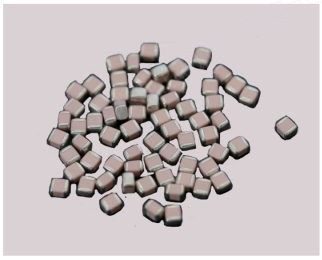
Specification

Part No.:DLC70A0R1BW151NTA20

DLC70A (.050" x .050")



◆Product Features

High Q, High Power, Low ESR/ESL, Low Noise,

High Self-Resonance, Ultra-Stable Performance

◆Product Application

Typical Functions: Tuning, Bypassing, Coupling, Feedback, Impedance Matching and D.C. Blocking

Typical Applications: Civil Satellite Communications, Mobile Communication Base Stations, RF Repaters, Trunking Communications

◆Part Numbering

DLC70A	0R1	B	W	151	N	T	A	2	0
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① **DLC70A: 70:series 0505size**

② Capacitor Code: 0R1=0.1pF

③ Capacitance Tolerance: B −0.1pF～0.1pF

④ Termination Type: W 100%Snover Nickel Plating,RoHS Compliant

⑤ Rated Voltage: 151=150V

⑥ Laser Marking: N No Marking

⑦ Packaging Type: Tape & Reel

⑧ Internal Code: A

⑨ Temperature Range: 2 −55℃~125℃

⑩ Internal Code: 0

◆DLC70A Dimension

unit: inch（millimeter）

Series	Type/ Outlines	Capacitor Dimensions			
		Length Lc	Width Wc	Thickness Tc	Overlap B
70A		.055+.015~-.010(1.40 +0.38~-0.25)	.055±.010(1.40±0.25)	.057(1.45)max	.009~.024(0.25~0.60)

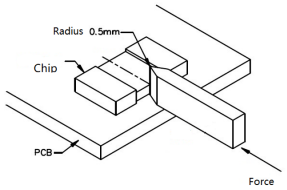
Remark: special capacitance, tolerance and WVDC are available, consult with DALICAP.

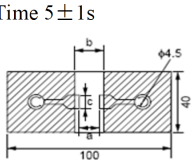
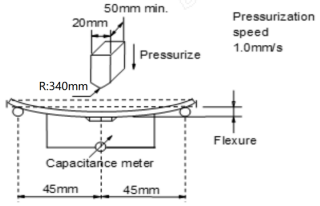
◆Reliability Test Condition

No.	Item	Specification	Test method
1	Operating temperature	-55℃~125℃	-
2	Appearance	No defects or abnormality	Visual inspection: ×10 microscope
3	Dimensions	See the previous page	Caliper inspection
4	Capacitance	0.1pF	Test frequency: C≤1000pF: 1MHz±10% C＞1000pF: 1KHz±10% Test voltage: 1.0±0.2Vrms
5	D.F	D.F≤0.01%	
6	Insulation resistance	≤100GΩ@25℃ ≤10GΩ@125℃	Voltage: DC Rated Voltage
7	Dielectric withstanding voltage (DWV)	Shall be no evidence of breakdown or visible evidence of arcing or damage	Test Voltage:250% of the rated voltage Applied Time: 5 s Charge/discharge current: 50mA max
8	Temperature coefficient	(0±30)ppm/℃	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
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: $8.0^{+1.0}_{0}$N Test time: 10±1 sec

step	temperature (℃)
1	25±2
2	-55±3
3	25±2
4	125±3
5	25±2

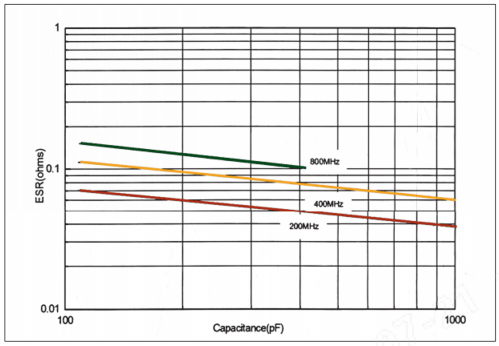
$$TC=\frac{C_x-C_3}{C_3 \times \triangle T}X10^6 \text{ ppm/℃}$$



