

# 锂碳电容器 Lithium Carbon Capacitors

## ■ 产品一览表 Series Table

系列 Series	特性 Features	温度范围 Temp. Range		容量 Capacitance	最大工作电压 Max. Operating Voltage	套管颜色 Sleeve Color	印字颜色 Letter Color
		Min.	Max.				
ZCC	高能量 High Energy 低自放电 Low Self-discharge	-30℃	+65℃	7~1000F	3.8 V.DC	黄色 Yellow	黑色 Black
ZFC	高倍率 High Rate 低自放电 Low Self-discharge	-40℃	+65℃	5500F	3.8 V.DC	无 NO	黑色 Black
ZFC	高能量 High Energy 低自放电 Low Self-discharge	-40℃	+65℃	5000~10000F	4.2 V.DC	无 NO	黑色 Black

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# 锂碳电容器 Lithium Carbon Capacitors

## ■ 特性 Features

- 可用作充电电池及后备电源。

Can be used as a rechargeable battery and ideal for backing up purpose.

- 具备数万次充电/放电循环次数，免却废物处理。

Capable of fifty of thousands of charge/discharge cycles; free from throwaway disposal.

- 不含有毒材料，如镍及镉。

Does not contain toxic materials such as nickel and cadmium.

## ■ 产品一览表 Series Table

系列 Series	特性 Features	温度范围 Temp. Range		容量 Capacitance	最大工作电压 Max. Operating Voltage	套管颜色 Sleeve Color	印字颜色 Letter Color	产品图片 Product Photo	页面 Page
		Min.	Max.						
ZCC	高能量密度 Higher Energy Density 低自放电 Low Self-discharge	-30°C	+65°C	7~1000F	3.8 V.DC	黄色 Yellow	黑色 Black	图片	P.**
ZFC	高倍率 High Rate 低自放电 Low Self-discharge	-40°C	+65°C	5500F	3.8 V.DC	无 NO	黑色 Black	图片	P.**
ZFC	高能量 High Energy 低自放电 Low Self-discharge	-40°C	+65°C	5000~10000F	4.2 V.DC	无 NO	黑色 Black	图片	P.**

## ■ 产品编码 Part Number System

### ※ 第一部分 Part 1

1 2 3	4 5 6	7	8 9	10	11 12	13 14
□□□	□□□	□	□□	□	□□	□□
ZCC	106	M	0Y	F	16	RR
系列 Series	容量 Capacitance	公差 Tolerance	电压 Voltage	铝壳直径 Case Dia.	铝壳长度 Case Length	成型类型 Type

系列 Series	容量 Cap. (F)	代码 Code	公差 Tol. (%)	代码 Code	电压 Vol. (V)	代码 Code	直径 Dia. (mm)	代码 Code	长度 Len. (mm)	代码 Code	特征 Feature	代码 Code
ZCC	7	705	±20	M	3.8	0Y	6.3	E	11	11	导针型散装 Radial Bulk	RR
	10	106	-20~+50	S	4.2	0M	8.0	F	16	16		
	15	156	-10~+20	V			8.0	F	16	16		
	30	306	-10~+75	U			10.0	I	16	16		
	70	706					10.0	G	25	25		
	120	127					12.5	I	25	25		
	180	187					12.5	I	35	35		
	220	227					16.0	K	25	25		
	500	507					18.0	L	40	40		
	1000	108					18.0	L	60	60		

# 锂碳电容器 Lithium Carbon Capacitors

## ■产品编码 Part Number System

### ※第二部分 Part 2

1 2 3	4 5 6			7	8 9		10 11		12		13 14		
□□□ ZFC	□□□ 508			□ S	□□ 0Y/0M		□□ D		□ 05/10		□□ L3		
系列 Series	容量 Capacitance			公差 Tolerance		电压 Voltage		长度 * 宽度 LengthxWidth		厚度 Thickness		成型类型 Type	
系列 Series	容量 Cap. (F)	代码 Code	公差 Tol. (%)	代码 Code	电压 Vol. (V)	代码 Code	长度 * 宽度 Lengthx Width (mm)	代码 Code	厚度 Thi. (mm)	代码 Code	特征 Feature	代码 Code	
ZFC	5000	508	-20~+50	S	4.2	0M	130 ×65	D	5.0	05	软包 Laminate	L3	
ZFC	5500	558	-20~+50	S	3.8	0Y	130 ×65	D	10.0	10	软包Laminate	L3	
ZFC	7200	728	-20~+50	S	4.2	0M	130 ×65	D	10.0	10	软包Laminate	L3	
ZFC	10000	109	-20~+50	S	4.2	0M	130 ×65	D	10.0	10	软包 Laminate	L3	

