PSA

PDC - MLCC Products

PASSIVE SYSTEM ALLIANCE

Prosperity Dielectrics Co., Ltd.

EuroTronix

AS 9100C Aerospace Quality Management System
航太品質管理系統認證
TS 16949 Automotive Quality Management System
汽車品質管理系統認證
UL Safety Certified 安規認證

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PDC MLCC Product Lineup

General

01005~2225
NPO, X7R, X7S, X6S, X5R, Y5V

High Frequency

RF Series
Ultra Hi-Q/ Low ESR

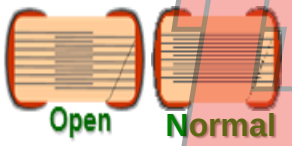
Custom-mode/ODM

Arc Prevention
Big size
EMI Discoidal Array
Pulse MLCC &
Chip-R Composite module

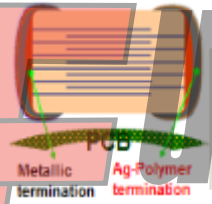
Power & High Reliability

0402~2225 **100V~4kV**

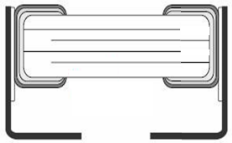
OP Series
Open Mode



FP Series Soft Terminal



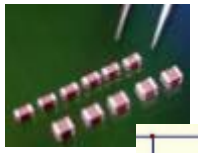
Mega Cap

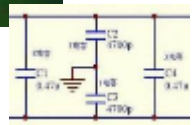


FE Series

Safety & High Reliability

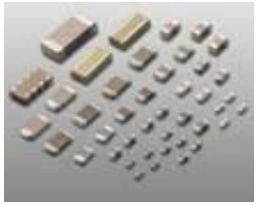
FH Series **X1/Y2**
FK Series **X2**





HT Series X8G/X8R
High Temperature:**-55~150℃**

Automotive

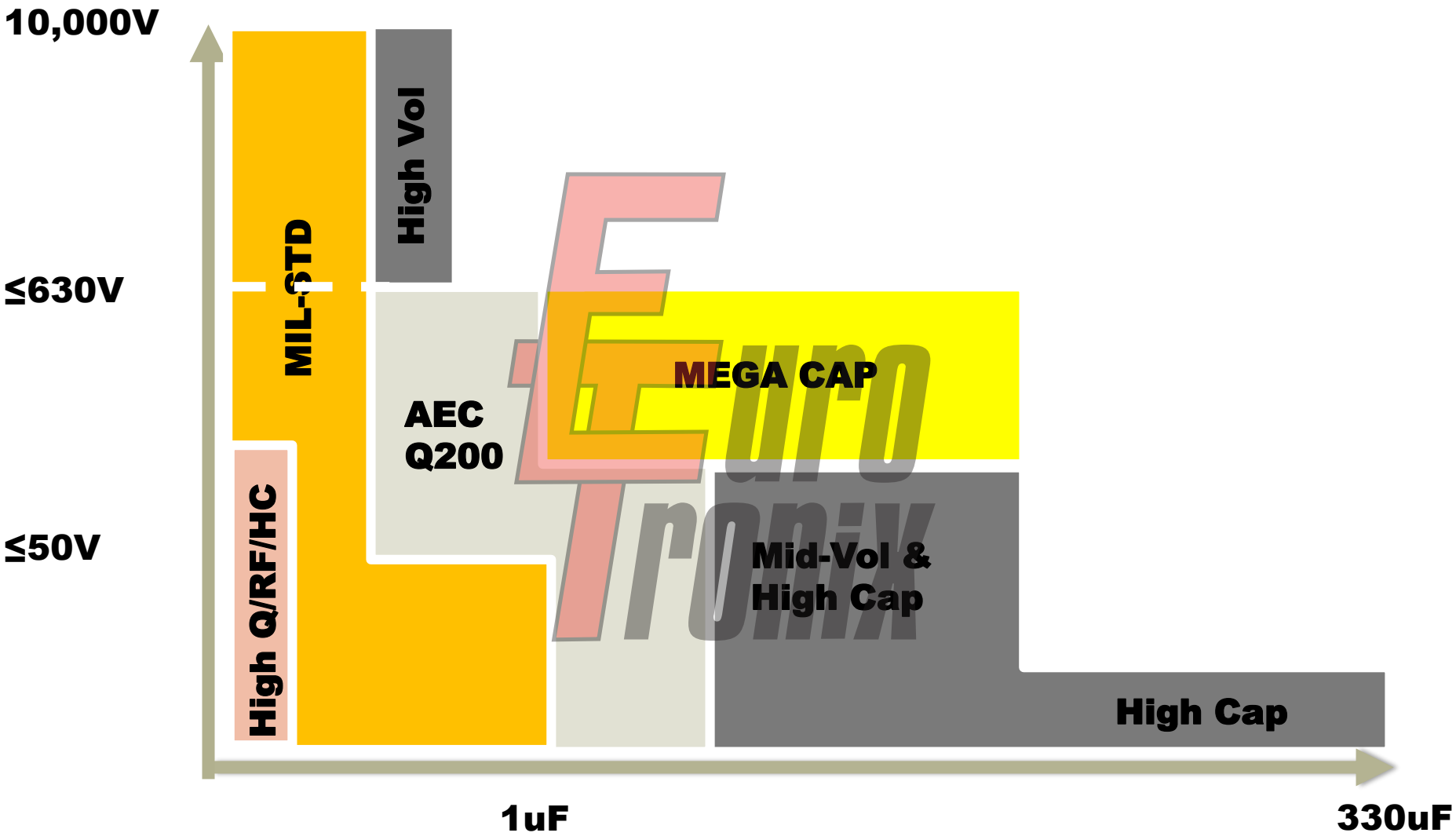


MT Series
AEC-Q200

MG Series
Non AEC-Q200

MY Series
AEC-Q200+Array
0402x4 (MY24)
0603x4 (MY34)

PDC MLCC Product Series Map



Safety Certified MLCC

Safety Capacitor Applications (X1/Y2 & X2)

Applications:

Designed for AC surge and lightning protection in line-to-ground interface.

1. Switching Power Supply
2. Modems/ADSL/VOIP Ethernet Protection.(2.5KV~5KV/ AC250V)
3. Computer networks.(2.5KV~5KV/AC250V)

