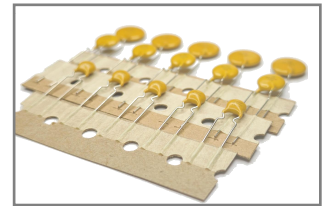


■CT81 直流陶瓷电容器--高压高介电质常数系列

CT81 DC ceramic capacitor - High-voltage high dielectric constant series



◆特征 Characteristics

- * 采用银电极芯片。
- * Utilizes silver electrode chips.
- * 采用无铅电子引线及焊锡。
- * Employs lead-free electronic leads and solder.
- * 封装层采用无卤素-阻燃环氧树脂（涂料符合 UL94V-0 规范/规格要求）。
- * The encapsulation layer uses halogen-free - flame-retardant epoxy resin (the coating meets the UL94V-0 specification/requirement).
- * 产品工作温度：-25℃~+125℃，电容器最高使用温度为 125℃（含自身发热 20℃以内）。
- * Operating temperature of the product: -25℃ to +125℃. The maximum operating temperature of the capacitor is 125℃ (including the internal heat of 20℃).

◆应用领域 Application Fields

- * 用于对损耗值和容量稳定性要求不高的电路中，如低频旁路、耦合、滤波、退耦等。
- * It is used in circuits where the requirements for loss values and capacity stability are not high, such as low-frequency bypass, coupling, filtering, decoupling, etc.

◆型号表示法 Model designation Method

CT81	N	5	Y5P	0	B	221	K	T	E	A	01
产品类型 Product Type	额定电压 Rated Voltage	直径代码 Diameter Code	温度特性 Temperature Characteristics	引线样式 Lead wire Style	引线间距 Lead wire Spacing	额定容量 Rated Capacity	容量偏差 Capacity Deviation	包装方式 Packaging Method	产品颜色 Product Color	电极代码 Electrode Code	编带样式或 引线长度 Tape packaging Style or Lead Length

①产品类型 Product Type

代码 Code	产品类型 Product Type
CT81	直流 CT81 系列-高压高介电质常数型电容器 DC CT81 Series - High Voltage High Dielectric Constant Type Capacitor

②额定电压 Rated Voltage

代码 Code	N	M	P	Q	R	S
电压 Voltage	1KV	2KV	3KV	4KV	5KV	6KV

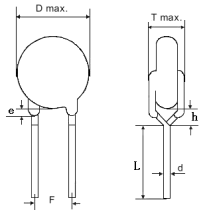
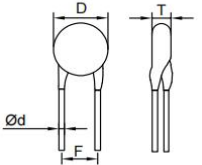
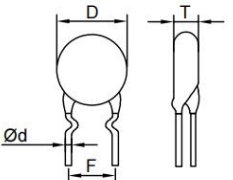
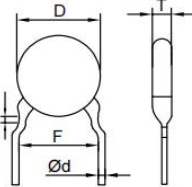
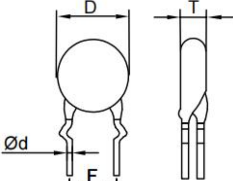
③直径代码 Diameter Code

代码 Code	4	5	6	7	8	9
芯片直径 Chip diameter (mm)	3.5~4.4	4.5~5.4	5.5~6.4	6.5~7.4	7.5~8.4	8.5~9.4
代码 Code	10	11	12	13	14	15
芯片直径 Chip diameter (mm)	9.5~10.4	10.5~11.4	11.5~12.4	12.5~13.4	13.5~14.4	14.5~15.4

④温度特性 Temperature Characteristics

材质代码 Material code		温度区间 Temperature range	容量允许偏差 Capacity tolerance deviation
EIA 代码 EIA Code	简称 Abbreviation		
Y5P	B	-25℃~+85℃	±10%
Y5R	R		±15%
Y5U	E		-56% to +22%
Y5V	F		-82% to +22%

⑤引线样式 Lead wire Style

代码 Code	脚型 Foot shape	图示 Example diagram	代码 Code	脚型 Foot shape	图示 Example diagram
0	前后打翘 Vertical		1、3、4	直脚 Straight	
6	内弯 Inside kink		7	直脚-改善型 Straight Improved type	
9	单外弯 Outside kink		注：本规格书“规格尺寸”栏所列产品均为主推 0 脚型，若需其他脚型规格，请与我司客服沟通确认。 Note: The products listed in the "Specification Dimensions" column of this specification document are all the main promoted 0-foot shape. If you need other foot shape specifications, please contact our customer service for confirmation.		

⑥引线间距 Lead wire Spacing

代码 Code	B	D	E
脚距 Foot distance (mm)	5.0±0.5	7.5±0.5	10.0±0.5

⑦标称容量 (额定容量) Nominal Capacity (Rated Capacity)

代码 Code	容量 Capacity	注：标称容量以 pF 为单位，用 3 位数字表示。前两位数字表示有效数字，第三位为 0 的个数；R 表示小数点。 Note: The nominal capacity is expressed in picofarads (pF) and is represented by three digits. The first two digits indicate the significant figures, and the third digit represents the number of zeros; R indicates the decimal point.
4R7	4.7pF	
330	33pF	
103	10000pF	

⑧容量偏差 Capacity Deviation

代码 Code	K	M
容差 Capacity deviation	±10%	±20%

⑨包装方式 Packaging Method

代码 Code	S	T
包装方式 Packaging method	散装 Bulking	编带 Taping

⑩产品颜色 Product Color

代码 Code	E	F
环氧树脂 Epoxy resin	黄色 Yellow	蓝色 Blue

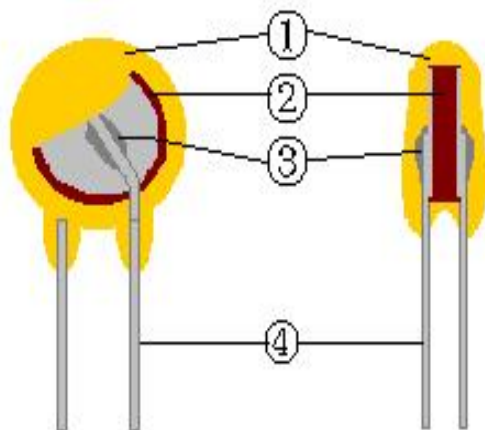
⑪电极代码 Code Electrode Code

代码 Code	A
电极 Electrode	银 Ag

⑫编带样式或引线长度 Tape packaging Style or Lead Length

编带代码 Tape packaging Code	尺寸 Size (mm)	编带代码 Tape packaging Code	尺寸 Size (mm)
01	元件间距 Component spacing: 12.7	03	元件间距 Component spacing: 25.4
02	元件间距 Component spacing: 15.0	04	元件间距 Component spacing: 30.0

散装代码 Bulk code	尺寸 Size (mm)	散装代码 Bulk code	尺寸 Size (mm)
A0~A9	引脚长度 Lead length: 2.0~2.9	E0~E9	引脚长度 Lead length: 6.0~6.9
B0~B9	引脚长度 Lead length: 3.0~3.9	F0~F9	引脚长度 Lead length: 7.0~7.9
C0~C9	引脚长度 Lead length: 4.0~4.9
D0~D9	引脚长度 Lead length: 5.0~5.9	T0	引脚长度 Lead length: 17.0 min
备注	注：对于短引脚产品对应代码 Code 表示引脚尺寸中心值；对于长引脚产品统一用“T0”代表最小尺寸“17.0”。 Note: For products with short pins, the corresponding code Code represents the center value of the pin size; For products with long pins, the abbreviation "T0" is uniformly used to represent the minimum size of "17.0".		

