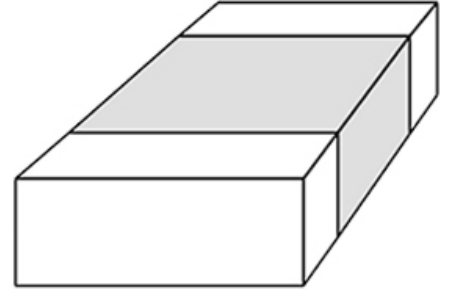


FEATURES

- Surface Mount
- Suitable for Reflow Soldering
- Excellent Frequency Characteristics
- RoHS Compliant
- Available with Flexible Termination

APPLICATIONS

- Telecommunications
- Industrial
- Lighting/LED
- Automation
- Meters/Controls
- Audio



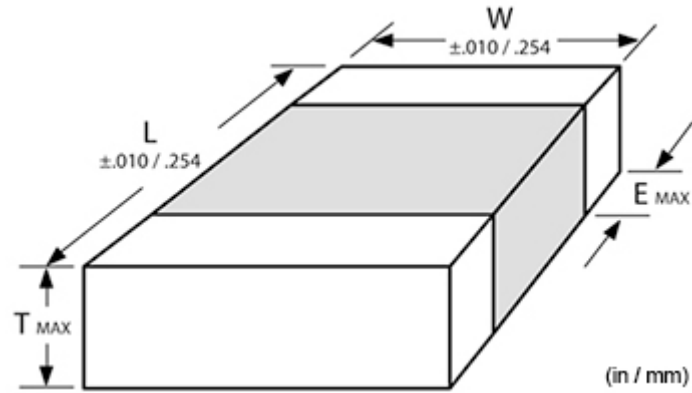
PART NUMBER EXAMPLE

| CMC | - | 050 | / | 104 | K | X | 0805 | T | F | F |
|--|---|------------------|---|-----------------------|----------------|---------------------|-----------|--------------|--------|----------------|
| Type | | Rated DC voltage | | Capacitance code (pF) | Tolerance code | Dielectric material | Case size | Package code | Option | RoHS compliant |
| Capacitance Code: First two digits represent significant figures, third digit represents multiplier (number of zeros). | | | | | | | | | | |
| Rated Voltage: 4R0 = 4V; 6R3 = 6.3V; 010 = 10V; 016 = 16V; 025 = 25V; 035 = 35V; 050 = 50V; 100 = 100V; 200 = 200V | | | | | | | | | | |
| Dielectric Material: N = NP0, X5 = X5R, X = X7R, Y = Y5V | | | | | | | | | | |
| Package Code: T = 7" Tape & Reel, T13 = 13" Tape & Reel, W = Waffle. | | | | | | | | | | |
| Option: Blank=Standard, F=Flex term. | | | | | | | | | | |

GENERAL SPECIFICATIONS

| Item | Performance |
|--------------------------------------|---|
| Operating temperature | NP0: -55°C to +125°C X5R: -55°C to +85°C X7R: -55°C to +125°C Y5V: -30°C to +85°C |
| Capacitance range | 0.5pF to 330μF |
| Capacitance tolerance | NP0: C<10pf - ±0.5pF (D), ±0.25pF (C), ±0.1pF (B), C≥10pf - ±1% (F), ±2% (G), ±5% (J), ±10% (K) X5R: ±10% (K), ±20% (M) X7R: ±5% (J), ±10% (K), ±20% (M) Y5V: +80/-20% (Z) |
| Rated voltage range | 4 VDC to 200 VDC |
| Temperature coefficient | NP0: 0ppm/°C ± 30ppm/°C from -55°C ~ +125°C X5R: ±15% Δ°C maximum from -55°C ~ +85°C X7R: ±15% Δ°C maximum from -55°C ~ +125°C Y5V: +22% ~ 82% Δ°C maximum from -30°C ~ +85°C |
| Withstanding voltage (between leads) | 2.5 times rated voltage, 50mA maximum for 1 second |
| Minimum insulation resistance | 10G Ω or 500meg Ω x Farads, whichever is less, measured @ rated voltage. |
| Dissipation factor | NP0: 0.1% maximum X5R: 10% maximum X7R: 2.5% @ 1.0Vrms, except 16 & 25 VDC 3.5% @ 16 & 25 VDC Y5V: 5% |
| Testing Conditions | NP0: 1MHz ± 50Hz @ 1.0 Vrms ± 0.20 Vrms (Values ≤ 100pF) 1KHz ± 50Hz @ 1.0 Vrms ±0.20 Vrms (Values > 100pF) X5R: 1KHz ± 50Hz @ 1.0 Vrms ± 0.20 Vrms (Values ≤ 10μF) 120Hz ± 50Hz @ 0.5 Vrms ±0.20 Vrms (Values > 10μF) X7R: 1KHz ± 50Hz @ 1.0 Vrms ± 0.20 Vrms (Values ≤ 10μF) 120Hz ± 50Hz @ 0.5 Vrms ±0.20 Vrms (Values > 10μF) Y5V: 1KHz ± 50Hz @ 1.0 Vrms ± 0.20 Vrms (Values ≤ 10μF) 120Hz ± 50Hz @ 0.5 Vrms ±0.20 Vrms (Values > 10μF) |

