

Specification

Part No.: DLC70C

DLC70C (.220" x .250")

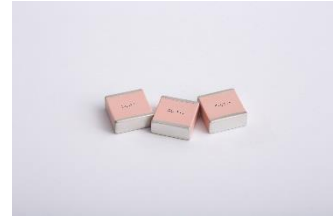
◆ Product Features

High Q, High Power, Low ESR/ESL, Low Noise,
High Self-Resonance, Ultra- Stable Performance.

◆ Product Application

Typical functions: bypass, coupling, tuning, impedance matching, and DC blocking.

Typical applications: semiconductor RF power supplies, MRI medical equipment, high-speed railway signal transponders, and radio and television equipment.



◆ DLC70C Capacitance Table

Cap.	Code	Tol.	Rated	Cap.	Code	Tol.	Rated	Cap.	Code	Tol.	Rated	Cap.	Code	Tol.	Rated
pF			WVDC	pF			WVDC	pF			WVDC	pF			WVDC
0.5	0R5	A,B,C, D	2500V Code 252 ro 3600V Code 362	3.9	3R9	A,B,C, D	2500V Code 252 ro 3600V Code 362	36	360	F,G, J	2500V Code 252 ro 3600V Code 362	330	331		1500V Code 152 ro 2000V Code 202
0.6	0R6			4.3	4R3			39	390			360	361		
0.7	0R7			4.7	4R7			43	430			390	391		
0.8	0R8			5.1	5R1			47	470			430	431		
0.9	0R9			5.6	5R6			51	510			470	471		
1.0	1R0			6.2	6R2			56	560			510	511		
1.1	1R1			6.8	6R8	62		620	560			561	F,G, J	1000V Code 102 ro 1500V Code 152	
1.2	1R2			7.5	7R5	68		680	620			621			
1.3	1R3			8.2	8R2	75		750	680			681			
1.4	1R4			9.1	9R1	82		820	750			751			
1.5	1R5			10	100	91		910	820			821			
1.6	1R6			11	110	100		101	910			911			
1.7	1R7			12	120	110		111	2500V Code 252 ro 3000V Code 302		1000	102			
1.8	1R8			13	130	120		121			1100	112			
1.9	1R9			15	150	130		131			1200	122			
2.0	2R0			16	160	150		151			1500	152			
2.1	2R1			18	180	160		161			1800	182	500V Code 501 ro 1000V Code 102		
2.2	2R2			20	200	180		181			2200	222			
2.4	2R4			22	220	200		201			2700	272			
2.7	2R7			24	240	220		221			3000	302			
3.0	3R0			27	270	240		241							
3.3	3R3			30	300	270		271							
3.6	3R6			33	330	300		301							

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

◆ Part Numbering

DLC70C

101

J

W

252

X

T

X

7

X

DLC70:series

C:2225

Capacitor Code:

Cap <10pF, e.g.:1R0=1.0pF, R denotes decimal point.;

Cap ≥10pF, e.g.:101=100pF, the third number

is the power of 10.

Capacitance Tolerance: See below list

Capacitance Tolerance								
Code	A	B	C	D	F	G	J	K
Tol	±0.25%	±0.1%	±0.05%	±0.025%	±1%	±0.5%	±5%	±10%

Internal code(can be left blank)

Operating temperature

Internal code(can be left blank)

Packaging Type

T: Tape & Reel

TV- Chip capacitor Vertical Orientation

Tape & Reel

C- Lead capacitor,

Laser Marking:

N: No Marking

X: Marking

Rated Voltage

e.g:252=2500V

Termination Type

※Operating temperature: left blank : -55°C~125°C; 5: -55°C~150°C; 7: -55°C~175°C.

