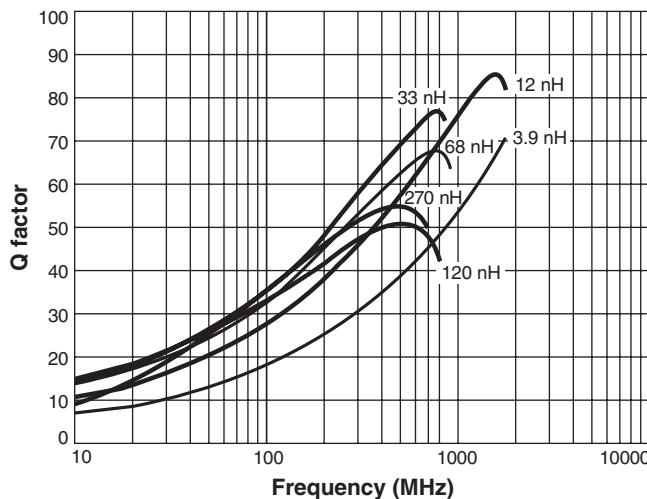




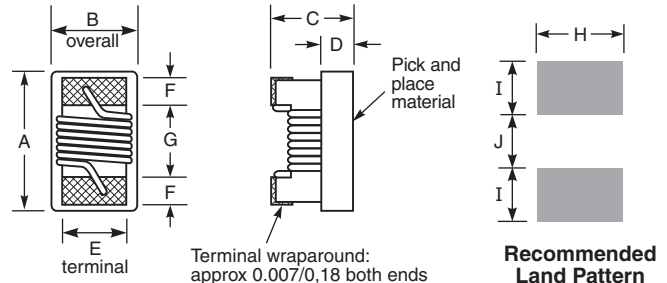
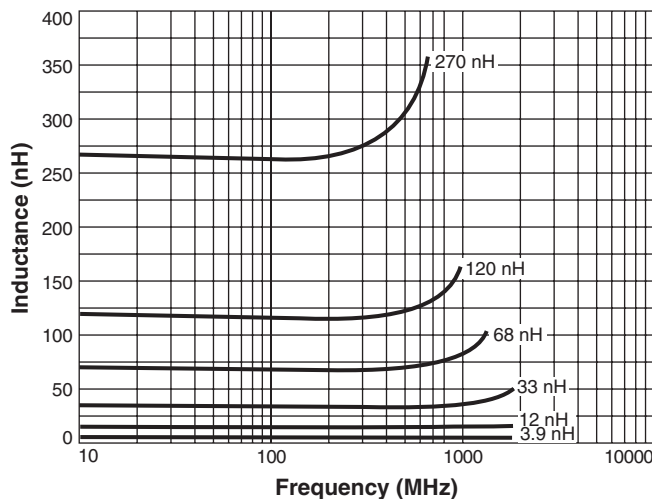
# Chip Inductors – 0603CS (1608)

Ultra-small size, exceptional Q and high SRFs make these inductors ideal for high frequency applications where size is at a premium. They also have excellent DCR and current carrying characteristics.

## Typical Q vs Frequency



## Typical L vs Frequency



| A     | B     | C     | D     | E     | F     | G     | H     | I     | J     |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| max   | max   | max   | ref   |       |       |       |       |       |       |
| 0.071 | 0.044 | 0.040 | 0.015 | 0.030 | 0.013 | 0.034 | 0.040 | 0.025 | 0.025 |
| 1,80  | 1,12  | 1,02  | 0,38  | 0,76  | 0,33  | 0,86  | 1,02  | 0,64  | 0,64  |

**Note:** Height dimension (C) is before optional solder application. For maximum height dimension including solder, add 0.006 in / 0,152 mm.

**Core material** Ceramic

**Environmental** RoHS compliant, halogen free

**Terminations** RoHS compliant matte tin over nickel over silver platinum-glass frit. Other terminations available at additional cost.

**Weight** 3.2 – 3.7 mg

**Ambient temperature** –40°C to +125°C with Irms current

**Maximum part temperature** +140°C (ambient + temp rise).

**Storage temperature** Component: –40°C to +140°C.

Tape and reel packaging: –40°C to +80°C

**Resistance to soldering heat** Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles

**Temperature Coefficient of Inductance (TCL)** +25 to +125 ppm/°C

**Moisture Sensitivity Level (MSL)** 1 (unlimited floor life at <30°C / 85% relative humidity)

**Packaging** 2000 per 7" reel; 10000 per 13" reel Paper tape: 8 mm wide, 1.0 mm thick, 4 mm pocket spacing

**PCB washing** Tested to MIL-STD-202 Method 215 plus an additional aqueous wash. See [Doc787\\_PCB\\_Washing.pdf](#).

**S-Parameter files**  
ON OUR WEB SITE

**SPICE models**  
ON OUR WEB SITE

# 0603CS Series (1608)

Designer's Kit C324 contains 10 each of all 5% values  
 Designer's Kit C324-2 contains 10 each of all 2% values



