WEIDY®纬迪
PROFESSIONAL CAPACITOR MANUFACTURER

瓷片电容器规格承认书
APPROVAL SPECIFICATION FOR DISC CERAMIC CAPACITORS

客户 CUSTOMER	
客户料号 CUSTOMER P/N	
客户规格描述 CUST. SPEC	
规格描述 DESCRIPTION	Y5V 103M 1KV F5 Ø9 ROHS
产品编码 PART NUMBER	**WC23A103MF4S320EGZ**
日期 DATE	2024/8/26
文件编号 DOC. NO.	WD-SPEC-004

纬迪承认栏 APPROVED BY WEIDY			客户承认栏 APPROVED BY CUSTOMER	
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深圳市纬迪实业发展有限公司 工程部 承认书专用章

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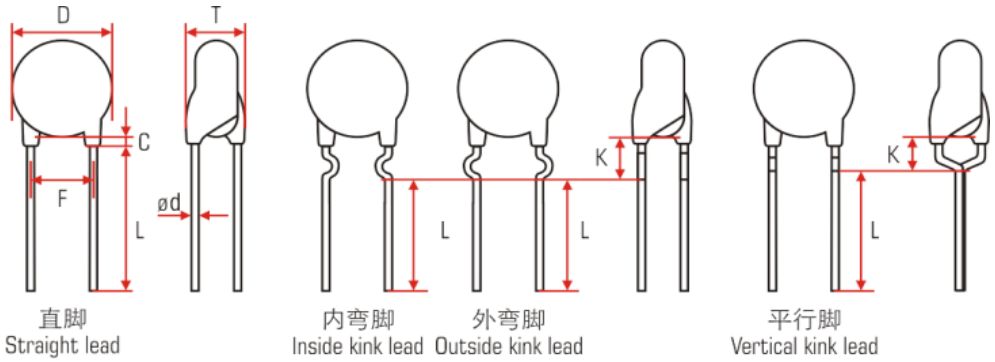
请确保我们的产品安装到您的产品上前，已根据您的需求进行了评估。
Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.
请您在使用我们的产品时，不要偏离此标准。
You are requested not to use our product deviating from this specification.

瓷片电容器规格承认书
APPROVAL SPECIFICATION FOR DISC CERAMIC CAPACITORS

1. 规格表
DATA SHEET



脚型代码
Lead style code: S I K V

产品编码 Part number		WC23A103MF4S320EGZ		
规格描述 Description		Y5V 103M 1KV F5 Ø9 ROHS		
客户料号 Customer P/N				
介质类别 Dielectric class		Class 2		
额定电压 Rated voltage		1KV		
电容量 Capacitance		10000	pF ±20%	@ 1kHz 1Vrms, 25±2℃
损耗角正切 Tangent of loss angle		0.025	max	@ 1kHz 1Vrms, 25±2℃
耐电压 Testing voltage		No defects		@ 1500VDC 1～5s, 2mA max
绝缘电阻 Insulation resistance		6000	MΩ min	@ 500VDC 60s
温度特性 Temperature characteristics		Y5V (ΔC/C:	+22/-82%	@ -25℃～85℃)
工作温度范围 Operating temperature range		-25℃～85℃		
尺寸 DIMENSIONS	D (Diameter)	10	mm max	
	T (Thickness)	4	mm max	
	F (Lead spacing)	5	±0.8mm	
	L (Lead length)	20	±5.0mm	
	ød (Lead diameter)	0.5	±0.1mm	
	C (Coating height on lead)	3	mm max	
标志 Marking		103 1KV		

2. 总则
GENERAL

1) 本规格书适用于电子设备用瓷片电容器。
This specification applies to the disc ceramic capacitors for electronic equipment.

2) 温度补偿型(1类瓷)电容器是专门设计并用在低损耗、电容量稳定性高或要求温度系数有明确规定的谐振电路中的一种电容器，例如，在电路中作温度补偿之用。
Temperature compensation (Class 1) ceramic capacitor specially designed and suited for resonant circuit application where low losses and high stability of capacitance are essential or where a precisely defined temperature coefficient is required, for example for compensating temperature effects in the circuit.

