TO : **2009.09.14**

S P E C I F I C A T I O N S

PRODUCT : CERAMIC CAPACITOR

MODEL : DS (X1Y2) SERIES

Manufacturer			Customer		
WRITTEN	CHECKED	APPROVED	WRITTEN	CHECKED	APPROVED
					
09/14	09/14	09/14	/	/	/

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SPEC No.	S P E C I F I C A T I O N	REV. No.	PAGE No.
DIS-H-203	AC CERAMIC CAPACITOR	1	1/11

Record of Revision

P/N		DONG IL SPEC.	

Rev. No	Reason	Contents	Date of approval	Checked	Remarks
Rev. 0	-	4.0 ± 0.5	-		
Rev. 1	Cutting legnth	3.2 ± 0.3	2009.02.11		

Approval standard and recognized No.

Mark	Standard	Recognized No.	R.V(ac)	Temp. Char
UL	UL1414	E128646	250	YB, YE, Fz
CSA	C22-2	LR79291	250	YB, YE, Fz
EK	K60384-14	SJ03001-2002	250	YB, YE, Fz
ENEC	IEC60384-14 2'nd	ENEC/FI 2009035	250	YB, YE, Fz

1. Scope

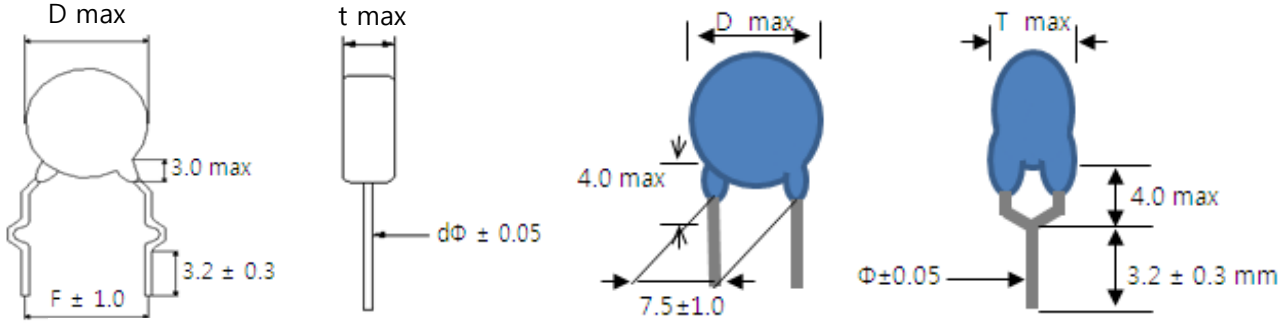
This specification relates high dielectric constant disc type fixed AC (Alternating Current) ceramic capacitor, intended for use in equipment for telecommunication and electronic devices.

1-1. Type Designation

DS 2E YE 222 M B K C04

- C04 — Cutting Length(1.3.7)
- K — Lead Variation (1.3.6)
- B — Packing Style (1.3.6)
- M — Cap. Tolerance (1.3.5)
- 222 — Capacitance (1.3.4)
- YE — Temperature Characteristic (1.3.3)
- 2E — Rating Voltage (1.3.2)
- DS — Type (1.3.1)

1-2. Dimension



Kink Type **Vertical Type** unut:mm

Type	Part Number	Dimensions(mm)				Capacitance(pF)		
		D (Max)	T (Max)	F	dΦ	B(Y5P)	E(Y5U)	F(Y5V)
DS	DS2E△△□□□△□□	8.0	6.0	7.5 / 10.0	0.6	100 ~ 470	1000	1000
	DS2E△△□□□△□□	9.0				560 ~ 680	1500	-
	DS2E△△□□□△□□	12.0				820 ~ 1000	2200	4700
	DS2E△△□□□△□□	14.0				-	3300	-
	DS2E△△□□□△□□	15.0				-	4700	10000

1-3. Specification and test methld

Operating Temperature Range : -25 to +125℃(-25 to +85℃ in case of the standard of UL/CSA)

