CONTENT (MLCC)

E STANDARD NUMBER **3**

STRUCTURE **4**

ORDERING CODE **4**

AUTOMOTIVE APPLICATION (AEC-Q200 COMPLIANT) **5**

CLASS I: TEMPERATURE COMPENSATING TYPE 6

NP0_A Series *6*

X8G_A Series *13*

NP0_B Series *14*

NP0_H Series *15*

CLASS II: HIGH DIELECTRIC CONSTANT TYPE 18

X7R_A Series *18*

X7S_A Series *25*

X7T_A Series *26*

X6S_A Series *26*

X5R_A Series *27*

X8R_A Series *28*

X7R_B Series *28*

TEST SPEC. 29

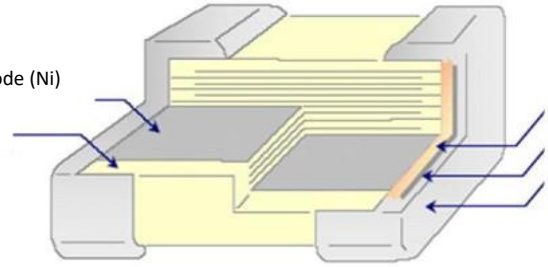
PACKAGE **35**

OTHERS **39**

E Standard Number

E3	1.0				2.2				4.7			
E6	1.0		1.5		2.2		3.3		4.7		6.8	
E12	1.0	1.2	1.5	1.8	2.2	2.7	3.3	3.9	4.7	5.6	6.8	8.2
E24	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.2	2.4	2.7	3.0	3.3	3.6	3.9	4.3	4.7	5.1	5.6	6.2	6.8	7.5	8.2	9.1

Structure



Ordering Code

C 2012 NP0 100 J G T A △

PRODUCT CODE

C = MLCC

SIZE in mm (EIA CODE, in inch)

0402(01005) 0603(0201) 1005 (0402) 1608 (0603) 2012 (0805)
3216 (1206) 3225(1210) 4520 (1808) 4532 (1812)

T. C.

X8G: 0 ± 30ppm/℃ ; X8R: ±15%	-55℃ to +150℃
NP0: 0 ± 30ppm/℃ ; X7R: ±15% ; X7S: ±22% ; X7T: +22/-33%	-55℃ to +125℃
X6S: ±22%	-55℃ to +105℃
X5R: ±15%	-55℃ to +85℃

CAPACITANCE CODE

Expressed in pico-farads and identified by a three-digit number.
First two digits represent significant figures.
Last digit specifies the number of zeros.
(Use 9 for 1.0 through 9.9pF ; Use 8 for 0.20 through 0.99pF)

Examples :

Code	478	229	101	102
Cap (pF)	0.47	2.2	100	1000

TOLERANCE CODE

A: ± 0.05pF B: ± 0.1pF C: ± 0.25pF D: ± 0.5pF F: ±1% G: ±2%
J: ±5% K: ±10% M: ±20% Z: +80/-20%

VOLTAGE CODE

B: 4V C: 6.3V D: 10V E: 16V F: 25V N: 35V G: 50V H: 100V
J: 200V K: 250V L: 500V M: 630V P: 1KV Q: 2KV R: 3KV S: 4KV

PACKAGING CODE

T: Paper tape reel Ø180mm (7”)
A: Paper tape reel Ø330mm (13”)
W: Special Packing
P: Embossed tape reel Ø180mm (7”)
E: Embossed tape reel Ø330mm (13”)

Application Code

A: Automotive with AEC-Q200 H: Microwave with AEC-Q200 B: Soft termination with AEC-Q200

Thickness Code

Code	Thick (mm)	Code	Thick(mm)	Code	Thick (mm)	Code	Thick (mm)
(blank)	Standard Thick	**M**	0.70	**G**	1.25	**S**	1.90
Z	0.20	**D**	0.80	**H**	1.50	**--**	--
A	0.30	**E**	0.85	**L**	1.60	**--**	--
Q	0.45	**I**	0.95	**N**	2.00	**--**	--
B	0.50	**J**	1.00	**P**	2.50	**--**	--
C	0.60	**F**	1.15	**R**	3.20	**--**	--

C2012/C3216/C3225/C4520/C4532 are with thickness code. C0603/C1005/C1608 are with thickness code when thickness is special.

Automotive Application (AEC-Q200 compliant)

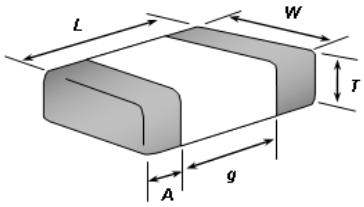
■ Feature

1. Monolithic structure ensures high reliability and mechanical strength.
2. RoHS compliant
3. AEC-Q200 compliant
4. Halogen Free
5. MSL Class : MSL 1

■ Application

1. Automotive comfort & infotainment systems
2. Bluetooth & wireless communication systems
3. Navigation & audio systems
4. Automotive after-market electronics

■ Standard External Dimensions



TYPE	Dimension (mm)				
Size (EIA Size)	L (Length)	W (Width)	T(Thickness)	g (Min)	A (Min/Max)
C0603 (0201)	0.6±△	0.3±△	△	0.15	0.10 / 0.25
C1005 (0402)	1.0±△	0.5±△		0.30	0.15 / 0.35
C1608 (0603)	1.6±△	0.8±△		0.50	0.25 / 0.65
C2012 (0805)	2.0±△	1.25±△		0.70	0.25 / 0.75
C3216 (1206)	3.2±△	1.6±△		1.50	0.25 / 0.75
C3225 (1210)	3.2±△	2.5±△		1.50	0.3 / 0.90

△:Please refer to “Part Number & Characteristic”

● Class I: Temperature Compensating Type

■ Part Number & Characteristic

■ NP0_A Series

● C0603NP0_A Series (EIA0201)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
100V	C0603NP0208□HTA	1V, 1MHz	0.2	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.25%	Paper,15Kpcs	(I)
	C0603NP0308□HTA	1V, 1MHz	0.3	pF	±0.25pF,±0.1pF,±0.05pF	0.30	±0.03	±0.03	0.25%		(I)
	C0603NP0408□HTA	1V, 1MHz	0.4	pF	±0.25pF,±0.1pF,±0.05pF	0.30	±0.03	±0.03	0.25%		(I)
	C0603NP0508□HTA	1V, 1MHz	0.5	pF	±0.25pF,±0.1pF,±0.05pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0608□HTA	1V, 1MHz	0.6	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0708□HTA	1V, 1MHz	0.7	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0808□HTA	1V, 1MHz	0.8	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0908□HTA	1V, 1MHz	0.9	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0109□HTA	1V, 1MHz	1.0	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0119□HTA	1V, 1MHz	1.1	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0129□HTA	1V, 1MHz	1.2	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0139□HTA	1V, 1MHz	1.3	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.23%		(I)
	C0603NP0159□HTA	1V, 1MHz	1.5	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.23%		(I)
	C0603NP0169□HTA	1V, 1MHz	1.6	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.23%		(I)
	C0603NP0189□HTA	1V, 1MHz	1.8	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.23%		(I)
	C0603NP0209□HTA	1V, 1MHz	2.0	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.23%		(I)
	C0603NP0229□HTA	1V, 1MHz	2.2	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.23%		(I)
	C0603NP0249□HTA	1V, 1MHz	2.4	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.22%		(I)
	C0603NP0279□HTA	1V, 1MHz	2.7	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.22%		(I)
	C0603NP0309□HTA	1V, 1MHz	3.0	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.22%		(I)
	C0603NP0339□HTA	1V, 1MHz	3.3	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.21%		(I)
	C0603NP0369□HTA	1V, 1MHz	3.6	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.21%		(I)
	C0603NP0399□HTA	1V, 1MHz	3.9	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.21%		(I)
	C0603NP0439□HTA	1V, 1MHz	4.3	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.21%		(I)
	C0603NP0479□HTA	1V, 1MHz	4.7	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.20%		(I)
	C0603NP0519□HTA	1V, 1MHz	5.1	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.20%		(I)
	C0603NP0569□HTA	1V, 1MHz	5.6	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.20%		(I)
	C0603NP0689□HTA	1V, 1MHz	6.8	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.19%		(I)
	C0603NP0829□HTA	1V, 1MHz	8.2	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	0.18%		(I)
	C0603NP0100□HTA	1V, 1MHz	10	pF	±5%, ±2%	0.30	±0.03	±0.03	0.17%		(I)
	C0603NP0120□HTA	1V, 1MHz	12	pF	±5%, ±2%	0.30	±0.03	±0.03	0.16%		(I)
	C0603NP0150□HTA	1V, 1MHz	15	pF	±5%, ±2%	0.30	±0.03	±0.03	0.14%		(I)
	C0603NP0180□HTA	1V, 1MHz	18	pF	±5%, ±2%	0.30	±0.03	±0.03	0.13%		(I)
	C0603NP0200□HTA	1V, 1MHz	20	pF	±5%, ±2%	0.30	±0.03	±0.03	0.13%		(I)
50V	C0603NP0508CGTA	1V, 1MHz	0.50	pF	±0.25pF	0.30	±0.03	±0.03	0.24%	Paper,15Kpcs	(I)
	C0603NP0608CGTA	1V, 1MHz	0.60	pF	±0.25pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0708CGTA	1V, 1MHz	0.70	pF	±0.25pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0758CGTA	1V, 1MHz	0.75	pF	±0.25pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0808CGTA	1V, 1MHz	0.80	pF	±0.25pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0908CGTA	1V, 1MHz	0.90	pF	±0.25pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0109CGTA	1V, 1MHz	1.0	pF	±0.25pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0129CGTA	1V, 1MHz	1.2	pF	±0.25pF	0.30	±0.03	±0.03	0.24%		(I)
	C0603NP0159CGTA	1V, 1MHz	1.5	pF	±0.25pF	0.30	±0.03	±0.03	0.23%		(I)
	C0603NP0189CGTA	1V, 1MHz	1.8	pF	±0.25pF	0.30	±0.03	±0.03	0.23%		(I)
	C0603NP0229CGTA	1V, 1MHz	2.2	pF	±0.25pF	0.30	±0.03	±0.03	0.23%		(I)
	C0603NP0249□GTA	1V, 1MHz	2.4	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.22%		(I)
	C0603NP0279CGTA	1V, 1MHz	2.7	pF	±0.25pF	0.30	±0.03	±0.03	0.22%		(I)
	C0603NP0339CGTA	1V, 1MHz	3.3	pF	±0.25pF	0.30	±0.03	±0.03	0.21%		(I)
	C0603NP0399CGTA	1V, 1MHz	3.9	pF	±0.25pF	0.30	±0.03	±0.03	0.21%		(I)
	C0603NP0479CGTA	1V, 1MHz	4.7	pF	±0.25pF	0.30	±0.03	±0.03	0.20%		(I)
	C0603NP0569DGTA	1V, 1MHz	5.6	pF	±0.5pF	0.30	±0.03	±0.03	0.20%		(I)
	C0603NP0689DGTA	1V, 1MHz	6.8	pF	±0.5pF	0.30	±0.03	±0.03	0.19%		(I)
	C0603NP0829DGTA	1V, 1MHz	8.2	pF	±0.5pF	0.30	±0.03	±0.03	0.18%		(I)
	C0603NP0100JGTA	1V, 1MHz	10	pF	±5%	0.30	±0.03	±0.03	0.17%		(I)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
50V	C0603NP0120JGTA	1V, 1MHz	12	pF	±5%	0.30	±0.03	±0.03	0.16%	Paper,15Kpcs	(I)
	C0603NP0150JGTA	1V, 1MHz	15	pF	±5%	0.30	±0.03	±0.03	0.14%		(I)
	C0603NP0180JGTA	1V, 1MHz	18	pF	±5%	0.30	±0.03	±0.03	0.13%		(I)
	C0603NP0220JGTA	1V, 1MHz	22	pF	±5%	0.30	±0.03	±0.03	0.12%		(I)
	C0603NP0270JGTA	1V, 1MHz	27	pF	±5%	0.30	±0.03	±0.03	0.11%		(I)
	C0603NP0330JGTA	1V, 1MHz	33	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0390JGTA	1V, 1MHz	39	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0470JGTA	1V, 1MHz	47	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0560JGTA	1V, 1MHz	56	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0680JGTA	1V, 1MHz	68	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0820JGTA	1V, 1MHz	82	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0101JGTA	1V, 1MHz	100	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0121JGTA	1V, 1MHz	120	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0151JGTA	1V, 1MHz	150	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0181JGTA	1V, 1MHz	180	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0221JGTA	1V, 1MHz	220	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
25V	C0603NP0249□FTA	1V, 1MHz	2.4	pF	±0.25pF,±0.1pF	0.30	±0.03	±0.03	0.22%	Paper,15Kpcs	(I)
	C0603NP0330JFTA	1V, 1MHz	33	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0470JFTA	1V, 1MHz	47	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0560JFTA	1V, 1MHz	56	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
	C0603NP0101JFTA	1V, 1MHz	100	pF	±5%	0.30	±0.03	±0.03	0.10%		(I)
10V	C0603NP0221JDTA	1V, 1MHz	220	pF	±5%	0.30	±0.03	±0.03	0.10%	Paper,15Kpcs	(I)

□ Tolerance Code: A=±0.05pF, B=±0.1pF, C=±0.25pF ,D=±0.5pF, F=±1%, G=±2%, J=±5%; Special tolerance on the request.

C1005NP0_A Series (EIA0402)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
200V	C1005NP0221JJTA	1V, 1MHz	220	pF	±5%	0.50	±0.05	±0.05	0.10%	Paper, 10Kpcs	(I)
	C1005NP0271JJTA	1V, 1MHz	270	pF	±5%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0331JJTA	1V, 1MHz	330	pF	±5%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0391JJTA	1V, 1MHz	390	pF	±5%	0.50	±0.05	±0.05	0.10%		(I)
100V	C1005NP0208□HTA	1V, 1MHz	0.2	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.25%	Paper, 10Kpcs	(I)
	C1005NP0308□HTA	1V, 1MHz	0.3	pF	±0.25pF,±0.1pF,±0.05pF	0.50	±0.05	±0.05	0.25%		(I)
	C1005NP0408□HTA	1V, 1MHz	0.4	pF	±0.25pF,±0.1pF,±0.05pF	0.50	±0.05	±0.05	0.25%		(I)
	C1005NP0508□HTA	1V, 1MHz	0.5	pF	±0.25pF,±0.1pF,±0.05pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0608□HTA	1V, 1MHz	0.6	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0708□HTA	1V, 1MHz	0.7	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0808□HTA	1V, 1MHz	0.8	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0908□HTA	1V, 1MHz	0.9	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0109□HTA	1V, 1MHz	1.0	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0119□HTA	1V, 1MHz	1.1	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0129□HTA	1V, 1MHz	1.2	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0139□HTA	1V, 1MHz	1.3	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0159□HTA	1V, 1MHz	1.5	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0169□HTA	1V, 1MHz	1.6	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0189□HTA	1V, 1MHz	1.8	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0209□HTA	1V, 1MHz	2.0	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0229□HTA	1V, 1MHz	2.2	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0249□HTA	1V, 1MHz	2.4	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.22%		(I)
	C1005NP0279□HTA	1V, 1MHz	2.7	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.22%		(I)
	C1005NP0309□HTA	1V, 1MHz	3.0	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.22%		(I)
	C1005NP0339□HTA	1V, 1MHz	3.3	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.21%		(I)
	C1005NP0369□HTA	1V, 1MHz	3.6	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.21%		(I)
	C1005NP0399□HTA	1V, 1MHz	3.9	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.21%		(I)
	C1005NP0439□HTA	1V, 1MHz	4.3	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.21%		(I)
	C1005NP0479□HTA	1V, 1MHz	4.7	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.20%		(I)
	C1005NP0519□HTA	1V, 1MHz	5.1	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.20%		(I)
	C1005NP0569□HTA	1V, 1MHz	5.6	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.20%		(I)
	C1005NP0689□HTA	1V, 1MHz	6.8	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.19%		(I)
	C1005NP0829□HTA	1V, 1MHz	8.2	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.18%		(I)
	C1005NP0100□HTA	1V, 1MHz	10	pF	±5%, ±2%	0.50	±0.05	±0.05	0.17%		(I)
	C1005NP0120□HTA	1V, 1MHz	12	pF	±5%, ±2%	0.50	±0.05	±0.05	0.16%		(I)
	C1005NP0150□HTA	1V, 1MHz	15	pF	±5%, ±2%	0.50	±0.05	±0.05	0.14%		(I)
	C1005NP0180□HTA	1V, 1MHz	18	pF	±5%, ±2%	0.50	±0.05	±0.05	0.13%		(I)
	C1005NP0220□HTA	1V, 1MHz	22	pF	±5%, ±2%	0.50	±0.05	±0.05	0.12%		(I)
	C1005NP0270□HTA	1V, 1MHz	27	pF	±5%, ±2%	0.50	±0.05	±0.05	0.11%		(I)
	C1005NP0300□HTA	1V, 1MHz	30	pF	±5%, ±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0330□HTA	1V, 1MHz	33	pF	±5%, ±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0390□HTA	1V, 1MHz	39	pF	±5%, ±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0470□HTA	1V, 1MHz	47	pF	±5%, ±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0560□HTA	1V, 1MHz	56	pF	±5%, ±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0680□HTA	1V, 1MHz	68	pF	±5%, ±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0820□HTA	1V, 1MHz	82	pF	±5%, ±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0101□HTA	1V, 1MHz	100	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
50V	C1005NP0508□GTA	1V, 1MHz	0.50	pF	±0.25pF,±0.1pF, ±0.05pF	0.50	±0.05	±0.05	0.24%	Paper, 10Kpcs	(I)
	C1005NP0608□GTA	1V, 1MHz	0.60	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0688□GTA	1V, 1MHz	0.68	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0708□GTA	1V, 1MHz	0.70	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0758□GTA	1V, 1MHz	0.75	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0808□GTA	1V, 1MHz	0.80	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0828□GTA	1V, 1MHz	0.82	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0908□GTA	1V, 1MHz	0.90	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0109□GTA	1V, 1MHz	1.0	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0119□GTA	1V, 1MHz	1.1	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0129□GTA	1V, 1MHz	1.2	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.24%		(I)

