

Spec. Name Ceramic disc capacitor approve	Record number
Description Guidelines for using ceramic disc capacitor	Page# 2-14

3 General item of safety

3.1 Real equipment, and welding conditions

3.1.1 design of P.C.B.

Between the hold of PCB with lead of capacitor must have some apare .

3.1.2 Adjusion of assembly machine

If it have excessive pound phenomenon when auto assembly, please adjust the assembly machine.
Capacitor location and the surrounding space adjustment

Voltage	Distance and space between the PCB safety
& 250VDC	' 0.5mm
500VDC(2KVDC 250VAC(1KVAC	' 1.0mm
3KVDC(6.3KVDC 2KVAC(4KVAC	' 2.0mm
' 8KVDC	' 2.5mm

Voltage	At least to maintain the space in other parts of the capacitance between a safe distance to avoid
& 250VDC	' 0.5mm
500VDC(2KVDC 250VAC(' 1.5mm
3KVDC(6.3KVDC 2KVAC(4KVAC	' 3.0mm
' 8KVDC	' 4.5mm
* 20KVDC	' 6.5mm

3.1.3 Soldering

Soldering fluidness: In this flow of the halogen need : - 0.1WT%(0.1WT% are rated of transform C1)

Solder: It can't immerge capacitor body in the solder process at approve.

Washing:It must use lotion wash. If the capacitor wash with P.C.B. must comfirm the solvent can't influence the capacitor body.

3.2 Storage

The capacitor must storage in door ,That can't storage in high humidity and high temperature environment.The temperature must at 5~40) and the humidity under75%.They are wallamted for a period of one year .From the date of mannfacture,But the storage perior must confirm lead will not oxidize.

It must avoid direct by sun shine and soaked by dew

Rev.	Edit	Date	Content	Responsible	
1	1				
	2				
	3				
Issue			Approve	Check	Prepare
12-Jun-17			Max Weng	Sun YongQin g	ZhongMinEr
Implement					
12-Jun-17			ZONKAS ELECTRONIC CO., LTD		

Standard title : Ceramic disc capacitor approve	Record NO.
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Name: Guidelines for using ceramic disc capacitor	Page : 3-14
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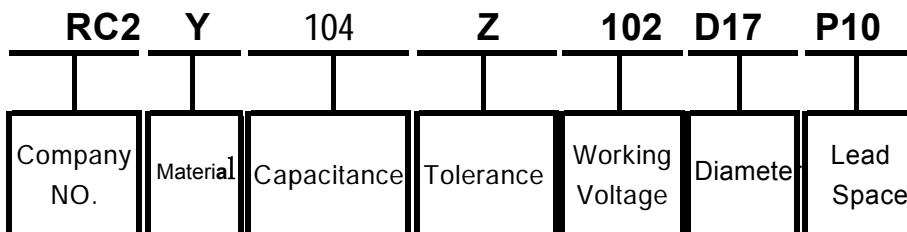
1 . Applicable range :

The specification applicable at ceramic disc capacitor (500VDC-4KVDC)

2 . Recommend standard :

GB9597-88

3 . The principle of part number :



Product Series

3-CLASS1	4-CLASS2	5-CLASS3
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Capacitance

223 ~ 22000PF ~ 22nF ~ 0.022μF	103~10000PF~10nF~0.01μF
331 ~ 330PF ~ 0.33nF ~ 0.00033μF	104~100000PF~100nF~0.1μF
222 ~ 2200PF ~ 2.2nF ~ 0.0022uF	
472 ~ 4700PF ~ 4.7nF ~ 0.0047uF	

Tolerance

Tolerance	±5%	±10%	±20%	+80%-20%
Symbol	J	K	M	Z

Voltage

Voltage	500V	1KV	4KV
Symbol	2H	3A	3G

Material

NPO	N75	SLO	2SL	X7R	Y5E	Y5P	Y5R	Y5U	Y5V	Z5V
NPO	N750	SL	2SL	X7R	Y5E	Y5P	Y5R	Y5U	Y5V	Z5V
CH	UJ	SL	2SL	B	B	B	B	E	F	F

Lead type

Lead type	Straight lead	Inside kink	Outside kink	up/down kink
Symbol	S	I	O	F

Pitch

Pitch	2.5mm	6.35mm	10mm
Symbol	3	6	9

Lead length

Lead length	3±0.5mm	18±2mm	25±3mm	Taping
Symbol	3	M	L	T

Coating

Painting method	Expore
Symbol	E

Rve	Edit	Date	Content	Responsible
1	1			
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	3			

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12-Jun-17		Max Weng	Sun YongQing	ZhongMinEr
Implement				
12-Jun-17				

4 . Operating temperature range :
-25°C ~ 125°C Include capacitor-self heat maximum 20°C, it can't application temperature characteristic.


5 . Performance : Performance and test method refer to table1.

