

RF/Microwave COG (NP0) Capacitors (RoHS)



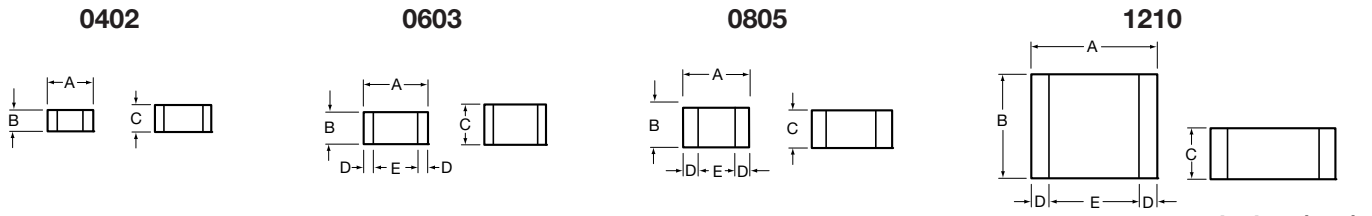
Ultra Low ESR, "U" Series, COG (NP0) Chip Capacitors

GENERAL INFORMATION

"U" Series capacitors are COG (NP0) chip capacitors specially designed for "Ultra" low ESR for applications in the communications market. Max ESR and effective capacitance

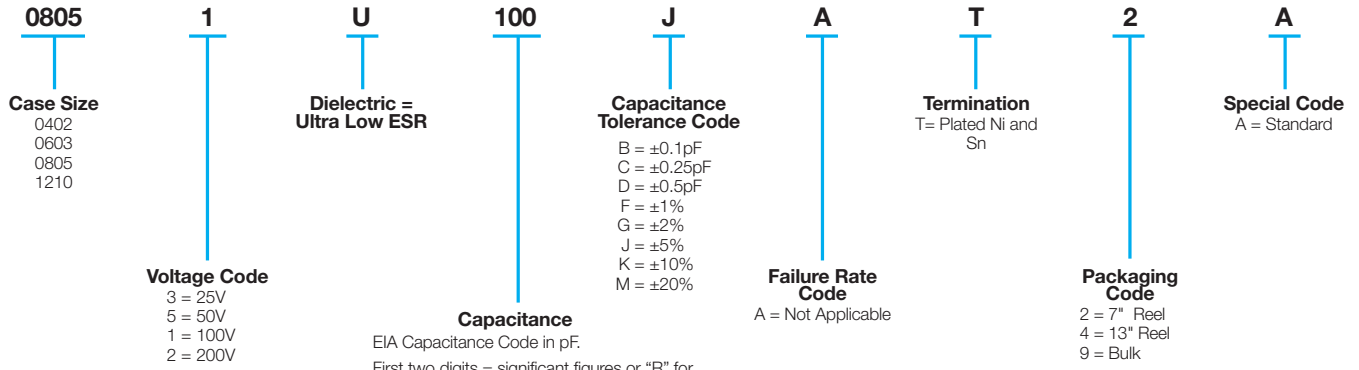
are met on each value producing lot to lot uniformity. Sizes available are EIA chip sizes 0402, 0603, 0805, and 1210.

DIMENSIONS: inches (millimeters)



| Size | A | B | C | D | E |
|------|-------------------------|-------------------------|--------------------------|---------------------------|------------------|
| 0402 | 0.039±0.004 (1.00±0.1) | 0.020±0.004 (0.50±0.1) | 0.024 (0.6) max | N/A | N/A |
| 0603 | 0.060±0.010 (1.52±0.25) | 0.030±0.010 (0.76±0.25) | 0.036 (0.91) max | 0.010±0.005 (0.25±0.13) | 0.030 (0.76) min |
| 0805 | 0.079±0.008 (2.01±0.2) | 0.049±0.008 (1.25±0.2) | 0.040±0.005 (1.02±0.127) | 0.020±0.010 (0.51±0.255) | 0.020 (0.51) min |
| 1210 | 0.126±0.008 (3.2±0.2) | 0.098±0.008 (2.49±0.2) | 0.050±0.005 (1.27±0.127) | 0.025±0.015 (0.635±0.381) | 0.040 (1.02) min |

HOW TO ORDER



NOTE: Contact factory for availability of Termination and Tolerance Options for Specific Part Numbers.