# 锂碳电容器 Lithium Carbon Capacitors

## ZCC系列 Series

### ■ 特性 Features

- 高能量密度 (10倍于2.5V/2.7V 超级电容器)

Higher Energy Density (10 times of 2.5V/2.7V EDLC)

- 极低的自放电 (3个月电压降小于5%)

Extremely low self-discharge (3 months voltage drop is less than 5%)

- 快速充电/放电

Quick Charge & Discharge

- 符合RoHS无铅要求

RoHS Directive Compliant

### ■ 推荐应用领域 Recommended Applications

- 消费类电器 Consumer Electronics
- 工业与汽车 Industrial and Automation
- 短期UPS (不间断电源) Short Term UPS(Uninterruptible Power Supply)
- 新能源储能系统 Renewable Energy Storage Systems
- 便携式电源工具 Portable Power Tools
- 智能仪表 (电表/水表/气表) Smart Meter
- 传感器网络 Sensor Network

### ■ 规格 Specifications

项目 Item	性能 Performance Characteristics	
<b>温度 Temperature</b>		
工作温度范围 Operating Temperature Range	-30°C to +65°C	
<b>容量 Capacitance</b>		
容量范围 Nominal Capacitance Range	7F to 1000F	
容量公差 Capacitance Tolerance	±20% or -20%~+50%等	
<b>电压 Voltage</b>		
额定电压 Rated Voltage	3.8 V.DC	
浪涌电压 Surge Voltage	4.2 V.DC	
最大工作电压 Maximum Operating Voltage	3.8 V.DC	
最小工作电压 Minimum Operating Voltage	2.2 V.DC	
<b>阻抗 Resistance</b>		
直流等值阻抗 ESR, DC	详见附件电性能列表 (表1) Please see the attached characteristics list (Table 1)	
交流等值阻抗 ESR, AC	详见附件电性能列表 (1kHz/20°C) (表1) Please see the attached characteristics list (1kHz/20°C) (Table 1)	
<b>寿命 Lifespan</b>		
贮存寿命 Shelf Life	+65°C下无负荷贮存1000小时后电容器符合规定的限值 After 1000 hours storage at +65°C without load, the capacitor shall meet the specified limits for endurance.	
耐用性 Endurance	+65°C下采用额定电压3.8V1000小时后电容器符合以下限定值 After 1000 hours application of rated voltage 3.8V at +65°C, the capacitor shall meet the following limits.	
	容量变化 Capacitance Change	初始测试值的±30% ±30% of initial measured value
	内阻 Internal Resistance	≤初始值的4倍 ≤4 times of initial specified value
<b>高低温性能 Temperature characteristic</b>		
高低温性能 Temperature characteristic	+65°C和-30°C电容器符合以下限定值 Capacitors shall meet the following limits when it was storage in +65°C or -30°C.	
	容量变化 Capacitance Change	-30°C 初始测试值的±50% ±50% of initial measured value +65°C 初始测试值的±30% ±65% of initial measured value
	内阻 Internal Resistance	-30°C ≤初始值的10倍 ≤10 times of initial specified value +65°C ≤规格值 ±65% ≤ limit of specification value
<b>循环次数 Cycles</b>		
循环次数 Cycles	+25°C下在额定电压3.8V和下限电压2.5V之间恒流充放电循环次数 (50,000次) Capacitors cycles between upper limited voltage 3.8V and low limited voltage 2.5V under constant current at +25°C (50,000 cycles)	
	容量变化 Capacitance Change	初始测试值的±30% ±30% of initial measured value
	内阻 Internal Resistance	≤初始值的4倍 ≤4 times of initial specified value

