

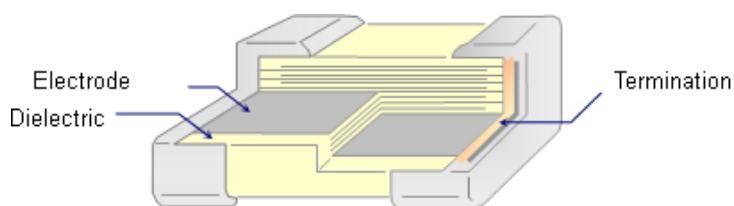
# **CONTENT (MLCC)**

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## **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	10	12	15	18	22	27	33	39	47	56	68	82
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 1005 NP0 101 J H T S  $\Delta$**

### 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.

NP0: $0 \pm 30\text{ppm}/^\circ\text{C}$	-55 $^\circ\text{C}$ to +125 $^\circ\text{C}$		
X7R: $\pm 15\%$	-55 $^\circ\text{C}$ to +125 $^\circ\text{C}$	X6S: $\pm 22\%$	-55 $^\circ\text{C}$ to +105 $^\circ\text{C}$
X5R: $\pm 15\%$	-55 $^\circ\text{C}$ to +85 $^\circ\text{C}$	Y5V: $+22\%/-82\%$	-30 $^\circ\text{C}$ to +85 $^\circ\text{C}$

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

### TOLERANCE CODE

A: $\pm 0.05\text{pF}$	B: $\pm 0.1\text{pF}$	C: $\pm 0.25\text{pF}$	D: $\pm 0.5\text{pF}$	F: $\pm 1\%$	G: $\pm 2\%$
J: $\pm 5\%$	K: $\pm 10\%$	M: $\pm 20\%$	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 $\varnothing 180\text{mm}$ (7")	P: Embossed tape reel $\varnothing 180\text{mm}$ (7")
N: Paper tape reel $\varnothing 250\text{mm}$ (10")	D: Embossed tape reel $\varnothing 250\text{mm}$ (10")
A: Paper tape reel $\varnothing 330\text{mm}$ (13")	E: Embossed tape reel $\varnothing 330\text{mm}$ (13")
W: Special Packing	

### Application Code

S: Standard    Q: High Q/Low ESR    F: Microwave    A: Automotive with AEC-Q200

### Thickness Code

Code	Thick (mm)	Code	Thick(mm)	Code	Thick (mm)
(blank)	Standard Thick	M	0.70	G	1.25
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

## Middle-High Voltage (100V~3kV)

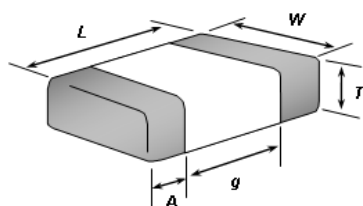
### ■ Feature

1. A monolithic structure ensures high reliability and mechanical strength.
2. Suitable for high speed SMT placement on PCBs.
3. RoHS compliant

### ■ Application

1. Input filtering circuit of modem and LAN Interface.
2. DC-DC Converters
3. Backlighting inverters of LCD screen.
4. Switching circuit.
5. General high voltage circuit.

### ■ Standard External Dimensions



TYPE	Dimension (mm)				
(EIA Size)	L (Length)	W (Width)	T (Max.)	g (Min)	A (Min/Max)
C0603 (0201)	0.6 ± 0.03	0.30 ± 0.03	0.33	0.15	0.10 / 0.20
C1005 (0402)	1.0 ± 0.05	0.50 ± 0.05	0.55	0.30	0.15 / 0.35
C1608 (0603)	1.6 ± 0.10	0.80 ± 0.10	0.90	0.50	0.25 / 0.65
C2012 (0805)	2.0 ± 0.15	1.25 ± 0.15	1.45	0.70	0.25 / 0.75
C3216 (1206)	3.2 ± 0.15	1.60 ± 0.15	1.80	1.50	0.25 / 0.75
C3225 (1210)	3.2 ± 0.30	2.50 ± 0.20	2.70	1.50	0.25 / 0.75
C4520 (1808)	4.6 ± 0.30	2.00 ± 0.20	2.20	1.50	0.25 / 0.75
C4532 (1812)	4.6 ± 0.30	3.20 ± 0.30	3.40	1.50	0.25 / 0.75

For some special parts, please see the "Part Number & Characteristic" for detail specification.

## ■ Part Number & Characteristic

### ■ NP0 Series

#### ● C1005NP0 Series (EIA0402)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
100V	C1005NP0208 HTS	C1005NP0208 HT	1V, 1MHz	0.20	pF	±0.1pF, ±0.05pF	0.50	±0.05	±0.05	0.25%	Paper, 10kpcs	(I)
	C1005NP0308 HTS	C1005NP0308 HT	1V, 1MHz	0.30	pF	±0.1pF, ±0.05pF	0.50	±0.05	±0.05	0.25%		(I)
	C1005NP0408 HTS	C1005NP0408 HT	1V, 1MHz	0.40	pF	±0.1pF, ±0.05pF	0.50	±0.05	±0.05	0.25%		(I)
	C1005NP0508 HTS	C1005NP0508 HT	1V, 1MHz	0.50	pF	±0.1pF, ±0.05pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0608 HTS	C1005NP0608 HT	1V, 1MHz	0.60	pF	±0.1pF, ±0.05pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0708 HTS	C1005NP0708 HT	1V, 1MHz	0.70	pF	±0.1pF, ±0.05pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0808 HTS	C1005NP0808 HT	1V, 1MHz	0.80	pF	±0.1pF, ±0.05pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0908 HTS	C1005NP0908 HT	1V, 1MHz	0.90	pF	±0.1pF, ±0.05pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0109 HTS	C1005NP0109 HT	1V, 1MHz	1.0	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0129 HTS	C1005NP0129 HT	1V, 1MHz	1.2	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.24%		(I)
	C1005NP0159 HTS	C1005NP0159 HT	1V, 1MHz	1.5	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0189 HTS	C1005NP0189 HT	1V, 1MHz	1.8	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0229 HTS	C1005NP0229 HT	1V, 1MHz	2.2	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.23%		(I)
	C1005NP0279 HTS	C1005NP0279 HT	1V, 1MHz	2.7	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.22%		(I)
	C1005NP0339 HTS	C1005NP0339 HT	1V, 1MHz	3.3	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.21%		(I)
	C1005NP0399 HTS	C1005NP0399 HT	1V, 1MHz	3.9	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.21%		(I)
	C1005NP0409 HTS	C1005NP0409 HT	1V, 1MHz	4.0	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.21%		(I)
	C1005NP0479 HTS	C1005NP0479 HT	1V, 1MHz	4.7	pF	±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.20%		(I)
	C1005NP0509 HTS	C1005NP0509 HT	1V, 1MHz	5.0	pF	±0.5pF, ±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.20%		(I)
	C1005NP0569 HTS	C1005NP0569 HT	1V, 1MHz	5.6	pF	±0.5pF, ±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.20%		(I)
	C1005NP0689 HTS	C1005NP0689 HT	1V, 1MHz	6.8	pF	±0.5pF, ±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.19%		(I)
	C1005NP0809 HTS	C1005NP0809 HT	1V, 1MHz	8.0	pF	±0.5pF	0.50	±0.05	±0.05	0.18%		(I)
	C1005NP0829 HTS	C1005NP0829 HT	1V, 1MHz	8.2	pF	±0.5pF, ±0.25pF, ±0.1pF	0.50	±0.05	±0.05	0.18%		(I)
	C1005NP0100 HTS	C1005NP0100 HT	1V, 1MHz	10	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.17%		(I)
	C1005NP0120 HTS	C1005NP0120 HT	1V, 1MHz	12	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.16%		(I)
	C1005NP0150 HTS	C1005NP0150 HT	1V, 1MHz	15	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.14%		(I)
	C1005NP0180 HTS	C1005NP0180 HT	1V, 1MHz	18	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.13%		(I)
	C1005NP0220 HTS	C1005NP0220 HT	1V, 1MHz	22	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.12%		(I)
	C1005NP0270 HTS	C1005NP0270 HT	1V, 1MHz	27	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.11%		(I)
	C1005NP0330 HTS	C1005NP0330 HT	1V, 1MHz	33	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0390 HTS	C1005NP0390 HT	1V, 1MHz	39	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0470 HTS	C1005NP0470 HT	1V, 1MHz	47	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0560 HTS	C1005NP0560 HT	1V, 1MHz	56	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0680 HTS	C1005NP0680 HT	1V, 1MHz	68	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0820 HTS	C1005NP0820 HT	1V, 1MHz	82	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0101 HTS	C1005NP0101 HT	1V, 1MHz	100	pF	±5%, ±2%, ±1%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0121 JHTS	C1005NP0121 JHT	1V, 1MHz	120	pF	±5%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0151 JHTS	C1005NP0151 JHT	1V, 1MHz	150	pF	±5%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0181 JHTS	C1005NP0181 JHT	1V, 1MHz	180	pF	±5%	0.50	±0.05	±0.05	0.10%		(I)
	C1005NP0221 JHTS	C1005NP0221 JHT	1V, 1MHz	220	pF	±5%	0.50	±0.05	±0.05	0.10%		(I)

#### ● C1608NP0 Series (EIA0603)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
250V	C1608NP0109 KTS	C1608NP0109 KT	1V, 1MHz	1.0	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.24%	Paper, 4kpcs	(I)
	C1608NP0129 KTS	C1608NP0129 KT	1V, 1MHz	1.2	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.24%		(I)
	C1608NP0159 KTS	C1608NP0159 KT	1V, 1MHz	1.5	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.23%		(I)
	C1608NP0189 KTS	C1608NP0189 KT	1V, 1MHz	1.8	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.23%		(I)
	C1608NP0229 KTS	C1608NP0229 KT	1V, 1MHz	2.2	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.23%		(I)
	C1608NP0279 KTS	C1608NP0279 KT	1V, 1MHz	2.7	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.22%		(I)
	C1608NP0339 KTS	C1608NP0339 KT	1V, 1MHz	3.3	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.21%		(I)
	C1608NP0399 KTS	C1608NP0399 KT	1V, 1MHz	3.9	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.21%		(I)
	C1608NP0479 KTS	C1608NP0479 KT	1V, 1MHz	4.7	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.20%		(I)
	C1608NP0569 KTS	C1608NP0569 KT	1V, 1MHz	5.6	pF	±0.5pF, ±0.25pF	0.80	±0.10	±0.10	0.20%		(I)
	C1608NP0689 KTS	C1608NP0689 KT	1V, 1MHz	6.8	pF	±0.5pF, ±0.25pF	0.80	±0.10	±0.10	0.19%		(I)
	C1608NP0829 KTS	C1608NP0829 KT	1V, 1MHz	8.2	pF	±0.5pF, ±0.25pF	0.80	±0.10	±0.10	0.18%		(I)
	C1608NP0100 JKTS	C1608NP0100 JKT	1V, 1MHz	10	pF	±5%	0.80	±0.10	±0.10	0.17%		(I)
	C1608NP0120 JKTS	C1608NP0120 JKT	1V, 1MHz	12	pF	±5%	0.80	±0.10	±0.10	0.16%		(I)
	C1608NP0150 JKTS	C1608NP0150 JKT	1V, 1MHz	15	pF	±5%	0.80	±0.10	±0.10	0.14%		(I)
	C1608NP0180 JKTS	C1608NP0180 JKT	1V, 1MHz	18	pF	±5%	0.80	±0.10	±0.10	0.13%		(I)
	C1608NP0220 JKTS	C1608NP0220 JKT	1V, 1MHz	22	pF	±5%	0.80	±0.10	±0.10	0.12%		(I)
	C1608NP0270 JKTS	C1608NP0270 JKT	1V, 1MHz	27	pF	±5%	0.80	±0.10	±0.10	0.11%		(I)
	C1608NP0330 JKTS	C1608NP0330 JKT	1V, 1MHz	33	pF	±5%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0390 JKTS	C1608NP0390 JKT	1V, 1MHz	39	pF	±5%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0470 JKTS	C1608NP0470 JKT	1V, 1MHz	47	pF	±5%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0560 JKTS	C1608NP0560 JKT	1V, 1MHz	56	pF	±5%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0680 JKTS	C1608NP0680 JKT	1V, 1MHz	68	pF	±5%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0820 JKTS	C1608NP0820 JKT	1V, 1MHz	82	pF	±5%	0.80	±0.10	±0.10	0.10%		(I)
	C1608NP0101 JKTS	C1608NP0101 JKT	1V, 1MHz	100	pF	±5%	0.80	±0.10	±0.10	0.10%		(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	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
250V	C1608NP0121JKTS	C1608NP0121JKT	1V, 1MHz	120	pF	±5%	0.80	±0.10	±0.10	0.10%	Paper, 4kpcs	(f)
	C1608NP0151JKTS	C1608NP0151JKT	1V, 1MHz	150	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0181JKTS	C1608NP0181JKT	1V, 1MHz	180	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0221JKTS	C1608NP0221JKT	1V, 1MHz	220	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0271JKTS	C1608NP0271JKT	1V, 1MHz	270	pF	±5%	0.80	±0.15	±0.15	0.10%		(f)
	C1608NP0331JKTS	C1608NP0331JKT	1V, 1MHz	330	pF	±5%	0.80	±0.15	±0.15	0.10%		(f)
	C1608NP0391JKTS	C1608NP0391JKT	1V, 1MHz	390	pF	±5%	0.80	±0.15	±0.15	0.10%		(f)
100V	C1608NP0471JKTS	C1608NP0471JKT	1V, 1MHz	470	pF	±5%	0.80	±0.15	±0.15	0.10%	Paper, 4kpcs	(f)
	C1608NP0308 HTS	C1608NP0308 HT	1V, 1MHz	0.30	pF	±0.1pF, ±0.05pF	0.80	±0.10	±0.10	0.25%		(f)
	C1608NP0408 HTS	C1608NP0408 HT	1V, 1MHz	0.40	pF	±0.1pF, ±0.05pF	0.80	±0.10	±0.10	0.25%		(f)
	C1608NP0508 HTS	C1608NP0508 HT	1V, 1MHz	0.50	pF	±0.1pF, ±0.05pF	0.80	±0.10	±0.10	0.24%		(f)
	C1608NP0608 HTS	C1608NP0608 HT	1V, 1MHz	0.60	pF	±0.1pF, ±0.05pF	0.80	±0.10	±0.10	0.24%		(f)
	C1608NP0708 HTS	C1608NP0708 HT	1V, 1MHz	0.70	pF	±0.1pF, ±0.05pF	0.80	±0.10	±0.10	0.24%		(f)
	C1608NP0758 HTS	C1608NP0758 HT	1V, 1MHz	0.75	pF	±0.1pF, ±0.05pF	0.80	±0.10	±0.10	0.24%		(f)
	C1608NP0808 HTS	C1608NP0808 HT	1V, 1MHz	0.80	pF	±0.1pF, ±0.05pF	0.80	±0.10	±0.10	0.24%		(f)
	C1608NP0908 HTS	C1608NP0908 HT	1V, 1MHz	0.90	pF	±0.1pF, ±0.05pF	0.80	±0.10	±0.10	0.24%		(f)
	C1608NP0109 HTS	C1608NP0109 HT	1V, 1MHz	1.0	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.24%		(f)
	C1608NP0129 HTS	C1608NP0129 HT	1V, 1MHz	1.2	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.24%		(f)
	C1608NP0159 HTS	C1608NP0159 HT	1V, 1MHz	1.5	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.23%		(f)
	C1608NP0189 HTS	C1608NP0189 HT	1V, 1MHz	1.8	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.23%		(f)
	C1608NP0209 HTS	C1608NP0209 HT	1V, 1MHz	2.0	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.23%		(f)
	C1608NP0229 HTS	C1608NP0229 HT	1V, 1MHz	2.2	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.23%		(f)
	C1608NP0249 HTS	C1608NP0249 HT	1V, 1MHz	2.4	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.22%		(f)
	C1608NP0279 HTS	C1608NP0279 HT	1V, 1MHz	2.7	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.22%		(f)
	C1608NP0309 HTS	C1608NP0309 HT	1V, 1MHz	3.0	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.22%		(f)
	C1608NP0339 HTS	C1608NP0339 HT	1V, 1MHz	3.3	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.21%		(f)
	C1608NP0399 HTS	C1608NP0399 HT	1V, 1MHz	3.9	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.21%		(f)
	C1608NP0409 HTS	C1608NP0409 HT	1V, 1MHz	4.0	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.21%		(f)
	C1608NP0439 HTS	C1608NP0439 HT	1V, 1MHz	4.3	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.21%		(f)
	C1608NP0479 HTS	C1608NP0479 HT	1V, 1MHz	4.7	pF	±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.20%		(f)
	C1608NP0509 HTS	C1608NP0509 HT	1V, 1MHz	5.0	pF	±0.5pF, ±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.20%		(f)
	C1608NP0569 HTS	C1608NP0569 HT	1V, 1MHz	5.6	pF	±0.5pF, ±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.20%		(f)
	C1608NP0609 HTS	C1608NP0609 HT	1V, 1MHz	6.0	pF	±0.5pF, ±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.19%		(f)
	C1608NP0629 HTS	C1608NP0629 HT	1V, 1MHz	6.2	pF	±0.5pF, ±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.19%		(f)
	C1608NP0689 HTS	C1608NP0689 HT	1V, 1MHz	6.8	pF	±0.5pF, ±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.19%		(f)
	C1608NP0709 HTS	C1608NP0709 HT	1V, 1MHz	7.0	pF	±0.5pF, ±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.19%		(f)
	C1608NP0829 HTS	C1608NP0829 HT	1V, 1MHz	8.2	pF	±0.5pF, ±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.18%		(f)
	C1608NP0909 HTS	C1608NP0909 HT	1V, 1MHz	9.0	pF	±0.5pF, ±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.17%		(f)
	C1608NP0919 HTS	C1608NP0919 HT	1V, 1MHz	9.1	pF	±0.5pF, ±0.25pF, ±0.1pF	0.80	±0.10	±0.10	0.17%		(f)
	C1608NP0100 HTS	C1608NP0100 HT	1V, 1MHz	10	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.17%		(f)
	C1608NP0110 HTS	C1608NP0110 HT	1V, 1MHz	11	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.16%		(f)
	C1608NP0120 HTS	C1608NP0120 HT	1V, 1MHz	12	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.16%		(f)
	C1608NP0150 HTS	C1608NP0150 HT	1V, 1MHz	15	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.14%		(f)
	C1608NP0180 HTS	C1608NP0180 HT	1V, 1MHz	18	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.13%		(f)
	C1608NP0200 HTS	C1608NP0200 HT	1V, 1MHz	20	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.13%		(f)
	C1608NP0220 HTS	C1608NP0220 HT	1V, 1MHz	22	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.12%		(f)
	C1608NP0240 HTS	C1608NP0240 HT	1V, 1MHz	24	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.11%		(f)
	C1608NP0270 HTS	C1608NP0270 HT	1V, 1MHz	27	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.11%		(f)
	C1608NP0300 HTS	C1608NP0300 HT	1V, 1MHz	30	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0330 HTS	C1608NP0330 HT	1V, 1MHz	33	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0360 HTS	C1608NP0360 HT	1V, 1MHz	36	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0390 HTS	C1608NP0390 HT	1V, 1MHz	39	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0430 HTS	C1608NP0430 HT	1V, 1MHz	43	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0470 HTS	C1608NP0470 HT	1V, 1MHz	47	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0560 HTS	C1608NP0560 HT	1V, 1MHz	56	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0620 HTS	C1608NP0620 HT	1V, 1MHz	62	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0680 HTS	C1608NP0680 HT	1V, 1MHz	68	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0750 HTS	C1608NP0750 HT	1V, 1MHz	75	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0820 HTS	C1608NP0820 HT	1V, 1MHz	82	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0910 HTS	C1608NP0910 HT	1V, 1MHz	91	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0101 HTS	C1608NP0101 HT	1V, 1MHz	100	pF	±5%, ±2%, ±1%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0121JHTS	C1608NP0121JHT	1V, 1MHz	120	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0151JHTS	C1608NP0151JHT	1V, 1MHz	150	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0181JHTS	C1608NP0181JHT	1V, 1MHz	180	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0201JHTS	C1608NP0201JHT	1V, 1MHz	200	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0221JHTS	C1608NP0221JHT	1V, 1MHz	220	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0271JHTS	C1608NP0271JHT	1V, 1MHz	270	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0331JHTS	C1608NP0331JHT	1V, 1MHz	330	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0391JHTS	C1608NP0391JHT	1V, 1MHz	390	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0471JHTS	C1608NP0471JHT	1V, 1MHz	470	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0561JHTS	C1608NP0561JHT	1V, 1MHz	560	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0681JHTS	C1608NP0681JHT	1V, 1MHz	680	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0821JHTS	C1608NP0821JHT	1V, 1MHz	820	pF	±5%	0.80	±0.10	±0.10	0.10%		(f)
	C1608NP0102JHTS	C1608NP0102JHT	1V, 1MHz	1.0	nF	±5%	0.80	±0.10	±0.10	0.10%		(f)