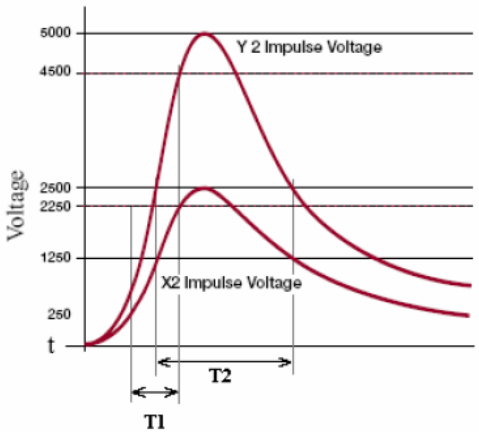


Figure 1. Impulse Voltage Wave Form

IEC 60950(Telecom applications) T1=10us T2=700us
IEC 60384-14(Power applications) T1=1.2us
T2=50us

Rating	Rated Voltage Vac	Dielectric Withstanding Voltage	Impulse Voltage
Y2	250Vac	1500Vac at 60Hz	5000V
X1	250Vac	1500Vac at 60Hz	4000V
X2	250Vac	1500Vac at 60Hz	2500V

Series	Description	Working Voltage	Impulse Voltage	T.C.C	1808	1812	2211	2220
FK	X1/Y2 Safety certified Capacitor UL/TUV(X1/Y2安規電容)	AC250V	5KV	NPO	271	471	721	
				X7R	102	102	222	472
FH	X2 Safety certified Capacitor UL/TUV(X2安規電容)	AC250V	2.5KV	NPO	102	102		
				X7R	222	562		

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FP Series Soft Termination MLCC

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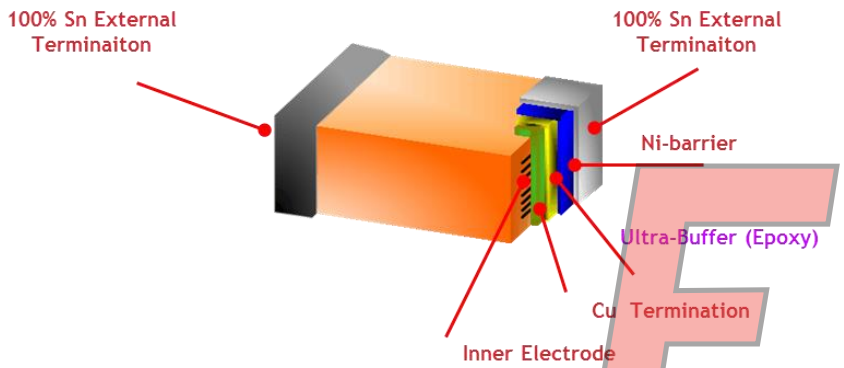
PDC FP Series solve risk of bending crack structure



PDC FP series is added a special termination material (Ultra-Buffer)between ceramic body and Ni-barrier that can absorb mechanical stress to prevent bending crack occurred.

Size / Cap Max . / Rated Voltage	0603	0805	1206	1210	1808	1812	1825	2220	2225
50V	104	224	105	475		335	106	106	106
100V	333	224	105	225		335	106	106	106
200V/250V	103	333	104	684		105	225	225	275
500V		223	333	124		224	684	684	105
630V		223	333	124		224	684	684	105
1KV			223	333	273	563	104	124	154
2KV			222	562	562	103	273	273	333
3KV					222	472	123	123	153

The capacitance listed in this table is the maximum available capacitance.

