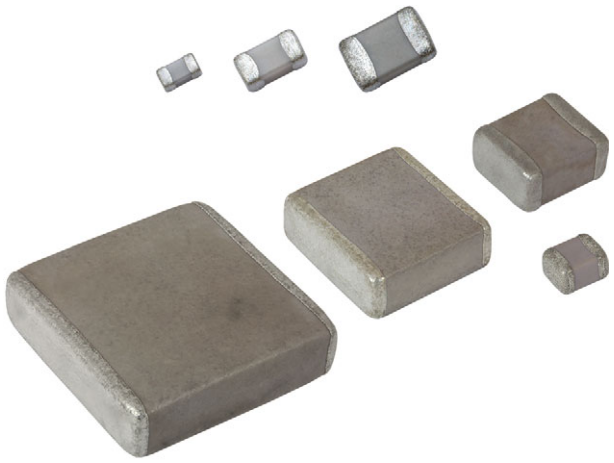
Surface Mount Multilayer Ceramic Chip Capacitors for High Frequency Applications



FEATURES

- Case size 0402, 0505, 0603, 0805, 1111, 2525, and 3838
- High frequency
- Ultra-stable, high Q dielectric material
- Non-magnetic copper termination “C”
- Lead (Pb)-free terminations code “X”
- Tin / lead termination code “L”
- Surface mount, wet build process
- Reliable Noble Metal Electrode (NME) system
- Made with a combination of design, materials, and tight process control to achieve very high field reliability
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb Available

RoHS* Available

HALOGEN FREE GREEN (5-2008) Available

Note

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

LINKS TO ADDITIONAL RESOURCES

S-Parameters | Simulation Tools | Related Documents | Packages | Technical Notes

APPLICATIONS

- RF and microwave instruments
- Base stations
- Wireless devices
- Broadband communication
- Medical instrumentation and test
- Military devices (radar, communication, etc.)
- Satellite communication

ELECTRICAL SPECIFICATIONS

Note

- Electrical characteristics at 25 °C unless otherwise specified

Operating Temperature:

-55 °C to +125 °C

Capacitance Range:

0402: 0.1 pF to 82 pF
0505: 0.1 pF to 1.0 nF
0603: 0.1 pF to 470 pF
0805: 0.1 pF to 1.0 nF
1111: 0.2 pF to 3.3 nF
2525: 1.0 pF to 3.0 nF
3838: 1.0 pF to 12 nF

Voltage Rating:

0402: 25 V_{DC} to 200 V_{DC}
0505: 50 V_{DC} to 250 V_{DC}
0603: 25 V_{DC} to 250 V_{DC}
0805: 25 V_{DC} to 500 V_{DC}
1111: 50 V_{DC} to 1500 V_{DC}
2525: 300 V_{DC} to 3600 V_{DC}
3838: 300 V_{DC} to 7200 V_{DC}

Temperature Coefficient of Capacitance (TCC):

C0G (D): 0 ppm/°C ± 30 ppm/°C from -55 °C to +125 °C with zero (0) V_{DC} applied

Dissipation Factor (DF):

C0G (D): 0.05 % max. at 1.0 V_{RMS} and 1 MHz for values ≤ 1000 pF

C0G (D): 0.05 % max. at 1.0 V_{RMS} and 1 kHz for values > 1000 pF

Aging Rate: 0 % maximum per decade

Insulation Resistance (IR):

at +25 °C and rated voltage 100 000 MΩ minimum or 1000 ΩF, whichever is less

at +125 °C and rated voltage 10 000 MΩ minimum or 100 ΩF, whichever is less

Dielectric Strength Test:

performed per method 103 of EIA-198-2-E.

Applied test voltages:

≤ 250 V_{DC}-rated: min. 200 % of rated voltage
> 250 V_{DC}- to 1000 V_{DC}-rated: min. 150 % of rated voltage
1500 V_{DC} and up: 120 % rated voltage

For technical questions, contact: mlccrf@vishay.com

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QUICK REFERENCE DATA

DIELECTRIC	CASE	MAXIMUM VOLTAGE (V)	CAPACITANCE	
			MINIMUM	MAXIMUM
D = HIFREQ	0402	200	0.1 pF	82 pF
	0505	250	0.1 pF	1 nF
	0603	250	0.1 pF	470 pF
	0805	500	0.1 pF	1.0 nF
	1111	1500	0.2 pF	3.3 nF
	2525	3600	1.0 pF	3 nF
	3838	7200	1.0 pF	12 nF

ORDERING INFORMATION

VJ0603	D	101	J	X	A	A	T
CASE CODE	DIELECTRIC	CAPACITANCE NOMINAL CODE	CAPACITANCE TOLERANCE	TERMINATION	DC VOLTAGE RATING (1)	MARKING	PACKAGING (4)
0402 0505 0603 0805 1111 2525 3838	D = HIFREQ	Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point. **Examples:** 1R0 = 1.0 pF	V = ± 0.05 pF B = ± 0.10 pF C = ± 0.25 pF D = ± 0.50 pF F = ± 1 % G = ± 2 % J = ± 5 % K = ± 10 % M = ± 20 % **Note** Details see "Selection Chart"	X = Ni barrier 100 % tin plate matte finish C = non-magnetic copper barrier 100 % tin plate matte finish E = AgPd (2) L = Ni barrier with tin lead plated finish min. 4 % lead	X = 25 V A = 50 V B = 100 V K = 150 V C = 200 V P = 250 V D = 300 V E = 500 V L = 630 V I = 800 V G = 1000 V R = 1500 V F = 2000 V O = 2500 V H = 3000 V W = 3600 V M = 5000 V S = 7200 V	A = unmarked (3) Q = marked	T = 7" reel / plastic tape C = 7" reel / paper tape O = 7" reel / flamed paper tape J = 7" reel (low quantity) R = 11 1/4" / 13" reel / plastic tape P = 11 1/4" / 13" reel / paper tape I = 11 1/4" / 13" reel / flamed paper tape W = waffle pack **Note** "I" and "O" is used for "E" termination code

Notes

(1) DC voltage rating should not be exceeded in application

(2) Termination code "E" is for conductive epoxy assembly - only available for EIA case sizes 0402, 0603, and 0805

(3) Case size 0402 only available with "A"

(4) See "Standard Packaging Quantities" table

ENVIRONMENTAL STATUS

TERMINATION CODE	TERMINATION DESCRIPTION	RoHS COMPLIANT	VISHAY GREEN
C	Non-magnetic copper barrier 100 % tin plated matte finish	Yes	Yes
X	Ni barrier 100 % tin plated matte finish	Yes	Yes
E	AgPd	Yes	Yes
L	Ni barrier tin lead plated with min. 4 % lead	No	No

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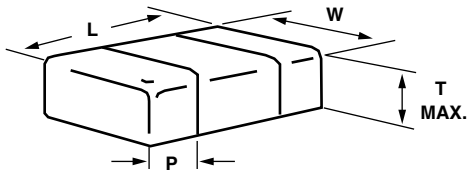
DIMENSIONS in inches (millimeters)



CASE CODE	STYLE	LENGTH (L)	WIDTH (W)	MAXIMUM THICKNESS (T)	TERMINATIONS PAD (P)	
					MINIMUM	MAXIMUM [1]
0402	VJ0402	0.040 ± 0.004 (1.02 ± 0.10)	0.020 ± 0.004 (0.51 ± 0.10)	0.024 (0.61)	0.004 (0.10)	0.016 (0.41)
0505	VJ0505	0.055 + 0.015 / - 0.010 (1.40 + 0.382 / - 0.254)	0.055 ± 0.015 (1.40 ± 0.38)	0.057 (1.45)	0.004 (0.10)	0.016 (0.41)
0603	VJ0603	0.063 ± 0.006 (1.60 ± 0.15)	0.031 ± 0.005 (0.80 ± 0.12)	0.037 (0.94)	0.010 (0.25)	0.022 (0.55)
0805	VJ0805	0.079 ± 0.008 (2.00 ± 0.20)	0.049 ± 0.008 (1.25 ± 0.20)	0.057 (1.45)	0.010 (0.25)	0.030 (0.76)
1111	VJ1111	0.117 + 0.015 / - 0.010 (2.98 + 0.382 / - 0.254)	0.110 + 0.015 / - 0.020 (2.79 + 0.382 / - 0.509)	0.102 (2.59)	0.012 (0.30)	0.018 [2] (0.46)
2525	VJ2525	0.250 + 0.020 / - 0.025 (6.35 + 0.508 / - 0.63)	0.250 ± 0.015 (6.35 ± 0.381)	0.102 (2.59)	0.010 (0.25)	0.030 [3] (0.76)
3838	VJ3838	0.381 ± 0.015 (9.7 ± 0.40)	0.381 + 0.017 / - 0.015 (9.7 + 0.45 / - 0.40)	0.118 (3.00)	0.010 (0.25)	0.030 [3] (0.76)

Notes

[1] For Cu termination “C” add 0.01 mm to maximum pad terminations

[2] For Cu termination “C” case size 1111 add 0.17 mm to maximum pad termination

[3] For Cu termination “C” case sizes 2525 and 3838 maximum pad termination size is 0.041 inches (1.04 mm)

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SELECTION CHART						
DIELECTRIC (VISHAY CODE)		C0G (D)				
STYLE		VJ0402				
CASE CODE		0402				
VOLTAGE (V_{DC})		25	50	100	200	TOLERANCE
VOLTAGE CODE		X	A	B	C	
CAP. CODE	CAP.					
0R1	0.1 pF	••	••	••	••	V, B, C, D
0R2	0.2 pF	••	••	••	••	V, B, C, D
0R3	0.3 pF	••	••	••	••	V, B, C, D
0R4	0.4 pF	••	••	••	••	V, B, C, D
0R5	0.5 pF	••	••	••	••	V, B, C, D
0R6	0.6 pF	••	••	••	••	V, B, C, D
0R7	0.7 pF	••	••	••	••	V, B, C, D
0R8	0.8 pF	••	••	••	••	V, B, C, D
0R9	0.9 pF	••	••	••	••	V, B, C, D
1R0	1.0 pF	••	••	••	••	V, B, C, D
1R1	1.1 pF	••	••	••	••	V, B, C, D
1R2	1.2 pF	••	••	••	••	V, B, C, D
1R3	1.3 pF	••	••	••	••	V, B, C, D
1R4	1.4 pF	••	••	••	••	V, B, C, D
1R5	1.5 pF	••	••	••	••	V, B, C, D
1R6	1.6 pF	••	••	••	••	V, B, C, D
1R7	1.7 pF	••	••	••	••	V, B, C, D
1R8	1.8 pF	••	••	••	••	V, B, C, D
1R9	1.9 pF	••	••	••	••	V, B, C, D
2R0	2.0 pF	••	••	••	••	V, B, C, D
2R1	2.1 pF	••	••	••	••	V, B, C, D
2R2	2.2 pF	••	••	••	••	V, B, C, D
2R4	2.4 pF	••	••	••	••	V, B, C, D
2R7	2.7 pF	••	••	••	••	V, B, C, D
3R0	3.0 pF	••	••	••	••	V, B, C, D
3R3	3.3 pF	••	••	••	••	V, B, C, D
3R6	3.6 pF	••	••	••	••	V, B, C, D
3R9	3.9 pF	••	••	••	••	V, B, C, D
4R3	4.3 pF	••	••	••	••	V, B, C, D
4R7	4.7 pF	••	••	••	••	V, B, C, D
5R1	5.1 pF	••	••	••	••	V, B, C, D
5R6	5.6 pF	••	••	••	••	V, B, C, D
6R2	6.2 pF	••	••	••	••	V, B, C, D
6R8	6.8 pF	••	••	••	••	V, B, C, D
7R5	7.5 pF	••	••	••	••	V, B, C, D
8R2	8.2 pF	••	••	••	••	V, B, C, D
9R1	9.1 pF	••	••	••	••	V, B, C, D