| Part number <sup>1</sup> | Inductance <sup>2</sup><br>(nH) | Percent<br>tolerance <sup>3</sup> | Q<br>min <sup>4</sup> | 900 MHz |       | 1.7 GHz |       | SRF<br>min <sup>5</sup><br>(GHz) | DCR<br>max <sup>6</sup><br>(Ohms) | Irms <sup>7</sup><br>(mA) | Color<br>dot <sup>8</sup> |
|--------------------------|---------------------------------|-----------------------------------|-----------------------|---------|-------|---------|-------|----------------------------------|-----------------------------------|---------------------------|---------------------------|
|                          |                                 |                                   |                       | L typ   | Q typ | L typ   | Q typ |                                  |                                   |                           |                           |
| 0603CS-1N6XJR_           | 1.6 @ 250 MHz                   | <b>5</b>                          | 24                    | 1.67    | 49    | 1.65    | 63    | 12.5                             | 0.030                             | 700                       | Red                       |
| 0603CS-1N8XJR_           | 1.8 @ 250 MHz                   | <b>5</b>                          | 16                    | 1.83    | 35    | 1.86    | 50    | 12.5                             | 0.045                             | 700                       | Black                     |
| 0603CS-2N2XJR_           | 2.2 @ 250 MHz                   | <b>5</b>                          | 13                    | 2.22    | 31    | 2.24    | 44    | 12.5                             | 0.250                             | 100                       | Yellow                    |
| 0603CS-3N3X_R_           | 3.3 @ 250 MHz                   | <b>5,3,2</b>                      | 35                    | 3.31    | 75    | 3.38    | 88    | 5.90                             | 0.045                             | 700                       | Blue                      |
| 0603CS-3N6X_R_           | 3.6 @ 250 MHz                   | <b>5,3,2</b>                      | 22                    | 3.72    | 53    | 3.71    | 65    | 5.90                             | 0.063                             | 700                       | Red                       |
| 0603CS-3N9X_R_           | 3.9 @ 250 MHz                   | <b>5,3,2</b>                      | 22                    | 3.95    | 49    | 3.96    | 67    | 6.90                             | 0.080                             | 700                       | Brown                     |
| 0603CS-4N3X_R_           | 4.3 @ 250 MHz                   | <b>5,3,2</b>                      | 22                    | 4.32    | 50    | 4.33    | 70    | 5.90                             | 0.063                             | 700                       | Orange                    |
| 0603CS-4N7X_R_           | 4.7 @ 250 MHz                   | <b>5,3,2</b>                      | 20                    | 4.72    | 47    | 4.75    | 57    | 5.80                             | 0.116                             | 700                       | Violet                    |
| 0603CS-5N1X_R_           | 5.1 @ 250 MHz                   | <b>5,3,2</b>                      | 20                    | 4.93    | 47    | 4.95    | 56    | 5.70                             | 0.140                             | 700                       | Green                     |
| 0603CS-5N6X_R_           | 5.6 @ 250 MHz                   | <b>5,3,2</b>                      | 26                    | 5.77    | 63    | 6.05    | 80    | 4.76                             | 0.075                             | 700                       | Black                     |
| 0603CS-6N8X_R_           | 6.8 @ 250 MHz                   | <b>5,3,2</b>                      | 27                    | 6.75    | 60    | 7.10    | 81    | 5.80                             | 0.110                             | 700                       | Red                       |
| 0603CS-7N5X_R_           | 7.5 @ 250 MHz                   | <b>5,3,2</b>                      | 28                    | 7.70    | 60    | 7.82    | 65    | 4.80                             | 0.106                             | 700                       | Brown                     |
| 0603CS-8N2X_R_           | 8.2 @ 250 MHz                   | <b>5,3,2</b>                      | 30                    | 8.25    | 82    | 8.37    | 87    | 4.20                             | 0.115                             | 700                       | Orange                    |
| 0603CS-8N7X_R_           | 8.7 @ 250 MHz                   | <b>5,3,2</b>                      | 28                    | 8.86    | 62    | 9.32    | 58    | 4.60                             | 0.109                             | 700                       | Yellow                    |
| 0603CS-9N5X_R_           | 9.5 @ 250 MHz                   | <b>5,3,2</b>                      | 28                    | 9.7     | 59    | 9.92    | 61    | 5.40                             | 0.135                             | 700                       | Blue                      |
| 0603CS-10NX_R_           | 10 @ 250 MHz                    | <b>5,3,2</b>                      | 31                    | 10.0    | 66    | 10.6    | 83    | 4.80                             | 0.130                             | 700                       | Orange                    |
| 0603CS-11NX_R_           | 11 @ 250 MHz                    | <b>5,3,2</b>                      | 30                    | 11.0    | 53    | 11.5    | 56    | 4.00                             | 0.130                             | 700                       | Gray                      |
| 0603CS-12NX_R_           | 12 @ 250 MHz                    | <b>5,3,2</b>                      | 35                    | 12.3    | 72    | 13.5    | 83    | 4.00                             | 0.130                             | 700                       | Yellow                    |
| 0603CS-15NX_R_           | 15 @ 250 MHz                    | <b>5,3,2</b>                      | 35                    | 15.4    | 64    | 16.8    | 89    | 4.00                             | 0.170                             | 700                       | Green                     |
| 0603CS-16NX_R_           | 16 @ 250 MHz                    | <b>5,3,2</b>                      | 34                    | 16.2    | 55    | 17.3    | 52    | 3.30                             | 0.170                             | 700                       | White                     |
| 0603CS-18NX_R_           | 18 @ 250 MHz                    | <b>5,3,2</b>                      | 35                    | 18.7    | 70    | 21.4    | 69    | 3.10                             | 0.170                             | 700                       | Blue                      |
| 0603CS-22NX_R_           | 22 @ 250 MHz                    | <b>5,3,2</b>                      | 38                    | 22.8    | 73    | 26.1    | 71    | 3.00                             | 0.190                             | 700                       | Violet                    |
| 0603CS-23NX_R_           | 23 @ 250 MHz                    | <b>5,3,2</b>                      | 38                    | 24.1    | 71    | 28.0    | 67    | 2.85                             | 0.190                             | 700                       | Orange                    |
