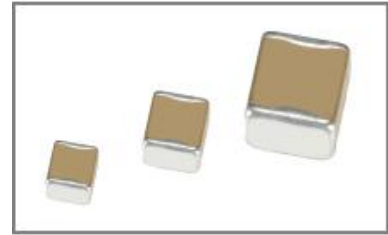


■ Automotive MLCC--AM Series

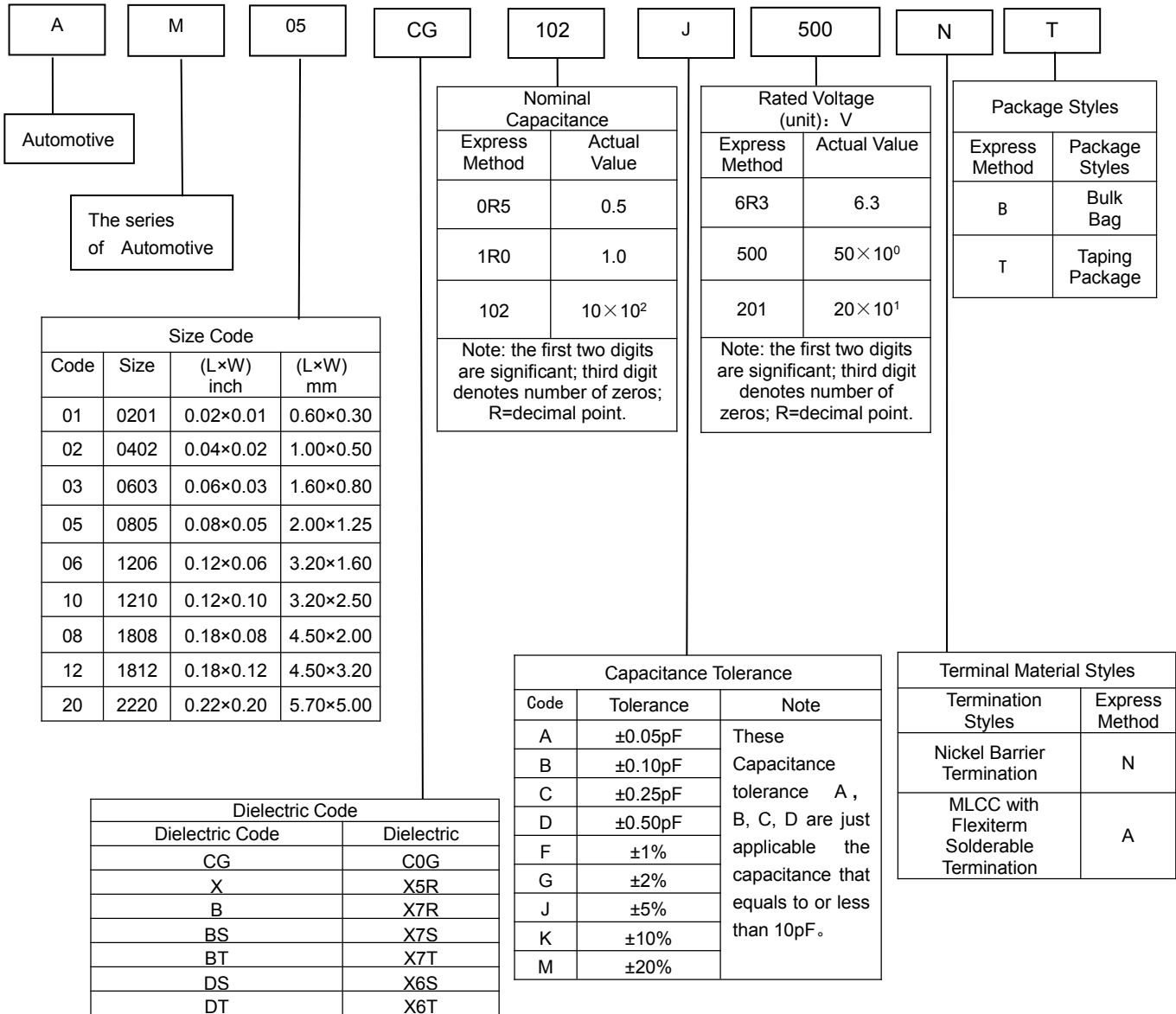
◆ Feature

- * There is high reliability on monolithic structure of laminated layers.
- * And its character of excellent soldering ability and soldering resistance ability is suitable for reflow soldering and peak soldering.
- * It includes high and stable capacitance.
- * 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
- * The materials used mainly include COG with high temperature stability and X7R, X5R, X7S, and X7T with high dielectric constant
- * Executive Standard: GB/T 21041-2007 GB/T 21042-2007 AEC-Q200



◆ Application

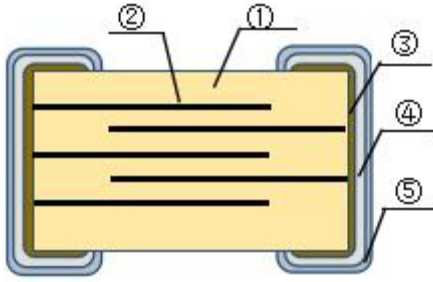
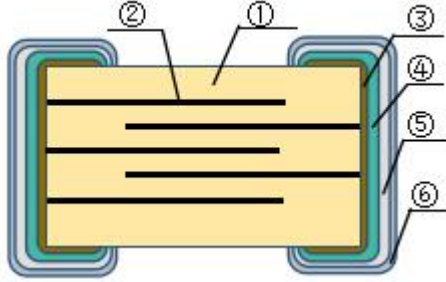
Code	Application description
M	<ul style="list-style-type: none"> * Meet AEC-Q200 requirements * General type automotive series. It is suitable for driving system control such as engine ECUs, airbags, ABS, etc.
E	<ul style="list-style-type: none"> * Meet AEC-Q200 requirements * High Bending Strength resistance automotive series. The resin end process is adopted to more effectively suppress stress cracks caused by bending between plates, and is suitable for bendable modules such as on-board power control and battery lines, and power transmission modules.
S	<ul style="list-style-type: none"> * Meet AEC-Q200 requirements * Complies with IEC60384-14 * Suitable for battery chargers, frequency converters, DC-DC converters, etc

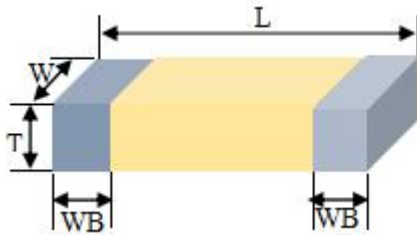
◆ Ordering Code

◆ Temperature Coefficient /Characteristics

Dielectric	Reference Temperature Point	Temperature Coefficient	Operation Temperature Range
COG	20℃	0±30 ppm/℃	-55℃~125℃
X5R	20℃	±15%	-55℃~85℃
X7R	20℃	±15%	-55℃~125℃
X7S	20℃	±22%	-55℃~125℃
X7T	20℃	-33%~22%	-55℃~125℃
X6S	20℃	±22%	-55℃~105℃
X6T	20℃	-33%~22%	-55℃~105℃

Note: Nominal temperature coefficient and allowed tolerance of class I are decided by the changing of the capacitance between 20℃ and 85℃. Nominal temperature coefficient of class II are decided by the temperature of 20℃.

◆ Product Structure

Item	N-Terminal (Cu/Ni/Sn Three-layer Terminal)	A-Terminal (Flexible Terminal)
Structure Diagram		
Code Description	①Ceramic Dielectric ②Nickel Electrode ③Copper electrode Layer ④Nickel Layer ⑤Tin Layer	①Ceramic Dielectric ②Nickel Electrode ③Copper electrode Layer ④Conductive Resin ⑤Nickel Layer ⑥Tin Layer

◆ Product Dimensions


Code	British expression	Metric expression	(mm)				Note
			L	W	T	WB	
01	0201	0603	0.6±0.03	0.3±0.03	0.3±0.03	0.15±0.05	C≤47nF
			0.6±0.05	0.3±0.05	0.3±0.05	0.15±0.05	C>47nF
02	0402	1005	1.00±0.05	0.50±0.05	0.50±0.05	0.25±0.05	C<0.1μF
			1.00±0.15	0.50±0.15	0.50±0.15	0.25±0.05	0.1μF≤C<10μF
03	0603	1608	1.60±0.10	0.80±0.10	0.80±0.10	0.35±0.20	C≤1μF
			1.60±0.20	0.80±0.20	0.80±0.20	0.35±0.20	C>1μF
05	0805	2012	2.00±0.20	1.25±0.20	0.80±0.20	0.50±0.20	—
					1.25±0.20	0.50±0.20	—
06	1206	3216	3.20±0.30	1.60±0.30	0.80±0.20	0.60±0.30	—
					1.25±0.20		—
					1.60±0.30		—
10	1210	3225	3.20±0.30	2.50±0.30	≤2.80	0.60±0.30	—
08	1808	4520	4.50±0.40	2.00±0.20	≤2.20	0.60±0.30	—
12	1812	4532	4.50±0.40	3.20±0.30	≤3.50	0.60±0.30	—
20	2220	5750	5.70±0.40	5.00±0.40	≤3.50	0.70±0.30	—

Note: 1、The specific thickness of the product can read "capacity range and voltage "in this approval sheet.
 2、We can design according to customer special requirements