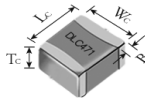
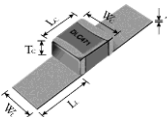
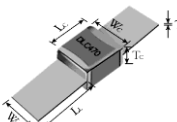
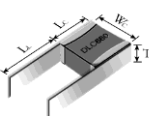
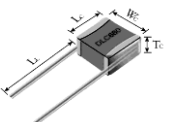
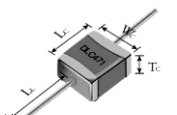
◆ DLC70C Termination Type and Dimensions

unit: inch (millimeter)

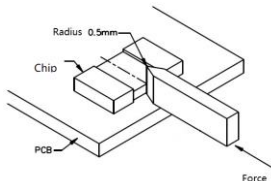
Series	Term. Code	Type/ Outlines	Capacitor Dimensions				Lead Dimensions			Termina Material
			Length Lc	Width Wc	Thickness Tc	Overlap B	Length Ll	Width Wl	Thickness Tl	
70C	W	 Chip	$.225$ $-.010+.020$ (5.72 $-0.25\sim0.51$)	$.250 \pm .015$ (6.35 ± 0.38)	$.150$ (3.81)max	$.020 \sim .047$ ($0.50 \sim 1.20$)	—	—	—	100%Sn over Nickel Plating , RoHS Compliant
	L						$.500$ (12.70) min	$.240 \pm .010$ (6.1 ± 0.25)	$.008 \pm .001$ (0.2 ± 0.025)	90%Sn 10%Pb over Nickel Plating ,
70C	MS									Silver-plated Copper
70C	AR									
70C	RR									
70C	RW									
70C	AW									Silver wire
							$.354$ (9.00) min	$.118 \pm .010$ (3.0 ± 0.25)	$.012 \pm .001$ (0.3 ± 0.025)	
							$.709$ (18.00)min	$.031 \pm .004$ (0.80 ± 0.10)		
							$.906$ (23.00)min			

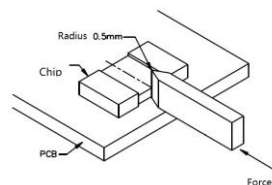
◆ **DLC70C Termination Type and Dimensions**

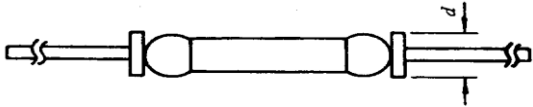
unit: inch (millimeter)

Series	Term. Code	Type/ Outlines	Capacitor Dimensions				Lead Dimensions			Terminals Material	
			Length Lc	Width Wc	Thickness Tc	Overlap B	Length LL	Width WL	Thickness TL		
70C	P	 Chip(Non-Mag)	.225 -.010+.020 (5.72 -0.25~0.51)	.250 ± .015 (6.35 ± 0.38)	.150 (3.81)max	.020~.047 (0.50~1.20)	—	—	—	100%Sn over Copper Plating , RoHS Compliant	
70C	MN	 Microstrip(Non-Mag)				—	.500 (12.70) min	.240 ± .010 (6.1 ± 0.25)	.008 ± .001 (0.2 ± 0.025)	Silver- plated Copper	
70C	AN	 Axial Ribbon (Non-Mag)					.354 (9.00) min	.118 ± .010 (3.0 ± 0.25)	.012 ± .001 (0.3 ± 0.025)		
70C	FN	 RadialRibbon (Non-Mag)									
70C	RN	 Radial Wire(Non-Mag)				—	.709 (18.00)min	.031 ± .004 (0.80 ± 0.10)		Silver wire	
70C	BN	 Axial Wire (Non-Mag)					.906 (23.00)min				

