

JNC	Safety Standard Recognized Ceramic Capacitor
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1. This specification is applied to following Safety Standard Recognized Ceramic Capacitor for Electronics Appliance.

TUV / ENEC18

X1, Y1 Class based on EN 60384-14 2005

UL /CSA

X1, Y1 Class based on CAN/ANSI/UL 60384-14

2. Approval Standard and Recognized No.

	Standard No.	Certificate No.	Rated Voltage
UL/CSA	UL 60384-14	E201384	X1:440V AC Y1:250V AC
TUV	EN 60384-14 2005	R50232059	
ENEC 18	EN 60384-14 2005	HN 69242987	

3. Part No.

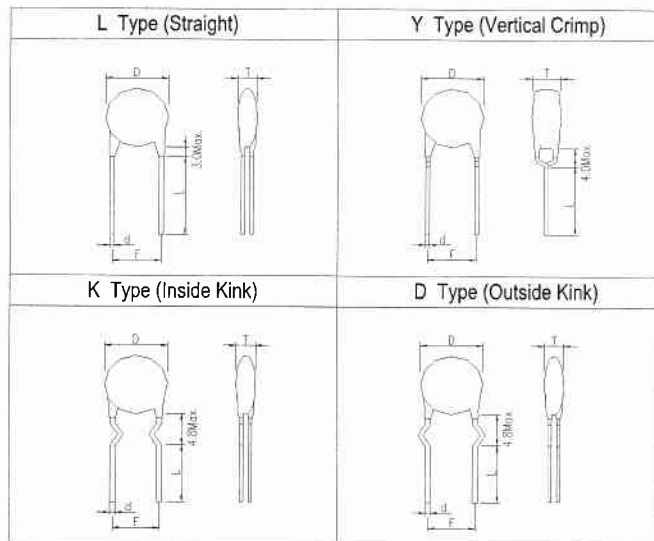
Ex.

JN	09	B	221	K	Y	0	2	N
Type	Body Dia.	T.C.	Nominal Capacitance	Capacitance Tolerance	Lead Style	Lead Spacing	Lead Length	RoHS
X1:440V AC		E:Y5U		J:±5%	L	0:10mm	2:25 mm Min.	H:HF
Y1:250V AC		F:Y5V		K:±10%	Y	1:12.5mm	3:3.5±1 mm	N:RoHS
		B:Y5P		M:±20%	K		5:5±1 mm	
		S:SL			D		T1/T2:Taping Box	
							R1/R2:Taping Reel	

4. Rating

4.1 Operating Temperature:25/125/21

4.2 Lead Style:



<i>JNC</i>	Safety Standard Recognized Ceramic Capacitor
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Marking:

1. Company Name Code : JNC

2. Type Designation : JN

Ex.

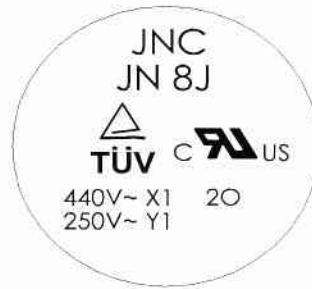
3. Nominal Capacitance: 3-digit-system

4. Capacitance Tolerance: Code

5. Manufactured Date: Abbreviation

Ex. 2012

_____	1(January)	21
_____	2(February)	22
: :	:	:
_____	10(October)	20
_____	11(November)	2N
_____	12(December)	2D



20*:

- *:NONE Made in Taiwan
- *:C Made in Dongguan
- *:H Made in Nanjing

6. Approval Mark:

TUV Approval Mark:



CUL Approval Mark:



ENEC Approval Mark:

(On the Label)



