



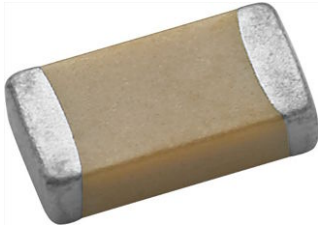
Part Numbering / Ordering Information

PART NUMBERING / ORDERING INFORMATION (1)								
VJ0805	Y	102	K	X	A	A	C	2L
CASE CODE (6)	DIELECTRIC	CAPACITANCE NOMINAL CODE	TOLERANCE CODE	TERMINATION	VOLTAGE RATING	MARKING OPTION (2)	PACKAGING	PROCESS CODE (6)
0201	A = COG (NP0)	Expressed in picofarad (pF). The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point. Example: 0R3 = 0.3 pF 4R7 = 4.7 pF 102 = 1000 pF 473 = 47 000 pF	V = ± 0.05 pF B = ± 0.10 pF C = ± 0.25 pF D = ± 0.50 pF F = ± 1 % G = ± 2 % H = ± 3 % J = ± 5 % K = ± 10 % M = ± 20 % Z = -20 % / +80 %	X = Ni barrier 100 % matte tin plate finish	Y = 6.3 V _{DC}	A = unmarked M = marking vendor ID + 2 character cap. code (size 0805 / 1206 / 0505 / 1111 / 2525 / 3838) B = marking for automotive VJ...31 / VJ...31X vendor ID + date code (size 0805 / 1206) S = marking for safety caps	T = 7" reel / plastic tape C = 7" reel / paper tape O = 7" reel / flamed paper tape used for AgPd termination 0402 / 0603 / 0805 J = 7" reel (low quantity) E = 7" reel / plastic tape only used automotive VJ...31 / VJ...34 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 used for AgPd termination 0402 / 0603 / 0805 M = 11 1/4" / 13" reel / plastic tape only used automotive VJ...31 / VJ...34	00, 54 = standard
0402					Q = 10 V _{DC}			31, 34, 31X = automotive
0505	Y = X7R			B = polymer 100 % matte tin plate finish	J = 16 V _{DC}			4X, 5H = open mode
0603	G = X5R			F, E = AgPd (4)	X = 25 V _{DC}			5Z = HV Arc Guard®
06C4 (3)	H = X8R			L = Ni barrier tin / lead plate min. 4 % lead	Z = 35 V _{DC}			X1, X2 = safety caps
0805	Q = high Q			N = non-magnetic (7)	A = 50 V _{DC}			SE = Source Energy Capacitor (SEC)
1111	V = Y5V			C = copper barrier 100 % matte tin plate finish (non-magnetic) (7)	B = 100 V _{DC}			8R = Controlled Discharge Capacitor (CDC)
1206	L = ultra high Q low ESR				C = 200 V _{DC}			2L, 2M, 68, 5G = high-rel.
1210					P = 250 V _{DC}			W1BC = basic commodity
1808	D = HIFREQ				D = 300 V _{DC}			
1812			T = 400 V _{DC}					
1825			E = 500 V _{DC}					
2008			L = 630 V _{DC}					
2012			I = 800 V _{DC}					
2220			G = 1000 V _{DC}					
2225			R = 1500 V _{DC}					
2525			F = 2000 V _{DC}					
3040			O = 2500 V _{DC}					
3640			H = 3000 V _{DC}					
3838		W = 3600 V _{DC}						
4044		M = 5000 V _{DC}						
			S = 7200 V _{DC} S = 4 V _{DC} only for VJ...W1BC series					
			U = 250 V _{AC}					

Notes

- (1) For details see individual datasheets
- (2) Marking option is not available in process code W1BC
- (3) Chip array size 0612 including 4 capacitors VJ06C4...W1BC, only Basic Commodity Series
- (4) Termination code "E" for conductive epoxy assembly, contact mlcc@vishay.com for availability
- (5) Case size designator may be replaced by a four digit drawing number
- (6) Customer specific process codes are also possible
- (7) For non-magnetic termination, "C" is recommended for solder assembly, and "N" for conductive epoxy assembly

