



# Chip Inductors – 0603HC (1608)

With their high current ratings and ultra-small size, these chip inductors are ideal for today's high frequency, low voltage applications like mobile phones. They feature continuous current ratings up to 2.4 Amps DC and

will handle transient currents up to 50% higher. At low inductance values, their Q factors are also higher than our 0603CS Series.

| Part number <sup>1</sup> | Inductance <sup>2</sup><br>(nH) | Percent tolerance <sup>3</sup> | Q min <sup>4</sup> | 900 MHz |       | 1.7 GHz |       | SRF min <sup>5</sup><br>(MHz) | DCR max <sup>6</sup><br>(Ohms) | Irms <sup>7</sup><br>(A) | Color code <sup>8</sup> |
|--------------------------|---------------------------------|--------------------------------|--------------------|---------|-------|---------|-------|-------------------------------|--------------------------------|--------------------------|-------------------------|
|                          |                                 |                                |                    | L typ   | Q typ | L typ   | Q typ |                               |                                |                          |                         |
| 0603HC-1N6XJR_           | 1.6                             | <b>5</b>                       | 24                 | 1.67    | 49    | 1.65    | 63    | 12500                         | 0.030                          | 2.4                      | Black                   |
| 0603HC-3N6XJR_           | 3.6                             | <b>5</b>                       | 24                 | 3.65    | 70    | 3.75    | 90    | 5900                          | 0.048                          | 2.3                      | Brown                   |
| 0603HC-3N9XJR_           | 3.9                             | <b>5</b>                       | 25                 | 3.74    | 70    | 3.90    | 90    | 5900                          | 0.054                          | 2.2                      | Red                     |
| 0603HC-6N8XJR_           | 6.8                             | <b>5</b>                       | 35                 | 6.72    | 70    | 7.10    | 75    | 5800                          | 0.054                          | 2.1                      | Orange                  |
| 0603HC-7N5XJR_           | 7.5                             | <b>5</b>                       | 38                 | 7.33    | 70    | 7.90    | 68    | 3700                          | 0.059                          | 2.1                      | Yellow                  |
| 0603HC-10NX_R_           | 10                              | <b>5,2</b>                     | 38                 | 9.70    | 73    | 10.5    | 57    | 3700                          | 0.071                          | 2.0                      | Green                   |
| 0603HC-12NX_R_           | 12                              | <b>5,2</b>                     | 38                 | 12.3    | 68    | 14.5    | 41    | 3000                          | 0.075                          | 2.0                      | Blue                    |
| 0603HC-15NX_R_           | 15                              | <b>5,2</b>                     | 38                 | 15.5    | 65    | 17.6    | 40    | 2800                          | 0.080                          | 1.9                      | Violet                  |
| 0603HC-18NX_R_           | 18                              | <b>5,2</b>                     | 40                 | 19.5    | 62    | 25.0    | 40    | 2800                          | 0.099                          | 1.9                      | Gray                    |
| 0603HC-22NX_R_           | 22                              | <b>5,2</b>                     | 42                 | 24.0    | 61    | 31.5    | 26    | 2400                          | 0.099                          | 1.8                      | White                   |
| 0603HC-24NX_R_           | 24                              | <b>5,2</b>                     | 42                 | 25.8    | 55    | 35.0    | 21    | 2400                          | 0.105                          | 1.8                      | Black                   |
| 0603HC-33NXJR_           | 33                              | <b>5</b>                       | 47                 | 34.3    | 50    | —       | —     | 1900                          | 0.175                          | 0.95                     | Brown                   |
| 0603HC-47NXJR_           | 47                              | <b>5</b>                       | 40                 | 49.5    | 45    | —       | —     | 1530                          | 0.195                          | 0.85                     | Red                     |

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

0603HC-47NXJRW

**Tolerance:** G = 2% 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, not halogen-free. Silver-palladium-platinum-glass frit terminations.  
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 at 250 MHz using Coilcraft SMD-A fixture in Agilent/HP 4286 impedance analyzer with Coilcraft-provided correlation pieces.

