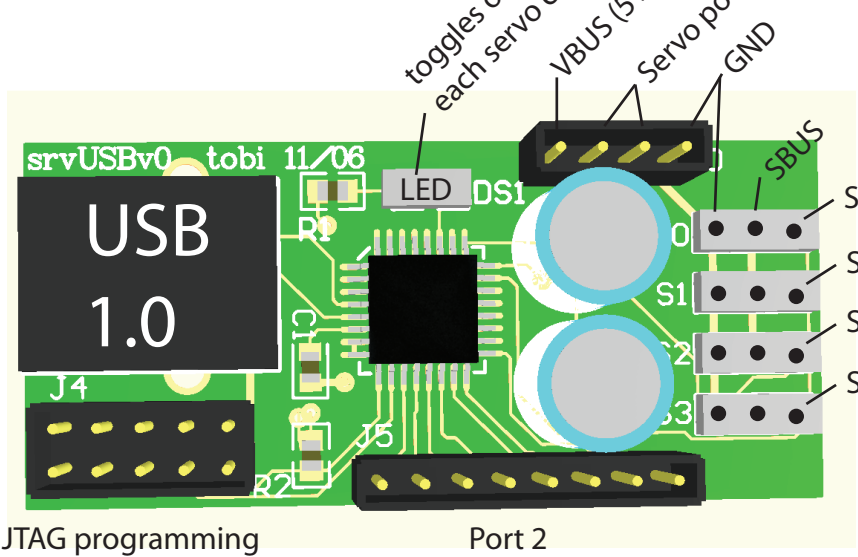

toggles
each servo
VBUS (5
Servo po
GND
SBUS
srvUSBv0 tobi 11/06
USB
1.0
LED
DS1
R1
C1
J4
J5
R2
S1
S2
S3
Servo0
Servo1
Servo2
Servo3
JTAG programming
Port 2

