



MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

DESCRIPTION: PRO-CAP HIGH VOLTAGE CAPACITORS (MA TYPE)

Pro-Cap offers RoHS compliant High Voltage Capacitors. These capacitors are developed for circuits that need reliable components in high voltage applications, such as high voltage solid state multipliers, high voltage power supply, high voltage rectifiers arrays and other consumer applications. Pro-Cap operates a policy of continuous research and development for its capacitance and voltage ranges for Multilayer Ceramic Capacitors. For further specific requirements, please contact a distributor.

HOW TO ORDER

MA 0805 CG 101 J 500 PR

PRO-CAP TYPE: _____

SIZE CODE: _____

0201	0402	0603	0805	1206	1210	1808	1812	2220	2225
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DIELECTRIC CODE: _____

CODE	DIELECTRIC
CG	NPO/COG(1B)
X7R, (XR*)	X7R(2R1)
X5R	X5R
ZU	Z5U(2E6)
YV	Y5V(2F4)

* The XR code is being replaced by the newer X7R code.

CAPACITANCE CODE: _____

Capacitance expressed in pico farads (pF).
 First two digits are significant figures.
 Third digit denotes the number of zeros.
 Use R for decimal point for values less than 10pF.
 A few examples are shown with codes.

(μ F)	(nF)	CAPACITANCE (pF)	CODE
		1.0 pF	1R0
		4.7 pF	4R7
		10 pF	100
	0.22 nF	220 pF	221
0.022 μ F	22 nF	22,000 pF	223
0.10 μ F	100 nF	100,000 pF	104
1 μ F	1,000 nF	1,000,000 pF	105

TOLERANCE CODE: _____

CODE	TOLERANCE	CODE	TOLERANCE	CODE	TOLERANCE
A	± 0.05 pF	F	$\pm 1\%$	M	$\pm 20\%$
B	± 0.10 pF	G	$\pm 2\%$	Z	$\pm 80\%, - 20\%$
C	± 0.25 pF	J	$\pm 5\%$	P	$\pm 100\%, - 0\%$
D	± 0.50 pF	K	$\pm 10\%$		

RATED VOLTAGE CODE: _____

2 significant digits + number of zeros.

CODE	VOLTAGE	CODE	VOLTAGE	CODE	VOLTAGE	CODE	VOLTAGE
6R3	6.3V DC	500	50V DC	301	300V DC	152	1500V DC
100	10V DC	101	100V DC	501	500V DC	202	2000V DC
160	16V DC	201	200V DC	631	630V DC	302	3000V DC
250	25V DC	251	250V DC	102	1000V DC	402	4000V DC

PACKAGING CODE: _____

PR: Tape and Reel, Cardboard Tape
 ER: Tape and Reel, Embossed Tape

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DESCRIPTION:

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Specifications	COG	X7R
Operating Temperature Range	-55°C to +125°C	-55°C to +125°C
Temperature Characteristic	0 ± 30ppm/°C	±15% with 0 Vdc Applied
Dissipation Factor	0.1% max @ 1MHz for 1000pF 0.1% max @ 1KHz for > 1000pF	2.5% max @ 1KHz 1.0 Vrms and 25°C
Insulation Resistance	100,000 Megohms min @ +25°C 10,000 Megohms min @ +125°C	100,000 Megohms min @ +25°C 10,000 Megohms min @ +125°C
Capacitance Range	1pF to 0.039µF	10pF to 1.0µF
Capacitance Tolerances	±2% (G) ±5% (J), +10% (K), ±20% (M)	±% (J), ±10% (K), ±20% (M)
Rated Voltage	200Vdc, 500Vdc, 1000Vdc	200Vdc, 500Vdc, 1000Vdc
Dielectric Withstanding Voltage	200Vdc = 250%, 500Vdc = 200%, 1000Vdc = 150% of rated voltage for 5 ± 1 seconds, 50 milliamps max.	200Vdc = 250%, 500Vdc = 200%, 1000Vdc = 150% of rated voltage for 5 ± 1 seconds, 50 milliamps max.
Termination Material	Nickel-barrier	Nickel-barrier

Notes:

- Other capacitance values are available in voltages up to 5000 Volts, contact us for details.
- For solder coated terminations, add 0.005” to length, width and thickness maximum dimensions.

MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

SOLDERING GUIDELINES

Surface mount passive components may be soldered to P.C.B. and substrates using any of these methods:

- Wave/dual wave
- Vapor phase reflow
- Bubble solder immersion
- Infrared reflow
- Hot air/convection reflow
- Other(laser, etc.).

Ceramic devices, particularly chip capacitors, generally have poor ability to withstand heat shock. Thermal shock may result during

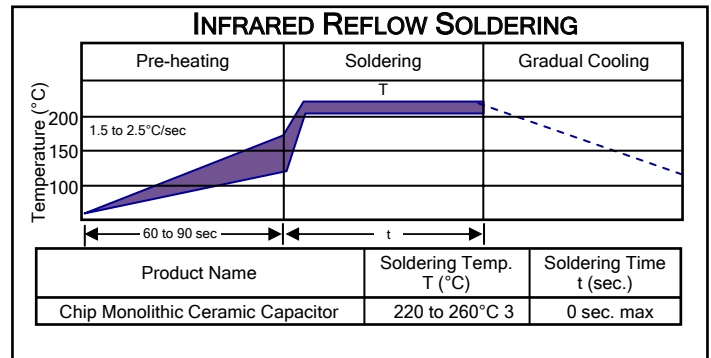
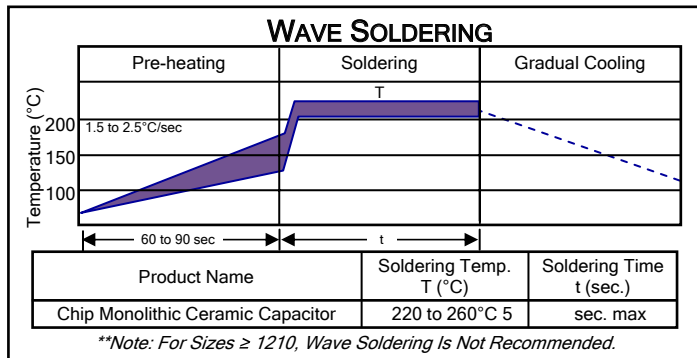
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include:

- Micro cracks in the ceramic
- Electrical shorts.
- Insulation resistance degradation in accelerated life test conditions.