◆产品结构 Product Structure
*** 瓷介电容剖面图 Sectional View of Ceramic Capacitor**


序号 NO.	名称 Name	材料 Materials
①	外包封层 Outsourced seal layer	环氧树脂 Epoxy resin
②	芯片 Chip	电极-陶瓷介质 Electrode - Ceramic Medium
③	焊锡 Solder	无铅锡条 Lead-free tin rod
④	引线 Wiring lead	镀锡铜包钢 Tinned copper-clad steel

◆规格尺寸 Specification Dimensions

* 规格清单表-额定电压 Specification List - Rated Voltage: 1KVDC

风华型号 FH Model	温度特性 TC	额定容量 Rated Capacity	容量偏差 Capacity Deviation	成品直径 Product Diameter (mm Max)	成品厚度 Product Thickness (mm Max)	引线线径 Wire Diameter (mm)	脚距 Lead wire Spacing (mm)
CT81N5Y5P0B101K⑨EA⑫	B	100pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5P0B151K⑨EA⑫	B	150pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5P0B221K⑨EA⑫	B	220pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5P0B271K⑨EA⑫	B	270pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5P0B331K⑨EA⑫	B	330pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5P0B391K⑨EA⑫	B	390pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5P0B471K⑨EA⑫	B	470pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5P0B681K⑨EA⑫	B	680pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N6Y5P0B821K⑨EA⑫	B	820pF	±10%	9.0	3.5	0.50±0.08	5.0±0.5
CT81N6Y5P0B102K⑨EA⑫	B	1000pF	±10%	9.0	3.5	0.50±0.08	5.0±0.5
CT81N7Y5P0B152K⑨EA⑫	B	1500pF	±10%	10.0	3.5	0.50±0.08	5.0±0.5
CT81N7Y5P0B182K⑨EA⑫	B	1800pF	±10%	10.0	3.5	0.50±0.08	5.0±0.5
CT81N8Y5P0B222K⑨EA⑫	B	2200pF	±10%	11.0	3.5	0.50±0.08	5.0±0.5
CT81N9Y5P0B332K⑨EA⑫	B	3300pF	±10%	12.0	3.5	0.50±0.08	5.0±0.5
CT81N9Y5P0B392K⑨EA⑫	B	3900pF	±10%	12.0	3.5	0.50±0.08	5.0±0.5
CT81N11Y5P0B472K⑨EA⑫	B	4700pF	±10%	14.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5R0B101K⑨EA⑫	R	100pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5R0B151K⑨EA⑫	R	150pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5R0B221K⑨EA⑫	R	220pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5R0B331K⑨EA⑫	R	330pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5R0B471K⑨EA⑫	R	470pF	±10%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N6Y5R0B561K⑨EA⑫	R	560pF	±10%	9.0	3.5	0.50±0.08	5.0±0.5
CT81N6Y5R0B681K⑨EA⑫	R	680pF	±10%	9.0	3.5	0.50±0.08	5.0±0.5
CT81N7Y5R0B821K⑨EA⑫	R	820pF	±10%	10.0	3.5	0.50±0.08	5.0±0.5
CT81N7Y5R0B102K⑨EA⑫	R	1000pF	±10%	10.0	3.5	0.50±0.08	5.0±0.5
CT81N8Y5R0B152K⑨EA⑫	R	1500pF	±10%	11.0	3.5	0.50±0.08	5.0±0.5
CT81N9Y5R0B182K⑨EA⑫	R	1800pF	±10%	12.0	3.5	0.50±0.08	5.0±0.5
CT81N10Y5R0B222K⑨EA⑫	R	2200pF	±10%	13.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5U0B102M⑨EA⑫	E	1000pF	±20%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5U0B152M⑨EA⑫	E	1500pF	±20%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5U0B222M⑨EA⑫	E	2200pF	±20%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N6Y5U0B332M⑨EA⑫	E	3300pF	±20%	9.0	3.5	0.50±0.08	5.0±0.5
CT81N7Y5U0B392M⑨EA⑫	E	3900pF	±20%	10.0	3.5	0.50±0.08	5.0±0.5
CT81N7Y5U0B472M⑨EA⑫	E	4700pF	±20%	10.0	3.5	0.50±0.08	5.0±0.5
CT81N10Y5U0B103M⑨EA⑫	E	10000pF	±20%	13.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5V0B152M⑨EA⑫	F	1500pF	±20%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5V0B222M⑨EA⑫	F	2200pF	±20%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N5Y5V0B332M⑨EA⑫	F	3300pF	±20%	8.0	3.5	0.50±0.08	5.0±0.5

CT81N5Y5V0B392M⑨EA⑫	F	3900pF	±20%	8.0	3.5	0.50±0.08	5.0±0.5
CT81N6Y5V0B472M⑨EA⑫	F	4700pF	±20%	9.0	3.5	0.50±0.08	5.0±0.5
CT81N7Y5V0B682M⑨EA⑫	F	6800pF	±20%	10.0	3.5	0.50±0.08	5.0±0.5
CT81N8Y5V0B103M⑨EA⑫	F	10000pF	±20%	11.0	3.5	0.50±0.08	5.0±0.5

* 规格清单表-额定电压 Specification List - Rated Voltage: 2KVDC

风华型号 FH Model	温度特性 TC	额定容量 Rated Capacity	容量偏差 Capacity Deviation	成品直径 Product Diameter (mm Max)	成品厚度 Product Thickness (mm Max)	引线线径 Wire Diameter (mm)	脚距 Lead wire Spacing (mm)
CT81M4Y5P0B101K⑨EA⑫	B	100pF	±10%	7.0	4.0	0.50±0.08	5.0±0.5
CT81M5Y5P0B151K⑨EA⑫	B	150pF	±10%	8.0	4.0	0.50±0.08	5.0±0.5
CT81M5Y5P0B221K⑨EA⑫	B	220pF	±10%	8.0	4.0	0.50±0.08	5.0±0.5
CT81M5Y5P0B331K⑨EA⑫	B	330pF	±10%	8.0	4.0	0.50±0.08	5.0±0.5
CT81M5Y5P0B471K⑨EA⑫	B	470pF	±10%	8.0	4.0	0.50±0.08	5.0±0.5
CT81M6Y5P0B681K⑨EA⑫	B	680pF	±10%	9.0	4.0	0.50±0.08	5.0±0.5
CT81M7Y5P0B821K⑨EA⑫	B	820pF	±10%	10.0	4.0	0.50±0.08	5.0±0.5
CT81M7Y5P0B102K⑨EA⑫	B	1000pF	±10%	10.0	4.0	0.50±0.08	5.0±0.5
CT81M8Y5P0B152K⑨EA⑫	B	1500pF	±10%	11.0	4.0	0.50±0.08	5.0±0.5
CT81M9Y5P0B222K⑨EA⑫	B	2200pF	±10%	12.0	4.0	0.50±0.08	5.0±0.5
CT81M12Y5P0B332K⑨EA⑫	B	3300pF	±10%	15.0	4.0	0.50±0.08	5.0±0.5
CT81M13Y5P0B472K⑨EA⑫	B	4700pF	±10%	16.0	4.0	0.50±0.08	5.0±0.5
CT81M5Y5R0B101K⑨EA⑫	R	100pF	±10%	8.0	4.0	0.50±0.08	5.0±0.5
CT81M5Y5R0B151K⑨EA⑫	R	150pF	±10%	8.0	4.0	0.50±0.08	5.0±0.5
CT81M5Y5R0B221K⑨EA⑫	R	220pF	±10%	8.0	4.0	0.50±0.08	5.0±0.5
CT81M5Y5R0B331K⑨EA⑫	R	330pF	±10%	8.0	4.0	0.50±0.08	5.0±0.5
CT81M6Y5R0B471K⑨EA⑫	R	470pF	±10%	9.0	4.0	0.50±0.08	5.0±0.5
CT81M6Y5R0B561K⑨EA⑫	R	560pF	±10%	9.0	4.0	0.50±0.08	5.0±0.5
CT81M7Y5R0B681K⑨EA⑫	R	680pF	±10%	10.0	4.0	0.50±0.08	5.0±0.5
CT81M7Y5R0B821K⑨EA⑫	R	820pF	±10%	10.0	4.0	0.50±0.08	5.0±0.5
CT81M8Y5R0B102K⑨EA⑫	R	1000pF	±10%	11.0	4.0	0.50±0.08	5.0±0.5
CT81M10Y5R0B152K⑨EA⑫	R	1500pF	±10%	13.0	4.0	0.50±0.08	5.0±0.5
CT81M12Y5R0B222K⑨EA⑫	R	2200pF	±10%	15.0	4.0	0.50±0.08	5.0±0.5
CT81M5Y5U0B102M⑨EA⑫	E	1000pF	±20%	8.0	4.0	0.50±0.08	5.0±0.5
CT81M6Y5U0B152M⑨EA⑫	E	1500pF	±20%	9.0	4.0	0.50±0.08	5.0±0.5
CT81M6Y5U0B222M⑨EA⑫	E	2200pF	±20%	9.0	4.0	0.50±0.08	5.0±0.5
CT81M7Y5U0B332M⑨EA⑫	E	3300pF	±20%	10.0	4.0	0.50±0.08	5.0±0.5
CT81M9Y5U0B472M⑨EA⑫	E	4700pF	±20%	12.0	4.0	0.50±0.08	5.0±0.5
CT81M10Y5U0B682M⑨EA⑫	E	6800pF	±20%	13.0	4.0	0.50±0.08	5.0±0.5
CT81M12Y5U0B103M⑨EA⑫	E	10000pF	±20%	15.0	4.0	0.50±0.08	5.0±0.5
CT81M5Y5V0B102M⑨EA⑫	F	1000pF	±20%	8.0	4.0	0.50±0.08	5.0±0.5
CT81M5Y5V0B152M⑨EA⑫	F	1500pF	±20%	8.0	4.0	0.50±0.08	5.0±0.5
CT81M6Y5V0B222M⑨EA⑫	F	2200pF	±20%	9.0	4.0	0.50±0.08	5.0±0.5
CT81M6Y5V0B332M⑨EA⑫	F	3300pF	±20%	9.0	4.0	0.50±0.08	5.0±0.5
CT81M8Y5V0B472M⑨EA⑫	F	4700pF	±20%	11.0	4.0	0.50±0.08	5.0±0.5

