



DLC10E High Q. RF/Microwave Multilayer Chip Ceramic

DLC10E(.380" x.380")

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◆Product Features

High Q, High RF Current/Voltage, High RF Power, Low ESR/ESL, Low Noise,
Ultra-Stable Performance.

◆Product Application

Typical Functional Applications: Bypass, Coupling, Tuning, Impedance Matching and D.C. Blocking.

Typical Circuit Applications: HF/RF Power Amplifiers, Transmitters, Antenna Tuning,
Plasma Chambers, and Medical.

◆DLC10E Capacitance Table

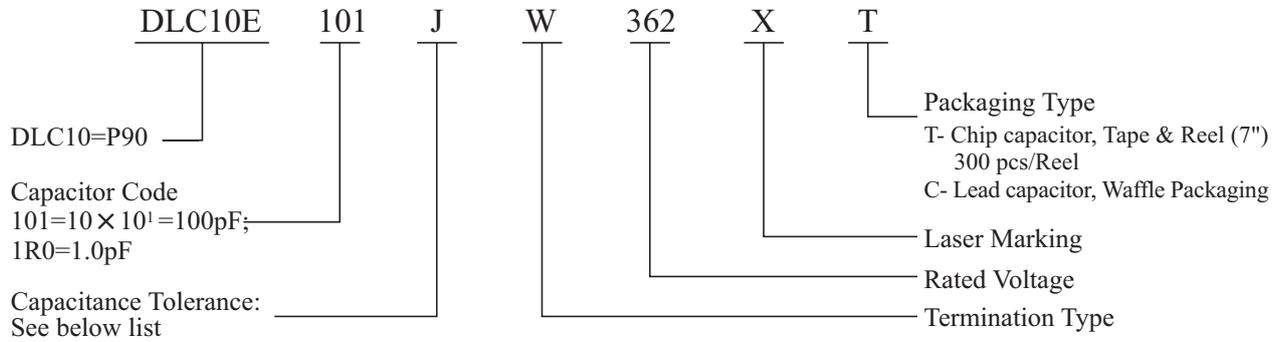
Cap.pF	Code	Tol.	Rated WVDC	Cap.pF	Code	Tol.	Rated WVDC	Cap.pF	Code	Tol.	Rated WVDC	Cap.pF	Code	Tol.	Rated WVDC
0.5	0R5		3600V Code 362 or 7200V Code 722	4.3	4R3	B, C, D	3600V Code 362 or 7200V Code 722	43	430	F, G, J	3600V Code 362 or 7200V Code 722	430	431	F, G, J	2500V Code 252
0.6	0R6			4.7	4R7			47	470			470	471		
0.7	0R7			5.1	5R1			51	510			510	511		
0.8	0R8			5.6	5R6			56	560			560	561		
0.9	0R9			6.2	6R2			62	620			620	621		
1.0	1R0			6.8	6R8			68	680			680	681		
1.1	1R1			7.5	7R5			75	750			750	751		
1.2	1R2			8.2	8R2			82	820			820	821		
1.3	1R3			9.1	9R1			91	910			910	911		
1.4	1R4			10	100			100	101			1000	102		
1.5	1R5			11	110	110	111	1100	112						
1.6	1R6			12	120	120	121	1200	122						
1.7	1R7			13	130	130	131	1500	152						
1.8	1R8			15	150	150	151	1800	182						
1.9	1R9			16	160	160	161	2200	222						
2.0	2R0			18	180	180	181	2400	242						
2.1	2R1			20	200	200	201	2700	272						
2.2	2R2			22	220	220	221	3000	302						
2.4	2R4			24	240	240	241	3300	332						
2.7	2R7			27	270	270	271	3600	362						
3.0	3R0		30	300	300	301	3900	392							
3.3	3R3		33	330	330	331	4300	432							
3.6	3R6		36	360	360	361	4700	472							
3.9	3R9		39	390	390	391	5100	512							



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◆Part Numbering



Code	A	B	C	D	F	G	J
Tolerance	± 0.05pF	± 0.1pF	± 0.25pF	± 0.5pF	± 1%	± 2%	± 5%

◆DLC10E Capacitor Dimensions

unit:inch(millimeter)

Series	Term. Code	Type/Outlines	Capacitor Dimensions				Lead Dimensions			Plated Material
			Length (Lc)	Width (Wc)	Thick. (Tc)	Overlap (B)	Length (Ll)	Width (Wl)	Thickness (Tl)	
10E	W	 Chip	.380+.015 to -.010 (9.65+0.38 to -0.25)	.380 ± .010 (9.65 ±0.25)	.170 (4.32) max	.063 (1.60) max	-	-	-	100% Sn over Nickel Plating
	L									
10E	MS	 Microstrip	.380 +.015 to -.010 (9.65 ±0.25) +0.38 to -.010 (9.65 ±0.25)	.380 ±.010 (9.65± 0.25)	.177 (4.50) max	-	.750 (19.05) min	.350 ± .010 (8.89 ±0.25)	.008 ± .001 (0.20 ±0.025)	Silver- plated Copper
10E	AR	 Axial Ribbon								
10E	RR	 Radial Ribbon								
10E	RW	 Radial Wire								
10E	AW	 Axial Wire								