6 . Experiment condition :
The standard experiment condition as (temperature15~35°C,humidity45`75%,atmospheric pressure 86~106kpa).If it can't limited any condition But doubt place or special place,Must using standard condition, as (temperature20±5°C, humidity 60 ~ 70%, atmospheric pressure 86 ~ 106kPa)


NO	Item	Characteristics	Test Method
1	Appearance,size and mark	Normal	Size measured by vernier. Appearance and
2	Mark and resistance to solvent	The mark reference appendix specification, resistance to solvent test, mark must clear	Appearance part number test by visual. Resistance to solvent test: Put the capacitor in the 20-25°C cleanser immerge 5+/-0.5mins
3	Voltage proof	Between terminals Normal	Test Voltage: W.V.=500V-2KV T.V=200%×W.V. W.V.=3KV-6KV T.V=150%×W.V. W.V.=8KV-15KV T.V=125%×W.V. Time of Voltage: 1 ~ 5seconds Charge and discharge current 50mA max
		Between terminal and case Normal	Test Voltage: 1300V.DC Time of Voltage: between1 ~ 5seconds Charge and discharge current 50mA max Voltage is applied: small metal ball method
4	Insulation resistance	T.C. 10000MΩ MIN HIK 5000MΩ MIN semiconductor(S.C.)100MΩ MIN	Test voltage: Rated voltage Test time: 1min±5s
5	Capacitance	Within the standard tolerance	Measure voltage T.C. HIK : 1.0Vrms semiconductor(S.C.) : 0.1Vrms Measure frequency: T.C. : ≤1000PF 1MHz >1000PF 1KHz HIK、 semiconductor (S.C.) : 1KHz Measure temperature : 25°C±2°C
6	Q and Dissipation factor (tan δ)	T.C. : 1.C<30PF : Q≥400+20×C 2.C≥30PF : Q≥1000 HIK : 1.Y5E、 Y5P、 Z5U、 Y5U、 X7R : DF≤2.5% 2. Z5V、 Y5V : DF≤5% 3. BN、 Y5T : DF≤0.5% 4.Y5R : DF≤0.2% semiconductor(S.C.): 1.Y5P、 Y5U : DF≤5% 2.Y5V : DF≤7%	same condition as the capacitance

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NO	Item	Characteristics	Test Method		
7	Temperature characteristic	T.C. : $C \leq 4PF$ TC $\pm 250PPM/^{\circ}C$ $C \leq 9.9PF$ TC $\pm 120PPM/^{\circ}C$ $C \geq 10PF$ TC $\pm 60PPM/^{\circ}C$ SL TC P350-N1000 HIK, S.C. : Y5E : $\pm 4.7\%$ Y5P, BN : $\pm 10\%$ X7R, Y5R : $\pm 15\%$ Y5T : $\pm 22\%$ Y5U, Z5U : $\pm 22\% - 56\%$ Y5V, Z5V : $\pm 22\% - 82\%$	measure temperature: NPO, SL, X7R : -55 $^{\circ}C$ ~ 125 $^{\circ}C$ Y5P, Y5R, BN, Y5E, Y5U : -25 $^{\circ}C$ ~ 125 $^{\circ}C$ Z5U, Y5V, Z5V : -25 $^{\circ}C$ ~ 85 $^{\circ}C$ Measure frequency: 1KHz1.0V measure temperature: 25 $^{\circ}C$ $\pm 2^{\circ}C$		
8	Strength of lead	Pull	Normal	Direction : Direction of ternainal Time : 10 \pm 1s Pull : 1.0KG	
		Bending	Normal	Direction : Bend to 90 $^{\circ}$ than bend 90 $^{\circ}$ reversely Pull : 0.5KG Times : 5times	
9	Resistance to vibration	Appearance	No marked defect	Frequency : 10 ~ 55 ~ 10Hz(1min) Amplitude : 1.5mm Direction to vibration : X、Y、Z 3 direction Time : 2hours	
		Capacitance	Refer to item 5		
		DF	Refer to item 6		
10	Weldability	Lead wire shall be soldered with uniformly coated on the axial . Direction over 75% of the circumferential direction, and no defect.	Solder temperature: 260 \pm 5 $^{\circ}C$ Test time: 3.5 \pm 0.5s Soak position : between bottom 4mm Stored in room temperature 24hours then test		
11	Solder ability of leads	Appearance	No marked defect	Solder temperature: 260 \pm 5 $^{\circ}C$ Soak position : between bottom 4mm Stored in room temperature 24hours then test it	
		Capacitance Changes	T.C. : $\pm 5\%$ or $\pm 0.5PF$ HIK, S.C. : Y5E, Y5P, BN : $\pm 10\%$ X7R, Y5R : $\pm 15\%$ Y5T, Y5U, Z5U : $\pm 20\%$ Z5V, Y5V : $\pm 30\%$		
		Q or DF	T.C. : 1. $C < 30PF$: $Q \geq 400 + 20 \times C$ 2. $C \geq 30PF$: $Q \geq 1000$ HIK : 1. Y5E, Y5P, Z5U, Y5U, X7R : $DF \leq 2.5\%$ 2. Z5V, Y5V : $DF \leq 5\%$ 3. BN, Y5T : $DF \leq 0.5\%$ 4. Y5R : $DF \leq 0.2\%$ (S.C.): 1. Y5P, Y5U : $DF \leq 5\%$ 2. Y5V : $DF \leq 7\%$		
		IR	To satisfy the specified initial value		
Rve	Edit	Date	Content	Responsible	
1	1				
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ZONKAS ELECTRONIC CO., LTD					