ELECTRICAL CHARACTERISTICS

Capacitance Values and Tolerances:

- Size 0402 - 0.2 pF to 22 pF @ 1 MHz
- Size 0603 - 1.0 pF to 100 pF @ 1 MHz
- Size 0805 - 1.6 pF to 160 pF @ 1 MHz
- Size 1210 - 2.4 pF to 1000 pF @ 1 MHz

Temperature Coefficient of Capacitance (TC):

0±30 ppm/°C (-55° to +125°C)

Insulation Resistance (IR):

- 10¹² Ω min. @ 25°C and rated WVDC
- 10¹¹ Ω min. @ 125°C and rated WVDC

Working Voltage (WVDC):

- Size Working Voltage
- 0402 - 50, 25 WVDC
- 0603 - 200, 100, 50 WVDC
- 0805 - 200, 100 WVDC
- 1210 - 200, 100 WVDC

Dielectric Working Voltage (DWV):

250% of rated WVDC

Equivalent Series Resistance Typical (ESR):

- 0402 - See Performance Curve, page 9
- 0603 - See Performance Curve, page 9
- 0805 - See Performance Curve, page 9
- 1210 - See Performance Curve, page 9

Marking: Laser marking EIA J marking standard

(except 0603) (capacitance code and tolerance upon request).

MILITARY SPECIFICATIONS

Meets or exceeds the requirements of MIL-C-55681



RF/Microwave C0G (NP0) Capacitors (RoHS)



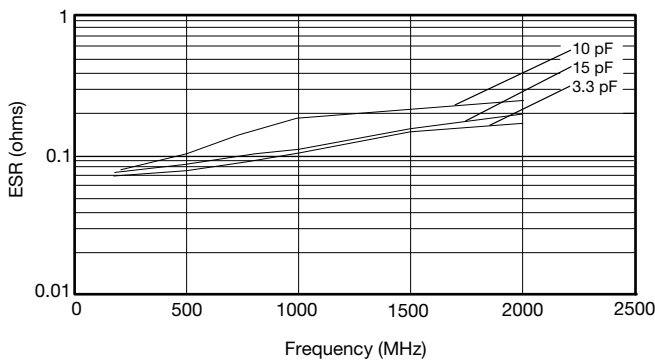
Ultra Low ESR, "U" Series, C0G (NP0) Chip Capacitors

CAPACITANCE RANGE

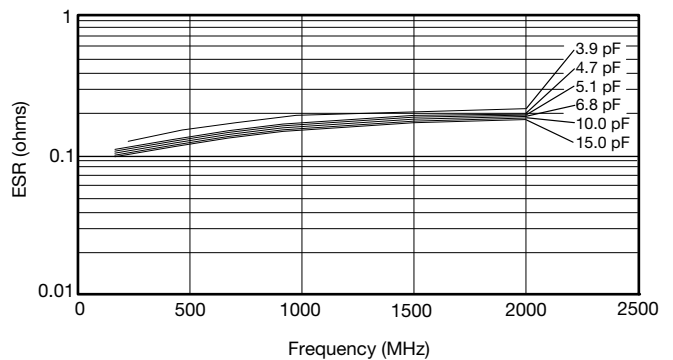
| Cap (pF) | Available Tolerance | Size | | | | Cap (pF) | Available Tolerance | Size | | | | Cap (pF) | Available Tolerance | Size | | | | Cap (pF) | Available Tolerance | Size | | | | | |
|----------|---------------------|------|------|------|------|----------|---------------------|------|------|------|------|----------|---------------------|------|------|------|------|----------|---------------------|------|------|------|------|--|--|
| | | 0402 | 0603 | 0805 | 1210 | | | 0402 | 0603 | 0805 | 1210 | | | 0402 | 0603 | 0805 | 1210 | | | 0402 | 0603 | 0805 | 1210 | | |
| 0.2 | B,C | 50V | N/A | N/A | N/A | 1.0 | B,C,D | 50V | 200V | 200V | 200V | 7.5 | B,C,J,K,M | 50V | 200V | 200V | 200V | 100 | F,G,J,K,M | N/A | 100V | 200V | 200V | | |
| 0.3 | B,C | | | | | 1.1 | | | | | | 8.2 | | | | | | 110 | | | | | | | |
| 0.4 | B,C | | | | | 1.2 | | | | | | 9.1 | B,C,J,K,M | | | | | 120 | | | 50V | 200V | 200V | | |
| 0.5 | B,C | | | | | 1.3 | | | | | | 10 | F,G,J,K,M | | | | | 130 | | | 50V | 200V | 200V | | |
| 0.6 | B,C,D | | | | | 1.4 | | | | | | 11 | | | | | | 140 | | | N/A | 200V | 200V | | |
| 0.7 | B,C,D | | | | | 1.5 | | | | | | 12 | | | | | | 150 | | | | 100V | 200V | | |
| 0.8 | B,C,D | | | | | 1.6 | | | | | | 13 | | | | | | 160 | | | | 100V | 200V | | |
| 0.9 | B,C,D | | | | | 1.7 | | | | | | 15 | | | | | | 180 | | | | N/A | 200V | | |
| | | | | | | 1.8 | | | | | | 18 | | | | | | 200 | | | | | | | |
| | | | | | | 1.9 | | | | | | 20 | | | | | | 220 | | | | | | | |
| | | | | | | 2.0 | | | | | | 22 | | | | | | 270 | | | | | | | |
| | | | | | | 2.1 | | | | | | 24 | | | | | | 300 | | | | | | | |
| | | | | | | 2.2 | | | | | | 27 | | | | | | 330 | | | | | | | |
| | | | | | | 2.4 | | | | | | 30 | | | | | | 360 | | | | | | | |
| | | | | | | 2.7 | | | | | | 33 | | | | | | 390 | | | | | | | |
| | | | | | | 3.0 | | | | | | 36 | | | | | | 430 | | | | | | | |
| | | | | | | 3.3 | | | | | | 39 | | | | | | 470 | | | | | | | |
| | | | | | | 3.6 | | | | | | 43 | | | | | | 510 | | | | | | | |
| | | | | | | 3.9 | | | | | | 47 | | | | | | 560 | | | | | | | |
| | | | | | | 4.3 | | | | | | 51 | | | | | | 620 | | | | | | | |
| | | | | | | 4.7 | | | | | | 56 | | | | | | 680 | | | | | | | |
| | | | | | | 5.1 | | | | | | 68 | | | | | | 750 | | | | | | | |
| | | | | | | 5.6 | | | | | | 75 | | | | | | 820 | | | | | | | |
| | | | | | | 6.2 | B,C,D | | | | | 82 | | | | | | 910 | | | | | | | |
| | | | | | | 6.8 | B,C,J,K,M | | | | | 91 | | | | | | 1000 | F,G,J,K,M | | | | | | |

