

BX characteristics are identical to X7R dielectric, with the added restriction that the Temperature-Voltage Coefficient (TVC) is not to exceed $-25\% \Delta C$ at rated voltage, over the operating temperature range (-55°C to 125°C). NOVACAP manufactures chips using dielectrics with minimal voltage coefficient and layer thickness designed to meet BX requirements.

COMMERCIAL & HIGH RELIABILITY

CAPACITANCE & VOLTAGE SELECTION

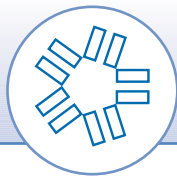
3 digit code: two significant digits, followed by number of zeros eg: 473 = 47,000 pF

SIZE	0402	0504	0603	0805	1005	1206	1210	1808	1812	1825	2221	2225
Min Cap	121	121	121	121	121	121	121	151	151	471	471	471

MAX CAP & VOLTAGE	16V	562	393	273	104	124	274	474	564	105	185	155	225
	25V	472	333	223	104	124	274	474	564	105	155	125	185
	50V	182	183	123	473	683	124	274	274	564	125	125	155
	100V	681	682	472	183	183	473	104	104	184	394	334	474
	200V	221	182	122	562	822	153	273	333	563	104	823	124
	250V	.	681	391	182	272	472	103	103	223	563	473	683
	300V	.	.	.	122	122	332	562	682	123	393	333	473
	400V	.	.	.	681	681	182	332	392	562	183	183	223
	500V	.	.	.	391	471	102	222	222	392	123	103	153

HOW TO ORDER

2225	X	124	K	201	N	X	H	T	M
SIZE See Chart	DIELECTRIC X = BX	CAPACITANCE Value in Picofarads Two significant figures, followed by number of zeros: 103 = 10,000 pF	TOLERANCE J = +/- 5 % K = +/- 10 % M = +/- 20 %	VOLTAGE-VDCW Two significant figures, followed by number of zeros: 302 = 3000V	TERMINATION N = Nickel Barrier (100% Tin) P = Palladium Silver Y = Nickel Barrier (90 Tin/10 Lead)	THICKNESS OPTION X = Non-standard thickness. Specify in Mils if non-standard is required. Standard items are any thickness to Max. shown in charts.	HIGH REL TESTING (Optional) Specify test criteria if required	PACKING OPTION T = Reeled	MARKING OPTION M = Marked (See Marking Specification)



STANDARD SMT CHIP P/N BREAKDOWN

1206 N 472 J 101 N X050 H T M

Case Size

Dielectric Code

Code	EIA	Class
N	COG/NP0	Ultra Stable
B	X7R	Stable
X	BX	MIL
Y	Y5V	General Purpose
Z	Z5U	General Purpose
S	X8R	High Temp up to 150°C
D	COG/NPO	High Temp up to 200°C
E	Class II (Stable)	High Temp up to 200°C
F	160°	High Temp up to 160°C
G	160°	High Temp up to 160°C
W	X5R	Stable
P	85°	Pulse Power
R	200°	Pulse Energy

Capacitance

1st two digits are significant, third digit denotes number of zeros, R= decimal

Examples:

1R0 = 1.0 pF 273 = .027 μF
 120 = 12 pF 474 = 0.47 μF
 471 = 470 pF 105 = 1.0 μF
 102 = 1,000 pF

Capacitance Tolerance

Code		COG NPO	X7R	BX	Z5U Y5V	X8R 150°C	D 200°C	E 200°C	W X5R
Cap Value < 10pF	B ±0.10pF	█							
	C ±0.25pF	█							
	D ±0.50pF	█							
D/F	± 1%	█	█			█	█		
E/G	± 2%	█	█			█	█		
J	± 5%		█	█		█	█		
K	±10%				█				█
M	±20%								█
Z	+80% -20%								
P	+100%/-0%								

Marking

M = Marked
 None = Unmarked
 Marking not available on sizes 0603 and below

Packaging

T = Tape and Reel
 W = Waffle Pack
 None = Bulk

High Reliability Testing

H = High Reliability Testing Required
 None = Standard SMT, no High-Rel
 Consult catalog to determine MIL SPEC required.

Special Thickness

X in the part number denotes a special thickness other than standard. Specify in mils if required. (As shown above X=.050")
 If no X in the part number then thickness is standard per Novacap catalog specifications.

Termination

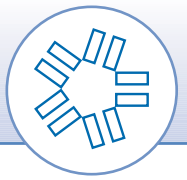
N = Nickel Barrier (100% Tin) (RoHS)
 P = Palladium Silver
 Y = Nickel Barrier (90%Tin/10%Lead)
 S = Silver
 C = Polymer with Nickel Barrier (100% Tin) (RoHS)
 D = Polymer with Nickel Barrier (90%Tin/10%Lead)
 V = Non-Solderable Silver

Voltage

Examples:

160 = 16 Volts 202 = 2000 Volts
 250 = 25 Volts 302 = 3000 Volts
 500 = 50 Volts 402 = 4000 Volts
 101 = 100 Volts 502 = 5000 Volts
 251 = 250 Volts 602 = 6000 Volts
 501 = 500 Volts 802 = 8000 Volts
 102 = 1000 Volts 103 = 10,000 Volts

This ordering information relates to NOVACAP's standard surface mount capacitors. Please refer to the specific catalog pages for ordering information for our application specific products; ie: Stacked, Leaded, Capacitor Arrays, Pulsed Power capacitors and other specialty products.

