

## Thin Film Binary MOS Capacitors



Product may not be to scale

The CBB and CBC MOS capacitor chips each contain five different capacitors in binary increments allowing the user many choices in value selection.

These chips are manufactured using Vishay Electro-Films (EFI) sophisticated Thin Film equipment and manufacturing technology. The CBB and CBCs are 100 % electrically tested and visually inspected to MIL-STD-883, method 2032, class H or K.

### FEATURES

- Wire bondable
- User value selection
- Five capacitors on a 0.019" x 0.048" (CBB) or 0.044" x 0.044" (CBC) chip
- Case size: 0402, 0404
- Capacitance range: up to 93 pF in binary increments
- Dielectric: silicon dioxide
- Low dielectric loss
- Substrate: silicon with gold backing
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

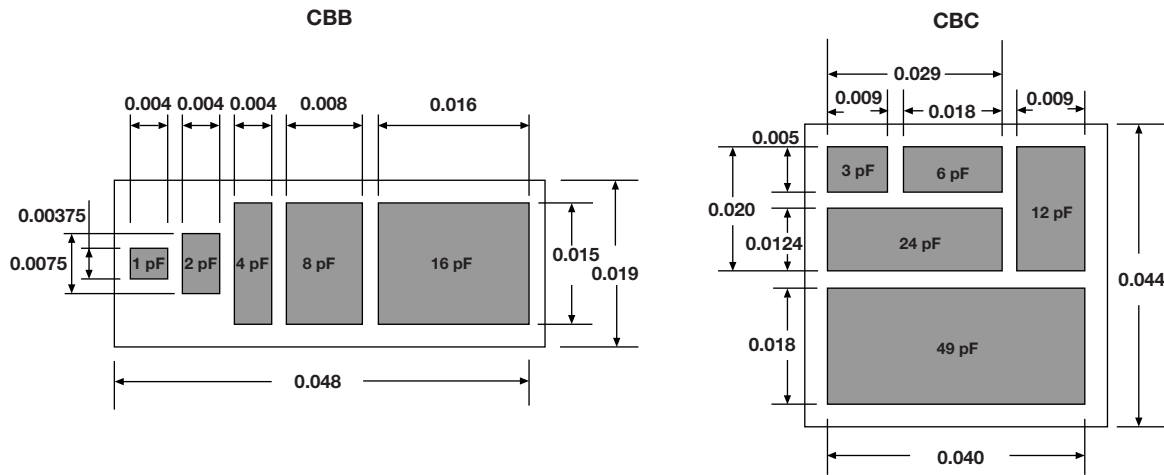
### APPLICATIONS

Vishay EFI CBB and CBC binary MOS multi-value capacitor chips are designed to be a useful device for trimming hybrid circuits by adding or subtracting capacitance, using normal wire-bonding techniques.

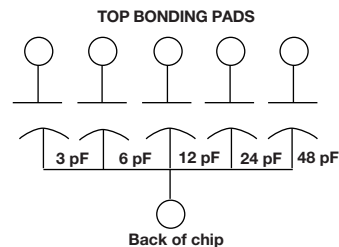
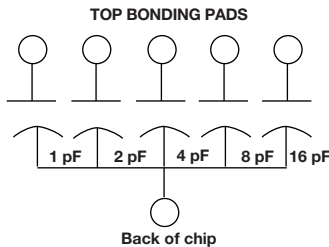
| WV (DC) VALUES AND TOLERANCES      |                |                  |      |
|------------------------------------|----------------|------------------|------|
| CAPACITOR MODEL                    | CBB            | CBC              | UNIT |
| Case Size                          | 0402           | 0404             |      |
| Total Capacitance                  | Up to 31       | Up to 93         | pF   |
| Capacitance Values (31 pF / 93 pF) | 1, 2, 4, 8, 16 | 3, 6, 12, 24, 48 | pF   |
| Tolerance                          | ± 10           | ± 10             | %    |
| DC Working Voltage                 | 75             | 75               | V    |