# ● C2012NP0 Series (EIA0805)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
1000V	C2012NP0100JPPSG	C2012NP0100JJP	1V, 1MHz	10	pF	±5%	1.25	±0.15/±0.10	±0.20	0.17%	Embossed, 3kpcs	(I)
	C2012NP0120JPPSG	C2012NP0120JJP	1V, 1MHz	12	pF	±5%	1.25	±0.15/±0.10	±0.20	0.16%		(I)
	C2012NP0150JPPSG	C2012NP0150JJP	1V, 1MHz	15	pF	±5%	1.25	±0.15/±0.10	±0.20	0.14%		(I)
	C2012NP0180JPPSG	C2012NP0180JJP	1V, 1MHz	18	pF	±5%	1.25	±0.15/±0.10	±0.20	0.13%		(I)
	C2012NP0220JPPSG	C2012NP0220JJP	1V, 1MHz	22	pF	±5%	1.25	±0.15/±0.10	±0.20	0.12%		(I)
	C2012NP0270JPPSG	C2012NP0270JJP	1V, 1MHz	27	pF	±5%	1.25	±0.15/±0.10	±0.20	0.11%		(I)
	C2012NP0330JPPSG	C2012NP0330JJP	1V, 1MHz	33	pF	±5%	1.25	±0.15/±0.10	±0.20	0.10%		(I)
	C2012NP0390JPPSG	C2012NP0390JJP	1V, 1MHz	39	pF	±5%	1.25	±0.15/±0.10	±0.20	0.10%		(I)
	C2012NP0470JPPSG	C2012NP0470JJP	1V, 1MHz	47	pF	±5%	1.25	±0.15/±0.10	±0.20	0.10%		(I)
	C2012NP0560JPPSG	C2012NP0560JJP	1V, 1MHz	56	pF	±5%	1.25	±0.15/±0.10	±0.20	0.10%		(I)
630V	C2012NP0680JPPSG	C2012NP0680JJP	1V, 1MHz	68	pF	±5%	1.25	±0.15/±0.10	±0.20	0.10%	Paper, 4kpcs	(I)
	C2012NP0100JMTSC	C2012NP0100JMT	1V, 1MHz	10	pF	±5%	0.60	±0.15/±0.10	±0.10	0.17%		(I)
	C2012NP0120JMTSC	C2012NP0120JMT	1V, 1MHz	12	pF	±5%	0.60	±0.15/±0.10	±0.10	0.16%		(I)
	C2012NP0150JMTSC	C2012NP0150JMT	1V, 1MHz	15	pF	±5%	0.60	±0.15/±0.10	±0.10	0.14%		(I)
	C2012NP0180JMTSC	C2012NP0180JMT	1V, 1MHz	18	pF	±5%	0.60	±0.15/±0.10	±0.10	0.13%		(I)
	C2012NP0220JMTSC	C2012NP0220JMT	1V, 1MHz	22	pF	±5%	0.60	±0.15/±0.10	±0.10	0.12%		(I)
	C2012NP0270JMTSC	C2012NP0270JMT	1V, 1MHz	27	pF	±5%	0.60	±0.15/±0.10	±0.10	0.11%		(I)
	C2012NP0330JMTSC	C2012NP0330JMT	1V, 1MHz	33	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0390JMTSC	C2012NP0390JMT	1V, 1MHz	39	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0470JMTSC	C2012NP0470JMT	1V, 1MHz	47	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
250V	C2012NP0560JMTSC	C2012NP0560JMT	1V, 1MHz	56	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%	Paper, 4kpcs	(I)
	C2012NP0680JMTSC	C2012NP0680JMT	1V, 1MHz	68	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0100JKTSC	C2012NP0100JKT	1V, 1MHz	10	pF	±5%	0.60	±0.15/±0.10	±0.10	0.17%		(I)
	C2012NP0120JKTSC	C2012NP0120JKT	1V, 1MHz	12	pF	±5%	0.60	±0.15/±0.10	±0.10	0.16%		(I)
	C2012NP0150JKTSC	C2012NP0150JKT	1V, 1MHz	15	pF	±5%	0.60	±0.15/±0.10	±0.10	0.14%		(I)
	C2012NP0180JKTSC	C2012NP0180JKT	1V, 1MHz	18	pF	±5%	0.60	±0.15/±0.10	±0.10	0.13%		(I)
	C2012NP0220JKTSC	C2012NP0220JKT	1V, 1MHz	22	pF	±5%	0.60	±0.15/±0.10	±0.10	0.12%		(I)
	C2012NP0270JKTSC	C2012NP0270JKT	1V, 1MHz	27	pF	±5%	0.60	±0.15/±0.10	±0.10	0.11%		(I)
	C2012NP0330JKTSC	C2012NP0330JKT	1V, 1MHz	33	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0390JKTSC	C2012NP0390JKT	1V, 1MHz	39	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
100V	C2012NP0470JKTSC	C2012NP0470JKT	1V, 1MHz	47	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%	Embossed, 3kpcs	(I)
	C2012NP0560JKTSC	C2012NP0560JKT	1V, 1MHz	56	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0680JKTSC	C2012NP0680JKT	1V, 1MHz	68	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0820JKTSC	C2012NP0820JKT	1V, 1MHz	82	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0101JKTSD	C2012NP0101JKT	1V, 1MHz	100	pF	±5%	0.80	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0121JKTSD	C2012NP0121JKT	1V, 1MHz	120	pF	±5%	0.80	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0151JKPSG	C2012NP0151JKP	1V, 1MHz	150	pF	±5%	1.25	±0.15/±0.10	±0.20	0.10%		(I)
	C2012NP0271JKPSG	C2012NP0271JKP	1V, 1MHz	270	pF	±5%	1.25	±0.15/±0.10	±0.20	0.10%		(I)
	C2012NP0331JKPSG	C2012NP0331JKP	1V, 1MHz	330	pF	±5%	1.25	±0.15/±0.10	±0.20	0.10%		(I)
	C2012NP0561JKPSG	C2012NP0561JKP	1V, 1MHz	560	pF	±5%	1.25	±0.15/±0.10	±0.20	0.10%		(I)
100V	C2012NP0100JHTSC	C2012NP0100JHT	1V, 1MHz	10	pF	±5%	0.60	±0.15/±0.10	±0.10	0.17%	Paper, 4kpcs	(I)
	C2012NP0120JHTSC	C2012NP0120JHT	1V, 1MHz	12	pF	±5%	0.60	±0.15/±0.10	±0.10	0.16%		(I)
	C2012NP0150JHTSC	C2012NP0150JHT	1V, 1MHz	15	pF	±5%	0.60	±0.15/±0.10	±0.10	0.14%		(I)
	C2012NP0180JHTSC	C2012NP0180JHT	1V, 1MHz	18	pF	±5%	0.60	±0.15/±0.10	±0.10	0.13%		(I)
	C2012NP0200JHTSC	C2012NP0200JHT	1V, 1MHz	20	pF	±5%	0.60	±0.15/±0.10	±0.10	0.13%		(I)
	C2012NP0220JHTSC	C2012NP0220JHT	1V, 1MHz	22	pF	±5%	0.60	±0.15/±0.10	±0.10	0.12%		(I)
	C2012NP0240JHTSC	C2012NP0240JHT	1V, 1MHz	24	pF	±5%	0.60	±0.15/±0.10	±0.10	0.11%		(I)
	C2012NP0270JHTSC	C2012NP0270JHT	1V, 1MHz	27	pF	±5%	0.60	±0.15/±0.10	±0.10	0.11%		(I)
	C2012NP0300JHTSC	C2012NP0300JHT	1V, 1MHz	30	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0330JHTSC	C2012NP0330JHT	1V, 1MHz	33	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
100V	C2012NP0360JHTSC	C2012NP0360JHT	1V, 1MHz	36	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%	Embossed, 3kpcs	(I)
	C2012NP0390JHTSC	C2012NP0390JHT	1V, 1MHz	39	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0430JHTSC	C2012NP0430JHT	1V, 1MHz	43	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0470JHTSC	C2012NP0470JHT	1V, 1MHz	47	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0560JHTSC	C2012NP0560JHT	1V, 1MHz	56	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0620JHTSC	C2012NP0620JHT	1V, 1MHz	62	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0680JHTSC	C2012NP0680JHT	1V, 1MHz	68	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0750JHTSC	C2012NP0750JHT	1V, 1MHz	75	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0820JHTSC	C2012NP0820JHT	1V, 1MHz	82	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0101JHTSC	C2012NP0101JHT	1V, 1MHz	100	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
100V	C2012NP0121JHTSC	C2012NP0121JHT	1V, 1MHz	120	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%	Paper, 4kpcs	(I)
	C2012NP0151JHTSC	C2012NP0151JHT	1V, 1MHz	150	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0181JHTSC	C2012NP0181JHT	1V, 1MHz	180	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0201JHTSC	C2012NP0201JHT	1V, 1MHz	200	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0221JHTSC	C2012NP0221JHT	1V, 1MHz	220	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0271JHTSC	C2012NP0271JHT	1V, 1MHz	270	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0331JHTSC	C2012NP0331JHT	1V, 1MHz	330	pF	±5%	0.60	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0391JHTSD	C2012NP0391JHT	1V, 1MHz	390	pF	±5%	0.80	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0471JHTSD	C2012NP0471JHT	1V, 1MHz	470	pF	±5%	0.80	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0561JHTSD	C2012NP0561JHT	1V, 1MHz	560	pF	±5%	0.80	±0.15/±0.10	±0.10	0.10%		(I)
100V	C2012NP0681JHTSD	C2012NP0681JHT	1V, 1MHz	680	pF	±5%	0.80	±0.15/±0.10	±0.10	0.10%	Embossed, 3kpcs	(I)
	C2012NP0821JHTSD	C2012NP0821JHT	1V, 1MHz	820	pF	±5%	0.80	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0102JHTSD	C2012NP0102JHT	1V, 1kHz	1.0	nF	±5%	0.80	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0122JHTSD	C2012NP0122JHT	1V, 1kHz	1.2	nF	±5%	0.80	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0152JHTSD	C2012NP0152JHT	1V, 1kHz	1.5	nF	±5%	0.80	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0182JHTSD	C2012NP0182JHT	1V, 1kHz	1.8	nF	±5%	0.80	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0222JHTSD	C2012NP0222JHT	1V, 1kHz	2.2	nF	±5%	0.80	±0.15/±0.10	±0.10	0.10%		(I)
	C2012NP0272JHPSG	C2012NP0272JHP	1V, 1kHz	2.7	nF	±5%	1.25	±0.15/±0.10	±0.20	0.10%		(I)
	C2012NP0332JHPSG	C2012NP0332JHP	1V, 1kHz	3.3	nF	±5%	1.25	±0.15/±0.10	±0.20	0.10%		(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.