DARFON

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
	C1005NP0139□GTA	1V, 1MHz	1.3	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0149□GTA	1V, 1MHz	1.4	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0159□GTA	1V, 1MHz	1.5	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0189□GTA	1V, 1MHz	1.8	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0209□GTA	1V, 1MHz	2.0	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0229□GTA	1V, 1MHz	2.2	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0249□GTA	1V, 1MHz	2.4	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.22%		(I)
	C1005NP0279□GTA	1V, 1MHz	2.7	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.22%		(I)
	C1005NP0309□GTA	1V, 1MHz	3.0	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.22%		(I)
	C1005NP0339□GTA	1V, 1MHz	3.3	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.21%		(I)
	C1005NP0399□GTA	1V, 1MHz	3.9	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.21%		(I)
	C1005NP0409□GTA	1V, 1MHz	4.0	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.21%		(I)
	C1005NP0479□GTA	1V, 1MHz	4.7	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.20%		(I)
	C1005NP0509□GTA	1V, 1MHz	5.0	pF	±0.5pF,±0.25pF	0.50	±0.05	±0.05	0.20%		(I)
	C1005NP0569□GTA	1V, 1MHz	5.6	pF	±0.5pF,±0.25pF	0.50	±0.05	±0.05	0.20%		(I)
	C1005NP0609□GTA	1V, 1MHz	6.0	pF	±0.5pF,±0.25pF	0.50	±0.05	±0.05	0.19%		(I)
	C1005NP0629□GTA	1V, 1MHz	6.2	pF	±0.5pF,±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.19%		(I)
	C1005NP0689□GTA	1V, 1MHz	6.8	pF	±0.5pF,±0.25pF,±0.1pF	0.50	±0.05	±0.05	0.19%		(I)
	C1005NP0709□GTA	1V, 1MHz	7.0	pF	±0.5pF,±0.25pF	0.50	±0.05	±0.05	0.19%		(I)
	C1005NP0759□GTA	1V, 1MHz	7.5	pF	±0.5pF,±0.25pF	0.50	±0.05	±0.05	0.18%		(I)
	C1005NP0809□GTA	1V, 1MHz	8.0	pF	±0.5pF,±0.25pF	0.50	±0.05	±0.05	0.18%		(I)
	C1005NP0829□GTA	1V, 1MHz	8.2	pF	±0.5pF,±0.25pF	0.50	±0.05	±0.05	0.18%		(I)
	C1005NP0909□GTA	1V, 1MHz	9.0	pF	±0.5pF,±0.25pF	0.50	±0.05	±0.05	0.17%		(I)
	C1005NP0919□GTA	1V, 1MHz	9.1	pF	±0.5pF,±0.25pF	0.50	±0.05	±0.05	0.17%		(I)
	C1005NP0100□GTA	1V, 1MHz	10	pF	±5%,±2%	0.50	±0.05	±0.05	0.17%		(I)
	C1005NP0120□GTA	1V, 1MHz	12	pF	±5%,±2%,±1%	0.50	±0.05	±0.05	0.16%		(I)
	C1005NP0130JGTA	1V, 1MHz	13	pF	±5%	0.50	±0.05	±0.05	0.15%		(I)
	C1005NP0140JGTA	1V, 1MHz	14	pF	±5%	0.50	±0.05	±0.05	0.15%		(I)
50V	C1005NP0150□GTA	1V, 1MHz	15	pF	±5%,±2%,±1%	0.50	±0.05	±0.05	0.14%	Paper, 10Kpcs	(I)
	C1005NP0160□GTA	1V, 1MHz	16	pF	±5%,±2%	0.50	±0.05	±0.05	0.14%		(I)
	C1005NP0180□GTA	1V, 1MHz	18	pF	±5%,±2%	0.50	±0.05	±0.05	0.13%		(I)
	C1005NP0200□GTA	1V, 1MHz	20	pF	±5%,±2%	0.50	±0.05	±0.05	0.13%		(I)
	C1005NP0220□GTA	1V, 1MHz	22	pF	±5%,±2%,±1%	0.50	±0.05	±0.05	0.12%		(I)
	C1005NP0240□GTA	1V, 1MHz	24	pF	±5%,±2%	0.50	±0.05	±0.05	0.11%		(I)
	C1005NP0270□GTA	1V, 1MHz	27	pF	±5%,±2%,±1%	0.50	±0.05	±0.05	0.11%		(I)
	C1005NP0330□GTA	1V, 1MHz	33	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0360□GTA	1V, 1MHz	36	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0390□GTA	1V, 1MHz	39	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0430□GTA	1V, 1MHz	43	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0470□GTA	1V, 1MHz	47	pF	±5%,±2%,±1%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0560□GTA	1V, 1MHz	56	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0680□GTA	1V, 1MHz	68	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0750□GTA	1V, 1MHz	75	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0820□GTA	1V, 1MHz	82	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0101□GTA	1V, 1MHz	100	pF	±5%,±2%,±1%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0121□GTA	1V, 1MHz	120	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0151□GTA	1V, 1MHz	150	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0181□GTA	1V, 1MHz	180	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0221□GTA	1V, 1MHz	220	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0271JGTA	1V, 1MHz	270	pF	±5%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0331□GTA	1V, 1MHz	330	pF	±5%,±2%,±1%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0391□GTA	1V, 1MHz	390	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0471□GTA	1V, 1MHz	470	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0681□GTA	1V, 1MHz	680	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0821□GTA	1V, 1MHz	820	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0102□GTA	1V, 1MHz	1.0	nF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0152□GTA	1V, 1kHz	1.5	nF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
25V	C1005NP0102JFTA	1V, 1MHz	1.0	nF	±5%	0.50	±0.05	±0.05	0.10%	Paper, 10Kpcs	(I)
16V	C1005NP0680JETA	1V, 1MHz	68	pF	±5%	0.50	±0.05	±0.05	0.10%	Paper, 10Kpcs	(I)

□ Tolerance Code: A=±0.05pF, B=±0.1pF, C=±0.25pF ,D=±0.5pF, F=±1%, G=±2%, J=±5%; Special tolerance on the request.

- C1608NP0_A Series (EIA0603)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
100V	C1608NP0508□HTA	1V, 1MHz	0.50	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.24%	Paper, 4Kpcs	(I)
	C1608NP0758□HTA	1V, 1MHz	0.75	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.24%		(I)
	C1608NP0109□HTA	1V, 1MHz	1.0	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.24%		(I)
	C1608NP0129□HTA	1V, 1MHz	1.2	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.24%		(I)
	C1608NP0159□HTA	1V, 1MHz	1.5	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.23%		(I)
	C1608NP0189□HTA	1V, 1MHz	1.8	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.23%		(I)
	C1608NP0209□HTA	1V, 1MHz	2.0	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.23%		(I)
	C1608NP0229□HTA	1V, 1MHz	2.2	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.23%		(I)
	C1608NP0249□HTA	1V, 1MHz	2.4	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.22%		(I)
	C1608NP0279□HTA	1V, 1MHz	2.7	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.22%		(I)
	C1608NP0309□HTA	1V, 1MHz	3.0	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.22%		(I)
	C1608NP0339□HTA	1V, 1MHz	3.3	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.21%		(I)
	C1608NP0399□HTA	1V, 1MHz	3.9	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.21%		(I)
	C1608NP0409□HTA	1V, 1MHz	4.0	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.21%		(I)
	C1608NP0479□HTA	1V, 1MHz	4.7	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.20%		(I)
	C1608NP0509□HTA	1V, 1MHz	5.0	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.20%		(I)
	C1608NP0569□HTA	1V, 1MHz	5.6	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.20%		(I)
	C1608NP0609□HTA	1V, 1MHz	6.0	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.19%		(I)
	C1608NP0629□HTA	1V, 1MHz	6.2	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.19%		(I)
	C1608NP0689□HTA	1V, 1MHz	6.8	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.19%		(I)
	C1608NP0709□HTA	1V, 1MHz	7.0	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.19%		(I)
	C1608NP0829□HTA	1V, 1MHz	8.2	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.18%		(I)
	C1608NP0909□HTA	1V, 1MHz	9.0	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.17%		(I)
	C1608NP0100□HTA	1V, 1MHz	10	pF	±5%,±2%	0.80	±0.10	±0.10	0.17%		(I)
	C1608NP0110□HTA	1V, 1MHz	11	pF	±5%,±2%	0.80	±0.10	±0.10	0.16%		(I)
	C1608NP0120□HTA	1V, 1MHz	12	pF	±5%,±2%	0.80	±0.10	±0.10	0.16%		(I)
	C1608NP0150□HTA	1V, 1MHz	15	pF	±5%,±2%	0.80	±0.10	±0.10	0.14%		(I)
	C1608NP0180□HTA	1V, 1MHz	18	pF	±5%,±2%	0.80	±0.10	±0.10	0.13%		(I)
	C1608NP0200□HTA	1V, 1MHz	20	pF	±5%,±2%	0.80	±0.10	±0.10	0.13%		(I)
	C1608NP0220□HTA	1V, 1MHz	22	pF	±5%,±2%	0.80	±0.10	±0.10	0.12%		(I)
	C1608NP0240□HTA	1V, 1MHz	24	pF	±5%,±2%	0.80	±0.10	±0.10	0.11%		(I)
	C1608NP0270□HTA	1V, 1MHz	27	pF	±5%,±2%	0.80	±0.10	±0.10	0.11%		(I)
	C1608NP0300□HTA	1V, 1MHz	30	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0330□HTA	1V, 1MHz	33	pF	±5%,±2%,±1%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0360□HTA	1V, 1MHz	36	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0390□HTA	1V, 1MHz	39	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0430□HTA	1V, 1MHz	43	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0470□HTA	1V, 1MHz	47	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0560□HTA	1V, 1MHz	56	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0620□HTA	1V, 1MHz	62	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0680□HTA	1V, 1MHz	68	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0750□HTA	1V, 1MHz	75	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0820□HTA	1V, 1MHz	82	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0910□HTA	1V, 1MHz	91	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0101□HTA	1V, 1MHz	100	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0121□HTA	1V, 1MHz	120	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0151□HTA	1V, 1MHz	150	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0181□HTA	1V, 1MHz	180	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0201□HTA	1V, 1MHz	200	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0221□HTA	1V, 1MHz	220	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0271□HTA	1V, 1MHz	270	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0331□HTA	1V, 1MHz	330	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0391□HTA	1V, 1MHz	390	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0471□HTA	1V, 1MHz	470	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0561□HTA	1V, 1MHz	560	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0681□HTA	1V, 1MHz	680	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0821□HTA	1V, 1MHz	820	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0102□HTA	1V, 1MHz	1.0	nF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)

□ Tolerance Code: A=±0.05pF, B=±0.1pF, C=±0.25pF ,D=±0.5pF, F=±1%, G=±2%, J=±5%; Special tolerance on the request.

DARFON

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
50V	C1608NP0508□GTA	1V, 1MHz	0.50	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.24%	Paper, 4Kpcs	(I)
	C1608NP0758□GTA	1V, 1MHz	0.75	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.24%		(I)
	C1608NP0109□GTA	1V, 1MHz	1.0	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.24%		(I)
	C1608NP0129□GTA	1V, 1MHz	1.2	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.24%		(I)
	C1608NP0159□GTA	1V, 1MHz	1.5	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.23%		(I)
	C1608NP0189□GTA	1V, 1MHz	1.8	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.23%		(I)
	C1608NP0209□GTA	1V, 1MHz	2.0	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.23%		(I)
	C1608NP0229□GTA	1V, 1MHz	2.2	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.23%		(I)
	C1608NP0249□GTA	1V, 1MHz	2.4	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.22%		(I)
	C1608NP0279□GTA	1V, 1MHz	2.7	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.22%		(I)
	C1608NP0309□GTA	1V, 1MHz	3.0	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.22%		(I)
	C1608NP0339□GTA	1V, 1MHz	3.3	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.21%		(I)
	C1608NP0399□GTA	1V, 1MHz	3.9	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.21%		(I)
	C1608NP0409□GTA	1V, 1MHz	4.0	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.21%		(I)
	C1608NP0479□GTA	1V, 1MHz	4.7	pF	±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.20%		(I)
	C1608NP0509□GTA	1V, 1MHz	5.0	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.20%		(I)
	C1608NP0569□GTA	1V, 1MHz	5.6	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.20%		(I)
	C1608NP0609□GTA	1V, 1MHz	6.0	pF	±0.5pF,±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.19%		(I)
	C1608NP0629□GTA	1V, 1MHz	6.2	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.19%		(I)
	C1608NP0689□GTA	1V, 1MHz	6.8	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.19%		(I)
	C1608NP0709□GTA	1V, 1MHz	7.0	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.19%		(I)
	C1608NP0809□GTA	1V, 1MHz	8.0	pF	±0.5pF,±0.25pF,±0.1pF	0.80	±0.10	±0.10	0.18%		(I)
	C1608NP0829□GTA	1V, 1MHz	8.2	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.18%		(I)
	C1608NP0909□GTA	1V, 1MHz	9.0	pF	±0.5pF,±0.25pF	0.80	±0.10	±0.10	0.17%		(I)
	C1608NP0100□GTA	1V, 1MHz	10	pF	±5%,±2%	0.80	±0.10	±0.10	0.17%		(I)
	C1608NP0110□GTA	1V, 1MHz	11	pF	±5%,±2%	0.80	±0.10	±0.10	0.16%		(I)
	C1608NP0120□GTA	1V, 1MHz	12	pF	±5%,±2%	0.80	±0.10	±0.10	0.16%		(I)
	C1608NP0150□GTA	1V, 1MHz	15	pF	±5%,±2%	0.80	±0.10	±0.10	0.14%		(I)
	C1608NP0180□GTA	1V, 1MHz	18	pF	±5%,±2%	0.80	±0.10	±0.10	0.13%		(I)
	C1608NP0200□GTA	1V, 1MHz	20	pF	±5%,±2%	0.80	±0.10	±0.10	0.13%		(I)
	C1608NP0220□GTA	1V, 1MHz	22	pF	±5%,±2%	0.80	±0.10	±0.10	0.12%		(I)
	C1608NP0270□GTA	1V, 1MHz	27	pF	±5%,±2%	0.80	±0.10	±0.10	0.11%		(I)
	C1608NP0330□GTA	1V, 1MHz	33	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0390□GTA	1V, 1MHz	39	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0470□GTA	1V, 1MHz	47	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0560□GTA	1V, 1MHz	56	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0620□GTA	1V, 1MHz	62	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0680□GTA	1V, 1MHz	68	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0820□GTA	1V, 1MHz	82	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0101□GTA	1V, 1MHz	100	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0121□GTA	1V, 1MHz	120	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0151□GTA	1V, 1MHz	150	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0181□GTA	1V, 1MHz	180	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0201□GTA	1V, 1MHz	200	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0221□GTA	1V, 1MHz	220	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0271□GTA	1V, 1MHz	270	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0331□GTA	1V, 1MHz	330	pF	±10%,±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0391□GTA	1V, 1MHz	390	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0471□GTA	1V, 1MHz	470	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0561□GTA	1V, 1MHz	560	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0681□GTA	1V, 1MHz	680	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0821□GTA	1V, 1MHz	820	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0102□GTA	1V, 1MHz	1.0	nF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0152□GTA	1V, 1kHz	1.5	nF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0182□GTA	1V, 1kHz	1.8	nF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0222□GTA	1V, 1kHz	2.2	nF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0332□GTA	1V, 1kHz	3.3	nF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0472□GTA	1V, 1kHz	4.7	nF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0682□GTA	1V, 1kHz	6.8	nF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0103□GTA	1V, 1kHz	10	nF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)
25V	C1608NP0150JFTA	1V, 1MHz	15	pF	±5%	0.80	±0.10	±0.10	0.14%	Paper, 4Kpcs	(I)
	C1608NP0680□FTA	1V, 1MHz	68	pF	±5%,±2%	0.80	±0.10	±0.10	0.10%		(I)

□ Tolerance Code: A=±0.05pF, B=±0.1pF, C=±0.25pF ,D=±0.5pF, F=±1%, G=±2%, J=±5%; Special tolerance on the request.

● C2012NP0_A Series (EIA0805)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
200V	C2012NP0101□JTA	1V, 1MHz	100	pF	±5%,±2%	0.85	±0.20	±0.10	0.10%	Paper, 4Kpcs	(I)
	C2012NP0102□JTA	1V, 1MHz	1.0	nF	±10%,±5%,±2%	0.85	±0.20	±0.10	0.10%		(I)
100V	C2012NP0100□HTA	1V, 1MHz	10	pF	±5%,±2%	0.60	±0.20	±0.10	0.17%	Paper, 4Kpcs	(I)
	C2012NP0120□HTA	1V, 1MHz	12	pF	±5%,±2%	0.60	±0.20	±0.10	0.16%		(I)
	C2012NP0150□HTA	1V, 1MHz	15	pF	±5%,±2%	0.60	±0.20	±0.10	0.14%		(I)
	C2012NP0180□HTA	1V, 1MHz	18	pF	±5%,±2%	0.60	±0.20	±0.10	0.13%		(I)
	C2012NP0220□HTA	1V, 1MHz	22	pF	±5%,±2%	0.60	±0.20	±0.10	0.12%		(I)
	C2012NP0240□HTA	1V, 1MHz	24	pF	±5%,±2%	0.60	±0.20	±0.10	0.11%		(I)
	C2012NP0270□HTA	1V, 1MHz	27	pF	±5%,±2%	0.60	±0.20	±0.10	0.11%		(I)
	C2012NP0300□HTA	1V, 1MHz	30	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0330□HTA	1V, 1MHz	33	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0390□HTA	1V, 1MHz	39	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0430□HTA	1V, 1MHz	43	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0470□HTA	1V, 1MHz	47	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0560□HTA	1V, 1MHz	56	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0620□HTA	1V, 1MHz	62	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0680□HTA	1V, 1MHz	68	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0750□HTA	1V, 1MHz	75	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0820□HTA	1V, 1MHz	82	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0101□HTA	1V, 1MHz	100	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0121□HTA	1V, 1MHz	120	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0151□HTA	1V, 1MHz	150	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0181□HTA	1V, 1MHz	180	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0221□HTA	1V, 1MHz	220	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0271□HTA	1V, 1MHz	270	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0331□HTA	1V, 1MHz	330	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0391□HTA	1V, 1MHz	390	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0471□HTA	1V, 1MHz	470	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0561□HTA	1V, 1MHz	560	pF	±5%,±2%	0.85	±0.20	±0.10	0.10%		(I)
	C2012NP0681□HTA	1V, 1MHz	680	pF	±5%,±2%	0.85	±0.20	±0.10	0.10%		(I)
	C2012NP0821□HTA	1V, 1MHz	820	pF	±5%,±2%	0.85	±0.20	±0.10	0.10%		(I)
	C2012NP0102□HTA	1V, 1MHz	1.0	nF	±10%,±5%,±2%	0.85	±0.20	±0.10	0.10%		(I)
50V	C2012NP0100□GTA	1V, 1MHz	10	pF	±5%,±2%	0.60	±0.20	±0.10	0.17%	Paper, 4Kpcs	(I)
	C2012NP0120□GTA	1V, 1MHz	12	pF	±5%,±2%	0.60	±0.20	±0.10	0.16%		(I)
	C2012NP0150□GTA	1V, 1MHz	15	pF	±5%,±2%	0.60	±0.20	±0.10	0.14%		(I)
	C2012NP0180□GTA	1V, 1MHz	18	pF	±5%,±2%	0.60	±0.20	±0.10	0.13%		(I)
	C2012NP0220□GTA	1V, 1MHz	22	pF	±5%,±2%	0.60	±0.20	±0.10	0.12%		(I)
	C2012NP0240□GTA	1V, 1MHz	24	pF	±5%,±2%	0.60	±0.20	±0.10	0.11%		(I)
	C2012NP0270□GTA	1V, 1MHz	27	pF	±5%,±2%	0.60	±0.20	±0.10	0.11%		(I)
	C2012NP0330□GTA	1V, 1MHz	33	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0360□GTA	1V, 1MHz	36	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0390□GTA	1V, 1MHz	39	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0430□GTA	1V, 1MHz	43	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0470□GTA	1V, 1MHz	47	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0560□GTA	1V, 1MHz	56	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0680□GTA	1V, 1MHz	68	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0750□GTA	1V, 1MHz	75	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0820□GTA	1V, 1MHz	82	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0101□GTA	1V, 1MHz	100	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0121□GTA	1V, 1MHz	120	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0151□GTA	1V, 1MHz	150	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0181□GTA	1V, 1MHz	180	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0221□GTA	1V, 1MHz	220	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0271□GTA	1V, 1MHz	270	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0331□GTA	1V, 1MHz	330	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0391□GTA	1V, 1MHz	390	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0471□GTA	1V, 1MHz	470	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0561□GTA	1V, 1MHz	560	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0681□GTA	1V, 1MHz	680	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0821□GTA	1V, 1MHz	820	pF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)
	C2012NP0102□GTA	1V, 1MHz	1.0	nF	±5%,±2%	0.60	±0.20	±0.10	0.10%		(I)

□ Tolerance Code: A=±0.05pF, B=±0.1pF, C=±0.25pF ,D=±0.5pF, F=±1%, G=±2%, J=±5%; Special tolerance on the request.