CT81M8Y5V0B682M ^⑨ EA ^⑫	F	6800pF	±20%	11.0	4.0	0.50±0.08	5.0±0.5
CT81M9Y5V0B103M ^⑨ EA ^⑫	F	10000pF	±20%	12.0	4.0	0.50±0.08	5.0±0.5

* 规格清单表-额定电压 Specification List - Rated Voltage: 3KVDC

风华型号 FH Model	温度特性 TC	额定容量 Rated Capacity	容量偏差 Capacity Deviation	成品直径 Product Diameter (mm Max)	成品厚度 Product Thickness (mm Max)	引线线径 Wire Diameter (mm)	脚距 Lead wire Spacing (mm)
CT81P5Y5P0D101K ^⑨ EA ^⑫	B	100pF	±10%	8.0	5.0	0.60±0.08	7.5±0.5
CT81P4Y5P0D151K ^⑨ EA ^⑫	B	150pF	±10%	7.0	5.0	0.60±0.08	7.5±0.5
CT81P4Y5P0D221K ^⑨ EA ^⑫	B	220pF	±10%	7.0	5.0	0.60±0.08	7.5±0.5
CT81P5Y5P0D331K ^⑨ EA ^⑫	B	330pF	±10%	8.0	5.0	0.60±0.08	7.5±0.5
CT81P5Y5P0D471K ^⑨ EA ^⑫	B	470pF	±10%	8.0	5.0	0.60±0.08	7.5±0.5
CT81P6Y5P0D681K ^⑨ EA ^⑫	B	680pF	±10%	9.0	5.0	0.60±0.08	7.5±0.5
CT81P7Y5P0D102K ^⑨ EA ^⑫	B	1000pF	±10%	10.0	5.0	0.60±0.08	7.5±0.5
CT81P4Y5R0D101K ^⑨ EA ^⑫	R	100pF	±10%	7.0	5.0	0.60±0.08	7.5±0.5
CT81P5Y5R0D151K ^⑨ EA ^⑫	R	150pF	±10%	8.0	5.0	0.60±0.08	7.5±0.5
CT81P5Y5R0D221K ^⑨ EA ^⑫	R	220pF	±10%	8.0	5.0	0.60±0.08	7.5±0.5
CT81P6Y5R0D331K ^⑨ EA ^⑫	R	330pF	±10%	9.0	5.0	0.60±0.08	7.5±0.5
CT81P5Y5U0D102M ^⑨ EA ^⑫	E	1000pF	±20%	8.0	5.0	0.60±0.08	7.5±0.5
CT81P6Y5U0D152M ^⑨ EA ^⑫	E	1500pF	±20%	9.0	5.0	0.60±0.08	7.5±0.5
CT81P7Y5U0D222M ^⑨ EA ^⑫	E	2200pF	±20%	10.0	5.0	0.60±0.08	7.5±0.5
CT81P9Y5U0D332M ^⑨ EA ^⑫	E	3300pF	±20%	12.0	5.0	0.60±0.08	7.5±0.5
CT81P10Y5U0D472M ^⑨ EA ^⑫	E	4700pF	±20%	13.0	5.0	0.60±0.08	7.5±0.5
CT81P4Y5V0D102M ^⑨ EA ^⑫	F	1000pF	±20%	7.0	5.0	0.60±0.08	7.5±0.5
CT81P5Y5V0D152M ^⑨ EA ^⑫	F	1500pF	±20%	8.0	5.0	0.60±0.08	7.5±0.5
CT81P5Y5V0D222M ^⑨ EA ^⑫	F	2200pF	±20%	8.0	5.0	0.60±0.08	7.5±0.5
CT81P7Y5V0D332M ^⑨ EA ^⑫	F	3300pF	±20%	10.0	5.0	0.60±0.08	7.5±0.5
CT81P8Y5V0D472M ^⑨ EA ^⑫	F	4700pF	±20%	11.0	5.0	0.60±0.08	7.5±0.5
CT81P9Y5V0D682M ^⑨ EA ^⑫	F	6800pF	±20%	12.0	5.0	0.60±0.08	7.5±0.5
CT81P12Y5V0D103M ^⑨ EA ^⑫	F	10000pF	±20%	15.0	5.0	0.60±0.08	7.5±0.5

* 规格清单表-额定电压 Specification List - Rated Voltage: 4KVDC~6KVDC

若需要额定电压 DC 4KV~6KV 的产品，可与我司客服沟通确认选型。

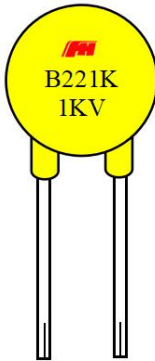
If you need products with rated voltage ranging from 4KV to 6KV, please contact our customer service for confirmation of the selection.

注：以上规格均为常用容量规格，如需其他容量规格请与我司客服沟通确认。

Note: The above specifications are for the standard capacity. If you need other capacity specifications, please contact our customer service for confirmation.

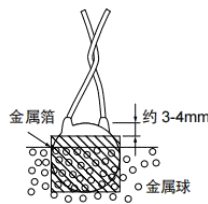
◆产品丝印 Product printing labels

* 产品丝印 Product printing labels

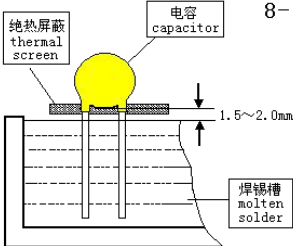
序号 No.	标示名称 Label name	代码 Code	图例 Example diagram
1	风华商标 FH logo	FH	
2	温度特性(TC)	B(Y5P)	
3	标称容量 Nominal Capacity	221(220pF)	
4	容量偏差 Capacity Deviation	K(±10%)	
5	额定电压 (DC) Rated Voltage	1KV	

◆可靠性测试方法 Reliability Testing Method

序号 No.	项目 Items		性能 Performance		试验条件 Test conditions (参考标准 Reference standard: GB/T 5968-2011)			
1	外观构造及尺寸 Appearance, Structure and Dimensions		外观无异常, 构造及尺寸依图示规定 The appearance shows no abnormalities. The structure and dimensions are in accordance with the illustrated specifications.		目视检验尺寸以游标卡尺测量 Visual inspection of dimensions is carried out using a vernier caliper for measurement.			
2	静电容量 Electrostatic capacitance		规定之容许误差以内 Within the allowable error range specified		测量频率: 1kHz±20% 测量电压: 1.0 V ± 0.2 V 测试温度: 25±2℃			
3	损耗角正切值 Dissipation factor		Y5P (B)	≤2.5%	Measurement frequency: 1kHz±20%			
			Y5R (R)	≤0.5%	Measurement voltage: 1.0 V ± 0.2 V			
			Y5U (E)	≤3.0%	Test temperature: 25±2℃			
			Y5V (F)	≤3.5%				
4	绝缘电阻 (端子间) Insulation resistance (Between terminals)		≥4000MΩ		测试电压 Test Voltage	500±50V DC	施加时间 Time	60s±5s
5	耐电压 Withstand voltage	端子间 Between terminals	无永久性击穿或飞弧 No permanent breakdown or arcing		测试电压 Test Voltage	1.5U _R +500V		
					施加时间 Time	逐批检验 Batch-by-batch inspection: 3s		
						鉴定和周期检验 Periodic Test: 60s		
					充放电流 Charge/discharge current: ≤50mA			

