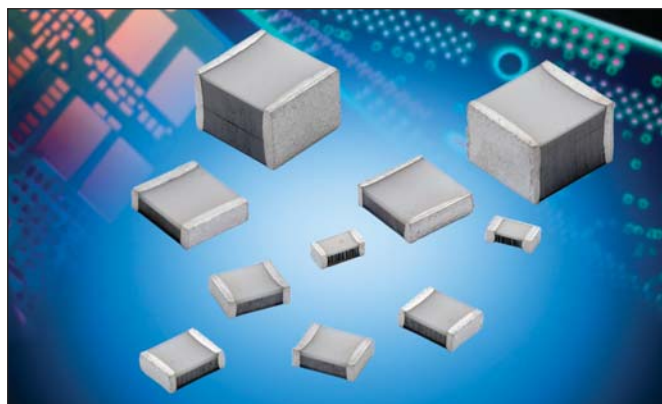


# Film Chip Capacitors



## PEN DIELECTRIC – CB Series



### APPLICATIONS

General purpose function in low voltage applications where miniaturization and SMD is required. Typical applications would be:

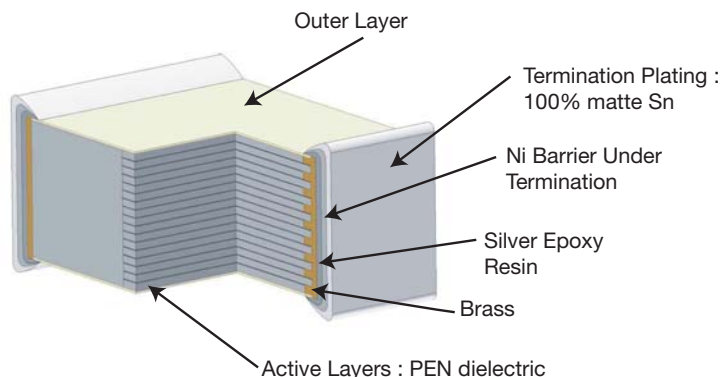
- Automotive (Airbag, Fuel injection calculator...)
- Telecom (Public switching systems, modems, telephone set, cordless, mobile)
- Industrial (SMPS, Power convertor module...)

### GENERAL DESCRIPTION

Film chip capacitor using a naked and stacked construction with metallized PEN (polyethylene naphthalate).

### ADVANTAGES

- Use of high temperature dielectric films make these capacitors suitable for IR or vapor phase reflow processes. This chip is built without specific encapsulation.
- The intrinsic elasticity of the dielectric film allows an excellent compatibility of the capacitor with all types of material for printed circuit boards.
- The self-healing property of film technology results to a safety open failure mode and better overall reliability.
- Excellent thermal shock resistance.
- Low dissipation factor ESR & ESL.
- No piezoelectric effect.
- Available in tape and reel suitable for automatic placement.
- Non-polar construction.



### PERFORMANCE CHARACTERISTICS

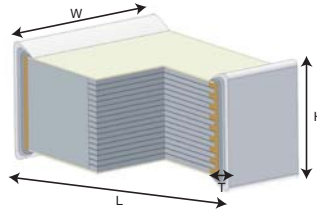
|                                    |                                                                                                                                                                                                                                                                   |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Climatic Category                  | 55/125/56                                                                                                                                                                                                                                                         |
| Capacitance Range                  | 1nF to 4.7 $\mu$ F                                                                                                                                                                                                                                                |
| Tolerance on C <sub>R</sub>        | $\pm 5\%$ , $\pm 10\%$                                                                                                                                                                                                                                            |
| Nominal Voltages                   | 25Vdc to 630Vdc                                                                                                                                                                                                                                                   |
| Test Voltage                       | 1.4Vr 2 sec. at 25°C                                                                                                                                                                                                                                              |
| Soldering methods                  | IR or vapor phase reflow (not suitable for wave soldering)                                                                                                                                                                                                        |
| Tangent of Loss Angle at 1kHz (DF) | $< 100 \times 10^{-4}$                                                                                                                                                                                                                                            |
| Insulation resistance minimum : IR | for C $\leq 0.33\mu$ F IR > 1000 M $\Omega$ at 20°C for 1 min. charge at 10Vdc<br>for VR < 100Vdc and 100Vdc for VR $\geq 100$ Vdc<br>for C > 0.33 $\mu$ F IR C > 400 sec. at 20°C for 1 min. charge at 10Vdc<br>for VR < 100Vdc and 100Vdc for VR $\geq 100$ Vdc |
| Temperature range                  | -55°C to 125°C with voltage derating of 1.25%/°C between 105°C and 125°C                                                                                                                                                                                          |
| A.C. applications                  | For high frequency A.C. application please check with AVX                                                                                                                                                                                                         |

# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



millimeters (inches)

| Capacitance Range (CR) | Ordering Code  | VOLTAGE Vdc: 25V Vac: 16V                  |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |               |
|------------------------|----------------|--------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|---------------|
|                        |                | Chip Dimensions<br>*Tolerances<br>(page 6) |                 |                 |                 | Tape Dimensions |                 |                 | Reel Dimensions |                 |                 | Packaging Unit |      | Reel Pkg Code |
|                        |                | L                                          | W               | H max           | T               | W               | P1              | K0              | A               | W1              | W2 max          | Bulk           | Reel |               |
| 0.001µF                | CB017C0102+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0012                 | CB017C0122+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0015                 | CB017C0152+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0018                 | CB017C0182+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0022                 | CB017C0222+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0027                 | CB017C0272+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0033                 | CB017C0332+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0047                 | CB017C0472+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0056                 | CB017C0562+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0068                 | CB017C0682+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0082                 | CB017C0822+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.010µF                | CB017C0103+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.012                  | CB017C0123+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.015                  | CB017C0153+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.018                  | CB017C0183+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.022                  | CB017C0223+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.027                  | CB027C0273+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.033                  | CB027C0333+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.047                  | CB027C0473+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.056                  | CB027C0563+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.068                  | CB027C0683+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.082                  | CB027C0823+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 2.20<br>(0.087) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 2.33<br>(0.092) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2000 | BA            |
| 0.100µF                | CB027C0104+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 2.30<br>(0.091) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 2.33<br>(0.092) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2000 | BA            |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

BA = tape & reel

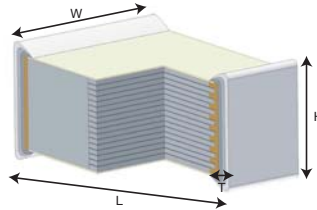


# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



millimeters (inches)

| Capacitance Range (CR) | Ordering Code  | VOLTAGE Vdc: 50V Vac: 40V                  |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |               |
|------------------------|----------------|--------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|---------------|
|                        |                | Chip Dimensions<br>*Tolerances<br>(page 6) |                 |                 |                 | Tape Dimensions |                 |                 | Reel Dimensions |                 |                 | Packaging Unit |      | Reel Pkg Code |
|                        |                | L                                          | W               | H max           | T               | W               | P1              | K0              | A               | W1              | W2 max          | Bulk           | Reel |               |
| 0.001μF                | CB017D0102+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0012                 | CB017D0122+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0015                 | CB017D0152+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0018                 | CB017D0182+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0022                 | CB017D0222+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0027                 | CB017D0272+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0033                 | CB017D0332+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0047                 | CB017D0472+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0056                 | CB017D0562+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0068                 | CB017D0682+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0082                 | CB017D0822+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.010μF                | CB017D0103+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.012                  | CB017D0123+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.015                  | CB017D0153+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.018                  | CB017D0183+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.022                  | CB017D0223+ -- | 3.30<br>(0.130)                            | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.027                  | CB027D0273+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.033                  | CB027D0333+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.047                  | CB027D0473+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.056                  | CB027D0563+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.068                  | CB027D0683+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.082                  | CB027D0823+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 2.20<br>(0.087) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 2.33<br>(0.092) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2000 | BA            |
| 0.100μF                | CB027D0104+ -- | 3.30<br>(0.130)                            | 2.50<br>(0.098) | 2.30<br>(0.091) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 2.33<br>(0.092) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2000 | BA            |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

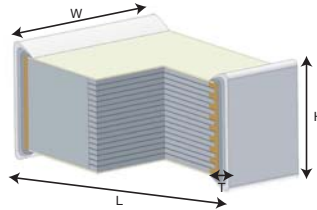
BA = tape & reel

# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



millimeters (inches)

| Capacitance Range (CR) | Ordering Code  | VOLTAGE Vdc: 63V Vac: 40V                  |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |               |
|------------------------|----------------|--------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|---------------|
|                        |                | Chip Dimensions<br>*Tolerances<br>(page 6) |                 |                 |                 | Tape Dimensions |                 |                 | Reel Dimensions |                 |                 | Packaging Unit |      | Reel Pkg Code |
|                        |                | L                                          | W               | H max           | T               | W               | P1              | K0              | A               | W1              | W2 max          | Bulk           | Reel |               |
| 0.001μF                | CB037D0102+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0012                 | CB037D0122+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0015                 | CB037D0152+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0018                 | CB037D0182+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.6<br>(0.024)  | 12.0<br>(0.472) | 8.0<br>(0.315)  | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0022                 | CB037D0222+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0027                 | CB037D0272+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.6<br>(0.024)  | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0033                 | CB037D0332+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0047                 | CB037D0472+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0056                 | CB037D0562+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0068                 | CB037D0682+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0082                 | CB037D0822+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.6<br>(0.024)  | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.010μF                | CB037D0103+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