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

•• Paper carrier

- For soldering conditions see Vishay Soldering Recommendations www.vishay.com/doc?45034

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SELECTION CHART						
DIELECTRIC (VISHAY CODE)		C0G (D)				
STYLE		VJ0402				
CASE CODE		0402				
VOLTAGE (V_{DC})		25	50	100	200	TOLERANCE
VOLTAGE CODE		X	A	B	C	
CAP. CODE	CAP.					
100	10 pF	••	••	••	••	F, G, J, K, M
110	11 pF	••	••	••	••	F, G, J, K, M
120	12 pF	••	••	••	••	F, G, J, K, M
130	13 pF	••	••	••	••	F, G, J, K, M
150	15 pF	••	••	••	••	F, G, J, K, M
180	18 pF	••	••	••	••	F, G, J, K, M
200	20 pF	••	••	••	••	F, G, J, K, M
220	22 pF	••	••	••	••	F, G, J, K, M
240	24 pF	••	••	••	••	F, G, J, K, M
270	27 pF	••	••	••	••	F, G, J, K, M
300	30 pF	••	••			F, G, J, K, M
330	33 pF	••	••			F, G, J, K, M
360	36 pF	••	••			F, G, J, K, M
390	39 pF	••	••			F, G, J, K, M
430	43 pF	••	••			F, G, J, K, M
470	47 pF	••	••			F, G, J, K, M
510	51 pF	••	••			F, G, J, K, M
560	56 pF	••	••			F, G, J, K, M
620	62 pF	••				F, G, J, K, M
680	68 pF	••				F, G, J, K, M
750	75 pF	••				F, G, J, K, M
820	82 pF	••				F, G, J, K, M
910	91 pF					
101	100 pF					
111	110 pF					
121	120 pF					

Notes

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•• Paper carrier

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SELECTION CHART							
DIELECTRIC (VISHAY CODE)		C0G (D)					
STYLE		VJ0505					
CASE CODE		0505					
VOLTAGE (V_{DC})		50	100	150	200	250	TOLERANCE
VOLTAGE CODE		A	B	K	C	P	
CAP. CODE	CAP.						
0R1	0.1 pF	•	•	•	•	•	V, B, C, D
0R2	0.2 pF	•	•	•	•	•	V, B, C, D
0R3	0.3 pF	•	•	•	•	•	V, B, C, D
0R4	0.4 pF	•	•	•	•	•	V, B, C, D
0R5	0.5 pF	•	•	•	•	•	V, B, C, D
0R6	0.6 pF	•	•	•	•	•	V, B, C, D
0R7	0.7 pF	•	•	•	•	•	V, B, C, D
0R8	0.8 pF	•	•	•	•	•	V, B, C, D
0R9	0.9 pF	•	•	•	•	•	V, B, C, D
1R0	1.0 pF	•	•	•	•	•	V, B, C, D
1R1	1.1 pF	•	•	•	•	•	V, B, C, D
1R2	1.2 pF	•	•	•	•	•	V, B, C, D
1R3	1.3 pF	•	•	•	•	•	V, B, C, D
1R4	1.4 pF	•	•	•	•	•	V, B, C, D
1R5	1.5 pF	•	•	•	•	•	V, B, C, D
1R6	1.6 pF	•	•	•	•	•	V, B, C, D
1R7	1.7 pF	•	•	•	•	•	V, B, C, D
1R8	1.8 pF	•	•	•	•	•	V, B, C, D
1R9	1.9 pF	•	•	•	•	•	V, B, C, D
2R0	2.0 pF	•	•	•	•	•	V, B, C, D
2R1	2.1 pF	•	•	•	•	•	V, B, C, D
2R2	2.2 pF	•	•	•	•	•	V, B, C, D
2R4	2.4 pF	•	•	•	•	•	V, B, C, D
2R7	2.7 pF	•	•	•	•	•	V, B, C, D
3R0	3.0 pF	•	•	•	•	•	V, B, C, D
3R3	3.3 pF	•	•	•	•	•	V, B, C, D
3R6	3.6 pF	•	•	•	•	•	V, B, C, D
3R9	3.9 pF	•	•	•	•	•	V, B, C, D
4R3	4.3 pF	•	•	•	•	•	V, B, C, D
4R7	4.7 pF	•	•	•	•	•	V, B, C, D
5R1	5.1 pF	•	•	•	•	•	V, B, C, D
5R6	5.6 pF	•	•	•	•	•	B, C, D
6R2	6.2 pF	•	•	•	•	•	B, C, D
6R8	6.8 pF	•	•	•	•	•	B, C, D
7R5	7.5 pF	•	•	•	•	•	B, C, D
8R2	8.2 pF	•	•	•	•	•	B, C, D
9R1	9.1 pF	•	•	•	•	•	B, C, D
100	10 pF	•	•	•	•	•	F, G, J, K, M
110	11 pF	•	•	•	•	•	F, G, J, K, M
120	12 pF	•	•	•	•	•	F, G, J, K, M
130	13 pF	•	•	•	•	•	F, G, J, K, M
150	15 pF	•	•	•	•	•	F, G, J, K, M
160	16 pF	•	•	•	•	•	F, G, J, K, M
180	18 pF	•	•	•	•	•	F, G, J, K, M

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

• Plastic carrier tape

- For soldering conditions see Vishay Soldering Recommendations www.vishay.com/doc?45034

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SELECTION CHART							
DIELECTRIC (VISHAY CODE)		C0G (D)					
STYLE		VJ0505					
CASE CODE		0505					
VOLTAGE (V_{DC})		50	100	150	200	250	TOLERANCE
VOLTAGE CODE		A	B	K	C	P	
CAP. CODE	CAP.						
200	20 pF	•	•	•	•	•	F, G, J, K, M
220	22 pF	•	•	•	•	•	F, G, J, K, M
240	24 pF	•	•	•	•	•	F, G, J, K, M
270	27 pF	•	•	•	•	•	F, G, J, K, M
300	30 pF	•	•	•	•	•	F, G, J, K, M
330	33 pF	•	•	•	•	•	F, G, J, K, M
360	36 pF	•	•	•	•	•	F, G, J, K, M
390	39 pF	•	•	•	•	•	F, G, J, K, M
430	43 pF	•	•	•	•	•	F, G, J, K, M
470	47 pF	•	•	•	•	•	F, G, J, K, M
510	51 pF	•	•	•	•	•	F, G, J, K, M
560	56 pF	•	•	•	•	•	F, G, J, K, M
620	62 pF	•	•	•	•	•	F, G, J, K, M
680	68 pF	•	•	•	•	•	F, G, J, K, M
750	75 pF	•	•	•	•		F, G, J, K, M
820	82 pF	•	•	•	•		F, G, J, K, M
910	91 pF	•	•	•	•		F, G, J, K, M
101	100 pF	•	•	•	•		F, G, J, K, M
111	110 pF	•	•	•	•		F, G, J, K, M
121	120 pF	•	•	•	•		F, G, J, K, M
131	130 pF	•	•	•	•		F, G, J, K, M
151	150 pF	•	•	•	•		F, G, J, K, M
161	160 pF	•	•	•	•		F, G, J, K, M
181	180 pF	•	•	•	•		F, G, J, K, M
201	200 pF	•	•	•	•		F, G, J, K, M
221	220 pF	•	•	•	•		F, G, J, K, M
241	240 pF	•	•	•	•		F, G, J, K, M
271	270 pF	•	•	•			F, G, J, K, M
301	300 pF	•	•	•			F, G, J, K, M
331	330 pF	•	•	•			F, G, J, K, M
361	360 pF	•	•	•			F, G, J, K, M
391	390 pF	•	•	•			F, G, J, K, M
431	430 pF	•	•	•			F, G, J, K, M
471	470 pF	•	•	•			F, G, J, K, M
511	510 pF	•					F, G, J, K, M
561	560 pF	•					F, G, J, K, M
621	620 pF	•					F, G, J, K, M
681	680 pF	•					F, G, J, K, M
751	750 pF	•					F, G, J, K, M
821	820 pF	•					F, G, J, K, M
911	910 pF	•					F, G, J, K, M
102	1000 pF	•					F, G, J, K, M
112	1100 pF						
122	1200 pF						

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

- Plastic carrier tape
- For soldering conditions see Vishay Soldering Recommendations www.vishay.com/doc?45034

