Specification

Part No.: DLC70F

DLC70F (.600" x .400")

◆Product Features

High Q value, high power, low ESR/ESL, low noise,

high self-resonant frequency, high reliability.

◆ Product Application

Typical applications: semiconductor RF power, MRI, repeater, high speed railway signal responsor, wireless broadcasting and TV device.

◆ DLC70F Capacitance Table

<table>
<tr><th>Cap.</th><th>Code</th><th>Tol.</th><th>Rated</th><th>Cap.</th><th>Code</th><th>Tol.</th><th>Rated</th><th>Cap.</th><th>Code</th><th>Tol.</th><th>Rated</th></tr>
<tr><th>pF</th><th></th><th></th><th>WVDC</th><th>pF</th><th></th><th></th><th>WVDC</th><th>pF</th><th></th><th></th><th>WVDC</th></tr>
<tr><td>1.0</td><td>1R0</td><td rowspan="5">A,B, C,D</td><td rowspan="15">5000V Code 502 or 8000V Code 802</td><td>33</td><td>330</td><td rowspan="15">F,G,J</td><td rowspan="5">5000V Code 502 or 8000V Code 802</td><td>820</td><td>821</td><td rowspan="9">F,G,J</td><td rowspan="6">2000V Code 202 or 3000V Code 302</td></tr>
<tr><td>1.2</td><td>1R2</td><td>39</td><td>390</td><td>1000</td><td>102</td></tr>
<tr><td>1.5</td><td>1R5</td><td>47</td><td>470</td><td>1200</td><td>122</td></tr>
<tr><td>2.2</td><td>2R2</td><td>56</td><td>560</td><td>1500</td><td>152</td></tr>
<tr><td>2.7</td><td>2R7</td><td>68</td><td>680</td><td>1800</td><td>182</td></tr>
<tr><td>3.3</td><td>3R3</td><td>82</td><td>820</td><td>2200</td><td>222</td></tr>
<tr><td>3.9</td><td>3R9</td><td>100</td><td>101</td><td rowspan="10">3000V Code 302 or 5000V Code 502</td><td>2700</td><td>272</td><td rowspan="6">1000V Code 102 or 2000V Code 202</td></tr>
<tr><td>4.7</td><td>4R7</td><td>120</td><td>121</td><td>3300</td><td>332</td></tr>
<tr><td>5.6</td><td>5R6</td><td>150</td><td>151</td><td>4700</td><td>472</td></tr>
<tr><td>6.8</td><td>6R8</td><td>180</td><td>181</td><td>5100</td><td>512</td></tr>
<tr><td>8.2</td><td>8R2</td><td>220</td><td>221</td><td>5100</td><td>512</td></tr>
<tr><td>10</td><td>100</td><td rowspan="5">F,G,J</td><td>270</td><td>271</td><td>5600</td><td>562</td></tr>
<tr><td>12</td><td>120</td><td>330</td><td>331</td><td>6800</td><td>682</td></tr>
<tr><td>15</td><td>150</td><td>390</td><td>391</td><td></td><td></td><td></td><td></td></tr>
<tr><td>18</td><td>180</td><td>470</td><td>471</td><td></td><td></td><td></td><td></td></tr>
<tr><td>22</td><td>220</td><td>560</td><td>561</td><td></td><td></td><td></td><td></td></tr>
<tr><td>27</td><td>270</td><td>680</td><td>681</td><td></td><td></td><td></td><td></td></tr>
</table>

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

◆ Part Numbering

DLC70F 101 J W 722 X T X 7 X

- DLC70F: DLC70:series F:6040
- 101: 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.
- J: Capacitance Tolerance: See below list
- W: Termination Type
- 722: Rated Voltage e.g:722=7200V
- X: Laser Marking: N: No Marking X: Marking
- T: Packaging Type T: Tape & Reel B/C:Waffle Packaging
- X: Internal code(can be left blank)
- 7: Operating temperature
- X: Internal code(can be left blank)

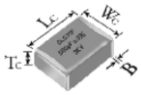
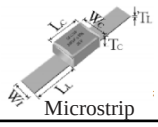
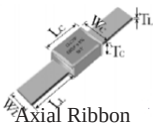
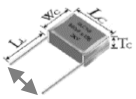
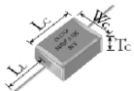
Capacitance Tolerance								
Code	A	B	C	D	F	G	J	K
Tol.	±0.05pF	±0.1pF	±0.25pF	±0.5pF	±1%	±2%	±5%	±10%

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

Note: For welded products of types B/C/E/F/G with pin dimensions, the packaging types of B and C are barrier packaging.