BA or BC = tape & reel

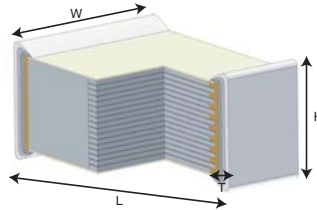


# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



| Capacitance Range (CR) | Ordering Code  | VOLTAGE Vdc: 63V Vac: 40V                  |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |               |
|------------------------|----------------|--------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|---------------|
|                        |                | Chip Dimensions<br>*Tolerances<br>(page 6) |                 |                 |                 | Tape Dimensions |                 |                 | Reel Dimensions |                 |                 | Packaging Unit |      | Reel Pkg Code |
|                        |                | L                                          | W               | H max           | T               | W               | P1              | K0              | A               | W1              | W2 max          | Bulk           | Reel |               |
| 0.010μF                | CB037D0103+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.0<br>(0.315)  | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.012                  | CB037D0123+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.015                  | CB037D0153+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.40<br>(0.095) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 900  | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.40<br>(0.095) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3600 | BC            |
| 0.018                  | CB037D0183+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.50<br>(0.099) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 900  | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.50<br>(0.099) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3600 | BC            |
| 0.022                  | CB037D0223+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.027                  | CB037D0273+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 1.90<br>(0.075) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.033                  | CB037D0333+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.047                  | CB037D0473+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.70<br>(0.107) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 700  | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.70<br>(0.107) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3000 | BC            |
| 0.056                  | CB037D0563+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.30<br>(0.091) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 900  | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.30<br>(0.091) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3600 | BC            |
| 0.068                  | CB037D0683+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.082                  | CB037D0823+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.50<br>(0.099) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 900  | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.50<br>(0.099) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3600 | BC            |
| 0.100μF                | CB037D0104+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.80<br>(0.111) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 700  | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.80<br>(0.111) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3000 | BC            |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

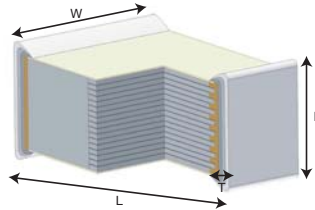
BA or BC = tape & reel

# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



| Capacitance Range (CR)     | Ordering Code  | VOLTAGE Vdc: 63V Vac: 40V               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |               |
|----------------------------|----------------|-----------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|---------------|
|                            |                | Chip Dimensions<br>*Tolerances (page 6) |                 |                 |                 | Tape Dimensions |                 |                 | Reel Dimensions |                 |                 | Packaging Unit |      | Reel Pkg Code |
|                            |                | L                                       | W               | H max           | T               | W               | P1              | K0              | A               | W1              | W2 max          | Bulk           | Reel |               |
| 0.120                      | CB037D0124+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.30<br>(0.091) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 900  | BA            |
|                            |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.30<br>(0.091) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3600 | BC            |
| 0.150                      | CB037D0154+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                            |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.180                      | CB037D0184+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.40<br>(0.095) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 900  | BA            |
|                            |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.40<br>(0.095) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3600 | BC            |
| 0.220                      | CB037D0224+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 3.00<br>(0.118) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 700  | BA            |
|                            |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 3.00<br>(0.118) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3000 | BC            |
| 0.330                      | CB047D0334+ -- | 5.80<br>(0.228)                         | 5.00<br>(0.195) | 4.00<br>(0.158) | 0.80<br>(0.031) | 16.0<br>(0.629) | 8.00<br>(0.315) | 4.10<br>(0.162) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 2300 | BC            |
| 0.470                      | CB047D0474+ -- | 5.80<br>(0.228)                         | 5.00<br>(0.195) | 4.00<br>(0.158) | 0.80<br>(0.031) | 12.0<br>(0.472) | 8.00<br>(0.315) | 4.10<br>(0.162) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 2300 | BC            |
| 0.560                      | CB047D0564+ -- | 5.80<br>(0.228)                         | 5.00<br>(0.195) | 2.50<br>(0.099) | 0.80<br>(0.031) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3000 | BC            |
| 0.680                      | CB047D0684+ -- | 5.80<br>(0.228)                         | 5.00<br>(0.195) | 3.90<br>(0.154) | 0.80<br>(0.031) | 12.0<br>(0.472) | 8.00<br>(0.315) | 4.10<br>(0.162) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 2300 | BC            |
| 0.82*                      | CB057D0824+ -- | 7.30<br>(0.287)                         | 6.10<br>(0.240) | 4.40<br>(0.173) | 0.80<br>(0.031) | 16.0<br>(0.629) | 12.0<br>(0.472) | 5.23<br>(0.206) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 1100 | BC            |
| 1µF*                       | CB057D0105+ -- | 7.30<br>(0.287)                         | 6.10<br>(0.240) | 4.70<br>(0.185) | 0.80<br>(0.031) | 16.0<br>(0.629) | 12.0<br>(0.472) | 4.80<br>(0.189) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 1800 | BC            |
| 1.5*                       | CB057D0155+ -- | 7.30<br>(0.287)                         | 6.10<br>(0.240) | 4.70<br>(0.185) | 0.80<br>(0.031) | 16.0<br>(0.629) | 12.0<br>(0.472) | 4.80<br>(0.189) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 1800 | BC            |
| 2.2                        | CB167D0225+ -- | 10.5<br>(0.413)                         | 7.60<br>(0.299) | 6.10<br>(0.240) | 0.80<br>(0.032) | 24.0<br>(0.944) | 12.0<br>(0.472) | 6.19<br>(0.244) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 500            | 900  | BC            |
| 2.7                        | CB177D0275+ -- | 12.8<br>(0.503)                         | 10.2<br>(0.402) | 6.70<br>(0.264) | 0.80<br>(0.032) | 24.0<br>(0.944) | 16.0<br>(0.629) | 7.00<br>(0.274) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 600  | BC            |
| 3.3                        | CB187D0335+ -- | 15.3<br>(0.601)                         | 13.7<br>(0.539) | 5.30<br>(0.209) | 0.80<br>(0.032) | 24.0<br>(0.944) | 24.0<br>(0.944) | 6.30<br>(0.248) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 400  | BC            |
| 4.7                        | CB187D0475+ -- | 15.3<br>(0.601)                         | 13.7<br>(0.539) | 7.20<br>(0.283) | 0.80<br>(0.032) | 24.0<br>(0.944) | 24.0<br>(0.944) | 7.60<br>(0.299) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 300  | BC            |
| VOLTAGE Vdc: 100V Vac: 63V |                |                                         |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |               |
| 0.001µF                    | CB017E0102+ -- | 3.30<br>(0.130)                         | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0012                     | CB017E0122+ -- | 3.30<br>(0.130)                         | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0015                     | CB017E0152+ -- | 3.30<br>(0.130)                         | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0018                     | CB017E0182+ -- | 3.30<br>(0.130)                         | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047) | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

BA or BC = tape & reel

\*Special length: 7.3 +0.7/-0.3 (0.287 +0.026/-0.012)