1-3-1. Type

Type	AC Testing Voltage
DS	Testing Voltage AC 2,600V

1-3-2. Rating Voltage

DS TYPE 2E : 250V AC (X1, Y2)

1-3-3. Capacitance temperature characteristic

T.C	Temp. Range	Change Rate
YB(Y5P)	-25 ~ +85℃	+10 ~ -10%
YE(Y5U)	-25 ~ +85℃	+20 ~ -55%
Fz(Z5V)	-25 ~ +85℃	+30 ~ -80%

1-3-4. Nominal Capacitance

The nominal capacitance value in pF is expressed by three digit number.
The first, two digits represent significant figures and the last digit is the number of zero to follow.

Ex) 222 : 2200pF

1-3-5. Capacitance Tolerance.

M : ±20%

1-3-6. Packing Style and Lead Variation

Packing Style		Lead Variation	
F	Taping Type "Flat Pack"	K	Kink or Vertical Type
B	Bulk Type	S	Kink or Vertical Type

1-3-7. Cutting Length

Code	Standard
C04	3.2±0.3mm

2. Electrical Performance

Operating Temperature Range : -25 to +125℃(-25 to +85℃ in case of the standard of UL)

2-1. Capacitance

Capacitance shall be within the specified tolerance when measured at 20±2℃, 1±0.1㎑, at 1Vrms

2-2. Dissipation Factor(tanδ)

Measured at 1±0.1㎑, 1Vrms and 20±2℃

T.C	Dissipation Factor (tanδ %)
YB(Y5P)	2.5 max
YE(Y5U)	2.5 max
Fz(Z5V)	5.0 max

2-3. Insulation Resistance

Insulation Resistance shall exceed 10,000㏁ when measured after 1 minute charge with 500V DC

2-4. Withstanding Voltage (Between terminals)

DS : 2,600V AC for 1.0sec. (Charge & Discharge current : 50mA Max)

2-5. Withstanding Voltage (Between terminal and body)

Capacitors shall not be damaged when Rated Voltage as below condition applied both connected leads and body. DS : 2,600V AC for 60 sec.

2-6. Temperature Characteristics

Steps / Char.	1	2	3	4	5
YB, YE, Fz	+20℃	-25℃	+20℃	+85℃	+20℃

Capacitance is measured under the above-temperature conditions.
Capacitance change rate from the 1st step to the 5th is calculated, standardizing capacitance of the 3rd step.

Char.	Change Rate
YB	+10 ~ -10%
YE	+20 ~ -55%
Fz	+30 ~ -80%

2-7. Humidity Resistance Test

Capacitor shall be subjected to 40±2℃ relative humidity of 90 to 95% for 500 ±12 hrs.
After placing in room condition for 12 to 24 hrs after this test satisfy table I

Table I.

Appearance	no remarkable damage
Cap. Changes	YB : ±10% Max
	YE : ±20% Max
	Fz : ±30% Max
D.F (tanδ)	YB : ±5% Max
	YE : ±5% Max
	Fz : ±7.5% Max
Insulation Resistance	3000MΩ Min

2-8. Humidity Resistance Load Test

Temperature : 40±2℃ , Humidity : 90 ~ 95%
Applied Voltage : Rating Voltage
Testing time : 500±12 hr
Rated value is the same table I

2-9. High temperature load test

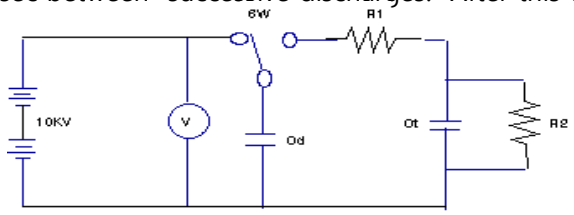
Capacitors are to placed in a circulating air oven for 1000±48.-0 hrs the air oven be maintained at a is be maintained at a temperature of 85±3℃ throughout the test, each capacitor is to be subjected to a 800Vrms alternating potential having a frequency of 50-60Hz, except that once each hour the potential is to be increased to 1600rms for 1/10 sec. After this test, capacitors shall satisfy Table I.