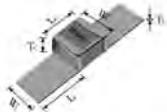
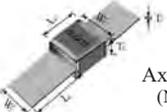
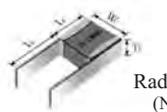
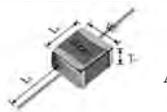


DLC10E High Q. RF/Microwave Multilayer Chip Ceramic

DLC10E(.380" x.380")

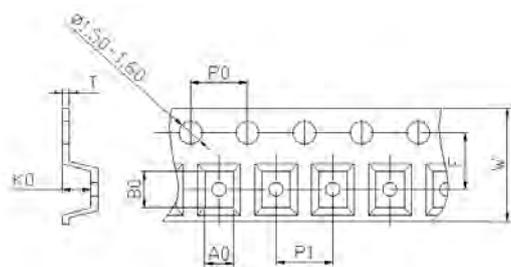
◆ **DLC10E Capacitor Dimensions**

unit:inch(millimeter)

Series	Term. Code	Type/Outlines	Capacitor Dimensions				Lead Dimensions			Plated Material
			Length (Lc)	Width (Wc)	Thick. (Tc)	Overlap (B)	Length (Ll)	Width (Wl)	Thickness (Tl)	
10E	P	 Chip (Non-Mag)	.380+0.015 to -0.010 (9.65+0.38 to -0.25)	.380 ± .010 (9.65 ±0.25)	.170 (4.32) max	.063 (1.60) max	—	—	—	100% Sn over Copper Plating RoHS Compliant
10E	MN	 Microstrip (Non-Mag)	.380 +0.015 to -0.010 (9.65 ±0.25 to -0.25)	.380 ±.010 (9.65±0.25)	.177 (4.50) max	—	.750 (19.05) min	.350 ± .010 (8.89 ±0.25)	.008 ± .001 (0.20 ±0.025)	Silver-plated Copper
10E	AN	 Axial Ribbon (Non-Mag)								
10E	FN	 Radial Ribbon (Non-Mag)								
10E	RN	 Radial Wire (Non-Mag)								
10E	BN	 Axial Wire (Non-Mag)								

◆ **Tape & Reel Specifications**

Orientation	EIA	A0	B0	K0	W	P0	P1	T	F	Qty/reel	Tape Material
Horizontal	3838	10.10	10.10	3.30	16.00	4.00	16.00	0.30	7.50	300	Plastic





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◆ Performance

Item	Specifications
Quality Factor (Q)	Greater than 10,000 at 1 MHz.
Insulation Resistance (IR)	Test Voltage: 500V 10 ⁵ Megohms min. @ +25°C at rated WVDC. 10 ⁴ Megohms min. @ +125°C at rated WVDC.
Rated Voltage	See Rated Voltage Table
Dielectric Withstanding Voltage (DWV)	250% of Rated Voltage for 5 seconds, Rated Voltage ≤ 500VDC 150% of Rated Voltage for 5 seconds, 500VDC < Rated Voltage ≤ 1250VDC 120% of Rated Voltage for 5 seconds, Rated Voltage > 1250VDC
Operating Temperature Range	-55°C to +175°C
Temperature Coefficient (TC)	+90 ± 20 ppm/°C (-55°C to +125°C)
Capacitance Drift	± 0.02% or ± 0.02pF, whichever is greater.
Piezoelectric Effects	None
Termination Type	See Termination Type Table

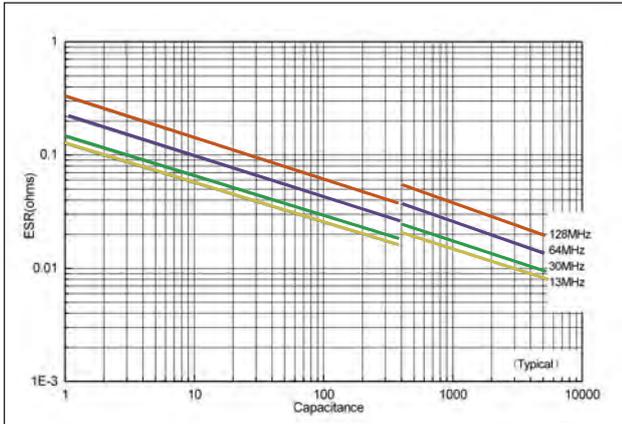
Capacitors are designed and manufactured to meet the requirements of MIL-PRF-55681 and MIL-PRF-123.