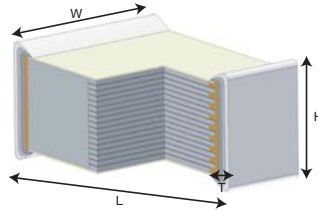


# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



millimeters (inches)

| Capacitance Range (CR) | Ordering Code  | VOLTAGE Vdc: 100V Vdc: 63V              |                 |                 |                 |                 |                 |                  |                 |                 |                 |                |      |               |
|------------------------|----------------|-----------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|----------------|------|---------------|
|                        |                | Chip Dimensions<br>*Tolerances (page 6) |                 |                 |                 | Tape Dimensions |                 |                  | Reel Dimensions |                 |                 | Packaging Unit |      | Reel Pkg Code |
|                        |                | L                                       | W               | H max           | T               | W               | P1              | K0               | A               | W1              | W2 max          | Bulk           | Reel |               |
| 0.0022                 | CB017E0222+ -- | 3.30<br>(0.130)                         | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047)  | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0027                 | CB017E0272+ -- | 3.30<br>(0.130)                         | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047)  | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0033                 | CB017E0332+ -- | 3.30<br>(0.130)                         | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047)  | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0047                 | CB017E0472+ -- | 3.30<br>(0.130)                         | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047)  | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0056                 | CB017E0562+ -- | 3.30<br>(0.130)                         | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047)  | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0068                 | CB017E0682+ -- | 3.30<br>(0.130)                         | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047)  | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.0082                 | CB017E0822+ -- | 3.30<br>(0.130)                         | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047)  | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.010μF                | CB017E0103+ -- | 3.30<br>(0.130)                         | 1.60<br>(0.063) | 1.15<br>(0.045) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.20<br>(0.047)  | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 3500 | BA            |
| 0.012                  | CB027E0123+ -- | 3.30<br>(0.130)                         | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075)  | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.015                  | CB027E0153+ -- | 3.30<br>(0.130)                         | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075)  | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.018                  | CB027E0183+ -- | 3.30<br>(0.130)                         | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075)  | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.022                  | CB027E0223+ -- | 3.30<br>(0.130)                         | 2.50<br>(0.098) | 1.80<br>(0.071) | 0.50<br>(0.020) | 8.00<br>(0.315) | 4.00<br>(0.158) | 1.90<br>(0.075)  | 180<br>(7.087)  | 8.40<br>(0.331) | 14.4<br>(0.567) | 2000           | 2500 | BA            |
| 0.027                  | CB037E0273+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.20<br>(0.087) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.1024) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 900  | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.20<br>(0.087) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.1024) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3600 | BC            |
| 0.033                  | CB037E0333+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081)  | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081)  | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.047                  | CB037E0473+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.60<br>(0.102) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122)  | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 700  | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.60<br>(0.102) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122)  | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3000 | BC            |
| 0.056                  | CB037E0563+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.50<br>(0.099) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102)  | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 900  | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.50<br>(0.099) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102)  | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3600 | BC            |
| 0.068                  | CB037E0683+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081)  | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081)  | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.082                  | CB037E0823+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.50<br>(0.099) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102)  | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 900  | BA            |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

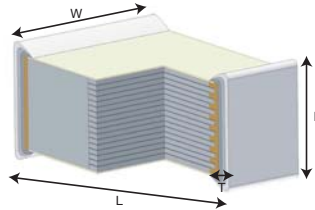
BA or BC = tape & reel

# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



millimeters (inches)

| Capacitance<br>Range<br>(CR) | Ordering<br>Code | VOLTAGE Vdc: 100V Vac: 63V                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |                     |
|------------------------------|------------------|--------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|---------------------|
|                              |                  | Chip Dimensions<br>*Tolerances<br>(page 6) |                 |                 |                 | Tape Dimensions |                 |                 | Reel Dimensions |                 |                 | Packaging Unit |      | Reel<br>Pkg<br>Code |
|                              |                  | L                                          | W               | H max           | T               | W               | P1              | K0              | A               | W1              | W2 max          | Bulk           | Reel |                     |
| 0.082                        | CB037E0823+ --   | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.50<br>(0.099) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3600 | BC                  |
| 0.100μF                      | CB037E0104+ --   | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 3.00<br>(0.118) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 700  | BA                  |
|                              |                  | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 3.00<br>(0.118) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3000 | BC                  |
| 0.120                        | CB047E0124+ --   | 5.80<br>(0.228)                            | 5.00<br>(0.195) | 4.00<br>(0.158) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 4.10<br>(0.162) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 2300 | BC                  |
| 0.150                        | CB047E0154+ --   | 5.80<br>(0.228)                            | 5.00<br>(0.195) | 3.30<br>(0.130) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.45<br>(0.136) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 2800 | BC                  |
| 0.180                        | CB047E0184+ --   | 5.80<br>(0.228)                            | 5.00<br>(0.195) | 3.00<br>(0.118) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3000 | BC                  |
| 0.220                        | CB047E0224+ --   | 5.80<br>(0.228)                            | 5.00<br>(0.195) | 4.00<br>(0.158) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 4.10<br>(0.162) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 2300 | BC                  |
| 0.330                        | CB047E0334+ --   | 5.80<br>(0.228)                            | 5.00<br>(0.195) | 4.00<br>(0.158) | 0.80<br>(0.032) | 16.0<br>(0.629) | 8.00<br>(0.315) | 4.10<br>(0.162) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1500           | 2300 | BC                  |
| 0.47*                        | CB057E0474+ --   | 7.30<br>(0.287)                            | 6.10<br>(0.240) | 4.50<br>(0.177) | 0.80<br>(0.032) | 16.0<br>(0.629) | 12.0<br>(0.472) | 4.80<br>(0.189) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 1800 | BC                  |
| 0.56*                        | CB057E0564+ --   | 7.30<br>(0.287)                            | 6.10<br>(0.240) | 4.00<br>(0.158) | 0.80<br>(0.032) | 16.0<br>(0.629) | 12.0<br>(0.472) | 4.10<br>(0.162) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 2300 | BC                  |
| 0.68*                        | CB057E0684+ --   | 7.30<br>(0.287)                            | 6.10<br>(0.240) | 4.50<br>(0.177) | 0.80<br>(0.032) | 16.0<br>(0.629) | 12.0<br>(0.472) | 4.80<br>(0.189) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 1800 | BC                  |
| 0.82                         | CB167E0824+ --   | 10.5<br>(0.413)                            | 7.6<br>(0.299)  | 5.80<br>(0.229) | 0.80<br>(0.032) | 24.0<br>(0.944) | 12.0<br>(0.472) | 6.19<br>(0.244) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 500            | 900  | BC                  |
| 1                            | CB167E0105+ --   | 10.5<br>(0.413)                            | 7.60<br>(0.299) | 6.00<br>(0.237) | 0.80<br>(0.032) | 24.0<br>(0.944) | 12.0<br>(0.472) | 6.19<br>(0.244) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 500            | 900  | BC                  |
| 1.5                          | CB177E0155+ --   | 12.8<br>(0.503)                            | 10.2<br>(0.402) | 5.50<br>(0.217) | 0.80<br>(0.032) | 24.0<br>(0.944) | 16.0<br>(0.629) | 5.70<br>(0.224) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 700  | BC                  |
| 2.2                          | CB177E0225+ --   | 12.8<br>(0.503)                            | 10.2<br>(0.402) | 6.90<br>(0.272) | 0.80<br>(0.032) | 24.0<br>(0.944) | 16.0<br>(0.629) | 7.00<br>(0.274) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 600  | BC                  |
| 3.3                          | CB187E0335+ --   | 15.3<br>(0.601)                            | 13.7<br>(0.539) | 7.10<br>(0.280) | 0.80<br>(0.032) | 24.0<br>(0.944) | 24.0<br>(0.944) | 7.60<br>(0.299) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 300  | BC                  |
|                              |                  | VOLTAGE Vdc: 250V Vac: 160V                |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |                     |
| 0.001μF                      | CB037G0102+ --   | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA                  |
|                              |                  | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC                  |
| 0.0012                       | CB037G0122+ --   | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA                  |
|                              |                  | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC                  |
| 0.0015                       | CB037G0152+ --   | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA                  |
|                              |                  | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC                  |
| 0.0018                       | CB037G0182+ --   | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA                  |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

BA or BC = tape & reel

\*Special length: 7.3 +0.7/-0.3 (0.287 +0.026/-0.012)

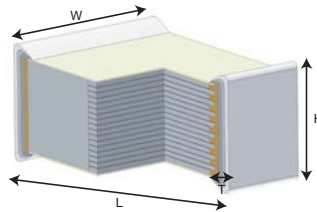


# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



millimeters (inches)

| Capacitance Range (CR) | Ordering Code  | VOLTAGE Vdc: 250V Vac: 160V                |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |               |
|------------------------|----------------|--------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|---------------|
|                        |                | Chip Dimensions<br>*Tolerances<br>(page 6) |                 |                 |                 | Tape Dimensions |                 |                 | Reel Dimensions |                 |                 | Packaging Unit |      | Reel Pkg Code |
|                        |                | L                                          | W               | H max           | T               | W               | P1              | K0              | A               | W1              | W2 max          | Bulk           | Reel |               |
| 0.0018                 | CB037G0182+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0022                 | CB037G0222+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0027                 | CB037G0272+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0033                 | CB037G0332+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0047                 | CB037G0472+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0056                 | CB037G0562+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0068                 | CB037G0682+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0082                 | CB037G0822+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.010μF                | CB037G0103+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.012                  | CB037G0123+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.015                  | CB037G0153+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.40<br>(0.094) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 900  | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.40<br>(0.094) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3600 | BC            |
| 0.018                  | CB037G0183+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.50<br>(0.099) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 900  | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.50<br>(0.099) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.60<br>(0.102) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3600 | BC            |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