NO	Item	Characteristics	Test Method																														
12	Appearance	Normal	Temperature cycle as one cycle to follow below list , After 10 cycles sink in water of 65+5/-0°C for 15 minutes then sink in the salt water of 0+/-3°C for 15minutes which as 1 cycle and perform 2 cycles ,To test after stored in room temperature for 24hours Temp. cycle condition: (X7R、Y5P、Y5U) <table border="1" style="margin-top: 10px; width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Seq.</th> <th>Temp (°C)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25 0/-3</td> <td>30</td> </tr> <tr> <td>2</td> <td>room temp.</td> <td>10~15</td> </tr> <tr> <td>3</td> <td>+125 +3/0</td> <td>30</td> </tr> <tr> <td>4</td> <td>room temp.</td> <td>10~15</td> </tr> </tbody> </table> Temp. cycle condition: (Y5V) <table border="1" style="margin-top: 10px; width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Seq.</th> <th>Temp (°C)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25 0/-3</td> <td>30</td> </tr> <tr> <td>2</td> <td>room temp.</td> <td>10~15</td> </tr> <tr> <td>3</td> <td>+85 +3/0</td> <td>30</td> </tr> <tr> <td>4</td> <td>room temp.</td> <td>10~15</td> </tr> </tbody> </table>	Seq.	Temp (°C)	Time (min)	1	-25 0/-3	30	2	room temp.	10~15	3	+125 +3/0	30	4	room temp.	10~15	Seq.	Temp (°C)	Time (min)	1	-25 0/-3	30	2	room temp.	10~15	3	+85 +3/0	30	4	room temp.	10~15
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Capacitance Change	T.C. : ±5% or ±0.5PF max HIK、S.C. : Y5E、Y5P、BN : ±10% X7R、Y5R : ±15% Y5T、Y5U、Z5U : ±20% Z5V、Y5V : ±30%																																
Q or DF	T.C. : 1.C<30PF : Q≥400+20×C 2.C≥30PF : Q≥1000 HIK : 1.Y5E、Y5P、Z5U、Y5U、X7R : DF≤5% 2. Z5V、Y5V : DF≤7.5% 3. BN、Y5T : DF≤1% 4.Y5R : DF≤0.5% (S.C.): 1.Y5P、Y5U : DF≤7.5% 2.Y5V : DF≤10%																																
IR	To Satisfy the special initial value																																
13	Appearance	Normal	Apply rated voltage for 500(+20-0) hours at (40+2°C) in 95% RH, Charge and discharge current 50mAmx. Leave the capacitance in ambient condition for over the following time. Measurement : T.C.:24 H rs HIK .S.C:48 Hrs Temperature: 40±2°C																														
	Capacitance	T.C. : ±7.5% or ±0.75PF max HIK、S.C. : Y5E、Y5P、BN : ±15% X7R、Y5R : ±20% Y5T、Y5U、Z5U : ±25% Z5V、Y5V : ±35%																															
	Q or DF	T.C. : 1.C<10PF : Q≥200+10×C 2.10PF≤C<30PF : Q≥275+2.5×C 3.C≥30PF:Q≥350 HIK : 1.Y5E、Y5P、Z5U、Y5U、X7R : DF≤5% 2. Z5V、Y5V : DF≤7.5% 3. BN、Y5T : DF≤1% 4.Y5R : DF≤0.5% (S.C.):1.Y5P、Y5U : DF≤7.5% 2.Y5V : DF≤10%																															
	IR	500MΩ min or 25MΩ X UF min																															