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SELECTION CHART							
DIELECTRIC (VISHAY CODE)		C0G (D)					
STYLE		VJ0603					
CASE CODE		0603					
VOLTAGE (V_{DC})		25	50	100	200	250	TOLERANCE
VOLTAGE CODE		X	A	B	C	P	
CAP. CODE	CAP.						
0R1	0.1 pF	••	••	••	••	••	V, B, C, D
0R2	0.2 pF	••	••	••	••	••	V, B, C, D
0R3	0.3 pF	••	••	••	••	••	V, B, C, D
0R4	0.4 pF	••	••	••	••	••	V, B, C, D
0R5	0.5 pF	••	••	••	••	••	V, B, C, D
0R6	0.6 pF	••	••	••	••	••	V, B, C, D
0R7	0.7 pF	••	••	••	••	••	V, B, C, D
0R8	0.8 pF	••	••	••	••	••	V, B, C, D
0R9	0.9 pF	••	••	••	••	••	V, B, C, D
1R0	1.0 pF	••	••	••	••	••	V, B, C, D
1R1	1.1 pF	••	••	••	••	••	V, B, C, D
1R2	1.2 pF	••	••	••	••	••	V, B, C, D
1R3	1.3 pF	••	••	••	••	••	V, B, C, D
1R4	1.4 pF	••	••	••	••	••	V, B, C, D
1R5	1.5 pF	••	••	••	••	••	V, B, C, D
1R6	1.6 pF	••	••	••	••	••	V, B, C, D
1R7	1.7 pF	••	••	••	••	••	V, B, C, D
1R8	1.8 pF	••	••	••	••	••	V, B, C, D
1R9	1.9 pF	••	••	••	••	••	V, B, C, D
2R0	2.0 pF	••	••	••	••	••	V, B, C, D
2R1	2.1 pF	••	••	••	••	••	V, B, C, D
2R2	2.2 pF	••	••	••	••	••	V, B, C, D
2R4	2.4 pF	••	••	••	••	••	V, B, C, D
2R7	2.7 pF	••	••	••	••	••	V, B, C, D
3R0	3.0 pF	••	••	••	••	••	V, B, C, D
3R3	3.3 pF	••	••	••	••	••	V, B, C, D
3R6	3.6 pF	••	••	••	••	••	V, B, C, D
3R9	3.9 pF	••	••	••	••	••	V, B, C, D
4R3	4.3 pF	••	••	••	••	••	V, B, C, D
4R7	4.7 pF	••	••	••	••	••	V, B, C, D
5R1	5.1 pF	••	••	••	••	••	V, B, C, D
5R6	5.6 pF	••	••	••	••	••	V, B, C, D
6R2	6.2 pF	••	••	••	••	••	V, B, C, D
6R8	6.8 pF	••	••	••	••	••	V, B, C, D
7R5	7.5 pF	••	••	••	••	••	V, B, C, D
8R2	8.2 pF	••	••	••	••	••	V, B, C, D
9R1	9.1 pF	••	••	••	••	••	V, B, C, D
100	10 pF	••	••	••	••	••	F, G, J, K, M
110	11 pF	••	••	••	••	••	F, G, J, K, M
120	12 pF	••	••	••	••	••	F, G, J, K, M
130	13 pF	••	••	••	••	••	F, G, J, K, M
150	15 pF	••	••	••	••	••	F, G, J, K, M
180	18 pF	••	••	••	••	••	F, G, J, K, M
200	20 pF	••	••	••	••	••	F, G, J, K, M
220	22 pF	••	••	••	••	••	F, G, J, K, M

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

•• Paper carrier • Plastic carrier tape

- For case size 0603: Cu termination “C” is only available in plastic carrier tape
- For soldering conditions see Vishay Soldering Recommendations www.vishay.com/doc?45034

For technical questions, contact: mlccrf@vishay.com

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SELECTION CHART							
DIELECTRIC (VISHAY CODE)		C0G (D)					
STYLE		VJ0603					
CASE CODE		0603					
VOLTAGE (V_{DC})		25	50	100	200	250	TOLERANCE
VOLTAGE CODE		X	A	B	C	P	
CAP. CODE	CAP.						
240	24 pF	••	••	••	••	••	F, G, J, K, M
270	27 pF	••	••	••	••	••	F, G, J, K, M
300	30 pF	••	••	••	••	••	F, G, J, K, M
330	33 pF	••	••	••	••	••	F, G, J, K, M
360	36 pF	••	••	••	••	••	F, G, J, K, M
390	39 pF	••	••	••	••	••	F, G, J, K, M
430	43 pF	••	••	••	••	••	F, G, J, K, M
470	47 pF	••	••	••	••	••	F, G, J, K, M
510	51 pF	••	••	••	••	••	F, G, J, K, M
560	56 pF	••	••	••	••	••	F, G, J, K, M
620	62 pF	•	•	•	•	•	F, G, J, K, M
680	68 pF	•	•	•	•	•	F, G, J, K, M
750	75 pF	•	•	•	•	•	F, G, J, K, M
820	82 pF	•	•	•	•	•	F, G, J, K, M
910	91 pF	•	•	•	•	•	F, G, J, K, M
101	100 pF	•	•	•	•	•	F, G, J, K, M
111	110 pF	•	•	•			F, G, J, K, M
121	120 pF	•	•	•			F, G, J, K, M
131	130 pF	•	•	•			F, G, J, K, M
151	150 pF	•	•	•			F, G, J, K, M
181	180 pF	•	•				F, G, J, K, M
201	200 pF	•	•				F, G, J, K, M
221	220 pF	•	•				F, G, J, K, M
241	240 pF	•	•				F, G, J, K, M
271	270 pF	•	•				F, G, J, K, M
301	300 pF	•	•				F, G, J, K, M
331	330 pF	•	•				F, G, J, K, M
361	360 pF	•					F, G, J, K, M
391	390 pF	•					F, G, J, K, M
431	430 pF	•					F, G, J, K, M
471	470 pF	•					F, G, J, K, M
511	510 pF						
561	560 pF						
621	620 pF						
681	680 pF						
751	750 pF						
821	820 pF						
911	910 pF						
102	1.0 nF						
112	1.1 nF						
122	1.2 nF						
132	1.3 nF						
152	1.5 nF						
182	1.8 nF						

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

•• Paper carrier • Plastic carrier tape

- For case size 0603: Cu termination “C” is only available in plastic carrier tape
- For soldering conditions see Vishay Soldering Recommendations www.vishay.com/doc?45034

For technical questions, contact: mlccrf@vishay.com

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SELECTION CHART

DIELECTRIC (VISHAY CODE)		C0G (D)						
STYLE		VJ0805						
CASE CODE		0805						
VOLTAGE (V_{DC})		25	50	100	200	250	500	TOLERANCE (1)
VOLTAGE CODE		X	A	B	C	P	E	
CAP. CODE	CAP.							
0R1	0.1 pF	•	•	•	•	•		V, B, C, D
0R2	0.2 pF	•	•	•	•	•		V, B, C, D
0R3	0.3 pF	•	•	•	•	•		V, B, C, D
0R4	0.4 pF	•	•	•	•	•		V, B, C, D
0R5	0.5 pF	•	•	•	•	•		V, B, C, D
0R6	0.6 pF	•	•	•	•	•		V, B, C, D
0R7	0.7 pF	•	•	•	•	•		V, B, C, D
0R8	0.8 pF	•	•	•	•	•		V, B, C, D
0R9	0.9 pF	•	•	•	•	•		V, B, C, D
1R0	1.0 pF	•	•	•	•	•	•	V, B, C, D
1R1	1.1 pF	•	•	•	•	•		V, B, C, D
1R2	1.2 pF	•	•	•	•	•	•	V, B, C, D
1R3	1.3 pF	•	•	•	•	•		V, B, C, D
1R4	1.4 pF	•	•	•	•	•		V, B, C, D
1R5	1.5 pF	•	•	•	•	•	•	V, B, C, D
1R6	1.6 pF	•	•	•	•	•		V, B, C, D
1R7	1.7 pF	•	•	•	•	•		V, B, C, D
1R8	1.8 pF	•	•	•	•	•	•	V, B, C, D
1R9	1.9 pF	•	•	•	•	•		V, B, C, D
2R0	2.0 pF	•	•	•	•	•		V, B, C, D
2R1	2.1 pF	•	•	•	•	•		V, B, C, D
2R2	2.2 pF	•	•	•	•	•	•	V, B, C, D
2R4	2.4 pF	•	•	•	•	•		V, B, C, D
2R7	2.7 pF	•	•	•	•	•		V, B, C, D
3R0	3.0 pF	•	•	•	•	•		V, B, C, D
3R3	3.3 pF	•	•	•	•	•	•	V, B, C, D
3R6	3.6 pF	•	•	•	•	•		V, B, C, D
3R9	3.9 pF	•	•	•	•	•	•	V, B, C, D
4R3	4.3 pF	•	•	•	•	•		V, B, C, D
4R7	4.7 pF	•	•	•	•	•	•	V, B, C, D
5R1	5.1 pF	•	•	•	•	•		V, B, C, D
5R6	5.6 pF	•	•	•	•	•	•	V, B, C, D
6R2	6.2 pF	•	•	•	•	•		V, B, C, D
6R8	6.8 pF	•	•	•	•	•	•	V, B, C, D
7R5	7.5 pF	•	•	•	•	•		V, B, C, D
8R2	8.2 pF	•	•	•	•	•	•	V, B, C, D
9R1	9.1 pF	•	•	•	•	•		V, B, C, D

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

• Plastic carrier tape

- For soldering conditions see Vishay Soldering Recommendations www.vishay.com/doc?45034

