Innovative Service Around the Globe YAGEO

DATA SHEET

SURFACE-MOUNT CERAMIC MULTILAYER CAPACITORS

High-Voltage

NP0/X7R

1 KV TO 3 KV

0.47 pF to 33 nF

RoHS compliant & Halogen Free

YAGEO

Product Specification – February 28, 2021 V.13

SCOPE

This specification describes High-Voltage NP0/X7R series chip capacitors with lead-free terminations.

APPLICATIONS

PCs, Hard disk, Game PCs
Power supplies
LCD panel
ADSL, Modem

FEATURES

Supplied in tape on reel
Nickel-barrier end termination
RoHS compliant
Halogen Free compliant

ORDERING INFORMATION - GLOBAL PART NUMBER, PHYCOMP CTC & 12NC

All part numbers are identified by the series, size, tolerance, TC material, packing style, voltage, process code, termination and capacitance value.

YAGEO BRAND ordering code

GLOBAL PART NUMBER (PREFERRED)

CC	XXXX	X	X	XXX	X	B	X	XXX
	(1)	(2)	(3)	(4)	(5)		(6)	(7)

(1) SIZE – INCH BASED (METRIC)

0805 (2012) / 1206 (3216) / 1210 (3225) / 1808 (4520) / 1812 (4532)

(2) TOLERANCE

C = ±0.25 pF
D = ±0.5 pF
G = ±2%
J = ±5%
K = ±10%
M = ±20%

(3) PACKING STYLE

R = Paper/PE taping reel; Reel 7 inch
K = Blister taping reel; Reel 7 inch
P = Paper/PE taping reel; Reel 13 inch
F = Blister taping reel; Reel 13 inch
C = Bulk case

(4) TC MATERIAL

NPO
X7R

(5) RATED VOLTAGE

C = 1 KV
D = 2 KV
S = 2.5KV
E = 3 KV

(6) PROCESS

N = NP0
B = Class 2 MLCC

(7) CAPACITANCE VALUE

2 significant digits+number of zeros
The 3rd digit signifies the multiplying factor, and letter R is decimal point
Example: 121 = 12×10^1 = 120 pF

CONSTRUCTION

The capacitor consists of a rectangular block of ceramic dielectric in which a number of interleaved metal electrodes are contained. This structure gives rise to a high capacitance per unit volume.

The inner electrodes are connected to the two end terminations and finally covered with a layer of plated tin (NiSn). The terminations are lead-free. A cross section of the structure is shown in Fig.1.

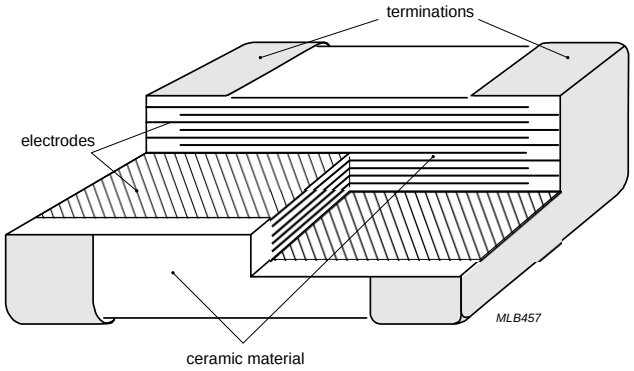

Fig. 1 Surface mounted multilayer ceramic capacitor construction

DIMENSION

Table 1 For outlines see fig. 2

TYPE	L_1 (mm)	W (mm)	T (MM)	L_2 / L_3 (mm)		L_4 (mm)
				min.	max.	min.
0805	2.0 ±0.10	1.25 ±0.10	0.60 ±0.10 0.85 ±0.10	0.25	0.75	0.70
	2.0 ±0.20	1.25 ±0.20	1.25 ±0.20			
1206	3.2 ±0.15	1.60 ±0.15	0.60 ±0.10	0.25	0.75	1.40
	3.2 ±0.30	1.60 ±0.20	0.85 ±0.10 1.25 ±0.20 1.60 ±0.20			
	3.2 ±0.30	1.60 ±0.30	1.60 ±0.30			
1210	3.2 ±0.20	2.50 ±0.20	0.85 ±0.10 1.25 ±0.20	0.25	0.75	1.40
	3.2 ±0.30	2.50 ±0.20	1.60 ±0.20 2.00 ±0.20			
1808	4.5 ±0.40	2.00 ±0.30	1.25 ±0.20 1.35 ±0.15 1.60 ±0.20 2.00 ±0.20	0.25	0.75	2.20
1812	4.5 ±0.40	3.20 ±0.20	0.85 ±0.10 1.25 ±0.20 1.35 ±0.15 1.60 ±0.20	0.25	0.75	2.20

