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## ■车规片式陶瓷电容器--AM 系列 Automotive MLCC--AM Series



### ◆特征

#### Feature

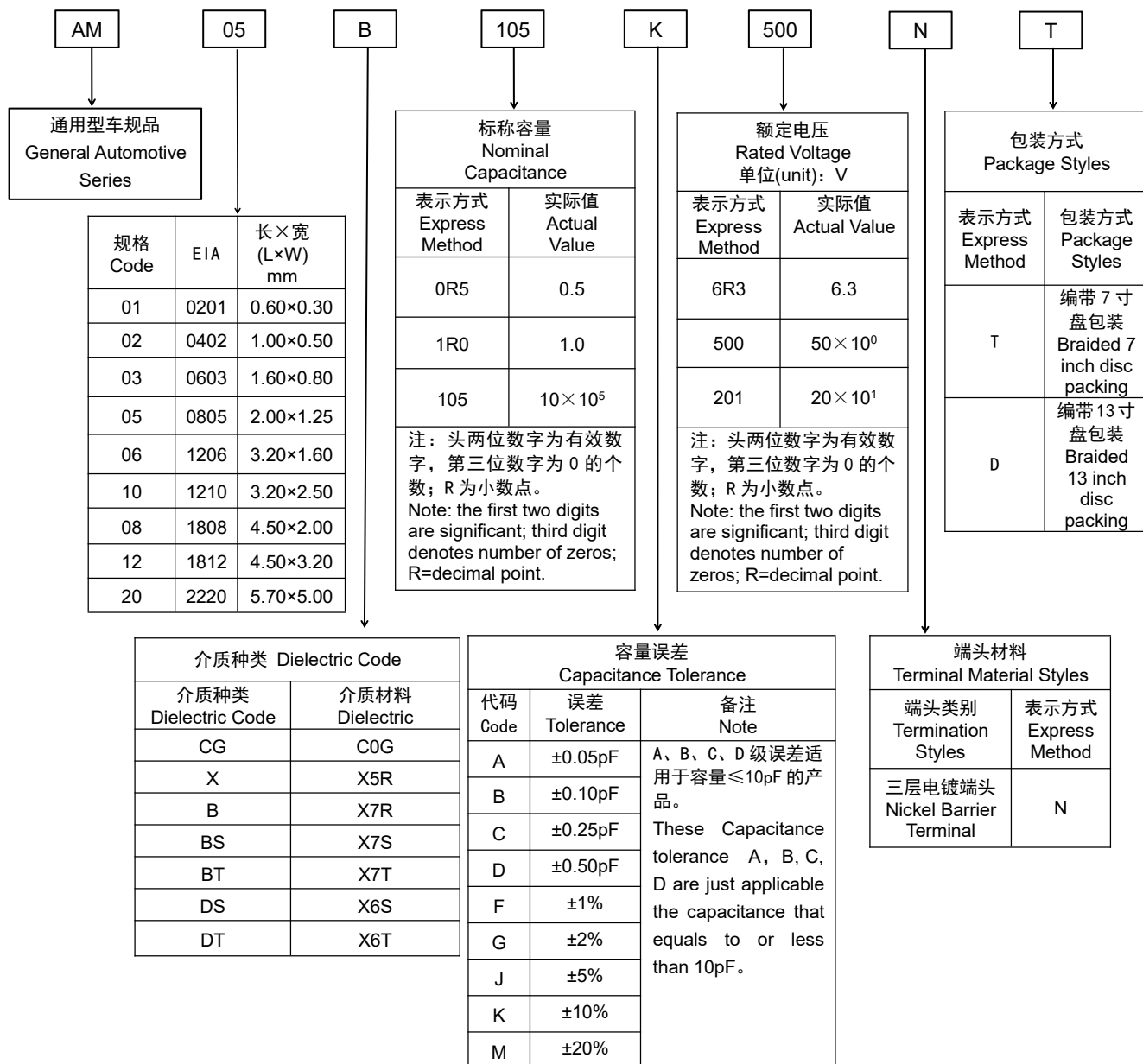
- \* 叠层独石结构，具有高可靠性能  
There is high reliability on monolithic structure of laminated layers.
- \* 具有优良的焊接与耐焊性能，适用于回流焊接与波峰焊接  
And its character of excellent soldering ability and soldering resistance ability is suitable for reflow soldering and peak soldering.
- \* 具有较高的容量且容量性能稳定  
It includes high and stable capacitance.
- \* 此类电容器为汽车专用电子元器件，已通过 AEC-Q200 标准设定的所有实验条件，在汽车使用过程中更具稳定性、安全性  
This type of capacitor is a special electronic component for automobiles, which has passed all the experimental conditions set by the AEC-Q200 standard, and is more stable and safe during automobile use
- \* 材料使用主要有温度稳定性能较高的 C0G 以及高介电常数的 X7R、X5R、X7S、X7T  
The materials used mainly include C0G with high temperature stability and X7R, X5R, X7S, and X7T with high dielectric constant
- \* 执行标准：GB/T 21041-2007    GB/T 21042-2007    AEC-Q200  
Executive Standard: GB/T 21041-2007    GB/T 21042-2007    AEC-Q200

### ◆应用范围

#### Applicable Range

- \* 通用型车规品，适用于引擎 ECU 驱动模块，自动变速器控制模块、大灯控制模块、中控门锁控制模块、ABS 控制模块、电动车窗控制模块、仪表板控制模块、安全气囊控制模块、自动空气控制模块、电控悬架控制模块，娱乐系统模块等。  
General Automotive Series, suitable for engine ECU drive modules, automatic transmission control modules, headlight control modules, central door lock control modules, ABS control modules, power window control modules, dashboard control modules, airbag control modules, automatic air control modules, electronical suspension control modules, entertainment system modules, and more.

## ◆ 型号表示法      How To Order

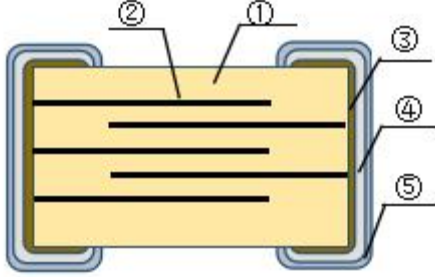
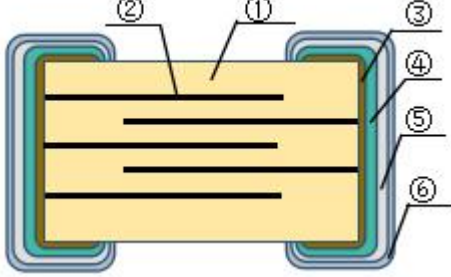


### ◆ 温度系数/特性 Temperature Coefficient /Characteristics

介质种类 Dielectric	参考温度点 Reference Temperature Point	标称温度系数 Temperature Coefficient	工作温度范围 Operation Temperature Range
C0G	25°C	0±30 ppm/°C	-55°C~125°C
X5R	25°C	±15%	-55°C~85°C
X7R	25°C	±15%	-55°C~125°C
X7S	25°C	±22%	-55°C~125°C
X7T	25°C	-33%~22%	-55°C~125°C
X6S	25°C	±22%	-55°C~105°C
X6T	25°C	-33%~22%	-55°C~105°C

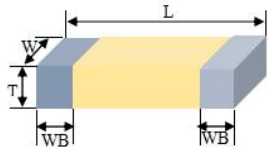
## ◆ 产品结构

### Product Structure

项目 Item	N 端头 (Cu/Ni/Sn 三层端头) N-Terminal (Cu/Ni/Sn Three-layer Terminal)	A 端头 (柔性端头) A-Terminal (Flexible Terminal)
结构示意图 Structure Diagram		
代码描述 Code Description	①陶瓷介质(Ceramic Dielectric) ②镍电极(Nickel Electrode) ③铜电极层(Copper electrode Layer) ④镍层(Nickel Layer) ⑤锡层(Tin Layer)	①陶瓷介质(Ceramic Dielectric) ②镍电极(Nickel Electrode) ③铜电极层(Copper electrode Layer) ④导电性树脂(Conductive Resin) ⑤镍层(Nickel Layer) ⑥锡层(Tin Layer)

## ◆ 产品尺寸

### Product Specifications

代号 Code	英制表示 British expression	公制表示 Metric expression	尺寸 (mm)					示意图 Schematic diagram
			L	W	T	WB	厚度代码 Code	
AM01	0201	0603	0.6±0.03	0.3±0.03	0.30±0.03	0.15±0.05	BA	
			0.6±0.09	0.3±0.09	0.30±0.09	0.15±0.05	BB	
AM02	0402	1005	1.00±0.05	0.50±0.05	0.50±0.05	0.25±0.10	CA	
			1.00±0.15	0.50±0.15	0.50±0.15	0.25±0.10	CB	
			1.00±0.20	0.50±0.20	0.50±0.20	0.25±0.10	CC	
AM03	0603	1608	1.60±0.10	0.80±0.10	0.80±0.10	0.35±0.20	DA	
			1.60±0.20	0.80±0.20	0.80±0.20	0.35±0.20	DB	
AM05	0805	2012	2.00±0.20	1.25±0.20	0.80±0.20	0.50±0.20	EA	
					1.25±0.25		EB	
AM06	1206	3216	3.20±0.30	1.60±0.30	0.80±0.20	0.60±0.30	FA	
					1.25±0.25		FB	
					1.60±0.30		FC	
AM10	1210	3225	3.20±0.30	2.50±0.30	1.25±0.25	0.60±0.30	GA	
					1.60±0.30		GB	
					2.00±0.30		GC	
					2.50±0.30		GD	
AM08	1808	4520	4.50±0.40	2.00±0.20	1.60±0.30	0.60±0.30	HA	
					2.00±0.30		HB	
AM12	1812	4532	4.50±0.50	3.20±0.30	1.25±0.25	0.60±0.30	IA	
					1.60±0.30		IB	
					2.00±0.30		IC	
					2.50±0.30		ID	
AM20	2220	5750	5.70±0.40	5.00±0.40	1.60±0.30	0.70±0.30	LA	
					2.00±0.30		LB	

# ◆ 容量范围及其电压

## Capacitance Range and Operating Voltage

\* I 类电容器具体电压对应容量及厚度情况列表

A list of the specific Voltage-specific capacitors of Class I capacitors

材料 Dielectric	COG(NPO)								
尺寸 Specification	AM01		AM02			AM03			
容量/电压 Capacity/Voltage	25V	50V	25V	50V	100V	25V	50V	100V	200V 250V
0.1pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
0.5pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
1.0pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
1.2pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
1.5pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
1.8pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
2.0pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
2.2pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
2.7pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
3.0pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
3.3pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
3.9pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
4.7pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
5.6pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
6.8pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
8.2pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
10pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
12pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
15pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
18pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
22pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
27pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
33pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
39pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
47pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
56pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
68pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
82pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
100pF	BA	BA	CA	CA	CA	DA	DA	DA	DA
120pF	BA		CA	CA		DA	DA	DA	DA
150pF	BA		CA	CA		DA	DA	DA	DA
180pF	BA		CA	CA		DA	DA	DA	DA
220pF	BA		CA	CA		DA	DA	DA	DA
270pF			CA	CA		DA	DA	DA	DA
330pF			CA	CA		DA	DA	DA	DA
390pF			CA	CA		DA	DA	DA	
470pF			CA	CA		DA	DA	DA	
560pF			CA	CA		DA	DA	DA	
680pF			CA	CA		DA	DA	DA	
820pF			CA	CA		DA	DA	DA	
1.0nF			CA	CA		DA	DA	DA	
1.5nF						DA	DA		
1.8nF						DA	DA		
2.2nF						DA	DA		
2.7nF						DA	DA		
3.3nF						DA	DA		
4.7nF									
5.6nF									
6.8nF									
10nF									

