



UNION TECHNOLOGY CORP.



M u l t i l a y e r

C e r a m i c C h i p

C a p a c i t o r s

OVERVIEW

Union Technology Corp. (UTC) is a global provider for the design and manufacture of multilayer ceramic capacitors for use in: commercial, industrial and high reliability applications.

Product offering:

- SMT multilayer ceramic chips
- SMT High Voltage MLCC
- SMT Large Body Size MLCC
- Radial Leaded High Voltage Capacitors
- Switch Mode Power Supply Capacitors (SMPS)
- Planar Arrays & Discoidal Capacitors

QUALITY

UTC integrates quality throughout its supply chain system by building quality into our designs and manufacturing process. Supplier control systems ensure the highest quality materials and service to our customers. Our manufacturing facility is ISO 9001:2000 certified and MIL-STD-790 approved.

UTC is equipped for performing testing in accordance with MIL-PRF-39014, MIL-PRF-20, and MIL-PRF-55681 as required by some customers. Our quality assurance system and procedures are based upon the requirements of MIL-I-45208 and MIL-STD-790, with the calibration program in accordance with MIL-STD-45662A.

OPERATIONS

Established in 1991, UTC is a Corporation headquartered in Monterey Park, California. Within this 25,000 square foot facility, UTC houses its technology center, manufacturing operations along with the sales and customer support staff. UTC also maintains a fully staffed, highly qualified engineering department to support customer applications, product design, and new product development.

UTC's global network of sales representatives and distributors are prepared to assist you with designing our products to meet your application requirements.

ENVIRONMENT

UTC is fully committed to helping the cause of achieving and maintaining a clean environment. The complete UTC offering of commercial ceramic chips within this catalog are designed and produced to be lead-free and are fully RoHS compliant.



**ISO 9001: 2000
CERTIFIED**



PRODUCT OVERVIEW

Union Technology Corp. is a global supplier of ceramic chip capacitors and other specialty multilayer ceramic (MLC) products used by electronic manufacturers.

UTC formulates the materials used in the manufacture of its MLCs, including ceramic dielectric powders, electrode materials, resins, and inks. Precise raw material characterization and tight process control maintains UTC's quality reputation as a state-of-the-art manufacturer of ceramic capacitor products.

UTC offers the full range of standard popular EIA sizes from a 0402 up to 2225. They are available in; NPO, X7R, X5R, and Y5V dielectrics from 6.3 volts up to ratings of 5,000 volts.

In addition to our standard chip products UTC does support many custom application specific designs which include capacitors that have voltage ratings up to 10 KV and chip sizes as large as 6560. Our Advanced Products Group is staffed and equipped to assist customers with developing these MLC solutions for their specific applications requiring cost effective, volumetric efficient designs.

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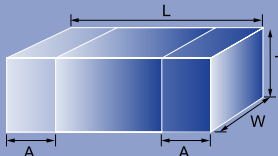
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Outline	Size Inch (mm)	Length L (mm)	Width W (mm)	Termination A (mm)	Thickness Designation T (mm)/Symbol		Packaging Qty/Reel
	0402 (1005)	1.00±0.05	0.50±0.05	0.25+0.05/-0.10	N	0.50±0.05	10,000
	0603 (1608)	1.60±0.10	0.80±0.10	0.40±0.15	S	0.80±0.07	4,000
		1.60+0.15/-0.10	0.80+0.15/-0.10		X	0.80+0.15/-0.10	4,000
	0805 (2012)	2.00±0.15	1.25±0.10	0.50±0.20	A	0.60±0.10	4,000
					B	0.80±0.10	4,000
		2.00±0.20	1.25±0.20		D	1.25±0.10	3,000
					I	1.25±0.20	3,000
	1206 (3216)	3.20±0.15	1.60±0.15	0.60±0.20	B	0.80±0.10	4,000
					C	0.95±0.10	3,000
			J		1.15±0.15	3,000	
			D		1.25±0.10	3,000	
		3.20+0.30/-0.10	1.60+0.30/-0.10		G	1.60±0.20	2,000
					P	1.60+0.30/-0.10	2,000
	1210 (3225)	3.20±0.30	2.50±0.20	0.75±0.25	C	0.95±0.10	3,000
		3.20±0.40	2.50±0.30		D	1.25±0.10	3,000
					G	1.60±0.20	2,000
					K	2.00±0.20	1,000
					M	2.50±0.30	1,000
	1808 (4520)	4.50±0.40	2.03±0.25	0.75±0.25	D	1.25±0.10	2,000
					K	2.00±0.20	1,000
	1812 (4532)	4.50±0.40	3.20±0.30	0.75±0.25*	D	1.25±0.10	1,000
					K	2.00±0.20	1,000
	2220	5.70±	4.50±	.50±	D	2.50±	1,000
					K	2.50±	1,000
	2225	5.70±	6.35±	.50±	D	3.05±	1,000
					K	3.05±	1,000

