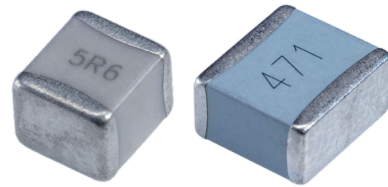


MQ10 High-Q MLCC

1 Features

- 1) Low ESR, low ESL, high self-resonance frequency, high Q and low noise;
- 2) Ultra-high density ceramic body, ultra-high stability;
- 3) Ultra-high reliability, wide-range applications.



2 Applications

Function: Bypass, Coupling, Tuning, Feedback, Impedance Matching and DC Blocking.

Circuits: MW/RF/Mid-frequency Amplifier, Frequency Mixer, Oscillator, low-noise Amplifier, Filter Network, Timing and Time Delay. Terminal Applications: Phased Array Radars, MRI, Radio Stations, RF Plasma, Laser Devices, Etc.

3 How to order

MQ	10	0505	M7G	2D	101	J	N	D	R	02
Type	Series	Case Size Code	TCC	Rated V.	Nominal Capacitance	Capacitance Tolerance	Termination Type	Thickness Code	Packing	Micro Strip Type
Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9	Table 10	Table 11

Table 1	Type	Table 2	Series
MQ	High-Q MLCC	10	High reliability application. The case sizes of 0505, 1111, 2525, 3838, etc. are available.

Table 3 Case Size Code Dimensions(mm)										
Case Size Code	Termination Type	Drawing	L	W	T(min)	T(max)	B	L _L (Min)	W _L	T _L
1111	MS/MN		2.79 ^{+0.89} _{-0.51}	2.79 ± 0.51	0.76	2.59	/	6.35	2.36 ± 0.15	0.10 ± 0.03
2525	MS/MN		5.84 ^{+0.51} _{-0.25}	6.50 ± 0.25	/	4.19	/	12.7	6.10 ± 0.25	0.10 ± 0.03
3838	MS/MN		9.65 ^{+0.38} _{-0.25}	9.85 ± 0.30	/	4.32	/	19.05	8.89 ± 0.25	0.25 ± 0.13
0505	N/D/TN		1.40 ± 0.64	1.40 ± 0.38	0.51	1.45	0.25 ^{+0.25} _{-0.13}	/	/	/
1111	N/D/TN		2.79 ^{+0.89} _{-0.51}	2.79 ± 0.51	0.76	2.59	0.38 ^{+0.50} _{-0.25}	/	/	/
2525	N/D/TN		5.84 ^{+0.51} _{-0.25}	6.50 ± 0.25	/	4.19	1.0max	/	/	/
3838	N/D/TN		9.65 ^{+0.38} _{-0.25}	9.85 ± 0.30	/	4.32	1.2max	/	/	/

Table 4 Temperature Coefficient		Table 5 Rated Voltage							
Code	M7G	1H	50V	2F	300V	3C	1500V	3H	5000V
		2A	100V	2H	500V	3D	2000V	3L	7200V
Temperature Coefficient	(100 ± 30)ppm/°C	2C	150V	2J	600V	3E	2500V		
Operating Temperature	-55°C ~ 125°C	2D	200V	2K	800V	3F	3000V		
		2E	250V	3A	1000V	3V	3600V		

Table 6 Nominal Capacitance

EIA Capacitance code in pF. 1st two digit are significant figures of capacitance; 3rd digit denotes number of Zeros; R=decimal point; For examples: 103=10,000pF; 3R9=3.9pF.