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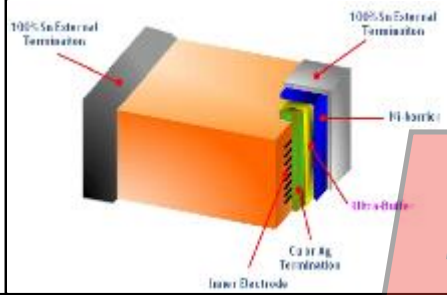
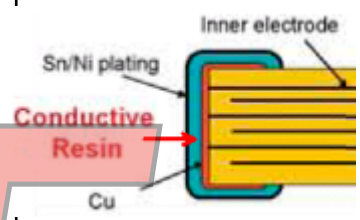
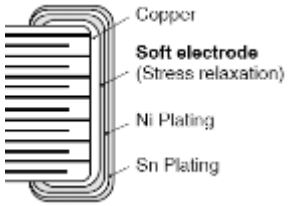
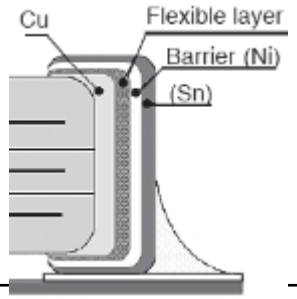
Soft termination products cross reference

		PDC	Murata	Yageo	Samsung
					
Termination	Inner layer	Cu	Cu	Cu	Cu
	Middle 1st layer	Ultra-Buffer	Conductive Cu polymer	Soft electrode	Soft termination Flexible layer
	Middle 2nd layer	Ni	Ni	Ni	Ni
	Outer layer	Sn	Sn	Sn	Sn
Coding rule(eg.0805)		FP21******	GRJ21**** / GCJ21****	CS0805****	CL*********4***/ CL *********5***
Bending Spec		>=5mm	>=3mm	>=3mm	Class Ⅰ:3mm; ClassⅡ:2mm
Dielectric		NP0/X7R	X7R	X7R	C0G/X7R
Size		0603~2225	0603~2220	0603~1206	0402~1206
Rated Voltage		50V~3000V	10V~1000V	16V~630V	10V~100V
Capacitance		100pF~10uF	1000pF~10uF	100pF~1uF	100pF~22uF

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FV Series Arc Prevention MLCC

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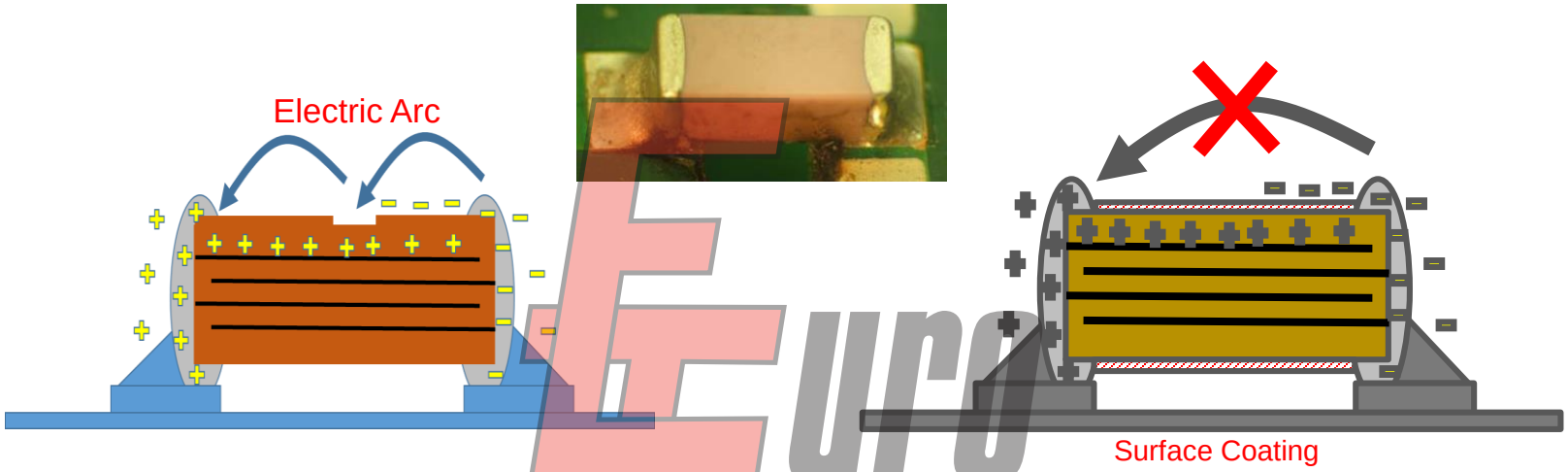
Arc Prevention MLCC



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Product range

Chip Size	1206	1808	2211	2220
Voltage	50V to 5000V			
Dielectric	Class II / Class I			

