

SPECIFICATION FOR APPROVAL

RoHS2.0 & REACH
Halogen free

CUSTOMER: _____

PRODUCT NAME: SMD-Y1 Encapsulated AC ceramic capacitorSEPCIFICATION: JA-2Y1X1 Y5U-471M/500VACPART NO. : JA2Y1X1E471M500VAC

CUSTOMERS M. NO: _____

DATE: 2025-06-19

MANUFACTURE			
DESIGNER	CHECKER	APPROVED	
Bulanc Danry			

CUSTOMER			
DESIGNER	CHECKER	APPROVED	MARK:
			☐ PASS ☐ FAIL

Please return to us a copy of “SPECIFICATION FOR APPROVAL” with your approved signature.

Information:

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<http://www.jk-et.com>

SMD-Y1 Encapsulated AC ceramic capacitor

一、Feature

1. Advanced packaging technology, packaging materials meet UL94-V0
2. Compact structure, small size, space saving
3. Superior high temperature and high humidity performance
4. Strong ability to suppress high surge and high current
5. SMD tray packaging, suitable for lead-free reflow soldering automatic placement
6. Conform to RoHS, REACH, H.F
7. Safety certification:



certification body	CQC	UL	ENEC
Certificate number	CQC22001360386	E340699	ENEC-04203



二、Application

1. LED circuit protection
2. Industrial equipment
3. Communication equipment
4. Automotive Electronics

三、Product Standard

1. UL60384-14
2. EN60384-14
3. GB/T6346.14

四、Test Condition

Parameter name	parameter values	unit
working temperature	-40 ~ +125	°C
storage temperature	+10 ~ +40	°C

五、Part No.Explain

①	②	③	④	⑤	⑥	⑦	⑧
JA	2	Y1X1	E	471	M	500VAC	
SERIES	COMPOSITION	CAPACITOR CATEGORY	MATERIAL QUALITY	CAPACITANCE	CAPACITANCE TOLERANCE	RATED VOLATGE	Internal control code
SMD-Y1	See note 9	Y1X1	E:Y5U	470pF	±20%	500VAC 250VAC	001-ZZZ

