

Specification

Part No.: DLC85E

DLC85E (.380" x .380")

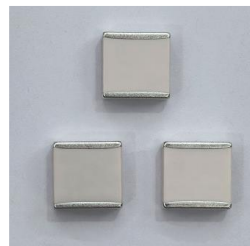
◆ Product Features

High Q, high power, low ESR/ESL, low noise,
high self-resonant frequency, high reliability.

◆ Product Application

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

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



◆ DLC85E Capacitance Table

Cap. pF	Code	Tol.	Rated WVDC	Cap. pF	Code	Tol.	Rated WVDC	Cap. pF	Code	Tol.	Rated WVDC		
3.3	3R3	A,B,C,D	7200V Code 722	39	390	F,G,J	7200V Code 722	430	431	F,G,J	3600V Code 362		
3.6	3R6			43	430			470	471				
3.9	3R9			47	470			510	511				
4.3	4R3			51	510			560	561				
4.7	4R7			56	560			620	621				
5.1	5R1			62	620			680	681				
5.6	5R6			68	680			750	751				
6.2	6R2			75	750			820	821				
6.8	6R8			82	820			910	911				
7.5	7R5			91	910			1000	102				
8.2	8R2			100	101			1100	112				
9.1	9R1			110	111			1200	122				
10	100			120	121			1300	132				
11	110			130	131			1500	152				
12	120	150		151	1600		162						
13	130	160		161	1800		182						
15	150	180		181	2000		202						
16	160	200		201	2200		222						
18	180	220		221	2400		242						
20	200	240		241	2700		272						
22	220	270		271	3000		302						
24	240	300		301	3300		332						
27	270	330		331	3600		362						
30	300	360		361	3900		392						
33	330	390		391	4300		432						
36	360				4700		472						
					5100		512						

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

DLC85E Low ESR,RF/ Microwave Ceramic Capacitors

◆ Part Numbering

DLC85E 101 J W 722 X T

DLC85:series.
E:3838

Capacitor Code:

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

Cap $\geq 10\text{pF}$, e.g.: 101=100pF, the third number is the power of 10.

Capacitance Tolerance: See below list

Packaging Type

T: Tape & Reel

TV- Chip capacitor Vertical Orientation

Tape & Reel

C- Lead capacitor,

Laser Marking:

N: No Marking

X: Marking

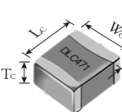
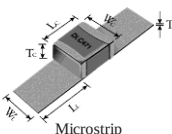
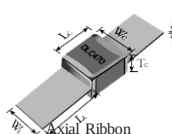
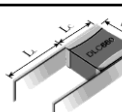
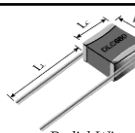
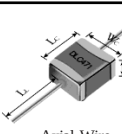
Rated Voltage
e.g:722=7200V

Termination Type

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

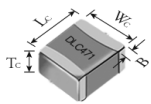
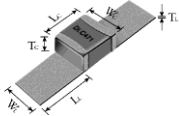
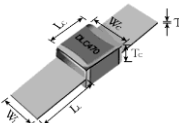
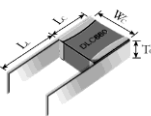
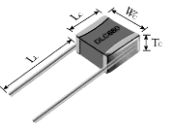
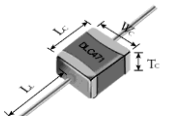
◆ DLC85E Termination Type and Dimensions

unit: inch (millimeter)

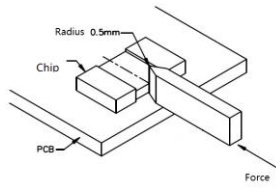
Series	Term. Code	Type/ Outlines	Capacitor Dimensions				Lead Dimensions			Terminals Material
			Length Lc	Width Wc	Thickness Tc	Overlap B	Length Ll	Width Wl	Thickness Tl	
85E	W	 Chip	.380 -.010~+.015 (9.65 -0.25~+0.38)	.380 -.010~+.015 (9.65 -0.25~+0.38)	.190 (4.83)max	.024~.059 (0.60~1.50)	—	—	—	100%Sn over Nickel Plating , RoHS Compliant
	L							90%Sn 10%Pb over Nickel Plating ,		
85E	MS	 Microstrip				.728 (18.50) min	.350±.020 (8.89±0.50)	.008±.001 (0.20±.025)	Silver-plated Copper	
85E	AR	 Axial Ribbon					.315±.010 (8.00±0.25)			
85E	RR	 Radial Ribbon				.354 (9.00) min	.118±.010 (3.00±0.25)	.012±.001 (0.30±.025)		Silver wire
85E	RW	 Radial Wire					.709 (18.00) min	.031±.004 (0.80 ± 0.10)		
85E	AW	 Axial Wire				.906 (23.00) min				