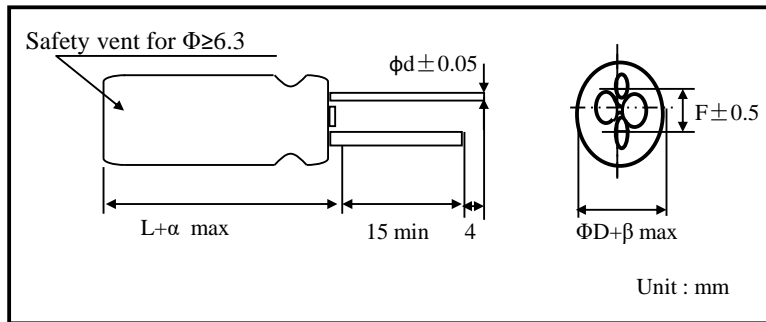
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# 锂碳电容器 Lithium Carbon Capacitors

## ZCC 系列 Series

### ■ 壳号尺寸表 Case Size Table

端子 Terminal: RR



$\Phi D$	6.3	8	10	12.5	16	18
F	2.5	3.5	5.0	5.0	7.5	7.5
$\Phi d$	0.5	0.5	0.6	0.6	0.8	0.8
$\alpha$	(L < 20) 1.5			(L $\geq$ 20) 2.0		
$\beta$	(D < 20) 0.5			(D $\geq$ 20) 1.0		

# 锂碳电容器 Lithium Carbon Capacitors

## ZFC 系列 Series

### ■ 特性 Features

- 高能量密度 (10倍于2.5V/2.7V 超级电容器)

Higher Energy Density (10 times of 2.5V/2.7V EDLC)

- 极低的自放电 (3个月电压降小于5%)

Extremely low self-discharge (3 months voltage drop is less than 5%)

- 快速充电/放电

Quick Charge & Discharge

- 符合RoHS无铅要求

RoHS Directive Compliant

### ■ 推荐应用领域 Recommended Applications

- 消费类电器 Consumer Electronics
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- 短期UPS (不间断电源) Short Term UPS(Uninterruptible Power Supply)
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- 智能仪表 (电表/水表/气表) Smart Meter
- 传感器网络 Sensor Network

### ■ 规格 Specifications

项目 Item	性能 Performance Characteristics	
<b>温度 Temperature</b>		
工作温度范围 Operating Temperature Range	-40℃ to +65℃	
<b>容量 Capacitance</b>		
容量范围 Nominal Capacitance Range	5500F to 10000F	
容量公差 Capacitance Tolerance	±20% or -20%~+50%等	
<b>电压 Voltage</b>		
额定电压 Rated Voltage	4.2 V.DC	
浪涌电压 Surge Voltage	4.2 V.DC	
最大工作电压 Maximum Operating Voltage	4.2 V.DC	
最小工作电压 Minimum Operating Voltage	2.2 V.DC	
<b>阻抗 Resistance</b>		
直流等值阻抗 ESR, DC	详见附件电性能列表 (表2) Please see the attached characteristics list (Table 2)	
交流等值阻抗 ESR, AC	详见附件电性能列表 (1kHz/20℃) (表2) Please see the attached characteristics list (1kHz/20℃) (Table 2)	
<b>寿命 Lifespan</b>		
贮存寿命 Shelf Life	+65℃下无负荷贮存1000小时后电容器符合规定的限值 After 1000 hours storage at +65℃ without load, the capacitor shall meet the specified limits for endurance.	
耐用性 Endurance	+65℃下采用电压3.8V1000小时后电容器符合以下限定值 After 1000 hours application of voltage 3.8V at +65℃, the capacitor shall meet the following limits.	
	容量变化 Capacitance Change	初始测试值的±30% ±30% of initial measured value
	内阻 Internal Resistance	≤初始值的4倍 ≤4 times of initial specified value
<b>高低温性能 Temperature characteristic</b>		
高低温性能 Temperature characteristic	+65℃和-40℃电容器符合以下限定值 Capacitors shall meet the following limits when it was storage in +65℃ or -30℃.	
	容量变化 Capacitance Change	-40℃初始测试值的±50% ±50% of initial measured value +65℃初始测试值的±30% ±65% of initial measured value
	内阻 Internal Resistance	-40℃≤初始值的10倍 ≤10 times of initial specified value +65℃≤规格值 ±65%≤ limit of specification value
<b>循环次数 Cycles</b>		
循环次数 Cycles	+25℃下在额定电压3.8V和下限电压2.5V之间恒流充放电循环次数 (50,000次) Capacitors cycles between upper limited voltage 3.8V and low limited voltage 2.5V under constant current at +25℃ (50,000 cycles)	
	容量变化 Capacitance Change	初始测试值的±30% ±30% of initial measured value
	内阻 Internal Resistance	≤初始值的4倍 ≤4 times of initial specified value