MQ10 High-Q MLCC

Table 7 Capacitance Tolerance Code			Table 8 Termination Type	
B	± 0.1pF	C _R < 10pF	N	Silver/Nickle/Tin
C	± 0.25pF		D	Silver/Nickel/Gold (Gold Thickness ≥ 1μm)
D	± 0.5pF		Z	Silver/Nickle/Tin&Lead
			TN	Silver/Copper/Tin
F	± 1%	C _R ≥ 10pF	ZN	Silver/Copper/Tin&Lead
G	± 2%		AW	Axial Lead (Silver plated over Copper Wire for 1111,2525,3838)
J	± 5%		BN	Non-Magnetic Axial Lead(Silver plated over Copper Wire for 1111,2525,3838)
K	± 10%		RW	Radial Lead(for 1111,2525,3838)
M	± 20%		RN	Non-Magnetic Radial Lead(for 1111,2525,3838)
			MS	Micro Strip(Silver plated over Copper for 1111,2525,3838)
			MA	Micro Strip(Silver for 1111,2525,3838)
			MN	Non-magnetic Micro Strip(Silver plated over Copper for 1111,2525,3838)
			FN	Radial Non-magnetic Micro Strip(Silver plated over Copper for 1111,2525,3838)
			AR	Axial Micro Strip(Silver for 1111,2525,3838)
			AN	Axial Non-Magnetic Micro Strip(Silver for 1111,2525,3838)

Table 9 Thickness Code				
Case Size Code	Capacitance (pF)	Thickness Code	Standard Thickness(mm)	Thickness Tolerance(mm)
0505	0.1	A	0.60	± 0.15
	0.2~100	D	1.00	± 0.15
1111	0.1	D	1.00	± 0.15
	0.2	F	1.25	± 0.20
	0.3~0.4	H	1.60	± 0.20
	0.5~1000	M	2.30	± 0.20
2525	1~2700	L	3.20	± 0.40
3838	1~5100	N	3.80	± 0.50

Table 10 Packaging		
B- Bulk with Bag	R- Reel	C- Waffle

Table 11 Micro-Strip Style		
Blank	01	02
There are φ1mm holes in the center of Micro-strip	Micro-strip with no Holes	Micro-strip with cushion function, 2 4.2mm holes for assembly, Distance of 2 holes is 39mm

MQ10 High-Q MLCC

4 MQ 10 Series M7G Capacitance Values

0505															
Cap. code	Cap. (pF)	Tolerance	Rated DC Voltage(V)		Cap. Code	Cap. (pF)	Cap. Tolerance	Rated DC Voltage(V)		Cap. code	Cap. (pF)	Cap. Tolerance	Rated DC Voltage(V)		
0R1	0.1	B	150	Extended Voltage 250	2R2	2.2	B、C、D	150	Extended Voltage 250	160	16	F、G、J、K、M	150	Extended Voltage 250	
0R2	0.2				2R4	2.4				180	18				
0R3	0.3	B、C			2R7	2.7				200	20				
0R4	0.4				3R0	3.0				220	22				
0R5	0.5	B、C、D			3R3	3.3				240	24				
0R6	0.6				3R6	3.6				270	27				
0R7	0.7				3R9	3.9				300	30				
0R8	0.8				4R3	4.3				330	33				
0R9	0.9				4R7	4.7				360	36				
1R0	1.0	B、C、D			5R1	5.1	390			39					
1R1	1.1				5R6	5.6	430			43					
1R2	1.2				6R2	6.2	470			47					
1R3	1.3				6R8	6.8	510			51					
1R4	1.4				7R5	7.5	560			56					
1R5	1.5				8R2	8.2	620			62					
1R6	1.6				9R1	9.1	680			68					
1R7	1.7				100	10	750			75					
1R8	1.8				110	11	820			82					
1R9	1.9				120	12	910			91					
2R0	2.0				130	13	101			100					
2R1	2.1				150	15									
1111															
0R1	0.1	B	500	Extended Voltage 1500	4R7	4.7	B、C、D	500	Extended Voltage 1500	750	75	F、G、J、K、M	500	Extended Voltage 1500	
0R2	0.2				5R1	5.1				820	82				
0R3	0.3	B、C			5R6	5.6				910	91				
0R4	0.4				6R2	6.2				101	100				
0R5	0.5	B、C、D			6R8	6.8				111	110				
0R6	0.6				7R5	7.5				121	120				
0R7	0.7				8R2	8.2				131	130				
0R8	0.8				9R1	9.1				151	150				
0R9	0.9				100	10	161			160					
1R0	1.0	B、C、D			110	11	181			180					
1R1	1.1				120	12	201			200					
1R2	1.2				130	13	221			220					
1R3	1.3				150	15	241			240					
1R4	1.4				160	16	271			270					
1R5	1.5				180	18	301			300					
1R6	1.6				200	20	331			330					
1R7	1.7				220	22	361			360					
1R8	1.8				240	24	391			390					
1R9	1.9				270	27	431			430					
2R0	2.0				300	30	471			470					
2R1	2.1				330	33	511			510					
2R2	2.2				360	36	561			560					
2R4	2.4				390	39	621			620					
2R7	2.7				430	43	681			680					
3R0	3.0				470	47	751			750					
3R3	3.3				510	51	821			820					
3R6	3.6				560	56	911			910					
3R9	3.9				620	62	102			1000					
4R3	4.3				680	68									