序号 No.	项目 Items		性能 Performance	试验条件 Test conditions (参考标准 Reference standard: GB/T 5968-2011)												
		端子与 外装间 Between terminal and Exterior cladding	无永久性击穿或飞弧 No permanent breakdown or arcing	<div></div> <p>如右图所示, 将电容器的端子连接, 在距各端子约 3mm-4mm 处, 用金属箔包裹电容器, 将电容器置于盛有直径为 1mm 金属球的容器内, 在电容器引线与金属球之间施加 1.5U_R+500V 电压 60 秒钟。(充放电流≤50mA)</p> <p>As shown in the figure on the right, connect the terminals of the capacitor. At a distance of about 3mm-4mm from each terminal, wrap the capacitor with a metal foil. Place the capacitor in a container filled with metal balls with a diameter of 1mm. Apply a voltage of 1.5U_R+500V between the capacitor leads and the metal balls for 60 seconds.</p> <p>(Current charging and discharging ≤ 50mA)</p>												
6	温度特性 Temperature characteristics		在允许规格范围内 Within the permitted specifications range	<p>预处理: 初次测量之前, 将电容器在 125±3℃条件下存放 1 小时, 然后在室内条件下放置 24±1 小时。</p> <p>Pre-treatment: Before the initial measurement, the capacitor should be stored at 125 ± 3℃ for 1 hour, and then placed in an indoor environment for 24 ± 1 hours.</p> <p>依次按以下温度循环阶段测定:</p> <p>Measure successively in the following temperature cycling stages:</p> <table><tr><th>阶段 Step</th><th>温度 Temperature(℃)</th></tr><tr><td>1</td><td>20℃±2℃</td></tr><tr><td>2</td><td>-25℃±2℃</td></tr><tr><td>3</td><td>20℃±2℃</td></tr><tr><td>4</td><td>85℃±2℃</td></tr><tr><td>5</td><td>20℃±2℃</td></tr></table>	阶段 Step	温度 Temperature(℃)	1	20℃±2℃	2	-25℃±2℃	3	20℃±2℃	4	85℃±2℃	5	20℃±2℃
阶段 Step	温度 Temperature(℃)															
1	20℃±2℃															
2	-25℃±2℃															
3	20℃±2℃															
4	85℃±2℃															
5	20℃±2℃															
7	端子强度 Strength of terminal	抗拉强度 Tensile strength	引线不断裂, 电容器不破损 The leads do not break and the capacitors do not get damaged.	<p>如右图所示, 固定住电容器, 在引线上逐步施加径向拉力直至 10N, 并保持 10±1 秒钟。</p> <p>As shown in the figure on the right, fix the capacitor, and gradually apply radial tension on the lead wire until it reaches 10N, and maintain this tension for 10s ± 1s .</p>												

序号 No.	项目 Items		性能 Performance		试验条件 Test conditions (参考标准 Reference standard: GB/T 5968-2011)						
											
		弯曲强度 Bending strength	引线不断裂，电容器不破损 The leads do not break and the capacitors do not get damaged.		在引线出口处沿一个方向施加 5N、90°的弯曲压力，然后恢复至原始状态。之后在 2 至 3 秒内再以相反方向施加一次 90°的弯曲压力。 Apply a 5N bending force at a 90° angle in one direction at the end of the lead wire, then return to the original state. Afterwards, apply a 90° bending force in the opposite direction again within 2 to 3 seconds.						
8	耐振性 Vibration resistance	外观 Appearance	无可见损伤 No visible damage		样品安装：将电容器牢固地焊接在支撑引线上 扫频范围：10Hz-55Hz；振幅：0.75mm 扫频速度：10Hz→55Hz→10Hz 为一个循环，单个循环时间≤1min；振动时间：X、Y、Z 三轴各 2h，共 6h Sample installation: Securely weld the capacitor to the support lead wire. Sweep frequency range: 10Hz - 55Hz. Amplitude: 0.75mm Sweep frequency speed: A cycle consists of 10Hz → 55Hz → 10Hz, and the duration of each cycle is ≤ 1 minute. Vibration time: 2 hours for each of the X, Y, and Z axes, totaling 6 hours.						
9	可焊性 Weldability		引线表面均匀沾锡，上锡面积不小于总面积的 95% The surface of the lead wire is evenly coated with tin, and the area of tin coating should be no less than 95% of the total area.		<table><tr><td>焊锡温度 Temperature</td><td>235℃±5℃</td></tr><tr><td>浸入时间 Time</td><td>2.0s±0.5s</td></tr><tr><td>上锡面积 The area of tin plating</td><td>≥95%</td></tr></table> 浸入深度:距离电容本体 2.0±0.5mm Immersion depth: 2.0 ± 0.5 mm from the capacitor body	焊锡温度 Temperature	235℃±5℃	浸入时间 Time	2.0s±0.5s	上锡面积 The area of tin plating	≥95%
焊锡温度 Temperature	235℃±5℃										
浸入时间 Time	2.0s±0.5s										
上锡面积 The area of tin plating	≥95%										
10	耐焊接热 Resistance to welding heat	外观 Appearance	无可见损伤 No visible damage		预处理：初次测量之前，将电容器在 85±2℃条件下存放 1 小时，然后在室内条件下放置 24±1 小时。 Pre-treatment: Before the initial measurement, the capacitor should be stored at 85 ± 2℃ for 1 hour, and then placed in an indoor environment for 24 ± 1 hours.						
		静电容量变化 Capacity	Y5P (B)	ΔC/C ≤10%		<table><tr><td>焊锡温度 Temperature</td><td>260℃±5℃</td></tr><tr><td>浸入时间 Time</td><td>10 s±1 s</td></tr></table>	焊锡温度 Temperature	260℃±5℃	浸入时间 Time	10 s±1 s	
焊锡温度 Temperature	260℃±5℃										
浸入时间 Time	10 s±1 s										

序号 No.	项目 Items		性能 Performance		试验条件 Test conditions (参考标准 Reference standard: GB/T 5968-2011)
		change	Y5R (R)	$ \Delta C/C \leq 15\%$	 <p>后处理：将电容器在室内条件下存放至 1 至 2 小时。 Post-processing: Store the capacitor in an indoor environment for 1 to 2 hours.</p>
			Y5U (E)	$ \Delta C/C \leq 20\%$	
			Y5V (F)	$ \Delta C/C \leq 20\%$	
11	快速温变 Rapid temperature change	外观 Appearance	无可见损伤、标志清晰 No visible damage, clear markings		<p>预处理：在 $125^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 的条件下放置 1h 进行热处理，在室温下放置 $24\text{h} \pm 1\text{h}$ 后进行测量 TL=下限类别温度，TU=上限类别温度； 在 TL 或 TU 的放置时间：30 分钟； TL 与 TU 间转换时间：1 分钟之内； 循环次数：5 次 后处理：室温放置 $24\text{h} \pm 2\text{h}$ 后进行测量 Pre-treatment: Heat treatment was conducted at $125^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 1 hour, and then measured at room temperature after being left for 24 hours ± 1 hours. TL = Lower limit category temperature, TU = Upper limit category temperature; The duration of placement at TL or TU: 30 minutes; The conversion time between TL and TU: within 1 minute; Number of cycles: 5 times Post-treatment: Measured after being left at room temperature for 24 hours ± 2 hours.</p>
12	稳态湿热-1 Damp heat, steady state-1 (DHSS)	外观 Appearance	无可见损伤、标志清晰 No visible damage, clear markings		<p>温度： $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 相对湿度： 90%至 95% 持续时间： 21d 后处理：将电容器在室内条件下存放至 6 至 24 小时。 Temperature: $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Relative humidity: 90% to 95% Duration: 21 days Post-treatment: Store the capacitor in an indoor environment for 6 to 24 hours.</p>
		静电容量 变化 Capacity change	Y5P (B)	$ \Delta C/C \leq 10\%$	
			Y5R (R)	$ \Delta C/C \leq 15\%$	
			Y5U (E)	$ \Delta C/C \leq 20\%$	
			Y5V (F)	$ \Delta C/C \leq 30\%$	
		损耗角 正切值 Dissipation factor	损耗因数： $\leq 2X$ 初始规格上限 DF: $\leq 2X$ initial specification upper limit		
绝缘电阻 Insulation resistance	$\geq 1000\text{M}\Omega$				

序号 No.	项目 Items		性能 Performance		试验条件 Test conditions (参考标准 Reference standard: GB/T 5968-2011)
13	稳态湿热-2 Damp heat, steady state-2 (DHSS)	外观 Appearance	无可见损伤、标志清晰 No visible damage, clear markings		温度: 40℃±2℃ 相对湿度: 90%至 95% 施加电压: 额定电压 持续时间: 21d 后处理: 将电容器在室内条件下存放至 1 至 2 小时。 Temperature: 40℃ ± 2℃ Relative humidity: 90% to 95% Voltage: Rated voltage Duration: 21 days Post-treatment: Store the capacitor in an indoor environment for 6 to 24 hours.
		静电容量 变化 Capacity change	Y5P (B)	\u0394C/C \u226410%	
			Y5R (R)	\u0394C/C \u226415%	
			Y5U (E)	\u0394C/C \u226420%	
			Y5V (F)	\u0394C/C \u226430%	
		损耗角 正切值 Dissipation factor	损耗因数: \u22642X 初始规格上限 DF: \u2264 2X initial specification upper limit		
		绝缘电阻 Insulation resistance	\u22651000M\u03a9		
15	耐久性 Endurance test	外观 Appearance	无可见损伤、标志清晰 No visible damage, clear markings		预处理: 在 125\u00b0C\u00b12\u00b0C的条件下放置 1h 进行热处理, 在室温下放置 24h\u00b12h 后进行测量 Pre-treatment: Heat treatment was conducted at 125\u00b0C \u00b1 2\u00b0C for 1 hour, and then the measurement was carried out after being left at room temperature for 24h \u00b1 2h. 在 125+2/-0\u00b0C 及相对湿度低于 50 % 的条件下施加 150%UR 的电压 1000 小时。 后处理: 将电容器在室内条件下存放至 24\u00b12 小时。 Apply a voltage of 150% UR for 1000 hours under conditions of 125 \u00b1 2/-0 \u00b0C and relative humidity below 50%. Post-treatment: Store the capacitor in an indoor environment for 24\u00b12 hours.
		静电容量 变化 Capacity change	Y5P (B)	\u0394C/C \u226420%	
			Y5R (R)	\u0394C/C \u226420%	
			Y5U (E)	\u0394C/C \u226420%	
			Y5V (F)	\u0394C/C \u226430%	
		损耗角 正切值 Dissipation factor	损耗因数: \u22642X 初始规格上限 DF: \u2264 2X initial specification upper limit		
		绝缘电阻 Insulation resistance	\u22652000M\u03a9		

