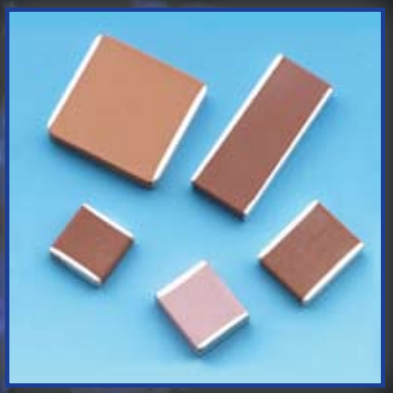
UTC

UNION TECHNOLOGY CORP.



Multilayer Ceramic Chip Capacitors

COMPANY OVERVIEW

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.

ENVIROMENT

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.

RoHS compliant Pb TÜVRheinland Precisely Right UL Underwriters Laboratories 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.

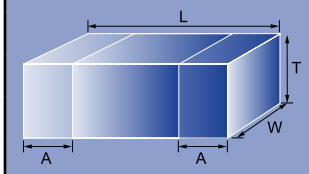
UTC formulates the materials used in the manufacture of its MLCs, including ceramic dielectric powders, electrode materials, resins, and inks. Precise raw material characterization and tight process control maintains UTC's quality reputation as a state-of-the-art manufacturer of ceramic capacitor products.

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.

TABLE OF CONTENTS

MECHANICAL DIMENSIONS & PACKAGING SPECIFICATIONS

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
					D	1.25±0.10	3,000
		2.00±0.20	1.25±0.20		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
			1.60±0.20		G	1.60±0.20	2,000
		3.20+0.30/-0.10	1.60+0.30/-0.10		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
					D	1.25±0.10	3,000
		3.20±0.40	2.50±0.30		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	**VOLTAGE**	**BODY SIZE**	**TEMPERATURE COEFFICIENT**	**CAPACITANCE CODE**	**TOLERANCE**	**TERMINATION**	**PACKAGE STYLE**
C = MLCC CHIP S = MLCC SAFETY CERTIFIED CHIP	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	0402 1825 0603 2220 0805 2225 1206 3530 1210 4040 1808 5550 1812	NPO X7R X5R Y5V	2 significant digits are used plus the third character then represents the number of zeros to follow	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	W = 100% tin termination & RoHS - Lead Free compliant product B = Soft Termination [consult factory]	T = Tape & Reel

NPO-COG DIELECTRIC MONOLITHIC CERAMIC CAPACITORS

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.

RoHS compliant

Pb

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.

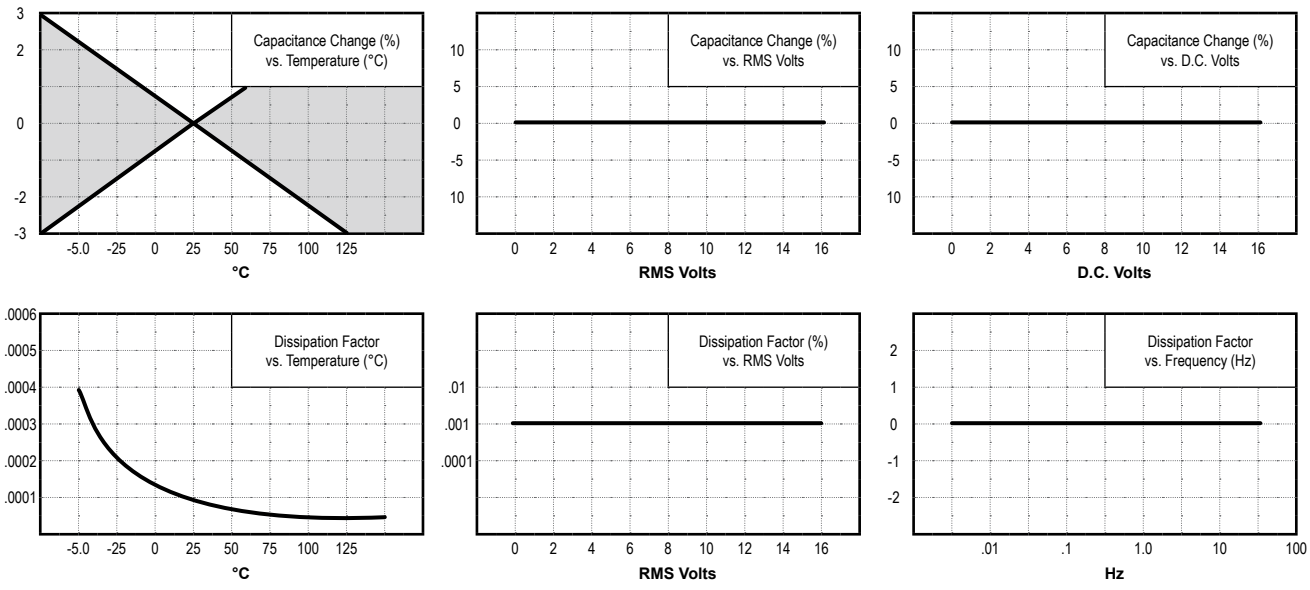
Quality Factor:
> 1000 @ MHz 25°C.

