

## General Information

Bare disc capacitors are designed and manufactured under strict quality control guidelines in order to insure performance and reliability for high voltage applications.

Double action pressing is utilized to minimize density gradients and produce uniform fired ceramic density.

Capacitors are available screened to MIL-PRF-49467 established reliability specification.

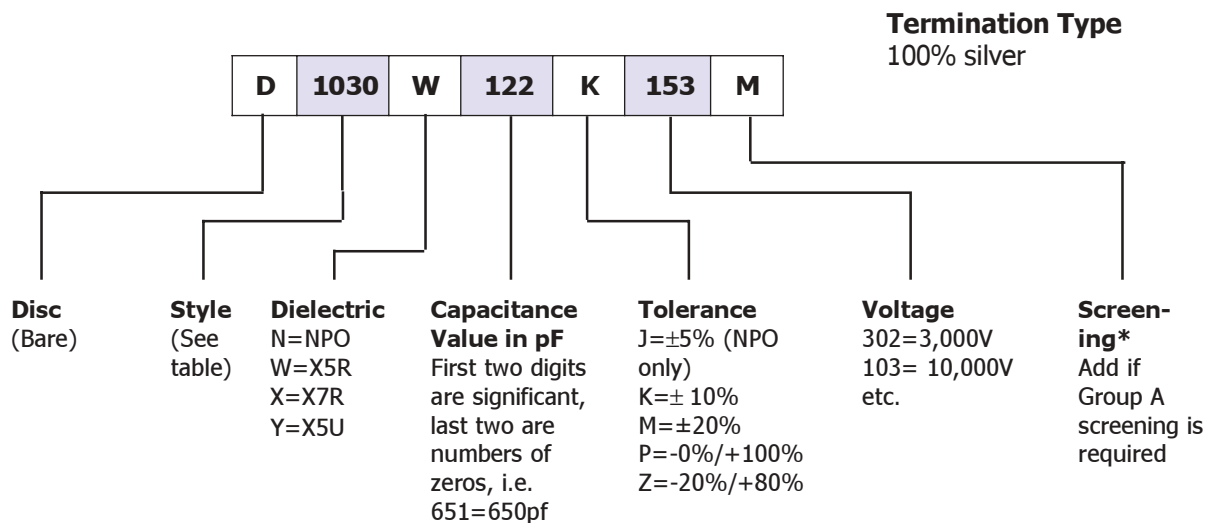
## Installation

Higher-voltage parts may require further encapsulation to prevent surface breakdown. Parts should be cleaned and oven dried at 85°C before further encapsulation. Silicone rubbers or an epoxy may be used. De-airing of encapsulates is recommended.

Components should be preheated to approximately 120°C prior to soldering.

Testing higher-voltage parts before encapsulation may be done in a suitable dielectric fluid such as FC-40.

## Part Number & Ordering Information



## Testing & Screening Information

- Dielectric withstanding voltage to Mil-Prf-49467, Mil-Std-202, MTD 302
- Insulation Resistance 25°C to Mil-Prf-49467, Mil-Std-202, MTD 302
- Capacitance/Dissipation Factor to Mil-Prf-49467, Mil-Std-202, MTD 305
- Group A & B inspection to Mil-Prf-49467, DSCC 87125, DSCC 89087, and NASA GSFC S-311-P-15C, where applicable.