该类陶瓷介质是由标称温度系数（alpha）来确定，如NP0、N750、SL等等。
The ceramic dielectric is defined by its rated temperature coefficient (alpha), such as NP0, N750, SL, etc.。

3) 高介电常数型(2类瓷)电容器是是适用于作旁路、耦合或用在对损耗和电容量稳定性要求不高的电路中的具有高介电常数的一种电容器。
High dielectric (Class 2) ceramic capacitor which has a dielectric with a high permittivity and is suitable for by-pass and coupling applications or for frequency discriminating circuits where low losses and high stability of capacitance are not of major importance.

该类陶瓷介质是以在类别温度范围内电容量非线性变化来表征，如Y5P、Y5U、Y5V等等。
The ceramic dielectric is characterized by the non-linear change of capacitance over the category temperature range, such as Y5P, Y5U and Y5V etc.

4) 可适用于自动化生产线
Cost-saving automatic insertion available

5) 符合RoHS 2.0、REACH标准，无卤。
Comply with RoHS 2.0 & REACH, halogen-free available

3. 适用标准
APPLICABLE STANDARD

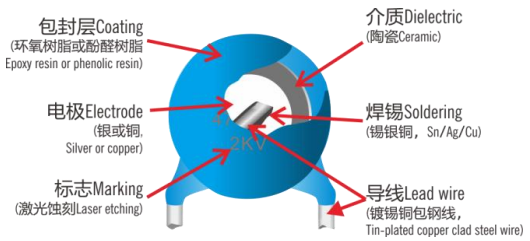
本产品符合下列标准，且本规格书的相关内容引用以下标准，当双方对此存在争议时，可依以下标准进行仲裁。
This product complies with the following standards, and the relevant content of this specification refers to the following standards, when the two sides in dispute, the following criteria for arbitration.

GB/T 2693-2001	电子设备用固定电容器 第1部分 总规范(IDT IEC 60384-1) Fixed capacitors for use in electronic equipmen — Part 1: Generic specification (IDT IEC 60384-1)
GB/T 5966-2011	电子设备用固定电容器 第8部分 分规范 1类瓷介固定电容器(IDT IEC 60384-8) Fixed capacitors for use in electronic equipmen — Part 8: Sectional specification: Fixed capacitors of ceramic dielectric, Class 1 (IDT IEC 60384-8)
GB/T 5968-2011	电子设备用固定电容器 第9部分 分规范 2类瓷介固定电容器(IDT IEC 60384-9) Fixed capacitors for use in electronic equipmen — Part 9: Sectional specification: Fixed capacitors of ceramic dielectric, Class 2 (IDT IEC 60384-9)

4. 结构
STRUCTURE

本产品结构如下图所示，环氧树脂（蓝色）或酚醛树脂（土黄色）包封，陶瓷介质，银电极或铜电极，以镀锡铜包钢线为导线，电极与导线采用无铅锡焊接而成，激光打标。

The structure of this product is shown in the following figure,epoxy resin (blue) or phenolic resin (earthy yellow) coating, ceramic dielectric, silver electrode or copper electrode, with tin-plated copper clad steel wire as the lead wire, the electrode and the lead wire are soldering with lead-free tin, laser marking.



注：环氧树脂使用额定电压不小于500V的产品上，酚醛树脂使用于额定电压小于500V的产品。
Note: Epoxy resin is used for products with a rated voltage of not less than 500V, and phenolic resin is used for products with a rated voltage of less than 500V.

5. 产品编码
PART NUMBER

本公司产品编码方式，举例说明如下：
The product part number representation of the company, examples are as follows：

WC2	3A	103	M	F4	S	3	20	E	GZ
系列 Series	额定直流电压 Rated dc voltage	标称容量 Nominal capacitance	容量偏差 Cap. tolerance	材质 TC	脚型 Lead style	脚距 Lead spacing	编带包装或脚长 Taping packing or Lead length	包封 Coating	内部识别码 Inter identification code

■ 系列 Series

WC1: 温度补偿型瓷片电容器Temperature compensation type disc ceramic capacitors
WC2: 高介电常数型瓷片电容器High dielectric type disc ceramic capacitors
WC3: 半导体型瓷片电容器Semiconductor type disc ceramic capacitors
WCL: 低损耗型瓷片电容器Low loss type disc ceramic capacitors

