

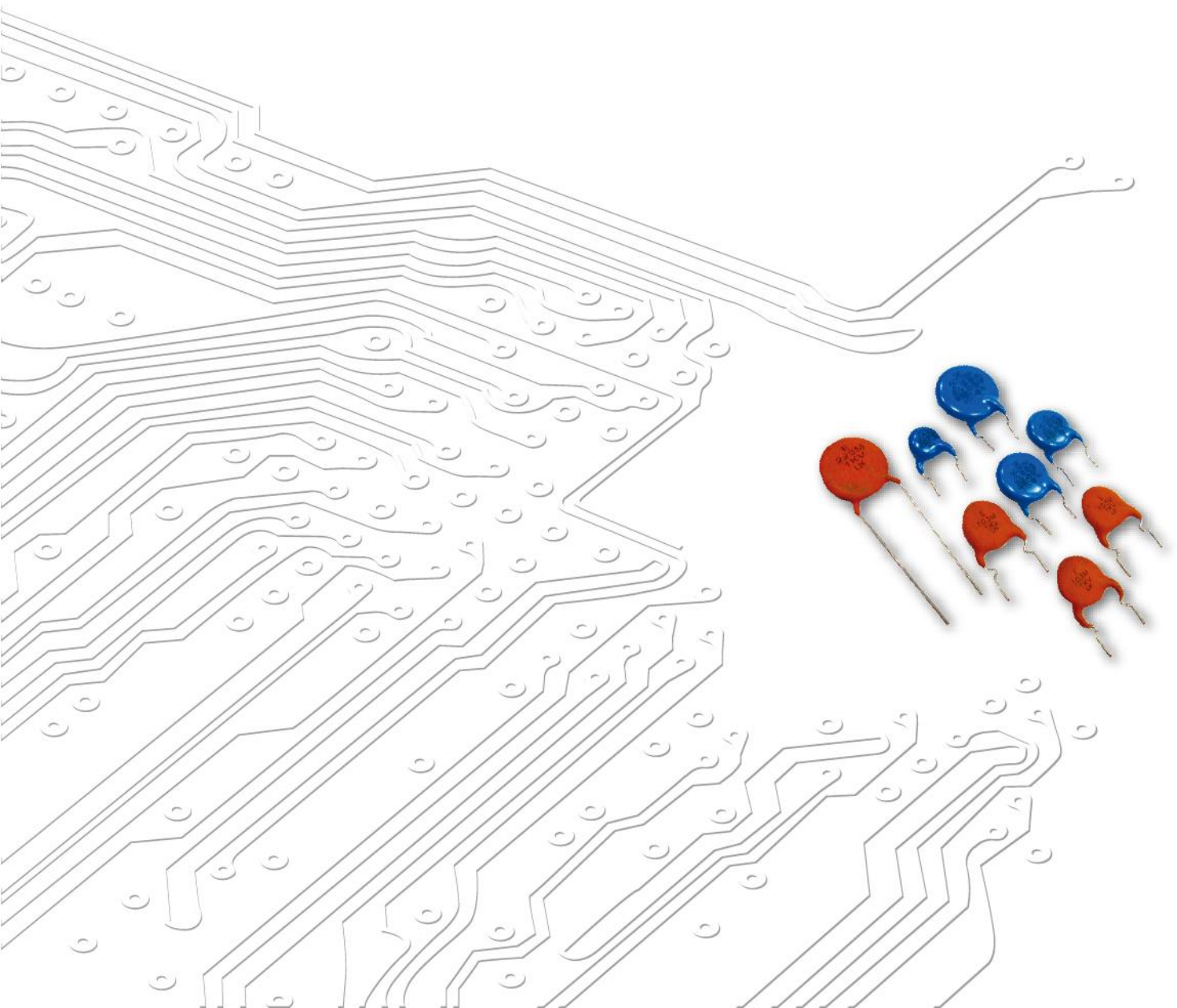
PSA

PASSIVE SYSTEM ALLIANCE
WALSIN TECHNOLOGY CORPORATION

Disc Capacitors

www.passivecomponent.com

Product catalog



Product Portfolio



Multilayer Ceramic Capacitors



Chip Resistors



Disc Capacitors



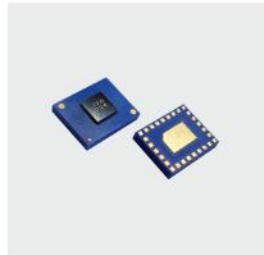
Inductors



RF Filters



Antenna



Antenna Switch & Module



MOV Varistors

IEC-63 Nominal Resistance / Capacitance

E1	100																							
E3	100			220						470														
E6	100	150	220	330	470	680																		
E12	100	120	150	180	220	270	330	390	470	560	680	820												
E24	100	110	120	130	150	160	180	200	220	240	270	300	330	360	390	430	470	510	560	620	680	750	820	910
E96	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 products in it 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 approve our product specifications or transact the approval sheet for product specifications before ordering.

CERAMIC CAPACITOR PART NUMBER EXPLANATION

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

YP	500	102	K	040	B	20	C	7	H
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)	
SL	SL (-1000 ~ +350) (+20°C to +85°C)	
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 ~ -30%) (-25°C to +125°C)
LB	≤ 0.5%	Y5P(±10%)

② Voltage Code

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

③ Capacitance Code

CODE	Capacitance
080	8 pF
100	10 pF
101	100 pF
102	1000 pF
472	4700 pF
103	0.01uF
104	0.1uF

④ Tolerance Code

CODE	Tolerance
D	± 0.5pF
J	± 5%
K	± 10%
M	± 20%
Z	-20 ~ +80 %

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	Ammo Box & Pitch 15.0 mm
AN	Ammo Box & Pitch 12.7 mm
AM	Ammo 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
A	Phenolic resin-Halogen free and Pb free
H	Epoxy resin-Halogen free and Pb free

CERAMIC DISC CAPACITOR:

CLASS I 50V, 100V, 500V, 1KV, 2KV, 3KV, 6KV TEMPERATURE COMPENSATION TYPE

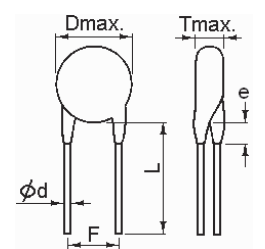
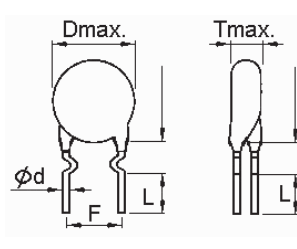
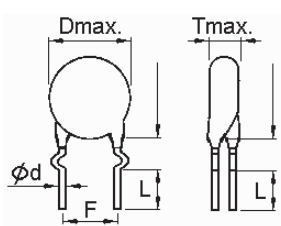
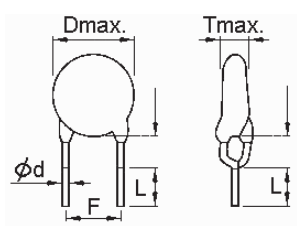
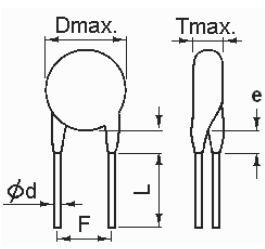
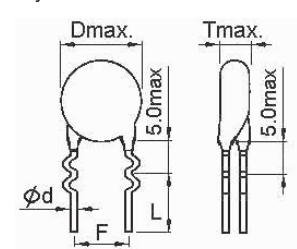
Features