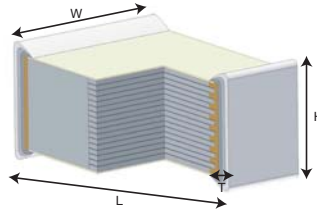
BA or BC = tape & reel

# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



millimeters (inches)

| Capacitance Range (CR)      | Ordering Code  | VOLTAGE Vdc: 250V Vac: 160V          |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |               |
|-----------------------------|----------------|--------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|---------------|
|                             |                | Chip Dimensions *Tolerances (page 6) |                 |                 |                 | Tape Dimensions |                 |                 | Reel Dimensions |                 |                 | Packaging Unit |      | Reel Pkg Code |
|                             |                | L                                    | W               | H max           | T               | W               | P1              | K0              | A               | W1              | W2 max          | Bulk           | Reel |               |
| 0.022                       | CB037G0223+ -- | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.90<br>(0.114) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 180<br>(7.087)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 700  | BA            |
|                             |                | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.90<br>(0.114) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3000 | BC            |
| 0.027                       | CB047G0273+ -- | 5.80<br>(0.228)                      | 5.00<br>(0.195) | 1.80<br>(0.071) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.43<br>(0.096) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3500 | BC            |
| 0.033                       | CB047G0333+ -- | 5.80<br>(0.228)                      | 5.00<br>(0.195) | 2.20<br>(0.087) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.43<br>(0.096) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3500 | BC            |
| 0.047                       | CB047G0473+ -- | 5.80<br>(0.228)                      | 5.00<br>(0.195) | 2.90<br>(0.114) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3000 | BC            |
| 0.056                       | CB047G0563+ -- | 5.80<br>(0.228)                      | 5.00<br>(0.195) | 2.90<br>(0.114) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3000 | BC            |
| 0.068                       | CB047G0683+ -- | 5.80<br>(0.228)                      | 5.00<br>(0.195) | 4.00<br>(0.158) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 4.10<br>(0.161) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 2800 | BC            |
| 0.082                       | CB047G0823+ -- | 5.80<br>(0.228)                      | 5.00<br>(0.195) | 4.50<br>(0.177) | 0.80<br>(0.032) | 16.0<br>(0.629) | 8.00<br>(0.315) | 4.60<br>(0.181) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1500           | 1900 | BC            |
| 0.100µF                     | CB047G0104+ -- | 5.80<br>(0.228)                      | 5.00<br>(0.195) | 4.50<br>(0.177) | 0.80<br>(0.032) | 16.0<br>(0.629) | 8.00<br>(0.315) | 4.60<br>(0.181) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1500           | 1900 | BC            |
| 0.120                       | CB057G0124+ -- | 7.20<br>(0.283)                      | 6.10<br>(0.240) | 3.90<br>(0.153) | 0.80<br>(0.032) | 24.0<br>(0.944) | 12.0<br>(0.472) | 4.80<br>(0.189) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 1000           | 1800 | BC            |
| 0.150                       | CB057G0154+ -- | 7.20<br>(0.283)                      | 6.10<br>(0.240) | 4.70<br>(0.185) | 0.80<br>(0.032) | 16.0<br>(0.629) | 12.0<br>(0.472) | 4.80<br>(0.189) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 1800 | BC            |
| 0.180                       | CB057G0184+ -- | 7.20<br>(0.283)                      | 6.10<br>(0.240) | 5.00<br>(0.197) | 0.80<br>(0.032) | 16.0<br>(0.629) | 12.0<br>(0.472) | 5.23<br>(0.206) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 1100 | BC            |
| 0.22µF                      | CB057G0224+ -- | 7.20<br>(0.283)                      | 6.10<br>(0.240) | 5.70<br>(0.225) | 0.80<br>(0.032) | 16.0<br>(0.629) | 12.0<br>(0.472) | 5.90<br>(0.232) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 900  | BC            |
| 0.330                       | CB167G0334+ -- | 10.5<br>(0.413)                      | 7.60<br>(0.299) | 6.10<br>(0.240) | 0.80<br>(0.032) | 24.0<br>(0.944) | 12.0<br>(0.472) | 6.19<br>(0.244) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 500            | 900  | BC            |
| 0.470                       | CB177G0474+ -- | 12.8<br>(0.503)                      | 10.2<br>(0.402) | 5.50<br>(0.205) | 0.80<br>(0.032) | 24.0<br>(0.944) | 16.0<br>(0.629) | 5.70<br>(0.224) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 700  | BC            |
| 0.560                       | CB177G0564+ -- | 12.8<br>(0.503)                      | 10.2<br>(0.402) | 6.00<br>(0.236) | 0.80<br>(0.032) | 24.0<br>(0.944) | 16.0<br>(0.629) | 5.70<br>(0.224) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 700  | BC            |
| 0.680                       | CB187G0684+ -- | 15.3<br>(0.601)                      | 13.7<br>(0.539) | 4.30<br>(0.169) | 0.80<br>(0.032) | 24.0<br>(0.944) | 24.0<br>(0.944) | 4.50<br>(0.177) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 600  | BC            |
| 1µF                         | CB187G0105+ -- | 15.3<br>(0.601)                      | 13.7<br>(0.539) | 6.40<br>(0.252) | 0.80<br>(0.032) | 24.0<br>(0.944) | 24.0<br>(0.944) | 6.30<br>(0.248) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 400  | BC            |
| VOLTAGE Vdc: 400V Vac: 200V |                |                                      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |               |
| 0.001µF                     | CB037I0102+ -- | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                             |                | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0012                      | CB037I0122+ -- | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                             |                | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0015                      | CB037I0152+ -- | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

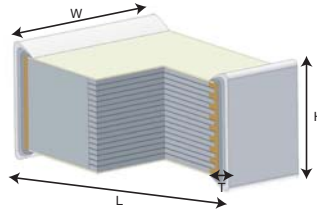
BA or BC = tape & reel

# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



millimeters (inches)

| Capacitance Range (CR) | Ordering Code  | VOLTAGE Vdc: 400V Vac: 200V             |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |               |
|------------------------|----------------|-----------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|---------------|
|                        |                | Chip Dimensions<br>*Tolerances (page 6) |                 |                 |                 | Tape Dimensions |                 |                 | Reel Dimensions |                 |                 | Packaging Unit |      | Reel Pkg Code |
|                        |                | L                                       | W               | H max           | T               | W               | P1              | K0              | A               | W1              | W2 max          | Bulk           | Reel |               |
| 0.0015                 | CB037I0152+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0018                 | CB037I0182+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0022                 | CB037I0222+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0027                 | CB037I0272+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0033                 | CB037I0332+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0047                 | CB037I0472+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0056                 | CB037I0562+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0068                 | CB037I0682+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0082                 | CB037I0822+ -- | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                         | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.010µF                | CB047I0103+ -- | 5.80<br>(0.228)                         | 5.00<br>(0.195) | 1.90<br>(0.075) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.10<br>(0.083) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4400 | BC            |
| 0.012                  | CB047I0123+ -- | 5.80<br>(0.228)                         | 5.00<br>(0.195) | 2.20<br>(0.087) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.43<br>(0.096) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3500 | BC            |
| 0.015                  | CB047I0153+ -- | 5.80<br>(0.228)                         | 5.00<br>(0.224) | 2.00<br>(0.079) | 0.80<br>(0.087) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.43<br>(0.096) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4400 | BC            |
| 0.018                  | CB047I0183+ -- | 5.80<br>(0.228)                         | 5.00<br>(0.195) | 2.30<br>(0.091) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.43<br>(0.096) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3500 | BC            |
| 0.022                  | CB047I0223+ -- | 5.80<br>(0.228)                         | 5.00<br>(0.195) | 2.80<br>(0.110) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3000 | BC            |
| 0.027                  | CB047I0273+ -- | 5.80<br>(0.228)                         | 5.00<br>(0.195) | 3.30<br>(0.130) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.45<br>(0.136) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 2800 | BC            |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