HOW TO ORDER

C
L
0805
X5R
105
K
W
T

UTC P/N STYLE

C = MLCC CHIP
S = MLCC SAFETY CERTIFIED CHIP

VOLTAGE

A = 6.3V N = 400V
C = 10V S = 500V
E = 16V K = 600V
L = 25V K = 630V
G = 50V T = 1000V
B = 100V W = 2000V
R = 200V X = 3000V
H = 250V Y = 4000V
J = 300V Z = 5000V

BODY SIZE

0402 1825
0603 2220
0805 2225
1206 3530
1210 4040
1808 5550
1812

TEMPERATURE COEFFICIENT

NPO
X7R
X5R
Y5V

CAPACITANCE CODE

2 significant digits are used plus the third character then represents the number of zeros to follow

TOLERANCE

F = 1%
G = 2%
J = 5%
K = 10%
M = 20%
Z = -20% / +80%
*Cap values < 10pF
B = +/-0.10pF
C = +/-0.25pF
D = +/-0.50pF

TERMINATION

W = 100% tin termination & RoHS - Lead Free compliant product
B = Soft Termination [consult factory]

PACKAGE STYLE

T = Tape & Reel

APPLICATION

Suited for precision circuits, requiring stable capacitor characteristics. No aging effects, low dielectric loss.

PERFORMANCE SPECIFICATIONS

Temperature Coefficient:

< 30 ppm/°C, -55°C to 125°C.

Dissipation Factor:

< 0.1 % @ 1 MHz, 25°C.



Insulation Resistance:

1000ΩF or 100GΩ, whichever is less @ rated voltage 25°C. At 125°C IR is 10% of 25°C value.

Dielectric Strength:

2.5 times rated voltage D.C.
1.5 times rated voltage for 500V devices.

Quality Factor:

> 1000 @ MHz 25°C.

Test Parameters:

Cap ≤ 100pF 1.0±0.2Vrms, 1MHz±10%

Cap > 100pF 1.0±0.2Vrms, 1KHz±10%

Capacitance Tolerances

Available:

B, C, D, F, G, J, K, M

HOW TO ORDER

C

UTC P/N STYLE

C = MLCC CHIP

B

VOLTAGE

E = 16V
L = 25V
G = 50V
B = 100V
R = 200V
H = 250V

0805

BODY SIZE

0402
0603
0805
1206
1210
1808
1812
2220
2225

NPO

TEMPERATURE COEFFICIENT

NPO

101

CAPACITANCE CODE

2 significant digits are used plus the third character then represents the number of zeros to follow

K

TOLERANCE

F = 1%
G = 2%
J = 5%
K = 10%
M = 20%

*Cap values < 10pF
B = +/-0.10pF
C = +/-0.25pF
D = +/-0.50pF

W

TERMINATION

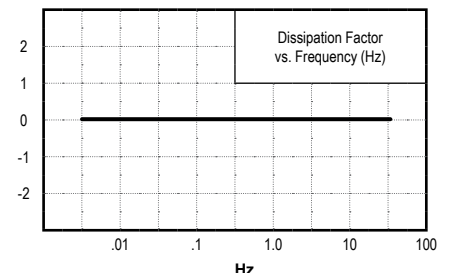
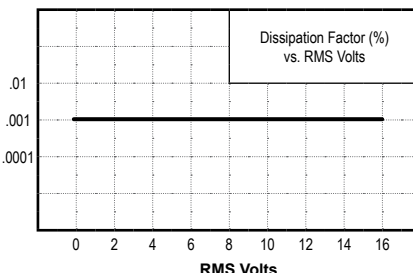
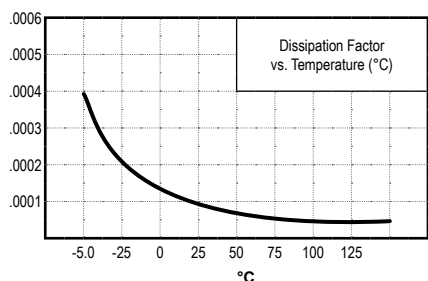
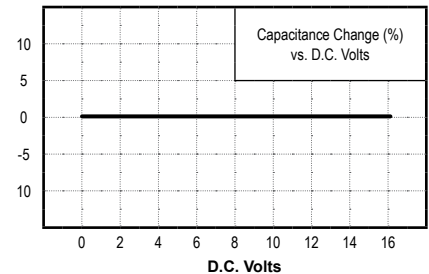
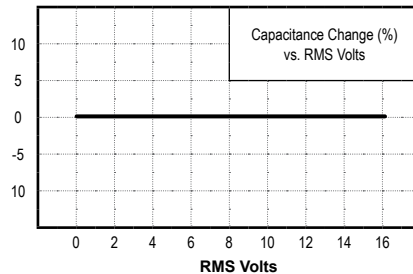
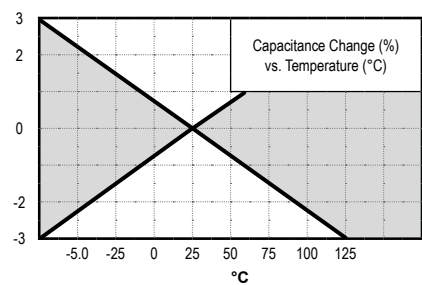
W = 100% tin termination & RoHS - Lead Free compliant product

B = Soft Termination [consult factory]

T

PACKAGE STYLE

T = Tape & Reel



These typical curves are for 50 volt parts.