EN/UL 60384-14 CLASS CODE: X1, Y1

Rated Voltage Mark: 440V~ , 250V~

JNC

Safety Standard Recognized Ceramic Capacitor X1,Y1

Part Numbering

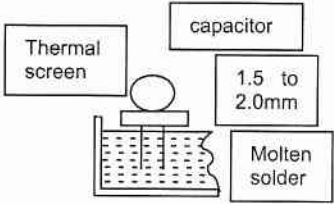
JN Type-Class X1: 440VAC, Y1: 250VAC

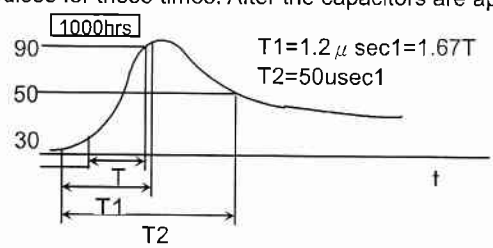
Part Number	Temp. Char.	Cap. (PF)	Cap. Tol. (%)	Dimensions(Unit:mm)				AC Tested Vol. V(r.m.s.)
				D (Max.)	F (±1.0)	T (Max.)	φ d	
JN09SL080K□□□□	SL	8	±5% ±10%	9.0	10.0 12.5	8.0	0.60±0.1	4000
JN09SL100K□□□□		10						
JN09SL150K□□□□		15						
JN09SL220K□□□□		22						
JN10SL330K□□□□		33						
JN10SL390K□□□□		39						
JN11SL470K□□□□		47						
JN11SL560K□□□□		56						
JN12SL680K□□□□		68						
JN09B080K□□□□	B (Y5P)	8	±10%	9.0	10.0 12.5	8.0	0.60±0.1	4000
JN09B100K□□□□		10						
JN09B150K□□□□		15						
JN09B220K□□□□		22						
JN09B330K□□□□		33						
JN09B390K□□□□		39						
JN09B470K□□□□		47						
JN09B560K□□□□		56						
JN09B680K□□□□		68						
JN09B101K□□□□		100						
JN09B151K□□□□		150						
JN09B181K□□□□		180						
JN09B221K□□□□		220						
JN09B331K□□□□		330						
JN09B361K□□□□		360						
JN09B391K□□□□		390						
JN09B421K□□□□		420						
JN09B471K□□□□		470						
JN10B561K□□□□	560	10.0						
JN10B681K□□□□	680	10.0						
JN12B102K□□□□	1000	12.0						
JN09E102M□□□□	E (Y5U)	1000	±20%	9.0	10.0 12.5	8.0	0.60±0.1	4000
JN11E152M□□□□		1500		11.0				
JN12E222M□□□□		2200		12.0				
JN14E332M□□□□		3300		14.0				
JN15E392M□□□□		3900		15.0				
JN15E472M□□□□		4700		15.0				
JN09F102M□□□□	F (Y5V)	1000	±20%	9.0	10.0 12.5	8.0	0.60±0.1	4000
JN09F152M□□□□		1500		9.0				
JN10F222M□□□□		2200		10.0				
JN12F332M□□□□		3300		12.0				
JN13F392M□□□□		3900		13.0				
JN14F472M□□□□		4700		14.0				

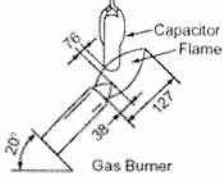
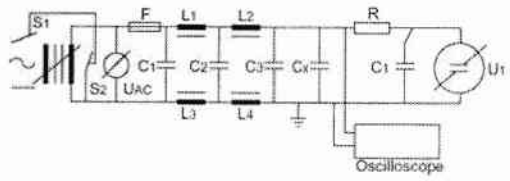
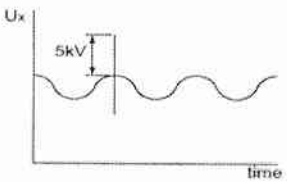
Performance

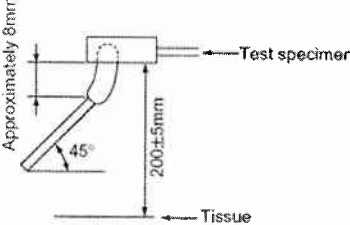
"room condition" temperature : 20~35°C , humidity: 45~75%, atmospheric pressure 86~106kPa.

