Content

Ceramic Disc Capacitor

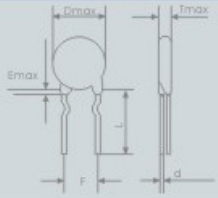
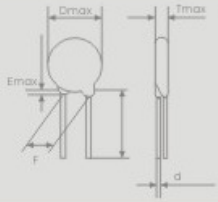
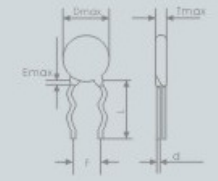
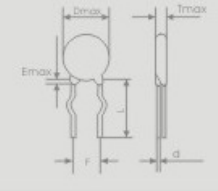
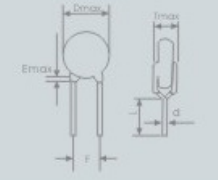
Explanation of part Numbers

CS1	B1	104	Z	F4	50V	F5	B	P	G	
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
Product Series	Lead Style	Nominal Capacitance	Capacitance Tolerance	Temp. Char.	Rated Voltage	Lead Space	Packaging	Coating	RoHS Mark	Suffix

Product Series

CC1	Class 1 Low Voltage Ceramic Capacitor
CT1	Class 2 Low Voltage Ceramic Capacitor
CS1	Class 3 Low Voltage Ceramic Capacitor
CC81	Class 1 High Voltage Ceramic Capacitor
CT81	Class 2 High Voltage Ceramic Capacitor
CT82	Ultra-high Voltage Ceramic Capacitor
CT7	Safety Recognized Ceramic Capacitor

Lead Style

Code	Lead Style	Picture
A1	Inside Crimp Long	
A2	Inside Crimp Short	
B1	Straight Long	
B2	Straight Short	
C1	Double Outside Crimp Long	
C2	Double Outside Crimp Short	
D1	Outside Crimp Long	
D2	Outside Crimp Short	
E1	Vertical Crimp Long	
E2	Vertical Crimp Short	

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Ceramic Disc Capacitor

Nominal Capacitance

The capacitance below 100pF marked the actual capacitance in units of pF, otherwise the capacitance is expressed in three digit codes in units of pF, and R is expressed as radix point.

Ex.:

2.2pF	2R2
220pF	221
2200pF	222
22000pF	223
220000pF	224

Capacitance Tolerance

C<10pF		C≧10pF	
Code	Cap.. Tol.	Code	Cap. Tol.
C	±0.25pF	J	±5%
D	±0.50pF	K	±10%
F	±1.0pF	M	±20%
G	±2.0pF	Z	+80/-20%

Temperature Characteristics

△ Class 1 Temperature Characteristics

Material Code	IEC	EIA	JIS	Color Marking	Temp. Coefficient(10⁻⁶/°C)	Tolerance(10⁻⁶/°C)	Tol. Code
P100	A	M7	A		+100	±15 ±30	F G
NP0	C	C0	C	Black	0	±15 ±30 ±60	F G H
N33	H	S1	H	Brown	-33	±15 ±30	F G
N75		U1	L	Red	-75	±15 ±30	F G
N150	P	P2	P	Orange	-150	±15 ±30 ±60	F G H
N220	R	R2	R	Yellow	-220	±30 ±60	G H
N330	S	S2	S	Green	-330	±30 ±60	G H
N470	T	T2	T	Blue	-470	±30 ±60	G H
N750	U	U2	U	Purple	-750	±60 ±120 ±250	H J K
N1000	Q	M3	V		-1000	±60 ±120 ±250	H J K
SL	SL	SL	SL	Grey	+140~-1000 (GB)	+350~-1000 (JIS)	
N1500	V	P3	W		-1500	±250	K
N2200	K	R3	X		-2200	±500	L
N3300	D	S3	Y		-3300	±500	L
N4700	E	T3	Z		-4700	±1000	M

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Ceramic Disc Capacitor

Nominal Capacitance

The capacitance below 100pF marked the actual capacitance in units of pF, otherwise the capacitance is expressed in three digit codes in units of pF, and R is expressed as radix point.

Ex.:

2.2pF	2R2
220pF	221
2200pF	222
22000pF	223
220000pF	224

Capacitance Tolerance

C<10pF		C≥10pF	
Code	Cap.. Tol.	Code	Cap. Tol.
C	±0.25pF	J	±5%
D	±0.50pF	K	±10%
F	±1.0pF	M	±20%
G	±2.0pF	Z	+80/-20%

Temperature Characteristics

△ Class 1 Temperature Characteristics

Material Code	IEC	EIA	JIS	Color Marking	Temp. Coefficient(10^{-6}/°C)	Tolerance(10^{-6}/°C)	Tol. Code
P100	A	M7	A		+100	±15 ±30	F G
NP0	C	C0	C	Black	0	±15 ±30 ±60	F G H
N33	H	S1	H	Brown	-33	±15 ±30	F G
N75		U1	L	Red	-75	±15 ±30	F G
N150	P	P2	P	Orange	-150	±15 ±30 ±60	F G H
N220	R	R2	R	Yellow	-220	±30 ±60	G H
N330	S	S2	S	Green	-330	±30 ±60	G H
N470	T	T2	T	Blue	-470	±30 ±60	G H
N750	U	U2	U	Purple	-750	±60 ±120 ±250	H J K
N1000	Q	M3	V		-1000	±60 ±120 ±250	H J K
SL	SL	SL	SL	Grey	+140~-1000 (GB)	+350~-1000 (JIS)	
N1500	V	P3	W		-1500	±250	K
N2200	K	R3	X		-2200	±500	L
N3300	D	S3	Y		-3300	±500	L
N4700	E	T3	Z		-4700	±1000	M

△ Class 2 Temperature Characteristics
IEC Temperature Characteristic Chart

Ex.: F 4

Capacitance Change from 20°C Reading

A	±5%
B	±10%
C	±20%
D	+20% -30%
E	+20% -55%
F	+30% -80%
R	±15%

Testing Temperature Range

1	-55℃ ~ +125℃
2	-55℃ ~ +85℃
3	-40℃ ~ +85℃
4	-25℃ ~ +85℃
5	-10℃ ~ +85℃
6	+10℃ ~ +85℃

EIA Temperature Characteristic Chart

First Digit is Lower Limit of Temp. Range	Second Digit is Upper Limit of Temp. Range	Last Digit is Max. Capacitance Change from25°C Reading
X -55℃	4 +65℃	A ±1.0%
Y -30℃	5 +85℃	B ±1.5%
Z +10℃	6 +105℃	C ±2.2%
	7 +125℃	D ±3.3%
	8 +150℃	E ±4.7%
		F ±7.5%
		P ±10%
		R ±15%
		S ±22%
		T +22% -33%
		U +22% -56%
		V +22% -82%