预处理(仅针对 II 类电容器): 在 125\u00b12\u00b0C 下预热 1h\u00b110min 后, 在室温下放置 24\u00b12h。

实验结束后处理(仅针对 II 类电容器): 在 125\u00b12\u00b0C 下预热 1h\u00b110min 后, 在室温下放置 24\u00b12h。

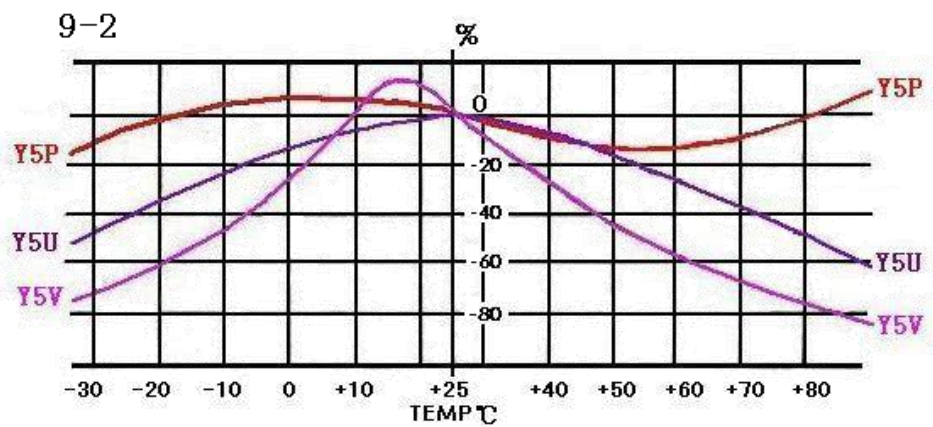
Pre-treatment (only for type II capacitors): Preheat at 125\u00b12\u00b0C for 1h\u00b110min, then leave at room temperature for 24\u00b12h.

Post-experiment treatment (only for type II capacitors): Preheat at 125\u00b12\u00b0C for 1h\u00b110min, then leave at room temperature for 24\u00b12h.

“室内条件”—— 温度: 15\u00b0C~35\u00b0C, 相对湿度: 25%~75 %, 大气压力: 86kPa~106kPa

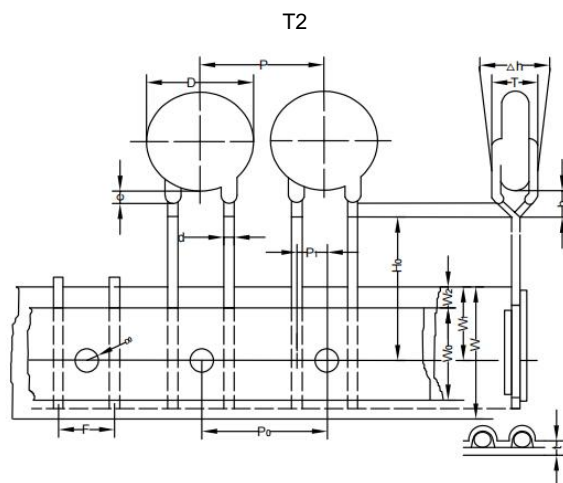
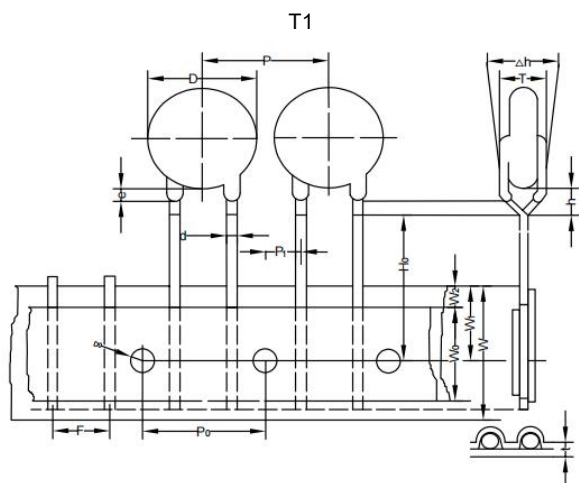
"Indoor conditions" - Temperature: 15\u00b0C to 35\u00b0C, Relative humidity: 25% to 75%, Atmospheric pressure: 86kPa to 106kPa

◆产品特性曲线图 Temperature characteristic curve graph

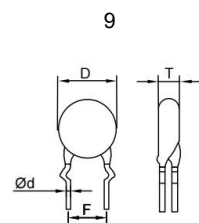
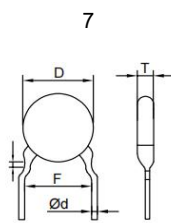
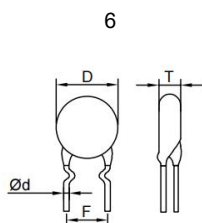
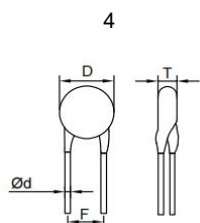


◆包装 Packaging (示例为 0 脚型 Example: 0)

* 编带样式及尺寸 Tape style and size



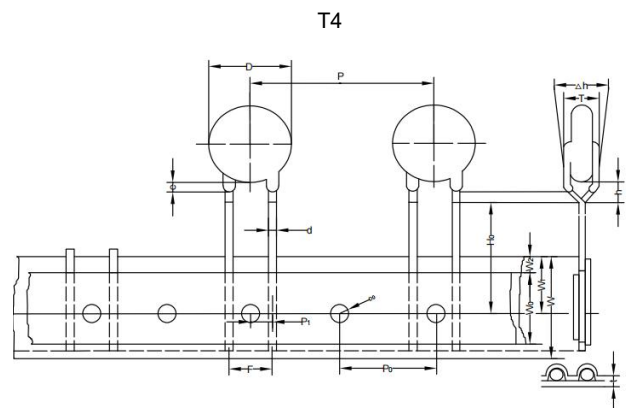
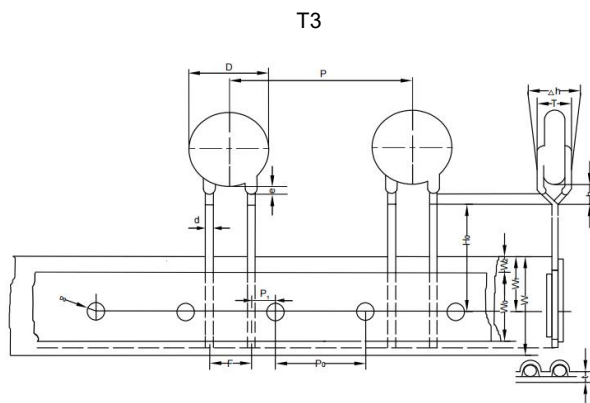
其他脚型



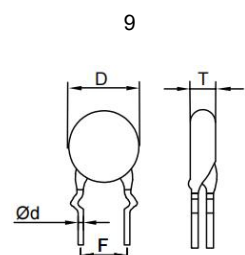
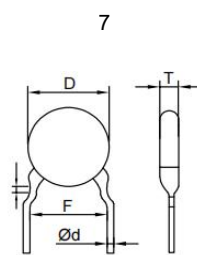
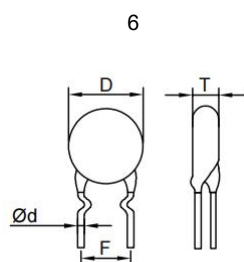
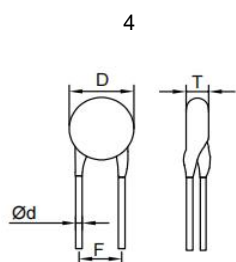
单位: mm

