

MS Series: Low ESR, High Volume Ceramic Capacitors

Description	Functional Applications	Benefits
Ceramic Capacitors NPO Low ESR, High Q Capacitance Range 0.2 - 2200 pF High Working Voltage Low Noise	DC Blocking Amplifier Matching Networks VCO Frequency Stabilization Filtering, Diplexers & Antenna Matching High RF Power Circuits Bypass Coupling Tuning & Feedback Broadcast Power Amps	High Q Stable TC, -55° to +125°C Operating Range EIA 0603 & 0805 Case Size SMD Compatibility Oscillators Timing Circuits Filters RF Power Amplifiers & Delay Lines Ultra Low ESR Ceramic Dielectric High Volume Applications



Dielectric Characteristics

Dielectric Material Code	Temperature Coefficient (ppm/°C Maximum)	Dissipation Factor (% @ 1MHz Maximum)	Dielectric Withstanding Voltage		Insulation Resistance (MΩ Minimum)		Aging	Piezoelectric Effects	Dielectric Absorption
			Voltage Rating (Volts)	DWV (Volts)	@ +25°C	@ +125°C			
MS	0 ± 30	0.05	Please see chart (pg. 21)	250% of WVDC for 5 sec unless specified in chart (pg. 21)	10 ⁶	10 ⁴	None	None	None

Part Number Breakdown*

C	06	MS	101	J -	5	Z	N -	X	0	T
Multi Layer	Case Size	Material System	Capacitance Code	Tolerance Level	Voltage Code	Termination Code	Leading Code	Test Level	Marking Code	Packaging

Available Termination Types		Code	Lead Types
C04	Z	N	None
C06	Z		
C08	Z		
C10	Z		
C11	Z		
C12	Z		
C17	Z		
C20	Z		
C22	Z		
C36	Z		

Code Termination System	
Z	Ag Termination, Ni Barrier Layer, Sn Plated Solder, RoHS

Test Level – All Case Sizes	
X	Standard
Y	Reduced Visual
D	Customer Specified

Code Laser Marking	
0	No marking

Available Packaging	
C06	T, B
C08	T, B
C10	T, B
C11	T, B
C12	T, B
C17	T, B

Code Packaging	
T	Tape & Reel – Horizontal
B	Bulk

*See page 6 for complete part number system.

Capacitance and Voltage Table

CAP CODE	CAP (pF)	CASE SIZE C06 0603	CASE SIZE C11 0505	CASE SIZE C17 1111	CASE SIZE C22 2225	CASE SIZE 36 3640
0R1	0.1	50V Code 5	250V Code 9	Code 7 1000V	2000V Code G	2500V Code B
0R2	0.2					
0R3	0.3					
0R4	0.4					
0R5	0.5					
0R6	0.6					
0R7	0.7					
0R8	0.8					
0R9	0.9					
1R0	1.0					
1R1	1.1					
1R2	1.2					
1R3	1.3					
1R4	1.4					
1R5	1.5					
1R6	1.6					
1R7	1.7					
1R8	1.8					
1R9	1.9					
2R0	2.0					
2R1	2.1					
2R2	2.2					
2R3	2.3					
2R4	2.4					
2R5	2.5					
2R6	2.6					
2R7	2.7					
2R8	2.8					
2R9	2.9					
3R0	3.0					
3R3	3.3					
3R6	3.6					
6R9	6.9					
4R3	4.3					
4R7	4.7					
5R1	5.1					
5R6	5.6					
6R2	6.2					
6R8	6.8					
7R5	7.5					
8R2	8.2					
9R1	9.1					
100	10					
110	11					
120	12					
130	13					
150	15					
160	16					
180	18					
200	20					
220	22					
240	24					
270	27					
300	30					
330	33					
360	36					
390	39					
430	43					
470	47					
510	51					
560	56					
620	62					
680	68					
750	75					
820	82					
910	91					
101	100					
111	110					
121	120					
151	150					
181	180					
221	220					
271	270					
331	330					
391	390					
471	470					
511	510					
561	560					
621	620					
681	680					

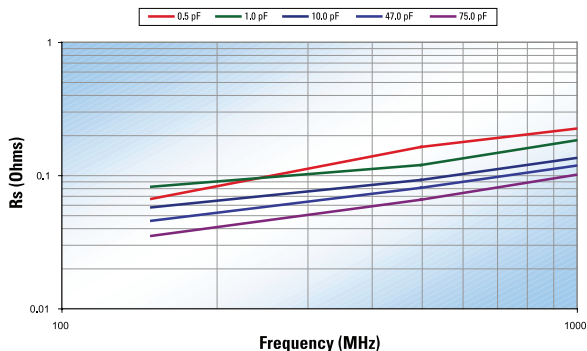
Table above represents common product line. Additional available products included in table below.