DIMENSIONS



SIZE mm (in)

| Size | Length | Width | Thickness | Endband |
|------|--------------|--------------|--------------|--------------|
| 0201 | 0.61 (0.024) | 0.31 (0.012) | 0.36 (0.014) | 0.15 (0.006) |
| 0402 | 1.02 (0.040) | 0.51 (0.020) | 0.56 (0.022) | 0.25 (0.010) |
| 0603 | 1.60 (0.063) | 0.81 (0.032) | 0.94 (0.037) | 0.41 (0.016) |
| 0805 | 2.01 (0.079) | 1.25 (0.049) | 1.45 (0.057) | 0.71 (0.028) |
| 1206 | 3.20 (0.126) | 1.60 (0.063) | 1.80 (0.071) | 1.50 (0.059) |
| 1210 | 3.20 (0.126) | 2.49 (0.098) | 2.79 (0.110) | 1.50 (0.059) |
| 1812 | 4.60 (0.181) | 3.20 (0.126) | 3.20 (0.126) | 0.31 (0.012) |
| 1825 | 4.60 (0.181) | 6.35 (0.250) | 3.20 (0.126) | 0.31 (0.012) |
| 2220 | 5.59 (0.220) | 5.00 (0.197) | 3.20 (0.126) | 0.31 (0.012) |
| 2225 | 5.59 (0.220) | 6.35 (0.250) | 3.20 (0.126) | 0.31 (0.012) |