产品编码 Product Number			*B****T*A01	*D****T*A01	*B****T*A02	*D****T*A02	*E****T*A02
编带样式代码 Tape style code			T1	T2	T1	T1	T2
序号 NO.	符号 Code	尺寸定义 Code definition	尺寸 Size		尺寸 Size		
1	P	元件间距	12.7±2.0		15.0±2.0		
2	P ₀	纸带孔距	12.7±0.3		15.0±0.3		
3	F	引线间距	5.0±0.5	7.5±0.5	5.0±0.5	7.5±0.5	10.0±0.5
4	P ₁	引线偏距	3.85±0.7	3.75±0.7	5.0±0.7	3.75±0.7	5.0±0.7
5	d	引线线径	0.50±0.08	0.60±0.08	0.50±0.08	0.60±0.08	
6	D	成品直径	见规格尺寸-成品直径				
7	T	成品厚度	见规格尺寸-成品厚度				
8	e	涂装脚长	弯折卡位内				
9	H ₀	引线高度	18.0±2.0（0、6、7、9 脚型）				
		（纸带孔-引线弯折位高度）	20±2.0（4 脚型）				
10	△h	元件前后偏距	2.0 Max				
11	h	元件底部-折弯位底部距离	4.0Max（4 脚型为 2.5Max，6、7、9 脚型为 4.5Max）				
12	D ₀	孔径	4.0±0.2				
13	W	纸带宽度	18.0±0.5				
14	W ₀	胶带宽度	7.5 min				
15	W ₁	纸带孔-纸带边偏距	9.0±0.5				
16	W ₂	胶带-纸带边偏距	1.5±1.5				
17	t	纸带-胶带厚度	0.7Max				

* 编带样式及尺寸 Tape style and size



其他脚型



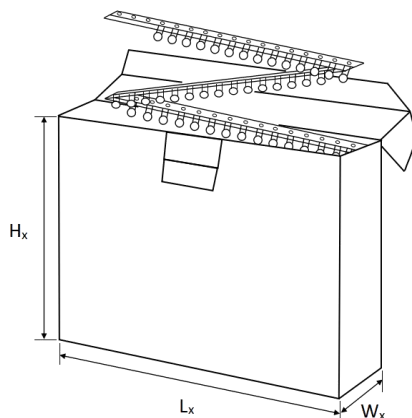
单位: mm

产品编码 Product Number			*B****T*A03	*D****T*A03	*E****T*A03	*B****T*A04	*D****T*A04	*E****T*A04
编带样式代码 Tape style code			T3	T4	T4	T3	T3	T4
序号 NO.	符号 Code	尺寸定义 Code definition	尺寸 Size			尺寸 Size		
1	P	元件间距	25.4±2.0			30.0±2.0		
2	P ₀	纸带孔距	12.7±0.3			15.0±0.3		
3	F	引线间距	5.0±0.5	7.5±0.5	10.0±0.5	5.0±0.5	7.5±0.5	10.0±0.5
4	P ₁	引线偏距	3.85±0.7	3.75±0.7	5.0±0.7	5.0±0.7	3.75±0.7	5.0±0.7
5	d	引线线径	0.50±0.08	0.60±0.08		0.50±0.08	0.60±0.08	
6	D	成品直径	见规格尺寸-成品直径					
7	T	成品厚度	见规格尺寸-成品厚度					
8	e	涂装脚长	弯折卡位内					
9	H ₀	引线高度 (纸带孔-引线弯折位高度)	18.0±2.0 (0、6、7、9 脚型)					
			20±2.0 (4 脚型)					
10	△h	元件前后偏距	2.0 Max					
11	h	元件底部-折弯位底部距离	4.0Max (4 脚型为 2.5Max, 6、7、9 脚型为 4.5Max)					
12	D ₀	孔径	4.0±0.2					
13	W	纸带宽度	18.0±0.5					
14	W ₀	胶带宽度	7.5 min					
15	W ₁	纸带孔-纸带边偏距	9.0±0.5					
16	W ₂	胶带-纸带边偏距	1.5±1.5					
17	t	纸带-胶带厚度	0.7Max					

* 包装数量 Packaging quantity

编带包装 Strapping packaging

内箱包装 Inner box packaging:

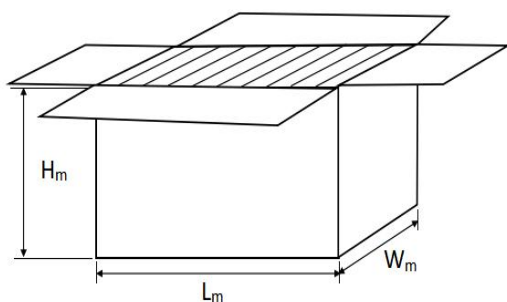


芯片直径 Chip diameter (mm)	L _x (mm)	W _x (mm)	H _x (mm)
<10	330	48	265
≥10	330	54	265

额定电压 (DC) Rated voltage	元件间距 Component spacing (mm)					
	包装数量 Packaging quantity (K/箱)					
	12.7	15.0	25.4		30.0	
			φ<12	φ≥12	φ<12	φ≥12
1KV~2KV	2.0	1.5	2.0	1.5	2.0	1.5
3KV~4KV	1.0	1.0	1.0	1.0	1.0	1.0
5KV~6KV	1.0	1.0	1.0	1.0	1.0	1.0

注：以上包装数量为常用包装数量，根据不同的产品尺寸，包装数量可能会存在有一定的差异，数量仅供参考。
Note: The above packaging quantities represent the common quantities. Depending on the different product sizes, there may be some variations in the packaging quantities. These quantities are for reference only.

外箱包装 Outer box packaging:

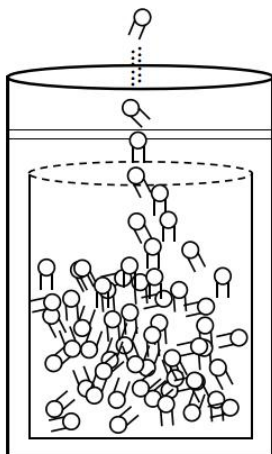


产品规格 (mm)	L _m (mm)	W _m (mm)	H _m (mm)
芯片直径<10	285	170	345
	535	288	350
芯片直径≥10	280	183	345
	595	288	350

注：以上外箱尺寸为常用包装尺寸，根据不同的装箱数量及包装要求外箱之间可能会存在有一定的差异，尺寸仅供参考。

Note: The above dimensions of the outer box are the commonly used packaging sizes. Depending on the different quantities of packing and packaging requirements, there may be some variations between the outer boxes. These dimensions are for reference only.

散装包装 Bulk packaging



包装数量 (Kpcs/袋) Packaging quantity (Kpcs/Bag)		内外箱尺寸 (L*W*H) Inner and outer box dimensions	外箱尺寸 (L*W*H) Outer box dimensions
芯片直径 $\phi < 11$	芯片直径 $\phi \geq 11$	30.0cm×21.5cm×10.5cm	46.0cm×31.5cm×23.5cm
1.0	0.5	24.0cm×21.5cm×9.5cm	44.5cm×25.5cm×22.0cm

注：以上包装尺寸为常用包装尺寸，根据不同的装箱数量及包装要求尺寸可能会存在有一定的差异，尺寸仅供参考。
 Note: The above packaging dimensions are the commonly used sizes. There may be some variations in size depending on the different packing quantities and packaging requirements. The dimensions provided are for reference only.

◆储存方法 Storage method

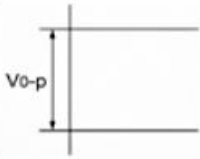
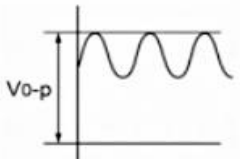
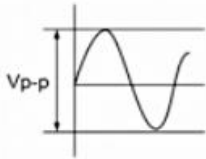
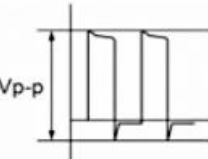
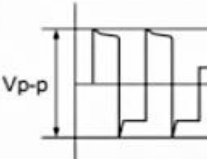
- ① 产品储存场地要整洁、干燥、通风、无漏水、无污染。
 - ② 产品长时间储存时不应直接放在地面，应放在托架上进行防潮。
 - ③ 注意按包装箱上的堆放高度对产品进行堆放。
 - ④ 储存环境温度：-25℃~+40℃；储存期限：2 年（附注：由于瓷介电容器具有老化特性，因此建议在收到货后尽快检测确认容量参数。经过检验合格的产品储存一段时间后再次检测可能会发现容量偏低，属于正常现象，无需进行专门处理，只需将产品于产线上正常经过波峰焊/回流焊后，容量将恢复到正常规格内。）
- ① The storage area for the products should be clean, dry, well-ventilated, free from water leakage and pollution.
 - ② When the products are stored for a long time, they should not be placed directly on the ground. Instead, they should be placed on racks to prevent moisture.
 - ③ Pay attention to stacking the products according to the stacking height indicated on the packaging boxes.
 - ④ Storage environment temperature: -25℃ to +40℃; Storage period: 2 years (Note: Due to the aging characteristic of ceramic capacitors, it is recommended to test and confirm the capacity parameters as soon as possible after receiving the goods. After the products pass the inspection, if their capacity is found to be lower after being stored for a period of time, this is a normal phenomenon and no special treatment is required. Just let the products go through the normal wave soldering/reflow soldering process on the production line, and their capacity will return to the normal specification.)