3. Tolerances in bold are stocked for immediate shipment.

4. Q measured at 250 MHz using Agilent/HP 4291A with Agilent/HP 16193 test fixture.

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

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

7. Current that causes a 20°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.

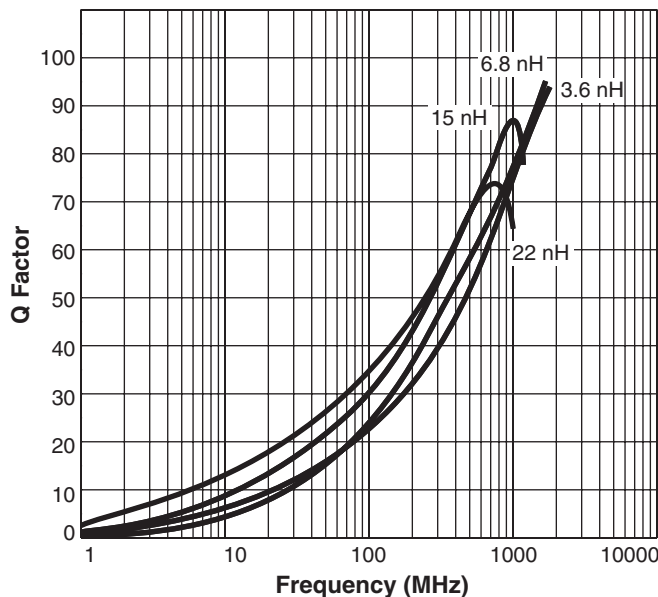
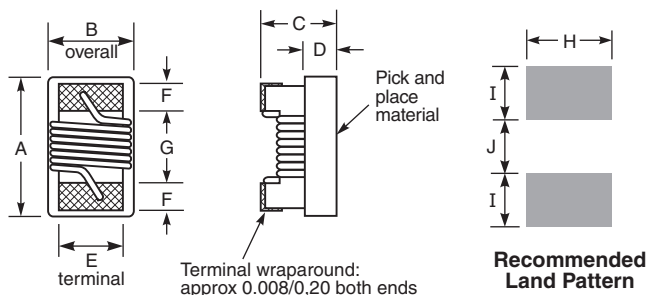
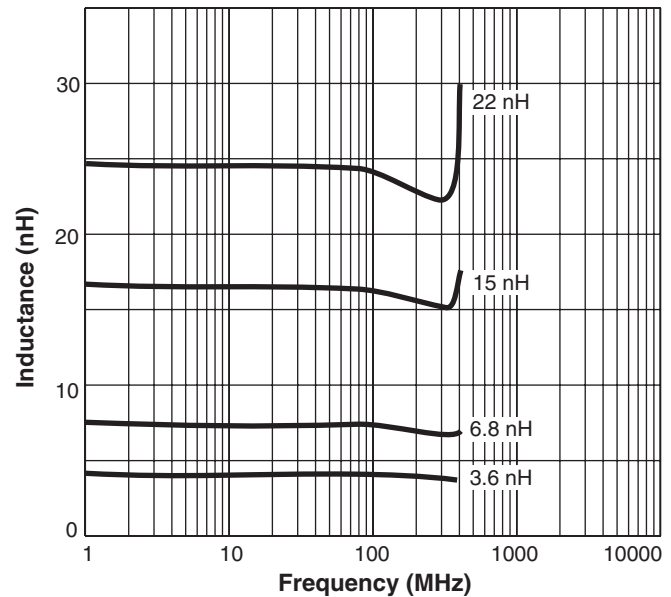
Refer to Doc 362 "Soldering Surface Mount Components" before soldering.

**HIGH CURRENT****0603HC (1608) Chip Inductors****S-Parameter files**

ON OUR WEB SITE

**SPICE models**

ON OUR WEB SITE

**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.

**Designer's Kit C339** contains 10 of each of all 5% parts

**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** 3.3 – 3.7 mg

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

**Maximum part temperature** +145°C (ambient + temp rise).

**Storage temperature** Component: –40°C to +145°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](#).

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