代码 Code	BA	CA	DA
T	0.30±0.03	0.50±0.05	0.80±0.10

材料 Dielectric	COG(NPO)											
尺寸 Specification	AM05					AM06						
容量/电压 Capacity/Voltage	25V	50V	100V	200V 250V	500V 630V	25V	50V	100V	200V 250V	500V 630V	1000V	2000V
0.5pF	EA	EA	EA	EA	EA							
1.0pF	EA	EA	EA	EA	EA						FB	
1.2pF	EA	EA	EA	EA	EA						FB	
1.5pF	EA	EA	EA	EA	EA						FB	
1.8pF	EA	EA	EA	EA	EA						FB	
2.0pF	EA	EA	EA	EA	EA						FB	
2.2pF	EA	EA	EA	EA	EA						FB	
2.7pF	EA	EA	EA	EA	EA						FB	
3.0pF	EA	EA	EA	EA	EA						FB	
3.3pF	EA	EA	EA	EA	EA						FB	
3.9pF	EA	EA	EA	EA	EA						FB	
4.7pF	EA	EA	EA	EA	EA						FB	
5.6pF	EA	EA	EA	EA	EA						FB	
6.8pF	EA	EA	EA	EA	EA						FB	
8.2pF	EA	EA	EA	EA	EA						FB	
10pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
12pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
15pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
18pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
22pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
27pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
33pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
39pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
47pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
56pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
68pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
82pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
100pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	FC
120pF	EA	EA	EA	EA	EA	FA	FA	FA	FA	FB	FB	
150pF	EA	EA	EA	EA	EB	FA	FA	FA	FA	FB	FB	
180pF	EA	EA	EA	EA	EB	FA	FA	FA	FA	FB	FB	
220pF	EA	EA	EA	EA	EB	FA	FA	FA	FA	FB	FB	
270pF	EA	EA	EA	EA	EB	FA	FA	FA	FA	FB	FB	
330pF	EA	EA	EA	EA	EB	FA	FA	FA	FA	FB	FB	
390pF	EA	EA	EA	EA		FA	FA	FA	FA	FB	FB	
470pF	EA	EA	EA	EA		FA	FA	FA	FA	FB	FB	
560pF	EA	EA	EA	EA		FA	FA	FA	FA	FC	FC	
680pF	EA	EA	EA	EA		FA	FA	FA	FA	FC		
820pF	EA	EA	EA	EA		FA	FA	FA	FA	FC		
1nF	EA	EA	EA	EA		FA	FA	FA	FB	FC		
1.5nF	EA	EA	EA			FA	FA	FB	FB			
1.8nF	EA	EA	EA			FA	FA	FB	FB			
2.2nF	EA	EA	EA			FA	FA	FB	FB			
2.7nF	EA	EA				FA	FA	FB				
3.3nF	EA	EA				FA	FA	FB				
4.7nF	EA	EA				FA	FA	FB				
5.6nF	EA	EA				FA	FA					
6.8nF	EA	EA				FA	FA					
10nF	EB	EB				FA	FA					

代码 Code	EA	EB	FA	FB	FC
T	0.80±0.20	1.25±0.25	0.80±0.20	1.25±0.25	1.60±0.30

材料 Dielectric	COG(NPO)								
尺寸 Specification	AM10				AM08				
容量/电压 Capacity/Voltage	200V 250V	500V 630V	1000V	2000V	200V 250V	500V 630V	1000V	2000V	3000V
10pF									HA
12pF									HA
15pF									HA
18pF									HA
22pF									HA
27pF									HA
33pF									HA
39pF									HA
47pF									HA
56pF									HA
68pF									HA
82pF									HA
100pF	GA	GA	GB	GB			HA	HA	HA
120pF	GA	GA	GB	GB			HA	HA	HA
150pF	GA	GA	GB	GB			HA	HA	HA
180pF	GA	GA	GB	GB			HA	HA	HA
220pF	GA	GA	GB	GB			HA	HA	HA
270pF	GA	GA	GB	GC			HA	HA	HB
330pF	GA	GA	GB	GC	HA	HA	HA	HA	HB
390pF	GA	GA	GB		HA	HA	HA	HA	
470pF	GA	GA	GB		HA	HA	HA	HA	
560pF	GA	GA	GB		HA	HA	HB	HB	
680pF	GA	GA	GB		HA	HA	HB	HB	
820pF	GA	GA	GB		HA	HA	HB	HB	
1nF	GA	GA	GC		HA	HA	HB	HB	
1.5nF	GA	GB			HA	HA			
1.8nF	GA	GB			HA	HA			
2.2nF	GB	GC			HA	HA			
2.7nF	GB				HA	HA			
3.3nF					HA	HA			
4.7nF					HA				
5.6nF									
6.8nF									
10nF									

代码 Code	GA	GB	GC	HA	HB
T	1.25±0.25	1.60±0.30	2.00±0.30	1.60±0.30	2.00±0.30

材料	COG(NPO)									
尺寸 Specification	AM12					AM20				
容量/电压 Capacity/Voltage	200V 250V	500V 630V	1000V	2000V	3000V	200V 250V	500V 630V	1000V	2000V	3000V
100pF	IB	IB	IB	IB	IB	LA	LA	LA	LB	LB
120pF	IB	IB	IB	IB	IB	LA	LA	LA	LB	LB
150pF	IB	IB	IB	IB	IB	LA	LA	LA	LB	LB
180pF	IB	IB	IB	IB	IB	LA	LA	LA	LB	LB
220pF	IB	IB	IB	IB	IB	LA	LA	LA	LB	LB
270pF	IB	IB	IB	IB	IC	LA	LA	LA	LB	LB
330pF	IB	IB	IB	IB	IC	LA	LA	LA	LB	LB
390pF	IB	IB	IB	IB	IC	LA	LA	LA	LB	LB
470pF	IB	IB	IB	IB	IC	LA	LA	LA	LB	LB
560pF	IB	IB	IC	IC		LA	LA	LA	LB	LB
680pF	IB	IB	IC	IC		LA	LA	LA	LB	LB
820pF	IB	IB	IC	IC		LA	LA	LA	LB	LB
1nF	IB	IB	IC	IC		LA	LA	LA	LB	LB
1.5nF	IB	IB				LA	LA	LB		
1.8nF	IB	IB				LA	LA	LB		
2.2nF	IB	IB				LA	LA	LB		
2.7nF	IB	IB				LA	LA			
3.3nF	IB	IB				LA	LA			
4.7nF	IC					LA	LA			
5.6nF	IC					LA				
6.8nF	IC					LA				
10nF	IC					LA				

代码 Code	IB	IC	LA	LB
T	1.60±0.30	2.00±0.30	1.60±0.30	2.00±0.30



\*II类电容器具体电压对应容量及厚度情况列表

A list of the specific Voltage-specific capacitors of Class II capacitors

尺寸 Specification	AM01														
材料 Dielectric	X7R		X7S				X7T					X5R			
电压 Voltage	≤25V	50V	≤10V	16V	25V	50V	6.3V	10V	16V	25V	50V	≤10V	16V	25V	50V
120pF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
150pF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
180pF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
220pF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
270pF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
330pF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
390pF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
470pF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
560pF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
680pF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
1nF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
1.2nF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
1.5nF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
1.8nF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
2.2nF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
2.7nF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
3.3nF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
3.9nF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
4.7nF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
5.6nF	BA		BA	BA	BA		BA	BA	BA	BA		BA	BA	BA	
6.8nF	BA		BA	BA	BA		BA	BA	BA	BA		BA	BA	BA	
10nF	BA		BA	BA	BA		BA	BA	BA	BA		BA	BA	BA	
12nF			BA	BA			BA	BA	BA			BA	BA		
15nF			BA	BA			BA	BA	BA			BA	BA		
18nF			BA	BA			BA	BA	BA			BA	BA		
22nF			BA	BA			BA	BA	BA			BA	BA		
27nF			BA				BA	BA	BA			BA	BA		
33nF			BA				BA	BA	BA			BA	BA		
39nF							BA	BA				BA			
47nF							BA	BA				BA			
56nF							BB					BB			
68nF							BB					BB			
100nF							BB					BB			

代码 Code	BA	BB
T	0.30±0.03	0.3±0.09

尺寸 Specification	AM02										
材料 Dielectric	X7R						X7S				
电压 Voltage	6.3V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V
120pF	CA	CA	CA	CA	CA	CA					
150pF	CA	CA	CA	CA	CA	CA					
180pF	CA	CA	CA	CA	CA	CA					
220pF	CA	CA	CA	CA	CA	CA					
270pF	CA	CA	CA	CA	CA	CA					
330pF	CA	CA	CA	CA	CA	CA					
390pF	CA	CA	CA	CA	CA	CA					
470pF	CA	CA	CA	CA	CA	CA					
560pF	CA	CA	CA	CA	CA	CA					
680pF	CA	CA	CA	CA	CA	CA					
1nF	CA	CA	CA	CA	CA	CA					
1.2nF	CA	CA	CA	CA	CA	CA					
1.5nF	CA	CA	CA	CA	CA	CA					
1.8nF	CA	CA	CA	CA	CA	CA					
2.2nF	CA	CA	CA	CA	CA	CA					
2.7nF	CA	CA	CA	CA	CA	CA					
3.3nF	CA	CA	CA	CA	CA	CA					
3.9nF	CA	CA	CA	CA	CA	CA					
4.7nF	CA	CA	CA	CA	CA	CA					
5.6nF	CA	CA	CA	CA	CA	CA					
6.8nF	CA	CA	CA	CA	CA	CA					
10nF	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA
12nF	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA
15nF	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA
18nF	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA
22nF	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA
27nF	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA
33nF	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA
39nF	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA
47nF	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA
56nF	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA
68nF	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA
100nF	CB	CB	CB	CB	CB	CB	CB	CB	CB	CB	CB
220nF	CB	CB	CB				CB	CB	CB		

代码 Code	CA	CB
T	0.50±0.05	0.50±0.15

尺寸 Specification	AM02								
材料 Dielectric	X7T					X5R			
电压 Voltage	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V
39nF	CA	CA	CA	CA	CA				
47nF	CA	CA	CA	CA	CA				
56nF	CA	CA	CA	CA	CA	CA	CA	CA	CA
68nF	CA	CA	CA	CA	CA	CA	CA	CA	CA
100nF	CB	CB	CB	CB	CB	CB	CB	CB	CB
220nF	CB	CB				CB	CB	CB	
330nF	CB	CB				CB	CB	CB	
470nF	CB	CB				CB	CB		
680nF	CB					CB	CB		
1μF	CB					CB	CB		

代码 Code	CA	CB
T	0.50±0.05	0.50±0.15

尺寸 Specification	AM03								
材料 Dielectric	X7T				X5R				
电压 Voltage	6.3V	10V	16V	25V	6.3V	10V	16V	25V	50V
47nF	DA	DA	DA	DA	DA	DA	DA	DA	DA
56nF	DA	DA	DA	DA	DA	DA	DA	DA	DA
68nF	DA	DA	DA	DA	DA	DA	DA	DA	DA
100nF	DA	DA	DA	DA	DA	DA	DA	DA	DA
220nF	DA	DA	DA	DA	DA	DA	DA	DA	DA
330nF	DA	DA	DA	DA	DA	DA	DA	DA	DA
470nF	DA	DA	DA	DA	DA	DA	DA	DA	DA
680nF	DA	DA	DA	DA	DA	DA	DA	DA	DA
1μF	DB	DB	DB	DB	DB	DB	DB	DB	
2.2μF	DB	DB			DB	DB	DB		
3.3μF	DB				DB				
4.7μF	DB				DB				
10μF	DB				DB				