◆ Capacitance Range and Operating Voltage

* A list of the specific voltage-specific capacitors of Class I capacitors

AM01、AM02、AM03——“N” terminal products

Dielectric	COG					
	01 (0.6mm*0.3mm)	02 (1.0mm*0.5mm)		03 (1.6mm*0.8mm)		
Dimensions	50V	50V	100V	50V	100V	250V
Voltage	50V	50V	100V	50V	100V	250V
0.1pF	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
0.2pF						
0.3pF						
0.5pF						
1pF						
1.2pF						
1.5pF						
1.8pF						
2.0pF						
2.2pF						
2.7pF						
3.0pF						
3.3pF						
3.6pF						
3.9pF						
4.7pF						
5.0pF						
5.6pF						
6.8pF						
8.0pF						
8.2pF						
10pF	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
12pF						
15pF						
18pF						
22pF						
27pF						
33pF						
39pF						
47pF						
56pF						
68pF						
100pF	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
120pF						
150pF						
180pF						
220pF						
270pF						
330pF						
390pF						
470pF						
560pF						
680pF						
1nF	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
1.5nF						
1.8nF						
2.2nF						
2.7nF						

Note:

- 1、Corresponding product design thickness , unit:mm
- 2、We can design according to customer special requirements

AM05、AM06——“N” terminal products

Dielectric	C0G									
	05 (2.0mm*1.25mm)				06 (3.2mm*1.6mm)					
	50V	100V	250V	500V/630V	50V	100V	250V	500V/630V	1000V	2000V
0.5pF										
1pF										
1.2pF										
1.5pF										
1.8pF										
2.0pF										
2.2pF										
2.7pF										
3.0pF										
3.3pF										
3.6pF										
3.9pF										
4.7pF										
5.0pF										
5.6pF										
6.8pF	0.80	0.80	0.80	0.80						
8.0pF	±0.20	±0.20	±0.20	±0.20	0.80					
8.2pF					±0.20	0.80	0.80	1.25	1.25	
10pF						±0.20	±0.20	±0.20	±0.20	
12pF										
15pF										
18pF										
22pF										
27pF										
33pF										
39pF										
47pF										
56pF										
68pF										
100pF										
120pF										
150pF										
180pF	0.80	0.80	0.80	0.80						
220pF	±0.20	±0.20	±0.20	±0.20						
270pF										
330pF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	1.25	1.25	
390pF	±0.20	±0.20	±0.20	±0.20	±0.20	±0.20	±0.20	±0.20	±0.20	
470pF										
560pF										
680pF	0.80		0.80		0.80	0.80	0.80	1.25	1.60	
1nF	±0.20	0.80	±0.20		±0.20	±0.20	±0.20	±0.20	±0.30	
1.5nF		±0.20						1.60±0.30		
1.8nF					1.25	1.25	1.25			
2.2nF					±0.20	±0.20	±0.20			
2.7nF	0.80									
3.3nF	±0.20				1.25					
4.7nF					±0.20					
6.8nF					1.6±0.30					
10nF					1.6±0.30					

Note:

- 1、Corresponding product design thickness , unit:mm
- 2、We can design according to customer special requirements

AM10、AM08——“N” terminal products

Dielectric	C0G									
	10 (3.2mm*2.5mm)				08 (4.5mm*2.0mm)					
	Voltage	250V	500/630V	1000V	2000V	250V	500V/630V	1000V	2000V	3000V
1pF										
1.2pF										
1.8pF	1.25±0.20	1.25±0.20			1.60±0.30	1.60±0.30				
2.0pF										
2.2pF										
2.7pF										
3.0pF										
3.3pF										
3.6pF										
3.9pF										
4.7pF										
5.0pF										
5.6pF										
6.8pF										
8.2pF										
10pF										
12pF										
15pF	1.25±0.20	1.25±0.20			1.60±0.30	1.60±0.30				
18pF										
22pF										
27pF										
33pF										
39pF			1.25±0.20	1.60±0.30			1.60±0.30	1.60±0.3	1.60±0.3	
47pF										
56pF										
68pF										
100pF										
120pF										
150pF										
180pF										
220pF										
270pF	1.25±0.20	1.25±0.20	1.60±0.30							
330pF										
390pF										
470pF	1.25±0.20	1.25±0.20			1.60±0.30	1.60±0.30	1.60±0.30			
560pF										
680pF										
1nF		1.60±0.30			1.60±0.30	1.60±0.30				
1.5nF	1.25±0.20									
1.8nF		2.00±0.30								
2.2nF							2.00±0.30			
2.7nF	1.60±0.30				1.60±0.30					
3.3nF										
3.9nF	1.60±0.30									
4.7nF										
6.8nF										
10.0nF										

Note:

- 1、Corresponding product design thickness , unit:mm
- 2、We can design according to customer special requirements

AM12、AM20——“N” terminal products

Dielectric	C0G									
	12 (4.5mm*3.2mm)					20 (5.7mm*5.0mm)				
	250V	500/630V	1000V	2000V	3000V	250V	500/630V	1000V	2000V	3000V
10pF	1.6±0.3 0	1.6±0.30	1.6±0.30	1.6±0.30	1.6±0.30	1.6±0.3	1.6±0.3	1.6±0.3	2.0±0.30	2.0±0.30
12pF										
15pF										
18pF										
22pF										
27pF										
33pF										
39pF										
47pF										
56pF										
68pF										
100pF										
120pF										
150pF										
180pF										
220pF										
270pF										
330pF										
390pF										
470pF										
560pF										
680pF										
1nF										
1.5nF										
1.8nF										
2.2nF										
2.7nF										
3.3nF										
3.9nF										
4.7nF										
5.6nF										
6.8nF										
10nF										
15nF										

Note:

- 1、Corresponding product design thickness , unit:mm
- 2、We can design according to customer special requirement

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

AM01 (0.6mm*0.3mm)

Dielectric	X7R		X7S				X7T					X5R			
	≤25 V	50V	≤10V	16 V	25V	50V	6.3V	10V	16V	25V	50V	≤10 V	16V	25V	50V
120pF															
180pF															
220pF															
270pF															
330pF															
390pF															
470pF															
560pF															
680pF															
1nF	0.3	0.30													0.30
1.2nF	0	±													±
1.5nF	±	0.03												0.30	0.03
1.8nF	0.0	(N)												±	(N)
2.2nF	3													0.30	
2.7nF	(N)												0.30	±	
3.3nF													±	0.03	
3.9nF													0.03	(N)	
4.7nF						0.30									±
5.6nF				0.3	±	0.03									(N)
6.8nF			0.30	±	0.03										
10nF			±	0.0											
12nF			0.03	3											
15nF			(N)	(N)											
18nF															
22nF								0.30							
27nF							0.30	±							
33nF							±	0.03							
39nF							(N)	±							
47nF							(N)	0.03							
56nF							0.30								
68nF							±0.0								
100nF							5								
							(N)								

Note: 1、Corresponding product design thickness , unit:mm ; "(N)" N-products "(A)" A-terminal products
 2、We can design according to customer special requirements

AM02 (1.0mm*0.5mm) _X5R(85℃)

Dielectric	X5R			
Voltage	6.3V	10V	16V	25V
56nF	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)
68nF				
100nF	0.50±0.15 (N)	0.50±0.15 (N)	0.50±0.15 (N)	0.50±0.15 (N)
220nF				
330nF				
470nF				
680nF				
1μF				

AM02 (1.0mm*0.5mm) _X7R (125℃)

Dielectric	X7R					
Voltage	6.3V	10V	16V	25V	50V	100V
120pF	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)
180pF						
220pF						
270pF						
330pF						
390pF						
470pF						
560pF						
680pF						
1nF						
1.2nF						
1.5nF						
1.8nF						
2.2nF						
2.7nF						
3.3nF						
3.9nF						
4.7nF						
5.6nF						
6.8nF						
10nF	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)	
12nF						
15nF						
18nF						
22nF						
27nF						
33nF						
39nF						
47nF						
56nF						
68nF						
100nF	0.50±0.15 (N)	0.50±0.15 (N)	0.50±0.15 (N)	0.50±0.15 (N)	0.50±0.15 (N)	

Note: 1、Corresponding product design thickness , unit:mm ; "(N)" N-products "(A)" A- terminal products
 2、We can design according to customer special requirements

AM02 (1.0mm*0.5mm) _X7S (125℃)

Dielectric	X7S				
Voltage	6.3V	10V	16V	25V	50V
39nF	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)
47nF					
56nF					
68nF					
100nF	0.50±0.15 (N)	0.50±0.15 (N)	0.50±0.15 (N)	0.50±0.15 (N)	0.50±0.15 (N)
220nF	0.50±0.15 (N)	0.50±0.15 (N)			

AM02 (1.0mm*0.5mm) _X7T (125℃)

Dielectric	X7T				
Voltage	6.3V	10V	16V	25V	50V
39nF	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)	0.50±0.05 (A)
47nF					
56nF					
68nF					
100nF	0.50±0.15 (N)	0.50±0.15 (N)	0.50±0.15 (N)	0.50±0.15 (N)	0.50±0.15 (N)
220nF	0.50±0.15 (N)	0.50±0.15 (N)			
330nF					
470nF					
680nF					
1μF	0.50±0.15 (N)				

AM03 (1.6mm*0.8mm) _X5R (85℃)

Dielectric	X5R				
Voltage	6.3V	10V	16V	25V	50V
47nF	0.80±0.10 (A)	0.80±0.10 (A)	0.80±0.10 (A)	0.80±0.10 (A)	0.80±0.10 (A)
100nF	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)
220nF					
330nF					
470nF					
680nF					
1.0μF					
2.2μF	0.80±0.20 (N)	0.80±0.20 (N)	0.80±0.20 (N)		
3.3μF					
4.7μF					