| STANDARD ELECTRICAL SPECIFICATIONS   |                            |        |
|--|----------------------------|--------|
| PARAMETER  | VALUE                      | UNIT   |
| Capacitance Range, CBB   | Up to 31                   | pF     |
| Capacitance Range, CBC   | Up to 93                   | pF     |
| Maximum Working Voltage  | 75                         | V      |
| Peak Voltage at +25 °C   | 1.5 x working voltage      |        |
| Dissipation Factor, 1 kHz, 1 V <sub>RMS</sub> , +25 °C                                 | 0.1 %                      | %      |
| Q at 1 mHz, 50 mV <sub>RMS</sub> , +25 °C  | 1000 min.                  |        |
| TCC, -55 °C to +150 °C   | + 15 ± 25                  | ppm/°C |
| Insulation Resistance at Working Voltage, +25 °C                                       | 10 <sup>9</sup> min.       | Ω      |
| Operating Temperature Range  | -55 to +15                 | °C     |
| Thermal Shock  | ± 0.25 + 0.25 pF max. ΔC/C | %      |
| Moisture Resistance, MIL-STD-202, Method 106   | ± 1.0 + 0.25 pF max. ΔC/C  | %      |
| Short Time Overload, +25 °C, 5 s; 1.5 x Working Voltage                                | ± 0.25 + 0.25 pF max. ΔC/C | %      |
| High Temperature Exposure: 100 h at +150 °C Ambient                                    | ± 0.25 + 0.25 pF max.      | %      |
| Life, MIL-STD-202, Method 108, Condition D, +125 °C Ambient, 1000 h at Working Voltage | ± 2.0 + 0.25 pF max. ΔC/C  | %      |

**CONFIGURATIONS** in inches



**SCHEMATIC**



| MECHANICAL SPECIFICATIONS |   |
|---------------------------|---|
| PARAMETER                 | VALUE   |
| Chip Size, CBB            | 0.019" x 0.048" ± 0.002" (0.48 mm x 1.2 mm ± 0.05 mm) |
| Chip Size, CBC            | 0.044" x 0.044" ± 0.002" (1.1 mm x 1.1 mm ± 0.05 mm)  |
| Chip Thickness            | 0.010" ± 0.002" (0.254 mm ± 0.05 mm)                  |
| Chip Substrate Material   | Semiconductor silicon                                 |
| Dielectric                | Silicon dioxide (MOS)                                 |
| Bonding Pads              | 10 kÅ minimum aluminum (Au optional)                  |
| Backing                   | 3 kÅ minimum gold                                     |

| GLOBAL PART NUMBER INFORMATION                         |  |   |          |                                     |          |   |          |                                |          |  |          |  |          |
|--|--|---|----------|-------------------------------------|----------|---|----------|--------------------------------|----------|--|----------|--|----------|
| Global Part Number: CBB3100BLGKWS                      |  |   |          |                                     |          |   |          |                                |          |  |          |  |          |
| Global Part Number Description: CBB 31 pF 25 % Au K WS |  |   |          |                                     |          |   |          |                                |          |  |          |  |          |
|  | <b>C</b>                                 | <b>B</b>  | <b>B</b> | <b>3</b>                            | <b>1</b> | <b>0</b>  | <b>0</b> | <b>B</b>                       | <b>L</b> | <b>G</b>                                 | <b>K</b> | <b>W</b>                                   | <b>S</b> |
| MODEL  | SIZE                                     | CAPACITANCE (pF)                                      |          | CAPACITANCE MULTIPLIER CODE         |          | TOLERANCE CODE  |          | TERMINATION                    |          | VISUAL CLASS                             |          | PACKAGING CODE                             |          |
| <b>CB</b><br>Binary Capacitor                          | <b>B</b> = 19 x 48<br><b>C</b> = 44 x 44 | First 4 digits are significant figures of capacitance |          | <b>C</b> = 0.001<br><b>B</b> = 0.01 |          | <b>K</b> = 10 %<br><b>M</b> = 20 %<br><b>L</b> = 25 % |          | <b>G</b> = Au<br><b>A</b> = Al |          | <b>H</b> = class H<br><b>K</b> = class K |          | <b>WS</b> = Waffle pack, 100 min., 1 mult. |          |



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