## ● C3216NP0 Series (EIA1206)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
2000V	C3216NP0100JQTS		1V, 1MHz	10	pF	±5%	0.80	±0.15	±0.10	0.17%	Paper, 4kpcs	(I)
	C3216NP0220JQTS		1V, 1MHz	22	pF	±5%	0.80	±0.15	±0.10	0.12%		(I)
	C3216NP0100JPTS	C3216NP0100JPT	1V, 1MHz	10	pF	±5%	0.80	±0.15	±0.10	0.17%		(I)
1000V	C3216NP0120JPTS	C3216NP0120JPT	1V, 1MHz	12	pF	±5%	0.80	±0.15	±0.10	0.16%	Paper, 4kpcs	(I)
	C3216NP0150JPTS	C3216NP0150JPT	1V, 1MHz	15	pF	±5%	0.80	±0.15	±0.10	0.14%		(I)
	C3216NP0180JPTS	C3216NP0180JPT	1V, 1MHz	18	pF	±5%	0.80	±0.15	±0.10	0.13%		(I)
	C3216NP0220JPTS	C3216NP0220JPT	1V, 1MHz	22	pF	±5%	0.80	±0.15	±0.10	0.12%		(I)
	C3216NP0270JPTS	C3216NP0270JPT	1V, 1MHz	27	pF	±5%	0.80	±0.15	±0.10	0.11%		(I)
	C3216NP0330JPTS	C3216NP0330JPT	1V, 1MHz	33	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0390JPTS	C3216NP0390JPT	1V, 1MHz	39	pF	±5%	0.80	±0.15	±0.10	0.10%	Embossed, 3kpcs	(I)
	C3216NP0470JPPSI	C3216NP0470JPP	1V, 1MHz	47	pF	±5%	0.95	±0.15	±0.10	0.10%		(I)
	C3216NP0560JPPSI	C3216NP0560JPP	1V, 1MHz	56	pF	±5%	0.95	±0.15	±0.10	0.10%		(I)
	C3216NP0680JPPSI	C3216NP0680JPP	1V, 1MHz	68	pF	±5%	0.95	±0.15	±0.10	0.10%	Embossed, 3kpcs	(I)
	C3216NP0820JPPSG	C3216NP0820JPP	1V, 1MHz	82	pF	±5%	1.25	±0.15	±0.20	0.10%		(I)
	C3216NP0101JPPSG	C3216NP0101JPP	1V, 1MHz	100	pF	±5%	1.25	±0.15	±0.20	0.10%		(I)
	C3216NP0121JPPSG	C3216NP0121JPP	1V, 1MHz	120	pF	±5%	1.25	±0.15	±0.20	0.10%	Embossed, 2kpcs	(I)
	C3216NP0151JPPSG	C3216NP0151JPP	1V, 1MHz	150	pF	±5%	1.25	±0.15	±0.20	0.10%		(I)
	C3216NP0181JPPSL		1V, 1MHz	180	pF	±5%	1.60	±0.15	±0.20	0.10%		(I)
	C3216NP0221JPPSL		1V, 1MHz	220	pF	±5%	1.60	±0.15	±0.20	0.10%	Embossed, 2kpcs	(I)
	C3216NP0271JPPSL	C3216NP0271JPP	1V, 1MHz	270	pF	±5%	1.60	±0.20	±0.20	0.10%		(I)
	C3216NP0331JPPSL	C3216NP0331JPP	1V, 1MHz	330	pF	±5%	1.60	±0.20	±0.20	0.10%		(I)
	C3216NP0391JPPSL	C3216NP0391JPP	1V, 1MHz	390	pF	±5%	1.60	±0.20	±0.20	0.10%	Embossed, 2kpcs	(I)
	C3216NP0471JPPSL	C3216NP0471JPP	1V, 1MHz	470	pF	±5%	1.60	±0.20	±0.20	0.10%		(I)
	C3216NP0561JPPSL	C3216NP0561JPP	1V, 1MHz	560	pF	±5%	1.60	±0.20	±0.20	0.10%		(I)
630V	C3216NP0100JMTSD	C3216NP0100JMT	1V, 1MHz	10	pF	±5%	0.80	±0.15	±0.10	0.17%	Paper, 4 Kpcs	(I)
	C3216NP0150JMTSD	C3216NP0150JMT	1V, 1MHz	15	pF	±5%	0.80	±0.15	±0.10	0.14%		(I)
	C3216NP0220JMTSD	C3216NP0220JMT	1V, 1MHz	22	pF	±5%	0.80	±0.15	±0.10	0.12%		(I)
	C3216NP0270JMTSD	C3216NP0270JMT	1V, 1MHz	27	pF	±5%	0.80	±0.15	±0.10	0.11%		(I)
	C3216NP0330JMTSD	C3216NP0330JMT	1V, 1MHz	33	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0470JMTSD	C3216NP0470JMT	1V, 1MHz	47	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0560JMTSD	C3216NP0560JMT	1V, 1MHz	56	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0680JMTSD	C3216NP0680JMT	1V, 1MHz	68	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0820JMTSD	C3216NP0820JMT	1V, 1MHz	82	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0101JMTSD	C3216NP0101JMT	1V, 1MHz	100	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0121JMTSD	C3216NP0121JMT	1V, 1MHz	120	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0151JMTSD	C3216NP0151JMT	1V, 1MHz	150	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0181JMTSD	C3216NP0181JMT	1V, 1MHz	180	pF	±5%	0.80	±0.15	±0.10	0.10%	Embossed, 3kpcs	(I)
	C3216NP0221JMTSD	C3216NP0221JMT	1V, 1MHz	220	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0271JMPFI		1V, 1MHz	270	pF	±5%	0.95	±0.15	±0.10	0.10%		(I)
	C3216NP0331JMPFI		1V, 1MHz	330	pF	±5%	0.95	±0.15	±0.10	0.10%	Embossed, 3kpcs	(I)
	C3216NP0391JMPFI		1V, 1MHz	390	pF	±5%	0.95	±0.15	±0.10	0.10%		(I)
	C3216NP0471JMPFI		1V, 1MHz	470	pF	±5%	0.95	±0.15	±0.10	0.10%		(I)
	C3216NP0222JMPFI	C3216NP0222JMP	1V, 1kHz	2.2	nF	±5%	1.60	±0.30/±0.20	±0.20	0.10%	Embossed, 2kpc	(I)
500V	C3216NP0471JLPSI		1V, 1MHz	470	pF	±5%	0.95	±0.15	±0.10	0.10%	Embossed, 3kpcs	(I)
	C3216NP0102JLPSL		1V, 1MHz	1.0	nF	±5%	1.60	±0.30/±0.20	±0.20	0.10%	Embossed, 2kpc	(I)
	C3216NP0121JKTSD	C3216NP0121JKT	1V, 1MHz	120	pF	±5%	0.80	±0.15	±0.10	0.10%	Paper, 4kpcs	(I)
250V	C3216NP0151JKTSD	C3216NP0151JKT	1V, 1MHz	150	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0181JKTSD	C3216NP0181JKT	1V, 1MHz	180	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0221JKTSD	C3216NP0221JKT	1V, 1MHz	220	pF	±5%	0.80	±0.15	±0.10	0.10%	Embossed, 3kpcs	(I)
	C3216NP0271JKPSI	C3216NP0271JKP	1V, 1MHz	270	pF	±5%	0.95	±0.15	±0.10	0.10%		(I)
	C3216NP0331JKPSI	C3216NP0331JKP	1V, 1MHz	330	pF	±5%	0.95	±0.15	±0.10	0.10%		(I)
	C3216NP0391JKPSI	C3216NP0391JKP	1V, 1MHz	390	pF	±5%	0.95	±0.15	±0.10	0.10%		(I)
	C3216NP0471JKPSI	C3216NP0471JKP	1V, 1MHz	470	pF	±5%	0.95	±0.15	±0.10	0.10%		(I)
100V	C3216NP0100JHTSD	C3216NP0100JHT	1V, 1MHz	10	pF	±5%	0.80	±0.15	±0.10	0.17%	Paper, 4kpcs	(I)
	C3216NP0120JHTSD	C3216NP0120JHT	1V, 1MHz	12	pF	±5%	0.80	±0.15	±0.10	0.16%		(I)
	C3216NP0150JHTSD	C3216NP0150JHT	1V, 1MHz	15	pF	±5%	0.80	±0.15	±0.10	0.14%		(I)
	C3216NP0180JHTSD	C3216NP0180JHT	1V, 1MHz	18	pF	±5%	0.80	±0.15	±0.10	0.13%		(I)
	C3216NP0220JHTSD	C3216NP0220JHT	1V, 1MHz	22	pF	±5%	0.80	±0.15	±0.10	0.12%		(I)
	C3216NP0270JHTSD	C3216NP0270JHT	1V, 1MHz	27	pF	±5%	0.80	±0.15	±0.10	0.11%		(I)
	C3216NP0330JHTSD	C3216NP0330JHT	1V, 1MHz	33	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0390JHTSD	C3216NP0390JHT	1V, 1MHz	39	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0470JHTSD	C3216NP0470JHT	1V, 1MHz	47	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0560JHTSD	C3216NP0560JHT	1V, 1MHz	56	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0680JHTSD	C3216NP0680JHT	1V, 1MHz	68	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0820JHTSD	C3216NP0820JHT	1V, 1MHz	82	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0101JHTSD	C3216NP0101JHT	1V, 1MHz	100	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0121JHTSD	C3216NP0121JHT	1V, 1MHz	120	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0151JHTSD	C3216NP0151JHT	1V, 1MHz	150	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0181JHTSD	C3216NP0181JHT	1V, 1MHz	180	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0221JHTSD	C3216NP0221JHT	1V, 1MHz	220	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0271JHTSD	C3216NP0271JHT	1V, 1MHz	270	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0331JHTSD	C3216NP0331JHT	1V, 1MHz	330	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0391JHTSD	C3216NP0391JHT	1V, 1MHz	390	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0471JHTSD	C3216NP0471JHT	1V, 1MHz	470	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0561JHTSD	C3216NP0561JHT	1V, 1MHz	560	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0681JHTSD	C3216NP0681JHT	1V, 1MHz	680	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0821JHTSD	C3216NP0821JHT	1V, 1MHz	820	pF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0102JHTSD	C3216NP0102JHT	1V, 1MHz	1.0	nF	±5%	0.80	±0.15	±0.10	0.10%		(I)



RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
100V	C3216NP0122JHTSD	C3216NP0122JHT	1V, 1kHz	1.2	nF	±5%	0.80	±0.15	±0.10	0.10%	Paper, 4kpcs	(I)
	C3216NP0152JHTSD	C3216NP0152JHT	1V, 1kHz	1.5	nF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0182JHTSD	C3216NP0182JHT	1V, 1kHz	1.8	nF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0222JHTSD	C3216NP0222JHT	1V, 1kHz	2.2	nF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0272JHTSD	C3216NP0272JHT	1V, 1kHz	2.7	nF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0332JHTSD	C3216NP0332JHT	1V, 1kHz	3.3	nF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0392JHTSD	C3216NP0392JHT	1V, 1kHz	3.9	nF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0472JHTSD	C3216NP0472JHT	1V, 1kHz	4.7	nF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0562JHTSD	C3216NP0562JHT	1V, 1kHz	5.6	nF	±5%	0.80	±0.15	±0.10	0.10%		(I)
	C3216NP0682JHPSI	C3216NP0682JHP	1V, 1kHz	6.8	nF	±5%	0.95	±0.15	±0.10	0.10%	Embossed, 3kpcs	(I)
	C3216NP0822JHPSG	C3216NP0822JHP	1V, 1kHz	8.2	nF	±5%	1.25	±0.15	±0.20	0.10%	Embossed, 3kpcs	(I)
	C3216NP0103JHPSG	C3216NP0103JHP	1V, 1kHz	10	nF	±5%	1.25	±0.15	±0.20	0.10%		(I)

## ● C3225NP0Series (EIA1210)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
1000V	C3225NP0331JPPSL	C3225NP0331JPP	1V, 1MHz	330	pF	±5%	1.60	±0.40/±0.30	±0.20	0.10%	Embossed, 2kpcs	(I)

## ● C4520NP0Series (EIA1808)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
3000V	C4520NP0509DRPSG	C4520NP0509DRP	1V, 1MHz	5.0	pF	±0.5pF	1.25	+0.5-0.3/±0.25	±0.20	0.20%	Embossed, 2kpcs	(I)
	C4520NP0100JRPSG	C4520NP0100JRP	1V, 1MHz	10	pF	±5%	1.25	+0.5-0.3/±0.25	±0.20	0.17%		(I)
	C4520NP0101JRPSG	C4520NP0101JRP	1V, 1MHz	100	pF	±5%	1.25	+0.5-0.3/±0.25	±0.20	0.10%	Embossed, 3kpcs	(I)
	C4520NP0101JRPSN		1V, 1MHz	100	pF	±5%	2.00	+0.5-0.3/±0.25	±0.20	0.10%	Embossed, 1kpcs	(I)
2000V	C4520NP0180JQPSG	C4520NP0180JQP	1V, 1MHz	18	pF	±5%	1.25	+0.5-0.3/±0.25	±0.20	0.13%	Embossed, 2kpcs	(I)
	C4520NP0101JQPSG	C4520NP0101JQP	1V, 1MHz	100	pF	±5%	1.25	+0.5-0.3/±0.25	±0.20	0.10%		(I)
1000V	C4520NP0330JPPSG	C4520NP0330JPP	1V, 1MHz	33	pF	±5%	1.25	+0.5-0.3/±0.25	±0.20	0.10%	Embossed, 2kpcs	(I)
	C4520NP0681JPPSN	C4520NP0681JPP	1V, 1MHz	680	pF	±5%	2.00	+0.5-0.3/±0.25	±0.20	0.10%	Embossed, 1kpcs	(I)

## ● C4532NP0Series (EIA1812)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
2000V	C4532NP0222KRPSG	C4520NP0101KRP	1V, 1kHz	2.2	nF	±10%	1.25	+0.5-0.3/±0.30	±0.20	0.10%	Embossed, 3kpcs	(I)

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



## X7R Series

### C1005X7R Series (EIA0402)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
100V	C1005X7R101KHST	C1005X7R101KHT	1V, 1kHz	100	pF	±10%	0.50	±0.05	±0.05	3.0%	Paper, 10kpcs	(I)
	C1005X7R121KHST	C1005X7R121KHT	1V, 1kHz	120	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R151KHST	C1005X7R151KHT	1V, 1kHz	150	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R181KHST	C1005X7R181KHT	1V, 1kHz	180	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R221KHST	C1005X7R221KHT	1V, 1kHz	220	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R271KHST	C1005X7R271KHT	1V, 1kHz	270	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R331KHST	C1005X7R331KHT	1V, 1kHz	330	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R391KHST	C1005X7R391KHT	1V, 1kHz	390	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R471KHST	C1005X7R471KHT	1V, 1kHz	470	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R561KHST	C1005X7R561KHT	1V, 1kHz	560	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R681KHST	C1005X7R681KHT	1V, 1kHz	680	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R821KHST	C1005X7R821KHT	1V, 1kHz	820	pF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R102KHST	C1005X7R102KHT	1V, 1kHz	1.0	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R122KHST	C1005X7R122KHT	1V, 1kHz	1.2	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R152KHST	C1005X7R152KHT	1V, 1kHz	1.5	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R182KHST	C1005X7R182KHT	1V, 1kHz	1.8	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R222KHST	C1005X7R222KHT	1V, 1kHz	2.2	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R272KHST	C1005X7R272KHT	1V, 1kHz	2.7	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R332KHST	C1005X7R332KHT	1V, 1kHz	3.3	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R392KHST	C1005X7R392KHT	1V, 1kHz	3.9	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R472KHST	C1005X7R472KHT	1V, 1kHz	4.7	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R562KHST	C1005X7R562KHT	1V, 1kHz	5.6	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)
	C1005X7R682KHST	C1005X7R682KHT	1V, 1kHz	6.8	nF	±10%	0.50	±0.05	±0.05	3.0%		(I)