■ 额定直流电压 Rated dc voltage

1C: 16V	1H: 50V	2E: 250V	3A: 1kV	3G: 4kV	3K: 8kV
1E: 25V	1J: 63V	2H: 500V	3D: 2kV	3H: 5kV	4A: 10kV
1V: 35V	2A: 100V	2J: 630V	3F: 3kV(3.15kV)	3J: 6kV(6.3kV')	

■ 标称容量 Nominal capacitance

用3位数表示，单位pF。如下所示：
In 3 digits, unit is pF, as shown in below:
103=10*10^3=10000PF

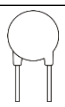
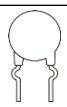
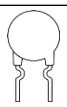
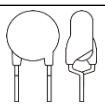
■ 容量偏差 Capacitance tolerance

C: ±0.25pF	J: ±5%	S: +50%/-20%
D: ±0.50pF	K: ±10%	Z: +80%/-20%
	M: ±20%	P: +100%/-0%

■ 温度特性 Temperature characteristics

Class 1:	CH: NP0	UJ: N750	SL: SL	DL: N3300
Class 2:	B4: Y5P	E4: Y5U	F4: Y5V	R1: X7R
Class 3:	3E: Y5U	3F: Y5V		

■ 脚型 Lead style

代码 Code	S	K	I	V	
脚型样式 Lead style drawing	 直脚 Straight Lead	 外弯脚 Outside kink Lead	 内弯脚 Inside kink Lead	 平行脚 Vertical kink Lead	

■ 脚距 Lead spacing

代码 Code	脚距 Lead spacing
1	2.5mm
3	5.0mm
5	7.5mm
6	10.0mm

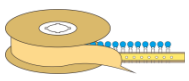
■ 编带包装或脚长 Taping packing or Lead length

● Bulk (Lead length)

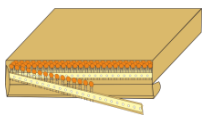
3E: 3.5mm	06: 6.0mm	16: 16mm
3H: 3.8mm	07: 7.0mm	20: 20mm
04: 4.0mm	08: 8.0mm	25: 25mm
4E: 4.5mm	10: 10mm	
05: 5.0mm	12: 12mm	

● Taping

R: Reel packing 卷盘包装



T: Ammo packing 折叠包装



■ 包封 Coating

P: 酚醛（黄） Phenolic (Yellow)
E: 环氧（蓝） Epoxy (Blue)

■ 内部识别码 Inter identification code

内部控制码，本规格书不作说明。
Inter control code will not be described in this an approval specifications.

6. 测量和试验
MEASUREMENT AND TEST

No.	项目 Item	标准 Specifications	试验方法 Testing Method
1	工作温度范围 Operating temperature range	-25℃～85℃	
2	额定电压 Rated voltage （UR）	1KV	额定电压是指在工作温度范围内，可连续施加在电容器上的最大直流电压或最大交流电压有效值或脉冲电压的峰值当交流电压附加于直流电压时，Vp-p或Vo-p（以较大者为准）应维持在额定电压范围内。 The rated voltage is defined as the maximum voltage which may be applied continuously to the capacitor within the operating temperature range. When AC voltage is superimposed on DC voltage, Vp-p or Vo-p, whichever is larger, should be maintained within the rated voltage range.
3	外观与尺寸 Appearance (APP) and Dimension	外观形状没有明显的缺点，尺寸在标准范围内。 No marked defect on appearance form and dimensions are within specified range.	电容必须用目视检查其明显的缺点。 The capacitor should be visually inspected for evidence of defect. 尺寸用游标卡尺测量。 Dimensions should be measured with slide calipers.
4	标志 Marking	清晰易于识别。 To be easily legible.	目视检查。 The capacitor should be visually inspected.
5	容量 (CR) Capacitance (CR)	8-12NF	容量与tan δ使用下列条件进行测量。 The capacitance, tan δ should be measured at the following conditions @ 1kHz 1Vrms, 25±2℃
6	损耗角正切 Tangent of loss angle (tan δ)	0.025 max	
7	绝缘电阻 Insulation Resistance (IR)	6000MΩ min	在两导线间施加下列电压进行测量，时间不超过1分钟。 The insulation resistance should be measured with a test voltages of below at normal temperature and humidity and less than 1 min. of charging. @ 500VDC
8	耐电压 Testing Voltage (TV)	没有不合格 No failure.	在电容器两导线间施加下列测试电压（充/放电流不大于2mA）1到5s后不被破坏。 The capacitor should not be damaged when test voltages (Charge/Discharge current ≤ 2mA) of below are applied between the lead wires for 1 to 5 sec. @ 1500VDC
9	导线抗张强度 Terminal Tensile Strength	引线不应断开，电容器不应破裂。 Lead wire should not be cut off capacitor should not be broken.	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。 Fix the body of the capacitor and apply a tensile weight gradually to each lead wire in the radial direction of the capacitor up to 10N and keep it for 10 ±1 sec.
10	导线抗折强度 Terminal Bending Strengt	引线不应断开，电容器不应破裂。 Lead wire should not be cut off capacitor should not be broken.	在引线出口处沿一个方向施加5N、90°的弯曲压力，再恢复至初始状态。之后，在2至3秒内再以相反方向施加一次90°的弯曲压力。 Each lead wire should be subjected to 5N of weight and bent 90° at the point of egress, in one direction, then returned to its original position and bent 90° in the opposite direction at the rate of one bent in 2 to 3 sec.
11	可焊性 Solderability of Lead	导线必须有3/4以上的面积均匀附着焊锡 Lead wire should be soldered with uniform coating on the axial direction over 3/4 of the circumferential direction.	引线浸入焊料中3±0.5秒，浸入深度离导线根部1.5-2.0mm。 The lead wire of a capacitor should be dipped into molten solder for 3±0.5 sec. The depth of immersion is up to about 1.5 to 2.0mm from the root of lead wires. 焊锡温度：无铅焊(Sn-3Ag-0.5Cu) 245±5°C Temp. of solder: Lead Free Solder (Sn-3Ag-0.5Cu) 245±5°C