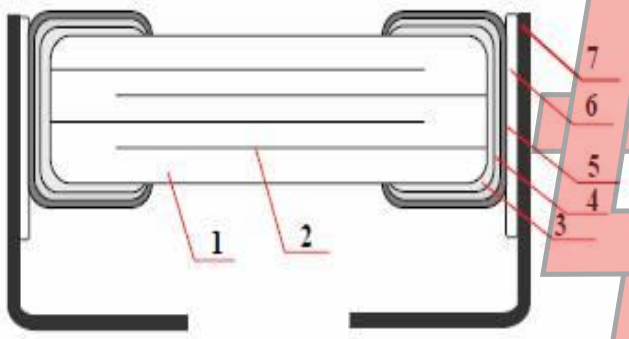
FE Series High Reliability Mega Cap

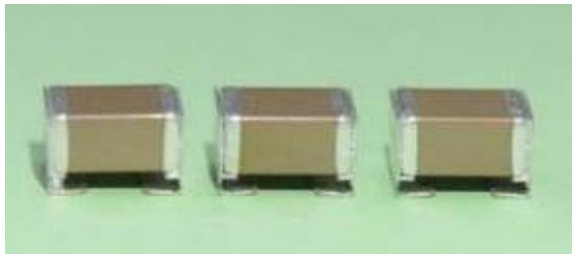
Mega Cap Products Series

Meg Cap Products Series

High Reliability

Products





No	Part	Material
1	Ceramic Dielectric	$BaTiO_3$
2	Electrode	Ni
3	Termination	Cu
4		Ni
5		Sn
6	Joint	High Temperatue Solder(Pb free)
7	Metal Lead Frame	Cu Alloy

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Mega Cap Products Series

Higher Capacitance as same mounting area

1210		1812		2220 / 1825 / 2225	
Stacked Chip Number	Capacitance	Stacked Chip Number	Capacitance	Stacked Chip Number	Capacitance
1	1 time	1	1 time	1	1 time
2	2 time	2	2 time	2	2 time
				3	3 time
				4	4 time

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More stacked chip number, more higher capacitance.

Mega Cap Products Series

Higher Capacitance as same mounting area

	1210		1812		2220			
	1 stacked	2 stacked	1 stacked	2 stacked	1 stacked	2 stacked	3 stacked	4 stacked
TDK	◎		◎	◎	◎	◎		
Murata	◎		◎	◎	◎	◎		
PDC	◎	◎	◎	◎	◎	◎	◎	◎

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PDC could support higher capacitance products.

Mega Cap Products Series

Feature of each Capacitors

	Normal MLCC	Mega Cap	Ta Cap
Shape			
Polarity	no	no	yes
Bending Strength	good	excellent	excellent
Voltage Proof	excellent	excellent	Bad
ESR	excellent	excellent	Bad
Reliability	good	excellent	Bad
Price	excellent	good	Excellent

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MG/MT Series Automotive MLCC

Automotive Application

Reliability

	MLCC series
AEC-Q200 Qualified Grade 1	MT / MY (array) RT / ST
Non AEC-Q200 qualified Most passenger compartment	MG / OP / SH / SG RF / HH
General Purpose MLCC Non Automotive	Standard series (General purpose)

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Standard series of Automotive MLCC

MG series MLCC (Non AEC-Q200 series)

Dielectric	NP0	X7R	X5R
Size	0402, 0603, 0805, 1206, 1210, 1812		
Capacitance range	0.5pF to 0.033uF	100pF to 2.2uF	0.056uF to 10uF
Rated voltage (WVDC)	10V~630V	6.3V ~ 250V	6.3V, 10V, 16V, 25V
Operating temperature	-55 to +125˚C		-55 to +85˚C
Capacitance characteristic	±30ppm/˚C	±15%	
Termination	Ni/Sn (lead-free termination)		

MT series MLCC (AEC-Q200 Qualified series)

Dielectric	X7R			NP0		
Range	Size	Rated voltage	Capacitance range	Size	Rated voltage	Capacitance range
	0402	10~50V	100~10nF	0402	10V ~ 50V	0.5pF ~ 1000pF
	0603	10~50V	100pF~100nF	0603	10V ~ 100V	0.5pF ~ 1000pF
		100V	100pF~10nF		200V	0.5pF~100pF
	0805	10~630V	~1uF(25V), ~220nF(50V), ~0.1uF(100V), ~22nF(250V), ~10nF(630V)	0805	10~50V	0.5pF~ 4.7nF
					100V	0.5pF~1nF
	1206	10~50V	220pF~1uF	1206	10~100V	1.2pF~10nF
		100~630V	220pF~220nF(100V) ~22nF(250V), ~10nF(630V)		200~630V	1.2pF~2.2nF
				1210	250V	10pF~3.9nF
Operating temperature	-55 to +125˚C					
Capacitance characteristic	+/- 15%			±30ppm/˚C		
Termination	Ni/Sn (lead-free termination)					

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RF Series Hi-Frequency MLCC

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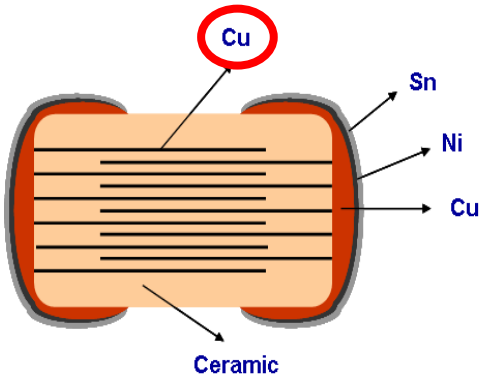
PDC RF-series MLCC

