



THE DATASHEET OF
0805B103K500NT



High Capacitance Chip - X7R, X5R

A range of High Capacitance value BME MLC chip capacitors, in stable Class II dielectrics X7R and X5R, with a spread of capacitance values offered up to 100µF.

Comparable circuit designs can be achieved at typically a third to a fifth of the capacitance values because of the low ESR characteristics these parts exhibit. As a consequence they are also ideal to replace Tantalum and Low ESR Electrolytic Capacitors without polarity concerns. They find application as power supply bypass capacitors, smoothing capacitors, input/output filters in DC-DC Converters and in digital circuits and LCD modules.

Parts are RoHS Compliant and suitable for reflow soldering process.

- Nickel Barrier terminations with tin, tin/lead or gold flash
- Capacitance tolerances available: ±10%, ±20%
- Available with high reliability screening. Contact the Knowles Capacitors Sales Office for details



Capacitance values - High Capacitance Chip

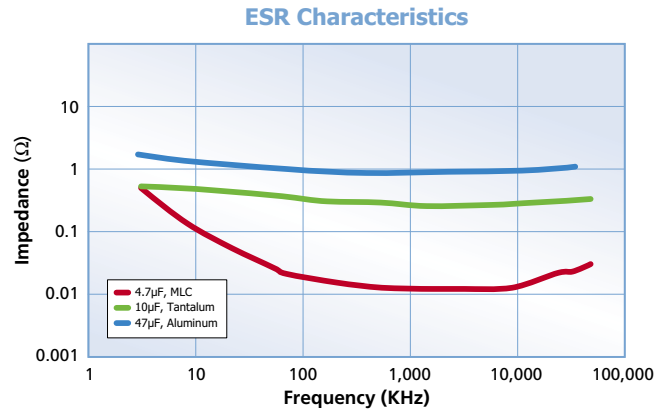
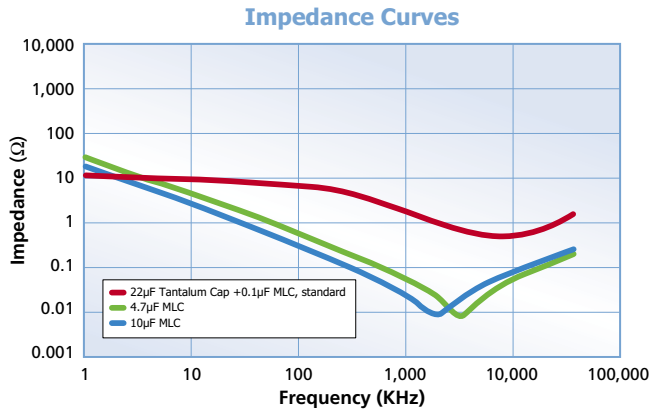
| Size | 0402 | | 0603 | | 0805 | | 1206 | | 1210 | | | | 1812 | |
|----------------------------------------|------------------------------------------------|-------------------------------------------|----------------|----------------------------------|-----------------------------------|----------------------------------|----------------------------------|---------------|------------------|------------------|----------------|-----------------|----------------|-----|
| Tmax <small>inches: mm:</small> | 0.024 0.61 | | 0.035 0.89 | | 0.054 1.37 | | 0.072* 1.83 | | 0.085* 2.16 | | 0.110* 2.79 | | 0.110* 2.79 | |
| Dielectric | X7R | X5R | X7R | X5R | X7R | X5R | X7R | X5R | X7R | X5R | X7R | X5R | X7R | X5R |
| 4V | | | | 22µF† | | | | 100µF† | | | | | | - |
| 6.3V | 470nF | 1µF 2.2µF† 4.7µF† | | 4.7µF 10µF† | | 22µF† | | 47µF† | | 47µF† | 47µF† | 100µF† | | - |
| 10V | | 1µF | 2.2µF | 4.7µF 10µF† | 10µF† | 10µF | 22µF† | 22µF† | | 22µF† | | 47µF† | | - |
| 16V | 15nF 22nF 33nF 47nF 100nF 220nF | 220nF 470nF 100nF 220nF 470nF | 100nF 1µF | 2.2µF 4.7µF | 470nF 1.0µF 2.2µF 4.7µF† | 4.7µF 10µF | 10µF | 10µF 22µF† | 4.7µF† 10µF† | | | 22µF† | | - |
| 25V | 6.8nF 10nF 47nF 100nF | 10nF 220nF | 470nF 1.0µF | 220nF 470nF 1.0µF 2.2µF | 1.0µF 2.2µF 4.7µF | 2.2µF 4.7µF | 2.2µF 4.7µF 10µF | 4.7µF 10µF | 3.3µF† 4.7µF† | 4.7µF† 10µF† | 22µF† | | | - |
| 35V | | | | | | | | | | 2.2µF† 4.7µF† | | 10µF | | - |
| 50V | 10nF | 100nF | 220nF 470nF | 100nF 470nF 1.0µF | 220nF 470nF 1.0µF | 220nF 470nF 1.0µF 2.2µF | 470nF 1.0µF 2.2µF 4.7µF | 4.7µF | 1.0µF | | 4.7µF† | 4.7µF† 10µF† | | - |
| 100V | | | 100nF | | 220nF | | 1.0µF | | 1.0µF 2.2µF | | | | 1.0µF 2.2µF | - |