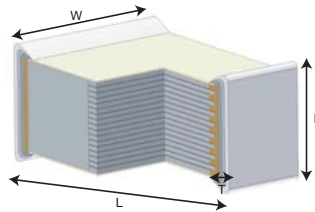
BA or BC = tape & reel

# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



millimeters (inches)

| Capacitance Range (CR) | Ordering Code  | VOLTAGE Vdc: 400V Vac: 200V          |                 |                 |                  |                 |                 |                 |                 |                 |                 |                |      |               |
|------------------------|----------------|--------------------------------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|---------------|
|                        |                | Chip Dimensions *Tolerances (page 6) |                 |                 |                  | Tape Dimensions |                 |                 | Reel Dimensions |                 |                 | Packaging Unit |      | Reel Pkg Code |
|                        |                | L                                    | W               | H max           | T                | W               | P1              | K0              | A               | W1              | W2 max          | Bulk           | Reel |               |
| 0.033                  | CB047I0333+ -- | 5.80<br>(0.228)                      | 5.00<br>(0.195) | 3.90<br>(0.154) | 0.80<br>(0.032)  | 12.0<br>(0.472) | 8.00<br>(0.315) | 4.10<br>(0.162) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 2300 | BC            |
| 0.047                  | CB057I0473+ -- | 7.20<br>(0.283)                      | 6.10<br>(0.24)  | 3.20<br>(0.126) | 0.80<br>(0.032)  | 24.0<br>(0.944) | 12.0<br>(0.472) | 3.80<br>(0.149) | 330<br>(12.99)  | 24.4<br>(0.96)  | 30.4<br>(1.196) | 1000           | 2250 | BC            |
| 0.056                  | CB057I0563+ -- | 7.20<br>(0.283)                      | 6.10<br>(0.24)  | 3.70<br>(0.146) | 0.80<br>(0.032)  | 24.0<br>(0.944) | 12.0<br>(0.472) | 3.80<br>(0.149) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 2250 | BC            |
| 0.068                  | CB057I0683+ -- | 7.20<br>(0.283)                      | 6.10<br>(0.24)  | 4.40<br>(0.173) | 0.80<br>(0.032)  | 24.0<br>(0.944) | 12.0<br>(0.472) | 4.80<br>(0.189) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 1800 | BC            |
| 0.082                  | CB167I0823+ -- | 10.5<br>(0.413)                      | 7.60<br>(0.299) | 4.50<br>(0.177) | 0.80<br>(0.032)  | 24.0<br>(0.944) | 12.0<br>(0.472) | 4.90<br>(0.193) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 500            | 1100 | BC            |
| 0.100µF                | CB167I0104+ -- | 10.5<br>(0.413)                      | 7.60<br>(0.299) | 4.00<br>(0.158) | 0.80<br>(0.032)  | 24.0<br>(0.944) | 12.0<br>(0.472) | 4.90<br>(0.193) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 500            | 1100 | BC            |
| 0.120                  | CB167I0124+ -- | 10.5<br>(0.413)                      | 7.60<br>(0.299) | 5.00<br>(0.196) | 0.80<br>(0.032)  | 24.0<br>(0.944) | 12.0<br>(0.472) | 6.19<br>(0.244) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 500            | 900  | BC            |
| 0.150                  | CB167I0154+ -- | 10.5<br>(0.413)                      | 7.60<br>(0.299) | 6.00<br>(0.235) | 0.80<br>(0.032)  | 24.0<br>(0.944) | 12.0<br>(0.472) | 6.19<br>(0.244) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 500            | 900  | BC            |
| 0.180                  | CB177I0184+ -- | 12.8<br>(0.503)                      | 10.2<br>(0.402) | 5.10<br>(0.200) | 0.80<br>(0.032)  | 24.0<br>(0.944) | 16.0<br>(0.629) | 5.70<br>(0.225) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 700  | BC            |
| 0.220                  | CB177I0224+ -- | 12.8<br>(0.503)                      | 10.2<br>(0.402) | 5.00<br>(0.196) | 0.80<br>(0.032)  | 24.0<br>(0.944) | 16.0<br>(0.629) | 5.70<br>(0.225) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 700  | BC            |
| 0.270                  | CB177I0274+ -- | 12.8<br>(0.503)                      | 10.2<br>(0.402) | 6.50<br>(0.255) | 0.80<br>(0.032)  | 24.0<br>(0.944) | 16.0<br>(0.629) | 7.00<br>(0.275) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 600  | BC            |
| 0.330                  | CB187I0334+ -- | 15.3<br>(0.601)                      | 13.7<br>(0.539) | 4.20<br>(0.165) | 0.80<br>(0.032)  | 24.0<br>(0.944) | 24.0<br>(0.944) | 4.50<br>(0.178) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 600  | BC            |
| 0.390                  | CB187I0394+ -- | 15.3<br>(0.601)                      | 13.7<br>(0.539) | 5.80<br>(0.228) | 0.80<br>(0.032)  | 24.0<br>(0.944) | 24.0<br>(0.944) | 6.30<br>(0.248) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 400  | BC            |
| 0.470                  | CB187I0474+ -- | 15.3<br>(0.601)                      | 13.7<br>(0.539) | 6.50<br>(0.255) | 0.80<br>(0.0315) | 24.0<br>(0.944) | 24.0<br>(0.944) | 7.60<br>(0.299) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 300  | BC            |
|                        |                | VOLTAGE Vdc: 630V Vac: 250V          |                 |                 |                  |                 |                 |                 |                 |                 |                 |                |      |               |
| 0.001µF                | CB037K0102+ -- | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024)  | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024)  | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0012                 | CB037K0122+ -- | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024)  | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024)  | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0015                 | CB037K0152+ -- | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024)  | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024)  | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0018                 | CB037K0182+ -- | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024)  | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024)  | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0022                 | CB037K0222+ -- | 4.70<br>(0.185)                      | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024)  | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

BA or BC = tape & reel

120418



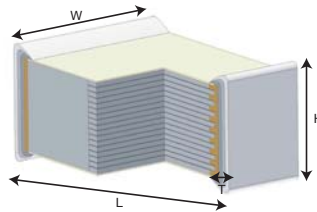
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# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



millimeters (inches)

| Capacitance Range (CR) | Ordering Code  | VOLTAGE Vdc: 630V Vac: 250V                |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |               |
|------------------------|----------------|--------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|---------------|
|                        |                | Chip Dimensions<br>*Tolerances<br>(page 6) |                 |                 |                 | Tape Dimensions |                 |                 | Reel Dimensions |                 |                 | Packaging Unit |      | Reel Pkg Code |
|                        |                | L                                          | W               | H max           | T               | W               | P1              | K0              | A               | W1              | W2 max          | Bulk           | Reel |               |
| 0.0022                 | CB037K0222+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0027                 | CB037K0272+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0033                 | CB037K0332+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1200 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.00<br>(0.079) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0047                 | CB037K0472+ -- | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.50<br>(0.099) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 1201 | BA            |
|                        |                | 4.70<br>(0.185)                            | 3.20<br>(0.126) | 2.50<br>(0.099) | 0.60<br>(0.024) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.06<br>(0.081) | 180<br>(7.09)   | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4500 | BC            |
| 0.0056                 | CB047K0562+ -- | 5.80<br>(0.228)                            | 5.00<br>(0.195) | 2.00<br>(0.079) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.10<br>(0.083) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4400 | BC            |
| 0.0068                 | CB047K0682+ -- | 5.80<br>(0.228)                            | 5.00<br>(0.195) | 2.00<br>(0.079) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.0<br>(0.315)  | 2.10<br>(0.083) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4400 | BC            |
| 0.0082                 | CB047K0822+ -- | 5.80<br>(0.228)                            | 5.00<br>(0.195) | 2.20<br>(0.086) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.0<br>(0.315)  | 2.43<br>(0.096) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3500 | BC            |
| 0.010µF                | CB047K0103+ -- | 5.80<br>(0.228)                            | 5.00<br>(0.195) | 2.00<br>(0.079) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 2.10<br>(0.083) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 4400 | BC            |
| 0.012                  | CB047K0123+ -- | 5.80<br>(0.228)                            | 5.00<br>(0.195) | 3.00<br>(0.118) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.10<br>(0.122) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 3000 | BC            |
| 0.015                  | CB047K0153+ -- | 5.80<br>(0.228)                            | 5.00<br>(0.195) | 3.40<br>(0.136) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 3.45<br>(0.136) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 2800 | BC            |
| 0.018                  | CB047K0183+ -- | 5.80<br>(0.228)                            | 5.00<br>(0.195) | 4.00<br>(0.157) | 0.80<br>(0.032) | 12.0<br>(0.472) | 8.00<br>(0.315) | 4.10<br>(0.162) | 330<br>(12.99)  | 12.4<br>(0.488) | 18.4<br>(0.724) | 1500           | 2300 | BC            |
| 0.022                  | CB057K0223+ -- | 7.20<br>(0.283)                            | 6.10<br>(0.240) | 3.40<br>(0.136) | 0.80<br>(0.032) | 24.0<br>(0.944) | 12.0<br>(0.472) | 3.80<br>(0.149) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 2250 | BC            |
| 0.027                  | CB057K0273+ -- | 7.20<br>(0.283)                            | 6.10<br>(0.240) | 4.00<br>(0.157) | 0.80<br>(0.032) | 24.0<br>(0.944) | 12.0<br>(0.472) | 4.80<br>(0.189) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 1800 | BC            |
| 0.033                  | CB057K0333+ -- | 7.20<br>(0.283)                            | 6.10<br>(0.240) | 4.80<br>(0.189) | 0.8<br>(0.032)  | 16.0<br>(0.629) | 12.0<br>(0.472) | 5.23<br>(0.206) | 330<br>(12.99)  | 16.4<br>(0.645) | 22.4<br>(0.881) | 1000           | 1100 | BC            |
| 0.047                  | CB167K0473+ -- | 10.5<br>(0.413)                            | 7.60<br>(0.299) | 3.80<br>(0.150) | 0.80<br>(0.032) | 24.0<br>(0.944) | 12.0<br>(0.472) | 3.93<br>(0.155) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 500            | 1400 | BC            |
| 0.056                  | CB167K0563+ -- | 10.5<br>(0.413)                            | 7.60<br>(0.299) | 4.60<br>(0.181) | 0.80<br>(0.032) | 24.0<br>(0.944) | 12.0<br>(0.472) | 6.19<br>(0.244) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 500            | 900  | BC            |
| 0.068                  | CB167K0683+ -- | 10.5<br>(0.413)                            | 7.60<br>(0.299) | 5.50<br>(0.216) | 0.80<br>(0.032) | 24.0<br>(0.944) | 12.0<br>(0.472) | 6.19<br>(0.244) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 500            | 900  | BC            |
| 0.082                  | CB177K0823+ -- | 12.8<br>(0.503)                            | 10.2<br>(0.402) | 4.50<br>(0.177) | 0.80<br>(0.032) | 24.0<br>(0.944) | 16.0<br>(0.629) | 4.70<br>(0.185) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 900  | BC            |
| 0.100µF                | CB177K0104+ -- | 12.8<br>(0.503)                            | 10.2<br>(0.402) | 4.60<br>(0.181) | 0.80<br>(0.032) | 24.0<br>(0.944) | 16.0<br>(0.629) | 4.70<br>(0.185) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 900  | BC            |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