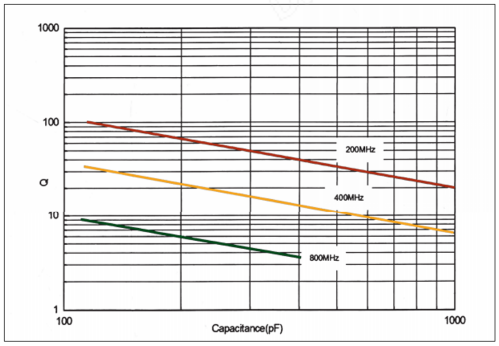
No.	Item	Specification	Test method
11	Substrate Bending test	Appearance：No defects or abnormalities. Capacitance Change： With in ±5% or ±0.3pF whichever is larger	Mounting method: Reflow solder the capacitor on the test substrate. Pressurization Method: Shown as below. Flexure 1mm. Holding Time 5±1s  a: 1.0mm b: 3.8mm c: 1.5mm 
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 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: 200% of the rated voltage The charge/discharge current is less than 50mA Temperature: Tmax Time: 2000h Measurement： Set it for 48 hours at room temperature, then measure

◆DLC70A Performance Curve

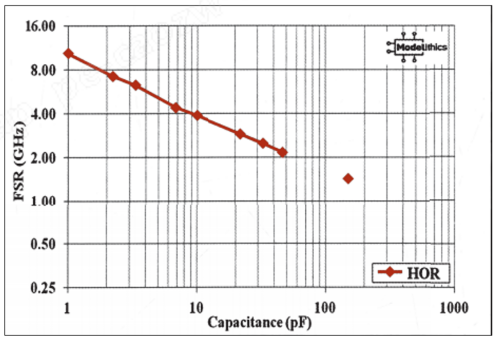
ESR vs Capacitance



Q vs Capacitance



Horizontal First Series Resonance (FSR)

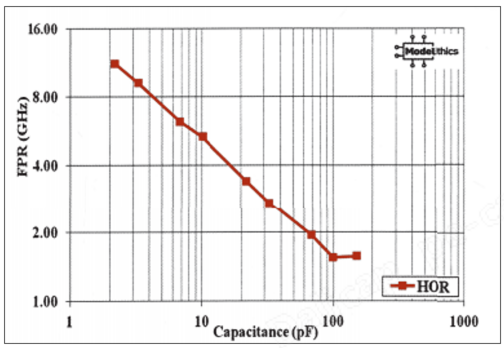


Definitions and Measurement Conditions

For a capacitor in a series configuration, i.e., mounted across a gap in a microstrip trace, with 50-Ohm source and termination resistances, the First Series Resonance, FSR, is defined as the lowest frequency at which the imaginary part of the input impedance, Im[Zin], equals zero. Should Im [Zin] or the real part of the input impedance, Re[Zin], not be monotonic with frequency at frequencies lower than those at which Im[Zin] = 0, the FSR shall be considered as undefined (gap in plot above). FSR is dependent on internal capacitor structure; substrate thickness and dielectric constant; capacitor orientation, as defined above; and mounting pad dimensions.

The measurement conditions are: substrate -- Rogers RO4350; substrate dielectric constant = 3.66; horizontal mount substrate thickness (mils) = 15; gap in microstrip trace (mils) = 25; horizontal mount microstrip trace width (mils) = 55. **Reference planes at sample edges.**

Horizontal First Parallel Resonance (FPR)



Definitions and Measurement Conditions

For a capacitor in a series configuration, i.e., mounted across a gap in a microstrip trace, with 50-Ohm source and termination resistances, the First Parallel Resonance,FPR, is defined as the lowest frequencyat which a suckout or notch appears in |S21|. It is generally independent of substrate thickness or dielectric constant, but does depend on capacitor orientation.A horizontal orientation means the capacitor electrode planes are parallel to the plane of the substrate; a vertical orientation means the electrode planes are perpendicular to the substrate.