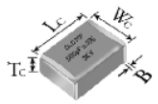
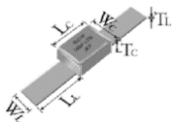
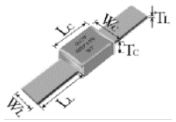
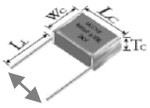
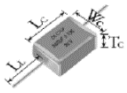
◆ DLC70F Termination Type and Dimensions

unit: inch（millimeter）

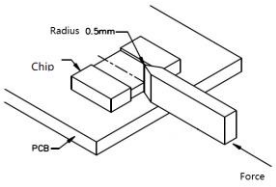
Series	Term. Code	Type/ Outlines	Capacitor Dimensions Length Lc	Width Wc	Thickness Tc	Overlap B	Lead Dimensions Length LL	Width WL	Thickness TL	Termina Material
70F	W	 Chip	.614 +.015～-.010 (15.60 +0.38～-0.25)	.433±.010 (11.00±0.25)	.197 (5.00) max	.024～.059 (0.60～1.50)	——	——	——	100%Sn over Nickel Plating , RoHS Compliant 90%Sn 10%Pb over Nickel Plating ,
70F	MS	 Microstrip				——	.728 (18.50) min	.350 ±.010 (8.89 ±0.25)	008 ±.001 (0.20 ±0.025)	Silver- plated Copper
70F	AR	 Axial Ribbon								
70F	RW	 Radial Wire					.748 (19.00) min	0.672±0.020 (17.06±0.50) 0315±.004 (0.80±0.10)		Silver wire
70F	AW	 Axial Wire					.906 (23.00) min	.031±.004 (0.80 ± 0.10)		

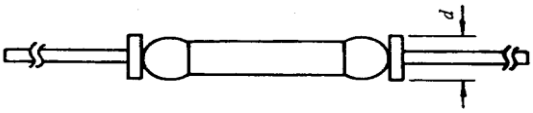
◆ DLC70F Termination Type and Dimensions

unit: inch（millimeter）

Series	Term.	Type/	Capacitor Dimensions				Lead Dimensions			Termina Material
	Code	Outlines	Length Lc	Width Wc	Thickness Tc	Overlap B	Length LL	Width WL	Thickness TL	
70F	P	 Chip(Non-Mag)	.614 +.015～-.010 (15.60 +0.38～-0.25)	.433±.010 (11.00±0.25)	.197 (5.00) max	.024～.059 (0.60～1.50)	–	–	–	100%Sn over Copper Plating , RoHS Compliant RoHS Compliant
70F	MN	 Microstrip(Non-Mag)				–	728 (18.50) min	.350 ±.010 (8.89 ±0.25)	.008 ±.001 (0.20 ±0.025)	Silver-plated Copper
70F	AN	 Axial Ribbon (Non-Mag)								
70F	RN	 Radial Wire(Non-Mag)					.748 (19.00) min	0.672±0.020 （17.06±0.50） 0315±.004 (0.80±0.10)		Silver wire
70F	BN	 Axial Wire (Non-Mag)					.906 (23.00) min	.031±.004 (0.80 ± 0.10)		

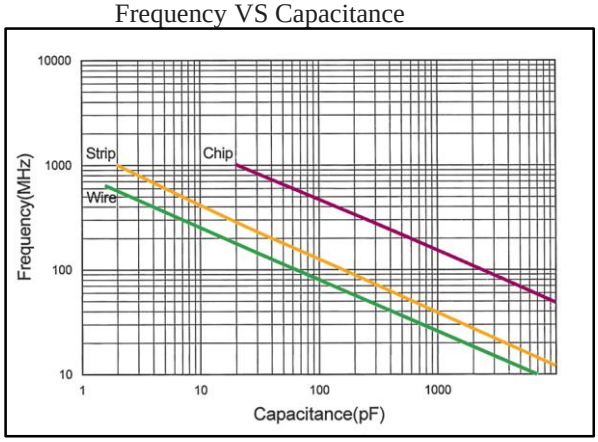
◆ Reliability Test Conditions.