- C3216NP0_A Series (EIA1206)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
630V	C3216NP0682□MPAG	1V, 1KHz	6.8	nF	±5%,±2%,±1%	1.25	±0.30/±0.20	±0.20	0.10%	Embossed, 3Kpcs	(I)

- C3225NP0_A Series (EIA1210)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
630V	C3225NP0333JMPAP	1V, 1KHz	33	nF	±5%	2.50	±0.30/±0.20	±0.20	0.10%	Embossed, 1Kpcs	(I)

■ X8G_A Series

- C1005X8G_A Series (EIA0402)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
50V	C1005X8G101□GTA	1V, 1MHz	100	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%	Paper, 10Kpcs	(I)
	C1005X8G121□GTA	1V, 1MHz	120	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005X8G151□GTA	1V, 1MHz	150	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005X8G181□GTA	1V, 1MHz	180	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005X8G201□GTA	1V, 1MHz	200	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005X8G221□GTA	1V, 1MHz	220	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005X8G271□GTA	1V, 1MHz	270	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005X8G331□GTA	1V, 1MHz	330	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005X8G391□GTA	1V, 1MHz	390	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005X8G471□GTA	1V, 1MHz	470	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005X8G681□GTA	1V, 1MHz	680	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005X8G821□GTA	1V, 1MHz	820	pF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)
	C1005X8G102□GTA	1V, 1MHz	1.0	nF	±5%,±2%	0.50	±0.05	±0.05	0.10%		(I)

- NP0_B Series
- C1608NP0_B Series (EIA0603)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
			Value	Unit			L/W	Thick.			
50V	C1608NP0101JGTB	1V,1MHz	100	pF	±5%	0.80	±0.20	±0.20	0.10%	Paper, 4Kpcs	(I)

■ NP0_H Series

● C0603NP0_H Series (EIA0201)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		Testing Freq	ESR mΩ (max.)	Q (min.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.					
50V	C0603NP0208□GTH	1V, 1MHz	0.2	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	1895	420	Paper, 15Kpcs	(I)
	C0603NP0308□GTH	1V, 1MHz	0.3	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	1263	420		(I)
	C0603NP0408□GTH	1V, 1MHz	0.4	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	947	420		(I)
	C0603NP0508□GTH	1V, 1MHz	0.5	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	758	420		(I)
	C0603NP0608□GTH	1V, 1MHz	0.6	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	632	420		(I)
	C0603NP0708□GTH	1V, 1MHz	0.7	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	541	420		(I)
	C0603NP0808□GTH	1V, 1MHz	0.8	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	474	420		(I)
	C0603NP0908□GTH	1V, 1MHz	0.9	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	421	420		(I)
	C0603NP0109□GTH	1V, 1MHz	1.0	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	379	420		(I)
	C0603NP0119□GTH	1V, 1MHz	1.1	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	413	350		(I)
	C0603NP0129□GTH	1V, 1MHz	1.2	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	379	350		(I)
	C0603NP0139□GTH	1V, 1MHz	1.3	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	350	350		(I)
	C0603NP0149□GTH	1V, 1MHz	1.4	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	325	350		(I)
	C0603NP0159□GTH	1V, 1MHz	1.5	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	303	350		(I)
	C0603NP0169□GTH	1V, 1MHz	1.6	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	284	350		(I)
	C0603NP0189□GTH	1V, 1MHz	1.8	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	253	350		(I)
	C0603NP0209□GTH	1V, 1MHz	2.0	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	265	300		(I)
	C0603NP0229□GTH	1V, 1MHz	2.2	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	241	300		(I)
	C0603NP0249□GTH	1V, 1MHz	2.4	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	221	300		(I)
	C0603NP0279□GTH	1V, 1MHz	2.7	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	196	300		(I)
	C0603NP0309□GTH	1V, 1MHz	3.0	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	221	240		(I)
	C0603NP0339□GTH	1V, 1MHz	3.3	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	201	240		(I)
	C0603NP0369□GTH	1V, 1MHz	3.6	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	184	240		(I)
	C0603NP0399□GTH	1V, 1MHz	3.9	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	170	240		(I)
	C0603NP0439□GTH	1V, 1MHz	4.3	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	154	240		(I)
	C0603NP0479□GTH	1V, 1MHz	4.7	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	141	240		(I)
	C0603NP0519□GTH	1V, 1MHz	5.1	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	144	216		(I)
	C0603NP0569□GTH	1V, 1MHz	5.6	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	132	216		(I)
	C0603NP0629□GTH	1V, 1MHz	6.2	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	119	216		(I)
	C0603NP0689□GTH	1V, 1MHz	6.8	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	108	216		(I)
	C0603NP0759□GTH	1V, 1MHz	7.5	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	147	144		(I)
	C0603NP0829□GTH	1V, 1MHz	8.2	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	135	144		(I)
	C0603NP0919□GTH	1V, 1MHz	9.1	pF	±0.25pF, ±0.1pF	0.30	±0.03	±0.03	1GHz	121	144		(I)
	C0603NP0100□GTH	1V, 1MHz	10	pF	±5%, ±2%	0.30	±0.03	±0.03	1GHz	111	144		(I)
	C0603NP0110□GTH	1V, 1MHz	11	pF	±5%, ±2%	0.30	±0.03	±0.03	1GHz	115	126		(I)
	C0603NP0120□GTH	1V, 1MHz	12	pF	±5%, ±2%	0.30	±0.03	±0.03	1GHz	123	108		(I)
	C0603NP0130□GTH	1V, 1MHz	13	pF	±5%, ±2%	0.30	±0.03	±0.03	1GHz	128	96		(I)
	C0603NP0150□GTH	1V, 1MHz	15	pF	±5%, ±2%	0.30	±0.03	±0.03	1GHz	126	84		(I)
	C0603NP0160□GTH	1V, 1MHz	16	pF	±5%, ±2%	0.30	±0.03	±0.03	1GHz	138	72		(I)
	C0603NP0180□GTH	1V, 1MHz	18	pF	±5%, ±2%	0.30	±0.03	±0.03	1GHz	123	72		(I)
	C0603NP0200□GTH	1V, 1MHz	20	pF	±5%, ±2%	0.30	±0.03	±0.03	1GHz	159	50		(I)
	C0603NP0220□GTH	1V, 1MHz	22	pF	±5%, ±2%	0.30	±0.03	±0.03	1GHz	181	40		(I)
	C0603NP0240□GTH	1V, 1MHz	24	pF	±5%, ±2%	0.30	±0.03	±0.03	500MHz	166	40		(I)
	C0603NP0270□GTH	1V, 1MHz	27	pF	±5%, ±2%	0.30	±0.03	±0.03	500MHz	196	30		(I)
	C0603NP0300□GTH	1V, 1MHz	30	pF	±5%, ±2%	0.30	±0.03	±0.03	500MHz	212	25		(I)
	C0603NP0330□GTH	1V, 1MHz	33	pF	±5%, ±2%	0.30	±0.03	±0.03	500MHz	241	20		(I)
	C0603NP0470□GTH	1V, 1MHz	47	pF	±5%, ±2%	0.30	±0.03	±0.03	500MHz	169	20		(I)
	C0603NP0560□GTH	1V, 1MHz	56	pF	±5%, ±2%	0.30	±0.03	±0.03	500MHz	237	12		(I)

□ Tolerance Code: A=±0.05 pF, B=±0.1pF, C=±0.25pF ,D=±0.5pF, F=±1%, G=±2%, J=±5%; Special tolerance on the request.

● C1005NP0_H Series (EIA0402)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		Testing Freq	ESR mΩ (max.)	Q (min.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.					
100V	C1005NP0208□HTH	1V, 1MHz	0.2	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	2411	330	Paper, 10Kpcs	(I)
	C1005NP0308□HTH	1V, 1MHz	0.3	pF	±0.25pF,±0.1pF,±0.05pF	0.50	±0.05	±0.05	1GHz	1608	330		(I)
	C1005NP0408□HTH	1V, 1MHz	0.4	pF	±0.25pF,±0.1pF,±0.05pF	0.50	±0.05	±0.05	1GHz	1206	330		(I)
	C1005NP0508□HTH	1V, 1MHz	0.5	pF	±0.25pF,±0.1pF,±0.05pF	0.50	±0.05	±0.05	1GHz	965	330		(I)
	C1005NP0608□HTH	1V, 1MHz	0.6	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	804	330		(I)
	C1005NP0708□HTH	1V, 1MHz	0.7	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	689	330		(I)
	C1005NP0808□HTH	1V, 1MHz	0.8	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	603	330		(I)
	C1005NP0908□HTH	1V, 1MHz	0.9	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	536	330		(I)
	C1005NP0109□HTH	1V, 1MHz	1.0	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	482	330		(I)
	C1005NP0119□HTH	1V, 1MHz	1.1	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	526	275		(I)
	C1005NP0129□HTH	1V, 1MHz	1.2	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	482	275		(I)
	C1005NP0139□HTH	1V, 1MHz	1.3	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	445	275		(I)
	C1005NP0159□HTH	1V, 1MHz	1.5	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	386	275		(I)
	C1005NP0169□HTH	1V, 1MHz	1.6	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	362	275		(I)
	C1005NP0189□HTH	1V, 1MHz	1.8	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	322	275		(I)
	C1005NP0209□HTH	1V, 1MHz	2.0	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	362	220		(I)
	C1005NP0229□HTH	1V, 1MHz	2.2	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	329	220		(I)
	C1005NP0249□HTH	1V, 1MHz	2.4	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	301	220		(I)
	C1005NP0279□HTH	1V, 1MHz	2.7	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	268	220		(I)
	C1005NP0309□HTH	1V, 1MHz	3.0	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	241	220		(I)
	C1005NP0339□HTH	1V, 1MHz	3.3	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	219	220		(I)
	C1005NP0369□HTH	1V, 1MHz	3.6	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	223	198		(I)
	C1005NP0399□HTH	1V, 1MHz	3.9	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	206	198		(I)
	C1005NP0439□HTH	1V, 1MHz	4.3	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	187	198		(I)
	C1005NP0479□HTH	1V, 1MHz	4.7	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	171	198		(I)
	C1005NP0519□HTH	1V, 1MHz	5.1	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	189	165		(I)
	C1005NP0569□HTH	1V, 1MHz	5.6	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	172	165		(I)
	C1005NP0689□HTH	1V, 1MHz	6.8	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	142	165		(I)
	C1005NP0829□HTH	1V, 1MHz	8.2	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	176	110		(I)
	C1005NP0100□HTH	1V, 1MHz	10	pF	±5%, ±2%	0.50	±0.05	±0.05	1GHz	181	88		(I)
	C1005NP0120□HTH	1V, 1MHz	12	pF	±5%, ±2%	0.50	±0.05	±0.05	1GHz	201	66		(I)
	C1005NP0150□HTH	1V, 1MHz	15	pF	±5%, ±2%	0.50	±0.05	±0.05	1GHz	241	44		(I)
	C1005NP0180□HTH	1V, 1MHz	18	pF	±5%, ±2%	0.50	±0.05	±0.05	1GHz	268	33		(I)
	C1005NP0220□HTH	1V, 1MHz	22	pF	±5%, ±2%	0.50	±0.05	±0.05	1GHz	301	24		(I)
	C1005NP0270□HTH	1V, 1MHz	27	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	246	24		(I)
	C1005NP0330□HTH	1V, 1MHz	33	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	254	19		(I)
	C1005NP0390□HTH	1V, 1MHz	39	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	255	16		(I)
	C1005NP0470□HTH	1V, 1MHz	47	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	242	14		(I)
	C1005NP0560□HTH	1V, 1MHz	56	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	258	11		(I)
	C1005NP0680□HTH	1V, 1MHz	68	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	260	9		(I)
	C1005NP0820□HTH	1V, 1MHz	82	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	243	8		(I)
	C1005NP0101□HTH	1V, 1MHz	100	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	265	6		(I)

□ Tolerance Code: A=±0.05 pF, B=±0.1pF, C=±0.25pF ,D=±0.5pF, F=±1%, G=±2%, J=±5%; Special tolerance on the request.

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		Testing Freq	ESR mΩ (max.)	Q (min.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.					
50V	C1005NP0208□GTH	1V, 1MHz	0.2	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	2411	330	Paper, 10Kpcs	(I)
	C1005NP0308□GTH	1V, 1MHz	0.3	pF	±0.25pF,±0.1pF,±0.05pF	0.50	±0.05	±0.05	1GHz	1608	330		(I)
	C1005NP0408□GTH	1V, 1MHz	0.4	pF	±0.25pF,±0.1pF,±0.05pF	0.50	±0.05	±0.05	1GHz	1206	330		(I)
	C1005NP0508□GTH	1V, 1MHz	0.5	pF	±0.25pF,±0.1pF,±0.05pF	0.50	±0.05	±0.05	1GHz	965	330		(I)
	C1005NP0608□GTH	1V, 1MHz	0.6	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	804	330		(I)
	C1005NP0708□GTH	1V, 1MHz	0.7	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	689	330		(I)
	C1005NP0808□GTH	1V, 1MHz	0.8	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	603	330		(I)
	C1005NP0828□GTH	1V, 1MHz	0.82	pF	±0.25pF,±0.1pF,±0.05pF	0.50	±0.05	±0.05	1GHz	588	330		(I)
	C1005NP0908□GTH	1V, 1MHz	0.9	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	536	330		(I)
	C1005NP0109□GTH	1V, 1MHz	1.0	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	482	330		(I)
	C1005NP0119□GTH	1V, 1MHz	1.1	pF	±0.25pF,±0.1pF,±0.05pF	0.50	±0.05	±0.05	1GHz	526	275		(I)
	C1005NP0129□GTH	1V, 1MHz	1.2	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	482	275		(I)
	C1005NP0139□GTH	1V, 1MHz	1.3	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	445	275		(I)
	C1005NP0159□GTH	1V, 1MHz	1.5	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	386	275		(I)
	C1005NP0169□GTH	1V, 1MHz	1.6	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	362	275		(I)
	C1005NP0189□GTH	1V, 1MHz	1.8	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	322	275		(I)
	C1005NP0209□GTH	1V, 1MHz	2.0	pF	±0.25pF,±0.1pF	0.50	±0.05	±0.05	1GHz	362	220		(I)
	C1005NP0229□GTH	1V, 1MHz	2.2	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	329	220		(I)
	C1005NP0249□GTH	1V, 1MHz	2.4	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	301	220		(I)
	C1005NP0259□GTH	1V, 1MHz	2.5	pF	±0.25pF,±0.1pF,±0.05pF	0.50	±0.05	±0.05	1GHz	289	220		(I)
	C1005NP0279□GTH	1V, 1MHz	2.7	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	268	220		(I)
	C1005NP0309□GTH	1V, 1MHz	3.0	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	241	220		(I)
	C1005NP0339□GTH	1V, 1MHz	3.3	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	219	220		(I)
	C1005NP0369□GTH	1V, 1MHz	3.6	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	223	198		(I)
	C1005NP0399□GTH	1V, 1MHz	3.9	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	206	198		(I)
	C1005NP0439□GTH	1V, 1MHz	4.3	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	187	198		(I)
	C1005NP0479□GTH	1V, 1MHz	4.7	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	171	198		(I)
	C1005NP0519□GTH	1V, 1MHz	5.1	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	189	165		(I)
	C1005NP0569□GTH	1V, 1MHz	5.6	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	172	165		(I)
	C1005NP0689□GTH	1V, 1MHz	6.8	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	142	165		(I)
	C1005NP0829□GTH	1V, 1MHz	8.2	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	1GHz	176	110		(I)
	C1005NP0100□GTH	1V, 1MHz	10	pF	±5%, ±2%	0.50	±0.05	±0.05	1GHz	181	88		(I)
	C1005NP0120□GTH	1V, 1MHz	12	pF	±5%, ±2%	0.50	±0.05	±0.05	1GHz	201	66		(I)
	C1005NP0150□GTH	1V, 1MHz	15	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	1GHz	241	44		(I)
	C1005NP0180□GTH	1V, 1MHz	18	pF	±5%, ±2%	0.50	±0.05	±0.05	1GHz	268	33		(I)
	C1005NP0220□GTH	1V, 1MHz	22	pF	±5%, ±2%	0.50	±0.05	±0.05	1GHz	301	24		(I)
	C1005NP0270□GTH	1V, 1MHz	27	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	246	24		(I)
	C1005NP0330□GTH	1V, 1MHz	33	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	254	19		(I)
	C1005NP0390□GTH	1V, 1MHz	39	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	255	16		(I)
	C1005NP0470□GTH	1V, 1MHz	47	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	242	14		(I)
	C1005NP0560□GTH	1V, 1MHz	56	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	258	11		(I)
	C1005NP0680□GTH	1V, 1MHz	68	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	260	9		(I)
	C1005NP0820□GTH	1V, 1MHz	82	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	243	8		(I)
	C1005NP0101□GTH	1V, 1MHz	100	pF	±5%, ±2%	0.50	±0.05	±0.05	500MHz	265	6		(I)

□ Tolerance Code: A=±0.05 pF, B=±0.1pF, C=±0.25pF ,D=±0.5pF, F=±1%, G=±2%, J=±5%; Special tolerance on the request.

● Class II: High Dielectric Constant Type

■ X7R_A Series

● C0603X7R_A Series (EIA0201)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
25V	C0603X7R222KFTA	1V , 1kHz	2.2	nF	±10%	0.30	± 0.03	± 0.03	3.5%	Paper, 15Kpcs	(I)
	C0603X7R331KFTA	1V , 1kHz	330	pF	±10%	0.30	± 0.03	± 0.03	3.5%		(I)
16V	C0603X7R472KETA	1V , 1kHz	4.7	nF	±10%	0.30	± 0.03	± 0.03	5.0%	Paper, 15Kpcs	(I)
10V	C0603X7R222KDTA	1V , 1kHz	2.2	nF	±10%	0.30	± 0.03	± 0.03	5.0%	Paper, 15Kpcs	(I)
	C0603X7R472KDTA	1V , 1kHz	4.7	nF	±10%	0.30	± 0.03	± 0.03	5.0%		(I)
	C0603X7R103KDTA	1V , 1kHz	10	nF	±10%	0.30	± 0.03	± 0.03	5.0%		(I)
6.3V	C0603X7R121KCTA	1V , 1kHz	120	pF	±10%	0.30	± 0.03	± 0.03	3.5%	Paper, 15Kpcs	(I)
	C0603X7R104KCTA	1V , 1kHz	100	nF	±10%	0.30	± 0.05	± 0.05	10.0%		(II)

- C1005X7R_A Series (EIA0402)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
50V	C1005X7R101KGTA	1V , 1kHz	100	pF	±10%	0.50	±0.05	±0.05	3.0%	Paper, 10Kpcs	(I)
	C1005X7R151KGTA	1V , 1kHz	150	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R221KGTA	1V , 1kHz	220	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R271KGTA	1V , 1kHz	270	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R331KGTA	1V , 1kHz	330	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R391KGTA	1V , 1kHz	390	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R471KGTA	1V , 1kHz	470	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R561KGTA	1V , 1kHz	560	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R681KGTA	1V , 1kHz	680	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R751KGTA	1V , 1kHz	750	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R821KGTA	1V , 1kHz	820	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R102KGTA	1V , 1kHz	1.0	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R122KGTA	1V , 1kHz	1.2	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R152KGTA	1V , 1kHz	1.5	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R182KGTA	1V , 1kHz	1.8	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R222KGTA	1V , 1kHz	2.2	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R272KGTA	1V , 1kHz	2.7	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R332□GTA	1V , 1kHz	3.3	nF	±5%,±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R392KGTA	1V , 1kHz	3.9	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R472KGTA	1V , 1kHz	4.7	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R562KGTA	1V , 1kHz	5.6	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R682KGTA	1V , 1kHz	6.8	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R822KGTA	1V , 1kHz	8.2	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R103KGTA	1V , 1kHz	10	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R153KGTA	1V , 1kHz	15	nF	±10%	0.50	±0.05	±0.05	5.0%		(I)
	C1005X7R223KGTA	1V , 1kHz	22	nF	±10%	0.50	±0.05	±0.05	5.0%		(I)
	C1005X7R333KGTA	1V , 1kHz	33	nF	±10%	0.50	±0.05	±0.05	5.0%		(II)
	C1005X7R473KGTA	1V , 1kHz	47	nF	±10%	0.50	±0.10	±0.10	10.0%		(II)
	C1005X7R683KGTA	1V , 1kHz	68	nF	±10%	0.50	±0.10	±0.10	10.0%		(II)
	C1005X7R104KGTA	1V , 1kHz	100	nF	±10%	0.50	±0.10	±0.10	10.0%		(II)
25V	C1005X7R221KFTA	1V , 1kHz	220	pF	±10%	0.50	±0.05	±0.05	3.0%	Paper, 10Kpcs	(I)
	C1005X7R271KFTA	1V , 1kHz	270	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R331KFTA	1V , 1kHz	330	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R391KFTA	1V , 1kHz	390	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R471KFTA	1V , 1kHz	470	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R561KFTA	1V , 1kHz	560	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R681KFTA	1V , 1kHz	680	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R821KFTA	1V , 1kHz	820	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R102KFTA	1V , 1kHz	1.0	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R122KFTA	1V , 1kHz	1.2	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R152KFTA	1V , 1kHz	1.5	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R182KFTA	1V , 1kHz	1.8	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R222KFTA	1V , 1kHz	2.2	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R272KFTA	1V , 1kHz	2.7	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R332KFTA	1V , 1kHz	3.3	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R392KFTA	1V , 1kHz	3.9	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R472KFTA	1V , 1kHz	4.7	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R562KFTA	1V , 1kHz	5.6	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R682□FTA	1V , 1kHz	6.8	nF	±5%,±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R822KFTA	1V , 1kHz	8.2	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R103KFTA	1V , 1kHz	10	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)

DARFON

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
25V	C1005X7R123KFTA	1V , 1kHz	12	nF	±10%	0.50	±0.05	±0.05	3.5%	Paper, 10Kpcs	(I)
	C1005X7R153KFTA	1V , 1kHz	15	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R183KFTA	1V , 1kHz	18	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R223KFTA	1V , 1kHz	22	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R273KFTA	1V , 1kHz	27	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R333KFTA	1V , 1kHz	33	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R473KFTA	1V , 1kHz	47	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R683KFTA	1V , 1kHz	68	nF	±10%	0.50	±0.10	±0.10	10.0%		(II)
	C1005X7R104KFTA	1V , 1kHz	100	nF	±10%	0.50	±0.10	±0.10	10.0%		(II)
16V	C1005X7R221KETA	1V , 1kHz	220	pF	±10%	0.50	±0.05	±0.05	3.5%	Paper, 10Kpcs	(I)
	C1005X7R271KETA	1V , 1kHz	270	pF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R331KETA	1V , 1kHz	330	pF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R391KETA	1V , 1kHz	390	pF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R471KETA	1V , 1kHz	470	pF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R561KETA	1V , 1kHz	560	pF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R681KETA	1V , 1kHz	680	pF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R821KETA	1V , 1kHz	820	pF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R102KETA	1V , 1kHz	1.0	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R122KETA	1V , 1kHz	1.2	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R152KETA	1V , 1kHz	1.5	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R182KETA	1V , 1kHz	1.8	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R222KETA	1V , 1kHz	2.2	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R272KETA	1V , 1kHz	2.7	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R332KETA	1V , 1kHz	3.3	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R392KETA	1V , 1kHz	3.9	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R472KETA	1V , 1kHz	4.7	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R562KETA	1V , 1kHz	5.6	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R682KETA	1V , 1kHz	6.8	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R822KETA	1V , 1kHz	8.2	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R103KETA	1V , 1kHz	10	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R123KETA	1V , 1kHz	12	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R153KETA	1V , 1kHz	15	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R183KETA	1V , 1kHz	18	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R223KETA	1V , 1kHz	22	nF	±10%	0.50	±0.05	±0.05	3.5%		(I)
	C1005X7R273KETA	1V , 1kHz	27	nF	±10%	0.50	±0.05	±0.05	5.0%		(I)
	C1005X7R333KETA	1V , 1kHz	33	nF	±10%	0.50	±0.05	±0.05	5.0%		(I)
	C1005X7R473KETA	1V , 1kHz	47	nF	±10%	0.50	±0.05	±0.05	5.0%		(I)
	C1005X7R563KETA	1V , 1kHz	56	nF	±10%	0.50	±0.05	±0.05	5.0%		(I)
	C1005X7R683KETA	1V , 1kHz	68	nF	±10%	0.50	±0.05	±0.05	5.0%		(I)
	C1005X7R823KETA	1V , 1kHz	82	nF	±10%	0.50	±0.05	±0.05	5.0%		(I)
	C1005X7R104KETA	1V , 1kHz	100	nF	±10%	0.50	±0.10	±0.10	5.0%		(I)
	C1005X7R224KETA	1V , 1kHz	220	nF	±10%	0.50	±0.10	±0.10	10.0%		(II)
10V	C1005X7R103KDTA	1V , 1kHz	10	nF	±10%	0.50	±0.05	±0.05	3.5%	Paper, 10Kpcs	(I)
	C1005X7R104KDTA	1V , 1kHz	100	nF	±10%	0.50	±0.10	±0.10	5.0%		(I)
	C1005X7R224KDTA	1V , 1kHz	220	nF	±10%	0.50	±0.10	±0.10	10%		(II)

☐ Tolerance Code: A=±0.05pF, B=±0.1pF, C=±0.25pF ,D=±0.5pF, F=±1%, G=±2%, J=±5%; Special tolerance on the request.