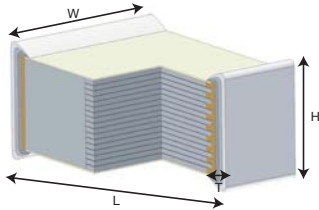
BA or BC = tape & reel

# Film Chip Capacitors

## PEN DIELECTRIC – CB Series



### CAPACITANCE VALUES (CR) AND NOMINAL VOLTAGES (VR)



millimeters (inches)

| Capacitance Range (CR) | Ordering Code  | VOLTAGE Vdc: 630V Vac: 250V                |                 |                 |                 |                 |                 |                 |                 |                 |                 |                |      |               |
|------------------------|----------------|--------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|---------------|
|                        |                | Chip Dimensions<br>*Tolerances<br>(page 6) |                 |                 |                 | Tape Dimensions |                 |                 | Reel Dimensions |                 |                 | Packaging Unit |      | Reel Pkg Code |
|                        |                | L                                          | W               | H max           | T               | W               | P1              | K0              | A               | W1              | W2 max          | Bulk           | Reel |               |
| 0.120                  | CB177K0124+ -- | 12.8<br>(0.503)                            | 10.2<br>(0.402) | 6.00<br>(0.236) | 0.80<br>(0.032) | 24.0<br>(0.944) | 16.0<br>(0.629) | 7.00<br>(0.275) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 600  | BC            |
| 0.15*                  | CB177K0154K -- | 12.8<br>(0.503)                            | 10.2<br>(0.402) | 6.90<br>(0.271) | 0.80<br>(0.032) | 24.0<br>(0.944) | 16.0<br>(0.629) | 7.00<br>(0.275) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 600  | BC            |
| 0.180                  | CB187K0184+ -- | 15.3<br>(0.601)                            | 13.7<br>(0.539) | 5.60<br>(0.220) | 0.80<br>(0.032) | 24.0<br>(0.944) | 24.0<br>(0.944) | 6.30<br>(0.248) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 400  | BC            |
| 0.220                  | CB187K0224+ -- | 15.3<br>(0.601)                            | 13.7<br>(0.539) | 6.00<br>(0.236) | 0.80<br>(0.032) | 24.0<br>(0.944) | 24.0<br>(0.944) | 6.30<br>(0.248) | 330<br>(12.99)  | 24.4<br>(0.961) | 30.4<br>(1.196) | 300            | 400  | BC            |

For other Values: upon request

Replace the + by the tolerance code: J = 5% or K = 10%

Replace the -- by the packaging suffix: -- = bulk

BA or BC = tape & reel

\*Only available in tolerance  $\pm 10\%$

# Film Chip Capacitors



## PEN DIELECTRIC – CB Series

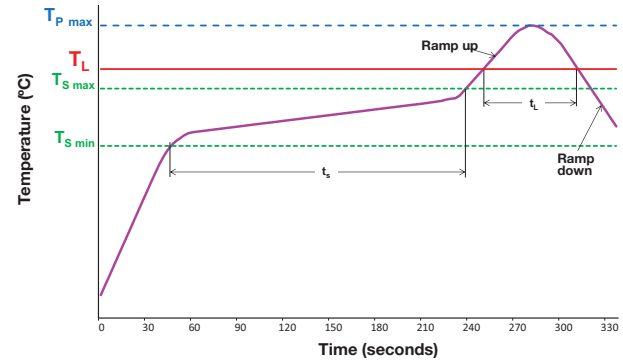
### MOUNTING AND SOLDERING RECOMMENDATIONS SOLDERING PROFILE

The capacitors can be mounted using infrared and vapor phase soldering following recommended below. They are NOT suitable for wave soldering.

All temperature refer to topside of the package, measured on the package body surface.

| Profile Feature                                                    | 1206 to 1812     | 2220 to 6054     |
|--------------------------------------------------------------------|------------------|------------------|
| Ramp-Up ( $T_{s\ max}$ to $T_p$ )                                  | 3°C / second max | 3°C / second max |
| Preheat                                                            |                  |                  |
| - Temperature Min ( $T_{s\ min}$ )                                 | 150°C            | 150°C            |
| - Temperature Max ( $T_{s\ max}$ )                                 | 200°C            | 200°C            |
| - Time ( $t_{s\ min}$ to $t_{s\ max}$ )                            | 180 sec. max     | 180 sec. max     |
| Time maintained above                                              |                  |                  |
| - Temperature ( $T_L$ )                                            | 217°C            | 217°C            |
| - Time ( $t_L$ )                                                   | 60 sec. max      | 75 sec. max      |
| Peak temperature ( $T_{p\ max}$ )                                  | 250°C            | 255°C            |
| Customer Peak temperature ( $T_p$ )                                | < 250°C          | < 255°C          |
| Time within 5°C of peak temperature ( $T_p \pm 5^\circ\text{C}$ )* | 10 sec.          | 10 sec.          |
| Ramp-Down                                                          | 6°C / sec.       | 6°C / sec.       |

\* Example :  $T_p = 238.5^\circ\text{C} \Rightarrow t_p = \text{time between } 238.5^\circ\text{C and } 233.5^\circ\text{C } (T_p - 5^\circ\text{C})$

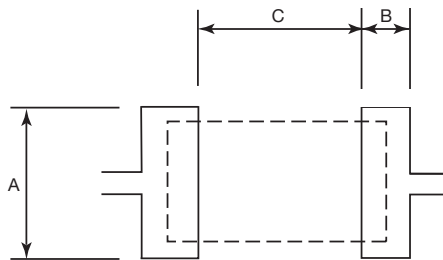


# Reflow soldering referring to JEDEC Standard with some limitations  
# JEDEC J-Std 020C

### RECOMMENDED SOLDER PASTE THICKNESS

For optimum solderability, the recommended soldering paste thickness: 1206 to 2824: 150 to 200µm  
4030 to 6054: 200 to 300µm

In case of hand soldering, the temperature of the soldering iron should not be above 250°C. Special care must be taken to avoid touching the capacitor body with the iron tip.



### PAD DIMENSIONS: millimeters (inches)

| Size Code | Case Size | A            | B            | C            |
|-----------|-----------|--------------|--------------|--------------|
| 01        | 1206      | 1.30 (0.051) | 1.30 (0.051) | 2.20 (0.087) |
| 02        | 1210      | 2.00 (0.079) | 1.30 (0.051) | 2.20 (0.087) |
| 03        | 1812      | 3.00 (0.118) | 1.50 (0.059) | 3.50 (0.137) |
| 04        | 2220      | 5.00 (0.195) | 1.90 (0.075) | 4.50 (0.178) |
| 05        | 2824      | 6.00 (0.234) | 2.50 (0.098) | 5.70 (0.224) |
| 16        | 4030      | 7.50 (0.295) | 3.00 (0.118) | 8.00 (0.315) |
| 17        | 5040      | 11.2 (0.441) | 3.50 (0.137) | 10.3 (0.406) |
| 18        | 6054      | 14.6 (0.575) | 3.60 (0.147) | 12.6 (0.496) |

### RECOMMENDED CLEANING

To clean flux from the PC board assembly, the recommended products are: ethanol, isopropyl alcohol, and deionized water wash. The cleaning products to avoid are: Toluene, Xylene, Trichloroethylene, Terpene Cleaner EC-7, surface active agent. In case of using another solvent, please contact us.