Size		0402				0603					0805					1206					1210					EIA Code		
Rated Voltage (VDC)		16V	25V	50V	100V	16V	25V	50V	100V	200V	250V	16V	25V	50V	100V	200V	250V	16V	50V	100V	200V	250V	16V	50V	100V	200V	250V	EIA Code
Capacitance	0.5pF			N	N		S	S	S					A	A	A	A											(0R5)
	0.6pF			N	N		S	S	S					A	A	A	A											(0R6)
	0.7pF			N	N		S	S	S					A	A	A	A											(0R7)
	0.8pF			N	N		S	S	S					A	A	A	A											(0R8)
	0.9pF			N	N		S	S	S					A	A	A	A											(0R9)
	1.0pF			N	N		S	S	S					A	A	A	A											(1R0)
	1.2pF			N	N		S	S	S					A	A	A	A											(1R2)
	1.5pF			N	N		S	S	S					A	A	A	A		B	B	B	B						(1R5)
	1.8pF			N	N		S	S	S					A	A	A	A		B	B	B	B						(1R8)
	2.2pF			N	N		S	S	S					A	A	A	A		B	B	B	B						(2R2)
	2.7pF			N	N		S	S	S					A	A	A	A		B	B	B	B						(2R7)
	3.3pF			N	N		S	S	S					A	A	A	A		B	B	B	B						(3R3)
	3.9pF			N	N		S	S	S					A	A	A	A		B	B	B	B						(3R9)
	4.7pF			N	N		S	S	S					A	A	A	A		B	B	B	B						(4R7)
	5.6pF			N	N		S	S	S					A	A	A	A		B	B	B	B						(5R6)
	6.8pF			N	N		S	S	S					A	A	A	A		B	B	B	B						(6R8)
	8.2pF			N	N		S	S	S					A	A	A	B		B	B	B	B						(8R2)
	10pF			N	N		S	S	S					A	A	A	B		B	B	B	B			C	C	C	100
	12pF			N	N		S	S	S					A	A	A	D		B	B	B	B			C	C	C	120
	15pF			N	N		S	S	S					A	A	A	D		B	B	B	B			C	C	C	150
	18pF			N	N		S	S	S					A	A	A	D		B	B	B	B			C	C	C	180
	22pF			N	N		S	S	S	S	S			A	A	A	D		B	B	B	B		C	C	C	C	220
	27pF			N	N		S	S	S	S	S			A	A	A	D		B	B	B	B		C	C	C	C	270
	33pF			N	N		S	S	S	S	S			A	A	A	D		B	B	B	B		C	C	C	C	330
	39pF			N	N		S	S	S	S	S			A	A	A			B	B	B	B		C	C	C	C	390
	47pF			N	N		S	S	S	S	S			A	A	A			B	B	B	B		C	C	C	C	470
	56pF			N			S	S	S	S	S			A	A	A			B	B	B	B		C	C	C	C	560
	68pF			N			S	S	S	S	S			A	A	A			B	B	B	B		C	C	C	C	680
	82pF			N			S	S	S	S	S			A	A	A			B	B	B	B		C	C	C	C	820
	100pF			N			S	S	S	S	S			A	A	A			B	B	B	B		C	C	C	C	101
	120pF			N			S	S	S					A	A	A			B	B	B	B		C	C	C	C	121
	150pF			N			S	S	S					A	A	A			B	B	B	B		C	C	C	C	151
	180pF			N	N		S	S	S					A	A	A			B	B	B	B		C	C	C	C	181
	220pF			N	N		S	S	S					A	A	A			B	B	B	B		C	C	C	C	221
	270pF	N					S	S	S					A	A	A			B	B	B	C		C	C	C	C	271
	330pF	N					S	S	S					A	A	A			B	B	B	C		C	C	C	C	331
	390pF	N					S	S	S					A	A	A			B	B	B	C		C	C	C	C	391
	470pF	N					S	S	S					A	A	B			B	B	C	C		C	C	C	C	471
	560pF						S	S	S					A	A	B			B	B	C	C		C	C	C	C	561
	680pF						S	S	S					A	A	D			B	B	C	C		C	C	C	C	681
820pF						S	S						A	A	D			B	B	C	D		C	C	C	C	821	
1000pF						S	S						A	A				B	B	C	G		C	C	C	C	102	
1200pF					S		S						B	B				B	B	C			C	C	D	D	122	
1500pF					S		S						B	B				B	B	C			C	C	D	D	152	
1800pF					S		S						B	B				B	B	D			C	C	D	D	182	
2200pF					S								B	B	B			B	B	D			C	C	D	D	222	
2700pF					S								D	D				B	B				C	C	D	D	272	
3300pF					S								D	D				B	B				C	C	D		332	
3900pF					S								D	D				B	B				C	C	D		392	
4700pF					S							D	D					B	B				C	C			472	
5600pF											D							B	B				C	C			562	
6800pF											D							C	C				C	C			682	
8200pF											D							C	C				C	C			822	
0.010μF													D					D					C	C			103	
0.012μF												D						D	P				C	D	D		123	
0.015μF												D						D	P				C	D	D		153	
0.018μF																		D									183	
0.022μF																		D									223	
0.027μF																		D									273	
0.033μF																		D									333	
0.039μF																		D									393	
0.047μF																											473	
0.056μF																											683	
0.068μF																											563	
0.082μF																											823	
0.010μF																											104	
0.012μF																											124	