srvUSBv1 tobi 7/08

5

G

SPOW

S0

S1

S2

S3

470

100nF

U1

C2

C3

2

1

10

9

1k

D+

D-

+3.3V

5

0.90in

1.99in

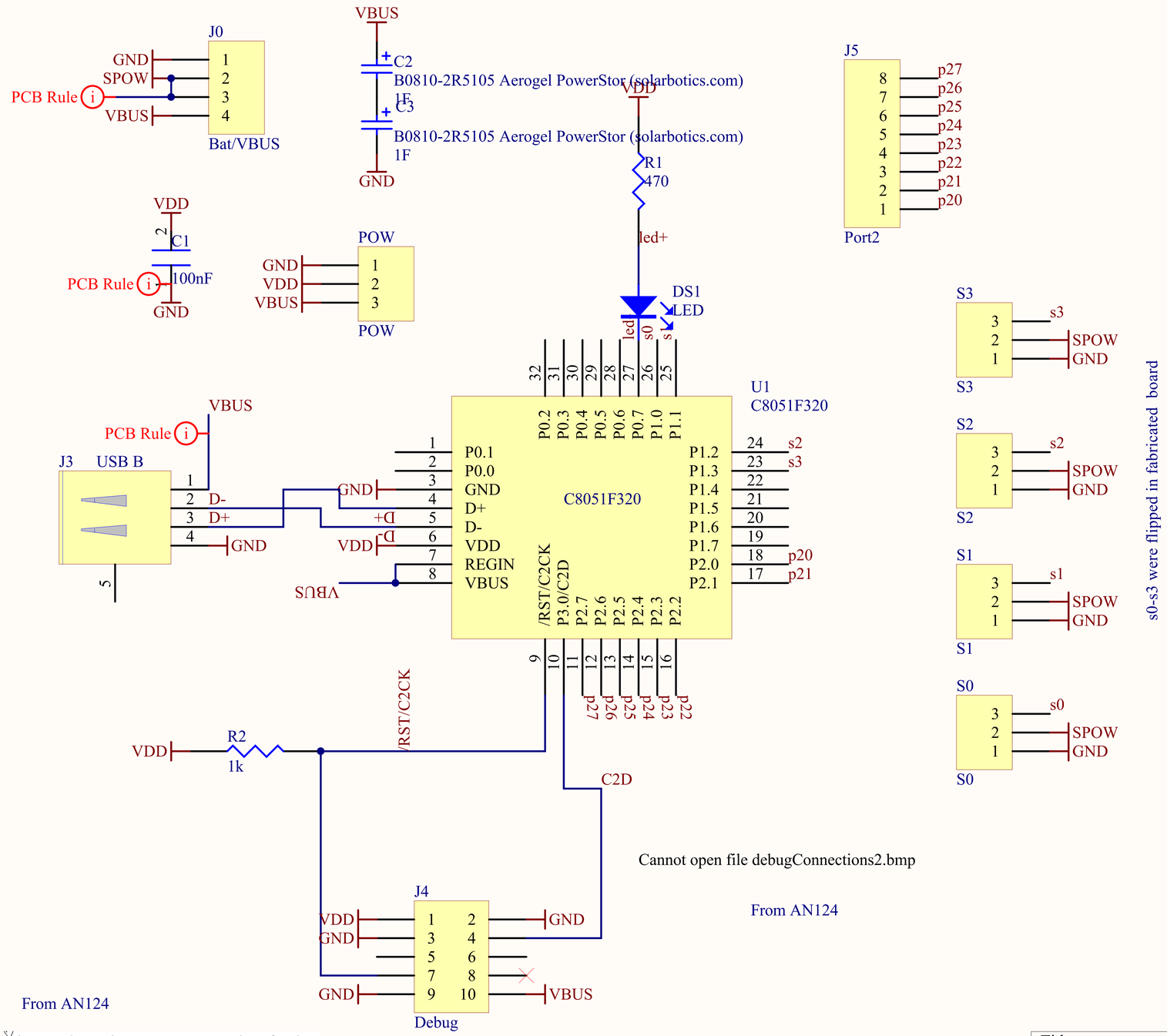


Figure 6 shows the necessary connections for the 10-pin connector used with the Silicon Labs Serial Adapter (EC-2). Note that to perform in-system debugging, an external pull-up resistor should be connected between the C2CK pin and VDD as shown in Figure 6. The C2CK pull-up resistor R3 should be a maximum of 10 kΩ

Title	Servo Controller USB (tobi)	
Size: A	Number	Revision
Date: 6/21/2010		Sheet of
File: C:\Users\..\servoUSBrev0.SCHDOC		Drawn By:

Bill of Material for ServoUSB.PRJPCB
On 6/21/2010 at 2:36:50 PM

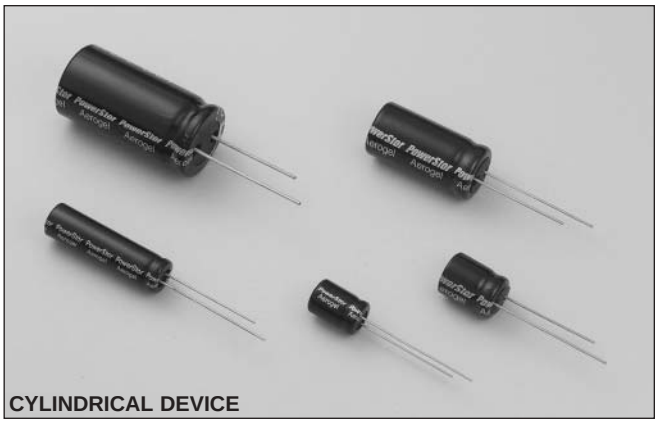
Comment	Pattern	Quantity	Components	
100nF	CC2013-0805	1	C1	
1k	CR2012-0805	1	R2	
470	CR2012-0805	1	R1	
B0810-2R5105 Aerogel PowerStor (solarbotics.com)	CAPPR3.5-8X10.5	2	C2, C3	Pola
Bat/VBUS	HDR1X4	1	J0	Header, 4-Pin
C8051F320	TQFP32	1	U1	Silicon Labs USB Microcontroller
Debug	HDR2X5	1	J4	Header, 5-Pin, Dual row
LED	0805LED	1	DS1	LED, SMT 3mm by 1.5mm
Port2	HDR1X8	1	J5	Header, 8-Pin
POW	HDR1X3	1	POW	Header, 3-Pin
S0	HDR1X3	1	S0	Header, 3-Pin
S1	HDR1X3	1	S1	Header, 3-Pin
S2	HDR1X3	1	S2	Header, 3-Pin
S3	HDR1X3	1	S3	Header, 3-Pin
USB B	usb	1	J3	USB TypB

COOPER Electronic Technologies

PowerStor™
Aerogel Capacitors
B Series

Description

The PowerStor Aerogel Capacitor is a unique, ultra-high capacitance device based on a novel type of carbon foam, known as carbon aerogel. Aerogel capacitors are similar to supercapacitors, ultracapacitors and electrochemical double layer capacitors (EDLCs) with the added benefit of low ESR (Equivalent Series Resistance).


CYLINDRICAL DEVICE

Features & Benefits

- High specific capacitance
- Very low ESR
- Low leakage currents
- Long cycle life
- Ultra low ESR also available (A Series)

Applications

- Main power
- Hybrid battery packs
- Hold-up power
- Pulse power

SPECIFICATIONS	
Working Voltage	2.5 volts
Surge Voltage	3.0 volts
Nominal Capacitance Range	0.22 to 50 F
Capacitance Tolerance	-20% to +80% (20°C)
Operating Temperature Range	-25°C to 70°C