### OTHER CAUTIONS

**Flame retardancy:** the dielectric film is not a flame retardant material.

**Environment:** contact us when chips are used in humid or gas atmosphere and /or when using resin.

**Recommended handling:** do not use edged tools, so not to damage the capacitors.

### TIN WHISKERS TESTS : JEDEC STANDARD NO 22A121

| Stress Type                            | Ref. Spec.  | Test Conditions                                               | Analysis   | Results |
|----------------------------------------|-------------|---------------------------------------------------------------|------------|---------|
| Temperature cycling                    | JESD22-A104 | -55°C +85(+10/-0)°C air<br>5 to 10 minutes soak 3 cycles/hour | SEM x 1000 | Pass    |
| Ambient Temperature / Humidity Storage |             | 30+/-2°C - 60+/-3% RH -2000H                                  | SEM x 1000 | Pass    |
| High Temperature / Humidity Storage    |             | 70+/-5°C - 93+3/-2% RH -1000H                                 | SEM x 1000 | Pass    |

# Film Chip Capacitors

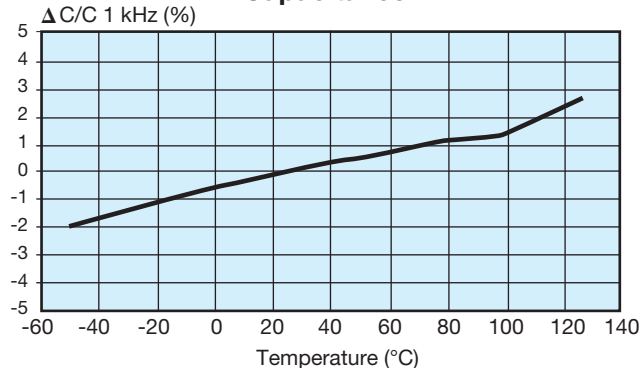
## PEN DIELECTRIC – CB Series



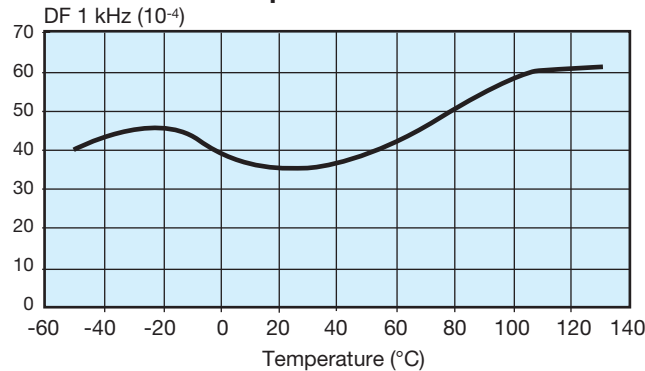
### ELECTRICAL CHARACTERISTICS VERSUS TEMPERATURE AND FREQUENCY

#### ELECTRICAL CHARACTERISTICS

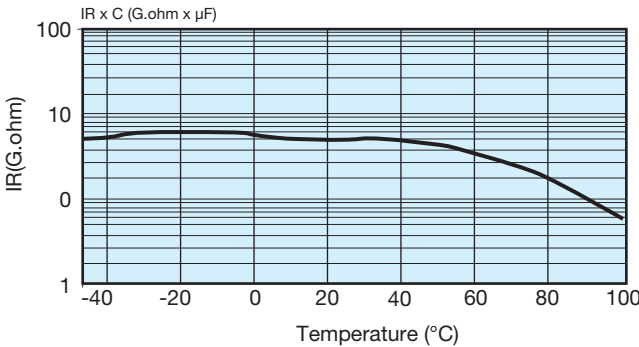
##### Capacitance



##### Dissipation Factor

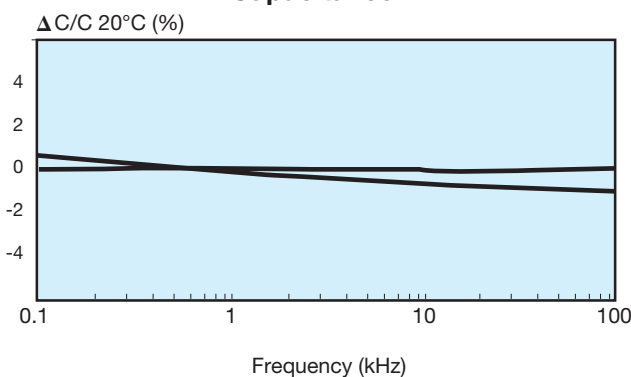


##### Insulation Resistance

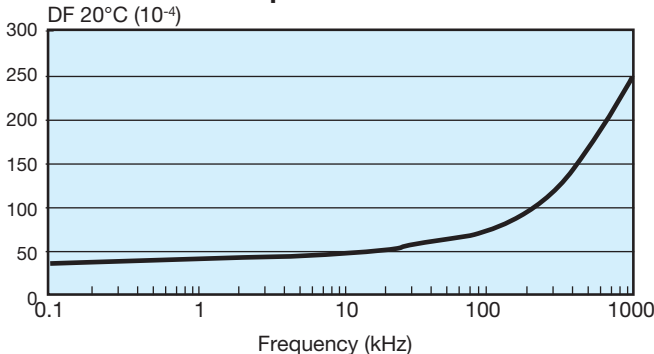


#### FREQUENCY CHARACTERISTICS

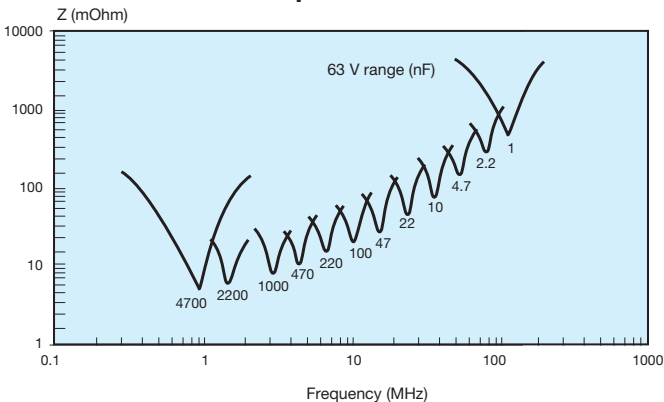
##### Capacitance



##### Dissipation Factor



##### Impedance



# Film Chip Capacitors

## PEN DIELECTRIC – CB Series

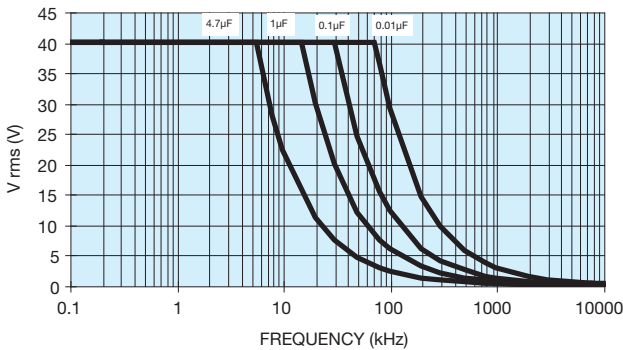


### RMS VOLTAGE AND CURRENT VERSUS FREQUENCY

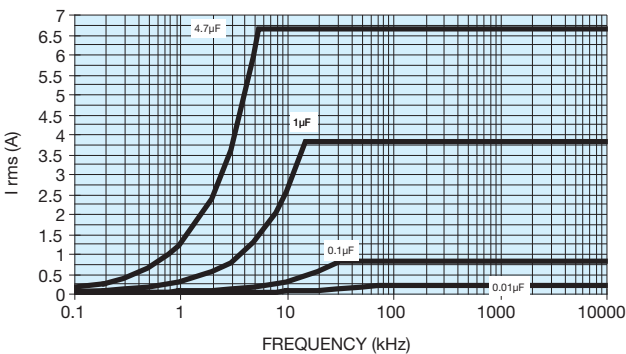
#### MAXIMUM VOLTAGE (VRMS) AND CURRENT (IRMS) VS FREQUENCY

Typical curves results from measurement carried out at ambient temperature (25°C) and sinusoidal wave-forms  
(for size CB01 to CB05)