### C1608X7R Series (EIA0603)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
250V	C1608X7R101KKTS	C1608X7R101KKHT	1V, 1kHz	100	pF	±10%	0.80	±0.10	±0.10	2.5%	Paper, 4kpcs	(I)
	C1608X7R121KKTS	C1608X7R121KKHT	1V, 1kHz	120	pF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R151KKTS	C1608X7R151KKHT	1V, 1kHz	150	pF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R181KKTS	C1608X7R181KKHT	1V, 1kHz	180	pF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R221KKTS	C1608X7R221KKHT	1V, 1kHz	220	pF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R271KKTS	C1608X7R271KKHT	1V, 1kHz	270	pF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R331KKTS	C1608X7R331KKHT	1V, 1kHz	330	pF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R391KKTS	C1608X7R391KKHT	1V, 1kHz	390	pF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R471KKTS	C1608X7R471KKHT	1V, 1kHz	470	pF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R561KKTS	C1608X7R561KKHT	1V, 1kHz	560	pF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R681KKTS	C1608X7R681KKHT	1V, 1kHz	680	pF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R821KKTS	C1608X7R821KKHT	1V, 1kHz	820	pF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R102KKTS	C1608X7R102KKHT	1V, 1kHz	1.0	nF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R122KKTS	C1608X7R122KKHT	1V, 1kHz	1.2	nF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R152KKTS	C1608X7R152KKHT	1V, 1kHz	1.5	nF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R182KKTS	C1608X7R182KKHT	1V, 1kHz	1.8	nF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R222KKTS	C1608X7R222KKHT	1V, 1kHz	2.2	nF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R272KKTS	C1608X7R272KKHT	1V, 1kHz	2.7	nF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R332KKTS	C1608X7R332KKHT	1V, 1kHz	3.3	nF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R392KKTS	C1608X7R392KKHT	1V, 1kHz	3.9	nF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R472KKTS	C1608X7R472KKHT	1V, 1kHz	4.7	nF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R562KKTS	C1608X7R562KKHT	1V, 1kHz	5.6	nF	±10%	0.80	±0.10	±0.10	2.5%		(I)
	C1608X7R682KKTS	C1608X7R682KKHT	1V, 1kHz	6.8	nF	±10%	0.80	±0.10	±0.10	2.5%		(I)
100V	C1608X7R101KHST	C1608X7R101KHT	1V, 1kHz	100	pF	±10%	0.80	±0.10	±0.10	3.0%	Paper, 4kpcs	(I)
	C1608X7R121KHST	C1608X7R121KHT	1V, 1kHz	120	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R151KHST	C1608X7R151KHT	1V, 1kHz	150	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R181KHST	C1608X7R181KHT	1V, 1kHz	180	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R221KHST	C1608X7R221KHT	1V, 1kHz	220	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R271KHST	C1608X7R271KHT	1V, 1kHz	270	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R331KHST	C1608X7R331KHT	1V, 1kHz	330	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R391KHST	C1608X7R391KHT	1V, 1kHz	390	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R471KHST	C1608X7R471KHT	1V, 1kHz	470	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R561KHST	C1608X7R561KHT	1V, 1kHz	560	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R681KHST	C1608X7R681KHT	1V, 1kHz	680	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R821KHST	C1608X7R821KHT	1V, 1kHz	820	pF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R102KHST	C1608X7R102KHT	1V, 1kHz	1.0	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R122KHST	C1608X7R122KHT	1V, 1kHz	1.2	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R152KHST	C1608X7R152KHT	1V, 1kHz	1.5	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R182KHST	C1608X7R182KHT	1V, 1kHz	1.8	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R222KHST	C1608X7R222KHT	1V, 1kHz	2.2	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R272KHST	C1608X7R272KHT	1V, 1kHz	2.7	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R332KHST	C1608X7R332KHT	1V, 1kHz	3.3	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R392KHST	C1608X7R392KHT	1V, 1kHz	3.9	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R472KHST	C1608X7R472KHT	1V, 1kHz	4.7	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R562KHST	C1608X7R562KHT	1V, 1kHz	5.6	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R682KHST	C1608X7R682KHT	1V, 1kHz	6.8	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R822KHST	C1608X7R822KHT	1V, 1kHz	8.2	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R103KHST	C1608X7R103KHT	1V, 1kHz	10	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R223KHST	C1608X7R223KHT	1V, 1kHz	22	nF	±10%	0.80	±0.10	±0.10	3.0%		(I)
	C1608X7R473KHST	C1608X7R473KHT	1V, 1kHz	47	nF	±10%	0.80	±0.15	±0.15	3.0%		(I)
	C1608X7R104KHST	C1608X7R104KHT	1V, 1kHz	100	nF	±10%	0.80	±0.15	±0.15	10.0%		(I)

# ● C2012X7R Series (EIA0805)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
630V	C2012X7R181KMTSD	C2012X7R181KMT	1V, 1kHz	180	pF	±10%	0.80	±0.15	±0.10	2.5%	Paper, 4kpcs	(I)
	C2012X7R221KMTSD	C2012X7R221KMT	1V, 1kHz	220	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R271KMTSD	C2012X7R271KMT	1V, 1kHz	270	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R331KMTSD	C2012X7R331KMT	1V, 1kHz	330	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R391KMTSD	C2012X7R391KMT	1V, 1kHz	390	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R471KMTSD	C2012X7R471KMT	1V, 1kHz	470	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R561KMTSD	C2012X7R561KMT	1V, 1kHz	560	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R681KMTSD	C2012X7R681KMT	1V, 1kHz	680	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R821KMTSD	C2012X7R821KMT	1V, 1kHz	820	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R102KMTSD	C2012X7R102KMT	1V, 1kHz	1.0	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R122KMTSD	C2012X7R122KMT	1V, 1kHz	1.2	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R152KMTSD	C2012X7R152KMT	1V, 1kHz	1.5	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R182KMTSD	C2012X7R182KMT	1V, 1kHz	1.8	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R222KMTSD	C2012X7R222KMT	1V, 1kHz	2.2	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R272KMTSD	C2012X7R272KMT	1V, 1kHz	2.7	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R332KMTSD	C2012X7R332KMT	1V, 1kHz	3.3	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
500V	C2012X7R472KMPSG		1V, 1kHz	4.7	nF	±10%	1.25	±0.15	±0.20	2.5%	Paper, 4kpcs	(I)
	C2012X7R103KMPSG	C2012X7R103KMP	1V, 1kHz	10	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C2012X7R223KMPSG		1V, 1kHz	22	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C2012X7R221KLTSD	C2012X7R221KLT	1V, 1kHz	220	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R271KLTSD	C2012X7R271KLT	1V, 1kHz	270	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R331KLTSD	C2012X7R331KLT	1V, 1kHz	330	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R471KLTSD	C2012X7R471KLT	1V, 1kHz	470	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R561KLTSD	C2012X7R561KLT	1V, 1kHz	560	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R681KLTSD	C2012X7R681KLT	1V, 1kHz	680	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R102KLTSD	C2012X7R102KLT	1V, 1kHz	1.0	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R222KLTSD	C2012X7R222KLT	1V, 1kHz	2.2	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R472KLPSG		1V, 1kHz	4.7	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C2012X7R181KKTSD	C2012X7R181KKT	1V, 1kHz	180	pF	±10%	0.80	±0.15	±0.10	2.5%	Paper, 4kpcs	(I)
	C2012X7R221KKTSD	C2012X7R221KKT	1V, 1kHz	220	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R331KKTSD	C2012X7R331KKT	1V, 1kHz	330	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R471KKTSD	C2012X7R471KKT	1V, 1kHz	470	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R561KKTSD	C2012X7R561KKT	1V, 1kHz	560	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R681KKTSD	C2012X7R681KKT	1V, 1kHz	680	pF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R102KKTSD	C2012X7R102KKT	1V, 1kHz	1.0	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R222KKTSD	C2012X7R222KKT	1V, 1kHz	2.2	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R332KKTSD	C2012X7R332KKT	1V, 1kHz	3.3	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R392KKTSD	C2012X7R392KKT	1V, 1kHz	3.9	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R472KKTSD	C2012X7R472KKT	1V, 1kHz	4.7	nF	±10%	0.80	±0.15	±0.10	2.5%		(I)
	C2012X7R562KKPSG	C2012X7R562KKP	1V, 1kHz	5.6	nF	±10%	1.25	±0.15	±0.20	2.5%	Paper, 4kpcs	(I)
	C2012X7R682KKPSG	C2012X7R682KKP	1V, 1kHz	6.8	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C2012X7R822KKPSG	C2012X7R822KKP	1V, 1kHz	8.2	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C2012X7R103KKPSG	C2012X7R103KKP	1V, 1kHz	10	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C2012X7R123KKPSG	C2012X7R123KKP	1V, 1kHz	12	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
100V	C2012X7R151KHTSD	C2012X7R151KHT	1V, 1kHz	150	pF	±10%	0.80	±0.15	±0.10	3.0%	Paper, 4kpcs	(I)
	C2012X7R181KHTSD	C2012X7R181KHT	1V, 1kHz	180	pF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R221KHTSD	C2012X7R221KHT	1V, 1kHz	220	pF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R271KHTSD	C2012X7R271KHT	1V, 1kHz	270	pF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R331KHTSD	C2012X7R331KHT	1V, 1kHz	330	pF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R391KHTSD	C2012X7R391KHT	1V, 1kHz	390	pF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R471KHTSD	C2012X7R471KHT	1V, 1kHz	470	pF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R561KHTSD	C2012X7R561KHT	1V, 1kHz	560	pF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R681KHTSD	C2012X7R681KHT	1V, 1kHz	680	pF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R821KHTSD	C2012X7R821KHT	1V, 1kHz	820	pF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R102KHTSD	C2012X7R102KHT	1V, 1kHz	1.0	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R122KHTSD	C2012X7R122KHT	1V, 1kHz	1.2	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R152KHTSD	C2012X7R152KHT	1V, 1kHz	1.5	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R182KHTSD	C2012X7R182KHT	1V, 1kHz	1.8	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R222KHTSD	C2012X7R222KHT	1V, 1kHz	2.2	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R272KHTSD	C2012X7R272KHT	1V, 1kHz	2.7	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R332KHTSD	C2012X7R332KHT	1V, 1kHz	3.3	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R392KHTSD	C2012X7R392KHT	1V, 1kHz	3.9	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R472KHTSD	C2012X7R472KHT	1V, 1kHz	4.7	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R562KHTSD		1V, 1kHz	5.6	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R682KHTSD		1V, 1kHz	6.8	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R822KHPSD		1V, 1kHz	8.2	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R103KHPSD		1V, 1kHz	10	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R123KHPSD		1V, 1kHz	12	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R153KHTSD		1V, 1kHz	15	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R183KHTSD		1V, 1kHz	18	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R223KHTSD		1V, 1kHz	22	nF	±10%	0.80	±0.15	±0.10	3.0%		(I)
	C2012X7R333KHPSG	C2012X7R333KHP	1V, 1kHz	33	nF	±10%	1.25	±0.15/±0.10	±0.10	2.5%	Embossed, 3kpcs	(I)
	C2012X7R473KHPSG	C2012X7R473KHP	1V, 1kHz	47	nF	±10%	1.25	±0.15/±0.10	±0.10	2.5%		(I)
	C2012X7R563KHPSG	C2012X7R563KHP	1V, 1kHz	56	nF	±10%	1.25	±0.15/±0.10	±0.10	2.5%		(I)
	C2012X7R683KHPSG	C2012X7R683KHP	1V, 1kHz	68	nF	±10%	1.25	±0.15/±0.10	±0.10	2.5%		(I)
	C2012X7R823KHPSG	C2012X7R823KHP	1V, 1kHz	82	nF	±10%	1.25	±0.15/±0.10	±0.10	2.5%		(I)
	C2012X7R104KHPSG	C2012X7R104KHP	1V, 1kHz	100	nF	±10%	1.25	±0.20	±0.20	10.0%		(I)

□ Tolerance Code: J=±5%, K=±10%, M=±20%; Special tolerance on the request.