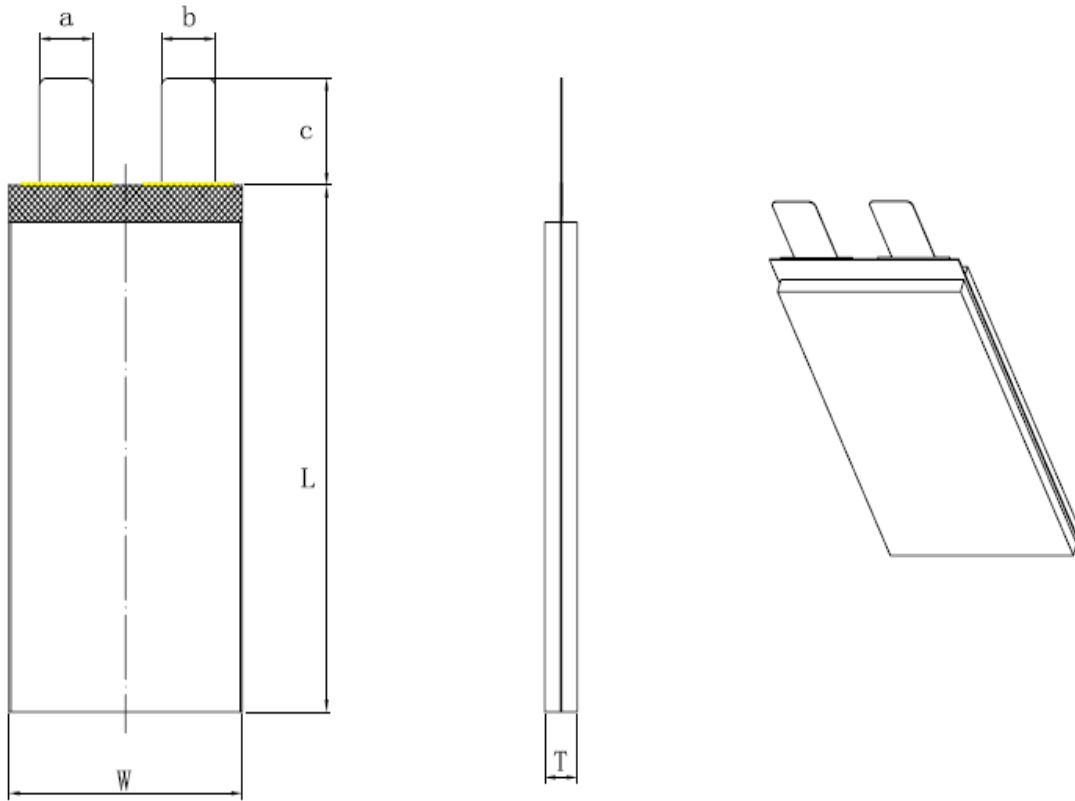
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# 鋰碳電容器 Lithium Carbon Capacitors

## ZFC 系列 Series

### ■ 壳号尺寸表 Case Size Table

端子 Terminal: L3



Items	Description	10000F Spec
T	Cell Thickness (Fresh)	11.0mm max
	Cell Thickness (After Cycle)	12.0mm max
W	Cell Width	65.0±2mm
L	Cell Length	130.0±2mm
a、 b	Tab Width	15.0±0.3mm
c	Tab Exposure Length	25.0±0.5mm
Tab Material	+ Tab Material	Al
	- Tab Material	Copper nickel plating

