



DLC70C High Q. RF/Microwave Multilayer Chip Ceramic Capacitors

DLC70C(.220" x.250")

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◆ Product Features

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

◆ Product Application

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

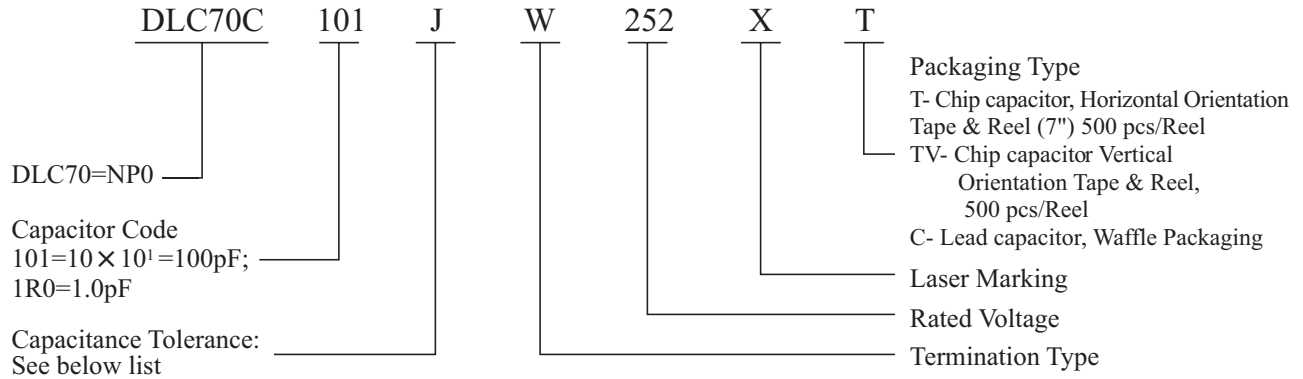
Typical Circuit Applications: UHF/VHF RF Power Amplifiers, Antenna Tuning, Plasma Chambers and Medical.

◆ DLC70C 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	B, C, D	2500V Code 252 or 3600V Code 362	3.6	3R6	B, C, D	2500V Code 252 or 3600V Code 362	30	300	F, G, J	2500V Code 252 or 3600V Code 362	240	241	F, G, J	1500V Code 152 or 2000V Code 202
0.6	0R6			3.9	3R9			33	330			270	271		
0.7	0R7			4.3	4R3			36	360			300	301		
0.8	0R8			4.7	4R7			39	390			330	331		
0.9	0R9			5.1	5R1			43	430			360	361		
1.0	1R0			5.6	5R6			47	470			390	391		
1.1	1R1			6.2	6R2			51	510			430	431		
1.2	1R2			6.8	6R8			56	560			470	471		
1.3	1R3			7.5	7R5			62	620			510	511		
1.4	1R4			8.2	8R2	68	680	560	561						
1.5	1R5			9.1	9R1	75	750	620	621						
1.6	1R6			10	100	82	820	680	681						
1.7	1R7			11	110	91	910	750	751						
1.8	1R8			12	120	100	101	820	821						
1.9	1R9			13	130	110	111	910	911						
2.0	2R0			15	150	120	121	1000	102						
2.1	2R1			16	160	130	131	1100	112						
2.2	2R2			18	180	150	151	1200	122						
2.4	2R4			20	200	160	161	1500	152						
2.7	2R7	22	220	180	181	1800	182								
3.0	3R0	24	240	200	201	2200	222								
3.3	3R3	27	270	220	221	2700	272								
500V Code 501															

Remark: special capacitance, tolerance and WVDC are available, consult with DALICAP.