FEATURES

1. Made by BME technology with Cu inner electrodes.
2. Excellent Q level at high frequency applications.
3. Having high SRF characteristic.
4. Offer ultra low capacitance to 0.1pF.
5. Offer high precision capacitance tolerance to ±0.05pF
6. Lead-free and Meet RoHS

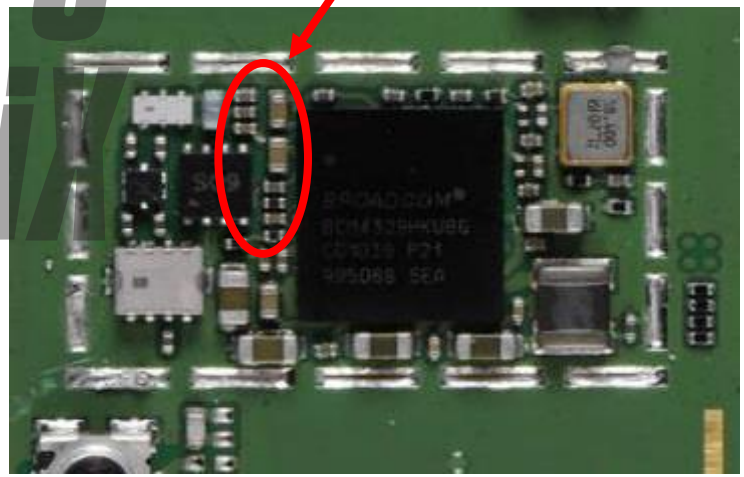
APPLICATIONS

1. Mobile phones and telecommunication equipments.
2. Related to satellite equipments and products.
3. RF Modules: Power amplifier, VCO.



Dielectric	NP0 characteristic
Size	Ultra-small : 01005 Regular : 0201, 0402, 0603, 0805 Square : 0505, 1111
Rated voltage (WVDC)	01005 : 16V/25V (New launch) 0201 : 6.3V ~ 50V 0402 : 50V ~ 200V 0603 : 50V ~ 250V 0805 : 50V ~ 500V 0505 : 50V ~ 250V 1111: 500V (New launch)

PDC's RF03N-MLCC applied in WiFi 802.11 a/b/g/n/ac/ad module



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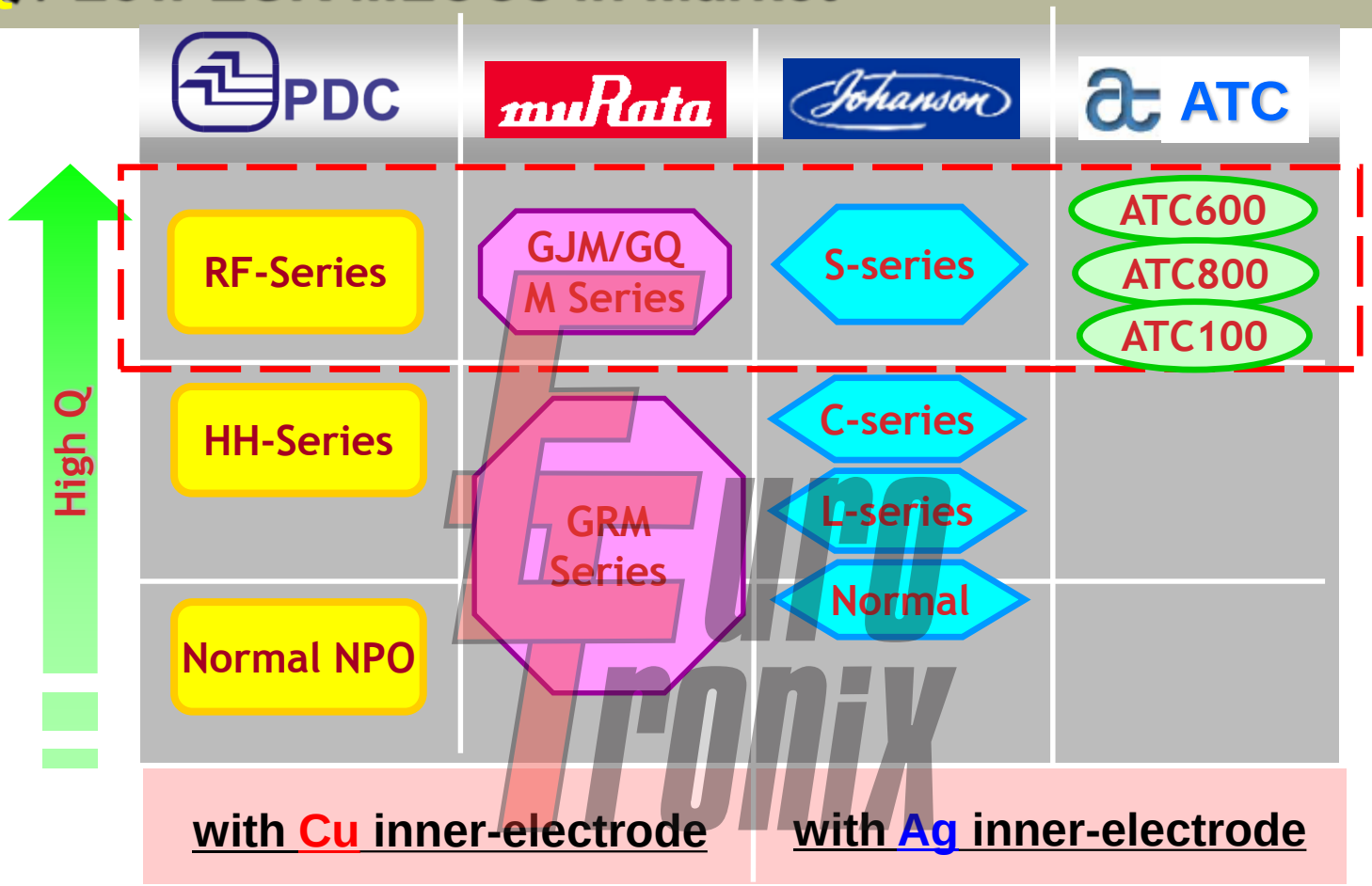
High Q / Low ESR MLCCs in Market