| 0603CS-24NX_R_           | 24 @ 250 MHz                    | <b>5,3,2</b>                      | 36                    | 24.5    | 45    | 28.7    | 39    | 2.65                             | 0.190                             | 700                       | Black                     |
| 0603CS-27NX_R_           | 27 @ 250 MHz                    | <b>5,3,2</b>                      | 40                    | 29.2    | 74    | 34.6    | 65    | 2.80                             | 0.220                             | 600                       | Gray                      |
| 0603CS-30NX_R_           | 30 @ 250 MHz                    | <b>5,3,2</b>                      | 37                    | 31.4    | 47    | 39.9    | 28    | 2.25                             | 0.220                             | 600                       | Brown                     |
| 0603CS-33NX_R_           | 33 @ 250 MHz                    | <b>5,3,2</b>                      | 40                    | 36.0    | 67    | 49.5    | 42    | 2.30                             | 0.220                             | 600                       | White                     |
| 0603CS-36NX_R_           | 36 @ 250 MHz                    | <b>5,3,2</b>                      | 37                    | 39.4    | 47    | 52.7    | 24    | 2.08                             | 0.250                             | 600                       | Red                       |
| 0603CS-39NX_R_           | 39 @ 250 MHz                    | <b>5,3,2</b>                      | 40                    | 42.7    | 60    | 60.2    | 40    | 2.20                             | 0.250                             | 600                       | Black                     |
| 0603CS-43NX_R_           | 43 @ 250 MHz                    | <b>5,3,2</b>                      | 38                    | 47.0    | 44    | 64.9    | 21    | 2.00                             | 0.280                             | 600                       | Orange                    |
| 0603CS-47NX_R_           | 47 @ 200 MHz                    | <b>5,3,2</b>                      | 38                    | 52.2    | 62    | 77.2    | 35    | 2.00                             | 0.280                             | 600                       | Brown                     |
| 0603CS-51NX_R_           | 51 @ 200 MHz                    | <b>5,3,2</b>                      | 35                    | 55.5    | 69    | 82.2    | 34    | 1.90                             | 0.270                             | 600                       | Blue                      |
| 0603CS-56NX_R_           | 56 @ 200 MHz                    | <b>5,3,2</b>                      | 38                    | 62.5    | 56    | 97.0    | 26    | 1.90                             | 0.310                             | 600                       | Red                       |
| 0603CS-68NX_R_           | 68 @ 200 MHz                    | <b>5,3,2</b>                      | 37                    | 80.5    | 54    | 168     | 21    | 1.70                             | 0.340                             | 600                       | Orange                    |
| 0603CS-72NX_R_           | 72 @ 150 MHz                    | <b>5,3,2</b>                      | 34                    | 82.0    | 53    | 135     | 20    | 1.70                             | 0.490                             | 400                       | Yellow                    |
| 0603CS-82NX_R_           | 82 @ 150 MHz                    | <b>5,3,2</b>                      | 34                    | 96.2    | 54    | 177     | 21    | 1.70                             | 0.540                             | 400                       | Green                     |
| 0603CS-R10X_R_           | 100 @ 150 MHz                   | <b>5,3,2</b>                      | 34                    | 124     | 49    | —       | —     | 1.40                             | 0.580                             | 400                       | Blue                      |
| 0603CS-R11X_R_           | 110 @ 150 MHz                   | <b>5,3,2</b>                      | 32                    | 138     | 43    | —       | —     | 1.35                             | 0.610                             | 300                       | Violet                    |
| 0603CS-R12X_R_           | 120 @ 150 MHz                   | <b>5,3,2</b>                      | 32                    | 166     | 39    | —       | —     | 1.30                             | 0.650                             | 300                       | Gray                      |
| 0603CS-R15X_R_           | 150 @ 150 MHz                   | <b>5,3,2</b>                      | 28                    | 250     | 25    | —       | —     | 0.990                            | 0.920                             | 280                       | White                     |
| 0603CS-R18X_R_           | 180 @ 100 MHz                   | <b>5,3,2</b>                      | 25                    | 305     | 22    | —       | —     | 0.990                            | 1.25                              | 240                       | Black                     |
| 0603CS-R20X_R_           | 200 @ 100 MHz                   | <b>5,3,2</b>                      | 25                    | —       | —     | —       | —     | 0.900                            | 1.98                              | 200                       | Green                     |
| 0603CS-R21X_R_           | 210 @ 100 MHz                   | <b>5,3,2</b>                      | 27                    | —       | —     | —       | —     | 0.895                            | 2.06                              | 200                       | Gray                      |
| 0603CS-R22X_R_           | 220 @ 100 MHz                   | <b>5,3,2</b>                      | 25                    | —       | —     | —       | —     | 0.900                            | 2.10                              | 200                       | Brown                     |
| 0603CS-R25X_R_           | 250 @ 100 MHz                   | <b>5,3,2</b>                      | 25                    | —       | —     | —       | —     | 0.822                            | 3.55                              | 120                       | Violet                    |
| 0603CS-R27X_R_           | 270 @ 100 MHz                   | <b>5,3,2</b>                      | 26                    | —       | —     | —       | —     | 0.830                            | 2.16                              | 170                       | Red                       |
| 0603CS-R33X_R_           | 330 @ 100 MHz                   | <b>5,3,2</b>                      | 25                    | —       | —     | —       | —     | 0.900                            | 3.89                              | 100                       | Blue                      |
| 0603CS-R39X_R_           | 390 @ 100 MHz                   | <b>5,3,2</b>                      | 25                    | —       | —     | —       | —     | 0.780                            | 4.35                              | 100                       | Yellow                    |