Rve	Edit	Date	Content	Responsible	
	1				
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Implement			Max Weng	Sun YongQing	ZhongMinE
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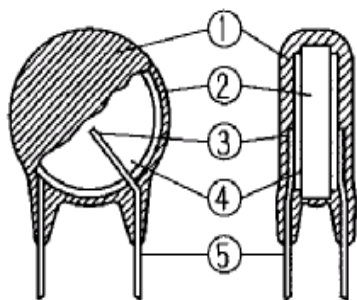
NO	Item	Characteristics	Test Method
14	Appearance	Normal	Test temp.: Y5E, Y5P, BN, Y5R, Y5T, Y5U, Z5U, Y5V, Z5V : 85±5°C NPO, N750, X7R : 125+5°C Test time: 1000+48/-0 Hrs Apply voltage : Rated voltage x1.5 Charge-discharge current <50mA. Capacitor shall be measured after leaving at room temperature T.C.:24Hr,HIK,S.C.:48Hr
	Capacitance Change	T.C. : ±7.5% or ±0.75PF HIK, S.C. : Y5E, Y5P, BN : ±10% X7R, Y5R : ±15% Y5T, Y5U, Z5U : ±20% Z5V, Y5V : ±30%	
	Q or DF	T.C. : 1.C<30PF : Q≥200+10×C 2.C≥30PF : Q≥500 HIK : 1.Y5E, Y5P, Z5U, Y5U, X7R : DF≤5% 2. Z5V, Y5V : DF≤7.5% 3. BN, Y5T : DF≤1% 4.Y5R : DF≤0.5% (S.C.): 1.Y5P, Y5U : DF≤7.5%	
	Insulation Resistance	T.C. : 1000MΩ above HIK : 500MΩ above S.C. : 25MΩ × UF	
15	Appearance	Normal	Temperature: 60±2°C Humidity : 90%RH Test time: 1000+48/-0H Capacitor shall be measured after leaving at room temperature T.C.:24Hr,HIK,S.C.:48Hr
	Capacitance Change	T.C. : ±7.5% or ±0.75PF HIK, S.C. : Y5E, Y5P, BN : ±10% X7R, Y5R : ±15% Y5T, Y5U, Z5U : ±20% Z5V, Y5V : ±30%	
	Q or DF	T.C. : 1.C<30PF : Q≥200+10×C 2.C≥30PF : Q≥500 HIK : 1.Y5E, Y5P, Z5U, Y5U, X7R : DF≤5% 2. Z5V, Y5V : DF≤7.5% 3. BN, Y5T : DF≤1% , 4.Y5R : DF≤0.5% (S.C.): 1.Y5P, Y5U : DF≤7.5%	
	Insulation Resistance	T.C. : 1000MΩ above HIK : 500MΩ above S.C. : 25MΩ × UF	
16	confirm the coating of thn	tin must add 50% on the capacitor	room temperature to 60°C Test time: 1000+48/-0 Hrs

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Implement						
12-Jun-17						

7 . Construction . Shape . Dimension

Does not specifically limit conditions, according to state (temperature 15 ~ 35 °C, relative humidity of 45 ~ 75%, atmospheric pressure 86 ~ 106kPa).

Doubt occasions or special requirements of the occasion, according to state (temperature 20 ± 5 ° C, relative temperature 60 ~ 70%, atmospheric pressure 86 ~ 06kPa).

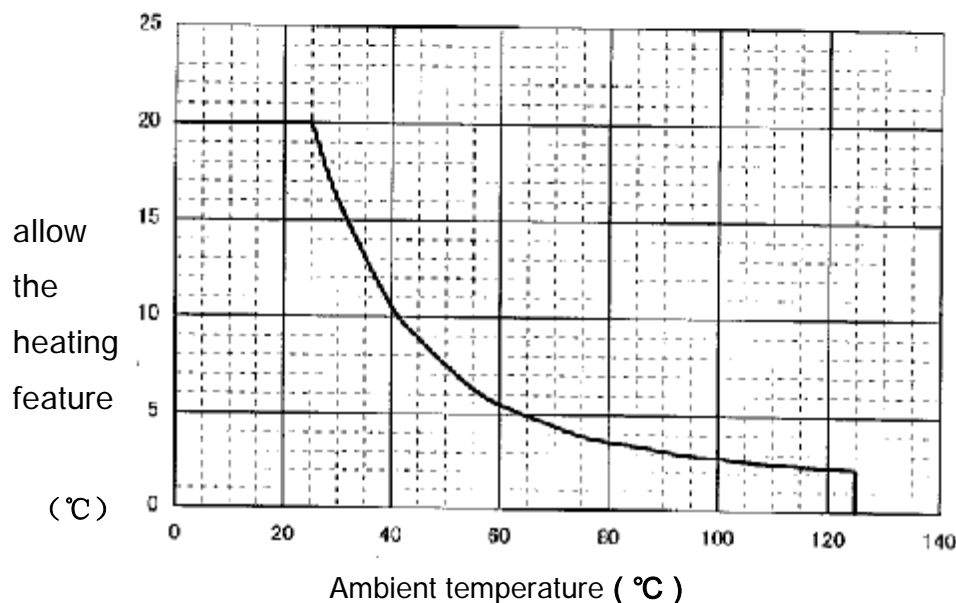


Material

NO.	Name	Material
1	Coating	Blue epoxy UL94.V-0
2	disc	Ceramic
3	Sloder	Tin of ROHS
4	Electrode	Silver
5	Loading	CP Lead