2-10. Discharge test I (Impulse test)

Table Ⅱ.

Insulation Resistance	1000MΩ Min
Withstand Voltage between terminals and envelope	No failure

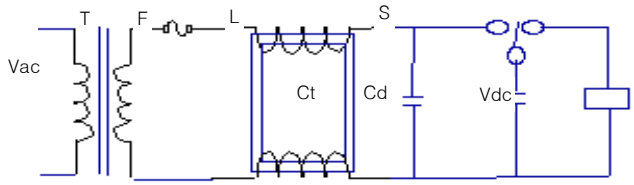
Capacitor shall withstand 15 times of discharges from a dump capacitor with an interval of 5 sec between successive discharges. After this test, capacitor shall satisfy table Ⅱ



SW : Switch R1: 1kΩ
V : DC Voltmeter R2: 1000MΩ(UL,CSA)
Ct: Test sample 4MΩ(VDE)
E : 10kv DC

2.11. Discharge test II (Impulse test)

Capacitor shall withstand, without causing a hazard, four discharges from a dump capacitor charged to a voltage value that when discharged places a potential of Vdc across the capacitor under test, with an interval of 5 sec between successive discharges.



Vac : 120V, 60Hz
T : Option isolation transformer of pulse blocking
F : Plug fuse 30A power supply
L : 3mH, 0.03 ohm choke coil
Ct : Test specimen
Cd : Dump Capacitor

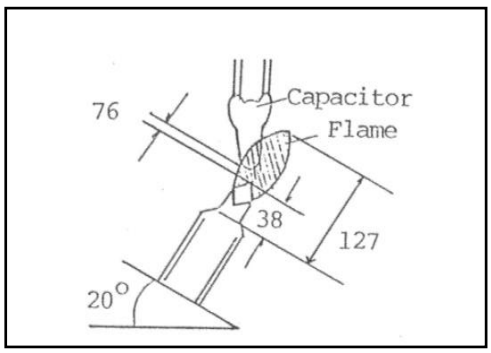
Ct Capacitance	Cd Capacitance	Tan δ (%)
0 to 0.005μF	0.005μF	0.5 MAX
0.0051 to 0.05μF	0.05μF	0.5 MAX

Vdc: Variable DC power supply
Vdc = 5000(Cd + Ct) / Cd (VDC)

2.12. Flaming test

The flame shall applied for 15 sec, and than removed for 15 sec until 5 such applications have been made.
The material to fourth cycle more than 1 minute in last cycle.

Dimensions in mm



Flame nozzle : 9.5mm

3. Mechanical Test

3.1 Terminal strength (Tensile)

Capacitors shall not be damaged, when tested as follows :

Lead Dia.	Load
0.50 ~ 0.65mm	1.0kg

- The load in table shall be applied gradually to the terminal in its draw-out direction and held thus for 1 to 5 sec.

3.2 Terminal strength (Tensional)

Capacitors shall not be damaged or broken, when tested as follows :

Lead Dia.	Load
0.50 ~ 0.65mm	0.5kg

- The Capacitor shall be held so that draw-out axis of the lead is kept vertical and load in left table shall be bent 90°and returned its original position in 5sec.

- Then the body shall be bent 90°To opposite direction and returned to its original position in the same speed.