ULTRA LOW ESR, "U" SERIES

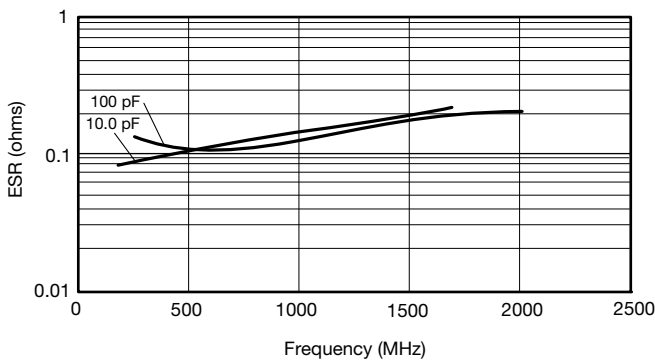
TYPICAL ESR vs. FREQUENCY
0402 "U" SERIES



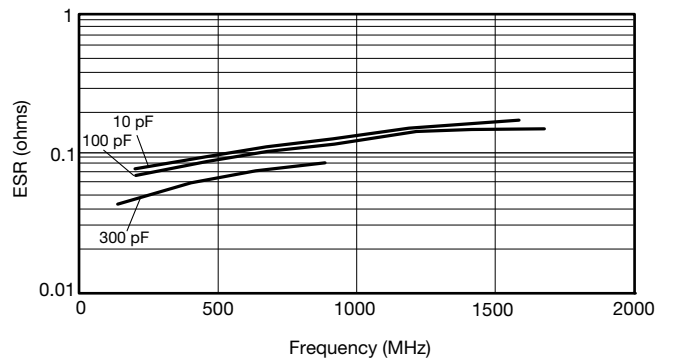
TYPICAL ESR vs. FREQUENCY
0603 "U" SERIES