# High Voltage Bare Disc Ceramic Capacitors

3kV to 20kV

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### Dielectric Comparison

SPECIFICATION	DIELECTRIC TYPE (EIA DESIGNATION)			
	NPO	X5R	X7R	X5U
TEMPERATURE RANGE	-55°C to 125°C	-55°C to 85°C	-55°C to 125°C	-55°C to 85°C
TEMPERATURE COEFFICIENT	± 30ppm/°C	±15%	±15%	+22%/-56%
VOLTAGE COEFFICIENT	0	-25% @ rated voltage and temperature	-25% @ rated voltage and temperature	N/A
VOLTAGE RANGE	3kV to 20kV	3kV to 20kV	3kV to 20kV	3kV to 20kV
DIELECTRIC WITHSTANDING VOLTAGE TEST	3kV to 20kV 1.5x rated	3kV to 20kV 1.5x rated	3kV to 20kV 1.5x rated	3kV to 20kV 1.5x rated
IR @ 25°C	100,000MΩ or 1,000MΩ - μF whichever is less	100,000MΩ or 1,000MΩ - μF whichever is less	100,000MΩ or 1,000MΩ - μF whichever is less	100,000MΩ or 1,000MΩ - μF whichever is less
IR @ EVALUATED TEMPERATURE	10,000MΩ or 100MΩ - μF whichever is less @ 125°C	10,000MΩ or 100MΩ - μF whichever is less @ 85°C	10,000MΩ or 100MΩ - μF whichever is less @ 125°C	10,000MΩ or 100MΩ - μF whichever is less @ 85°C
DISSIPATION FACTOR @ 1kHz, 25°C	0.1% max	2.5% max	2.5% max	2.5% max
AGING RATE	0	-2% max/decade hour	-2% max/decade hour	-3% max/decade hour
COEFFICIENT OF THERMAL EXPANSION @ 25°C	9x10 <sup>-6</sup> in/in/°C	11x10 <sup>-6</sup> in/in/°C	11x10 <sup>-6</sup> in/in/°C	11x10 <sup>-6</sup> in/in/°C

VOLTAGE RATING (KV)	MAX THICKNESS INCHES [MM]	NOMINAL THICKNESS INCHES [MM]
3	0.075 [1.9]	.060 [1.5]
5	0.125 [3.2]	.100 [2.5]
7.5	0.180 [4.6]	.150 [3.8]
10	0.235 [6.0]	.200 [5.1]
15	0.350 [8.9]	.300 [7.6]
20	0.460 [11.7]	.400 [10.2]

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# High Voltage Bare Disc Ceramic Capacitors

3kV to 20kV

## High Voltage Bare Disc Ceramic Capacitors

3kVDC	Disc STYLE	D MAX.	NPO (PF)		X5R (PF)		X7R (PF)		X5U (PF)	
			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
	0606	0.220	8.0	9.6	270	330	240	290	540	650
	0806	0.275	12	15	420	500	370	440	830	1000
	1006	0.330	19	23	650	780	600	690	1300	1570
	1206	0.400	28	33	940	1100	830	1000	1900	2200
	1406	0.460	38	45	1300	1500	1100	1300	2500	3100
	1606	0.525	49	60	1650	2000	1400	1700	3300	4000
	2006	0.650	75	90	2600	3100	2300	2700	5200	6200
	2206	0.710	95	110	3100	3800	2700	3300	6300	7500
	2406	0.775	110	130	3800	4500	3300	3900	7500	9000
	2806	0.900	150	180	5100	6100	4500	5400	10200	12000
	3206	1.030	200	240	6600	8000	5900	7000	13300	16000
	4006	1.280	310	370	10400	12500	9000	11000	21000	25000

5kVDC	Disc STYLE	D MAX.	NPO (PF)		X5R (PF)		X7R (PF)		X5U (PF)	
			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
	0610	0.220	4.8	5.9	160	200	140	175	320	400
	0810	0.275	7.3	9.0	250	300	220	270	500	610
	1010	0.330	12	14	390	480	340	420	780	960
	1210	0.400	17	20	560	690	490	600	1120	1380
	1410	0.460	23	28	760	940	670	830	1500	1900
	1610	0.525	29	36	1000	1200	870	1070	2000	2400
	2010	0.650	46	57	1600	1900	1300	1700	3100	3800
	2210	0.710	55	68	1900	2300	1600	2100	3800	4600
	2410	0.775	66	81	2200	2700	1900	2400	4500	5500
	2810	0.900	90	110	3000	3700	2600	3300	6100	7500
	3210	1.030	120	150	3900	4900	3500	4300	7900	9800
	4010	1.280	180	230	6200	7700	5500	6700	12400	15300