- C1608X7R_A Series (EIA0603)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
100V	C1608X7R471KHTA	1V , 1kHz	470	pF	±10%	0.80	±0.10	±0.10	3.0%	Paper, 4Kpcs	(I)
	C1608X7R102□HTA	1V , 1kHz	1.0	nF	±5%,±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R122KHTA	1V , 1kHz	1.2	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R152KHTA	1V , 1kHz	1.5	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R182KHTA	1V , 1kHz	1.8	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R222KHTA	1V , 1kHz	2.2	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R272KHTA	1V , 1kHz	2.7	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R332KHTA	1V , 1kHz	3.3	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R392KHTA	1V , 1kHz	3.9	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R472□HTA	1V , 1kHz	4.7	nF	±5%,±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R562KHTA	1V , 1kHz	5.6	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R682KHTA	1V , 1kHz	6.8	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R822KHTA	1V , 1kHz	8.2	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R103□HTA	1V , 1kHz	10	nF	±5%,±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R153KHTA	1V , 1kHz	15	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R223KHTA	1V , 1kHz	22	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R473□HTA	1V , 1kHz	47	nF	±5%,±10%	0.80	±0.15	±0.15	5.0%		(I)
	C1608X7R104KHTA	1V , 1kHz	100	nF	±10%	0.80	±0.15	±0.15	10.0%		(I)
50V	C1608X7R101KGTA	1V , 1kHz	100	pF	±10%	0.80	±0.10	±0.10	3.0%	Paper, 4Kpcs	(I)
	C1608X7R221KGTA	1V , 1kHz	220	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R331KGTA	1V , 1kHz	330	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R471KGTA	1V , 1kHz	470	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R681KGTA	1V , 1kHz	680	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R102□GTA	1V , 1kHz	1.0	nF	±5%,±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R122KGTA	1V , 1kHz	1.2	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R152KGTA	1V , 1kHz	1.5	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R182KGTA	1V , 1kHz	1.8	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R222KGTA	1V , 1kHz	2.2	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R272KGTA	1V , 1kHz	2.7	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R332KGTA	1V , 1kHz	3.3	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R392KGTA	1V , 1kHz	3.9	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R472□GTA	1V , 1kHz	4.7	nF	±5%,±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R562KGTA	1V , 1kHz	5.6	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R682KGTA	1V , 1kHz	6.8	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R822□GTA	1V , 1kHz	8.2	nF	±5%,±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R103□GTA	1V , 1kHz	10	nF	±5%,±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R153KGTA	1V , 1kHz	15	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R223KGTA	1V , 1kHz	22	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R273KGTA	1V , 1kHz	27	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R333KGTA	1V , 1kHz	33	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R393KGTA	1V , 1kHz	39	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R473KGTA	1V , 1kHz	47	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R563KGTA	1V , 1kHz	56	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R683KGTA	1V , 1kHz	68	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R823KGTA	1V , 1kHz	82	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R104□GTA	1V , 1kHz	100	nF	±5%,±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R124□GTA	1V , 1kHz	120	nF	±5%,±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R224KGTA	1V , 1kHz	220	nF	±10%	0.80	±0.15	±0.15	3.5%		(II)
	C1608X7R474KGTA	1V , 1kHz	470	nF	±10%	0.80	±0.15	±0.15	10.0%		(II)
	C1608X7R105KGTA	1V , 1kHz	1.0	uF	±10%	0.80	±0.20	±0.20	10.0%		(II)
25V	C1608X7R102KFTA	1V , 1kHz	1.0	nF	±10%	0.80	±0.10	±0.10	3.0%	Paper, 4Kpcs	(I)
	C1608X7R152KFTA	1V , 1kHz	1.5	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R682KFTA	1V , 1kHz	6.8	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R103KFTA	1V , 1kHz	10	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R273□FTA	1V , 1kHz	27	nF	±5%,±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R393KFTA	1V , 1kHz	39	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R473KFTA	1V , 1kHz	47	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R104KFTA	1V , 1kHz	100	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R224KFTA	1V , 1kHz	220	nF	±10%	0.80	±0.15	±0.15	3.5%		(II)
	C1608X7R474KFTA	1V , 1kHz	470	nF	±10%	0.80	±0.20	±0.20	10.0%		(II)
	C1608X7R105KFTA	1V , 1kHz	1.0	uF	±10%	0.80	±0.20	±0.20	10.0%		(II)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
16V	C1608X7R101KETA	1V , 1kHz	100	pF	±10%	0.80	±0.10	±0.10	3.5%	Paper, 4Kpcs	(I)
	C1608X7R221KETA	1V , 1kHz	220	pF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R471KETA	1V , 1kHz	470	pF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R102KETA	1V , 1kHz	1.0	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R122KETA	1V , 1kHz	1.2	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R152KETA	1V , 1kHz	1.5	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R182KETA	1V , 1kHz	1.8	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R222KETA	1V , 1kHz	2.2	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R272KETA	1V , 1kHz	2.7	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R332KETA	1V , 1kHz	3.3	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R392KETA	1V , 1kHz	3.9	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R472KETA	1V , 1kHz	4.7	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R562KETA	1V , 1kHz	5.6	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R682KETA	1V , 1kHz	6.8	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R822KETA	1V , 1kHz	8.2	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R103KETA	1V , 1kHz	10	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R223KETA	1V , 1kHz	22	nF	±10%	0.80	±0.10	±0.10	3.5%		(I)
	C1608X7R273KETA	1V , 1kHz	27	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R393KETA	1V , 1kHz	39	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R473KETA	1V , 1kHz	47	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R563KETA	1V , 1kHz	56	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R683KETA	1V , 1kHz	68	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R823KETA	1V , 1kHz	82	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R104KETA	1V , 1kHz	100	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R154KETA	1V , 1kHz	150	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R224KETA	1V , 1kHz	220	nF	±10%	0.80	±0.15	±0.15	3.5%		(I)
	C1608X7R334KETA	1V , 1kHz	330	nF	±10%	0.80	±0.15	±0.15	5.0%		(I)
	C1608X7R474KETA	1V , 1kHz	470	nF	±10%	0.80	±0.15	±0.15	10.0%		(II)
	C1608X7R105KETA	1V , 1kHz	1.0	uF	±10%	0.80	±0.20	±0.20	10.0%		(II)
10V	C1608X7R102KDTA	1V , 1kHz	1.0	nF	±10%	0.80	±0.10	±0.10	5.0%	Paper, 4Kpcs	(I)
	C1608X7R122KDTA	1V , 1kHz	1.2	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R152KDTA	1V , 1kHz	1.5	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R182KDTA	1V , 1kHz	1.8	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R222KDTA	1V , 1kHz	2.2	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R272KDTA	1V , 1kHz	2.7	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R332KDTA	1V , 1kHz	3.3	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R392KDTA	1V , 1kHz	3.9	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R472KDTA	1V , 1kHz	4.7	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R562KDTA	1V , 1kHz	5.6	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R682KDTA	1V , 1kHz	6.8	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R822KDTA	1V , 1kHz	8.2	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R103KDTA	1V , 1kHz	10	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R223KDTA	1V , 1kHz	22	nF	±10%	0.80	±0.10	±0.10	5.0%		(I)
	C1608X7R273KDTA	1V , 1kHz	27	nF	±10%	0.80	±0.15	±0.15	5.0%		(I)
	C1608X7R393KDTA	1V , 1kHz	39	nF	±10%	0.80	±0.15	±0.15	5.0%		(I)
	C1608X7R473KDTA	1V , 1kHz	47	nF	±10%	0.80	±0.15	±0.15	5.0%		(I)
	C1608X7R563KDTA	1V , 1kHz	56	nF	±10%	0.80	±0.15	±0.15	5.0%		(I)
	C1608X7R683KDTA	1V , 1kHz	68	nF	±10%	0.80	±0.15	±0.15	5.0%		(I)
	C1608X7R823KDTA	1V , 1kHz	82	nF	±10%	0.80	±0.15	±0.15	5.0%		(I)
	C1608X7R104KDTA	1V , 1kHz	100	nF	±10%	0.80	±0.15	±0.15	5.0%		(I)
	C1608X7R154KDTA	1V , 1kHz	150	nF	±10%	0.80	±0.15	±0.15	5.0%		(I)
	C1608X7R184KDTA	1V , 1kHz	180	nF	±10%	0.80	±0.15	±0.15	5.0%		(I)
	C1608X7R224KDTA	1V , 1kHz	220	nF	±10%	0.80	±0.15	±0.15	10.0%		(I)
	C1608X7R105KDTA	1V , 1kHz	1.0	uF	±10%	0.80	±0.15	±0.15	5.0%		(II)
6.3V	C1608X7R105KCTA	1V , 1kHz	1.0	uF	±10%	0.80	±0.15	±0.15	10.0%	Paper, 4Kpcs	(II)
	C1608X7R225KCTA	1V , 1kHz	2.2	uF	±10%	0.80	±0.20	±0.20	10.0%		(II)

☐ Tolerance Code: A=±0.05pF, B=±0.1pF, C=±0.25pF ,D=±0.5pF, F=±1%, G=±2%, J=±5%; Special tolerance on the request.

- C2012X7R_A Series (EIA0805)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
250V	C2012X7R223KKPAG	1V , 1kHz	22	nF	±10%	1.25	±0.20	±0.20	2.5%	Embossed, 3Kpcs	(I)
100V	C2012X7R102KHTAE	1V , 1kHz	1.0	nF	±10%	0.85	±0.20	±0.10	3.0%	Paper, 4Kpcs	(I)
	C2012X7R122KHTAE	1V , 1kHz	1.2	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R152KHTAE	1V , 1kHz	1.5	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R182KHTAE	1V , 1kHz	1.8	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R222KHTAE	1V , 1kHz	2.2	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R272KHTAE	1V , 1kHz	2.7	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R332KHTAE	1V , 1kHz	3.3	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R392KHTAE	1V , 1kHz	3.9	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R472KHTAE	1V , 1kHz	4.7	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R562KHTAE	1V , 1kHz	5.6	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R682KHTAE	1V , 1kHz	6.8	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R822KHTAE	1V , 1kHz	8.2	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R103KHTAE	1V , 1kHz	10	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R123KHTAE	1V , 1kHz	12	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R153KHTAE	1V , 1kHz	15	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R183KHTAE	1V , 1kHz	18	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R223KHTAE	1V , 1kHz	22	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R333KHPAG	1V , 1kHz	33	nF	±10%	1.25	±0.20	±0.20	2.5%	Embossed, 3Kpcs	(I)
	C2012X7R473KHPAG	1V , 1kHz	47	nF	±10%	1.25	±0.20	±0.20	2.5%		(I)
	C2012X7R563KHPAG	1V , 1kHz	56	nF	±10%	1.25	±0.20	±0.20	2.5%		(I)
	C2012X7R683KHPAG	1V , 1kHz	68	nF	±10%	1.25	±0.20	±0.20	2.5%		(I)
	C2012X7R823KHPAG	1V , 1kHz	82	nF	±10%	1.25	±0.20	±0.20	2.5%		(I)
	C2012X7R104KHPAG	1V , 1kHz	100	nF	±10%	1.25	±0.20	±0.20	5.0%		(I)
50V	C2012X7R102□GTAE	1V , 1kHz	1.0	nF	±5%,±10%	0.85	±0.20	±0.10	3.0%	Paper, 4Kpcs	(I)
	C2012X7R122KGTAE	1V , 1kHz	1.2	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R152KGTAE	1V , 1kHz	1.5	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R182KGTAE	1V , 1kHz	1.8	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R222KGTAE	1V , 1kHz	2.2	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R272KGTAE	1V , 1kHz	2.7	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R332KGTAE	1V , 1kHz	3.3	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R392KGTAE	1V , 1kHz	3.9	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R472KGTAE	1V , 1kHz	4.7	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R562KGTAE	1V , 1kHz	5.6	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R682KGTAE	1V , 1kHz	6.8	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R822KGTAE	1V , 1kHz	8.2	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R103KGTAE	1V , 1kHz	10	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R123KGTAE	1V , 1kHz	12	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R153KGTAE	1V , 1kHz	15	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R183KGTAE	1V , 1kHz	18	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R223KGTAE	1V , 1kHz	22	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R273KGTAE	1V , 1kHz	27	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R333KGTAE	1V , 1kHz	33	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R393KGTAE	1V , 1kHz	39	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R473KGTAE	1V , 1kHz	47	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R563KGTAE	1V , 1kHz	56	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R683KGTAE	1V , 1kHz	68	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R683KGPAG	1V , 1kHz	68	nF	±10%	1.25	±0.20	±0.20	3.0%	Embossed, 3Kpcs	(I)
	C2012X7R823KGTAE	1V , 1kHz	82	nF	±10%	0.85	±0.20	±0.10	3.0%	Paper, 4Kpcs	(I)
	C2012X7R823KGPAG	1V , 1kHz	82	nF	±10%	1.25	±0.20	±0.20	3.0%	Embossed, 3Kpcs	(I)
	C2012X7R104KGTAE	1V , 1kHz	100	nF	±10%	0.85	±0.20	±0.10	3.0%	Paper, 4Kpcs	(I)
	C2012X7R104KGPAG	1V , 1kHz	100	nF	±10%	1.25	±0.20	±0.20	3.0%	Embossed, 3Kpcs	(I)
	C2012X7R154KGTAE	1V , 1kHz	150	nF	±10%	0.85	±0.20	±0.10	3.0%	Paper, 4Kpcs	(I)
	C2012X7R224KGPAG	1V , 1kHz	220	nF	±10%	1.25	±0.20	±0.20	3.5%	Embossed, 3Kpcs	(I)
	C2012X7R334KGPAG	1V , 1kHz	330	nF	±10%	1.25	±0.20	±0.20	3.5%		(II)
	C2012X7R474KGPAG	1V , 1kHz	470	nF	±10%	1.25	±0.20	±0.20	5.0%		(II)
	C2012X7R105KGPAG	1V , 1kHz	1	uF	±10%	1.25	±0.20	±0.20	10.0%		(II)

□ Tolerance Code: A=±0.05pF, B=±0.1pF, C=±0.25pF ,D=±0.5pF, F=±1%, G=±2%, J=±5%; Special tolerance on the request.

DARFON

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
25V	C2012X7R102KFTAE	1V , 1kHz	1.0	nF	±10%	0.85	±0.20	±0.10	3.0%	Paper, 4Kpcs	(I)
	C2012X7R122KFTAE	1V , 1kHz	1.2	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R152KFTAE	1V , 1kHz	1.5	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R182KFTAE	1V , 1kHz	1.8	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R222KFTAE	1V , 1kHz	2.2	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R272KFTAE	1V , 1kHz	2.7	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R332KFTAE	1V , 1kHz	3.3	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R392KFTAE	1V , 1kHz	3.9	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R472KFTAE	1V , 1kHz	4.7	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R562KFTAE	1V , 1kHz	5.6	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R682KFTAE	1V , 1kHz	6.8	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R822KFTAE	1V , 1kHz	8.2	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R103KFTAE	1V , 1kHz	10	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R123KFTAE	1V , 1kHz	12	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R153KFTAE	1V , 1kHz	15	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R183KFTAE	1V , 1kHz	18	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R223KFTAE	1V , 1kHz	22	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R273KFTAE	1V , 1kHz	27	nF	±10%	0.85	±0.20	±0.10	2.5%		(I)
	C2012X7R333KFTAE	1V , 1kHz	33	nF	±10%	0.85	±0.20	±0.10	2.5%		(I)
	C2012X7R393KFTAE	1V , 1kHz	39	nF	±10%	0.85	±0.20	±0.10	2.5%		(I)
	C2012X7R473KFTAE	1V , 1kHz	47	nF	±10%	0.85	±0.20	±0.10	2.5%		(I)
	C2012X7R563KFTAE	1V , 1kHz	56	nF	±10%	0.85	±0.20	±0.10	2.5%		(I)
	C2012X7R683KFTAE	1V , 1kHz	68	nF	±10%	0.85	±0.20	±0.10	2.5%		(I)
	C2012X7R823KFTAE	1V , 1kHz	82	nF	±10%	0.85	±0.20	±0.10	2.5%		(I)
	C2012X7R104KFTAE	1V , 1kHz	100	nF	±10%	0.85	±0.20	±0.10	2.5%		(I)
	C2012X7R124KFTAE	1V , 1kHz	120	nF	±10%	0.85	±0.20	±0.10	2.5%		(I)
	C2012X7R154KFTAE	1V , 1kHz	150	nF	±10%	0.85	±0.20	±0.10	2.5%		(I)
	C2012X7R184KFTAE	1V , 1kHz	180	nF	±10%	0.85	±0.20	±0.10	3.0%		(I)
	C2012X7R224KFTAE	1V , 1kHz	220	nF	±10%	0.85	±0.20	±0.10	3.5%		(I)
	C2012X7R334KFPAG	1V , 1kHz	330	nF	±10%	1.25	±0.20	±0.20	5.0%	Embossed, 3Kpcs	(I)
	C2012X7R474KFPAG	1V , 1kHz	470	nF	±10%	1.25	±0.20	±0.20	5.0%		(I)
	C2012X7R105KFPAG	1V , 1kHz	1.0	uF	±10%	1.25	±0.20	±0.20	5.0%		(II)
	C2012X7R225KFPAG	1V , 1kHz	2.2	uF	±10%	1.25	±0.20	±0.20	10.0%		(II)
16V	C2012X7R105KEPAG	1V , 1kHz	1.0	uF	±10%	1.25	±0.20	±0.20	5.0%	Embossed, 3Kpcs	(II)
	C2012X7R225KEPAG	1V , 1kHz	2.2	uF	±10%	1.25	±0.20	±0.20	10.0%		(II)
	C2012X7R475KEPAG	1V , 1kHz	4.7	uF	±10%	1.25	±0.20	±0.20	10.0%		(II)
10V	C2012X7R102KDTAE	1V , 1kHz	1.0	nF	±10%	0.85	±0.20	±0.10	5.0%	Paper, 4Kpcs	(I)
	C2012X7R122KDTAE	1V , 1kHz	1.2	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R152KDTAE	1V , 1kHz	1.5	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R182KDTAE	1V , 1kHz	1.8	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R222KDTAE	1V , 1kHz	2.2	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R272KDTAE	1V , 1kHz	2.7	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R332KDTAE	1V , 1kHz	3.3	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R392KDTAE	1V , 1kHz	3.9	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R472KDTAE	1V , 1kHz	4.7	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R562KDTAE	1V , 1kHz	5.6	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R682KDTAE	1V , 1kHz	6.8	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R822KDTAE	1V , 1kHz	8.2	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R103KDTAE	1V , 1kHz	10	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R123KDTAE	1V , 1kHz	12	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R153KDTAE	1V , 1kHz	15	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R183KDTAE	1V , 1kHz	18	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R223KDTAE	1V , 1kHz	22	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R273KDTAE	1V , 1kHz	27	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R333KDTAE	1V , 1kHz	33	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R393KDTAE	1V , 1kHz	39	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R473KDTAE	1V , 1kHz	47	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R563KDTAE	1V , 1kHz	56	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R683KDTAE	1V , 1kHz	68	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R823KDTAE	1V , 1kHz	82	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R104KDTAE	1V , 1kHz	100	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R124KDTAE	1V , 1kHz	120	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R154KDTAE	1V , 1kHz	150	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R184KDTAE	1V , 1kHz	180	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)
	C2012X7R224KDTAE	1V , 1kHz	220	nF	±10%	0.85	±0.20	±0.10	5.0%		(I)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
10V	C2012X7R334KDPAG	1V , 1kHz	330	nF	±10%	1.25	±0.20	±0.20	5.0%	Embossed, 3Kpcs	(I)
	C2012X7R474KDPAG	1V , 1kHz	470	nF	±10%	1.25	±0.20	±0.20	5.0%		(I)
	C2012X7R105KDPAG	1V , 1kHz	1.0	uF	±10%	1.25	±0.20	±0.20	5.0%		(II)
	C2012X7R225KDPAG	1V , 1kHz	2.2	uF	±10%	1.25	±0.20	±0.20	10.0%		(II)
	C2012X7R475KDPAG	1V , 1kHz	4.7	uF	±10%	1.25	±0.20	±0.20	10.0%		(II)
	C2012X7R106KDPAG	1V , 1kHz	10	uF	±10%	1.25	±0.20	±0.20	10.0%		(II)