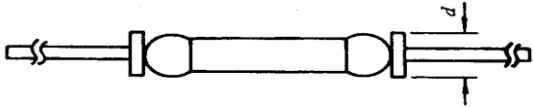
◆ **DLC85E Termination Type and Dimensions**

unit: inch (millimeter)

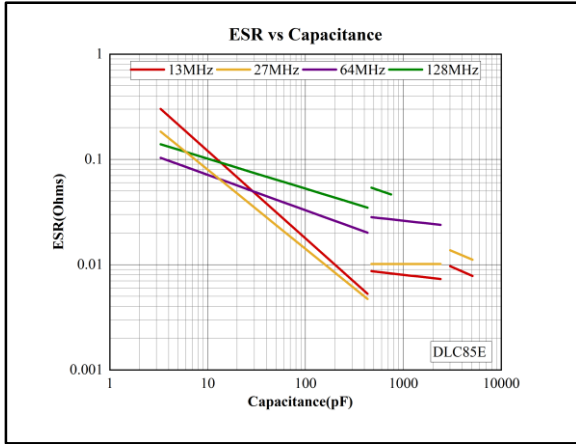
Series	Term. Code	Type/ Outlines	Capacitor Dimensions				Lead Dimensions			Termina Material
			Length Lc	Width Wc	Thickness Tc	Overlap B	Length LL	Width WL	Thickness TL	
85E	P	 Chip(Non-Mag)				.024~.059 (0.60~1.50)	—	—		100%Sn over Copper Plating , RoHS Compliant
85E	MN	 Microstrip(Non-Mag)						.350 ± .020 (8.89 ± 0.50)		
85E	AN	 Axial Ribbon (Non-Mag)	.380 -.010~+.015 (9.65)	.380 -.010~+.015 (9.65)	.190 (4.83)max		.728 (18.50) min	.315 ± .010 (8.00 ± 0.25)	.008 ± .001 (0.20 ± .025)	Silver- plated Copper
85E	FN	 Radial Ribbon (Non-Mag)	-0.25~+0.38	-0.25~+0.38		—	.354 (9.00) min	.118 ± .010 (3.00 ± 0.25)	.012 ± .001 (0.30 ± .025)	
85E	RN	 Radial Wire(Non-Mag)					.709 (18.00) min	.031 ± .004 (0.80 ± 0.10)		Silver wire
85E	BN	 Axial Wire (Non-Mag)					.906 (23.00) min			

◆ **Reliability Test Conditions.**

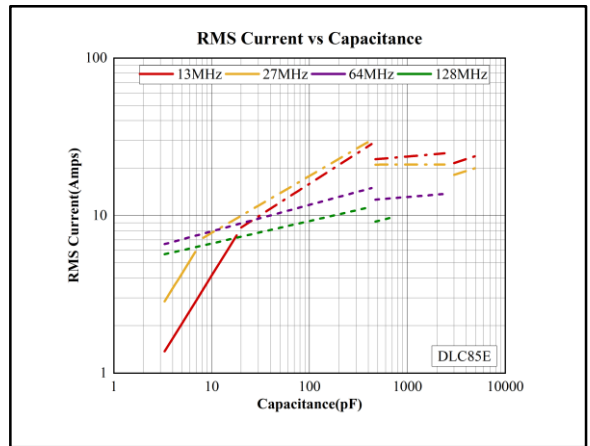
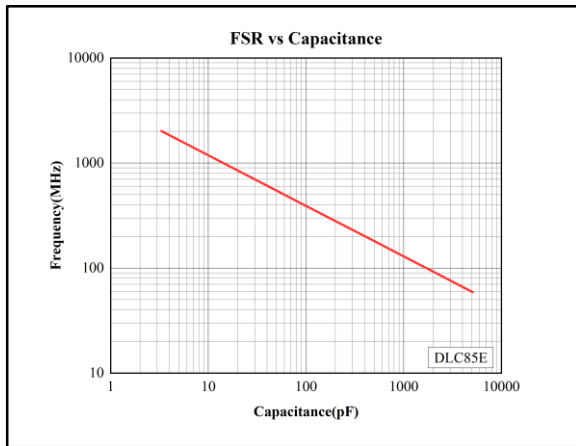
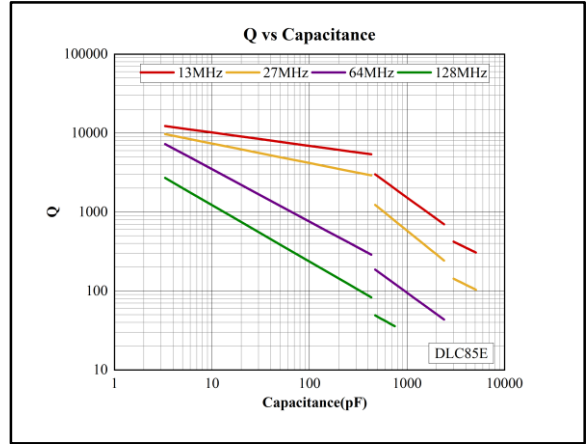
No.	Item	Specification	Test method												
1	Operating temperature	-55℃～150℃	-												
2	Appearance	No defects or abnormality	Visual inspection: ×10 microscope.												
3	Dimensions	See the previous page	Caliper inspection												
4	Capacitance	Shall be within the applicable tolerance specified.	Test frequency: C≤1000pF: 1MHz±10% C>1000pF: 1KHz±10%												
5	D.F	D.F≤0.02%	Test voltage: 1.0±0.2Vrms												
6	Insulation resistance	10 ⁵ Megohms min. @ +25℃ 10 ⁴ Megohms min. @ +125℃	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/℃	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><td>step</td><td>temperature (℃)</td></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>150±3</td></tr><tr><td>5</td><td>25±2</td></tr></table> $TC = \frac{C_5 - C_3}{C_3 \times \Delta T} \times 10^6 \text{ ppm/℃}$	step	temperature (℃)	1	25±2	2	-55±3	3	25±2	4	150±3	5	25±2
step	temperature (℃)														
1	25±2														
2	-55±3														
3	25±2														
4	150±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: 50.0 ^{+2.0} ₀ N Test time: 10±1 sec. 												