Users of ceramic chip components can minimize thermal shock by employing a basic process prior to soldering (Recommendation: Preheat the ceramic chip components and board to within 100°C of the soldering temperature.) The time to preheat should be a minimum or one (1) minute.

In addition, the recommended soldering profile process time-temperature profile for components should be followed.

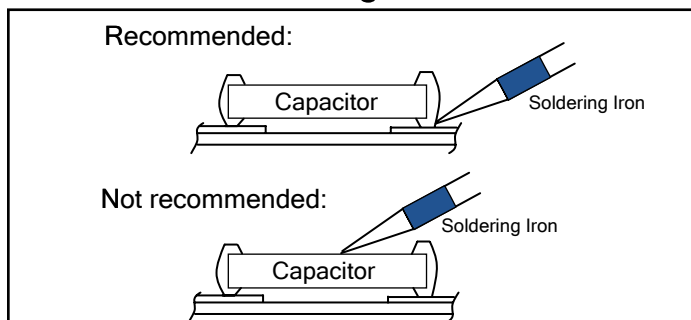


Vapor phase reflow soldering techniques may be used to attach many surface mount components onto a P.C.B. or substrate at one time. Solder temperatures are controlled precisely due to the known boiling point of the liquid.

Vapor phase soldering involves condensation heating, whereby the latent heat of the vaporized liquid is released as the vapor condenses on metallization of the parts to be soldered. The phase change from liquid to vapor is rapid and occurs on all exposed surfaces of the part, resulting in uniform heating.

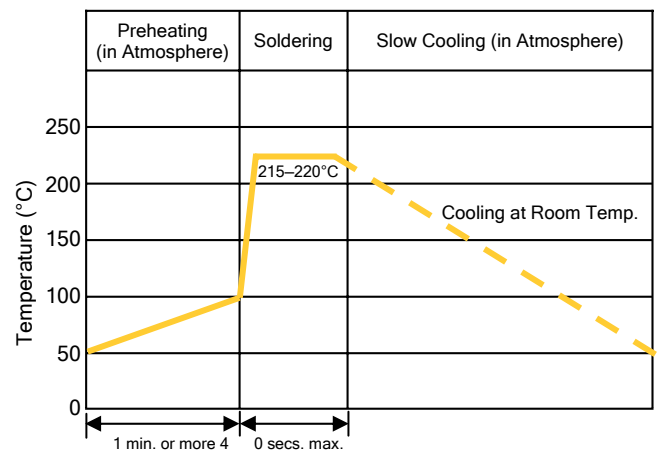
Pro-Cap surface mount capacitors can be successfully attached to a P.C.B. or substrate using the vapor phase reflow technique. Due to the lower soldering temperature, the effect of heat on the components is not severe.

Soldering Iron



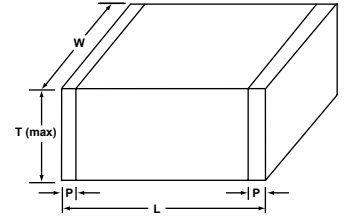
The soldering iron method is used primarily for rework or bread boarding. It is important that the solder iron tip *not touch* the ceramic body. The iron should be applied only to the termination-solder fillet. (Recommendation: The soldering iron shall be of the nichrome wire heater type with a maximum diameter of 3.0mm.)

Product Name	Soldering Iron Tip Temp.	Soldering Time	Iron Output
Chip Monolithic Ceramic Capacitor	280°C 5	sec. max	30W max.





SIZE			100V~300V
(L)	LENGHT	mm	1.01 ± 0.13
(W)	WIDTH	mm	0.51 ± 0.13
(T)	THICKNESS	mm	0.58 Max
(P)	TERMINATION	mm	0.25 ± 0.13



VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10															
(pF) 0.12	R12															
0.15	R15															
0.18	R18															
0.22	R22															
0.27	R27															
0.33	R33															
0.38	R38															
0.47	R47															
0.50	R50															
0.56	R56															
0.68	R68															
0.82	R82															
1.0	1R0															
1.2	1R2															
1.5	1R5															
1.8	1R8															
2.2	2R2															
2.7	2R7															
3.3	3R3															
3.9	3R9															
4.7	4R7															
5.6	5R6															
6.8	6R8															
8.2	8R2															
10	100															
12	120															
15	150															
18	180															
22	220															
27	270															
33	330															
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2200	222															
2700	272															
3300	332															
3900	392															
4700	472															
5600	562															
6800	682															
8200	822															

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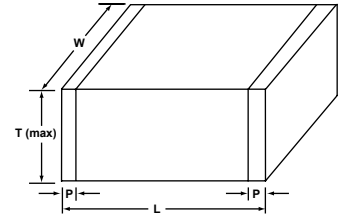
VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.010	103															
(µF) 0.012	123															
0.015	153															
0.018	183															
0.022	223															
0.027	273															
0.033	333															
0.039	393															
0.047	473															
0.056	563															
0.068	683															
0.082	823															
0.100	104															
0.120	124															
0.150	154															
0.180	184															
0.220	224															
0.330	334															
0.470	474															
0.680	684															
1.0	105															
1.5	155															

VOLTAGE		300				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	0R1					
(pF) 0.12	R12					
0.15	R15					
0.18	R18					
0.22	R22					
0.27	R27					
0.33	R33					
0.38	R38					
0.47	R47					
0.50	0R5					
0.56	R56					
0.68	R68					
0.82	R82					
1.0	1R0					
1.2	1R2					
1.5	1R5					
1.8	1R8					
2.2	2R2					
2.7	2R7					
3.3	3R3					
3.9	3R9					
4.7	4R7					
5.6	5R6					
6.8	6R8					
8.2	8R2					
10	100					
12	120					
15	150					
18	180					
22	220					
27	270					
33	330					
39	390					
47	470					
56	560					
68	680					
82	820					
100	101					
120	121					
150	151					
180	181					
220	221					
270	271					
330	331					
390	391					
470	471					
560	561					
680	681					
820	821					
1000	102					
1200	122					
1500	152					
1800	182					
2000	202					
2200	222					
2700	272					
3300	332					
3900	392					
4700	472					
5600	562					
6800	682					
8200	822					

Voltage over 300V
are available
upon request.

Contact us for more information.