◆ **Reliability Test Conditions.**

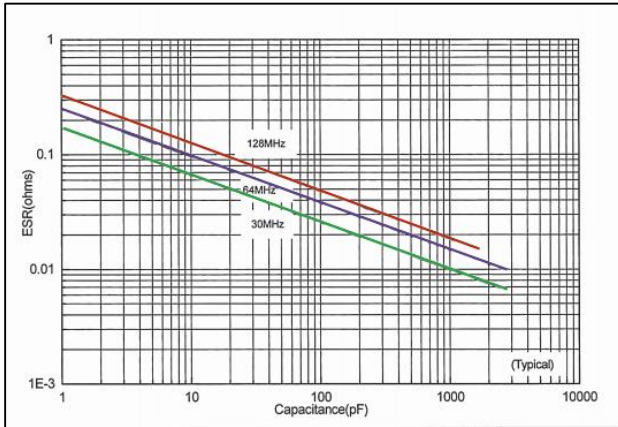
No.	Item	Specification	Test method												
1	Operating temperature	-55℃~125℃ -55℃~175℃	-												
2	Appearance	No defects or abnormality	Visual inspection: ×10 microscope.												
3	Dimensions	See the previous page	Caliper inspection												
4	Capacitance	Shall be within the applicable tolerance specified.	Test frequency: C≤1000pF: 1MHz ± 10% C>1000pF: 1KHz ± 10%												
5	D.F	D.F≤0.01%	Test voltage: 1.0±0.2Vrms												
6	Insulation resistance	10 ⁵ Megohms min. @ +25 °C 10 ⁴ Megohms min. @ +125 °C	Voltage: DC Rated Voltage (500V max)												
7	Dielectric withstanding voltage (DWV)	Shall be no evidence of breakdown or visible evidence of arcing or damage.	Test Voltage: Rated voltage≤500V: 250% of the rated voltage 500V<Rated voltage≤1250V: 150% of the rated voltage Rated voltage>1250V: 120% of the rated voltage Applied Time: 5 s Charge/discharge current: 50mA max.												
8	Temperature coefficient	(0±30)ppm/°C(-55℃~125℃) (0±60)ppm/°C(+125℃~175℃)	The capacitance change should be measured after 5 min. at each specified temp. stage. Capacitance value as a reference is the value in step 3. <table><tr><th>step</th><th>temperature (°C)</th></tr><tr><td>1</td><td>25±2</td></tr><tr><td>2</td><td>-55±3</td></tr><tr><td>3</td><td>25±2</td></tr><tr><td>4</td><td>Tmax ±3</td></tr><tr><td>5</td><td>25±2</td></tr></table> $TC=\frac{C_2-C_3}{C_3 \times \Delta T} \times 10^6 \text{ ppm/}^\circ\text{C}$	step	temperature (°C)	1	25±2	2	-55±3	3	25±2	4	Tmax ±3	5	25±2
step	temperature (°C)														
1	25±2														
2	-55±3														
3	25±2														
4	Tmax ±3														
5	25±2														
9	Capacitance Drift	±0.2% or ±0.05pF, whichever is larger.													
10	Adhesive Strength of Termination	No removal of the terminations or other defect should occur.	Pressurizing force: 25.0 ^{+1.0} ₀ N Test time: 10±1 sec. 												



