BX characteristics are identical to X7R dielectric, with the added restriction that the Temperature-Voltage Coefficient (TVC) is not to exceed -25% ΔC 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

MAX CAP & VOLTAGE

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
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 150ºC
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 160ºC
G	160°	High Temp up to 160ºC
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
120 = 12 pF
471 = 470 pF
102 = 1,000 pF
273 = .027 µF
474 = 0.47 µF
105 = 1.0 µF

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 Reliablity 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

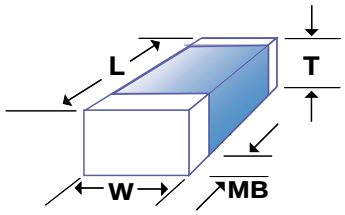
Voltage

Examples:

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



CODE COMBINATIONS

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

DIMENSIONS 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)

TOLERANCE +/- INCHES (MM)

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 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)

TOLERANCE +/- INCHES (MM)

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)

NOVACAP - 25111 Anza Drive -Valencia CA 91355
Tel: 661-295-5920 Fax: (661) 295-5928 Email: sales@novacap.com