代码 Code	DA	DB
T	0.80±0.10	0.80±0.20

尺寸 Specificati on	AM03													
材料 Dielectric	X7R							X7S						
电压 Voltage	6.3V	10V	16V	25V	50V	100V	200V 250V	6.3V	10V	16V	25V	50V	100V	200V 250V
120pF	DA	DA	DA	DA	DA	DA	DA							
150pF	DA	DA	DA	DA	DA	DA	DA							
180pF	DA	DA	DA	DA	DA	DA	DA							
220pF	DA	DA	DA	DA	DA	DA	DA							
270pF	DA	DA	DA	DA	DA	DA	DA							
330pF	DA	DA	DA	DA	DA	DA	DA							
390pF	DA	DA	DA	DA	DA	DA	DA							
470pF	DA	DA	DA	DA	DA	DA	DA							
560pF	DA	DA	DA	DA	DA	DA	DA							
680pF	DA	DA	DA	DA	DA	DA	DA							
1nF	DA	DA	DA	DA	DA	DA	DA							
1.2nF	DA	DA	DA	DA	DA	DA	DA							
1.5nF	DA	DA	DA	DA	DA	DA	DA							
1.8nF	DA	DA	DA	DA	DA	DA	DA							
2.2nF	DA	DA	DA	DA	DA	DA	DA							
2.7nF	DA	DA	DA	DA	DA	DA	DA							
3.3nF	DA	DA	DA	DA	DA	DA	DA							
3.9nF	DA	DA	DA	DA	DA	DA	DA							
4.7nF	DA	DA	DA	DA	DA	DA	DA							
5.6nF	DA	DA	DA	DA	DA	DA	DA							
6.8nF	DA	DA	DA	DA	DA	DA	DA							
10nF	DA	DA	DA	DA	DA	DA	DA	DA	DA	DA	DA	DA	DA	DA
12nF	DA	DA	DA	DA	DA	DA		DA	DA	DA	DA	DA	DA	DA
15nF	DA	DA	DA	DA	DA	DA		DA	DA	DA	DA	DA	DA	DA
18nF	DA	DA	DA	DA	DA	DA		DA	DA	DA	DA	DA	DA	DA
22nF	DA	DA	DA	DA	DA	DA		DA	DA	DA	DA	DA	DA	DA
27nF	DA	DA	DA	DA	DA	DA		DA	DA	DA	DA	DA	DA	DA
33nF	DA	DA	DA	DA	DA	DA		DA	DA	DA	DA	DA	DA	DA
39nF	DA	DA	DA	DA	DA	DA		DA	DA	DA	DA	DA	DA	DA
47nF	DA	DA	DA	DA	DA	DA		DA	DA	DA	DA	DA	DA	DA
56nF	DA	DA	DA	DA	DA	DA		DA	DA	DA	DA	DA	DA	
68nF	DA	DA	DA	DA	DA	DA		DA	DA	DA	DA	DA	DA	
100nF	DA	DA	DA	DA	DA	DA		DA	DA	DA	DA	DA	DA	
220nF	DA	DA	DA	DA	DA			DA	DA	DA	DA	DA		
330nF	DA	DA	DA	DA				DA	DA	DA	DA			
470nF	DA	DA	DA	DA				DA	DA	DA	DA			
680nF	DA	DA	DA	DA				DA	DA	DA	DA			
1.0μF	DB	DB	DB	DB				DB	DB	DB	DB			

代码 Code	DA	DB
T	0.80±0.10	0.80±0.20

尺寸 Specificati on	AM05														
材料 Dielectric	X7R							X7S							
电压 Voltage	≤10V	16V	25V	50V	100V	200V 250V	500V	≤10V	16V	25V	50V	100V	200V 250V	500V	
120pF	EA	EA	EA	EA	EA	EA	EA								
150pF	EA	EA	EA	EA	EA	EA	EA								
180pF	EA	EA	EA	EA	EA	EA	EA								
220pF	EA	EA	EA	EA	EA	EA	EA								
270pF	EA	EA	EA	EA	EA	EA	EA								
330pF	EA	EA	EA	EA	EA	EA	EA								
390pF	EA	EA	EA	EA	EA	EA	EA								
470pF	EA	EA	EA	EA	EA	EA	EA								
560pF	EA	EA	EA	EA	EA	EA	EA								
680pF	EA	EA	EA	EA	EA	EA	EA								
1nF	EA	EA	EA	EA	EA	EA	EA								
1.2nF	EA	EA	EA	EA	EA	EA	EA								
1.5nF	EA	EA	EA	EA	EA	EA	EA								
1.8nF	EA	EA	EA	EA	EA	EA	EA								
2.2nF	EA	EA	EA	EA	EA	EA	EA								
2.7nF	EA	EA	EA	EA	EA	EA	EA								
3.3nF	EA	EA	EA	EA	EA	EA	EB								
3.9nF	EA	EA	EA	EA	EA	EA	EB								
4.7nF	EA	EA	EA	EA	EA	EA	EB								
5.6nF	EA	EA	EA	EA	EA	EA	EB								
6.8nF	EA	EA	EA	EA	EA	EA	EB								
10nF	EA	EA	EA	EA	EA	EA	EB	EA	EA	EA	EA	EA	EA	EB	
12nF	EA	EA	EA	EA	EA	EB		EA	EA	EA	EA	EA	EB		
15nF	EA	EA	EA	EA	EA	EB		EA	EA	EA	EA	EA	EB		
18nF	EA	EA	EA	EA	EA	EB		EA	EA	EA	EA	EA	EB		
22nF	EA	EA	EA	EA	EA	EB		EA	EA	EA	EA	EA	EB		
27nF	EA	EA	EA	EA	EA	EB		EA	EA	EA	EA	EA	EB		
33nF	EA	EA	EA	EA	EA	EB		EA	EA	EA	EA	EA	EB		
39nF	EA	EA	EA	EA	EA			EA	EA	EA	EA	EA			
47nF	EA	EA	EA	EA	EA			EA	EA	EA	EA	EA			
56nF	EA	EA	EA	EA	EA			EA	EA	EA	EA	EA			
68nF	EA	EA	EA	EA	EB			EA	EA	EA	EA	EB			
100nF	EA	EA	EA	EA	EB			EA	EA	EA	EA	EB			
220nF	EA	EA	EA	EA	EB			EA	EA	EA	EA	EB			
330nF	EA	EA	EA	EA				EA	EA	EA	EA				
470nF	EB	EB	EB	EB				EB	EB	EB	EB				
680nF	EB	EB	EB	EB				EB	EB	EB	EB				
1μF	EB	EB	EB	EB				EB	EB	EB	EB				
2.2μF	EB	EB	EB					EB	EB	EB					
3.3μF	EB	EB	EB					EB	EB	EB					
4.7μF	EB	EB						EB	EB						

代码 Code	EA	EB
T	0.80±0.20	1.25±0.25

尺寸 Specification	AM05									
材料 Dielectric	X7T				X5R					
电压 Voltage	6.3V	10V	16V	25V	6.3V	10V	16V	25V	50V	100V
56nF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
68nF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EB
100nF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EB
220nF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EB
330nF	EA	EA	EA	EA	EA	EA	EA	EA	EA	
470nF	EB	EB	EB	EB	EB	EB	EB	EB	EB	
680nF	EB	EB	EB	EB	EB	EB	EB	EB	EB	
1μF	EB	EB	EB	EB	EB	EB	EB	EB	EB	
2.2μF	EB	EB	EB		EB	EB	EB	EB		
3.3μF	EB	EB	EB		EB	EB	EB	EB		
4.7μF	EB	EB	EB		EB	EB	EB	EB		
6.8μF	EB				EB	EB				
10μF	EB				EB	EB				
22μF	EB				EB					

代码 Code	EA	EB
T	0.80±0.20	1.25±0.25

材料 Dielectric	X7T				X5R				
尺寸 Specification	AM06								
电压 Voltage	6.3V	10V	16V	25V	6.3V	10V	16V	25V	50V
1μF	FC	FC	FC	FC					
2.2μF	FC	FC	FC	FC	FC	FC	FC	FC	FC
3.3μF	FC	FC	FC	FC	FC	FC	FC	FC	FC
4.7μF	FC	FC	FC	FC	FC	FC	FC	FC	
6.8μF	FC	FC	FC	FC	FC	FC	FC	FC	
10μF	FC	FC	FC	FC	FC				
15μF	FC				FC				
22μF	FC				FC				

代码 Code	FA	FB	FC
T	0.80±0.20	1.25±0.25	1.60±0.30

尺寸 Specification	AM06										
材料 Dielectric	X7R							X7S			
电压 Voltage	≤25V	50V	100V	200V 250V	500V 630V	1000V	2000V	≤25V	50V	100V	200V 250V
120pF	FA	FA	FA	FA	FA	FB	FB				
150pF	FA	FA	FA	FA	FA	FB	FB				
180pF	FA	FA	FA	FA	FA	FB	FB				
220pF	FA	FA	FA	FA	FA	FB	FB				
270pF	FA	FA	FA	FA	FA	FB	FB				
330pF	FA	FA	FA	FA	FA	FB	FB				
390pF	FA	FA	FA	FA	FA	FB	FB				
470pF	FA	FA	FA	FA	FA	FB	FB				
560pF	FA	FA	FA	FA	FA	FB	FB				
680pF	FA	FA	FA	FA	FA	FB	FB				
1.0nF	FA	FA	FA	FA	FA	FB	FB				
1.2nF	FA	FA	FA	FA	FA	FB	FB				
1.5nF	FA	FA	FA	FA	FA	FB	FB				
1.8nF	FA	FA	FA	FA	FA	FB	FB				
2.2nF	FA	FA	FA	FA	FB	FB	FB				
2.7nF	FA	FA	FA	FA	FB	FB					
3.3nF	FA	FA	FA	FA	FB	FB					
3.9nF	FA	FA	FA	FA	FB	FB					
4.7nF	FA	FA	FA	FA	FB	FB					
5.6nF	FA	FA	FA	FB	FB	FB					
6.8nF	FA	FA	FA	FB	FB	FB					
10nF	FA	FA	FA	FB	FB	FB					
12nF	FA	FA	FA	FB	FB						
15nF	FA	FA	FA	FB	FB						
18nF	FA	FA	FA	FB	FB						
22nF	FA	FA	FA	FB	FB						
27nF	FA	FA	FA	FB	FB						
33nF	FA	FA	FA	FB	FB						
39nF	FA	FA	FA	FB							
47nF	FA	FA	FA	FB							
56nF	FA	FA	FA	FB							
68nF	FA	FA	FB	FB							
100nF	FA	FA	FB	FB				FA	FA	FB	FB
220nF	FA	FA	FB					FA	FA	FB	
330nF	FC	FC	FC					FC	FC	FC	
470nF	FC	FC	FC					FC	FC	FC	
680nF	FC	FC	FC					FC	FC	FC	
1μF	FC	FC	FC					FC	FC	FC	
2.2μF	FC	FC						FC	FC		
3.3μF	FC	FC						FC	FC		
4.7μF	FC	FC						FC	FC		
6.8μF	FC							FC			
10μF	FC							FC			

代码 Code	FA	FB	FC
T	0.80±0.20	1.25±0.25	1.60±0.30

尺寸 Specification	AM10						
材料 Dielectric	X7R						
电压 Voltage	25V	50V	100V	200V 250V	500V 630V	1000V	2000V
470pF	GA	GA	GA	GA	GA	GA	GA
560pF	GA	GA	GA	GA	GA	GA	GA
680pF	GA	GA	GA	GA	GA	GA	GA
1.0nF	GA	GA	GA	GA	GA	GA	GA
1.2nF	GA	GA	GA	GA	GA	GA	GA
1.5nF	GA	GA	GA	GA	GA	GA	GA
1.8nF	GA	GA	GA	GA	GA	GA	GA
2.2nF	GA	GA	GA	GA	GA	GA	GA
2.7nF	GA	GA	GA	GA	GA	GA	GA
3.3nF	GA	GA	GA	GA	GA	GA	GA
3.9nF	GA	GA	GA	GA	GA	GA	GA
4.7nF	GA	GA	GA	GA	GA	GA	GA
5.6nF	GA	GA	GA	GA	GA	GA	GB
6.8nF	GA	GA	GA	GA	GA	GB	GB
10nF	GA	GA	GA	GA	GA	GB	GC
12nF	GA	GA	GA	GA	GA	GB	
15nF	GA	GA	GA	GA	GA	GB	
18nF	GA	GA	GA	GA	GA	GB	
22nF	GA	GA	GA	GA	GA	GB	
27nF	GA	GA	GA	GA	GB		
33nF	GA	GA	GA	GA	GB		
39nF	GA	GA	GA	GA	GB		
47nF	GA	GA	GA	GA	GC		
56nF	GA	GA	GA	GA			
68nF	GA	GA	GA	GA			
100nF	GA	GA	GA	GA			
220nF	GB	GB	GB	GB			
330nF	GB	GB	GB				
470nF	GB	GB	GB				
680nF	GB	GB	GB				
1μF	GB	GB	GB				
2.2μF	GD	GD	GD				
3.3μF	GD	GD					
4.7μF	GD	GD					
6.8μF	GD						
10μF	GD						