Shape and outline dimension refer to attachmen

8.Ambient temperature - allow the heating features

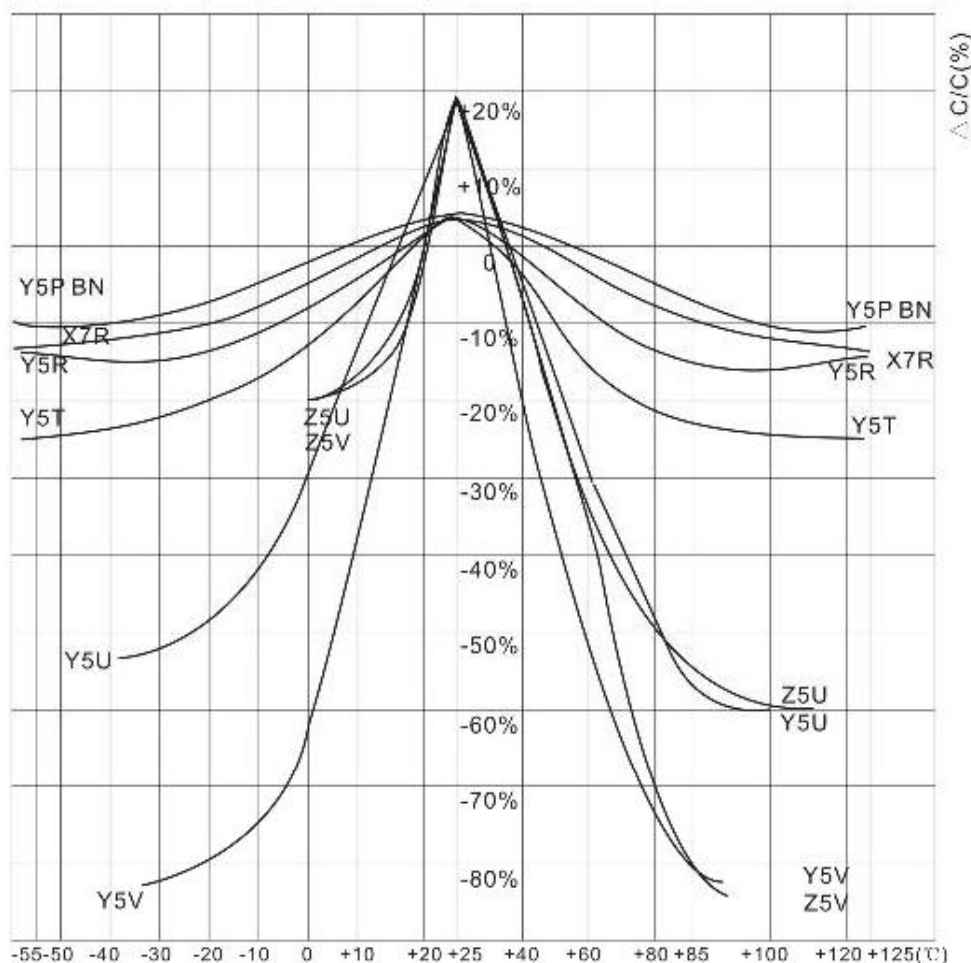


【Explain】 :


The capacitor operating at AC voltage self-heat temperature in room temperature(25°C)max are 20°C. Self-heat tempetature (to different capacitor surface and environment temperature). It have varied according variety of surface temprature. Environment temperature over 25°C, It'll referent up figure.

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1	1			
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12-Jun-17				ZhongMinE

9.Capacitance and Temperature Curve



Code	T.R.	PPM/°C	EIA Code	Code	T.R.	Cap change	EIA Code	Code	T.R.	Cap Change	EIA code
CH	-55°C ~ 125°C	0±60~500	COH(NPO)	B	-25°C - +85°C	±15%	Y5R	B	-55°C ~ +125°C	±15%	X7R
UJ	-55°C ~ 125°C	-750±120	U2J(N750)	B	-25°C - +85°C	±10%	Y5P BN	B	-25°C - +85°C	±22%	Y5T
SL	-55°C ~ 125°C	+350~ -1000	S2L	E	-25°C - +85°C	+22% ~ -56%	Z5U	E	-25°C - +85°C	+22%~-56%	Y5U
2SL	-55°C ~ 125°C	+2000~ -5000	2SL	F	-25°C - +85°C	+22% ~ -82%	Z5V	F	-25°C - +85°C	+22%~-82%	Y5V

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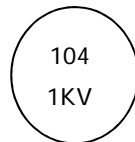
Name: Guidelines for using ceramic disc capacitor	Page : 10-14
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10 . REPRESATATION :

- 1.Capacitance : under100pF, marking 2 number,over 100pF , marking 3 number
- 2.Voltage : 1kV/2kV/3kV real marking

For example :

1KV 100NF




11 . Packing Method :

- (1) Bulk 1000PCS per bag
- (2) Taped 2000PCS per bag

12 . Manufacturer :

