.0	9.0	7.5	8.5	9.5	11.5	13.5	
T max. (mm)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
8	080							080														
10	100							100					100									
12	120							120					120									
15	150							150					150						150			
18	180							180					180						180			
20	200							200					200						200			
22	220							220					220						220			
24	240							240					240						240			
27	270							270					270						270			
30	300							300					300						300			
33	330							330					330						330			
36	360							360					360						360			
39	390							390					390						390			
47	470							470					470						470			
51	510							510					510						510			
56	560							560					560						560			
68	680							680					680						680			
75	750							750					750						750			
82	820							820					820						820			
100	101							101					101						101			
120		121							121					121						121		
150		151							151						151					151		
180		181								181					181						181	
200			201							201						201					201	
220			221							221						221					221	
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270				271							271										271	
300				301							301										301	
330				331							331										331	
360				361								361										
390				391								391										
470					471																	
500						501																
510						511																
560						561																
680							681															
750							751															
820							821															
φd (mm)	0.6±0.06																					
Packing	T or B							T or B					T or B				T or B					B
Coating	Phenolic Resin															Epoxy Resin						

Marking	1. Temperature characteristic	2. Nominal capacitance	3. Rated voltage		4. Capacitance tolerance	5. manufacturer's identification	6. Halogen and Pb free
	SL:No marking.	Identified by 3-figure code. Ex. 5pF→"5" 100 pF→"101"	50V/100V	Marked as underline	C:±0.25pF D:±0.5pF J:±5%	Shall be marked as " UK ", but Dφ=6.0 mm and less in Dia shall be omitted.	There is a " _ " marking under the code "V" as the coating is Halogen and Pb free Epoxy.
			500V	No marking (is blank)			
			1000V	Marked "1kV"			
			2000V	Marked "2kV"			

# CERAMIC DISC CAPACITOR

Class I 50V,100V,500V,1KV,2KV,3KV,6KV, Temperature Compensation

Manufacturing product range Cap. Value v.s. Rate voltage, Product diameter & Type					Photo: CH      SL		
T.C	CH ( Temperature:-25°C~+85°C, T.C.C.: 0±60ppm/°C)				SL ( Temperature:+20°C~+85°C, T.C.C.: +350 ~ -1000ppm/°C)		
Rate voltage	3KV(CH302)				3KV(SL302)		
Dφ(Code)	060	070	080	090	060	070	080
D max. (mm)	7.5	8.5	9.5	10.5	7.5	8.5	9.5
T max. (mm)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
2	020						
3	030						
4	040						
5	050				050		
6	060				060		
7	070				070		
8	080				080		
10	100				100		
12	120				120		
15	150				150		
18	180				180		
20	200				200		
22	220				220		
24		240			240		
27			270		270		
30			300		300		
33				330	330		
36					360		
39					390		
47						470	
51						510	
56						560	
62						620	
68						680	
75							750
82							820
100							101
φd (mm)	0.6±0.06						
Packing	TAPING or BULK						
Coating	Epoxy Resin						

	1. Temperature characteristic	2. Nominal capacitance	3. Capacitance tolerance	4. Rated voltage	5. Manufacturer's identification	6. Halogen and Pb free
	CH: Be marked "CH" SL:No marking	1. Cap.≥100pF Ex. 120pF →"121" 2. Cap<100pF, Ex. 22pF→"22"	C: ±0.25pF D: ±0.5pF J: ±5%	3000V : Be marked "3kV"	Shall be marked as "UK ", but when the body diameter ≤060 shall be omitted.	When the epoxy resin is Halogn and Pb free, there is a "-"marking.
	Definition of date code marking:					
	7.Supplier of Epoxy  □: K-company , : P-company	8.No. of test equipment 1~9: No.1~No.9, J: No.10, K: No.11, L: No.12 .....	9.Factory of manufacture C: GZ Plant D: DL Plant	10.Year of manufacture 1:2011, 2:2012, 3:2013, .....	11.Month of manufacture 1~9:January~ September, O: October, N: November, D: December	12.Week of manufacture by month week 1: - week 2: • week 3: : week 4: ' week 5: ;

Remark: K40-- K100-- K130-- K300--



# CERAMIC DISC CAPACITOR

Class I 50V,100V,500V,1KV,2KV,3KV,6KV, Temperature Compensation Type

Manufacturing product range Cap. Value v.s. Rate voltage, product diameter & type					Photo: CH		SL	
T.C.	CH ( Temperature:-25°C~+85°C, T.C.C.: 0±60ppm/°C)				SL ( Temperature:+20°C~+85°C, T.C.C.: +350 ~ -1000ppm/°C)			
Rate voltage	6KV				6KV			
D φ (Code)	060	080	090	110	060	080	090	
D max. (mm)	7.5	9.5	10.5	12.5	7.5	9.5	10.5	
T max. (mm)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
2	020				020			
3	030				030			
5	050				050			
6	060				060			
7	070				070			
8	080				080			
10	100				100			
12	120				120			
15	150				150			
18	180				180			
20		200			200			
22		220			220			
27		270			270			
30			300		300			
33			330		330			
39			390		390			
47				470		470		
51						510		
56						560		
68							680	
82							820	
100							101	
φd (mm)	0.6±0.06							
Packing	TAPING or BULK							
Coating	Epoxy Resin							

	1. Temperature characteristic	2. Nominal capacitance	3. Capacitance tolerance	4. Rated voltage	5. Manufacturer's identification	6. Halogen and Pb free
	CH: Be marked "CH" SL: No marking	1. Cap. ≥100pF Ex. 120pF → "121" 2. Cap <100pF, Ex. 22pF → "22"	C: ±0.25pF D: ±0.5pF J: ±5%	6000V : Be marked "6kV"	Shall be marked as "UK ", but when the body diameter ≤060 shall be omitted.	When the epoxy resin is Halogn and Pb free, there is a "-" marking.
	Definition of date code marking:					
7. Supplier of Epoxy	8. No. of test equipment	9. Factory of manufacture	10. Year of manufacture	11. Month of manufacture	12. Week of manufacture by month	
□: K-company , : P-company	1~9: No.1~No.9, J: No.10, K: No.11, L: No.12 .....	C: GZ Plant D: DL Plant	1:2011, 2:2012, 3:2013, .....	1~9: January~ September, O: October, N: November, D: December	week 1: - week 2: • week 3: : week 4: ' week 5: ;	

Remark: K40-- K100-- K130-- K300--

# CERAMIC DISC CAPACITOR

## Class II 50V,100V,500V,1KV,2KV,3KV, Hi-K Type

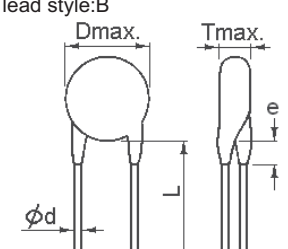
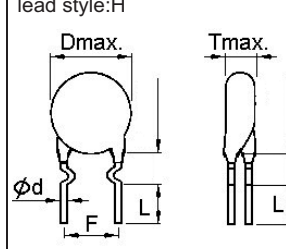
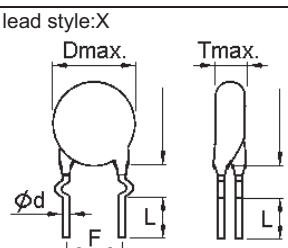
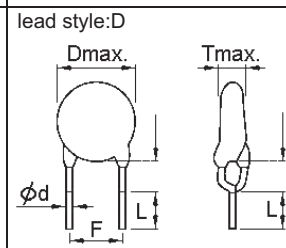
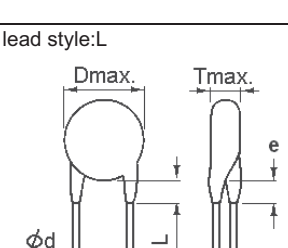
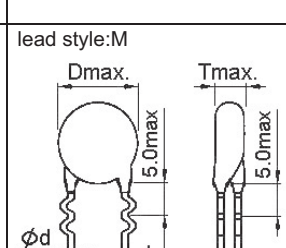
### Features:

- Capacitance has nonlinear temperature coefficient
- Large capacitance in small size
- Epoxy Coating for 2KV and 3KV parts (equivalent to UL94V-0 standards)
- RoHS Compliance
- Halogen free products are available
- Wide range of general purpose applications

### General specification:

Capacitance Range	100pF to 22000pF
Capacitance Tolerance	±10%(for Y5P), ±20%(for Z5U), +80% -20%(for Z5U&Z5V&Y5V)
Operating Temperature Range	-25°C~ +85°C(Y5P,Y5V) ; 10°C~ +85°C(Z5U, Z5V)
Rated Voltage	50,100, 500,1000,2000,3000VDC
Dissipation Factor (tan δ)	Y5P, Z5U : tanδ≤2.5%, Z5V, Y5V : tanδ≤5.0%
Insulation Resistance (IR) @ 25°C	10,000 MΩMinimum or 200 MΩμF whichever is smaller
Dielectric Strength	50~500VDC: 2.5 times the rated WVDC; 1K,2K,3KVDC: 2 times the rated WVDC
Testing Parameters	1KHz ±20%, 1.0Vrms±0.2Vrms

### Lead style:

Lead type	Lead Code	Lead configuration	Lead type	Lead Code	Lead configuration
Type 1 Straight long lead	B	lead style:B 	Type 4 Inside kink lead	H	lead style:H 
Type 2 Outside kink lead	X	lead style:X 	Type 5 Vertical kink short lead	D	lead style:D 
Type 3 Straight short lead	L	lead style:L 	Type 6 Double outside kink lead	M	lead style:M 

# CERAMIC DISC CAPACITOR

## Class II 50V,100V,500V,1KV,2KV,3KV, Hi-K Type

**Manufacturing product range**  
**Cap. Value v.s. Rate voltage, product diameter & type**

**Photo:**



T.C.		Y5P (CLASS II, Temperature:-25°C~+85°C, T.C.C.:±10%)																										
Rate voltage	50V(YP500) & 100V(YP101)							500V(YP501)							1KV(YP102)					2KV(YP202)								
Dφ(Code)	040	050	060	070	080	090	100	040	050	060	070	080	090	100	110	130	050	060	070	080	100	120	060	080	090	100	130	140
D max. (mm)	4.5	5.5	6.5	7.5	8.5	9.5	11.0	4.5	5.5	6.5	7.5	9.0	10.0	11.0	12.0	14.0	6.0	7.0	8.0	9.0	11.0	13.0	7.5	9.5	10.5	11.5	14.5	15.5
T max. (mm)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
100	101							101									101											
120	121							121									121											
150	151							151									151											
180	181							181									181											
200	201							201									201											
220	221							221									221											
240	241							241									241											
270	271							271									271											
330	331							331									331											
390	391							391									391											
470	471							471									471											
560	561							561									561											
680	681							681									681											
820	821							821									821											
1000	102							102									102											
1200		122								122								122										
1500		152								152								152										
1800		182								182									182									
2000		202								202									202									
2200		222								222									222									
2700			272								272									272						272		
3000			302								302									302								
3300			332									332								332						332		
3900				392								392									392					392		
4700				472									472								472					472		
5000					502								502															
5600					562								562															
6800						682								682														
8200							822								822													
10000								103								103												
φd (mm)	0.6±0.06																											
Packing	T or B			B				T or B							B		T or B			B		T or B			B			
Coating	Phenolic Resin												Epoxy Resin															