(1) 500 V, < 10 pF tolerances B, C, D only

For technical questions, contact: mlccrf@vishay.com

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SELECTION CHART

DIELECTRIC (VISHAY CODE)		C0G (D)						
STYLE		VJ0805						
CASE CODE		0805						
VOLTAGE (V_{DC})		25	50	100	200	250	500	TOLERANCE (1)
VOLTAGE CODE		X	A	B	C	P	E	
CAP. CODE	CAP.							
100	10 pF	•	•	•	•	•	•	F, G, J, K, M
110	11 pF	•	•	•	•	•		F, G, J, K, M
120	12 pF	•	•	•	•	•	•	F, G, J, K, M
130	13 pF	•	•	•	•	•		F, G, J, K, M
150	15 pF	•	•	•	•	•	•	F, G, J, K, M
180	18 pF	•	•	•	•	•	•	F, G, J, K, M
200	20 pF	•	•	•	•	•		F, G, J, K, M
220	22 pF	•	•	•	•	•	•	F, G, J, K, M
240	24 pF	•	•	•	•	•		F, G, J, K, M
270	27 pF	•	•	•	•	•	•	F, G, J, K, M
300	30 pF	•	•	•	•	•		F, G, J, K, M
330	33 pF	•	•	•	•	•	•	F, G, J, K, M
360	36 pF	•	•	•	•	•		F, G, J, K, M
390	39 pF	•	•	•	•	•	•	F, G, J, K, M
430	43 pF	•	•	•	•	•		F, G, J, K, M
470	47 pF	•	•	•	•	•	•	F, G, J, K, M
510	51 pF	•	•	•	•	•		F, G, J, K, M
560	56 pF	•	•	•	•	•	•	F, G, J, K, M
620	62 pF	•	•	•	•	•		F, G, J, K, M
680	68 pF	•	•	•	•	•	•	F, G, J, K, M
750	75 pF	•	•	•	•	•		F, G, J, K, M
820	82 pF	•	•	•	•	•		F, G, J, K, M
910	91 pF	•	•	•	•	•		F, G, J, K, M
101	100 pF	•	•	•	•	•		F, G, J, K, M
111	110 pF	•	•	•	•	•		F, G, J, K, M
121	120 pF	•	•	•	•	•		F, G, J, K, M
131	130 pF	•	•	•	•	•		F, G, J, K, M
151	150 pF	•	•	•	•	•		F, G, J, K, M
181	180 pF	•	•	•	•	•		F, G, J, K, M
201	200 pF	•	•	•	•	•		F, G, J, K, M
221	220 pF	•	•	•	•	•		F, G, J, K, M
241	240 pF	•	•	•	•	•		F, G, J, K, M
271	270 pF	•	•	•	•	•		F, G, J, K, M
301	300 pF	•	•	•	•	•		F, G, J, K, M
331	330 pF	•	•	•	•	•		F, G, J, K, M
361	360 pF	•	•	•	•			F, G, J, K, M
391	390 pF	•	•	•	•			F, G, J, K, M
431	430 pF	•	•	•				F, G, J, K, M
471	470 pF	•	•	•				F, G, J, K, M
511	510 pF	•	•	•				F, G, J, K, M
561	560 pF	•	•	•				F, G, J, K, M
621	620 pF	•	•	•				F, G, J, K, M
681	680 pF	•	•	•				F, G, J, K, M
751	750 pF	•	•					F, G, J, K, M
821	820 pF	•	•					F, G, J, K, M
911	910 pF	•	•					F, G, J, K, M
102	1.0 nF	•	•					F, G, J, K, M

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

• Plastic carrier tape

- For soldering conditions see Vishay Soldering Recommendations www.vishay.com/doc?45034

(1) 500 V, < 10 pF tolerances B, C, D only

For technical questions, contact: mlccrf@vishay.com

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SELECTION CHART										
DIELECTRIC (VISHAY CODE)		C0G (D)								
STYLE		VJ1111								
CASE CODE		1111								
VOLTAGE (V_{DC})		50	100	200	300	500	630	1000	1500	TOLERANCE
VOLTAGE CODE		A	B	C	D	E	L	G	R	
CAP. CODE	CAP.									
0R2	0.2 pF	•	•	•	•	•	•	•	•	V, B, C, D
0R3	0.3 pF	•	•	•	•	•	•	•	•	V, B, C, D
0R4	0.4 pF	•	•	•	•	•	•	•	•	V, B, C, D
0R5	0.5 pF	•	•	•	•	•	•	•	•	V, B, C, D
0R6	0.6 pF	•	•	•	•	•	•	•	•	V, B, C, D
0R7	0.7 pF	•	•	•	•	•	•	•	•	V, B, C, D
0R8	0.8 pF	•	•	•	•	•	•	•	•	V, B, C, D
0R9	0.9 pF	•	•	•	•	•	•	•	•	V, B, C, D
1R0	1.0 pF	•	•	•	•	•	•	•	•	V, B, C, D
1R1	1.1 pF	•	•	•	•	•	•	•	•	V, B, C, D
1R2	1.2 pF	•	•	•	•	•	•	•	•	V, B, C, D
1R3	1.3 pF	•	•	•	•	•	•	•	•	V, B, C, D
1R4	1.4 pF	•	•	•	•	•	•	•	•	V, B, C, D
1R5	1.5 pF	•	•	•	•	•	•	•	•	V, B, C, D
1R6	1.6 pF	•	•	•	•	•	•	•	•	V, B, C, D
1R7	1.7 pF	•	•	•	•	•	•	•	•	V, B, C, D
1R8	1.8 pF	•	•	•	•	•	•	•	•	V, B, C, D
1R9	1.9 pF	•	•	•	•	•	•	•	•	V, B, C, D
2R0	2.0 pF	•	•	•	•	•	•	•	•	V, B, C, D
2R1	2.1 pF	•	•	•	•	•	•	•	•	V, B, C, D
2R2	2.2 pF	•	•	•	•	•	•	•	•	V, B, C, D
2R4	2.4 pF	•	•	•	•	•	•	•	•	V, B, C, D
2R7	2.7 pF	•	•	•	•	•	•	•	•	V, B, C, D
3R0	3.0 pF	•	•	•	•	•	•	•	•	V, B, C, D
3R3	3.3 pF	•	•	•	•	•	•	•	•	V, B, C, D
3R6	3.6 pF	•	•	•	•	•	•	•	•	V, B, C, D
3R9	3.9 pF	•	•	•	•	•	•	•	•	V, B, C, D
4R3	4.3 pF	•	•	•	•	•	•	•	•	V, B, C, D
4R7	4.7 pF	•	•	•	•	•	•	•	•	V, B, C, D
5R1	5.1 pF	•	•	•	•	•	•	•	•	V, B, C, D
5R6	5.6 pF	•	•	•	•	•	•	•	•	B, C, D
6R2	6.2 pF	•	•	•	•	•	•	•	•	B, C, D
6R8	6.8 pF	•	•	•	•	•	•	•	•	B, C, D
7R5	7.5 pF	•	•	•	•	•	•	•	•	B, C, D
8R2	8.2 pF	•	•	•	•	•	•	•	•	B, C, D
9R1	9.1 pF	•	•	•	•	•	•	•	•	B, C, D
100	10 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
110	11 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
120	12 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
130	13 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
150	15 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
160	16 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
180	18 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
200	20 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
220	22 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
240	24 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
270	27 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
300	30 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
330	33 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
360	36 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
390	39 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
430	43 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
470	47 pF	•	•	•	•	•	•	•	•	F, G, J, K, M

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

• Plastic carrier tape

For technical questions, contact: mlccrf@vishay.com

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SELECTION CHART										
DIELECTRIC (VISHAY CODE)		C0G (D)								
STYLE		VJ1111								
CASE CODE		1111								
VOLTAGE (V_{DC})		50	100	200	300	500	630	1000	1500	TOLERANCE
VOLTAGE CODE		A	B	C	D	E	L	G	R	
CAP. CODE	CAP.									
510	51 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
560	56 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
620	62 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
680	68 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
750	75 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
820	82 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
910	91 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
101	100 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
111	110 pF	•	•	•	•	•	•	•	•	F, G, J, K, M
121	120 pF	•	•	•	•	•	•	•		F, G, J, K, M
131	130 pF	•	•	•	•	•	•	•		F, G, J, K, M
151	150 pF	•	•	•	•	•	•	•		F, G, J, K, M
161	160 pF	•	•	•	•	•	•	•		F, G, J, K, M
181	180 pF	•	•	•	•	•	•	•		F, G, J, K, M
201	200 pF	•	•	•	•	•	•	•		F, G, J, K, M
221	220 pF	•	•	•	•	•	•			F, G, J, K, M
241	240 pF	•	•	•	•	•	•			F, G, J, K, M
271	270 pF	•	•	•	•	•	•			F, G, J, K, M
301	300 pF	•	•	•	•	•	•			F, G, J, K, M
331	330 pF	•	•	•	•	•	•			F, G, J, K, M
361	360 pF	•	•	•	•	•	•			F, G, J, K, M
391	390 pF	•	•	•	•	•	•			F, G, J, K, M
431	430 pF	•	•	•	•	•	•			F, G, J, K, M
471	470 pF	•	•	•	•	•	•			F, G, J, K, M
511	510 pF	•	•	•	•					F, G, J, K, M
561	560 pF	•	•	•	•					F, G, J, K, M
621	620 pF	•	•	•	•					F, G, J, K, M
681	680 pF	•	•	•	•					F, G, J, K, M
751	750 pF	•	•	•	•					F, G, J, K, M
821	820 pF	•	•	•	•					F, G, J, K, M
911	910 pF	•	•	•	•					F, G, J, K, M
102	1000 pF	•	•	•	•					F, G, J, K, M
112	1100 pF	•	•	•						F, G, J, K, M
122	1200 pF	•	•	•						F, G, J, K, M
132	1300 pF	•	•	•						F, G, J, K, M
152	1500 pF	•	•	•						F, G, J, K, M
162	1600 pF	•	•	•						F, G, J, K, M
182	1800 pF	•	•							F, G, J, K, M
202	2000 pF	•	•							F, G, J, K, M
222	2200 pF	•	•							F, G, J, K, M
242	2400 pF	•	•							F, G, J, K, M
272	2700 pF	•	•							F, G, J, K, M
302	3000 pF	•	•							F, G, J, K, M
332	3300 pF	•	•							F, G, J, K, M

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

• Plastic carrier tape

For technical questions, contact: mlccrf@vishay.com

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SELECTION CHART

DIELECTRIC (VISHAY CODE)		C0G (D)										
STYLE		VJ2525										
CASE CODE		2525										
VOLTAGE (V_{DC})		300	500	630	800	1000	1500	2000	2500	3000	3600	TOLERANCE
VOLTAGE CODE		D	E	L	I	G	R	F	O	H	W	
CAP. CODE	CAP.											
1R0	1.0 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
1R1	1.1 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
1R2	1.2 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
1R3	1.3 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
1R4	1.4 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
1R5	1.5 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
1R6	1.6 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
1R7	1.7 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
1R8	1.8 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
1R9	1.9 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
2R0	2.0 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
2R1	2.1 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
2R2	2.2 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
2R4	2.4 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
2R7	2.7 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
3R0	3.0 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
3R3	3.3 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
3R6	3.6 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
3R9	3.9 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
4R3	4.3 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
4R7	4.7 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
5R1	5.1 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
5R6	5.6 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
6R2	6.2 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
6R8	6.8 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
7R5	7.5 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
8R2	8.2 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
9R1	9.1 pF	•	•	•	•	•	•	•	•	•	•	B, C, D
100	10 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
110	11 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
120	12 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
130	13 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
150	15 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
160	16 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
180	18 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
200	20 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
220	22 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
240	24 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
270	27 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
300	30 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
330	33 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
360	36 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
390	39 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

