

FEATURES

- High reliability
- Small size with high dielectric constant
- Low inductance
- Popular temperature coefficients available
- Wide operating temperature range
- High insulation resistance
- Case sizes: 0402, 0603, 0805, 1206, 1210



CHARACTERISTICS

| Item | Characteristics | | |
|----------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------|-------------------------------------------|
| | NPO / COG | X7R | Z5U |
| Operating Temperature Range | -55°C ~ +125°C | -55°C ~ +125°C | -25°C ~ +85°C |
| Temperature Coefficient | ±30ppm/°C for C>20pF +120ppm, -40ppm/°C for C≤20pF | ΔC ±15% maximum over -55°C +125°C | ΔC ±56%-22% maximum over +10°C +85°C |
| Measuring Conditions for Capacitance and D.F. | 1MHz, 1Vrms for C≤1,000pF 1KHz, 1Vrms for C>1,000pF | 1KHz, 1Vrms | 1KHz, 0.3Vrms |
| Dissipation Factor and Tangent of Loss Angle (Tan δ) | ≥0.001 for C≥50pF ≤1.5(150/C + 7) x 10 ⁻² for C<50pF | ≤0.025 | ≤0.030 |
| Insulation Resis. After 60 sec. Charging at Rated Voltage 25°C | ≥100GΩ or ≥1,000MΩ(C) whichever is less | ≥100GΩ or ≥1,000MΩ(C) whichever is less | ≥10GΩ or ≥1,000MΩ(C) whichever is less |
| Voltage Test 25°C | 2.5 x rated voltage | 2.5 x rated voltage | 2.5 x rated voltage |
| Capacitance Aging | 0 | =1.5% per decade hour | =5% per decade hour |

PART NUMBERING SYSTEM

| | | | | | | | | | | | | | | |
|----------|----------|----------|----------|-----------|-------------------------|----------|----------|----------|-----------|----------|----------|----------|----------|----------|
| C | C | 5 | 0 | 2 | N | 1 | 0 | 1 | J | / | R | E | E | L |
| Series | | Voltage | | Case Size | Temperature Coefficient | Value | | | Tolerance | Suffix | | | | |

CODES FOR CASE SIZE, TEMPERATURE COEFFICIENT, AND TOLERANCE

| Case Size | Code |
|-----------|------|
| 0805 | 1 |
| 1206 | 2 |
| 1210 | 3 |
| 0603 | 4 |
| 0402 | 5 |

| Temperature Coefficient | Code |
|-------------------------|------|
| NPO / COG | N |
| X7R | B |
| Z5U | Z |
| Y5V | V |

| Tolerance | Code | Tolerance | Code |
|-----------|------|-----------|------|
| ±0.25pF | C | ±20% | M |
| ±0.5pF | D | +80% -20% | Z |
| ±5% | J | +100% -0% | P |
| ±10% | K | GMV | V |

| Suffix | Code |
|---------------|-------|
| Tape and Reel | /REEL |
| Bulk | -BK |

For capacitance values below 10pF, use C or D.
GMV = Guaranteed Minimum Value

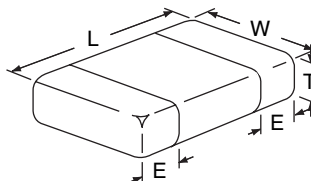
■ CAPACITANCE RANGES

| Case Size | NPO / COG | | X7R | | Z5U (0805, 1206, 1210) / Y5V (0603) | |
|-----------|---------------|---------------|---------------------------|--------------------------|-------------------------------------|------|
| | 50V | 100V | 50V | 100V | 50V | 100V |
| 0402 | 1.0pF~220pF | | 220pF~1000pF | | | --- |
| 0603 | 1.0pF~470pF | | 100pF~0.01 μ F | | 0.01 μ F~0.1 μ F | --- |
| 0805 | 1.0pF~1500pF | 1.0pF~1000pF | 100pF~0.1 μ F | 100pF~.022 μ F | 2700pF~0.15 μ F | --- |
| 1206 | 1.0pF~3900pF | 1.0pF~2700pF | 100pF~0.1 μ F | 100pF~.047 μ F | 8200pF~0.47 μ F | --- |
| 1210 | 4700pF~8200pF | 3300pF~5600pF | 0.12 μ F~0.22 μ F | .047 μ F~0.1 μ F | 0.22 μ F~0.68 μ F | --- |

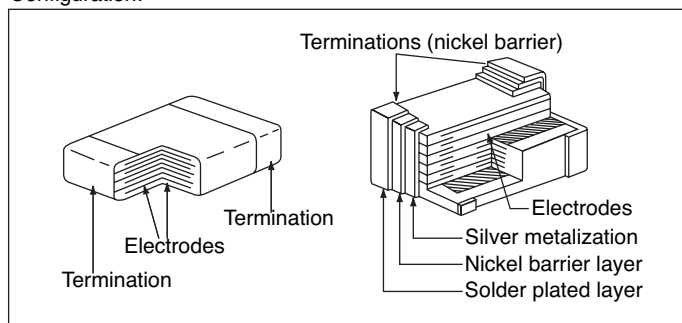
■ TOLERANCE AVAILABLE

| Availability | NPO / COG | | | | X7R | | | Z5U | | |
|--------------|---------------|--------------|-----------|--------------|------------|------------|------------|------------|------------|------------|
| | ± 0.25 pF | ± 0.5 pF | $\pm 2\%$ | $\pm 5\%$ | $\pm 5\%$ | $\pm 10\%$ | $\pm 20\%$ | $\pm 20\%$ | +80% -20% | +100% -0% |
| Capacitance | <5pF | ≤ 10 pF | >13pF | ≥ 10 pF | All Values | All Values | All Values | All Values | All Values | All Values |

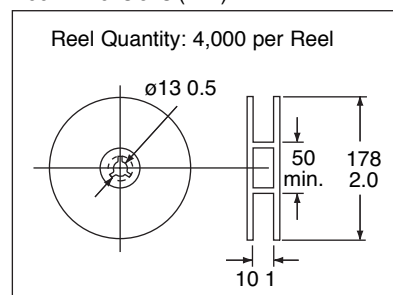
■ DIMENSIONS



Configuration:



Reel Dimensions (mm):



| Case Size | Dimensions (mm) | | | |
|-----------|-----------------|---------------|--------------------|-----------------|
| | L (length) | W (width) | T (thickness) max. | E (termination) |
| 0402 | 1.0 ± 0.2 | 0.5 ± 0.2 | .35 | 0.5 ± 0.2 |
| 0603 | 1.52 ± 0.2 | 0.8 ± 0.2 | .65 | 0.5 ± 0.2 |
| 0805 | 2.0 ± 0.2 | 1.2 ± 0.2 | 1.0 | 0.5 ± 0.2 |
| 1206 | 3.2 ± 0.2 | 1.6 ± 0.2 | 1.25 | 0.5 ± 0.2 |
| 1210 | 3.2 ± 0.2 | 2.5 ± 0.2 | 1.3 | 0.5 ± 0.2 |