Rated Voltage

Rated voltage below 1KV marked in units of V
Otherwise rated voltage marked in units of KV
Safety Recognized Ceramic Capacitor:Y1,Y2

Lead Space

Code	Space(mm)
F2	2.5±0.5
F5	5.0±0.5
F7	7.5±0.5

Code	Space(mm)
F10	10.0±1.0
F12	12.5±1.0

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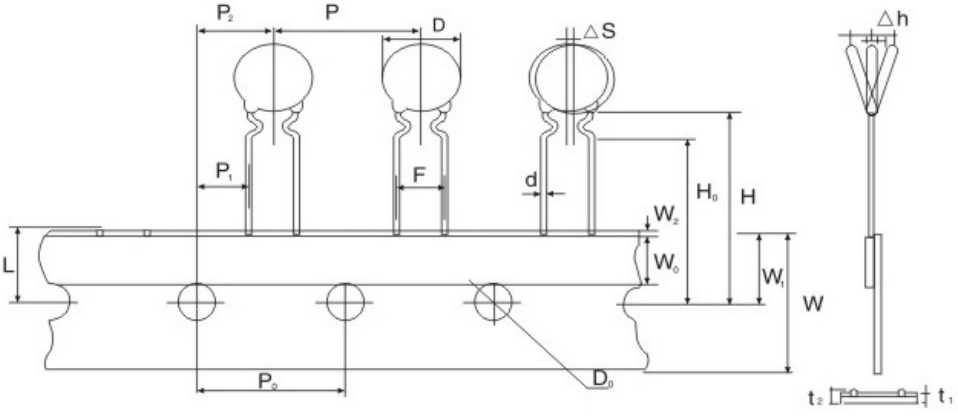
Ceramic Disc Capacitor

Packaging

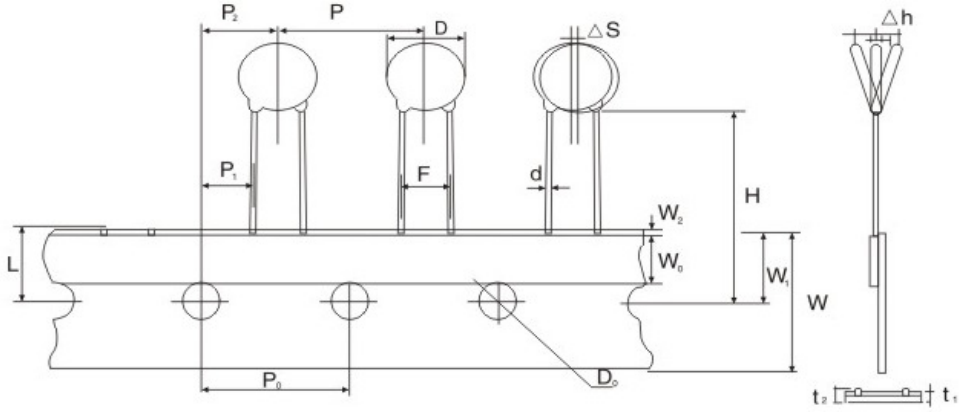
B	Bulk
A	Ammo Pack(taping)
R	Reel Pack(taping)

△ Taping Specification

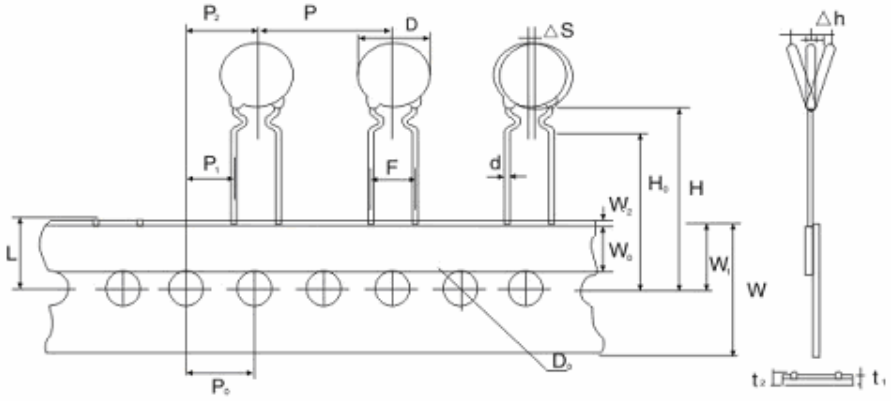
Lead style A /12.7mm pitch/lead spacing 5mm 7.5mm



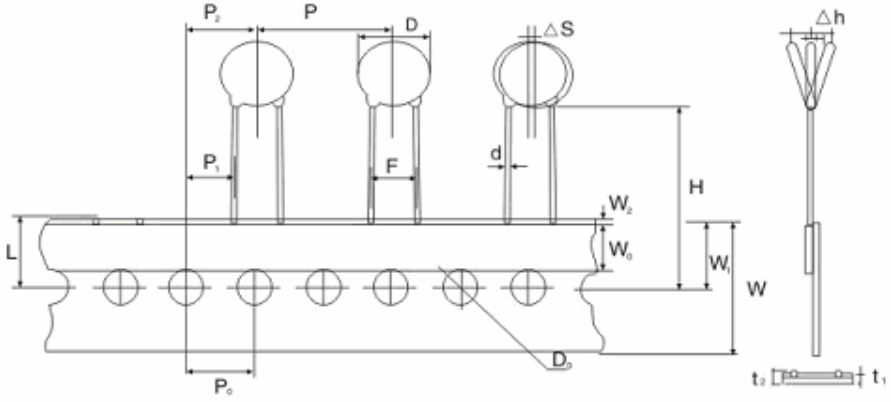
Lead style B style /12.7mm pitch/lead spacing 2.5mm 5mm 7.5mm