7.5kVDC	Disc STYLE	D MAX.	NPO (PF)		X5R (PF)		X7R (PF)		X5U (PF)	
			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
	0615	0.220	3.2	3.9	110	130	95	120	220	260
	0815	0.275	4.9	6.0	165	200	145	180	330	400
	1015	0.330	7.6	9.4	260	320	230	280	520	630
	1215	0.400	11	13	370	460	330	400	740	910
	1415	0.460	15	18	510	620	450	550	1000	1200
	1615	0.525	20	24	660	800	580	700	1300	1600
	2015	0.650	31	37	1030	1200	900	1100	2100	2500
	2215	0.710	37	45	1240	1500	1100	1300	2500	3000
	2415	0.775	44	54	1480	1800	1300	1600	3000	3600
	2815	0.900	60	73	2020	2400	1700	2100	4100	5000
	3215	1.030	78	96	2630	3200	2300	2800	5300	6600
	4015	1.280	120	150	4130	5000	3600	4500	8300	10100



# High Voltage Bare Disc Ceramic Capacitors

3kV to 20kV

## High Voltage Bare Disc Ceramic Capacitors

10KVDC

Disc STYLE	D MAX.	NPO (PF)		X5R (PF)		X7R (PF)		X5U (PF)	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
0620	0.220	1.6	2.0	55	65	50	60	110	130
0820	0.275	2.4	3.0	80	100	75	90	170	200
1020	0.330	3.8	4.7	130	160	110	140	260	320
1220	0.400	5.5	6.8	190	230	160	200	370	460
1420	0.460	7.5	9.2	250	310	220	270	510	620
1620	0.525	9.8	12	330	400	300	350	660	800
2020	0.650	15	19	520	630	450	560	1100	1260
2220	0.710	19	22	620	760	550	670	1300	1500
2420	0.775	22	27	740	910	650	800	1500	1800
2820	0.900	30	37	1000	1200	900	1100	2100	2500
3220	1.030	40	48	1300	1600	1200	1400	2700	3200
4020	1.280	62	75	2100	2500	1800	2200	4200	5000

15KVDC

Disc STYLE	D MAX.	NPO (PF)		X5R (PF)		X7R (PF)		X5U (PF)	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
0630	0.220	1.6	2.0	55	65	50	60	110	130
0830	0.275	2.4	3.0	80	100	75	90	170	200
1030	0.330	3.8	4.7	130	160	110	140	260	320
1230	0.400	5.5	6.8	190	230	160	200	370	460
1430	0.460	7.5	9.2	250	310	220	270	510	620
1630	0.525	9.8	12	330	400	300	350	660	800
2030	0.650	15	19	520	630	450	560	1100	1260
2230	0.710	19	22	620	760	550	670	1300	1500
2430	0.775	22	27	740	910	650	800	1500	1800
2830	0.900	30	37	1000	1200	900	1100	2100	2500
3230	1.030	40	48	1300	1600	1200	1400	2700	3200
4030	1.280	62	75	2100	2500	1800	2200	4200	5000

20KVDC

Disc STYLE	D MAX.	NPO (PF)		X5R (PF)		X7R (PF)		X5U (PF)	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
0640	0.220	1.2	1.5	40	50	35	40	80	100
0840	0.275	1.8	2.2	60	75	55	65	120	150
1040	0.330	2.9	3.5	100	120	85	100	190	240
1240	0.400	4.1	5.1	140	170	120	150	280	340
1440	0.460	5.6	6.9	190	230	170	200	380	460
1640	0.525	7.3	9.0	250	300	220	270	500	600
2040	0.650	12	14	390	470	340	420	780	950
2240	0.710	14	17	470	560	410	500	940	1100
2440	0.775	17	20	580	680	490	600	1100	1350
2840	0.900	23	28	760	930	670	820	1520	1850
3240	1.030	30	36	1000	1200	870	1100	2000	2400
4040	1.280	46	56	1500	1900	1300	1700	3100	3800

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