

# Multilayer Ceramic Chip Capacitor

## Ultra high Q/ low ESR Type

UQ Series

MERITEK

### FEATURE

- Ultra high Q and low ESR performance at high frequency
- Ultra low capacitance to 0.1pF
- Can offer high precision tolerance to  $\pm 0.005\text{pF}$
- Operating Temperature:  $-55 \sim +125^\circ\text{C}$
- Applications: Telecommunication Products & Equipments: mobile phone, WLAN and base station, RF Module: power amplifier, VCO, Tuners



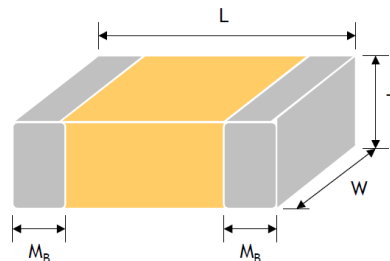
### PART NUMBERING SYSTEM



UQ (1)   0805 (2)   N (3)   101 (4)   J (5)   101 (6)

No	Item	Code	Description	Series Reference
(1)	Meritek Series	UQ	Meritek Ceramic Chip Capacitor series	ultra high Q / Low ESR type
(2)	Size code	0805	0805: 2.00mm X 1.25mm	0201: 0.6mm X 0.3mm, 0402: 1.0mm X 0.5mm, 0603: 1.6mm X 0.8mm, 01005:0.4mm X 0.2mm, 0505:1.6mm X 1.4mm
(3)	Dielectric	N	NP0(C0G)	EIA Class I ceramic materials
(4)	Capacitance	101	101: $10 \times 10^1 \text{pF} = 100\text{pF}$	0R1:0.1pF ~ 101: 100pF
(5)	Tolerance	J	J: $\pm 5\%$	A: $\pm 0.05\text{pF}$ , B: $\pm 0.1\text{pF}$ , C: $\pm 0.25\text{pF}$ , D: $\pm 0.50 \text{pF}$ , F: $\pm 1\%$ , G: $\pm 2\%$
(6)	Rated Voltage	101	Working Voltage: 100VDC	6R3: 6.3VDC ~ 501: 500VDC

### DIMENSIONS



Size Code	L (mm)	W (mm)	T (mm) / Code		M <sub>B</sub> Min (mm)
01005	0.40 $\pm$ 0.02	0.20 $\pm$ 0.02	0.20 $\pm$ 0.02	V	0.10 $\pm$ 0.03
0201	0.60 $\pm$ 0.03	0.30 $\pm$ 0.03	0.30 $\pm$ 0.03	L	0.15 $\pm$ 0.05
0402	1.00 $\pm$ 0.05	0.50 $\pm$ 0.05	0.50 $\pm$ 0.05	N	0.225 $\pm$ 0.075
0603	1.60 $\pm$ 0.10	0.80 $\pm$ 0.10	0.80 $\pm$ 0.07	S	0.40 $\pm$ 0.15
	1.625 $\pm$ 0.125	0.825 $\pm$ 0.125	0.50 $\pm$ 0.10	H	
0805	2.00 $\pm$ 0.15	1.25 $\pm$ 0.10	0.60 $\pm$ 0.10	A	0.50 $\pm$ 0.20
	2.00 $\pm$ 0.20	1.25 $\pm$ 0.20	0.85 $\pm$ 0.10	T	
0505	1.59 $\pm$ 0.19	1.40 $\pm$ 0.38	1.15 $\pm$ 0.15	J	0.31 $\pm$ 0.19

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### ELECTRICAL CHARACTERISTICS

Item	Characteristics					
Dielectric	NPO					
Chip Size	01005	0201	0402	0603	0805	0505
Rated Voltage (WVDC)	6.3V, 10V, 25V, 50V, 100V, 250V, 500V					
Capacitance Range*	0.1pF ~ 100pF					
Capacitance Tolerance	<ul style="list-style-type: none"> <li>Cap≤5pF: A (±0.05pF), B (±0.1pF), C (±0.25pF)</li> <li>5pF&lt;Cap&lt;10pF: B (±0.1pF), C (±0.25pF), D (±0.5pF)</li> <li>Cap≥10pF: F (±1% pF), G (±2% pF), J (±5% pF)</li> </ul>					
Q <sup>Note</sup>	01005, 0201, 0402 / 25V~50V: 1)Cap<30pF: Q≥400+20C; 2)Cap≥30pF: Q≥1000 0402/100V~200V, 0603, 0805, 0505: 1)Cap<30pF: Q≥800+20C; 2) Cap≥30pF: Q≥1400					
Insulation Resistance at Ur	≥10GΩ or RxC≥100Ω-F Whichever is smaller.					
Operation Temperature	-55 ~ +125°C					
Temperature Coefficient	±30 ppm/°C; 0201: Cap≥22pF, ±60ppm/°C					
Termination	Ni/Sn (lead-free termination)					

### CAPACITANCE RANGE

Size 01005		UQ01005 series		Tolerance
C (pF)	Code	16V	25V	
0.2pF	0R2	V	V	A, B
0.3pF	0R3	V	V	A, B
0.4pF	0R4	V	V	A, B
0.5pF	0R5	V	V	A, B, C
0.6pF	0R6	V	V	A, B, C
0.7pF	0R7	V	V	A, B, C
0.8pF	0R8	V	V	A, B, C
0.9pF	0R9	V	V	A, B, C
1.0pF	1R0	V	V	A, B, C
1.2pF	1R2	V	V	A, B, C
1.5pF	1R5	V	V	A, B, C
1.8pF	1R8	V	V	A, B, C
2.0pF	2R0	V	V	A, B, C
2.2pF	2R2	V	V	A, B, C
2.7pF	2R7	V	V	A, B, C
3.0pF	3R0	V	V	A, B, C
3.3pF	3R3	V	V	A, B, C
3.9pF	3R9	V	V	A, B, C
4.0pF	4R0	V	V	A, B, C
4.7pF	4R7	V	V	A, B, C
5.0pF	5R0	V	V	A, B, C
5.6pF	5R6	V	V	B, C, D
6.0pF	6R0	V	V	B, C, D
6.8pF	6R8	V	-	B, C, D
7.0pF	7R0	V	-	B, C, D
8.0pF	8R0	V	-	B, C, D
8.2pF	8R2	V	-	B, C, D
9.0pF	9R0	V	-	B, C, D
10pF	100	V	V	C, D, G
12pF	120	V	V	J
15pF	150	V	V	J
20pF	200	V	V	J
22pF	220	V	V	J

Note: The letter in cell is expressed the product thickness code.

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UQ Series

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### CAPACITANCE RANGE (CONTINUED)