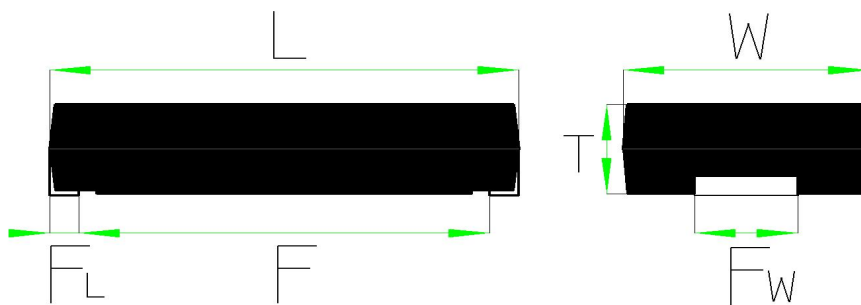
六、Specification details

NO.	Product code	Specifications	Material quality	Capacitance (pF)
1	JA1Y1X1SL100J500VAC	JA-1Y1X1 SL-100J/500VAC	SL	10
2	JA1Y1X1SL220J500VAC	JA-1Y1X1 SL-220J/500VAC	SL	22
3	JA1Y1X1SL470J500VAC	JA-1Y1X1 SL-470J/500VAC	SL	47
4	JA1Y1X1SL560J500VAC	JA-1Y1X1 SL-560J/500VAC	SL	56
5	JA1Y1X1SL680J500VAC	JA-1Y1X1 SL-680J/500VAC	SL	68
6	JA3Y1X1SL101J500VAC	JA-3Y1X1 SL-101J/500VAC	SL	100
7	JA1Y1X1B101K500VAC	JA-1Y1X1 Y5P-101K/500VAC	Y5P	100
8	JA2Y1X1B101K500VAC	JA-2Y1X1 Y5P-101K/500VAC	Y5P	100
9	JA1Y1X1B121K500VAC	JA-1Y1X1 Y5P-121K/500VAC	Y5P	120
10	JA2Y1X1B121K500VAC	JA-2Y1X1 Y5P-121K/500VAC	Y5P	120
11	JA1Y1X1B151K500VAC	JA-1Y1X1 Y5P-151K/500VAC	Y5P	150
12	JA2Y1X1B151K500VAC	JA-2Y1X1 Y5P-151K/500VAC	Y5P	150
13	JA1Y1X1B201K500VAC	JA-1Y1X1 Y5P-201K/500VAC	Y5P	200
14	JA2Y1X1B201K500VAC	JA-2Y1X1 Y5P-201K/500VAC	Y5P	200
15	JA1Y1X1B221K500VAC	JA-1Y1X1 Y5P-221K/500VAC	Y5P	220
16	JA2Y1X1B221K500VAC	JA-2Y1X1 Y5P-221K/500VAC	Y5P	220
17	JA1Y1X1B271K500VAC	JA-1Y1X1 Y5P-271K/500VAC	Y5P	270
18	JA2Y1X1B271K500VAC	JA-2Y1X1 Y5P-271K/500VAC	Y5P	270
19	JA1Y1X1B331K500VAC	JA-1Y1X1 Y5P-331K/500VAC	Y5P	330
20	JA1Y1X1B391K500VAC	JA-1Y1X1 Y5P-391K/500VAC	Y5P	390
21	JA1Y1X1B471K500VAC	JA-1Y1X1 Y5P-471K/500VAC	Y5P	470
22	JA3Y1X1B561K500VAC	JA-3Y1X1 Y5P-561K/500VAC	Y5P	560
23	JA3Y1X1B681K500VAC	JA-3Y1X1 Y5P-681K/500VAC	Y5P	680
24	JA3Y1X1B821K500VAC	JA-3Y1X1 Y5P-821K/500VAC	Y5P	820
25	JA3Y1X1B102K500VAC	JA-3Y1X1 Y5P-102K/500VAC	Y5P	1000
26	JA1Y1X1E471M500VAC	JA-1Y1X1 Y5U-471M/500VAC	Y5U	470
27	JA2Y1X1E471M500VAC	JA-2Y1X1 Y5U-471M/500VAC	Y5U	470
28	JA1Y1X1E561M500VAC	JA-1Y1X1 Y5U-561M/500VAC	Y5U	560
29	JA2Y1X1E561M500VAC	JA-2Y1X1 Y5U-561M/500VAC	Y5U	560
30	JA1Y1X1E681M500VAC	JA-1Y1X1 Y5U-681M/500VAC	Y5U	680
31	JA2Y1X1E681M500VAC	JA-2Y1X1 Y5U-681M/500VAC	Y5U	680
32	JA1Y1X1E821M500VAC	JA-1Y1X1 Y5U-821M/500VAC	Y5U	820
33	JA2Y1X1E821M500VAC	JA-2Y1X1 Y5U-821M/500VAC	Y5U	820
34	JA1Y1X1E102M500VAC	JA-1Y1X1 Y5U-102M/500VAC	Y5U	1000