## ● C3216X7R Series (EIA1206)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance (mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
2000V	C3216X7R151KQPSG	C3216X7R151KQP	1V, 1kHz	150	pF	±10%	1.25	±0.30	±0.20	2.5%	Embossed, 3kpcs	(I)
	C3216X7R181KQPSG	C3216X7R181KQP	1V, 1kHz	180	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R221KQPSG	C3216X7R221KQP	1V, 1kHz	220	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R271KQPSG	C3216X7R271KQP	1V, 1kHz	270	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R331KQPSG	C3216X7R331KQP	1V, 1kHz	330	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R471KQPSG	C3216X7R471KQP	1V, 1kHz	470	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R561KQPSG	C3216X7R561KQP	1V, 1kHz	560	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R681KQPSG	C3216X7R681KQP	1V, 1kHz	680	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R821KQPSG		1V, 1kHz	820	pF	±10%	1.25	±0.30	±0.20	2.5%	Embossed, 2kpcs	(I)
	C3216X7R821KQPSL	C3216X7R821KQP	1V, 1kHz	820	pF	±10%	1.60	±0.30	±0.20	2.5%		(I)
	C3216X7R102KQPSG		1V, 1kHz	1.0	nF	±10%	1.25	±0.30	±0.20	2.5%	Embossed, 3kpcs	(I)
	C3216X7R102KQPSL	C3216X7R102KQP	1V, 1kHz	1.0	nF	±10%	1.60	±0.30	±0.20	2.5%		(I)
	C3216X7R122KQPSL	C3216X7R122KQP	1V, 1kHz	1.2	nF	±10%	1.60	±0.30	±0.20	2.5%	Embossed, 2kpcs	(I)
	C3216X7R152KQPSL	C3216X7R152KQP	1V, 1kHz	1.5	nF	±10%	1.60	±0.30	±0.20	2.5%		(I)
	C3216X7R182KQPSL	C3216X7R182KQP	1V, 1kHz	1.8	nF	±10%	1.60	±0.30	±0.20	2.5%		(I)
	C3216X7R222KQPSL	C3216X7R222KQP	1V, 1kHz	2.2	nF	±10%	1.60	±0.30	±0.20	2.5%		(I)
	C3216X7R222KQPSG		1V, 1kHz	2.2	nF	±10%	1.25	±0.30	±0.20	2.5%	Embossed, 3kpcs	(I)
1000V	C3216X7R151KPPSG	C3216X7R151KPP	1V, 1kHz	150	pF	±10%	1.25	±0.30	±0.20	2.5%	Embossed, 3kpcs	(I)
	C3216X7R181KPPSG	C3216X7R181KPP	1V, 1kHz	180	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R221KPPSG	C3216X7R221KPP	1V, 1kHz	220	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R271KPPSG	C3216X7R271KPP	1V, 1kHz	270	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R331KPPSG	C3216X7R331KPP	1V, 1kHz	330	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R471KPPSG	C3216X7R471KPP	1V, 1kHz	470	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R561KPPSG	C3216X7R561KPP	1V, 1kHz	560	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R681KPPSG	C3216X7R681KPP	1V, 1kHz	680	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R821KPPSG	C3216X7R821KPP	1V, 1kHz	820	pF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R102KPPSG	C3216X7R102KPP	1V, 1kHz	1.0	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R122KPPSG	C3216X7R122KPP	1V, 1kHz	1.2	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R152KPPSG	C3216X7R152KPP	1V, 1kHz	1.5	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R182KPPSG	C3216X7R182KPP	1V, 1kHz	1.8	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R222KPPSG	C3216X7R222KPP	1V, 1kHz	2.2	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R272KPPSG	C3216X7R272KPP	1V, 1kHz	2.7	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R332KPPSG	C3216X7R332KPP	1V, 1kHz	3.3	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
630V	C3216X7R392KPPSG	C3216X7R392KPP	1V, 1kHz	3.9	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R472KPPSG	C3216X7R472KPP	1V, 1kHz	4.7	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R562KPPSG	C3216X7R562KPP	1V, 1kHz	5.6	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R682KPPSG	C3216X7R682KPP	1V, 1kHz	6.8	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R822KPPSG	C3216X7R822KPP	1V, 1kHz	8.2	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R103KPPSG	C3216X7R103KPP	1V, 1kHz	10	nF	±10%	1.25	±0.30	±0.20	2.5%		(I)
	C3216X7R181KMPSG	C3216X7R181KMP	1V, 1kHz	180	pF	±10%	1.25	±0.15	±0.20	2.5%	Embossed, 3kpcs	(II)
	C3216X7R221KMPSG	C3216X7R221KMP	1V, 1kHz	220	pF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R271KMPSG	C3216X7R271KMP	1V, 1kHz	270	pF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R331KMPSG	C3216X7R331KMP	1V, 1kHz	330	pF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R391KMPSG	C3216X7R391KMP	1V, 1kHz	390	pF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R471KMPSG	C3216X7R471KMP	1V, 1kHz	470	pF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R561KMPSG	C3216X7R561KMP	1V, 1kHz	560	pF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R681KMPSG	C3216X7R681KMP	1V, 1kHz	680	pF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R821KMPSG	C3216X7R821KMP	1V, 1kHz	820	pF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R102KMPSG	C3216X7R102KMP	1V, 1kHz	1.0	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R122KMPSG	C3216X7R122KMP	1V, 1kHz	1.2	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R152KMPSG	C3216X7R152KMP	1V, 1kHz	1.5	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R182KMPSG	C3216X7R182KMP	1V, 1kHz	1.8	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R222KMPSG	C3216X7R222KMP	1V, 1kHz	2.2	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R272KMPSG	C3216X7R272KMP	1V, 1kHz	2.7	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
500V	C3216X7R332KMPSG	C3216X7R332KMP	1V, 1kHz	3.3	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R392KMPSG	C3216X7R392KMP	1V, 1kHz	3.9	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R472KMPSG	C3216X7R472KMP	1V, 1kHz	4.7	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R562KMPSG	C3216X7R562KMP	1V, 1kHz	5.6	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R682KMPSG	C3216X7R682KMP	1V, 1kHz	6.8	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R102KMPSG	C3216X7R102KMP	1V, 1kHz	1.0	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R822KMPSG	C3216X7R822KMP	1V, 1kHz	8.2	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R103KMPSG	C3216X7R103KMP	1V, 1kHz	10	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R123KMPSG	C3216X7R123KMP	1V, 1kHz	12	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R153KMPSG	C3216X7R153KMP	1V, 1kHz	15	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R183KMPSG	C3216X7R183KMP	1V, 1kHz	18	nF	±10%	1.25	±0.15	±0.20	2.5%		(II)
	C3216X7R223KMPSL	C3216X7R223KMP	1V, 1kHz	22	nF	±10%	1.60	±0.30/±0.20	±0.20	2.5%	Embossed, 2kpcs	(II)
	C3216X7R273KMPSL	C3216X7R273KMP	1V, 1kHz	27	nF	±10%	1.60	±0.30/±0.20	±0.20	2.5%		(II)
	C3216X7R333KMPSL	C3216X7R333KMP	1V, 1kHz	33	nF	±10%	1.60	±0.30/±0.20	±0.20	2.5%		(II)
	C3216X7R473KMPSL	C3216X7R473KMP	1V, 1kHz	47	nF	±10%	1.60	±0.30/±0.20	±0.20	2.5%		(II)
	C3216X7R181KLPSG	C3216X7R181KLP	1V, 1kHz	180	pF	±10%	1.25	±0.15	±0.20	2.5%	Embossed, 3kpcs	(I)
	C3216X7R221KLPSG	C3216X7R221KLP	1V, 1kHz	220	pF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C3216X7R471KLPSG	C3216X7R471KLP	1V, 1kHz	470	pF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C3216X7R102KLPSG	C3216X7R102KLP	1V, 1kHz	1.0	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C3216X7R222KLPSG	C3216X7R222KLP	1V, 1kHz	2.2	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C3216X7R272KLPSG	C3216X7R272KLP	1V, 1kHz	2.7	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C3216X7R472KLPSG		1V, 1kHz	4.7	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C3216X7R102KLPSG	C3216X7R102KLP	1V, 1kHz	1.0	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C3216X7R103KLPSG	C3216X7R103KLP	1V, 1kHz	10	nF	±10%	1.25	±0.15	±0.20	2.5%	Embossed, 2kpcs	(I)
	C3216X7R223KLPSL	C3216X7R223KLP	1V, 1kHz	22	nF	±10%	1.60	±0.30/±0.20	±0.20	2.5%		(I)
	C3216X7R473KLPSL	C3216X7R473KLP	1V, 1kHz	47	nF	±10%	1.60	±0.30/±0.20	±0.20	2.5%		(I)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
250V	C3216X7R221KKPSG		1V, 1kHz	220	pF	±10%	1.25	±0.15	±0.20	2.5%	Embossed, 3kpcs	(I)
	C3216X7R471KKPSG		1V, 1kHz	470	pF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C3216X7R561KKPSG		1V, 1kHz	560	pF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C3216X7R102KKPSG		1V, 1kHz	1.0	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C3216X7R222KKPSG		1V, 1kHz	2.2	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C3216X7R472KKPSG		1V, 1kHz	4.7	nF	±10%	1.25	±0.15	±0.20	2.5%		(I)
	C3216X7R472KKTSE	C3216X7R472KKKT	1V, 1kHz	4.7	nF	±10%	0.85	±0.15	±0.15	2.5%	Paper, 4kpcs	(I)
	C3216X7R103KKPSG		1V, 1kHz	10	nF	±10%	1.25	±0.15	±0.20	2.5%	Embossed, 3kpcs	(I)
	C3216X7R103KKTSE	C3216X7R103KKKT	1V, 1kHz	10	nF	±10%	0.85	±0.15	±0.15	2.5%	Paper, 4kpcs	(I)
	C3216X7R153KKPSG		1V, 1kHz	15	nF	±10%	1.25	±0.15	±0.20	2.5%	Embossed, 3kpcs	(I)
	C3216X7R223KKPSG		1V, 1kHz	22	nF	±10%	1.25	±0.15	±0.20	2.5%	Embossed, 3kpcs	(I)
	C3216X7R473KKPSL		1V, 1kHz	47	nF	±10%	1.60	±0.20	±0.20	2.5%	Embossed, 2kpcs	(I)
200V	C3216X7R104KKPSL	C3216X7R104KKP	1V, 1kHz	100	nF	±10%	1.60	±0.20	±0.20	2.5%		(I)
	C3216X7R102KJTSE	C3216X7R102KJKT	1V, 1kHz	1.0	nF	±10%	0.85	±0.15	±0.15	2.5%	Paper, 4kpcs	(I)
100V	C3216X7R102KJPSG		1V, 1kHz	1.0	nF	±10%	1.25	±0.15	±0.20	2.5%	Embossed, 3kpcs	(I)
	C3216X7R103KHTSD	C3216X7R103KHT	1V, 1kHz	10	nF	±10%	0.80	±0.15	±0.10	3.5%	Paper, 4kpcs	(I)
	C3216X7R123KHTSD	C3216X7R123KHT	1V, 1kHz	12	nF	±10%	0.80	±0.15	±0.10	3.5%		(I)
	C3216X7R153KHTSD	C3216X7R153KHT	1V, 1kHz	15	nF	±10%	0.80	±0.15	±0.10	3.5%		(I)
	C3216X7R183KHTSD	C3216X7R183KHT	1V, 1kHz	18	nF	±10%	0.80	±0.15	±0.10	3.5%		(I)
	C3216X7R223KHTSD	C3216X7R223KHT	1V, 1kHz	22	nF	±10%	0.80	±0.15	±0.10	3.5%		(I)
	C3216X7R273KHTSD	C3216X7R273KHT	1V, 1kHz	27	nF	±10%	0.80	±0.15	±0.10	3.5%		(I)
	C3216X7R333KHTSD	C3216X7R333KHT	1V, 1kHz	33	nF	±10%	0.80	±0.15	±0.10	3.5%		(I)
	C3216X7R393KHTSD	C3216X7R393KHT	1V, 1kHz	39	nF	±10%	0.80	±0.15	±0.10	3.5%		(I)
	C3216X7R473KHTSD	C3216X7R473KHT	1V, 1kHz	47	nF	±10%	0.80	±0.15	±0.10	3.5%		(I)
	C3216X7R563KHTSD	C3216X7R563KHT	1V, 1kHz	56	nF	±10%	0.80	±0.15	±0.10	3.5%		(I)
	C3216X7R683KHTSD	C3216X7R683KHT	1V, 1kHz	68	nF	±10%	0.80	±0.15	±0.10	3.5%		(I)
	C3216X7R823KHTSD	C3216X7R823KHT	1V, 1kHz	82	nF	±10%	0.80	±0.15	±0.10	3.5%		(I)
	C3216X7R823KHPSG	C3216X7R823KHP	1V, 1kHz	82	nF	±10%	1.25	±0.15	±0.10	3.5%	Embossed, 3kpcs	(I)
	C3216X7R104KHTSD	C3216X7R104KHT	1V, 1kHz	100	nF	±10%	0.80	±0.15	±0.10	3.5%	Paper, 4kpcs	(I)
	C3216X7R104KHPSG	C3216X7R104KHP	1V, 1kHz	100	nF	±10%	1.25	±0.15	±0.10	3.5%	Embossed, 3kpcs	(I)
	C3216X7R154KHPSL	C3216X7R154KHP	1V, 1kHz	150	nF	±10%	1.60	±0.20	±0.20	2.5%		(I)
	C3216X7R224KHPSL	C3216X7R224KHP	1V, 1kHz	220	nF	±10%	1.60	±0.20	±0.20	2.5%	Embossed, 2kpcs	(I)
	C3216X7R105KHPSL	C3216X7R105KHP	1V, 1kHz	1.0	uF	±10%	1.60	±0.30	±0.30	10.0%		(I)
	C3216X7R225KHPSL	C3216X7R225KHP	1V, 1kHz	2.2	uF	±10%	1.60	±0.30	±0.30	10.0%		(II)

## ● C3225X7R Series (EIA1210)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
2000V	C3225X7R102KQPSG	C3225X7R102KQP	1V, 1kHz	1.0	nF	±10%	1.25	±0.40/±0.30	±0.20	2.50%	Embossed, 3kpcs	(I)
	C3225X7R222KQPSN	C3225X7R222KQP	1V, 1kHz	2.2	nF	±10%	2.00	±0.40/±0.30	±0.20	2.50%	Embossed, 2kpcs	(I)
1000V	C3225X7R103KPPSL	C3225X7R103KPP	1V, 1kHz	10	nF	±10%	1.60	±0.40/±0.30	±0.20	2.50%	Embossed, 2kpcs	(I)
630V	C3225X7R102KMPSG	C3225X7R102KMP	1V, 1kHz	1.0	nF	±10%	1.25	±0.30/±0.20	±0.20	2.50%	Embossed, 3kpcs	(I)
	C3225X7R222KMPSG	C3225X7R222KMP	1V, 1kHz	2.2	nF	±10%	1.25	±0.30/±0.20	±0.20	2.50%		(I)
	C3225X7R472KMPSG	C3225X7R472KMP	1V, 1kHz	4.7	nF	±10%	1.25	±0.30/±0.20	±0.20	2.50%		(I)
	C3225X7R103KMPSG	C3225X7R103KMP	1V, 1kHz	10	nF	±10%	1.25	±0.30/±0.20	±0.20	2.50%		(I)
	C3225X7R223KMPSG	C3225X7R223KMP	1V, 1kHz	22	nF	±10%	1.25	±0.30/±0.20	±0.20	2.50%	Embossed, 2kpcs	(I)
	C3225X7R473KMPSL	C3225X7R473KMP	1V, 1kHz	47	nF	±10%	1.60	±0.40/±0.30	±0.20	2.50%		(I)
500V	C3225X7R683KMPSL	C3225X7R683KMP	1V, 1kHz	68	nF	±10%	1.60	±0.40/±0.30	±0.20	2.50%		(I)
	C3225X7R103KLPSG	C3225X7R103KLP	1V, 1kHz	10	nF	±10%	1.25	±0.30/±0.20	±0.20	2.50%	Embossed, 3kpcs	(I)
	C3225X7R223KLPSG	C3225X7R223KLP	1V, 1kHz	22	nF	±10%	1.25	±0.30/±0.20	±0.20	2.50%	Embossed, 3kpcs	(I)
250V	C3225X7R104KLPSN	C3225X7R104KLP	1V, 1kHz	100	nF	±10%	2.00	±0.40/±0.30	±0.20	2.50%	Embossed, 2kpcs	(I)
	C3225X7R224KKPSP	C3225X7R224KPP	1V, 1kHz	220	nF	±10%	2.50	±0.40/±0.30	±0.30	2.50%	Embossed, 1kpcs	(I)
100V	C3225X7R104KHPSI	C3225X7R104KHP	1V, 1kHz	100	nF	±10%	0.95	±0.30/±0.20	±0.10	2.50%	Embossed, 3kpcs	(I)
	C3225X7R474KHPSI		1V, 1kHz	470	nF	±10%	2.50	±0.30/±0.20	±0.30	3.00%	Embossed, 1kpcs	(I)
	C3225X7R564KHPSI	C3225X7R564KHP	1V, 1kHz	560	nF	±10%	2.50	±0.30/±0.20	±0.30	3.00%		(I)
	C3225X7R105KHPSN	C3225X7R105KHP	1V, 1kHz	1.0	uF	±10%	2.00	±0.30/±0.20	±0.20	10.0%	Embossed, 2kpcs	(I)
	C3225X7R225KHPSN	C3225X7R225KHP	1V, 1kHz	2.2	uF	±10%	2.00	±0.30/±0.20	±0.20	10.0%		(I)
	C3225X7R225KHPSI		1V, 1kHz	2.2	uF	±10%	2.50	±0.30/±0.20	±0.20	5.0%	Embossed, 1kpcs	(I)

## ● C4520X7R Series (EIA1808)

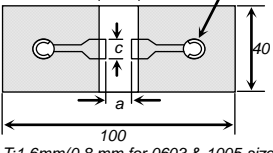
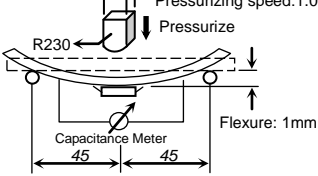
RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
3000V	C4520X7R102KRPSG		1V, 1kHz	1.0	nF	±10%	1.25	±0.30/±0.20	±0.20	2.50%	Embossed, 3kpcs	(I)
	C4520X7R102KRPSN	C4520X7R102KRP	1V, 1kHz	1.0	nF	±10%	2.00	±0.40/±0.30	±0.20	2.50%	Embossed, 1kpcs	(I)
2000V	C4520X7R102KQPSG		1V, 1kHz	1.0	nF	±10%	1.25	±0.40/±0.30	±0.20	2.50%	Embossed, 2kpcs	(I)
	C4520X7R102KQPSN	C4520X7R102KQP	1V, 1kHz	1.0	nF	±10%	2.00	±0.40/±0.30	±0.20	2.50%	Embossed, 1kpcs	(I)
	C4520X7R152KQPSN	C4520X7R152KQP	1V, 1kHz	1.5	nF	±10%	2.00	±0.40/±0.30	±0.20	2.50%	Embossed, 1kpcs	(I)
	C4520X7R222KQPSL	C4520X7R222KQP	1V, 1kHz	2.2	nF	±10%	1.60	±0.30/±0.20	±0.20	2.50%	Embossed, 2kpcs	(I)