OUTLINES

For dimension see Table 1

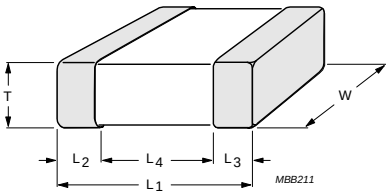

Fig. 2 Surface mounted multilayer ceramic capacitor dimension

CAPACITANCE RANGE & THICKNESS FOR NP0

Table 2 Sizes from 0805 to 1812

CAP.	0805	1206			1210		1808			1812		
	1 KV	1 KV	2 KV	3 KV	1 KV	2 KV	1 KV	2 KV	3 KV	1 KV	2 KV	3 KV
0.47 pF		0.85±0.1										
0.56 pF		0.85±0.1										
0.68 pF		0.85±0.1										
0.82 pF		0.85±0.1										
1.0 pF		0.85±0.1										
1.2 pF		0.85±0.1										
1.5 pF		0.85±0.1										
1.8 pF		0.85±0.1										
2.2 pF		0.85±0.1										
2.7 pF		0.85±0.1										
3.3 pF		0.85±0.1										
3.9 pF		0.85±0.1										
4.7 pF		0.85±0.1										
5.6 pF		0.85±0.1										
6.8 pF		0.85±0.1										
8.2 pF		0.85±0.1										
10 pF	0.85±0.1	0.85±0.1 1.25±0.2	1.25±0.2	1.25±0.2					1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
12 pF	0.85±0.1	1.25±0.2	1.25±0.2	1.25±0.2					1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
15 pF	0.85±0.1	1.25±0.2	1.25±0.2	1.25±0.2					1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
18 pF	0.85±0.1	1.25±0.2	1.25±0.2	1.25±0.2					1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
22 pF	0.85±0.1	1.25±0.2	1.25±0.2	1.25±0.2					1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
27 pF	0.85±0.1	1.25±0.2	1.25±0.2	1.25±0.2					1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
33 pF	0.85±0.1	1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
39 pF	0.85±0.1	1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
47 pF	0.85±0.1	1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
56 pF	1.25±0.2	1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
68 pF	1.25±0.2	1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
82 pF	1.25±0.2	1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
100 pF		1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2	1.6±0.2	1.25±0.2	1.25±0.2	1.25±0.2
120 pF		1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.25±0.2
150 pF		1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.25±0.2
180 pF		1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.25±0.2

NOTE

1. Values in shaded cells indicate thickness class in mm
2. Capacitance value of non E-12 series is on request

CAPACITANCE RANGE & THICKNESS FOR NP0

Table 3 Sizes from 0805 to 1812

CAP.	0805	1206			1210		1808			1812		
	1 KV	1 KV	2 KV	3 KV	1 KV	2 KV	1 KV	2 KV	3 KV	1 KV	2 KV	3 KV
220 pF		1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.25±0.2
270 pF		1.25±0.2			1.25±0.2		1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	
330 pF		1.25±0.2			1.25±0.2		1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	
390 pF		1.25±0.2			1.25±0.2		1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	
470 pF		1.25±0.2			1.25±0.2		1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	
560 pF		1.25±0.2			1.25±0.2		1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	
680 pF		1.25±0.2			1.25±0.2		1.25±0.2			1.25±0.2	1.25±0.2	
820 pF		1.25±0.2			1.25±0.2					1.25±0.2	1.25±0.2	
1.0 nF		1.25±0.2			1.25±0.2					1.25±0.2	1.25±0.2	
1.2 nF										1.25±0.2		
1.5 nF										1.25±0.2		

NOTE

3. Values in shaded cells indicate thickness class in mm
4. Capacitance value of non E-12 series is on request

CAPACITANCE RANGE & THICKNESS FOR X7R

Table 4 Sizes from 0805 to 1812

CAP.	0805	1206			1210		1808			1812		
	1 KV	1 KV	2 KV	2.5KV	1 KV	2 KV	1 KV	2 KV	3 KV	1 KV	2 KV	3 KV
100 pF												
150 pF	0.85±0.1								1.6±0.2			
220 pF	0.85±0.1	1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2			1.6±0.2			
330 pF	0.85±0.1	1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2		1.35±0.15	1.6±0.2			
470 pF	0.85±0.1	1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.35±0.15	1.35±0.15	1.6±0.2			
680 pF	0.85±0.1	1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.35±0.15	1.35±0.15	1.6±0.2			
1.0 nF	0.85±0.1	1.25±0.2	1.25±0.2	1.6±0.2	1.25±0.2	1.25±0.2	1.35±0.15	1.35±0.15	2.0±0.2	1.35±0.15	1.35±0.15	1.6±0.2
1.5 nF	1.25±0.2	1.25±0.2	1.25±0.2		1.25±0.2	1.25±0.2	1.35±0.15	1.35±0.15	2.0±0.2	1.35±0.15	1.35±0.15	
2.2 nF	1.25±0.2	1.25±0.2			1.25±0.2	1.60±0.2	1.35±0.15	1.6±0.2		1.35±0.15	1.35±0.15	
3.3 nF	1.25±0.2	1.25±0.2			1.25±0.2		1.35±0.15			1.35±0.15	1.35±0.15	
4.7 nF		1.25±0.2			1.25±0.2		1.35±0.15			1.35±0.15	1.35±0.15	
6.8 nF		1.25±0.2			1.25±0.2		1.6±0.2			1.35±0.15		
10 nF		1.25±0.2			1.25±0.2		1.6±0.2			1.35±0.15		
15 nF					1.25±0.2					1.35±0.15		
22 nF					1.6±0.2					1.35±0.15		
33 nF										1.6±0.2		
47 nF												
68 nF												
100 nF												

NOTE

1. Values in shaded cells indicate thickness class in mm
2. Capacitance value of non E-6 series is on request
3. For products with 5% tolerance, please contact local sales force before ordering

THICKNESS CLASSES AND PACKING QUANTITY

Table 5

SIZE CODE	THICKNESS CLASSIFICATION	TAPE WIDTH QUANTITY PER REEL	Ø180 MM / 7 INCH		Ø330 MM / 13 INCH		QUANTITY PER BULK CASE
			Paper	Blister	Paper	Blister	
0201	0.3 ±0.03 mm	8 mm	15,000	---	50,000	---	---
0402	0.5 ±0.05 mm	8 mm	10,000	---	50,000	---	50,000
0603	0.8 ±0.1 mm	8 mm	4,000	---	15,000	---	15,000
0805	0.6 ±0.1 mm	8 mm	4,000	---	20,000	---	10,000
	0.8 / 0.85 ±0.1 mm	8 mm	4,000	---	15,000	---	8,000
	1.00 ±0.1 mm	8 mm	---	3,000	---	10,000	---
	1.25 ±0.2 mm	8 mm	---	3,000	---	10,000	5,000
1206	0.6 ±0.1 mm	8 mm	4,000	---	20,000	---	---
	0.8 / 0.85 ±0.1 mm	8 mm	4,000	---	15,000	---	---
	1.00 / 1.15 ±0.1 mm	8 mm	---	3,000	---	10,000	---
	1.25 ±0.2 mm	8 mm	---	3,000	---	10,000	---
	1.6 ±0.15 mm	8 mm	---	2,500	---	10,000	---
	1.6 ±0.2 mm	8 mm	---	2,000	---	8,000	---
1210	0.6 / 0.7 ±0.1 mm	8 mm	---	4,000	---	15,000	---
	0.85 ±0.1 mm	8 mm	---	4,000	---	10,000	---
	1.15 ±0.1 mm	8 mm	---	3,000	---	10,000	---
	1.15 ±0.15 mm	8 mm	---	3,000	---	10,000	---
	1.25 ±0.2 mm	8 mm	---	3,000	---	---	---
	1.5 ±0.1 mm	8 mm	---	2,000	---	---	---
	1.6 / 1.9 ±0.2 mm	8 mm	---	2,000	---	---	---
	2.0 ±0.2 mm	8 mm	---	2,000 1,000	---	---	---
	2.5 ±0.2 mm	8 mm	---	1,000 500	---	---	---
1808	1.15 ±0.15 mm	12 mm	---	3,000	---	---	---
	1.25 ±0.2 mm	12 mm	---	3,000	---	---	---
	1.35 ±0.15 mm	12 mm	---	2,000	---	---	---
	1.5 ±0.1 mm	12 mm	---	2,000	---	---	---
	1.6 ±0.2 mm	12 mm	---	2,000	---	---	---
	2.0 ±0.2 mm	12 mm	---	2,000	---	---	---
1812	0.6 / 0.85 ±0.1 mm	12 mm	---	2,000	---	---	---
	1.15 ±0.1 mm	12 mm	---	1,000	---	---	---
	1.15 ±0.15 mm	12 mm	---	1,000	---	---	---
	1.25 ±0.2 mm	12 mm	---	1,000	---	---	---
	1.35 ±0.15 mm	12 mm	---	1,000	---	---	---
	1.5 ±0.1 mm	12 mm	---	1,000	---	---	---
	1.6 ±0.2 mm	12 mm	---	1,000	---	---	---
	2.0 ±0.2 mm	12 mm	---	1,000	---	---	---
	2.5 ±0.2 mm	12 mm	---	500	---	---	---

ELECTRICAL CHARACTERISTICS

NP0/X7R DIELECTRIC CAPACITORS; NISN TERMINATIONS

Unless otherwise stated all electrical values apply at an ambient temperature of 20±1 °C, an atmospheric pressure of 86 to 106 kPa, and a relative humidity of 63 to 67%.

Table 6

DESCRIPTION		VALUE
Capacitance range		10 pF to 33 nF
Capacitance tolerance		
NP0	C < 10 pF	±0.25 pF, ±0.5 pF
	C ≥ 10 pF	±2%, ±5%
X7R		±5% [1], ±10%
Dissipation factor (D.F.)		
NP0	C < 30 pF	≤ 1 / (400 + 20C)
	C ≥ 30 pF	≤ 0.1 %
X7R		≤ 2.5 %
Insulation resistance after 1 minute at U_r (DC)		R_{ins} ≥ 10 GΩ or R_{ins} × C ≥ 500 seconds whichever is less
Maximum capacitance change as a function of temperature (temperature characteristic/coefficient):		
NP0		±30 ppm/°C
X7R		±15%
Operating temperature range:		
NP0/X7R		–55 °C to +125 °C

NOTE

1. ±5% tolerance of capacitance value isn't available for X7R full product range, please contact local sales force before ordering

HIGH-VOLTAGE NP0

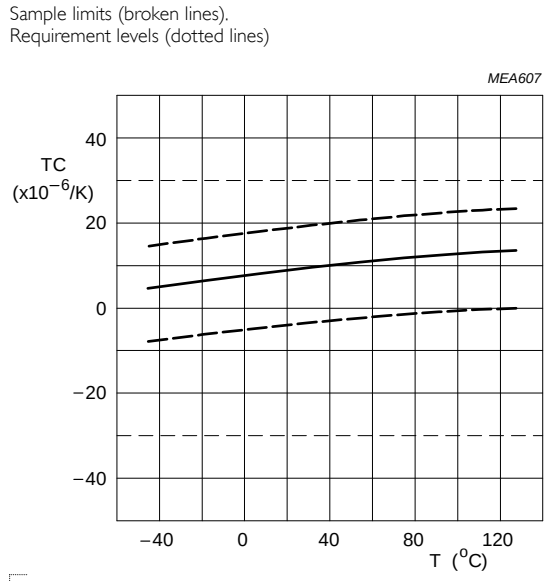

Fig. 3 Typical temperature coefficient as a function of temperature

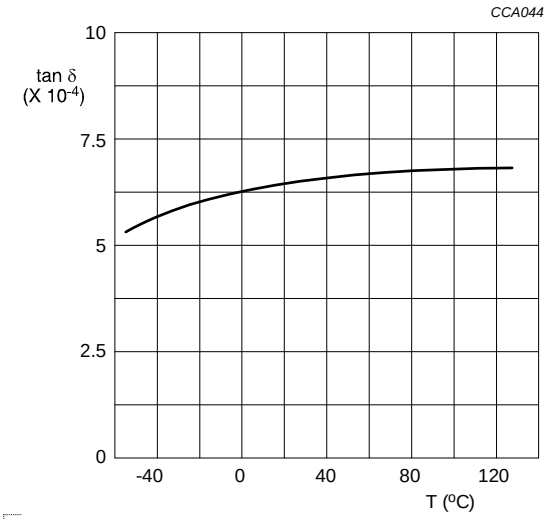

Fig. 4 Typical tan δ as a function of temperature

HIGH-VOLTAGE X7R

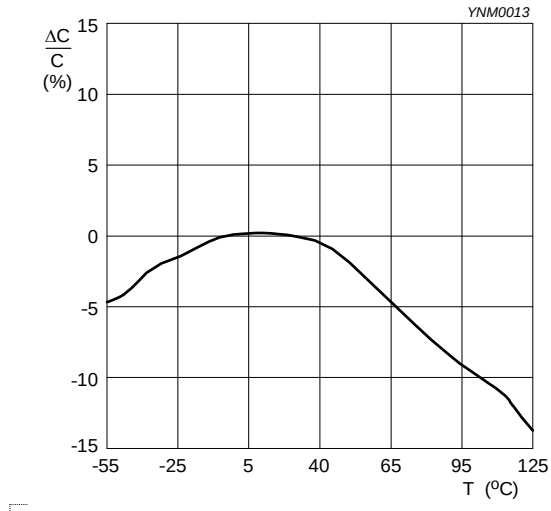

Fig. 5 Typical capacitance change as a function of temperature

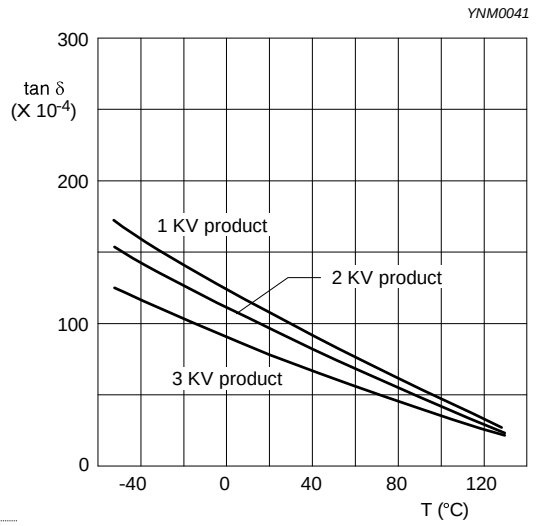

Fig. 6 Typical tan δ as a function of temperature

SOLDERING RECOMMENDATION

Table 7

SOLDERING METHOD	SIZE 0402	0603	0805	1206	≥ 1210
Reflow	Reflow only	≥ 1.0 µF	≥ 2.2 µF	≥ 4.7 µF	Reflow only
Reflow/Wave	---	< 1.0 µF	< 2.2 µF	< 4.7 µF	---

TESTS AND REQUIREMENTS

Table 8 Test procedures and requirements

TEST	TEST METHOD		PROCEDURE	REQUIREMENTS
Mounting	IEC 60384-21/22	4.3	The capacitors may be mounted on printed-circuit boards or ceramic substrates	No visible damage
Visual Inspection and Dimension Check		4.4	Any applicable method using × 10 magnification	In accordance with specification
Capacitance		4.5.1	Class 1: f = 1 MHz for C ≤ 1 nF, measuring at voltage 1 V_{rms} at 20 °C f = 1 KHz for C > 1 nF, measuring at voltage 1 V_{rms} at 20 °C Class 2: f = 1 KHz for C ≤ 10 µF, measuring at voltage 1 V_{rms} at 20 °C	Within specified tolerance
Dissipation Factor (D.F.)		4.5.2	Class 1: f = 1 MHz for C ≤ 1 nF , measuring at voltage 1 V_{rms} at 20 °C f = 1 KHz for C > 1 nF, measuring at voltage 1 V_{rms} at 20 °C Class 2: f = 1 KHz for C ≤ 10 µF, measuring at voltage 1 V_{rms} at 20 °C	In accordance with specification
Insulation Resistance		4.5.3	U_r ≤ 500 V: At Ur for 1 minute U_r > 500 V: At 500 V for 1 minute	In accordance with specification

TEST	TEST METHOD	PROCEDURE	REQUIREMENTS
Temperature Coefficient	4.6	Capacitance shall be measured by the steps shown in the following table. The capacitance change should be measured after 5 min at each specified temperature stage. Step / Temperature(℃) a / 25±2 b / Lower temperature±3℃ c / 25±2 d / Upper Temperature±2℃ e / 25±2 (1) Class I Temperature Coefficient shall be calculated from the formula as below $\text{Temp, Coefficient} = \frac{C2 - C1}{C1 \times \Delta T} \times 10^6$ [ppm/℃] C1: Capacitance at step c C2: Capacitance at 125℃ ΔT: 100℃(=125℃-25℃) (2) Class II Capacitance Change shall be calculated from the formula as below $\Delta C = \frac{C2 - C1}{C1} \times 100\%$ C1: Capacitance at step c C2: Capacitance at step b or d	<General purpose series> Class1: Δ C/C: ±30ppm Class2: X7R: Δ C/C: ±15% Y5V: Δ C/C: 22~-82% <High Capacitance series> Class2: X7R/X5R: Δ C/C: ±15% Y5V: Δ C/C: 22~-82%
Adhesion	IEC 60384-21/22 4.7	A force applied for 10 seconds to the line joining the terminations and in a plane parallel to the substrate	Force size ≥ 0603: 5N
Bending Strength	4.8	Mounting in accordance with IEC 60384-22 paragraph 4.3 Conditions: bending 1 mm at a rate of 1 mm/s, radius jig 5 mm	No visible damage ΔC/C Class 1: NP0: within ±1% or 0.5 pF, whichever is greater Class2: X7R: ±10%

TEST	TEST METHOD	PROCEDURE	REQUIREMENTS
Resistance to Soldering Heat	4.9	Precondition: 150 +0/–10 °C for 1 hour, then keep for 24 ±1 hours at room temperature Preheating: for size ≤ 1206: 120 °C to 150 °C for 1 minute Preheating: for size >1206: 100 °C to 120 °C for 1 minute and 170 °C to 200 °C for 1 minute Solder bath temperature: 260 ±5 °C Dipping time: 10 ±0.5 seconds Recovery time: 24 ±2 hours	Dissolution of the end face plating shall not exceed 25% of the length of the edge concerned ΔC/C Class 1: NP0: within ±0.5% or 0.5 pF, whichever is greater Class2: X7R: ±10% D.F. within initial specified value R_{ins} within initial specified value
Solderability	4.10	Preheated to a temperature of 80 °C to 140 °C and maintained for 30 seconds to 60 seconds. 1. Temperature: 235±5°C / Dipping time: 2 ±0.5 s 2. Temperature: 245±5°C / Dipping time: 3 ±0.5 s (lead free)Depth of immersion: 10mm	The solder should cover over 95% of the critical area of each termination
Rapid Change of Temperature	IEC 60384-21/22 4.11	Preconditioning; 150 +0/–10 °C for 1 hour, then keep for 24 ±1 hours at room temperature 5 cycles with following detail: 30 minutes at lower category temperature 30 minutes at upper category temperature Recovery time 24 ±2 hours	No visual damage ΔC/C Class 1: NP0: within ±1% or 1 pF, whichever is greater Class2: X7R: ±15% D.F. meet initial specified value R_{ins} meet initial specified value
Damp Heat	4.13	1. Preconditioning, class 2 only: 150 +0/-10 °C /1 hour, then keep for 24 ±1 hour at room temp 2. Initial measure: Spec: refer to initial spec C, D, IR 3. Damp heat test: 500 ±12 hours at 40 ±2 °C; 90 to 95% R.H. 4. Recovery: Class 1: 6 to 24 hours Class 2: 24 ±2 hours 5. Final measure: C, D, IR P.S. If the capacitance value is less than the minimum value permitted, then after the other measurements have been made the capacitor shall be preconditioned according to *"IEC 60384 4.1"* and then the requirement shall be met.	No visual damage after recovery ΔC/C Class 1: NP0: within ±2% or 1 pF, whichever is greater Class2: X7R: ±15% D.F. Class 1: NP0: ≤ 2 x specified value Class2: X7R: ≥ 25 V: ≤ 5% R_{ins} Class 1: NP0: ≥ 2,500 MΩ or $R_{ins} \times C_r \geq 25s$ whichever is less Class2: X7R: ≥ 500 MΩ or $R_{ins} \times C_r \geq 25s$ whichever is less

TEST	TEST METHOD	PROCEDURE	REQUIREMENTS
Endurance	IEC 60384-21/22 4.14	1. Preconditioning, class 2 only: 150 +0/-10 °C /1 hour, then keep for 24 ±1 hour at room temp 2. Initial measure: Spec: refer to initial spec C, D, IR Endurance test: Temperature: NP0/X7R: 125 °C Specified stress voltage applied for 1,000 hours. High-Voltage series follows the stress conditions below:	No visual damage ΔC/C Class1: NP0: within ±2% or 1 pF, whichever is greater Class2: X7R: ±15% D.F. Class1: NP0: ≤ 2 x specified value Class2: X7R: ≥ 25 V: ≤ 5% R_{ins} Class1: NP0: ≥ 4,000 MΩ or $R_{ins} \times C_r \geq 40s$ whichever is less Class2: X7R: ≥ 1,000 MΩ or $R_{ins} \times C_r \geq 50s$ whichever is less

Voltage	NPO	X7R
≤ 100V	2.0 x Ur	2.0 x Ur
200/250V	1.5 x Ur	1.5 x Ur
500/630V	1.3 x Ur	1.2 x Ur
≥ 1KV	1.2 x Ur	1.1 x Ur

3. Recovery time: 24 ±2 hours
4. Final measure: C, D, IR

P.S. If the capacitance value is less than the minimum value permitted, then after the other measurements have been made the capacitor shall be preconditioned according to *"IEC 60384 4.1"* and then the requirement shall be met.

Voltage Proof		Specified stress voltage applied for 1~5 seconds Ur ≤ 100 V: series applied 2.5 Ur 100 V < Ur ≤ 200 V series applied (1.5 Ur + 100) 200 V < Ur ≤ 500 V series applied (1.3 Ur + 100) Ur > 500 V: 1.3 Ur Ur ≥ 1KV: 1.2 Ur Charge/Discharge current less than 50mA	No breakdown or flashover

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 13	Feb. 28, 2021	-	- Add NPO/1206/0.47pF to 10pF with 0.85 mm
Version 12	Dec. 01, 2020	-	- Add X7R/0805/1.5nF to 3.3nF/1KV. NPO/0805/ 56pF to 82pF/1KV
Version 11	Jul. 13, 2018	-	- Add NPO/1206/10pF to 47pF/3KV
Version 10	Mar. 7, 2017	-	- 0805 L4 spec updated
Version 9	Jan. 16, 2017	-	- Product range updated
Version 8	Oct. 12, 2015	-	- Product range updated
Version 7	May 21, 2014	-	- Product range updated
Version 6	Jun. 17, 2012	-	- Product range updated
Version 5	Sep 25, 2012	-	- Product range updated
Version 4	Aug 08, 2011	-	- Product range updated
Version 3	Jan 19, 2011	-	- Dimension updated - Add NP0 0805 1KV
Version 2	Feb 02, 2010	-	- Change to dual brand datasheet that describe High-Voltage NP0/X7R series with RoHS compliant - Replace the high voltage part of pdf files: UP-NP0X7R_HV_1K-to-4KV_1 and UY-NP0X7R_HV_1K-to-4KV_1 - Description of "Halogen Free compliant" added - Product range updated - Define global part number - Test method and procedure updated
Version 1	Sep 30, 2005	-	- Thickness revised
Version 0	Sep 12, 2005	-	- New

LEGAL DISCLAIMER

YAGEO, its distributors and agents (collectively, "YAGEO"), hereby disclaims any and all liabilities for any errors, inaccuracies or incompleteness contained in any product related information, including but not limited to product specifications, datasheets, pictures and/or graphics. YAGEO may make changes, modifications and/or improvements to product related information at any time and without notice.