- Capacitance has linear temperature coefficient
- Capacitance high stability
- Epoxy Coating for 1KV, 2KV, 3KV, 6KV parts (equivalent to UL94V-0 standards)
- RoHS Compliance
- Halogen free products are available
- Low loss at wide range of frequency

General specification

Capacitance Range	8pF to 820pF (See page 3 to page 5)
Capacitance Tolerance	±0.5pF(for 8~10pF), ±5%(for 10~820pF),
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 



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

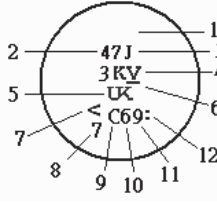
Photo:



T.C	SL (CLASS I, Temperature:+20°C~+85°C, T.C.C.: -1000 ~ +350ppm/°C)																		
	Rate voltage	50V(SL500);100V(SL101)						500V(SL501)					1KV(SL102)				2KV(SL202)		
Dφ(Code)	040	050	060	070	080	090	100	050	060	070	080	100	050	060	070	080	060	070	080
D max. (mm)	5.0	6.0	7.0	8.0	9.0	10.0	11.0	6.0	7.0	8.0	9.0	11.0	6.0	7.0	8.0	9.0	7.5	8.5	9.5
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
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				
200			201							201						201			
220			221							221						221			
240			241								241								
270				271							271								
300				301							301								
330				331							331								
360				361								361							
390				391								391							
470					471														
500						501													
510						511													
560						561													
680							681												
750							751												
820							821												
φd (mm)	0.55±0.05																		
Packing	TAPING or BULK						TAPING or BULK					TAPING or BULK				TAPING or BULK			
Coating	Phenolic Resin											Phenolic or Epoxy Resin				Epoxy Resin			

Marking	1	2	3		4	5	6
	Temperature characteristic	Nominal capacitance	Rated voltage		Capacitance tolerance	Manufacturer's identification	Halogen and Pb free
	SL : No marking.	Identified by 3-figure code. Ex. 8pF→"8" 100 pF→"101"	50V/100V	Marked as underline	D:±0.5pF J:±5%	Shall be marked as "LK", but when Dφ≤060 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"			

Manufacturing product range Cap. Value v.s. Rate voltage, Product diameter & Type				Photo: SL302		SL602	
							
T.C.							
SL (Temperature:+20°C~+85°C, T.C.C.: -1000 ~ +350 ppm/°C)							
Rate voltage	3KV(SL302)			6KV(SL602)			
Dφ(Code)	060	070	080	060	070	080	
D max. (mm)	7.5	8.5	9.5	7.5	8.5	9.5	
T max. (mm)	5.0	5.0	5.0	5.0	5.0	5.0	
10	100			100			
12	120			120			
15	150			150			
18	180			180			
20	200			200			
22	220			220			
24	240						
27	270			270			
30	300			300			
33	330			330			
36	360						
39	390			390			
47		470			470		
51		510			510		
56		560			560		
62		620					
68		680					680
75			750				
82			820				820
100			101				101
φd (mm)	0.55±0.05						
Packing	TAPING or BULK						
Coating	Epoxy Resin						

	1	2	3	4	5	6
	Temperature characteristic	Nominal capacitance	Capacitance tolerance	Rated voltage	Manufacturer's identification	Halogen and Pb free
	SL : No marking	1. Cap.≥100pF Ex. 120pF →"121" 2. Cap<100pF, Ex. 22pF→"22"	D: ±0.5pF J: ±5%	3000V : Be marked "3kV" 6000V : Be marked "6kV"	Shall be marked as "UK", but when Dφ≠060 shall be omitted.	When the epoxy resin is Halogen and Pb free, there is a "-" marking.
	Definition of date code marking:					
7	8	9	10	11	12	
Supplier of Epoxy	No. of test equipment	Factory of manufacture	Year of manufacture	Month of manufacture	Week of manufacture by month	
<: K-company	1~9: No.1~No.9, J: No.10, K: No.11, L: No.12	C: GZ Plant D: DL Plant	5:2015, 6:2016, 7:2017,	1~9:January~September, O: October, N: November, D: December	week 1: - week 2: • week 3: : week 4: ' week 5: ;	

CERAMIC DISC CAPACITOR
CLASS II 50V, 100V, 500V, 1KV, 2KV, 3KV Hi-K TYPE

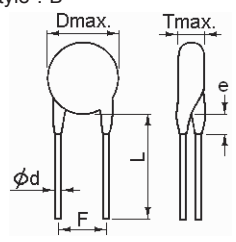
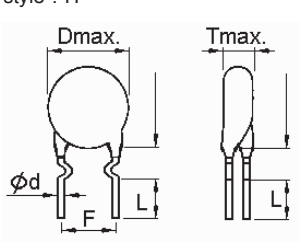
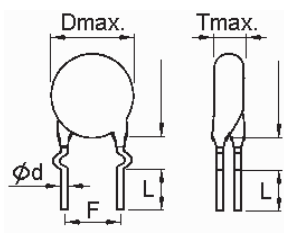
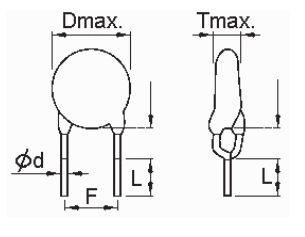
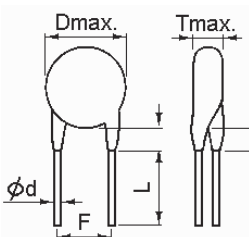
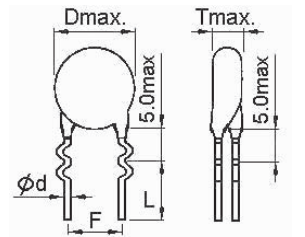
Features

- Capacitance has non-linear temperature coefficient.
- Large capacitance in small size.
- Epoxy Coating for 1KV, 2KV and 3KV parts (equivalent to UL94V-0 standards).
- RoHS Compliance.
- Halogen free products are available.
- Wide range of general purposes applications.