* Denotes non standard chip thickness. Order code needs to have an 'X' inserted together with the dimension in inches -e.g. X072 where dimension is 0.072".

† Denotes only available in ±20% capacitance tolerance

High Capacitance Chip - X7R, X5R

Comparison with other dielectric capacitors



Dielectric characteristics

| | X7R (BB) Stable | X5R (BW) Stable |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Operating temperature range: | -55°C to 125°C | -55°C to 85°C |
| Temperature coefficient: | ±15% ΔC Max. | ±15% ΔC Max. |
| Dissipation factor: | 3.5% max except: 0402 ≥ 0.1µF = 5%, 0603 ≥ 0.22µF = 10%, 0805 ≥ 1.0µF = 5%, 0805 ≥ 2.2µF = 10%, 1206 ≥ 2.2µF = 10%, 1210 ≥ 4.7µF = 5%, 1210 ≥ 22µF = 10% | 5% max except: 0402 ≥ 1.0µF = 10%, 0603 ≥ 1.0µF = 10%, 0805 ≥ 4.7µF = 10%, 1206 ≥ 4.7µF = 10%, 1210 ≥ 10µF = 10% |
| Insulation resistance @25°C: | >10GΩ or >100ΩF whichever is less | >10GΩ or >100ΩF whichever is less |
| Dielectric withstanding voltage: | 250% | 250% |
| Ageing Rate: | X7R 3.5% typical | X5R 5% typical |
| Test parameters @ 25°C: | 1KHz, 1.0 ±0.2 VRMS | 1KHz, 1.0 ±0.2 VRMS 120Hz, 0.5 ±0.1 VRMS for 22µF, 47µF & 100µF |

Ordering information - High Capacitance Chip Capacitors

| 1206 | W | 476 | K | 6R3 | N | X080 | T |
|----------------------------------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------|
| Chip sizes | Dielectric | Capacitance | Tolerance | Voltage-VDCW | Termination | Thickness option | Packing |
| 0402 0603 0805 1206 1210 1812 | BB* = X7R BW* = X5R *Formerly B & W codes | Value in Picofarads. Two significant figures, followed by number of zeros: 476 = 47µF (47,000,000pF) | K = ± 10% M = ± 20% | Two significant figures, followed by number of zeros. R denotes decimal point: 6R3 = 6.3V 501 = 500V | N = Nickel Barrier (100% tin) Y = Nickel Barrier (90% tin/10% lead) NG = Nickel Barrier Gold Flash | Blank = Standard thickness X = special thickness, specified in inches: X085 = 0.085" | No suffix = Bulk T = Tape & Reel |

Note: BME parts available with added high reliability test. Consult the factory.

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

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