- Plastic carrier tape

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SELECTION CHART												
DIELECTRIC (VISHAY CODE)		C0G (D)										
STYLE		VJ2525										
CASE CODE		2525										
VOLTAGE (V_{DC})		300	500	630	800	1000	1500	2000	2500	3000	3600	TOLERANCE
VOLTAGE CODE		D	E	L	I	G	R	F	O	H	W	
CAP. CODE	CAP.											
430	43 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
470	47 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
510	51 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
560	56 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
620	62 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
680	68 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
750	75 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
820	82 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
910	91 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
101	100 pF	•	•	•	•	•	•	•	•	•	•	F, G, J, K, M
111	110 pF	•	•	•	•	•	•	•	•	•		F, G, J, K, M
121	120 pF	•	•	•	•	•	•	•	•	•		F, G, J, K, M
131	130 pF	•	•	•	•	•	•	•	•	•		F, G, J, K, M
151	150 pF	•	•	•	•	•	•	•	•	•		F, G, J, K, M
161	160 pF	•	•	•	•	•	•	•	•	•		F, G, J, K, M
181	180 pF	•	•	•	•	•	•	•	•	•		F, G, J, K, M
201	200 pF	•	•	•	•	•	•	•	•	•		F, G, J, K, M
221	220 pF	•	•	•	•	•	•	•	•	•		F, G, J, K, M
241	240 pF	•	•	•	•	•	•	•	•	•		F, G, J, K, M
271	270 pF	•	•	•	•	•	•	•	•	•		F, G, J, K, M
301	300 pF	•	•	•	•	•	•	•				F, G, J, K, M
331	330 pF	•	•	•	•	•	•	•				F, G, J, K, M
361	360 pF	•	•	•	•	•	•	•				F, G, J, K, M
391	390 pF	•	•	•	•	•	•	•				F, G, J, K, M
431	430 pF	•	•	•	•	•	•	•				F, G, J, K, M
471	470 pF	•	•	•	•	•	•	•				F, G, J, K, M
511	510 pF	•	•	•	•	•	•					F, G, J, K, M
561	560 pF	•	•	•	•	•	•					F, G, J, K, M
621	620 pF	•	•	•	•	•	•					F, G, J, K, M
681	680 pF	•	•	•	•	•	•					F, G, J, K, M
751	750 pF	•	•	•	•	•	•					F, G, J, K, M
821	820 pF	•	•	•	•	•	•					F, G, J, K, M
911	910 pF	•	•	•	•	•	•					F, G, J, K, M
102	1000 pF	•	•	•	•	•	•					F, G, J, K, M
112	1100 pF	•	•	•	•	•	•					F, G, J, K, M
122	1200 pF	•	•	•	•	•	•					F, G, J, K, M
152	1500 pF	•	•	•	•							F, G, J, K, M
182	1800 pF	•	•	•	•							F, G, J, K, M
222	2200 pF	•	•	•	•							F, G, J, K, M
242	2400 pF	•	•	•								F, G, J, K, M
272	2700 pF	•	•									F, G, J, K, M
302	3000 pF	•	•									F, G, J, K, M

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

• Plastic carrier tape

For technical questions, contact: mlccrf@vishay.com

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SELECTION CHART									
DIELECTRIC (VISHAY CODE)		C0G (D)							
STYLE		VJ3838							
CASE CODE		3838							
VOLTAGE (V_{DC})		300	500	1000	2500	3600	5000	7200	TOLERANCE
VOLTAGE CODE		D	E	G	O	W	M	S	
CAP. CODE	CAP.								
1R0	1.0 pF	•	•	•	•	•	•	•	B, C, D
1R1	1.1 pF	•	•	•	•	•	•	•	B, C, D
1R2	1.2 pF	•	•	•	•	•	•	•	B, C, D
1R3	1.3 pF	•	•	•	•	•	•	•	B, C, D
1R4	1.4 pF	•	•	•	•	•	•	•	B, C, D
1R5	1.5 pF	•	•	•	•	•	•	•	B, C, D
1R6	1.6 pF	•	•	•	•	•	•	•	B, C, D
1R7	1.7 pF	•	•	•	•	•	•	•	B, C, D
1R8	1.8 pF	•	•	•	•	•	•	•	B, C, D
1R9	1.9 pF	•	•	•	•	•	•	•	B, C, D
2R0	2.0 pF	•	•	•	•	•	•	•	B, C, D
2R1	2.1 pF	•	•	•	•	•	•	•	B, C, D
2R2	2.2 pF	•	•	•	•	•	•	•	B, C, D
2R4	2.4 pF	•	•	•	•	•	•	•	B, C, D
2R7	2.7 pF	•	•	•	•	•	•	•	B, C, D
3R0	3.0 pF	•	•	•	•	•	•	•	B, C, D
3R3	3.3 pF	•	•	•	•	•	•	•	B, C, D
3R6	3.6 pF	•	•	•	•	•	•	•	B, C, D
3R9	3.9 pF	•	•	•	•	•	•	•	B, C, D
4R3	4.3 pF	•	•	•	•	•	•	•	B, C, D
4R7	4.7 pF	•	•	•	•	•	•	•	B, C, D
5R1	5.1 pF	•	•	•	•	•	•	•	B, C, D
5R6	5.6 pF	•	•	•	•	•	•	•	B, C, D
6R2	6.2 pF	•	•	•	•	•	•	•	B, C, D
6R8	6.8 pF	•	•	•	•	•	•	•	B, C, D
7R5	7.5 pF	•	•	•	•	•	•	•	B, C, D
8R2	8.2 pF	•	•	•	•	•	•	•	B, C, D
9R1	9.1 pF	•	•	•	•	•	•	•	B, C, D
100	10 pF	•	•	•	•	•	•	•	F, G, J, K, M
110	11 pF	•	•	•	•	•	•	•	F, G, J, K, M
120	12 pF	•	•	•	•	•	•	•	F, G, J, K, M
130	13 pF	•	•	•	•	•	•	•	F, G, J, K, M
150	15 pF	•	•	•	•	•	•	•	F, G, J, K, M
160	16 pF	•	•	•	•	•	•	•	F, G, J, K, M
180	18 pF	•	•	•	•	•	•	•	F, G, J, K, M
200	20 pF	•	•	•	•	•	•	•	F, G, J, K, M
220	22 pF	•	•	•	•	•	•	•	F, G, J, K, M
240	24 pF	•	•	•	•	•	•	•	F, G, J, K, M
270	27 pF	•	•	•	•	•	•	•	F, G, J, K, M
300	30 pF	•	•	•	•	•	•	•	F, G, J, K, M
330	33 pF	•	•	•	•	•	•	•	F, G, J, K, M
360	36 pF	•	•	•	•	•	•	•	F, G, J, K, M
390	39 pF	•	•	•	•	•	•	•	F, G, J, K, M
430	43 pF	•	•	•	•	•	•	•	F, G, J, K, M
470	47 pF	•	•	•	•	•	•	•	F, G, J, K, M
510	51 pF	•	•	•	•	•	•	•	F, G, J, K, M
560	56 pF	•	•	•	•	•	•	•	F, G, J, K, M
620	62 pF	•	•	•	•	•	•	•	F, G, J, K, M
680	68 pF	•	•	•	•	•	•	•	F, G, J, K, M
750	75 pF	•	•	•	•	•	•	•	F, G, J, K, M
820	82 pF	•	•	•	•	•	•	•	F, G, J, K, M
910	91 pF	•	•	•	•	•	•	•	F, G, J, K, M

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

• Plastic carrier tape

For technical questions, contact: mlccrf@vishay.com

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SELECTION CHART									
DIELECTRIC (VISHAY CODE)		C0G (D)							
STYLE		VJ3838							
CASE CODE		3838							
VOLTAGE (V_{DC})		300	500	1000	2500	3600	5000	7200	TOLERANCE
VOLTAGE CODE		D	E	G	O	W	M	S	
CAP. CODE	CAP.								
101	100 pF	•	•	•	•	•	•	•	F, G, J, K, M
111	110 pF	•	•	•	•	•	•		F, G, J, K, M
121	120 pF	•	•	•	•	•	•		F, G, J, K, M
131	130 pF	•	•	•	•	•	•		F, G, J, K, M
151	150 pF	•	•	•	•	•	•		F, G, J, K, M
161	160 pF	•	•	•	•	•	•		F, G, J, K, M
181	180 pF	•	•	•	•	•	•		F, G, J, K, M
201	200 pF	•	•	•	•	•			F, G, J, K, M
221	220 pF	•	•	•	•	•			F, G, J, K, M
241	240 pF	•	•	•	•	•			F, G, J, K, M
271	270 pF	•	•	•	•	•			F, G, J, K, M
301	300 pF	•	•	•	•	•			F, G, J, K, M
331	330 pF	•	•	•	•	•			F, G, J, K, M
361	360 pF	•	•	•	•	•			F, G, J, K, M
391	390 pF	•	•	•	•	•			F, G, J, K, M
431	430 pF	•	•	•	•				F, G, J, K, M
471	470 pF	•	•	•	•				F, G, J, K, M
511	510 pF	•	•	•	•				F, G, J, K, M
561	560 pF	•	•	•	•				F, G, J, K, M
621	620 pF	•	•	•	•				F, G, J, K, M
681	680 pF	•	•	•	•				F, G, J, K, M
751	750 pF	•	•	•	•				F, G, J, K, M
821	820 pF	•	•	•					F, G, J, K, M
911	910 pF	•	•	•					F, G, J, K, M
102	1000 pF	•	•	•					F, G, J, K, M
112	1100 pF	•	•	•					F, G, J, K, M
122	1200 pF	•	•	•					F, G, J, K, M
152	1500 pF	•	•	•					F, G, J, K, M
182	1800 pF	•	•	•					F, G, J, K, M
222	2200 pF	•	•	•					F, G, J, K, M
242	2400 pF	•	•	•					F, G, J, K, M
272	2700 pF	•	•	•					F, G, J, K, M
302	3000 pF	•	•	•					F, G, J, K, M
332	3300 pF	•	•	•					F, G, J, K, M
362	3600 pF	•	•	•					F, G, J, K, M
392	3900 pF	•	•	•					F, G, J, K, M
432	4300 pF	•	•	•					F, G, J, K, M
472	4700 pF	•	•	•					F, G, J, K, M
512	5100 pF	•	•	•					F, G, J, K, M
562	5600 pF	•	•						F, G, J, K, M
622	6200 pF	•	•						F, G, J, K, M
682	6800 pF	•	•						F, G, J, K, M
752	7500 pF	•	•						F, G, J, K, M
822	8200 pF	•							F, G, J, K, M
912	9100 pF	•							F, G, J, K, M
103	10 000 pF	•							F, G, J, K, M
113	11 000 pF	•							F, G, J, K, M
123	12 000 pF	•							F, G, J, K, M

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code “L”

• Plastic carrier tape

For technical questions, contact: mlccrf@vishay.com

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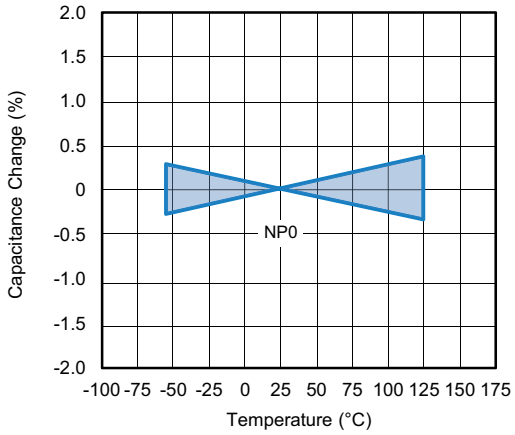
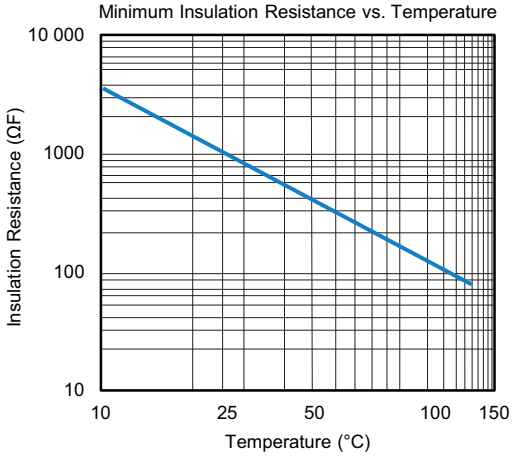
EIA SIZE / QUAD SIZE - TYPICAL PARAMETERS

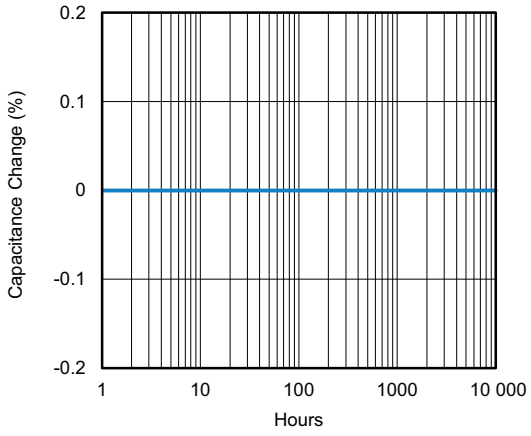
Temperature Coefficient of Capacitance



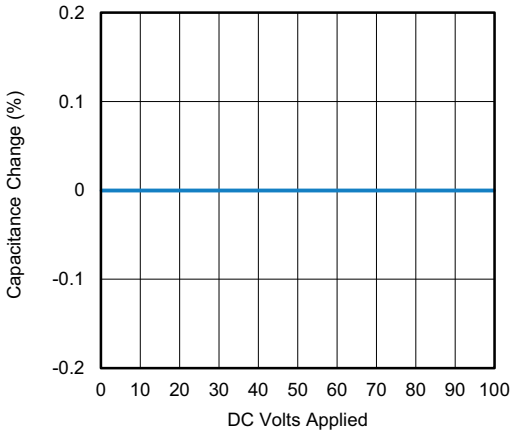
Minimum Insulation Resistance vs. Temperature



Aging Rate



Voltage Coefficient of Capacitance



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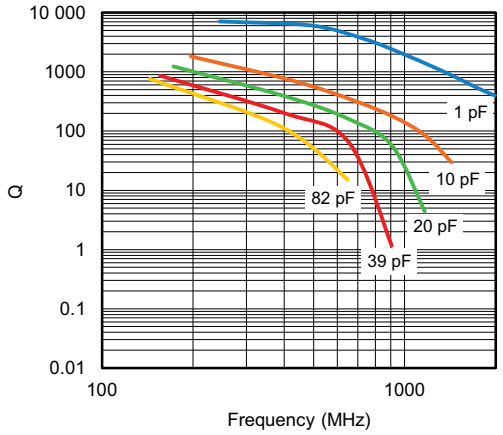
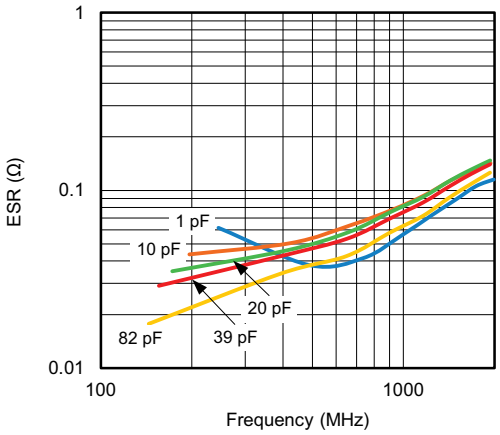
EIA SIZE DIELECTRIC - TYPICAL PARAMETERS

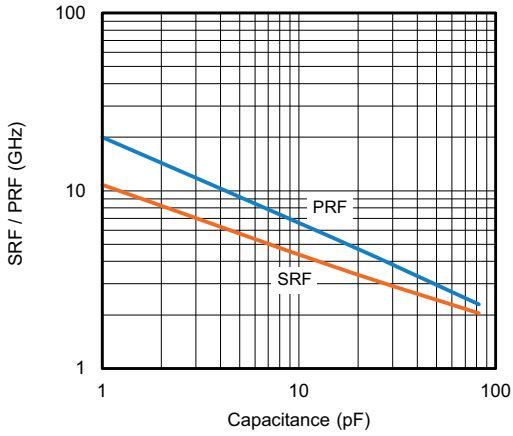
Typical Q Value vs. Frequency (Size 0402)



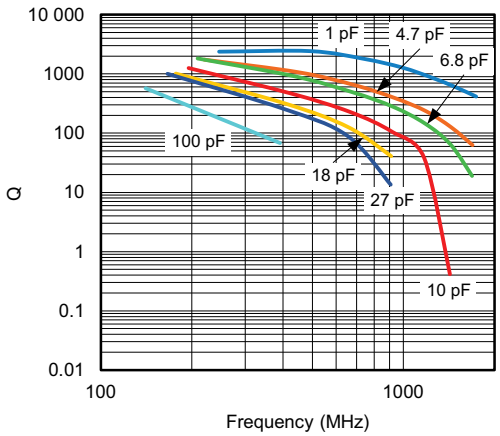
Typical ESR vs. Frequency (Size 0402)



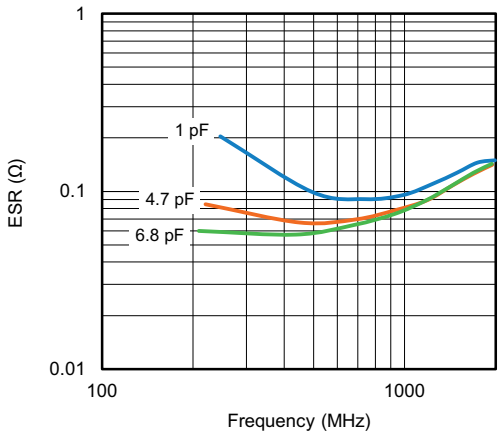
Typical SRF / PRF vs. Capacitance (Size 0402)



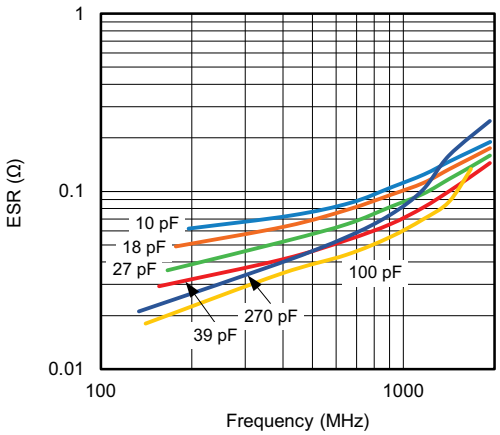
Typical Q Value vs. Frequency (Size 0603)



Typical ESR vs. Frequency (Size 0603)



Typical ESR vs. Frequency (Size 0603)



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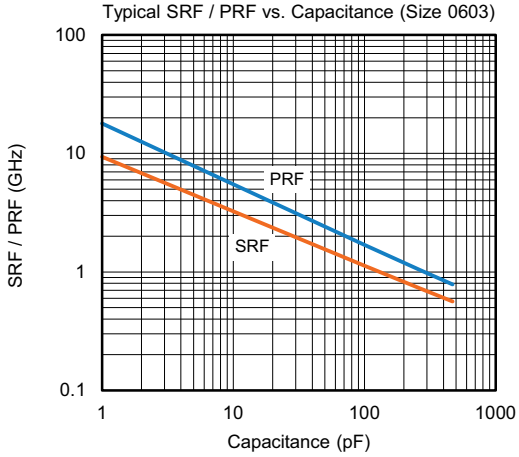
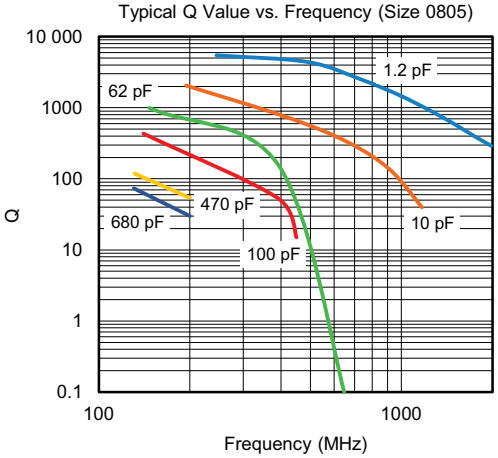
EIA SIZE DIELECTRIC - TYPICAL PARAMETERS

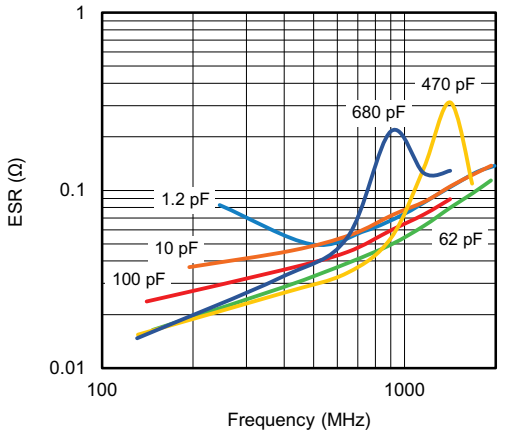
Typical SRF / PRF vs. Capacitance (Size 0603)