General specification

Capacitance Range	100pF to 22000pF (See page 6 to page 9)
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 

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%)																														
	50V(YP500) & 100V(YP101)							500V(YP501)							1KV(YP102)						2KV(YP202)										
Rate voltage	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			
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	4.0	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							821							
1000	102							102									102							102							
1200		122							122									122							122						
1500		152							152									152							152						
1800		182								182									182						182						
2000		202								202									202						202						
2200		222								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)	0.55±0.05																														
Packing	TAPING or BULK							BULK			TAPING or BULK						BULK			TAPING or BULK			BULK			TAPING or BULK			BULK		
Coating	Phenolic Resin													Phenolic or Epoxy Resin						Epoxy Resin											

Marking	1	2	3		4	5	6
	Temperature characteristic	Nominal capacitance	Rated voltage		Capacitance tolerance	Manufacturer's identification	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 when Dφ ≤060 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"			

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%)																	
	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)	0.55±0.05																	
Packing	TAPING or BULK																	BULK
Coating	Phenolic Resin						Phenolic or Epoxy Resin						Epoxy Resin					

Marking	1	2	3		4	5	6
	Temperature characteristic	Nominal capacitance	Rated voltage		Capacitance tolerance	Manufacturer's identification	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 "UK", but when Dφ ≤ 060 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"			

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

Photo:



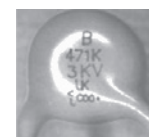
T.C.	Z5V (CLASS II, Temperature: +10°C~+85°C, T.C.C.: +22~-82%)									
Rate voltage	50V(ZV500) & 100V(ZV101)				500V(ZV501)	1KV(ZV102)			2KV(ZV202)	
Dφ (Code)	050	060	070	080	080	060	080	100	120	
D max. (mm)	5.5	6.5	7.5	8.5	9.0	7.0	9.0	11.0	13.5	
T max. (mm)	3.5	3.5	3.5	3.5	4.0	4.5	4.5	4.5	4.5	
1000	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)	0.55±0.05									
Packing	TAPING or BULK								BULK	
Coating	Phenolic Resin					Phenolic or Epoxy 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)	0.55±0.05												
Packing	TAPING or BULK										BULK		
Coating	Phenolic Resin								Phenolic or Epoxy Resin		Epoxy Resin		

Marking	1	2	3		4	5	6
	Temperature characteristic	Nominal capacitance	Rated voltage		Capacitance tolerance	Manufacturer's identification	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	Marked as underline	M: ±20% Z: -20~+80%	Shall be marked as "UK", but when Dφ ≤ 060 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"			
			2000V	Marked "2kV"			

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

Photo: **Y5P** **Z5U**



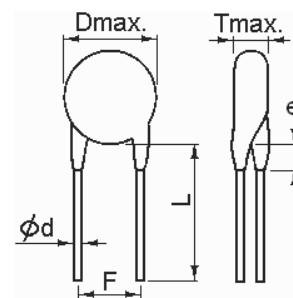
T.C.	Y5P (CLASS II, Temperature:-25°C~+85°C, T.C.C.:±10%)					Z5U (CLASS II, Temperature: +10°C~+85°C, T.C.C.: +22~56%)						
Rate voltage	3KV(YP302)					3KV(ZU302)						
Dφ (Code)	060	070	090	110	130	060	080	100	110	120	140	170
D max. (mm)	8.0	9.0	11.0	13.0	15.0	8.0	10.0	12.0	13.0	14.0	16.0	19.0
T max. (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	
φd (mm)	0.55±0.05											
Packing	TAPING or BULK											
Coating	Epoxy Resin											

	1	2	3	4	5	6
	Temperature characteristic	Nominal capacitance	Capacitance tolerance	Rated voltage	Manufacturer's identification	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 Dφ≤060 shall be omitte	When the epoxy resin is Halogn and Pb free, there is a "-"marking.
Definition of date code marking:						
	7	8	9	10	11	12
	Supplier of Epoxy	No. of test equipment	Factory of manufacture	Year of manufacture	Month of manufacture	Week of manufacture by month
	< : K-company	1~9: No.1~No.9, J: No.10, K: No.11, L: No.12	C: GZ Plant D: DL Plant	5:2015, 6:2016, 7:2017,	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 lost at wide range of frequency
- 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
φd (mm)	0.55±0.05		
Packing	TAPING or BULK		
Coating	Phenolic Resin		

Marking	1	2	3		4	5
	Temperature characteristic	Nominal capacitance	Rated voltage		Capacitance tolerance	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 LR TYPE

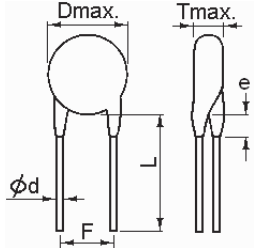
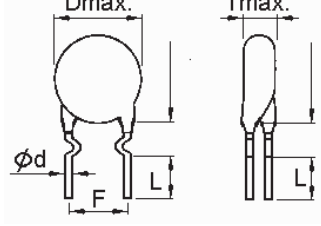
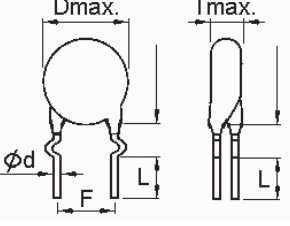
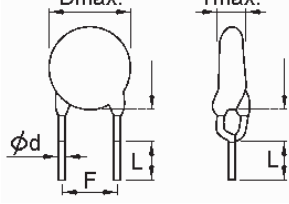
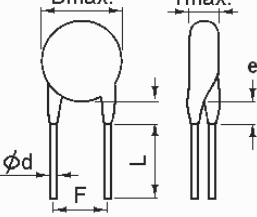
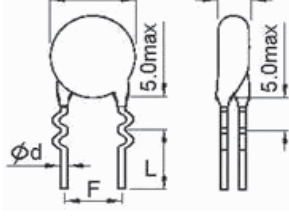
Features

- 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 (See page 12 to page 13)
Capacitance Tolerance	±10%,
Operating Temperature Range	-25°C~ +125°C
Rated Voltage	1K, 2K, 3K VDC
Dissipation Factor (tan δ)	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 

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	820	±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
LR202681K080□□□□□	2000VDC	680	±10%	9.5	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	2	3		4	5	6
	Temperature characteristic	Nominal capacitance	Rated voltage		Capacitance tolerance	Manufacturer's identification	Halogen and Pb free
	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 when Dφ ≤ 060 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"			

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

SAFETY STANDARD CERAMIC CAPACITOR SAP Part Number Explanation

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

YV	0AC	472	M	10	0	L	20	C	7	H
1	2	3	4	5	6	7	8	9	10	11

1. Temperature characteristic (identified code):

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

2. TYPE (identified by 3-figure code):

0AC=AC(X1-400V~/Y2-250V~); 1AC=AC(X1-440V~/Y2-300V~)(only approval for VDE//ENEC/UL/CSA)
 0AH=AH(X1-400V~/Y1-250V~); 1AH=AH(X1-400V~/Y1-400V~)
 0AS=AS(X1-760V~/Y1-500V~) (Only approval for VDE//ENEC/UL/CUL)

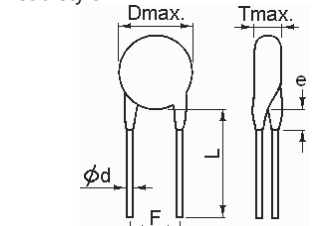
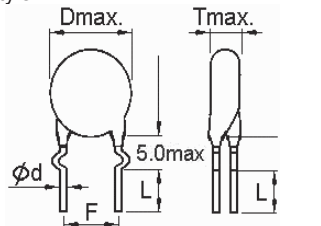
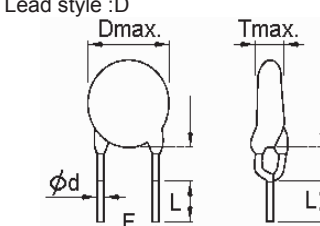
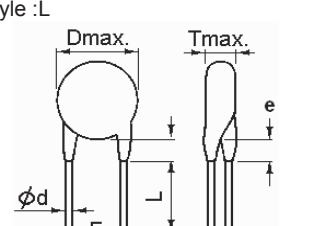
3. Capacitance (identified by 3-figure code)