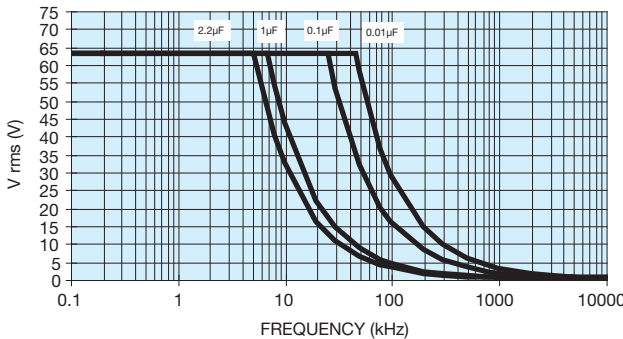
63 Vdc / 40 Vac



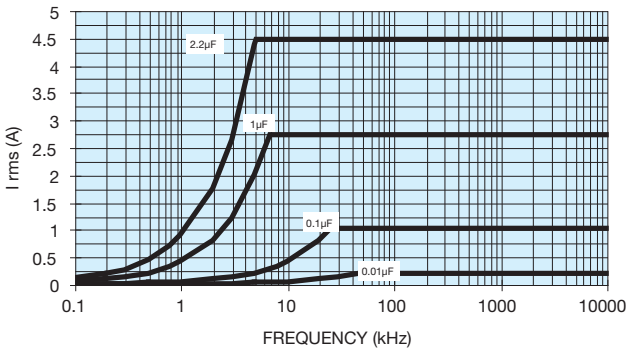
63 Vdc / 40 Vac



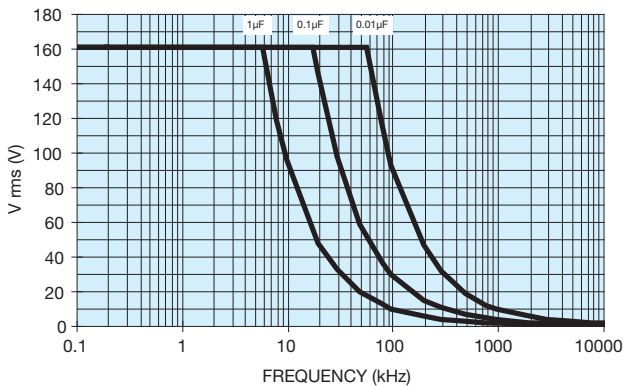
100 Vdc / 63 Vac



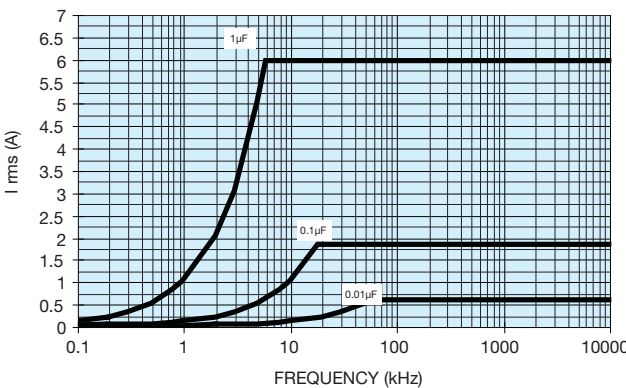
100 Vdc / 63 Vac



250 Vdc / 160 Vac



250 Vdc / 160 Vac



# Film Chip Capacitors

## PEN DIELECTRIC – CB Series

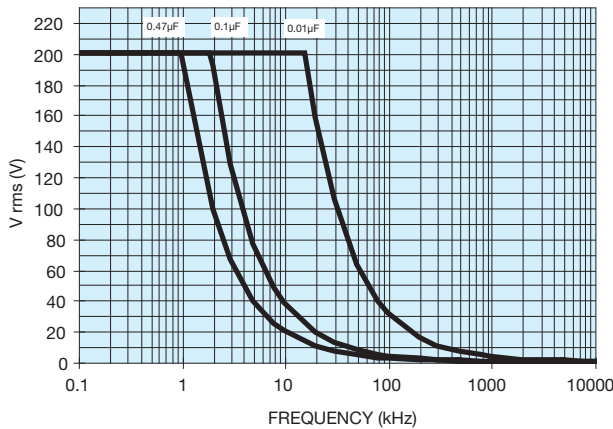


### RMS VOLTAGE AND CURRENT VERSUS FREQUENCY

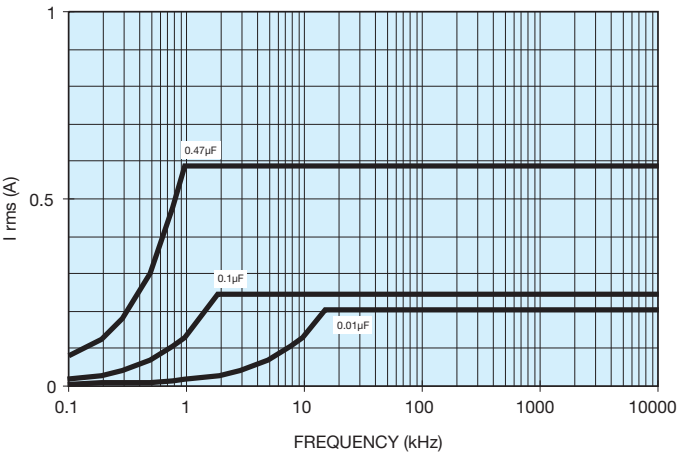
#### MAXIMUM VOLTAGE (V<sub>RMS</sub>) AND CURRENT (I<sub>RMS</sub>) VS FREQUENCY

Typical curves results from measurement carried out at ambient temperature (25°C) and sinusoidal wave-forms  
(for size CB03 to CB05)

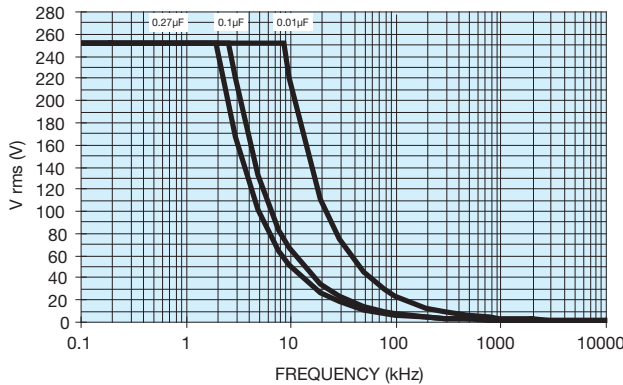
400 Vdc / 200 Vac



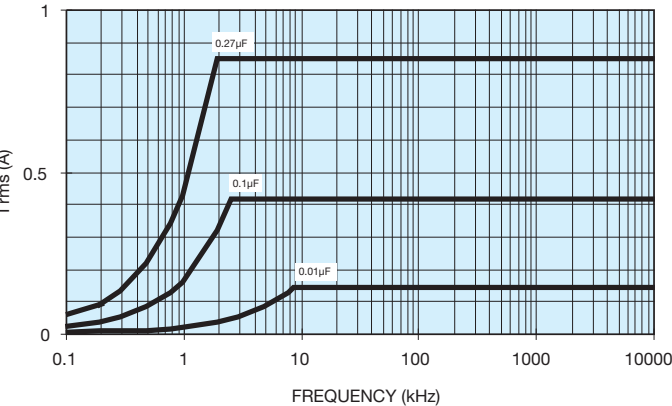
400 Vdc / 200 Vac



630 Vdc / 250 Vac



630 Vdc / 250 Vac



#### MAXIMUM PULSE RISE TIME (DV/DT)

| Voltage Range          | 25 | 50 | 63 | 100 | 250 | 400 | 630 |
|------------------------|----|----|----|-----|-----|-----|-----|
| Dv/dt max.<br>(V/µsec) | 15 | 40 | 40 | 50  | 150 | 200 | 250 |

# Film Chip Capacitors

## PEN DIELECTRIC – CB Series – RoHS



### MATERIALS CONTROLLED BY ROHS (PPM BY WEIGHT):

| Mass / unit (g)         | Lead | Mercury | Cadmium | Hexavalent Chromium | PBB  | PBDE |
|-------------------------|------|---------|---------|---------------------|------|------|
| <b>CB range</b>         | 0    | 0       | 0       | 0                   | 0    | 0    |
| <b>RoHS Limit (ppm)</b> | 1000 | 1000    | 100     | 1000                | 1000 | 1000 |
| <b>Pass/Fail</b>        | Pass | Pass    | Pass    | Pass                | Pass | Pass |

This product has been tested and found to be compliant with all requirements, provisions, and exemptions of EU Directive 2002/95/EC of the European Parliament and Council of January 27, 2003. On the Restriction of use of certain Hazardous Substances (RoHS) in electrical and electronic equipment and EU Directive 2000/53/EC regarding ELV or End of Life Vehicle.

### ROHS / ELV STATUS

External Plating  
100% Matte Sn as standard

### LEAD-FREE STATUS / MOISTURE SENSITIVITY RANKING

Pb Free Reflow Solder compliant, MSL = 3.  
Reflow soldering referring to Jedec Standard with some limitations. Additional JESD-97 data to be phased in MSL e3 termination.

### PRODUCT LABELING:

(For informational purposes only to be phased in on reel and container.)

### PRODUCT TRACEABILITY:

Full internal material traceability by reference to unique lot number marked on reel and external package.

Pb Free:



RoHS Compliant:

