

# Type BLC Polypropylene Board Mount DC Link Capacitors

## PCB Mount Power Film Capacitors



Type BLC series uses the most advanced metallized film technology for long life and high reliability in DC Link applications. This series combines high capacitance and very high ripple current capability needed for today's inverter designs for medium power wind, solar, fuel cells, UPS systems and more.

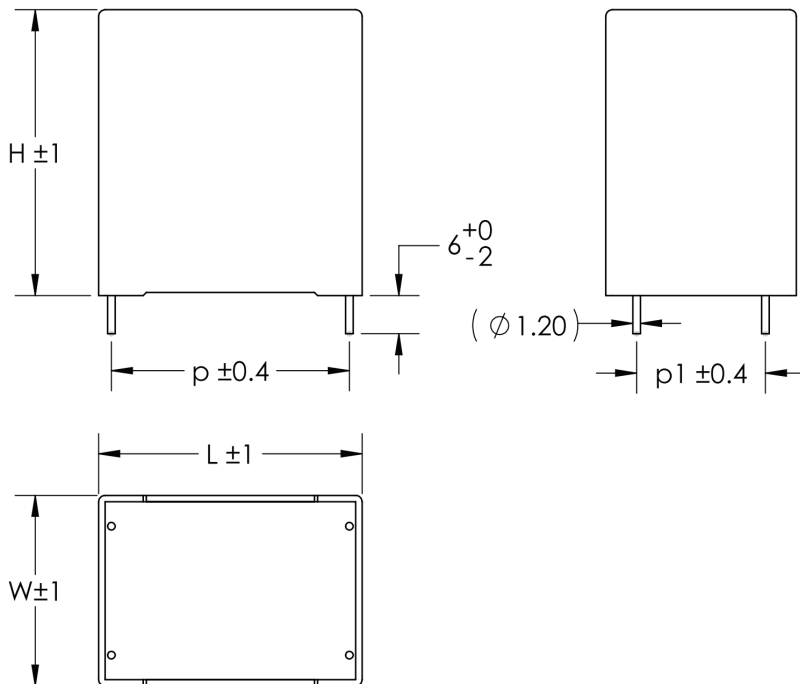
### Highlights

- High capacitance
- High ripple current
- Self-healing

### Specifications

Capacitance Range	8 to 55 $\mu$ F
Capacitance Tolerance	$\pm$ 5% standard
Rated Voltage	700 to 1100 Vdc
Operating Temperature Range	-45 $^{\circ}$ C to 85 $^{\circ}$ C (ambient)
Maximum rms Current	see data tables
Maximum rms Voltage	230 Vac
Test Voltage between Terminals @ 25 $^{\circ}$ C	150% rated DC voltage for 10 s
Test Voltage between Terminals and Case @ 25 $^{\circ}$ C	2 kVac @ 50/60 Hz for 10 s
Life Test	5000 h @ 85 $^{\circ}$ C, rated voltage
Reference Standards	IEC 61071
RoHS Compliant	

### Dimensions



Construction Details	
Case Material	Plastic UL94V-0
Resin Material	Dry Resin UL94V-0
Terminal Material	Tin Plated Copper

# Type BLC Polypropylene Board Mount DC Link Capacitors

## PCB Mount Power Film Capacitors

### Part Numbering System

**BLC**

↓  
Type  
BLC

**300**

↓  
Capacitance  
080 = 8  $\mu$ F  
150 = 15  $\mu$ F  
300 = 30  $\mu$ F

**J**

↓  
Tolerance  
J =  $\pm$ 5%

**901**

↓  
Voltage  
701 = 700 Vdc  
901 = 900 Vdc  
112 = 1100 Vdc

**B4**

↓  
Case Type  
B4 = Box 4 Lead

**E**

↓  
Case Code

Case Code	W	H	L	p	p1	d
A	20	40	41.5	37.5	10.2	1.2
B	28	37	41.5	37.5	10.2	1.2
C	24	44	41.5	37.5	10.2	1.2
D	30	45	41.5	37.5	20.3	1.2
E	30	45	57.5	52.5	20.3	1.2
F	35	50	57.5	52.5	20.3	1.2

## Ratings

PartNumber	Cap C ( $\mu$ F)	Typ		Current			Peak Current $I_{pk}$ (A)	Thermal		Case Area (mm <sup>2</sup> )	Typical Weight (g)	Case Code
		10 kHz ESR (m $\Omega$ )	$T_A=25^\circ\text{C}$ I <sub>rms</sub> (A)	$T_A=55^\circ\text{C}$ I <sub>rms</sub> (A)	$T_A=75^\circ\text{C}$ I <sub>rms</sub> (A)	dV/dt (V/ $\mu$ s)		$\Theta_{cc}$ ( $^\circ\text{C}/\text{W}$ )	$\Theta_{ca}$ ( $^\circ\text{C}/\text{W}$ )			
<b>700 Vdc</b>												
BLC150J701B4A	15	5.2	21	15	8	13.5	200	10.0	15.8	6580	30.5	A
BLC200J701B4B	20	3.9	25	17	10	13.0	260	11.4	14.0	7467	36.8	B
BLC220J701B4C	22	3.6	27	19	11	11.8	290	10.0	13.4	7756	37.8	C
BLC300J701B4D	30	2.6	33	23	13	13.0	390	10.0	11.7	8925	46.7	D
BLC450J701B4E	45	3.6	31	22	13	8.5	390	8.0	9.3	11325	59.5	E
BLC550J701B4F	55	2.9	36	25	14	8.9	490	8.0	8.0	13275	69.6	F
<b>900 Vdc</b>												
BLC120J901B4A	12	5.2	21	15	8	15.8	190	10.0	15.8	6580	34.8	A
BLC140J901B4B	14	4.5	23	16	9	16.4	230	11.4	14.0	7467	39.3	B
BLC160J901B4C	16	3.9	26	18	10	15.6	250	10.0	13.4	7756	41.5	C
BLC200J901B4D	20	3.1	30	21	12	16.0	320	10.0	11.7	8925	48.8	D
BLC300J901B4E	30	4.3	29	20	11	10.8	325	8.0	9.3	11325	62.4	E
BLC400J901B4F	40	3.2	35	25	14	10.7	430	8.0	8.0	13275	78.6	F
<b>1100 Vdc</b>												
BLC080J112B4A	8	6.5	19	13	7	20.0	160	10.0	15.8	6580	34.3	A
BLC100J112B4B	10	5.2	22	15	9	20.0	200	11.4	14.0	7467	40.4	B
BLC120J112B4D	12	4.3	25	18	10	19.2	230	10.0	11.7	8925	44.5	D
BLC200J112B4E	20	5.3	26	18	10	13.0	260	8.0	9.3	11325	61.1	E
BLC250J112B4F	25	4.2	30	21	12	13.2	330	8.0	8.0	13275	72.9	F

# Type BLC Polypropylene Board Mount DC Link Capacitors

## PCB Mount Power Film Capacitors

### Expected Lifetime Predictions

Capacitance:  $C$  ( $\mu\text{F}$ )  
Equivalent Series Resistance:  $\text{ESR}$  ( $\text{m}\Omega$ )  
Frequency:  $f$  ( $\text{kHz}$ )  
Ripple Current:  $I$  ( $\text{A}_{\text{rms}}$ )  
Ambient Temperature:  $T_A$  ( $^{\circ}\text{C}$ )  
Core Temperature:  $T_C$  ( $^{\circ}\text{C}$ )  
Total Thermal Resistance:  $\Theta$  ( $^{\circ}\text{C}/\text{W}$ )  
Thermal Resistance case-to-ambient:  $\Theta_{\text{CA}}$  ( $^{\circ}\text{C}/\text{W}$ )  
Thermal Resistance core-to-case:  $\Theta_{\text{CC}}$  ( $^{\circ}\text{C}/\text{W}$ )  
Airflow Speed:  $v$  ( $\text{m}/\text{s}$ )  
Applied Voltage:  $V_A$  ( $\text{V}_{\text{DC}}$ )  
Rated Voltage:  $V_R$  ( $\text{V}_{\text{DC}}$ )

#### Determine ESR at Operating Frequency

Use the 10 kHz ESR from the ratings tables.

For operation below 10 kHz, add the dielectric resistance:  $\text{ESR} + 31.83 / (fC)$ .

#### Determine Thermal Resistance at Operating Frequency and Air Flow

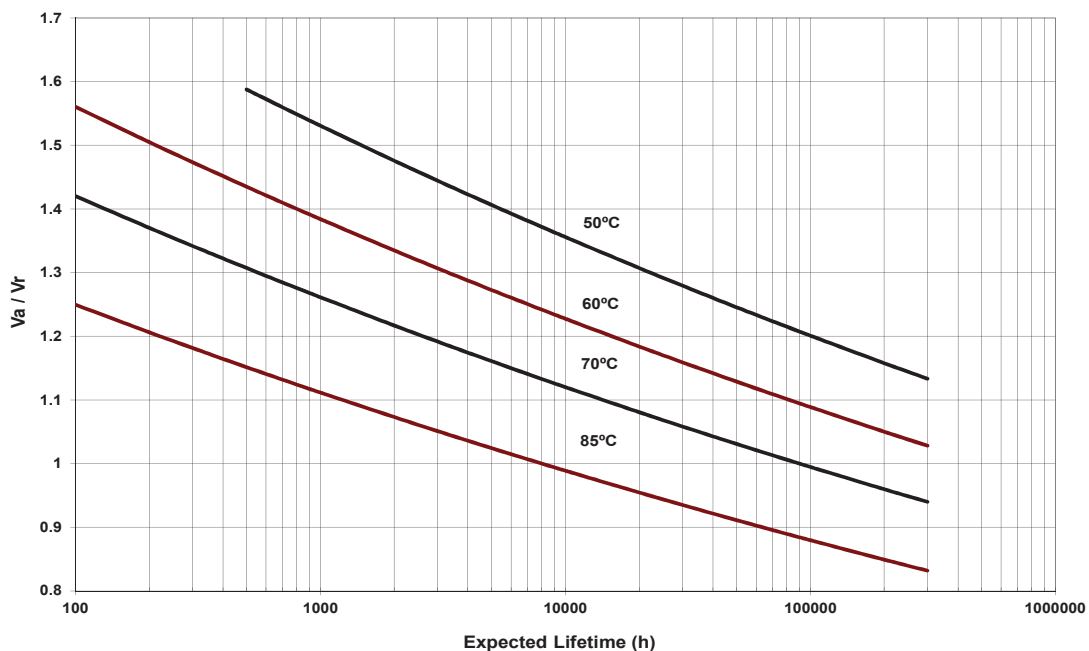
Compute  $\Theta = \Theta_{\text{CC}} + \Theta_{\text{CA}}$ . In the ratings tables,  $\Theta_{\text{CC}}$  is for  $\leq 10$  kHz and  $\Theta_{\text{CA}}$  is for still air. For frequency  $> 10$  kHz multiply  $\Theta_{\text{CC}}$  by  $[1 + (f - 10) / 100]$ . For  $v = 0$  to 5 m/s, multiply  $\Theta_{\text{CA}}$  by  $[(5 + 17(0.1^{0.66})) / (5 + 17(v + 0.1)^{0.66})]$

#### Determine Expected Lifetime

Look up Expected Lifetime on the graph using  $V_A/V_R$  and  $T_C = T_A + I^2 (\text{ESR}/1000) \Theta$

The maximum allowed temperature rise is  $40^{\circ}\text{C}$  and the maximum allowed core temperature is  $95^{\circ}\text{C}$ .

Expected Lifetime vs Core Temperature and Applied DC Voltage



# Type BLC Polypropylene Board Mount DC Link Capacitors

## PCB Mount Power Film Capacitors

### Typical Performance Curves