Case Style	Electrical Capacitance (pf)										
	0402	0603	0505	0805	1206	1111/1210	1812	2220	2225	3640	
Volts (V)	50/63	0.1 - 33	0.1 - 220	0.2 - 330	0.2 - 680	0.5 - 2,200					
	100	0.1 - 22	0.1 - 150	0.2 - 220	0.2 - 470	0.5 - 1,500	0.3 - 3,300	1.0 - 6,800	2.0 - 15,000	2.0 - 18,000	
	150	0.1 - 15	0.1 - 120	0.2 - 180	0.2 - 390	0.5 - 1,200	0.3 - 2,700	1.0 - 4,700	2.0 - 12,000	2.0 - 15,000	
	200/250		0.1 - 100	0.2 - 150	0.2 - 330	0.5 - 1,000	0.3 - 2,200	1.0 - 3,900	2.0 - 10,000	2.0 - 10,000	
	300		0.1 - 56	0.2 - 100	0.2 - 220	0.5 - 680	0.3 - 1,500	1.0 - 3,300	2.0 - 6,800	2.0 - 8,200	
	500				0.2 - 100	0.5 - 330	0.3 - 820	1.0 - 2,200	2.0 - 4,700	2.0 - 5,600	4.0 - 15,000
	630					0.5 - 150	0.3 - 390	1.0 - 1,000	2.0 - 2,200	2.0 - 3,300	4.0 - 6,800
	1000					0.5 - 82	0.3 - 220	1.0 - 680	2.0 - 1,500	2.0 - 2,200	4.0 - 4,700
	2000					0.5 - 18	0.3 - 68	1.0 - 150	2.0 - 470	2.0 - 560	4.0 - 1,500
	3000							1.0 - 68	2.0 - 150	2.0 - 150	4.0 - 470

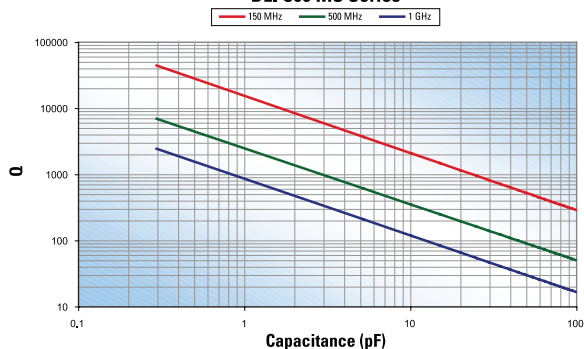
Capacitance values are available in E24 series values. Other values may be available on request, consult factory for details.