## ● C4532X7R Series (EIA1812)

RV	DARFON P/N	DARFON P/N 2	Measuring Condition	Capacitance		Available Tolerance	Thick. (mm)	Tolerance(mm)		DF (max.)	Standard Packing	Test Spec.
				Value	Unit			L/W	Thick.			
3000V	C4532X7R102□RPSN	C4532X7R102□RP	1V, 1kHz	1.0	nF	±10%, ±20%	2.00	+0.5-0.3/±0.3	±0.20	2.50%	Embossed, 1kpcs	(I)
2000V	C4532X7R102KQPSG	C4532X7R102KQP	1V, 1kHz	1.0	nF	±10%	1.25	±0.40/±0.30	±0.10	2.50%	Embossed, 1kpcs	(I)
	C4532X7R222KQPSG	C4532X7R222KQP	1V, 1kHz	2.2	nF	±10%	1.25	±0.40/±0.30	±0.10	2.50%		(I)
	C4532X7R222KQPSL		1V, 1kHz	2.2	nF	±10%	1.60	±0.30	±0.20	2.50%		(II)
250V	C4532X7R474KKPSN	C4532X7R474□KP	1V, 1kHz	470	nF	±10%	2.00	+0.5-0.3/±0.3	±0.20	2.50%	Embossed, 1kpcs	(I)
200V	C4532X7R105KJPSN	C4532X7R105KJP	1V, 1kHz	1.0	uF	±10%	2.50	+0.5-0.3/±0.4	±0.30	2.50%	Embossed, 0.5kpcs	(I)

□ Tolerance Code: J=±5%, K=±10%, M=±20%; Special tolerance on the request.

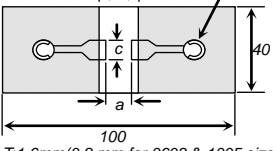
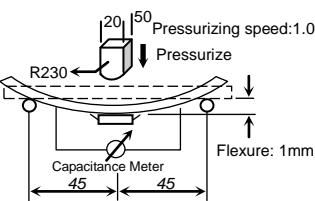
## ● Test Spec. ● Middle-High Voltage (I)

	Item	Specification		Test Method																														
		Temp. compensation type	High dielectric constant type																															
1	Operation Temperature Range	NP0: -55 to 125 °C	X7R: -55 to 125 °C	---																														
2	Rated Voltage	Shown in the table of "Part Number & Characteristic"		The rated voltage is defined as the maximum voltage, which may be applied continuously to the capacitor.																														
3	Appearance	No defects or abnormalities.		Visual inspection																														
4	Dimensions	Within the specified dimension.		Using calipers																														
5	Dielectric Strength	No defects or abnormalities.		No failure shall be observed when 250% of the rated voltage (150% for 500V, 120% for above 1KV) is applied between the terminations for 1 to 5 seconds. The charge and discharge current is less than 50mA.																														
6	Insulation Resistance ( I.R.)	Rated Voltage <200V	To apply rated voltage. I.R. ≥ 10GΩ or R <sub>C</sub> R <sub>R</sub> ≥ 500Ω·F (whichever is smaller)	The insulation resistance shall be measured with a DC voltage not exceeding the rated voltage at 25℃ and 75%RH max, and within 1 minute of charging.																														
		Rated Voltage <500V	To apply rated voltage. I.R. ≥ 10GΩ or R <sub>C</sub> R <sub>R</sub> ≥ 100Ω·F (whichever is smaller)																															
		Rated Voltage ≥ 500V	To apply 500V.																															
7	Capacitance	Within the specified tolerance * X7R at 1000 hours		The capacitance / D.F. shall be measured at 25℃ at the frequency and voltage shown in the table of "Part Number & Characteristic".																														
8	Q/Dissipation Factor ( D.F.)	NP0: If C ≤ 30pF, DF ≤ 1/(400+20C), C in pF If C > 30pF, DF ≤ 0.1%.	Shown in the table of "Part Number & Characteristic"																															
9	Capacitance Temperature Characteristics	Capacitance change NP0 within 0±30ppm/℃ under operating temperature range.	Capacitance change X7R within ±15%	1.Temperature compensation type:  The capacitance value at 25℃ and 85℃ shall be measured and calculated from the formula given below. T.C.=(C <sub>85</sub> -C <sub>25</sub> )/C <sub>25</sub> *ΔT*10 <sup>6</sup> (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.																														
10	Termination Strength	No removal of the terminations or marking defect.		Apply a parallel force of 5N to a PCB mounted sample for 10±1sec.																														
11	Deflection (Bending Strength)	No cracking or marking defects shall occur at 1mm deflection. Capacitance change: NP0: within ±5% or ± 0.5pF. (whichever is larger) X7R, X5R:within ±12.5%		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. 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.																														
		<div>(Unit in mm)</div> <div><table><thead><tr><th>Size</th><th>a</th><th>b</th><th>C</th></tr></thead><tbody><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>4520</td><td>3.5</td><td>7.0</td><td>2.5</td></tr><tr><td>4532</td><td>3.5</td><td>7.0</td><td>3.7</td></tr></tbody></table><div></div><div>Fig. a.</div></div>		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	4520	3.5	7.0	2.5	4532	3.5	7.0
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3216	2.2	5.0	2.0																															
4520	3.5	7.0	2.5																															
4532	3.5	7.0	3.7																															
12	Solderability of Termination	90% of the terminations are to be soldered evenly and continuously.		Immerse the test capacitor into a methanol solution containing rosin for 3 to 5 seconds, preheat it 150 to 180℃ for 2 to 3 minutes and immerse it into SAC305(Sn96.5Ag3.0Cu0.5) solder of 245 ± 5℃ for 3±1seconds.																														
13	Resistance to Soldering Heat	Appearance	No marking defects	*Preheat the capacitor at 120 to 150℃ for 1 minute.																														
		Cap. Change	NP0 within ±2.5% or 0.25pF ( whichever is larger ) X7R within ±7.5%	Immerse the capacitor in a SAC305(Sn96.5Ag3.0Cu0.5) solder solution at 270±5℃ for 10±1 seconds. Let sit at room temperature for 24±2 hours, then measure.																														
		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 <sub>C</sub> R <sub>R</sub> ≥ 500Ω·F (whichever is smaller)	I.R. ≥ 10,000MΩ or R <sub>C</sub> R <sub>R</sub> ≥ 500Ω·F (whichever is smaller)  *High dielectric constant type: Initial measurement : perform a heat treatment at 150+0/-10℃ for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement.																														



	Item	Specification		Test Method
		Temp. compensation type	High dielectric constant type	
14	Temperature cycle (Thermal shock)	Appearance	No marking defects	<p>Solder the capacitor to supporting jig (Glass epoxy board) and perform the five cycles according to the four heat treatments listed in the following table. Let sit for 24±2hrs at room temperature, then measure.</p> <p>Step 1: Minimum operating temperature 30±3min</p> <p>Step 2: Room temperature 2~3 min</p> <p>Step 3: Maximum operating temperature 30±3min</p> <p>Step 4: Room temperature 2~3min</p> <p>*High dielectric constant type:</p> <p>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.</p>
		Cap. Change	NP0 within ±2.5% or 0.25pF ( whichever is larger )	
		Q/D.F.	If C ≤ 30pF, DF ≤ 1/(400+20C) If C > 30pF, DF ≤ 0.1%	
		I.R.	I.R. ≥ 10,000MΩ or R <sub>C</sub> ≥ 500Ω-F. (whichever is smaller)	
15	Humidity load	Appearance	No marking defects	<p>Apply the rated voltage at 40±2℃ and 90 to 95% humidity for 500±12 hours. The charge / discharge current is less than 50mA.</p> <p>[Temperature compensation type]</p> <p>Remove and let sit for 24±2 hours at room temperature, then measure.</p> <p>[High dielectric constant type]</p> <p>*Initial measurement</p> <p>Perform a heat treatment at 150+0/-10℃ for one hour and then let sit for 24±2 hours at room temperature.</p> <p>Perform the initial measurement.</p> <p>*Measurement after test</p> <p>Perform a heat treatment and then let sit for 24±2 hours at room temperature, then measure.</p>
		Cap. Change	NP0 within ±7.5% or 0.75pF ( whichever is larger )	
		Q/D.F.	If C > 30pF, DF ≤ 0.5% If C ≤ 30pF, DF ≤ 1/(100+10xC/3) C in pF	
		I.R.	I.R. ≥ 500MΩ or R <sub>C</sub> ≥ 25Ω-F. (whichever is smaller)	
16	High temperature load life test	Appearance	No marking defects	<p>Apply 200%(150% for ≥ 500V; 120% for ≥ 1000V) of the rated voltage for 1000±12 hours at the maximum operating temperature ± 3℃. The charge / discharge current is less than 50mA.</p> <p>[Temperature compensation type]</p> <p>Remove and let sit for 24±2 hours at room temperature, then measure.</p> <p>[High dielectric constant type]</p> <p>*Initial measurement</p> <p>Perform a heat treatment at 150+0/-10℃ for one hour and then let sit for 24±2 hours at room temperature.</p> <p>Perform the initial measurement.</p> <p>*Measurement after test</p> <p>Perform a heat treatment and then let sit for 24±2 hours at room temperature, then measure.</p>
		Cap. Change	NP0 within ±7.5% or 0.75pF ( whichever is larger )	
		Q/D.F.	If C > 30pF, DF ≤ 0.3% If 10pF < C ≤ 30pF, DF ≤ 1/(275+5xC/2) If C ≤ 10pF, DF ≤ 1/(200+10C), C in pF	
		I.R.	More than 1GΩ or R <sub>C</sub> ≥ 50Ω-F (whichever is less.)	

## ● Middle-High Voltage (II)

	Item	Specification		Test Method																																
		Temp. compensation type	High dielectric constant type																																	
1	Operation Temperature Range	NP0: -55 to 125 ℃	X7R: -55 to 125 ℃	---																																
2	Rated Voltage	Shown in the table of "Part Number & Characteristic"		The rated voltage is defined as the maximum voltage, which may be applied continuously to the capacitor.																																
3	Appearance	No defects or abnormalities.		Visual inspection																																
4	Dimensions	Within the specified dimension.		Using calipers																																
5	Dielectric Strength	No defects or abnormalities.		No failure shall be observed when 250% of the rated voltage (150% for 500V, 120% for above 1KV) is applied between the terminations for 1 to 5 seconds. The charge and discharge current is less than 50mA.																																
6	Insulation Resistance ( I.R.)	C≤0.047uF : More than 10000 MΩ C> 0.047uF : More than 500Ω·F C: Nominal Capacitance		The insulation resistance shall be measured with a DC voltage not exceeding the rated voltage at 25℃ and 75%RH max, and within 1 minute of charging.																																
7	Capacitance	Within the specified tolerance * X7R at 1000 hours		The capacitance / D.F. shall be measured at 25℃ at the frequency and voltage shown in the table of "Part Number & Characteristic".																																
8	Q/Dissipation Factor ( D.F.)	NP0: If C≤30pF, DF≤1/(400+20C), C in pF If C>30pF, DF≤0.1%.	Shown in the table of "Part Number & Characteristic"																																	
9	Capacitance Temperature Characteristics	Capacitance change NP0 within 0±30ppm/℃ under operating temperature range.	Capacitance change X7R within ±15%	1.Temperature compensation type:  The capacitance value at 25℃ and 85℃ shall be measured and calculated from the formula given below. $T.C.=(C_{85}-C_{25})/C_{25}*\Delta T*10^6(PPM/℃)$ 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.																																
10	Termination Strength	No removal of the terminations or marking defect.		Apply a parallel force of 5N to a PCB mounted sample for 10±1sec.																																
11	Deflection (Bending Strength)	No cracking or marking defects shall occur at 1mm deflection. Capacitance change: NP0: within ±5% or ± 0.5pF. (whichever is larger) X7R, X5R:within ±12.5%		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. 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.																																
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4520	3.5	7.0	2.5																																	
4532	3.5	7.0	3.7																																	
12	Solderability of Termination	90% of the terminations are to be soldered evenly and continuously.		Immerse the test capacitor into a methanol solution containing rosin for 3 to 5 seconds, preheat it 150 to 180℃ for 2 to 3 minutes and immerse it into SAC305(Sn96.5Ag3.0Cu0.5) solder of 245 ± 5℃ for 3±1seconds.																																
13	Resistance to Soldering Heat	Appearance	No marking defects	*Preheat the capacitor at 120 to 150℃ for 1 minute. Immerse the capacitor in a SAC305(Sn96.5Ag3.0Cu0.5) solder solution at 270±5℃ for 10±1 seconds. Let sit at room temperature for 24±2 hours, then measure.  * Preheat 150 to 200℃ for size ≥3216.  *High dielectric constant type: Initial measurement : perform a heat treatment at 150+0/-10℃ for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement																																
		Cap. Change	NP0 within ±2.5% or 0.25pF ( whichever is larger ) X7R within ±7.5%																																	
		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 <sub>C</sub> R <sub>R</sub> ≥500Ω·F. (whichever is smaller) I.R. ≥10,000MΩor R <sub>C</sub> R <sub>R</sub> ≥500Ω·F. (whichever is smaller)																																	



	Item	Specification		Test Method
		Temp. compensation type	High dielectric constant type	
14	Temperature cycle (Thermal shock)	Appearance	No marking defects	<p>Solder the capacitor to supporting jig (Glass epoxy board) and perform the five cycles according to the four heat treatments listed in the following table. Let sit for 24±2hrs at room temperature, then measure.</p> <p>Step 1: Minimum operating temperature 30±3min</p> <p>Step 2: Room temperature 2~3 min</p> <p>Step 3: Maximum operating temperature 30±3min</p> <p>Step 4: Room temperature 2~3min</p> <p>*High dielectric constant type:</p> <p>Initial measurement: perform a heat treatment at 150±10°C for one hour and then let sit for 24±2 hours at room temp. Perform the initial measurement.</p>
		Cap. Change	NP0 within ±2.5% or 0.25pF ( whichever is larger )	
		Q/D.F.	If C ≤ 30pF, DF ≤ 1/(400+20C) If C > 30pF, DF ≤ 0.1%	
		I.R.	I.R. ≥ 10,000MΩ or R <sub>C</sub> ≥ 500Ω-F. (whichever is smaller)	
15	Humidity load	Appearance	No marking defects	<p>Apply the rated voltage at 40±2°C and 90 to 95% humidity for 500±12 hours. The charge / discharge current is less than 50mA.</p> <p>[Temperature compensation type]</p> <p>Remove and let sit for 24±2 hours at room temperature, then measure.</p> <p>[High dielectric constant type]</p> <p>*Initial measurement</p> <p>Perform a heat treatment at 150+0/-10°C for one hour and then let sit for 24±2 hours at room temperature.</p> <p>Perform the initial measurement.</p> <p>*Measurement after test</p> <p>Perform a9 heat treatment and then let sit for 24±2 hours at room temperature, then measure.</p>
		Cap. Change	NP0 within ±7.5% or 0.75pF ( whichever is larger )	
		Q/D.F.	If C > 30pF, DF ≤ 0.5% If C ≤ 30pF, DF ≤ 1/(100+10xC/3) C in pF	
		I.R.	I.R. ≥ 500MΩ or R <sub>C</sub> ≥ 25Ω-F. (whichever is smaller)	
16	High temperature load life test	Appearance	No marking defects	<p>Apply 150%(120% for ≥ 250V; 100% for ≥ 1000V) of the rated voltage for 1000±12 hours at the maximum operating temperature ± 3°C. The charge / discharge current is less than 50mA.</p> <p>[Temperature compensation type]</p> <p>Remove and let sit for 24±2 hours at room temperature, then measure.</p> <p>[High dielectric constant type]</p> <p>*Initial measurement</p> <p>Perform a heat treatment at 150+0/-10°C for one hour and then let sit for 24±2 hours at room temperature.</p> <p>Perform the initial measurement.</p> <p>*Measurement after test</p> <p>Perform a heat treatment and then let sit for 24±2 hours at room temperature, then measure.</p>
		Cap. Change	NP0 within ±7.5% or 0.75pF ( whichever is larger )	
		Q/D.F.	If C > 30pF, DF ≤ 0.3% If 10pF < C ≤ 30pF, DF ≤ 1/(275+5xC/2) If C ≤ 10pF, DF ≤ 1/(200+10C), C in pF	
		I.R.	More than 1GΩ or R <sub>C</sub> ≥ 50Ω-F (whichever is less.)	