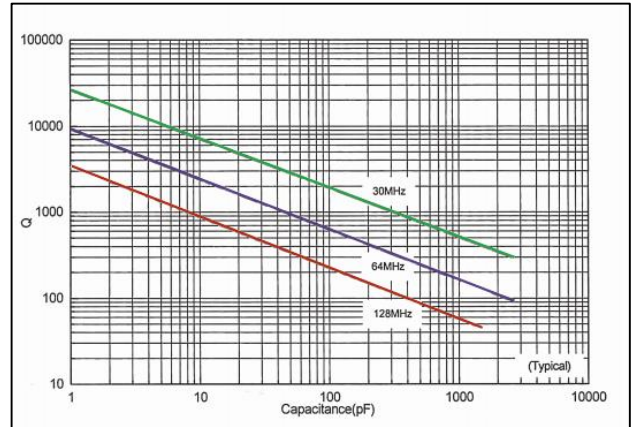
No.	Item	Specification	Test method															
11	Substrate Bending test	Visual examination for loosening, rupturing, and permanent damage to the terminals.	Solder the capacitor on test jig as below . Then apply a horizontal force. Holding time: 5~10 s Force: 10 N minimum. d= (1.02±0.15) mm; 															
12	Solderability of termination	Shall be at least 95 percent covered with a smooth solder coating.	Immerse the capacitor in a eutectic solution requirement temperature 245±2 °C for 2±0.5 seconds. Capacitor shall be immersed to a depth of 10mm.															
13	Resistance to soldering Heat	Appearance: No evidence of mechanical damage or delamination or exposed. Cap change: within -1.0%~+2.0% or ±0.5pF whichever is larger. Q: No less than initial requirement. IR(25°C): No less than initial requirement.	Preheat for 1 minute at 150°C to 180°C before immerse the capacitor in a eutectic solution at 260±5°C for 10±1 seconds. Capacitor shall be immersed to a depth of 10mm. And following a 24±2 hours cooling period.															
14	Temperature Cycle	Appearance: No evidence of mechanical damage . Cap change: within ±0.5% or ±0.5pF whichever is larger. Q: No less than initial requirement. IR(25°C): No less than 30% initial requirement. DWV: To meet initial requirement.	Perform the 5 cycles according to the four heat treatments listed in the following table. Set it for 24±2 hours at room temperature. <table><tr><th>step</th><th>Temperature(°C)</th><th>Time(min)</th></tr><tr><td>1</td><td>-55(-3~0)</td><td>≥30</td></tr><tr><td>2</td><td>25+10</td><td>≤5</td></tr><tr><td>3</td><td>125(0~+3)</td><td>≥30</td></tr><tr><td>4</td><td>25+10</td><td>≤5</td></tr></table>	step	Temperature(°C)	Time(min)	1	-55(-3~0)	≥30	2	25+10	≤5	3	125(0~+3)	≥30	4	25+10	≤5
step	Temperature(°C)	Time(min)																
1	-55(-3~0)	≥30																
2	25+10	≤5																
3	125(0~+3)	≥30																
4	25+10	≤5																
15	Humidity, steady state	Appearance: No evidence of mechanical damage . Cap change: within ±0.3% or ±0.3pF whichever is larger. IR(25°C): No less than initial requirement.	With 1.5 Volts D.C. applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours minimum. Removed and sit 3.5±0.5 hours at room temperature.															
16	High Temperature Load (Life)	Appearance: No evidence of mechanical damage . Cap change: within ±2% or ±0.5pF whichever is larger. Q: No less than 50% initial requirement. IR(25°C): No less than 30% initial requirement.	Test Voltage: Rated voltage≤500V: 200% of the rated voltage 500V<Rated voltage≤1250V: 120% of the rated voltage Rated voltage>1250V: 100% of the rated voltage The charge/discharge current is less than 50mA. Temperature: Tmax°C; Time: 2000h. Measurement: Set it for 48 hours at room temperature, then measure.															