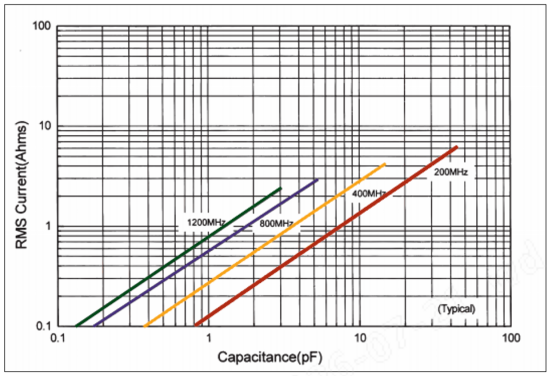
The measurement conditions are:substrate --Rogers RO4350; substrate dielectric constant =3.66; horizontal mount

substrate thickness (mils) =25; gap in microstrip trace(mils) =15; horizontal mount microstrip trace width(mils)=55.

Reference planes at sample edges.

◆DLC70A Performance Curve

RMS Current vs Capacitance



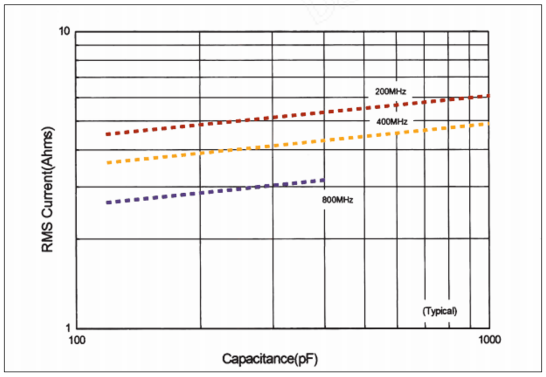
The current determined by rated voltage (max voltage products). (Solid line)

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

The current determined by dissipated power. (Dashed line)

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

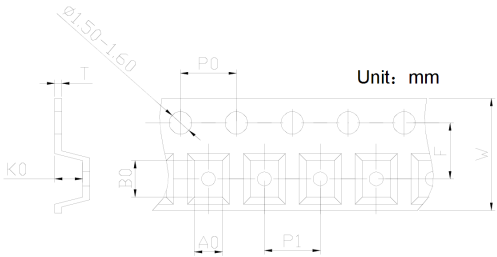
RMS Current vs Capacitance



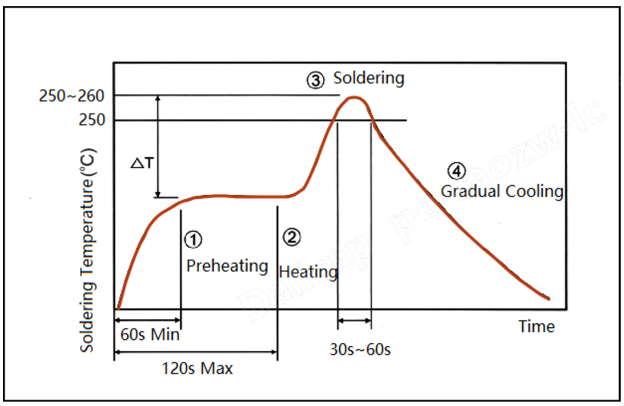
If the rated current is based on a temperature rise(ΔT) of 60°C (Ambient Temperature at 65°C), with a thermal resistance(θ) of 40°C/W, the maximum power dissipation of the capacitor is 1.5W.

◆Tape & Reel Specifications

Orien-tation	EIA	A0	B0	K0	W	P0	P1	T	F	Qty/reel	Tape Material
Horiz-ontal	0505	1.50	1.75	1.15	8.00	4.00	4.00	0.22	3.50	3000	Plastic
Vertical	0505	1.10	1.60	1.40	8.00	4.00	4.00	0.30	3.50	2000	Plastic



◆Recommended Soldering Conditions

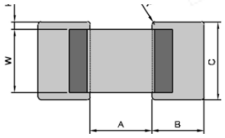


△T≤190℃
Maximum temperature: 255℃±5℃
Heating rate: ≤4℃/s

◆Recommended Land Dimensions

Horizontal Mounting

Orientation	EIA	A(mm)	B(mm)	C(mm)
Horizontal	0505	0.7	0.6	1.5



Vertical Mounting

Orientation	EIA	A(mm)	B(mm)	C(mm)
Vertical	0505	0.7	0.9	1.5