Note: Please refer to the chart on page 3 for the corresponding thickness designation.

Size	1808					1812					2220					2225					EIA Code
	25V	50V	100V	200V	250V	25V	50V	100V	200V	250V	25V	50V	100V	200V	250V	25V	50V	100V	200V	250V	
Capacitance	0.5pF																				(0R5)
	0.6pF																				(0R6)
	0.7pF																				(0R7)
	0.8pF																				(0R8)
	0.9pF																				(0R9)
	1.0pF																				(1R0)
	1.2pF																				(1R2)
	1.5pF																				(1R5)
	1.8pF																				(1R8)
	2.2pF																				(2R2)
	2.7pF																				(2R7)
	3.3pF																				(3R3)
	3.9pF																				(3R9)
	4.7pF																				(4R7)
	5.6pF																				(5R6)
	6.8pF																				(6R8)
	8.2pF																				(8R2)
	10pF	D	D	D	D	D			D	D	D										100
	12pF	D	D	D	D	D			D	D	D										120
	15pF	D	D	D	D	D			D	D	D										150
	18pF	D	D	D	D	D			D	D	D										180
	22pF	D	D	D	D	D			D	D	D										220
	27pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	270
	33pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	330
	39pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	390
	47pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	470
	56pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	560
	68pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	680
	82pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	820
	100pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	101
	120pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	121
	150pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	151
	180pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	181
	220pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	221
	270pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	271
	330pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	331
	390pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	391
	470pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	471
	560pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	561
	680pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	681
	820pF	D	D	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	821
	1000pF	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	102
	1200pF	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	122
	1500pF	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	152
	1800pF	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	182
	2200pF	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	222
	2700pF	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	272
	3300pF	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	332
	3900pF	D	D	D	D	D	D	D	D		D	D	D	D	D	D	D	D	D	D	392
	4700pF	D	D	D	D	D	D	D	D		D	D	D	D	D	D	D	D	D	D	472
	5600pF	D	D	D	D	D	D	D	D		D	D	D	D	D	D	D	D	D	D	562
	6800pF	D	D	D	D	D	D	D	D		D	D	D	D	D	D	D	D	D	D	682
	8200pF	D	D	D	D		D	D	D		D	D	D	D	D	D	D	D	D	D	822
	0.010μF	D	D	D	D		D	D	D		D	D	D	D	D	D	D	D	D	D	103
	0.012μF	D	D	D			D	D	D		D	D	D	D	D	D	D	D	D	D	123
	0.015μF	D	D	D			D	D	D		D	D	D	D	D	D	D	D	D	D	153
	0.018μF	D	D				D	D	D		D	D	D	D	D	D	D	D	D	D	183
	0.022μF	D	D				D	D	D		D	D	D	D	D	D	D	D	D	D	223
	0.027μF	D					D	D	D		D	D	D	D	D	D	D	D	D	D	273
	0.033μF	D					D	D			D	D	D	D	D	D	D	D	D	D	333
	0.039μF						D	D			D	D	D	D	D	D	D	D	D	D	393
	0.047μF						D				D	D	D	D		D	D	D	D	D	473
	0.056μF						D				D	D	D			D	D	D	D	D	563
	0.068μF										D	D	D			D	D	D	D	D	683
	0.082μF										D	D				D	D	D	D		823
	0.10μF										D	D				D	D	D			104
	0.12μF															D	D				124

Note: Please refer to the chart on page 3 for the corresponding thickness designation.



X7R DIELECTRIC MONOLITHIC CERAMIC CAPACITORS

APPLICATION

Suited for By-Pass and Coupling Application, Filtering, D.C. Blocking and Transient Suppression.

