

Product Specification

Number: RNP10-Y2-Y5V Series

Name: Ceramic disc safety Y capacitor

Customer: _____

Date: 2023-11-22

Customer Signature:



Compi	Check	Review	Approva
Jenny	Jack.C		

Spec. Name Ceramic disc safety Y capacitor approval	Record number
Description Guidelines for using ceramic disc safety Y capacitor	Page: 2-9

1. Applicable range:

The approval guidelines for using and safety item for the ceramic disc safety Y capacitor.

Take safety notice

If the capacitor using mistake in relevant rated and performance condition (using environment, circuit etc.) Will worsen it that will short or broken circuit, as smoke and fire as worst condition. Guide lines for using must strict confirm the safety condition as following.

2. Strict item as safety:

2.1 Using environment and circuit design.

2.1.1 Using environment and rated performance confirm

- Confirm storage and using environment ,It can not over the using environment .
It'll worsen short or broken circuit, as smoke and fire the capacitor over performance.
- Using in human machine (aviation, space, medical machine etc) must confirm with us before using

2.1.2 Operating temperature range

- It can't over operating temperature range
 - ①Don't over the highest temperature by the approve.
 - ②Don't over the highest temperature including environment and self-heat

2.1.3 Operating voltage

- Don't over the rated voltage of capacitor operating in AC circuit.
must attention the AC voltage alteration rated (especially electromotive force, Pulse voltage) then will be using.

2.1.4 To limited of operating place

- Don't using place as following
 - ①Water or salt solvent
 - ②Dew
 - ③Corrosive place
 - ④High vibration place as over approved

2.2 Operating assembly and process


2.2.1 Epoxy and plastic assembly

- If the capacitor using at plastic assembly ,Must research influence of the capacitor ,Some assembly will damage self-capacitor, As thermal expansion and cold shrink ,It have crevices in the epoxy that will worse there humidity


2.3 Test

2.3.1 AC voltage proof test.

- Primary coil alternate noise suppression and alternate voltage test ,As (relevant condition of voltage, time, wave-farn). Some test equipment will make the apply voltage wave out of range.
And over 2times from apply Vp-p, it will cause the capacitor insulation broke down.

Rev.	Edit	Date	Content	Responsible		
1	1					
	2					
	3					
Issue			 The best choice for passive components	Approve	Manager	Prepare
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Description: Guidelines for using ceramic disc safety Y capacitor	Page: 3-9
<ul style="list-style-type: none"> The apply AC voltage must from 0v up to test voltage and the between terminals must clamping clip before test .If test voltage not from 0v up to test voltage that start by by direct test voltage ,It's abnormal voltage .The abnormal voltage will engender abnormal voltage at between terminals. It have broken the capacitor insulation resistance. <p>3. General item of safety:</p> <p>3.1 Assembly and operating process</p> <p>3.1.1 design of P.C.B.</p> <ul style="list-style-type: none"> Between the hole of PCB with lead of capacitor must have some margin . <p>3.1.2 To adjust of assembly equipment</p> <ul style="list-style-type: none"> It will adjust location of equipment and replace cutter regular when capacitor by auto dip assembly. Push-pull of body and leads warp must avoid at the process, it must attention dimension tolerance at adjustment of assembly equipment. The place and around space adjust of captor, it must follow specification. <p>3.1.3 Soldering</p> <ul style="list-style-type: none"> Soldering fluidness: The Halogen possession in the ambulant: $\leq 0.1WT\%$(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 confirm the solvent can't influence the capacitor body. <p>3.2Storage</p> <ul style="list-style-type: none"> The capacitor must storage in door ,That can't storage in high humidity and high temperature environment. The temperature must at 5~40°C and the humidity under 75%. They are warranted for one year from the date of manufacture. But the storage period over one year, must confirm lead not oxidized. It must avoid by sun shine directly and soaked by dew <p>4. Notice of safety capacitor:</p> <p>4.1 How to select and apply the safety capacitor</p> <ul style="list-style-type: none"> It'll operate safety capacitor at the equipment, The specification using capacitance (pF) instead part number .for example: ZE 222M Y5U Y2, The style is ZE , 222=2200pF ,Safety capacitor class Y2(attention:the part number 102M250V,It doesn't show on the safety capacitor body) <p>4.2 Operating condition by UL standard technology</p> <ul style="list-style-type: none"> As:(1) Insulation, as the coating by epoxy, discharge test must follow specification . (2)In the UL specification, The capacitor operate condition of technology will be limit. the final design is operate a cover gap of safety capacitor ,The condition by figure as following <p>5. Others:</p> <ul style="list-style-type: none"> It can't operate the safety capacitor at un-reasonable condition by specification. We can't approve the responsibility by abnormal operating condition ,The consequence are responsible for itself own action 	