Note: 1、Corresponding product design thickness , unit:mm ; "(N)" N-terminal products "(A)" A-terminal products
 2、We can design according to customer special requirements

AM03 (1.6mm*0.8mm) _X7R (125°C)

Dielectric	X7R					
	6.3V	10V	16V	25V	50V	100V
120pF	0.80±0.10 (A)	0.80±0.10 (A)	0.80±0.10 (A)	0.80±0.10 (A)	0.80±0.10 (A)	0.80±0.10 (A)
150pF						
180pF						
220pF						
270pF						
330pF						
390pF						
470pF						
560pF						
680pF						
1nF						
1.2nF						
1.5nF						
1.8nF						
2.2nF						
2.7nF						
3.3nF						
3.9nF						
4.7nF						
5.6nF						
6.8nF						
10nF						
12nF						
15nF						
18nF						
22nF						
27nF						
33nF						
39nF						
47nF						
56nF						
68nF						
100nF	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)
220nF	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	

AM03 (1.6mm*0.8mm) _X7S (125°C)

Dielectric	X7S				
	6.3V	10V	16V	25V	50V
47nF	0.80±0.10 (A)	0.80±0.10 (A)	0.80±0.10 (A)	0.80±0.10 (A)	0.80±0.10 (A)
56nF					
68nF	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)
100nF					
220nF					
330nF					
470nF	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	
680nF					
1.0μF					

Note: 1、Corresponding product design thickness , unit:mm ; "(N)" N- terminal products "(A)" A- terminal products
 2、We can design according to customer special requirements

AM03 (1.6mm*0.8mm) _X7T (125℃)

Dielectric	X7T			
	6.3V	10V	16V	25V
47nF	0.80±0.10 (A)	0.80±0.10 (A)	0.80±0.10 (A)	0.80±0.10 (A)
56nF				
68nF				
100nF	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)	0.80±0.10 (N)
220nF				
330nF				
470nF				
680nF				
1μF				
2.2μF	0.80±0.020 (N)	0.80±0.020 (N)		

AM05 (2.0mm*1.25mm) _X5R (85℃)

Dielectric	X5R					
	6.3V	10V	16V	25V	50V	100V
56nF	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)
68nF						
100nF						
220nF	0.80±0.20 (N)	0.80±0.20 (N)	0.80±0.20 (N)	0.80±0.20 (N)	0.80±0.20 (N)	1.25±0.20 (N)
330nF						
470nF						
680nF						
1μF						
2.2μF	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)	
3.3μF						
4.7μF						
6.8μF	1.25±0.20 (N)	1.25±0.20 (N)				
10μF						

AM05 (2.0mm*1.25mm) _X7R (125℃)

Dielectric	X7R						
	≤10V	16V	25V	50V	100V	250V	500V
120pF	0.80±0.20(A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)
150pF							
180pF							
220pF							
270pF							
330pF							
390pF							
470pF							
560pF							
680pF							
1nF							
1.2nF							
1.5nF							
1.8nF							

Note: 1、Corresponding product design thickness , unit:mm ; "(N)" N- terminal products "(A)" A- terminal products
 2、We can design according to customer special requirements

AM05 (2.0mm*1.25mm) _X7R (125°C)

Dielectric	X7R						
	≤10V	16V	25V	50V	100V	250V	500V
2.2nF	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)
2.7nF							
3.3nF	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	1.25±0.20 (N)
3.9nF							
4.7nF							
5.6nF							
6.8nF							
10nF	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	1.25±0.20 (N)	
12nF							
15nF							
18nF							
22nF							
27nF							
33nF							
39nF	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)		
47nF							
56nF							
68nF	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	1.25±0.20 (N)		
100nF							
220nF	0.80±0.20 (N)	0.80±0.20 (N)	0.80±0.20 (N)	0.80±0.20 (N)			
330nF							
470nF	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)			
680nF							
1μF	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)			

AM05 (2.0mm*1.25mm) _X7S (125°C)

Dielectric	X7S				
	≤10V	16V	25V	50V	100V
56nF	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)
68nF					
100nF					
220nF	0.80±0.20 (N)	0.80±0.20 (N)	0.80±0.20 (N)	0.80±0.20 (N)	0.80±0.20 (N)
330nF					
470nF	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)
680nF					
1μF					
2.2μF					
3.3μF					
4.7μF					

Note:

- 1、Corresponding product design thickness , unit:mm ; "(N)" N- terminal products "(A)" A- terminal products
- 2、We can design according to customer special requirements

AM05 (2.0mm*1.25mm)_X7T(125℃)

Dielectric	X7T			
	6.3V	10V	16V	25V
56nF	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)	0.80±0.20 (A)
68nF				
100nF				
220nF	0.80±0.20 (N)	0.80±0.20 (N)	0.80±0.20 (N)	0.80±0.20 (N)
330nF				
470nF	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)
680nF				
1µF				
2.2µF				
3.3µF	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)	
4.7µF				
6.8µF	1.25±0.20 (N)			
10µF				

AM06(3.2mm*1.6mm)_X5R (85℃)

Dielectric	X5R				
	6.3V	10V	16V	25V	50V
2.2µF	1.60±0.30 (N)	1.60±0.30 (N)	1.60±0.30 (N)	1.60±0.30 (N)	1.60±0.30 (N)
3.3µF					
4.7µF	1.60±0.30 (N)	1.60±0.30 (N)	1.60±0.30 (N)	1.60±0.30 (N)	
6.8µF					
10µF					
15µF	1.60±0.30 (N)				
22µF					

Note:

- 1、Corresponding product design thickness , unit:mm ; "(N)" N- terminal products "(A)" A- terminal products
- 2、We can design according to customer special requirements

AM06(3.2mm*1.6mm)_X7R (125℃)

Dielectric	X7R						
	≤25V	50V	100V	250V	500/630V	1000V	2000V
120pF	0.80±0.20(A)	0.80±0.20(A)	0.80±0.20(A)	0.80±0.20(A)	0.80±0.20(A)	1.25±0.20(N)	1.25±0.20(N)
150pF							
180pF							
220pF							
270pF							
330pF							
390pF							
470pF							
560pF							
680pF							
1.0nF							
1.2nF							
1.5nF	0.80±0.20(A)	0.80±0.20(A)	0.80±0.20(A)	0.80±0.20(A)	0.80±0.20(A) & 1.25±0.20(N)	1.25±0.20(N)	
1.8nF							
2.2nF							
2.7nF	0.80±0.20(A)	0.80±0.20(A)	0.80±0.20(A)	0.80±0.20(A)	1.25±0.20(N)	1.25±0.20(N)	
3.3nF							
3.9nF							
4.7nF							
5.6nF							
6.8nF	0.80±0.20(A)	0.80±0.20(A)	0.80±0.20(A)	1.25±0.20(N)			
10nF							
12nF	0.80±0.20(A)	0.80±0.20(A)	0.80±0.20(A)	1.25±0.20(N)	1.25±0.20(N)		
15nF							
18nF							
22nF							
27nF							
33nF							
39nF							
47nF	0.80±0.20(A)	0.80±0.20(A)	0.80±0.20(A)	1.25±0.20(N)			
56nF							
68nF							
100nF	0.80±0.20(A)	0.80±0.20(A)	1.25±0.20(N)				
220nF							
330nF	1.60±0.30(N)	1.60±0.30(N)					
470nF							
680nF							
1μF							
2.2μF							
3.3μF							
4.7μF							

AM06(3.2mm*1.6mm)_X7S(125℃)

Dielectric	X7S		
	≤25V	50V	100V
1μF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)
2.2μF			
3.3μF			
4.7μF			
6.8μF			
10μF			

Note:

- 1、Corresponding product design thickness , unit:mm ; "(N)" N- terminal products "(A)" A- terminal products
- 2、We can design according to customer special requirements

AM06(3.2mm*1.6mm)_X7T(125℃)

Dielectric	X7T			
	6.3V	10V	16V	25V
1μF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)
2.2μF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)
3.3μF				
4.7μF				
6.8μF	1.60±0.30(N)	1.60±0.30(N)		
10μF				
22μF				

AM10 (3.2mm*2.5mm)_X7R (125℃)

Dielectric	X7R					
	≤50V	100V	250V	500V/630V	1000V	2000V
470pF	1.25±0.20(N)	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)	1.25±0.20 (N)
560pF						
680pF						
1.0nF						
1.2nF						
1.5nF						
1.8nF						
2.2nF						
3.3nF						
4.7nF						
5.6nF	1.25±0.20(N)	1.25±0.20(N)	1.25±0.20(N)	1.25±0.20(N)	1.25±0.20(N)	1.60±0.30(N)
6.8nF	1.25±0.20(N)	1.25±0.20(N)	1.25±0.20(N)	1.25±0.20(N)	1.60±0.30(N)	
10nF	1.25±0.20(N)	1.25±0.20(N)	1.25±0.20(N)	1.25±0.20(N)	1.60±0.30(N)	2.00±0.30(N)
12nF	1.25±0.20(N)	1.25±0.20(N)	1.25±0.20(N)	1.25±0.20(N)	1.60±0.30(N)	
15nF						
18nF						
22nF						
27nF						
33nF						1.60±0.30(N)
39nF	1.25±0.20(N)	1.25±0.20(N)	1.25±0.20(N)	2.00±0.30(N)		
47nF						
56nF						
68nF						
100nF						
220nF					1.60±0.30(N)	1.60±0.30(N)
330nF	1.60±0.30(N)	1.60±0.30(N)				
470nF						
680nF						
1μF						
2.2μF	2.5±0.30(N)	2.50±0.30(N)				
3.3μF	2.50±0.30(N)					
4.7μF						