PERFORMANCE SPECIFICATIONS

Temperature Coefficient:

$\pm 15\% \Delta C$, -55°C to 125°C.
maximum -55 to 125° at WVdc.

Dissipation Factor:

Maximum DF; 25V - 3.5%
Maximum DF; 50V - 2.5%
Maximum DF; 100V - 2.5%
Maximum DF; 250V - 2.5%

Insulation Resistance:

1000ΩF or 100GΩ, whichever is less @ rated
voltage 25°C. At 125°C IR is 10% of 25°C value.

Dielectric Strength:

2.5 times rated voltage D.C.
1.5 times rated voltage for 500V devices.

Aging:

Maximum 2% per decade hour, for X7R.

Test Parameters:

1 kHz and 1 vms if capacitance $\leq 10\mu F$
120 Hz and 0.5 vms if capacitance $> 10\mu F$

Capacitance Tolerances

Available:

J, K, M



RoHS
compliant



HOW TO ORDER

C

UTC P/N STYLE

C = MLCC CHIP

B

VOLTAGE

C = 10V
E = 16V
L = 25V
G = 50V
B = 100V
R = 200V
H = 250V

0805

BODY SIZE

0402
0603
0805
1206
1210
1812
2220

X7R

TEMPERATURE COEFFICIENT

X7R

104

CAPACITANCE CODE

2 significant
digits are used
plus the third
character then
represents
the number of
zeros to follow

K

TOLERANCE

J = 5%
K = 10%
M = 20%

W

TERMINATION

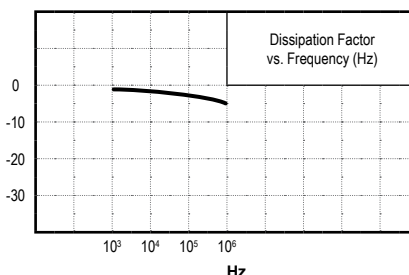
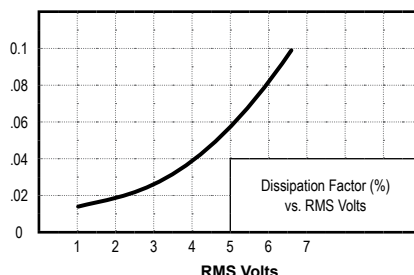
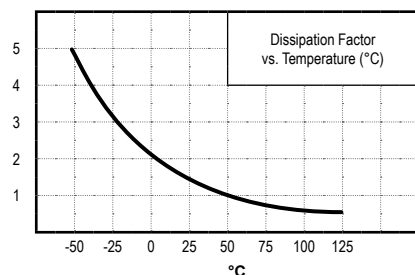
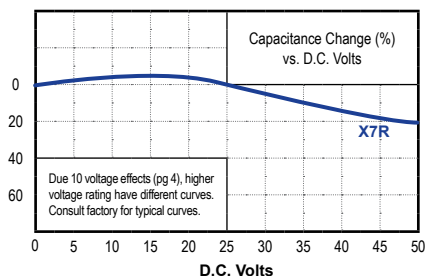
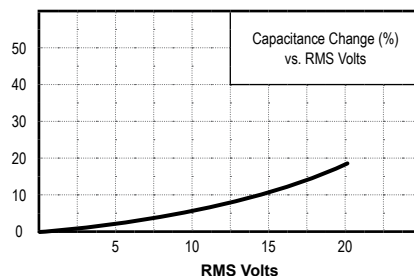
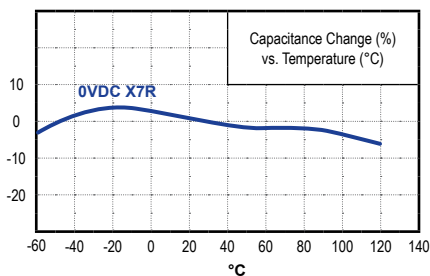
W = 100%
tin termination
& RoHS - Lead
Free compliant
product

B = Soft
Termination
[consult factory]

T

PACKAGE STYLE

T = Tape & Reel



These typical curves are for 50 volt parts.