Lead style A、E /25.4mm pitch/lead spacing 7.5mm 10.0mm 12.5mm



Lead style B /25.4mm pitch/lead spacing 7.5mm 10.0mm 12.5mm



Ceramic Disc Capacitor

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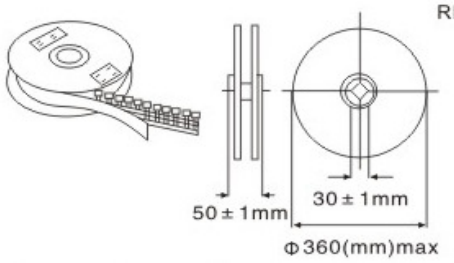
No.	Item	Code	F2	F5	F7	F7	F10	F12
1	Pitch of component	P	12.7			25.4		
2	Pitch of sprocket hole	P_0	12.7 ± 0.3			12.7 ± 0.3		
3	Lead spacing	F	2.5 ± 0.5	5.0 ± 0.5	7.5 ± 0.5	7.5 ± 1.0	10.0 ± 1.0	12.5 ± 1.0
4	Length from hole center to component Center	P_2	6.35 ± 0.5			12.7 ± 0.5		
5	Length from hole center to lead	P_1	5.1 ± 0.7	3.85 ± 0.7	-	8.95 ± 1.0	7.7 ± 1.0	6.45 ± 1.0
6	Body diameter	D	See individual product standard list					
7	Deviation along tape, left or right	△S	0 ± 0.6			0 ± 1.0		
8	Carrier tape width	W	18.0 ± 0.5			18.0 ± 0.5		
9	Adhesive tape width	W_0	6~12			6~12		
10	Hold down tape width	W_2	1.5 ± 1.5			1.5 ± 1.5		
11	Position of sprocket hold	W_1	9.0 ± 0.5			9.0 ± 0.5		
12	Lead distance between reference and bottom planes	H_0	16.0 ± 0.5			16.0 ± 0.5		
13		H	20.0(-1.0/+1.5)			20.0(-1.0/+1.5)		
14	Diameter of sprocket hole	D_0	4.0(-0.6/+0.2)			4.0(-0.6/+0.2)		
15	Lead diameter	d	0.50~0.80			0.50~0.80		
16	Total thickness, tape and wire	t_2	1.5 max			1.5 max		
17	Total tape thickness	t_1	0.6 ± 0.3			0.6 ± 0.3		
18	Body thickness	T	See individual product standard list					
19	Portion to cut in case of defect	L	11.0max			11.0max		
20	Deviation across tape, front rear	△h	1.0max			2.0max		

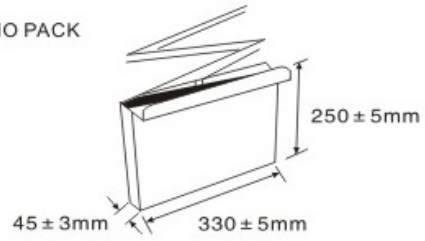
△ Packaging Styles(taping)

REEL PACK



2000 pcs.max.per reel depending upon dia.of capacitor

AMMO PACK



2000 pcs.max.per box depending upon dia.of capacitor

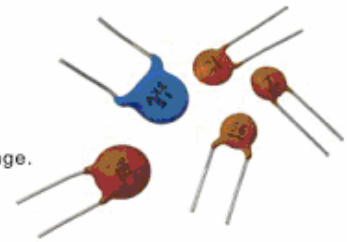
Materials of coating

E	Epoxy Resin
P	Phenol Resin

RoHS Mark

G	Meeting the requirements of RoHS directives
	Some environment harmful substance such as Pb will be contained when"G"is omitted

CC1、CC81 Series Ceramic Capacitors



1.High reliability and low cost.
2.Little residual inductance, can be used in high frequencies.
3.Temperature compensating with high Q and stable against temperature change.
4.50V-capacitors are designed to be suitable for 63V-applications.

Standard List

Rated Voltage	Dimension(mm)			Temperature Coefficient					
	Dmax	Tmax	F	C	P	R	T	U	SL
50V	5	4	2.5	51	36	39	51	51	220
	6.3	4	5	82	62	62	82	82	270
	8	4	5	150	100	120	150	150	470
	10	4	5	220	150	200	250	250	680
500V	5	4	2.5	15	18	18	18	27	100
	6.3	4	5	22	27	27	30	56	150
	8	4	5	47	82	82	82	82	330
	10	4	5	82	120	120	120	150	560
	12.5	4	7.5						
	14	4	7.5						
	16	4	7.5						
1KV	8	6.3	7.5	22	33			56	180
	10	6.3	10	33	68			100	330
	12.5	6.3	10	56	100			150	470
	16	8	10	100	200			300	820
2KV	8	6.3	7.5	12	18			30	
	10	6.3	10	36	24			51	68
	12.5	6.3	10	47	39			75	100
	16	8	10	68	91			180	200
	18	8	15	120	130			270	330
3KV	8	6.3	7.5	12	10		22	22	
	10	6.3	10	15	18		39	39	43
	12.5	6.3	10	22	24		51	51	56
	16	8	10	51	68		150	150	160
	18	8	10	91	100		180	180	270
6.3KV	12.5	6.3	10	13	16		33	33	36
	16	8	10	30	36		75	75	82
	20	8	15	43	56		120	120	130

Design, specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.

Ceramic Disc Capacitor

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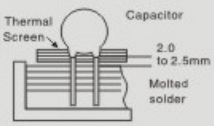
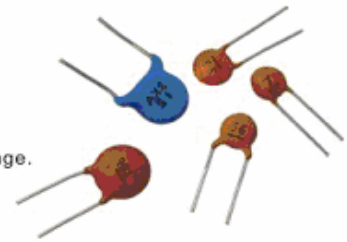
Specification

	Item		Specification	Testing Method
1	Operating Temp.Range		-55℃-+125℃	Except for SL T.C.
2	Capacitance		Within specified tolerance	Measured at 20℃ with 1± 0.2MHz and AC 1.0Vrms
3	Quality Factor		C≥30PF; Q≥1000 C<30PF; Q≥400+20C	Same as above
4	Insulation Resistance		10,000MΩmin.	CC1: Applied DC10 1V for 60s CC81: Applied Dc500±50V for 60s
5	Dielectric Strength		No failure	CC1: Applied DC voltage of 300% the rated voltage for 2s CC81: Applied DC voltage of 150% the rated voltage and 500V for 2s
6	Temperature Characteristic	Capacitance change	±0.3% or±0.05PF ±1% or±0.05PF (SL) whichever is greater	The capacitance measurement shall be made at each step specified in the table Step: 1 | 2 | 3 | 4 | 5 Temp.(℃): 20±2 | -25±3 | 20±2 | 85±2 | 20±2
7	Strength of Lead		Lead wire shall not be cut off,capacitor shall not be broken	Pull: Fix the body of capacitor, apply a tensile weight as in the table gradually to each lead wire in the radial direction of capacitor and keep it for 5s Weight(N) | Diameter of Lead Wire (mm) Bending: Each lead wire shall be subject to 5N weight and then a 90° bend, at the point of egress, in one direction, return to original position, and then a 90° bend in the opposite direction at the rate of one bend in 3s 5 | d≤0.5 10 | 0.5<d≤0.8
8	Solderability of Lead		Lead wire shall besoldered with uniformly coated on the axial direction over 3/4 of the circumferential direction	The lead wire of a capacitor shall be dipped into a methanol solution of 25wt% rosin and then into molten solder of 235 5℃ for 2 0.5s. In both cases the depth of dipping is up to about 1.5 to 2 mm from the root of lead wires
9	Vibration Resistance	Appearance	No marked defect	In vibration frequency 10 -55 -10Hz for 1min at amplitude 0.75mm, 2h each in 3 mutually perpendicular directions
		Capacitance	Within specified tolerance	
		Q	Satisfies initial requirement	
10	Soldering Effect	Appearance	No marked defect	Temp. of melted solder: 350±10℃ (260±5℃ Diameter of capacitor body under 7mm) Immering Time: 3±0.5s Immering Depth: 2.0~2.5mm from the root of lead wires Post-treatment: 24±2 hours at room condition
		Capacitance change	±0.5% or±0.5pF ±1% or±1pF (SL) whichever is greater	
11	Humidity (Under steady state)	Appearance	No marked defect	Temp.: 40±2℃ Humidity: 90~95%RH Testing Time: 500 $^{+24}_{-0}$ hours Post-treatment: 24±2hours at room condition
		Capacitance change	±2% or±1pF ±3% or±1pF(SL) whichever is greater	
		Q	C≥30pF,Q≥350; C<30pF,Q≥200+10C	
		IR	2,500MΩmin	
12	Life	Appearance	No marked defect	Temp.: 85±3℃ Voltage Applied: Rated Votage×1.5 Testing Time: 1000hours Post-treatment: 24±2hours at room condition
		Capacitance change	±3% or±1pF ±5% or±1pF(SL) whichever is greater	
		Q	C≥30pF,Q≥350; C<30pF,Q≥200+10C	
		IR	4,000MΩmin	