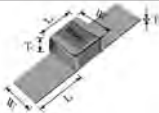
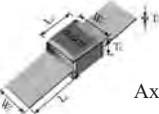
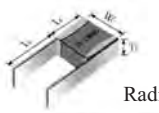


◆ **Part Numbering**



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

◆ **DLC70C Capacitor Dimensions**

unit:inch(millimeter)

Series	Term. Code	Type/Outlines	Capacitor Dimensions				Lead Dimensions			Plated Material
			Length (L _C)	Width (W _C)	Thick. (T _C)	Overlap (B)	Length (L _L)	Width (W _L)	Thickness (T _L)	
70C	W	 Chip	.230 +.025 to -.010 (5.84 to -0.25)	.250 ± .015 (6.35 ±0.38)	.165 (4.19) max	.047 (1.20) max	-	-	-	100% Sn over Nickel Plating 90 Sn10Pb over Nickel Plating
	L									
70C	MS	 Microstrip	.245 ±	.250 ±	.150 (3.81) max	-	.500 (12.70) min	.240 ± .005 (6.10 ±0.13)	.008 ± .001 (0.20 ±0.025)	Silver- plated Copper
70C	AR	 Axial Ribbon								
70C	RR	 Radial Ribbon								
70C	RW	 Radial Wire								
70C	AW	 Axial Wire								


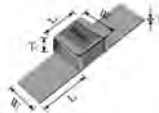

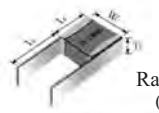




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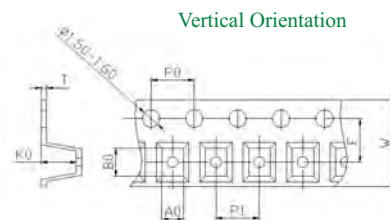
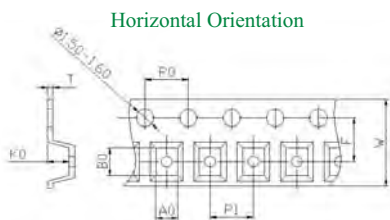
◆ DLC70C Capacitor Dimensions

unit:inch(millimeter)

Series	Term. Code	Type/Outlines	Capacitor Dimensions				Lead Dimensions			Plated Material	
			Length (L _C)	Width (W _C)	Thick. (T _C)	Overlap (B)	Length (L _L)	Width (W _L)	Thickness (T _L)		
70C	P	 Chip (Non-Mag)	.230 +.025 to -.010 (5.84 +0.51 to-0.25)	.250 ± .015 (6.35 ±0.38)	.165 (4.19) max	.047 (1.20) max	—	—	—	100% Sn over Copper Plating RoHS Compliant	
70C	MN	 Microstrip (Non-Mag)	.245 ±	.250 ±	.150 (3.81) max	—	.500 (12.70) min	.240 ±	.008 ±	Silver- plated Copper	
70C	AN	 Axial Ribbon (Non-Mag)						.005 (6.10 ±0.13)	.001 (0.20 ±0.025)		
70C	FN	 Radial Ribbon (Non-Mag)						.354 (9.00) min	.118 ±.005 (3.00 ±0.13)		.012 ±.001 (0.30 ±0.025)
70C	RN	 Radial Wire (Non-Mag)						.709 (18.00) min	Dia.=.031±.004 (0.80±0.10)		
70C	BN	 Axial Wire (Non-Mag)						.906 (23.00) min			

◆ Tape & Reel Specifications

Orientation	EIA	A0	B0	K0	W	P0	P1	T	F	Qty/reel	Tape Material
Horizontal	2225	6.70	6.20	3.40	16.00	4.00	12.00	0.30	7.50	500	Plastic
Vertical	2225	3.50	6.66	6.90	16.00	4.00	8.00	0.50	7.50	500	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 \leq 500VDC 150% of Rated Voltage for 5 seconds, 500VDC < Rated Voltage \leq 1250VDC 120% of Rated Voltage for 5 seconds, Rated Voltage > 1250VDC
Operating Temperature Range	-55°C to +200°C
Temperature Coefficient (TC)	0 ± 30 ppm/°C (-55°C to +125°C)
Capacitance Drift	$\pm 0.02\%$ or ± 0.02 pF, whichever is greater.
Piezoelectric Effects	None
Termination Type	See Termination Type Table

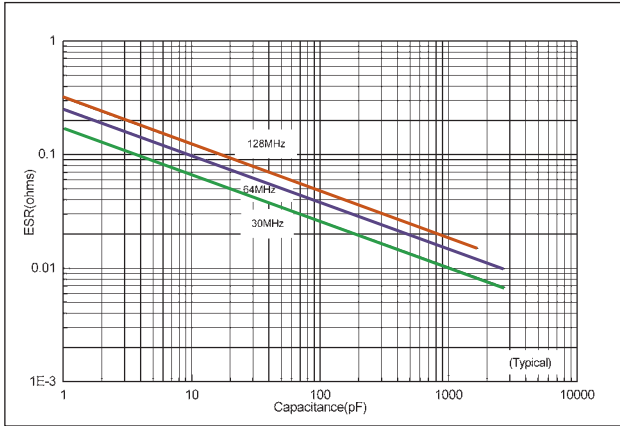
Capacitors are designed and manufactured to meet the requirements of MIL-PRF-55681 and MIL-PRF-123.