RF Characteristics

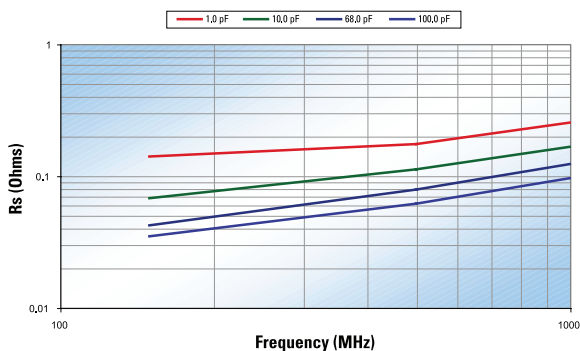
ESR vs Frequency
DLI C06 MS Series



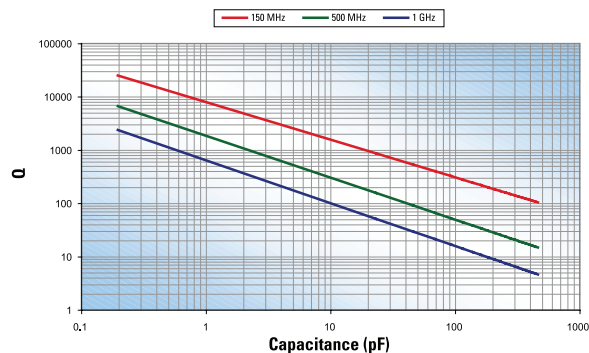
Q vs Capacitance
DLI C06 MS Series



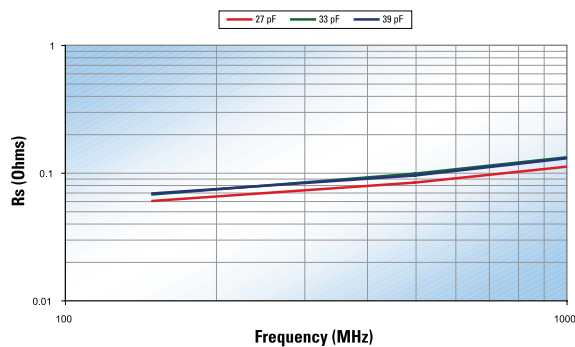
ESR vs Frequency
DLI C08 MS Series



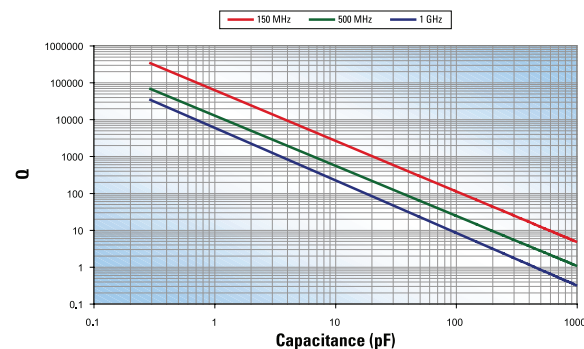
Q vs Capacitance
DLI C08 MS Series



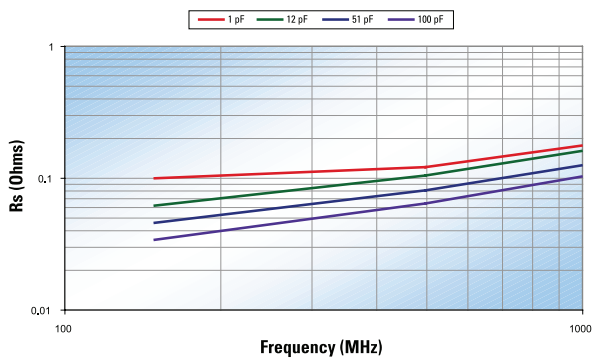
ESR vs Frequency
DLI C10 MS Series



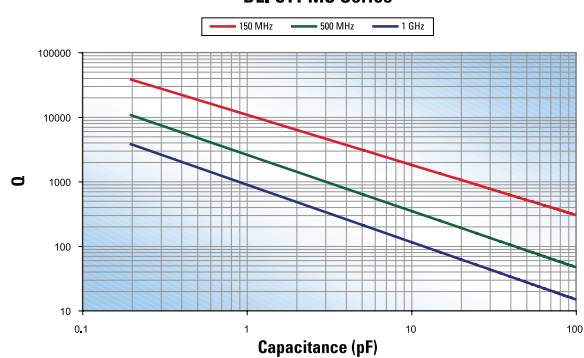
Q vs Capacitance
DLI C10 MS Series



ESR vs Frequency
DLI C11 MS Series

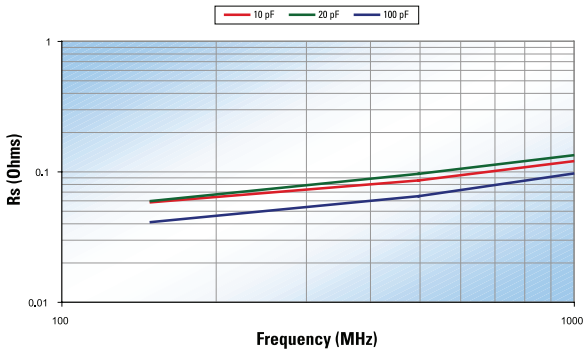


Q vs Capacitance
DLI C11 MS Series

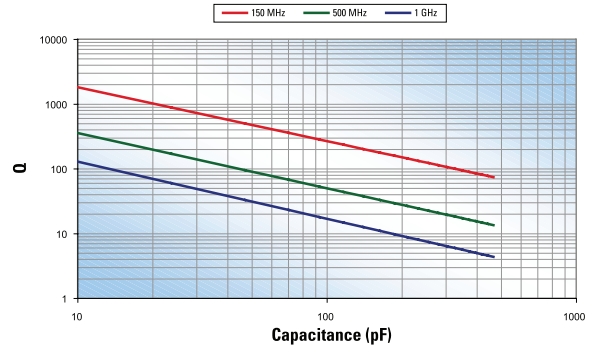


The information above represents typical device performance.