Surface Mount Multilayer Ceramic Chip Capacitors for High Frequency Applications



FEATURES

- Ultra-stable dielectric offering a Temperature Coefficient of Capacitance (TCC) of 0 ppm/°C ± 30 ppm/°C over the entire temperature range
- Low Dissipation Factor (DF)
- Wet build process
- Reliable Noble Metal Electrode (NME) system
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)
Available

APPLICATIONS

- Ideal for critical timing applications
- Ideal for tuning applications

ELECTRICAL SPECIFICATIONS

Note

- Electrical characteristics at + 25 °C unless otherwise specified.

Operating Temperature: - 55 °C to + 150 °C

Voltage Range: 50 V_{DC} to 200 V_{DC}

Capacitance Range: 1.0 pF to 220 pF

Temperature Coefficient of Capacitance (TCC):

0 ppm/°C ± 30 ppm/°C from - 55 °C to + 125 °C

Dissipation Factor (DF):

0.1 % maximum at 1.0 V_{RMS} and 1 MHz for values ≤ 1000 pF

0.1 % maximum 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:

≤ 200 V_{DC}-rated: 250 % of rated voltage

QUICK REFERENCE DATA				
DIELECTRIC	CASE	MAXIMUM VOLTAGE (V)	CAPACITANCE	
			MINIMUM	MAXIMUM
HIGH Q COG (NP0)	0603	100	1.0 pF	100 pF
	0805	200	1.0 pF	220 pF

Note

- Detail ratings see "Selection Chart"

ORDERING INFORMATION								
VJ0805	Q	101	K	X	A	A	C	### ⁽²⁾
CASE CODE	DIELECTRIC	CAPACITANCE NOMINAL CODE	CAPACITANCE TOLERANCE	TERMINATION	DC VOLTAGE RATING ⁽¹⁾	MARKING	PACKAGING	PROCESS CODE
0603 0805	Q = HIGH Q	Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point. Examples: 101 = 100 pF 1R8 = 1.8 pF	B = ± 0.10 pF C = ± 0.25 pF D = ± 0.5 pF F = ± 1 % G = ± 2 % J = ± 5 % K = ± 10 % Note B, C, D < 10 pF F, G, J, K ≥ 10 pF	X = Ni barrier 100 % tin plated F, E = AgPd ⁽³⁾	A = 50 V B = 100 V C = 200 V	A = Unmarked	C = 7" reel/paper tape O = reel/flamed paper tape I = 11 1/4"/13" reel/flamed paper tape P = 11 1/4"/13" reel/paper tape Note "O" and "I" are used for "F" and "E" termination	

Notes

- Size 0402 available with Vishay Basic Commodity series, see datasheet: www.vishay.com/doc?28534
- (1) DC voltage rating should not be exceeded in application. Other application factors may affect the MLCC performance. Consult for questions: mlcc@vishay.com
- (2) Process code may be added with up to three digits, used to control non-standard products and /or special requirements.
- (3) Termination code "E" is for conductive epoxy assembly.

ENVIRONMENTAL STATUS			
TERMINATION CODE	TERMINATION DESCRIPTION	RoHS COMPLIANT	VISHAY GREEN
X	Ni barrier 100 % tin plated matte finish	Yes	Yes
E	AgPd	Yes	Yes
F	AgPd	Yes	No

DIMENSIONS in inches (millimeters)						
CASE CODE	STYLE	LENGTH (L)	WIDTH (W)	MAXIMUM THICKNESS (T)	TERMINATION (P)	
					MINIMUM	MAXIMUM
0603	VJ0603	0.063 ± 0.006 (1.60 ± 0.15)	0.031 ± 0.006 (0.80 ± 0.15)	0.036 (0.92)	0.012 (0.30)	0.018 (0.46)
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)	0.028 (0.71)