代码 Code	GA	GB	GC	GD
T	1.25±0.25	1.60±0.30	2.00±0.30	2.50±0.30



尺寸 Specification	AM10						
材料 Dielectric	X7S			X7T			
电压 Voltage	25V	50V	100V	16V	25V	50V	100V
220nF	GB	GB	GB	GB	GB	GB	GB
330nF	GB	GB	GB	GB	GB	GB	GB
470nF	GB	GB	GB	GB	GB	GB	GB
680nF	GB	GB	GB	GB	GB	GB	GB
1μF	GB	GB	GB	GB	GB	GB	GB
2.2μF	GD	GD	GD	GD	GD	GD	
3.3μF	GD	GD		GD	GD	GD	
4.7μF	GD	GD		GD	GD	GD	
6.8μF	GD	GD		GD	GD		
10μF	GD			GD	GD		
22μF				GD			

代码 Code	GA	GB	GC	GD
T	1.25±0.25	1.60±0.30	2.00±0.30	2.50±0.30

材料 Dielectric	X7R					
尺寸 Specification	AM20					
电压 Voltage	100V	200V 250V	500V 630V	1000V	2000V	3000V
1nF	LA	LA	LA	LA	LA	LA
1.2nF	LA	LA	LA	LA	LA	LA
1.5nF	LA	LA	LA	LA	LA	LA
1.8nF	LA	LA	LA	LA	LA	LA
2.2nF	LA	LA	LA	LA	LA	LA
2.7nF	LA	LA	LA	LA	LA	LA
3.3nF	LA	LA	LA	LA	LA	LA
4.7nF	LA	LA	LA	LA	LA	LB
5.6nF	LA	LA	LA	LA	LA	
6.8nF	LA	LA	LA	LA	LA	
10nF	LA	LA	LA	LA	LA	
12nF	LA	LA	LA	LA	LA	
15nF	LA	LA	LA	LA	LA	
18nF	LA	LA	LA	LA	LA	
22nF	LA	LA	LA	LA	LA	
27nF	LA	LA	LA	LA	LA	
33nF	LA	LA	LA	LA	LB	
39nF	LA	LA	LA	LA	LB	
47nF	LA	LA	LA	LA	LB	
56nF	LA	LA	LA	LA		
100nF	LA	LA	LA	LB		
220nF	LA	LA	LA			
330nF	LA	LA	LA			
470nF	LA	LA	LB			
680nF	LA	LA				
1μF	LA	LA				
10μF	LB					

代码 Code	LA	LB
T	1.60±0.30	2.00±0.30

材料 Dielectric	X7R									
尺寸 Specification	AM08					AM12				
电压 Voltage	≤250V	500V 630V	1000V	2000V	3000V	≤250V	500V 630V	1000V	2000V	3000V
120pF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
150pF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
180pF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
220pF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
270pF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
330pF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
390pF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
470pF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
560pF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
680pF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
1nF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
1.2nF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
1.5nF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
1.8nF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
2.2nF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
2.7nF	HA	HA	HA	HA	HA	IB	IB	IB	IB	IB
3.3nF	HA	HA	HA	HA		IB	IB	IB	IB	IB
3.9nF	HA	HA	HA	HA		IB	IB	IB	IB	IB
4.7nF	HA	HA	HA	HA		IB	IB	IB	IB	IB
5.6nF	HA	HA	HA	HA		IB	IB	IB	IB	IB
6.8nF	HA	HA	HA	HA		IB	IB	IB	IB&ID	ID
10nF	HA	HA	HA	HA		IB	IB	IB	IB&ID	ID
12nF	HA	HA	HA			IB	IB	IB	IB&ID	
15nF	HA	HA	HA			IB	IB	IB		
18nF	HA	HA	HA			IB	IB	IB		
22nF	HA	HA	HA			IB	IB	IB		
27nF	HA	HA				IB	IB	IB		
33nF	HA	HA				IB	IB	IB		
39nF	HA	HA				IB	IB	IB		
47nF	HA	HA				IB	IB	IB		
56nF	HA					IB	IB	IB		
68nF	HA					IB	IB			
100nF	HA					IB	ID			
220nF	HA					IB				
330nF	HA					IC				
470nF						IC				
680nF						IC				
1μF						IC				

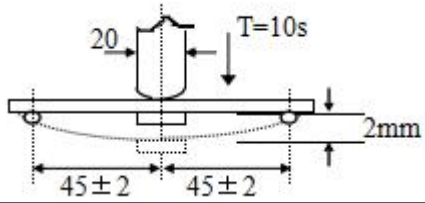
代码 Code	HA	IB	IC	ID
T	1.60±0.30	1.60±0.30	2.00±0.30	2.50±0.30

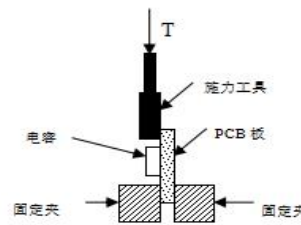
**◆可靠性测试方法**
**Reliability Test Methods**

序号 NO.	项目 Item	技术规格 Technical Specification		测试方法 Test Method and Remarks							
1	容量 Capacitance	应符合指定的误差级别 Should be within the specified tolerance.		测试温度: 25°C±3°C Test Temperature: 25°C±3°C  I类 ClassI: ≤1000pF 测试频率 Test Frequency: 1MHz±10% 测试电压 Test Voltage: 1.0±0.2Vrms >1000 pF 测试频率 Test Frequency: 1KHz±10% 测试电压 Test Voltage: 1.0±0.2Vrms  II类 ClassII: C≤10μF: 测试频率 Test Frequency: 1KHz±10% 测试电压 Test Voltage: 1.0±0.2Vrms C>10μF : 测试频率 Test Frequency: 120±24 Hz 测试电压 Test Voltage: 0.5±0.1Vrms							
2	损耗角正切 (DF, tanδ) Dissipation Factor	I类 ClassI	Cr<30pF: Q≥400+20C Cr≥30pF: Q≥1000  说明 note: Q=1/DF	≤1000pF 测试频率 Test Frequency: 1MHz±10% 测试电压 Test Voltage: 1.0±0.2Vrms >1000 pF 测试频率 Test Frequency: 1KHz±10% 测试电压 Test Voltage: 1.0±0.2Vrms							
	损耗角正切 (DF, tanδ) Dissipation Factor	II类 ClassII		电压 Voltage	DF (*10-4)	0201	0402	0603	0805	1206 及 以上 and above	测试方法与 容量相同 The test method is the same as the capacity.
				≥100V	≡ 250	——	≤10nF	≤100nF	≤100nF	≤100nF	
				50V	≡ 500	——	——	——	≤220nF	≤4.7μF	
					≡ 250	——	≤10nF	——	≤220nF	<1μF	
					≡ 350	≤3.3nF	——	——	——	——	
					≡ 500	≤10nF	≤0.1μF	≤100nF	≤1μF	1μF≤C≤2.2μF	
					≡ 750	——	——	≤1μF	——	≤4.7μF	
					≡ 1000	——	——	——	≤2.2μF	≤10μF	
				25V	≡ 250	——	≤10nF	≤100nF	≤220nF	≤1μF	
					≡ 350	≤3.3nF	≤100nF	——	——	——	
					≡ 500	≤10nF	≤220nF	<470nF	≤1μF	≤2.2μF	
					≡ 750	——	——	<1μF	≤2.2μF	≤4.7μF	
					≡ 1000	≤100nF	≤2.2μF	≤10μF	≤22μF	≤22μF	
				16V	≡ 250	——	≤10nF	≤100nF	≤220nF	<1μF	
					≡ 350	≤3.3nF	≤100nF	≤330nF	——	——	
					≡ 500	≤27nF	≤220nF	≤470nF	≤1μF	≤2.2μF	
					≡ 750	——	——	≤1μF	≤2.2μF	≤4.7μF	
					≡ 1000	≤100nF	≤4.7μF	≤10μF	≤22μF	≤47μF	
				10V	≡ 250	——	≤10nF	≤100nF	≤220nF	<1μF	
					≡ 350	≤3.3nF	≤100nF	≤330nF	——	——	
					≡ 500	≤27nF	≤220nF	≤470nF	≤1μF	≤2.2μF	
					≡ 750	——	≤1μF	≤1μF	≤2.2μF	≤4.7μF	
					≡ 1000	≤1μF	≤10μF	≤22μF	≤47μF	≤100μF	
				≡ 6.3V	≡ 250	——	≤10nF	≤100nF	≤220nF	——	
					≡ 350	≤3.3nF	≤100nF	≤330nF	——	≤1μF	
					≡ 500	≤27nF	≤220nF	≤680nF	≤1μF	≤2.2μF	
					≡ 750	——	≤1μF	——	4.7μF	≤10μF	
					≡ 1000	≤4.7μF	≤22μF	≤47μF	≤47μF	≤100μF	

序号 NO.	项目 Item	技术规格 Technical Specification	测试方法 Test Method and Remarks
3	绝缘电阻(IR) Insulation Resistance	I类 Class I: $C \leq 10 \text{ nF}$ , $R_i \geq 50000 \text{ M}\Omega$ $C > 10 \text{ nF}$ , $R_i \cdot C_R \geq 500 \text{ S}$ II类 Class II: $C \leq 25 \text{ nF}$ , $R_i \geq 10000 \text{ M}\Omega$ $C > 25 \text{ nF}$ , $R_i \cdot C_R \geq 100 \text{ S}$	测试电压: 额定电压 (最高 500V) 测试时间: 60±5 秒 测试湿度: ≤75% 测试温度: 25°C±3°C 测试充放电电流: ≤50mA Test Voltage: Rated Voltage (Max 500V) Duration: 60±5s Test Humidity: ≤75% Test Temperature: 25°C±3°C Testing charge/discharge current: ≤50mA
4	介质耐电强度 (DWV) Dielectric Withstanding Voltage (DWV)	不应有介质被击穿或损伤 No breakdown or damage.	① $U_r < 100 \text{ V}$ 测量电压: I 类: 300% $U_r$ II 类: 250% $U_r$ 时 间: 1~5 秒 充/放电电流: 不应超过 50mA Test Voltage: Class I :300% $U_r$ Class II :250% $U_r$ Duration: 1~5s Charge/ Discharge Current: 50mA max. ② $U_r = 100 \text{ V}$ 测量电压: 250% $U_r$ 时 间: 5 秒 充/放电电流: 不应超过 50mA Test Voltage: 250% $U_r$ Duration: 5s Charge/ Discharge Current: 50mA max. ③ $100 \text{ V} < U_r \leq 500 \text{ V}$ 测量电压: 200% $U_r$ 时 间: 5 秒 充/放电电流: 不应超过 50mA Test Voltage: 200% $U_r$ Duration: 5s Charge/ Discharge Current: 50mA max. ④ $500 \text{ V} \leq U_r \leq 1000 \text{ V}$ 测量电压: 150% $U_r$ 时 间: 5 秒 充/放电电流: 不应超过 50mA Test Voltage: 150% $U_r$ Duration: 5s Charge/ Discharge Current: 50mA max. ⑤ $1000 \text{ V} < U_r \leq 2000 \text{ V}$ 测量电压: 120% $U_r$ 时 间: 5 秒 充/放电电流: 不应超过 50mA Test Voltage: 120% $U_r$ Duration: 5s Charge/ Discharge Current: 50mA max. ⑥ $1000 \text{ V} < U_r \leq 2000 \text{ V}$ 测量电压: 120% $U_r$ 时 间: 5 秒 充/放电电流: 不应超过 10mA Test Voltage: 120% $U_r$ Duration: 5s Charge/ Discharge Current: 10mA max
5	外观 Appearance	无可见损伤 No visible damage	目视检查 Visual inspection
6	尺寸 Physical Specification	在规定尺寸范围内 Within the specified Specifications	使用卡尺 Use caliper
7	破坏性物理分析 Destructive Physical Analysis (DPA)	无缺陷或异常 No defects or abnormalities	按照 EIA-469 Accounting to EIA-469

序号 NO.	项目 Item	技术规格 Technical Specification	测试方法 Test Method and Remarks																		
8	温度循环 Temperature Cycle	$\Delta C/C$ : I类 Class I: $\leq \pm 2.5\%$ 或 $\pm 0.25\text{pF}$ , 取两者中最大者 whichever is larger. II类 Class II: $-12.5\% \sim +12.5\%$ ; DF: 同初始标准 Same to initial value.; IR: 同初始标准 Same to initial value.; 外观: 无可见损伤 Appearance: No visible damage	循环次数: 1000 次, 一个循环分以下 4 步: 阶段 1: 下限温度 $-55^{\circ}\text{C}$ ; 时间 30 分钟; 阶段 2: 常温 $20^{\circ}\text{C}$ ; 时间 1 分钟; 阶段 3: 上限温度 $125^{\circ}\text{C}$ ; 时间 30 分钟; 阶段 4: 常温 $20^{\circ}\text{C}$ ; 时间 1 分钟. Cycling Times: 1000 times. A cycle is divided into the following 4 steps: Step1: Lower limit temperature $-55^{\circ}\text{C}$ ; 30 minutes; Step2: Normal temperature $20^{\circ}\text{C}$ ; 1 minutes; Step3: Upper limit temperature $125^{\circ}\text{C}$ ; 30 minutes; Step4: Normal temperature $20^{\circ}\text{C}$ ; 1 minute.																		
9	耐湿负荷 Biased Humidity	$\Delta C/C$ : I类 Class I: $\leq \pm 3.0\%$ 或 $\pm 0.3\text{pF}$ , 取两者中最大者 whichever is larger. II类 Class II: $-12.5\% \sim +12.5\%$ ; DF: 同初始标准 Same to initial value.; IR: 同初始标准 Same to initial value.; 外观: 无可见损伤 Appearance: No visible damage	试验温度: $85 \pm 2^{\circ}\text{C}$ , 试验湿度: $80 \sim 85\% \text{R.H.}$ , 试验时间: 1000 小时, 施加电压: $U_r < 1000\text{V}$ : 额定电压 $U_r \geq 1000\text{V}$ : 1000V Temperature: $85^{\circ}\text{C}$ Humidity: $80 \sim 85\% \text{RH}$ Voltage: $U_r < 1000\text{V}$ : Rated Voltage $U_r \geq 1000\text{V}$ : 1000V Duration: 1000h																		
10	寿命试验 Life test	$\Delta C/C$ : I类 Class I: $\leq \pm 2.5\%$ 或 $\pm 0.25\text{pF}$ , 取两者中最大者 whichever is larger. II类 Class II: $-15\% \sim +15\%$ ; DF: 同初始标准 Same to initial value.; IR: I类 Class I: $R_i \geq 5000\text{M}\Omega$ 或 $R_i \cdot C_R \geq 50\text{S}$ , 取两者中最小者 whichever is smaller. II类 Class II: $R_i \geq 1000\text{M}\Omega$ 或 $R_i \cdot C_R \geq 10\text{S}$ , 取两者中最小者 whichever is smaller; 外观: 无可见损伤 Appearance: No visible damage	时间 Duration: 1000h 温度 Temperature: 上限温度 Up- category temp. 充电电流 Charge/ Discharge Current: 50mA max 电压 Voltage: ① $U_r < 500\text{V}$ : I类 Class I: $2.0U_r$ II类 Class II: 见下表 Shown in the table below <table border="1"> <thead> <tr> <th>容量 Capacitance</th><th>试验电压 Applied Voltage</th><th>容量 Capacitance</th><th>试验电压 Applied Voltage</th></tr> </thead> <tbody> <tr> <td><math>220\text{nF} \geq 0201 \geq 10\text{nF}</math></td><td rowspan="6">1.5Ur</td><td><math>0201 &lt; 10\text{nF}</math></td><td rowspan="6">2.0Ur</td></tr> <tr> <td><math>2.2\mu\text{F} \geq 0402 \geq 47\text{nF}</math></td><td><math>0402 &lt; 47\text{nF}</math></td></tr> <tr> <td><math>4.7\mu\text{F} \geq 0603 \geq 220\text{nF}</math></td><td><math>0603 &lt; 220\text{nF}</math></td></tr> <tr> <td><math>10\mu\text{F} \geq 0805 \geq 0.47\mu\text{F}</math></td><td><math>0805 &lt; 0.47\mu\text{F}</math></td></tr> <tr> <td><math>22\mu\text{F} \geq 1206 \geq 1\mu\text{F}</math></td><td><math>1206 &lt; 1\mu\text{F}</math></td></tr> <tr> <td><math>22\mu\text{F} \geq 1210 \geq 1\mu\text{F}</math></td><td><math>1210 &lt; 1\mu\text{F}</math></td></tr> </tbody> </table> 除上表之外的, 按 1.0Ur 施加电压 In addition to the above table, apply voltage at 1.0Ur. ② $500\text{V} \leq U_r \leq 630\text{V}$ : 1.2 Ur ③ $U_r > 630\text{V}$ : 1.0Ur	容量 Capacitance	试验电压 Applied Voltage	容量 Capacitance	试验电压 Applied Voltage	$220\text{nF} \geq 0201 \geq 10\text{nF}$	1.5Ur	$0201 < 10\text{nF}$	2.0Ur	$2.2\mu\text{F} \geq 0402 \geq 47\text{nF}$	$0402 < 47\text{nF}$	$4.7\mu\text{F} \geq 0603 \geq 220\text{nF}$	$0603 < 220\text{nF}$	$10\mu\text{F} \geq 0805 \geq 0.47\mu\text{F}$	$0805 < 0.47\mu\text{F}$	$22\mu\text{F} \geq 1206 \geq 1\mu\text{F}$	$1206 < 1\mu\text{F}$	$22\mu\text{F} \geq 1210 \geq 1\mu\text{F}$	$1210 < 1\mu\text{F}$
容量 Capacitance	试验电压 Applied Voltage	容量 Capacitance	试验电压 Applied Voltage																		
$220\text{nF} \geq 0201 \geq 10\text{nF}$	1.5Ur	$0201 < 10\text{nF}$	2.0Ur																		
$2.2\mu\text{F} \geq 0402 \geq 47\text{nF}$		$0402 < 47\text{nF}$																			
$4.7\mu\text{F} \geq 0603 \geq 220\text{nF}$		$0603 < 220\text{nF}$																			
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$22\mu\text{F} \geq 1210 \geq 1\mu\text{F}$		$1210 < 1\mu\text{F}$																			
11	可焊性 Solder ability	上锡率应大于 95% 外观: 无可见损伤. At least 95% of the terminal electrode is covered by new solder. Visual Appearance: No visible damage.	将电容在 $80 \sim 120^{\circ}\text{C}$ 的温度下预热 10~30 秒. Preheating conditions: $80 \sim 120^{\circ}\text{C}$ ; 10~30s. 无铅焊料: 浸锡温度: $245 \pm 5^{\circ}\text{C}$ 浸锡时间: $3 \pm 0.3\text{s}$ Lead-free soldering Solder Temperature: $245 \pm 5^{\circ}\text{C}$ Duration: $3 \pm 0.3\text{s}$																		

序号 NO.	项目 Item	技术规格 Technical Specification	测试方法 Test Method and Remarks
12	耐焊接热 Resistance to Soldering Heat	$\Delta C/C$ : I类 Class I: $\leq \pm 2.5\%$ 或 $\pm 0.25\text{pF}$ , 取两者中最大者 whichever is larger. II类 Class II: $-15\% \sim +15\%$ ; DF: 同初始标准 Same to initial value.; IR: 同初始标准 Same to initial value.; 外观: 无可见损伤 上锡率: $\geq 95\%$ Appearance: No visible damage. At least 95% of the terminal electrode is covered by new solder.	将电容在 $100 \sim 200^\circ\text{C}$ 的温度下预热 60~120 秒. 浸锡温度: $265 \pm 5^\circ\text{C}$ 浸锡时间: $10 \pm 1\text{s}$ 然后取出溶剂清洗干净, 在 10 倍以上的显微镜底下观察. 放置时间: $24 \pm 2$ 小时 放置条件: 室温 Preheating conditions: $100$ to $200^\circ\text{C}$ ; $60 \sim 120\text{s}$ . Solder Temperature: $265 \pm 5^\circ\text{C}$ Duration: $10 \pm 1\text{s}$ Clean the capacitor with solvent and examine it with a $10\times(\text{min.})$ microscope. Recovery Time: $24 \pm 2\text{h}$ Recovery condition: Room temperature
13	静电放电 Electrostatic Discharge (ESD)	$\Delta C/C$ : 同初始标准 Same to initial value; DF: 同初始标准 Same to initial value; IR: 同初始标准 Same to initial value; 外观: 无可见损伤 Appearance: No visible damage	参照 AEC-Q200-002 方法进行 ESD 静电放电试验; 放电电压: $2\text{kV} \sim 22\text{kV}$ 按 $2\text{kV}$ 步进测试。 每个样品每个电极承受两次放电, 正、负级性各 1 次; 样品经过指定等级的电压后符合验收标准要求, 则使用 原样品进入下一个电压应力等级试验。 ESD electrostatic discharge test was carried out according to AEC-Q200-002 method: Discharge Voltage: $2\text{kV} \sim 22\text{kV}$ according to $2\text{kV}$ step test. Each sample is subjected to two discharges per electrode, one positive and one negative grade. After the sample meets the requirements of the acceptance criteria after passing the specified level of Voltage, the original sample is used to enter the next Voltage stress level test
14	抗弯曲强度 Bending Strength	$\Delta C/C$ : I类 Class I: $\leq \pm 5.0\%$ 或 $\pm 0.5\text{pF}$ , 取两者中最大者 whichever is larger. II类 Class II: $-12.5\% \sim +12.5\%$ ; DF: 同初始标准 Same to initial value.; IR: 同初始标准 Same to initial value.; 外观: 无可见损伤 Appearance: No visible damage	试验基板: $\text{Al}_2\text{O}_3$ 或 PCB 弯曲深度: $\geq 2\text{mm}$ 施压速度: $1\text{mm/sec}$ . 保持时间: $60\text{s}$ 应在弯曲状态下进行测量 Test Board: $\text{Al}_2\text{O}_3$ or PCB Bending depth: $\geq 2\text{mm}$ Speed: $1\text{mm/sec}$ . Hold time: $60\text{s}$ The measurement should be made with the board in the bending position. 
15	振动 Vibration	$\Delta C/C$ : I类 Class I: $\leq \pm 2.5\%$ 或 $\pm 0.25\text{pF}$ , 取两者中最大者 whichever is larger. II类 Class II: $-12.5\% \sim +12.5\%$ ; DF: 同初始标准 Same to initial value.; IR: 同初始标准 Same to initial value.; 外观: 无可见损伤 Appearance: No visible damage	5g 的力 20 分钟, 三个方向每个方向 12 个循环。 注意: 使用 8"X5" 印刷线路板, .031" 厚, 在长的一边有 7 个固定点, 在对面的边的角有 2 个固定点。产品在距 离固定点 2" 内安装。测试频率从 10-2000 赫兹。 The force of 5g is 20 minutes, and there are 12 cycles in each direction in three directions. Note: Use an 8"X5" PCB board, .031" thick, with 7 fixing points on the long side and 2 fixing points at the corners of the opposite side. The product is installed within 2" of the fixed point. Test frequency from 10-2000 Hz.

序号 NO.	项目 Item	技术规格 Technical Specification	测试方法 Test Method and Remarks																			
16	端子强度 (SMD) Terminal strength	<p><math>\Delta C/C</math>:</p> <p>I类 Class I: <math>\leq \pm 5.0\%</math>或 <math>\pm 0.5\text{pF}</math> , 取两者中最大者 whichever is larger.</p> <p>II类 Class II: <math>-12.5\% \sim +12.5\%</math>;</p> <p>DF: 同初始标准 Same to initial value.;</p> <p>IR: 同初始标准 Same to initial value.;</p> <p>外观: 无可见损伤 Appearance: No visible damage</p>	如图所示 慢慢施加一个 T 的力到电容 侧面瓷体上, 并保持 10+1 秒。	<table><tr><th>规格 Specificati on</th><th>施加力 T Apply force T</th></tr><tr><td>AM01</td><td>2N</td></tr><tr><td>AM02</td><td>3N</td></tr><tr><td>AM03</td><td>5N</td></tr><tr><td>AM05</td><td>9N</td></tr><tr><td><math>\geq \text{AM06}</math></td><td>17.7N</td></tr></table>	规格 Specificati on	施加力 T Apply force T	AM01	2N	AM02	3N	AM03	5N	AM05	9N	$\geq \text{AM06}$	17.7N						
			规格 Specificati on	施加力 T Apply force T																		
AM01	2N																					
AM02	3N																					
AM03	5N																					
AM05	9N																					
$\geq \text{AM06}$	17.7N																					
<p>As shown in the picture Slowly apply a T force to the porcelain body on the side of the capacitor and hold for 10+1 seconds.</p> 																						
17	温度特性 Temperature characteristics	<table><tr><th>项目 Item</th><th><math>\Delta C/C</math></th><th>温度范围 Temperature range</th></tr><tr><td>C0G</td><td><math>\pm 30\text{ppm}/^\circ\text{C}</math></td><td><math>-55^\circ\text{C} \sim 125^\circ\text{C}</math></td></tr><tr><td>X7R</td><td><math>\pm 15\%</math></td><td><math>-55^\circ\text{C} \sim 125^\circ\text{C}</math></td></tr><tr><td>X7S</td><td><math>\pm 22\%</math></td><td><math>-55^\circ\text{C} \sim 125^\circ\text{C}</math></td></tr><tr><td>X7T</td><td><math>-33\% \sim +22\%</math></td><td><math>-55^\circ\text{C} \sim 125^\circ\text{C}</math></td></tr><tr><td>X5R</td><td><math>\pm 15\%</math></td><td><math>-55^\circ\text{C} \sim 85^\circ\text{C}</math></td></tr></table>	项目 Item	$\Delta C/C$	温度范围 Temperature range	C0G	$\pm 30\text{ppm}/^\circ\text{C}$	$-55^\circ\text{C} \sim 125^\circ\text{C}$	X7R	$\pm 15\%$	$-55^\circ\text{C} \sim 125^\circ\text{C}$	X7S	$\pm 22\%$	$-55^\circ\text{C} \sim 125^\circ\text{C}$	X7T	$-33\% \sim +22\%$	$-55^\circ\text{C} \sim 125^\circ\text{C}$	X5R	$\pm 15\%$	$-55^\circ\text{C} \sim 85^\circ\text{C}$	<p>在下限温度、25°C、上限温度三个温度点分别测量产品 电性能</p> <p>The electrical properties of the product are measured at three temperature points of lower limit temperature, 25°C and upper limit temperature</p>	
		项目 Item	$\Delta C/C$	温度范围 Temperature range																		
		C0G	$\pm 30\text{ppm}/^\circ\text{C}$	$-55^\circ\text{C} \sim 125^\circ\text{C}$																		
		X7R	$\pm 15\%$	$-55^\circ\text{C} \sim 125^\circ\text{C}$																		
		X7S	$\pm 22\%$	$-55^\circ\text{C} \sim 125^\circ\text{C}$																		
		X7T	$-33\% \sim +22\%$	$-55^\circ\text{C} \sim 125^\circ\text{C}$																		
X5R	$\pm 15\%$	$-55^\circ\text{C} \sim 85^\circ\text{C}$																				
18	机械冲击 Mechanical shock	<p><math>\Delta C/C</math>:</p> <p>I类 Class I: <math>\leq \pm 2.5\%</math>或 <math>\pm 0.25\text{pF}</math> , 取两者中最大者 whichever is larger.</p> <p>II类 Class II: <math>-12.5\% \sim +12.5\%</math>;</p> <p>DF: 同初始标准 Same to initial value.;</p> <p>IR: 同初始标准 Same to initial value.;</p> <p>外观: 无可见损伤 Appearance: No visible damage</p>	应沿试件的 3 个互相垂直轴, 在每个方向上实施 3 次冲 击试验 (共计 18 次冲击)。 脉冲波形: 正弦半波 持续时长: 0.5 毫秒 峰值: 1500g 速度变化: 4.7m/s																			
			<p>Three impact tests (18 shocks in total) should be performed in each direction along the three perpendicular axes of the specimen.</p> <p>Pulse waveform: sinusoidal half-wave Duration: 0.5 ms Peak: 1500g Speed change: 4.7m/s</p>																			
19	高温存储 High Temperature Exposure	<p><math>\Delta C/C</math>:</p> <p>I类 Class I: <math>\leq \pm 2.5\%</math>或 <math>\pm 0.25\text{pF}</math> , 取两者中最大者 whichever is larger.</p> <p>II类 Class II: <math>-12.5\% \sim +12.5\%</math>;</p> <p>DF: 同初始标准 Same to initial value.;</p> <p>IR: 同初始标准 Same to initial value.;</p> <p>外观: 无可见损伤 Appearance: No visible damage</p>	温度: 125°C 实验电压: 不施加电压 实验时间: 1000 小时 放置条件: 室温 放置时间: 24 小时(I类); 48 小时(II类) Temperature: 125°C Voltage: Apply no voltage Duration: 1000h Recovery conditions: Room temperature Recovery Time: 24h (ClassI) or 48h (ClassII)																			

※预处理 (仅针对 II 类电容器): 在 140°C~150°C 下预热 1h±10min 后, 在室温下放置 24±2h。

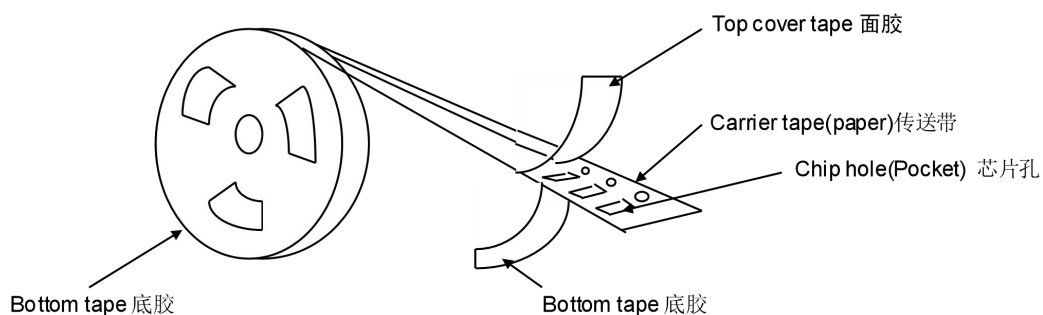
实验结束后处理 (仅针对 II 类电容器): 在 140°C~150°C 下预热 1h±10min 后, 在室温下放置 24±2h。

※Pre-conditioning (for Class II capacitors only): Preheat at 140°C to 150°C for 1 hour ±10 minutes, then store at room temperature for 24 ±2 hours.

Post-test treatment (for Class II capacitors only): Preheat at 140°C to 150°C for 1 hour ±10 minutes, then store at room temperature for 24 ±2 hours.

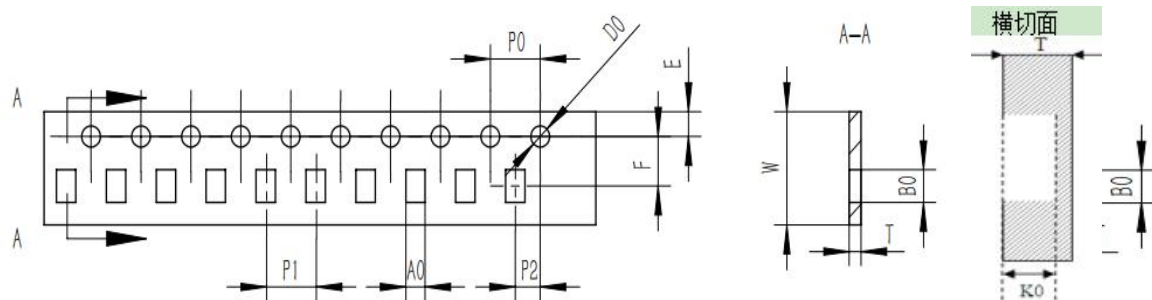
## ◆包装 Package

### \* 纸带卷盘结构 Paper Taping



### ※ 适合‘AM01’纸带编带尺寸大小

#### Specifications of paper taping for AM01type

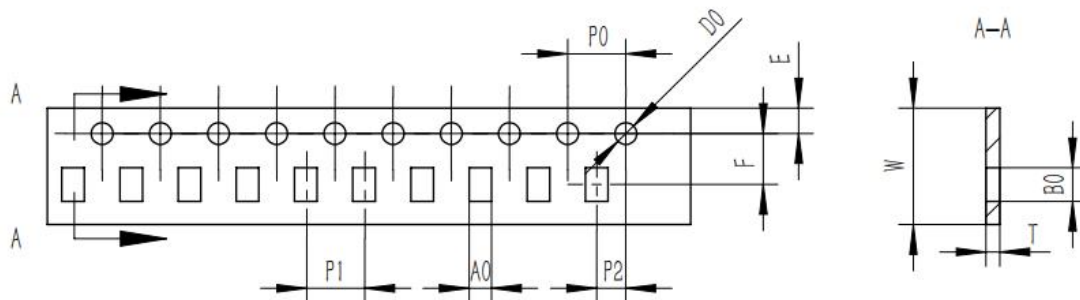


Unit: mm

代号 Code	A0	B0	W	F	E	P1	P2	P0	D0	T	K0
AM01	0.35±0.02	0.66±0.02	8.0±0.10	3.50±0.05	1.75±0.10	2.0±0.05	2.0±0.05	4.0±0.10	1.55±0.05	0.43±0.03	0.35±0.02

