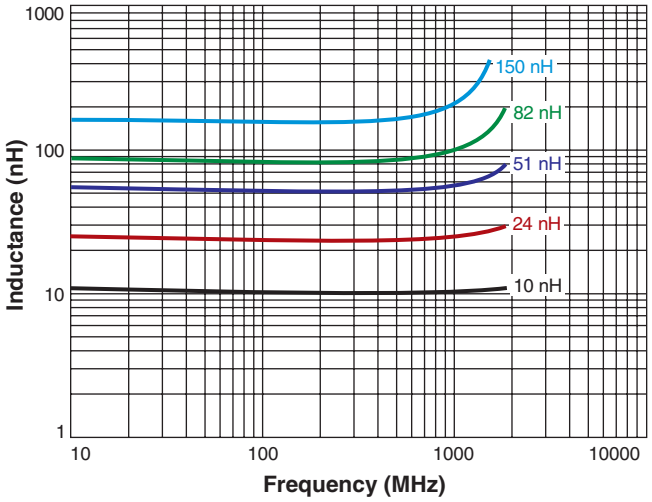
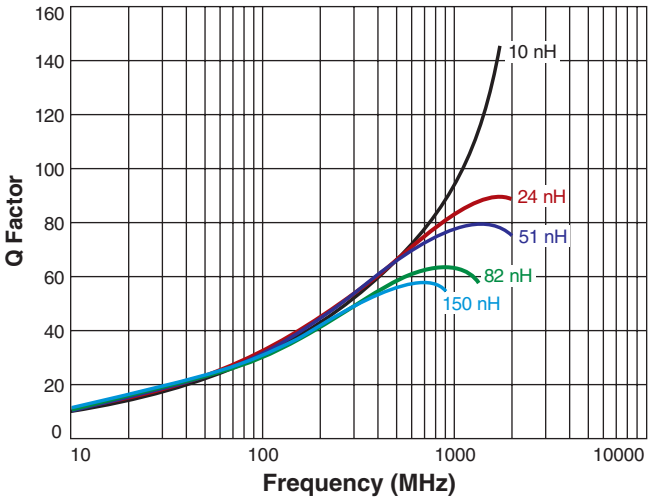
# Chip Inductors for Critical Applications ST312RAG

- Higher Q and lower DCR than other 0603 inductors
- Highest SRF values – as high as 16 GHz
- Excellent current handling capability – up to 1500 mA
- 43 inductance values from 1.8 to 150 nH

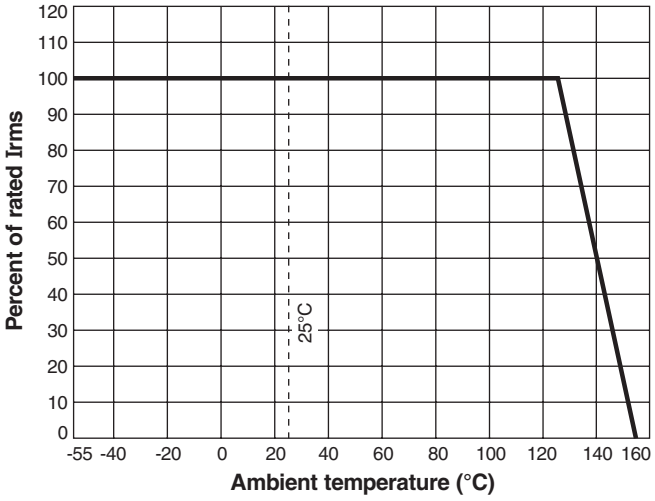
## Typical L vs Frequency

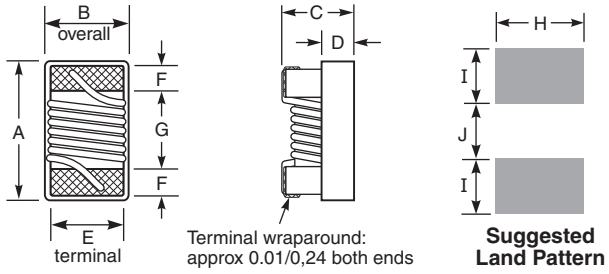



## Typical Q vs Frequency




## Current Derating




| A max | B min–max | C max | D | E | F | G | H | I | J | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.069 | 0.034–0.043 | 0.034 | 0.015 | 0.029 | 0.013 | 0.038 | 0.040 | 0.027 | 0.028 | inches |
| 1,75 | 0,86–1,09 | 0,86 | 0,38 | 0,74 | 0,33 | 0,96 | 1,02 | 0,69 | 0,71 | mm |

Note: Dimensions are before optional solder application. For maximum overall dimensions including solder, add 0.0025 in / 0,064 mm to **B** and 0.006 in / 0,15 mm to **A** and **C**.