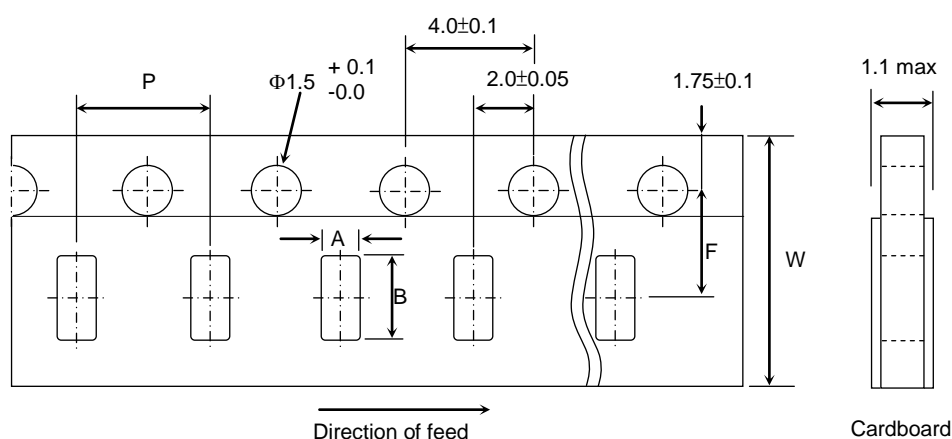
## Package

### • 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.

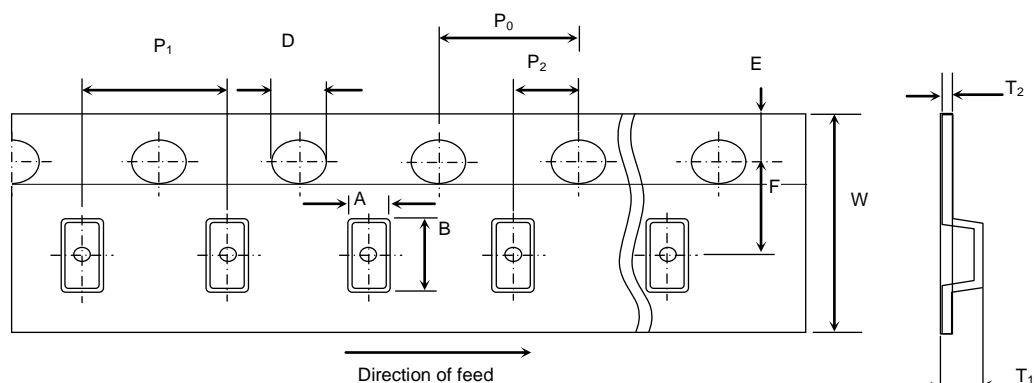
### 【Paper tape specifications】

2mm and 4mm pitch tape



SYMBOL	PRODUCT SIZE CODE												UNIT
	0402(01005)		0603(0201)		1005(0402) (±0.05 mm)		1005(0402) (±0.10 mm)		1005(0402) (±0.15 mm)		1005(0402) (±0.20 mm)		
	SIZE	TOL.	SIZE	TOL.	SIZE	TOL.	SIZE	TOL.	SIZE	TOL.	SIZE	TOL.	
A	0.23	± 0.02	0.38	± 0.04	0.65	± 0.10	0.70	± 0.10	0.72	± 0.10	0.80	± 0.10	mm
B	0.43	± 0.02	0.68	± 0.04	1.15	± 0.10	1.19	± 0.10	1.25	± 0.10	1.35	± 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	± 0.05	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

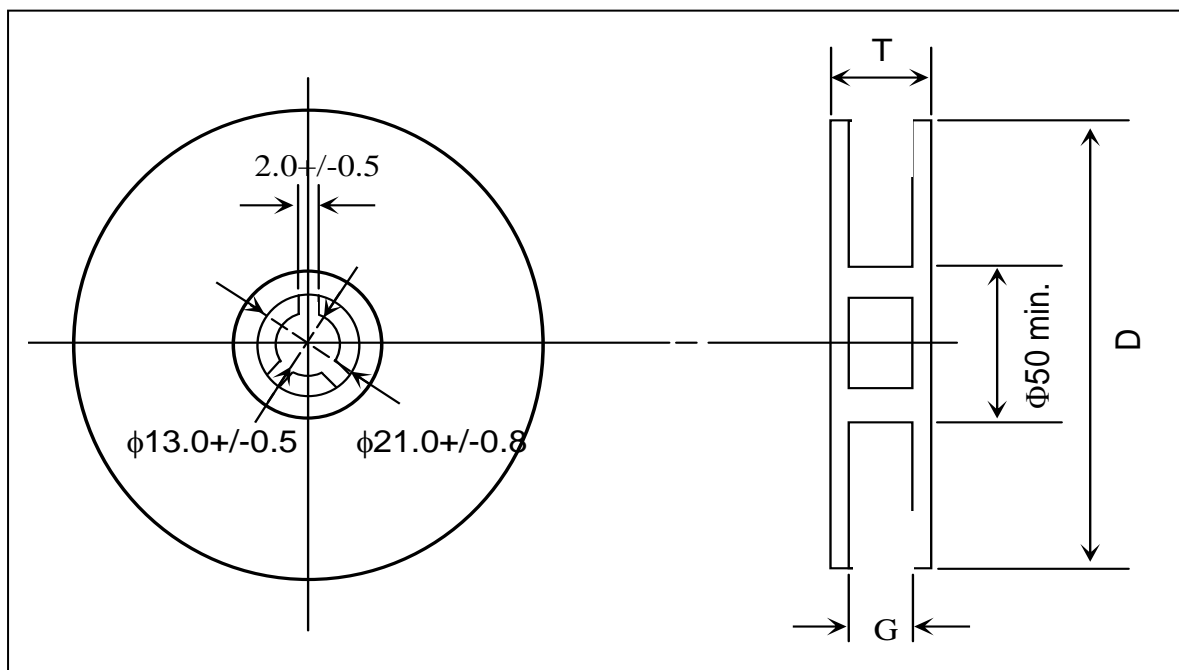
SYMBOL	PRODUCT SIZE CODE (EIA)								UNIT
	1608 (0603) (±0.15 mm)		1608 (0603) (±0.20 mm)		2012 (0805)		3216 (1206)		
	Size	Tol.	Size	Tol.	Size	Tol.	Size	Tol.	
A	1.0	±0.2	1.1	±0.2	1.5	±0.2	1.9	±0.2	mm
B	1.8	±0.2	1.9	±0.2	2.3	±0.2	3.6	±0.2	mm
F	3.5	±0.05	3.5	±0.05	3.5	±0.05	3.5	±0.05	mm
P	4	±0.1	4	±0.1	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**


For  $W = 8\text{mm}$ :  $T_1 = 2.5\text{mm max.}$

For  $W = 12\text{mm}$ :  $T_1 = 4.5\text{mm}$

DIMENSION (mm)	PRODUCT SIZE CODE						
	1mm tape	4 mm tape				8 mm tape	
	0402 (01005)	1608 (0603)	2012 (0805)	3216 (1206)	3225 (1210)	4520 (1808)	4532 (1812)
$P_1$	$1 \pm 0.02$	$4 \pm 0.1$	$4 \pm 0.1$	$4 \pm 0.1$	$4 \pm 0.1$	$8 \pm 0.1$	$8 \pm 0.1$
$P_0$	$2 \pm 0.04$	$4 \pm 0.1$	$4 \pm 0.1$	$4 \pm 0.1$	$4 \pm 0.1$	$4 \pm 0.1$	$4 \pm 0.1$
$P_2$	$1 \pm 0.02$	$2 \pm 0.05$	$2 \pm 0.05$	$2 \pm 0.05$	$2 \pm 0.05$	$2 \pm 0.05$	$2 \pm 0.05$
$A$	$0.23 \pm 0.02$	$1.2 \pm 0.2$	$1.45 \pm 0.2$	$1.9 \pm 0.2$	$2.8 \pm 0.2$	$2.3 \pm 0.2$	$3.6 \pm 0.2$
$B$	$0.43 \pm 0.02$	$2.0 \pm 0.2$	$2.3 \pm 0.2$	$3.5 \pm 0.2$	$3.6 \pm 0.2$	$4.9 \pm 0.2$	$4.9 \pm 0.2$
$W$	$4 \pm 0.05$	$8 \pm 0.3$	$8 \pm 0.2$	$8 \pm 0.2$	$8 \pm 0.2$	$12 \pm 0.2$	$12 \pm 0.2$
$E$	$0.9 \pm 0.05$	$1.75 \pm 0.1$	$1.75 \pm 0.1$	$1.75 \pm 0.1$	$1.75 \pm 0.1$	$1.75 \pm 0.1$	$1.75 \pm 0.1$
$F$	$1.8 \pm 0.02$	$3.5 \pm 0.05$	$3.5 \pm 0.05$	$3.5 \pm 0.05$	$3.5 \pm 0.05$	$5.5 \pm 0.05$	$5.5 \pm 0.05$
$D$	$0.8 \pm 0.04$	$1.5$ (+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)
$T_1$	0.5 max	1.4 max.	2.5 max.	2.5 max.	2.5 max.	4.5	4.5
$T_2$	0.15~0.40	$0.25 \pm 0.1$	$0.305 \pm 0.1$	$0.30 \pm 0.1$	$0.30 \pm 0.1$	$0.30 \pm 0.1$	$0.30 \pm 0.1$

**【Reel specifications】**


TAPE WIDTH (mm)	G (mm)	T max. (mm)	D (mm)
4	$5.0 \pm 1.5$	8.0	180
8	$10.0 \pm 1.5$	14.5	180
8	$10.0 \pm 1.5$	14.5	250
8	$10.0 \pm 1.5$	14.5	330
12	$14.0 \pm 1.5$	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 <sup>#1</sup>		
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	
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		
H	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)		2K		
		4520 (1808)		1K		
		4532 (1812)		1K		
P	2.50	3225 (1210)		500pcs/1K		

#1: 4mm width 1mm pitch Embossed Taping

## 【Packing Rule】

EIA SIZE	Tape	Reel Size	Reels/Box	Boxes/ Carton
01005	Emboss	7"	8	12
01005	Paper	7"	5	12
0201	Paper	7"	5	12
0402	Paper	7"	5	12
0603	Paper/Emboss	7"	5	12
0805	Paper/Emboss	7"	5	12
1206	Paper/Emboss	7"	5	12
1210	Emboss	7"	5	12
1808	Emboss	7"	5	12
1812	Emboss	7"	5	12

## Others

### 【Storage】

1. The chip capacitors shall be packaged in carrier tapes or bulk cases.
2. Keep storage place 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. The solderability is assured for 12 months from our final inspection date if the above storage condition is followed.

### 【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】**

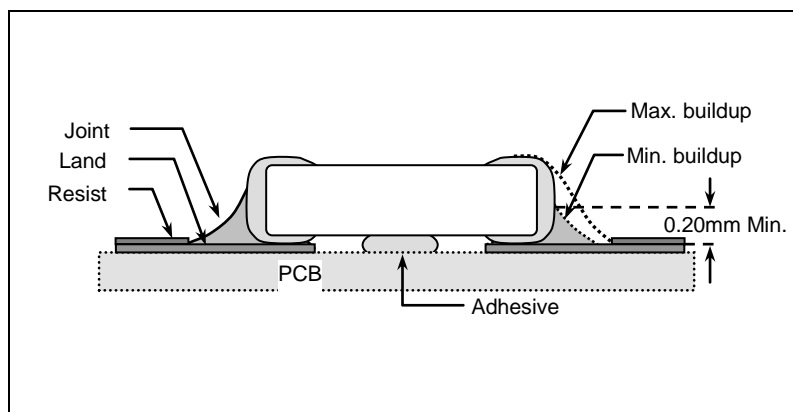
1. An excessive amount of flux or too rapid temperature rise can causes solvent burst, solder can generate a large quantity of gas. The gas can spreads small solder particles to cause solder balling effect or bridging problem.
2. Flux containing too high of a percentage of halide may cause corrosion 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.

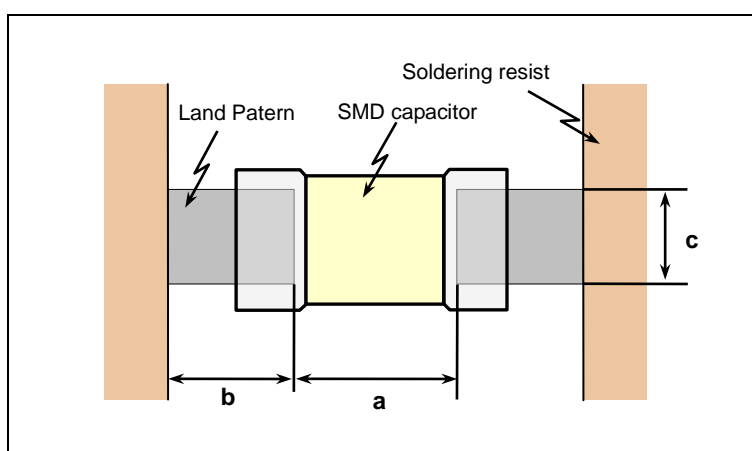




## 【Recommended Land Pattern Dimensions】

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.