Note:

- 1、Corresponding product design thickness , unit:mm ; "(N)" N-terminal products "(A)" A-terminal products
- 2、We can design according to customer special requirements

AM10 (3.2mm*2.5mm) _X7S /X7T (125°C)

Dielectric	X7S			X7T		
	25V	50V	100V	25V	50V	100V
220nF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)
330nF						
470nF						
680nF						
1μF						
2.2μF	2.50±0.30(N)	2.50±0.30(N)	2.50±0.30(N)	2.50±0.30(N)	2.50±0.30(N)	
3.3μF						
4.7μF						
10μF						

Note: 1、Corresponding product design thickness , unit:mm ; "(N)" N- terminal products "(A)" A- terminal products
 2、We can design according to customer special requirements

AM08 (4.5mm*2.0mm) _X7R (125°C)

Dielectric	X7R				
	≤250V	500V/630V	1000V	2000V	3000V
120pF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)
150pF					
180pF					
220pF					
330pF					
390pF					
470pF					
680pF					
1nF					
1.2nF					
1.5nF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)
1.8nF					
2.2nF					
3.3nF					
4.7nF					
5.6nF					
6.8nF					
10nF					
12nF					
15nF					
18nF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)
22nF					
27nF					
33nF					
39nF					
47nF					
56nF					
68nF					
100nF					
220nF					
330nF	1.60±0.30(N)				
470nF					
680nF					

Note: 1、Corresponding product design thickness , unit:mm ; "(N)" N- terminal products "(A)" A- terminal products
 2、We can design according to customer special requirements

AM12 (4.5mm*3.2mm) _X7R (125°C)

Dielectric	X7R				
	≤250V	500V	1000V	2000V	3000V
Voltage					
120pF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)
150pF					
180pF					
220pF					
270pF					
330pF					
390pF					
470pF					
560pF					
680pF					
1nF					
1.2nF					
1.5nF					
1.8nF					

AM12 (4.5mm*3.2mm) _X7R (125°C)

Dielectric	X7R							
	≤250V	500V/630V	1000V	2000V	3000V			
Voltage								
2.2nF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)			
3.3nF								
4.7nF								
5.6nF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)			
6.8nF				1.60±0.30(N)	2.50±0.30(N)			
10nF				1.60±0.30(N)	2.50±0.30(N)			
12nF								
15nF								
18nF								
22nF								
27nF				1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)		
33nF								
39nF								
47nF								
56nF								
68nF								
100nF				1.60±0.30(N)	2.50±0.30(N)			
220nF				1.60±0.30(N)				
330nF	2.00±0.30(N)							
470nF								
680nF								
1μF								

Note: 1、Corresponding product design thickness , unit:mm ; "(N)" N- terminal products "(A)" A- terminal products
 2、 We can design according to customer special requirements

AM20 (5.7mm*5.0mm)_X7R (125°C)

Dielectric Voltage	X7R					
	100V	250V	500V/630V	1000V	2000V	3000V
1nF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)
1.2nF						
1.5nF						
1.8nF						
2.2nF						
3.3nF						
4.7nF						
5.6nF						
6.8nF						
10nF						
15nF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)
18nF						
22nF						
27nF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.80±0.30(N)	1.60±0.30(N)
33nF						
39nF						
47nF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	2.00±0.30(N)	1.60±0.30(N)
56nF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)		1.60±0.30(N)
100nF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)	2.00±0.30(N)		1.60±0.30(N)
220nF	1.60±0.30(N)	1.60±0.30(N)	1.60±0.30(N)			1.60±0.30(N)
330nF	1.60±0.30(N)					
470nF	1.60±0.30(N)	1.60±0.30(N)	2.00±0.30(N)			
1μF	1.60±0.30(N)	1.60±0.30(N)				
10μF	2.00±0.30(N)					

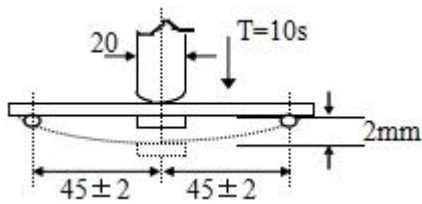
Note: 1、Corresponding product design thickness , unit:mm ; "(N)" N- terminal products "(A)" A- terminal products
 2、We can design according to customer special requirements

◆ Reliability Test Methods

NO.	Item	Technical Specification		Test Method and Remarks																																																																																																																																																						
		Class I	Class II	Capacitance	Measuring Frequency	Measuring Voltage																																																																																																																																																				
1	Capacitance	Class I	Should be within the specified tolerance.	≤1000pF	1MHz±10%	1.0±0.2Vrms																																																																																																																																																				
		Class II	Should be within the specified tolerance.	>1000 pF	1KHz±10%																																																																																																																																																					
2	(DF, tanδ) Dissipation Factor	Class I	<table border="1"> <thead> <tr> <th>DF</th> <th>Capacitance</th> </tr> </thead> <tbody> <tr> <td>≤0.1%</td> <td>C ≥30pF</td> </tr> <tr> <td>≤0.15%</td> <td>C <30pF</td> </tr> </tbody> </table>	DF	Capacitance	≤0.1%	C ≥30pF	≤0.15%	C <30pF	Test Frequency: 1MHz±10% Test Voltage: 1.0±0.2Vrms																																																																																																																																																
		DF	Capacitance																																																																																																																																																							
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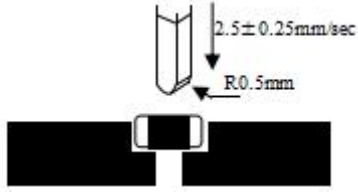
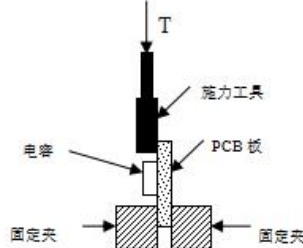
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4	Dielectric Withstanding Voltage	No breakdown or damage.	<table border="1"> <tr> <td>Ur<100V</td> <td> Measuring Voltage: I class:300% Ur II class :250% Ur Duration: 1~5s Charge/ Discharge Current: 50mA max. </td> </tr> <tr> <td>Ur=100V</td> <td>Force 200%Rated voltage for 5 second. Max..current should not exceed 50 mA.</td> </tr> <tr> <td>100V<Ur<500V</td> <td>Force 200%Rated voltage for 5 second. Max..current should not exceed 50 mA.</td> </tr> <tr> <td>500V≤Ur≤1000V</td> <td>Force 150%Rated voltage for 5 second. Max..current should not exceed 50 mA.</td> </tr> <tr> <td>1000V<Ur≤2000V</td> <td>Force 120%Rated voltage for 5 seconds. Max..current should not exceed 50 mA.</td> </tr> <tr> <td>Ur >2000V</td> <td>Force 120%Rated voltage for 5 seconds. Max..current should not exceed 10 mA.</td> </tr> </table>	Ur<100V	Measuring Voltage: I class:300% Ur II class :250% Ur Duration: 1~5s Charge/ Discharge Current: 50mA max.	Ur=100V	Force 200%Rated voltage for 5 second. Max..current should not exceed 50 mA.	100V<Ur<500V	Force 200%Rated voltage for 5 second. Max..current should not exceed 50 mA.	500V≤Ur≤1000V	Force 150%Rated voltage for 5 second. Max..current should not exceed 50 mA.	1000V<Ur≤2000V	Force 120%Rated voltage for 5 seconds. Max..current should not exceed 50 mA.	Ur >2000V	Force 120%Rated voltage for 5 seconds. Max..current should not exceed 10 mA.		
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5	Appearance	No visible damage		Visual inspection													
6	Physical Dimension	Within the specified dimensions		Use caliper													
7	DPA	No defects or abnormalities		Accounting to EIA-469													
8	High Temperature Exposure	<table border="1"> <tr> <td>Item</td> <td>Class I</td> <td>Class II</td> </tr> <tr> <td>ΔC/C</td> <td>≤±2.5% or ±0.25pF, whichever is larger.</td> <td>≤±12.5%</td> </tr> <tr> <td>DF</td> <td colspan="2">Same to initial value.</td> </tr> <tr> <td>IR</td> <td colspan="2">Same to initial value.</td> </tr> </table>	Item	Class I	Class II	ΔC/C	≤±2.5% or ±0.25pF, whichever is larger.	≤±12.5%	DF	Same to initial value.		IR	Same to initial value.			Temperature: 125℃ Voltage: without Duration: 1000h Recovery conditions: Room temperature Recovery Time: 24h (Class1) or 48h (Class2)	
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0805	$\geq 470\text{nF}$		0805	$< 470\text{nF}$																																								
1206	$\geq 1\mu\text{F}$		1206	$< 1\mu\text{F}$																																								
1210	$\geq 1\mu\text{F}$		1210	$< 1\mu\text{F}$																																								

NO.	Item	Technical Specification	Test Method and Remarks												
12	Solder ability	At least 95% of the terminal electrode is covered by new solder. Visual Appearance: No visible damage.	Preheating conditions: 80 to 120°C; 10~30s. Solder Temperature: 235±5°C Duration: 2±0.5s Solder Temperature: 245±5°C Duration: 3±0.3s												
13	Resistance to Soldering Heat	<table border="1"> <thead> <tr> <th>Item</th> <th>Class I</th> <th>Class II</th> </tr> </thead> <tbody> <tr> <td>ΔC/C</td> <td>≤±2.5% or ±0.25pF, whichever is larger.</td> <td>±15%</td> </tr> <tr> <td>DF</td> <td colspan="2">Same to initial value.</td> </tr> <tr> <td>IR</td> <td colspan="2">Same to initial value.</td> </tr> </tbody> </table> Appearance: No visible damage. At least 95% of the terminal electrode is covered by new solder.	Item	Class I	Class II	ΔC/C	≤±2.5% or ±0.25pF, whichever is larger.	±15%	DF	Same to initial value.		IR	Same to initial value.		Preheating conditions: 100 to 200°C; 60~120s. Solder Temperature: 265±5°C Duration: 10±1s Clean the capacitor with solvent and examine it with a 10X(min.) microscope. Recovery Time: 24±2h Recovery condition: Room temperature
Item	Class I	Class II													
ΔC/C	≤±2.5% or ±0.25pF, whichever is larger.	±15%													
DF	Same to initial value.														
IR	Same to initial value.														
14	ESD	<table border="1"> <thead> <tr> <th>Item</th> <th>Class I</th> <th>Class II</th> </tr> </thead> <tbody> <tr> <td>ΔC/C</td> <td colspan="2">Same to initial value.</td> </tr> <tr> <td>DF</td> <td colspan="2">Same to initial value.</td> </tr> <tr> <td>IR</td> <td colspan="2">Same to initial value.</td> </tr> </tbody> </table> Appearance: No visible damage	Item	Class I	Class II	ΔC/C	Same to initial value.		DF	Same to initial value.		IR	Same to initial value.		ESD electrostatic discharge test was carried out according to AEC-Q200-002 method: Discharge voltage: 2kV~22kV according to 2kV 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
Item	Class I	Class II													
ΔC/C	Same to initial value.														
DF	Same to initial value.														
IR	Same to initial value.														
15	Bending Strength	<table border="1"> <thead> <tr> <th>Item</th> <th>Class I</th> <th>Class II</th> </tr> </thead> <tbody> <tr> <td>ΔCC</td> <td>≤±5.0% or ±0.5pF, whichever is larger.</td> <td>-10%~+10%</td> </tr> <tr> <td>DF</td> <td colspan="2">Same to initial value.</td> </tr> <tr> <td>IR</td> <td colspan="2">Same to initial value.</td> </tr> </tbody> </table> Appearance: No visible damage	Item	Class I	Class II	ΔCC	≤±5.0% or ±0.5pF, whichever is larger.	-10%~+10%	DF	Same to initial value.		IR	Same to initial value.		Test Board: Al ₂ O ₃ or PCB Warp: ≥ 2mm Speed: 1mm/sec. Unit: mm Hold time: 60 sec The measurement should be made with the board in the bending position. 
Item	Class I	Class II													
ΔCC	≤±5.0% or ±0.5pF, whichever is larger.	-10%~+10%													
DF	Same to initial value.														
IR	Same to initial value.														

Note:

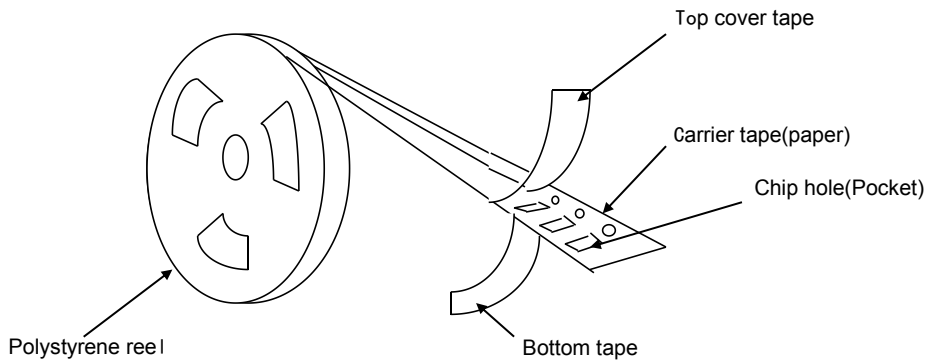
Preheating: (only for class2 capacitor) is a method to treat the capacitor before measurement. First, place the capacitor in the up-category temperature or other specified higher temperature environment for 1hour. Then recovery the capacitor at standard pressure conditions for 24±1hours.

NO.	Item	Technical Specification	Test Method and Remarks																							
16	Beam load (breaking strength)	<table border="1"> <thead> <tr> <th>Type</th> <th>Product thickness</th> <th>Min force</th> </tr> </thead> <tbody> <tr> <td rowspan="2">≤AM05</td> <td>> 0.5mm</td> <td>20N</td> </tr> <tr> <td>≤0.5mm</td> <td>8N</td> </tr> <tr> <td rowspan="2">≥AM06</td> <td>≥1.25mm</td> <td>54N</td> </tr> <tr> <td>< 1.25mm</td> <td>15N</td> </tr> </tbody> </table>	Type	Product thickness	Min force	≤AM05	> 0.5mm	20N	≤0.5mm	8N	≥AM06	≥1.25mm	54N	< 1.25mm	15N	<p>As shown in the picture The force on the porcelain body when the product breaks during the test must be greater than the minimum bearing force.</p> 										
Type	Product thickness	Min force																								
≤AM05	> 0.5mm	20N																								
	≤0.5mm	8N																								
≥AM06	≥1.25mm	54N																								
	< 1.25mm	15N																								
17	(SMD) Terminal strength	<table border="1"> <thead> <tr> <th>Item</th> <th>Class I</th> <th>Class II</th> </tr> </thead> <tbody> <tr> <td>ΔCC</td> <td>≤±0.5%</td> <td>-10%~+10%</td> </tr> <tr> <td>DF</td> <td colspan="2">Same to initial value.</td> </tr> <tr> <td>IR</td> <td colspan="2">Same to initial value.</td> </tr> <tr> <td colspan="3">Appearance: No visible damage</td> </tr> </tbody> </table>	Item	Class I	Class II	ΔCC	≤±0.5%	-10%~+10%	DF	Same to initial value.		IR	Same to initial value.		Appearance: No visible damage			<table border="1"> <thead> <tr> <th>specification</th> <th>Applied force T</th> </tr> </thead> <tbody> <tr> <td>≤AM02</td> <td>2N</td> </tr> <tr> <td>AM03</td> <td>10N</td> </tr> <tr> <td>>AM03</td> <td>17.7N</td> </tr> </tbody> </table> <p>As shown in the picture Slowly apply a T force to the porcelain body on the side of the capacitor and hold for 60+1 seconds.</p> 	specification	Applied force T	≤AM02	2N	AM03	10N	>AM03	17.7N
Item	Class I	Class II																								
ΔCC	≤±0.5%	-10%~+10%																								
DF	Same to initial value.																									
IR	Same to initial value.																									
Appearance: No visible damage																										
specification	Applied force T																									
≤AM02	2N																									
AM03	10N																									
>AM03	17.7N																									
18	Temperature characteristics	<table border="1"> <thead> <tr> <th>Item</th> <th>ΔCC</th> <th>Temperature range</th> </tr> </thead> <tbody> <tr> <td>C0G</td> <td>±30ppm</td> <td>-55°C~125°C</td> </tr> <tr> <td>X7R</td> <td>±15%</td> <td>-55°C~125°C</td> </tr> <tr> <td>X7S</td> <td>±22%</td> <td>-55°C~125°C</td> </tr> <tr> <td>X7T</td> <td>-33%~+22%</td> <td>-55°C~125°C</td> </tr> <tr> <td>X5R</td> <td>±15%</td> <td>-55°C~85°C</td> </tr> </tbody> </table>	Item	ΔCC	Temperature range	C0G	±30ppm	-55°C~125°C	X7R	±15%	-55°C~125°C	X7S	±22%	-55°C~125°C	X7T	-33%~+22%	-55°C~125°C	X5R	±15%	-55°C~85°C	<p>The electrical properties of the product are measured at three temperature points of lower limit temperature, 20°C and upper limit temperature</p>					
Item	ΔCC	Temperature range																								
C0G	±30ppm	-55°C~125°C																								
X7R	±15%	-55°C~125°C																								
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X5R	±15%	-55°C~85°C																								
19	Vibration	<table border="1"> <thead> <tr> <th>Item</th> <th>Class I</th> <th>Class II</th> </tr> </thead> <tbody> <tr> <td>ΔCC</td> <td>≤±2.5% or ±0.25pF, whichever is larger.</td> <td>-10%~+10%</td> </tr> <tr> <td>DF</td> <td colspan="2">Same to initial value.</td> </tr> <tr> <td>IR</td> <td colspan="2">Same to initial value.</td> </tr> <tr> <td colspan="3">Appearance: No visible damage</td> </tr> </tbody> </table>	Item	Class I	Class II	ΔCC	≤±2.5% or ±0.25pF, whichever is larger.	-10%~+10%	DF	Same to initial value.		IR	Same to initial value.		Appearance: No visible damage			<p>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.</p>								
Item	Class I	Class II																								
ΔCC	≤±2.5% or ±0.25pF, whichever is larger.	-10%~+10%																								
DF	Same to initial value.																									
IR	Same to initial value.																									
Appearance: No visible damage																										