<table>
<tr><th>No.</th><th>Item</th><th>Specification</th><th>Test method</th></tr>
<tr><td>1</td><td>Operating temperature</td><td>-55℃～125℃
-55℃～175℃</td><td>-</td></tr>
<tr><td>2</td><td>Appearance</td><td>No defects or abnormality</td><td>Visual inspection: ×10 microscope.</td></tr>
<tr><td>3</td><td>Dimensions</td><td>See the previous page</td><td>Caliper inspection</td></tr>
<tr><td>4</td><td>Capacitance</td><td>Shall be within the applicable tolerance specified.</td><td rowspan="2">Test frequency:
C≤1000pF: 1MHz±10%
C＞1000pF: 1KHz±10%
Test voltage: 1.0±0.2Vrms</td></tr>
<tr><td>5</td><td>D.F</td><td>DF≤0.05%</td></tr>
<tr><td>6</td><td>Insulation resistance</td><td>10^5 Megohms min. @ +25 ℃
10^4 Megohms min. @ +125 ℃</td><td>Voltage: DC Rated Voltage (500V max)</td></tr>
<tr><td>7</td><td>Dielectric withstanding voltage (DWV)</td><td>Shall be no evidence of breakdown or visible evidence of arcing or damage.</td><td>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.</td></tr>
<tr><td>8</td><td>Temperature coefficient</td><td>(0±30)ppm/℃(-55℃～125℃)
(0±60)ppm/℃(+125℃～175℃)</td><td rowspan="2">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 (℃)</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>
$TC=\frac{C_x-C_3}{C_3 \times \Delta T} X10^6$ ppm/℃</td></tr>
<tr><td>9</td><td>Capacitance Drift</td><td>±0. 2% or ±0.05pF, whichever is larger.</td></tr>
<tr><td>10</td><td>Adhesive Strength of Termination</td><td>No removal of the terminations or other defect should occur.</td><td>Pressurizing force: $50.0^{+1.0}_{0}$N
Test time: 10±1 sec.
  </td></tr>
</table>

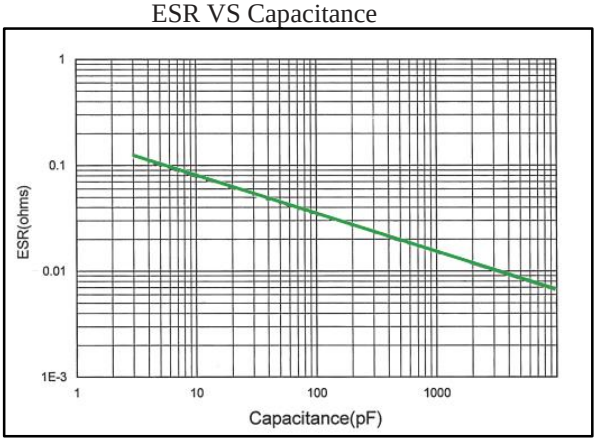
<table>
<tr><th>No.</th><th>Item</th><th>Specification</th><th>Test method</th></tr>
<tr><td>11</td><td>Terminal strength</td><td>Visual examination for loosening, rupturing, and permanent damage to the terminals.</td><td>Solder the capacitor on test jig as below . Then apply a horizontal force.
Holding time: 5～10 s
Force: 10 N minimum.
d=（1.02±0.15）mm;
  </td></tr>
<tr><td>12</td><td>Solderability of termination</td><td>Shall be at least 95 percent covered with a smooth solder coating.</td><td>Immerse the capacitor in a eutectic solution requirement temperature 245±2 ℃ for 2±0.5 seconds. Capacitor shall be immersed to a depth of 10mm.</td></tr>
<tr><td>13</td><td>Resistance to soldering Heat</td><td>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℃): No less than initial requirement.</td><td>Preheat for 1 minute at 150℃ to 180℃ before immerse the capacitor in a eutectic solution at 260±5℃ for 10±1 seconds. Capacitor shall be immersed to a depth of 10mm.
And following a 24±2 hours cooling period.</td></tr>
<tr><td>14</td><td>Temperature Cycle</td><td>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℃): No less than 30% initial requirement.
DWV: To meet initial requirement.</td><td>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(℃)</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></td></tr>
<tr><td>15</td><td>Humidity, steady state</td><td>Appearance:
No evidence of mechanical damage .
Cap change:
within ±0.3% or ±0.3pF whichever is larger.
IR(25℃): No less than initial requirement.</td><td>With 1.5 Volts D.C. applied while subjected to an environment of 85℃ with 85% relative humidity for 240 hours minimum.
Removed and sit 3.5±0.5 hours at room temperature.</td></tr>
<tr><td>16</td><td>High Temperature Load (Life)</td><td>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℃): No less than 30% initial requirement.</td><td>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℃;
Time: 2000h.
Measurement：
Set it for 48 hours at room temperature, then measure.</td></tr>
</table>