SELECTION CHART						
DIELECTRIC		HIGH Q				
STYLE		VJ0603		VJ0805		
CASE CODE		0603		0805		
VOLTAGE (V _{DC})		50	100	50	100	200
VOLTAGE CODE		A	B	A	B	C
CAP. CODE	CAP.					
1R0	1.0 pF	••	••	••	••	••
1R2	1.2 pF	••	••	••	••	••
1R5	1.5 pF	••	••	••	••	••
1R8	1.8 pF	••	••	••	••	••
2R2	2.2 pF	••	••	••	••	••
2R7	2.7 pF	••	••	••	••	••
3R3	3.3 pF	••	••	••	••	••
3R9	3.9 pF	••	••	••	••	••
4R7	4.7 pF	••	••	••	••	••
5R6	5.6 pF	••	••	••	••	••
6R8	6.8 pF	••	••	••	••	••
8R2	8.2 pF	••	••	••	••	••
100	10 pF	••	••	••	••	••
120	12 pF	••	••	••	••	••
150	15 pF	••	••	••	••	••
180	18 pF	••	••	••	••	••
220	22 pF	••	••	••	••	••
270	27 pF	••	••	••	••	••
330	33 pF	••	••	••	••	••
390	39 pF	••	••	••	••	••
470	47 pF	••	••	••	••	••
560	56 pF	••	••	••	••	••
680	68 pF	••	••	••	••	••
820	82 pF	••	••	••	••	••
101	100 pF	••	••	••	••	••
121	120 pF			••	••	••
151	150 pF			••	••	••
181	180 pF			••	••	
221	220 pF			••	••	

Notes

- RoHS-compliant
- Available in paper carrier tape only

HIGH Q PACKAGING QUANTITIES (1)			
CASE CODE	TAPE SIZE	7" REEL QUANTITIES	11 1/4" AND 13" REEL QUANTITIES
		PACKAGING CODE "C"/"O"	PACKAGING CODE "P"/"I"
0603	8 mm	4000	10 000
0805	8 mm	3000	10 000

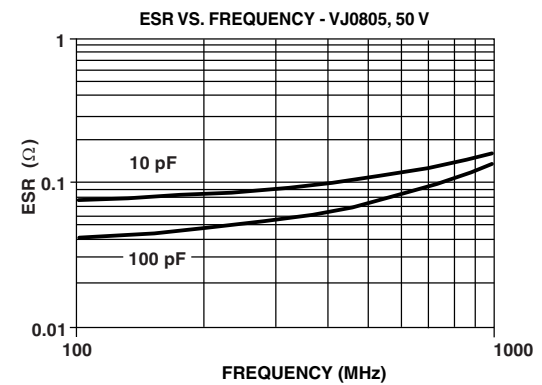
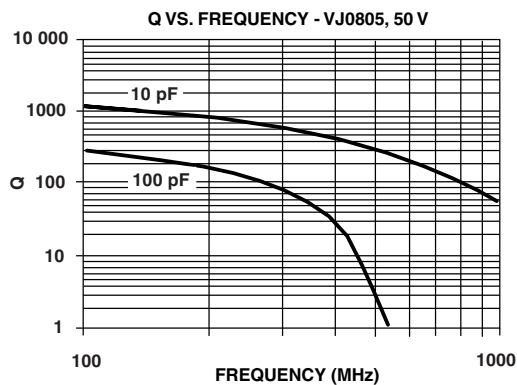
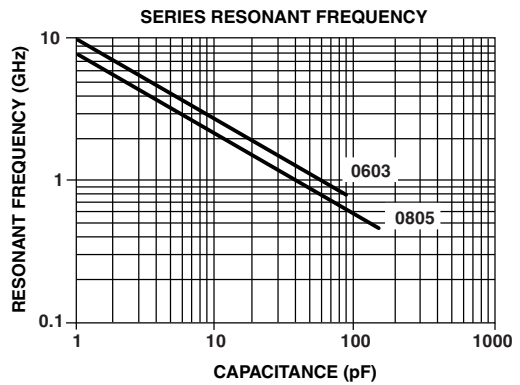
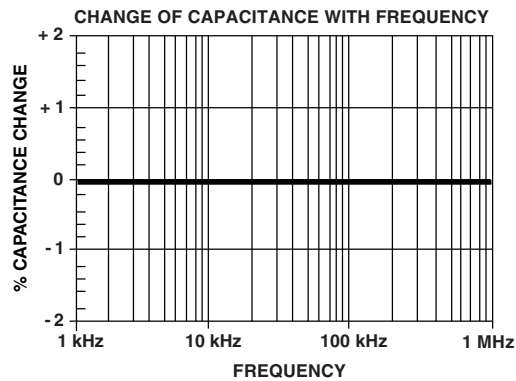
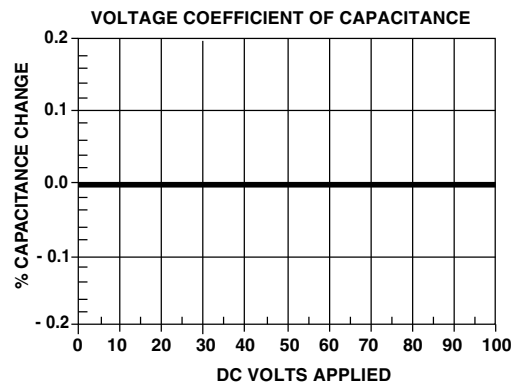
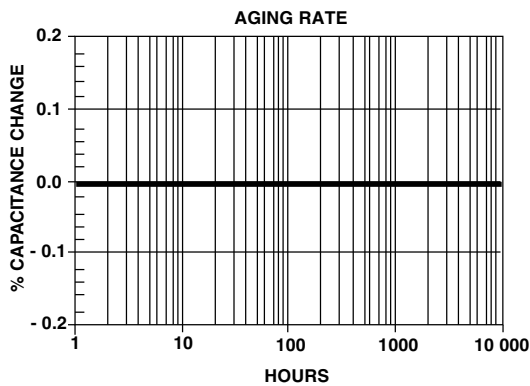
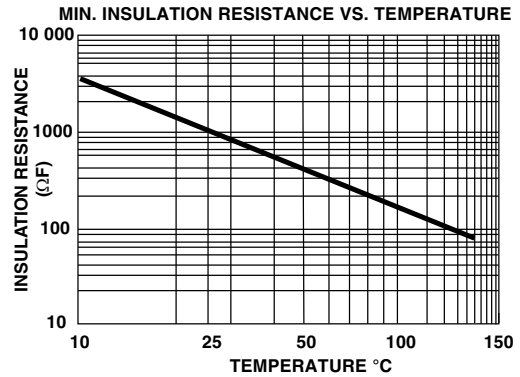
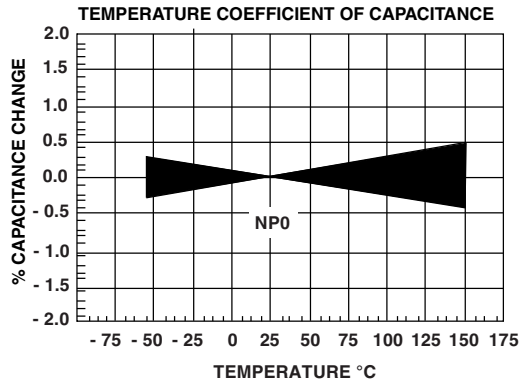
Note

(1) Reference: EIA standard RS481 - "Taping of Surface Mount Components for Automatic Placement"

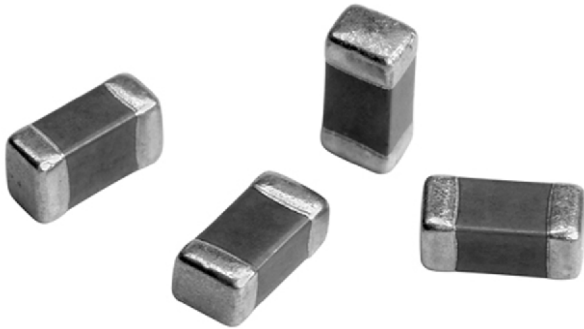
STORAGE AND HANDLING CONDITIONS
<p>(1) Store the components at 5 °C to + 40 °C ambient temperature and ≤ 70 % related humidity conditions.</p> <p>(2) The product is recommended to be used within a time-frame of 2 years after shipment. Check solderability in case extended shelf life beyond the expiry date is needed.</p> <p>Precautions:</p> <ol style="list-style-type: none"> 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.



HIGH Q DIELECTRIC - TYPICAL PARAMETERS



Surface Mount Multilayer Ceramic Chip Capacitors for High Q Commodity Applications



FEATURES

- Ultra stable class 1 dielectric
- High Q and low ESR at high frequency
- Four standard sizes
- High capacitance per unit volume
- Supplied in tape on reel
- For high frequency applications
- Ni-barrier with 100 % tin terminations
- Dry sheet manufacturing technology
- Noble Metal Electrode system (NME)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

APPLICATIONS

- Mobile telecommunication
- WLAN
- RF modules
- Tuner

ELECTRICAL SPECIFICATIONS

Note

- Electrical characteristics at 25 °C, 30 % to 70 % related humidity, unless otherwise specified

Operating Temperature: - 55 °C to + 125 °C

Capacitance Range: 0.5 pF to 3300 pF

Voltage Range: 16 V_{DC} to 100 V_{DC}

Temperature Coefficient of Capacitance (TCC):
± 30 ppm/°C from - 55 °C to + 125 °C

Dissipation Factor:

Cap. < 30 pF: Q ≥ 400 + 20 C

Cap. ≥ 30 pF: Q ≥ 1000

Test Conditions for Capacitance and DF Measurement

Cap. ≤ 1000 pF 1.0 V_{RMS} ± 0.2 V_{RMS}, 1 MHz ± 10 %

Cap. > 1000 pF 1.0 V_{RMS} ± 0.2 V_{RMS}, 1 kHz ± 10 %

Aging Rate: 0 % maximum per decade

Insulation Resistance (IR): after 120 s at U_R (DC)
≥ 10 GΩ or R x C ≥ 500 Ω x F whichever is less

Dielectric Strength Test:

This is the maximum voltage the capacitors are tested for 1 s to 5 s period and the charge/discharge current does not exceed 50 mA

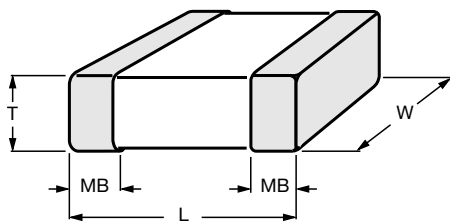
≤ 100 V_{DC}: DWV at 250 % of rated voltage

QUICK REFERENCE DATA				
DIELECTRIC	CASE	MAXIMUM VOLTAGE (V)	CAPACITANCE	
			MINIMUM	MAXIMUM
High Q	0402	50	0.5 pF	470 pF
	0603	100	0.5 pF	3.3 nF

Note

- Detail ratings see selection chart

ORDERING INFORMATION							
VJ0402	Q	101	F	X	J	C	W1BC
SIZE CODE	DIELECTRIC	CAPACITANCE	TOLERANCE	TERMINATION	VOLTAGE	PACKAGING	PROCESS CODE FOR BASIC COMMODITY
0402 0603	Q = High Q	Two significant digits followed by the number of zeros: 1R0 = 1.0 pF 101 = 100 pF	Cap. value ≤ 5 pF B = ± 0.10 pF C = ± 0.25 pF 5 pF > Cap. value < 10 pF C = ± 0.25 pF D = ± 0.50 pF Cap. value ≥ 10 pF F = ± 1 % G = ± 2 % J = ± 5 %	X = Ni barrier 100 % tin termination	J = 16 V X = 25 V A = 50 V B = 100 V	C = 7" reel/paper P = 13" reel/paper	

DIMENSIONS in inches (millimeters)					
	SIZE CODE	L	W	T MAX.	MB
	0402 (1005)	0.040 ± 0.002 (1.00 ± 0.05)	0.020 ± 0.002 (0.50 ± 0.05)	0.022 (0.55)	0.010 + 0.002/- 0.004 (0.25 + 0.05/- 0.10)
	0603 (1608)	0.063 + 0.006/- 0.004 (1.60 + 0.15/- 0.10)	0.030 + 0.006/- 0.004 (0.80 + 0.15/- 0.10)	0.038 (0.95)	0.016 ± 0.006 (0.40 ± 0.15)



SELECTION CHART									
DIELECTRIC		HIGH Q							
STYLE		VJ0402				VJ0603			
SIZE CODE		0402				0603			
VOLTAGE (V _{DC})		16 V	25 V	50 V	100 V	16 V	25 V	50 V	100 V
VOLTAGE CODE		J	X	A	B	J	X	A	B
CAP. CODE	CAP.								
0R5	0.5 pF		N	N			S	S	S
1R0	1.0 pF		N	N			S	S	S
1R2	1.2 pF		N	N			S	S	S
1R5	1.5 pF		N	N			S	S	S
1R8	1.8 pF		N	N			S	S	S
2R2	2.2 pF		N	N			S	S	S
2R7	2.7 pF		N	N			S	S	S
3R3	3.3 pF		N	N			S	S	S
3R9	3.9 pF		N	N			S	S	S
4R7	4.7 pF		N	N			S	S	S
5R6	5.6 pF		N	N			S	S	S
6R8	6.8 pF		N	N			S	S	S
8R2	8.2 pF		N	N			S	S	S
100	10 pF		N	N			S	S	S
120	12 pF		N	N			S	S	S
150	15 pF		N	N			S	S	S
180	18 pF		N	N			S	S	S
220	22 pF		N	N			S	S	S
270	27 pF		N	N			S	S	S
330	33 pF		N	N			S	S	S
390	39 pF		N	N			S	S	S
470	47 pF		N	N			S	S	S
560	56 pF		N	N			S	S	S
680	68 pF		N	N			S	S	S
820	82 pF		N	N			S	S	S
101	100 pF		N	N			S	S	S
121	120 pF		N	N			S	S	S
151	150 pF		N	N			S	S	S
181	180 pF		N	N			S	S	S
221	220 pF		N	N			S	S	S
271	270 pF	N	N	N			S	S	S
331	330 pF	N	N	N			S	S	S
391	390 pF	N	N	N			S	S	S
471	470 pF	N	N	N			S	S	S
561	560 pF						S	S	S
681	680 pF						S	S	S
821	820 pF						S	S	S
102	1000 pF						S	S	S
122	1200 pF					X	X	X	
152	1500 pF					X	X	X	
182	1800 pF					X	X	X	
222	2200 pF					X	X	X	
272	2700 pF					X	X	X	
332	3300 pF					X	X	X	
472	4700 pF								
562	5600 pF								
682	6800 pF								
822	8200 pF								
103	10 000 pF								

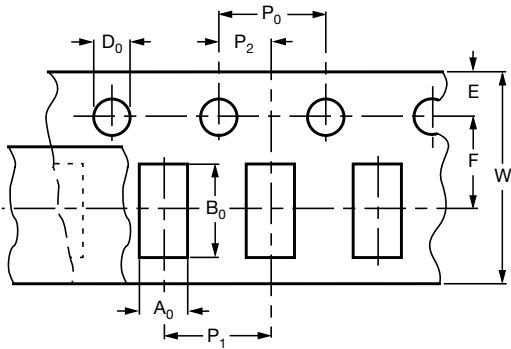
Note

- Letters indicate product thickness, see packaging quantities



PACKAGING QUANTITIES				
SIZE CODE (inch/mm)	MAX. THICKNESS (mm)	THICKNESS SYMBOL	PAPER TAPE	
			7" REEL (C)	13" REEL (P)
0402 (1002)	0.55	N	10K	20K
0603 (1608)	0.95	S, X	4K	15K

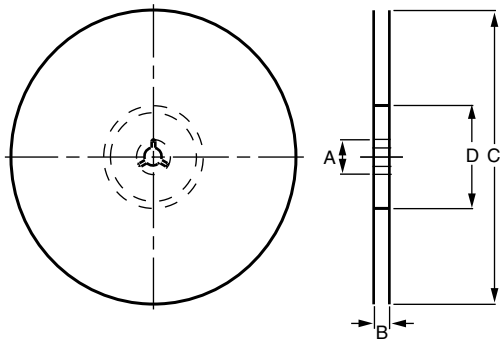
PAPER TAPE SPECIFICATION



DIMENSIONS OF PAPER TAPE
in millimeters

SYM.	PRODUCT SIZE CODE	
	0402	0603
A_0	0.62 ± 0.05	1.02 ± 0.05
B_0	1.12 ± 0.05	1.80 ± 0.05
W	8.00 ± 0.10	8.00 ± 0.10
E	1.75 ± 0.05	1.75 ± 0.05
F	3.50 ± 0.05	3.50 ± 0.05
D_0	1.55 ± 0.05	1.55 ± 0.05
P_0	4.00 ± 0.10	4.00 ± 0.10
P_1	2.00 ± 0.05	4.00 ± 0.10
P_2	2.00 ± 0.05	2.00 ± 0.05

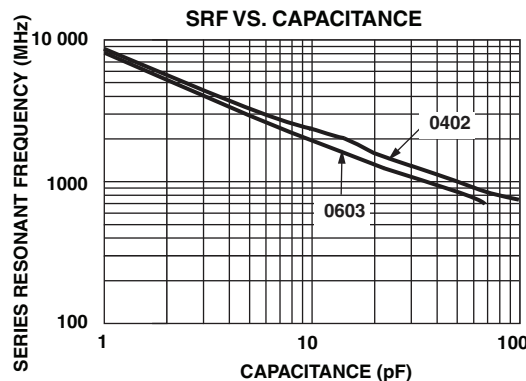
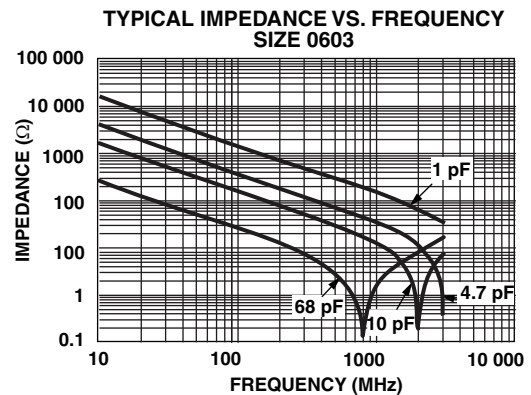
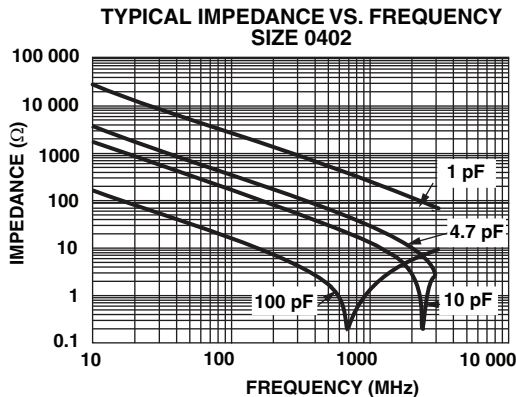
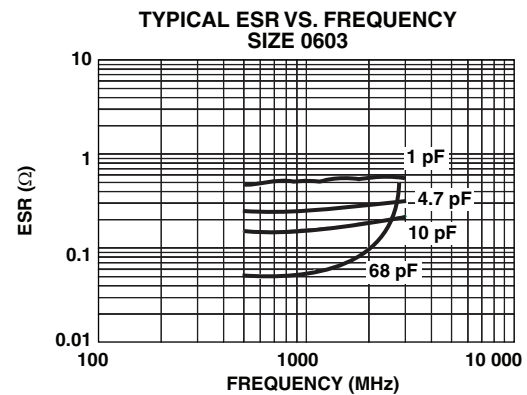
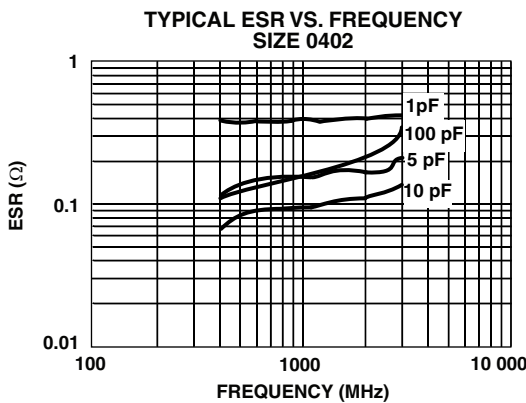
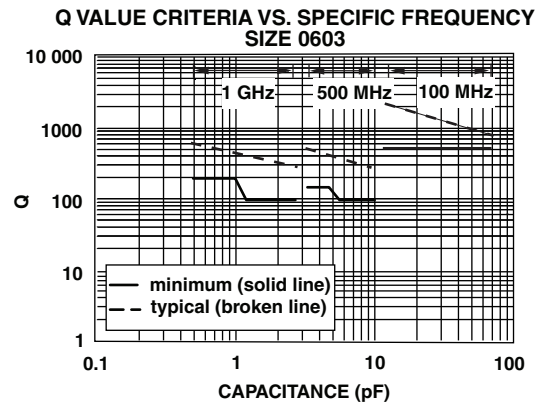
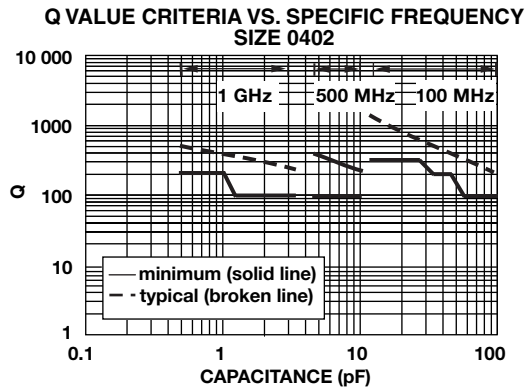
REEL SPECIFICATIONS