### ※ 适合‘AM02, AM03, AM05, AM06’常规尺寸产品的纸带尺寸

#### Specifications of paper taping for AM02, AM03, AM05, AM06 types.

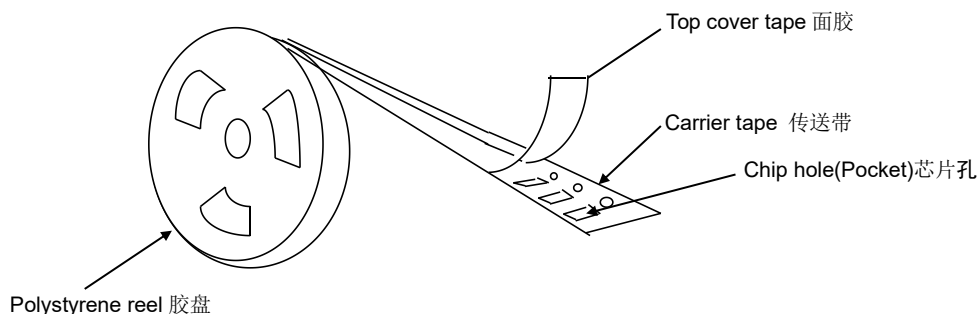




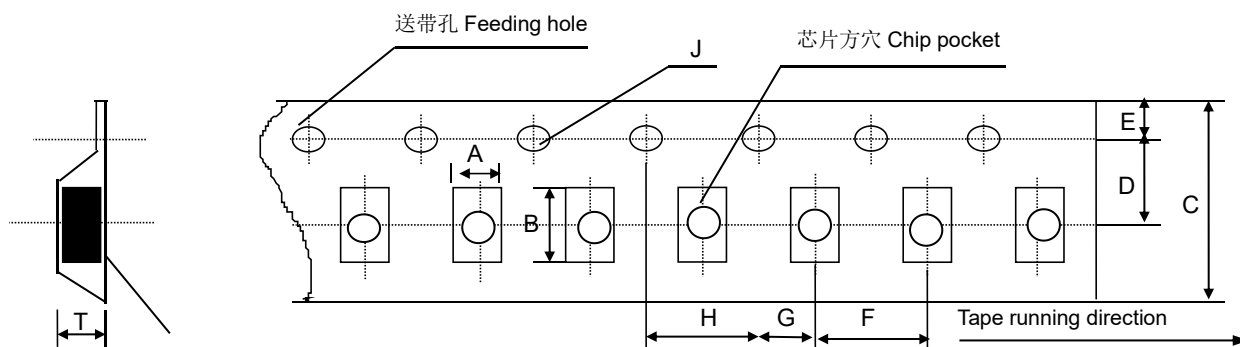
Unit: mm

代号 Code	A0	B0	W	F	E	P1	P2	P0	D0	T
AM02	0.59±0.03	1.12±0.03	8.0±0.10	3.5±0.05	1.75±0.10	2.0±0.05	2±0.05	4.0±0.10	1.55±0.05	0.60±0.03
AM03	0.95±0.05	1.90±0.05	8.0±0.10	3.5±0.05	1.75±0.10	4.0±0.1	2±0.05	4.0±0.10	1.55±0.05	0.95±0.03
AM05	1.55±0.05	2.30±0.05	8.0±0.10	3.5±0.05	1.75±0.10	4.0±0.1	2±0.05	4.0±0.10	1.55±0.05	0.95±0.03
AM06	1.85±0.05	3.45±0.05	8.0±0.10	3.5±0.05	1.75±0.10	4.0±0.1	2±0.05	4.0±0.10	1.55±0.05	0.95±0.03

## \* 塑胶卷盘结构 Embossed Taping



## ※ 塑胶带尺寸结构(适合‘AM05~AM20’型产品) Embossed Taping Dimension and Structure (suitable for 'AM05~AM20' type products).



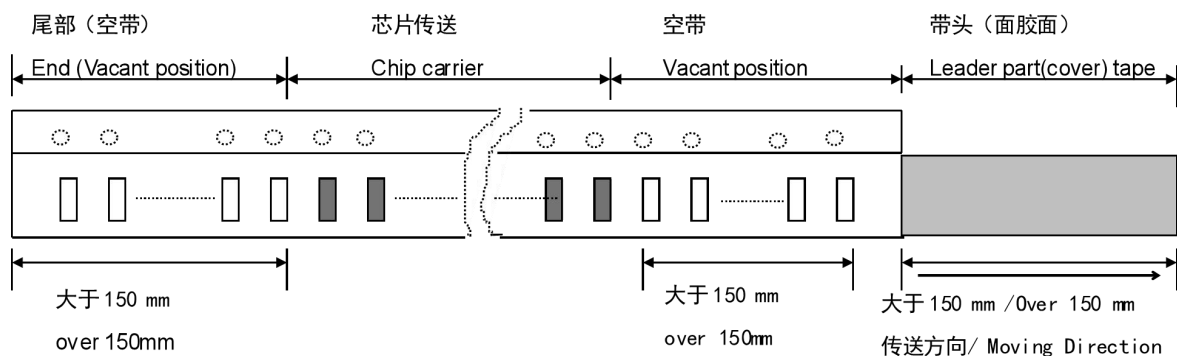
Unit: mm

代号 Code 规格 Tape size	I	B	C	D*	E	F	G*	H	J	T
AM05	1.55 ± 0.20	2.35 ± 0.20	8.00 ± 0.20	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.10	1.50 -0/+0.10	1.50 Max
AM06	1.95 ± 0.20	3.60 ± 0.20	8.00 ± 0.20	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.1	1.50 -0/+0.10	1.85 Max
AM10	2.70 ± 0.10	3.42 ± 0.10	8.00 ± 0.10	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.55 -0/+0.10	3.2 Max
AM08	2.20 ± 0.10	4.95 ± 0.10	12.00 ± 0.10	5.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.50 -0/+0.10	3.0 Max
AM12	3.66 ± 0.10	4.95 ± 0.10	12.00 ± 0.10	5.50 ± 0.05	1.75 ± 0.10	8.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.55 -0/+0.10	4.0 Max
AM20	6.20 ± 0.10	6.70 ± 0.10	12.00 ± 0.10	5.50 ± 0.05	1.75 ± 0.10	8.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.55 -0/+0.10	2.40 ± 0.10

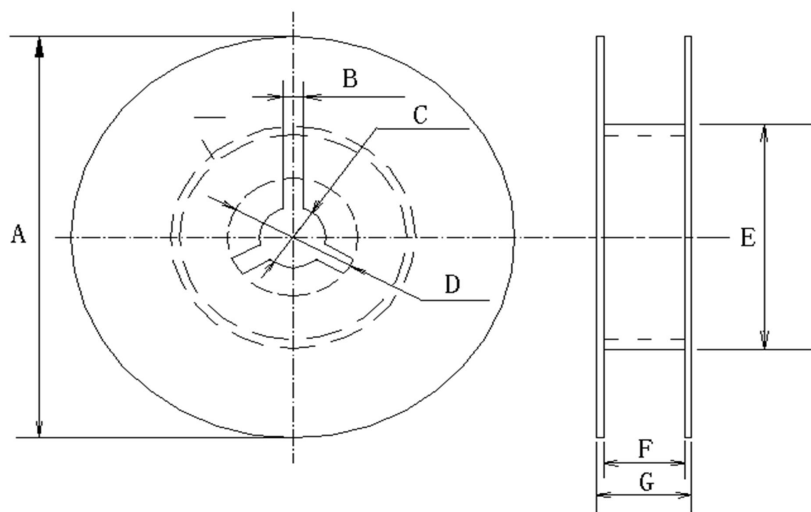
备注：\*表示此处对尺寸的要求非常精确。Note: The place with “\*” means where needs exactly Specifications.

\* 传送带的前后结构

Structure of leader part and end part of the carrier paper



\* 卷盘尺寸 Reel Specifications (unit: mm)



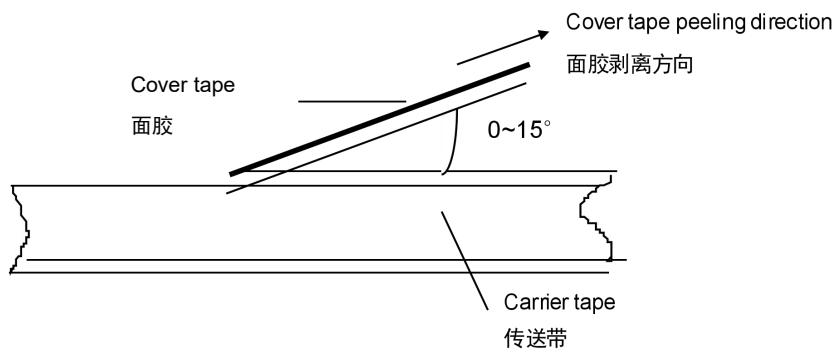
\* 尺寸代码 Code Code

卷盘型号 Code	A	B	C	D	E	F	G
7' REEL	$\phi 178 \pm 2.0$	3.0	$\phi 13 \pm 0.5$	$\phi 21 \pm 0.8$	$\phi 50$ 或更大 or more	$10.0 \pm 1.5$	12max
13' REEL	$\phi 330 \pm 2.0$	3.0	$\phi 13 \pm 0.5$	$\phi 21 \pm 0.8$	$\phi 50$ 或更大 or more	$10.0 \pm 1.5$	12max

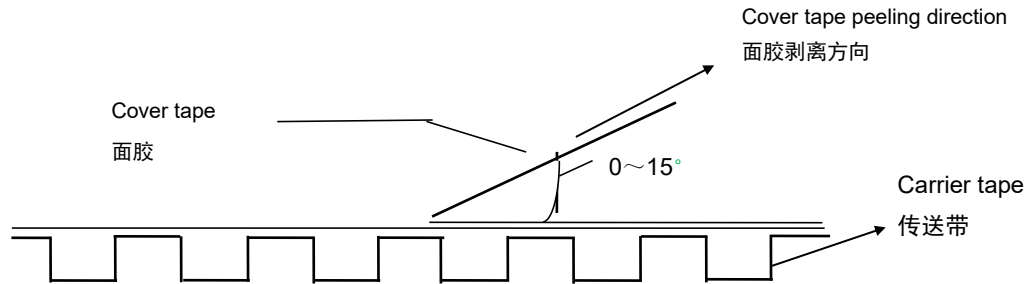
\* 关于卷带的说明 Taping specification

※ 面胶剥离强度 Top tape peeling strength

(I) 纸带 Paper Taping



## (II) 塑料胶盘 Embossed Taping



标准:  $0.1N < \text{剥离强度} < 0.7N$ ; 在剥离时, 纸带不能有纸碎, 也不能粘在底、面胶上。

Standard:  $0.1N < \text{peeling strength} < 0.7N$ ; No paper dirty remains on the scotch when peeling and sticks to top and bottom tape.

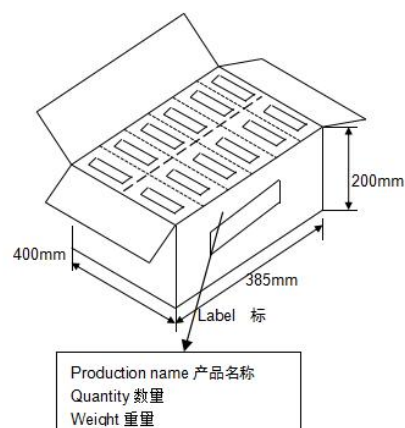
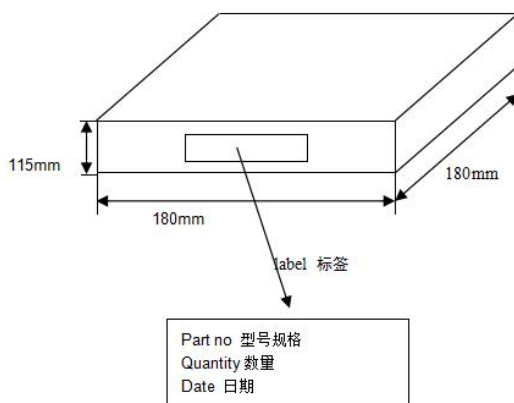
### ※包装数量 Packing Quantity

尺寸代码 Size Code	厚度 (T) Thickness	7 寸纸带卷盘 (7' PT)	7 寸胶带卷盘 (7' ET)	13 寸纸带卷盘 (13' PT)	13 寸胶带卷盘 (13' ET)
AM01	BA	15000	---	70000	---
	BB	15000	---	70000	---
	BC	15000	---	70000	---
AM02	CA	10000	---	50000	---
	CB	10000	---	50000	---
	CC	10000	---	50000	---
AM03	DA	4000	---	15000	---
	DB	4000	---	15000	---
AM05	EA	4000	---	15000	---
	EB	---	3000	---	10000
AM06	FA	4000	---	15000	---
	FB	---	3000	---	10000
	FC	---	2000	---	8000
AM10	GA	---	2000	---	8000
	GB	---	2000	---	8000
	GD	---	1000	---	8000
AM08	HA	---	2000	---	8000
	HB	---	2000	---	8000
AM12	IB	---	1000	---	3000
	IC	---	500	---	3000
AM20	LA	---	500	---	---
	LB	---	500	---	---

### \* 外包装 Outer packing

小包装 The first package: 10 卷 reels

大包装 The second package : 6 盒 cases



## ◆储存方法

## Storage Methods

\*MLCC 的储存条件：相对湿度为 20~70%，储存温度为 5~40℃，建议温度低于 30℃。

\*MLCC 的性能可能会受到储存条件的影响，交货后请立即使用。高温高湿条件、长期储存可能会导致包装材料变质、产品端头电极氧化。如自交付后已超过六个月，使用前检查包装、外观等。如果交付后超过一年，在使用前要检查可焊性。

\* 不要将电容器存放在含有腐蚀性气体(例如硫化氢、二氧化硫、氯气、氨气等)的环境中。

\* 不要在阳光直射下或高湿度条件下储存电容器。

Storage Conditions for MLCC: Relative humidity: 20~70%, storage temperature: 5~40℃, recommended temperature is below 30℃.