Marking	1. Temperature characteristic	2. Nominal capacitance	3. Rated voltage		4. Capacitance tolerance	5. manufacturer's identification	6. Halogen and Pb free
	Be marked "B".	Identified by 3-figure code. Ex. 1000pF→"102" 3300pF→"332"	50V/100V	Marked as underline	K:±10%	Shall be marked as "UK", but Dφ=6.0 mm and less in Dia shall be omitted.	There is a " " marking under the code "V" as the coating is Halogen and Pb free Epoxy.
			500V	No marking (is blank)			
			1000V	Marked "1kV"			
			2000V	Marked "2kV"			

**P.S. : Packing : T → Packing in taping type. B → Packing in bulk type.**

# CERAMIC DISC CAPACITOR

Class II 50V,100V,500V,1KV,2KV,3KV, Hi-K Type

**Manufacturing product range  
Cap. Value v.s. Rate voltage, product diameter & type**

Photo:



T.C.	Z5U (CLASS II, Temperature: +10°C~+85°C, T.C.C.: +22~-56%)																		
Rate voltage	50V(ZU500)&100V(ZU101)				500V(ZU501)				1KV(ZU102)				2KV(ZU202)						
Dφ(Code)	040	050	060	070	050	060	070	090	050	070	090	100	060	070	080	090	110	130	
D max. (mm)	4.5	5.5	6.5	7.5	5.5	6.5	7.5	9.5	6.0	8.0	10.0	11.0	7.5	8.5	9.5	10.5	12.5	14.5	
T max. (mm)	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
1000					102				102				102						
1200					122				122				122						
1500					152				152				152						
2200	222				222				222				222						
2700	272				272				272				272						
3300	332					332			332					332					
3600	362					362			362							362			
3900	392					392			392							392			
4700	472						472		472							472			
5000		502							502										
5600							562										562		
6800							682				682						682		
8200			822								822							822	
10000				103				103				103						103	
φd (mm)	0.6±0.06																		
Packing	T or B																	B	
Coating	Phenolic Resin												Epoxy Resin						

Marking	1. Temperature characteristic	2. Nominal capacitance	3. Rated voltage		4. Capacitance tolerance	5. manufacturer's identification	6. Halogen and Pb free
	Be marked "E".	Identified by 3-figure code. Ex. 1000pF→"102" 3300pF→"332"	50V/100V	Marked as underline	M:±20% Z:-20~+80%	Shall be marked as "1K", but Dφ=6.0 mm and less in Dia shall be omitted.	There is a "_" marking under the code "V" as the coating is Halogen and Pb free Epoxy.
			500V	No marking (is blank)			
			1000V	Marked "1kV"			
			2000V	Marked "2kV"			

**P.S. : Packing : T→ Packing in taping type. B→ Packing in bulk type.**

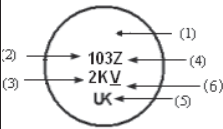
# CERAMIC DISC CAPACITOR

## Class II 50V,100V,500V,1KV,2KV,3KV, Hi-K Type

<b>Manufacturing product range</b> <b>Cap. Value v.s. Rate voltage, product diameter &amp; type</b>	<b>Photo:</b> 
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T.C.	Z5V (CLASS II, Temperature: +10°C~+85°C, T.C.C.: +22~82%)									
Rate voltage	50V(ZV500) & 100V(ZV101)				500V(ZV501)	1KV(ZV102)			2KV(ZV202)	
Dφ (Code)	050	060	070	080	080	060	080	100	120	
D max. (mm)	5.5	6.5	7.5	8.5	9.0	7.0	9.0	11.0	13.5	
T max. (mm)	3.5	3.5	3.5	3.5	4.0	4.5	4.5	4.5	4.5	
1000	102									
1500	152					152				
2200	222					222				
2700	272					272				
3300	332					332				
3900	392						392			
4700	472						472			
10000		103			103			103	103	
20000			203							
22000				223						
φd (mm)	0.6±0.06									
Packing	T or B								B	
Coating	Phenolic Resin								Epoxy Resin	

T.C.	Y5V (CLASS II, Temperature: -25°C~+85°C, T.C.C.: +22% ~-82%)												
Rate voltage	50V(YV500)				100V(YV101)			500V(YV501)			1KV(YV102)	2KV(YV202)	
Dφ(Code)	040	050	060	080	040	050	060	050	070	080	100	070	120
D max. (mm)	4.5	5.5	6.6	8.5	4.5	5.5	6.6	5.5	7.5	8.5	11.0	8.5	13.5
T max. (mm)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.5	5.0	5.0
1000	102				102							102	
2200		222				222		222				222	
4700		472				472		472					
10000			103				103			103	103		103
22000				223									
φd (mm)	0.6±0.06												
Packing	T or B											B	
Coating	Phenolic Resin											Epoxy Resin	

Marking	1. Temperature characteristic	2. Nominal capacitance	3. Rated voltage		4. Capacitance tolerance	5. manufacturer's identification	6. Halogen and Pb free
	Z5V, Y5V: the logo is "F", but the "F" shall be omitted.	Identified by 3-figure code. Ex. 1000pF → "102" 3300pF → "332" 4700pF → "472"	50V/100V 500V 1000V 2000V	Marked as underline No marking (is blank) Marked "1kV" Marked "2kV"	M: ±20% Z: -20~+80%	Shall be marked as "UK", but Dφ=6.0 mm and less in Dia shall be omitted.	There is a "_" marking under the code "V" as the coating is Halogen and Pb free Epoxy.

# CERAMIC DISC CAPACITOR

Class II 50V,100V,500V,1KV,2KV,3KV, Hi-K Type

Manufacturing product range  
Cap. Value v.s. Rate voltage, product diameter & type

Photo: Y5P

Z5U



T.C.	Y5P (CLASS II, Temperature:-25°C~+85°C, T.C.C.:±10%)					Z5U (CLASS II, Temperature: +10°C~+85°C, T.C.C.: +22~-56%)						
Rate voltage	3KV(YP302)					3KV(ZU302)						
Dφ (Code)	060	070	090	110	130	060	080	100	110	120	140	170
D max. (mm)	8.0	9.0	11.0	13.0	15.0	8.0	10.0	12.0	13.0	14.0	16.0	19.0
T max. (mm)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
100	101											
120	121											
150	151											
180	181											
220	221											
270	271											
330	331											
390		391										
470		471										
560		561										
680			681									
820			821									
1000			102			102						
1200				122			122					
1500				152			152					
1800				182			182					
2200					222		222					
2700								272				
3300								332				
3900									392			
4700										472		
5600											562	
6800											682	
8200												822
10000												103
φd (mm)	0.6±0.06											
Packing	TAPING or BULK											
Coating	Epoxy Resin											
	1. Temperature characteristic	2. Nominal capacitance	3. Capacitance tolerance	4. Rated voltage	5. Manufacturer's identification	6. Halogen and Pb free						
	Y5P:Be marked "B" Z5U:Be marked "E"	Identified by 3-figure code when Cap.≥100pF Ex. 1000pF →"102"	K:±10%(for Y5P) M:±20%(for Z5U)	3000V : Be marked "3kV"	Shall be marked as "UK", but when the body diameter ≤060 shall be omitted.	When the epoxy resin is Halogn and Pb free, there is a "-"marking.						
	Definition of date code marking:											
	7.Supplier of Epoxy	8.No. of test equipment	9.Factory of manufacture	10.Year of manufacture	11.Month of manufacture	12.Week of manufacture by month						
<: K-company , : P-company	1~9: No.1~No.9, J: No.10, K: No.11, L: No.12 .....	C: GZ Plant D: DL Plant	1:2011, 2:2012, 3:2013, .....	1~9: January~ September, O: October, N: November, D: December	week 1: - week 2: • week 3: : week 4: ' week 5: ;							

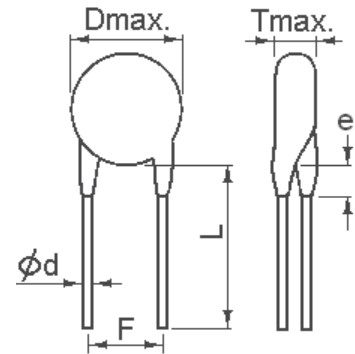


# CERAMIC DISC CAPACITOR

## Class III Semi-Conductive Type

### Features:

- Large capacitance in small size
- Low loss at a wide range of frequencies
- Cost saving by placing film capacitors
- Capacitance has linear temperature coefficient
- Stable capacitance change over specified temperature range
- RoHS Compliance
- Halogen free products are available



### General specification:

Capacitance Range	100000pF
Capacitance Tolerance	+80%-20%
Operating Temperature Range	-25°C ~+ 85°C
Rated Voltage	16,25&50 VDC
Dissipation Factor (tan δ)	Y5V 16V.....tan δ≤7.5% Y5V 25/50V.....tan δ≤5.0%
Insulation Resistance (IR) @ 25°C	16V.....100MΩ Minimum or 10MΩμF 25/50V...1000MΩ Minimum or 20MΩμF
Dielectric Strength	2 times the rated WVDC
Testing Parameters	1KHz±20%, 0.1Vrms Maximum

### Capacitance chart:

Manufacturing Product Range						
T.C.	FY (Y5V) CLASS III					
Rate voltage	16V		25V		50V	
Dφ(Code)	060		060		060	
D max. (mm)	7.0		7.0		7.0	
T max. (mm)	3.5		3.5		3.5	
0.1uF	104		104		104	
Marking	1. Temperature characteristic	2. Nominal Capacitance	3. Rated voltage		4. Capacitance tolerance	5. Manufacturer's identification
	Y5V: the product logo is "F", but it is omitted on marking.	Identified by 3-figure code. 0.1uF → "104"	16V/25V	Marked with code: 16V → "16V" 25V → "25V"	Z: -20~+80%	50V: Shall be marked as "UK", 16V&25V shall be omitted.
			50V	Marked as underline		

# CERAMIC DISC CAPACITOR

## 1KV, 2KV, 3KV Low Dissipation LB,LR Type

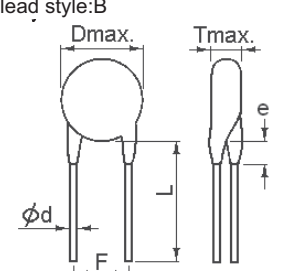
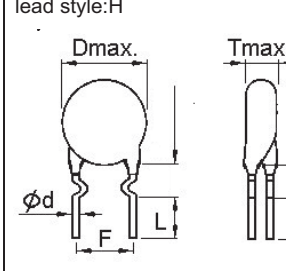
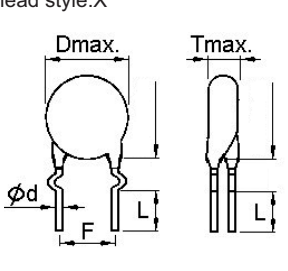
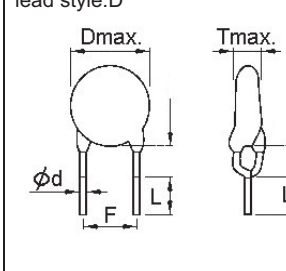
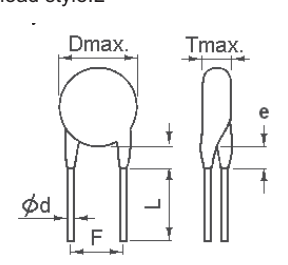
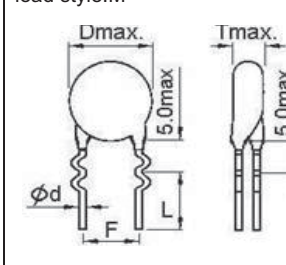
### Features:

- Reduced heat dissipation permitted due to small dielectric loss of the ceramic material
- Operating temperature range is guaranteed up to 125 degree C
- Coated with flame-retardant epoxy resin (equivalent to UL94V-0 standards)
- RoHS Compliance
- Halogen free products are available
- Ideal for use on high frequency pulse circuits such as a horizontal resonance circuit for CTV and snubber circuits for switching power supplies

### General specification:

Capacitance Range	100pF to 4700pF
Capacitance Tolerance	±10%,
Operating Temperature Range	-25°C~ +125°C
Rated Voltage	1K,2K,3K VDC
Dissipation Factor (tan δ)	LB: tan δ≤0.5% ; LR: tan δ≤0.2%
Insulation Resistance (IR) @ 25°C	10000MΩ Minimum or 200MΩμF whichever is smaller (500VDC,60sec)
Dielectric Strength	2 times the rated WVDC
Testing Parameters	1KHz ±20%, 1.0Vrms±0.2Vrms

### Lead style:

Lead type	Lead Code	Lead configuration	Lead type	Lead Code	Lead configuration
Type 1 Straight long lead	B	lead style:B 	Type 4 Inside kink lead	H	lead style:H 
Type 2 Outside kink lead	X	lead style:X 	Type 5 Vertical kink short lead	D	lead style:D 
Type 3 Straight short lead	L	lead style:L 	Type 6 Double outside kink lead	M	lead style:M 

# CERAMIC DISC CAPACITOR

## 1KV, 2KV, 3KV Low Dissipation LB,LR Type

### ■ LB Series:

Part Number	Rated Voltage.	Cap. in pF	Cap. Tol. (%)	Dimensions in mm	
				D max.	T Max.
LB102101K050□□□□□□	1000VDC	100	±10%	6.5	4.5
LB102151K050□□□□□□	1000VDC	150	±10%	6.5	4.5
LB102181K050□□□□□□	1000VDC	180	±10%	6.5	4.5
LB102221K050□□□□□□	1000VDC	220	±10%	6.5	4.5
LB102271K050□□□□□□	1000VDC	270	±10%	6.5	4.5
LB102331K050□□□□□□	1000VDC	330	±10%	6.5	4.5
LB102391K050□□□□□□	1000VDC	390	±10%	6.5	4.5
LB102471K050□□□□□□	1000VDC	470	±10%	6.5	4.5
LB102561K050□□□□□□	1000VDC	560	±10%	6.5	4.5
LB102681K060□□□□□□	1000VDC	680	±10%	7.5	4.5
LB102821K060□□□□□□	1000VDC	820	±10%	7.5	4.5
LB102102K060□□□□□□	1000VDC	1000	±10%	7.5	4.5
LB102152K070□□□□□□	1000VDC	1500	±10%	8.5	4.5
LB102182K070□□□□□□	1000VDC	1800	±10%	8.5	4.5
LB102222K080□□□□□□	1000VDC	2200	±10%	9.5	4.5
LB102332K100□□□□□□	1000VDC	3300	±10%	11.5	4.5
LB102392K100□□□□□□	1000VDC	3900	±10%	11.5	4.5
LB102472K120□□□□□□	1000VDC	4700	±10%	13.5	4.5
LB202101K050□□□□□□	2000VDC	100	±10%	6.5	5.0
LB202151K050□□□□□□	2000VDC	150	±10%	6.5	5.0
LB202221K050□□□□□□	2000VDC	220	±10%	6.5	5.0
LB202271K050□□□□□□	2000VDC	270	±10%	6.5	5.0
LB202331K050□□□□□□	2000VDC	330	±10%	6.5	5.0
LB202391K050□□□□□□	2000VDC	390	±10%	6.5	5.0
LB202471K050□□□□□□	2000VDC	470	±10%	7.5	5.0
LB202561K060□□□□□□	2000VDC	560	±10%	7.5	5.0
LB202681K060□□□□□□	2000VDC	680	±10%	8.5	5.0
LB202821K070□□□□□□	2000VDC	820	±10%	8.5	5.0
LB202102K070□□□□□□	2000VDC	1000	±10%	8.5	5.0
LB202122K070□□□□□□	2000VDC	1200	±10%	8.5	5.0
LB202152K080□□□□□□	2000VDC	1500	±10%	9.5	5.0
LB202182K090□□□□□□	2000VDC	1800	±10%	10.5	5.0
LB202222K100□□□□□□	2000VDC	2200	±10%	11.5	5.0
LB202272K110□□□□□□	2000VDC	2700	±10%	12.5	5.0
LB202332K120□□□□□□	2000VDC	3300	±10%	13.5	5.0
LB202392K130□□□□□□	2000VDC	3900	±10%	14.5	5.0
LB202472K140□□□□□□	2000VDC	4700	±10%	15.5	5.0
LB302101K050□□□□□□	3000VDC	100	±10%	6.5	6.0
LB302151K050□□□□□□	3000VDC	150	±10%	6.5	6.0
LB302221K050□□□□□□	3000VDC	220	±10%	6.5	6.0
LB302331K050□□□□□□	3000VDC	330	±10%	6.5	6.0
LB302391K050□□□□□□	3000VDC	390	±10%	6.5	6.0
LB302471K060□□□□□□	3000VDC	470	±10%	7.5	6.0
LB302561K060□□□□□□	3000VDC	560	±10%	7.5	6.0
LB302681K070□□□□□□	3000VDC	680	±10%	8.5	6.0
LB302821K080□□□□□□	3000VDC	820	±10%	9.5	6.0
LB302102K080□□□□□□	3000VDC	1000	±10%	9.5	6.0
LB302152K100□□□□□□	3000VDC	1500	±10%	11.5	6.0
LB302222K120□□□□□□	3000VDC	2200	±10%	13.5	6.0
LB302272K130□□□□□□	3000VDC	2700	±10%	14.5	6.0
LB302332K140□□□□□□	3000VDC	3300	±10%	15.5	6.0
LB302392K150□□□□□□	3000VDC	3300	±10%	16.5	6.0
LB302472K160□□□□□□	3000VDC	4700	±10%	17.5	6.0

# CERAMIC DISC CAPACITOR

## 1KV, 2KV, 3KV Low Dissipation LB,LR Type

### LR Series:

Part Number	Rated Voltage.	Cap. in pF	Cap. Tol. (%)	Dimensions in mm	
				D max.	T Max.
LR102101K050□□□□□	1000VDC	100	±10%	6.5	4.5
LR102151K050□□□□□	1000VDC	150	±10%	6.5	4.5
LR102221K050□□□□□	1000VDC	220	±10%	6.5	4.5
LR102271K050□□□□□	1000VDC	270	±10%	6.5	4.5
LR102331K050□□□□□	1000VDC	330	±10%	6.5	4.5
LR102391K050□□□□□	1000VDC	390	±10%	6.5	4.5
LR102471K050□□□□□	1000VDC	470	±10%	6.5	4.5
LR102681K060□□□□□	1000VDC	680	±10%	7.5	4.5
LR102821K070□□□□□	1000VDC	1000	±10%	8.5	4.5
LR102102K070□□□□□	1000VDC	1000	±10%	8.5	4.5
LR102152K090□□□□□	1000VDC	1500	±10%	10.5	4.5
LR102222K100□□□□□	1000VDC	2200	±10%	11.5	4.5
LR102332K130□□□□□	1000VDC	3300	±10%	14.5	4.5
LR202101K050□□□□□	2000VDC	100	±10%	6.5	5.0
LR202151K050□□□□□	2000VDC	150	±10%	6.5	5.0
LR202221K050□□□□□	2000VDC	220	±10%	6.5	5.0
LR202271K050□□□□□	2000VDC	270	±10%	6.5	5.0
LR202331K060□□□□□	2000VDC	330	±10%	7.5	5.0
LR202391K060□□□□□	2000VDC	390	±10%	7.5	5.0
LR202471K060□□□□□	2000VDC	470	±10%	7.5	5.0
LR202561K070□□□□□	2000VDC	560	±10%	8.5	5.0
LR202681K070□□□□□	2000VDC	680	±10%	8.5	5.0
LR202821K080□□□□□	2000VDC	820	±10%	9.5	5.0
LR202102K090□□□□□	2000VDC	1000	±10%	10.5	5.0
LR202122K100□□□□□	2000VDC	1200	±10%	11.5	5.0
LR202152K110□□□□□	2000VDC	1500	±10%	12.5	5.0
LR202182K120□□□□□	2000VDC	1800	±10%	13.5	5.0
LR202222K130□□□□□	2000VDC	2200	±10%	14.5	5.0
LR202332K160□□□□□	2000VDC	3300	±10%	17.5	5.0
LR302101K050□□□□□	3000VDC	100	±10%	6.5	6.0
LR302151K050□□□□□	3000VDC	150	±10%	6.5	6.0
LR302221K050□□□□□	3000VDC	220	±10%	6.5	6.0
LR302331K060□□□□□	3000VDC	330	±10%	7.5	6.0
LR302391K070□□□□□	3000VDC	390	±10%	8.5	6.0
LR302471K080□□□□□	3000VDC	470	±10%	9.5	6.0
LR302561K080□□□□□	3000VDC	560	±10%	9.5	6.0
LR302681K090□□□□□	3000VDC	680	±10%	10.5	6.0
LR302821K100□□□□□	3000VDC	820	±10%	11.5	6.0
LR302102K100□□□□□	3000VDC	1000	±10%	11.5	6.0
LR302152K130□□□□□	3000VDC	1500	±10%	14.5	6.0
LR302222K150□□□□□	3000VDC	2200	±10%	16.5	6.0

Marking	1. Temperature characteristic	2. Nominal capacitance	3. Rated voltage		4. Capacitance tolerance	5. manufacturer's identification	6. Halogen and Pb free
	LB:Be marked "LB" LR:Be marked "LR"	Identified by 3-figure code. Ex. 100pF→"101" 2200pF→"222"	1000V	Marked "1kV"	K:±10%	Shall be marked as "UK", but Dφ=6.0 mm and less in Dia shall be omitted.	There is a " _ " marking under the code "V" as the coating is Halogen and Pb free Epoxy.
			2000V	Marked "2kV"			
			3000V	Marked "3kV"			

LB: Cap. Change: ±10%(-25°C~+85°C), DF:0.5%Max. ;

LR: Cap. Change:-30%~+15%(-25°C~+125°C), DF:0.2%Max.

# CERAMIC DISC CAPACITOR

## 1KV, 2KV, 3KV Low Dissipation LB,LR Type

### ■ Caution

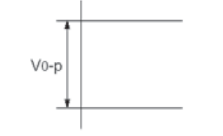
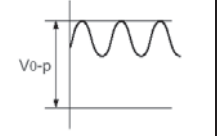
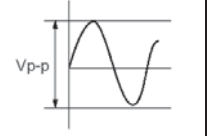
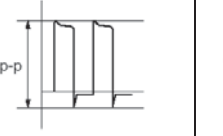
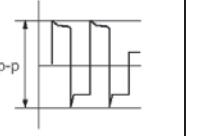
#### 1. Caution (Rating)

##### 1.1 Operating Voltage

When dc-rated capacitors are to be used in ac or ripple current circuits, be sure to maintain the  $V_{p-p}$  value of the applied voltage or the  $V_{0-p}$  which contains dc bias within the rated voltage range.