No.	Item		Specification	Test Condition																				
1	Dielectric Strength	Between lead wires	No failure	The capacitors shall not be damage when AC2600V(for Y2 Class) and AC4000V (for Y1 Class) are applied between the lead wires for 60 sec. (charge/discharge current < 50mA)																				
		Body insulation	No failure	First the terminals of the capacitor shall be connected together. Then a metal foil shall be closely wrapped around the body of the capacitor distance of about 3 to 4mm from each terminal. Then the capacitor shall be inserted into a container filled with metal balls of about 1mm diameter. Finally AC2600V is applied for 60 sec. between the capacitor lead wires and metal balls. (charge/discharge current ≤ 50mA)																				
2	Insulation Resistance (I.R.)		10000MΩ min	The insulation resistance shall be measured with 500±50VDC with 60±5 sec of charging.																				
3	Capacitance		Within specified tolerance.	Char	Frequency	Voltage																		
				NPO/SL	1MHz±20%	5.0 Vrms Max																		
				Y5P/Y5U/Y5V	1KHz±20%																			
				The measurement at reference temperature 25° C																				
4	Dissipation Factor(D.F.)		Char.	Specified	The Capacitance shall be measured At 25°C with 1±0.1KHZ for X7R&Y5P, with 1±0.1MHZ for COG and 5Vrms max.																			
			NPO/SL	Q ≥ 300																				
			Y5P	D.F ≤ 2.5%																				
			Y5U/Y5V	D.F ≤ 5.0%																				
5	Temperature Characteristic		Char.	Cap. Change	The Capacitance measurement shall be made at each step specified in Table.																			
			NPO	Within±60ppm																				
			SL	+350~1000%																				
			Y5P	Within±10%																				
			Y5U	-56%/+22%																				
			Y5V	-82%/+22%																				
		<table border="1"> <thead> <tr> <th rowspan="2">Step</th> <th colspan="2">Temperature</th> </tr> <tr> <th colspan="2">P.F</th> </tr> </thead> <tbody> <tr> <td>1</td> <td colspan="2">+25±2°C</td> </tr> <tr> <td>2</td> <td colspan="2">Min. operation temp.</td> </tr> <tr> <td>3</td> <td colspan="2">+25±2°C</td> </tr> <tr> <td>4</td> <td colspan="2">Max. operation temp.</td> </tr> <tr> <td>5</td> <td colspan="2">+25±2°C</td> </tr> </tbody> </table>			Step	Temperature		P.F		1	+25±2°C		2	Min. operation temp.		3	+25±2°C		4	Max. operation temp.		5	+25±2°C	
Step	Temperature																							
	P.F																							
1	+25±2°C																							
2	Min. operation temp.																							
3	+25±2°C																							
4	Max. operation temp.																							
5	+25±2°C																							
		Pre-treatment: Capacitor shall be stored at max. temperature for 1hour. Then placed at room condition for (※)24±2 hours before measurements.																						
6	Robustness of Termination	Tensile	Lead wire shall not cut off Capacitor shall not be broken.	With the termination in its normal position the specimen is held by its body in such a manner that the axis of the termination is vertical the tensile force of 10N shall be applied to the termination in the direction of its axis and acting in a direction away from the body of the specimen.																				
		Bending	Lead wire shall not cut off Capacitor shall not be broken.	With the termination in its normal position the specimen is held by its body in such a manner that the axis of the termination is vertical : a mass applying a force of 5N is then suspended from the end of the termination. The body of the specimen is then inclined within a period of 2 to 3 sec., through an angle of a approximately 90 in the vertical plane and then returned to its initial position over the same period of time; this operation constitutes one bend. One bend immediately followed by a second bend in the opposite direction.																				

No.	Item	Specification	Test Condition	
7	Soldering Effect	Appearance	No marked defect.	
		I.R.	1000M Ω min	
		Dielectric Strength	Per Item 1.	
		Capacitance	Within $\pm 10\%$	
			<p>Solder temperature: $350 \pm 10^\circ\text{C}$ (or $260 \pm 5^\circ\text{C}$) Immersion time: 3.5 ± 0.5 sec (In case of $260 \pm 5^\circ\text{C}$; 10 ± 1sec)</p> <p>The depth of immersion shall be a position $2 + 0/0.5\text{mm}$ From the seating plane. Using a thermal insulating screen of $1.5 \pm 0.5\text{mm}$ thickness.</p>  <p>Pre-treatment: Capacitor shall be stored at $85 \pm 2^\circ\text{C}$ for 1 hour. Then placed at room condition (※) for 24 ± 2 hours before initial measurements.</p> <p>Post-treatment: Capacitor shall be stored for 1 to 2 hours at room condition.</p>	
8	Humidity (Under Steady State)	Appearance	No marked defect	
		Capacitance	NPO	$\leq 5\%$ of initial
			SL	$\leq 5\%$ of initial
			Y5P	$\leq 10\%$ of initial
			Y5U	$\leq 15\%$ of initial
			Y5V	$\leq 30\%$ of initial
		D.F.	N/S	$Q \geq 135$
P	$\leq 5.0\%$ max.			
E/F	$\leq 7.5\%$ max.			
I.R.	3000M Ω min			
Dielectric Strength	Per Item 1.			
			<p>Set the capacitor for 500 ± 12 hours at $40 \pm 2^\circ\text{C}$, in 90 to 95% humidity. Then Capacitor shall be stored for 1 to 2 hours at room condition.</p>	
9	Humidity Loading	Appearance	No marked defect	
		Capacitance	NPO	$\leq 5\%$ of initial
			SL	$\leq 5\%$ of initial
			Y5P	$\leq 10\%$ of initial
			Y5U	$\leq 15\%$ of initial
			Y5V	$\leq 30\%$ of initial
		D.F.	N/S	$Q \geq 135$
P	$\leq 5.0\%$ max.			
E/F	$\leq 7.5\%$ max.			
I.R.	3000M Ω min			
Dielectric Strength	Per Item 1.			
			<p>Apply the rated voltage for 500 ± 12 hours at $40 \pm 2^\circ\text{C}$, in 90 to 95% humidity and set it for 1 to 2 hours at room condition.</p>	