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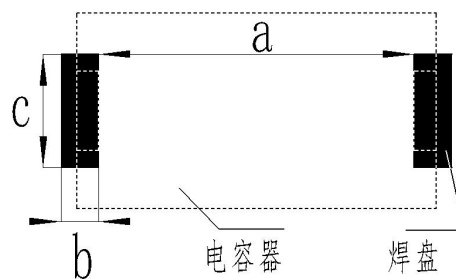
35	JA2Y1X1E102M500VAC	JA-2Y1X1 Y5U-102M/500VAC	Y5U	1000
36	JA1Y1X1E152M500VAC	JA-1Y1X1 Y5U-152M/500VAC	Y5U	1500
37	JA3Y1X1E222M500VAC	JA-3Y1X1 Y5U-222M/500VAC	Y5U	2200
38	JA3Y1X1E332M500VAC	JA-3Y1X1 Y5U-332M/500VAC	Y5U	3300
39	JA1Y1X1F102M500VAC	JA-1Y1X1 Y5V-102M/500VAC	Y5V	1000
40	JA2Y1X1F102M500VAC	JA-2Y1X1 Y5V-102M/500VAC	Y5V	1000
41	JA1Y1X1F152M500VAC	JA-1Y1X1 Y5V-152M/500VAC	Y5V	1500
42	JA2Y1X1F152M500VAC	JA-2Y1X1 Y5V-152M/500VAC	Y5V	1500
43	JA1Y1X1F222M500VAC	JA-1Y1X1 Y5V-222M/500VAC	Y5V	2200
44	JA3Y1X1F332M500VAC	JA-3Y1X1 Y5V-332M/500VAC	Y5V	3300
45	JA3Y1X1F472M500VAC	JA-3Y1X1 Y5V-472M/500VAC	Y5V	4700

七、Figure and code of dimension (unit:mm)



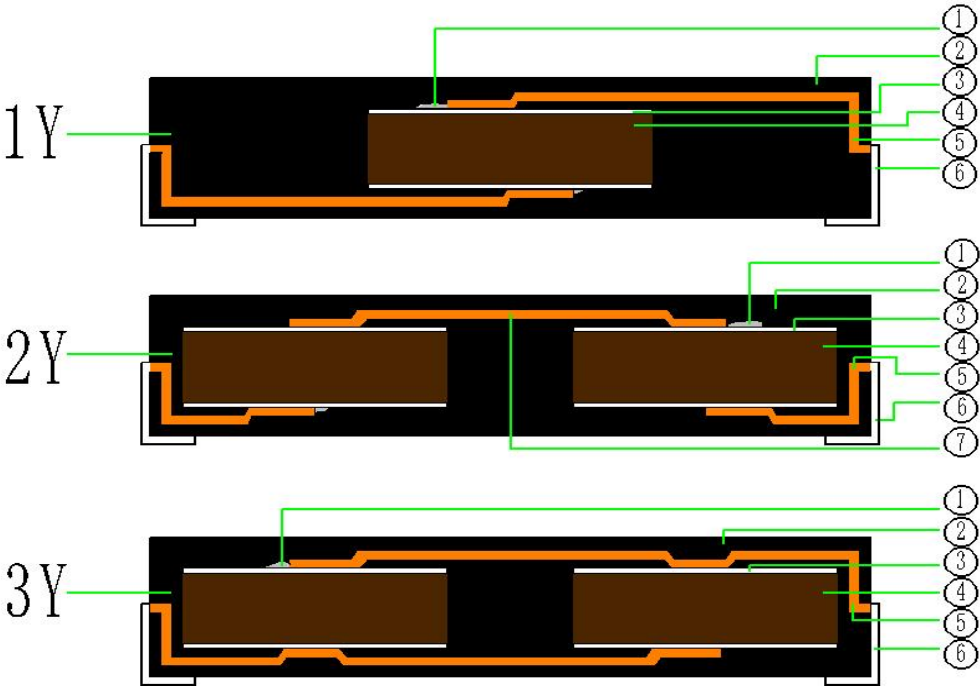
code	L	W	T	F	FL	FW
size	11.4±0.3	6.0±0.3	2.4±0.1	10±0.3	0.7±0.3	2.5±0.3

八、Pad size (unit:mm)



code	a	b	C
size	10	2.2	3.6

九、 Structure



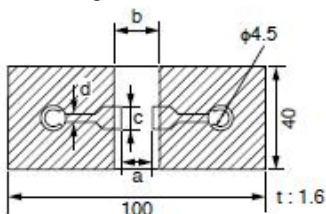
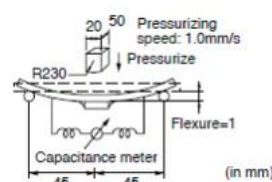
No.	Part name	Material
①	Solder	Sn-Sb High temperature, no lead/Sn-Pb-Ag High lead RoHS exempt
②	Coating	Epoxy resin （UL94V-0 Certified products ）
③	Electrode	Silver/copper electrode
④	medium	Ceramic
⑤	Internal pins	Copper alloy (electronic frame copper)
⑥	JA Soldering pins	Tin-coated copper foil
⑦	Connect the intermediate pins in series	Copper alloy (electronic frame copper)