When the voltage is applied to the circuit, starting or stopping may generate irregular voltage for a transit period because of resonance or switching. Be sure to use a capacitor with a rated voltage range that includes these irregular voltages.

When using the low-dissipation (LB, LR Char.) series in a high-frequency and high-voltage circuit, be sure to read the instructions in item 4.

Voltage	DC Voltage	DC+AC Voltage	AC Voltage	Pulse Voltage(1)	Pulse Voltage(2)
Positional measurement					

##### 1.2 Operating Temperature And Self-Generated Heat

Keep the surface temperature of a capacitor below the upper limit of its rated operating temperature range. be sure to take into account the heat generated by the capacitor itself. When the capacitor is used in a high-frequency current, pulse current or similar current, it may self-generate heat due to dielectric loss. The frequency of the applied sine wave voltage should be less than 300kHz. the applied voltage load (\*) should be such that the capacitor's self-generated heat is within 20°C at an atmosphere temperature of 25°C. When measuring, use a thermocouple of small thermal capacity-k of  $\phi 0.1\text{mm}$  in conditions where the capacitor is not affected by radiant heat from other components or surrounding ambient fluctuations.

Excessive heat may lead to deterioration of the capacitor's characteristics and reliability. (Never attempt to perform measurement with the cooling fan running. otherwise, accurate measurement cannot be ensured.)

##### 1.3 Fail-Safe

When capacitor is broken, failure may result in a short circuit. Be sure to provide an appropriate fail-safe function like a fuse on your product if failure would follow an electric shock, fire or fume.

##### 1.4 Load Reduction and Self-generated Heat During Application of High Frequency and High Voltage

Due to the low self-heating characteristics of low dissipation capacitors, the allowable electric power of these capacitors is generally much higher than that of B characteristic capacitors. However, in case the self heating temperature is 15°C under a high-frequency voltage whose peak-to-peak value equals the capacitor's rated voltage, the capacitor's power consumption may exceed it's allowable electric power.

Therefore, when using the Low D.F. series in a high-frequency and high-voltage circuit with a frequency of 1kHz or higher, make sure that the  $V_{p-p}$  values including the DC bias, do not exceed the applied voltage value specified in Table 1. Also make sure that the self-heating temperature (the difference between the capacitor's surface temperature and the capacitor's ambient temperature) at an ambient temperature of 25°C does not exceed the value specified in Table 1.

As shown in Fig. 2, the self-heating temperature depends on the ambient temperature. Therefore, if you are not able to set the ambient temperature to approximately 25°C, please contact our sales representatives or product engineers.

# CERAMIC DISC CAPACITOR

## 1KV, 2KV, 3KV Low Dissipation LB,LR Type

[Table 1] Allowable conditions at high frequency

Series	DC rated voltage	Allowable conditions at High-frequency *3		Capacitor's ambient temp. *2
		Applied voltage (Max.)	Self-heating temp. (25°C ambient temp.)*1	
LB、LR	1KV	800Vp-p	15°CMax.	-25 ~ +125°C
		1000Vp-p	5°CMax.	
	2KV	1400Vp-p	10°CMax.	
		2000Vp-p	5°CMax.	
	3KV	1600Vp-p	5°CMax.	
		3000Vp-p	5°CMax.	

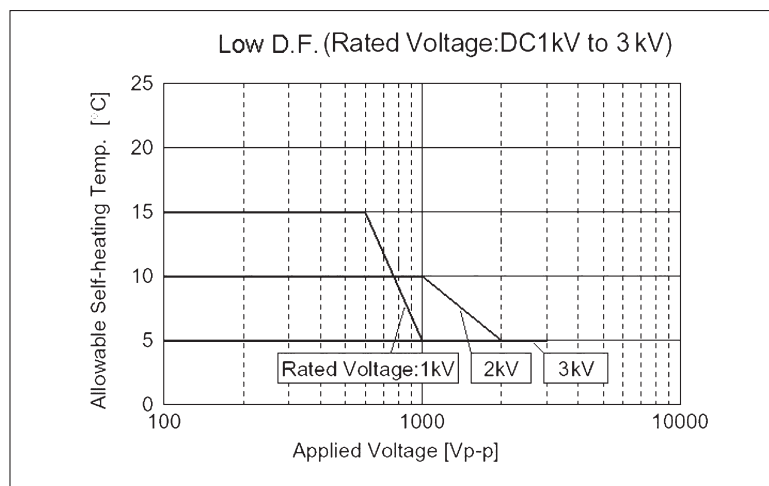
\*1 Fig. 1 shows the relationship between the applied voltage and the allowable self-heating temperature regarding 1 to 2KV rated voltage of the low D.F. series LB,LR characteristic.

\*2 Fig. 2 When the ambient temperature is 85 to 125°C, the applied voltage needs to be further reduced. If the low D.F. series needs to be used at an ambient temperature of 85 to 125°C, please contact our sales representatives or product engineers.

\*3 Fig. 3 shows reference data on the allowable voltage-frequency characteristic for a sine wave voltage.

Failure to follow the above cautions (items 1.1 to 1.4) may result, worst case, in a short circuit and cause fuming or partial dispersion when the product is used.

**Fig 1 : Relationship Between Applied Voltage and Self-heating Temperature (Allowable Self-heating Temp. at 25°C Ambient Temp.)**

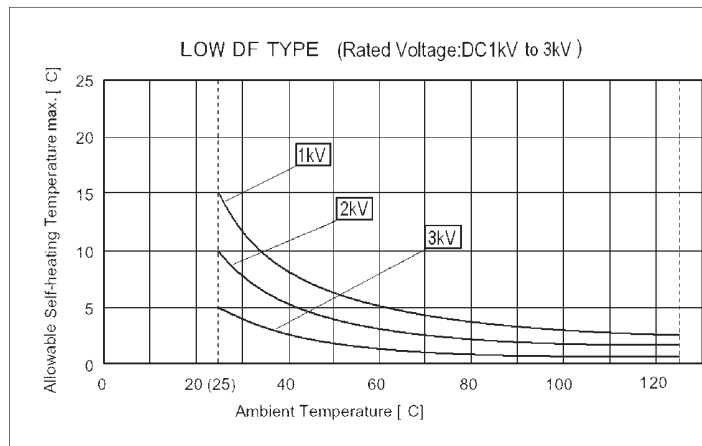




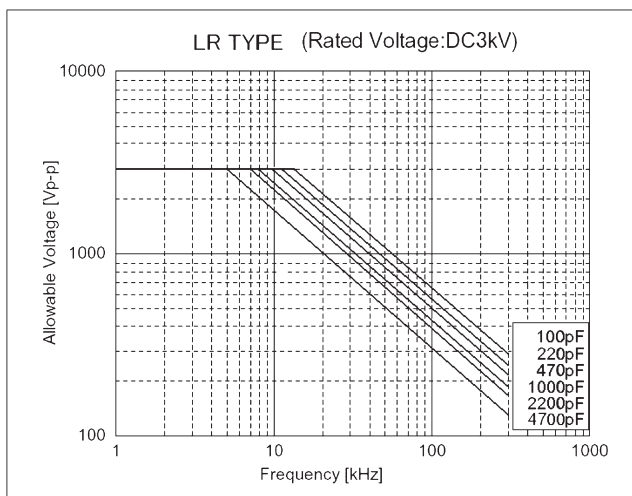
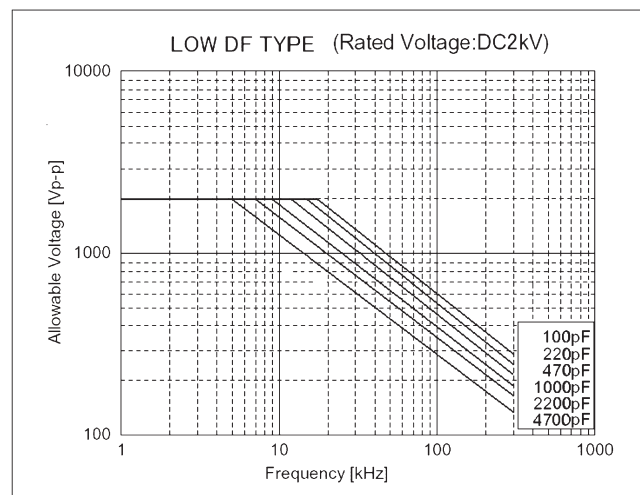
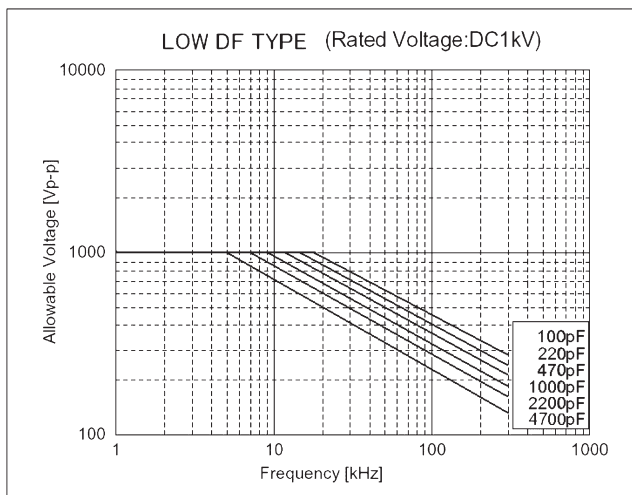
# CERAMIC DISC CAPACITOR

## 1KV, 2KV, 3KV Low Dissipation LB,LR Type

**Fig 2 : Dependence of Self-heating Temperature on Ambient Temperature.**



**Fig 3 : Allowable Voltage ( Sine Wave Voltage ) – Frequency Characteristics (At Ambient Temperature of 85°C or less)**



# CERAMIC DISC CAPACITOR

## 1KV, 2KV, 3KV Low Dissipation LB,LR Type

Because of influence of harmonics, when the applied voltage is a rectangular wave or pulse wave voltage (instead of a sine wave voltage), the heat generated by the capacitor is higher than the value obtained by application of the sine wave with the same fundamental frequency. Roughly calculated for reference, the allowable voltage for a rectangular wave or pulse wave corresponds approximately to the allowable voltage for a sine wave whose fundamental frequency is twice as large as that of the rectangular wave or pulse wave. This allowable voltage, however, varies depending on the voltage and current waveforms.

Therefore, you are requested to make sure that the self-heating temperature is not higher than the value specified in Table 1.

## 2. Caution (Storage And Operating Condition)

### I. Operating And Storage Environment

The insulating coating of capacitors does not form a perfect seal; therefore, do not use or store capacitors in a corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. And avoid exposure to Moisture. Before cleaning, bonding or molding this product, verify that these processes do not affect product quality by testing the performance of a cleaned, bonded or molded product in the intended equipment. Store the capacitors where the temperature and relative humidity do not exceed -10 to 40 degrees centigrade and 15 to 85 %.

Use capacitors within 6 months.