续上表
Continued on the table

No.	项目 Item		标准 Specifications	试验方法 Testing Method
12	焊锡耐热性 Soldering Effect	APP	没有可见损伤 No marked defect	将导线浸入离导线根部1.5-2.0mm处、锡温为260±10ºC中3.5±0.5秒。 The lead wires should be immersed in solder of 260±5ºC up to 1.5 to 2.0mm from the root of terminal for 3.5±0.5 sec. 试验后处理：电容必须存放在室温下24小时。 Post-treatment: Capacitor should be stored for 24h at room condition.
		ΔC/C	Within ±30%	
		IR	大于初始标准的50% More than 50% initial specified value.	
		TV	如第8项进行试验，没有不合格 Per Item 8.	
13	振动 Vibration Resistance	APP	没有可见损伤 No marked defect	将电容器导线焊稳和调整振动频率范围为10-55Hz、总振幅为1.5mm，振动从10Hz到55Hz，然后再回到10Hz，大约一分钟。 The capacitor should be firmly soldered to the supporting lead wire and vibrated at a frequency range of 10 to 55Hz, 1.5mm in total amplitude, with about a 1 minute rate of vibration change from 10Hz to 55Hz and back to 10Hz. 总时间六个小时，每两小时在相互垂直方向来回三次。 Apply for a total of 6 hours, 2 hours each in 3 mutually perpendicular directions.
		CR	如第5项进行试验，没有不合格 Per Item 5.	
		tan δ	如第6项进行试验，没有不合格 Per Item 6.	
14	温度特性 Temperature characteristics		ΔC/C: +22/-82%	电容器必须按照下列每一步骤进行测量。 The capacitance measurement should be made at each step specified in below.
15	稳态湿热 Damp heat, steady state (DHSS)	APP	没有可见损伤 No marked defect	施加下列电压(额定电压大于4KV者不施加电压)的电容保持在温度为40±2ºC、相对湿度为90-95%条件下500±12小时。 Apply a test voltage (Rated voltage greater than 4KV, no voltage is applied) of below for 500±12 hours at 40±2ºC in 90 to 95% relative humidity. @ 1000VDC 试验后处理：电容必须贮存在室温条件下24小时。 Post-treatment: Capacitor should be stored for 24 h. at room condition.
		ΔC/C	Within ±30%	
		tan δ	小于初始标准的2倍 Less than 200% initial specified value.	
		IR	大于初始标准的25% More than 25% initial specified value.	
		TV	如第8项进行试验，没有不合格 Per Item 8.	
16	高温负荷 High Temperature Load	APP	没有可见损伤 No marked defect	在上限类别温度相对温度不大于50%条件下施加下列电压1000+48/-0小时（充/放电流小于5mA） Apply a test voltages of below for 1000+48/-0 hours at Upper category temperature with a relative humidity of 50% max. (Charge/discharge current ≤5mA) @ 1000VDC 试验后处理: 电容器应在室温下储存24小时。 Post-treatment: Capacitor shall be stored for 24 h at room condition.
		ΔC/C	Within ±30%	
		tan δ	小于初始标准的2倍 Less than 200% of initial specified value.	
		IR	大于初始标准的50% More than 50% initial specified value.	
		TV	如第8项进行试验，没有不合格 Per Item 8.	