十、 Marking Explain

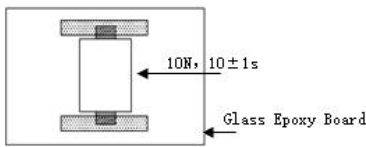
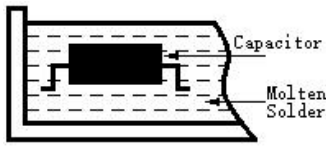
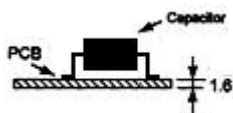
JK-ET JA
2Y1X1E471M500VAC
49V DA2P1 250VAC

JK-ET	trademark	471	code of capacitance
JA	series	M	code of tolerance
2	Structure (see note 9)	500VAC	rated voltage
Y1X1	Capacitor category	250VAC	
E	Material code	49V DA2P1	Trace the identification code

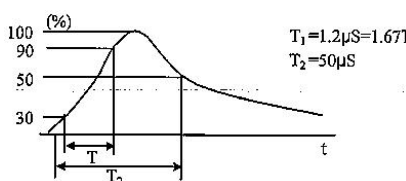
十一、Performance and test

NO	ITEMS		PERFORMANCE		TESTING METHOD												
1	Appearance and dimension		Clean surface, no visible damage, Dimension according to ordain requirement		Visual check of Appearance Measure the size with vernier caliper.												
2	marking		The marking shall be easily legible		Visual check												
3	Withstand Voltage	Between lead wire	No permanent break-down or flashover during the test period		The capacitor should not be damaged when the test voltages 4000VAC are applied between the lead wires for 60 sec. First, the terminals of the capacitor should be connected together, and the capacitor should be wrapped closely with an aluminum film around the body of the capacitor to a distance about 2 to 3mm from each terminal. Then, put the capacitor into the testing jig as shown in below figure. Finally, apply a voltage 4000VAC for 60 sec												
		Body insulation	No permanent break-down or flashover during the test period														
4	Capacitance		within the specified tolerance.		Temperature: 25±2°C:												
5	Tan δ Dissipation factor	Y5P Y5U Y5V	tgδ≤0.025		Test Frequency: 1KHz±20%												
		SL	tgδ≤0.001		(SL: 1MHz±20%) Test Voltage: 1.0Vrms												
6	Insulation Resistance		≥6000MΩ		Test Voltage: 500V DC Test Time: 60±5s												
7	Temperature Characteristics	Change rate of capacitance within the category temperature rangeΔ:		The capacitance measurement shall be made at each step specified in table													
		Y5P	±10%		<table><tr><th>STEP</th><th>TEMPERATURE</th></tr><tr><td>1</td><td>+20±2°C</td></tr><tr><td>2</td><td>-25±2°C</td></tr><tr><td>3</td><td>+20±2°C</td></tr><tr><td>4</td><td>+85±2°C</td></tr><tr><td>5</td><td>+20±2°C</td></tr></table>	STEP	TEMPERATURE	1	+20±2°C	2	-25±2°C	3	+20±2°C	4	+85±2°C	5	+20±2°C
		STEP	TEMPERATURE														
		1	+20±2°C														
		2	-25±2°C														
3	+20±2°C																
4	+85±2°C																
5	+20±2°C																
Y5U	-56% ~+22%		Δ=(C _X -C ₀)/C ₀ *100% C _X : Capacitance measured at the 2nd or 4th test point C ₀ : Capacitance of the third test point SL: Δ = [(C ₂ -C ₁) *10 ⁶]/[C ₁ (T ₂ -T ₁)] C ₁ : Capacitance at standard temperature (20°C). C ₂ : Capacitance at each temperature. T ₁ : Test temperature (Min. Temp. and Max. Temp.) T ₂ : Reference temperature														
Y5V	-82% ~+30%																
SL	-1000~+350PPM/°C (+20~85°C)																
8	Deflection	No visible damage 		Solder the capacitor to the test jig(glass epoxy board)shown in Fig.1; Then apply a force in the direction shown in Fig.1. The soldering should be done using reflow method and should be conducted with care so that the soldering is uniform a free of defects such as heat shock.													
		<table><tr><th colspan="4">Dimension()</th></tr><tr><th>a</th><th>b</th><th>c</th><th>d</th></tr><tr><td>9.6</td><td>11.7</td><td>2.7</td><td>1.0</td></tr></table>		Dimension()				a	b	c	d	9.6	11.7	2.7	1.0		
Dimension()																	
a	b	c	d														
9.6	11.7	2.7	1.0														
9	Solderability of leads		75% of the terminations are to be soldered evenly and continuously.		Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Immerse in solder solution for 2±0.5 sec ,Immersing speed: 25±2.5mm/s Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu)												