TYPICAL ESR vs. FREQUENCY
0805 "U" SERIES



TYPICAL ESR vs. FREQUENCY
1210 "U" SERIES



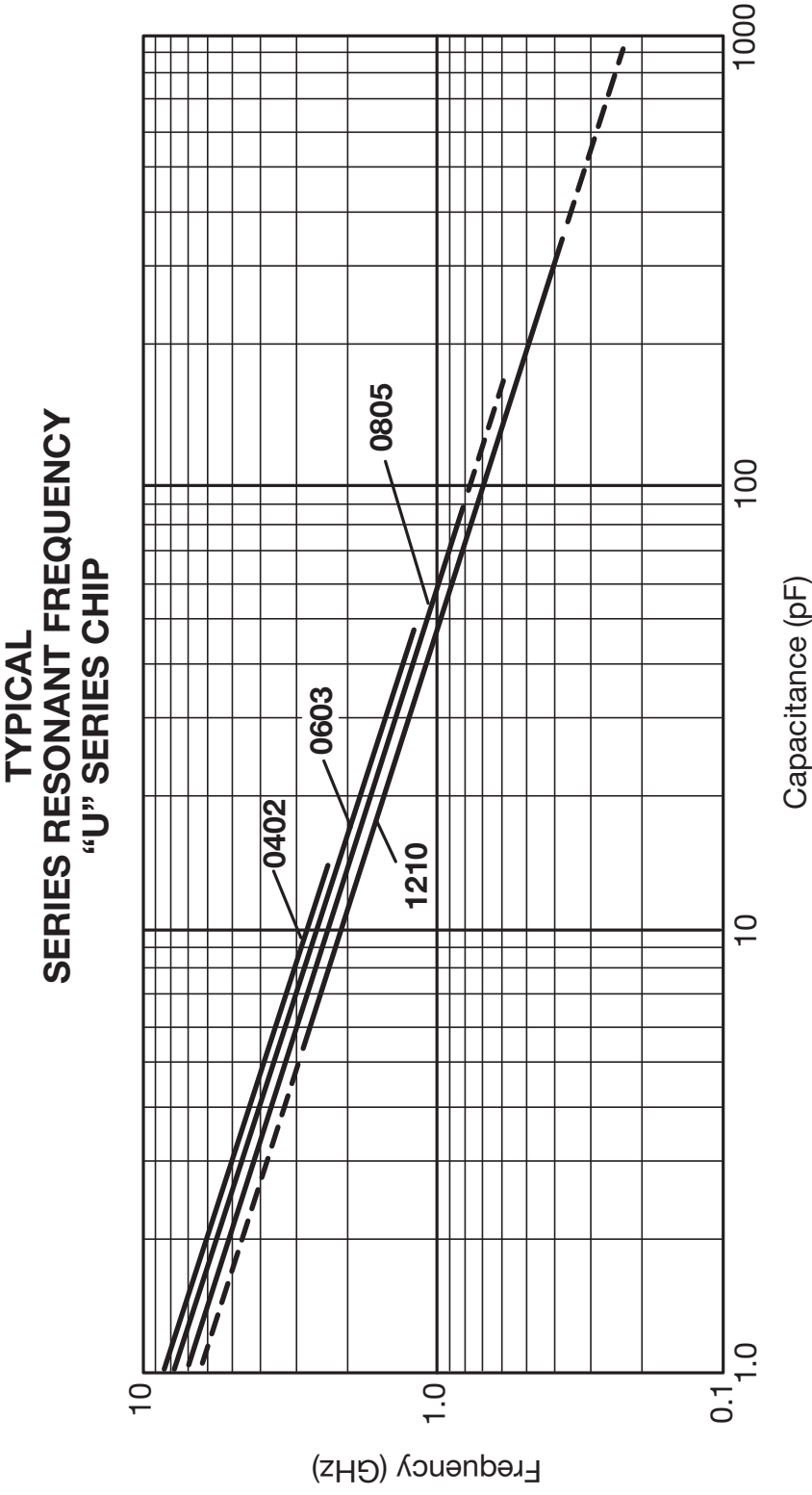
ESR Measured on the Boonton 34A



RF/Microwave C0G (NP0) Capacitors



Ultra Low ESR, "U" Series, C0G (NP0) Chip Capacitors



RF/Microwave C0G (NP0) Capacitors (Sn/Pb)

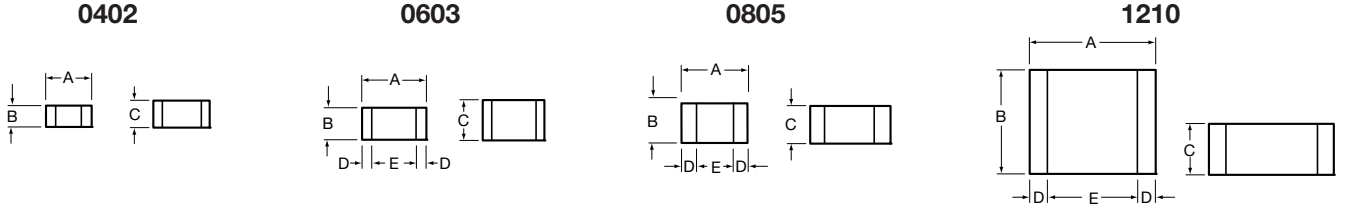
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HOW TO ORDER