Size 0201 / 0402		UQ0201 series				UQ0402 series				Tolerance
C (pF)	Code	6.3V	10V	25V	50V	25V	50V	100V	200V	
0.1pF	0R1	L	L	L	L	N	N	N	N	B
0.2pF	0R2	L	L	L	L	N	N	N	N	A, B
0.3pF	0R3	L	L	L	L	N	N	N	N	A, B
0.4pF	0R4	L	L	L	L	N	N	N	N	A, B
0.5pF	0R5	L	L	L	L	N	N	N	N	A, B, C
0.6pF	0R6	L	L	L	L	N	N	N	N	A, B, C
0.7pF	0R7	L	L	L	L	N	N	N	N	A, B, C
0.8pF	0R8	L	L	L	L	N	N	N	N	A, B, C
0.9pF	0R9	L	L	L	L	N	N	N	N	A, B, C
1.0pF	1R0	L	L	L	L	N	N	N	N	A, B, C
1.1pF	1R1	L	L	L	L	N	N	N	N	A, B, C
1.2pF	1R2	L	L	L	L	N	N	N	N	A, B, C
1.3pF	1R3	L	L	L	L	N	N	N	N	A, B, C
1.4pF	1R4	L	L	L	L	N	N	N	N	A, B, C
1.5pF	1R5	L	L	L	L	N	N	N	N	A, B, C
1.6pF	1R6	L	L	L	L	N	N	N	N	A, B, C
1.7pF	1R7	L	L	L	L	N	N	N	N	A, B, C
1.8pF	1R8	L	L	L	L	N	N	N	N	A, B, C
1.9pF	1R9	L	L	L	L	N	N	N	N	A, B, C
2.0pF	2R0	L	L	L	L	N	N	N	N	A, B, C
2.1pF	2R1	L	L	L	L	N	N	N	N	A, B, C
2.2pF	2R2	L	L	L	L	N	N	N	N	A, B, C
2.3pF	2R3	L	L	L	L	N	N	N	N	A, B, C
2.4pF	2R4	L	L	L	L	N	N	N	N	A, B, C
2.5pF	2R5	L	L	L	L	N	N	N	N	A, B, C
2.6pF	2R6	L	L	L	L	N	N	N	N	A, B, C
2.7pF	2R7	L	L	L	L	N	N	N	N	A, B, C
2.8pF	2R8	L	L	L	L	N	N	N	N	A, B, C
2.9pF	2R9	L	L	L	L	N	N	N	N	A, B, C
3.0pF	3R0	L	L	L	L	N	N	N	N	A, B, C
3.1pF	3R1	L	L	L	L	N	N	N	N	A, B, C
3.2pF	3R2	L	L	L	L	N	N	N	N	A, B, C
3.3pF	3R3	L	L	L	L	N	N	N	N	A, B, C
3.4pF	3R4	L	L	L	L	N	N	N	N	A, B, C
3.5pF	3R5	L	L	L	L	N	N	N	N	A, B, C
3.6pF	3R6	L	L	L	L	N	N	N	N	A, B, C
3.7pF	3R7	L	L	L	L	N	N	N	N	A, B, C
3.8pF	3R8	L	L	L	L	N	N	N	N	A, B, C
3.9pF	3R9	L	L	L	L	N	N	N	N	A, B, C
4.0pF	4R0	L	L	L	L	N	N	N	N	A, B, C
4.1pF	4R1	L	L	L	L	N	N	N	N	A, B, C
4.2pF	4R2	L	L	L	L	N	N	N	N	A, B, C
4.3pF	4R3	L	L	L	L	N	N	N	N	A, B, C
4.4pF	4R4	L	L	L	L	N	N	N	N	A, B, C
4.5pF	4R5	L	L	L	L	N	N	N	N	A, B, C
4.6pF	4R6	L	L	L	L	N	N	N	N	A, B, C
4.7pF	4R7	L	L	L	L	N	N	N	N	A, B, C

Note: The letter in cell is expressed the product thickness code.

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### CAPACITANCE RANGE (CONTINUED)

Size 0201 / 0402		UQ0201 series				UQ0402 series				Tolerance
C (pF)	Code	6.3V	10V	25V	50V	25V	50V	100V	200V	
4.8pF	4R8	L	L	L	L	N	N	N	N	A, B, C
4.9pF	4R9	L	L	L	L	N	N	N	N	A, B, C
5.0pF	5R0	L	L	L	L	N	N	N	N	A, B, C
5.1pF	5R1	L	L	L	L	N	N	N	N	B, C, D
5.2pF	5R2	L	L	L	L	N	N	N	N	B, C, D
5.3pF	5R3	L	L	L	L	N	N	N	N	B, C, D
5.4pF	5R4	L	L	L	L	N	N	N	N	B, C, D
5.5pF	5R5	L	L	L	L	N	N	N	N	B, C, D
5.6pF	5R6	L	L	L	L	N	N	N	N	B, C, D
5.7pF	5R7	L	L	L	L	N	N	N	N	B, C, D
5.8pF	5R8	L	L	L	L	N	N	N	N	B, C, D
5.9pF	5R9	L	L	L	L	N	N	N	N	B, C, D
6.0pF	6R0	L	L	L	L	N	N	N	N	B, C, D
6.1pF	6R1	L	L	L	L	N	N	N	N	B, C, D
6.2pF	6R2	L	L	L	L	N	N	N	N	B, C, D
6.3pF	6R3	L	L	L	L	N	N	N	N	B, C, D
6.4pF	6R4	L	L	L	L	N	N	N	N	B, C, D
6.5pF	6R5	L	L	L	L	N	N	N	N	B, C, D
6.6pF	6R6	L	L	L	L	N	N	N	N	B, C, D
6.7pF	6R7	L	L	L	L	N	N	N	N	B, C, D
6.8pF	6R8	L	L	L	L	N	N	N	N	B, C, D
6.9pF	6R9	L	L	L	L	N	N	N	N	B, C, D
7.0pF	7R0	L	L	L	L	N	N	N	N	B, C, D
7.1pF	7R1	L	L	L	L	N	N	N	N	B, C, D
7.2pF	7R2	L	L	L	L	N	N	N	N	B, C, D
7.3pF	7R3	L	L	L	L	N	N	N	N	B, C, D
7.4pF	7R4	L	L	L	L	N	N	N	N	B, C, D
7.5pF	7R5	L	L	L	L	N	N	N	N	B, C, D
7.6pF	7R6	L	L	L	L	N	N	N	N	B, C, D
7.7pF	7R7	L	L	L	L	N	N	N	N	B, C, D
7.8pF	7R8	L	L	L	L	N	N	N	N	B, C, D
7.9pF	7R9	L	L	L	L	N	N	N	N	B, C, D
8.0pF	8R0	L	L	L	L	N	N	N	N	B, C, D
8.1pF	8R1	L	L	L	L	N	N	N	N	B, C, D
8.2pF	8R2	L	L	L	L	N	N	N	N	B, C, D
8.3pF	8R3	L	L	L	L	N	N	N	N	B, C, D
8.4pF	8R4	L	L	L	L	N	N	N	N	B, C, D
8.5pF	8R5	L	L	L	L	N	N	N	N	B, C, D
8.6pF	8R6	L	L	L	L	N	N	N	N	B, C, D
8.7pF	8R7	L	L	L	L	N	N	N	N	B, C, D
8.8pF	8R8	L	L	L	L	N	N	N	N	B, C, D
8.9pF	8R9	L	L	L	L	N	N	N	N	B, C, D
9.0pF	9R0	L	L	L	L	N	N	N	N	B, C, D
9.1pF	9R1	L	L	L	L	N	N	N	N	B, C, D
9.2pF	9R2	L	L	L	L	N	N	N	N	B, C, D

Note: The letter in cell is expressed the product thickness code.

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### CAPACITANCE RANGE (CONTINUED)

Size 0201 / 0402		UQ0201 series				UQ0402 series				Tolerance
C (pF)	Code	6.3V	10V	25V	50V	25V	50V	100V	200V	
9.3pF	9R3	L	L	L	L	N	N	N	N	B, C, D
9.4pF	9R4	L	L	L	L	N	N	N	N	B, C, D
9.5pF	9R5	L	L	L	L	N	N	N	N	B, C, D
9.6pF	9R6	L	L	L	L	N	N	N	N	B, C, D
9.7pF	9R7	L	L	L	L	N	N	N	N	B, C, D
9.8pF	9R8	L	L	L	L	N	N	N	N	B, C, D
9.9pF	9R9	L	L	L	L	N	N	N	N	B, C, D
10pF	100	L	L	L	L	N	N	N	N	F, G, J
11pF	110	L	L	L	L	N	N	N	N	F, G, J
12pF	120	L	L	L	L	N	N	N	N	F, G, J
13pF	130	L	L	L	L	N	N	N	N	F, G, J
15pF	150	L	L	L	L	N	N	N	N	F, G, J
16pF	160	L	L	L	L	N	N	N	N	F, G, J
18pF	180	L	L	L	L	N	N	N	N	F, G, J
20pF	200	L	L	L	L	N	N	N	N	F, G, J
22pF	220	L	L	L	-	N	N	N	N	F, G, J
24pF	240	L	L	L	-	N	N	N	N	F, G, J
27pF	270	L	L	L	-	N	N	N	N	F, G, J
30pF	300	L	L	L	-	N	N	N	N	F, G, J
33pF	330	L	L	L	-	N	N	N	N	F, G, J
36pF	360	-	-	-	-	N	N	N	-	F, G, J
39pF	390	-	-	-	-	N	N	N	-	F, G, J
43pF	430	-	-	-	-	N	N	N	-	F, G, J
47pF	470	-	-	-	-	N	N	N	-	F, G, J
56pF	560	-	-	-	-	N	N	N	-	F, G, J
68pF	680	-	-	-	-	N	N	-	-	F, G, J
82pF	820	-	-	-	-	N	N	-	-	F, G, J
100pF	101	-	-	-	-	N	N	-	-	F, G, J