CC1、CC81 Series Ceramic Capacitors



1.High reliability and low cost.
2.Little residual inductance, can be used in high frequencies.
3.Temperature compensating with high Q and stable against temperature change.
4.50V-capacitors are designed to be suitable for 63V-applications.

Standard List

Rated Voltage	Dimension(mm)			Temperature Coefficient					
	Dmax	Tmax	F	C	P	R	T	U	SL
50V	5	4	2.5	51	36	39	51	51	220
	6.3	4	5	82	62	62	82	82	270
	8	4	5	150	100	120	150	150	470
	10	4	5	220	150	200	250	250	680
500V	5	4	2.5	15	18	18	18	27	100
	6.3	4	5	22	27	27	30	56	150
	8	4	5	47	82	82	82	82	330
	10	4	5	82	120	120	120	150	560
	12.5	4	7.5						
	14	4	7.5						
	16	4	7.5						
1KV	8	6.3	7.5	22	33			56	180
	10	6.3	10	33	68			100	330
	12.5	6.3	10	56	100			150	470
	16	8	10	100	200			300	820
2KV	8	6.3	7.5	12	18			30	
	10	6.3	10	36	24			51	68
	12.5	6.3	10	47	39			75	100
	16	8	10	68	91			180	200
	18	8	15	120	130			270	330
3KV	8	6.3	7.5	12	10		22	22	
	10	6.3	10	15	18		39	39	43
	12.5	6.3	10	22	24		51	51	56
	16	8	10	51	68		150	150	160
	18	8	10	91	100		180	180	270
6.3KV	12.5	6.3	10	13	16		33	33	36
	16	8	10	30	36		75	75	82
	20	8	15	43	56		120	120	130

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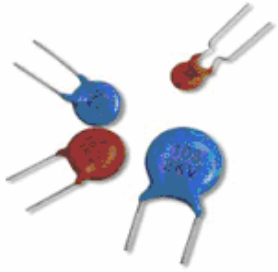
CT1、CT81 Series Ceramic Capacitors



Features

1. High reliability and low cost.
2. Little residual inductance, can be used in high frequencies.
3. 50V-capacitors are designed to be suitable for 63V-applications.

Standard List

Rated Voltage	Dimension(mm)			Temperature Coefficient		
	Dmax	Tmax	F	2B	2E	2F
50V	5	4	2.5	1500	2200	6200
	6.3	4	5	3300	3900	10000
	8	4	5	6200	8200	18000
	10	4	5	8200	10000	25000
	12.5	4	7.5	10000	15000	30000
500V	6.3	4	5	1000	3300	5000
	8	4	5	2700	5000	6800
	10	4	5	4700	10000	10000
	12.5	4	7.5	5600	15000	22000
	14	4	7.5	10000	22000	33000
1KV	8	6.3	7.5	1800	2200	5000
	10	6.3	10	2700	3300	6800
	12.5	6.3	10	3900	6200	10000
	14	8	10	4700	10000	15000
	16	8	10	5600	15000	22000
	18	8	10	8200	20000	33000
2KV	8	6.3	7.5	680	1000	2200
	10	6.3	10	1000	1500	3300
	12.5	6.3	10	1800	2200	4700
	14	8	10	3300	3300	5600
	16	8	10	3900	4700	10000
	18	8	10	4700		22000
3KV	8	6.3	7.5	270	680	1000
	10	6.3	10	560	1000	1500
	12.5	6.3	10	1000	1500	2200
	14	8	10	1800	2200	3300
	16	8	10	2700	3300	4700
	18	8	10	3900	4700	10000
6.3KV	8	6.3	10	330	470	680
	12.5	6.3	10	680	680	1000
	16	8	10	820	1000	2200
	20	8	10	1200	2200	3300

Design, specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.

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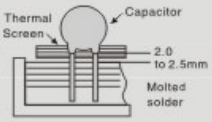
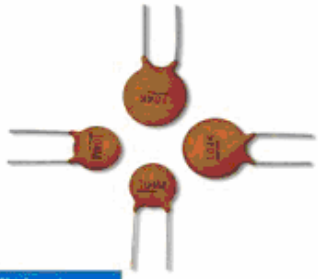
Ceramic Disc Capacitor

Specification

	Item		Specification	Testing Method
1	Operating Temp.Range		-30℃~+125℃	Except for Z5V、Z5U T.C.
2	Capacitance		Within specified tolerance	Measured at 20℃ with 1KHz and AC 1.0V±0.2Vrms
3	Dissipation Factor		B、D、E：≤2.5% F：≤3.5%	Same as above
4	Insulation Resistance		4,000MΩmin.	CT1:Applied DC 10±1V for 60s CT81:Applied DC 500±50V for 60s
5	Dielectric Strength		No failure	CT1：Applied DC voltage of 250% the rated voltage for 2s CT81：Applied DC voltage of 150% of the rated voltage and 500V for 2s
6	Temperature Characteristic	Capacitance change	B:±10% E:+20%/−55% F:+30/−80%	The capacitance measurement shall be made at each step specified in the table Step: 1 | 2 | 3 | 4 | 5 Temp.(℃): 20±2 | −25±3 | 20±2 | 85±2 | 20±2
7	Strength of Lead		Lead wire shall not be cut off,capacitor shall not be broken	Pull: Fix the body of capacitor, apply a tensile weight as in the table gradually to each lead wire in the radial direction of capacitor and keep it for 5s Weight(N) / Diameter of Lead Wire (mm) Bending: Each lead wire shall be subject to 5N weight and then a 90° bend, at the point of egress, in one direction, return to original position, and then a 90° bend in the opposite direction at the rate of one bend in 3s 5: d≤0.5 10: 0.5<d≤0.8
8	Solderability of Lead		Lead wire shall besoldered with uniformly coated on the axial direction over 3/4 of the circumferential direction	The lead wire of a capacitor shall be dipped into a methanol solution of 25wt% rosin and then into molten solder of 235 5℃ for 2 0.5s. In both cases the depth of dipping is up to about 1.5 to 2 mm from the root of lead wires
9	Vibration Resistance	Appearance	No marked defect	In vibration frequency 10 −55 −10Hz for 1min at amplitude 0.75mm, 2h each in 3 mutually perpendicular directions
		Capacitance	Within specified tolerrance	
		DF	Satisfies initial requirement	
10	Soldering Effect	Appearance	No marked defect	Temp of melted solder: 350±10℃ (260±5℃ Diameter of capacitor body under 7mm) Immerging Time: 3±0.5s Immerging Depth: 2.0~2.5mm from the root of lead wires Post-treatment: 48±2 hours at room condition
		Capacitance change	B:≤±10% E、F:≤±20%	
				