LD05 | **1** | **U** | **100** | **J** | **A** | **B** | **2** | **A**

- Case Size**
LD02 = 0402
LD03 = 0603
LD05 = 0805
LD10 = 1210
- Voltage Code**
3 = 25V
5 = 50V
1 = 100V
2 = 200V
- Dielectric = Ultra Low ESR**
- Capacitance**
EIA Capacitance Code in pF.
First two digits = significant figures or "R" for decimal place.
Third digit = number of zeros or after "R" significant figures.
- Capacitance Tolerance Code**
B = ±0.1pF
C = ±0.25pF
D = ±0.5pF
F = ±1%
G = ±2%
J = ±5%
K = ±10%
M = ±20%
- Failure Rate Code**
A = Not Applicable
- Termination**
B = 5% min lead
- Packaging Code**
2 = 7" Reel
4 = 13" Reel
9 = Bulk
- Special Code**
A = Standard

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Marking: Laser marking EIA J marking standard (except 0603) (capacitance code and tolerance upon request).

MILITARY SPECIFICATIONS

Meets or exceeds the requirements of MIL-C-55681

Not RoHS Compliant

“U” SERIES KITS

0402

| Kit 5000 UZ | | | |
|---------------|--------------------------|---------------|--------------------------|
| Cap. Value pF | Tolerance | Cap. Value pF | Tolerance |
| 0.5 | B ($\pm 0.1\text{pF}$) | 4.7 | B ($\pm 0.1\text{pF}$) |
| 1.0 | | 5.6 | |
| 1.5 | | 6.8 | |
| 1.8 | | 8.2 | |
| 2.2 | | 10.0 | |
| 2.4 | J ($\pm 5\%$) | 12.0 | J ($\pm 5\%$) |
| 3.0 | | 15.0 | |
| 3.6 | | | |
| | | | |

***25 each of 15 values

0603

| Kit 4000 UZ | | | |
|---------------|--------------------------|---------------|--------------------------|
| Cap. Value pF | Tolerance | Cap. Value pF | Tolerance |
| 1.0 | B ($\pm 0.1\text{pF}$) | 6.8 | B ($\pm 0.1\text{pF}$) |
| 1.2 | | 7.5 | |
| 1.5 | | 8.2 | |
| 1.8 | | 10.0 | |
| 2.0 | | 12.0 | |
| 2.4 | | 15.0 | |
| 2.7 | | 18.0 | |
| 3.0 | | 22.0 | |
| 3.3 | | 27.0 | |
| 3.9 | | 33.0 | |
| 4.7 | J ($\pm 5\%$) | 39.0 | J ($\pm 5\%$) |
| 5.6 | | 47.0 | |

***25 each of 24 values

0805

| Kit 3000 UZ | | | | | |
|---------------|--------------------------|-----------------|-----------------|-------|-----------------|
| Cap. Value pF | Tolerance | Cap. Value pF | Tolerance | | |
| 1.0 | B ($\pm 0.1\text{pF}$) | 15.0 | J ($\pm 5\%$) | | |
| 1.5 | | 18.0 | | | |
| 2.2 | | 22.0 | | | |
| 2.4 | | 24.0 | | | |
| 2.7 | | 27.0 | | | |
| 3.0 | | 33.0 | | | |
| 3.3 | | 36.0 | | | |
| 3.9 | | 39.0 | | | |
| 4.7 | | 47.0 | | | |
| 5.6 | | 56.0 | | | |
| 7.5 | | 68.0 | | | |
| 8.2 | | 82.0 | | | |
| 9.1 | | 100.0 | | | |
| 10.0 | | J ($\pm 5\%$) | | 130.0 | J ($\pm 5\%$) |
| 12.0 | | | | 160.0 | |

***25 each of 30 values

1210

| Kit 3500 UZ | | | |
|---------------|--------------------------|-----------------|-----------------|
| Cap. Value pF | Tolerance | Cap. Value pF | Tolerance |
| 2.2 | B ($\pm 0.1\text{pF}$) | 36.0 | J ($\pm 5\%$) |
| 2.7 | | 39.0 | |
| 4.7 | | 47.0 | |
| 5.1 | | 51.0 | |
| 6.8 | | 56.0 | |
| 8.2 | | 68.0 | |
| 9.1 | | 82.0 | |
| 10.0 | | J ($\pm 5\%$) | |
| 13.0 | 120.0 | | |
| 15.0 | 130.0 | | |
| 18.0 | 240.0 | | |
| 20.0 | 300.0 | | |
| 24.0 | 390.0 | | |
| 27.0 | 470.0 | | |
| 30.0 | 680.0 | | |

***25 each of 30 values