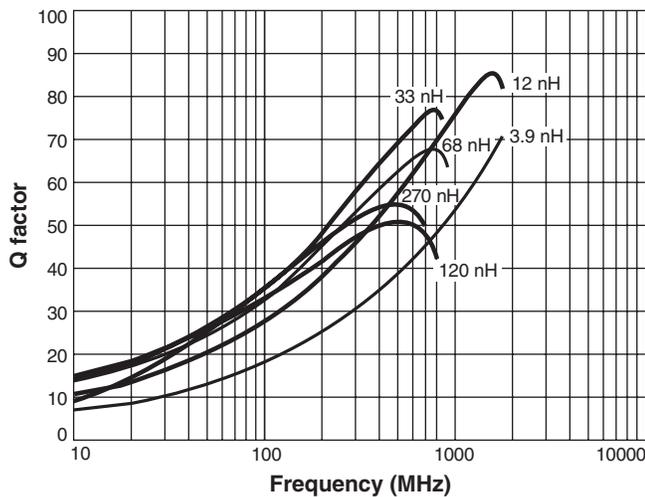


# Chip Inductors – 0603CS (1608)

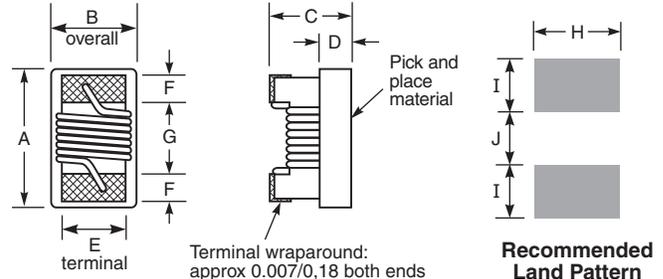
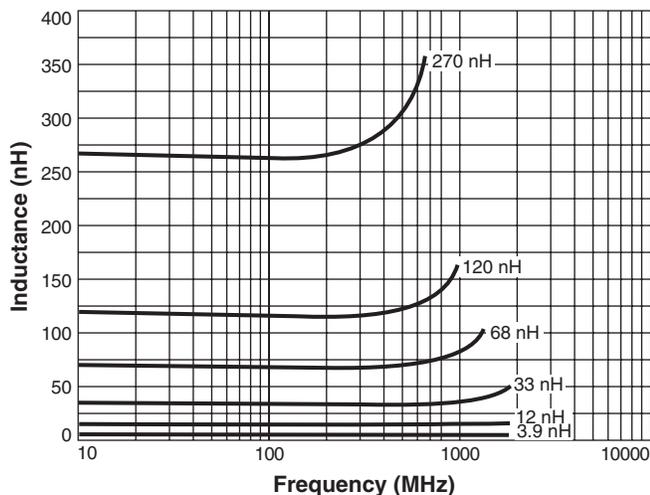


Ultra-small size, exceptional Q and high SRFs make these inductors ideal for high frequency applications where size is at a premium. They also have excellent DCR and current carrying characteristics.

## 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 silver-palladium-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)

**Failures in Time (FIT) / Mean Time Between Failures (MTBF)**

One per billion hours / one billion hours, calculated per Telcordia SR-332

**Packaging** 2000 per 7" 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](#).

## 0603CS Series (1608)

Designer's Kits C324A and B contain 10 each of all 5% values  
 Designer's Kits C324A-2 and B-2 contain 10 each of all 2% values



Part number <sup>1</sup>	Inductance <sup>2</sup> (nH)	Percent tolerance <sup>3</sup>	Q min <sup>4</sup>	900 MHz		1.7 GHz		SRF min <sup>5</sup> (GHz)	DCR max <sup>6</sup> (Ohms)	Irms <sup>7</sup> (mA)	Color dot <sup>8</sup>
				L typ	Q typ	L typ	Q typ				
0603CS-1N6XJE_	1.6 @ 250 MHz	<b>5</b>	24	1.67	49	1.65	63	12.5	0.030	700	Red
0603CS-1N8XJE_	1.8 @ 250 MHz	<b>5</b>	16	1.83	35	1.86	50	12.5	0.045	700	Black
0603CS-2N2XJE_	2.2 @ 250 MHz	<b>5</b>	13	2.22	31	2.24	44	12.5	0.250	100	Yellow
0603CS-3N3X_E_	3.3 @ 250 MHz	<b>5,3,2</b>	35	3.31	75	3.38	88	5.90	0.045	700	Blue
0603CS-3N6X_E_	3.6 @ 250 MHz	<b>5,3,2</b>	22	3.72	53	3.71	65	5.90	0.063	700	Red
0603CS-3N9X_E_	3.9 @ 250 MHz	<b>5,3,2</b>	22	3.95	49	3.96	67	6.90	0.080	700	Brown
0603CS-4N3X_E_	4.3 @ 250 MHz	<b>5,3,2</b>	22	4.32	50	4.33	70	5.90	0.063	700	Orange
0603CS-4N7X_E_	4.7 @ 250 MHz	<b>5,3,2</b>	20	4.72	47	4.75	57	5.80	0.116	700	Violet
0603CS-5N1X_E_	5.1 @ 250 MHz	<b>5,3,2</b>	20	4.93	47	4.95	56	5.70	0.140	700	Green
0603CS-5N6X_E_	5.6 @ 250 MHz	<b>5,3,2</b>	26	5.77	63	6.05	80	4.76	0.075	700	Black
0603CS-6N8X_E_	6.8 @ 250 MHz	<b>5,3,2</b>	27	6.75	60	7.10	81	5.80	0.110	700	Red
0603CS-7N5X_E_	7.5 @ 250 MHz	<b>5,3,2</b>	28	7.70	60	7.82	65	4.80	0.106	700	Brown
0603CS-8N2X_E_	8.2 @ 250 MHz	<b>5,3,2</b>	30	8.25	82	8.37	87	4.20	0.115	700	Orange
0603CS-8N7X_E_	8.7 @ 250 MHz	<b>5,3,2</b>	28	8.86	62	9.32	58	4.60	0.109	700	Yellow
0603CS-9N5X_E_	9.5 @ 250 MHz	<b>5,3,2</b>	28	9.7	59	9.92	61	5.40	0.135	700	Blue
0603CS-10NX_E_	10 @ 250 MHz	<b>5,3,2</b>	31	10.0	66	10.6	83	4.80	0.130	700	Orange
0603CS-11NX_E_	11 @ 250 MHz	<b>5,3,2</b>	30	11.0	53	11.5	56	4.00	0.130	700	Gray
0603CS-12NX_E_	12 @ 250 MHz	<b>5,3,2</b>	35	12.3	72	13.5	83	4.00	0.130	700	Yellow
0603CS-15NX_E_	15 @ 250 MHz	<b>5,3,2</b>	35	15.4	64	16.8	89	4.00	0.170	700	Green
0603CS-16NX_E_	16 @ 250 MHz	<b>5,3,2</b>	34	16.2	55	17.3	52	3.30	0.170	700	White
0603CS-18NX_E_	18 @ 250 MHz	<b>5,3,2</b>	35	18.7	70	21.4	69	3.10	0.170	700	Blue
0603CS-22NX_E_	22 @ 250 MHz	<b>5,3,2</b>	38	22.8	73	26.1	71	3.00	0.190	700	Violet
0603CS-23NX_E_	23 @ 250 MHz	<b>5,3,2</b>	38	24.1	71	28.0	67	2.85	0.190	700	Orange
0603CS-24NX_E_	24 @ 250 MHz	<b>5,3,2</b>	36	24.5	45	28.7	39	2.65	0.190	700	Black
0603CS-27NX_E_	27 @ 250 MHz	<b>5,3,2</b>	40	29.2	74	34.6	65	2.80	0.220	600	Gray
0603CS-30NX_E_	30 @ 250 MHz	<b>5,3,2</b>	37	31.4	47	39.9	28	2.25	0.220	600	Brown
0603CS-33NX_E_	33 @ 250 MHz	<b>5,3,2</b>	40	36.0	67	49.5	42	2.30	0.220	600	White
0603CS-36NX_E_	36 @ 250 MHz	<b>5,3,2</b>	37	39.4	47	52.7	24	2.08	0.250	600	Red
0603CS-39NX_E_	39 @ 250 MHz	<b>5,3,2</b>	40	42.7	60	60.2	40	2.20	0.250	600	Black
0603CS-43NX_E_	43 @ 250 MHz	<b>5,3,2</b>	38	47.0	44	64.9	21	2.00	0.280	600	Orange
0603CS-47NX_E_	47 @ 200 MHz	<b>5,3,2</b>	38	52.2	62	77.2	35	2.00	0.280	600	Brown
0603CS-51NX_E_	51 @ 200 MHz	<b>5,3,2</b>	35	55.5	69	82.2	34	1.90	0.270	600	Blue
0603CS-56NX_E_	56 @ 200 MHz	<b>5,3,2</b>	38	62.5	56	97.0	26	1.90	0.310	600	Red
0603CS-68NX_E_	68 @ 200 MHz	<b>5,3,2</b>	37	80.5	54	168	21	1.70	0.340	600	Orange
0603CS-72NX_E_	72 @ 150 MHz	<b>5,3,2</b>	34	82.0	53	135	20	1.70	0.490	400	Yellow
0603CS-82NX_E_	82 @ 150 MHz	<b>5,3,2</b>	34	96.2	54	177	21	1.70	0.540	400	Green
0603CS-R10X_E_	100 @ 150 MHz	<b>5,3,2</b>	34	124	49	—	—	1.40	0.580	400	Blue
0603CS-R11X_E_	110 @ 150 MHz	<b>5,3,2</b>	32	138	43	—	—	1.35	0.610	300	Violet
0603CS-R12X_E_	120 @ 150 MHz	<b>5,3,2</b>	32	166	39	—	—	1.30	0.650	300	Gray
0603CS-R15X_E_	150 @ 150 MHz	<b>5,3,2</b>	28	250	25	—	—	0.990	0.920	280	White
0603CS-R18X_E_	180 @ 100 MHz	<b>5,3,2</b>	25	305	22	—	—	0.990	1.25	240	Black
0603CS-R20X_E_	200 @ 100 MHz	<b>5,3,2</b>	25	—	—	—	—	0.900	1.98	200	Green
0603CS-R21X_E_	210 @ 100 MHz	<b>5,3,2</b>	27	—	—	—	—	0.895	2.06	200	Gray
0603CS-R22X_E_	220 @ 100 MHz	<b>5,3,2</b>	25	—	—	—	—	0.900	2.10	200	Brown
0603CS-R25X_E_	250 @ 100 MHz	<b>5,3,2</b>	25	—	—	—	—	0.822	3.55	120	Violet
0603CS-R27X_E_	270 @ 100 MHz	<b>5,3,2</b>	26	—	—	—	—	0.830	2.16	170	Red
0603CS-R33X_E_	330 @ 100 MHz	<b>5,3,2</b>	25	—	—	—	—	0.900	3.89	100	Blue
0603CS-R39X_E_	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-R39XJEW

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

(Table shows stock tolerances in bold.)

**Termination:** 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).

U = Less than full reel. In tape, but not machine ready.  
 To have a leader and trailer added (\$25 charge),  
 use code letter W instead.

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.

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

**SPICE models**  
ON OUR WEB SITE



www.coilcraft.com

US +1-847-639-6400 sales@coilcraft.com

UK +44-1236-730595 sales@coilcraft-europe.com

Taiwan +886-2-2264 3646 sales@coilcraft.com.tw

China +86-21-6218 8074 sales@coilcraft.com.cn

Singapore +65-6484 8412 sales@coilcraft.com.sg

Document 195-2 Revised 06/11/14

© Coilcraft Inc. 2017

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