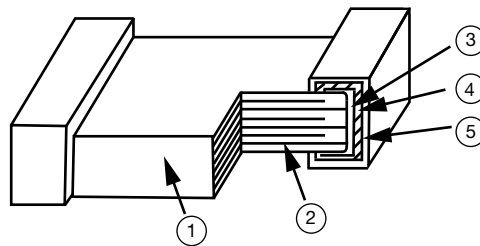
REEL DIMENSIONS AND TAPE WIDTH
in millimeters

	$\varnothing 180 \text{ mm}; 7''$	$\varnothing 330 \text{ mm}; 13''$
A	13.0 ± 0.5	13.0 ± 0.5
B	9.0 ± 1.0	9.0 ± 1.0
C	178.0 ± 1.0	330.0 ± 1.0
D	60.0 ± 1.0	100.0 ± 1.0

TYPICAL ELECTRICAL CHARACTERISTICS



CONSTRUCTION		
NO.	NAME	HIGH Q
1	Ceramic material	BaTiO ₃ based
2	Inner electrode	AgPd alloy
3	Termination	Inner layer
4		Middle layer
5		Outer layer
		Sn (matt)



STORAGE AND HANDLING CONDITIONS

- (1) To store products at 5 °C to 40 °C ambient temperature and 20 % to 70 % relative humidity conditions.
- (2) The product is recommended to be used within one year after shipment. Check solderability in case of shelf life extension is needed.

Cautions:

- a. Do not store products in a corrosive environment such as sulfide, chloride gas, or acid. It may cause oxidation of electrode, which easily be resulted in poor soldering.
- b. To store products on the shelf and avoid exposure to moisture.
- c. Do not expose products to excessive shock, vibration, direct sunlight and so on.