# 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

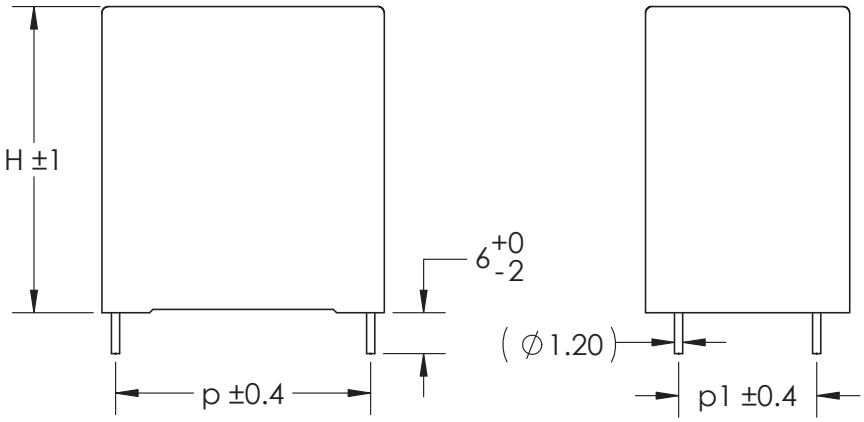
- High capacitance
- High ripple current
- Self-healing

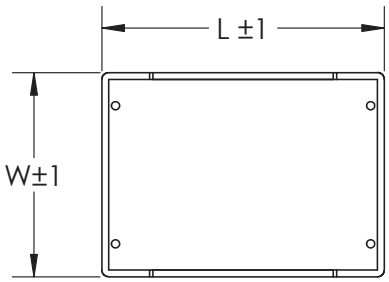
## Specifications

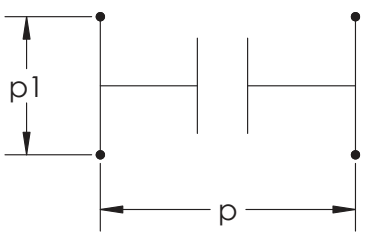
| | |
|---|---|
| Capacitance Range | 8 to 55 µF |
| Capacitance Tolerance | ±5% standard |
| Rated Voltage | 700 to 1100 Vdc |
| Operating Temperature Range | -45 °C to 85 °C (ambient) |
| Maximum rms Current | see data tables |
| Maximum rms Voltage | 230 Vac |
| Test Voltage between Terminals @ 25 °C | 150% rated DC voltage for 10 s |
| Test Voltage between Terminals and Case @ 25°C | 2 kVac @ 50/60 Hz for 10 s |
| Insulation Resistance | ≥30,000 MΩxµF @ 100 Vdc 25 °C after 1 minute |
| Life Test | 5000 h @ 85 °C, rated voltage |
| Reference Standards | IEC 61071 |
| Regulatory Information | |

## Dimensions

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



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## PCB Mount Power Film Capacitors

## Part Numbering System

| BLC | 300 | J | 901 | B4 | E |
|---|---|---|---|---|---|
| Type | Capacitance | Tolerance | Voltage | Case Type | Case Code |
| BLC | 080= 8 µF<br>150= 15 µF<br>300= 30 µF | J = ±5% | 701 = 700 Vdc<br>901 = 900 Vdc<br>112 = 1100 Vdc | B4 = Box 4 Lead | |

| 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 (µF) | Typ 10 kHz ESR (mΩ) | Current $T_A$=25 °C Irms (A) | Current $T_A$=55 °C Irms (A) | Current $T_A$=75 °C Irms (A) | dV/dt (V/µs) | Peak Current $I_{pk}$ (A) | Thermal Resistance Θcc (°C/W) | Thermal Resistance Θca (°C/W) | Typical ESL (nH) | Case Area (mm²) | Typical Weight (g) | Case Code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **700 Vdc** | | | | | | | | | | | | | |
| BLC150J701B4A | 15 | 5.2 | 21 | 15 | 8 | 13.5 | 200 | 10.0 | 15.8 | 30 | 6580 | 44 | A |
| BLC200J701B4B | 20 | 3.9 | 25 | 17 | 10 | 13.0 | 260 | 11.4 | 14.0 | 30 | 7467 | 56 | B |
| BLC220J701B4C | 22 | 3.6 | 27 | 19 | 11 | 11.8 | 290 | 10.0 | 13.4 | 30 | 7756 | 57 | C |
| BLC300J701B4D | 30 | 2.6 | 33 | 23 | 13 | 13.0 | 390 | 10.0 | 11.7 | 30 | 8925 | 72 | D |
| BLC450J701B4E | 45 | 3.6 | 31 | 22 | 13 | 8.5 | 390 | 8.0 | 9.3 | 35 | 11325 | 94 | E |
| BLC550J701B4F | 55 | 2.9 | 36 | 25 | 14 | 8.9 | 490 | 8.0 | 8.0 | 35 | 13275 | 123 | F |
| **900 Vdc** | | | | | | | | | | | | | |
| BLC120J901B4A | 12 | 5.2 | 21 | 15 | 8 | 15.8 | 190 | 10.0 | 15.8 | 30 | 6580 | 44 | A |
| BLC140J901B4B | 14 | 4.5 | 23 | 16 | 9 | 16.4 | 230 | 11.4 | 14.0 | 30 | 7467 | 56 | B |
| BLC160J901B4C | 16 | 3.9 | 26 | 18 | 10 | 15.6 | 250 | 10.0 | 13.4 | 30 | 7756 | 57 | C |
| BLC200J901B4D | 20 | 3.1 | 30 | 21 | 12 | 16.0 | 320 | 10.0 | 11.7 | 30 | 8925 | 72 | D |
| BLC300J901B4E | 30 | 4.3 | 29 | 20 | 11 | 10.8 | 325 | 8.0 | 9.3 | 35 | 11325 | 94 | E |
| BLC400J901B4F | 40 | 3.2 | 35 | 25 | 14 | 10.7 | 430 | 8.0 | 8.0 | 35 | 13275 | 123 | F |
| **1100 Vdc** | | | | | | | | | | | | | |
| BLC080J112B4A | 8 | 6.5 | 19 | 13 | 7 | 20.0 | 160 | 10.0 | 15.8 | 30 | 6580 | 44 | A |
| BLC100J112B4B | 10 | 5.2 | 22 | 15 | 9 | 20.0 | 200 | 11.4 | 14.0 | 30 | 7467 | 56 | B |
| BLC120J112B4D | 12 | 4.3 | 25 | 18 | 10 | 19.2 | 230 | 10.0 | 11.7 | 30 | 8925 | 72 | D |
| BLC200J112B4E | 20 | 5.3 | 26 | 18 | 10 | 13.0 | 260 | 8.0 | 9.3 | 35 | 11325 | 94 | E |
| BLC250J112B4F | 25 | 4.2 | 30 | 21 | 12 | 13.2 | 330 | 8.0 | 8.0 | 35 | 13275 | 123 | F |

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## PCB Mount Power Film Capacitors

## Expected Lifetime Predictions

| | |
|---|---|
| Capacitance: | C (µF) |
| Equivalent Series Resistance: | ESR (mΩ) |
| Frequency: | f (kHz) |
| Ripple Current: | I ($A_{rms}$) |
| Ambient Temperature: | $T_A$ (°C) |
| Core Temperature: | $T_C$ (°C) |
| Total Thermal Resistance: | Θ (°C/W) |
| Thermal Resistance case-to-ambient: | $Θ_{CA}$ (°C/W) |
| Thermal Resistance core-to-case: | $Θ_{CC}$ (°C/W) |
| Airflow Speed: | v (m/s) |
| Applied Voltage: | $V_A$ ($V_{DC}$) |
| Rated Voltage: | $V_R$ ($V_{DC}$) |

**Determine ESR at Operating Frequency**

Use the 10 kHz ESR from the ratings tables.
For operation below 10 kHz, the ESR will need to be adjusted using the following equation: ESR - 31.83/(10C) + 31.83/(fC).

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

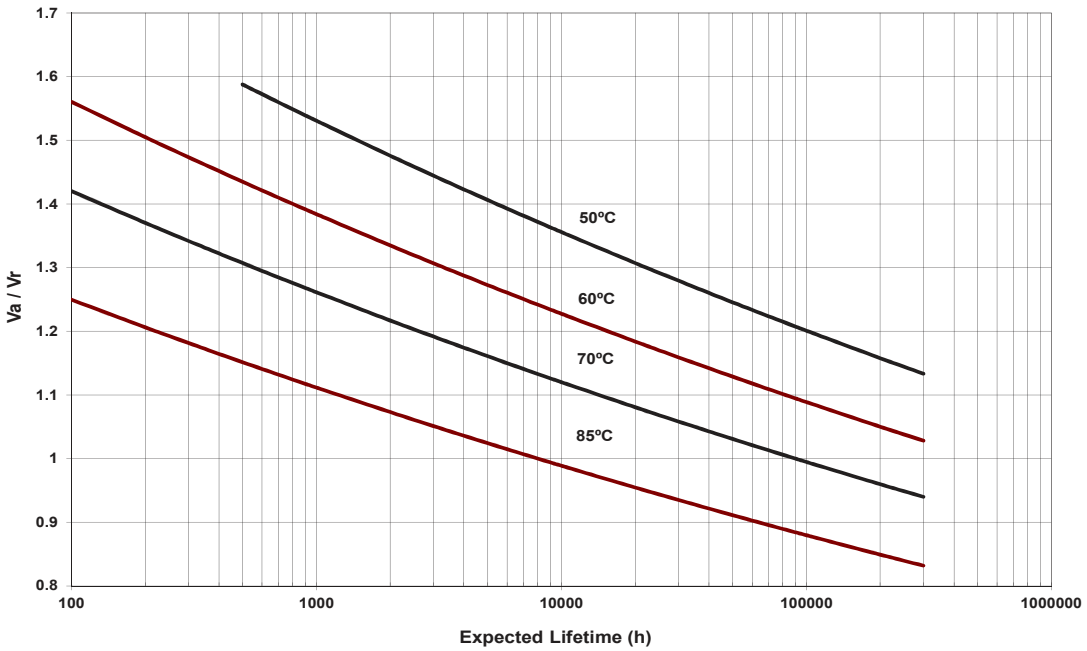
Compute $Θ = Θ_{CC} + Θ_{CA}$. In the ratings tables, $Θ_{CA}$ is for still air. For v = 0 to 5 m/s, multiply $Θ_{CA}$ by $[(5 + 17.6(0.1^{0.66})) / (5 + 17.6(v + 0.1)^{0.66})]$

**Determine Expected Lifetime**

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

The maximum allowed temperature rise is 40 °C and the maximum allowed core temperature is 95 °C.

**Expected Lifetime vs Core Temperature and Applied DC Voltage**



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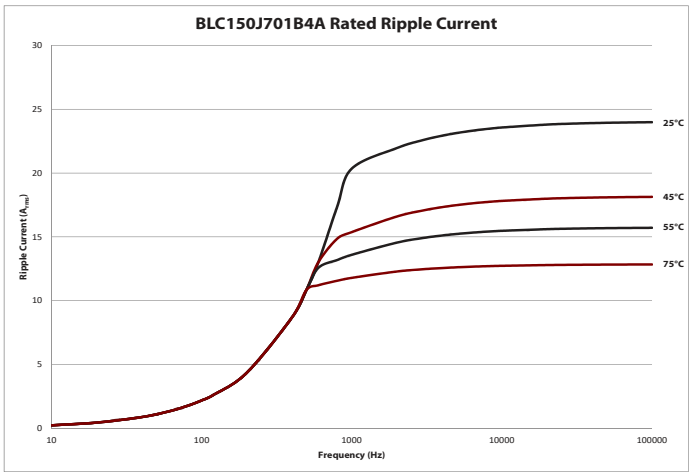
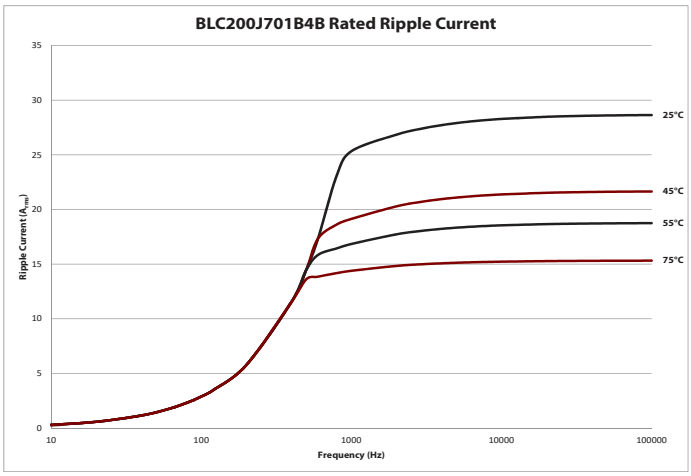
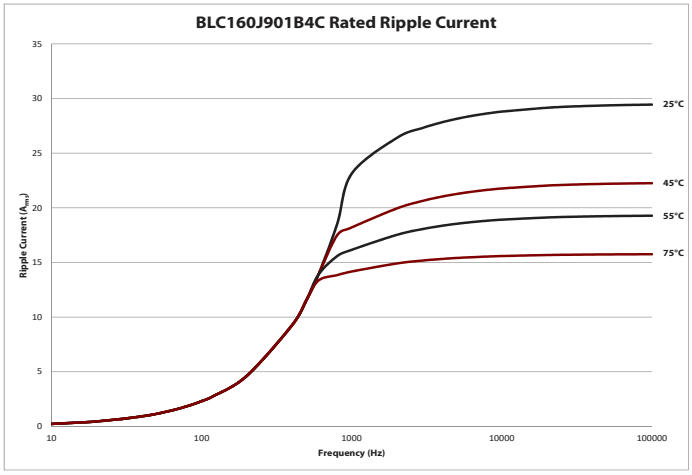
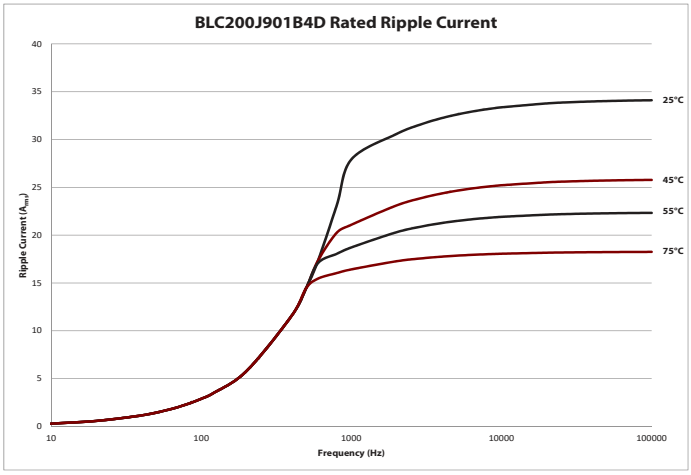
## PCB Mount Power Film Capacitors

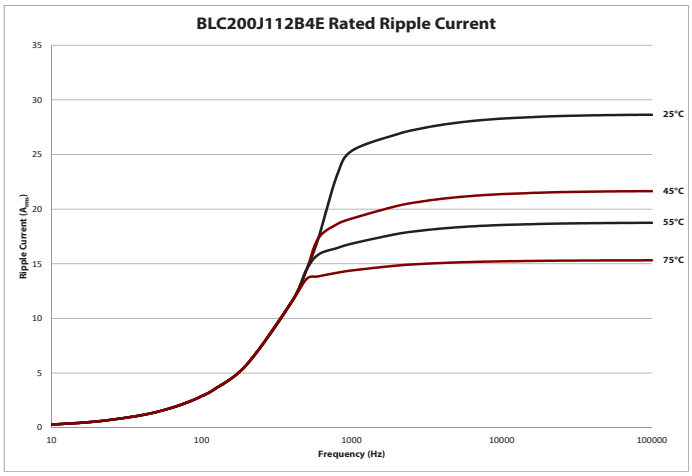
## Typical Performance Curves

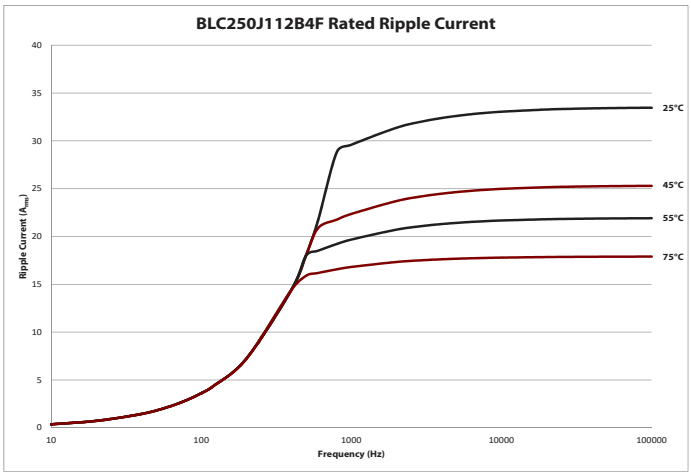


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