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Description: Ceramic disc safety Y capacitor specification	Page: 4-9

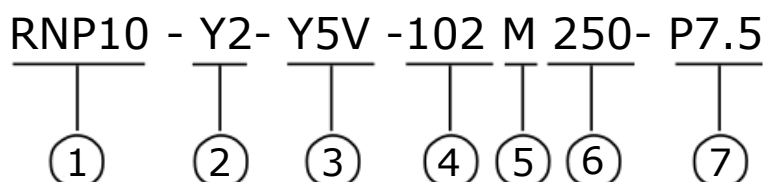
1. Applicable range :

The specification applicable at safety ceramic disc capacitor and the size are approved by every country. The capacitor operating at place of prevent power noise etc.

2. Standard:

- IEC Pub.384-14 2Ed.(EN132400) : Fixed capacitors for electromagnetic interference suppression and connection to the supply mains(Sub-class Y2 and X1)
- BS EN 60065:1944(BS 415:1944) : Sub-causes 9.3.5 13.1 and 14.2
- BS415 1990:9.3.5 : Creepage distances and clearances, 14.2CAapacitors
- UL1414 : Across-the line, Antenna-Coupling and line-by-pass Capacitors for Radio and Television type appliances.
- CSA C22.2 No1:6.12 : Antenna and line Isolation Capacitors Across-the-line Capacotors

3. The principle of part number:



- RoHS Compliance
- 1.RNP10=Ceramic capacitors
 - 2.Y2=Y2 Type
 - 3.Y5V=Material
 - 4.332=Nominal Capacitance
 - 5.M=Capacitance Tolerance Symbol
 - 6.300=Rated voltage
 - 7.P7.5=Pitch

Capacitance
容量
471 ~ 470PF ~ 0.47nF
102 ~ 1000PF ~ 1nF
152 ~ 1500PF ~ 1.5nF
222 ~ 2200PF ~ 2.2nF
332 ~ 3300PF ~ 3.3nF

Voltage
250~250VAC
400~400VAC
500~500VAC

Tolerance
M=±20%
K=±10%

Rev.	Edit	Date	Content	Responsible
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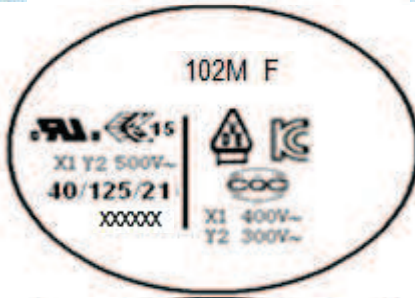
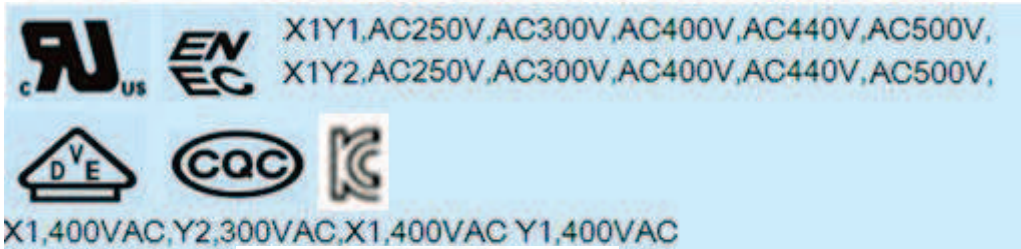
Description: Ceramic disc safety Y capacitor specification	Page: 5-9
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4. Approval standard and certification number:

Certificate organization	Standard	Certification number	Certificate range
ENEC	EN 60384-14:2013	01004 01005	X1/Y1 500VAC X1/Y2 500VAC
VDE	EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016	40017350 40020372	Y1 400VAC Y2 300VAC
UL, CUL	IEC60384-14 3rd	E258931	X1/Y1 500VAC X1/Y2 500VAC
CQC	GB/T6346. 14-2015	CQC06001015311 CQC06001015312	X1/Y2 300VAC X1/Y1 400VAC
EK	K60384-1 K60384-14	HU03012-6001B HU03012-6002B	X1/Y1 400VAC Y2 300VAC

5. Marking:

- (1): Manufacturer logo
- (2): Y1/Y2
- (3): 250VAC/300VAC/400VAC/440VAC/500VAC
- (4): Approval symbol
- (5)XXXXXX (Internal coding)



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2023-11-22				

Spec. Name: Ceramic disc safety Y capacitor approval	Record number
Description: Ceramic disc safety Y capacitor specification	Page: 6-9

6. Operating temperature range:

-25°C~+125°C Y5P ; -25°C~+125°C Y5U; -25°C~+125°C X7R; -25°C~+85°C Y5V; UL and ENEC are -40°C~125°C All Ser

7. Performance:


Performance and test method refer to table 1.

8. Experiment condition:

The experiment condition follow standard (temperature 15~35°C, humidity 45~75%, atmospheric pressure 86~106kpa) if no special required. But doubt place or special place, using standard condition to proceed. (temperature 20±5°C, humidity 60~70%, atmospheric pressure 86~106kPa)

Table 1

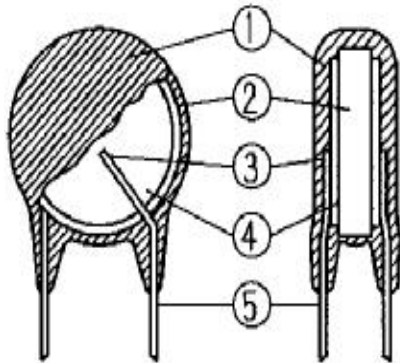
NO	Item	Performance requirement	Experiment manner
1	Appearance, size and mark	No failure	Size measured by vernier. Appearance and marks by visual inspection
2	Mark and resistance to solvent	The mark reference appendix specification, resistance to solvent test, mark must clear	Appearance part number test by visual. Resistance to solvent test: Put the capacitor in the 20-25°C cleanser immerge 5+/-0.5mins. Using cotton brush 10 times and still clear.
3	Voltage proof	Between terminal:	Apply voltage must from 0V up to 2600VAC-Y2 or 4000VAC -Y1 by 150VAC each step keep 1 min of frequency 50/60Hz, The terminals must clip before test and keep distance of the capacitor bottom \geq 2.6mm.
		Between terminal and case	
4	Insulation resistance	Between terminal:	Test voltage: 500V.DC Test time: 1 min±5 sec
		Between terminal and case	
5	Capacitance	It have provide tolerance range in the approval sheet as attachment	Measure voltage: 1Vrms. Measure frequency: 1kHz±20% measure temperature: 25°C±2°C
6	Dissipation factor (tan θ)	SL \leq 1.5%, X7R: \leq 2.5% Y5P: \leq 2.5% Y5U: \leq 5% Y5V: \leq 5%	Measure voltage: 1Vrms. Measure frequency: 1kHz±20% measure temperature: 25°C±2°C
7	Temperature characteristic	Capacitance change rate: SL \leq 10%, X7R +15% Y5P \pm 22% , Y5U +22%~-68% , Y5V +22%~-94%	Measure temperature range: -25°C~85°C (Y5V); -25°C~+125°C (Y5P, Y5U, X7R, SL) Measure frequency: 1KHz±20% Measure temperature: 25°C±2°C

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Description: Ceramic disc safety Y capacitor specification	Page: 7-9