Failure to follow the above cautions may result, worst case, in a short circuit and cause fuming or partial dispersion when the product is used.

## 3. Caution (Soldering And Mounting)

### I. Vibration And Impact

Do not expose a capacitor or its leads to excessive shock or vibration during use.

### II. Soldering

When soldering this product to a Pcb / Pwb, do not exceed the solder heat resistance specification of the capacitor. Subjecting this product to excessive heating could melt the internal junction solder and may result in thermal shocks that can crack the ceramic element. When soldering capacitor with a soldering iron, it should be performed in following conditions.

Temperature of iron-tip: 400 °C Max.

Soldering iron wattage: 50W Max.

Soldering time: 3.5 sec. Max.

Failure to follow the above cautions may result, worst case, in a short circuit and cause fuming or partial dispersion when the product is used.

## 4. Caution (Handling)

### Vibration And Impact

Do not expose a capacitor or its leads to excessive shock or vibration during use.

Failure to follow the above cautions may result, worst case, in a short circuit and cause fuming or partial dispersion when the product is used.

## ■ Notice

### 1. Notice (Soldering And Mounting)

#### Cleaning (ultrasonic cleaning)

To perform ultrasonic cleaning, observe the following conditions.

Rinse bath capacity: output of 20-watts per liter or less.

Rinsing time: 5 min. Maximum.

Do not vibrate the Pcb/Pwb directly.

Excessive ultrasonic cleaning may lead to fatigue destruction of the lead wires.

### 2. Notice (Rating)

#### Low D.F. series

Capacitance might change greatly depending on the surrounding temperature or an applied voltage.

So, it is not likely to be suitable for use in a time constant circuit. Please contact us if you need detailed information.

# SAFETY STANDARD CERAMIC CAPACITOR

## SAP Part Number Explanation

To order, please also specify Part No. as the following example for SAP system :

YV	0AC	472	M	10	0	L	20	C	7	B
❶	❷	❸	❹	❺	❻	❼	❽	❾	❿	⓫

### ❶ Temperature characteristic (identified code):

CODE	CH(NPO)	SL	YP (Y5P)	YU (Y5U)	YV (Y5V)
Cap. Change (%)	0±60ppm/°C	-1000~+350ppm/°C(+20°C~+85°C)	±10%	+20%to -55%	+30%to -80%

### ❷ TYPE (identified by 3-figure code) :

0AC=AC(X1-400V~/Y2-250V~) ; 1AC=AC(X1-440V~/Y2-300V~)(only for VDE/CB/ENEC)

0AH=AH(X1-400V~/Y1-250V~) ; 1AH=AH(X1-400V~/Y1-400V~)

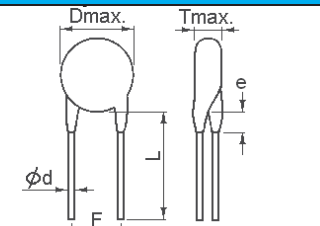
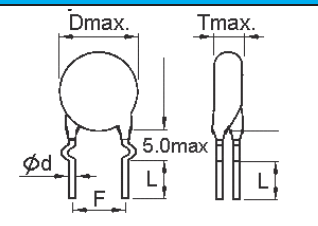
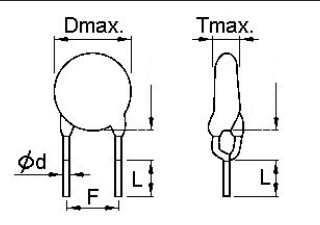
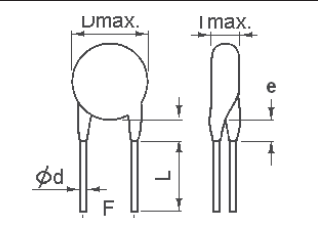
### ❸ Capacitance (identified by 3-figure code)

### ❹ Capacitance tolerance (identified by code)

### ❺ Nominal body diameter dimension (identified by 2-figure code)

### ❻ Internal control code:0—Normal, other code—Special control

### ❼ Kinked Lead Style

Lead type & Code	Lead configuration	Lead type & Code	Lead configuration
Type B Straight long lead	lead style:B 	Type X Outside kink lead	lead style:X 
Type D Vertical kink short lead	lead style:D 	Type L Straight short lead	lead style:L 

### ❽ Packing mode and lead length (identified by 2-figure code)

Taping Code	Description	Bulk Code	Description
AM	Box and Pitch:25.4 mm (10.0mm)	3E	lead length L : 3.5mm
AF	lBox and Pitch:15.0 mm (Pitch=7.5mm)	04	lead length L : 4.0mm
		4E	lead length L : 4.5mm
		20	lead length L : 20mm

### ❾ Length tolerance

Code	Description
A	±0.5 mm (only for kink lead type)
B	±1.0 mm
C	MIN.
D	Taping special purpose

### ❿ Pitch

Code	Description
7	7.5±1 mm
0	10±1 mm

### ⓫ Epoxy resin code

Code	Description
B	Epoxy Resin →Pb free
H	Halogen and Pb free, epoxy resin

# SAFETY STANDARD CERAMIC CAPACITOR

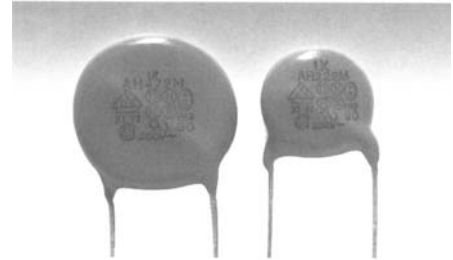
## AH Type-Class X1/Y1 AC Typa-Class X1/Y2

### Introduction :

These Safety Recognized Ceramic Capacitors are specifically designed for AC applications and meet the safety requirements of various safety standard agencies. They are ideal for across the line and line by-pass applications.

### Features :

- Compact size
- Cost effective products
- Ideal for across the line applications
- Safety Standard Recognized for AC applications
- Coated with flame-retardant epoxy resin  
(equivalent to UL94V-0 standards)
- RoHS Compliance
- Halogen free products are available



### Approval standards :

Agencies	UL	CSA	CQC	KTL	VDE, SEMKO, NEMKO, DEMKO, FIMKO, SEV, KEMA
Standard No.	UL60384-14: 2009	E60384-14: 09	GB/T 14472-1998	K60384-14	IEC384-14 3rd Edition (2005)
Rated Voltage	0AC = AC(X1-400V~/Y2-250V~) 1AC = AC(X1-440V~/Y2-300V~)(only for VDE/CB/ENEC) 0AH = AH(X1-400V~/Y1-250V~) 1AH = AH(X1-400V~/Y1-400V~)				
Capacitance Value(pF)	AH: 2 ~ 4700 AC: 2 ~ 10000				

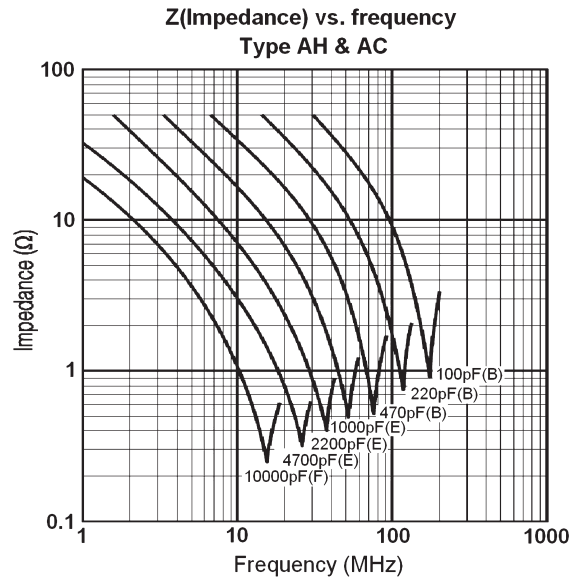
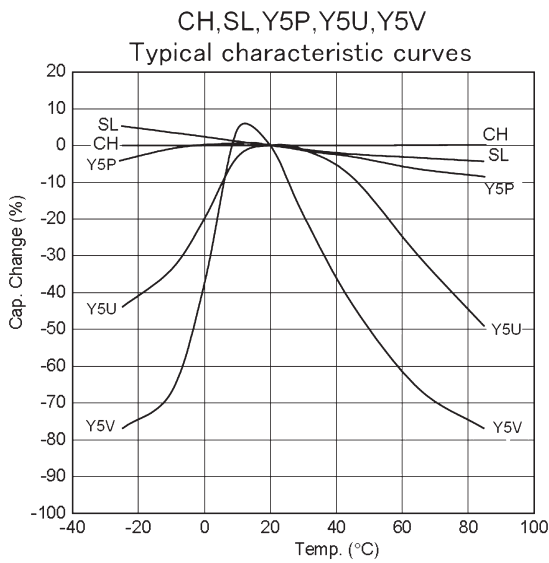
### General specification :

Capacitance Range	AH:2pF to 4700pF; AC:2pF to 10000pF
Capacitance Tolerance	±0.25pF, ±0. 5pF, ±5%, ±10%, ±20%
Operating Temperature Range	-25°C~ +125°C
Temperature Coefficient (ΔC Max)	±60ppm/°C(CH), -1000~+350ppm/°C(SL), ±10% (Y5P), +30~80% (Y5V), +20~55% (Y5U)
Voltage Resistance	AH Type: X1:400Vac / Y1:400Vac or 250Vac ; AC Type: X1:400Vac or 440Vac / Y2:250VAC or 300Vac
Dissipation Factor(tanδ) or Q	CH&SL: 30pF&above:Q ≥ 1000 Below 30pF:Q ≥ 400+20×C @20°C, 1MHz, 1±0.2Vrms Y5P: tanδ=2.5% Max. @20°C, 1KHz, 1±0.2Vrms Y5U: tanδ=2.5% Max. @20°C, 1KHz, 1±0.2Vrms Y5V: tanδ=5.0% Max. @20°C, 1KHz, 1±0.2Vrms
Insulation Resistance	10000MΩ at 500VDC for 60 Seconds
Dielectric Strength	1500VAC for 60 Seconds (AC TYPE) ( For Lead Pitch=5.0mm)
	2600VAC for 60 Seconds (AC TYPE) ( For Lead Pitch=7.5 & 10 mm)
	4000VAC for 60 Seconds (AH TYPE) ( For Lead Pitch=10.0mm)