PDC classifies & provides different Q level of NPO-MLCCs for different application fields and competitive prices.

MLCC OEM/ODM Solutions

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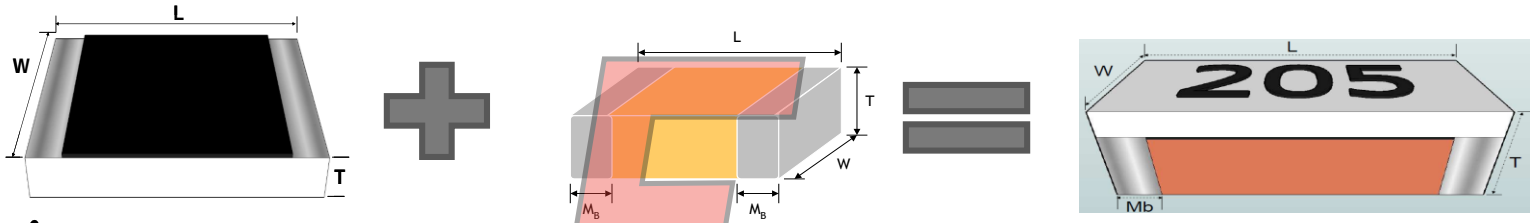
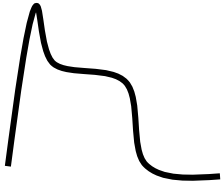
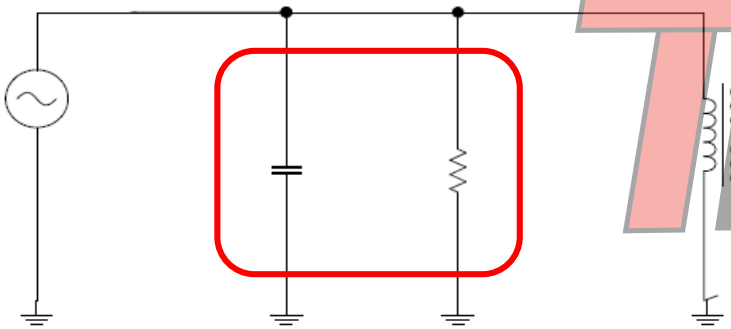
High Voltage MLCC & Chip-R modules





Impulse 2.8KV



Resistor + MLCC

Chip Size : 2010
Power rating : 0.75Watt
Resistance 10M-100M
Capacitance : <102
Rating Voltage : 3KV

* We can provide customer made capacitance and resistance.

Custom-made/ODM MLCC

Definition

- Custom-made MLCC is a product with particular requirements from a customer for a project. These requirements maybe include case size, quality and capacitance.
- ODM MLCC is a product designed and developed by PDC as per quality requirements addressed by customer.

Applications

- High power SPS (Switching Power Supply)
- Isolations
- DC-DC Converter
- Medical Applications
- Industrial Applications

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MLCC Big size Product MAP

Rated Voltage	50V	100V	200V/250V	500V/630V
Dielectric	X7R	X7R	X7R	X7R
1210	475	225	474	563
1812	275	225	105	124
1825	565	475	225	334
2020	565	475	225	334
2220	685	475	225	474
2225	685	475	225	105
3035	685	475	335	125
3333	825	475	335	125
3530	825	475	475	125
3640	825	565	475	225
3940	825	655	565	225
4045	106	685	565	225
4238	106	685	565	335
4252	106	685	685	335

*** We also can provide customer made product range , please contact with PDC local representative.**

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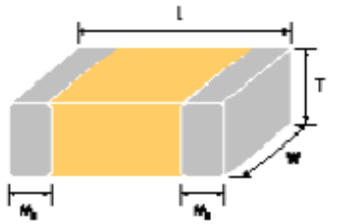
Custom-made/ODM MLCC - Physical Dimension