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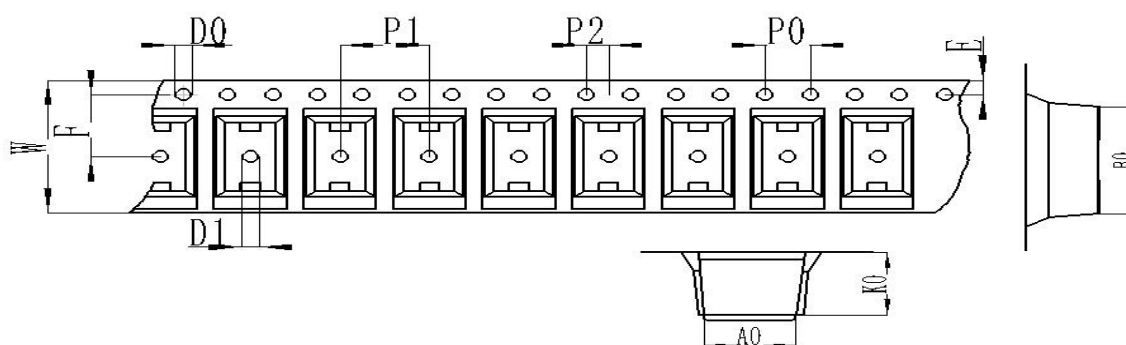
10	Adhesive Strength of Termination	(No removal of the terminations or other defect should occur.)			Solder the capacitor to the test jig(glass epoxy board)shown in Fig.2; Then apply 10N force in the direction of the arrow. The soldering should be done using reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. 
11	Resistance to Soldering Heat	Appearance	No visible damage		Preheat the capacitor as in table. Immerse the capacitor in solder solution at 260±5°Cfor 10±1 sec. Let sit at room condition for 24±2 hrs., then measured. Immersing speed: 25±2.5mm/s Pretreatment: Perform a heat treatment at 150 +0/-10°C for 60±5 min. and then let sit for 24±2 hrs. at room condition. 
Capacitance Change	SL	±5%			
	B	±10%			
	E F	±20%			
I.R.	1000MΩ min				
Dielectric Strength	Per Item 3.				
12	Vibration Resistance	Appearance	No visible damage		Solder the capacitor to the test jig (glass epoxy board).The capacitor should be subjected to a simple harmonic motion having a total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 to 55Hz.The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1min.This motion should be applied for a period of 2hrs.in each of 3 mutually perpendicular directions (total of 6hrs.). 
Capacitance	within the specified tolerance.				
tan δ Dissipation factor	within the specified tolerance.				
13	Humidity (Steady State)	Appearance	No visible damage		Test temperature: 40±2°C Humidity: 93±3%RH duration: 504+24/-0 hours Voltage: 500VAC(U_R)for one half of the samples. After test the capacitors shall be recovered for 24hours at 25±3°C
Capacitance Change	SL	±5%			
	B	±10%			
	E F	±20%			
tan δ Dissipation factor	SL	≤0.3%			
	B E F	≤5.0%			
I.R.	≥3000MΩ				
Dielectric Strength	Per Item3.				
14	Impulse voltage	No permanent breakdown or flashover during the test period.			Peak impulse voltage:8.0KV Impulses distance :> 10seconds