MQ10 High-Q MLCC

2525														
Cap. Code	Cap. (pF)	Cap. Tolerance	Rated DC Voltage(V)		Cap. Code	Cap. (pF)	Cap. Tolerance	Rated DC Voltage(V)		Cap. Code	Cap. (pF)	Cap. Tolerance	Rated DC Voltage(V)	
1R0	1.0	B、C、D	2500	Extended Voltage 3600	120	12	F、G、J、K、M	2500	Extended Voltage 3600	221	220	F、G、J、K、M	2500	Extended Voltage 3000
1R1	1.1				130	13				241	240			
1R2	1.2				150	15				271	270			
1R3	1.3				160	16				301	300			
1R4	1.4				180	18				331	330			
1R5	1.5				200	20				361	360			
1R6	1.6				220	22				391	390			
1R7	1.7				240	24				431	430			
1R8	1.8				270	27				471	470			
1R9	1.9				300	30				511	510			
2R0	2.0				330	33				561	560			
2R1	2.1				360	36				621	620			
2R2	2.2				390	39				681	680			
2R4	2.4				430	43				751	750			
2R7	2.7				470	47				821	820			
3R0	3.0				510	51				911	910			
3R3	3.3				560	56				102	1000			
3R6	3.6				620	62				112	1100			
3R9	3.9				680	68				122	1200			
4R3	4.3				750	75				152	1500			
4R7	4.7				820	82				182	1800			
5R1	5.1				910	91				202	2000			
5R6	5.6	101	100	222	2200									
6R2	6.2	111	110	242	2400									
6R8	6.8	121	120	272	2700									
7R5	7.5	131	130											
8R2	8.2	151	150											
9R1	9.1	161	160											
100	10	F、G、J、K、M			181	180								
110	11				201	200								

3838														
1R0	1.0	B、C、D	3600	Extended Voltage 7200	130	13	F、G、J、K、M	3600	Extended Voltage 7200	271	270	F、G、J、K、M	3600	
1R1	1.1				150	15				301	300			
1R2	1.2				160	16				331	330			
1R3	1.3				180	18				361	360			
1R4	1.4				200	20				391	390			
1R5	1.5				220	22				431	430			
1R6	1.6				240	24				471	470			
1R7	1.7				270	27				511	510			
1R8	1.8				300	30				561	560			
1R9	1.9				330	33				621	620			
2R0	2.0				360	36				681	680			
2R1	2.1				390	39				751	750			
2R2	2.2				430	43				821	820			
2R4	2.4				470	47				911	910			
2R7	2.7				510	51				102	1000			
3R0	3.0				560	56				112	1100			
3R3	3.3				620	62				122	1200			
3R6	3.6				680	68				152	1500			
3R9	3.9				750	75				182	1800			
4R3	4.3				820	82				202	2000			
4R7	4.7				910	91				222	2200			
5R1	5.1				101	100				242	2400			
5R6	5.6	111	110	272	2700									
6R2	6.2	121	120	302	3000									
6R8	6.8	131	130	332	3300									
7R5	7.5	151	150	362	3600									
8R2	8.2	161	160	392	3900									
9R1	9.1	181	180	432	4300									
100	10	F、G、J、K、M			201	200	472	4700						
110	11				221	220	512	5100						
120	12				241	240								