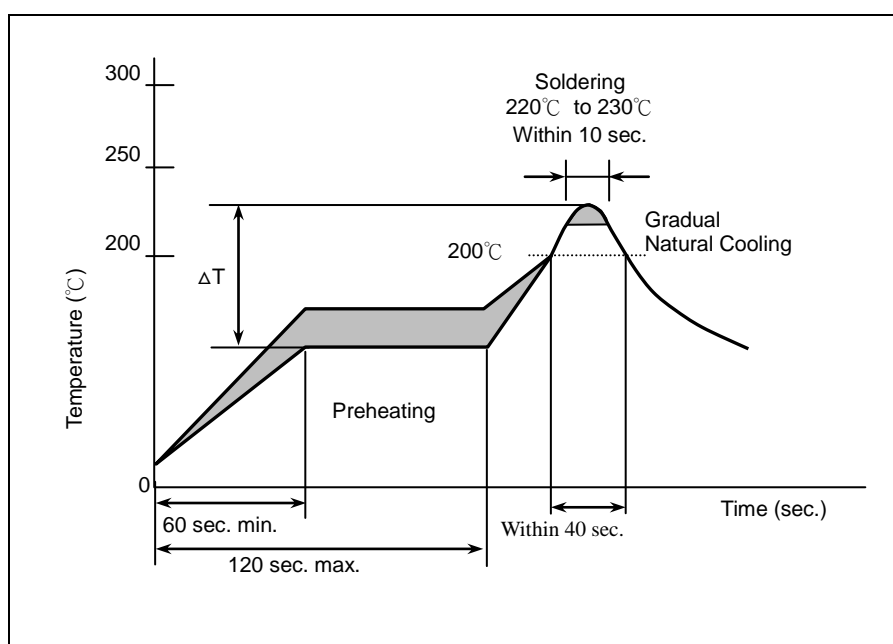
Size mm (EIA)	L x W (mm) (Dimension tolerance)	a (mm)	b (mm)	c (mm)
0402 (01005)	0.4*0.2	0.16 to 0.20	0.12 to 0.18	0.20 to 0.23
0603 (0201)	0.6*0.3	0.15 to 0.35	0.2 to 0.3	0.25 to 0.3
1005 (0402)	1.0*0.5 (within±0.10)	0.3 to 0.5	0.35 to 0.45	0.4 to 0.5
	1.0*0.5 (±0.15 or ±0.20)	0.4 to 0.6	0.4 to 0.5	0.5 to 0.6
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 or ±0.20)	0.8 to 1.1	0.7 to 0.9	0.8 to 0.9
2012 (0805)	2.0*1.25	1.0 to 1.3	0.7 to 0.9	1.0 to 1.2
3216 (1206)	3.2*1.6	2.1 to 2.5	1.0 to 1.2	1.3 to 1.6
3225 (1210)	3.2*2.5	2.1 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	3.2 to 3.8	1.2 to 1.4	2.7 to 3.2

## 【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】

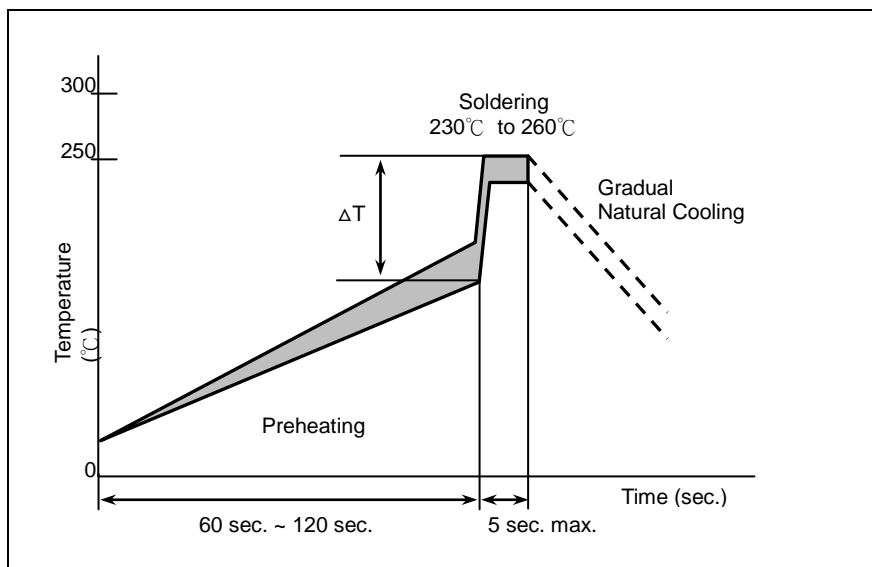
### Reflow Soldering



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

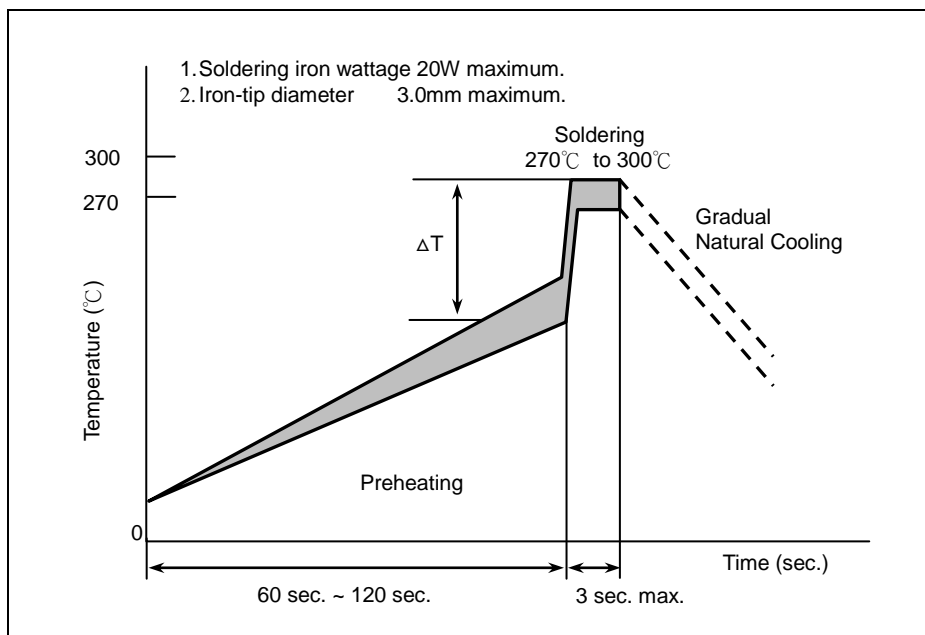
Chip Size	3216 and smaller	3225 and above
Preheating	$\Delta T \leq 150^{\circ}\text{C}$	$\Delta T \leq 130^{\circ}\text{C}$

## Wave Soldering



Chip Size	3216 and smaller	3225 and above
Preheating	$\Delta T \leq 150^\circ\text{C}$	-

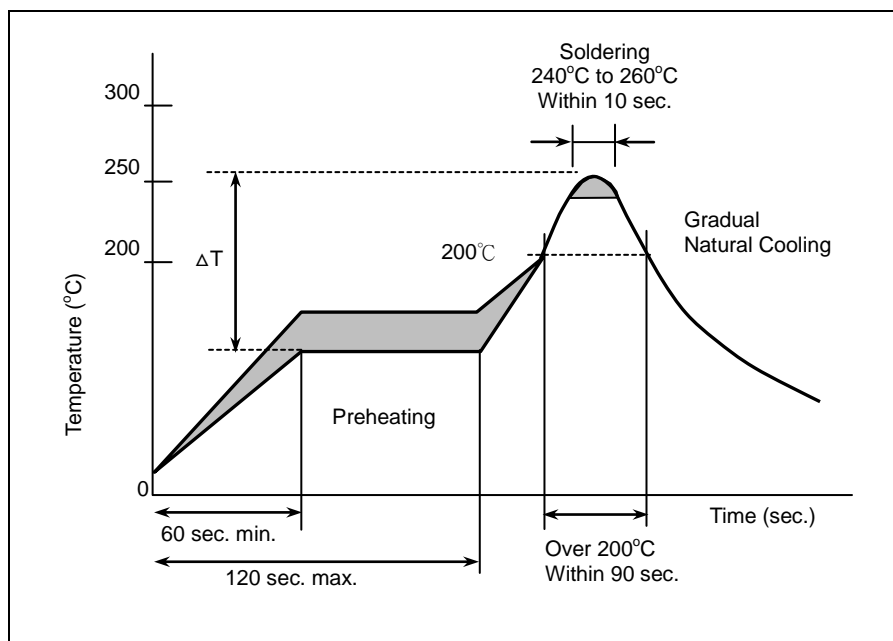
## Soldering Iron



Chip Size	3216 and smaller	3225 and above
Preheating	$\Delta T \leq 190^\circ\text{C}$	$\Delta T \leq 130^\circ\text{C}$

## 【Soldering】

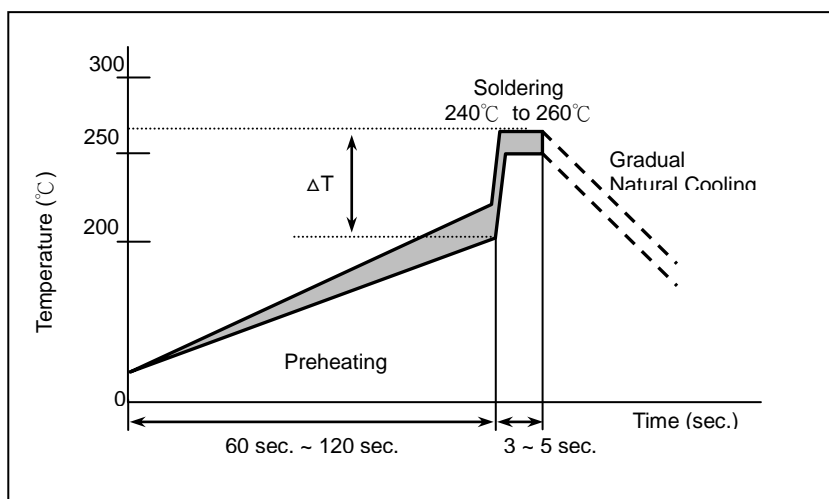
### Reflow Soldering for Lead free Termination



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

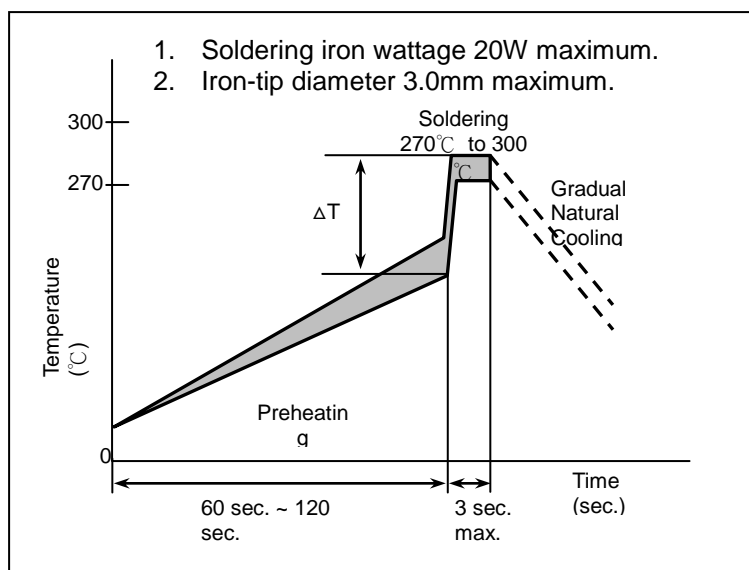
Chip Size	3216 and smaller	3225 and above
Preheating	$\Delta T \leq 150^{\circ}\text{C}$	$\Delta T \leq 130^{\circ}\text{C}$

### Flow Soldering for Lead free Termination



Chip Size	3216 and smaller	3225 and above
Preheating	$\Delta T \leq 150^{\circ}\text{C}$	-

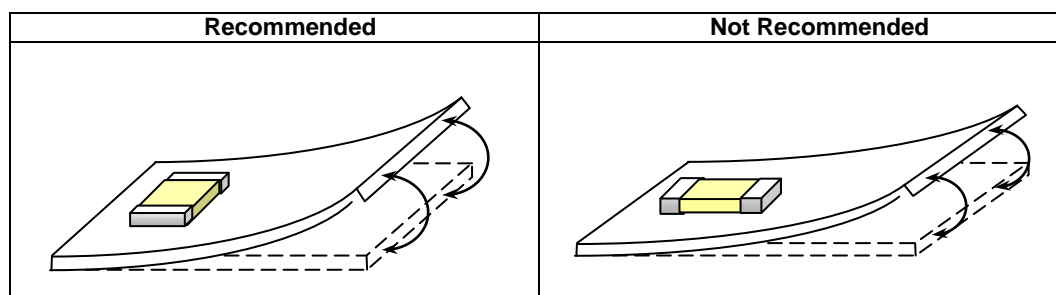
## Soldering Iron



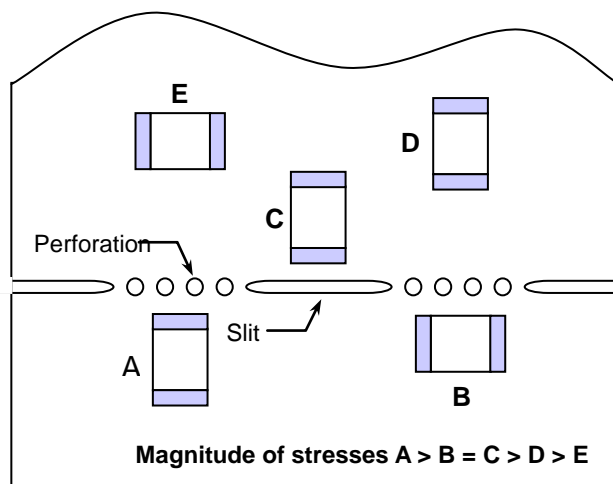
Chip Size	3216 and smaller	3225 and above
Preheating	$\Delta T \leq 190^\circ\text{C}$	$\Delta T \leq 130^\circ\text{C}$

## 【Chip Layout and Breaking PCB】

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

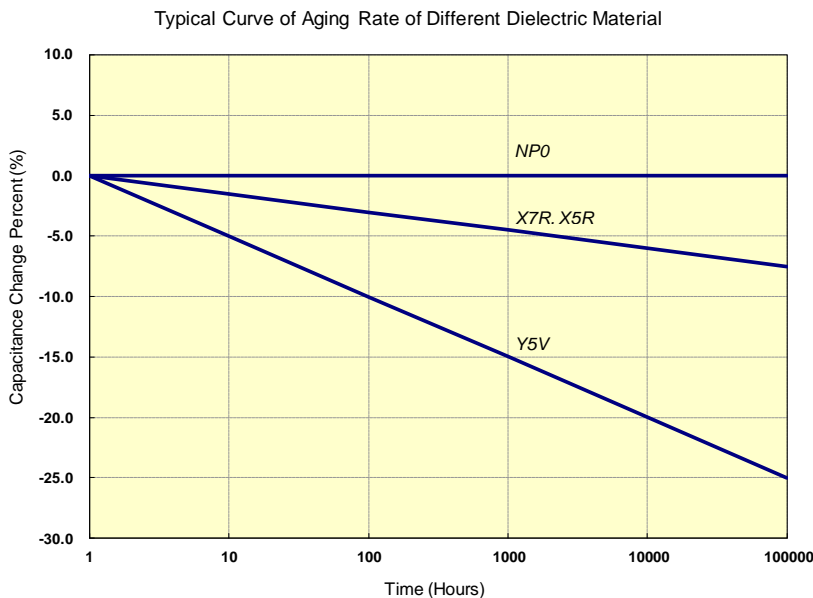


- When breaking PCB, the layout should be noted that the mechanical stresses are depending on the position of capacitors. The following example shows recommendation for better design.



## 【Aging Rate】

The capacitance and dissipation factor of class 2 capacitors decreases with time. It is known as 'aging' that follows a logarithmic law 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  $t_1$  hours of start aging.

$C_{t2}$ : Capacitance after  $t_2$  hours of start aging.

$k$ : aging constant (capacitance decrease per decade)

$t_1, t_2$ : time in hours from start of aging.

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

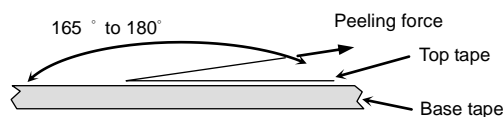
When heating the capacitors above Curie temperature ( $130^{\circ}\text{C} \sim 150^{\circ}\text{C}$ ) the capacitance can be re-new. So capacitance of class 2 capacitors will be complete de-aged by soldering process; subsequently a new aging process begins.

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.

## 【Peeling Off Force】

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

The peeling speed:  $300 \pm 10$  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.