The performance of MLCCs may be affected by storage conditions. Please use immediately after delivery. High temperature and high humidity conditions, or long-term storage, may lead to packaging material deterioration and oxidation of the product's end electrodes. If it has been over six months since delivery, check the packaging and appearance before use. If it has been over a year, check the solderability before use.

Do not store capacitors in environments containing corrosive gases (e.g., hydrogen sulfide, sulfur dioxide, chlorine, ammonia, etc.).

Do not store capacitors under direct sunlight or in high humidity conditions.

## ◆使用前注意事项

## Precautions For Use

## \*安装前的信息 Pre-installation Information:

- 1、不要重复使用从设备上拆下的电容器。
- 2、确认额定容量、额定电压等电气特性。
- 3、确认施加电压下的电容特性。
- 4、确认使用下的机械应力。
- 5、确认长期存放的电容器的可焊性。
- 6、在测量电容之前，对长期存放的电容器进行热处理。

- 1.Do not reuse capacitors removed from equipment.
- 2.Confirm electrical characteristics such as rated capacitance and rated Voltage.
- 3.Confirm the capacitor characteristics under applied Voltage.
- 4.Confirm the mechanical stress under use conditions.
- 5.Confirm the solderability of capacitors stored for long periods.
- 6.Perform heat treatment on capacitors that have been stored for a long time before measuring capacitance.

## \* 应用限制 Application Restrictions

- 1、我们的产品为汽车专用电子元器件，产品的设计基于正常操作和使用条件下的通用应用和标准用途。
- 2、除汽车及汽车相关电子产品外，在将我们的产品用于以下对应用要求特别高的场景之前，请联系我们：航空航天设备、医疗设备、原子能设备、灾难预防设备、犯罪预防设备、电加热设备、燃烧设备、公共信息网络设备、数据处理设备、军事设备、发电控制设备、安全设备、和海底设备，或用于可能导致人身伤害、死亡或严重财产损失的其他应用场景。

3、除非您事先获得风华的书面同意，否则风华不对您或第三方因将我们的产品用于第 2 点设备而产生的任何损害承担任何责任。

1.Our products are automotive-specific electronic components, and their design is based on general applications and standard uses under normal operating and usage conditions.

2.Before using our products in the following high-reliability application scenarios other than automotive and automotive-related electronic products, please contact us: aerospace equipment, medical devices, atomic energy equipment, disaster prevention equipment, crime prevention equipment, electric heating equipment, combustion equipment, military equipment, public information network devices, data processing equipment, power generation control equipment, safety equipment, and underwater equipment, or in any other application where product failure may lead to personal injury, death, or severe property damage.

3.Unless you have prior written consent from Fenghua, Fenghua is not liable for any damages caused to you or third parties by using our products in the devices mentioned in point 2.

## \* 焊接的条件与相关图表

### Soldering Condition and Profile

为避免因温度的突然变化而引起的芯片开裂或局部爆炸的现象发生,请按有关温度曲线图表来进行。

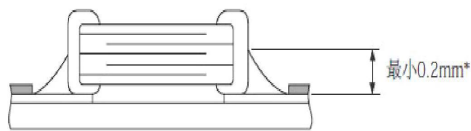
To avoid the crack problem by sudden temperature change, follow the temperature profile in the adjacent graph .

## \* 推荐焊料用量

### Recommended Soldering Amounts

回流焊接的最佳焊料用量

The optimal solder fillet amounts  
for re-flow soldering

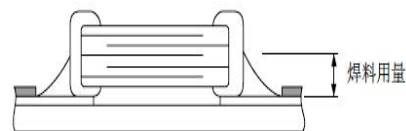


元件最小厚度的1/3。

剖面图

使用烙铁返修时的最佳焊料量

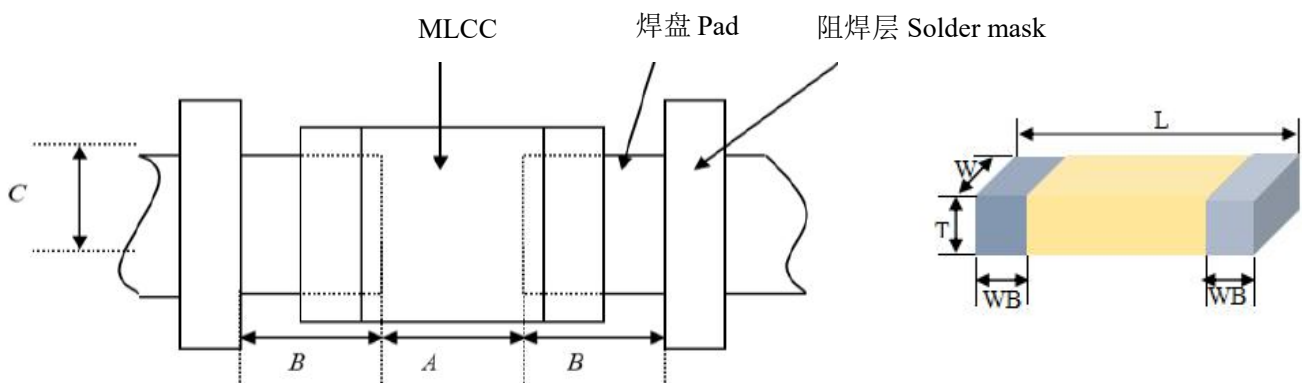
The optimal solder fillet amounts  
for reworking by using soldering



剖面图

## \* 推荐焊盘设计

Recommended pad design



电容产品尺寸 Capacitor product size			焊盘尺寸 Pad size		
规格代码 Code	L	W	A	B	C
AM01	0.60±0.03	0.30±0.03	0.20~0.25	0.20~0.30	0.20~0.35
	0.60±0.09	0.30±0.09	0.23~0.30	0.25~0.35	0.30~0.40
AM02	1.00±0.05	0.50±0.05	0.30~0.50	0.35~0.45	0.40~0.60
	1.00±0.15	0.50±0.15	0.40~0.60	0.40~0.50	0.50~0.70
	1.00±0.20	0.50±0.20			
AM03	1.60±0.10	0.80±0.10	0.60~0.80	0.60~0.70	0.60~0.80
	1.60±0.20	0.80±0.20	0.70~0.90	0.70~0.80	0.80~1.00
AM05	2.00±0.20	1.25±0.20	1.00~1.40	0.60~0.80	1.20~1.40
AM06	3.20±0.30	1.60±0.30	1.90~2.10	1.00~1.30	1.60~1.90
AM10	3.20±0.30	2.50±0.30	2.00~2.40	1.00~1.30	2.50~2.80
AM08	4.50±0.40	2.00±0.20	2.50~3.50	1.00~1.80	2.30~3.50
AM12	4.50±0.40	3.20±0.30	2.50~3.50	1.00~1.80	2.30~3.50

### ◆推荐焊接方法

#### Recommended Soldering Method

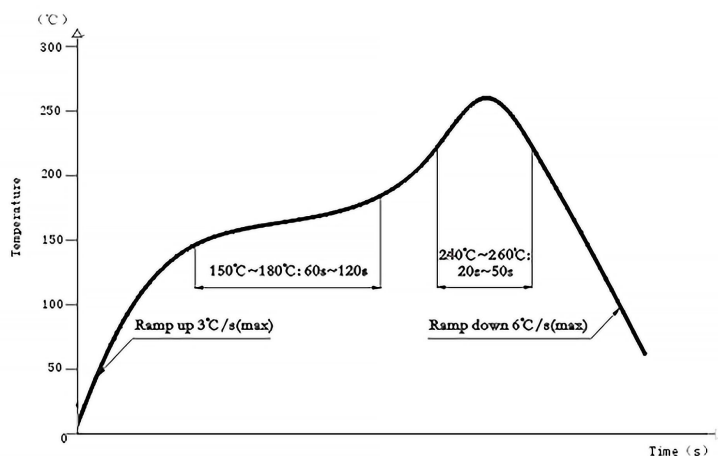
规格尺寸 Size	焊接方式 Soldering Method
AM02	回流焊 Reflow Soldering
AM03	回流焊 Reflow Soldering
AM05	回流焊 Reflow Soldering
AM06	回流焊 Reflow Soldering
≥AM10	回流焊 Reflow Soldering

### 推荐焊接温度曲线图

#### The temperature profile for soldering

\* 回流焊接

Re-flow soldering



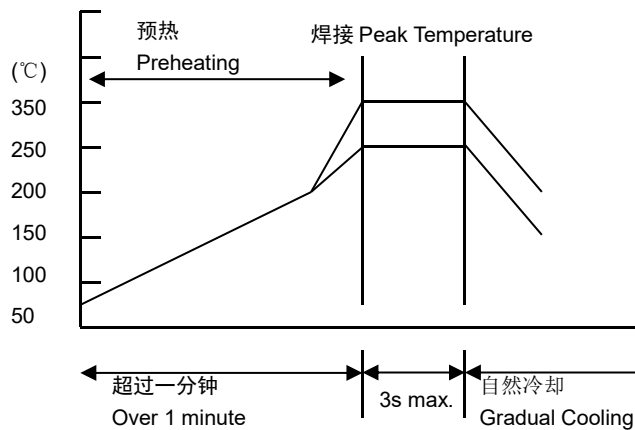
在预热时，请将焊接温度与芯片表面温度之间的温差维持在  $T \leq 150^\circ\text{C}$ 。

While in preheating, please keep the temperature difference between soldering temperature and surface temperature of chips as:  
 $T \leq 150^\circ\text{C}$ .

## \* 手工焊接

### Hand soldering

温度 Temperature



项目 (Item)	建议 (Suggestions)
预热 Preheating	$\Delta \leq 130^{\circ}\text{C}$
烙铁头温度 Temperature of soldering iron head	最高 $350^{\circ}\text{C}$ Highest temperature: $350^{\circ}\text{C}$
烙铁功率 Power of soldering iron	最大 20W 20W at the highest
烙铁头直径 Diameter of soldering iron head	建议 1mm 1mm recommended
焊接时间 Soldering time	最长 3s 3s at the longest
锡膏量 Solder paste amount	$\leq 1/2$ 芯片厚度 $\leq 1/2$ chip thickness
限制条件 Restricted conditions	请勿使用烙铁头直接接触陶瓷元件 Please avoid the direct contact between soldering iron head and ceramic components

## ◆备注 Notes

- 1.上述所提供之内容为产品规格说明。在产品未变更时，风华保有修改此内容不另行通知之所有权利，任何产品变更将会以 PCN 通知客户。
- 1.The content provided above is the product specification description. Fenghua reserves the right to modify this content without further notice as long as there are no changes to the product. Any product changes will be communicated to the customer via PCN (Product Change Notification).
- 2.产品规格书中，同规格同容量同温度特性可交付的高电压型号规格，可以完全覆盖低压；同规格同容量同电压产品，温度特性 X7R 产品可覆盖 X7S, X7T, X6S, X5R (如 AM02B104K250NT 可以覆盖 AM02BS104K250NT, AM02BT104K250NT, AM02DS104K250NT, AM02X104K250NT), 规格书中就不再列出详细型号规格。
- 2.In the product specification, high-Voltage models with the same specifications, capacitance, and temperature characteristics can fully cover the low-Voltage models. Similarly, for products with the same specifications, capacitance, and Voltage, X7R temperature characteristic products can cover X7S, X7T, X6S, and X5R (e.g., AM02B104K250NT can cover AM02BS104K250NT, AM02BT104K250NT, AM02DS104K250NT, and AM02X104K250NT). Therefore, detailed model specifications will not be listed in the specification.
- 3.产品规格书仅供设计选型参考用，不作为交货依据。
- 3.The product specification is for design and selection reference only and shall not serve as a basis for delivery.

[illegible]