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	B	0805	NPO	101	K	W	T
UTC P/N STYLE	**VOLTAGE**	**BODY SIZE**	**TEMPERATURE COEFFICIENT**	**CAPACITANCE CODE**	**TOLERANCE**	**TERMINATION**	**PACKAGE STYLE**
C = MLCC CHIP	E = 16V L = 25V G = 50V B = 100V R = 200V H = 250V	0402 0603 0805 1206 1210 1808 1812 2220 2225	NPO	2 significant digits are used plus the third character then represents the number of zeros to follow	F = 1% G = 2% J = 5% K = 10% M = 20% *Cap values < 10pF B = +/-0.10pF C = +/-0.25pF D = +/-0.50pF	W = 100% tin termination & RoHS - Lead Free compliant product B = Soft Termination [consult factory]	T = Tape & Reel



These typical curves are for 50 volt parts.

Size		0402				0603						0805						1206					1210					
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	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					
Rated Voltage (VDC)		25V	50V	100V	200V	250V	25V	50V	100V	200V	250V	25V	50V	100V	200V	250V	25V	50V	100V	200V	250V	EIA Code
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	D	270
	33pF	D	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	D	390
	47pF	D	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	D	560
	68pF	D	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	D	820
	100pF	D	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	D	121
	150pF	D	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	D	181
	220pF	D	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	D	271
	330pF	D	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	D	391
	470pF	D	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	D	561
	680pF	D	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	D	821
	1000pF	D	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	D	122
	1500pF	D	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	D	182
	2200pF	D	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	D	272
	3300pF	D	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	D	392
	4700pF	D	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	D	562
	6800pF	D	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:
±15% ΔC, -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 ≤ 10µF
120 Hz and 0.5 vms if capacitance > 10µF

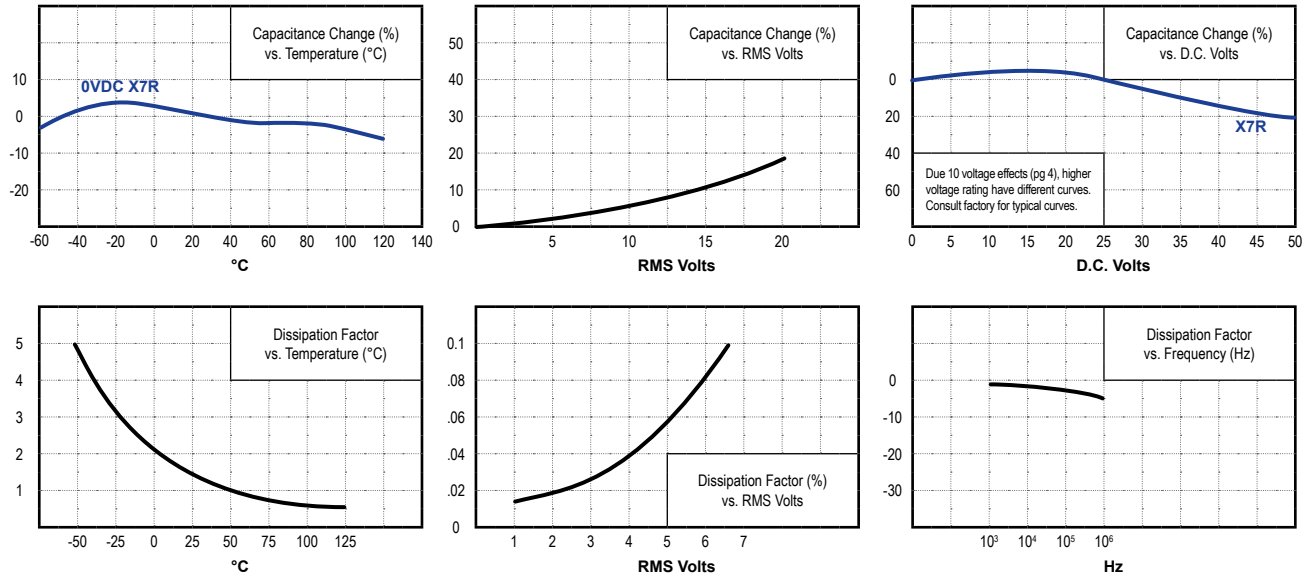
Capacitance Tolerances Available:
J, K, M