11	Humidity (Under steady state)	Appearance	No marked defect	Temp.: 40±2℃
		Capacitance change	B:≤±10% E、F:≤±20%	Humidity: 90~95%RH Testing Time: 500 $^{+24}_{-0}$ hours
		DF	B:≤5% E、F≤7%	Post-treatment: 48±2hours at room condition
		IR	1,000MΩmin.	Pre-treatment: Capacitor shall be stored at 125±3℃ for 1h, then placed at room condition for 48±2h before measurement of capacitance and DF
12	Life	Appearance	No marked defect	Temp.: 85±3℃
		Capacitance change	≤±20%	Voltage Applied: Rated Votage×1.5 Testing Time: 1000hours
		DF	B:≤5% E、F≤7%	Post-treatment: 48±2hours at room condition
		IR	2000MΩmin.	Pre-treatment: Capacitor shall be stored at 125±3℃ for 1h, then placed at room condition for 48±2h before measurement of capacitance and DF

CS1 Series Ceramic Capacitors



Features

Much more compact sizes than conventional ceramic capacitors, perfect for meeting the need of high density assemblies.

Standard List

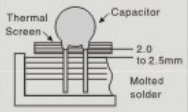
Rated Voltage	Dimension(mm)			Temperature Coefficient		
	Dmax	Tmax	F	3B	3E	3F
16V	6.3	4	5	- - -	100000	100000
	8	4	5	- - -	150000	220000
25V	6.3	4	5	15000	47000	100000
	8	4	5	33000	100000	220000
	10	4	5	100000	220000	- - -
50V	6.3	4	5	22000	22000	68000
	8	4	5	33000	33000	100000
	10	4	5	68000	100000	220000

Design, specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.

eCERA

Ceramic Disc Capacitor

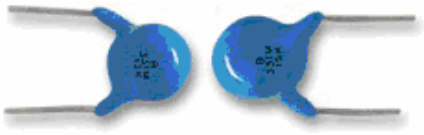
Specification

	Item		Specification	Testing Method
1	Operating Temp.Range		-30℃~+125℃	
2	Capacitance		Within specified tolerance	Measured at 20℃ with 1±0.2KHz and AC0.1Vrms
3	Dissipation Factor		B: ≤ 3.5% E、F: ≤ 5%	Same as above
4	Insulation Resistance		1000MΩmin.	The I.R shall be measuured with rated voltage within 60 s of charging
5	Dielectric Strength		No failure	The capacitor shall not be damage when DC voltage of 150% of the rated voltage are applied between the lead wire for 5s.
6	Temperature Characteristic	Capacitance change	B:±10% E:+20%/−55% F:+30/−80%	The capacitance measurement shall be made at each step specified in the table Step: 1 / 2 / 3 / 4 / 5 Temp.(℃): 20±2 / −25±3 / 20±2 / 85±2 / 20±2
7	Strength of Lead		Lead wire shall not be cut off,capacitor shall not be broken	Pull: Fix the body of capacitor, apply a tensile weight as in the table gradually to each lead wire in the radial direction of capacitor and keep it for 5s. Weight(N) / Diameter of Lead Wire (mm) Bending: Each lead wire shall be subject to 5N weight and then a 90° bend, at the point of egress, in one direction, return to original position, and then a 90° bend in the opposite direction at the rate of one bend in 3s. 5 / d≤0.5; 10 / 0.5<d≤0.8
8	Solderability of Lead		Lead wire shall besoldered with uniformly coated on the axial direction over 3/4 of the circumferential direction	The lead wire of a capacitor shall be dipped into a methanol solution of 25wt% rosin and then into molten solder of 235 5℃ for 2 0.5s. In both cases the depth of dipping is up to about 1.5 to 2 mm from the root of lead wires
9	Vibration Resistance	Appearance	No marked defect	In vibration frequency 10 −55 −10Hz for 1min at amplitude 0.75mm, 2h each in 3 mutually perpendicular directions
		Capacitance	Within specified tolerance	
		DF	Satisfies initial requirement	
10	Soldering Effect	Appearance	No marked defect	Temp of melted solder: 350±10℃ (260±5℃ Diameter of capacitor body under 7mm) Immerging Time: 3±0.5s Immerging Depth: 2.0~2.5mm from the root of lead wires Post-treatment: 48±2hours at room condition
		Capacitance Change	B:≤±10% E、F:≤±20%	
11	Humidity (Under steady state)	Appearance	No marked defect	Temp.: 40±2℃
		Capacitance change	B:≤±10% E、F:≤±20%	Humidity: 90-95%RH Testing Time: 500 $^{+24}_{-0}$ hours
		DF	B:≤7% E、F≤10%	Post-treatment: 48±2hours at room condition
		IR	500MΩ or R·C≥12.5s	Pre-treatment: Capacitor shall be stored at 125±3℃ for 1h, then placed at room condition for 48±2h before measurement of capacitance and DF
12	Life	Appearance	No marked defect	Temp.: 85±3℃
		Capacitance change	≤±20%	Voltage Applied: Rated Votage×1.25 Testing Time: 1000hours
		DF	B:≤7% E、F≤10%	Post-treatment: 48±2hours at room condition
		IR	700MΩ or R·C≥17.5s	Pre-treatment: Capacitor shall be stored at 125±3℃ for 1h, then placed at room condition for 48±2h before measurement of capacitance and DF

CT82 Series Ultra-high Voltage Ceramic Capacitors

Features

1. Small size, excellent heat-proof, humidity-proof and high-dielectric strength voltage.
2. Color TV doublers triplers, high-voltage DC power supplies, tuning capacitor in focus circuit for display.