SIZE			100V~300V
(L)	LENGHT	mm	1.52 ± 0.13
(W)	WIDTH	mm	0.76 ± 0.13
(T)	THICKNESS	mm	0.84 Max
(P)	TERMINATION	mm	0.25 ± 0.13



VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10															
(pF) 0.12	R12															
0.15	R15															
0.18	R18															
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0.56	R56															
0.68	R68															
0.82	R82															
1.0	1R0															
1.2	1R2															
1.5	1R5															
1.8	1R8															
2.2	2R2															
2.7	2R7															
3.3	3R3															
3.9	3R9															
4.7	4R7															
5.6	5R6															
6.8	6R8															
8.2	8R2															
10	100															
12	120															
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8200	822															

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MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

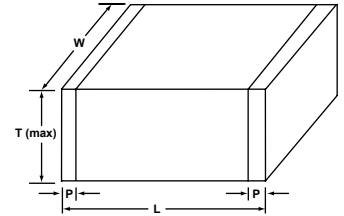
VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.010	103															
(µF) 0.012	123															
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0.680	684															
1.0	105															
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VOLTAGE		300				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10					
(pF) 0.12	R12					
0.15	R15					
0.18	R18					
0.22	R22					
0.27	R27					
0.33	R33					
0.38	R38					
0.47	R47					
0.50	R50					
0.56	R56					
0.68	R68					
0.82	R82					
1.0	1R0					
1.2	1R2					
1.5	1R5					
1.8	1R8					
2.2	2R2					
2.7	2R7					
3.3	3R3					
3.9	3R9					
4.7	4R7					
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6.8	6R8					
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(μF) 0.010	103					
0.012	123					
0.015	153					
0.018	183					
0.022	223					
0.027	273					
0.033	333					
0.039	393					
0.047	473					
0.056	563					

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are available
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SIZE			100V~1000V
(L)	LENGHT	mm	2.03 ± 0.15
(W)	WIDTH	mm	1.27 ± 0.15
(T)	THICKNESS	mm	1.02 ± 0.25
(P)	TERMINATION	mm	0.38



VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10															
(pF) 0.12	R12															
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0.27	R27															
0.33	R33															
0.38	R38															
0.47	R47															
0.50	R50															
0.56	R56															
0.68	R68															
0.82	R82															
1.0	1R0															
1.2	1R2															
1.5	1R5															
1.8	1R8															
2.2	2R2															
2.7	2R7															
3.3	3R3															
3.9	3R9															
4.7	4R7															
5.6	5R6															
6.8	6R8															
8.2	8R2															
10	100															
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VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.010	103															
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0.150	154															
0.180	184															
0.220	224															
0.330	334															
0.470	474															
0.680	684															
1.0	105															
1.5	155															
2.2	225															



VOLTAGE		300					500					630				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP	0.10	R10														
(pF)	0.12	R12														
	0.15	R15														
	0.18	R18														
	0.22	R22														
	0.27	R27														
	0.33	R33														
	0.38	R38														
	0.47	R47														
	0.50	R50														
	0.56	R56														
	0.68	R68														
	0.82	R82														
	1.0	1R0														
	1.2	1R2														
	1.5	1R5														
	1.8	1R8														
	2.2	2R2														
	2.7	2R7														
	3.3	3R3														
	3.9	3R9														
	4.7	4R7														
	5.6	5R6														
	6.8	6R8														
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	8200	822														

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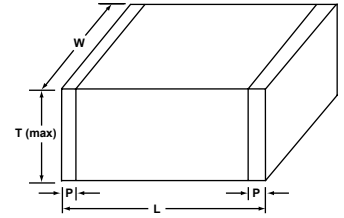
VOLTAGE		300					500					630				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
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(µF)	0.012	123														
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	0.027	273														
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	0.047	473														
	0.056	563														
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	0.082	823														
	0.100	104														
	0.150	154														
	0.220	224														
	0.330	334														
	0.470	474														
	0.680	684														
	1.0	105														
	2.2	225														
	4.7	475														
	6.8	685														
	10	106														
	22	226														

VOLTAGE		1000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10					
(pF) 0.12	R12					
0.15	R15					
0.18	R18					
0.22	R22					
0.27	R27					
0.33	R33					
0.38	R38					
0.47	R47					
0.50	R50					
0.56	R56					
0.68	R68					
0.82	R82					
1.0	1R0					
1.2	1R2					
1.5	1R5					
1.8	1R8					
2.2	2R2					
2.7	2R7					
3.3	3R3					
3.9	3R9					
4.7	4R7					
5.6	5R6					
6.8	6R8					
8.2	8R2					
10	100					
12	120					
15	150					
18	180					
22	220					
27	270					
33	330					
39	390					
47	470					
56	560					
68	680					
82	820					
100	101					
120	121					
150	151					
180	181					
220	221					
270	271					
330	331					
390	391					
470	471					
560	561					
680	681					
820	821					
1000	102					
1200	122					
1500	152					
1800	182					
2200	222					
2700	272					
3300	332					
3900	392					
4700	472					
5600	562					
6800	682					
8200	822					

Voltage over 1000V
are available
upon request.

Contact us for more information.

SIZE			100V~3000V
(L)	LENGHT	mm	3.05 ± 0.15
(W)	WIDTH	mm	1.52 ± 0.15
(T)	THICKNESS	mm	1.02 ± 0.25
(P)	TERMINATION	mm	0.76



VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10															
(pF) 0.12	R12															
0.15	R15															
0.18	R18															
0.22	R22															
0.27	R27															
0.33	R33															
0.38	R38															
0.47	R47															
0.50	R50															
0.56	R56															
0.68	R68															
0.82	R82															
1.0	1R0															
1.2	1R2															
1.5	1R5															
1.8	1R8															
2.2	2R2															
2.7	2R7															
3.0	3R0															
3.3	3R3															
3.9	3R9															
4.7	4R7															
5.6	5R6															
6.8	6R8															
8.2	8R2															
10	100															
12	120															
15	150															
18	180															
22	220															
27	270															
33	330															
39	390															
47	470															
56	560															
68	680															
82	820															
100	101															
120	121															
150	151															
180	181															
200	201															
220	221															
270	271															
330	331															
390	391															
470	471															
560	561															
680	681															
820	821															
1000	102															
1200	122															
1500	152															
1800	182															
2200	222															
2700	272															
3300	332															
3900	392															
4700	472															
5600	562															
6800	682															
8200	822															

Continues on next page...

MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.010	103															
(µF) 0.012	123															
0.015	153															
0.018	183															
0.022	223															
0.027	273															
0.033	333															
0.039	393															
0.047	473															
0.056	563															
0.068	683															
0.082	823															
0.100	104															
0.120	124															
0.150	154															
0.180	184															
0.220	224															
0.330	334															
0.470	474															
0.680	684															
1.0	105															
1.5	155															



VOLTAGE			300					500					1000				
Capacitance	CODE		COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10																
(pF) 0.12	R12																
0.15	R15																
0.18	R18																
0.22	R22																
0.27	R27																
0.33	R33																
0.38	R38																
0.47	R47																
0.50	R50																
0.56	R56																
0.68	R68																
0.82	R82																
1.0	1R0																
1.2	1R2																
1.5	1R5																
1.8	1R8																
2.2	2R2																
2.7	2R7																
3.0	3R0																
3.3	3R3																
3.9	3R9																
4.7	4R7																
5.6	5R6																
6.8	6R8																
8.2	8R2																
10	100																
12	120																
15	150																
18	180																
22	220																
27	270																
33	330																
39	390																
47	470																
56	560																
68	680																
82	820																
100	101																
120	121																
150	151																
180	181																
220	221																
270	271																
330	331																
390	391																
470	471																
560	561																
680	681																
820	821																
1000	102																
1200	122																
1500	152																
1800	182																
2200	222																
2700	272																
3300	332																
3900	392																
4700	472																
5600	562																
6800	682																
8200	822																

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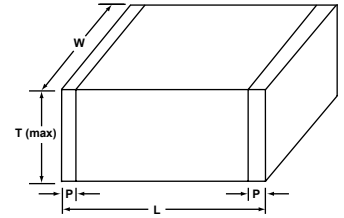


VOLTAGE		300					500					1000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.010	103															
(µF) 0.012	123															
0.015	153															
0.018	183															
0.022	223															
0.027	273															
0.033	333															
0.039	393															
0.047	473															
0.056	563															
0.068	683															
0.082	823															
0.100	104															
0.150	154															
0.220	224															
0.330	334															
0.470	474															
0.680	684															
1.0	105															
2.2	225															
4.7	475															
6.8	685															
10	106															
22	226															
33	336															
47	476															



VOLTAGE		1500					2000					3000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP	0.10	R10														
(pF)	0.12	R12														
	0.15	R15														
	0.18	R18														
	0.22	R22														
	0.27	R27														
	0.33	R33														
	0.38	R38														
	0.47	R47														
	0.50	R50														
	0.56	R56														
	0.68	R68														
	0.82	R82														
	1.0	1R0														
	1.2	1R2														
	1.5	1R5														
	1.8	1R8														
	2.2	2R2														
	2.7	2R7														
	3.0	3R0														
	3.3	3R3														
	3.9	3R9														
	4.7	4R7														
	5.6	5R6														
	6.8	6R8														
	8.2	8R2														
	10	100														
	12	120														
	15	150														
	18	180														
	22	220														
	27	270														
	33	330														
	39	390														
	47	470														
	56	560														
	68	680														
	82	820														
	100	101														
	120	121														
	150	151														
	180	181														
	220	221														
	270	271														
	330	331														
	390	391														
	470	471														
	560	561														
	680	681														
	820	821														
	1000	102														
	1200	122														
	1500	152														
	1800	182														
	2200	222														
	2700	272														
	3300	332														
	3900	392														
	4700	472														
	5600	562														
	6800	682														
	8200	822														

SIZE			100V~3000V
(L)	LENGHT	mm	3.05 ± 0.25
(W)	WIDTH	mm	2.54 ± 0.25
(T)	THICKNESS	mm	2.41 Max
(P)	TERMINATION	mm	0.51



VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10															
(pF) 0.12	R12															
0.15	R15															
0.18	R18															
0.22	R22															
0.27	R27															
0.33	R33															
0.38	R38															
0.47	R47															
0.50	R50															
0.56	R56															
0.68	R68															
0.82	R82															
1.0	1R0															
1.2	1R2															
1.5	1R5															
1.8	1R8															
2.2	2R2															
2.7	2R7															
3.3	3R3															
3.9	3R9															
4.7	4R7															
5.6	5R6															
6.8	6R8															
8.2	8R2															
10	100															
12	120															
15	150															
18	180															
22	220															
27	270															
33	330															
39	390															
47	470															
56	560															
68	680															
82	820															
100	101															
120	121															
150	151															
180	181															
200	201															
220	221															
270	271															
330	331															
390	391															
470	471															
560	561															
680	681															
820	821															
1000	102															
1200	122															
1500	152															
1800	182															
2200	222															
2700	272															
3300	332															
3900	392															
4700	472															
5600	562															
6800	682															
8200	822															

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MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

VOLTAGE			100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	
CAP 0.010	103																
(µF) 0.012	123																
0.015	153																
0.018	183																
0.022	223																
0.027	273																
0.033	333																
0.039	393																
0.047	473																
0.056	563																
0.068	683																
0.082	823																
0.100	104																
0.120	124																
0.150	154																
0.180	184																
0.220	224																
0.330	334																
0.470	474																
0.680	684																
1.0	105																
1.5	155																



VOLTAGE		300					500					1000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP	0.10	R10														
(pF)	0.12	R12														
	0.15	R15														
	0.18	R18														
	0.22	R22														
	0.27	R27														
	0.33	R33														
	0.38	R38														
	0.47	R47														
	0.50	R50														
	0.56	R56														
	0.68	R68														
	0.82	R82														
	1.0	1R0														
	1.2	1R2														
	1.5	1R5														
	1.8	1R8														
	2.2	2R2														
	2.7	2R7														
	3.3	3R3														
	3.9	3R9														
	4.7	4R7														
	5.0	5R0														
	5.6	5R6														
	6.8	6R8														
	8.2	8R2														
	10	100														
	12	120														
	15	150														
	18	180														
	22	220														
	27	270														
	33	330														
	39	390														
	47	470														
	56	560														
	68	680														
	82	820														
	100	101														
	120	121														
	150	151														
	180	181														
	220	221														
	270	271														
	330	331														
	390	391														
	470	471														
	560	561														
	680	681														
	820	821														
	1000	102														
	1200	122														
	1500	152														
	1800	182														
	2200	222														
	2700	272														
	3300	332														
	3900	392														
	4700	472														
	5600	562														
	6800	682														
	8200	822														

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MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

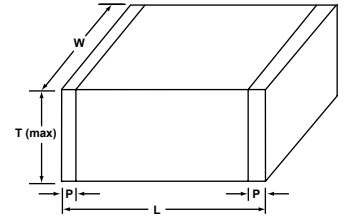
VOLTAGE		300					500					1000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP	0.010															
(µf)	0.012															
	0.015															
	0.018															
	0.022															
	0.027															
	0.033															
	0.039															
	0.047															
	0.056															
	0.068															
	0.082															
	0.100															
	0.150															
	0.220															
	0.330															
	0.470															
	0.680															
	1.0															
	2.2															
	4.7															
	6.8															
	10															
	22															
	33															
	47															