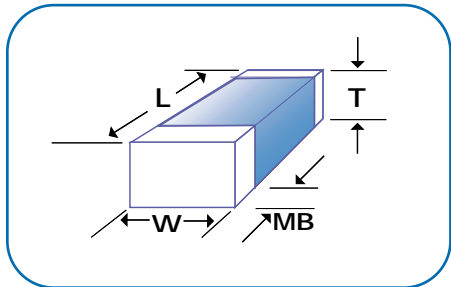


PART NUMBER PREFIX DEFINITIONS

LS = Y3 Certified Safety Capacitor	pg. 36
ES = Y2 Certified Safety Capacitor	pg. 37
AP = Arc Prevention Capacitor	pg. 50
CR = Cap-Rack Capacitor Array	pg. 40 - 41
RC = Bleed Resistor	pg. 34 - 37
RD = Ring Detect Capacitor	pg. 38
ST = Stacked Capacitor Assembly	pg. 48 - 49
SM = Hi-Rel Stacked Capacitor Assembly	pg. 48 - 49

CODE COMBINATIONS

Dielectric Code	Max. Temp. Rated	Terminations (allowed)
N (COG/NPO)	125°	N, P, Y, S, V
B (X7R)	125°	N, P, Y, C, D, S, V
X (BX)	125°	N, P, Y, C, D, S, V
Y (Y5V)	125°	N, Y, C, D
Z (Z5U)	125°	N, Y, C, D
D (NPO-HIGH TEMP)	200°	P, S, V
E (CLASS 11-HIGH TEMP)	200°	P, S, V
F (NPO-HIGH TEMP)	160°	N, P, Y, S, V
G (CLASS 11-HIGH TEMP)	160°	N, P, Y, S, V
S (X8R)	150°	N, P, Y, S, V
P (PULSE POWER)	85°	P
R (R2D)	200°	P
W (X5R)	85°	N



DIMENSIONS
TOLERANCE +/-
INCHES (MM)

SIZE	0402	0504	0603	0805	0907	1005	1206	1210	1515	1808	1812	1825
LENGTH L	.040 (1.02)	.050 (1.27)	.060 (1.52)	.080 (2.03)	.090 (2.29)	.100 (2.54)	.125 (3.18)	.125 (3.18)	.150 (3.81)	.180 (4.57)	.180 (4.57)	.180 (4.57)
WIDTH W	.020 (.508)	.040 (1.02)	.030 (.762)	.050 (1.27)	.070 (1.78)	.050 (1.27)	.060 (1.52)	.100 (2.54)	.150 (3.81)	.080 (2.03)	.125 (3.18)	.250 (6.35)
T MAX.	.024 (.610)	.044 (1.12)	.035 (.889)	.054 (1.37)	.054 (1.37)	.054 (1.37)	.064 (1.63)	.065 (1.65)	.130 (3.30)	.065 (1.65)	.065 (1.65)	.080 (2.03)
MB	.010 (.254)	.014 (.356)	.014 (.356)	.020 (.508)	.020 (.508)	.020 (.508)	.020 (.508)	.020 (.508)	.030 (.762)	.024 (.610)	.024 (.610)	.024 (.610)
LENGTH	.004 (.102)	.006 (.152)	.006 (.152)	.008 (.203)	.008 (.203)	.008 (.203)	.008 (.203)	.008 (.203)	.015 (.381)	.012 (.305)	.012 (.305)	.012 (.305)
WIDTH	.004 (.102)	.006 (.152)	.006 (.152)	.008 (.203)	.008 (.203)	.008 (.203)	.008 (.203)	.008 (.203)	.015 (.381)	.008 (.203)	.008 (.203)	.015 (.381)
MB	.006 (.152)	.006 (.152)	.006 (.152)	.010 (.254)	.010 (.254)	.010 (.254)	.010 (.254)	.010 (.254)	.015 (.381)	.014 (.356)	.014 (.356)	.014 (.356)

DIMENSIONS
TOLERANCE +/-
INCHES (MM)

SIZE	2020	2221	2225	2520	3333	3530	4040	4540	5440	5550	6560	7565
LENGTH L	.200 (5.08)	.220 (5.59)	.220 (5.59)	.250 (6.35)	.330 (8.38)	.350 (8.89)	.400 (10.2)	.450 (11.4)	.540 (13.7)	.550 (14.0)	.650 (16.5)	.750 (19.1)
WIDTH W	.200 (5.08)	.210 (5.33)	.250 (6.35)	.200 (5.08)	.330 (8.38)	.300 (7.62)	.400 (10.2)	.400 (10.2)	.400 (10.2)	.500 (12.7)	.600 (15.2)	.650 (16.5)
T MAX.	.180 (4.57)	.080 (2.03)	.080 (2.03)	.180 (4.57)	.250 (6.35)	.250 (6.35)	.300 (7.62)	.300 (7.62)	.300 (7.62)	.300 (7.62)	.300 (7.62)	.300 (7.62)
MB	.024 (.610)	.030 (.762)	.030 (.762)	.030 (.762)	.030 (.762)	.030 (.762)	.040 (1.02)	.040 (1.02)	.040 (1.02)	.040 (1.02)	.040 (1.02)	.040 (1.02)
LENGTH	.015 (.381)	.015 (.381)	.015 (.381)	.015 (.381)	.017 (.432)	.018 (.457)	.020 (.508)	.023 (.584)	.027 (.686)	.028 (.711)	.033 (.838)	.038 (.965)
WIDTH	.015 (.381)	.015 (.381)	.015 (.381)	.015 (.381)	.017 (.432)	.015 (.381)	.020 (.508)	.020 (.508)	.020 (.508)	.025 (.635)	.030 (.762)	.033 (.838)
MB	.014 (.356)	.015 (.381)	.015 (.381)	.015 (.381)	.015 (.381)	.015 (.381)	.020 (.508)	.020 (.508)	.020 (.508)	.020 (.508)	.020 (.508)	.020 (.508)