4. Capacitance tolerance (identified by code)

5. Nominal body diameter dimension (identified by 2-figure code)

6. Internal control code:0—Normal, other code—Special control

7. 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 

8. Packing mode and lead length (identified by 2-figure code)

Taping Code	Description
AM	Box and Pitch : 25.4 mm (10.0mm)
AF	Box and Pitch : 15.0 mm (Pitch=7.5mm)

Bulk Code	Description
3E	lead length L : 3.5mm
04	lead length L : 4.0mm
4E	lead length L : 4.5mm
20	lead length L : 20mm

9. Length tolerance

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

10. Pitch

Code	Description
7	7.5±1.0 mm
0	10±1.0 mm

11. Epoxy Resin Code

Code	Description
H	Halogen and Pb free, epoxy resin (Ag electrode)
T	Halogen and Pb free, epoxy resin (Cu electrode)

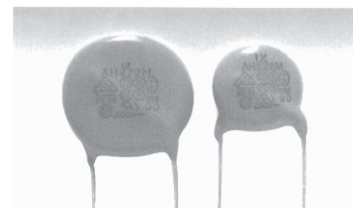
SAFETY STANDARD CERAMIC CAPACITOR:
AH and AS Type-Class X1/Y1; AC Type-Class X1/Y2

Introduction

Ideal for use as X/Y capacitors for AC line filters and primary-secondary coupling on switching power Supplies and AC adapters applications. Having internationally recognized safety certifications, these capacitors are well-suited for applications that require keeping potentially disruptive or damaging line transients and EMI out of susceptible equipment. They are also an ideal solution in situations where there is a need to suppress line disturbances at the power.

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



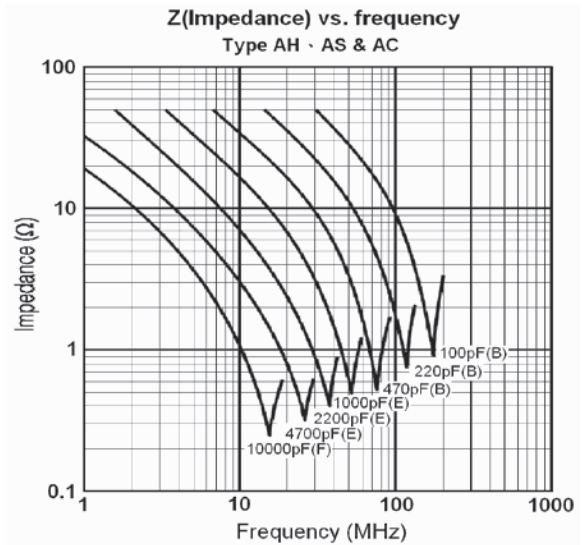
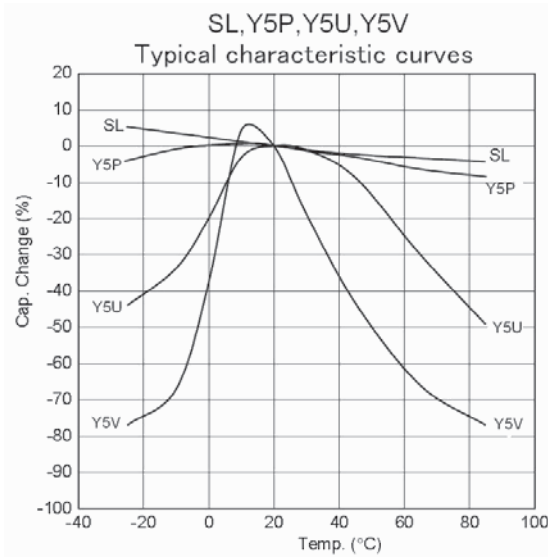
Approval standards

Agencies	UL	CSA	CQC	KTL	VDE, ENEC, SEMKO, NEMKO, DEMKO, FIMKO, SEV, KEMA
Standard No.	UL60384-14: 2014	E60384-14:14	IEC60384-14: 2005	K60384-14	IEC384-14 4 th Edition
Rated Voltage	0AC = AC(X1:400V~/Y2:250V~) 1AC = AC(X1:440V~/Y2:300V~) 0AH = AH(X1:400V~/Y1:250V~) 1AH = AH(X1:400V~/Y1:400V~) 0AS = AS(X1:760V~/Y1:500V~)				
Capacitance Value(pF)	AH: 2 ~ 4700; AC: 2 ~ 10000; AS: 100~4700				