MINIMUM/MAXIMUM CAPACITANCE VS. SIZE

| TC | VDC | Size | | | | | | | | | |
|-----|-----|-------------------|--------------------|-------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | | 0201 | 0402 | 0603 | 0805 | 1206 | 1210 | 1812 | 1825 | 2220 | 2225 |
| NP0 | 16 | | 1,000pF to 2,200pF | 100pF to 0.015µF | 120pF to 0.047µF | | | | | | |
| NP0 | 25 | 0.5pF to 220pF | 0.5pF to 2,200pF | 120pF to 0.01µF | 120pF to 0.047µF | 120pF to 0.1µF | 2,200pF to 0.22µF | 0.12µF to 0.22µF | | | |
| NP0 | 50 | 10pF to 220pF | 0.5pF to 1,500pF | 0.5pF to 0.01µF | 0.5pF to 0.033µF | 0.5pF to 0.1µF | 12pF to 0.15µF | 1,000pF to 0.22µF | 0.01µF to 0.047µF | 0.01µF to 0.47µF | 0.01µF to 0.15µF |
| NP0 | 100 | | 0.5pF to 1,000pF | 0.5pF to 0.01µF | 0.5pF to 0.033µF | 0.5pF to 0.1µF | 27pF to 0.1µF | 1,000pF to 0.15µF | 0.01µF to 0.033µF | 0.01µF to 0.33µF | 0.01µF to 0.068µF |
| NP0 | 200 | | | 2pF to 680pF | 1pF to 3,900pF | 2pF to 0.01µF | 100pF to 5,600pF | 150pF to 0.1µF | 0.01µF to 0.1µF | 0.01µF to 0.047µF | 0.01µF to 0.056µF |
| X5R | 4 | 0.01µF to 1µF | 0.47µF to 10µF | 2.2µF to 22µF | 47µF to 100µF | 47µF to 220µF | 22µF to 330µF | | | | |
| X5R | 6.3 | 4,700pF to 1µF | 0.015µF to 10µF | 0.82µF to 22µF | 1µF to 47µF | 2.2µF to 100µF | 10µF to 220µF | 33µF to 100µF | | 100µF to 100µF | |
| X5R | 10 | 1,000pF to 1µF | 0.01µF to 10µF | 0.22µF to 22µF | 0.22µF to 47µF | 1µF to 100µF | 3.3µF to 100µF | 22µF to 100µF | | 68µF to 100µF | |
| X5R | 16 | 100pF to 0.22µF | 0.01µF to 2.2µF | 0.068µF to 10µF | 0.33µF to 22µF | 1µF to 47µF | 2.2µF to 100µF | 22µF to 33µF | | 33µF to 47µF | |
| X5R | 25 | 100pF to 0.22µF | 0.01µF to 2.2µF | 0.033µF to 10µF | 0.22µF to 22µF | 1µF to 33µF | 1µF to 47µF | 10µF to 22µF | | 22µF to 22µF | |
| X5R | 35 | | 0.068µF to 2.2µF | 0.015µF to 4.7µF | 0.47µF to 22µF | 1µF to 22µF | 1µF to 10µF | | | | |
| X5R | 50 | 100pF to 0.01µF | 0.01µF to 0.47µF | 0.047µF to 2.2µF | 0.22µF to 4.7µF | 1µF to 10µF | 1µF to 10µF | | | 10µF to 10µF | |
| X7R | 6.3 | 1,000pF to 0.01µF | 0.01µF to 1µF | 0.033µF to 10µF | 1µF to 10µF | 2.2µF to 22µF | 4.7µF to 47µF | | | | |
| X7R | 10 | 100pF to 0.01µF | 0.01µF to 0.47µF | 0.1µF to 2.2µF | 0.22µF to 10µF | 1µF to 22µF | 2.2µF to 47µF | 22µF to 22µF | | | |
| X7R | 16 | 100pF to 0.01µF | 1,000pF to 0.22µF | 0.01µF to 2.2µF | 0.1µF to 10µF | 0.47µF to 22µF | 0.47µF to 22µF | 10µF to 33µF | | 22µF to 47µF | |
| X7R | 25 | 100pF to 0.01µF | 100pF to 0.22µF | 100pF to 1µF | 1,000pF to 4.7µF | 0.1µF to 10µF | 0.1µF to 22µF | 3.3µF to 22µF | | 10µF to 33µF | |
| X7R | 35 | | | | | 1µF to 10µF | 10µF to 10µF | | | | |
| X7R | 50 | 100pF to 1,500pF | 100pF to 0.1µF | 100pF to 1µF | 100pF to 2.2µF | 1,000pF to 4.7µF | 1,000pF to 10µF | 0.1µF to 6.8µF | 0.33µF to 2.2µF | 0.33µF to 15µF | 0.33µF to 4.7µF |
| X7R | 100 | | 220pF to 4,700pF | 100pF to 0.1µF | 100pF to 0.47µF | 1,000pF to 2.2µF | 1,000pF to 2.2µF | 0.01µF to 2.2µF | 0.1µF to 10µF | 0.1µF to 10µF | 0.1µF to 10µF |
| X7R | 200 | | | 100pF to 0.01µF | 100pF to 0.056µF | 1,000pF to 0.22µF | 1,000pF to 0.68µF | 0.01µF to 1µF | 0.01µF to 3.3µF | 0.01µF to 3.3µF | 0.01µF to 4.7µF |
| Y5V | 4 | 0.1µF to 0.1µF | | | | | | | | | |
| Y5V | 6.3 | 0.01µF to 0.1µF | 0.01µF to 1µF | 0.47µF to 10µF | 1µF to 22µF | 10µF to 100µF | 22µF to 100µF | 100µF to 100µF | | | |
| Y5V | 10 | 2,200pF to 0.01µF | 0.022µF to 1µF | 0.15µF to 4.7µF | 0.68µF to 10µF | 1µF to 22µF | 1.5µF to 47µF | 47µF to 100µF | | 100µF to 100µF | |
| Y5V | 16 | 0.01µF to 0.01µF | 0.01µF to 0.47µF | 0.022µF to 2.2µF | 0.1µF to 10µF | 0.1µF to 22µF | 0.33µF to 47µF | 22µF to 47µF | | 100µF to 100µF | |
| Y5V | 25 | | 0.01µF to 0.22µF | 0.01µF to 1µF | 0.047µF to 4.7µF | 0.1µF to 10µF | 0.33µF to 22µF | 4.7µF to 22µF | | 47µF to 47µF | |
| Y5V | 35 | | | | | 2.2µF to 10µF | 10µF to 10µF | | | | |
| Y5V | 50 | | 4,700pF to 0.022µF | 1,000pF to 0.47µF | 0.01µF to 2.2µF | 0.1µF to 4.7µF | 0.22µF to 10µF | 10µF to 10µF | | 3.3µF to 22µF | |
| Y5V | 100 | | | | | | | | | 0.47µF to 0.68µF | |