### CAPACITANCE RANGE (CONTINUED)

Size 0505 / 0603 / 0805		UQ0505 series	UQ0603 series			UQ0805 series				Tolerance
C (pF)	Code	250V	50V	100V	250V	50V	100V	250V	500V	
0.1pF	0R1	-	H	H	H	-	-	-	-	A, B
0.2pF	0R2	-	H	H	H	A	A	A	A	A, B
0.3pF	0R3	-	S	S	S	T	T	T	T	A, B
0.4pF	0R4	J	S	S	S	T	T	T	T	A, B
0.5pF	0R5	J	S	S	S	T	T	T	T	A, B, C
0.6pF	0R6	J	S	S	S	T	T	T	T	A, B, C
0.7pF	0R7	J	S	S	S	T	T	T	T	A, B, C
0.8pF	0R8	J	S	S	S	T	T	T	T	A, B, C
0.9pF	0R9	J	S	S	S	T	T	T	T	A, B, C
1.0pF	1R0	J	S	S	S	T	T	T	T	A, B, C
1.1pF	1R1	J	S	S	S	T	T	T	T	A, B, C
1.2pF	1R2	J	S	S	S	T	T	T	T	A, B, C
1.3pF	1R3	J	S	S	S	T	T	T	T	A, B, C
1.4pF	1R4	J	S	S	S	T	T	T	T	A, B, C
1.5pF	1R5	J	S	S	S	T	T	T	T	A, B, C

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### CAPACITANCE RANGE (CONTINUED)

Size 0505 / 0603 / 0805		UQ0505 series	UQ0603 series				UQ0805 series				Tolerance
C (pF)	Code	250V	50V	100V	250V	50V	100V	250V	500V		
1.6pF	1R6	J	S	S	S	T	T	T	T	A, B, C	
1.7pF	1R7	J	S	S	S	T	T	T	T	A, B, C	
1.8pF	1R8	J	S	S	S	T	T	T	T	A, B, C	
1.9pF	1R9	J	S	S	S	T	T	T	T	A, B, C	
2.0pF	2R0	J	S	S	S	T	T	T	T	A, B, C	
2.1pF	2R1	J	S	S	S	T	T	T	T	A, B, C	
2.2pF	2R2	J	S	S	S	T	T	T	T	A, B, C	
2.3pF	2R3	J	S	S	S	T	T	T	T	A, B, C	
2.4pF	2R4	J	S	S	S	T	T	T	T	A, B, C	
2.5pF	2R5	J	S	S	S	T	T	T	T	A, B, C	
2.6pF	2R6	J	S	S	S	T	T	T	T	A, B, C	
2.7pF	2R7	J	S	S	S	T	T	T	T	A, B, C	
2.8pF	2R8	J	S	S	S	T	T	T	T	A, B, C	
2.9pF	2R9	J	S	S	S	T	T	T	T	A, B, C	
3.0pF	3R0	J	S	S	S	T	T	T	T	A, B, C	
3.1pF	3R1	J	S	S	S	T	T	T	T	A, B, C	
3.2pF	3R2	J	S	S	S	T	T	T	T	A, B, C	
3.3pF	3R3	J	S	S	S	T	T	T	T	A, B, C	
3.4pF	3R4	J	S	S	S	T	T	T	T	A, B, C	
3.5pF	3R5	J	S	S	S	T	T	T	T	A, B, C	
3.6pF	3R6	J	S	S	S	T	T	T	T	A, B, C	
3.7pF	3R7	J	S	S	S	T	T	T	T	A, B, C	
3.8pF	3R8	J	S	S	S	T	T	T	T	A, B, C	
3.9pF	3R9	J	S	S	S	T	T	T	T	A, B, C	
4.0pF	4R0	J	S	S	S	T	T	T	T	A, B, C	
4.1pF	4R1	J	S	S	S	T	T	T	T	A, B, C	
4.2pF	4R2	J	S	S	S	T	T	T	T	A, B, C	
4.3pF	4R3	J	S	S	S	T	T	T	T	A, B, C	
4.4pF	4R4	J	S	S	S	T	T	T	T	A, B, C	
4.5pF	4R5	J	S	S	S	T	T	T	T	A, B, C	
4.6pF	4R6	J	S	S	S	T	T	T	T	A, B, C	
4.7pF	4R7	J	S	S	S	T	T	T	T	A, B, C	
4.8pF	4R8	J	S	S	S	T	T	T	T	A, B, C	
4.9pF	4R9	J	S	S	S	T	T	T	T	A, B, C	
5.0pF	5R0	J	S	S	S	T	T	T	T	A, B, C	
5.1pF	5R1	J	S	S	S	T	T	T	T	B, C, D	
5.2pF	5R2	J	S	S	S	T	T	T	T	B, C, D	
5.3pF	5R3	J	S	S	S	T	T	T	T	B, C, D	
5.4pF	5R4	J	S	S	S	T	T	T	T	B, C, D	
5.5pF	5R5	J	S	S	S	T	T	T	T	B, C, D	
5.6pF	5R6	J	S	S	S	T	T	T	T	B, C, D	
5.7pF	5R7	J	S	S	S	T	T	T	T	B, C, D	
5.8pF	5R8	J	S	S	S	T	T	T	T	B, C, D	
5.9pF	5R9	J	S	S	S	T	T	T	T	B, C, D	
6.0pF	6R0	J	S	S	S	T	T	T	T	B, C, D	
6.1pF	6R1	J	S	S	S	T	T	T	T	B, C, D	
6.2pF	6R2	J	S	S	S	T	T	T	T	B, C, D	

Note: The letter in cell is expressed the product thickness code.

# Multilayer Ceramic Chip Capacitor

## Ultra high Q/ low ESR Type

UQ Series

**MERITEK**

### CAPACITANCE RANGE (CONTINUED)

Size 0505 / 0603 / 0805		UQ0505 series	UQ0603 series				UQ0805 series				Tolerance
C (pF)	Code	250V	50V	100V	250V	50V	100V	250V	500V		
6.3pF	6R3	J	S	S	S	T	T	T	T	B, C, D	
6.4pF	6R4	J	S	S	S	T	T	T	T	B, C, D	
6.5pF	6R5	J	S	S	S	T	T	T	T	B, C, D	
6.6pF	6R6	J	S	S	S	T	T	T	T	B, C, D	
6.7pF	6R7	J	S	S	S	T	T	T	T	B, C, D	
6.8pF	6R8	J	S	S	S	T	T	T	T	B, C, D	
6.9pF	6R9	J	S	S	S	T	T	T	T	B, C, D	
7.0pF	7R0	J	S	S	S	T	T	T	T	B, C, D	
7.1pF	7R1	J	S	S	S	T	T	T	T	B, C, D	
7.2pF	7R2	J	S	S	S	T	T	T	T	B, C, D	
7.3pF	7R3	J	S	S	S	T	T	T	T	B, C, D	
7.4pF	7R4	J	S	S	S	T	T	T	T	B, C, D	
7.5pF	7R5	J	S	S	S	T	T	T	T	B, C, D	
7.6pF	7R6	J	S	S	S	T	T	T	T	B, C, D	
7.7pF	7R7	J	S	S	S	T	T	T	T	B, C, D	
7.8pF	7R8	J	S	S	S	T	T	T	T	B, C, D	
7.9pF	7R9	J	S	S	S	T	T	T	T	B, C, D	
8.0pF	8R0	J	S	S	S	T	T	T	T	B, C, D	
8.1pF	8R1	J	S	S	S	T	T	T	T	B, C, D	
8.2pF	8R2	J	S	S	S	T	T	T	T	B, C, D	
8.3pF	8R3	J	S	S	S	T	T	T	T	B, C, D	
8.4pF	8R4	J	S	S	S	T	T	T	T	B, C, D	
8.5pF	8R5	J	S	S	S	T	T	T	T	B, C, D	
8.6pF	8R6	J	S	S	S	T	T	T	T	B, C, D	
8.7pF	8R7	J	S	S	S	T	T	T	T	B, C, D	
8.8pF	8R8	J	S	S	S	T	T	T	T	B, C, D	
8.9pF	8R9	J	S	S	S	T	T	T	T	B, C, D	
9.0pF	9R0	J	S	S	S	T	T	T	T	B, C, D	
9.1pF	9R1	J	S	S	S	T	T	T	T	B, C, D	
9.2pF	9R2	J	S	S	S	T	T	T	T	B, C, D	
9.3pF	9R3	J	S	S	S	T	T	T	T	B, C, D	
9.4pF	9R4	J	S	S	S	T	T	T	T	B, C, D	
9.5pF	9R5	J	S	S	S	T	T	T	T	B, C, D	
9.6pF	9R6	J	S	S	S	T	T	T	T	B, C, D	
9.7pF	9R7	J	S	S	S	T	T	T	T	B, C, D	
9.8pF	9R8	J	S	S	S	T	T	T	T	B, C, D	
9.9pF	9R9	J	S	S	S	T	T	T	T	B, C, D	
10pF	100	J	S	S	S	T	T	T	T	F, G, J	
11pF	110	J	S	S	S	T	T	T	T	F, G, J	
12pF	120	J	S	S	S	T	T	T	T	F, G, J	
13pF	130	J	S	S	S	T	T	T	T	F, G, J	
15pF	150	J	S	S	S	T	T	T	T	F, G, J	
16pF	160	J	S	S	S	T	T	T	T	F, G, J	
18pF	180	J	S	S	S	T	T	T	T	F, G, J	
20pF	200	J	S	S	S	T	T	T	T	F, G, J	
22pF	220	J	S	S	S	T	T	T	T	F, G, J	
24pF	240	J	S	S	S	T	T	T	T	F, G, J	

Note: The letter in cell is expressed the product thickness code.

# Multilayer Ceramic Chip Capacitor

## Ultra high Q/ low ESR Type

UQ Series

MERITEK

### CAPACITANCE RANGE (CONTINUED)

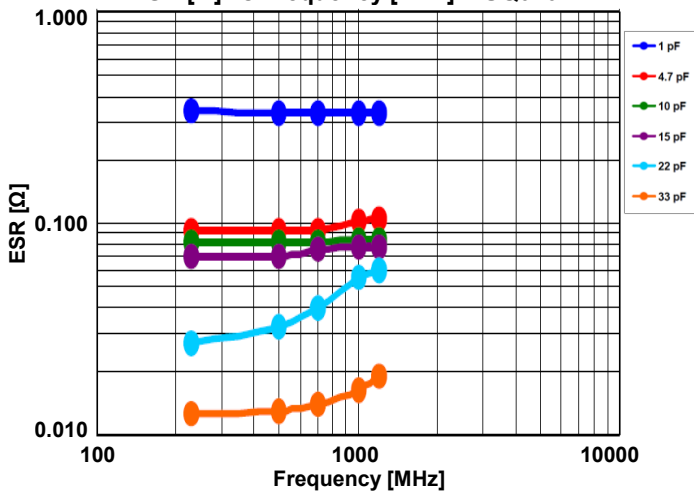
Size 0505 / 0603 / 0805		UQ0505 series	UQ0603 series				UQ0805 series				Tolerance
C (pF)	Code	250V	50V	100V	250V	50V	100V	250V	500V		
27pF	270	J	S	S	S	T	T	T	T	F, G, J	
30pF	300	J	S	S	S	T	T	T	T	F, G, J	
33pF	330	J	S	S	S	T	T	T	T	F, G, J	
36pF	360	J	S	S	S	T	T	T	T	F, G, J	
39pF	390	J	S	S	S	T	T	T	T	F, G, J	
43pF	430	J	S	S	S	T	T	T	T	F, G, J	
47pF	470	J	S	S	S	T	T	T	T	F, G, J	
56pF	560	J	S	S	S	T	T	T	T	F, G, J	
68pF	680	J	S	S	S	T	T	T	T	F, G, J	
75pF	750	J	S	S	S	T	T	T	T	F, G, J	
82pF	820	J	S	S	S	T	T	T	-	F, G, J	
100pF	101	J	S	S	S	T	T	T	-	F, G, J	

Note: The letter in cell is expressed the product thickness code.

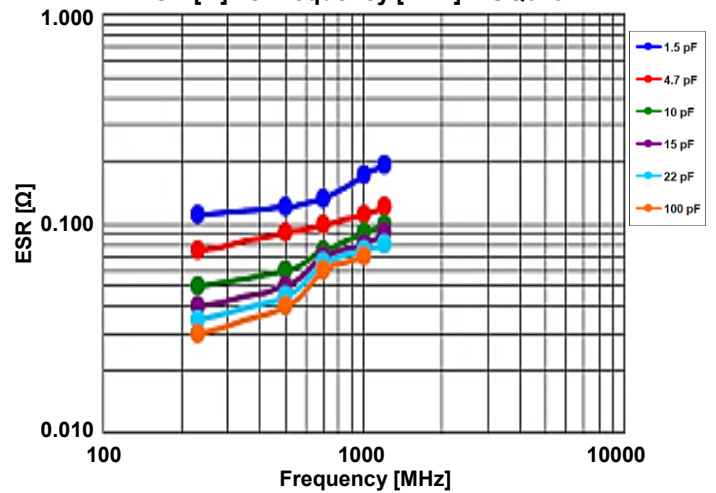
### CHARACTERISTICS CURVES

#### 1. ESR [Ω] vs Frequency [MHz].

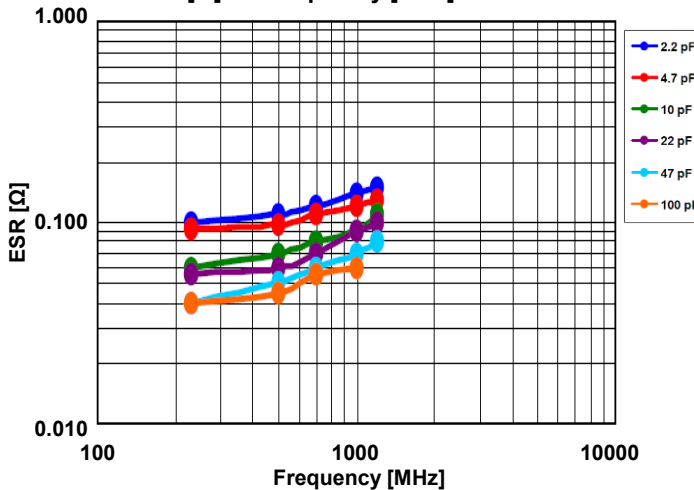
ESR [Ω] vs Frequency [MHz] – UQ0201



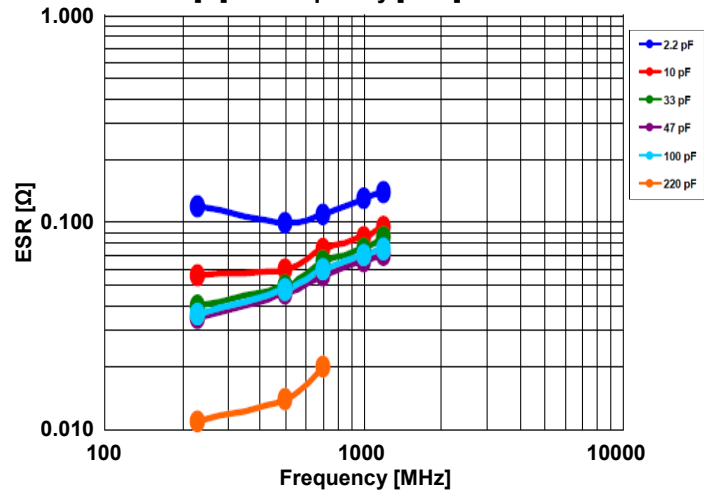
ESR [Ω] vs Frequency [MHz] – UQ0402



ESR [Ω] vs Frequency [MHz] – UQ0603



ESR [Ω] vs Frequency [MHz] – UQ0805



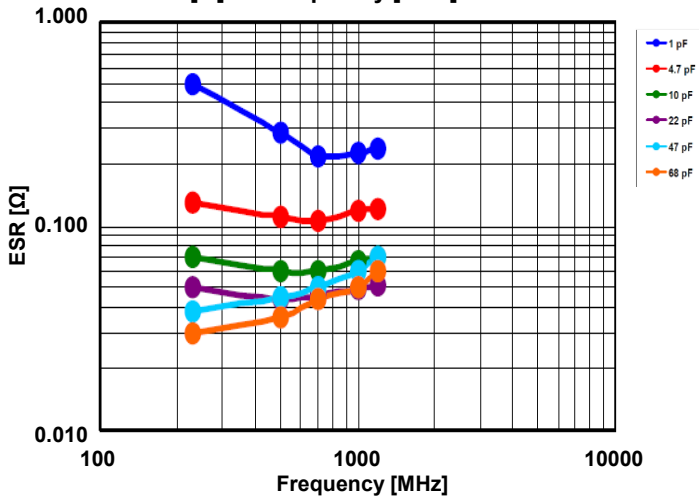


# Multilayer Ceramic Chip Capacitor Ultra high Q/ low ESR Type

UQ Series

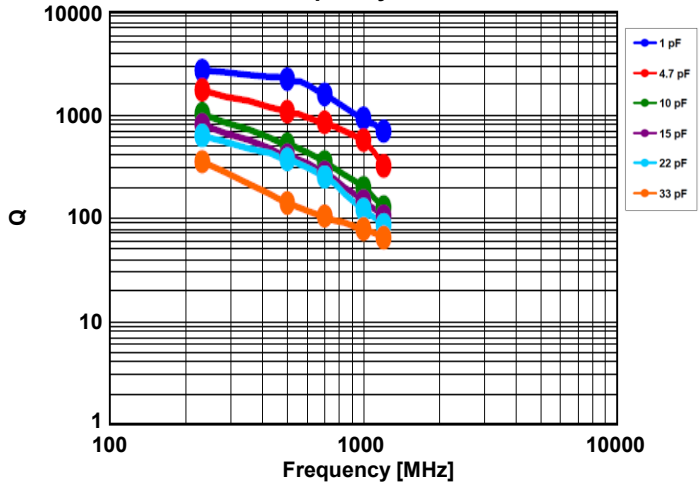
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ESR [ $\Omega$ ] vs Frequency [MHz] – UQ0505

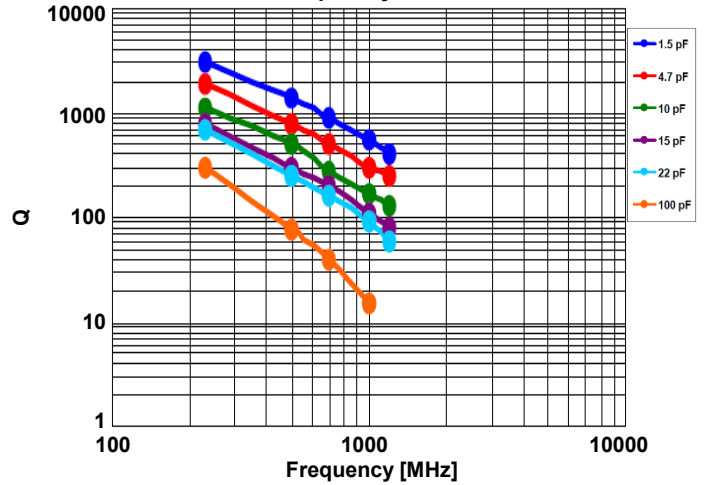


## 2. Q vs Frequency [MHz].

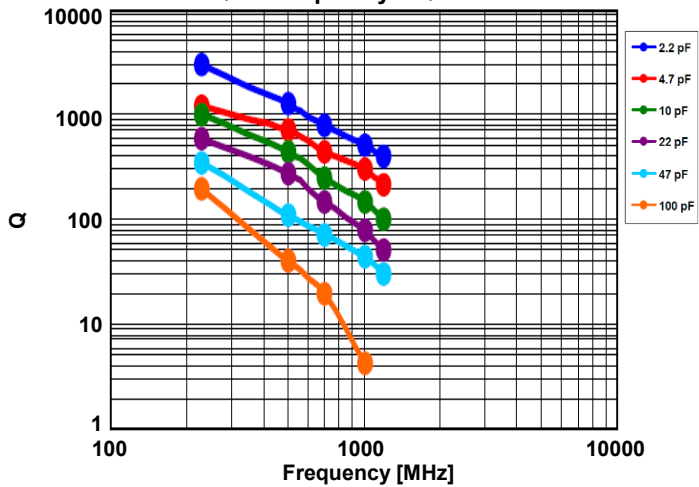
Q vs Frequency UQ0201



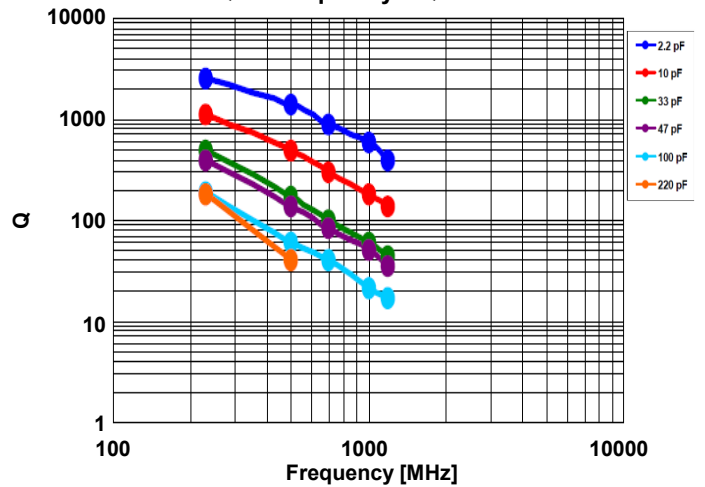
Q vs Frequency UQ0402



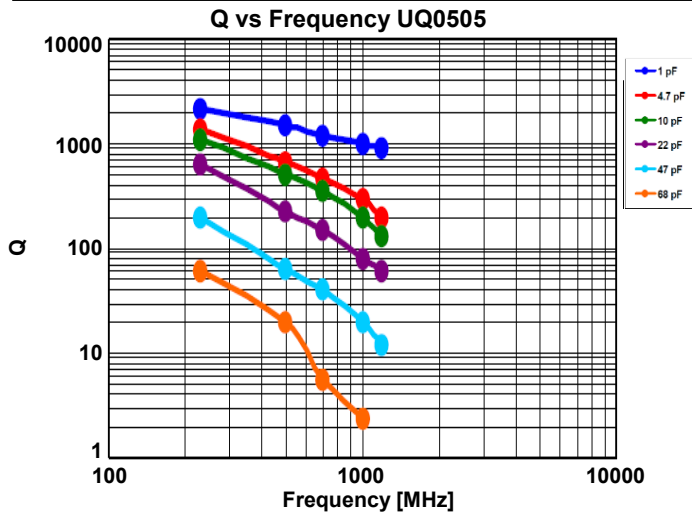
Q vs Frequency UQ0603



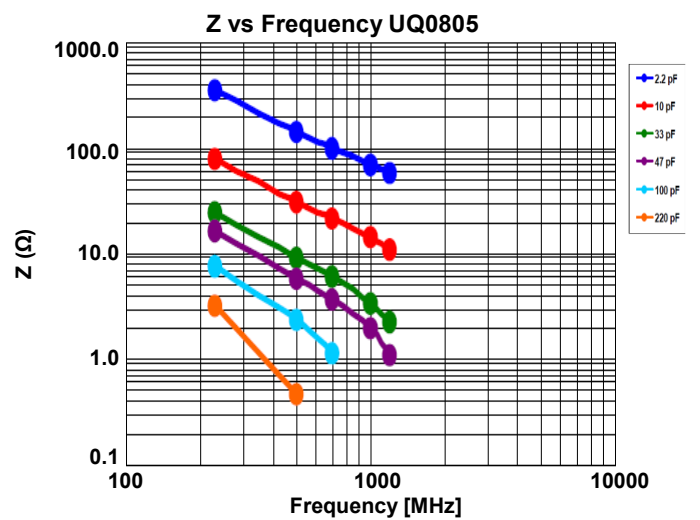
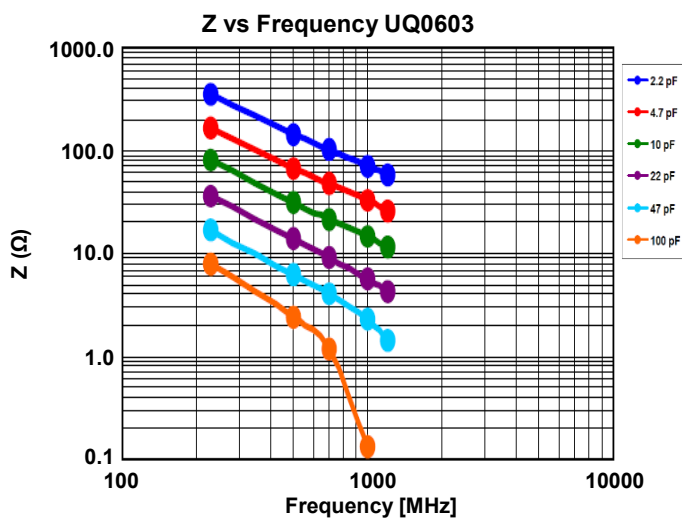
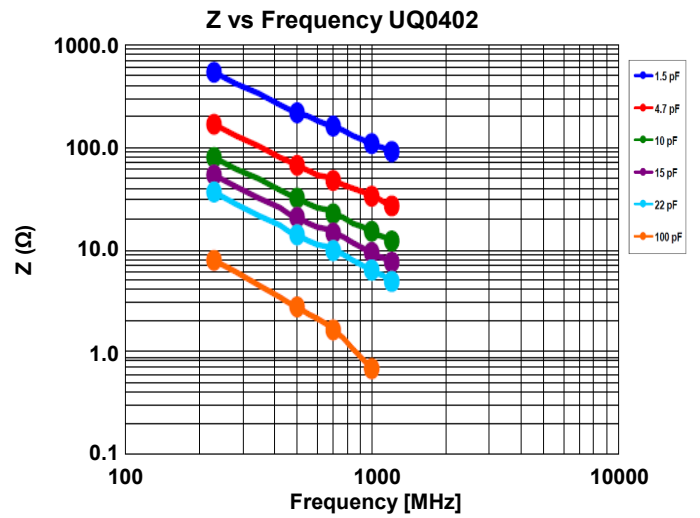
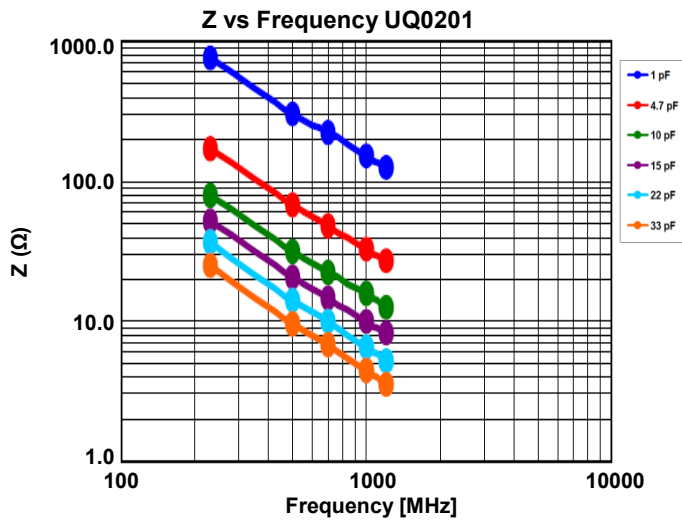
Q vs Frequency UQ0805



# Multilayer Ceramic Chip Capacitor Ultra high Q/ low ESR Type



### 3. Impedance Z [ohm] vs Frequency [MHz].

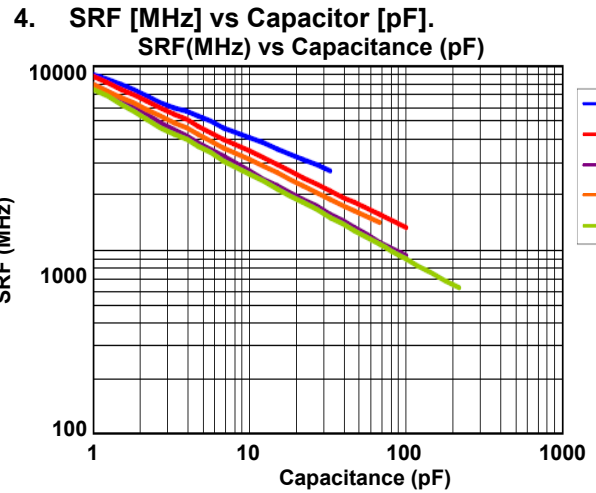
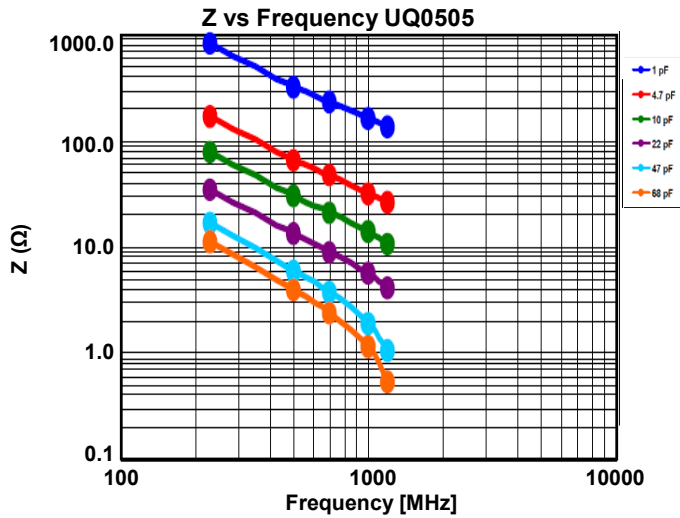


# Multilayer Ceramic Chip Capacitor

## Ultra high Q/ low ESR Type

UQ Series

MERITEK



## RELIABILITY TEST CONDITIONS AND REQUIREMENTS

Item	Test Condition	Requirements
<b>Q/ D.F. (Dissipation Factor)</b>	1.0±0.2Vrms, 1MHz±10% At 25°C ambient temperature.	<ul style="list-style-type: none"> <li>01005, 0201, 0402/25V~50V: Cap&lt;30pF,Q≥400+20C; Cap≥30pF, Q≥1000,</li> <li>0402/100V~200V, 0603, 0805, 0505: Cap&lt;30pF:Q≥800+20C;Cap≥30pF:Q≥1400</li> </ul>
<b>Dielectric Strength</b>	<ul style="list-style-type: none"> <li>To apply voltage  <ul style="list-style-type: none"> <li>≦100V : 250% of rated voltage.</li> <li>200V ~ 300V : 200% of rated voltage.</li> <li>500V ~ 999V : 150% of rated voltage.</li> <li>1000V ~ 3000V : 120% of rated voltage.</li> <li>4000V : 110% of rated voltage.</li> </ul> </li> <li>Duration: 1 to 5 sec.</li> <li>Charge and discharge current less than 50mA.</li> </ul>	<ul style="list-style-type: none"> <li>No evidence of damage or flashover during test.</li> </ul>
<b>Insulation Resistance</b>	<ul style="list-style-type: none"> <li>≤100V: To apply rated voltage for Max. 120 sec.</li> <li>≥200V: To apply rated voltage (500V Max.) for Max. 60 sec.</li> </ul>	<ul style="list-style-type: none"> <li>≥10GΩ or RxC ≧ 100Ω-F whichever is smaller.</li> </ul>
<b>Temperature Coefficient</b>	With no electrical load. Temperature: -55~125°C at 25°C	Capacitance change: within ±30ppm/°C (0201 Cap≥22pF: Within ±60ppm/°C)
<b>Adhesive Strength of Termination</b>	<ul style="list-style-type: none"> <li>Pressurizing force: 01005: 1N,           0201: 2N, 0402 to 0603 : 5N,   &gt;0603 : 10N</li> <li>Test time: 10±1 sec.</li> </ul>	<ul style="list-style-type: none"> <li>No remarkable damage or removal of the terminations.</li> </ul>
<b>Vibration Resistance</b>	<ul style="list-style-type: none"> <li>Vibration frequency: 10~55 Hz/min.</li> <li>Total amplitude: 1.5mm</li> <li>Test time: 6 hrs. (Two hrs. each in three mutually perpendicular directions.)</li> <li>Cap./DF(Q) Measurement to be made after de-gaging at 150°C for 1hr then set for 24±2 hrs at room temp.</li> </ul>	<ul style="list-style-type: none"> <li>No remarkable damage.</li> <li>Cap change and Q/D.F.: To meet initial spec.</li> </ul>
<b>Solderability</b>	<ul style="list-style-type: none"> <li>Solder temperature: 235±5°C</li> <li>Dipping time: 2±0.5 sec.</li> </ul>	<ul style="list-style-type: none"> <li>95% min. coverage of all metalized area.</li> </ul>
<b>Bending Test</b>	<ul style="list-style-type: none"> <li>The middle part of the substrate shall be pressurized by means of the pressurizing rod at a rate of about 1 mm per second until the deflection becomes 1 mm and then the pressure shall be maintained for 5±1 Sec.</li> <li>Measurement to be made after keeping at room temp. for 24±2 hrs.</li> </ul>	<ul style="list-style-type: none"> <li>No remarkable damage</li> <li>Cap Change: within ±5.0% or ±0.5pF whichever is larger. (This capacitance change means the change of capacitance under specified flexure of substrate from the capacitance measured before the test.)</li> </ul>

**RELIABILITY TEST CONDITIONS AND REQUIREMENTS (CONTINUED)**

Item	Test Condition	Requirements															
<b>Resistance to Soldering Heat</b>	<ul style="list-style-type: none"> <li>Solder temperature: 260±5°C</li> <li>Dipping time: 10±1 sec</li> <li>Preheating: 120 to 150°C for 1 minute before immerse the capacitor in a eutectic solder.</li> <li>Cap. / DF(Q) / I.R. Measurement to be made after de-aging at 150°C for 1hr then set for 24±2 hrs at room temp.</li> </ul>	<ul style="list-style-type: none"> <li>No remarkable damage.</li> <li>Cap change: within ±2.5% or ±0.25pF whichever is larger.</li> <li>Q/D.F., I.R. and dielectric strength: To meet initial requirements.</li> <li>25% max. leaching on each edge.</li> </ul>															
<b>Temperature Cycle</b>	<ul style="list-style-type: none"> <li>Conduct the five cycles according to the temperatures and time.</li> </ul> <table border="1"> <thead> <tr> <th>No.</th> <th>Temp. (°C)</th> <th>Time (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Min. operating temp. +0/-3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temp.</td> <td>2~3</td> </tr> <tr> <td>3</td> <td>Max. Operating temp. +3/-0</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temp.</td> <td>2~3</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Cap. / DF(Q) / I.R. Measurement to be made after de-aging at 150°C for 1hr then set for 24±2 hrs at room temp.</li> </ul>	No.	Temp. (°C)	Time (min.)	1	Min. operating temp. +0/-3	30±3	2	Room temp.	2~3	3	Max. Operating temp. +3/-0	30±3	4	Room temp.	2~3	<ul style="list-style-type: none"> <li>No remarkable damage.</li> <li>Cap change: within ±2.5% or ±0.25pF whichever is larger.</li> <li>Q/D.F., I.R. and dielectric strength: To meet initial requirement</li> </ul>
No.	Temp. (°C)	Time (min.)															
1	Min. operating temp. +0/-3	30±3															
2	Room temp.	2~3															
3	Max. Operating temp. +3/-0	30±3															
4	Room temp.	2~3															
<b>Humidity (Damp Heat) Steady State</b>	<ul style="list-style-type: none"> <li>Test temp.: 40±2°C</li> <li>Humidity: 90~95% Related Humidity</li> <li>Test time: 500+24/-0hrs.</li> <li>Cap. / DF(Q) / I.R. Measurement to be made after de-aging at 150°C for 1hr then set for 24±2 hrs at room temp.</li> </ul>	<ul style="list-style-type: none"> <li>No remarkable damage.</li> <li>Cap change: within ±5% or ±0.5pF whichever is larger</li> <li>Q/D.F. value: Cap ≥ 30pF, Q≥350, 10pF≤Cap≤30pF, Q≥275+2.5C, Cap &lt; 10pF, Q≥200+10C</li> <li>I.R.: ≥1GΩ</li> </ul>															
<b>Humidity (Damp Heat) Load</b>	<ul style="list-style-type: none"> <li>Test temp.: 40±2°C</li> <li>Humidity: 90~95% RH</li> <li>Test time: 500+24/-0hrs.</li> <li>Cap. / DF(Q) / I.R. Measurement to be made after keeping at room temp. for 24±2 hrs.</li> </ul>	<ul style="list-style-type: none"> <li>No remarkable damage.</li> <li>Cap change: within ±7.5% or 0.75pF whichever is larger</li> <li>Q/D.F. value: Cap ≥ 30pF, Q≥200, Cap ≤ 30pF, Q≥100+10/3C</li> <li>I.R.: ≥500MΩ</li> </ul>															
<b>High Temperature Load (Endurance)</b>	<ul style="list-style-type: none"> <li>Test temp.: 125±3°C</li> <li>To apply voltage:               <ol style="list-style-type: none"> <li>10V Ur&lt;500V: 200% of rated voltage.</li> <li>≅6.3V or 500V: 150% of rated voltage.</li> <li>Ur≅630V: 120% of rated voltage.</li> </ol> </li> <li>Test time: 1000±24/-0 hrs.</li> <li>Cap. / DF(Q) / I.R. Measurement to be made after keeping at room temp. for 24±2 hrs.</li> </ul>	<ul style="list-style-type: none"> <li>No remarkable damage.</li> <li>Cap change: within ±3.0% or ±0.3pF whichever is larger</li> <li>Q/D.F. value: Cap≥30pF, Q≥350, 10pF≤Cap≤30pF, Q≥275+2.5C, Cap&lt;10pF, Q≥200+10C</li> <li>I.R.: ≥1GΩ.</li> </ul>															
<b>Equivalent Series Resistance</b>	<ul style="list-style-type: none"> <li>The Equivalent Series Resistance should be measured at room temperature and tested at frequency 1±0.1 GHz.</li> </ul>	<ul style="list-style-type: none"> <li>01005: 0.2pF≤Cap≤1pF:&lt; 700mΩ, 1pF&lt;Cap≤2pF:&lt; 600mΩ, 2pF&lt;Cap≤5pF:&lt; 500mΩ, 5pF&lt;Cap≤10pF:&lt; 300mΩ, 10pF&lt;Cap≤22pF:&lt; 350mΩ.</li> <li>01005: 0.4pF≤Cap&lt;1.0pF: &lt; 1500mΩ, 1.0pF≤Cap&lt;10pF: &lt; 250mΩ, 10pF≤Cap≤100pF: &lt; 200mΩ.</li> <li>0201: 0.1pF≤Cap≤1pF:&lt; 350mΩ, 1pF&lt;Cap≤5pF:&lt; 300mΩ, 5pF&lt;Cap≤22pF:&lt; 250mΩ.</li> <li>0402: 0.1pF≤Cap≤1pF:&lt; 350mΩ, 1pF&lt;Cap≤5pF:&lt; 300mΩ, 5pF&lt;Cap≤100pF:&lt; 250mΩ.</li> <li>0603: 0.3pF≤Cap≤1pF:&lt; 1500mΩ, 1pF&lt;Cap≤10pF:&lt; 250mΩ,10pF&lt;Cap≤100pF:&lt; 200mΩ</li> <li>0805: 0.3pF≤Cap≤1pF: &lt; 1500mΩ, 1pF&lt;Cap≤10pF: &lt; 250mΩ, Cap&gt;10pF: &lt; 200mΩ</li> </ul>															
	<ul style="list-style-type: none"> <li>The Equivalent Series Resistance should be measured at room temperature and tested at frequency 500±50 GHz.</li> </ul>	<ul style="list-style-type: none"> <li>0201: 22pF≤ Cap ≤33pF: &lt;300mΩ</li> </ul>															