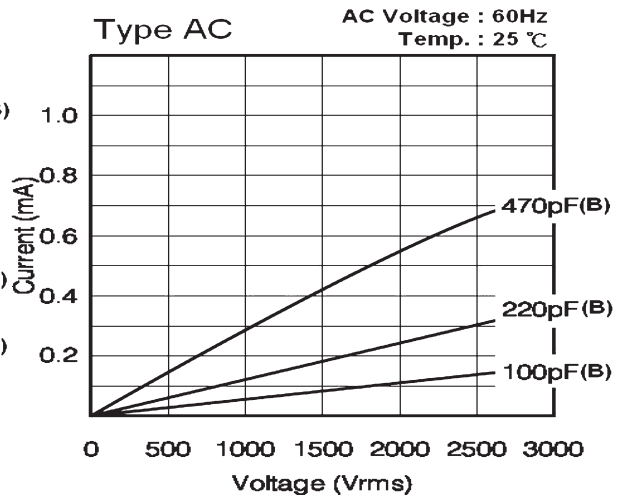
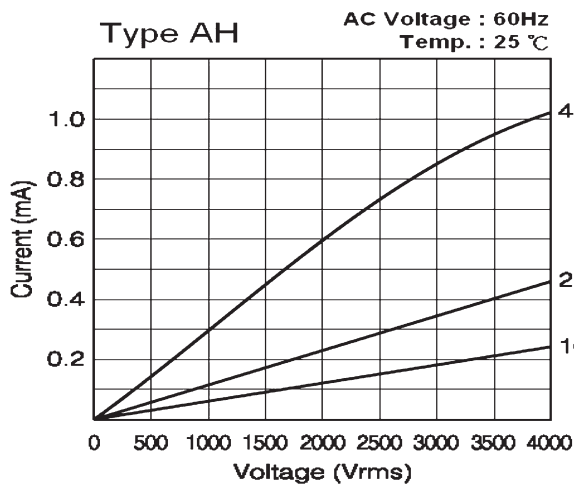
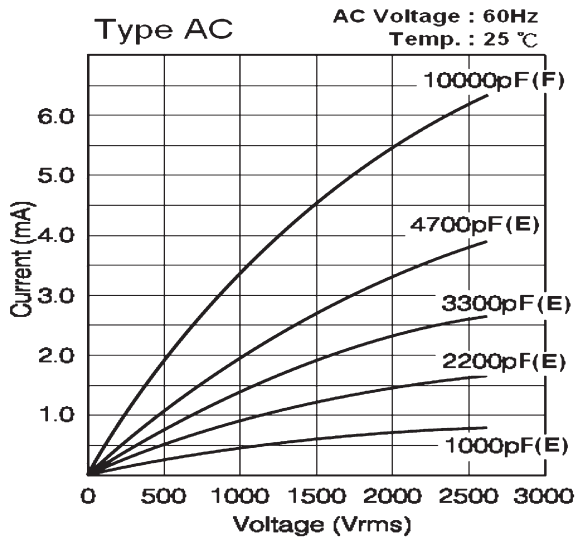
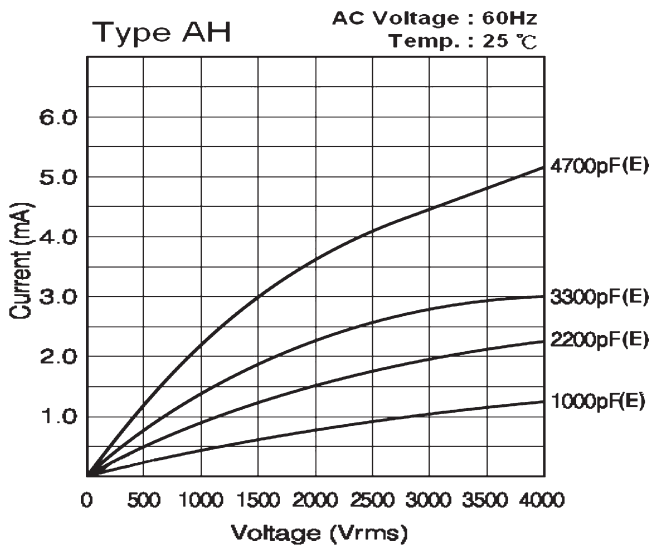
# SAFETY STANDARD CERAMIC CAPACITOR

## AH Type-Class X1/Y1 AC Typa-Class X1/Y2

Typical characteristic curves & Z(Impedance) vs. frequency :



Current vs. Voltage (Leakage Current Characteristics)

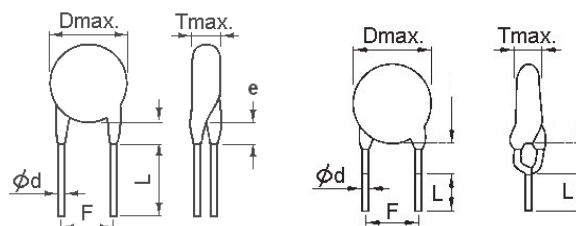


# SAFETY STANDARD CERAMIC CAPACITOR

## Detail Specification

### AH Type-Class X1/Y1

Part Number	Temp. Char.	Cap.(pF)	Tol.	Dimension (mm)			
				D Max.	T Max.	F±1	Wire Dia. (Ød)
YP *AH101K060	Y5P	100	±10%	7.0	5.0	10.0	0.60 +0.1-0.05
YP *AH151K060		150		7.0			
YP *AH221K060		220		7.0			
YP *AH331K060		330		7.0			
YP *AH471K070		470		8.0			
YP *AH561K080		560		9.0			
YP *AH681K080		680		9.0			
YP *AH102K100		1000		11.0			
YU *AH102M070	Y5U	1000	±20%	8.0	5.0	10.0	0.60 +0.1-0.05
YU *AH152M080		1500		9.0			
YU *AH222M090		2200		10.0			
YU *AH332M110		3300		12.0			
YU *AH392M120		3900		14.0			
YU *AH472M130		4700		14.0			
YV *AH102M060	Y5V	1000	±20%	7.0	5.5	10.0	0.60 +0.1-0.05
YV *AH152M070		1500		8.0			
YV *AH222M080		2200		9.0			
YV *AH332M100		3300		11.0			
YV *AH472M110		4700		12.0			
CH *AH***C060	CH (NPO)	2,3,4,5	±0.25pF	7.0	5.0	10.0	0.60 +0.1-0.05
CH *AH***D060		6,7,8,9,10	±0.5pF	7.0			
CH *AH120J060		12	±5%	7.0			
CH *AH ***J070		15,18,20,22,24,27		8.0			
SL *AH ***J060	SL	15,18,20,22,24, 27,30,33,36,39	±5%	7.0	5.0	10.0	0.60 +0.1-0.05
SL *AH ***J070		47,50,51,56,62		8.0			
SL *AH ***J080		68,75,82		9.0			
SL *AH101J090		100		10.0			






# SAFETY STANDARD CERAMIC CAPACITOR

## Detail Specification

### AC Type-Class X1/Y2

Part Number	Temp. Char.	Cap.(pF)	Tol.	Dimension (mm)			
				D max.	T max.	F±1	Wire Dia. (Ød)
YP *AC101K060	Y5P	100	±10%	7.0	5.0	7.5, 10.0	0.60 +0.1-0.05
YP *AC151K060		150		7.0			
YP *AC221K060		220		7.0			
YP *AC331K060		330		7.0			
YP *AC471K060		470		7.0			
YP *AC561K070		560		8.0			
YP *AC681K070		680		8.0			
YP *AC821K080		820		9.0			
YP *AC102K080		1000		9.0			
YU *AC102M060		Y5U		1000			
YU *AC152M080	1500		9.0				
YU *AC222M080	2200		9.0				
YU *AC332M100	3300		11.0				
YU *AC392M120	3900		13.0				
YU *AC472M120	4700		13.0				
YV *AC102M060	Y5V	1000	±20%	7.0	5.0	7.5, 10.0	0.60 +0.1-0.05
YV *AC152M060		1500		7.0			
YV *AC222M060		2200		7.0			
YV *AC332M080		3300		9.0			
YV *AC392M100		3900		11.0			
YV *AC472M100		4700		11.0			
YV *AC682M120		6800		13.0			
YV *AC103M140		10000		15.0		10.0	
CH *AC *** C060	CH (NPO)	2,3,4,5	±0.25pF	7.0	5.0	7.5, 10.0	0.60 +0.1-0.05
CH *AC *** D060		6,7,8,9,10	±0.5pF	7.0			
CH *AC *** J060		12,15	±5%	7.0			
CH *AC *** J070		18,20,22,24		8.0			
CH *AC *** J080		27,30,33		9.0			
CH *AC *** J090		36,39		10.0			
CH *AC470J100		47		11.0			
SL *AC *** J060	SL	10,12,15,18,20,22 ,24,27,30,33,36, 39,47,50,51	±5%	7.0	5.0	7.5, 10.0	0.60 +0.1-0.05
SL *AC *** J070		52,62,68,75		8.0			
SL *AC820J080		82		9.0			
SL *AC101J090		100		10.0			

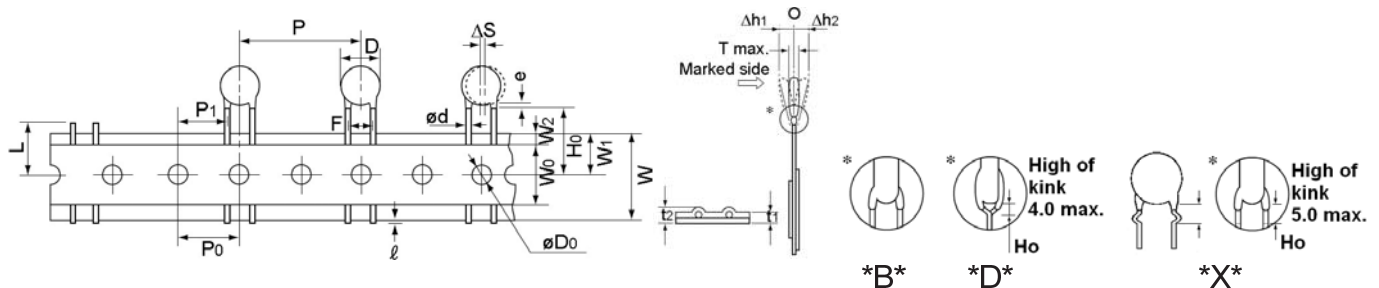
 = **Lead Code** : Please consult our part number explanation on page 20 for detail lead space, lead length, and lead configuration.

# SAFETY STANDARD CERAMIC CAPACITOR

## Taping Specification and Dimension

### ■ Taping Format: AH X1/Y1

- 25.4mm pitch/lead spacing 10.0mm taping
- Lead Code: \*BAMD0 & \*DAMD0 & \*XAMD0



Part Number	*BAMD0 / *DAMD0 / *XAMD0	
Item	Symbol	Dimensions(mm)
Pitch of component	P	25.4 ± 2
Pitch of sprocket	P0	12.7 ± 0.3
Lead spacing	F	10.0 ± 1.0
Length from hole center to component center	P2	12.7 ± 1.5
Length from hole center to lead	P1	7.7 ± 1.5
Body diameter	D	Refer to page 23
Deviation along tape, left or right	ΔS	0 ± 2.0
Carrier tape width	W	18.0 +1/-0.5
Position of sprocket hole	W1	9.0 ± 0.5
Lead distance between the kink and center of sprocket hole	H0	18.0 +2.0/-0 (For: *DAMD0 & *XAMD0)
Lead distance between the bottom of body and the center of sprocket hole	H	20.0+1.5/-1.0 (For: *BAMD0)
Protrusion length	ℓ	2.0max (Or the end of lead wire may be inside the tape.)
Diameter of sprocket hole	D0	4.0 ± 0.2
Lead diameter	φd	0.60 +0.1/-0.05
Total tape thickness	t1	0.6 ± 0.3
Total thickness, tape and lead wire	t2	1.5 max.
Deviation across tape	Δh1	2.0 max.
	Δh2	2.0 max
Portion to cut in case of defect	L	11.0 max.
Hole-down tape width	W0	11 max
Hole-down tape distortion	W2	1.5 ± 1.5
Coating extension on leads	e	3.0 max for straight lead style; Not exceed the kink leads for kink lead.
Body thickness	T	Refer to page 23