◆ **Environmental Tests**

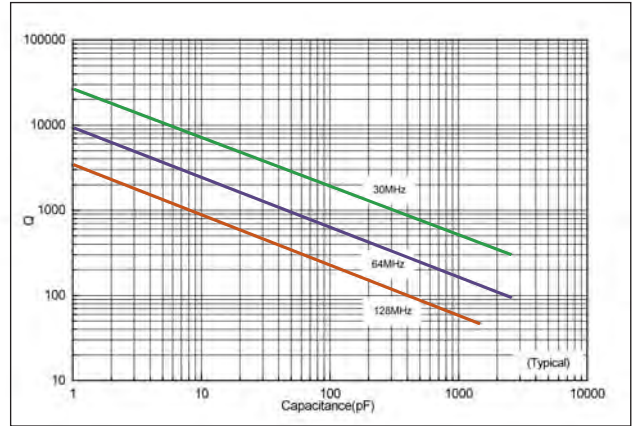
Item	Specifications	Method
Thermal Shock	DWV: the initial value IR: Shall not be less than 30% of the initial value Capacitance change: no more than 0.5% or 0.5pF. whichever is greater.	MIL-STD-202, Method 107, Condition A. At the maximum rated temperature (-55°C and 125°C) stay 30 minutes. The time of removing shall not be more than 3 minutes. Perform the five cycles.
Moisture Resistance		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 \leq 500VDC 120% of Rated Voltage for Capacitors, 500VDC < Rated Voltage \leq 1250VDC 100% of Rated Voltage for Capacitors, Rated Voltage > 1250VDC

◆ **DLC70C Performance Curve**

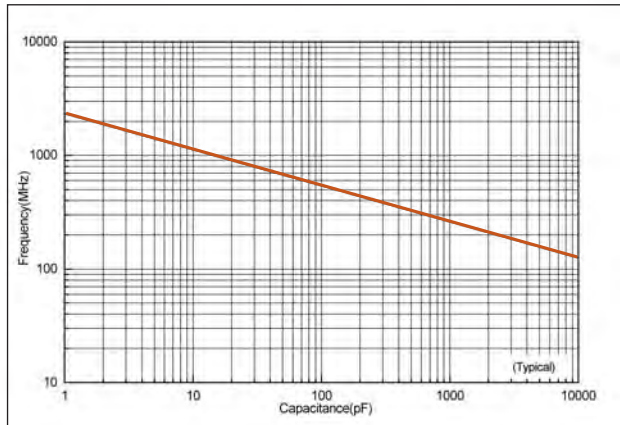
ESR vs Capacitance



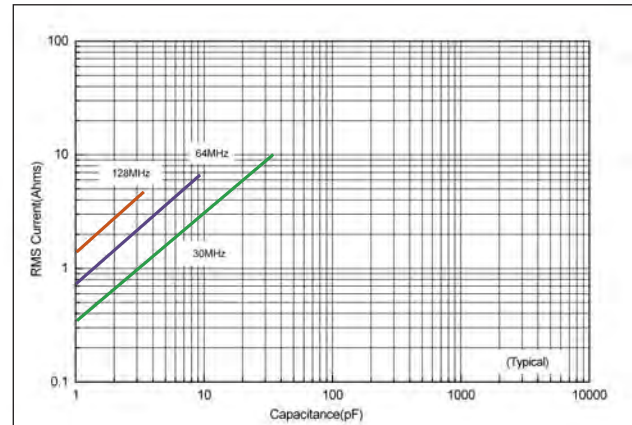
Q vs Capacitance



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 15°C/W.

then a power dissipation of 4 W will result in the current limited

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