General specification

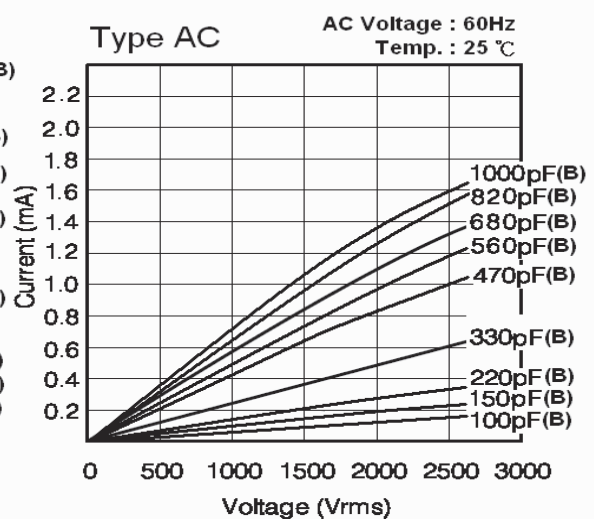
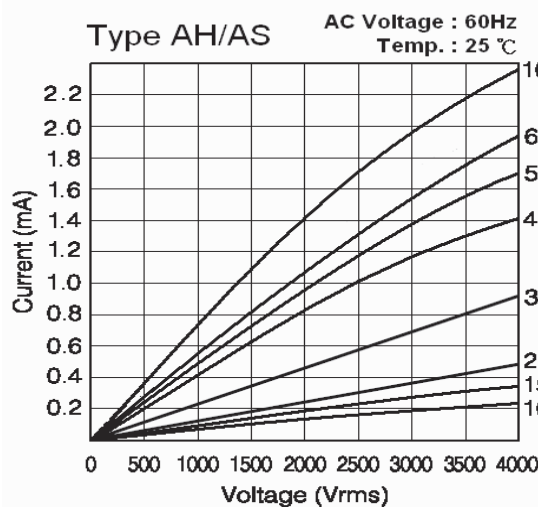
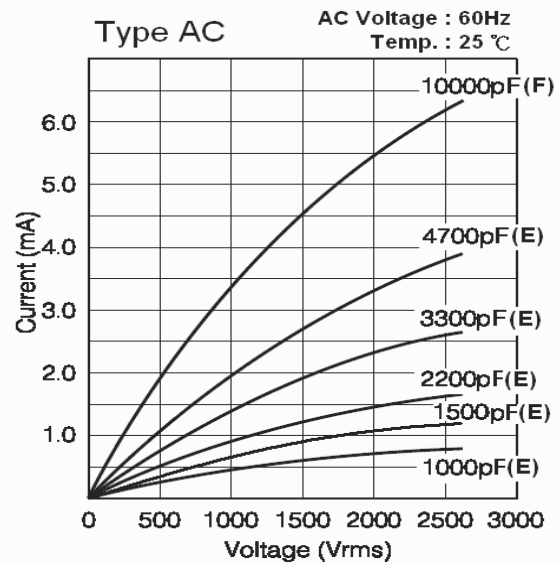
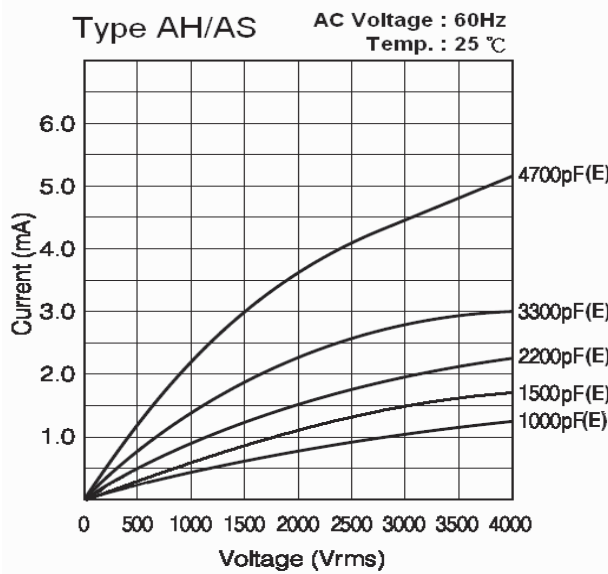
Capacitance Range	AH: 10pF to 4700pF; AC: 10pF to 10000pF; AS: 100pF to 4700pF
Capacitance Tolerance	±0.25pF, ±0. 5pF, ±5%, ±10%, ±20%
Operating Temperature Range	-40°C~ +125°C
Temperature Coefficient (ΔC Max)	-1000~+350ppm/°C(SL), ±10% (Y5P), +30 ~80% (Y5V), +20~55% (Y5U)
Voltage Resistance	AH Type: X1:400Vac / Y1:400Vac or 250Vac ; AC Type: X1:400Vac or 440Vac / Y2:250VAC or 300Vac AS Type: X1:760Vac / Y1:500Vac
Dissipation Factor(tanδ) or Q	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,AS TYPE) (For Lead Pitch=10.0mm & 12.5mm)

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



Note: Above data are just for reference not assured ones.

Leakage Current Characteristics (AH and AS: ~4000V / AC: ~2600V):



Note: Above data are just for reference not assured ones

AH Type-Class X1/Y1 (Normal for standard parts):


Part Number	Temp. Char.	Cap.(pF)	Tol.	Dimension (mm)			
				D Max.	T Max.	F±1	Wire Dia. (φd)
YP *AH101K060	Y5P	100	±10%	7.0	5.0	10.0	0.55±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 *AH681M060	Y5U	680	±20%	7.0	5.0	10.0	0.55±0.05
YU *AH102M070		1000		8.0			
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	0.55±0.05
YV *AH152M070		1500		8.0			
YV *AH222M080		2200		9.0			
YV *AH332M100		3300		11.0			
YV *AH472M110		4700		12.0			
SL *AH ***J060	SL	10,12,15,18,20,22,24,27,30,33,36,39	±5%	7.0	5.0	10.0	0.55±0.05
SL *AH ***J070		47,50,51,56,62		8.0			
SL *AH ***J080		68,75		9.0			
SL *AH***J090		82,100		10.0			

AS Type-Class X1/Y1 (Normal for standard parts):

SAP P/N	T.C.	Capacitance(pF)	Tol.	Dimension (unit:mm)			
				D (max.)	T (max.)	F	Φd
YP*AS101K070*	Y5P	100 pF	±10%	8.0	7.0	10.0	0.55+/-0.05
YP*AS151K070*		150 pF		8.0			
YP*AS221K070*		220 pF		8.0			
YP*AS331K070*		330 pF		8.0			
YP*AS471K080*		470 pF		9.0			
YP*AS561K090*		560 pF		10.0			
YP*AS681K090*		680 pF		10.0			
YP*AS102K110*		1000 pF		12.0			
YU*AS102M080*	Y5U	1000 pF	±20%	9.0	7.0	10.0	0.55+/-0.05
YU*AS152M090*		1500 pF		10.0			
YU*AS222M120*		2200 pF		13.0			
YU*AS332M120*		3300 pF		13.0			
YU*AS392M130*		3900 pF		14.0			
YU*AS472M140*		4700 pF		15.0			

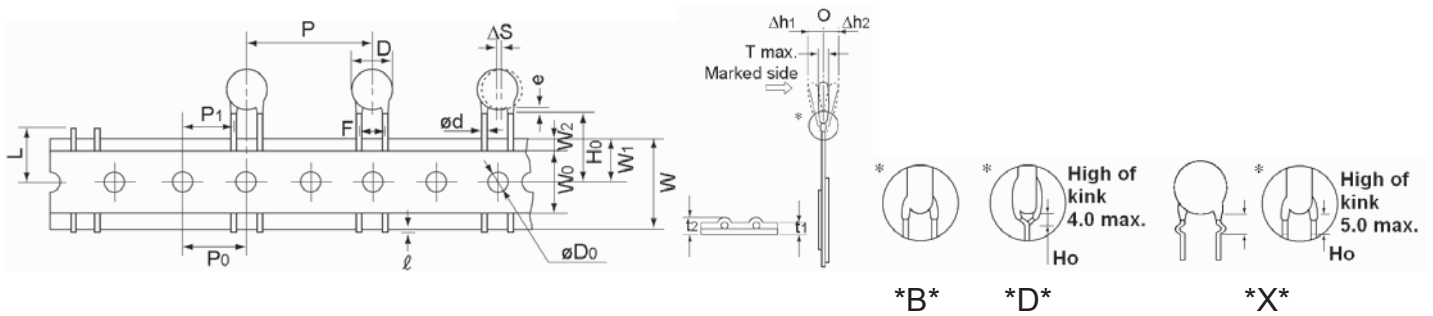
AC Type-Class X1/Y2:

Part Number	Temp. Char.	Cap.(pF)	Tol.	Dimension (mm)			
				D max.	T max.	F±1	Wire Dia. (φd)
YP *AC101K060	Y5P	100	±10%	7.0	5.0	7.5, 10.0	0.55±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	0.55±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	
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	0.55±0.05
SL *AC *** J070		56,62,68,75		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.