No.	Item	Specification	Test method															
11	Terminal strength	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: 150°C; Time: 2000h. Measurement: Set it for 48 hours at room temperature, then measure.															

◆ **DLC85E Performance Curve**



ESR Measurement: Coaxial Resonant Cavity Method.



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

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

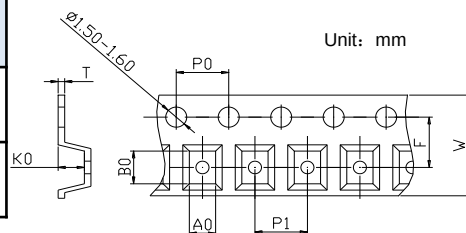
The current determined by dissipated power. (Dashed line).

$$I_{RMS} = \sqrt{\frac{P_{dmax}}{ESR}}$$

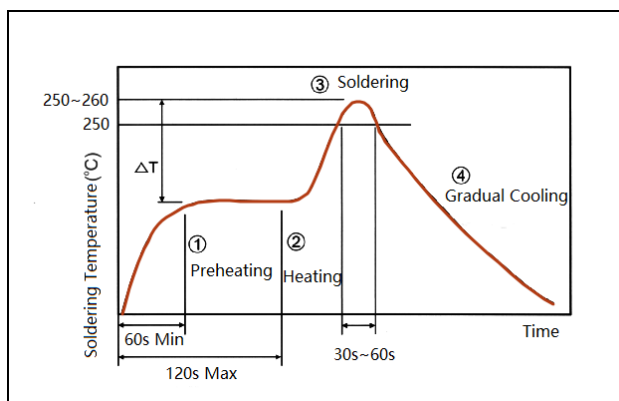
If the rated current is based on a temperature rise(ΔT) of 60°C (Ambient Temperature at 65°C), with a thermal resistance(θ) of 13.3°C/W, the maximum power dissipation of the capacitor is 4.5W.

◆ Tape & Reel Specifications

Orientation	EIA	A0	B0	K0	W	P0	P1	T	F	Qty/reel	Tape Material
Horizontal	3838	10.1	10.1	4.3	16	4	16	0.4	7.5	200	Plastic
Vertical	3838	4.3	10.1	10.1	24	4	12	0.5	11.5	500	Plastic



◆ Recommended soldering conditions



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

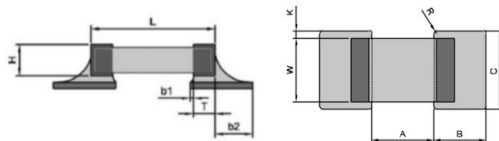
Maximum temperature: $255^\circ\text{C} \pm 5^\circ\text{C}$;

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

◆ Recommended Land Dimensions

Horizontal Mounting

Orientation	EIA	A(mm)	B(mm)	C(mm)
Horizontal	3838	7.1	3.0	10.0



Vertical Mounting

Orientation	EIA	A(mm)	B(mm)	C(mm)
Vertical	3838	7.1	3.0	5.0