# SAFETY STANDARD CERAMIC CAPACITOR

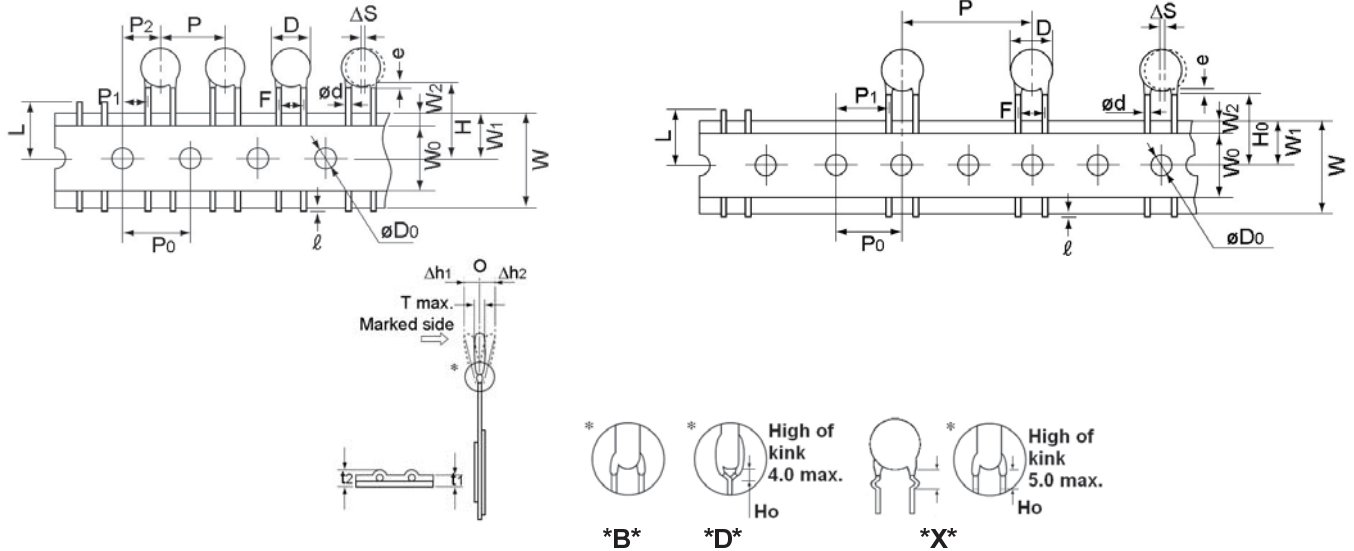
## Taping Specification and Dimension

### ■ Taping Format: AC X1/Y2

- 15mm pitch/lead spacing 7.5mm taping  
Lead Code: \*BAFD7 & \*DAFD7 & \*XAFD7

- 25.4mm pitch/lead spacing 7.5mm taping  
Lead Code: \*BAMD7 & \*DAMD7 & \*XAMD7

- 25.4mm pitch/lead spacing 10.0mm taping  
Lead Code: \*BAMD0 & \*DAMD0 & \*XAMD0



Part Number		*BAFD7	*DAFD7 *XAFD7	*BAMD7 *DAMD7 *XAMD7	*BAMD0 *DAMD0 *XAMD0
Item	Symbol	Dimensions (mm)			
Pitch of component	P	15.0	15.0	25.4	25.4
Pitch of sprocket	P0	15.0±0.3	15.0±0.3	12.7±0.3	12.7±0.3
Lead spacing	F	7.5±1.0	7.5±1.0	7.5±1.0	10.0±1.0
Length from hole center to component center	P2	7.5±1.5	7.5±1.5	12.7±1.5	12.7 ± 1.5
Length from hole center to lead	P1	3.75±1.0	3.75±1.0	8.95±1.0	7.7±1.5
Body diameter	D	Refer to page 24			
Deviation along tape, left or right	ΔS	0±2.0			
Carrier tape width	W	18.0 +1/-0.5			
Position of sprocket hole	W1	9.0±0.5			
Lead distance between the kink and center of sprocket hole	H0	---	18.0+2.0/-0	18.0+2.0/-0 (For: *DAMD7 / *XAMD7)	18.0+2.0/-0 (For: *DAMD0 / *XAMD0)
Lead distance between the bottom of body and the center of sprocket hole	H	20.0+1.5/-1.0	---	20.0+1.5/-1.0 (For: *BAMD7)	20.0+1.5/-1.0 (For: *BAMD0)
Protrusion length	ℓ	2.0max (Or the end of lead wire may be inside the tape.)			
Diameter of sprocket hole	D0	4.0±0.2			
Lead diameter	φd	0.60 +0.1/-0.05			
Total tape thickness	t1	0.6±0.3			
Total thickness, tape and lead wire	t2	1.5 max.			
Deviation across tape	Δh1/Δh2	2.0 max.			
Portion to cut in case of defect	L	11.0 max.			
Hole-down tape width	W0	11.5min			
Hole-down tape distortion	W2	1.5±1.5			
Coating extension on leads	e	3.0 max for straight lead style; Not exceed the kink leads for kink lead.			
Body thickness	T	Refer to page 24			

# SAFETY STANDARD CERAMIC CAPACITOR

## Taping Specification and Dimension

### ■ Marking : AH

1.Type Designation	AH		
2.Nominal Capacitance	3-digit-system		
3.Capacitance Tolerance	C:±0.25pF,D:±0.5pF,J:±5%,K:±10%,M:±20%		
4.Company Trade mark	UK		
5.Manufactured Date	<p>Abbreviation ex.:</p> <div style="text-align: center;"> </div> <p> <b>Last digit of year:</b>              0: 2010              1: 2011              2: 2012              ⋮         </p> <p> <b>Epoxy resin code:</b>              " _ ": Halogen and Pb free, epoxy resin.              No" _ ": Pb free, epoxy resin.         </p> <p> <b>Manufactory:</b>              C: Guangzhou              Ć: Dongguan         </p>		
6.Approved Monogram:			
(1) VDE approval mark		IEC 60384-14 3rd (2005). Class Code:X1:400V~,Y1:250V~ or400V~	
(2) UL approval mark		(6) DEMKO approval mark	
(3) CSA approval mark		(7) FIMKO approval mark	
(4) SEMKO approval mark		(8) SEV approval mark	
(5) NEMKO approval mark		(9) CQC approval mark	
<b>Two sides</b>	<b>One side</b>		
Ex.:	Ex.:		Special marking: YP*AH102K100* OAH:
OAH :  1AH :	OAH:  1AH:		OAH:  1AH:
* Marking by the stamp or laser. * The marking can be printed on either one side or two side of coating body. **“C01”,Marked with code “ _ ” stand for Halogen and Pb free;No marked with “ _ ” stand for Pb free. * When the TCC is Y5V(YV), there is a “F” between the “AH” and capacitance code.			

# SAFETY STANDARD CERAMIC CAPACITOR

## Taping Specification and Dimension

### ■ Marking : AC

1.Type Designation	AC									
2.Nominal Capacitance	3-digit-system									
3.Capacitance Tolerance	C:±0.25pF,D:±0.5pF,J:±5%,K:±10%,M:±20%									
4.Company Trade mark	UK									
5.Manufactured Date	<p>Abbreviation ex.</p> <div style="text-align: center;"> </div> <p>Last digit of year:          0: 2010          1: 2011          2: 2012          :          :</p> <p>Epoxy resin code:          " _ ": Halogen and Pb free, epoxy resin.          No" _ ": Pb free, epoxy resin.</p> <p>Factory:          C: Guangzhou          Ć: Dongguan</p>									
6.Approved monogram:										
6.1 VDE		6.3 CSA		6.5 NEMKO		6.7 FIMKO		6.9 CQC		
6.2 UL		6.4 SEMKO		6.6 DEMKO		6.8 SEV				
Marking Ex.:	<b>Type</b>	<b>Two sides marking</b>				<b>One side marking</b>				
	<b>0AC</b> <u>X1:400Vac</u> <u>Y2:250Vac</u>									
	<b>Type</b>	<b>One side marking</b>								
	<b>1AC</b> <u>X1:440Vac</u> <u>Y2:300Vac</u>									
<p>* Marking by the stamp or laser.</p> <p>* The marking can be printed on either one side or two side of coating body.</p> <p>* "C11", Marked with code " _ " stand for Halogen and Pb free;No marked with " _ " stand for Pb free.</p>										

# RADIAL LEADED MULTILAYER CERAMIC CAPACITOR

## SAP Part Number Explanation

To order, please also specify Part No. as the following example for SAP system :

RD21	B	102	K	500	B	5	C	07	B
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

### ① Product Type

Product Type	
RD21	RD20

### ② Dielectric Code

Code	T.C.	OP Temperature	Cap. Change ( $\Delta^{\circ}\text{C}$ )
N	NPO	-55~+125 $^{\circ}\text{C}$	0 $\pm$ 30 (ppm/ $^{\circ}\text{C}$ )
B	X7R	-55~+125 $^{\circ}\text{C}$	$\pm$ 15%
F	Y5V	-25~+85 $^{\circ}\text{C}$	+30% ~ -80%

### ③ Capacitance Code

Code	Capacitance	Code	Capacitance	Code	Capacitance	Code	Capacitance
010	1 pF	100	10 pF	102	1000 pF	103	10000 pF
1R5	1.5 pF	101	100 pF	472	4700 pF	104	100000 pF

### Tolerance Code

Code	Tolerance	Code	Tolerance	Code	Tolerance	Code	Tolerance
J	$\pm$ 5%	K	$\pm$ 10%	M	$\pm$ 20%	Z	+80% / -20%

### ⑤ Rated Voltage

Code	Voltage	Code	Voltage	Code	Voltage	Code	Voltage	Code	Voltage
100	10V	250	25V	101	100V	251	250V	631	630V
160	16V	500	50V	201	200V	501	500V	102	1000V

### ⑥ Packaging Code

Code	Packing
A	Ammo
B	Bulk

### ⑦ Chip Size

Code	Chip Size
5	0805
6	1206
0	1210

### ⑧ Termination

Code	Termination	Code	Termination	Code	Termination	Code	Termination
A	Ag/Ni/Sn Halogen free	L	Ag/Ni/Sn	H	Cu/Ni/Sn Halogen free	C	Cu/Ni/Sn

### ⑨ -1 Lead Length for Bulk

Code	Length
07	7.0 mm
3E	3.5 mm
05	5.0 mm

### ⑨-2 Packing for Taping

Code	Packing
AN	Ammo

### ⑩ Length Tolerance

Code	Length Tol.	Code	Length Tol.
A	$\pm$ 0.5 mm	D	Taping.
B	$\pm$ 1.0 mm		

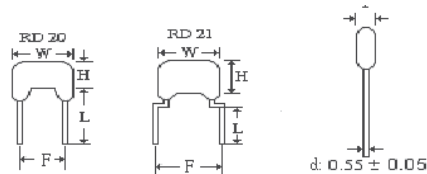
# RADIAL LEADED MULTILAYER CERAMIC CAPACITOR

## Features and Specification

### Features:

1. MLC Radial Lead Capacitor (RD) has wide application in computer, data processing, telecommunication, industrial control and instrumentation equipment
2. The radial lead MLC is built with superior moisture, and shock resistant epoxy coating material, can be supplied in both, bulk or taping form for automatic insertion
3. RoHS compliance
4. Halogen free products are available