Taping Format: AH and AS X1/Y1

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



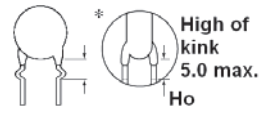
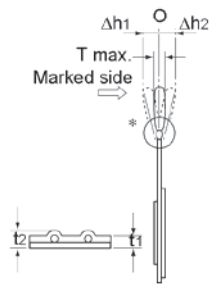
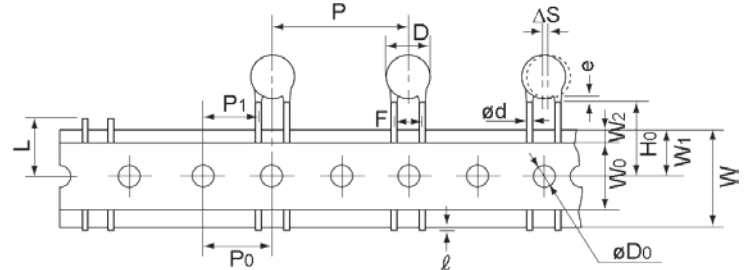
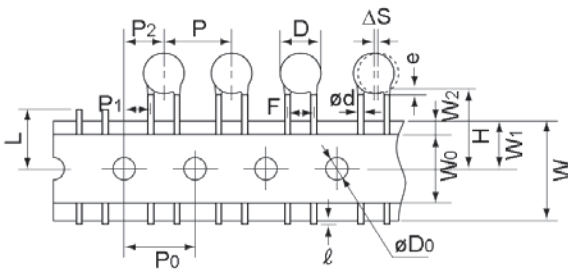
POE Part Number		*BAMD0 / *DAMD0 / *XAMD0
Item	Symbol	Dimensions(mm)
Pitch of component	P	25.4 ± 2
Pitch of sprocket	P0	12.7 ± 0.3
Lead spacing	F	10.0 ± 1.0
Length from hole center to component center	P2	12.7 ± 1.5
Length from hole center to lead	P1	7.7 ± 1.5
Body diameter	D	Refer to page 21
Deviation along tape, life 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	ød	0.55±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	8.0 min
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 20

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



B

D

X

POE 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 22			
Deviation along tape, life 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	0.55±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	8.0 min			
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 21			



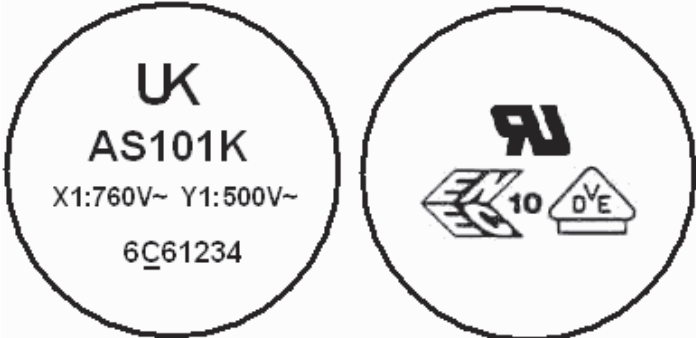

Marking: AH

1. Type Designation	AH		
2. Nominal Capacitance	3-digit-system		
3. Capacitance Tolerance	D:±0.5pF, J:±5%, K:±10%, M:±20%		
4. Company Trade mark	UK		
5. Products ID	<p>Abbreviation ex.:</p> <p>Manufacture year: ← 6 C 6 1234 → Last 4 digits of lot no.</p> <p>5:2015 6:2016 7:2017 ⋮</p> <p>Manufacture month: 1:January 2:February ⋮ 9:September O:October N:November D:December</p> <p>Epoxy resin code: " _ ": Halogen and Pb free epoxy resin (For the last code "H" and "B" of SAP P/N)</p> <p>Factory: C:Pan overseas (Guangzhou)</p>		
6. Approved Monogram:			
(1) VDE approval mark		IEC 60384-14 Class Code : X1 : 400V~ , Y1 : 250V~ or 400V~	
(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	
Two sides (For SAP part number 10-11 digits≤07 products)		One side (For SAP part number 10-11 digits≥"08" products)	
Ex.:	Ex.:		Special marking: YP*AH102K100* 0AH:
<p>0AH:</p> <p>1AH:</p>	<p>0AH:</p> <p>1AH:</p>		<p>1AH:</p>
<p>* Marking by the laser. **"C": Marked with code " _ " stand for Halogen and Pb free for epoxy resin coating.</p>			

Marking: AC

1. Type Designation	AC								
2. Nominal Capacitance	3-digit-system								
3. Capacitance Tolerance	D:±0.5pF, J:±5%, K:±10%, M:±20%								
4. Company Trade mark	UK								
5. Products ID	<p>Abbreviation ex.:</p> <p>Manufacture year: ← 6 C 6 1234 → Last 4 digits of lot no.</p> <p>5:2015 6:2016 7:2017 ⋮</p> <p>Manufacture month: 1:January 2:February ⋮ 9:September O:October N:November D:December</p> <p>Epoxy resin code: " _ ": Halogen and Pb free epoxy resin (For the last code "H" and "B" of SAP P/N)</p> <p>Factory: C:Pan overseas (Guangzhou)</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.:	Type	Two sides marking (For SAP part number 10-11 digits≤07 products)				One side marking (For SAP part number 10-11 digits≥“08” products)			
	0AC <u>X1:400Vac</u> <u>Y2:250Vac</u>								
	1AC <u>X1:440Vac</u> <u>Y2:300Vac</u>								
		<p>*Marking by the laser. **“C” : Marked with code “ _ ” stand for Halogen and Pb free for epoxy resin coating.</p>							

Marking: AS

1. Type Designation	AS	
2. Nominal Capacitance	3-digit-system	
3. Capacitance Tolerance	K:±10%, M:±20%	
4. Company Name Code(Trade mark)	UK	
5. Products ID	<p>Abbreviation ex.:</p> <p>Manufacture year: ← 6 C 6 1234 → Last 4 digits of lot no.</p> <p>5:2015 6:2016 7:2017 ⋮</p> <p>Manufacture month: 1:January 2:February ⋮ 9:September O:October N:November D:December</p> <p>Manufactory: C:Pan overseas (Guangzhou)</p> <p>Epoxy resin code: " _ ": Halogen and Pb free epoxy resin (For the last code "H" and "B" of SAP P/N)</p>	
6. Approved Monogram:		
(1) VDE approval mark		IEC 60384-14 Class code : X1 : 760V~ , Y1 : 500V~
(2) UL approval mark		
Marking sample		
Two sides marking (for SAP part number 10-11 digits ≤"08" products)		One side marking (for SAP part number 10-11 digits ≥"09" products)
		
<p>* Marking by the laser. **"C" : Marked with code " _ " stand for Halogen and Pb free epoxy resin.</p>		

RADIAL LEADED MULTILAYER CERAMIC CAPACITOR PART NUMBER EXPLANATION

To order, please also specify Pan Overseas 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	RD30

② Dielectric Code

Code	T.C.	OP Temperature	Cap. Change (ΔC)
N	NPO	-55~+125°C	0 ± 30 (ppm/°C)
B	X7R	-55~+125°C	± 15%
F	Y5V	-25~+85°C	+30% ~ -80%

③ Capacitance Code

Code	Capacitance	Code	Capacitance	Code	Capacitance	Code	Capacitance
1R0	1 pF	100	10 pF	102	1000 pF	103	10000 pF
1R5	1.5 pF	101	100 pF	472	4700 pF	104	100000 pF

④ Tolerance Code

Code	Tolerance	Code	Tolerance	Code	Tolerance	Code	Tolerance	Code	Tolerance
D	±0.25pF	J	± 5%	K	± 10%	M	± 20%	Z	+80% / -20%

* Remark about tolerance code:

NPO: Cap<10pF: D tolerance / Cap≥10pF: J, K, M, Z, X7R: K · M, Y5V: M · Z

Code	Voltage	Code	Voltage	Code	Voltage	Code	Voltage	Code	Voltage	Code	Voltage
100	10V	250	25V	101	100V	251	250V	631	630V	202	2000V
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

⑧ Termination

Code	Termination	Code	Termination
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	± 0.5 mm	D	Taping.
B	± 1.0 mm		

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.