Size (Inch)	L (mm)	W (mm)	Tmax (mm)	M_B min (mm)
2020	5.00 ± 0.20	5.00 ± 0.20	3.70	0.30
3035	7.62 ± 0.38	8.89 ± 0.38	5.08	0.30
3333	8.38 ± 0.38	8.38 ± 0.38	5.08	0.30
3530	8.89 ± 0.38	7.62 ± 0.38	5.08	0.30
3640	9.14 ± 0.38	10.16 ± 0.38	5.08	0.30
3940	9.90 ± 0.38	10.16 ± 0.38	5.08	0.30
4045	10.16 ± 0.38	11.43 ± 0.38	5.08	0.30
4238	10.67 ± 0.38	9.65 ± 0.38	5.08	0.30
4252	10.67 ± 0.38	13.08 ± 0.38	5.08	0.30
4540	11.43 ± 0.38	10.16 ± 0.38	5.08	0.30
5550	13.97 ± 0.38	12.70 ± 0.38	5.08	0.30
5780	14.48 ± 0.38	20.32 ± 0.38	5.08	0.30
5868	14.73 ± 0.38	17.27 ± 0.38	5.08	0.30
6560	16.51 ± 0.38	15.24 ± 0.38	5.08	0.30
7680	19.30 ± 0.38	20.32 ± 0.38	5.08	0.30
7875	19.81 ± 0.38	19.05 ± 0.38	5.08	0.30
7880	19.81 ± 0.38	20.32 ± 0.38	5.08	0.30
8550	21.59 ± 0.38	12.70 ± 0.38	5.08	0.30
8840	22.35 ± 0.38	10.16 ± 0.38	5.08	0.30
42102	10.67 ± 0.38	25.91 ± 0.38	5.08	0.30
10642	26.92 ± 0.38	10.67 ± 0.38	5.08	0.30
13060	33.02 ± 0.38	15.24 ± 0.38	5.08	0.30



The outline of MLCC

If the dimension you are looking for is not contained, please don't hesitate just contact us and we can develop suitable dimension per your applications and circuit design

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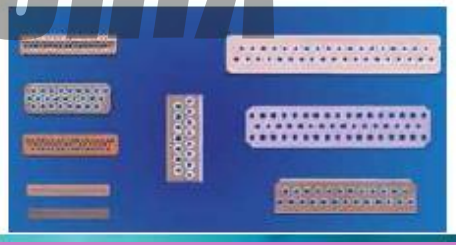
Custom-made/ODM MLCC

EMI DISCOIDAL Arrays Capacitor(5GHz)

Competitor	Application	Type	Physical	Dielectric	Connect Layout	Rate Voltage	Capacitance Range	Terminations Material
AMC	EMI Filtering	Planar Capacitor Arrays	Circular Arrays	NPO X7R	MIL-1560/ MIL-1554/ MIL-1669/ MIL-1651/ MIL-1698/ MIL-33702/ MIL-AUDIO	Up to 2000V	47pF ~ 800nF	Silver or Ti/W/Ni w/Au Sputter(100 μ inches)
			Rectangular Arrays	NPO X7R	AR-010 Through AR-150	Up to 1330V	47pF ~ 940nF	
			D-Subminature Rectangular Arrays	NPO X7R	AR-010 Through AR-150	Up to 1330V	47pF ~ 210nF	
AVX	Implantable Medical Military Aerospace EMI Filter Assembly/Arrays	Planar Capacitor Arrays	Rectangular Arrays	NPO X7R	AR-010 Through AR-150	200 ~ 500V	82pF ~ 4.7nF	Silver-Palladium-Platinum
PDC (OEM)	Implantable Medical Military EMI Filter Assembly/Arrays	Planar Capacitor Arrays	CIRCULAR SUB D ARINC	NPO/ X7R	MIL-STD-1651A MIL-STD-1560A MIL-STD-1669 MIL-STD-1554 MIL-C-24308 SUB "D" MIL-C-83723 MICROSTYLE	Detail Specification please contact with PDC.		N/A, for customer application connect assembly



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Application of Circuit

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Application of Circuit

Function	Product Type	Capacitance	Voltage	Size	Material
Smoothing	Low Volt.	1uF ~100uF	3.3V/6.3V/10V/16V	≦1206	X7R/X5R
	Mid Volt.	1uF~22uF	25/50V	≧1206	X7R
	High Volt.	0.1uF~4.7uF	100V/250V/500V/1KV	≧1206	X7R
De-coupling	High Volt.	1p~33pF	3000/5000/6000V	≧1808	NPO
Oscillation	Low Vol.	0.1nF~22nF	10V/16V	≦0805	NPO
	High Vol.	1nF~10nF	250V/500V	≧1210	NPO
Snubber	High Voltage	1nF~10nF	100/250/500/1000V	≧0805	X7R
Tuning	High Freq.	0.1p~1nF	50V/100V	≦0603	NPO
Interface	High Volt.	0.68~2.2nF	2000V/3000V	≧1206	X7R
	Safety Cap	0.68~2.2nF	AC 250V	≧1206	X7R