◆ DLC70F Performance Curve

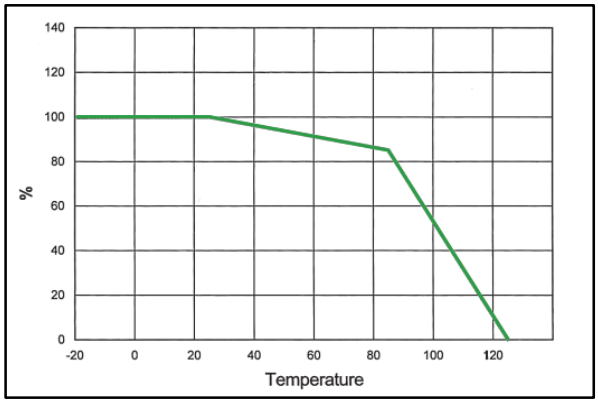
Frequency VS Capacitance



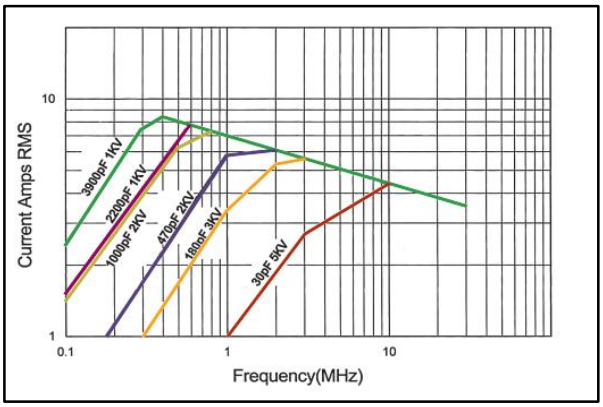
ESR VS Capacitance



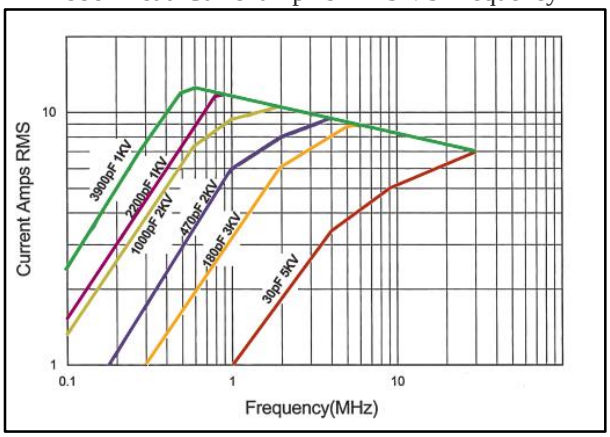
Current（max） VS Temperature



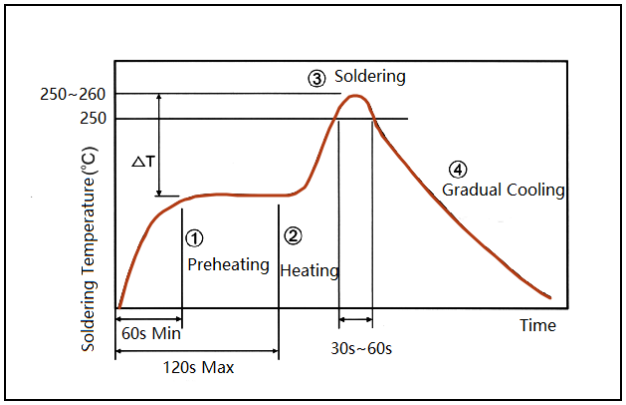
Wire Lead Current Apms RMS VS Frequency



Ribbon Lead Current Apms RMS VS Frequency

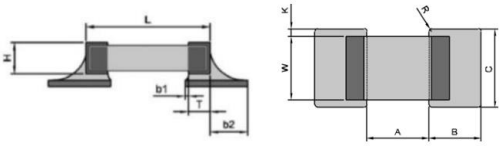


◆ Recommended soldering conditions



△T≤150℃；
Maximum temperature: 255℃±5℃；
Heating rate: ≤4℃/s。

◆ Recommended Land Dimensions

Horizontal Mounting

Orientation	EIA	A(mm)	B(mm)	C(mm)
Horizontal	6040	16.00	3.3	19.60