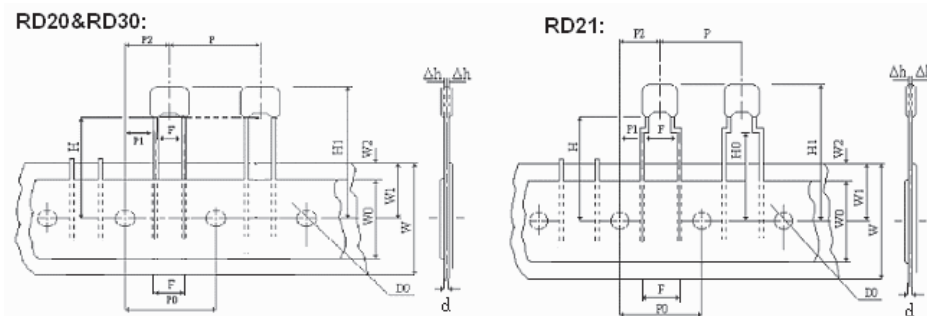
Lead configuration and dimension

(Unit: mm)

Size		Width (W) Max.	Height (H)Max.	Thickness (T) Max.	Length (L)	Lead spacing (F)		Lead diameter (d)
						Taping	Bulk	
RD20	0805	5.0	4.5	6.0	Refer to the item ①-1 SAP Part Number	2.5±1.0	2.54±1.0	0.5±0.05
RD21	0805	5.0	4.5	6.5		5.0±1.0	5.08±1.0	
	1206	6.5	5.0	7.0				
RD30	1210	6.5	5.5	7.5		5.0±1.0	5.08±1.0	
	1808	8.0	6.0	7.5				
	1812	8.0	6.5	8.0				

Lead Configuration	RD20	RD21	RD30

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 & RD30)	
Feed hole center to component center	P2	6.35 ± 1.3	
Lead diameter	φd	0.5 ± 0.05	
Lead to lead spacing	F	2.5 ± 0.8 (for RD20) 5.0 ± 0.8 (for RD21& RD30)	To lead top within tolerance
Component alignment, F - R	Δh	2.0 max	The alignment from the center of the lead is ± 1.0 mm
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/RD30) 16.0 ± 0.5 (for RD21)	6.5 ≤ H0 - W1
Component height	H1	32.25 max	
Feed hole diameter	D0	4.0 ± 0.2	
Total tape thickness	T	0.6 ± 0.3	

NPO Dielectric

Dielectric	NPO																								
	0805			1206							1210							1808				1812			
Size	50	100	200	50	100	200	250	500	630	1000	50	100	200	250	500	630	1000	500	630	1000	2000	500	630	1000	2000
Voltage (VDC)	50	100	200	50	100	200	250	500	630	1000	50	100	200	250	500	630	1000	500	630	1000	2000	500	630	1000	2000
1.0pF (1R0)	B	B	B																						
1.2pF (1R2)	B	B	B	B	B																				
1.5pF (1R5)	B	B	B	B	B	B	B	B	B	B															
1.8pF (1R8)	B	B	B	B	B	B	B	B	B	B								B	B	B	B				
2.2pF (2R2)	B	B	B	B	B	B	B	B	B	B								B	B	B	B				
2.7pF (2R7)	B	B	B	B	B	B	B	B	B	B								B	B	B	B				
3.3pF (3R3)	B	B	B	B	B	B	B	B	B	B								B	B	B	B				
3.9pF (3R9)	B	B	B	B	B	B	B	B	B	B								B	B	B	B				
4.7pF (4R7)	B	B	B	B	B	B	B	B	B	B								B	B	B	B				
5.6pF (5R6)	B	B	B	B	B	B	B	B	B	B								B	B	B	B				
6.8pF (6R8)	B	B	B	B	B	B	B	B	B	B								B	B	B	B				
8.2pF (8R2)	B	B	B	B	B	B	B	B	B	B								B	B	B	B				
10pF (100)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
12pF (120)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
15pF (150)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
18pF (180)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
22pF (220)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
27pF (270)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
33pF (330)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
39pF (390)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
47pF (470)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
56pF (560)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
68pF (680)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
82pF (820)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
100pF (101)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
120pF (121)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
150pF (151)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
180pF (181)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
220pF (221)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
270pF (271)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
330pF (331)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
390pF (391)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	
470pF (471)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	
560pF (561)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	
680pF (681)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	
820pF (821)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	
1000pF (102)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	
1200pF (122)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	
1500pF (152)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B		
1800pF (182)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B			
2200pF (222)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B			
2700pF (272)	B	B		B	B	B	B				B	B	B	B	B	B	B				B	B			
3300pF (332)	B	B		B	B	B	B				B	B	B	B	B	B	B				B	B			
3900pF (392)	B	B		B	B	B	B				B	B	B	B	B	B	B								
4700pF (472)	B	B		B	B	B	B				B	B	B	B	B	B	B								
5600pF (562)	B	B		B	B						B	B	B	B	B	B	B								
6800pF (682)	B	B		B	B						B	B	B	B	B	B	B								
8200pF (822)	B			B	B						B	B	B	B	B	B	B								
0.010uF (103)	B			B	B						B	B	B	B											
0.012uF (123)	B			B	B						B	B													
0.015uF (153)				B	B						B	B													
0.018uF (183)	B			B	B																				
0.022uF (223)	B			B	B																				
0.027uF (273)				B																					
0.033uF (333)				B																					
0.039uF (393)				B																					
0.047uF (473)				B																					
0.056uF (563)				B																					
0.068uF (683)				B																					
0.082uF (823)				B																					
0.1uF (104)				B																					

- The letter in cell is expressed the symbol of product terminations. B: (Cu/Ni/Sn)
- RD30 type can use Mlcc size 1808 and 1812, RD21 type can use Mlcc size 0805 and 1206, but RD20 type can only use Mlcc size 0805.