# 锂碳电容器 Lithium Carbon Capacitors

## ZCC系列 Series

### ■ 电性能列表 Characteristics List

● 表1 Table 1

产品编码 Part Number	额定电压 Rated Voltage (V.DC)	额定容量 Rated Cap. (F)	尺寸 Size 直径x长度 ΦD×L (mm)	直流等值阻抗 ESR, DC (mΩ) (max)	交流等值阻抗 ESR, AC (mΩ) (max) at 1kHz/20℃	漏电流 Leakage Current (mA /72hrs)	短路电流Short Circuit Current(A)
ZCC705S0YE11RR	3.8	7	6.3x11	2500	1200	0.001	1.52
ZCC705S0YE11RR	4.2	7	6.3x11	2500	1200	0.002	1.68
ZCC106S0YF16RR	3.8	10	8x16	1200	600	0.001	3.17
ZCC156S0YF16RR	3.8	15	8x16	1200	600	0.001	3.17
ZCC306S0YG16RR	3.8	30	10x16	400	200	0.002	9.50
ZCC706S0YG25RR	3.8	70	10x25	200	100	0.006	19.00
ZCC127S0YI25RR	3.8	120	12.5x25	120	80	0.015	31.67
ZCC187S0YI35RR	3.8	180	12.5x35	105	70	0.015	36.19
ZCC227S0YK25RR	3.8	220	16x25	90	60	0.025	42.22
ZCC507S0YL40RR	3.8	500	18x40	50	35	0.030	76.00
ZCC108S0YL60RR	3.8	1000	18x60	35	20	0.035	108.57

## ZFC系列 Series

### ■ 电性能列表 Characteristics List

● 表2 Table 2

产品编码 Part Number	额定电压 Rated Voltage (V.DC)	额定容量 Rated Cap. (F)	尺寸 Size 直径x长度 W×L×H (mm)	直流等值阻抗 ESR, DC (mΩ) (max)	交流等值阻抗 ESR, AC (mΩ) (max) at 1kHz/20℃	漏电流 Leakage Current (mA /72hrs)	短路电流Short Circuit Current(A)
ZFC508S0MD05L3	4.2	5000	130x65x5	7	3.0	1.000	600.00
ZFC558S0YD10L3	3.8	5500	130x65x10	3.5	1.5	2.000	1085.71
ZFC728S0MD10L3	4.2	7200	130x65x10	3.5	1.5	2.000	1200.00
ZFC109S0MD10L3	4.2	10000	130x65x10	3.5	1.5	2.000	1200.00

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# 锂碳电容器 Lithium Carbon Capacitors

## ZCC ZFC系列 Series

### ■ 电性能列表 Characteristics List

● 表3 Table 3

额定容量 Rated Capacitance (F)	7	7	10	15	30	70	120	180	220	500	1000	5000	5500	7200	10000
尺寸 Size 直径x长度 ΦD×L (mm)	6.3×11	6.3×11	8×16	8×16	10×16	10×25	12.5×25	12.5×35	16×25	18×40	18×60	130×65×5	130×65×10	130×65×10	130×65×10
质量能量密度 Energy Density 最高能量值 E <sub>max</sub> (Wh/kg)	10.9	15.2	8.8	13.1	13.7	17.7	21.0	23.3	25.0	28.4	42.1	92.0	43.1	78.6	95.9
功率密度 Power Density(W/kg)	2373.7	2373.7	1332.9	1332.9	2310.4	2406.7	2221.5	1875.3	1925.3	1732.8	1833.7	6153.5	3983.4	4866.2	3207.3
体积能量密度 Energy Density 最高能量值 E <sub>max</sub> (Wh/L)	23.2	32.3	14.2	21.2	27.2	40.6	44.5	47.7	49.8	55.9	74.5	187.2	76.3	139.0	170.4
最大容量 Maximum Capacity 最大容量值 C <sub>max</sub> (mAh)	2.53	3.31	3.61	5.42	10.83	25.28	43.33	65.00	79.44	180.56	361.11	2361.11	1986.11	3400.00	4722.22
最大放电电流 Maximum Discharge current(A)	0.03	0.03	0.04	0.05	0.11	0.25	0.43	0.65	0.79	1.81	3.61	23.61	19.86	34.00	47.22
最大峰值电流 Maximum Peak Current( pulse 1sec) (A)	0.13	0.17	0.18	0.27	0.54	1.26	2.17	3.25	3.97	9.03	18.06	118.06	99.31	170.00	236.11
最大充电电流 Charge max current(A)	0.05	0.07	0.07	0.11	0.22	0.51	0.87	1.30	1.59	3.61	7.22	47.22	39.72	68.00	94.44

\* High Pd(W/kg) and Energy Density (E<sub>max</sub>(Wh/kg))

### ■ 其它技术信息 Additional Technical Information

I<sub>c</sub>=25℃下72小时后的漏电流

I<sub>c</sub>=leakage current after 72 hours at 25℃

I<sub>sc</sub>=短路电流

I<sub>sc</sub>=short circuit current

R<sub>DC</sub>=直流内阻 (DC)

R<sub>DC</sub>=internal resistance (DC)

M=电容器总重 (kg)

M=capacitor mass (kg)

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