Size		0402				0603						0805								1206								
Rated Voltage (VDC)		10V	16V	25V	50V	10V	16V	25V	50V	100V	200V	10V	16V	25V	50V	100V	200V	250V	10V	16V	25V	50V	100V	200V	250V	EIA Code		
Capacitance	100pF				N				S	S	S				B	B	B	B									101	
	120pF				N				S	S	S				B	B	B	B									121	
	150pF				N				S	S	S				B	B	B	B				B	B	B	B	B	151	
	180pF				N				S	S	S				B	B	B	B				B	B	B	B	B	181	
	220pF				N				S	S	S				B	B	B	B				B	B	B	B	B	221	
	270pF				N				S	S	S				B	B	B	B				B	B	B	B	B	271	
	330pF				N				S	S	S				B	B	B	B				B	B	B	B	B	331	
	390pF				N				S	S	S				B	B	B	B				B	B	B	B	B	391	
	470pF				N				S	S	S				B	B	B	B				B	B	B	B	B	471	
	560pF				N				S	S	S				B	B	B	B				B	B	B	B	B	561	
	680pF				N				S	S	S				B	B	B	B				B	B	B	B	B	681	
	820pF				N				S	S	S				B	B	B	B				B	B	B	B	B	821	
	1000pF				N				S	S	S				B	B	B	B				B	B	B	B	B	102	
	1200pF				N				S	S	S				B	B	B	B				B	B	B	B	B	122	
	1500pF				N				S	S	S				B	B	B	B				B	B	B	B	B	152	
	1800pF				N				S	S	S				B	B	B	B				B	B	B	B	B	182	
	2200pF				N				S	S	S				B	B	B	B				B	B	B	B	B	222	
	2700pF				N				S	S	S				B	B	B	B				B	B	B	B	B	272	
	3300pF				N				S	S	S				B	B	B	B				B	B	B	B	B	332	
	3900pF				N				S	S	S				B	B	B	B				B	B	B	B	B	392	
	4700pF				N				S	S	S				B	B	B	B				B	B	B	B	B	472	
	5600pF			N					S	S	X				B	B	D	D				B	B	B	B	B	562	
	6800pF			N					S	S	X				B	B	D	D				B	B	B	B	B	682	
	8200pF			N					S	S	X				B	B	D	D				B	B	B	B	B	822	
	0.010μF			N					S	S	X				B	B	D	D				B	B	B	B	B	103	
	0.012μF		N	N					S	X	X				B	B	D	D				B	B	B	B	B	123	
	0.015μF		N	N					S	X	X				B	B	D	D				B	B	B	C	C	153	
	0.018μF		N	N					S	X	X				B	B	D	D				B	B	B	C	C	183	
	0.022μF		N						S	X	X				B	B	D	D				B	B	B	C	C	223	
	0.027μF	N							S						B	D	D	D				B	B	B	C	C	273	
	0.033μF	N					S	X							B	D						B	B	B	C	C	333	
	0.039μF	N					S	X							B	D						B	B	B	C	C	393	
	0.047μF	N					S	X							B	D						B	B	B	C	C	473	
	0.056μF	N					S	X							B	D						B	B	B	C	C	563	
	0.068μF	N					S	X							B	D						B	B	B	C	C	683	
	0.082μF	N					S	S	X					B	B	D						B	B	D	C	C	823	
	0.10μF	N					S	S	X					B	B	D						B	B	D	C	C	104	
	0.12μF					S	S	S						B	D							B	B	D			124	
	0.15μF					S	S	S						D	D							C	C	G			154	
	0.18μF					S	S	S						D								C	C	G			184	
	0.22μF					S	S							D								C	C	G			224	
	0.27μF					X	X							D							C	D	D				274	
	0.33μF					X	X							D							C	D	D				334	
	0.39μF					X	X						D	D						C	J	P	P				394	
	0.47μF					X	X						D	D						J	J	P	P				474	
	0.56μF												D	D						J	J	P	P				564	
	0.68μF											D	D	D						J	J	P	P				684	
	0.82μF											D	D	D						J	J	P	P				824	
	1.0μF											D	D							J	J	P	P				105	
	1.5μF											D									G						155	
	2.2μF											D									P						225	
	3.3μF																										335	
	4.7μF																										475	

Note: Please refer to the chart on page 3 for the corresponding thickness designation.