3.3 Solderability of Leads

The lead wire shall be soldered with uniformly coated on the axial direction over 75% of the circumferential direction

- Flux : Solution of rosin in 25%
- Solder : Sn 97.5%
- Solder temp : 260±5℃
- Immersion time : 2±0.5sec.
- Immersion depth : up to 3~4mm

3.4 Resistance of Soldering heat

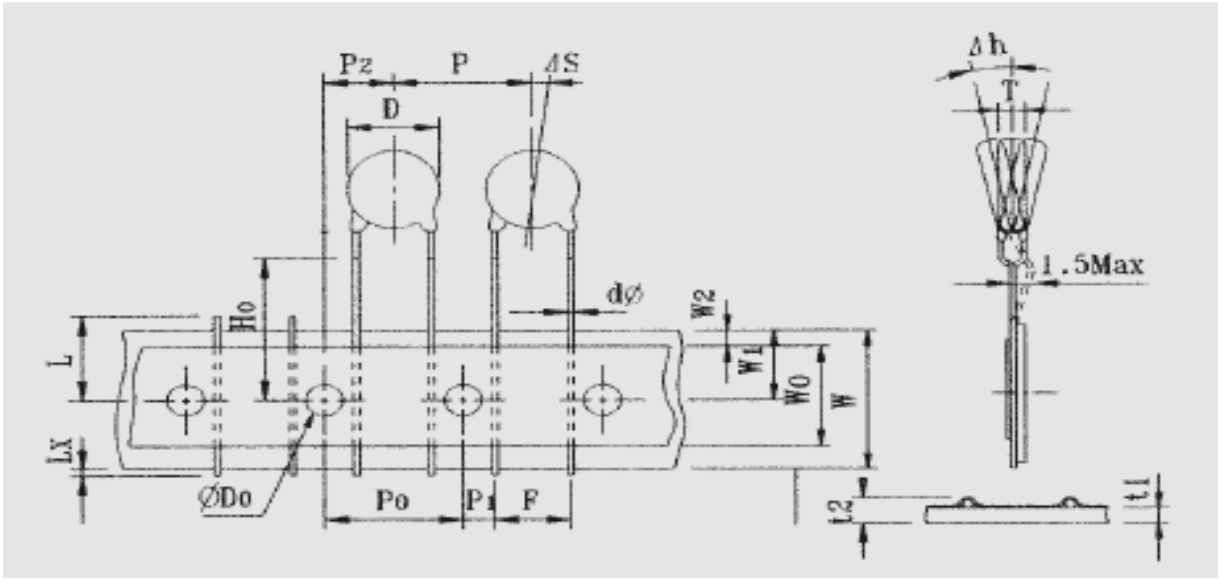
- Solder temp. : 270±5℃
- Immersion time : 5±0.5sec

Appearance		No. visible damage
Capacitance Change	YB	± 10% max
	YE	± 20% max
	Fz	± 20% max
Dielectric Strength		No. Failure

4. Marking

1	Type Designation	DS	
2	Nominal Capacitance	3 digit code	
3	Capacitance Tolerance	letter code	
4	Manufacturer's Name	DIC	
5	Recognized Mark	UL, EK, CSA,ENEC	
6	Rating Voltage	250~	
7	X, Y Class	X1, Y2	

TAPING FK07 (15mm pitch of component)



Unit : mm

Symbol	Item	Dimension(mm)	Tolerance
P	Pitch of component	15	±1.3
Po	Pitch of sprocket hole	15	±1.0
P1	Lead length from hole to lead	3.75	±1.0
P2	Lead length from hole center to component center	7.5	±1.5
Φd	Lead diameter	0.55, 0.60	±0.05
Δh	Deviation across tape	0	±2.0
F	Lead spacing	7.5, 10.0	±1.0
W	Carrier tape width	18	+0.8~-0.2
Wo	Hold down tape width	6.0Min.	-
W1	Position of sprocket hole	9	±0.5
W2	Hole down tape position	3.0Max	-
H	Height of component from hole center	20	±1.0
Ho	Lead-wire clinch height	16	±0.5
ΦD	Body diameter	12.0 Max	-
ΦDo	Diameter of sprocket hole	4	±0.2
t1	Total tape thickness	0.7	±0.2
t2	Total thickness, tape and lead-wire	1.5Max	-