◆ Environmental Tests

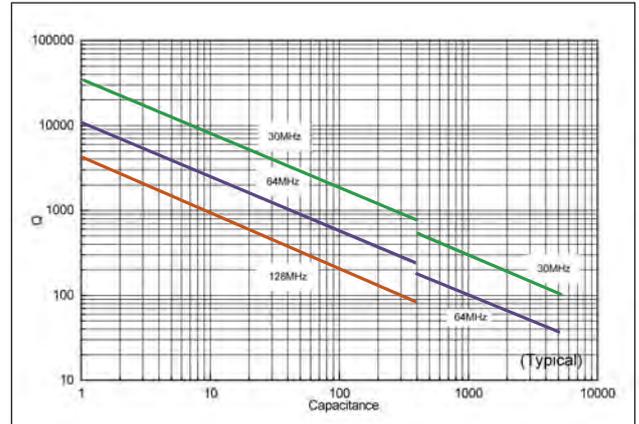
Item	Specifications	Method
Thermal Shock	DWV: the initial value IR: Shall not be less than 30% of the initial value Capacitance change: no more than 0.5% or 0.5pF, whichever is greater.	MIL-STD-202, Method 107, Condition A. At the maximum rated temperature (-55°C and 125°C) stay 30 minutes. The time of removing shall not be more than 3 minutes. Perform the five cycles.
Moisture Resistance	no more than 0.5% or 0.5pF, whichever is greater.	MIL-STD-202, Method 106.
Humidity (steady state)	DWV: the initial value IR: the initial value Capacitance change: no more than 0.3% or 0.3pF, whichever is greater.	MIL-STD-202, Method 103, Condition A, with 1.5 Volts D.C. applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours minimum.
Life	IR: Shall not be less than 30% of the initial value Capacitance change: no more than 2.0% or 0.5pF, whichever is greater.	MIL-STD-202, Method 108, for 2000 hours, at 125°C. 200% of Rated Voltage for Capacitors, Rated Voltage ≤ 500VDC 120% of Rated Voltage for Capacitors, 500VDC < Rated Voltage ≤ 1250VDC 100% of Rated Voltage for Capacitors, Rated Voltage > 1250VDC

◆ **DLC10E Performance Curve**

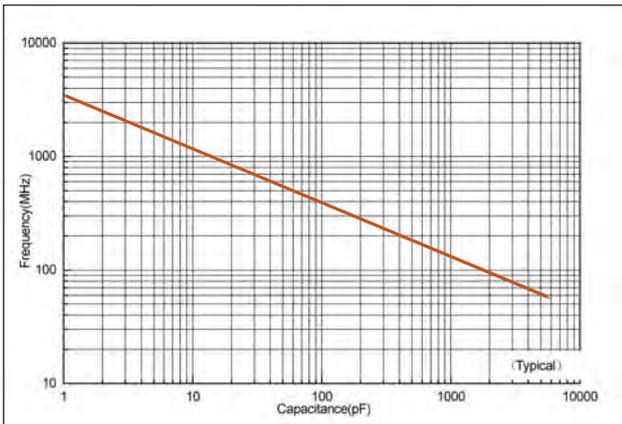
ESR vs Capacitance



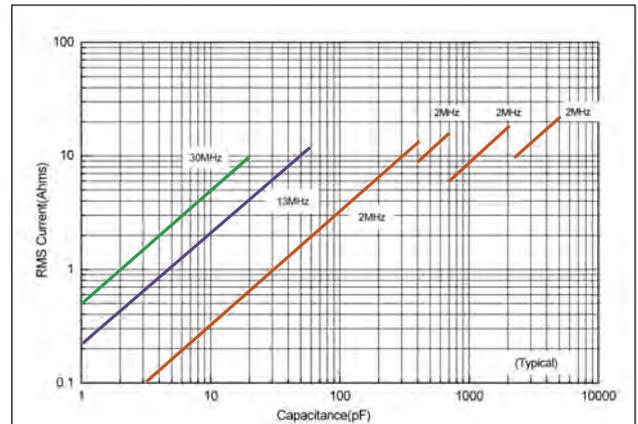
Q vs Capacitance



Series Resonance vs Capacitance



Current Rating vs Capacitance



The current depends on voltage limited: $I = \frac{\sqrt{2}}{2} I_{peak} = \frac{\sqrt{2}}{2} \times \frac{V_{rated}}{X_C} = \sqrt{2} \pi f C V_{rated}$

The current depends on power dissipation limited: $I = \sqrt{\frac{P_{dissipation}}{ESR}}$

Note: If the thermal resistance of mounting surface is 12°C/W, then a power dissipation of 5 W will result in the current limited

we can calculate the current limited $I = \sqrt{\frac{P_{dissipation}}{ESR}}$