No.	Item	Specification	Test Condition	
10	Life	Appearance	No marked defect	
		Capacitance	NPO	$\leq 5\%$ of initial
			SL	$\leq 20\%$ of initial
			Y5P	$\leq 20\%$ of initial
			Y5U	$\leq 20\%$ of initial
			Y5V	$\leq 30\%$ of initial
I.R.	3000M Ω min			
Dielectric Strength	Per Item 1.			
Discharge Test (II)	No failure			
			<p>Impulse Voltage</p> <p>Each individual capacitor shall be subjected to 5KV(Y2) and 8KV(Y1) impulses for these times. After the capacitors are applied to life test.</p> <p>Fig. </p> <p>The specimen capacitor are placed in a circulating air oven for a period of 1000 hours. The air in the oven is maintained at a temperature of $125 \pm 2^\circ\text{C}$. Throughout the test the capacitors are subjected to a $1.7U_r$ alternating voltage of mains frequency. Except that once each hour the voltage is increased to 1000Vrms for 0.1sec.</p>	

11	Flame Test	<p>The capacitor flame discontinue as follows.</p> <table border="1" data-bbox="383 235 694 353"> <tr> <th>Cycle</th> <th>Time</th> </tr> <tr> <td>1 to 4</td> <td>30 sec. max.</td> </tr> <tr> <td>5</td> <td>60 sec. Max.</td> </tr> </table>	Cycle	Time	1 to 4	30 sec. max.	5	60 sec. Max.	<p>The capacitor shall be subjected to applied for 15 sec. And then removed for 15 sec, until 5 cycle.</p>  <p>(Unit: mm)</p>
Cycle	Time								
1 to 4	30 sec. max.								
5	60 sec. Max.								
12	Active Flammability	<p>The cheese-cloth shall not be on fire</p>	<p>The specimens shall be individually wrapped in at least one but more than two complete layers of cheese-cloth The specimens shall be subjected to 20 discharges. The interval between successive discharges shall be 5 sec. The U_{ac} shall be maintained for 2 min. after the last discharge.</p>  <p> $C_{1,2} : 1 \mu F \pm 10\%$ $C_3 : 0.33 \mu F \pm 5\% 10KV$ $C_t : 3 \mu F \pm 5\% 10KV$ C_x : Capacitor $L_{1-10} : 1.5mH \pm 20\% 16A$ Rod core choke $R : 100 \Omega \pm 2\%$, $U_{ac} : U_r \pm 5\%$ U_r : Rated working voltage F : Fuse, Rated 10A U_t : Voltage applied to C_t </p> 						

No.	Item	Specification	Test Condition
13	Passive Flammability	<p>The burning time shall not be exceeded the time 30sec. The tissue paper shall not ignite.</p>	<p>The capacitor under test shall be held in the flame in the position, which best promotes burning. Each specimen shall only be exposed once to the flame.</p> <p>Time of exposure to flame : 30 sec.</p> <p> Length of flame : $12 \pm 1mm$ Gas burner : Length 35mm min Inside Dia. : $0.5 \pm 0.1mm$ Outside Dia. : 0.9mm max. Gas : Butane gas Purity 95% min. </p>  <p>(Unit : mm)</p>