Step	1	2	3	4	5
Temperature (℃±1℃)	20	-25	20	85	20

续上表
Continued on the table

No.	项目 Item		标准 Specifications	试验方法 Testing Method
17	温度循环 Temperature and Immersion Cycle	APP	没有可见损伤 No marked defect	温度循环试验按以下条件进行试验和测量 Temperature cycling shall be measured in the following test. 下限类别温度：30分钟 Lower category temperature: 30min 上限类别温度：30分钟 Upper category temperature: 30min 循环次数：5次 Cycle numbers: 5 cycles 试验后处理: 电容器应在室温下储存24小时。 Post-treatment: Capacitor shall be stored for 24 h at room condition.
		ΔC/C	Within ±30%	
		tan δ	小于初始标准的2倍 Less than 200% of initial specified value.	
		IR	大于初始标准的50% More than 50% initial specified value.	
		TV	如第8项进行试验，没有不合格 Per Item 8.	

7. 贮存条件
STORAGE ENVIRONMENT

电容器绝缘包封层不是完美的密封形式，因此，请勿将电容器存放在腐蚀性气体中，尤其是存在氯气、硫气、酸、碱、盐等场所，同时应防潮。
The insulating coating of capacitors does not form a perfect seal; therefore, do not use or store capacitors in a corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. And avoid exposure to moisture.

电容器应存放在温度及相对湿度分别不超出5～40℃及15～70%范围的场所。
Store the capacitors where the temperature and relative humidity do not exceed 5 to 40 degrees centigrade and 15 to 70%.

请在6个月内使用电容器。超过6个月，在使用前确认其可焊性和电容量。
Use capacitors within 6 months after delivered. for more than 6 months, confirm the solderability and capacitance before use.

8. 测量和使用注意事项
MEASURING AND APPLICATION NOTICE

8.1. 测量注意事项
Measurement notice

请在以下条件下测量。
Please measure under the following conditions.

8.1.1. 标准大气条件
Standard atmospheric conditions

除非另有规定，所有试验和测量应按在IEC 60068-1的5.3中规定的试验用标准大气条件下表进行。
Unless otherwise specified, all tests and measurements shall be made under standard atmospheric conditions for testing as given in 5.3 of IEC

温度 Temperature	相对湿度 Relative humidity	气压 Air pressure
15ºC～35ºC	25%～75%	86kPa～106kPa

在进行测量之前，电容器应在测量温度下存放足够时间，以使整个电容器都达到这一温度。为此目的，规定与试验后恢复时间同样的时间，通常是足够的。
Before the measurements are made, the capacitor shall be stored at the measuring temperature for a time sufficient to allow the entire capacitor to reach this temperature. The period as prescribed for recovery at the end of a test is normally sufficient for this purpose.

在标准大气条件下进行测量，其测量结果存在争议时应采用仲裁温度（见8.1.3）重复测量。
Test and measurement shall be made under standard atmospheric conditions for testing, in the event of a dispute, the measurements shall be repeated using one of the referee temperatures (as given in 8.1.3).

当按某一顺序进行试验时，一个试验的最后测量可以作为下一试验的初始测量。
When tests are conducted in a sequence, the final measurements of one test may be taken as the initial measurements for the succeeding test.

在测量期间，不应使电容器受到气流、阳光直射或可能引起误差的其他影响。
During measurements the capacitor shall not be exposed to draughts, direct sunlight or other influences likely to cause error.

8.1.2. 恢复条件
Recovery conditions

除非另有规定，恢复应在试验用标准大气条件（见8.1.1）下进行。
Unless otherwise specified recovery shall take place under the standard atmospheric conditions for testing (8.1.1).