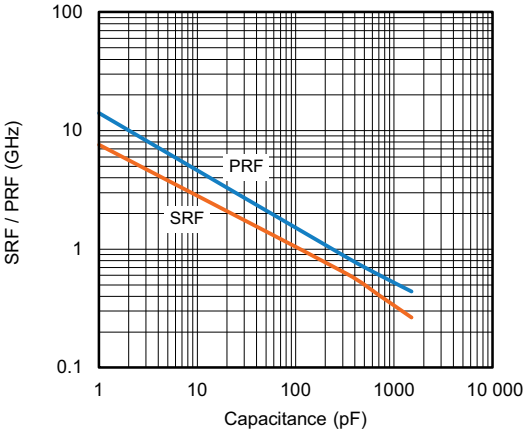
Typical Q Value vs. Frequency (Size 0805)



Typical ESR vs. Frequency (Size 0805)



Typical SRF / PRF vs. Capacitance (Size 0805)



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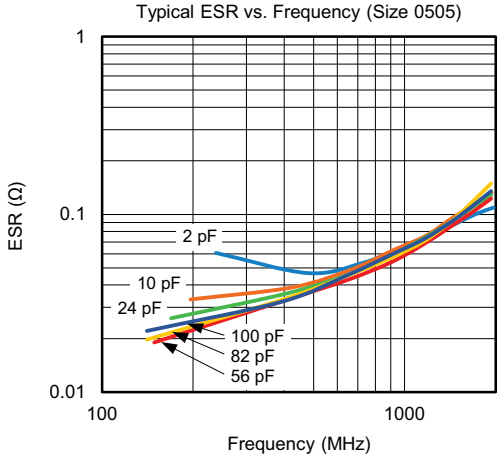
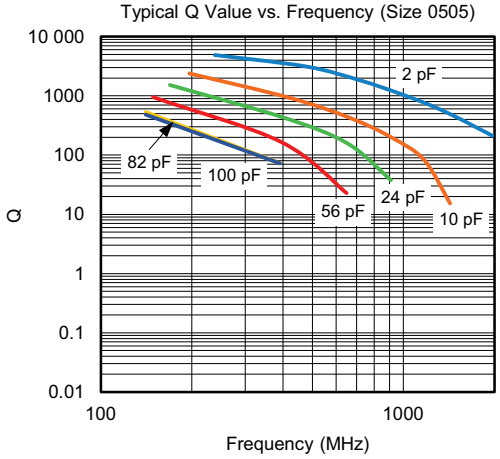
QUAD SIZE DIELECTRIC - TYPICAL PARAMETERS

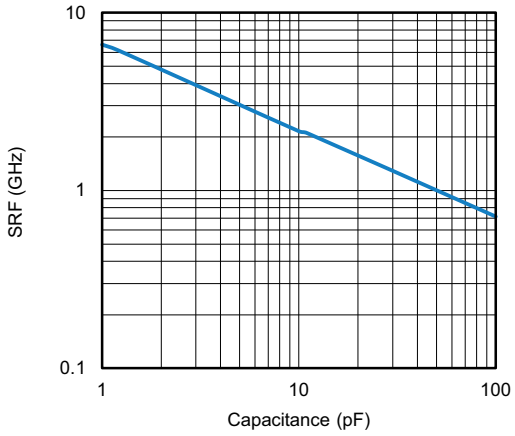
Typical ESR vs. Frequency (Size 0505)



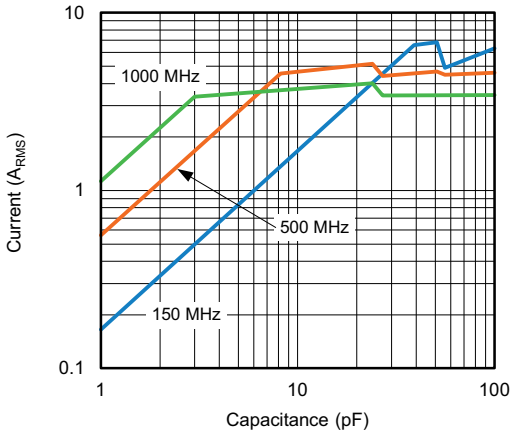
Typical Q Value vs. Frequency (Size 0505)



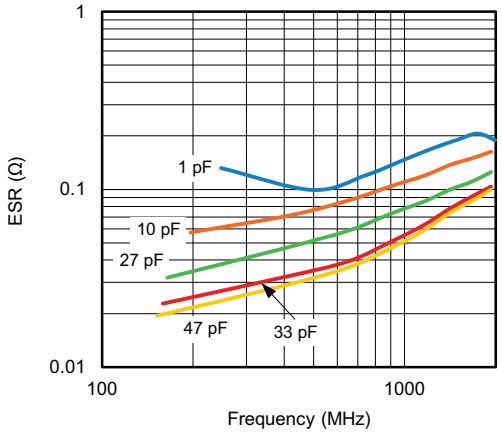
SRF vs. Capacitance (Size 0505)



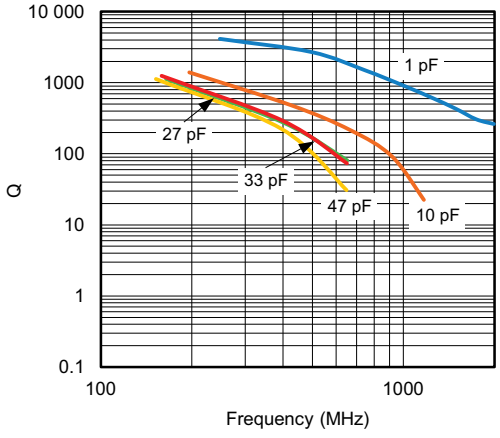
Current Rating (Size 0505, Ext. Voltage)



Typical ESR vs. Frequency (Size 1111)



Typical Q Value vs. Frequency (Size 1111)



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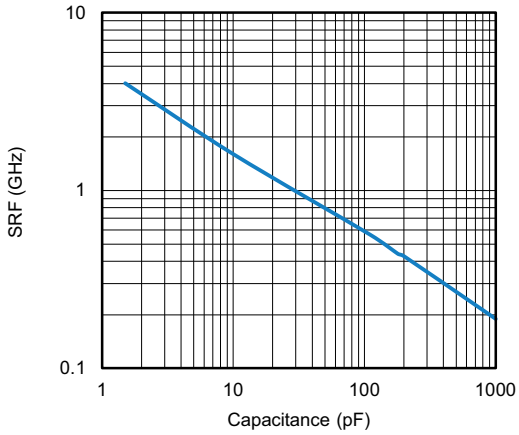
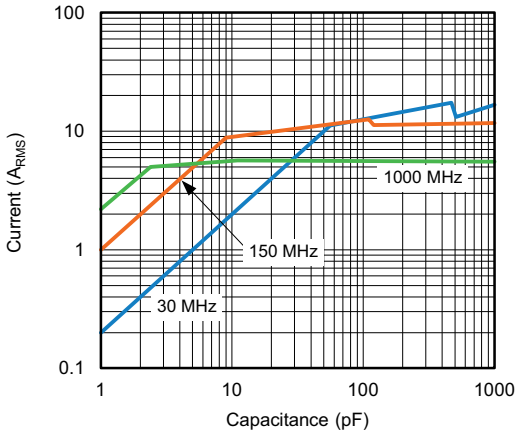
QUAD SIZE DIELECTRIC - TYPICAL PARAMETERS

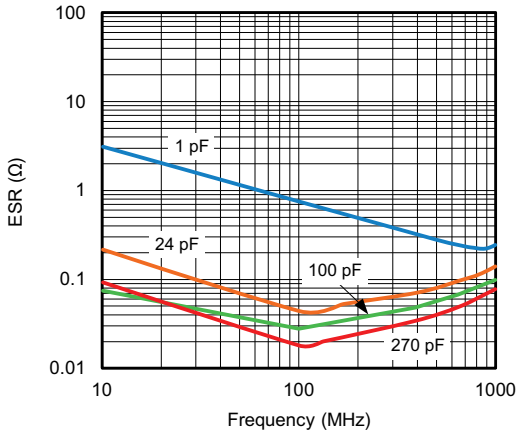
SRF vs. Capacitance (Size 1111)



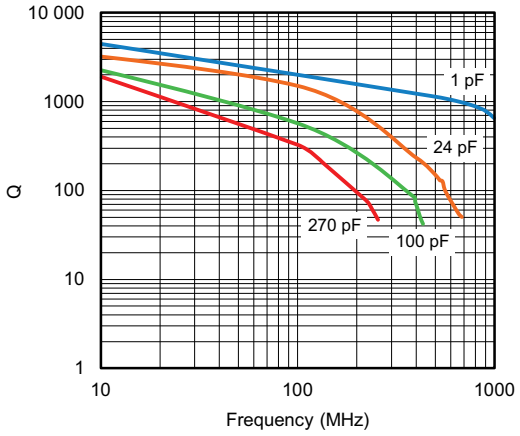
Current Rating (Size 1111, Ext. Voltage)



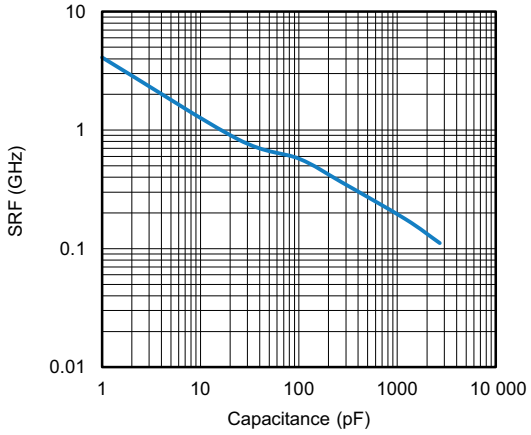
ESR vs. Frequency (Size 2525)



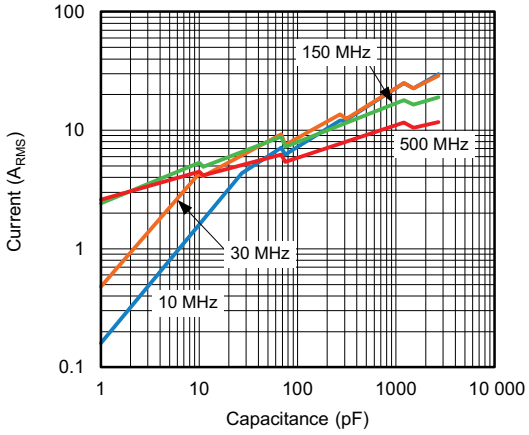
Q Value vs. Frequency (Size 2525)



SRF vs. Capacitance (Size 2525)



Current Rating (Size 2525, Ext. Voltage)