Standard List

△ B/Y5P Specification

Rated Voltage (KV)	Capacitance (PF)	Cap. Tolerance (%)	Dimension(mm)			
			Dmax	Tmax	F(± 1.0)	d(±0.05)
10	100	± 10	7.5	7.0	10.0	0.65
10	150	± 10	7.5	7.0	10.0	0.65
10	220	± 10	8.0	7.0	10.0	0.65
10	330	± 10	9.5	7.5	10.0	0.65
10	470	± 10	11.0	7.5	10.0	0.65
10	680	± 10	12.5	7.5	10.0	0.65
10	1000	± 10	15.0	8.0	10.0	0.65
12	100	± 10	7.5	7.5	10.0	0.65
12	150	± 10	8.0	7.5	10.0	0.65
12	220	± 10	8.0	7.5	10.0	0.65
12	330	± 10	10.5	8.5	10.0	0.65
12	470	± 10	12.0	8.5	10.0	0.65
12	680	± 10	14.0	8.5	10.0	0.65
12	1000	± 10	16.0	8.5	10.0	0.65
15	100	± 10	8.0	9.0	10.0	0.65
15	150	± 10	8.5	9.0	10.0	0.65
15	220	± 10	10.5	9.0	10.0	0.65
15	330	± 10	12.0	9.0	10.0	0.80
15	470	± 10	14.0	9.0	10.0	0.80
15	680	± 10	16.5	10.0	10.0	0.80
15	1000	± 10	20.0	10.0	10.0	0.80

Ceramic Disc Capacitor

△ E/Y5U、D/Y5T Specification

Rated Voltage (KV)	Capacitance (PF)	Cap. Tolerance (%)	Dimension(mm)			
			Dmax	Tmax	F(±1.0)	d(±0.05)
10	100	±10/±20	7.5	7.0	10.0	0.65
10	150	±10/±20	7.5	7.0	10.0	0.65
10	220	±10/±20	7.5	7.0	10.0	0.65
10	330	±10/±20	8.0	7.0	10.0	0.65
10	470	±10/±20	9.5	7.5	10.0	0.65
10	680	±10/±20	9.5	7.5	10.0	0.65
10	1000	±10/±20	11.5	7.5	10.0	0.65
10	1500	±10/±20	14.0	7.5	10.0	0.80
10	2200	±10/±20	16.0	7.5	12.5	0.80
12	100	±10/±20	7.5	7.5	10.0	0.65
12	150	±10/±20	7.5	7.5	10.0	0.65
12	220	±10/±20	7.5	7.5	10.0	0.65
12	330	±10/±20	8.0	7.5	10.0	0.65
12	470	±10/±20	9.0	7.5	10.0	0.65
12	680	±10/±20	11.5	7.5	10.0	0.65
12	1000	±10/±20	12.5	7.5	10.0	0.80
12	1500	±10/±20	14.0	8.0	10.0	0.80
12	2200	±10/±20	16.0	8.0	12.5	0.80
15	100	±10/±20	9.0	8.5	10.0	0.65
15	150	±10/±20	9.0	8.5	10.0	0.65
15	220	±10/±20	9.0	8.5	10.0	0.65
15	330	±10/±20	9.5	8.5	10.0	0.65
15	470	±10/±20	11.0	8.5	10.0	0.65
15	680	±10/±20	12.5	8.5	10.0	0.65
15	1000	±10/±20	14.5	8.5	10.0	0.80
15	1500	±10/±20	17.0	8.5	10.0	0.80
15	2200	±10/±20	20.0	8.5	12.5	0.80
20	100	±10/±20	9.0	8.5	10.0	0.65
20	150	±10/±20	9.0	8.5	10.0	0.65
20	220	±10/±20	9.0	8.5	10.0	0.65
20	330	±10/±20	10.0	8.5	10.0	0.65
20	470	±10/±20	11.5	9.5	10.0	0.65
20	680	±10/±20	12.5	9.5	10.0	0.65
20	1000	±10/±20	15.0	9.5	10.0	0.65
25	100	±10/±20	9.5	10.5	10.0	0.65
25	150	±10/±20	10.0	10.5	10.0	0.65
25	220	±10/±20	11.0	10.5	10.0	0.65
25	330	±10/±20	11.0	11.0	10.0	0.65
25	470	±10/±20	12.5	11.0	10.0	0.80

Specification

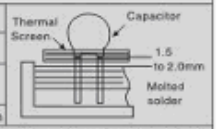
	Item		Specification	Testing method
1	Operating		-25°C~+85°C	
2	Capacitance		With the specified tolerance	Measured at 20°C with 1±0.2KHZ and 1Vrms
3	Dissipation Factor(DF)		B、D、E: ≤2.5% F: ≤5.0%	Same condition as capacitance.
4	Insulation Resistance(IR)		10,000MΩ min.	The insulation resistance shall be measured with DC1000V within 60s of charging.
5	Dielectric Strength	Between lead wires	No failure	The capacitors shall not be damage when DC voltage of 150% of the rated voltage are applied between the lead wires for 60s in insulate liquid or gas.
		Body Insulation		The capacitors is placed in the container with metal balls of diameter 1mm so that each lead wire, shortcircuited, is kept approximately 2mm off the balls as shown in the figure, and DC voltage of 3KV is applied for 10s between capacitor lead wires and metals.(Charge/discharge current≤50mA)
6	Temperature Characteristic		B: ±10% D:+20%/-30% E:+20%/-55% F:+30%/-80%	The Capacitance measurement shall be made at each step specified in table.

Step	1	2	3	4	5
Temp.(°C)	20±2	-25±3	20±2	85±2	20±2

7	Strength of Lead	Lead wire shall not cut. Capacitor shall not be broken.
	Pull	As a figure, fix the body of capacitor, apply a tensile weight gradually to each lead wire in the radial direction of capacitor up to 10N, and keep it for 10s.
	Bending	Each lead wire shall be subjected to 5N weight and then a 90°bend, at the point of egress, in one direction, return to original position, and then a 90°bend in the opposite direction at the rate of one bend in 2 to 3s.
8	Solderability of Lead	Lead wire shall be soldered with uniformly coated on the axial direction over 3/4 of the circumferential direction.

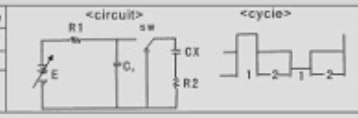
The lead wire of a capacitor shall be dipped into 25% methanol solution of rosin and the into molten solder of 235±5°C for 2±0.5s. In both case the depth of dipping is up to about 1.5 to 2.0mm from the root of lead wires.