X7R Dielectric

Dielectric		X7R																												
Size		0805			1206						1210						1808					1812								
Voltage (VDC)		50	100	200	50	100	200	250	500	630	1000	50	100	200	250	500	630	1000	500	630	1000	2000	3000	500	630	1000	2000	3000		
Capacitance	100pF (101)	B	B	B																										
	120pF (121)	B	B	B																										
	150pF (151)	B	B	B	B	B	B	B	B	B	B									B	B	B	B	B						
	180pF (181)	B	B	B	B	B	B	B	B	B	B									B	B	B	B	B						
	220pF (221)	B	B	B	B	B	B	B	B	B	B									B	B	B	B	B						
	270pF (271)	B	B	B	B	B	B	B	B	B	B									B	B	B	B	B				B	B	
	330pF (331)	B	B	B	B	B	B	B	B	B	B									B	B	B	B	B				B	B	
	390pF (391)	B	B	B	B	B	B	B	B	B	B									B	B	B	B	B				B	B	
	470pF (471)	B	B	B	B	B	B	B	B	B	B									B	B	B	B	B				B	B	
	560pF (561)	B	B	B	B	B	B	B	B	B	B									B	B	B	B	B				B	B	
	680pF (681)	B	B	B	B	B	B	B	B	B	B									B	B	B	B	B				B	B	B
	820pF (821)	B	B	B	B	B	B	B	B	B	B									B	B	B	B	B				B	B	B
	1000pF (102)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	1200pF (122)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	1500pF (152)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	1800pF (182)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	2200pF (222)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	2700pF (272)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	3300pF (332)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	3900pF (392)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	4700pF (472)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	5600pF (562)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	6800pF (682)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	8200pF (822)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.01uF (103)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.012uF (123)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	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	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.018uF (183)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	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	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.027uF (273)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	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	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.039uF (393)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	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	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	0.056uF (563)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	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	B	B	B							B	B	
	0.082uF (823)	B	B	B	B	B	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	B	B	B							B	B	
	0.12uF (124)	B			B	B						B	B	B	B													B	B	
	0.15uF (154)	B			B	B						B	B	B	B													B	B	
	0.18uF (184)	B			B	B						B	B	B	B													B	B	
0.22uF (224)	B	B		B	B						B	B	B	B													B	B		
0.27uF (274)	B			B	B						B	B	B	B																
0.33uF (334)	B			B	B						B	B	B	B																
0.39uF (394)	B			B	B						B	B	B	B																
0.47uF (474)	B	B		B	B						B	B	B	B																
0.56uF (564)				B	B						B	B																		
0.68uF (684)				B	B						B	B																		
0.82uF (824)				B	B						B	B																		
1.0uF (105)	B			B	B						B	B																		
1.5uF (155)											B	B																		
2.2uF (225)	B			B	B						B	B																		
4.7uF (475)				B							B																			

- The letter in cell is expressed the symbol of product terminations. B: (Cu/Ni/Sn)
- RD30 type can use Mlcc size 1808 and 1812, RD21 type can use Mlcc size 0805 and 1206, but RD20 type can only use Mlcc size 0805.

Y5V Dielectric

Dielectric		Y5V																									
Size		0805						1206						1210						1812							
Voltage (VDC)		10	16	25	50	100	200	10	16	25	50	100	200	250	10	16	25	50	100	200	250	50	100	200	250		
Capacitance	0.01uF (103)	B	B	B	B	B	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	B	B		B	B	B		
	0.022uF (223)	B	B	B	B	B	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	B	B		B	B	B		
	0.047uF (473)	B	B	B	B	B	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	B	B		B	B	B		
	0.1uF (104)	B	B	B	B	B		B	B	B	B	B	B	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	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				B	B	B	B
	0.33uF (334)	B	B	B	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	B	B
	0.68uF (684)	B	B	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					B	B	B						B	B	B						B			
	2.2uF (225)	B	B	B				B	B	B	B					B	B	B	B					B			
	3.3uF (335)	B	B					B	B	B						B	B	B						B			
	4.7uF (475)	B	B	B				B	B	B						B	B	B	B					B			
	6.8uF (685)	B						B	B							B	B	B	B					B			
10uF (106)	B	B					B	B	B						B	B	B	B					B				
22uF (226)	B						B																				

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

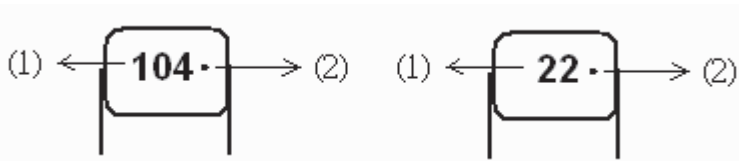
☆ RD30 type can use Mlcc size 1808 and 1812, RD21 type can use Mlcc size 0805 and 1206, but RD20 type can only use Mlcc size 0805.

Marking

Rated voltage (VDC)	10	16	25	50	100	200	250	500	630	1000	2000	3000
3-figure code Marking	<u>104</u>	<u>104</u>	<u>104</u>	104	<u>104</u>	<u>104</u>	<u>104</u>	<u>104</u>	<u>104</u>	<u>104</u>	<u>104</u>	^A 104
2-figure code Marking	<u>22</u>	<u>22</u>	<u>22</u>	22	<u>22</u>	<u>22</u>	<u>22</u>	<u>22</u>	<u>22</u>	<u>22</u>	<u>22</u>	^A 22

3-figure code Marking

2-figure code Marking



(1) Rated capacitance:

Two significant digits followed by no. of zeros. And R is in place of decimal point.

ex.: 0R5=0.5pF, 1R0=1.0pF, 104=10x104 =100nF

(2) Halogen and Pb free: There is a "." beside the capacitance code when the coating resin is Halogen and Pb free Epoxy.

MPQ (Min. Packing Quantity)

Y Cap. (AH and AC series)	Packing type	The code of 14th to 15th in SAP P/N		MPQ (Kpcs/Box)		Remark
	Taping	AF		1		
		AT		0.5		
		AM		1		For size code ≤ 11
		AM		0.5		For size code ≥ 12
		AN		1		
	Packing type	Lead length	Size code of 10th to 11th in SAP P/N	MPQ (Kpcs/Bag)	Kpcs/Box	Remark
	Bulk	Long lead (L \geq 20mm)	06~12	0.5	1.5	
			13-15	0.5	1	
		Short lead (L<20mm)	06~14	0.5	2	
15			0.2	1		
All	16	0.2	1			

Disc DC Cap. (50V~6KVdc)	Packing type	The code of 14th to 15th in SAP P/N		MPQ (Kpcs/Box)		Remark
	Taping	AF		1		
		AT		0.5		
		AM		0.5		
		TN		2		
		AN		2		Phenolic resin
		AN		1.5		Epoxy resin
	Packing type	Lead length	Size code of 10th to 12th in SAP P/N	MPQ (Kpcs/Bag)	Kpcs/Box	Remark
	Bulk	Long lead (L \geq 20mm)	040~070	1	3	Phenolic resin
			080~100	1	2	Phenolic resin
			050~100	1	2	Epoxy resin
			110~120	0.5	1.5	
			130~170	0.5	1	
		Short lead (L<20mm)	040~060	1	6	
070~080			1	4		
090~100			1	3		
110~140			1	2		
150~170			0.5	1		

RD Cap. (Multilayer Radial Leaded Type)	Packing type	The code of 16th to 17th in SAP P/N		MPQ (Kpcs/Box)		Remark
	Taping	TN		2		
		AN		2		Size of chip ≤ 0805
		AN		1.5		Size of chip > 0805
	Packing type	Lead length		MPQ (Kpcs/Bag)	Kpcs/Box	Remark
Bulk	Short lead(L<20mm)		1	20		

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