RoHS compliant

Pb

HOW TO ORDER

C	B	0805	X7R	104	K	W	T
UTC P/N STYLE	**VOLTAGE**	**BODY SIZE**	**TEMPERATURE COEFFICIENT**	**CAPACITANCE CODE**	**TOLERANCE**	**TERMINATION**	**PACKAGE STYLE**
C = MLCC CHIP	C = 10V E = 16V L = 25V G = 50V B = 100V R = 200V H = 250V	0402 0603 0805 1206 1210 1812 2220	X7R	2 significant digits are used plus the third character then represents the number of zeros to follow	J = 5% K = 10% M = 20%	W = 100% tin termination & RoHS - Lead Free compliant product B = Soft Termination [consult factory]	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					
Rated Voltage (VDC)		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	EIA Code
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.

X5R/Y5V DIELECTRIC MONOLITHIC CERAMIC CAPACITORS

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.

RoHS compliant

Pb

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

Insulation Resistance:
100ΩF or 10GΩ, whichever is less @ Rated Voltage 25°C.

Dielectric Strength:
2.5 times rated voltage D.C.

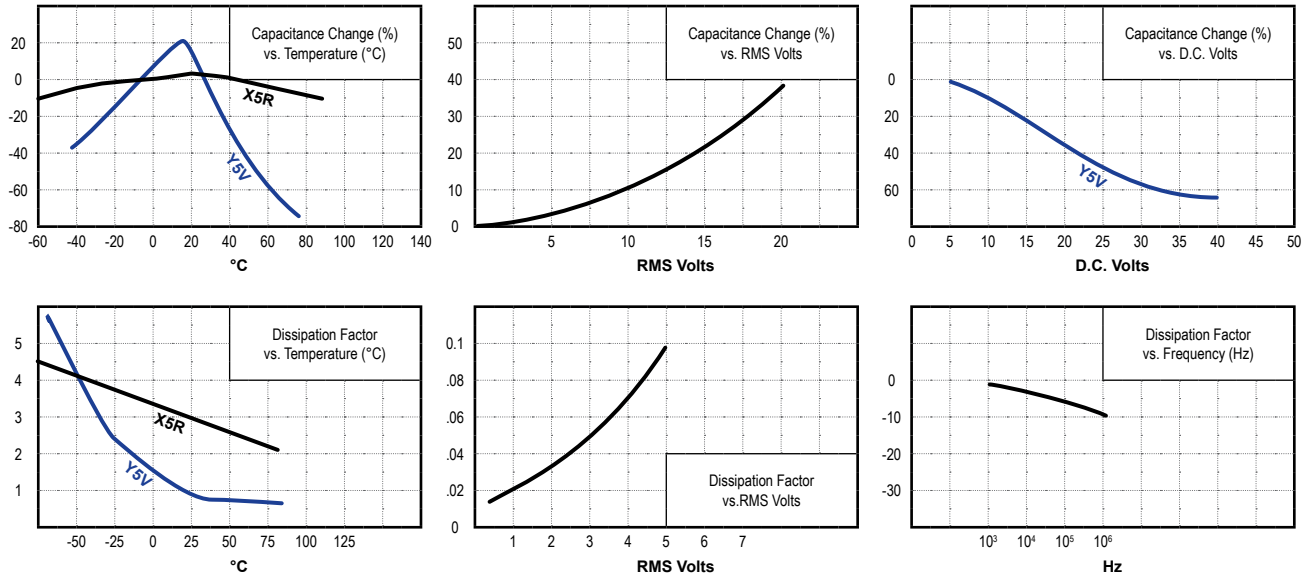
Aging:
X5R Maximum 2.5% per decade hour.
Y5V Maximum 7% per decade hour.

Test parameters:
(X5R) 1 kHz and 1 vms if capacitance ≤ 10μF
120 Hz and 0.5 vms if capacitance > 10μF
(Y5V) 1 kHz and 1 vms if capacitance ≤ 10μF
120 Hz and 0.5 vms if capacitance > 10μF
1 kHz and 1 vms

Capacitance Tolerance Available:
M, Z

HOW TO ORDER

C	L	0805	X5R	105	K	W	T
UTC P/N STYLE	**VOLTAGE**	**BODY SIZE**	**TEMPERATURE COEFFICIENT**	**CAPACITANCE CODE**	**TOLERANCE**	**TERMINATION**	**PACKAGE STYLE**
C = MLCC CHIP	A = 6.3V C = 10V E = 16V L = 25V G = 50V B = 100V	0402 0603 0805 1206 1210 1812	X5R Y5V	2 significant digits are used plus the third character then represents the number of zeros to follow	K = 10% M = 20% Z = -20% / +80%	W = 100% tin termination & RoHS - Lead Free compliant product B = Soft Termination [consult factory]	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		226
	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.