VOLTAGE			2000					3000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	
CAP	0.10	R10										
	0.12	R12										
	0.15	R15										
	0.18	R18										
	0.22	R22										
	0.27	R27										
	0.33	R33										
	0.38	R38										
	0.47	R47										
	0.50	R50										
	0.56	R56										
	0.68	R68										
	0.82	R82										
	1.0	1R0										
	1.2	1R2										
	1.5	1R5										
	1.8	1R8										
	2.2	2R2										
	2.7	2R7										
	3.3	3R3										
	3.9	3R9										
	4.7	4R7										
	5.0	5R0										
	5.6	5R6										
	6.8	6R8										
	8.2	8R2										
	10	100										
	12	120										
	15	150										
	18	180										
	22	220										
	27	270										
	33	330										
	39	390										
	47	470										
	56	560										
	68	680										
	82	820										
	100	101										
	120	121										
	150	151										
	180	181										
	220	221										
	270	271										
	330	331										
	390	391										
	470	471										
	560	561										
	680	681										
	820	821										
	1000	102										
	1200	122										
	1500	152										
	1800	182										
	2200	222										
	2700	272										
	3300	332										
	3900	392										
	4700	472										
	5600	562										
	6800	682										
	8200	822										
(µF)	0.010	103										
	0.012	123										
	0.015	153										
	0.018	183										
	0.022	223										

Voltage over 3000V are available upon request.

Contact us for more information.

SIZE			100V~3000V
(L)	LENGHT	mm	4.57 ± 0.25
(W)	WIDTH	mm	2.03 ± 0.25
(T)	THICKNESS	mm	2.03 Max
(P)	TERMINATION	mm	0.76



VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10															
(pF) 0.12	R12															
0.15	R15															
0.18	R18															
0.22	R22															
0.27	R27															
0.33	R33															
0.38	R38															
0.47	R47															
0.50	R50															
0.56	R56															
0.68	R68															
0.82	R82															
1.0	1R0															
1.2	1R2															
1.5	1R5															
1.8	1R8															
2.2	2R2															
2.7	2R7															
3.3	3R3															
3.9	3R9															
4.7	4R7															
5.6	5R6															
6.8	6R8															
8.2	8R2															
10	100															
12	120															
15	150															
18	180															
22	220															
27	270															
33	330															
39	390															
47	470															
56	560															
68	680															
82	820															
100	101															
120	121															
150	151															
180	181															
200	201															
220	221															
270	271															
330	331															
390	391															
470	471															
560	561															
680	681															
820	821															
1000	102															
1200	122															
1500	152															
1800	182															
2200	222															
2700	272															
3300	332															
3900	392															
4700	472															
5600	562															
6800	682															
8200	822															

Continues on next page...

MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.010	103															
(µF) 0.012	123															
0.015	153															
0.018	183															
0.022	223															
0.027	273															
0.033	333															
0.039	393															
0.047	473															
0.056	563															
0.068	683															
0.082	823															
0.100	104															
0.120	124															
0.150	154															
0.180	184															
0.220	224															
0.330	334															
0.390	394															
0.470	474															
0.680	684															
1.0	105															
1.5	155															

MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

VOLTAGE			500					1000					2000				
Capacitance	CODE		COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP	0.10	R10															
(pF)	0.12	R12															
	0.15	R15															
	0.18	R18															
	0.22	R22															
	0.27	R27															
	0.33	R33															
	0.38	R38															
	0.47	R47															
	0.50	R50															
	0.56	R56															
	0.68	R68															
	0.82	R82															
	1.0	1R0															
	1.2	1R2															
	1.5	1R5															
	1.8	1R8															
	2.2	2R2															
	2.7	2R7															
	3.3	3R3															
	3.9	3R9															
	4.7	4R7															
	5.6	5R6															
	6.8	6R8															
	8.2	8R2															
	10	100															
	12	120															
	15	150															
	18	180															
	22	220															
	27	270															
	33	330															
	39	390															
	47	470															
	56	560															
	68	680															
	82	820															
	100	101															
	120	121															
	150	151															
	180	181															
	220	221															
	270	271															
	330	331															
	390	391															
	470	471															
	560	561															
	680	681															
	820	821															
	1000	102															
	1200	122															
	1500	152															
	1800	182															
	2200	222															
	2700	272															
	3300	332															
	3900	392															
	4700	472															
	5600	562															
	6800	682															
	8200	822															
(μF)	0.010	103															
	0.012	123															
	0.015	153															
	0.018	183															
	0.022	223															
	0.027	273															
	0.033	333															
	0.039	393															
	0.047	473															
	0.056	563															
	0.068	683															
	0.082	823															
	0.100	104															
	0.120	124															

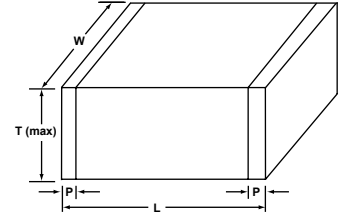
For additional capacitance values and working voltages, please contact us.

VOLTAGE		3000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V
CAP	2.2	2R2				
	3.0	3R0				
(pF)	3.3	3R3				
	3.9	3R9				
	4.7	4R7				
	5.6	5R6				
	6.8	6R8				
	8.2	8R2				
	10	100				
	12	120				
	15	150				
	18	180				
	22	220				
	27	270				
	33	330				
	39	390				
	47	470				
	56	560				
	68	680				
	82	820				
	100	101				
	120	121				
	150	151				
	180	181				
	220	221				
	270	271				
	330	331				
	390	391				
	470	471				
	560	561				
	680	681				
	820	821				
	1000	102				
	1200	122				
	1500	152				
	1800	182				
	2200	222				
	2700	272				
	3300	332				
	3900	392				
	4700	472				
	5600	562				
	6800	682				
	8200	822				
(µF)	0.010	103				
	0.012	123				
	0.015	153				
	0.018	183				
	0.022	223				
	0.027	273				
	0.033	333				
	0.039	393				
	0.047	473				
	0.056	563				
	0.068	683				
	0.082	823				
	0.100	104				
	0.120	124				
	0.150	154				
	0.180	184				
	0.220	224				
	0.270	274				
	0.330	334				
	0.390	394				
	0.470	474				
	0.560	564				
	0.680	684				

Voltage over 3000V are available upon request.