9	Soldering Effect	Appearance	No marked defect	Temp. of melted solder	350±10℃
		Capacitance Change	B: ≤±10% D、E、F≤±20%	Immerging time	3.5±0.5s
				Immerging depth	1.5~2.0mm from the root lead wires
				Post-treatment	48±2hours at room condition



Capacitor shall be stored at 125°C for 1h, the placed at room condition for 48h before measurement of capacitance and DF.

10	Humidity (Under Steady State)	Appearance	No marked defect	Temp.(°C)	40±2℃
		Capacitance Change	B: ≤±10%; F≤±30% D、E: ≤±20%	Humidity	90~95%RH
				Testing time	240±8hours
		DF	B: ≤4.0%; F: ≤7.0% D、E: ≤5.0%	Post-treatment	48 hours at room condition
		IR	5,000MΩ min.	Capacitor shall be stored at 125°C for 1h, the placed at room condition for 48h before measurement of capacitance and DF.	
		Dielectric Strength	No failure		
11	Life	Appearance	No marked defect	Temp.(°C)	85±3℃
		Capacitance Change	B: ≤±10%; D、E、F: ≤±20%	Voltage applied	Rated voltage×1.25(DC)
				Testing time	1000hours
		DF	B: ≤4.0%; F: ≤7.0% D、E: ≤5.0%	Post-treatment	48±2hours at room condition
		IR	5,000MΩ min.	Capacitor shall be stored at 125°C for 1h, the placed at room condition for 48h before measurement of capacitance and DF.	
		Dielectric Strength	No failure		
12	Change Discharge Test	Appearance	No marked defect	Voltage applied Rated voltage	
		Capacitance Change	B: ≤±10%; F≤±30% D、E: ±20%	Cycle number 20000 cycles	
				Post-treatment 4hours	
		DF	B: ≤4.0%; F: ≤7.0% D、E: ≤5.0%	C_x:specimen C_o:supplied energy for C_x,C_o=10C_x	
		IR	5,000MΩ min.	R1: circuit protective resistor(300KΩ) R2: current limiting resistor (E/10Ω)	
		Dielectric Strength	No failure	E: direct-current voltage source	



eCERA

Ceramic Disc Capacitor

CT7 Series Safety Recognized Ceramic Capacitors

Features

1. Interference suppressor for AC primary line of electronic equipment.
2. Coated with flame-retardant expoxy resin (conforming to UL94V-0 standard).

Standard List

△Y 2 (IEC 60384-14 Sub-class Y2, X1)

Capacitance (PF)	Cap. Tolerance (%)	Temperature Char.	Dimension(mm)			
			Dmax	Tmax	F(±1)	d(±0.05)
100	±10	B/Y5P	7	7.0	7.5	0.6
150	±10	B/Y5P	7	7.0	7.5	0.6
220	±10	B/Y5P	7	7.0	7.5	0.6
330	±10	B/Y5P	7	7.0	7.5	0.6
470	±10	B/Y5P	7	7.0	7.5	0.6
680	±10	B/Y5P	8	7.0	7.5	0.6
1000	±20	E/Y5U	7	7.0	7.5	0.6
1500	±20	E/Y5U	8	7.0	7.5	0.6
2200	±20	E/Y5U	9	7.0	7.5	0.6
3300	±20	E/Y5U	11.5	7.0	7.5	0.6
4700	±20	E/Y5U	14	7.0	10.0	0.6
4700	±20	F/Y5V	11.5	7.0	7.5	0.6
10000	±20	F/Y5V	16	7.0	10.0	0.6

Design, specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.

△Y1 (IEC 60384-14 Sub-class Y1, X1)

Capacitance (PF)	Cap. Tolerance (%)	Temperature Char.	Dimension(mm)			
			Dmax	Tmax	F(±1)	d(±0.05)
100	±10	B/Y5P	11.0	8.0	10.0	0.6
220	±10	B/Y5P	11.0	8.0	10.0	0.6
330	±10	B/Y5P	11.0	8.0	10.0	0.6
470	±10	B/Y5P	11.0	8.0	10.0	0.6
1000	±10	B/Y5P	11.0	8.0	10.0	0.6
1000	±20	E/Y5U	10.0	8.0	10.0	0.6
1500	±20	E/Y5U	11.0	8.0	10.0	0.6
2200	±20	E/Y5U	11.0	8.0	10.0	0.6
3300	±20	E/Y5U	13.0	8.0	10.0	0.6
4700	±20	E/Y5U	16.0	8.0	10.0	0.6
1000	±20	F/Y5V	10.0	8.0	10.0	0.6
1500	±20	F/Y5V	11.0	8.0	10.0	0.6
2200	±20	F/Y5V	11.0	8.0	10.0	0.6
4700	±20	F/Y5V	13.0	8.0	10.0	0.6

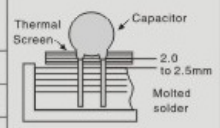
1.Design, specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.

2.The thickness of coating insulated substance is more than 0.4mm.