**Core material** Ceramic

**Terminations** Silver-palladium-platinum-glass frit. Other terminations available at additional cost.

**Ambient temperature** –40°C to +125°C with Irms current, +125°C to +140°C with derated current

**Storage temperature** Component: –55°C to +125°C. Tape and reel packaging: –55°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 Paper tape: 8 mm wide, 1 mm thick, 4 mm pocket spacing

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This product may not be used in medical or high risk applications without prior Coilcraft approval. Specifications subject to change without notice. Please check our web site for latest information.

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# ST312RAG Series (0603)

| Part number[1] | Inductance[2] (nH) | Percent tolerance | L test freq (MHz) | Q min[3] at 250 MHz | 900 MHz | | 1.7 GHz | | SRF min[4] (GHz) | DCR max[5] (Ohms) | Imax (mA) | Color code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | L typ | Q typ[3] | L typ | Q typ[3] | | | | |
| ST312RAG1N8JLZ | 1.8 | 5 | 250 | 17 | 1.77 | 40 | 1.77 | 65 | >5.00 | 0.035 | 800 | Black |
| ST312RAG3N3_LZ | 3.3 | 5,2 | 250 | 35 | 3.28 | 67 | 3.32 | 104 | >5.00 | 0.030 | 800 | Blue |
| ST312RAG3N6_LZ | 3.6 | 5,2 | 250 | 32 | 3.59 | 70 | 3.62 | 116 | >5.00 | 0.033 | 800 | Red |
| ST312RAG3N9_LZ | 3.9 | 5,2 | 250 | 33 | 3.88 | 68 | 3.95 | 108 | >5.00 | 0.045 | 800 | Brown |
| ST312RAG4N3_LZ | 4.3 | 5,2 | 250 | 28 | 4.29 | 58 | 4.31 | 91 | >5.00 | 0.080 | 710 | Orange |
| ST312RAG4N7_LZ | 4.7 | 5,2 | 250 | 22 | 4.65 | 48 | 4.71 | 75 | >5.00 | 0.100 | 720 | Violet |
| ST312RAG5N1_LZ | 5.1 | 5,2,1 | 250 | 38 | 5.08 | 84 | 5.12 | 140 | >5.00 | 0.042 | 800 | Green |
| ST312RAG5N6_LZ | 5.6 | 5,2,1 | 250 | 43 | 5.6 | 87 | 5.73 | 145 | >5.00 | 0.042 | 800 | Black |
| ST312RAG6N0_LZ | 6.0 | 5,2,1 | 250 | 40 | 5.92 | 94 | 6.12 | 154 | 4.80 | 0.053 | 800 | White |
| ST312RAG6N8_LZ | 6.8 | 5,2,1 | 250 | 34 | 6.83 | 88 | 7.05 | 143 | 4.64 | 0.050 | 800 | Red |
| ST312RAG7N2_LZ | 7.2 | 5,2,1 | 250 | 36 | 7.25 | 96 | 7.38 | 139 | 4.32 | 0.080 | 800 | Green |
| ST312RAG7N5_LZ | 7.5 | 5,2,1 | 250 | 32 | 7.55 | 81 | 7.85 | 112 | 4.24 | 0.100 | 800 | Brown |
| ST312RAG8N2_LZ | 8.2 | 5,2,1 | 250 | 37 | 8.21 | 96 | 8.39 | 148 | 4.72 | 0.054 | 800 | Orange |
| ST312RAG8N7_LZ | 8.7 | 5,2,1 | 250 | 33 | 8.73 | 97 | 9.00 | 149 | 4.40 | 0.054 | 800 | Yellow |
| ST312RAG9N1_LZ | 9.1 | 5,2,1 | 250 | 38 | 9.18 | 76 | 9.64 | 109 | 4.08 | 0.054 | 800 | Black |
| ST312RAG9N5_LZ | 9.5 | 5,2,1 | 250 | 40 | 9.56 | 98 | 9.99 | 149 | 3.92 | 0.053 | 800 | Blue |
| ST312RAG10N_LZ | 10 | 5,2,1 | 250 | 38 | 10.16 | 90 | 10.64 | 142 | 3.44 | 0.054 | 800 | Orange |
| ST312RAG11N_LZ | 11 | 5,2,1 | 250 | 36 | 11.06 | 78 | 11.82 | 108 | 3.28 | 0.075 | 800 | Gray |
| ST312RAG12N_LZ | 12 | 5,2,1 | 250 | 32 | 12.26 | 69 | 13.20 | 91 | 3.28 | 0.110 | 750 | Yellow |
| ST312RAG15N_LZ | 15 | 5,2,1 | 250 | 36 | 15.41 | 83 | 17.20 | 124 | 2.88 | 0.085 | 800 | Green |
| ST312RAG16N_LZ | 16 | 5,2,1 | 250 | 32 | 16.37 | 77 | 18.70 | 116 | 2.80 | 0.095 | 790 | White |