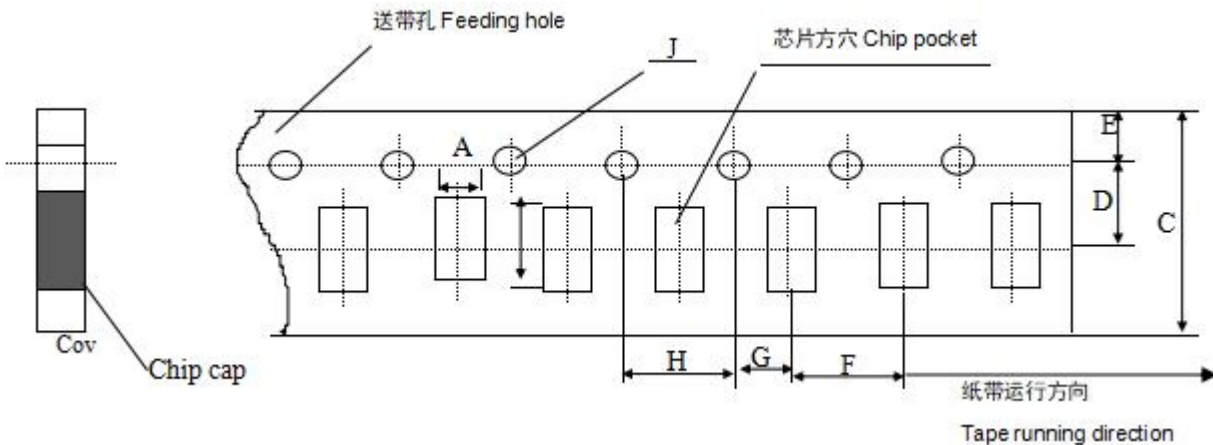
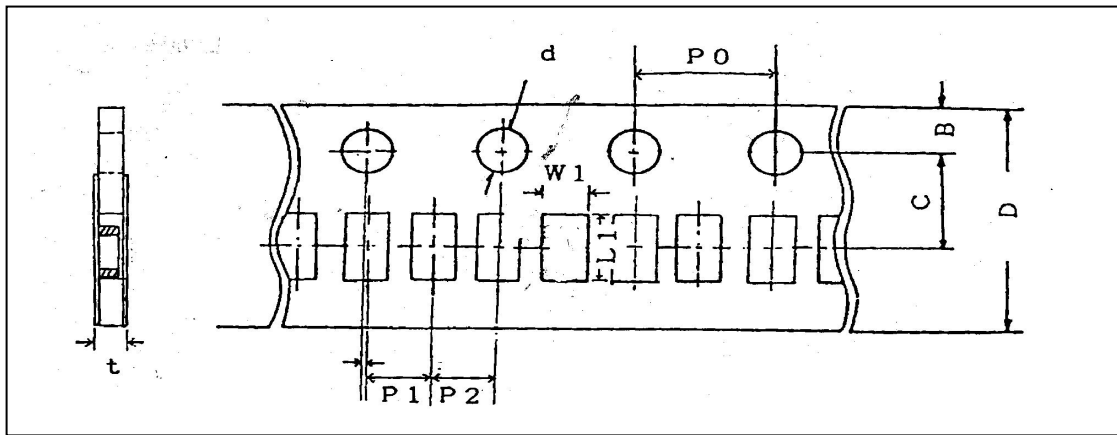
NO.	Item	Technical Specification	Test Method and Remarks															
20	Mechanical shock	<table border="1"> <thead> <tr> <th>Item</th> <th>Class I</th> <th>Class II</th> </tr> </thead> <tbody> <tr> <td>ΔCC</td> <td>$\leq \pm 2.5\%$ or $\pm 0.25\text{pF}$, whichever is larger.</td> <td>-10%~+10%</td> </tr> <tr> <td>DF</td> <td colspan="2">Same to initial value.</td> </tr> <tr> <td>IR</td> <td colspan="2">Same to initial value.</td> </tr> <tr> <td>Appearance:</td> <td colspan="2">No visible damage</td> </tr> </tbody> </table>	Item	Class I	Class II	ΔCC	$\leq \pm 2.5\%$ or $\pm 0.25\text{pF}$, whichever is larger.	-10%~+10%	DF	Same to initial value.		IR	Same to initial value.		Appearance:	No visible damage		Three impact tests (18 shocks in total) should be performed in each direction along the three perpendicular axes of the specimen. Pulse waveform: sinusoidal half-wave Duration: 0.5 ms Peak: 1500g Speed change: 4.7m/s
Item	Class I	Class II																
ΔCC	$\leq \pm 2.5\%$ or $\pm 0.25\text{pF}$, whichever is larger.	-10%~+10%																
DF	Same to initial value.																	
IR	Same to initial value.																	
Appearance:	No visible damage																	

◆ **Package**

* Paper Taping

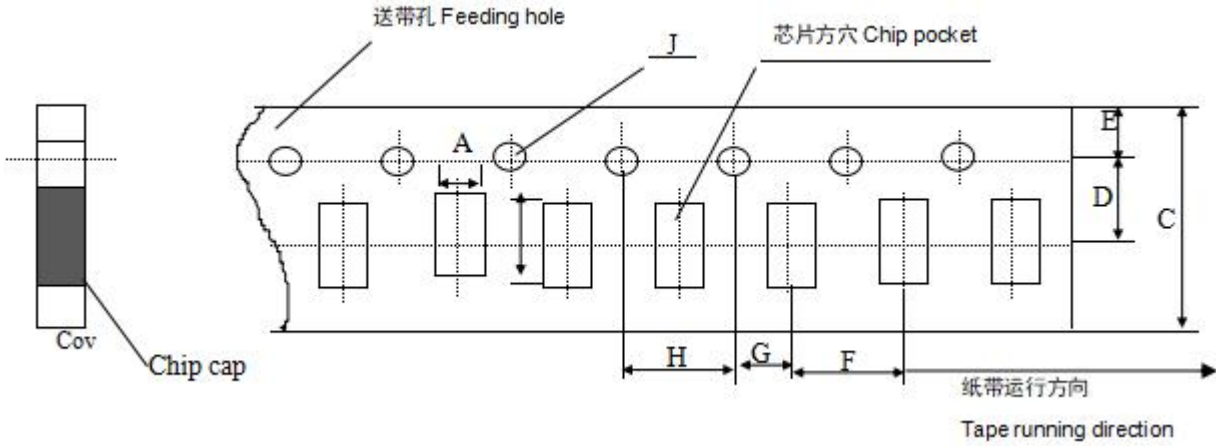


*Dimensions of paper taping for AM01、AM02 type



代号 Code	W1	L1	D	C	B	P1	P2	P0	d	t
AM01	0.37± 0.10	0.67± 0.10	8.00± 0.10	3.50± 0.05	1.75± 0.10	2.00± 0.05	2.00± 0.05	4.00± 0.10	1.50 -0/+0.10	0.80 Below
AM02	0.65± 0.10	1.15± 0.10	8.00± 0.10	3.50± 0.05	1.75± 0.10	2.00± 0.05	2.00± 0.05	4.00± 0.10	1.50 -0/+0.10	0.80 Below

Dimensions of paper taping for AM03, AM05, AM06 types.

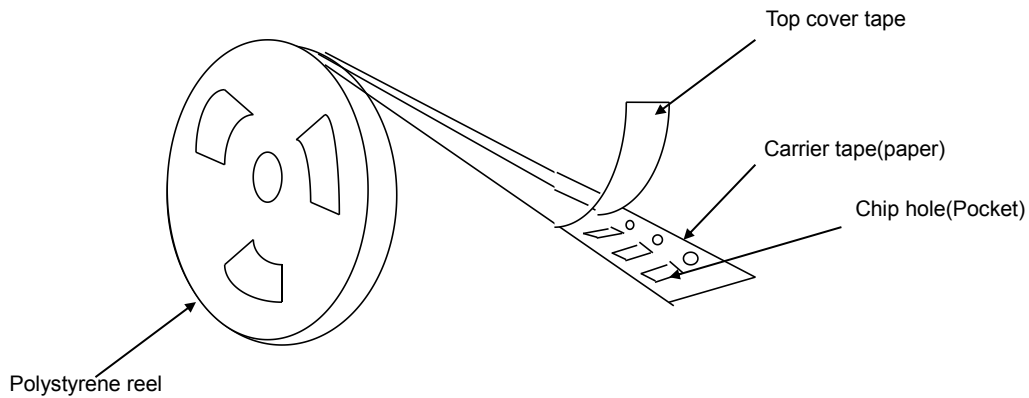


代号Code 纸带规格 paper size	A	B	C	D*	E	F	G*	H	J	T
AM03	1.10 ±0.10	1.90 ±0.10	8.00 ±0.10	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.10	4.00 ±0.10	1.50 -0/+0.10	1.10 Max
AM05	1.45 ±0.15	2.30 ±0.15	8.0 ±0.15	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.10	4.00 ±0.10	1.50 -0/+0.10	1.10 Max
AM06	1.80 ±0.20	3.40 ±0.20	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	1.10 Max