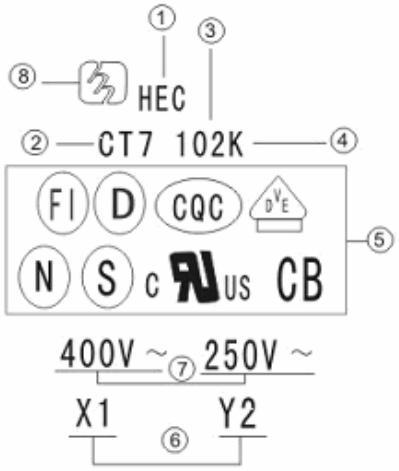
eCERA

Ceramic Disc Capacitor

Specification

	Item		Specification	Testing Method					
1	Operating Temp.Range		– 30℃~ +125℃						
2	Appearance and Dimension		Appearance has no marked Dimension shall be within specified tolerance	Appearance be watched on sight.Dimension measured by calliper					
3	Mark		Should be discerned easily	Be watched on sight					
4	Capacitance		Within specified tolerrance	Mrsdutrf sy 20℃ with 1KHZ and AC 1.0V ± 0.2Vrms					
5	Dissipation Factor		B、E: ≤2.5% F: ≤5%	Same as above					
6	Insulation Resistance		10,000MΩmin.	The I.R.shall be measuured with DC500 ± 50V within 60s charging					
7	Dielectric Strength		No failure	Y2	Applied a voltage of 2.5KVAC for 60s				
				Y1	Applied a voltage of 4.0KVAC for 60s				
8	Temperature Characteristic	Capacitance change	B: ± 10% E: +20%/–55% F: +30/–80%	The capacitance measurement shall be made at each step specified in the table					
				Step	1	2	3	4	5
				Temp.(℃)	20 ± 2	–25 ± 3	20 ± 2	85 ± 2	20 ± 2
9	Strength of Lead		Lead wire shall not be cut off,capacitor shall not be broken	Pull	Fix the body of capacitor, apply a tensile weight as in the table gradually to each lead wire in the radial direction of capacitor up to 10N and keep it for 10s				
				Bending	Each lead wire shall be subject to 5N weight and then a 90° bend, at the point of egress, in one direction, return to original position, and then a 90° bend in the opposite direction at the rate of one bend in 3s				
10	Solderability of Lead		Lead wire shall besoldered with uniformly coated on the axial direction over 3/4 of the circumferential direction	The lead wire of a capacitor shall be dipped into a methanol solution of 25wt% rosin and then into molten solder of 235 ± 5℃ for 2 ± 0.5s. In both cases the depth of dipping is up to about 1.5 to 2 mm from the root of lead wires					
11	Resistance	Appearance	No marked defect	In vibration frequency 10 –55 –10Hz for 1min at amplitude 0.75mm, 2h each in 3 mutually perpendicular directions					
		Capacitance	Within specified tolerance						
		DF	Satisfies initial requirement						
12	Soldering Effect	Appearance	No marked defect	Temp of melted solder	350 ± 10℃ (260 ± 5℃ Diameter of capacitor body under 7mm)				
		Capacitance Change	B:≤ ± 10% E、F:≤ ± 20%	Immerging Time	3 ± 0.5s				
				Immerging Depth	2.0–2.5mm from the root of lead wires				
		Dielectric Strength	No failure	Post–treatment	48 ± 2hours at room condition				
				Pre–treatment	Capacitor shall be stored at 125 ± 3℃ for 1h, then placed at room condition for 48 ± 2 h before measurement of capacitance and DF				
13	Humidity (Under steady state)	Appearance	No marked defect	Temp.(℃)	40 ± 2℃				
		Capacitance Change	B:≤ ± 10% E、F:≤ ± 20%	Humidity	90~95%RH				
				Testing Time	500 $^{+24}_{-0}$ hours				
		DF	B:≤5%;E、F≤7%	Post–treatment	48 ± 2hours at room condition				
		IR	3,000MΩmin.	Pre–treatment	Capacitor shall be stored at 125 ± 3℃ for 1h, then placed at room condition for 48 ± 2 h before measurement of capacitance and DF				
		Dielectric Strength	No failure						
14	Life	Appearance	No marked defect	Temp.(℃)	85 ± 3℃				
		Capacitance Change	≤ ± 20%	Voltage Applied	AC425V(r.m.s),except once each hour the voltage is increased to AC1000V(r.m.s) for 0.1s				
				Testing Time	1000hours				
		DF	B:≤5%; E、F:≤7%	Post–treatment	48 ± 2 hours at room condition				
		IR	3,000MΩmin.						
		Dielectric Strength	No failure	Pre–treatment	Capacitor shall be stored at 125 ± 3℃ for 1h, then placed at room condition for 48 ± 2 h before measurement of capacitance and DF				

Marking Example

Example	Item	
	①Manufacturer's Identification	HEC
	②Type	CT7
	③Capacitance	
	④Capacitance Tolerance	
	⑤Safety Approval Mark	
	cUL、UL Approval Mark	c US
	VDE Approval Mark	
	FIMKO Approval Mark	FI
	DEMKO Approval Mark	D
	NEMKO Approval Mark	N
	SEMKO Approval Mark	S
	CQC Approval Mark	CQC
	CB Approval Mark	CB
	⑥Class Code	X1 Y2
	⑦Rate Voltage	Y2: 250V~ X1: 400V~
	⑧Trade mark	

The actual marking is sometimes different from the above example with the change of the safety recognition contents and so on.

Relate Standards and Certificate Numbers

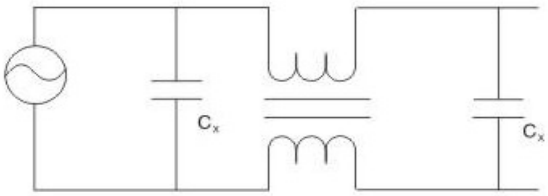
UL	UL1414	Line-by-pass, Across-the-Line and Antenna-coupling capacitors	E233106	X1:400VAC Y1:250VAC Y2:250VAC
CUL	C22.2No.1	Line-by-pass, Across-the-Line and Antenna-coupling capacitors	E233106	
VDE	IEC60384-14 2nd edition EN 132400 (1994)	(Y1)CB-Test Certificate (Y2)CB-Test Certificate (X1)CB-Test Certificate	40003902 40013601 file 58598 40013601 file 53349	
CB			DE1-19433 DE1-32950 DE1-32950-A1	
SEMKO			300515 512426	
FIMKO			FI19207 FI22033	
DEMKO			31200901 313555-01	
NEMKO			200303205 P05205043	
CQC			CQC03001008769 CQC03001008770	

Ceramic Disc Capacitor

CB-Certificate replaces all national approval marks of the following countries(they have already signed the CB-Agreement):				
Austria	Belgium	Denmark	Finland	Sweden
France	Germany	Ireland	Italy	Switzerland
Netherlands	Israel	Portugal	Spain	Great Britain
Japan	Norway	China	Poland	Czech.Rpublic
Singapore	Rep.of Korea	Hungary	Iceland	Slovenla

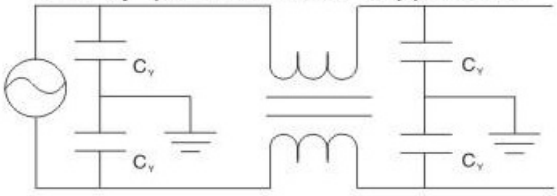
Application Examples

Across the line for noise suppression



C_X=Y1 or Y2

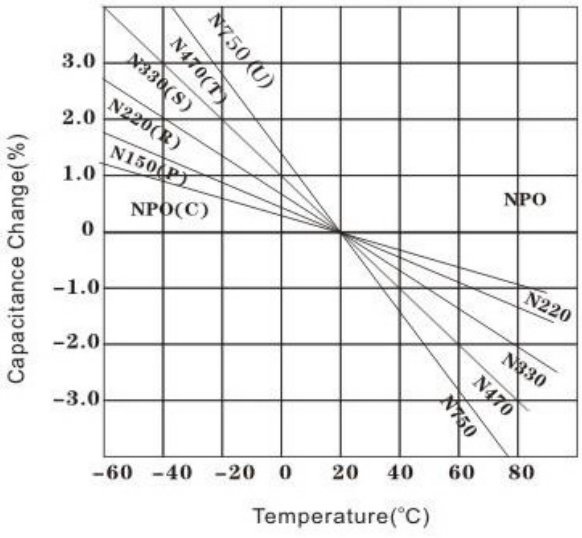
Line-by-pass for noise suppression



C_Y=Y1 or Y2

Ceramic Disc Capacitor Temperature Characteristics

Capacitance-Temp.Char.



Capacitance-Temp.Char.