

RF/Microwave Automotive C0G (NP0) Capacitors (RoHS), AEC Q200 Qualified



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

GENERAL INFORMATION

Automotive "U" Series capacitors are C0G (NP0) chip capacitors specially designed for "Ultra" low ESR for applications in the automotive market. Max ESR and effective capacitance

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

DIMENSIONS: inches (millimeters)

0402

0603



| 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 |

inches (mm)

HOW TO ORDER

0805
Case Size
0402
0603

1
Voltage Code
5 = 50V
1 = 100V
2 = 200V

U
Dielectric =
Ultra Low
ESR

100
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.

J
Capacitance
Tolerance
Code
B = ±0.1pF
C = ±0.25pF
D = ±0.5pF
F = ±1%
G = ±2%
J = ±5%
K = ±10%
M = ±20%

4
Failure Rate
Code
4 = Automotive

T
Termination
T = Plated Ni and Sn

2
Packaging
Code
2 = 7" Reel
4 = 13" Reel
9 = Bulk

A
Special Code
A = Standard

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

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

Dielectric Working Voltage (DWV):

250% of rated WVDC

Equivalent Series Resistance Typical (ESR):

0402 - See Performance Curve, page 195
0603 - See Performance Curve, page 195

Automotive Specifications

Meets or exceeds the requirements of AEC Q200



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CAPACITANCE RANGE

| Cap (pF) | Available Tolerance | Size | |
|----------|---------------------|------|------|
| | | 0402 | 0603 |
| 0.2 | B,C | 50V | N/A |
| 0.3 | ↓ B,C | ↓ | ↓ |
| 0.4 | | | |
| 0.5 | B,C | ↓ | ↓ |
| 0.6 | B,C,D | ↓ | ↓ |
| 0.7 | ↓ B,C,D | ↓ | ↓ |
| 0.8 | | | |
| 0.9 | B,C,D | ↓ | ↓ |

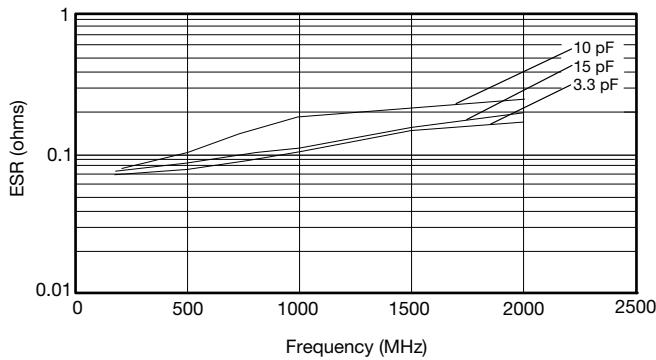
| Cap (pF) | Available Tolerance | Size | |
|----------|---------------------|------|------|
| | | 0402 | 0603 |
| 1.0 | B,C,D | 50V | 200V |
| 1.1 | ↓ | ↓ | ↓ |
| 1.2 | | | |
| 1.3 | ↓ | ↓ | ↓ |
| 1.4 | | | |
| 1.5 | ↓ | ↓ | ↓ |
| 1.6 | | | |
| 1.7 | ↓ | ↓ | ↓ |
| 1.8 | | | |
| 1.9 | ↓ | ↓ | ↓ |
| 2.0 | | | |
| 2.1 | ↓ | ↓ | ↓ |
| 2.2 | | | |
| 2.4 | ↓ | ↓ | ↓ |
| 2.7 | | | |
| 3.0 | ↓ | ↓ | ↓ |
| 3.3 | | | |
| 3.6 | ↓ | ↓ | ↓ |
| 3.9 | | | |
| 4.3 | ↓ | ↓ | ↓ |
| 4.7 | | | |
| 5.1 | ↓ | ↓ | ↓ |
| 5.6 | | | |
| 6.2 | B,C,D | ↓ | ↓ |
| 6.8 | B,C,J,K,M | ↓ | ↓ |

| Cap (pF) | Available Tolerance | Size | |
|----------|---------------------|------|------|
| | | 0402 | 0603 |
| 7.5 | B,C,J,K,M | 50V | 200V |
| 8.2 | ↓ | ↓ | ↓ |
| 9.1 | | | |
| 10 | B,C,J,K,M | ↓ | ↓ |
| 11 | ↓ | ↓ | ↓ |
| 12 | | | |
| 13 | ↓ | ↓ | ↓ |
| 15 | | | |
| 18 | ↓ | ↓ | ↓ |
| 20 | | | |
| 22 | ↓ | ↓ | ↓ |
| 24 | | | |
| 27 | ↓ | ↓ | ↓ |
| 30 | | | |
| 33 | ↓ | ↓ | ↓ |
| 36 | | | |
| 39 | ↓ | ↓ | ↓ |
| 43 | | | |
| 47 | ↓ | ↓ | ↓ |
| 51 | | | |
| 56 | ↓ | ↓ | ↓ |
| 68 | | | |
| 75 | ↓ | ↓ | ↓ |
| 82 | | | |
| 91 | ↓ | ↓ | ↓ |

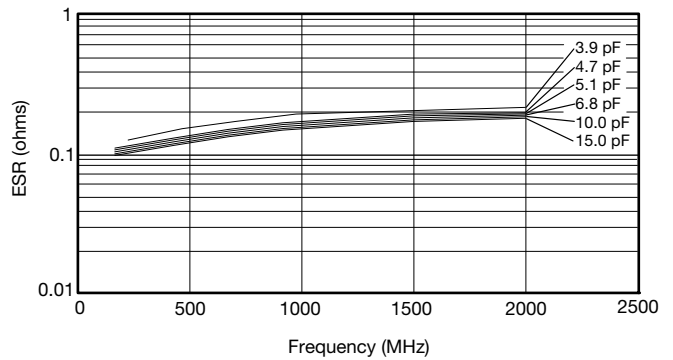
| Cap (pF) | Available Tolerance | Size | |
|----------|---------------------|------|------|
| | | 0402 | 0603 |
| 100 | F,G,J,K,M | N/A | 100V |
| 110 | ↓ | ↓ | ↓ |
| 120 | | | |
| 130 | ↓ | ↓ | ↓ |
| 140 | | | |
| 150 | ↓ | ↓ | ↓ |
| 160 | | | |
| 180 | ↓ | ↓ | ↓ |
| 200 | | | |
| 220 | ↓ | ↓ | ↓ |
| 270 | | | |
| 300 | ↓ | ↓ | ↓ |
| 330 | | | |
| 360 | ↓ | ↓ | ↓ |
| 390 | | | |
| 430 | ↓ | ↓ | ↓ |
| 470 | | | |
| 510 | ↓ | ↓ | ↓ |
| 560 | | | |
| 620 | ↓ | ↓ | ↓ |
| 680 | | | |
| 750 | ↓ | ↓ | ↓ |
| 820 | | | |
| 910 | ↓ | ↓ | ↓ |
| 1000 | | | |

ULTRA LOW ESR, “U” SERIES

TYPICAL ESR vs. FREQUENCY □
0402 “U” SERIES



TYPICAL ESR vs. FREQUENCY □
0603 “U” SERIES



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TYPICAL
SERIES RESONANT FREQUENCY
"U" SERIES CHIP