◆ **DLC70C Performance Curve**

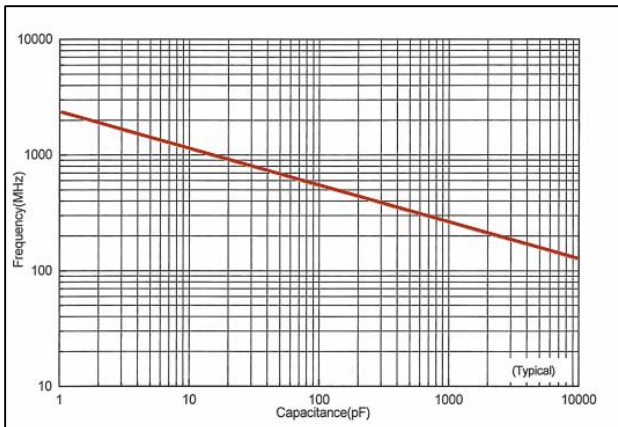
ESR vs Capacitance



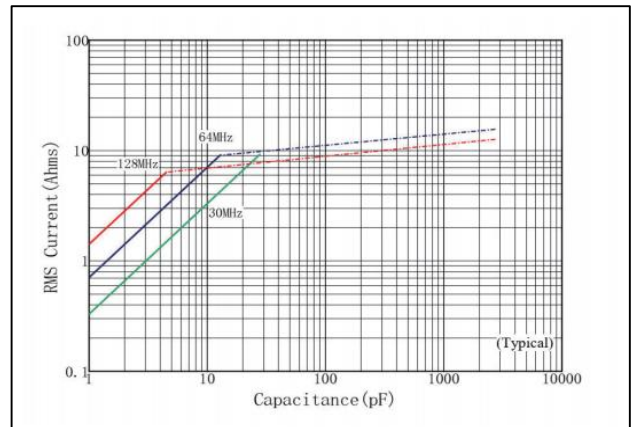
Q vs Capacitance



Series Resonance vs Capacitance



RMSCurrent vs Capacitance



The current determined by rated voltage (max voltage products). (Solid line)

$$I_{RMS} = \frac{\sqrt{2}}{2} I_{peak} = \frac{\sqrt{2}}{2} \times \frac{V_{rated}}{X_C} = \sqrt{2} \pi F C V_{rated}$$

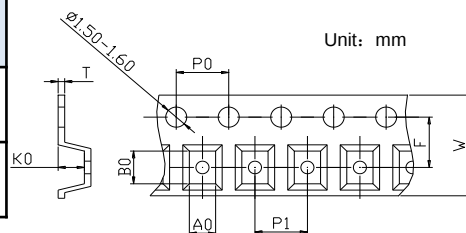
The current determined by dissipated power. (Dashed line)

$$I_{RMS} = \sqrt{\frac{Pd_{max}}{ESR}}$$

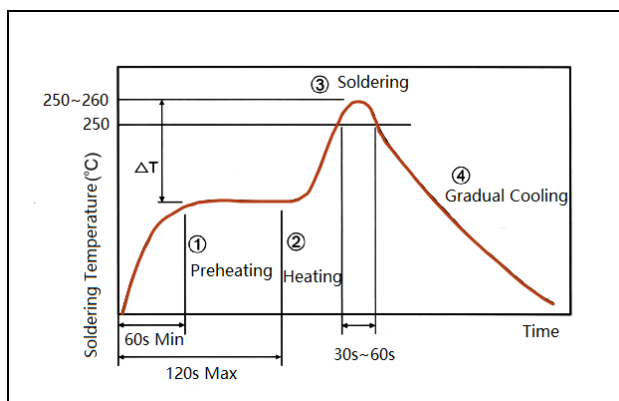
If the rated current is based on a temperature rise(ΔT) of 60°C (Ambient Temperature at 65°C), with a thermal resistance(θ) of 15°C/W, the maximum power dissipation of the capacitor is 4W.

◆ Tape & Reel Specifications

Orientation	EIA	A0	B0	K0	W	P0	P1	T	F	Qty/reel	Tape Material
Horizontal	2225	6.7	6.2	3.4	16	4	12	0.3	7.5	500	Plastic
Vertical	2225	4.1	6.15	6.55	16	4	8	0.4	7.5	300	Plastic



◆ Recommended soldering conditions



$\Delta T \leq 150^\circ\text{C}$;

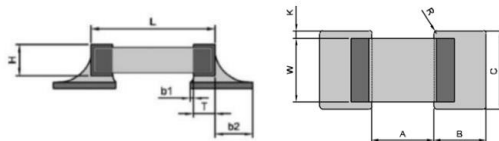
Maximum temperature: $255^\circ\text{C} \pm 5^\circ\text{C}$;

Heating rate: $\leq 4^\circ\text{C/s}$.

◆ Recommended Land Dimensions

Horizontal Mounting

Orientation	EIA	A(mm)	B(mm)	C(mm)
Horizontal	2225	4.0	2.3	7.0



Vertical Mounting

Orientation	EIA	A(mm)	B(mm)	C(mm)
Vertical	2225	3.9	2.5	4.0

