

# MULTILAYER CERAMIC CAPACITORS

## X7R COMMERCIAL – 25 Vdc to 4 KVdc



**X7R Dielectrics** are considered to be “temperature stable” ceramics that fall into the category of Class II dielectrics as defined in EIA-198. X7R material provides predictable performance characteristics related to variations in temperature, applied voltage and time.

Eclipse NanoMed, LLC utilizes a proprietary high K formulation that achieves a high level capacitance per unit volume while maintaining exceptional dielectric strength and Insulation Resistance.

Typical applications include decoupling, by-pass, filtering, transient voltage suppression, blocking and energy storage.

### PERFORMANCE CHARACTERISTICS

#### Operating Temperature Range

-55 to +125°C

#### Insulation Resistance

1000 ΩF or 100 GΩ w/e less @ vwdc & +25°C  
100 ΩF or 10 GΩ w/e less @ vwdc & +125°C

#### Dissipation Factor

2.5% Max @ 1kHz & +25°C (<1.2% Typ)

#### Temperature Coefficient

ΔC @ ±15% Max, -55 to +125°C (±8% Max Typ)

#### Dielectric Strength

2.5 x WVDC @ WVDC ≤ 200 Vdc  
1.5 x WVDC @ 201 Vdc ≤ WVDC ≤ 500 Vdc  
1.2 x WVDC @ WVDC >500 Vdc

#### Voltage - Temperature Coefficient

Pre-defined limits available - Contact factory

#### Aging Rate

< 2% per decade hour

#### Test Parameters

1KHz ± 50 Hz, 1.0 ± 0.2 VRMS @ +25°C

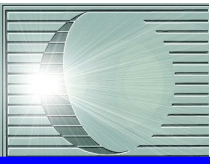
### MECHANICAL DIMENSIONS

Chip Size	Length	Tol	Width	Tol	Thickness	End Band	Tol
	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
0805	0.080 (2.030)	± 0.008 (0.203)	0.050 (1.270)	± 0.008 (0.203)	0.055 (1.40) Max	0.020 (0.508)	± 0.010 (0.254)
1005	0.100 (2.540)	± 0.010 (0.254)	0.050 (1.270)	± 0.010 (0.254)	0.055 (1.40) Max	0.020 (0.508)	± 0.010 (0.254)
1206	0.125 (3.180)	± 0.010 (0.254)	0.060 (1.520)	± 0.010 (0.254)	0.065 (1.65) Max	0.020 (0.508)	± 0.010 (0.254)
1210	0.125 (3.180)	± 0.010 (0.254)	0.100 (2.54)	± 0.010 (0.254)	0.065 (1.65) Max	0.020 (0.508)	± 0.010 (0.254)
1515	0.150 (3.810)	± 0.015 (0.380)	0.150 (3.810)	± 0.015 (0.380)	0.140 (3.55) Max	0.030 (0.760)	± 0.015 (0.380)
1805	0.180 (4.570)	± 0.015 (0.380)	0.050 (1.270)	± 0.015 (0.380)	0.055 (1.40) Max	0.020 (0.508)	± 0.010 (0.254)
1808	0.180 (4.570)	± 0.015 (0.380)	0.080 (2.030)	± 0.015 (0.380)	0.080 (2.03) Max	0.020 (0.508)	± 0.010 (0.254)
1812	0.180 (4.570)	± 0.015 (0.380)	0.125 (3.180)	± 0.015 (0.380)	0.100 (2.54) Max	0.025 (0.640)	± 0.015 (0.380)
1825	0.180 (4.570)	± 0.015 (0.380)	0.250 (6.350)	± 0.015 (0.380)	0.140 (3.56) Max	0.025 (0.640)	± 0.015 (0.380)
2020	0.200 (5.080)	± 0.015 (0.380)	0.200 (5.080)	± 0.015 (0.380)	0.180 (4.57) Max	0.025 (0.640)	± 0.015 (0.380)
2220	0.220 (5.590)	± 0.015 (0.380)	0.200 (5.080)	± 0.015 (0.380)	0.180 (4.57) Max	0.025 (0.640)	± 0.015 (0.380)
2225	0.225 (5.720)	± 0.015 (0.380)	0.250 (6.350)	± 0.015 (0.380)	0.200 (5.08) Max	0.030 (0.762)	± 0.015 (0.380)
2520	0.250 (6.350)	± 0.015 (0.380)	0.200 (5.080)	± 0.015 (0.380)	0.180 (4.57) Max	0.030 (0.762)	± 0.015 (0.380)
3333	0.330 (8.380)	± 0.017 (0.432)	0.330 (8.380)	± 0.017 (0.432)	0.200 (5.08) Max	0.030 (0.762)	± 0.015 (0.380)
3530	0.350 (8.890)	± 0.018 (0.457)	0.300 (7.620)	± 0.015 (0.380)	0.200 (5.08) Max	0.030 (0.762)	± 0.015 (0.380)
4040	0.400 (10.16)	± 0.020 (0.510)	0.400 (10.16)	± 0.020 (0.510)	0.200 (5.08) Max	0.040 (1.020)	± 0.020 (0.510)
4540	0.450 (11.43)	± 0.023 (0.584)	0.400 (10.16)	± 0.020 (0.510)	0.200 (5.08) Max	0.040 (1.020)	± 0.020 (0.510)
5550	0.550 (14.00)	± 0.028 (0.711)	0.500 (12.70)	± 0.025 (0.635)	0.200 (5.08) Max	0.040 (1.020)	± 0.020 (0.510)
6560	0.650 (16.50)	± 0.030 (0.762)	0.600 (15.20)	± 0.030 (0.762)	0.200 (5.08) Max	0.040 (1.020)	± 0.020 (0.510)
7565	0.750 (19.10)	± 0.030 (0.762)	0.650 (16.50)	± 0.030 (0.762)	0.200 (5.08) Max	0.040 (1.020)	± 0.020 (0.510)