5. STANDARD PACKING

1) BULK PACKING TYPE

전압	특성	정전용량(pF)	Straight Long		Forming Cut (절단 제품)	
			비닐포장 수량	BOX 포장 수량	비닐포장 수량	BOX 포장 수량
DS	B	100~560	1,000	5,000	1,000	6,000
		680	1,000	2,000	1,000	6,000
		1000	500	3,000	1,000	4,000
	E	1000	500	3,000	1,000	6,000
		1500~1800	500	2,000	1,000	6,000
		2200	500	3,000	1,000	4,000
		3300	500	2,000	1,000	3,000
		4700	500	2,000	500	3,000
	F	2200	500	3,000	1,000	6,000
		4700	500	3,000	1,000	4,000
		10000	500	2,000	500	3,000

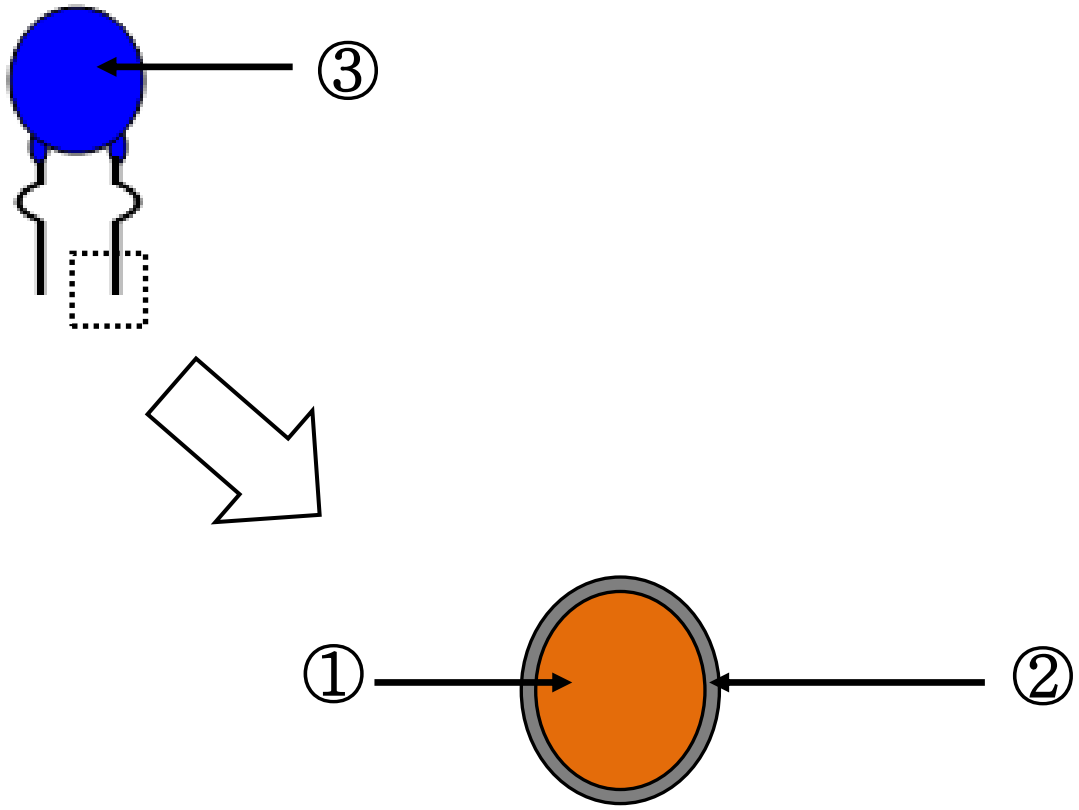
2) TAPING PACKING TYPE

전압	특성	정전용량	Taping Type	
			Inner Box	Outter Box
DS	E / F	1000	1,000	6,000
		1500~1800		
		2200		
		3300		
		4700		

External Materials

1. Parts Name : Disc Ceramic Capacitor

2. Specification



No.	MATERIAL	REMARK
①	COPPER(Symbol : Cu)	
②	TIN(Symbol : Sn)	Sn 100%(Pb free), 3㎛ MIN(thickness)
③	Epoxy Resin	Hihg Voltage (1kV 이상)

1. The Outline of company

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