如果恢复必须在严格控制的条件下进行，应采用IEC 60068-1中5.4.1的控制条件。
If recovery under closely controlled conditions is necessary, the controlled recovery conditions of 5.4.1 of IEC 60068-1 shall be used.

除非有关规范另有规定，恢复时间应为1h～2h。
Unless otherwise specified in the relevant specification, a duration of 1 h to 2 h shall be used.

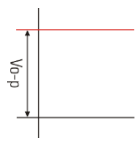
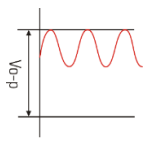
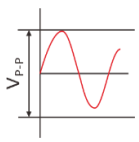
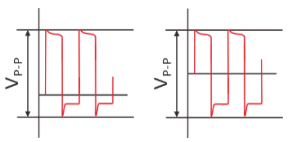
8.1.3. 仲裁条件
Referee conditions

在仲裁情况下，应选用IEC 60068-1中5.2中规定的仲裁试验用标准大气条件。
For referee purposes, one of the standard atmospheric conditions for referee tests taken from 5.2 of IEC 60068-1, as given in table 1 below, shall be selected:

温度 Temperature	相对湿度 Relative humidity	气压 Air pressure
25ºC±1ºC	48%～52%	86kPa～106kPa

8.2. 工作电压
Operating voltage

向电容器施加的电压切勿超过额定电压。
The voltage applied to the capacitor must not exceed the rated voltage.

电压 Voltage	直流电压 DC Voltage	直流+交流电压 DC+AC Voltage	交流电压 AC Voltage	脉冲电压 Pulse Voltage
测量位置 Positional Measurement				

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，请务必将外加电压的Vp-p值或包含直流偏置电压的Vo-p值维持在额定电压范围内。

When DC-rated capacitors are to be used in AC or ripple current circuits, be sure to maintain the Vp-p value of the applied voltage or the Vo-p which contains DC bias within the rated voltage range.

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异常电压。请务必使用额定电压范围包含这些异常电压的电容器。

When the voltage is applied to the circuit, starting or stopping may generate irregular voltage for a transit period because of resonance or switching. Be sure to use a capacitor with a rated voltage range that includes these irregular voltages.

8.3. **过电压影响**

Overvoltage effects

施加到电容器的过电压可能会导致电容器内部介质层击穿而引起电路短路。

The overvoltage applied to the capacitor may cause the dielectric layer of the capacitor to break down and cause a short circuit.

击穿前的可持续时间取决于施加电压和周围温度。

The duration before the breakdown depends on the applied voltage and the ambient temperature.

8.4. **焊锡**

Soldering

当在PCB/PWB焊锡这个产品时，不要超过电容器的焊锡耐热性标准。过度的热量会使电容器内部焊锡熔化，可能导致热冲击而使陶瓷介质出现暗裂。

When soldering this product to a PCB/PWB, do not exceed the solder heat resistance specifications of the capacitor. Subjecting this product to excessive heating could melt the internal junction solder and may result in thermal shocks that can crack the ceramic element.

注意：额定电压小于2kV的产品，请不要使用双波峰焊接；如果需要双波峰焊，请与我公司沟通。

Note: For products with rated voltage not greater than 2kV, please do not use double wave soldering; If double wave soldering is required, please communicate with our company.

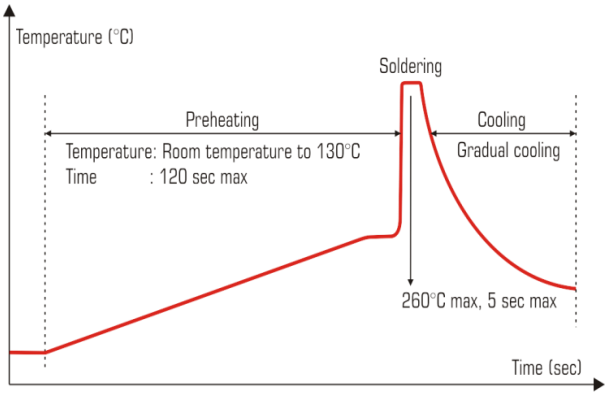


Fig.: Wave-soldering temperature-time profile to recommend

当使用烙铁进行手工焊锡时，应该遵照下列条件：

When soldering capacitor with a soldering iron, it should be performed in the following conditions.