YAGEO makes no representation, warranty, and/or guarantee about the fitness of its products for any particular purpose or the continuing production of any of its products. To the maximum extent permitted by law, YAGEO disclaims (i) any and all liability arising out of the application or use of any YAGEO product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for a particular purpose, non -infringement and merchantability.

YAGEO products are designed for general purpose applications under normal operation and usage conditions. Please contact YAGEO for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property: Aerospace equipment (artificial satellite, rocket, etc.), Atomic energy-related equipment, Aviation equipment, Disaster prevention equipment, crime prevention equipment, Electric heating apparatus, burning equipment, Highly public information network equipment, data-processing equipment , Medical devices, Military equipment, Power generation control equipment, Safety equipment, Traffic signal equipment, Transportation equipment and Undersea equipment, or for any other application or use in which the failure of YAGEO products could result in personal injury or death, or serious property damage. Particularly **YAGEO Corporation and its affiliates do not recommend the use of commercial or automotive grade products for high reliability applications or manned space flight.**

Information provided here is intended to indicate product specifications only. YAGEO reserves all the rights for revising this content without further notification, as long as products are unchanged. Any product change will be announced by PCN.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

YAGEO:

CC1812KKX7R9BB334 CC1812KKX7R9BB394 CC1812KKX7R9BB474 CC1812JKNPOEBN470
CC1812JKNPOEBN680 CC1812KKX7RDBB102 CC1812KKX7RCBB102 CC1812KKX7RDBB332
CC1812JKNPOCBN471 CC1812JKNPOCBN681 CC1812JKNPOCBN821 CC1812JKNPOEBN101
CC1812JKNPOEBN220 CC1812JKNPOEBN221 CC1812JKNPOEBN330 CC1812KKX7RCBB103
CC1812KKX7R9BB224 CC1812KKX7RDBB472 CC1812KKX7R9BB274 CC1812KKX5R7BB226
CC1812KKX7RCBB333 CC1812JKNPOEBN100 CC1812KKX7RBBB104 CC1812JKNPO9BN103
CC1812JKNPO9BN153 CC1812JKNPO9BN472 CC1812JKNPOCBN101 CC1812JKNPOCBN102
CC1812JKNPOCBN151 CC1812JKNPOCBN152 CC1812JKNPOCBN221 CC1812JKNPOCBN331
CC1812JKNPODBN101 CC1812JKX7R9BB105 CC1812KKX7R0BB474 CC1812KKX7R9BB104
CC1812KKX7R9BB105 CC1812KKX7R9BB154 CC1812KKX7R9BB684 CC1812KKX7RCBB153
CC1812KKX7RCBB222 CC1812KKX7RCBB332 CC1812KKX7RCBB472 CC1812KKX7RDBB152
CC1812KKX7RDBB222 CC1812KKX7RDBB103 CC1812JKNPO9BN223 CC1812JKNPO9BN822
CC1812JKNPODBN271 CC1812JKNPOEBN150 CC1812JKNPOEBN560 CC1812JKX7R9BB104
CC1812JKX7R9BB224 CC1812JKX7R9BB474 CC1812KKX7R9BB184 CC1812KKX7RCBB152
CC1812KKX7RCBB223 CC1812KKX7RDBB822 CC1812KKX7REBB102 CC1812JKNPOBBN332
CC1812JKNPOABN392 CC1812JKNPOBBN222 CC1812KKX7RABB473 CC1812KKX7RBBB472
CC1812KKX7RBBB103 CC1812KKX7RYBB474 CC1812KKX7R0BB223 CC1812KKX7RABB683
CC1812KKX7RYBB104 CC1812KKX7RYBB224 CC1812KKX7RBBB153 CC1812KKX7R0BB104
CC1812KKX7RABB104 CC1812KKX7R0BB684 CC1812KKX7R0BB154 CC1812ZKY5V6BB476
CC1812KKX7RBBB473 CC1812KKX7R0BB103 CC1812KKX7R0BB334 CC1812KKX7R0BB224
CC1812KKX7R0BB105 CC1812KKX7R0BB473 CC1812KKNPOEBN100