MQ10 High-Q MLCC

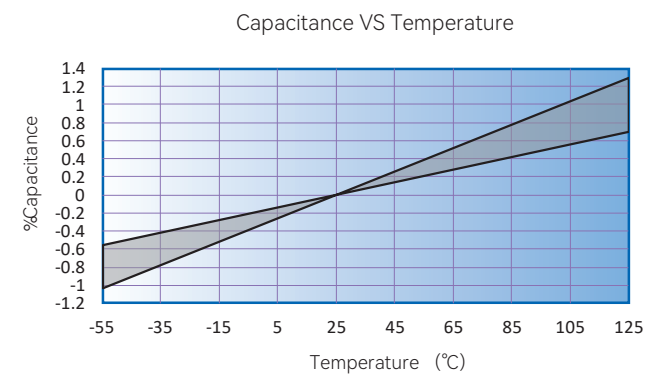
5 Electrical Specifications&Test Conditions		
Item	Test Conditions (25°C ±2°C)	Electrical Specifications
Capacitance		Capacitance is up to requirements
Dissipation Factor tanδ	Test Frequency: C _R ≤ 1000pF, 1MHz±10% C _R > 1000pF, 1kHz±10% Test Voltage: 1.0Vrms±0.2Vrms	C _R ≥ 50pF, tanδ ≤ 0.15%; 5pF <C _R <50pF, tanδ ≤ 1.5(150/C _R +7)×10 ⁻⁴ ; C _R ≤ 5pF, test free
Insulation Resistance Ri	Test Voltage: Rated Voltage or 500V(whichever is smaller) Endurance time: 2min±5s	R _i (25°C) ≥ 100000MΩ or 1000MΩ·μF(whichever is smaller); R _i (125°C) ≥ 10000MΩ or 100MΩ·μF(whichever is smaller)
Withstanding Voltage	Test Voltage: U _R >1250V, 1.2U _R ; 500V<U _R ≤ 1250V, 1.5U _R ; U _R ≤ 500V, 2.5U _R Endurance time: 5s±1s Surge current≤ 50mA	No breakdown, flashover or visible damages

MQ10 High-Q MLCC

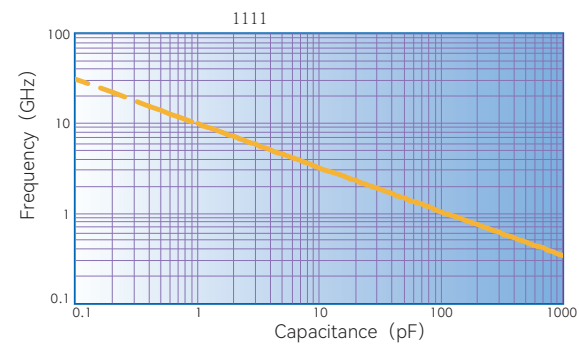
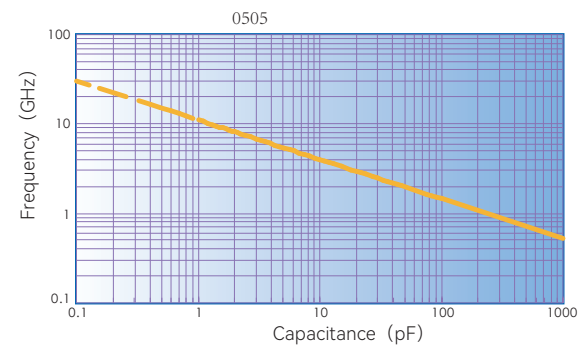
6 Reliability Characteristics&Test Conditions		
Item	Test Conditions	Reliability Characteristics
Thermal Shock	Upper limit: 125°C; Lower limit: -55°C; Recycle times: 5; Endurance: 30min	No visible damage to appearance. Capacitance change less than ±1% or ±1pF(Whichever is wider)
Resistance to soldering heat	Slot Weld Preheat at 110°C~140°C,endure 30s~60s. Temperature:260°C ±5°C; Dip time:10s±1s; Dip depth:10mm; Dip time:1 time; recover:6h~24h.	No visible damages, cracks or exposure of inner electrodes. The peeling of Termination coating is less than 25%. Capacitance values are up to the permissible capacitance tolerance range.
Resistance to Humidity in Steady State	Temperature:40°C ±2°C; Relative:90%~95%; Endure:21d(500+10)h; Withstanding Voltage Test within15min after test finish: U _R ,5s; Recover:6h~24h.	No visible damages, Marks are clear; Capacitance:Compared with initial value, ΔC/C ≤ 2% or < 1pF, whichever is higher; Dissipation factor:No exceeds the initial value or 2x initial requirements, whichever is higher; Insulation resistance:R _i ≥ 25000MΩ or R _i ×C _R ≥ 250s,whichever is lower.
High-temperature Life Test	Endurance: 2000h for 2525 3838,Other case size:1000h; Test temperature:125°C; Test Voltage:U _R >1250V,U _R ; 500<U _R ≤ 1250V,1.2U _R ; U _R ≤ 500V,2U _R .	No visible damages, Marks are clear; Capacitance:Compared with initial value, ΔC/C ≤ 2% or < 1pF, whichever is higher; Dissipation factor:No exceeds the initial value or 2x initial requirements, whichever is higher; Insulation resistance: R _i ≥ 40000MΩ or R _i ×C _R ≥ 400s, whichever is lower.