- C3216X7R_A Series (EIA1206)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
1000V	C3216X7R471KPPAG	1V , 1kHz	470	pF	±10%	1.25	±0.3/±0.2	±0.20	2.5%	Embossed, 3Kpcs	(II)
630V	C3216X7R223KMPAL	1V , 1kHz	22	nF	±10%	1.60	±0.3/±0.2	±0.20	2.5%	Embossed, 2Kpcs	(II)
200V	C3216X7R104KJPAL	1V , 1kHz	100	nF	±10%	1.6	±0.3/±0.2	±0.20	2.5%	Embossed, 2Kpcs	(II)
100V	C3216X7R683KHPAG	1V , 1kHz	68	nF	±10%	1.25	±0.3/±0.2	±0.20	2.5%	Embossed, 3Kpcs	(II)
	C3216X7R224KHPAG	1V , 1kHz	220	nF	±10%	1.25	±0.3/±0.2	±0.20	3.5%	Embossed, 3Kpcs	(II)
50V	C3216X7R104KGTAE	1V , 1kHz	100	nF	±10%	0.85	±0.15	±0.10	3.5%	Paper, 4Kpcs	(I)
	C3216X7R225KGPAL	1V , 1kHz	2.2	uF	±10%	1.60	±0.30	±0.30	10.0%	Embossed, 2Kpcs	(II)
25V	C3216X7R105KFPAL	1V , 1kHz	1.0	uF	±10%	1.60	±0.30	±0.30	10.0%	Embossed, 2Kpcs	(II)
	C3216X7R475KFPAL	1V , 1kHz	4.7	uF	±10%	1.60	±0.30	±0.30	10.0%	Embossed, 2Kpcs	(II)
	C3216X7R106KFPAL	1V , 1kHz	10	uF	±10%	1.60	±0.30	±0.30	10.0%	Embossed, 2Kpcs	(II)
16V	C3216X7R106KEPAL	1V , 1kHz	10	uF	±10%	1.60	±0.30	±0.30	10.0%	Embossed, 2Kpcs	(II)
6.3V	C3216X7R226KCPAL	0.5V , 120Hz	22	uF	±10%	1.60	±0.30	±0.30	10.0%	Embossed, 2Kpcs	(II)

- C3225X7R_A Series (EIA1210)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
100V	C3225X7R225KHPAN	1V , 1kHz	2.2	uF	±10%	2.00	±0.3/±0.2	±0.20	5.0%	Embossed, 2Kpcs	(II)
50V	C3225X7R105KGPAG	1V , 1kHz	1.0	uF	±10%	1.25	±0.3/±0.2	±0.20	2.5%	Embossed, 3Kpcs	(I)
	C3225X7R225KGPAP	1V , 1kHz	2.2	uF	±10%	2.50	±0.3/±0.2	±0.20	5.0%	Embossed, 1Kpcs	(II)
	C3225X7R475KGPAP	1V , 1kHz	4.7	uF	±10%	2.50	±0.30	±0.30	10.0%		(II)
25V	C3225X7R105KFPAG	1V , 1kHz	1.0	uF	±10%	1.25	±0.3/±0.2	±0.20	2.5%	Embossed, 3Kpcs	(I)
	C3225X7R106KFPAP	1V , 1kHz	10	uF	±10%	2.50	±0.30	±0.30	10.0%	Embossed, 1Kpcs	(II)
	C3225X7R226□FPAP	0.5V , 120Hz	22	uF	±10%,±20%	2.50	±0.30	±0.30	10.0%	Embossed, 1Kpcs	(II)
16V	C3225X7R226□EPAP	0.5V , 120Hz	22	uF	±10%,±20%	2.50	±0.30	±0.30	15.0%	Embossed, 1Kpcs	(II)
10V	C3225X7R226□DPAP	0.5V , 120Hz	22	uF	±10%,±20%	2.50	±0.30	±0.30	15.0%	Embossed, 1Kpcs	(II)
6.3V	C3225X7R476□CPAP	0.5V , 120Hz	47	uF	±10%,±20%	2.50	±0.30	±0.30	15.0%	Embossed, 1Kpcs	(II)

■ X7S_A Series

- C0603X7S_A Series (EIA0201)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
6.3V	C0603X7S473KCTA	1V , 1kHz	47	nF	±10%	0.30	± 0.03	± 0.03	10.0%	Paper, 15Kpcs	(II)
	C0603X7S104KCTA	1V , 1kHz	100	nF	±10%	0.30	± 0.05	± 0.05	10.0%		(II)

- C1608X7S_A Series (EIA0603)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
100V	C1608X7S104KHTA	1V , 1kHz	100	nF	±10%	0.80	±0.15	±0.15	10.0%	Paper, 4Kpcs	(I)

- C2012X7S_A Series (EIA0805)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
100V	C2012X7S105KHPAG	1V , 1kHz	1.0	uF	±10%	1.25	±0.20	±0.20	5.0%	Embossed, 3Kpcs	(II)

- C3216X7S_A Series (EIA1206)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
100V	C3216X7S225KHPAL	1V , 1kHz	2.2	uF	±10%	1.60	±0.20	±0.20	3.5%	Embossed, 2Kpcs	(II)
50V	C3216X7S475KGPAL	1V , 1kHz	4.7	uF	±10%	1.60	±0.20	±0.20	2.5%	Embossed, 2Kpcs	(II)

■ X7T_A Series

- C0603X7T_A Series (EIA0201)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
6.3V	C0603X7T104KCTA	1V , 1kHz	100	nF	±10%	0.30	± 0.05	± 0.05	10.0%	Paper, 15Kpcs	(II)

- C1005X7T_A Series (EIA0402)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
10V	C1005X7T474KDTA	1V , 1kHz	470	nF	±10%	0.50	± 0.1	± 0.1	10.0%	Paper, 10Kpcs	(II)
10V	C1005X7T105KDTA	1V , 1kHz	1.0	uF	±10%	0.50	± 0.2	± 0.2	10.0%	Paper, 10Kpcs	(II)
6.3V	C1005X7T225KCTA	1V , 1kHz	2.2	uF	±10%	0.50	± 0.2	± 0.2	10.0%	Paper, 10Kpcs	(II)

- C1608X7T_A Series (EIA0603)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
6.3V	C1608X7T106MCTA	1V , 1kHz	10	uF	±20%	0.80	± 0.2	± 0.2	12.5%	Paper, 4Kpcs	(II)

- C2012X7T_A Series (EIA0805)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
16V	C2012X7T106KEPAG	1V , 1kHz	10	uF	±10%	1.25	± 0.2	± 0.2	12.5%	Embossed, 3Kpcs	(II)

■ X6S_A Series

- C1005X6S_A Series (EIA0402)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
6.3V	C1005X6S225□CTA	1V , 1kHz	2.2	uF	±10%, ±20%	0.50	±0.20	±0.20	10.0%	Paper, 10Kpcs	(II)

- C1608X6S_A Series (EIA0603)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
6.3V	C1608X6S475KCTA	1V , 1kHz	4.7	uF	±10%	0.80	±0.15	±0.15	10.0%	Paper, 4Kpcs	(II)

■ X5R_A Series

● C0603X5R_A Series (EIA0201)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
6.3	C0603X5R224□CTA	1V , 1kHz	220	nF	±10%,±20%	0.30	±0.03	±0.03	10.0%	Paper, 15Kpcs	(II)

● C1005X5R_A Series (EIA0402)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
50V	C1005X5R103KGTA	1V , 1kHz	10	nF	±10%	0.50	±0.05	±0.05	3.0%	Paper, 10Kpcs	(I)
10V	C1005X5R224KDTA	1V , 1kHz	220	nF	±10%	0.50	±0.05	±0.05	5.0%	Paper, 10Kpcs	(II)
10V	C1005X5R225MDTA	1V , 1kHz	2.2	uF	±20%	0.50	±0.1	±0.1	10.0%	Paper, 10Kpcs	(II)

● C1608X5R_A Series (EIA0603)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
25V	C1608X5R225KFTA	1V , 1kHz	2.2	uF	±10%	0.80	±0.20	±0.20	10.0%	Paper, 4Kpcs	(II)
16V	C1608X5R475KETA	1V , 1kHz	4.7	uF	±10%	0.80	±0.20	±0.20	10.0%	Paper, 4Kpcs	(II)
10V	C1608X5R106KDTA	1V , 1kHz	10.0	uF	±10%	0.80	±0.20	±0.20	10.0%	Paper, 4Kpcs	(II)

● C2012X5R_A Series (EIA0805)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
25V	C2012X5R475KFPAG	1V , 1kHz	4.7	uF	±10%	1.25	±0.20	±0.20	10.0%	Embossed, 3Kpcs	(II)
16V	C2012X5R475KEPAG	1V , 1kHz	4.7	uF	±10%	1.25	±0.20	±0.20	10.0%	Embossed, 3Kpcs	(II)
10V	C2012X5R106KDPAG	1V , 1kHz	10	uF	±10%	1.25	±0.20	±0.20	10.0%	Embossed, 3Kpcs	(II)

● C3216X5R_A Series (EIA1206)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
10V	C3216X5R226KDPAL	0.5V , 120Hz	22.0	uF	±10%	1.60	±0.20	±0.20	10.0%	Embossed, 2Kpcs	(II)

● C3225X5R_A Series (EIA1210)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
10V	C3225X5R476KDPAP	0.5V , 120Hz	47.0	uF	±10%	2.50	±0.20	±0.20	10.0%	Embossed, 1Kpcs	(II)

■ X8R_A Series

● C1005X8R_A Series (EIA0402)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
50V	C1005X8R472KGTA	1V , 1kHz	4.7	nF	±10%	0.50	±0.10	±0.10	7.5%	Paper, 10Kpcs	(I)

● C1608X8R_A Series (EIA0603)

RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
50V	C1608X8R104KGTA	1V , 1kHz	100	nF	±10%	0.80	±0.15	±0.15	7.5%	Paper, 4Kpcs	(I)
25V	C1608X8R104KFTA	1V , 1kHz	100	nF	±10%	0.80	±0.15	±0.15	7.5%	Paper, 4Kpcs	(I)

■ X7R_B Series

● C1608X7R_B Series (EIA0603)

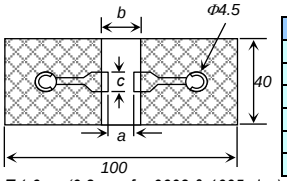
RV	DARFON P/N	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec
			Value	Unit			L/W	Thick.			
50V	C1608X7R102KGTB	1V , 1kHz	1.0	nF	±10%	0.80	±0.2/±0.15	±0.15	2.5%	Paper, 4Kpcs	(I)
	C1608X7R332KGTB	1V , 1kHz	3.3	nF	±10%	0.80	±0.2/±0.15	±0.15	2.5%		(I)
	C1608X7R472KGTB	1V , 1kHz	4.7	nF	±10%	0.80	±0.2/±0.15	±0.15	2.5%		(I)
	C1608X7R104KGTB	1V , 1kHz	100.0	nF	±10%	0.80	±0.2/±0.15	±0.15	3.5%		(I)

Test Spec.

Test Spec (I)

No	AEC-Q200 Test Item		Specification		AEC-Q200 Test Method
			Temp. compensation type	High dielectric constant type	
1	Pre- and Post-Stress Electrical Test		---		---
2	Temperature Cycle (Thermal shock)	Appearance	No marking defects		Solder the capacitor to supporting jig (Glass epoxy board) and perform 1000 cycles according to the four heat treatments listed in the following table. Let sit for 24±2hrs at room temperature, then measure. Step 1: Minimum operating temperature 15±3min Step 2: Room temperature 1 min Step 3: Maximum operating temperature 15±3min Step 4: Room temperature 1 min *High dielectric constant type: Initial measurement: perform a heat treatment at 150±10℃ for one hour and then let sit for 24±2 hours at room temp. Perform the initial measurement.
		Cap. Change	within ±2.5% or 0.25pF (whichever is larger)	within ±10.0%	
		Q/D.F.	If C≦30pF, DF≦1/(400+20C) If C >30pF, DF≦0.1%	To satisfy the specified initial spec	
		I.R.	I.R.≧10,000MΩ or R_iC_R≧500Ω-F. (whichever is smaller)		
3	Destructive Physical Analysis		No defects or abnormalities		Per EIA-469
4	Biased Humidity	Appearance	No marking defects		Apply 100% of the rated voltage and at 85±3℃ and 80 to 85% humidity for 1000±12 hours. The charge / discharge current is less than 50mA. [Temperature compensation type] Remove and let sit for 24±2 hours at room temperature, then measure. [High dielectric constant type] *Initial measurement Perform a heat treatment at 150+0/-10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement.
		Cap. Change	within ±3.0% or 0.30pF (whichever is larger)	within ±12.5%	
		Q/D.F.	If C≦30pF,DF≦1/(100+10C/3) If C >30pF, DF≦0.5%	200% max of initial spec.	
		I.R.	I.R.≧500MΩ or R_iC_R≧25Ω-F. (whichever is smaller)		
5	Operational Life	Appearance	No marking defects		Apply 100% of the rated voltage for 1000±12 hours at the maximum operating temperature ± 3℃. The charge / discharge current is less than 50mA. **[Temperature compensation type]** Remove and let sit for 24±2 hours at room temperature, then measure.
		Cap. Change	within ±3.0% or 0.30pF (whichever is larger)	within ±12.5%	
		Q/D.F.	If C<10pF, DF≦1/(200+10C) If 10pF≦C≦30pF, DF≦1/(275+5C/2) If C >30pF, DF≦0.285%	200% max of initial spec.	
		I.R.	I.R.≧1,000MΩ or R_iC_R≧50Ω-F. (whichever is smaller)		
6	External Visual		No defects or abnormalities		Visual inspection
7	Physical Dimension		Within the specified dimensions		Using calipers
8	Resistance to Solvents	Appearance	No marking defects		Per MIL-STD-202 Method 215 Solvent 1: 1 part (by volume) of isopropyl alcohol 3 parts (by volume) of mineral spirits Solvent 2: Terpene defluxer Solvent 3: 42 parts (by volume) of water 1 part (by volume) of propylene glycol monomethylether 1 part (by volume) of monoethanolomine
		Cap. Change	Within the specified tolerance		
		Q/D.F.	If C≦30pF, DF≦1/(400+20C) If C >30pF, DF≦0.1%	X7R/X8R/X6S: To satisfy the specified initial spec	
		I.R.	I.R.≧10,000MΩ or R_iC_R≧500Ω-F. (whichever is smaller)		
9	Mechanical Shock	Appearance	No marking defects		Three shocks in each direction should be applied along 3 mutually perpendicular axes of the test specimen (18 shocks). The specified test pulse should be Half-sine and should have a duration: 0.5ms, peak value: 1500g and velocity change: 4.7m/s.
		Cap. Change	Within the specified tolerance		
		Q/D.F.	If C≦30pF, DF≦1/(400+20C) If C >30pF, DF≦0.1%	To satisfy the specified initial spec	
		I.R.	I.R.≧10,000MΩ or R_iC_R≧500Ω-F. (whichever is smaller)		
10	Vibration	Appearance	No marking defects		Solder the capacitor to supporting jig (Glass epoxy board). The capacitor should be subjected to a simple harmonic motion having a total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 2000Hz. The frequency range, from 10 to 2000Hz and return to 10Hz, should be traversed in approximately 20 minutes. This motion should be applied for 12 items in each 3 mutually perpendicular directions (total 36 times).
		Cap. Change	Within the specified tolerance		
		Q/D.F.	If C≦30pF, DF≦1/(400+20C) If C >30pF, DF≦0.1%	To satisfy the specified initial spec	
		I.R.	I.R.≧10,000MΩ or R_iC_R≧500Ω-F. (whichever is smaller)		

<table>
<tr><th colspan="3" rowspan="2">AEC-Q200
Test Item</th><th colspan="2">Specification</th><th rowspan="2">Test Method</th></tr>
<tr><th>Temp. compensation type</th><th>High dielectric constant type</th></tr>
<tr><td rowspan="4">11</td><td rowspan="4">Resistance to Soldering Heat</td><td>Appearance</td><td colspan="2">No marking defects</td><td rowspan="4">Solder the capacitor to supporting jig (FR4) with below profile 3 times: Peak temperature 250±5℃ and peak temperature period 30±5 seconds (1 ~ 4℃/sec, time above 183℃, 90s ~ 120s).
Let sit at room temperature for 24±2 hours, then measure.
Initial measurement: perform a heat treatment at 150+0/-10℃ for one hour and then let sit for 24±2 hours at room temperature, then measure.</td></tr>
<tr><td>Cap. Change</td><td>within ±3.0% or 0.30pF (whichever is larger)</td><td>within ±12.5%</td></tr>
<tr><td>Q/D.F.</td><td>If C≦30pF, DF≦1/(400+20C)
If C >30pF, DF≦0.1%</td><td>To satisfy the specified initial spec</td></tr>
<tr><td>I.R.</td><td colspan="2">I.R.≧10,000MΩ or R_iC_R≧500Ω-F.
(whichever is smaller)</td></tr>
<tr><td rowspan="4">12</td><td rowspan="4">ESD</td><td>Appearance</td><td colspan="2">No marking defects</td><td rowspan="4">Per AEC-Q200-002</td></tr>
<tr><td>Cap. Change</td><td colspan="2">Within the specified tolerance</td></tr>
<tr><td>Q/D.F.</td><td>If C≦30pF, DF≦1/(400+20C)
If C >30pF, DF≦0.1%</td><td>To satisfy the specified initial spec</td></tr>
<tr><td>I.R.</td><td colspan="2">I.R.≧10,000MΩ or R_iC_R≧500Ω-F.
(whichever is smaller)</td></tr>
<tr><td>13</td><td colspan="2">Solderability of Termination</td><td colspan="2">95% of the terminations are to be soldered evenly and continuously.</td><td>(a) Electrical Test not required. Magnification 50 X. Method B1: Should be placed into 155℃ dry bake for 4 hours±15 minutes. After preheating, immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rin in weight proportion). Immerse in SAC305 solder solution for 5+0/-0.5 seconds at 245±5℃
(b) Electrical Test not required. Magnification 50 X. Test D:
Should be placed into 155℃ dry bake for 4 hours±15 minutes. After preheating, immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Immerse in SAC305 solder solution for 30+0/-0.5 seconds at 260±5℃</td></tr>
<tr><td rowspan="4">14</td><td rowspan="4">Electrical Characterization</td><td>Appearance</td><td colspan="2">No marking defects</td><td rowspan="3">The capacitance / D.F. shall be measured at 25℃ at the frequency and voltage shown in the table of “Part Number & Characteristic”.
Measurement Frequency:1.0+/-0.1MHz/1.0+/-0.1kHz
Measurement Voltage :1.0+/-0.2Vrms/ 0.5+/-0.1Vrms</td></tr>
<tr><td>Cap. Change</td><td colspan="2">Within the specified tolerance</td></tr>
<tr><td>Q/D.F.</td><td>If C≦30pF, DF≦1/(400+20C)
If C >30pF, DF≦0.1%</td><td>X7R/X8R/X6S:
To satisfy the specified initial spec</td></tr>
<tr><td>I.R. 25℃</td><td>I.R.≧10,000MΩ or R_iC_R≧500Ω-F.
(whichever is smaller)</td><td>I.R.≧10,000MΩ or R_iC_R≧500Ω-F.
(whichever is smaller)</td><td>The insulation resistance shall be measured with a DC voltage not exceeding the rated voltage at 25℃ and 125℃, within 1 minute of charging.</td></tr>
<tr><td>Dielectric Strength</td><td colspan="2">No failure</td><td>No failure shall be observed when 250% of the rated voltage is applied between the terminations for 1 to 5 seconds. The charge and discharge current is less than 50mA.</td></tr>
<tr><td rowspan="4">15</td><td rowspan="4">Board Flex</td><td>Appearance</td><td colspan="2">No marking defects</td><td rowspan="4">Solder the capacitor to the test jig (glass epoxy boards) shown in Fig.a using a SAC305(Sn96.5Ag3.0Cu0.5) solder (then let sit for 24±2 hours for X7R).
Then apply a force in the direction shown in Fig.b for 60±1sec.
The soldering shall be done with the reflow method and shall be conducted with care so that the soldering is uniform and free of defects such as heat shock.</td></tr>
<tr><td>Cap. Change</td><td>within ±5.0% or 0.5pF (whichever is larger)</td><td>within ±10.0%</td></tr>
<tr><td>Q/D.F.</td><td>If C≦30pF, DF≦1/(400+20C)
If C >30pF, DF≦0.1%</td><td>To satisfy the specified initial spec</td></tr>
<tr><td>I.R.</td><td colspan="2">I.R.≧10,000MΩ or R_iC_R≧500Ω-F.
(whichever is smaller)</td></tr>
</table>



T:1.6mm(0.8 mm for 0603 & 1005 size)

Fig. a.