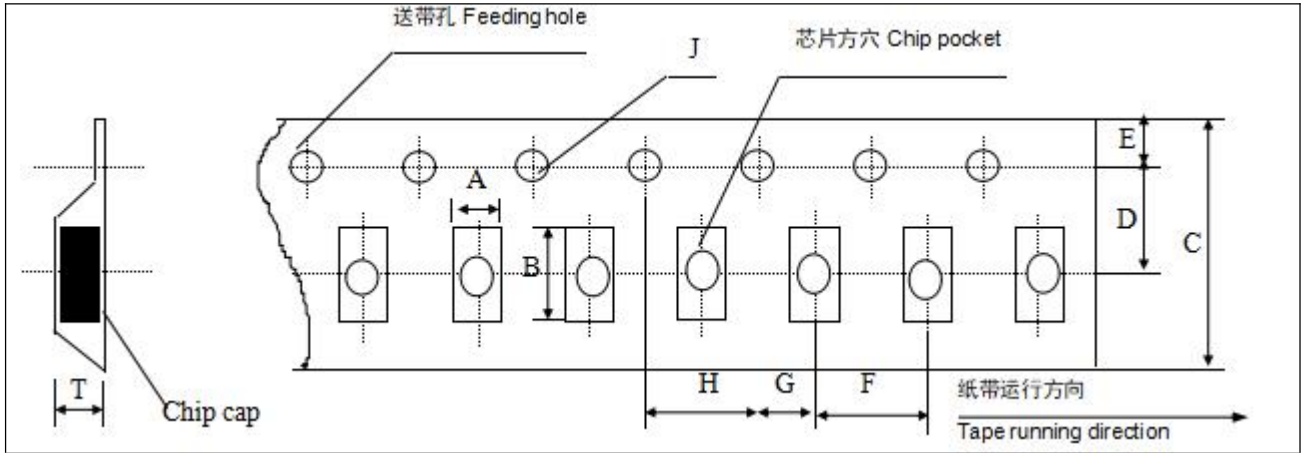
注意：*表示此处对尺寸的要求非常精确。

Note: The place with "*" means where needs exactly dimensions.

* Embossed taping



* Dimensions of embossed taping for AM05~AM20 type

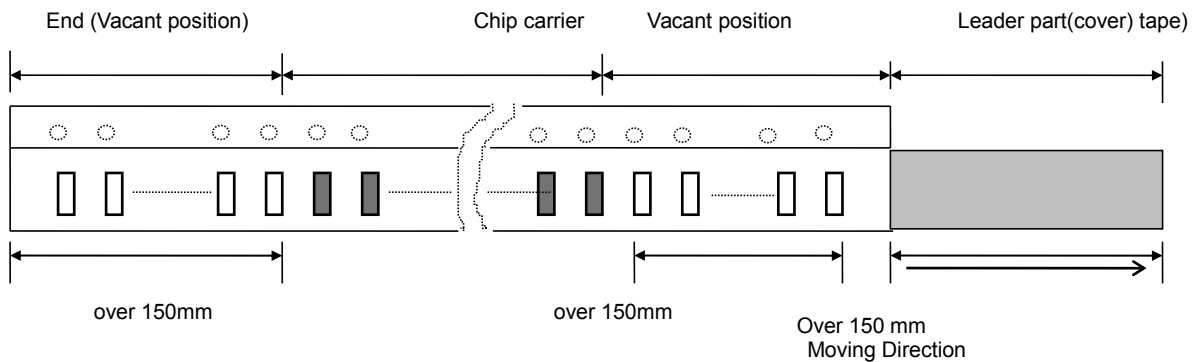


Unit: mm

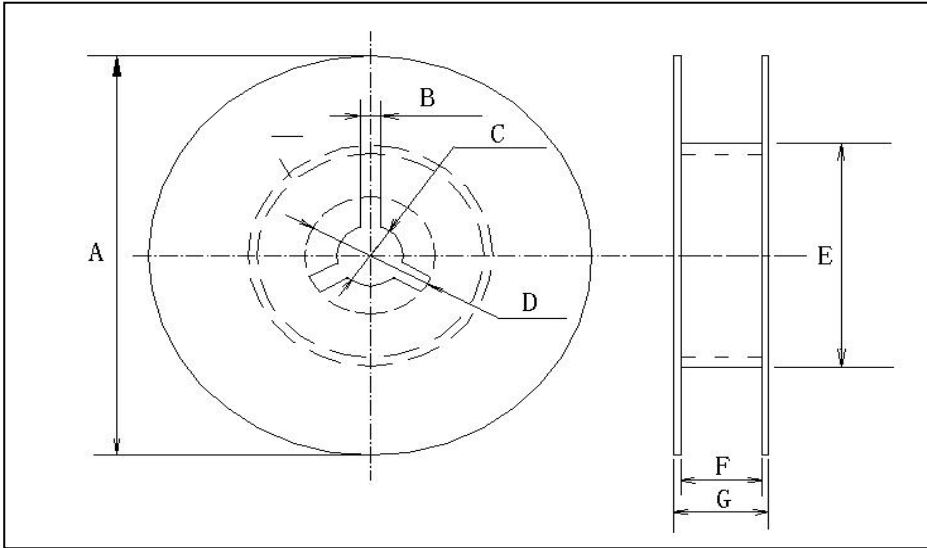
Code Tape size	A	B	C	D*	E	F	G*	H	J	T
AM05	1.55 ± 0.20	2.35 ± 0.20	8.00 ± 0.20	3.50 ±0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.10	1.50 -0/+0.10	1.50 Max
AM06	1.95 ± 0.20	3.60 ± 0.20	8.00 ± 0.20	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.1	1.50 -0/+0.10	1.85 Max
AM10	2.70 ± 0.10	3.42 ± 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	6.2 ± 0.1	6.7 ± 0.1	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	2.4 ± 0.10

Note: The place with “*” means where needs exactly dimensions.

* Structure of leader part and end part of the carrier paper



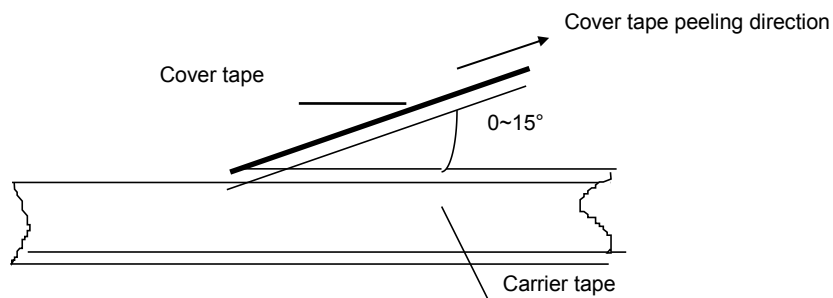
* Reel dimensions (unit: mm)



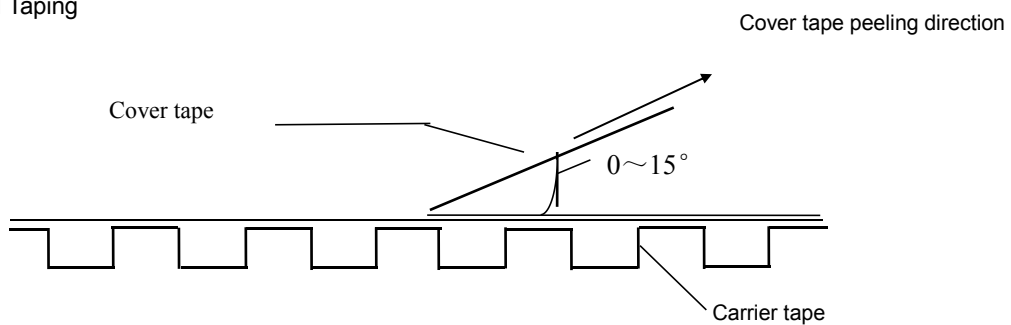
Reel model	A	B	C	D	E	F	G
7'REEL	$\phi 178 \pm 2.0$	3.0	$\phi 13 \pm 0.5$	$\phi 21 \pm 0.8$	$\phi 50$ or more	10.0 ± 1.5	12max

* Taping specification: top tape peeling strength

* Paper Tapin



* Embossed Taping



Standard: $0.1N < \text{peeling strength} < 0.7N$

No paper dirty remains on the scotch when peeling, and sticks to top and bottom tape.

***Bulk Case Package**

unit:mm

Symbol	A	B	T	C	D	E
Dimension	6.80±0.10	8.80±1.00	12.00±0.10	15.00+0.10/-0	2.00+0/-0.10	4.70±0.10
Symbol	F	W	G	H	L	I
Dimension	31.50+0.20/-0	36.00+0/-0.20	19.00±0.35	7.00±0.35	110.00±0.70	5.00±0.35

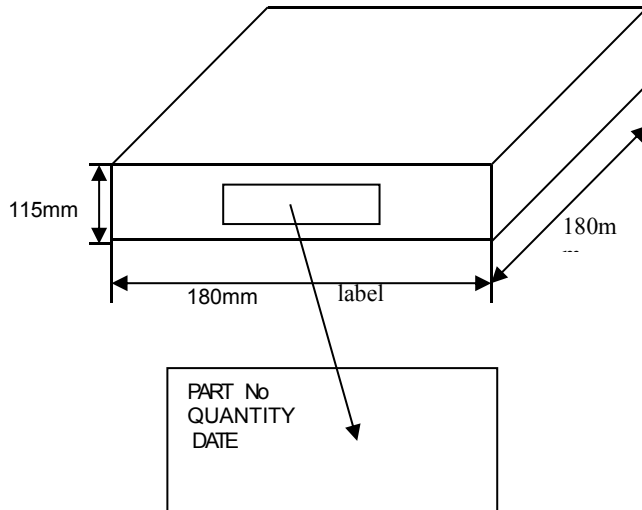
*** Packing Quantity**

(SIZE)	Package Style & Quantity unit: pcs			
	PT	ET	BC	BP)
AM01	15000	-----	20000	5000
AM02	10000	-----	20000	5000
AM03	4000	-----	15000	5000
AM05	4000	3000	10000	5000
AM06	4000	T≤1.35mm 3000 T>1.35mm 2000	5000	5000
AM10	-----	T≤1.80mm 2000 T>1.80mm 1000	-----	2000
AM08	-----	2000	-----	2000
AM12	-----	T≤1.85mm 1000 T>1.85mm 500	-----	2000
AM20	-----	500	-----	-----