焊锡温度：320ºC最大

Temperature of iron-tip: 320 degrees C. Max.

烙铁头：不超过40W

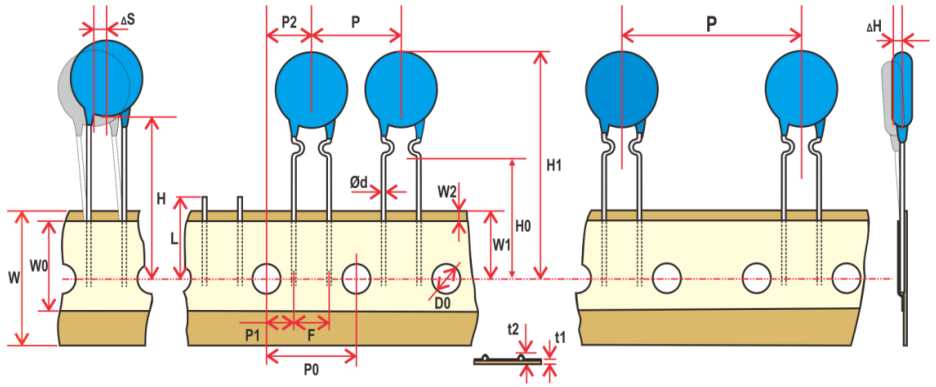
Soldering iron wattage: 40W max.

焊锡时间：不超过3.0秒

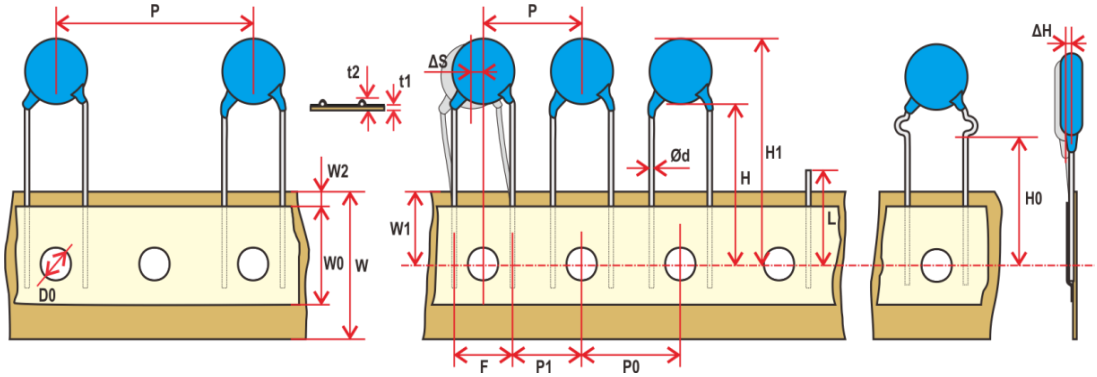
Soldering time: 3.0 sec. Max.

9. 编带尺寸规格
TAPING SPECIFICATIONS

■ Method 1 : sprocket hole between parts



■ Method 2: sprocket hole between leads



Item		Symbol	Specification(mm)	Remarks
Lead-wire diameter		Ød	0.5±0.1mm	
Pitch of component		P	12.7	
Feed hole pitch		P0	12.7	Cumulative pitch error: 1.0mm/20 pitch
Feed hole center to lead		P1	3.85	
Hole center to component center		P2	6.35	
Lead-to-lead distance		F	5±0.8mm	
Component alignment		Δh	≤2.0mm	
Deviation along tape, Left or right		ΔS	≤1.3mm	
Tape width		W	18.0+1.0/-0.5mm	
Hold-down tape width		W0	≥7.0mm	
Hole position		W1	9.0+0.75/-0.5mm	
Hole-down tape position		W2	≤3.0mm	
Height of component from tape center	Straight lead	H	18.0+2/-0mm	
	Kinked lead	H0	17.5±1.0mm	
Component height		H1	≤32.25mm	
Feed hole diameter		D0	4.0±0.3mm	
Total tape thickness		t1	≤0.9mm	Ground paper: 0.5±0.1mm
Total thickness, tape and lead wire		t2	≤1.5mm	
Length of snipped		L	≤11.0mm	