Size	1210					1808					1812					2220					2225					EIA Code
	25V	50V	100V	200V	250V	25V	50V	100V	200V	250V	25V	50V	100V	200V	250V	25V	50V	100V	200V	250V	25V	50V	100V	200V	250V	
Capacitance	100pF					D	D	D	D																	101
	120pF					D	D	D	D																	121
	150pF					D	D	D	D																	151
	180pF					D	D	D	D																	181
	220pF					D	D	D	D																	221
	270pF					D	D	D	D																	271
	330pF					D	D	D	D																	331
	390pF					D	D	D	D																	391
	470pF					D	D	D	D							D	D	D	D	D						471
	560pF					D	D	D	D							D	D	D	D	D						561
	680pF					D	D	D	D							D	D	D	D	D						681
	820pF					D	D	D	D							D	D	D	D	D						821
	1000pF		C	C	C	C	D	D	D	D		D	D	D	D	D	D	D	D	D						102
	1200pF		C	C	C	C	D	D	D	D		D	D	D	D	D	D	D	D	D						122
	1500pF		C	C	C	C	D	D	D	D		D	D	D	D	D	D	D	D	D						152
	1800pF		C	C	C	C	D	D	D	D		D	D	D	D	D	D	D	D	D						182
	2200pF		C	C	C	C	D	D	D	D		D	D	D	D	D	D	D	D	D						222
	2700pF		C	C	C	C	D	D	D	D		D	D	D	D	D	D	D	D	D						272
	3300pF		C	C	C	C	D	D	D	D		D	D	D	D	D	D	D	D	D						332
	3900pF		C	C	C	C	D	D	D	D		D	D	D	D	D	D	D	D	D						392
	4700pF		C	C	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	472
	5600pF		C	C	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	562
	6800pF		C	C	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	682
	8200pF		C	C	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	822
	0.010μF		C	C	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	103
	0.012μF		C	C	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	123
	0.015μF		C	C	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	153
	0.018μF		C	C	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	183
	0.022μF		C	C	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	223
	0.027μF		C	C	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	273
	0.033μF		C	C	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	333
	0.039μF		C	C	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	393
	0.047μF		C	C	D	D	D	D	D	D		D	D	D	D	D	D	D	D	D	D	D	D	D	D	473
	0.056μF		C	C	D	D	D	D	D	D		D	D	D	D	D	D	D	D	D	D	D	D	D	D	563
	0.068μF		C	C	G	G	D	D	D	D		D	D	D	D	D	D	D	D	D	D	D	D	D	D	683
	0.082μF		C	C	G	G	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	D	D	823
	0.10μF		C	C	G	G	D	D	D			D	D	D	D	D	D	D	D	D	D	D	D	D	D	104
	0.12μF		C	C	G	G	D	D				D	D	D	D	D	D	D	D	D	D	D	D	D	D	124
	0.15μF		C	D	M	M	D	D				D	D	K	K	D	D	D	D	D	D	D	D	D	D	154
	0.18μF		C	D	M	M						D	D	K	K	D	D	D	D	D	D	D	D	D	D	184
	0.22μF		C	D	M	M						D	D	K	K	D	D	D	D	D	D	D	D	D	D	224
	0.27μF		C	G								D	D	K	K	D	D	D	D	D	D	D	D	D	D	274
	0.33μF	C	D	G								D	D	K	K	D	D	D	D	D	D	D	D	D	D	334
	0.39μF	C	D	M								D	D	K	K	D	D	D	D	D	D	D	D	D	D	394
	0.47μF	C	D	M								D	K	K	K	D	D	D	D	D	D	D	D	D	D	474
	0.56μF	D	D	M								D	K			D	D	D	D	D	D	D	D	D	D	564
	0.68μF	D	D								D	K	K			D	D	D	D	K	D	D	D	D		684
	0.82μF	D	D								D	K	K			D	D	D	K	K	D	D	D	D		824
	1.0μF	D	D								D	K	K			D	D	D	K	K	D	D	D	D		105
	1.5μF										K	K	K			D	D	D			D	D	D			155
	2.2μF										K	K	K			D	D	D			D	D	D			225
	3.3μF															D	D	D			D	D				335
	4.7μF															D	D	D			D	D				475

Note: Please refer to the chart on page 3 for the corresponding thickness designation.

APPLICATION

Hi-K Dielectric suited for applications where PCB real estate is at a premium and usage is at near room temperature with low DC bias.



PERFORMANCE SPECIFICATIONS

Temperature Coefficient:

X5R +15% -15% ΔC , -55°C to 85°C
Y5V +22% -82% ΔC , -30°C to 85°C

Dissipation Factor:

X5R	Y5V
Maximum DF; 6.3V~10V - 3.5%	Maximum DF; 6.3V~10V - 10%
16V~25V - 3.5%	16V~25V - 7%
50V - 2.5%	50V~100V - 5%

Insulation Resistance:

100 Ω F or 10G Ω , whichever is less @ Rated Voltage 25°C.

Dielectric Strength:

2.5 times rated voltage D.C.

Aging:

X5R Maximum 2.5% per decade hour.
Y5V Maximum 7% per decade hour.

Test parameters:

(X5R) 1 kHz and 1 vms if capacitance $\leq 10\mu F$
120 Hz and 0.5 vms if capacitance $> 10\mu F$
(Y5V) 1 kHz and 1 vms if capacitance $\leq 10\mu F$
120 Hz and 0.5 vms if capacitance $> 10\mu F$
1 kHz and 1 vms

Capacitance Tolerance

Available:

M, Z

HOW TO ORDER

C

UTC P/N STYLE

C = MLCC CHIP

L

VOLTAGE

A = 6.3V
C = 10V
E = 16V
L = 25V
G = 50V
B = 100V

0805

BODY SIZE

0402
0603
0805
1206
1210
1812

X5R

TEMPERATURE COEFFICIENT

X5R
Y5V

105

CAPACITANCE CODE

2 significant digits are used plus the third character then represents the number of zeros to follow