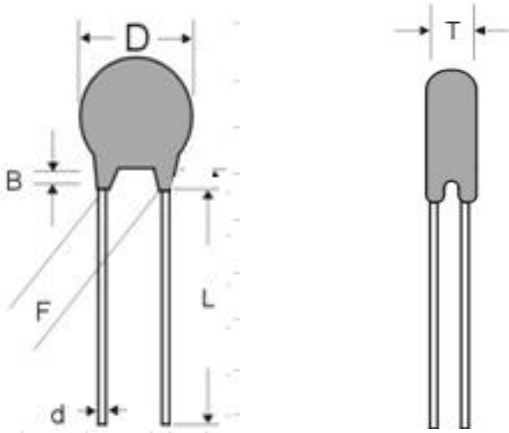
Name : Zonkas Electronic co., Ltd.
Address : Ling Xia Industrial Area, Liaobu Town, Dong Guan City, Guang Dong Province,China
TEL : 0769-83222669 83237061
FAX : 0769-83237062

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12-Jun-17				

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13.Shape and Dimension



Outline dimension

Symbol	dimension(mm)	Remark
D	-	Refer to be below list
T	-	Refer to be below list
L	-	Refer to be below list
F	10.0±1.0	
B	3.0max	
d	0.5±0.1	

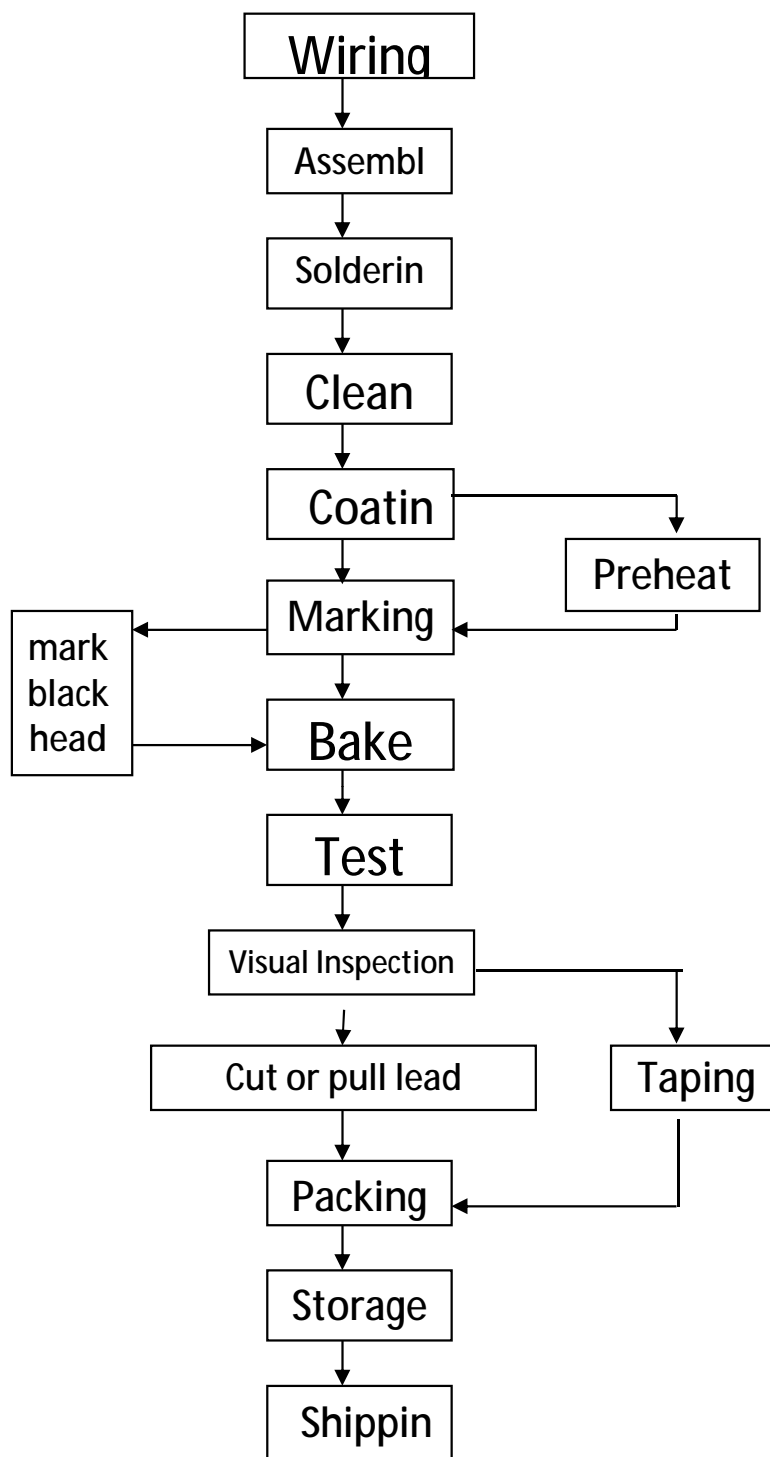
Code


Customer NO.	Type NO.	Capacitance		voltage (KV)	Dimension (mm)			
		Cap.(nF)	tolerance		D max	T max	F	L
	J4104Z3AY5VS9LEN	100	+80%-20%	1.0	18.0	3	10±1.0	25±3.0