Contact us for more information.

SIZE			100V~3000V
(L)	LENGHT	mm	4.57 ± 0.25
(W)	WIDTH	mm	3.05 ± 0.25
(T)	THICKNESS	mm	2.79 Max
(P)	TERMINATION	mm	0.76 ± 0.25



VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10															
(pF) 0.12	R12															
0.15	R15															
0.18	R18															
0.22	R22															
0.27	R27															
0.33	R33															
0.38	R38															
0.47	R47															
0.50	R50															
0.56	R56															
0.68	R68															
0.82	R82															
1.0	1R0															
1.2	1R2															
1.5	1R5															
1.8	1R8															
2.2	2R2															
2.7	2R7															
3.3	3R3															
3.9	3R9															
4.7	4R7															
5.6	5R6															
6.8	6R8															
8.2	8R2															
10	100															
12	120															
15	150															
18	180															
22	220															
27	270															
33	330															
39	390															
47	470															
56	560															
68	680															
82	820															
100	101															
120	121															
150	151															
180	181															
200	201															
220	221															
270	271															
330	331															
390	391															
470	471															
560	561															
680	681															
820	821															
1000	102															
1200	122															
1500	152															
1800	182															
2200	222															
2700	272															
3300	332															
3900	392															
4700	472															
5600	562															
6800	682															
8200	822															

Continues on next page...

MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.010	103															
(µF) 0.012	123															
0.015	153															
0.018	183															
0.022	223															
0.027	273															
0.033	333															
0.039	393															
0.047	473															
0.056	563															
0.068	683															
0.082	823															
0.100	104															
0.120	124															
0.150	154															
0.180	184															
0.220	224															
0.330	334															
0.470	474															
0.680	684															
1.0	105															
1.5	155															
2.2	225															
3.3	335															



VOLTAGE		500					1000					2000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP	0.10	R10														
(pF)	0.12	R12														
	0.15	R15														
	0.18	R18														
	0.22	R22														
	0.27	R27														
	0.33	R33														
	0.38	R38														
	0.47	R47														
	0.50	R50														
	0.56	R56														
	0.68	R68														
	0.82	R82														
	1.0	1R0														
	1.2	1R2														
	1.5	1R5														
	1.8	1R8														
	2.2	2R2														
	2.7	2R7														
	3.3	3R3														
	3.9	3R9														
	4.7	4R7														
	5.6	5R6														
	6.8	6R8														
	8.2	8R2														
	10	100														
	12	120														
	15	150														
	18	180														
	22	220														
	27	270														
	33	330														
	39	390														
	47	470														
	56	560														
	68	680														
	82	820														
	100	101														
	120	121														
	150	151														
	180	181														
	220	221														
	270	271														
	330	331														
	390	391														
	470	471														
	560	561														
	680	681														
	820	821														
	1000	102														
	1200	122														
	1500	152														
	1800	182														
	2200	222														
	2700	272														
	3300	332														
	3900	392														
	4700	472														
	5600	562														
	6800	682														
	8200	822														
(μF)	0.010	103														
	0.012	123														
	0.015	153														
	0.018	183														
	0.022	223														
	0.027	273														
	0.033	333														
	0.039	393														
	0.047	473														
	0.056	563														
	0.068	683														
	0.082	823														
	0.100	104														
	0.120	124														
	0.150	154														

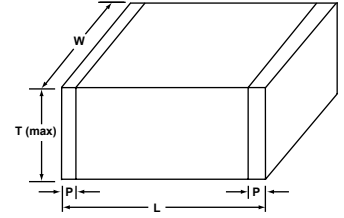
For additional capacitance values and working voltages, please contact us.

VOLTAGE		3000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V
CAP 1.0	1R0					
(pF) 1.5	1R5					
2.2	2R2					
3.0	3R0					
3.3	3R3					
3.9	3R9					
4.7	4R7					
5.6	5R6					
6.8	6R8					
8.2	8R2					
10	100					
12	120					
15	150					
18	180					
22	220					
27	270					
33	330					
39	390					
47	470					
56	560					
68	680					
82	820					
100	101					
120	121					
150	151					
180	181					
220	221					
270	271					
330	331					
390	391					
470	471					
560	561					
680	681					
820	821					
1000	102					
1200	122					
1500	152					
1800	182					
2200	222					
2700	272					
3300	332					
3900	392					
4700	472					
5600	562					
6800	682					
8200	822					
(µF) 0.010	103					
0.012	123					
0.015	153					
0.018	183					
0.022	223					
0.027	273					
0.033	333					
0.039	393					
0.047	473					
0.056	563					
0.068	683					
0.082	823					
0.100	104					
0.120	124					
0.150	154					
0.180	184					
0.220	224					
0.270	274					
0.330	334					
0.390	394					
0.470	474					
0.560	564					
0.680	684					

Voltage over 3000V
are available
upon request.

Contact us for more information.

SIZE			100V~3000V
(L)	LENGHT	mm	4.57 ± 0.25
(W)	WIDTH	mm	6.35 ± 0.25
(T)	THICKNESS	mm	3.05 Max
(P)	TERMINATION	mm	0.76



VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10															
(pF) 0.12	R12															
0.15	R15															
0.18	R18															
0.22	R22															
0.27	R27															
0.33	R33															
0.38	R38															
0.47	R47															
0.50	R50															
0.56	R56															
0.68	R68															
0.82	R82															
1.0	1R0															
1.2	1R2															
1.5	1R5															
1.8	1R8															
2.2	2R2															
2.7	2R7															
3.3	3R3															
3.9	3R9															
4.7	4R7															
5.6	5R6															
6.8	6R8															
8.2	8R2															
10	100															
12	120															
15	150															
18	180															
22	220															
27	270															
33	330															
39	390															
47	470															
56	560															
68	680															
82	820															
100	101															
120	121															
150	151															
180	181															
200	201															
220	221															
270	271															
330	331															
390	391															
470	471															
560	561															
680	681															
820	821															
1000	102															
1200	122															
1500	152															
1800	182															
2200	222															
2700	272															
3300	332															
3900	392															
4700	472															
5600	562															
6800	682															
8200	822															

Continues on next page...

MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.010	103															
(µF) 0.012	123															
0.015	153															
0.018	183															
0.022	223															
0.027	273															
0.033	333															
0.039	393															
0.047	473															
0.056	563															
0.068	683															
0.082	823															
0.100	104															
0.120	124															
0.150	154															
0.180	184															
0.220	224															
0.330	334															
0.470	474															
0.680	684															
0.820	824															
1.0	105															
1.2	125															
1.5	155															
2.2	225															
3.3	335															
3.9	395															



VOLTAGE		500					1000					2000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP	0.15	R15														
(pF)	0.18	R18														
	0.22	R22														
	0.27	R27														
	0.33	R33														
	0.38	R38														
	0.47	R47														
	0.50	R50														
	0.56	R56														
	0.68	R68														
	0.82	R82														
	1.0	1R0														
	1.2	1R2														
	1.5	1R5														
	1.8	1R8														
	2.2	2R2														
	2.7	2R7														
	3.3	3R3														
	3.9	3R9														
	4.7	4R7														
	5.6	5R6														
	6.8	6R8														
	8.2	8R2														
	10	100														
	12	120														
	15	150														
	18	180														
	22	220														
	27	270														
	33	330														
	39	390														
	47	470														
	56	560														
	68	680														
	82	820														
	100	101														
	120	121														
	150	151														
	180	181														
	220	221														
	270	271														
	330	331														
	390	391														
	470	471														
	560	561														
	680	681														
	820	821														
	1000	102														
	1200	122														
	1500	152														
	1800	182														
	2200	222														
	2700	272														
	3300	332														
	3900	392														
	4700	472														
	5600	562														
	6800	682														
	8200	822														
(μF)	0.010	103														
	0.012	123														
	0.015	153														
	0.018	183														
	0.022	223														
	0.027	273														
	0.033	333														
	0.039	393														
	0.047	473														
	0.056	563														
	0.068	683														
	0.082	823														
	0.100	104														
	0.120	124														
	0.150	154														
	0.220	224														
	0.330	334														

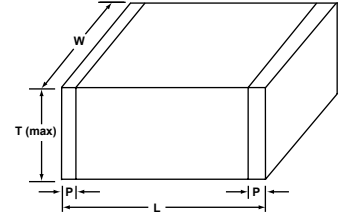
For additional capacitance values and working voltages, please contact us.

VOLTAGE		3000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V
CAP	1.0	1R0				
(pF)	1.5	1R5				
	2.2	2R2				
	3.0	3R0				
	3.3	3R3				
	3.9	3R9				
	4.7	4R7				
	5.6	5R6				
	6.8	6R8				
	8.2	8R2				
	10	100				
	12	120				
	15	150				
	18	180				
	22	220				
	27	270				
	33	330				
	39	390				
	47	470				
	56	560				
	68	680				
	82	820				
	100	101				
	120	121				
	150	151				
	180	181				
	220	221				
	270	271				
	330	331				
	390	391				
	470	471				
	560	561				
	680	681				
	820	821				
	1000	102				
	1200	122				
	1500	152				
	1800	182				
	2200	222				
	2700	272				
	3300	332				
	3900	392				
	4700	472				
	5600	562				
	6800	682				
	8200	822				
(µF)	0.010	103				
	0.012	123				
	0.015	153				
	0.018	183				
	0.022	223				
	0.027	273				
	0.033	333				
	0.039	393				
	0.047	473				
	0.056	563				
	0.068	683				
	0.082	823				
	0.100	104				
	0.120	124				
	0.150	154				
	0.180	184				
	0.220	224				
	0.270	274				
	0.330	334				
	0.390	394				
	0.470	474				
	0.560	564				
	0.680	684				

Voltage over 3000V are available upon request.

Contact us for more information.

SIZE			100V~3000V
(L)	LENGHT	mm	5.59 ± 0.25
(W)	WIDTH	mm	5.08 ± 0.25
(T)	THICKNESS	mm	4.06 Max
(P)	TERMINATION	mm	1.02



VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10															
(pF) 0.12	R12															
0.15	R15															
0.18	R18															
0.22	R22															
0.27	R27															
0.33	R33															
0.38	R38															
0.47	R47															
0.50	R50															
0.56	R56															
0.68	R68															
0.82	R82															
1.0	1R0															
1.2	1R2															
1.5	1R5															
1.8	1R8															
2.2	2R2															
2.7	2R7															
3.3	3R3															
3.9	3R9															
4.7	4R7															
5.6	5R6															
6.8	6R8															
8.2	8R2															
10	100															
12	120															
15	150															
18	180															
22	220															
27	270															
33	330															
39	390															
47	470															
56	560															
68	680															
82	820															
100	101															
120	121															
150	151															
180	181															
200	201															
220	221															
270	271															
330	331															
390	391															
470	471															
560	561															
680	681															
820	821															
1000	102															
1200	122															
1500	152															
1800	182															
2200	222															
2700	272															
3300	332															
3900	392															
4700	472															
5600	562															
6800	682															
8200	822															

Continues on next page...

MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.010	103															
(µF) 0.012	123															
0.015	153															
0.018	183															
0.022	223															
0.027	273															
0.033	333															
0.039	393															
0.047	473															
0.056	563															
0.068	683															
0.082	823															
0.100	104															
0.120	124															
0.150	154															
0.180	184															
0.220	224															
0.330	334															
0.470	474															
0.680	684															
1.0	105															
1.5	155															
2.2	225															
3.3	335															
4.7	475															
10	106															
22	226															
47	476															
100	107															



VOLTAGE		500					630					1000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.56	R56															
(pF) 0.68	R68															
0.82	R82															
1.0	1R0															
1.2	1R2															
1.5	1R5															
1.8	1R8															
2.2	2R2															
2.7	2R7															
3.3	3R3															
3.9	3R9															
4.7	4R7															
5.6	5R6															
6.8	6R8															
8.2	8R2															
10	100															
12	120															
15	150															
18	180															
22	220															
27	270															
33	330															
39	390															
47	470															
56	560															
68	680															
82	820															
100	101															
120	121															
150	151															
180	181															
220	221															
270	271															
330	331															
390	391															
470	471															
560	561															
680	681															
820	821															
1000	102															
1200	122															
1500	152															
1800	182															
2200	222															
2700	272															
3300	332															
3900	392															
4700	472															
5600	562															
6800	682															
8200	822															

Continues on next page...

MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

VOLTAGE		500					630					1000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.010	103															
(µf) 0.012	123															
0.015	153															
0.018	183															
0.022	223															
0.027	273															
0.033	333															
0.039	393															
0.047	473															
0.056	563															
0.068	683															
0.082	823															
0.100	104															
0.120	124															
0.150	154															
0.180	184															
0.220	224															
0.330	334															
0.470	474															
0.680	684															
1.0	105															
1.5	155															
2.2	225															
3.3	335															
4.7	475															
10	106															
22	226															
47	476															
100	107															

VOLTAGE		2000					3000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 3.0	3R0										
(pF) 3.3	3R3										
3.9	3R9										
4.7	4R7										
5.6	5R6										
6.8	6R8										
8.2	8R2										
10	100										
12	120										
15	150										
18	180										
22	220										
27	270										
33	330										
39	390										
47	470										
56	560										
68	680										
82	820										
100	101										
120	121										
150	151										
180	181										
220	221										
270	271										
330	331										
390	391										
470	471										
560	561										
680	681										
820	821										
1000	102										
1200	122										
1500	152										
1800	182										
2200	222										
2700	272										
3300	332										
3900	392										
4700	472										
5600	562										
6800	682										
8200	822										

Voltage over 3000V are available upon request.
 Contact us for more information.

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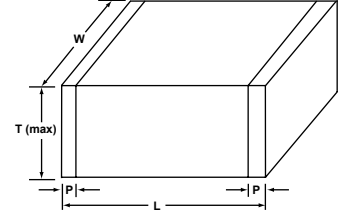
MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

VOLTAGE		2000					3000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.010	103										
(µf) 0.012	123										
0.015	153										
0.018	183										
0.022	223										
0.027	273										
0.033	333										
0.039	393										
0.047	473										
0.056	563										
0.068	683										
0.082	823										
0.100	104										
0.120	124										
0.150	154										
0.180	184										
0.220	224										
0.330	334										
0.470	474										
0.680	684										
1.0	105										
1.5	155										
2.2	225										
3.3	335										
4.7	475										
10	106										
22	226										
47	476										
100	107										

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SIZE			100V~3000V
(L)	LENGHT	mm	5.59 ± 0.25
(W)	WIDTH	mm	6.35 ± 0.25
(T)	THICKNESS	mm	5.08 (COG=4.06) Max
(P)	TERMINATION	mm	1.02



VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.10	R10															
(pF) 0.12	R12															
0.15	R15															
0.18	R18															
0.22	R22															
0.27	R27															
0.33	R33															
0.38	R38															
0.47	R47															
0.50	R50															
0.56	R56															
0.68	R68															
0.82	R82															
1.0	1R0															
1.2	1R2															
1.5	1R5															
1.8	1R8															
2.2	2R2															
2.7	2R7															
3.3	3R3															
3.9	3R9															
4.7	4R7															
5.6	5R6															
6.8	6R8															
8.2	8R2															
10	100															
12	120															
15	150															
18	180															
22	220															
27	270															
33	330															
39	390															
47	470															
56	560															
68	680															
82	820															
100	101															
120	121															
150	151															
180	181															
200	201															
220	221															
270	271															
330	331															
390	391															
470	471															
560	561															
680	681															
820	821															
1000	102															
1200	122															
1500	152															
1800	182															
2200	222															
2700	272															
3300	332															
3900	392															
4700	472															
5600	562															
6800	682															
8200	822															

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MULTILAYER CERAMIC CHIP CAPACITORS -HIGH VOLTAGE

VOLTAGE		100					200					250				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP 0.010	103															
(µF) 0.012	123															
0.015	153															
0.018	183															
0.022	223															
0.027	273															
0.033	333															
0.039	393															
0.047	473															
0.056	563															
0.068	683															
0.082	823															
0.100	104															
0.120	124															
0.150	154															
0.180	184															
0.220	224															
0.330	334															
0.470	474															
0.680	684															
1.0	105															
1.2	125															
1.5	155															
1.8	185															
2.2	225															
3.3	335															
4.7	475															
10	106															
22	226															
47	476															



VOLTAGE		500					1000					2000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V	COG	X5R	X7R	Z5U	Y5V
CAP	4.7	4R7														
(pF)	5.6	5R6														
	6.8	6R8														
	8.2	8R2														
	10	100														
	12	120														
	15	150														
	18	180														
	22	220														
	27	270														
	33	330														
	39	390														
	47	470														
	56	560														
	68	680														
	82	820														
	100	101														
	120	121														
	150	151														
	180	181														
	220	221														
	270	271														
	330	331														
	390	391														
	470	471														
	560	561														
	680	681														
	820	821														
	1000	102														
	1200	122														
	1500	152														
	1800	182														
	2200	222														
	2700	272														
	3300	332														
	3900	392														
	4700	472														
	5600	562														
	6800	682														
	8200	822														
(μF)	0.010	103														
	0.012	123														
	0.015	153														
	0.018	183														
	0.022	223														
	0.027	273														
	0.033	333														
	0.039	393														
	0.047	473														
	0.056	563														
	0.068	683														
	0.082	823														
	0.100	104														
	0.120	124														
	0.150	154														
	0.180	184														
	0.220	224														
	0.270	274														
	0.330	334														
	0.390	394														
	0.470	474														
	0.560	564														
	0.680	684														
	0.820	824														
	1.000	105														
	1.200	125														
	1.500	155														
	1.800	185														
	2.200	225														
	2.700	275														

VOLTAGE		3000				
Capacitance	CODE	COG	X5R	X7R	Z5U	Y5V
CAP	4.7	4R7				
(pF)	5.6	5R6				
	6.8	6R8				
	8.2	8R2				
	10	100				
	12	120				
	15	150				
	18	180				
	22	220				
	27	270				
	33	330				
	39	390				
	47	470				
	56	560				
	68	680				
	82	820				
	100	101				
	120	121				
	150	151				
	180	181				
	220	221				
	270	271				
	330	331				
	390	391				
	470	471				
	560	561				
	680	681				
	820	821				
	1000	102				
	1200	122				
	1500	152				
	1800	182				
	2200	222				
	2700	272				
	3300	332				
	3900	392				
	4700	472				
	5600	562				
	6800	682				
	8200	822				
(μF)	0.010	103				
	0.012	123				
	0.015	153				
	0.018	183				
	0.022	223				
	0.027	273				
	0.033	333				
	0.039	393				
	0.047	473				
	0.056	563				
	0.068	683				
	0.082	823				
	0.100	104				
	0.120	124				
	0.150	154				
	0.180	184				
	0.220	224				
	0.270	274				
	0.330	334				
	0.390	394				
	0.470	474				
	0.560	564				
	0.680	684				
	0.820	824				
	1.000	105				
	1.200	125				
	1.500	155				
	1.800	185				
	2.200	225				
	2.700	275				

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