K

TOLERANCE

K = 10%
M = 20%
Z = -20% / +80%

W

TERMINATION

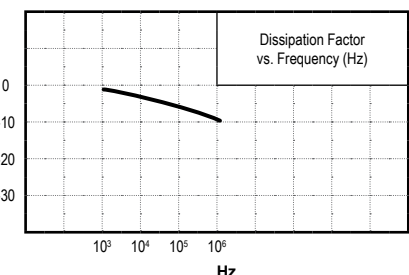
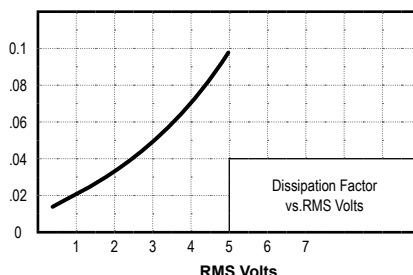
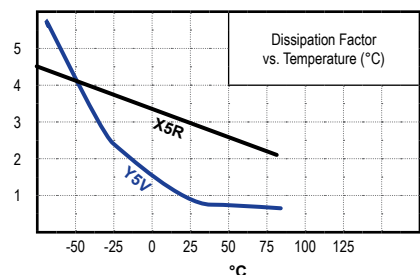
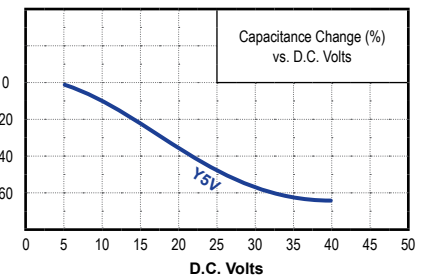
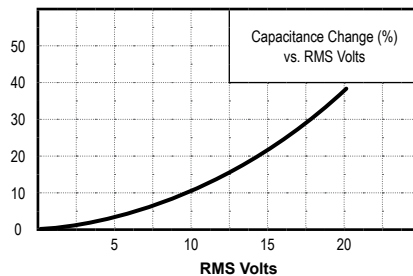
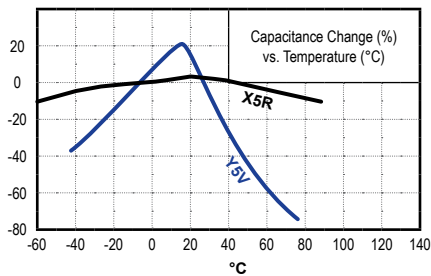
W = 100% tin termination & RoHS - Lead Free compliant product

B = Soft Termination [consult factory]

T

PACKAGE STYLE

T = Tape & Reel



These typical curves are for 50 volt parts.

X5R																							
Size		0402		0603					0805					1206					1210				
Rated Voltage (VDC)		6.3V	10V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	EIA Code
Capacitance	0.010μF																						103
	0.015μF																						153
	0.022μF																						223
	0.033μF																						333
	0.047μF	N			S	S	S					D	D										473
	0.068μF																						683
	1.0μF	N			S	S	S		D	D	D	D		G			P						105
	1.5μF																						155
	2.2μF			S	S	S	S			D	D	D		G		P							225
	3.3μF													G									335
	4.7μF			S					D	D	D			P	P	P	P						475
	6.8μF																						685
	10μF	N			S	S			D	D	D			P	P	P	P	P	K				106
	15μF																						156
	22μF	N								D	D				P	P	P				K	K	
47μF									D					P	P				K	K	K		476
100μF														P					K				107

Y5V																								
Size		0402					0603				0805				1206				1210		1812			
Rated Voltage (VDC)		6.3V	10V	16V	25V	50V	10V	16V	25V	50V	16V	25V	50V	100V	10V	25V	50V	100V	50V	100V	10V	50V	100V	EIA Code
Capacitance	0.010μF					N				S			A	B		B	B	B		C			D	103
	0.015μF					N				S			A	B		B	B	B		C			D	153
	0.022μF					N				S			A	B		B	B	B		C			D	223
	0.033μF					N				S			A	B		B	B	B		C			D	333
	0.047μF				N					S			A	B		B	B	B		C			D	473
	0.068μF			N	N					S			A	B		B	B	B		C			D	683
	0.10μF		N	N	N					S			A	B		B	B	B	C	C		D	D	104
	0.15μF		N							S			A	B		B	B	C	C	C		D	D	154
	0.22μF		N							S			A	B		B	B	C	C	C		D	D	224
	0.33μF	N	N						S				A			B	B		C	C		D	D	334
	0.47μF	N	N						S				B			B	B		C			D	D	474
	0.68μF	N						S				B	B			B	B		C			D	D	684
	1.0μF	N					S	X			B	D				B	B		C			D	D	105
	3.3μF						S	X			B	D				C	C		C			D	D	335
	10μF																							106
22μF														P									226	
47μF																				K			476	

Note: Please refer to the chart on page 3 for the corresponding thickness designation.