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		If any three successive impulses are shown by the oscilloscope monitor to have had a waveform indicating that no self-healing breakdowns or flashovers have taken place in the capacitor, then no further impulses shall be applied and the capacitor shall be counted as conforming.		Impulses times:24 
		If all 24 impulses have been applied to the capacitor and 3 or more of them are of a waveform indicating that no self-healing breakdowns or flashovers have occurred, then the capacitor shall be counted as conforming.		
		If less than three impulses are of the required waveform, then the capacitor shall be counted as a nonconforming item.		
15	Endurance	Appearance	No visible damage	Test temperature: 125±3°C Duration: 1000+24/-0hours test voltage: 850VAC(1.7UR), except that once every hour the voltage shall be increased to 1000v r.m.s. for 0.1s. Each of these voltage shall be applied To each capacitor individually through a resistor of 47Ω±5%. After test the capacitors shall be recovered for 24±2hours at 25±3°C
		Capacitance Change	Within±20%	
		I.R.	≥3000MΩ	
		Dielectric Strength	Per Item 3.	
16	Passive Flammability	The burning time shall not be exceeded the time 30sec. The tissue paper shall not ignite.		The capacitor under test shall be held in the position, which best promotes burning. Each specimen shall only be exposed once to flame. Time of exposure to flame: 30sec. Length of flame : 12±1mm Gas burner : Length 35mm min. Inside Dia. : 0.5±0.1mm Outside Dia. : 0.9mm max. Gas : Butane gas Purity 95% min.

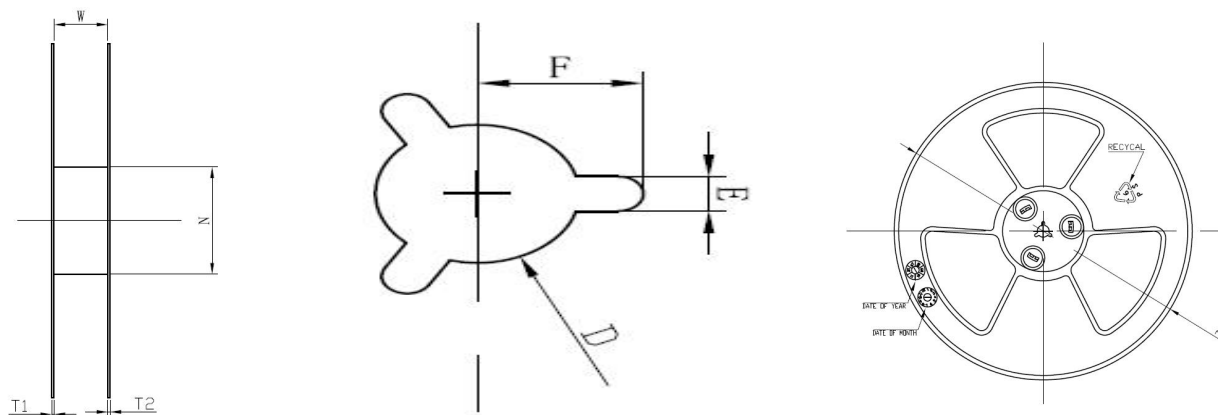
十二、packing description:

A Taping Packaging



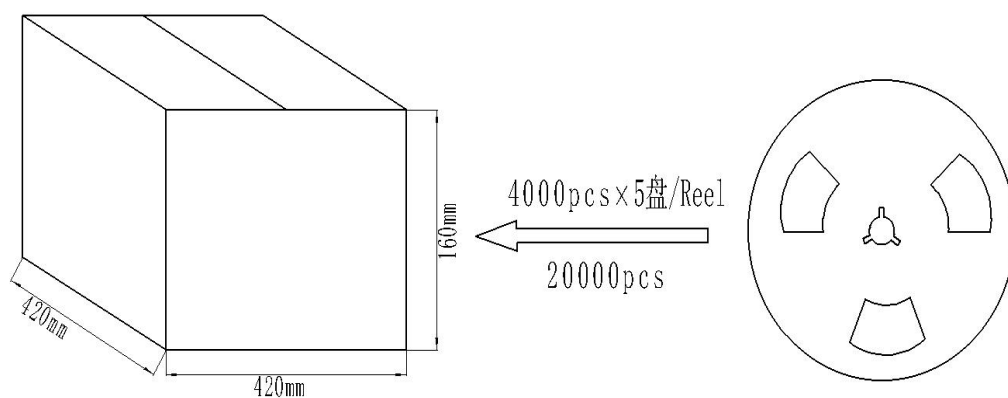
A0	B0	K0	P0	P1	P2
6.5±0.1	12.2±0.1	2.8±0.1	4.0±0.1	8.0±0.1	2.0±0.05
W	E	F	D0	D1	PCS/Reel
24.0±0.2	1.75±0.1	7.5±0.1	1.5±0.1	1.5±0.1	4000

B 15 inch plastic tray size



code	W	N	T1	T2	A	D	E	F
size	24.4±0.3	Φ100±3.0	2.2±0.3	2.2±0.3	Φ380±3.0	13.3±0.3	2.3±0.5	10.75±0.5

C Carton Packing



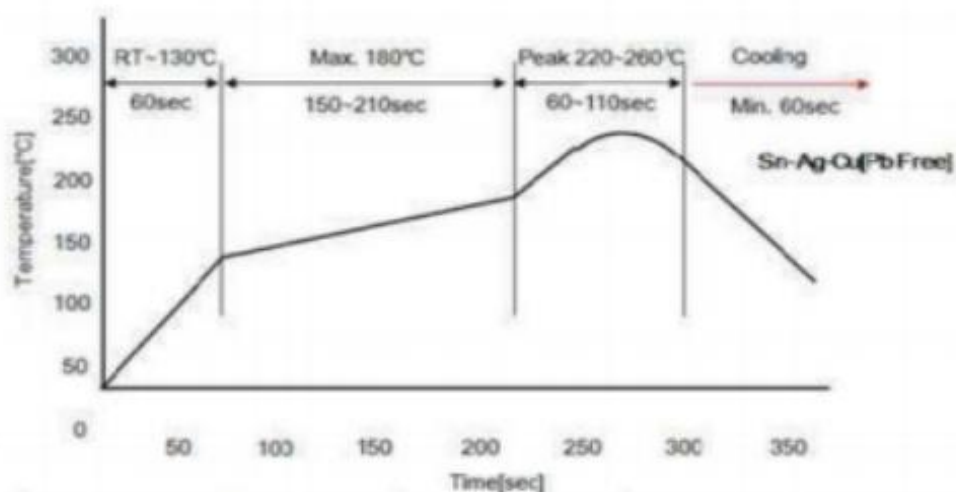
D counter mark

JK-ET CERAMIC CAPACITOR			
TYPE			
CAP		T. C	
W. V		TOL	
L*W*T		QTY	PCS
Lot No			
P/N			

QC
-**-
Pass

RoHS

十三、Welding according to the instruction



Warm zone		temperature range	time	comments on a form
a	solidifying	RT~130	60	soldering tin: Sn-Ag-Cu High temperatures: <10S
b	preheat	180max	150~210	
c	welding	220-260(260max)	60~110	
d	cooling action	220~RT	60min	