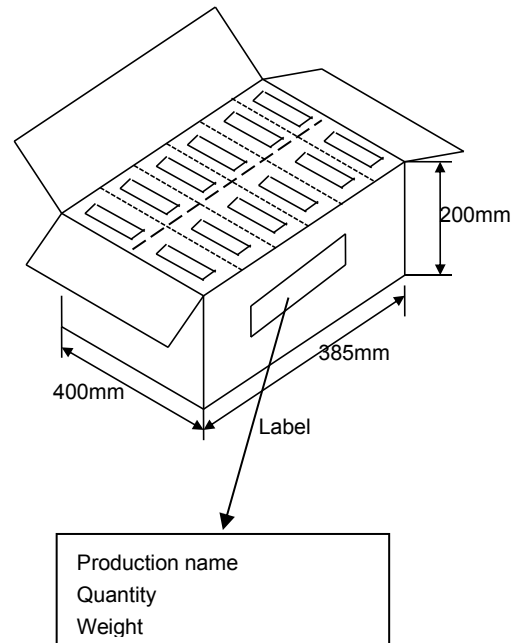
Note: We can choose packing style and quantity can be according to the customer's requirement.

*** Outer packing**

The first package
 Quantity: 10 reels



The second package
 Quantity: 6 cases


◆ Storage Methods

The guaranteed period for solder ability is 12 months (Under deliver package condition). Time calculation is based on the date of manufacture on the outer packaging. If it exceeds 1 year, the welding performance of the product should be confirmed before use

*** Storage conditions:**

Temperature 5~40℃ Relative Humidity 20~70%

* The product is prohibited from being stored in corrosive environments (such as sulfur, chlorine, acid), otherwise it may cause oxidation of the end electrode and affect weld ability

* To avoid the influence of moisture and dust, products should be stored on shelves

* During product storage, thermal shock, vibration, and light exposure should be avoided

* Products should be stored in sealed packaging

◆ Precautions Before Use

The Multi-layer Ceramic Capacitors (MLCC) may fail in a short circuit mode in an open circuit mode when subjected to severe conditions of electrical environment and / or mechanical stress beyond the specified "rating" and specified "conditions" in the specification, which will result in burn out, flaming or glowing in the worst case. Following "precautions for "safety" and Application Notes shall be taken in your major consideration. If you have a question about the precautions for handling, please contact our engineering section or factory.

*** Soldering Profile**

To avoid the crack problem by sudden temperature change, follow the temperature profile in the adjacent graph (refer to the graph in the enclosure page).

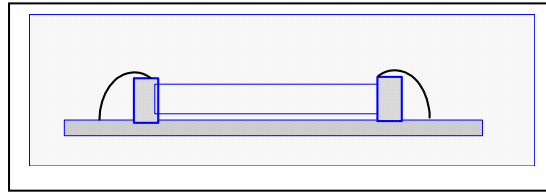
*** Manual Soldering**

Manual soldering can pose a great risk of creating thermal cracks in capacitors. The hot soldering iron tip comes into direct contact with the end terminations, and operator's careless may cause the tip of the soldering iron to come into direct contact with the ceramic body of the capacitor. Therefore the soldering iron must be handled carefully, and pay much attention to the selection of the soldering iron tip

and temperature contact of the tip.

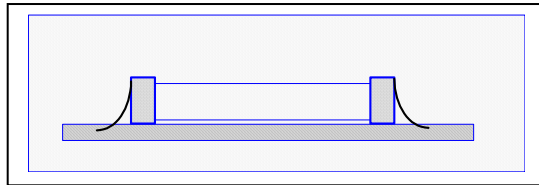
***Optimum Solder Amount for Reflow Soldering**

Too much solder



Cracks tend to occur due to large stress.

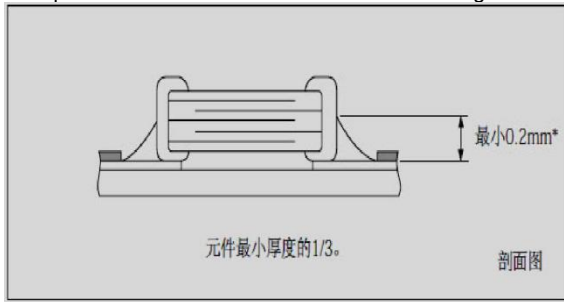
Not enough solder



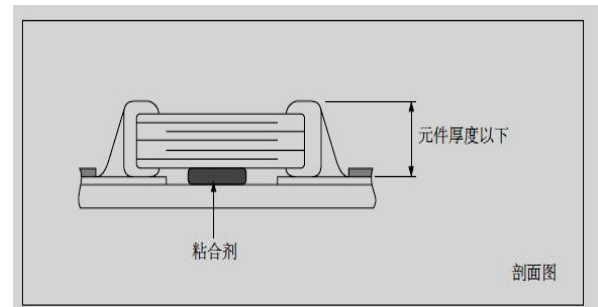
Weak holding force may cause badconnection between the capacitor and PCB.

*** Recommended Soldering amounts**

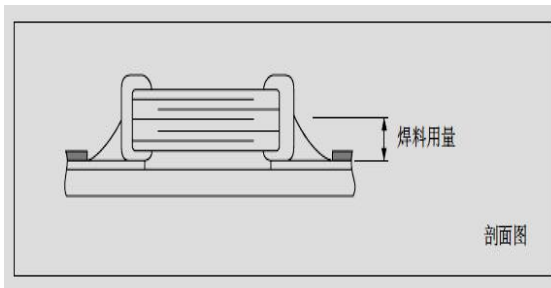
The optimal solder fillet amounts for wave soldering



The optimal solder fillet amounts for re-flow soldering



The optimal solder fillet amounts for reworking by using soldering iron



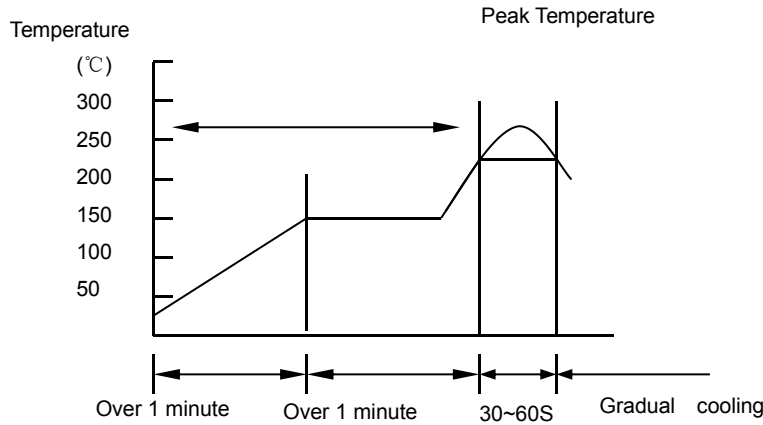
*** Recommended Soldering Method**

Type	Temperature characteristics	Welding method	Type	Temperature characteristics	Welding method
AM01	NPO	R	AM05	NPO	R
	X7R /X7S/X7T/X5R	R		X7R /X7S/X7T/X5R	R
AM02	NPO	R	AM06	NPO	R
	X7R /X7S/X7T/X5R	R		X7R /X7S/X7T/X5R	R
AM03	NPO	R	≥AM10	NPO	R
	X7R /X7S/X7T/X5R	R		X7R /X7S/X7T/X5R	R

Soldering method:
R—Reflow Soldering
W— Wave Soldering

◆ The temperature profile for soldering

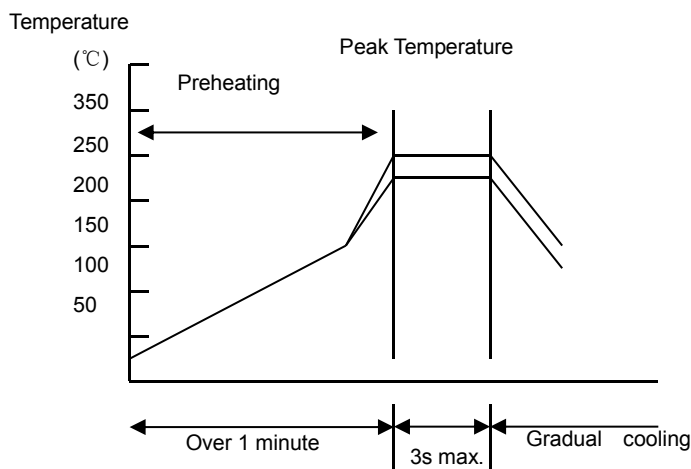
* Re-flow soldering



	Pb-Sn soldering	Lead-free soldering
Peak temperature	230°C~250°C	240°C~260°C

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

* Hand soldering



Conditions:

Preheating	Temperature of soldering iron head	Power of soldering iron	Diameter of soldering iron head	Soldering time	Solder paste amount	Restricted conditions
$\Delta \leq 130^\circ\text{C}$	Highest temperature: 350°C	20W at the highest	1mm recommended	3s at the longest	$\leq 1/2$ chip thickness	Please avoid the direct contact between soldering iron head and ceramic components

* The latest version prevails