7 Performance Data

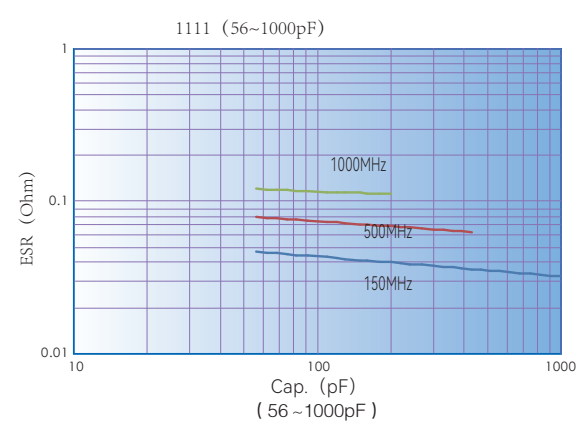
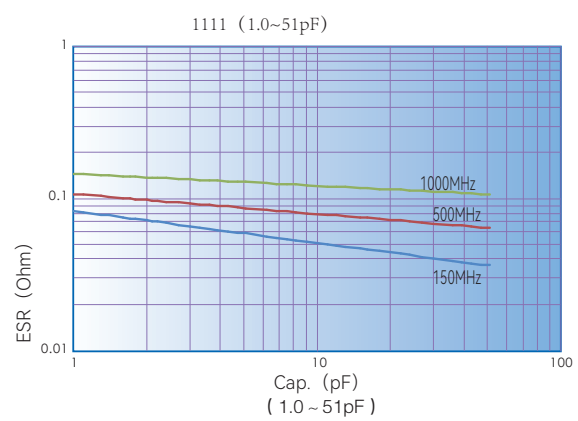
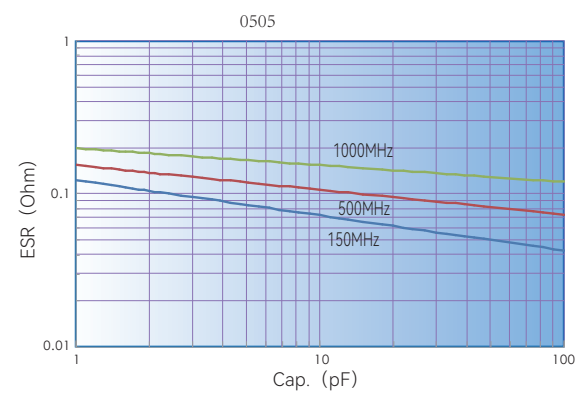
1. Temperature Coefficient



2. Series Resonance Frequency



3. ESR



4.Q Value