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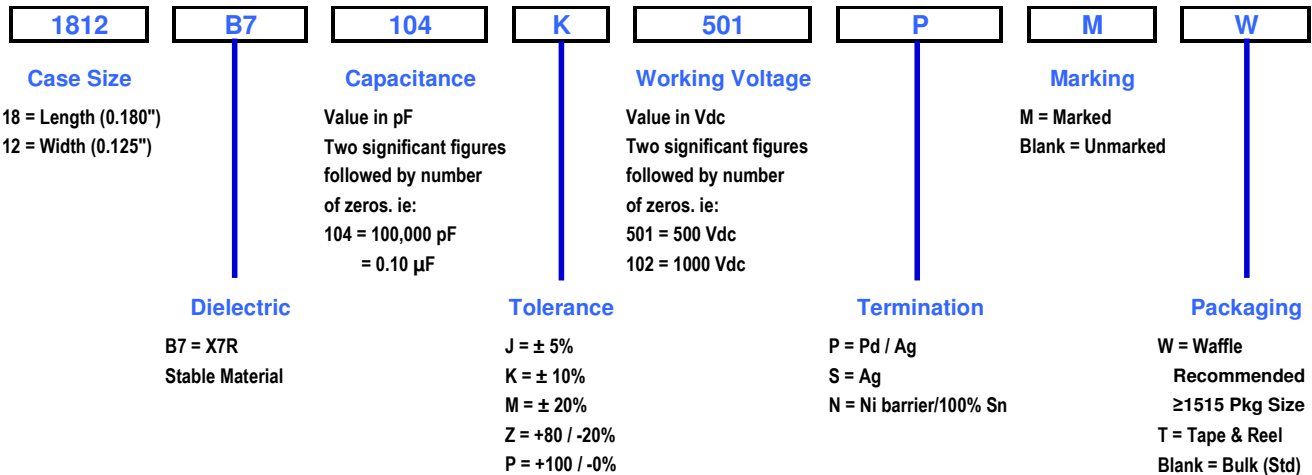
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### CAPACITANCE & VOLTAGE SELECTION

Chip Size	0805	1005	1206	1210	1515	1805	1808	1812	1825	2020	2220	2225	2520	3333	3530	4040	4540	5550	6560	7565	
Min Cap	101	101	101	102	102	821	102	102	102	102	102	102	102	102	102	102	102	102	102	102	
Working Voltage DC	25	104	154	274	474	125	334	334	105	255	225	255	335	275	685	565	106	126	186	226	336
	50	104	154	274	474	125	334	334	105	255	225	255	335	275	685	565	106	126	186	226	336
	100	104	154	274	474	125	334	334	105	255	225	225	335	275	685	565	106	126	186	226	336
	200	823	124	224	394	105	274	334	105	225	185	225	275	275	565	565	825	106	156	186	276
	250	563	823	184	334	824	184	254	824	185	155	185	225	185	475	475	685	825	126	156	226
	300	423	683	154	274	684	154	224	684	155	125	155	185	155	425	395	565	685	106	126	186
	400	223	333	823	154	474	823	124	474	125	824	125	155	125	275	275	475	565	825	106	156
	500	123	223	473	104	394	473	823	334	105	684	105	125	105	255	255	395	425	685	825	126
	600	103	123	333	563	274	273	473	224	684	565	824	105	824	185	185	275	335	565	685	106
	750	472	822	183	273	184	153	333	124	474	474	564	684	564	155	155	225	255	425	475	685
	1000	272	332	822	123	104	682	183	683	224	274	274	334	334	684	684	125	125	185	275	335
	1500	•	•	182	222	393	152	472	183	104	104	124	124	124	274	274	474	564	824	105	125
	2000	•	•	•	•	153	•	122	103	423	473	563	683	563	124	124	224	254	394	474	684
	3000	•	•	•	•	392	•	•	122	123	183	183	183	153	393	393	563	683	104	124	184
	4000	•	•	•	•	102	•	•	•	222	•	•	•	•	123	123	183	183	333	423	563

- Note:
- Capacitors rated for 1000 Vdc and up may require conformal coating to preclude the possibility of surface arcing.
  - Leaded configurations recommended for those larger sizes where product is more susceptible to mechanical and thermal stress. Reference leaded catalog options or contact factory for additional information.

### PART NUMBER DEFINITION / ORDERING INFORMATION



### APPLICATION SPECIFIC PRODUCTS

Eclipse NanoMed's experienced staff is ready to assist you with your application specific requirements. Our product is processed in a state-of-the-art facility, complete with a Class 10,000 clean room, a full service machine shop and extensive testing options, guaranteed to satisfy the most rigid requirements. Whether your application requires Industrial, Military or Automotive grade capacitors, or if your product will be exposed to even higher temperature environments, we can help.

**Commercial • Military Grade • Industrial • Medical • Automotive • +300°C High Temperature**