1. When ordering, specify **tolerance**, **termination** and **packaging** codes:

**0603CS-R39XJRW**

**Tolerance:** G = 2% H = 3% J = 5%

(Table shows stock tolerances in bold.)

**Termination:** R = RoHS compliant matte tin over nickel over silver-platinum-glass frit.

E = Halogen free component. RoHS compliant silver-palladium-platinum-glass frit terminations.

L = RoHS compliant silver-palladium-platinum-glass frit.

Special order: T = RoHS tin-silver-copper (95.5/4/0.5) or S = non-RoHS tin-lead (63/37).

**Packaging:** W = 7" machine-ready reel. EIA-481 punched paper tape (2000 parts per full reel). Quantities less than full reel available: in tape (not machine ready) or with leader and trailer (\$25 charge).

Y = 13" machine-ready reel. EIA-481 punched paper tape. Factory order only, not stocked (10000 parts per full reel).

U = Less than full reel. In an effort to simplify our part numbering system, Coilcraft is eliminating the need for multiple packaging codes. When ordering, simply change the last letter of your part number from U to W.

2. Inductance measured using a Coilcraft SMD-A fixture in an Agilent/HP 4286 impedance analyzer with Coilcraft-provided correlation pieces.

3. Tolerances in bold are stocked for immediate shipment.

4. Q measured at the same frequency as inductance using an Agilent/HP 4291A with an Agilent/HP 16193 test fixture.

5. SRF measured using an Agilent/HP 8720D network analyzer and a Coilcraft SMD-D test fixture.

6. DCR measured on a Cambridge Technology micro-ohmmeter and a Coilcraft CCF858 test fixture.

7. Current that causes a 15°C temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings.

8. Each part is marked with a single dot. The color dots are not unique identifiers and correspond to multiple inductance values.

9. Electrical specifications at 25°C.

Refer to Doc 362 "Soldering Surface Mount Components" before soldering.



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