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Application of Power Circuit 電源電路應用

Function	Product Type	Capacitance	Voltage	Size	Material
Smoothing 平滑電路	FS Series	1uF ~330uF	3.3V to 25V	≦1206	X7R/X5R
	FM/FS Series	0.1uF~4.7uF	100V/250V/500V	≧1206	X7R
EMI (De)Coupling (去)偶合	FM/FV Series	0.1nF~10nF	250V/630V/ 1000V/3000V	≧0805	NPO/X7R
Oscillation 振盪電路	FM Series	1nF~10nF	250V/500V	≧1210	NPO
Snubber 緩衝電路	FM/FV Series	1nF~10nF	100/250/500/ 1000V	≧0805	X7R

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Smoothing Circuit (平滑電路)

Series	Description	Working Voltage	T.C.C	1206	1210	1808	1812	1825	2020	2211	2220	2225
FS	Smoothing Function Capacitor ≧50v ,1uF (濾波電容)	50V	X7R	475	225		275	565	565		685	685
			X5R	475	106		106					
		100V	X7R	105	225		225	475	475		475	475
		200/250 V	X7R				105	225	225		225	225
FG	Big size MLCC (大尺寸電容)	50-10KV	X7R	Chip Size 3035 to 13060 , Capacitance Please contact with PDC								

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EMI (De)Coupling Circuit /(去)偶合電路

Series	Description	Working Voltage	T.C.C	1206	1210	1808	1812	1825	2020	2211	2220	2225
FV	High Voltage MLCC 1000V-6000V (高壓電容)	1KV	NP0	681	102	152	222	332	332	332	332	392
			X7R	103	103	123	473	683	683	104	104	104
		2KV	NP0	271	561	102	122	152	152	152	152	182
			X7R	222	222	222	472	682	682	822	822	103
		3KV	NP0	680	221	331	471	102	102	102	102	122
			X7R			102	182	222	222	272	272	332
		4KV	NP0			121	221	471	471	471	471	561
			X7R			561	821	102	102	122	122	152
		5KV	NP0						271	331	331	471
			X7R						821	821	102	102
		6KV	NP0						101	101	121	151
			X7R						681	681	821	821

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L/C Oscillation Circuit 電感電容振盪電路

Series	Description	Working Voltage	T.C.C	1210	1812	1825	2020	2220	2225
FM	Middle Voltage MLCC 100V-630V (中電壓電容)	250V	NPO	392	682	822	822	822	103
		500V	NPO	182	332	472	472	472	682
FL	Low Dissipation MLCC (低損型電容)	250V	X7E	154				684	
		500V	X7E	473					

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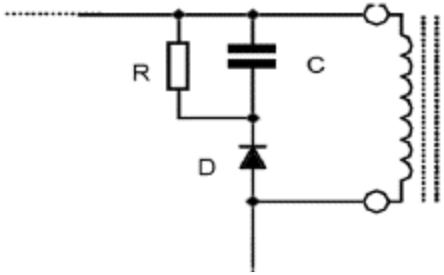
Snubber circuit (緩衝電路)



Series	Description	Working Voltage	T.C.C	0805	1206	1210	1808	1812	2211	2220
FM	Middle Voltage MLCC 100V-630V (中電壓電容)	250V	NPO	102	222	392		682		822
			X7R	333	104	474		105		225
		500V	NPO	391	222	182		332		472
			X7R	223	333	563		124		474
FV	High Voltage MLCC 1000V-6000V (高壓電容)	1KV	NP0		681	102	152	222	332	332
			X7R		103	103	123	473	104	104
		2KV	NP0		271	561	102	122	152	152
			X7R		222	222	222	472	822	822
		3KV	NP0		680	221	331	471	102	102
			X7R				102	182	272	272

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Interface Safety certified Capacitor

Series	Description	Working Voltage	Impulse Voltage	T.C.C	1808	1812	2211	2220
FK	X1/Y2 Safety certified Capacitor UL/TUV(X1/Y2安規電容)	AC250V	5KV	NPO	271	471	721	
				X7R	102	102	222	472
FH	X2 Safety certified Capacitor UL/TUV(X2安規電容)	AC250V	2.5KV	NPO	102	102		
				X7R	222	562		

Series	Description	Working Voltage	T.C.C	1206	1210	1808	1812	1825	2020	2211	2220	2225
FV	High Voltage MLCC 1000V-6000V (高壓電容)	1KV	NP0	681	102	152	222	332	332	332	332	392
			X7R	103	103	123	473	683	683	104	104	104
		2KV	NP0	271	561	102	122	152	152	152	152	182
			X7R	222	222	222	472	682	682	822	822	103
		3KV	NP0	680	221	331	471	102	102	102	102	122
			X7R			102	182	222	222	272	272	332
		4KV	NP0			121	221	471	471	471	471	561
			X7R			561	821	102	102	122	122	152
		5KV	NP0						271	331	331	471
			X7R						821	821	102	102
		6KV	NP0						101	101	121	151
			X7R						681	681	821	821

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Thank you!

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