# Multilayer Ceramic Chip Capacitor

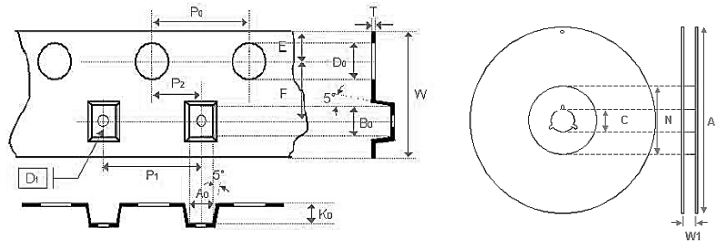
## Ultra high Q/ low ESR Type

UQ Series

MERITEK

### PACKAGE DIMENSION

Size	01005, 0201 0402, 0505, 0603, 0805	
Reel Size	7"	13"
C	13.0+0.5/-0.2	13.0+0.5/-0.2
W1	8.4+1.5/-0	8.4+1.5/-0
A	178.0±1.0	330.0±1.0
N	60.0±1.0/-0	100.0±1.0



Size	01005	0201	0402	0505	0603	0805
Thickness	V	L	N	J	S	T
A <sub>0</sub>	0.25±0.05	0.39±0.07	0.70±0.20	<1.90	1.05±0.30 /-0.10	1.50±0.20
B <sub>0</sub>	0.45±0.05	0.69±0.07	1.20±0.20	<1.90	1.80±0.30	2.30±0.20
T	≤0.50	≤0.50	≤0.80	0.23±0.10	≤1.20	≤1.30
K <sub>0</sub>	-	-	-	<1.50	-	-
W	8.00±0.10	8.00±0.10	8.00±0.10	8.00±0.20	8.00±0.10	8.00±0.10
P <sub>0</sub>	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10
10xP <sub>0</sub>	40.0±0.10	40.0±0.10	40.0±0.10	40.00±0.20	40.0±0.20	40.0±0.20
P <sub>1</sub>	2.00±0.05	2.00±0.05	2.00±0.05	4.00±0.10	4.00±0.10	4.00±0.10
P <sub>2</sub>	2.00±0.05	2.00±0.05	2.00±0.05	2.00±0.05	2.00±0.05	2.00±0.05
D <sub>0</sub>	1.55±0.05	1.55±0.05	1.55±0.05	1.55±0.05	1.55±0.05	1.55±0.05
D <sub>1</sub>	-	-	-	1.00±0.10	-	-
E	1.75±0.05	1.75±0.05	1.75±0.05	1.75±0.05	1.75±0.05	1.75±0.05
F	3.50±0.05	3.50±0.05	3.50±0.05	3.50±0.05	3.50±0.05	3.50±0.05

### APPLICATION NOTES

#### Storage

Store products at 5 to 40 °C ambient temperature and 20 to 70% related humidity conditions.

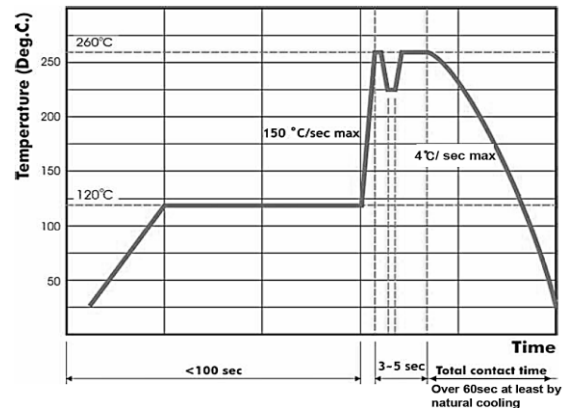
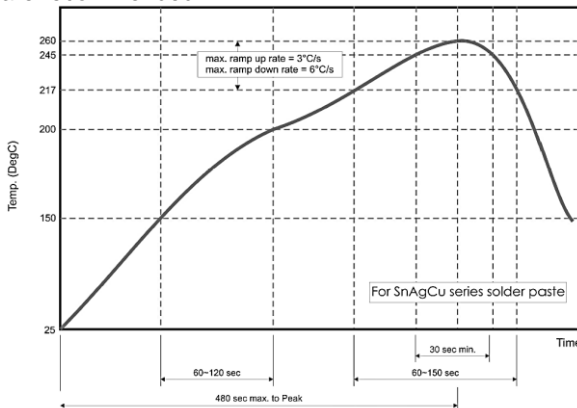
The product is recommended to be used within one year after shipment. Check solderability in case of shelf life extension is needed.

Cautions:

- The corrosive gas reacts on the terminal electrodes of capacitors, and results in the poor solderability. Do not store the capacitors in the ambience of corrosive gas (e.g., hydrogen sulfide, sulfur dioxide, chlorine, ammonia gas, etc.)
- In corrosive atmosphere, solderability might be degraded, and silver migration might occur to cause low reliability.
- Due to the dewing by rapid humidity change, or photochemical change of the terminal electrode by direct sunlight, the solderability and electrical performance may deteriorate. Do not store capacitors under direct sunlight or dewing condition. Store products on the shelf and avoid exposure to moisture.

#### Soldering

The lead-free termination MLCCs are not only to be used on SMT against lead-free solder paste, but also suitable against lead-containing solder paste. If the optimized solder joint is requested, increasing solder time, temperature and concentration of N<sub>2</sub> within oven are recommended.



\*Specifications subject to change without notice.