Size	a	b	c
0603	0.3	0.9	0.3
1005	0.5	1.5	0.6
1608	0.6	2.2	0.9
2012	0.8	3.0	1.3
3216	2.0	4.4	1.7
3225	2.0	4.4	2.6

(Unit in mm)

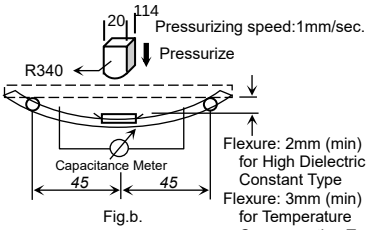
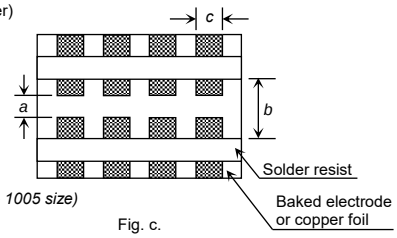


Fig.b.

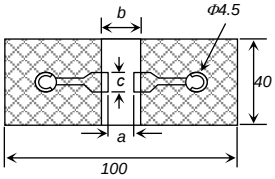
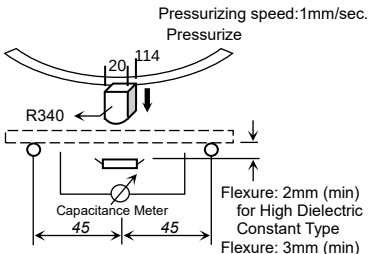
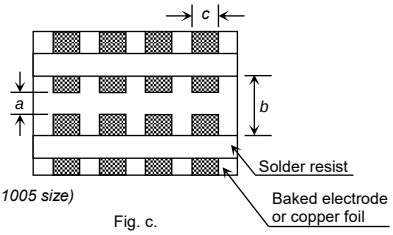
<table>
<tr><th colspan="3" rowspan="2">AEC-Q200
Test Item</th><th colspan="2">Specification</th><th rowspan="2">Test Method</th></tr>
<tr><th>Temp. compensation type</th><th>High dielectric constant type</th></tr>
<tr><td rowspan="4">16</td><td rowspan="4">Terminal Strength</td><td>Appearance</td><td colspan="2">No marking defects</td><td rowspan="4">Solder the capacitor to the test jig (glass epoxy boards) shown in Fig.c using a SAC305(Sn96.5Ag3.0Cu0.5) solder (then let sit for 24±2 hours for X7R).
Then apply *18N force in the direction parallel to the testing jig for 60sec. The soldering shall be done with the reflow method and shall be conducted with care so that the soldering is uniform and free of defects such as heat shock.
*2N for 0603 & 1005 size
Size | a | b | C
0603 | 0.3 | 0.9 | 0.3
1005 | 0.4 | 1.5 | 0.5
1608 | 1.0 | 3.0 | 1.2
2012 | 1.2 | 4.0 | 1.65
3216 | 2.2 | 5.0 | 2.0
3225 | 2.2 | 5.0 | 2.9
(Unit in mm)</td></tr>
<tr><td>Cap. Change</td><td colspan="2">Within the specified tolerance</td></tr>
<tr><td>Q/D.F.</td><td>If C≦30pF, DF≦1/(400+20C)
If C >30pF, DF≦0.1%</td><td>To satisfy the specified initial spec</td></tr>
<tr><td>I.R.</td><td colspan="2">I.R.≧10,000MΩ or R_iC_R≧500Ω-F.
(whichever is smaller)


T:1.6mm
(0.8 mm for 0603 & 1005 size)
Fig. c.</td></tr>
<tr><td>17</td><td colspan="2">Capacitance Temperature Characteristics</td><td>Capacitance change
NP0/X8G within 0±30ppm/℃ under operating temperature range.</td><td>Capacitance change
X7R/X8R within ±15%
X6S/X7S within ±22%
X7T within +22%/-33%</td><td>1.Temperature compensation type:
The capacitance value at 25℃ and 85℃ shall be measured and calculated from the formula given below.
T.C.=(C_{85}-C_{25})/C_{25}*ΔT*10^6(PPM/℃)
2.High dielectric constant type:
The ranges of capacitance change compared with the 25℃ value over the temperature ranges shall be within the specified ranges.</td></tr>
</table>

● Test Spec (II)

●	AEC-Q200 Test Item		Specification High dielectric constant type	AEC-Q200 Test Method
1	Pre- and Post-Stress Electrical Test		---	---
2	Temperature Cycle (Thermal shock)	Appearance	No marking defects	Solder the capacitor to supporting jig (Glass epoxy board) and perform 1000 cycles according to the four heat treatments listed in the following table. Let sit for 24±2hrs at room temperature, then measure. Step 1: Minimum operating temperature 15±3min Step 2: Room temperature 1 min Step 3: Maximum operating temperature 15±3min Step 4: Room temperature 1 min *High dielectric constant type: Initial measurement: perform a heat treatment at 150±10℃ for one hour and then let sit for 24±2 hours at room temp. Perform the initial measurement.
		Cap. Change	within ±10.0%	
		Q/D.F.	To satisfy the specified initial spec	
		I.R.	R_iC_R≧50Ω-F. Series: X7R X7S X7T; Cap Range: 0603≧2.2uF; 1005≧22uF 1608≧47uF; 2012≧100uF 3216≧100uF; 3225≧100uF; Insulation Resistance: RiCR≧20Ω-F	
3	Destructive Physical Analysis		No defects or abnormalities	Per EIA-469
4	Biased Humidity	Appearance	No marking defects	Apply 100% of the rated voltage at 85±3℃ and 80 to 85% humidity for 1000±12 hours. The charge / discharge current is less than 50mA. [Temperature compensation type] Remove and let sit for 24±2 hours at room temperature, then measure. [High dielectric constant type] *Initial measurement Perform a heat treatment at 150+0/-10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement.
		Cap. Change	within ±12.5%	
		Q/D.F.	200% max of initial spec.	
		I.R.	R_iC_R≧12.5Ω-F. High cap: Series: X7R X7S X7T X6S; Cap Range: 0603≧0.1uF; 1005≧0.47uF 1608≧1uF; 2012≧2.2uF 3216≧4.7uF; 3225≧10uF; Insulation Resistance: RiCR≧5Ω-F Series: X7R X7S X7T X6S; Cap Range: 0603≧2.2uF; 1005≧22uF 1608≧47uF; 2012≧100uF 3216≧100uF; 3225≧100uF; Insulation Resistance: RiCR≧1Ω-F	
5	Operational Life	Appearance	No marking defects	Apply 100% of the rated voltage for 1000±12 hours at the maximum operating temperature ± 3℃. The charge / discharge current is less than 50mA. **[Temperature compensation type]** Remove and let sit for 24±2 hours at room temperature, then measure.
		Cap. Change	within ±12.5%	
		Q/D.F.	200% max of initial spec.	
		I.R.	R_iC_r≧25Ω-F High cap: Series: X7R X7S X7T; Cap Range: 0603≧0.1uF; 1005≧0.47uF 1608≧1uF; 2012≧2.2uF 3216≧4.7uF; 3225≧10uF; Insulation Resistance: RiCR≧10Ω-F Series: X7R X7S X7T; Cap Range: 0603≧2.2uF; 1005≧22uF 1608≧47uF; 2012≧100uF 3216≧100uF; 3225≧100uF; Insulation Resistance: RiCR≧2Ω-F	
6	External Visual		No defects or abnormalities	Visual inspection
7	Physical Dimension		Within the specified dimensions	Using calipers
8	Resistance to Solvents	Appearance	No marking defects	Per MIL-STD-202 Method 215 Solvent 1: 1 part (by volume) of isopropyl alcohol 3 parts (by volume) of mineral spirits Solvent 2: Terpene defluxer Solvent 3: 42 parts (by volume) of water 1 part (by volume) of propylene glycol monomethylether 1 part (by volume) of monoethanolomine
		Cap. Change	Within the specified tolerance	
		Q/D.F.	To satisfy the specified initial spec	
		I.R.	R_iC_R≧50Ω-F.. Series: X7R X7S X7T; Cap Range: 0603≧2.2uF; 1005≧22uF 1608≧47uF; 2012≧100uF 3216≧100uF; 3225≧100uF; Insulation Resistance: RiCR≧20Ω-F	

<table>
<tr><th colspan="3" rowspan="2">AEC-Q200
Test Item</th><th>Specification</th><th rowspan="2">Test Method</th></tr>
<tr><th>High dielectric constant type</th></tr>
<tr><td rowspan="5">9</td><td rowspan="5">Mechanical Shock</td><td>Appearance</td><td>No marking defects</td><td rowspan="5">Three shocks in each direction should be applied along 3 mutually perpendicular axes of the test specimen (18 shocks). The specified test pulse should be Half-sine and should have a duration: 0.5ms, peak value: 1500g and velocity change: 4.7m/s.</td></tr>
<tr><td>Cap. Change</td><td>Within the specified tolerance</td></tr>
<tr><td>Q/D.F.</td><td>To satisfy the specified initial spec</td></tr>
<tr><td>I.R.</td><td>R_iC_R≧50Ω-F..
<table><tr><th>Series</th><th>Cap Range</th><th>Insulation Resistance</th></tr><tr><td>X7R
X7S
X7T</td><td>0603≧2.2uF; 1005≧22uF
1608≧47uF; 2012≧100uF
3216≧100uF; 3225≧100uF</td><td>RiCR≧20Ω-F</td></tr></table></td></tr>
<tr><td>Appearance</td><td>No marking defects</td></tr>
<tr><td rowspan="5">10</td><td rowspan="5">Vibration</td><td>Cap. Change</td><td>Within the specified tolerance</td><td rowspan="5">Solder the capacitor to supporting jig (Glass epoxy board). The capacitor should be subjected to a simple harmonic motion having a total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 2000Hz. The frequency range, from 10 to 2000Hz and return to 10Hz, should be traversed in approximately 20 minutes. This motion should be applied for 12 items in each 3 mutually perpendicular directions (total 36 times).</td></tr>
<tr><td>Q/D.F.</td><td>To satisfy the specified initial spec</td></tr>
<tr><td>I.R.</td><td>R_iC_R≧50Ω-F..
<table><tr><th>Series</th><th>Cap Range</th><th>Insulation Resistance</th></tr><tr><td>X7R
X7S
X7T</td><td>0603≧2.2uF; 1005≧22uF
1608≧47uF; 2012≧100uF
3216≧100uF; 3225≧100uF</td><td>RiCR≧20Ω-F</td></tr></table></td></tr>
<tr><td>Appearance</td><td>No marking defects</td></tr>
<tr><td rowspan="5">11</td><td rowspan="5">Resistance to Soldering Heat</td><td>Cap. Change</td><td>within ±12.5%</td><td rowspan="5">Solder the capacitor to supporting jig (FR4) with below profile 3 times: Peak temperature 250±5℃ and peak temperature period 30±5 seconds (1 ~ 4℃/sec, time above 183℃, 90s ~ 120s). Let sit at room temperature for 24±2 hours, then measure.
Initial measurement: perform a heat treatment at 150+0/-10℃ for one hour and then let sit for 24±2 hours at room temperature, then measure.</td></tr>
<tr><td>Q/D.F.</td><td>To satisfy the specified initial spec</td></tr>
<tr><td>I.R.</td><td>R_iC_R≧50Ω-F..
<table><tr><th>Series</th><th>Cap Range</th><th>Insulation Resistance</th></tr><tr><td>X7R
X7S
X7T</td><td>0603≧2.2uF; 1005≧22uF
1608≧47uF; 2012≧100uF
3216≧100uF; 3225≧100uF</td><td>RiCR≧20Ω-F</td></tr></table></td></tr>
<tr><td>Appearance</td><td>No marking defects</td></tr>
<tr><td rowspan="4">12</td><td rowspan="4">ESD</td><td>Cap. Change</td><td>Within the specified tolerance</td><td rowspan="4">Per AEC-Q200-002</td></tr>
<tr><td>Q/D.F.</td><td>To satisfy the specified initial spec</td></tr>
<tr><td>I.R.</td><td>R_iC_R≧50Ω-F..
<table><tr><th>Series</th><th>Cap Range</th><th>Insulation Resistance</th></tr><tr><td>X7R
X7S
X7T</td><td>0603≧2.2uF; 1005≧22uF
1608≧47uF; 2012≧100uF
3216≧100uF; 3225≧100uF</td><td>RiCR≧20Ω-F</td></tr></table></td></tr>
<tr><td>13</td><td colspan="2">Solderability of Termination</td><td>95% of the terminations are to be soldered evenly and continuously.</td><td>(a) Electrical Test not required. Magnification 50 X. Method B1: Should be placed into 155℃ dry bake for 4 hours±15 minutes. After preheating, immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Immerse in SAC305 solder solution for 5+0/-0.5 seconds at 245±5℃
(b) Electrical Test not required. Magnification 50 X. Test D:
Should be placed into 155℃ dry bake for 4 hours±15 minutes. After preheating, immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Immerse in SAC305 solder solution for 30+0/-0.5 seconds at 260±5℃</td></tr>
<tr><td rowspan="5">14</td><td rowspan="5">Electrical Characterization</td><td>Appearance</td><td>No marking defects</td><td rowspan="3">The capacitance / D.F. shall be measured at 25℃ at the frequency and voltage shown in the table of “Part Number & Characteristic”.
Measurement Frequency:1.0+/-0.1MHz/1.0+/-0.1kHz
Measurement Voltage :1.0+/-0.2Vrms/ 0.5+/-0.1Vrms</td></tr>
<tr><td>Cap. Change</td><td>Within the specified tolerance</td></tr>
<tr><td>Q/D.F.</td><td>To satisfy the specified initial spec</td></tr>
<tr><td>I.R. 25℃</td><td>R_iC_R≧50Ω-F..
<table><tr><th>Series</th><th>Cap Range</th><th>Insulation Resistance</th></tr><tr><td>X7R
X7S
X7T</td><td>0603≧2.2uF; 1005≧22uF
1608≧47uF; 2012≧100uF
3216≧100uF; 3225≧100uF</td><td>RiCR≧20Ω-F</td></tr></table></td><td>The insulation resistance shall be measured with a DC voltage not exceeding the rated voltage at 25℃ and 125℃, within 1 minute of charging.</td></tr>
<tr><td>Dielectric Strength</td><td>No failure</td><td>No failure shall be observed when 250% of the rated voltage is applied between the terminations for 1 to 5 seconds. The charge and discharge current is less than 50mA.</td></tr>
</table>

<table>
<tr><th colspan="3">AEC-Q200
Test Item</th><th>Specification
High dielectric constant type</th><th>Test Method</th></tr>
<tr><td rowspan="5">15</td><td rowspan="5">Board Flex</td><td>Appearance</td><td>No marking defects</td><td rowspan="5">Solder the capacitor to the test jig (glass epoxy boards) shown in Fig.a using a SAC305(Sn96.5Ag3.0Cu0.5) solder (then let sit for 24±2 hours for X7R).
Then apply a force in the direction shown in Fig.b for 60±1sec. The soldering shall be done with the reflow method and shall be conducted with care so that the soldering is uniform and free of defects such as heat shock.</td></tr>
<tr><td>Cap. Change</td><td>within ±10.0%</td></tr>
<tr><td>Q/D.F.</td><td>To satisfy the specified initial spec</td></tr>
<tr><td rowspan="2">I.R.</td><td>RiCR≧50Ω-F..
<table><tr><th>Series</th><th>Cap Range</th><th>Insulation Resistance</th></tr><tr><td>X7R
X7S
X7T</td><td>0603≧2.2uF; 1005≧22uF
1608≧47uF; 2012≧100uF
3216≧100uF; 3225≧100uF</td><td>RiCR≧20Ω-F</td></tr></table>T:1.6mm(0.8 mm for 0603 & 1005 size)
Fig. a.
<table><tr><th>Size</th><th>a</th><th>b</th><th>c</th></tr><tr><td>0603</td><td>0.3</td><td>0.9</td><td>0.3</td></tr><tr><td>1005</td><td>0.5</td><td>1.5</td><td>0.6</td></tr><tr><td>1608</td><td>0.6</td><td>2.2</td><td>0.9</td></tr><tr><td>2012</td><td>0.8</td><td>3.0</td><td>1.3</td></tr><tr><td>3216</td><td>2.0</td><td>4.4</td><td>1.7</td></tr><tr><td>3225</td><td>2.0</td><td>4.4</td><td>2.6</td></tr></table>(Unit in mm)
Fig.b.</td></tr>
<tr><td rowspan="5">16</td><td rowspan="5">Terthminal Streng</td><td>Appearance</td><td>No marking defects</td><td rowspan="5">Solder the capacitor to the test jig (glass epoxy boards) shown in Fig.c using a SAC305(Sn96.5Ag3.0Cu0.5) solder (then let sit for 24±2 hours for X7R).
Then apply *18N force in the direction parallel to the testing jig for 60sec. The soldering shall be done with the reflow method and shall be conducted with care so that the soldering is uniform and free of defects such as heat shock.
*2N for 0603 & 1005 size</td></tr>
<tr><td>Cap. Change</td><td>Within the specified tolerance</td></tr>
<tr><td>Q/D.F.</td><td>To satisfy the specified initial spec</td></tr>
<tr><td rowspan="2">I.R.</td><td>RiCR≧50Ω-F..
<table><tr><th>Series</th><th>Cap Range</th><th>Insulation Resistance</th></tr><tr><td>X7R
X7S
X7T</td><td>0603≧2.2uF; 1005≧22uF
1608≧47uF; 2012≧100uF
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(0.8 mm for 0603 & 1005 size)
Fig. c.
<table><tr><th>Size</th><th>a</th><th>b</th><th>C</th></tr><tr><td>0603</td><td>0.3</td><td>0.9</td><td>0.3</td></tr><tr><td>1005</td><td>0.4</td><td>1.5</td><td>0.5</td></tr><tr><td>1608</td><td>1.0</td><td>3.0</td><td>1.2</td></tr><tr><td>2012</td><td>1.2</td><td>4.0</td><td>1.65</td></tr><tr><td>3216</td><td>2.2</td><td>5.0</td><td>2.0</td></tr><tr><td>3225</td><td>2.2</td><td>5.0</td><td>2.9</td></tr></table>(Unit in mm)</td></tr>
<tr><td>17</td><td colspan="2">Capacitance Temperature Characteristics</td><td>Capacitance change
X7R/X8R within ±15%
X6S/X7S within ±22%
X7T within +22%/-33%</td><td>High dielectric constant type:
The ranges of capacitance change compared with the 25℃ value over the temperature ranges shall be within the specified ranges.</td></tr>
</table>

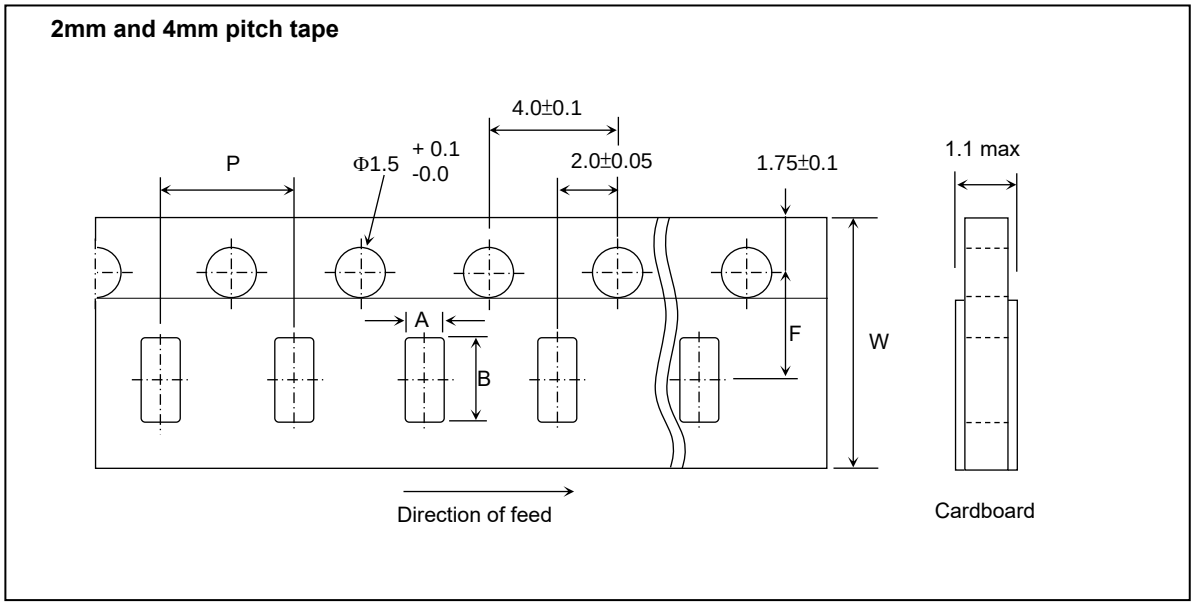
Package

- **Tape and reel packaging**

  Tape and reel packaging is currently the most promising system for high-speed production. A typical 180mm (7 inch) diameter reel contains 1,500 to 15,000 capacitors, 250mm (10 inch) contains 10,000 capacitors, and 330mm (13 inch) contains 10,000 to 50,000 capacitors. Three standard sizes are available in taped and reeled package either with paper carrier tapes or embossed tapes.

【Paper tape specifications】

2mm and 4mm pitch tape

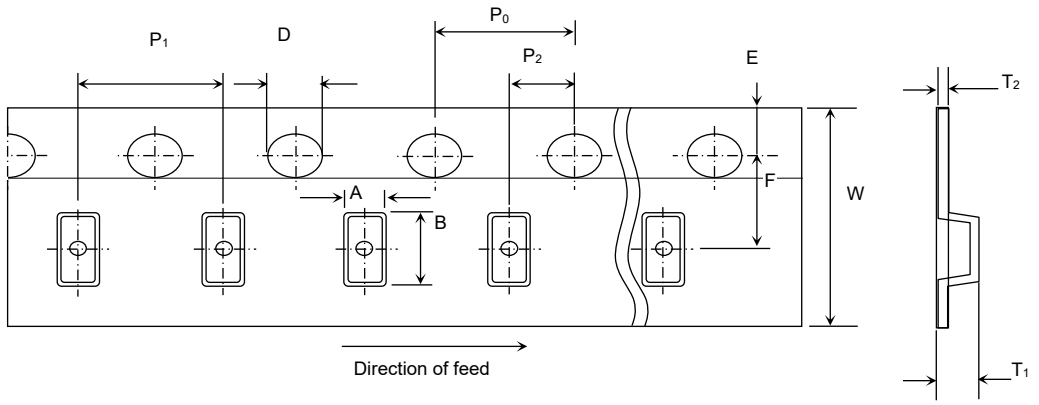


SYMBOL	PRODUCT SIZE CODE												UNIT
	C0603(0201)		C1005(0402) Dim. Tol. : ± 0.05		C1005(0402) Dim. Tol. : ± 0.10		C1005(0402) Dim. Tol. ± 0.15		C1005(0402) Dim. Tol. ± 0.20		C1005(0402) Dim. Tol. ± 0.30		
	SIZE	TOL.	SIZE	TOL.	SIZE	TOL.	SIZE	TOL.	SIZE	TOL.	SIZE	TOL.	
A	0.38	± 0.04	0.65	± 0.10	0.70	± 0.10	0.72	± 0.10	0.80	± 0.10	0.90	± 0.10	mm
B	0.68	± 0.04	1.15	± 0.10	1.19	± 0.10	1.25	± 0.10	1.35	± 0.10	1.45	± 0.10	mm
F	3.5	± 0.05	3.5	± 0.05	3.5	± 0.05	3.5	± 0.05	3.5	± 0.05	3.5	± 0.05	mm
P	2	± 0.10	2	± 0.10	2	± 0.10	2	± 0.10	2	± 0.10	2	± 0.10	mm
W	8	± 0.20	8	± 0.20	8	± 0.20	8	± 0.20	8	± 0.20	8	± 0.20	mm

SYMBOL	PRODUCT SIZE CODE								UNIT
	C1608(0603) Dim. Tol. : ± 0.10/± 0.15		C1608 (0603) Dim. Tol. ± 0.20/± 0.25		C2012 (0805)		C3216 (1206)		
	SIZE	TOL.	SIZE	TOL.	SIZE	TOL.	SIZE	TOL.	
A	1.0	±0.2	1.1	±0.2	1.5	±0.2	1.9	±0.2	mm
B	1.8	±0.2	1.9	±0.2	2.3	±0.2	3.6	±0.2	mm
F	3.5	±0.05	3.5	±0.05	3.5	±0.05	3.5	±0.05	mm
P	4	±0.1	4	±0.1	4	±0.1	4	±0.1	mm
W	8	±0.2	8	±0.2	8	±0.2	8	±0.2	mm

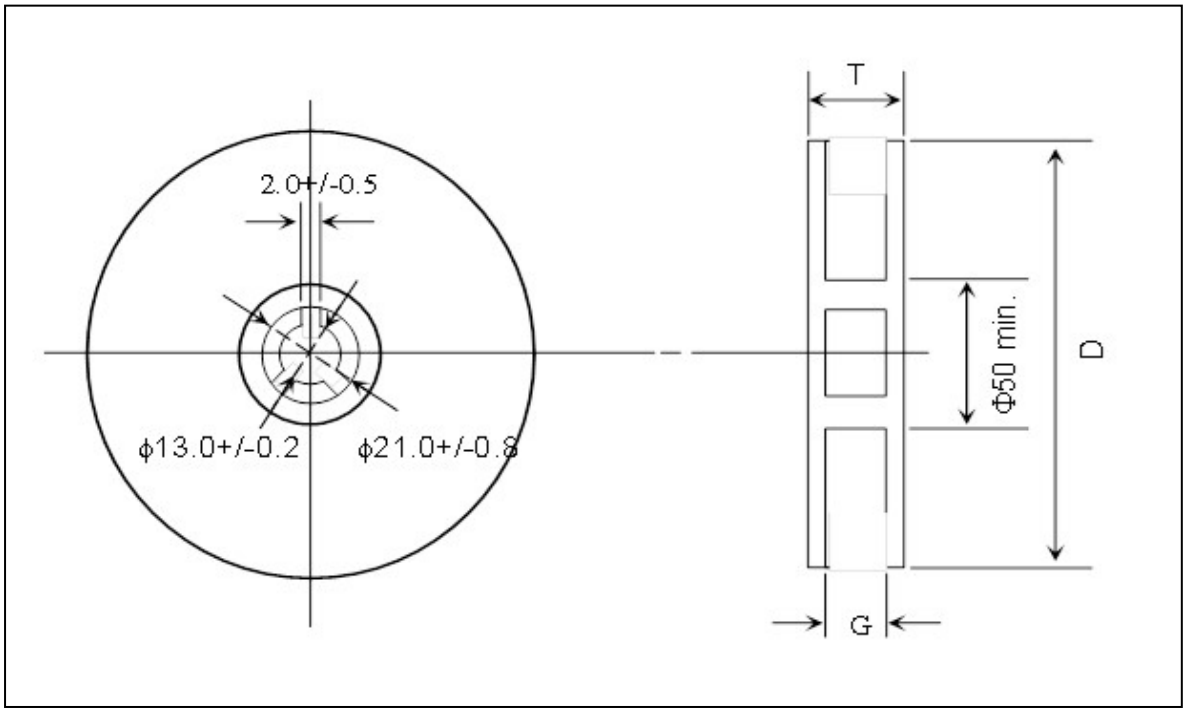
【Embossed tape specifications】

1mm and 4mm and 8mm pitch tape



DIMENSION (mm)	PRODUCT SIZE CODE					
	1608 (0603)	2012 (0805)	3216 (1206)	3225 (1210)	4520 (1808)	4532 (1812)
P_1	4±0.1	4±0.1	4±0.1	4±0.1	4±0.1	8±0.1
P_O	4±0.1	4±0.1	4±0.1	4±0.1	4±0.1	4±0.1
P_2	2±0.05	2±0.05	2±0.05	2±0.05	2±0.05	2±0.05
A	1.2±0.2	1.45±0.2	1.9±0.2	2.8±0.2	2.3±0.2	3.6±0.2
B	2.0±0.2	2.3±0.2	3.5±0.2	3.6±0.2	4.9±0.2	4.9±0.2
W	8±0.3	8±0.2	8±0.2	8±0.2	12±0.2	12±0.2
E	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1
F	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05	5.5±0.05	5.5±0.05
D	1.5 (+0.1/-0.0)	1.5 (+0.1/-0.0)	1.5 (+0.1/-0.0)	1.5 (+0.1/-0.0)	1.5 (+0.1/-0.0)	1.5 (+0.1/-0.0)
T_1	1.4 max.	2.0 max.	2.2 max.	3.0 max.	2.5 max.	4.5 max.
T_2	0.25±0.1	0.30±0.1	0.30±0.1	0.30±0.1	0.30±0.1	0.30±0.1

【Reel specifications】



TAPE WIDTH (mm)	G (mm)	T max. (mm)	D (mm)
4	5.0 ± 1.5	8.0	180
8	10.0 ± 1.5	14.5	180
8	10.0 ± 1.5	14.5	250
8	10.0 ± 1.5	14.5	330
12	14.0 ± 1.5	18.5	180

【Thickness and Packing Amount】

Thickness			Amount per reel			
			180 mm (7”)		330 mm (13”)	
Code	Spec.(mm)	Size (EIA)	Paper	Embossed	Paper	Embossed
Z	0.20	0402 (01005)	20K	40K#1		
A	0.30	0603 (0201)	15K		50K	
		1005 (0402)	15K		50K	
B	0.50	1005 (0402)	10K		50K	
Q	0.45	1005 (0402)	10K		50K	
		1608 (0603)	4K		15K	
C	0.60	2012 (0805)	4K		15K	
		3216 (1206)	4K		15K	
D	0.80	1608 (0603)	4K	4K	15K	
		2012 (0805)	4K		15K	
		3216 (1206)	4K		15K	
E	0.85	2012 (0805)	4K		15K	
		3216 (1206)	4K		15K	
		3225 (1210)		3K		10K
		4532 (1812)		1K		
I	0.95	2012 (0805)		3K		
		3216 (1206)		3K		
F	1.15	3216 (1206)		3K		10K
		4520 (1808)		3K		
G	1.25	2012 (0805)		2K/3K		10K
		3216 (1206)		3K		10K
		3225 (1210)		3K		
		4520 (1808)		2K/3K		
		4532 (1812)		1K		
		3225 (1210)		3K		
L	1.60	3216 (1206)		2K		
		3225 (1210)		2K		
		4520 (1808)		2K		
		4532 (1812)		1K		
N	2.00	3216 (1206)		2K/3K		
		3225 (1210)		1K/2K		
		4520 (1808)		1K/2K		
		4532 (1812)		1K		
P	2.50	3225 (1210)		500pcs/1K		

#1: 4mm width 1mm pitch Embossed Taping

【Packing Rule】

EIA SIZE	Tape type	Reel Size	Max Reels/Box
0402 (01005)	Emboss	7”	16
0402 (01005)	Paper	7”	10
0603 (0201)	Paper	7"	10
1005 (0402)	Paper	7"	10
1608 (0603)	Paper/Emboss	7"	10
2012 (0805)	Paper/Emboss	7"	10
3216 (1206)	Paper/Emboss	7"	10
3225 (1210)	Emboss	7"	10

*Maximum 60 reels in one carton.

Others

【Storage】

1. The chip capacitors shall be packaged in carrier tapes or bulk cases.
2. Too high temperatures or humidity may deteriorate the quality of the product rapidly. Recommended products storage with temperatures from +5℃ to +35℃, humidity from 45 to 70% RH.
3. The storage atmosphere must be free of gas containing sulfur and chlorine. Also, avoid exposing the product to saline moisture. If the product is exposed to such atmospheres, the terminations will oxidize and solderability will be affected.
4. In consideration of solderability, an allowable storage period should be within 12 months from the outgoing date of delivery. As for products in storage over 12 months, please check solderability before use.

【Circuit Design】

1. Once application and assembly environments have been checked, the capacitor may be used in conformance with the rating and performance, which are provided in both the catalog and the specifications. Exceeding the specifications listed may result in inferior performance. It may also cause a short, open, smoking, or flaming to occur, etc.
2. Please use the capacitors in conformance with the operating temperature provided in both the catalog and the specifications. Be especially cautious not to exceed the maximum temperature. In the situation the maximum temperature set forth in both the catalog and specifications is exceeded, the capacitor's insulation resistance may deteriorate, power may suddenly surge and short-circuit may occur. The loss of capacitance will occur, and may self-heat due to equivalent series resistance when alternating electric current is passed through. As this effect becomes critical in high frequency circuits, please exercise with caution. When using the capacitor in a (self-heating) circuit, please make sure the surface of the capacitor remains under the maximum temperature for usage. Also, please make certain temperature rise remain below 20℃.
3. Please keep voltage under the rated voltage, which is applied to the capacitor. Also, please make certain the peak voltage remains below the rated voltage when AC voltage is super-imposed to the DC voltage. In the situation where AC or pulse voltage is employed, ensure average peak voltage does not exceed the rated voltage. Exceeding the rated voltage provided in both catalog and specifications may lead to defective withstanding voltage or, in worse case situations, may cause the capacitor to burn out.
4. It's is a common phenomenon of high-dielectric products to have a deteriorated amount of static electricity due to the application of DC voltage.

【Handling】

Chip capacitors should be handled with care to avoid contamination or damage. The use of vacuum pick-up or plastic tweezers is recommended for manual placement. Tape and reeled packages are suitable for automatic pick and placement machine.

【Flux】

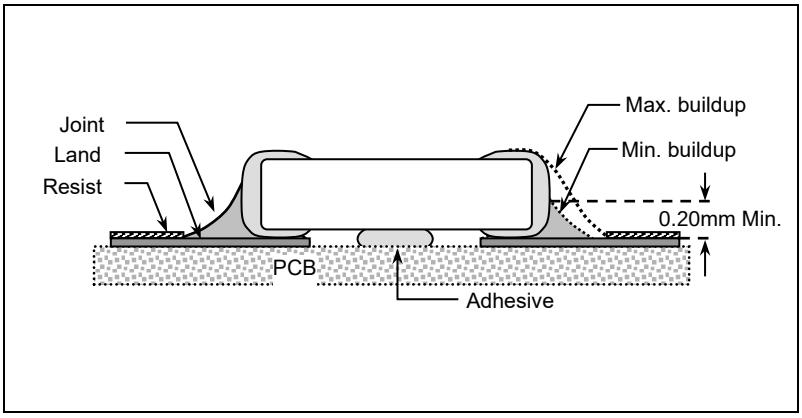
1. An excessive amount of flux or too rapid temperature rise can causes solvent burst, solder can generate a large quantity of gas. The gas can spreads small solder particles to cause solder balling effect or bridging problem.
2. Flux containing too high of a percentage of halide may cause corrosion of termination unless sufficient cleaning is applied.
3. Use rosin-type flux. Highly acidic flux (halide content less than 0.2wt%) is not recommended.
4. The water soluble flux causes deteriorated insulation resistance between outer terminations unless sufficiently cleaned.

【Component Spacing】

For wave soldering components, the spacing must be sufficient far apart to prevent bridging or shadowing. This is not so important for reflow process but enough space for rework should be considered. The suggested spacing for reflow soldering and wave soldering is 0.5mm and 1.0mm, respectively.

【Solder Fillet】

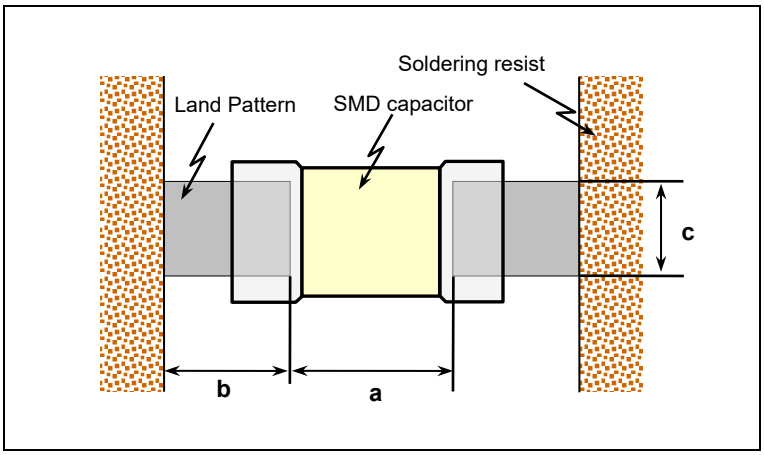
Too much solder amount may increase solder stress and cause crack risk. Insufficient solder amount may reduce adhesive Strength and cause parts falling off PCB. When soldering, confirm that the solder is placed over 0.2mm of the surface of the terminations.



【Recommended Land Pattern Dimensions】

When mounting the capacitor to substrate, it's important to consider that the amount of solder (size of fillet) used has a direct effect upon the capacitor once it's mounted.

1. The greater the amount of solder, the greater the stress to the elements, as this may cause the substrate to break or crack.
2. In the situation where two or more devices are mounted onto a common land, separate the device into exclusive pads by using soldering resist.
3. Land width equal to or less than component. It is permissible to reduce land width to 80% of component width.



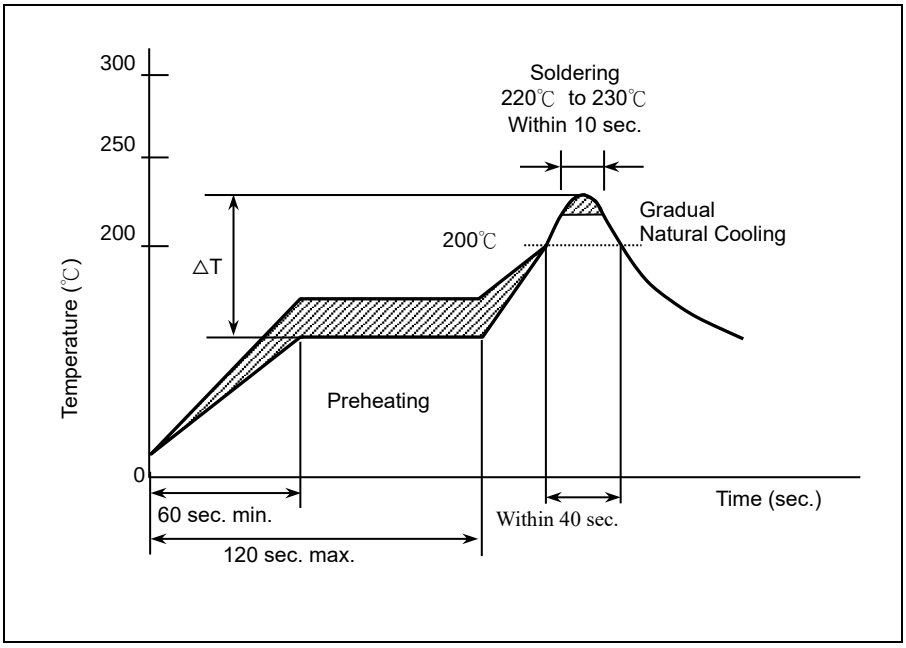
Size mm (EIA)	L x W (mm) (Dimension tolerance)	a (mm)	b (mm)	c (mm)
0603 (0201)	0.6*0.3 (within±0.03)	0.2 to 0.35	0.2 to 0.3	0.2 to 0.4
	0.6*0.3 (±0.05/±0.09)	0.2 to 0.35	0.2 to 0.35	0.25 to 0.4
1005 (0402)	1.0*0.5 (within±0.10)	0.3 to 0.5	0.35 to 0.45	0.4 to 0.6
	1.0*0.5 (±0.15/±0.20)	0.4 to 0.6	0.4 to 0.5	0.5 to 0.7
1608 (0603)	1.6*0.8 (within±0.10)	0.7 to 1.0	0.6 to 0.8	0.7 to 0.8
	1.6*0.8 (±0.15/±0.20/±0.25)	0.8 to 1.1	0.7 to 0.8	0.8 to 1.0
2012 (0805)	2.0*1.25	1.0 to 1.4	0.7 to 0.9	1.2 to 1.4
3216 (1206)	3.2*1.6 (within±0.20)	1.8 to 2.4	0.9 to 1.2	1.5 to 1.9
	3.2*1.6 (within±0.30)	1.9 to 2.5	1.0 to 1.3	1.7 to 2.0
3225 (1210)	3.2*2.5	1.8 to 2.5	1.0 to 1.2	2.0 to 2.5
4520 (1808)	4.5*2.0	3.2 to 3.8	1.2 to 1.4	1.7 to 2.0
4532 (1812)	4.5*3.2	3.0 to 3.5	1.4 to 1.6	2.7 to 3.5

【Resin Mold】

If a large amount of resin is used for molding the chip, cracks may occur due to contraction stress during curing. To avoid such cracks, use a low shrinkage resin. The insulation resistance of the chip will degrade due to moisture absorption. Use a low moisture absorption resin. Check carefully that the resin does not generate a decomposition gas or reaction gas during the curing process or during normal storage. Such gases may crack the chip capacitor or damage the device itself.

【Soldering Profile for SMT Process with SnPb Solder Paste】

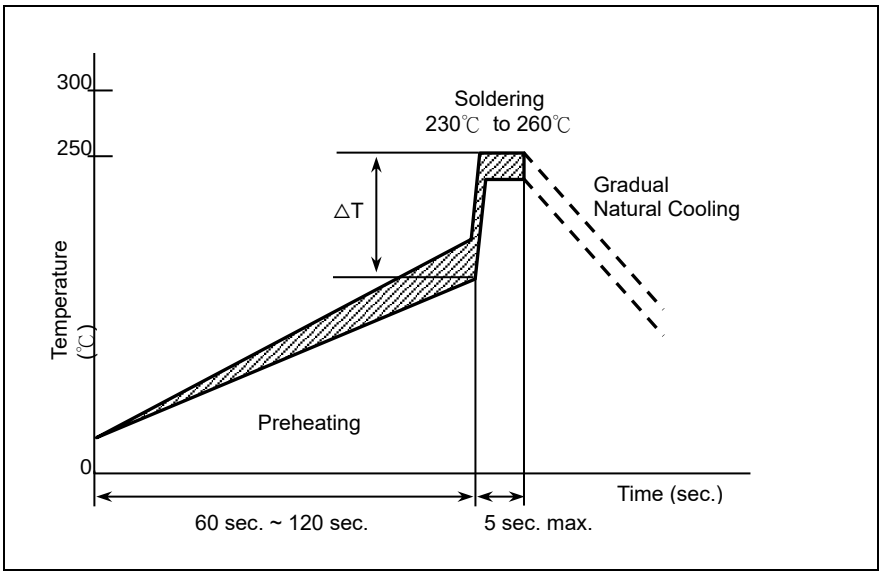
Reflow Soldering



The difference between solder and chip surface should be controlled as following table. The rate of preheat should not exceed 4℃/sec and a target of 2℃/sec is preferred.

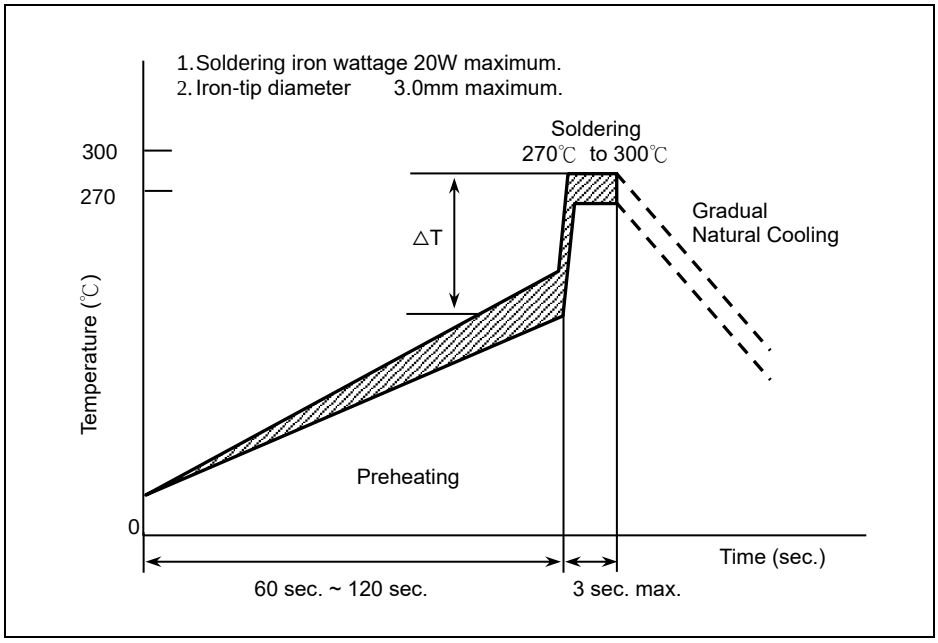
Chip Size	3216 and smaller	3225 and above
Preheating	△T≦150℃	△T≦130℃

Wave Soldering



Chip Size	1608/2012/3216	3225 and above
Preheating	△T≦150℃	-

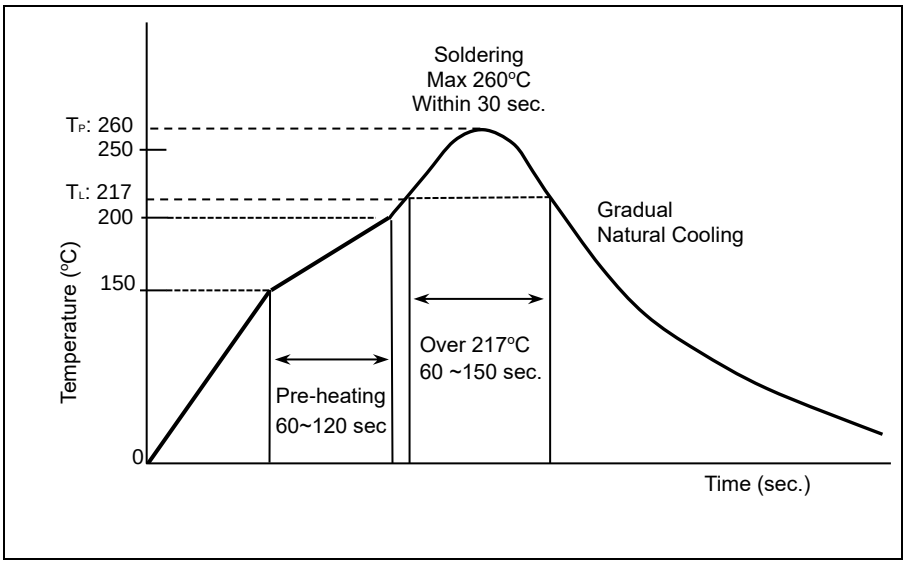
Soldering Iron



Chip Size	3216 and smaller	3225 and above
Preheating	△T≦190℃	△T≦130℃

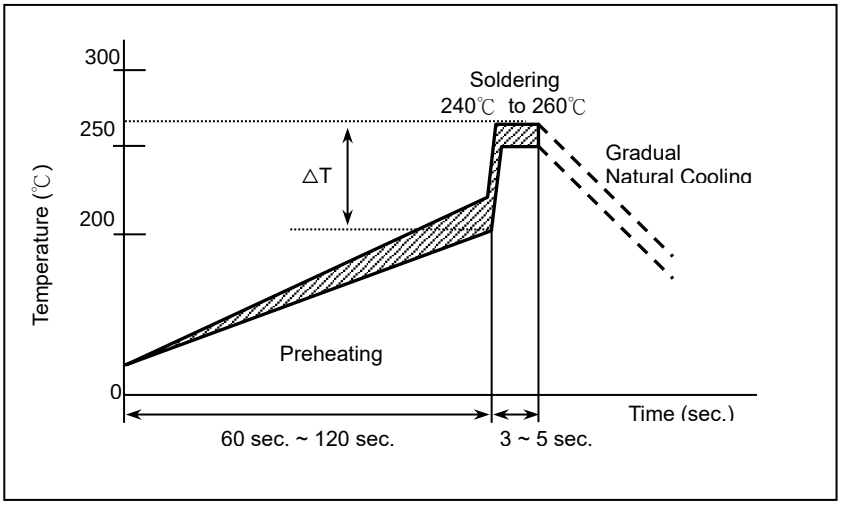
【Soldering】

Reflow Soldering for Lead free (Pb free) Termination



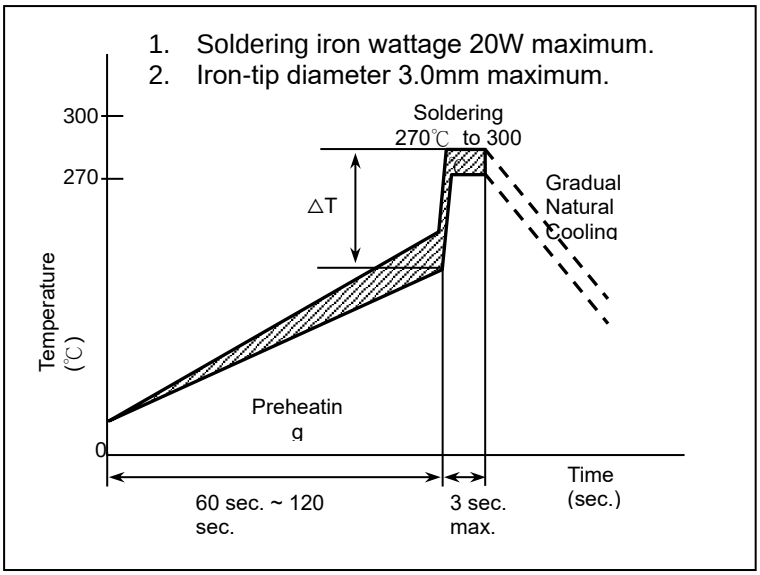
The difference between solder and chip surface should be controlled as following table.
Pre-heating is necessary for all constituents including the PCB to prevent the mechanical damages on MLCC.
The Temperature of the ramp-up rate(TL to TP) is 3□/second max and the ramp-down Rate (TP to TL) is 6□/second max.

Wave Soldering for Lead free Termination



Chip Size	1608/2012/3216	3225 and above
Preheating	△T≦150℃	-

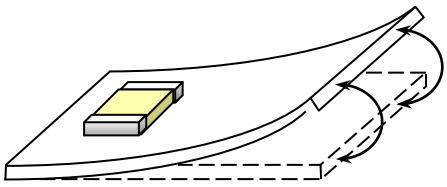
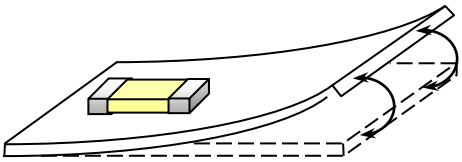
Soldering Iron



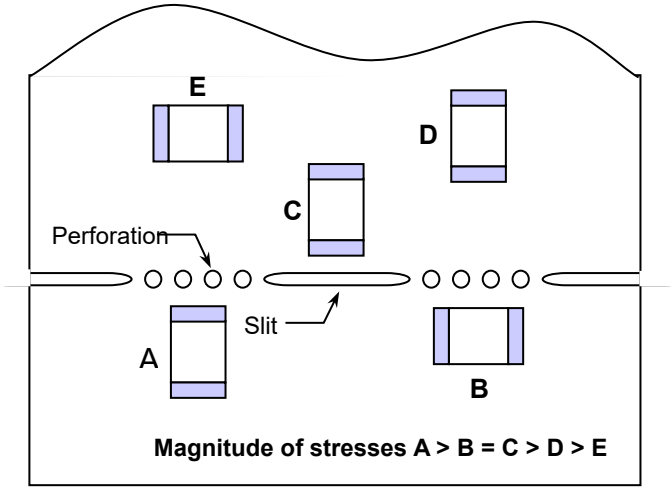
Chip Size	3216 and smaller	3225 and above
Preheating	△T≦190℃	△T≦130℃

【Chip Layout and Breaking PCB】

1. To layout the SMD capacitors for reducing bend stress from board deflection of PCB. The following are examples of Hood and bad layout.

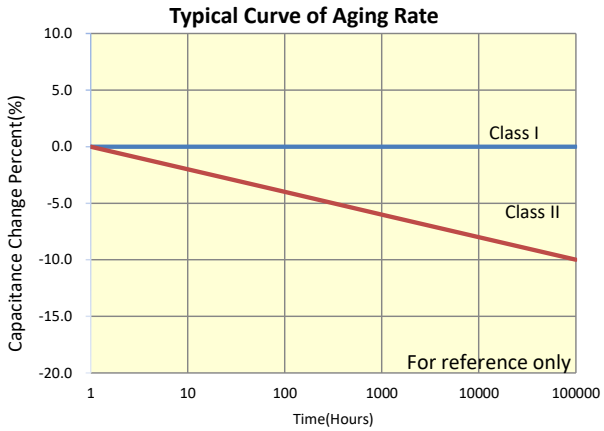
Recommended	Not Recommended
	

2. When breaking PCB, the layout should be noted that the mechanical stresses are depending on the position of capacitors. The following example shows recommendation for better design.



【Aging Rate】

The capacitance and dissipation factor of class 2 capacitors decreases with time. It is known as 'aging' that follows a logarithmic low and expressed in terms of an aging constant. Aging is caused by a gradual re-alignment of the crystalline structure of the ceramic. The aging constant is defined as the percentage loss of capacitance at a 'time decade'. The law of capacitance aging is expressed as following equation:



$C_{t2} = C_{t1} \times (1 - k \times \log_{10}(t_2/t_1))$

C_{t1}: Capacitance after t1 hours of start aging.

C_{t2}: Capacitance after t2 hours of start aging.

k: aging constant (capacitance decrease per decade)

t1, t2: time in hours from start of aging.

A typical curve of aging rate is shown in following figure.

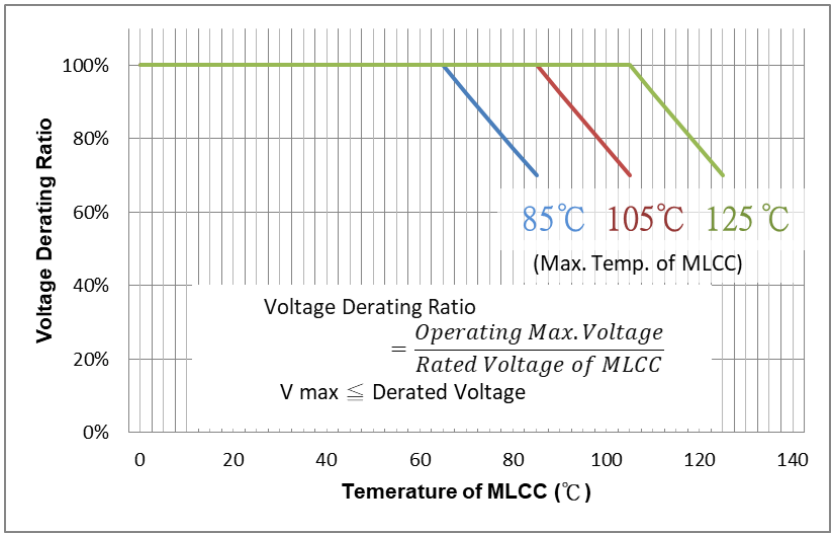
For reference only

When heating the capacitors above Curie temperature (130℃~150℃) the capacitance can be re-new. So capacitance of class 2 capacitors will be complete de-aged by soldering process; subsequently a new aging process begins.

Because of aging, it is specified an age for measurement to meet the prescribed tolerance for class 2 capacitors. Normally, 1000 hours (t_2=1000 hrs) is defined.

【Voltage Derating & Applied Voltage】

The derated MLCC should be applied with the derating voltage. The "Temperature of MLCC" is the surface temperature of MLCC including self-heating effect. The maximum operating voltage of MLCC with reference to the maximum voltage (Vmax) is as shown in the following graph.



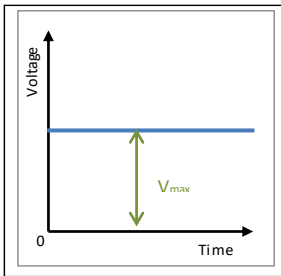
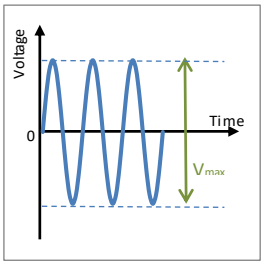
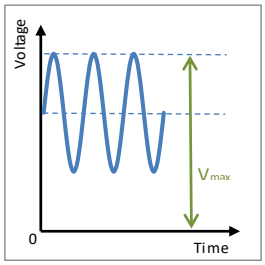
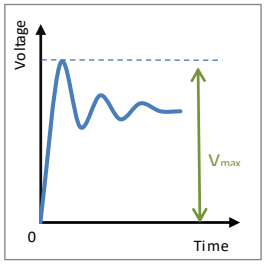
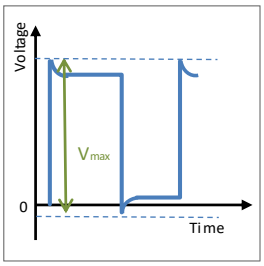
85℃ :X5R

105℃:X6S/X6T

125℃:X7R/X7S/X7T/X7U

【Applied Voltage】

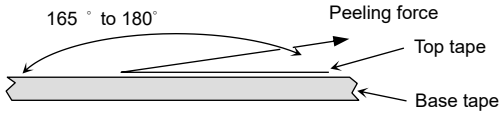
Cautions by types of voltage applied to MLCC · For DC voltage or DC+AC voltage, DC voltage or the maximum value of DC + AC voltage should not exceed the rated voltage of MLCC. · For AC voltage or pulse voltage, the peak-to-peak value of AC voltage or pulse voltage should not exceed the rated voltage of MLCC. · Abnormal voltage such as surge voltage, static electricity should not exceed the rated voltage of MLCC.

				
DC Voltage	AC Voltage	DC+AC Voltage	DC+AC Voltage	DC+Pulse Voltage

【Peeling Off Force】

Peeling off force: 0.1N to 1.0 N* in the direction shown as below.

The peeling speed: 300±10 mm/min



1. The taped tape on reel is wound clockwise. The sprocket holes are to the right as the tape is pulled toward the user.
2. There are minimum 150 mm as the leader and minimum 40 mm empty tape as the tail is attached to the end of the tape.

【Disclaimer & Limitation of Use and Applications】

Disclaimer

All product specifications, statements, information and data (collectively, the “Information”) in this spec sheet or made available on the website are subject to change. The customer is responsible for checking and verifying the extent to which the Information contained in this publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without guarantee, warranty, or responsibility of any kind, expressed or implied. ANY USE OF PRODUCT OUTSIDE OF SPECIFICATIONS OR ANY STORAGE OR INSTALLATION INCONSISTENT WITH PRODUCT GUIDANCE VOIDS ANY WARRANTY. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage. Although all product–related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicted or that other measures may not be required.

Limitation

The below application conditions require especially high reliability products to prevent defects that may directly cause damages or loss to third party's life, body or property. If you have any questions regarding this 'Limitation'，you should first contact our sales personnel or application engineers.

1. Automotive power chain and Safety system
2. Aerospace/Aviation equipment
3. Military equipment
4. Atomic energy-related equipment
5. Undersea equipment
6. Medical equipment (excepting Pharmaceutical Affairs Law classification Class1,2)
7. Disaster prevention/crime prevention equipment
8. Power plant control equipment
9. Traffic signal equipment
10. Data-processing equipment
11. Electric heating apparatus，burning equipment
12. Safety equipment
13. Any other applications with the same as or similar complexity or reliability to the applications