◆使用前的注意事项 Pre-use precautions

* 工作电压 Working voltage

在交流电路或纹波电流电路中使用直流额定电压电容器时，请务必确保外加电压的 V_{p-p} 值或包含直流偏置电压的 V_{o-p} 值保持在额定电压范围内。若向电路施加电压，开始或停止时可能会因谐振或切换产生暂时的不规则电压，请务必使用额定电压范围大于此不规则电压的电容器。

When using DC rated voltage capacitors in AC circuits or ripple current circuits, it is essential to ensure that the V_{p-p} value of the applied voltage or the V_{o-p} value including the DC bias voltage remains within the rated voltage range. If a voltage is applied to the circuit, temporary irregular voltages may occur due to resonance or switching when starting or stopping. Therefore, it is necessary to use capacitors with a rated voltage range greater than this irregular voltage.

直流电压 DC voltage	直流+交流电压 DC+AC voltage	交流电压 AC voltage	冲击电压 (1) Pulse voltage (1)	冲击电压 (2) Pulse voltage (2)
				

* 工作温度和自身发热（适用于 B/E/F 特性）

Working temperature and self-heating (applicable to B/E/F characteristics)

电容器的表面温度应保持在额定工作温度范围内，务必考虑到电容器自身发出的热量。电容器在高频电流、冲击电流等使用时可能会因介电损耗自身发热，所施加的正弦波电压的频率应低于 300 kHz。外加电压应使自身发热等负荷在 25℃ 周围温度条件下不超过 20℃ 范围，测量时应使用 $\phi 0.1\text{mm}$ 小热容量的 (K) 的热电偶，而且电容器不应受到其它组件的散热或周围温度波动影响。过热可能会导致电容器特性及可靠性下降（切勿在冷却风扇运转时进行测量，否则无法确保测量数据的精确性）。

The surface temperature of the capacitor should be maintained within its rated operating temperature range, taking into account the heat generated by the capacitor itself. When the capacitor is used in high-frequency currents, impulse currents, etc., it may generate heat due to dielectric loss. The applied sinusoidal voltage frequency should be lower than 300 kHz. The applied voltage should ensure that the

load causing self-heating does not exceed 20°C within the temperature range of 25°C. During measurement, a (K) type thermocouple with $\varnothing 0.1\text{mm}$ small heat capacity should be used. The capacitor should not be affected by the heat dissipation of other components or temperature fluctuations in the surrounding environment. Overheating may lead to a decline in the characteristics and reliability of the capacitor (Do not measure when the cooling fan is running, otherwise the accuracy of the measurement data cannot be ensured).

* 耐电压的测试条件 Test conditions for withstanding voltage

测试设备 Testing equipment

直流耐电压的测试设备应满足 GB/T2693-2001 标准 4.6 条款规定, 如果施加电压使得充放电电流 $>50\text{mA}$, 或者施加带有纹波的电压, 或超过规定电压值的超载电压, 则可能会导致故障。

The testing equipment for DC withstand voltage should comply with the provisions of Article 4.6 of the GB/T2693-2001 standard. If the applied voltage causes the charge-discharge current to exceed 50mA, or if a voltage with ripple is applied, or if an overload voltage exceeding the specified voltage value is applied, it may lead to malfunction.

电压外加方法 Voltage application method

施加耐电压时, 电容器的引线或端子应与耐电压测试设备的输出端连接牢固, 然后再将电压从近零增加到测试电压。如果测试电压不从近零逐渐提高而是直接施加在电容器上, 则施加时应包含过零点, 测试结束时, 测试电压应降到近零, 然后再将电容器引线或端子从耐电压测试设备的输出端取下。如果测试电压不从近零逐渐提高而是直接施加在电容器上, 则可能会出现浪涌电压, 从而导致故障。

When applying the withstand voltage, the leads or terminals of the capacitor should be firmly connected to the output terminal of the withstand voltage testing equipment, and then the voltage should be increased from nearly zero to the test voltage. If the test voltage is not gradually raised from nearly zero but is directly applied to the capacitor, then during the application process, the zero point should be included. At the end of the test, the test voltage should be reduced to nearly zero, and then the leads or terminals of the capacitor should be disconnected from the output terminal of the withstand voltage testing equipment. If the test voltage is not gradually raised from nearly zero but is directly applied to the capacitor, then a surge voltage may occur, which could lead to a fault.

过零点是指电压正弦通过 0V 的位置。

The zero-crossing point refers to the position where the voltage sine wave passes through 0V.

* 失效安全性 Failure safety

如果电容器破损, 会导致短路电路故障。务必在本产品上适当提供例如保险丝等自动防故障功能, 以免导致电击、火灾、或冒烟等。

If the capacitor is damaged, it will cause a short circuit fault in the circuit. It is essential to provide appropriate automatic fault prevention functions such as fuses on this product to avoid electric shock, fire, or smoke emission.

* 焊接、安装与使用 Welding, installation and usage

振荡与冲击 Vibration and Impact

使用时请勿使电容器或引线受到过度冲击或振荡。

When using, please avoid subjecting the capacitors or leads to excessive shock or vibration.

焊接 Welding

将该产品焊接在 PCB/PWB 上时, 不应超出电容器的耐焊接热规格, 本产品过热会使内部接点锡焊料熔化, 导致温度骤变, 而造成陶瓷组件产生裂纹。当使用烙铁焊接电容器时, 应遵循以下条件: 烙铁头温度: 最高 400°C; 烙铁功率: 最大 50W; 焊接时间: 最多 3.5 秒。

When welding this product onto a PCB/PWB, it should not exceed the soldering temperature limit of the capacitor. If this product overheats, the internal soldering material of the contact points will melt, causing a sudden temperature change and thereby causing cracks in the ceramic component. When using a soldering iron to solder capacitors, the following conditions should be followed: Soldering iron tip temperature: maximum 400°C; Soldering iron power: maximum 50W; Soldering time: up to 3.5 seconds.

* 清洗 (超声波清洗) Cleaning (Ultrasonic cleaning)

进行超声波清洗时, 应遵守下列条件: “洗涤槽容量: 20 瓦特输出功率 / 每升或以下; 洗涤时间: 最多 5 分钟; 不得直接振荡 PCB/PWB”。过度的超声波洗涤会导致引线的超载损坏。

When conducting ultrasonic cleaning, the following conditions should be followed: "Washing tank capacity: 20 watt output power / per

liter or less; washing time: no more than 5 minutes; Do not directly oscillate PCB/PWB". Excessive ultrasonic cleaning can cause overload damage to the leads.

●警告（使用与保管环境） Kindly note (Usage and Storage Environment)

电容器的绝缘涂层不形成完美的密封；因此，请勿在腐蚀性环境中使用或存放电容器，尤其是存在氯气、硫气、酸、碱、盐等地方。同时应防潮。在对本产品进行清洗、覆膜或包装前，请先在指定设备上测试经清洗、覆膜或封膜的产品的性能，以确认这些过程不会影响电容器的质量。电容器应存放在温度及相对湿度分别不超过-10℃到 40℃及 15%RH 至 85%RH 范围的地方。

使用本产品时如未能遵循上述警告事项，则在严重情况下，可能导致短路，并引起冒烟或局部离散。

The insulating coating of the capacitor does not form a perfect seal; therefore, do not use or store the capacitor in corrosive environments, especially in places with chlorine, sulfur, acids, alkalis, salts, etc. At the same time, it should be protected from moisture. Before cleaning, coating or packaging this product, please first test the performance of the cleaned, coated or sealed product on the designated equipment to confirm that these processes will not affect the quality of the capacitor. The capacitor should be stored in a place where the temperature and relative humidity do not exceed -10°C to 40°C and 15%RH to 85%RH respectively.

If the above warning matters are not followed when using this product, in severe cases, it may cause short circuits and result in smoke or local disintegration.

●警告（焊接与安装） Kindly note (Welding and Installation)

振荡与冲击 Vibration and Impact

使用时请勿使电容器或引线受到过度冲击或振动。过度冲击或振荡会对安装在电路板上的引线造成疲劳性破坏。请采取措施，使用粘合剂、封膜树脂或其它涂层将电容器安装在电路板上。使用指定设备进行固定时，请确认固定措施对产品不会造成影响。

When using, please avoid subjecting the capacitors or leads to excessive shock or vibration. Excessive shock or vibration can cause fatigue damage to the leads installed on the circuit board. Please take measures by using adhesives, encapsulation resins or other coatings to install the capacitors on the circuit board. When using the specified equipment for fixation, please confirm that the fixation measures will not affect the product.

焊接 Welding

当将本产品焊接到 PCB/PWB 上时，不得超过电容器的焊接耐热性。如果本产品过热，可能导致内部连接点焊料熔化，并且可能导致热冲击，从而导致陶瓷元件破裂。当使用烙铁焊接电容器时，应遵循以下条件：

烙铁头温度：最高 400℃

烙铁功率：最大 50W

焊接时间：最长 3.5s

When soldering this product onto a PCB/PWB, the temperature must not exceed the soldering tolerance of the capacitor. If this product overheats, it may cause the solder at the internal connection points to melt, and it may also lead to thermal shock, thereby causing the ceramic components to crack. When using a soldering iron to solder capacitors, the following conditions should be followed:

Soldering iron tip temperature: Maximum 400℃

Soldering iron power: Maximum 50W

Soldering time: Up to 3.5 s

* 粘合、树脂封膜和树脂涂敷 Bonding, resin sealing film and resin coating

在对本产品进行覆膜、封膜或施加涂层时，请先在指定设备上测试经覆膜、封膜或涂敷的产品的性能，以确认这些工艺不会影响电容器的质量。当含有有机溶剂（乙酸乙酯、甲基乙基酮、甲苯等等）的粘合剂和封膜树脂的使用量、干燥/硬化条件不适当时，有机溶剂可能损坏电容器的外涂层树脂，最坏情况下可能导致短路。粘合剂、封膜树脂或涂层的厚度变化可能导致处于温度周期变化中的电容器的外涂层树脂破裂或陶瓷元件破裂。

When applying film coating, sealing film or applying coating to this product, please first test the performance of the coated, sealed or coated product on the designated equipment to ensure that these processes do not affect the quality of the capacitor. When the usage amount of adhesives and sealing resins containing organic solvents (ethyl acetate, methyl ethyl ketone, toluene, etc.) and the

drying/hardening conditions are inappropriate, the organic solvents may damage the outer coating resin of the capacitor, and in the worst case, may cause a short circuit. Changes in the thickness of adhesives, sealing resins or coatings may cause the outer coating resin of the capacitor or ceramic components to crack under temperature cycle variations.

* 粘合、树脂封膜和树脂涂敷后的处理 Bonding, resin sealing film and resin coating treatment

焊接后，当外涂层很热（超过 100℃）时，外涂层会变得很软、易碎。因此，请注意不要对涂层施加机械冲击力。

使用本产品时如未能遵循上述警告事项，则在严重情况下，可能导致短路，并引起冒烟或局部离散。

After welding, when the outer coating is very hot (above 100℃), it becomes very soft and brittle. Therefore, please be careful not to apply mechanical impact force to the coating.

If the above warnings are not followed when using this product, in severe cases, it may cause a short circuit and result in smoke or local detachment.

⚠警告（使用方面） Kindly note (Usage)

振荡与冲击 Vibration and Impact

使用时请勿使电容器或引线受到过度冲击或振动。过度冲击或振荡会对安装在电路板上的引线造成疲劳性破坏。请采取措施，使用粘合剂、封膜树脂或其它涂层将电容器安装在电路板上。使用指定设备进行固定时，请确认固定措施对产品不会造成影响。

使用本产品时如未能遵循上述警告事项，则在严重情况下，可能导致短路，并引起冒烟或局部离散。

When using, please avoid subjecting the capacitors or leads to excessive shock or vibration. Excessive shock or vibration can cause fatigue damage to the leads installed on the circuit board. Please take measures by using adhesives, encapsulation resins or other coatings to install the capacitors on the circuit board. When using the specified equipment for fixation, please confirm that the fixation measures will not affect the product.

If the above warning matters are not followed when using this product, in severe cases, it may lead to short circuit, and cause smoking or local disintegration.

* 应用限制 Application Instructions

- ① 本规格书中记载的产品规格仅适用在通用标准用途意义上使用的一般电子设备（影音设备、家电设备、娱乐设备、通信设备、计算机设备、个人设备、办公设备、计测设备等），并且仅限于一般电子设备常规的操作和使用方法。
- ② 对于要求高安全性与高可靠性的应用场景，或因设备故障、失误操作、运行异常可能导致人身伤亡、财产损失及重大社会影响的特定用途（如下），本公司不对产品的适用性、性能表现及品质提供任何保证。
- ① The product specifications recorded in this specification are applicable only to general electronic devices (audio-visual equipment, household appliances, entertainment equipment, communication equipment, computer equipment, personal devices, office equipment, measuring and testing equipment, etc.) used in general standard purposes, and are limited to the normal operation and usage methods of general electronic devices.
- ② For applications requiring high safety and reliability, or for specific purposes where equipment failure, improper operation, or abnormal operation may result in personal injury, property loss, and significant social impact (such as the following), our company does not provide any guarantees regarding the applicability, performance, and quality of the products.

1、	航空，航天设备 Aerospace and aviation equipment	6、	运输设备（汽车，电车，船舶等） Transportation equipment (cars, trams, ships, etc.)
2、	军用设备 Military equipment	7、	电热用品，燃烧设备 Electric heating appliances, combustion equipment
3、	交通工具控制设备 Transportation vehicle control equipment	8、	核动力相关设备 Nuclear power-related equipment
4、	医疗设备 Medical equipment	9、	防灾防盗设备 Disaster prevention and theft prevention equipment
5、	发电控制设备 Power generation control equipment	10、	其他被认定为特定用途的应用 Other applications that have been identified as being for specific purposes

- ③ 若客户拟在本产品目录所说明的适用范围、使用条件之外使用产品，或计划将产品用于特定用途，敬请事先向本公司相关部门咨询。本公司将根据客户实际需求，协同商议与本产品目录所记载内容不同的使用方案。
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◆推荐安装/焊接方法 Recommended installation/welding method

* 焊接建议 Welding Suggestions

1.波峰焊外形 Wave soldering shape

建议流量的温度条件如图所示。The recommended temperature conditions for the flow rate are shown in the figure below.

必须进行预热。Preheating must be carried out.

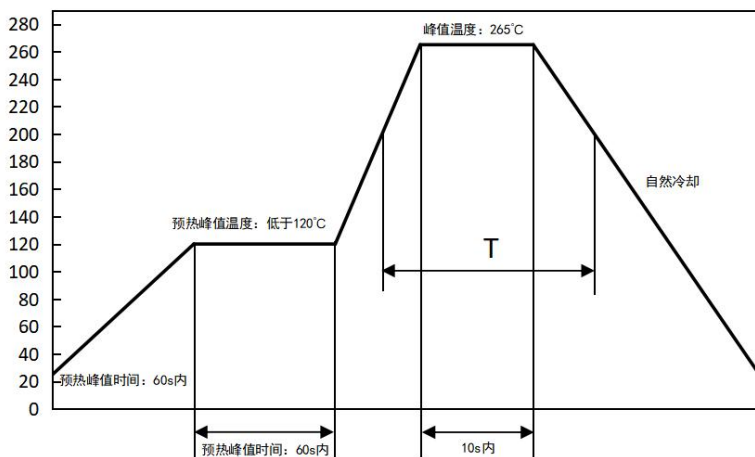
建议最高峰值流量温度为 265℃。The recommended peak flow temperature is 265℃.

当温度超过 200℃时，在 20 秒内执行图表中建议的时间“T”。

When the temperature exceeds 200℃, the time indicated in the chart "T" should be executed within 20 seconds.

注意流动焊料，不要在安装时直接接触电容器本体。

Be careful with the flow of solder, do not directly touch the capacitor body during installation.



2.使用烙铁的推荐返工条件 Recommended rework conditions for using the soldering iron

烙铁头温度：最高 400℃。Soldering iron tip temperature: Maximum 400℃.

烙铁功率：最大 50W。Soldering iron power: Maximum 50W.

焊接时间：最长 3.5s。Welding time: Maximum 3.5 seconds.

与涂层主体的距离：2 mm（最小值）。Distance from the coating body: 2 mm (minimum value).

◆修订履历

版本 Version	日期 Date	修订内容 Revision Content	修订人 Reviser
A0	2024-12-01	新修订	黄晓雯
A1	2025-11-06	1.按照股份要求对全文格式进行调整; 2.参考 GB 标准, 细化可靠性测试方法; 3.增加包装数量及产品应用限制。	陆雨
A2	2026-01-13	1.更新【规格尺寸】-规格栏清单	陆雨