| ST312RAG18N_LZ | 18 | 5,2,1 | 250 | 34 | 18.56 | 76 | 20.90 | 100 | 2.64 | 0.075 | 800 | Blue |
| ST312RAG22N_LZ | 22 | 5,2,1 | 250 | 30 | 22.7 | 77 | 25.90 | 88 | 2.52 | 0.140 | 600 | Violet |
| ST312RAG23N_LZ | 23 | 5,2,1 | 250 | 36 | 24.0 | 69 | 29.53 | 80 | 2.40 | 0.195 | 560 | Orange |
| ST312RAG24N_LZ | 24 | 5,2,1 | 250 | 43 | 24.9 | 77 | 28.9 | 91 | 2.36 | 0.085 | 800 | Black |
| ST312RAG27N_LZ | 27 | 5,2,1 | 250 | 34 | 28.4 | 74 | 34.0 | 84 | 2.24 | 0.150 | 620 | Gray |
| ST312RAG30N_LZ | 30 | 5,2,1 | 250 | 40 | 31.5 | 82 | 37.9 | 82 | 2.24 | 0.130 | 720 | Brown |
| ST312RAG33N_LZ | 33 | 5,2,1 | 250 | 38 | 34.9 | 76 | 42.9 | 80 | 2.16 | 0.170 | 560 | White |
| ST312RAG36N_LZ | 36 | 5,2,1 | 250 | 36 | 38.5 | 69 | 50.0 | 64 | 2.00 | 0.225 | 480 | Red |
| ST312RAG39N_LZ | 39 | 5,2,1 | 250 | 38 | 41.5 | 78 | 51.9 | 74 | 1.96 | 0.190 | 540 | Black |
| ST312RAG43N_LZ | 43 | 5,2,1 | 250 | 36 | 45.7 | 83 | 58.1 | 76 | 1.96 | 0.170 | 630 | Orange |
| ST312RAG47N_LZ | 47 | 5,2,1 | 200 | 39 | 50.6 | 77 | 66.9 | 72 | 1.84 | 0.270 | 440 | Brown |
| ST312RAG51N_LZ | 51 | 5,2,1 | 200 | 37 | 54.6 | 73 | 71.3 | 62 | 1.84 | 0.280 | 440 | Blue |
| ST312RAG56N_LZ | 56 | 5,2,1 | 200 | 36 | 60.3 | 74 | 79.9 | 56 | 1.76 | 0.30 | 420 | Red |
| ST312RAG68N_LZ | 68 | 5,2,1 | 200 | 37 | 75.5 | 73 | 113.3 | 49 | 1.60 | 0.33 | 400 | Orange |
| ST312RAG72N_LZ | 72 | 5,2,1 | 150 | 36 | 80.8 | 69 | — | — | 1.52 | 0.42 | 380 | Yellow |
| ST312RAG75N_LZ | 75 | 5,2,1 | 150 | 36 | 84.6 | 71 | — | — | 1.52 | 0.52 | 340 | Violet |
| ST312RAG82N_LZ | 82 | 5,2,1 | 150 | 36 | 94.0 | 62 | — | — | 1.44 | 0.46 | 350 | Green |
| ST312RAG91N_LZ | 91 | 5,2,1 | 150 | 36 | 103.0 | 64 | — | — | 1.32 | 0.58 | 310 | White |
| ST312RAGR10_LZ | 100 | 5,2,1 | 150 | 36 | 114.0 | 69 | — | — | 1.36 | 0.54 | 340 | Blue |
| ST312RAGR11_LZ | 110 | 5,2,1 | 150 | 35 | 126.2 | 63 | — | — | 1.28 | 0.58 | 310 | Violet |
| ST312RAGR12_LZ | 120 | 5,2,1 | 150 | 36 | 142.4 | 61 | — | — | 1.24 | 0.72 | 280 | Gray |
| ST312RAGR15_LZ | 150 | 5,2,1 | 150 | 36 | 188.8 | 57 | — | — | 1.08 | 0.82 | 260 | White |

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

**ST312RAGR39GLZ**

**Tolerance:** **F** = 1% **G** = 2% **J** = 5%
**Termination:** **L** = RoHS compliant silver-palladium-platinum-glass frit.
**Special order:**
**S** = Tin-lead (63/37) over silver-palladium-platinum-glass frit.
**T** = Tin-silver-copper (95.5/4/0.5) over silver-palladium-platinum-glass frit.
**Testing:** **Z** = COTS
**H** = Screening per Coilcraft CP-SA-10001

2. Inductance measured at 250 MHz using a Coilcraft SMD-A test fixture and Coilcraft-provided correlation pieces with an Agilent/HP 4286A impedance analyzer or equivalent.
3. Q measured using an Agilent/HP 4291A with an Agilent/HP 16197A test fixture or equivalents.
4. SRF measured using an Agilent/HP 8753ES network analyzer or equivalent and a Coilcraft CCF1232 test fixture.
5. DCR measured on a Keithley 580 micro-ohmmeter or equivalent and a Coilcraft CCF1010 test fixture.
6. Electrical specifications at 25°C.

Refer to Doc 362 “Soldering Surface Mount Components” before soldering.

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