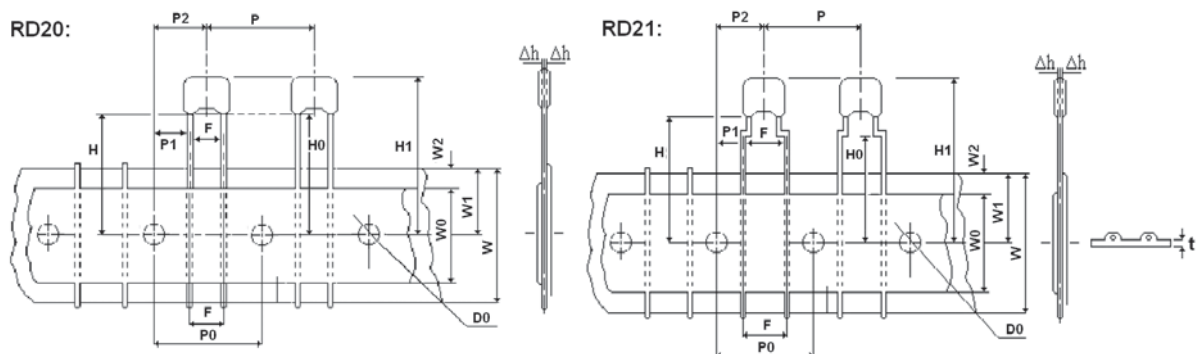
### Lead configuration and dimension:



(Unit: mm)

Size	Width (W) Max.	Height (H)Max.	Thickness (T) Max.	Length (L)	Lead spacing for Taping (F)	Lead spacing for Bulk (F)	Lead diameter (d)	
RD20	0805	5.5	5.5	4.0	Refer to the item ①-1 SAP Part Number	2.5±1.0	0.55±0.05	
	1206	6.5	5.5	4.0		2.54±1.0		
RD21	0805	5.5	5.5	4.0		5.0±1.0		5.08±1.0
	1206	6.5	5.5	4.0		5.08±1.0		

### Taping Specification:



ITEM	SYMBOL	DIMENSIONS (mm)	REMARKS
Pitch of Components	P	12.7 ± 1.0	
Feed hole pitch	P0	12.7 ± 0.3	Cumulative pitch error : ± 1.0mm / 20 pitches
Feed hole center to lead	P1	5.1 ± 0.7(for RD20) 3.85 ± 0.7(for RD21)	
Feed hole center to component center	P2	6.35 ± 1.3	
Lead diameter	d	0.55 ± 0.05	
Lead to lead spacing	F	2.5 ± 0.8 (for RD20) 5.0 ± 0.8 (for RD21)	To lead top within tolerance
Component alignment, F - R	Δh	2.0 max	The alignment from the center of the lead is ± 1.0mm
Tape width	W	18.0 -1.0 / -0.5	
Adhesive tape width	W0	11.0 min	
Hole position	W1	9.0 ± 0.5	
Adhesive tape position	W2	3.0 max	
Height of bottom body from tape center	H	18.0 + 2.0 / -0	H + 12.5 mm ≤ H1
Lead-wire clinch height	H0	18.0 ± 0.5 (for RD20) 16.0 ± 0.5 (for RD21)	6.5 ≤ H0 - W1
Component height	H1	32.25 max	
Feed hole diameter	D0	4.0 ± 0.3	
Total tape thickness	T	0.7 ± 0.2	



# RADIAL LEADED MULTILAYER CERAMIC CAPACITOR

## Capacitance Range

### Capacitance Range

Dielectric		NPO												
Size		0805						1206						
Voltage (VDC)		50	100	200	250	500	630	50	100	200	250	500	630	1000
Capacitance	1.0pF (010)	B	B	B	B	B	B							
	1.2pF (1R2)	B	B	B	B	B	B							
	1.5pF (1R5)	B	B	B	B	B	B							
	1.8pF (1R8)	B	B	B	B	B	B							
	2.2pF (2R2)	B	B	B	B	B	B							
	2.7pF (2R7)	B	B	B	B	B	B							
	3.3pF (3R3)	B	B	B	B	B	B							
	3.9pF (3R9)	B	B	B	B	B	B							
	4.7pF (4R7)	B	B	B	B	B	B							
	5.6pF (5R6)	B	B	B	B	B	B							
	6.8pF (6R8)	B	B	B	B	B	B							
	8.2pF (8R2)	B	B	B	B	B	B							
	10pF (100)	B	B	B	B	B	B							
	12pF (120)	B	B	B	B	B	B							
	15pF (150)	B	B	B	B	B	B							
	18pF (180)	B	B	B	B	B	B							
	22pF (220)	B	B	B	B	B	B							
	27pF (270)	B	B	B	B	B	B							
	33pF (330)	B	B	B	B	B	B							
	39pF (390)	B	B	B	B	B	B							
	47pF (470)	B	B	B	B	B	B							
	56pF (560)	B	B	B	B	B	B							
	68pF (680)	B	B	B	B	B	B							
	82pF (820)	B	B	B	B	B	B							
	100pF (101)	B	B	B	B	B	B							
	120pF (121)	B	B	B	B	B	B							
	150pF (151)	B	B	B	B	B	B							
	180pF (181)	B	B	B	B	B	B							
	220pF (221)	B	B	B	B	B	B							
	270pF (271)	B	B	B	B	B	B							
	330pF (331)	B	B	B	B	B	B							
	390pF (391)	B	B	B	B	B	B							
	470pF (471)	B	B	B	B	B	B							
560pF (561)	B	B	B	B	B	B								
680pF (681)	B	B	B	B	B	B								
820pF (821)	B	B	B	B	B	B								
1000pF (102)	B	B	B											
1200pF (122)	B	B	B											
1500pF (152)	B	B	B											
1800pF (182)	B	B	B											
2200pF (222)	B	B	B											
2700pF (272)	B	B	B											
3300pF (332)	B	B	B											
3900pF (392)	B	B	B											
4700pF (472)	B	B	B											
5600pF (562)	B	B	B											
6800pF (682)	B	B	B											
8200pF (822)	B	B	B											
0.01uF (103)	B													

Dielectric		X7R												
Size		0805						1206						
Voltage (VDC)		50	100	200	250	500	630	50	100	200	250	500	630	1000
Capacitance	100pF (101)	B	B	B	B	B	B							
	120pF (121)	B	B	B	B	B	B							
	150pF (151)	B	B	B	B	B	B							
	180pF (181)	B	B	B	B	B	B							
	220pF (221)	B	B	B	B	B	B							
	270pF (271)	B	B	B	B	B	B							
	330pF (331)	B	B	B	B	B	B							
	390pF (391)	B	B	B	B	B	B							
	470pF (471)	B	B	B	B	B	B							
	560pF (561)	B	B	B	B	B	B							
	680pF (681)	B	B	B	B	B	B							
	820pF (821)	B	B	B	B	B	B							
	1000pF (102)	B	B	B	B	B	B							
	1200pF (122)	B	B	B	B	B	B							
	1500pF (152)	B	B	B	B	B	B							
	1800pF (182)	B	B	B	B	B	B							
	2200pF (222)	B	B	B	B	B	B							
	2700pF (272)	B	B	B	B	B	B							
	3300pF (332)	B	B	B	B	B	B							
	3900pF (392)	B	B	B	B	B	B							
	4700pF (472)	B	B	B	B	B	B							
	5600pF (562)	B	B	B	B	B	B							
	6800pF (682)	B	B	B	B	B	B							
	8200pF (822)	B	B	B	B	B	B							
	0.01uF (103)	B	B	B	B	B	B							
	0.012uF (123)	B	B	B										
	0.015uF (153)	B	B	B										
	0.018uF (183)	B	B	B										
	0.022uF (223)	B	B	B										
	0.027uF (273)	B	B											
	0.033uF (333)	B	B											
	0.039uF (393)	B	B											
	0.047uF (473)	B	B											
0.056uF (563)	B	B												
0.068uF (683)	B	B												
0.082uF (823)	B	B												
0.1uF (104)	B	B												
0.12uF (124)	B													
0.15uF (154)	B													
0.18uF (184)	B													
0.22uF (224)	B													
0.27uF (274)	B													
0.33uF (334)	B													
0.39uF (394)	B													
0.47uF (474)	B													
0.56uF (564)														
0.68uF (684)														
0.82uF (824)														
1.0uF (105)														

Dielectric		Y5V													
Size		0805						1206							
Voltage (VDC)		10	16	25	50	100	200	250	10	16	25	50	100	200	250
Capacitance	0.01uF (103)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.015uF (153)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.022uF (223)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.033uF (333)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.047uF (473)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.068uF (683)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.1uF (104)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.15uF (154)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.22uF (224)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.33uF (334)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.47uF (474)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.68uF (684)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	1.0uF (105)	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	1.5uF (155)	B	B												
	2.2uF (225)	B	B	B											
	3.3uF (335)	B	B												
4.7uF (475)	B	B	B												
6.8uF (685)	B	B													
10uF (106)	B														
22uF (226)															

The letter in cell indicates the symbol of product terminations. B: (Cu/Ni/Sn)

# CERAMIC CAPACITOR MOQ & PACKING STYLES


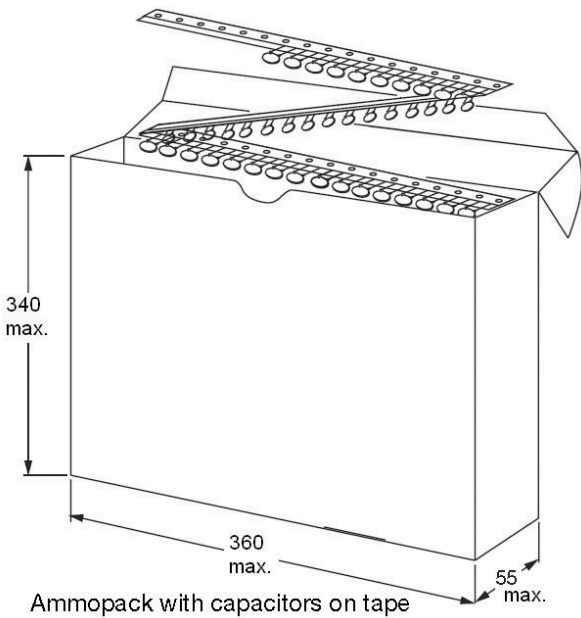
## Disc Capacitor MOQ

Product	MOQ (pcs)		Coating Type
	Bulk (Bag)	Ammo Pack	
Ceramic Disc Capacitor 50V~2KV	1000	2000	Phenolic Resin
	1000	1500	Epoxy Resin

Product	MOQ (pcs)		Coating Type
	Bulk (Bag)	Ammo Pack	
Ceramic Disc Capacitor 50V~2KV	1000	1000	Epoxy Resin
Safety Ceramic Disc Capacitor	1000	1000	Epoxy Resin

Product	MLCC chip size	MOQ (pcs)	
		Bulk (Bag)	Ammo Pack
MLC Radial Lead Capacitor (RD type)	0805	1000	2000
	1206	1000	1500

## Packaging Styles

Bulk	Taping
<p>Polyethylene Bag</p> 	<p>Ammo Pack</p>  <p>Ammopack with capacitors on tape</p>