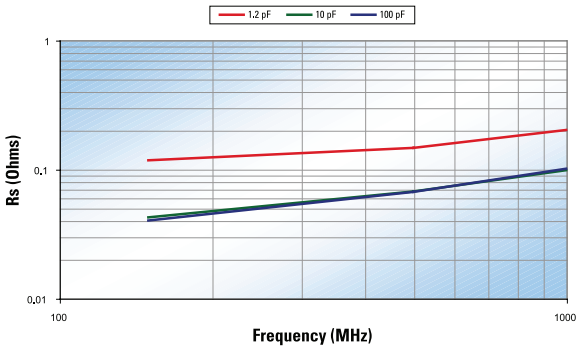
**ESR vs Frequency
DLI C12 MS Series**



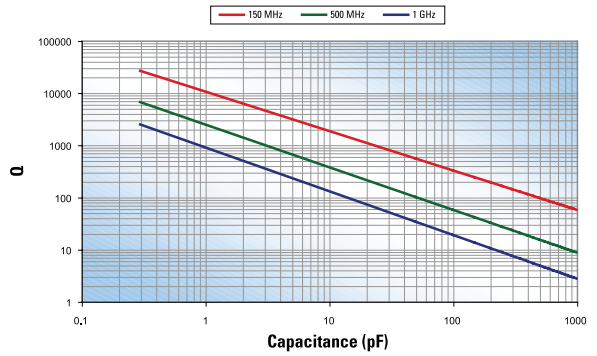
**Q vs Capacitance
DLI C12 MS Series**



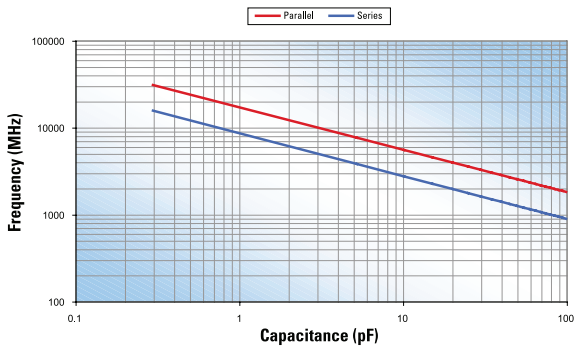
**ESR vs Frequency
DLI C17 MS Series**



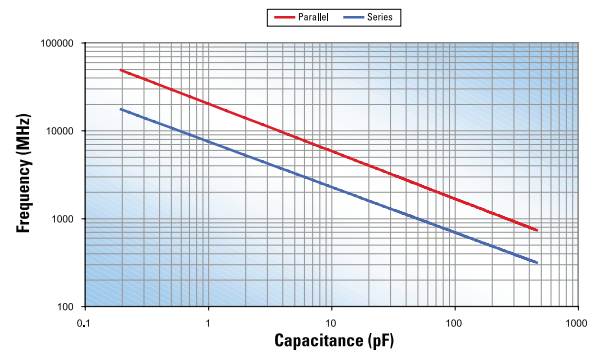
**Q vs Capacitance
DLI C17 MS Series**



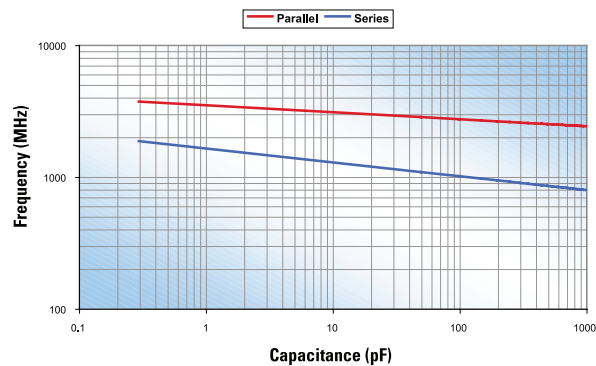
**Resonant Frequency vs Capacitance
DLI C06 MS Series**



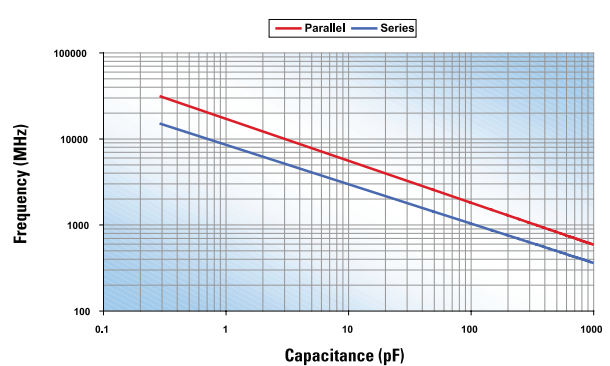
**Resonant Frequency vs Capacitance
DLI C08 MS Series**



**Resonant Frequency vs Capacitance
DLI C10 MS Series**



**Resonant Frequency vs Capacitance
DLI C17 MS Series**



The information above represents typical device performance.