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Issue 12-Jun-17	 ZONKAS ELECTRONIC CO., LTD	Approve Max Weng	Manager Sun YongQing	Prepare ZhongMinE
Implement 12-Jun-17				

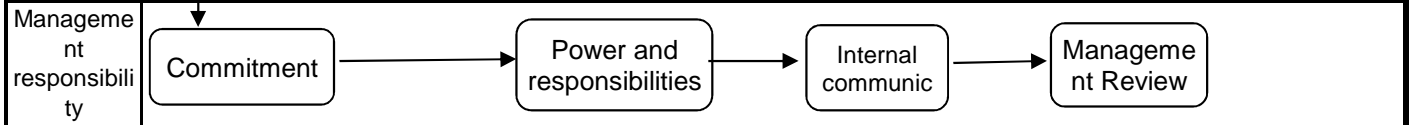
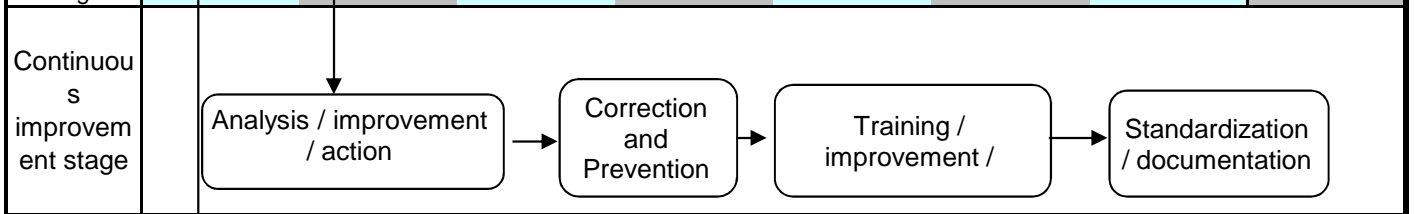
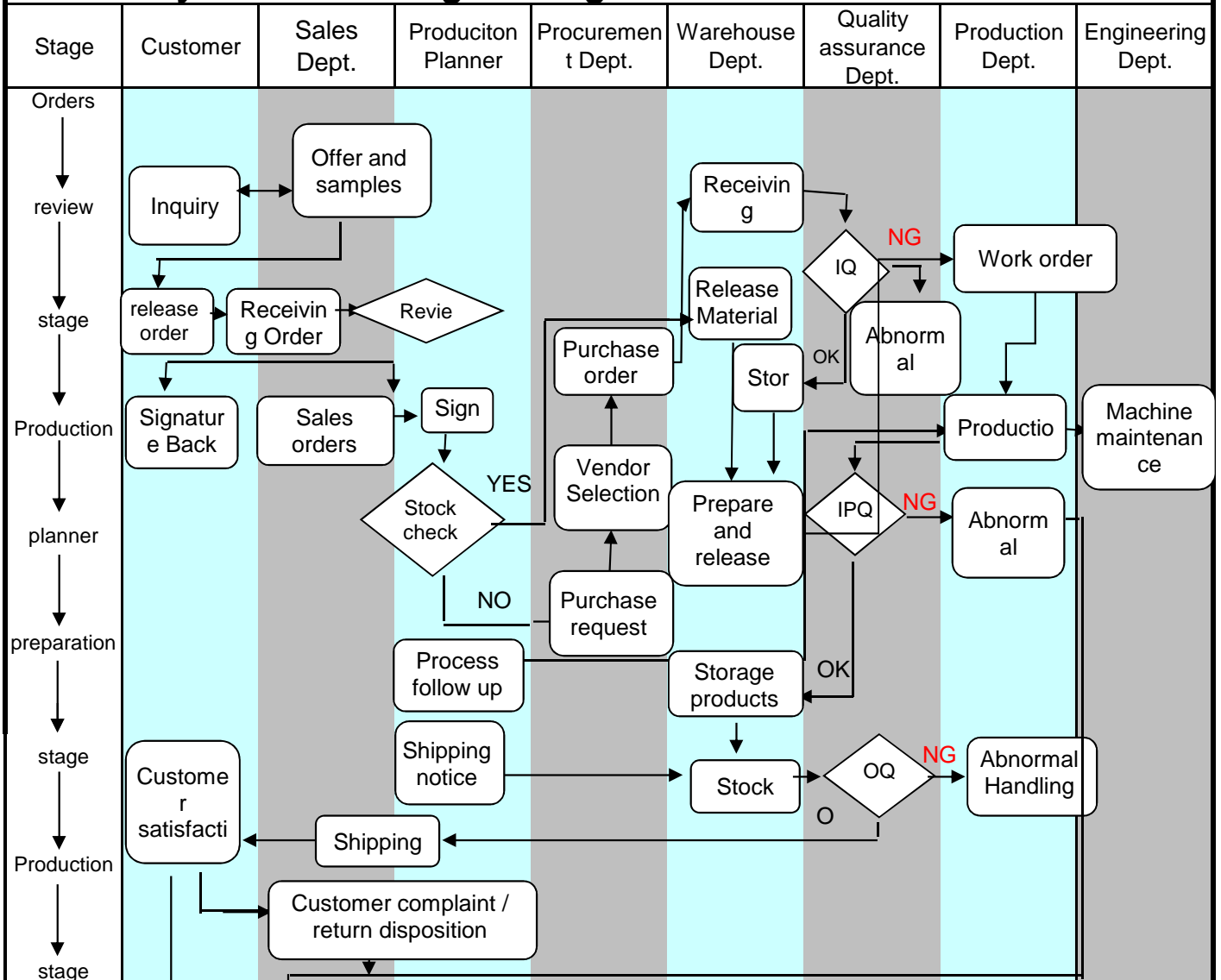
14. Manufacture Process:



Rve	Edit	Date	Content	Responsible	
1	1				
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15 .Quality assurance engineering chart



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12/Jun/17		Max Weng	Sun YongQing	ZhongMin Er
Implement				
12/Jun/17				

Spec. Name: Ceramic disc capacitor approve	Record number
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16. Quality Change History

Responsible Dept.

Date:
Dept.:
Company Name
Signature:
e-mail:

[Change] means referring to mass production at the time of the activities related to production changes.

Select one of two

- | | | |
|---|--------------------------|--------------------------|
| 1. Quality responsible | Change | Unchanged |
| Top Quality responsible change: | <input type="checkbox"/> | <input type="checkbox"/> |
| Title: | | |
| Name: | | |
| *Whatever change or not, please fill in the above information. | | |
| 2. Production location change or increase | Change | Unchanged |
| Production line change (process change) | <input type="checkbox"/> | <input type="checkbox"/> |
| Production factory (address) or origin (country) change | | |
| Processing supplier (sub-contract supplier) change | | |
| 3. Material and parts | Change | Unchanged |
| Upstream supplier (sub-contract supplier) change | <input type="checkbox"/> | <input type="checkbox"/> |
| Specification change | | |
| Material change | | |
| Re-cycle material change | | |
| Supplement material (plastic, solvent, coating, ink, soldering etc) | | |
| Packing material | | |

Above record are correct.

Change content:

Note: As supplier issue to change (the above item 2, 3), approved by Zonkas IQC or SQA in advance is required.

Rev	Edit	Date	Content	Responsible
1	1			
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Issue		Approve	Manager	Prepare
12/Jun/17		Max Weng	Sun YongQin	ZhongMin Er
Implement				
12/Jun/17	ZONKAS ELECTRONIC CO., LTD			

松家電子有限公司 ZONKAS ELECTRONIC CO.,LTD.

(單層)陶瓷系列承認書
(Disc) Ceramic Capacitors series

170612001

編號：SJ/RD—8224

2017年6月12日

Customer 顧客	金沛	Customer NO 顧客料號		Part No 零件代號 J4104Z3AY5VS9LEN				Q'TY 數量	PCS
		Operating Temperature (使用溫度範圍)		-25°C ~ +85°C		Cap change (容量變化率)		+22%~-82%	
Name Code 規格	C/C	CAP. 容量	100nF (104)	TOL 誤差	+80%	Material 材質	Y5V	W.V. 電壓 (DC)	1KV

1. Test condition 測試條件

Instrument (儀器)	Freq.頻率	Temp.溫度	R.H.濕度	非ROHS <input type="checkbox"/>
HP4278A	1KHz 1.0V	31°C +/-2°C	65%	ROHS <input checked="" type="checkbox"/>

Appearance 外觀	Capacitance 靜電容量 (nF)	Insulation Resistance 絕緣電阻 (MΩ)	Body size 外徑 (mm) D	Coating on Lead 塗料長度 (mm) B	Lead Spacing 導線間格 (mm) F
104 1KV	80~180	≥5000	≤18	≤3.0	10±1.0
DF值	Lead Length 導線長度 (mm) L	Thickness 厚度 (mm) T	Wire diameter 線徑 (mm) d	Dielectric Strength 誘電體強度 V.DC	
≤5%	25±3.0	≤3	0.5±0.1	2KV.DC1-5S 充放電電流為50mA以下	

2. Actual record 實測記錄

NO	1	2	3	4	5	6	7	8	9	10
Capacitance 靜電容量(nF)	95.16	96.35	93.94	95.20	96.40	95.91	96.09	97.77	100.44	85.85
DF值(%)	0.47	0.43	0.41	0.39	0.45	0.44	0.45	0.41	0.38	0.43
Judgment 判定	AC <input checked="" type="checkbox"/>					RE <input type="checkbox"/>				

3. Reference drawing 圖形參考