STANDARD PRODUCTS

Nominal Capacitance (F)	Part Number	Nominal ESR (Equivalent Series Resistance) Measured @ 1kHz (Ω)	Nominal Dimensions
0.22	B0510-2R5224	3	Ø = 5 mm; L = 11 mm
1.0	B0810-2R5105	0.400	Ø = 8 mm; L = 11.5 mm
1.5	B1010-2R5155	0.300	Ø = 10 mm; L = 12.5 mm
2.2	B0820-2R5225	0.200	Ø = 8 mm; L = 20 mm
3.3	B1020-2R5335	0.150	Ø = 10 mm; L = 20.5 mm
4.7	B0830-2R5475	0.150	Ø = 8 mm; L = 30 mm
6.8	B1030-2R5685	0.100	Ø = 10 mm; L = 30 mm
10	B1325-2R5106	0.060	Ø = 13 mm; L = 26 mm
22	B1635-2R5226	0.040	Ø = 16 mm; L = 35 mm
33	B1835-2R5336	0.030	Ø = 18 mm; L = 35 mm
50	B1840-2R5506	0.025	Ø = 18 mm; L = 40 mm

PERFORMANCE

Parameter	Capacitance Change (% of initial measured value)	ESR (% of initial specified value)
Life (1000 hrs @ 70°C @ 2.5 volts DC)	≤ 30	≤ 300
Storage - low and high temperature (1000 hrs @ -25°C and 70°C)	≤ 30	≤ 300

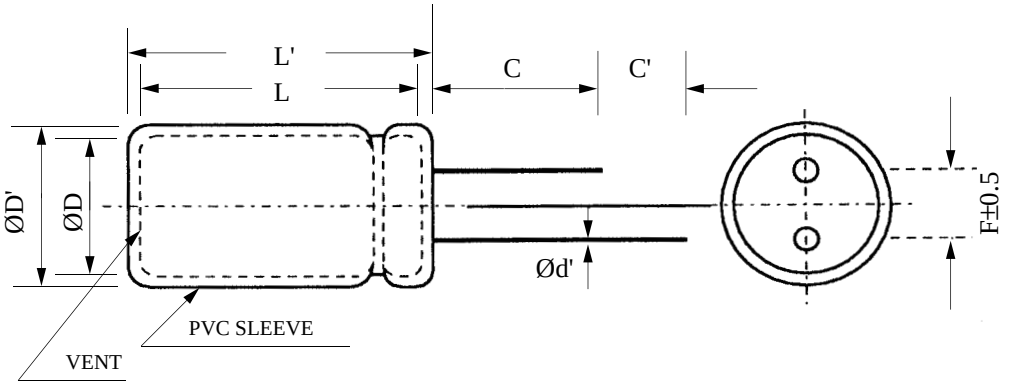
COOPER Electronic Technologies

Visit us on the Web at www.cooperET.com

3601 Quantum Boulevard Boynton Beach, Florida 33426-8638
Tel: +1-561-752-5000 Toll Free: +1-888-414-2645 Fax: +1-561-742-1178

DIMENSIONS (mm)								
Part Number	**D**	**D'**	**L**	**L'**	**F**	**d'**	**C**	**C'**
B0510-2R5224	5.0	5.5	11.5	12.0	2.0	0.50	20.0	5.0
B0810-2R5105	8.0	8.5	12.7	13.2	3.5	0.50	20.0	5.0
B1010-2R5155	10.0	10.5	13.9	14.4	5.0	0.60	20.0	5.0
B0820-2R5225	8.0	8.5	20.5	21.0	3.5	0.50	20.0	5.0
B1020-2R5335	10.0	10.5	21.8	22.3	5.0	0.60	20.0	5.0
B0830-2R5475	8.0	8.5	30.5	31.0	3.5	0.50	20.0	5.0
B1030-2R5685	10.0	10.5	31.0	31.5	5.0	0.60	20.0	5.0
B1325-2R5106	13.0	13.5	27.9	28.4	5.0	0.60	20.0	5.0
B1635-2R5226	16.0	16.5	37.5	38.0	7.5	0.80	20.0	5.0
B1835-2R5336	18.0	18.5	37.5	38.0	7.5	0.80	20.0	5.0
B1840-2R5506	18.0	18.5	41.5	42.0	7.5	0.80	20.0	5.0
	Maximum				± 0.5	± 0.02	Minimum	

Note: Longer lead is positive



PART NUMBERING SYSTEM									
B	☐ ☐	☐ ☐	**-**	**2**	**R**	**5**	☐ ☐	☐	
Series Code	Dimensions (mm)			Voltage (V) R is decimal			Capacitance		
B = High Capacitance	Diameter	Length		2R5 = 2.5V			Value	Multiplier	
							Example: 475 = 47 x 10^5 µ F or 4.7 F		

PACKAGING INFORMATION

Standard packaging: Bulk, 100 units per package.

Special packaging available upon request. Contact factory.

PART MARKING

Manufacturer
Capacitance (F)
Max. Operating Voltage (V)
Series Code (or part number)
Polarity Marking

PS-5102 12/01

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