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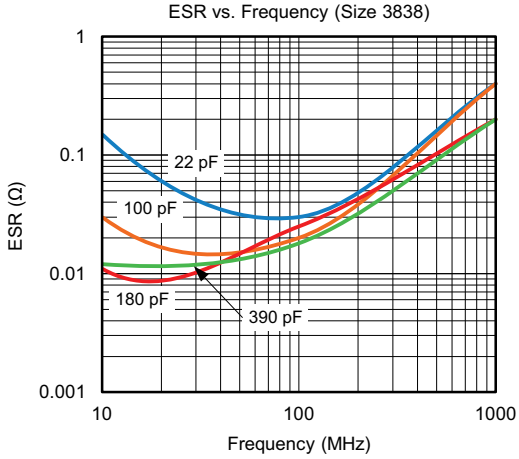
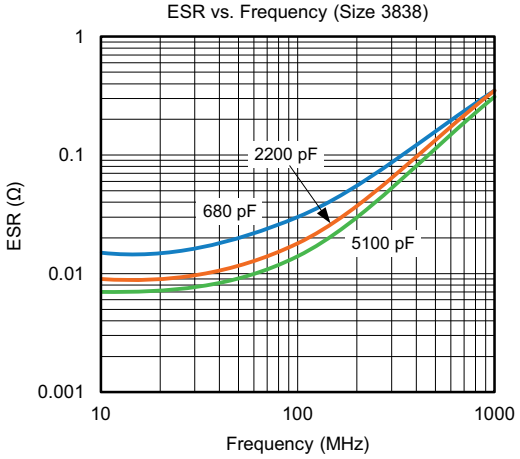
QUAD SIZE DIELECTRIC - TYPICAL PARAMETERS

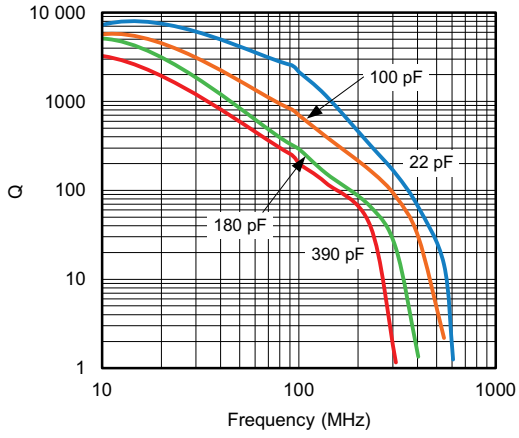
ESR vs. Frequency (Size 3838)



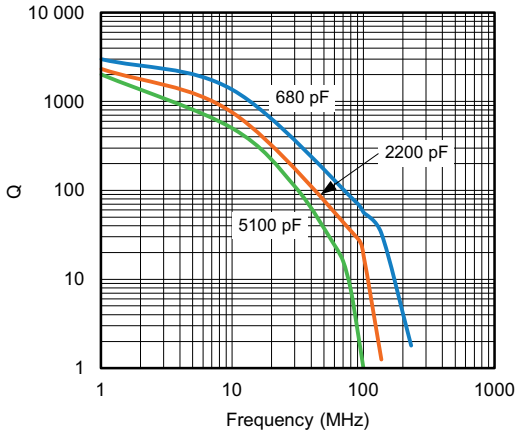
ESR vs. Frequency (Size 3838)



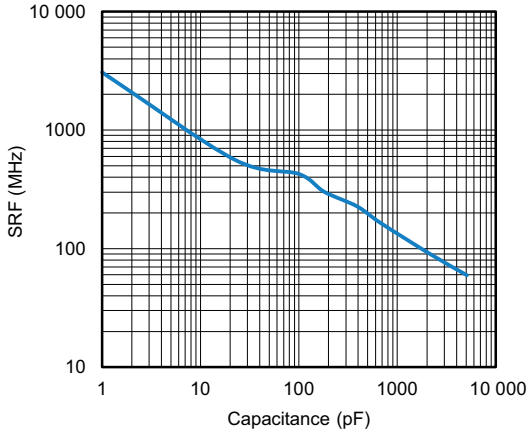
Q Value vs. Frequency (Size 3838)



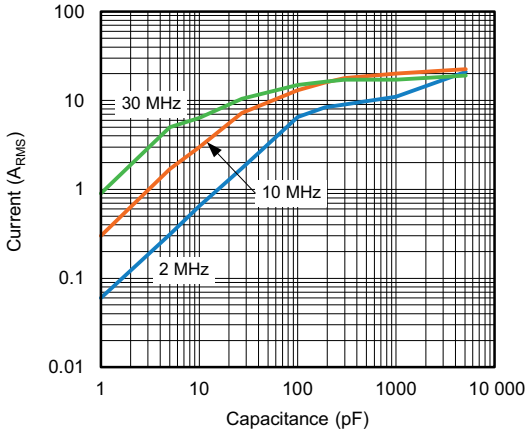
Q Value vs. Frequency (Size 3838)



SRF vs. Capacitance (Size 3838)



Current Rating (Size 3838, Ext. Voltage)



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STANDARD PACKAGING QUANTITIES (1)(2)(3)

CASE CODE	TAPE SIZE	7" REEL QUANTITIES			11 1/4" AND 13" REEL QUANTITIES		WAFFLE PACK
		PAPER TAPE PACKAGING CODE "C" / "O"	PLASTIC TAPE PACKAGING CODE "T"	LOW QUANTITY "J" (5)	PAPER TAPE PACKAGING CODE "P" / "I"	PLASTIC TAPE PACKAGING CODE "R"	PLASTIC WAFFLE PACK PACKAGING CODE "W"
0402	8 mm	5000	n/a	1000	10 000	n/a	n/a
0603 (4)	8 mm	4000	4000	1000	10 000	10 000	n/a
0805 (4)	8 mm	n/a	3000	1000	n/a	10 000	n/a
0505	8 mm	n/a	3000	1000	n/a	10 000	n/a
1111	8 mm	n/a	2500	1000	n/a	9000	n/a
2525	12 mm	n/a	800	500	n/a	n/a	81
3838	16 mm	n/a	400	100	n/a	n/a	35

Notes

(1) Vishay Vitramon uses embossed plastic carrier tape
(2) Reference: EIA standard RS 481 - "Taping of Surface Mount Components for Automatic Placement"
(3) n/a = not available
(4) Packaging "C" / "P" / "O" / "I" and "T" / "R" or lower quantities can depend from product thickness
(5) Paper / plastic tape used by availability

STORAGE AND HANDLING CONDITIONS

(1) Store the components at 5 °C to +40 °C ambient temperature and ≤ 70 % relative humidity conditions.
(2) The product is recommended to be used within a time-frame of 2 years after shipment.
Check solderability in case extended shelf life beyond the expiry date is needed.

Precautions:

a. Do not store products in an environment containing corrosive elements, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. This may cause corrosion or oxidization of the terminations, which can easily lead to poor soldering.
b. Store products on the shelf and avoid exposure to moisture or dust.
c. Do not expose products to excessive shock, vibration, direct sunlight and so on.

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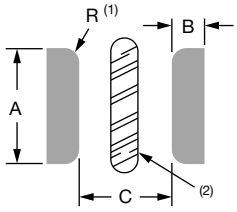
Solder Pad Dimensions for Vishay Surface-Mount Multilayer Ceramic Chip Capacitors

DIMENSIONS in millimeters



CASE CODE	A	B	C
0402	0.50	0.50	0.40
0505	1.35	1.00	0.60
0603	0.90	1.00	1.00 (3)
0805	1.30	1.20	1.00
1111	2.90	1.30	1.75
1206	1.80	1.20	2.10
1210	2.80	1.30	1.90
1808	2.40	1.50	3.00
1812	3.60	1.50	3.00
1825	6.50	1.50	3.00
2008	2.70	1.50	4.08
2220	5.50 (4)	1.50	4.20
2225	6.50	1.50	4.20
2525	6.60	1.50	4.50
3040	10.80	2.00	5.50
3640	10.80	2.00	7.00
3838	10.20	2.00	7.50
4044	12.30	2.00	8.00

Notes

(1) For safety capacitors and voltages above 3000 V, corner rounding (R) of 0.5 mm is recommended to suppress arcing
(2) Add a 1 mm slot in PCB between pads to allow cleaning and coating under MLCC
(3) For VJ HiFREQ Series, this dimension is 0.6 mm
(4) For safety capacitors, the A dimension should be 5.80 mm

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PRINTED CIRCUIT BOARD PCB DESIGN CONSIDERATIONS FOR HIGH VOLTAGE SURFACE-MOUNT MLCCS

Special assembly process and design considerations should be employed for today's high voltage rating MLCCs. As case sizes remain the same and voltage ratings increase, MLCC manufacturers must design, evaluate, and qualify their capacitors using methods that reduce the occurrence of corona discharge and arcover events. To meet similar capability in high voltage applications, users should employ similar cautionary design and assembly methods.

MLCC PAD LAYOUT

A capacitor's arcover inception point can degrade due to factors such as the MLCC termination, PCB pad design, PCB cleanliness, solder flux residue, surface contamination / deposits and environmental conditions. PCB pads and their design affect the air gap distance between the opposing polarities of the MLCC termination. For voltage rating greater than 1500 V_{DC} add a corner radius to the inward facing edge of the MLCC pads and as large a gap as possible between the pads. Too small of a pad gap distance will reduce the capacitor's own arcover inception voltage level. Refer to the Figure and Table Figure 1.0, MLCC Pad Layout and Table 1.0, Vishay MLCC Solder Pad Dimensions for the recommended MLCC solder pad dimensions.

SLOT OR TRENCH BETWEEN PADS

PCB assembly can deposit dust, trap solder balls, or flux residue underneath the capacitors. These contaminants will reduce conductive clearances and the arcover inception level. Assembly methods must include a final PCB cleaning process. A slot or trench can be cut into the PCB in between the pads to allow cleaners to penetrate underneath the MLCC. The slot will also allow conformal or epoxy coatings to flow underneath the MLCC and build an insulative barrier between pads. Refer to Figure 1.0 MLCC Pad Layout for slot reference location.

COATING PRINTED CIRCUIT BOARD

Coating a printed circuit board with materials such as acrylic, silicone and urethane resins provide a protective dielectric barrier that is non-conductive and will enhance the resistance to arcing. Various processes exist which include dipping, brushing, and spaying. Optimal performance will come from coating the MLCC on all sides, top and bottom. The PCB slot in between the pads should extend slightly beyond the width of the MLCC. Refer to Figure 1.0 MLCC Pad Layout for slot reference location.

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