9. Construction . Shape . Dimension:

Construction



Material

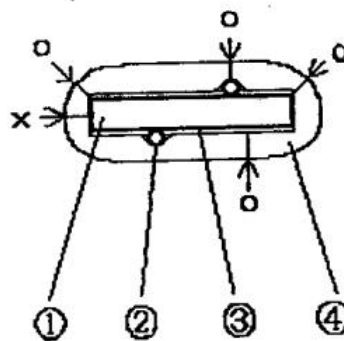
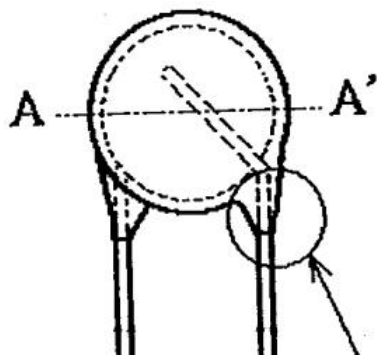
NO	Name	Material
1	Coating	Epoxy (blue)
2	disc	Ceramic Powder
3	Solder	Tin of ROHS
4	Electrode	Silver
5	Lead	Cp lead

Epoxy thickness: Over 0.3mm

Shape and outline dimension refer to attachment

Test position of epoxy thickness

A—A' a cross -section enlarge



Test position — o
No test — x

No specify

- ① Disc (insulation)
- ② CP lead
- ③ Electrode
- ④ Coating

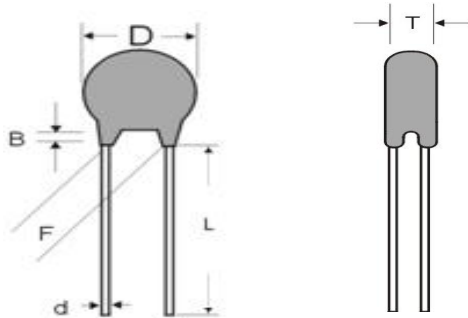
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Description : **Ceramic disc safety Y capacitor specification** Page: 8-9

10. Shape and Dimension(Y2)



Outline dimension

Symbol	Dimension(mm)	Remark
D	—	Refer to be below list
T	—	Refer to be below list
L		Refer to be below list
B	≤3.0	
F	7.5±0.8	

Type NO.	Capacitance		voltage (VAC)	Dimension (mm)			
	Cap.(nF)	tolerance		D max	T max	F	L
RNP10-Y2-Y5V-102M250V-P7.5	1	±20%	250	7.0	4	7.5±0.8	27±5

11 . Packing:

- (1) Bulk 500PCS per bag
- (2) Bulk 1000PCS per bag
- (3) Taped 1000PCS per box

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安規系列承認書

(Safety) Ceramic series-approval sheet

2023年11月22日

Customer	E32	Customer NO (顧客料號)		RNP10-Y2-Y5V-102M250V-P7.5					Q'TY 數量	PCS
		Part No 零件代號								
顧客		Operating Temperature (使用溫度範圍)			-40°C ~ +125°C (UL, ENEC) -25°C ~ +85°C	Cap change (容量變化率) 溫度範圍		-25°C ~ +85°C +22% ~ -94%		
Name Code 規格	X1Y2	CAP. 容量	1NF (102)	TOL 誤差	+20% -20%	Material 材質	Y5V	W.V. 電壓 (AC)	X1Y2 500V (UL, ENEC) Y2 300V X1 400V	

1. Test condition 測試條件

Instrument (儀器)	Freq. 頻率	Temp. 溫度	R.H. 濕度	環保
HP4278A	1KHz 1.0V	25°C ± 2°C	65%	ROHS

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
ZONKAS	0.8~1.2	≥10000	≤7	≤3.0	7.5±0.8
DF值	Lead Length 導線長度 (mm)	Thickness 厚度 (mm) T	Wire diameter 線徑 (mm) d	Dielectric Strength 誘電體強度 V.AC	
≤5%	27±5	≤4	0.56±0.1	2.6KV.AC60S 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)										
DF值(%)										
Judgment 判定	AC <input checked="" type="checkbox"/>					RE <input type="checkbox"/>				

3. Reference drawing 圖形參考

