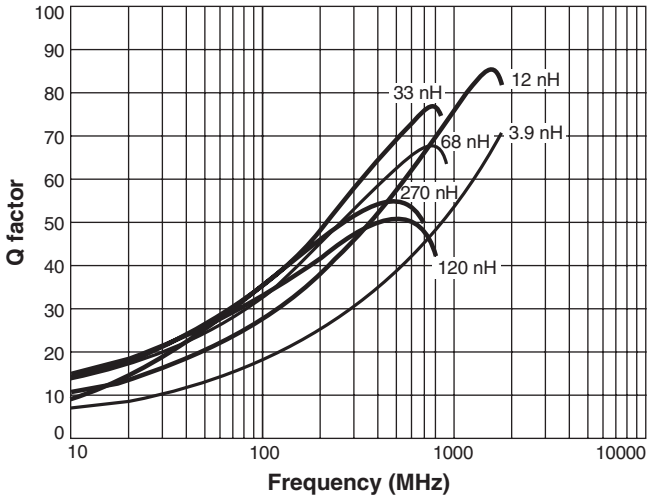
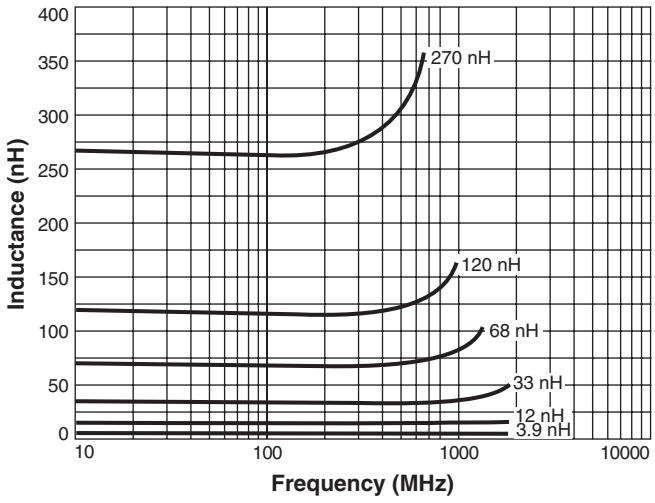
Chip Inductors – 0603CS (1608)

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.

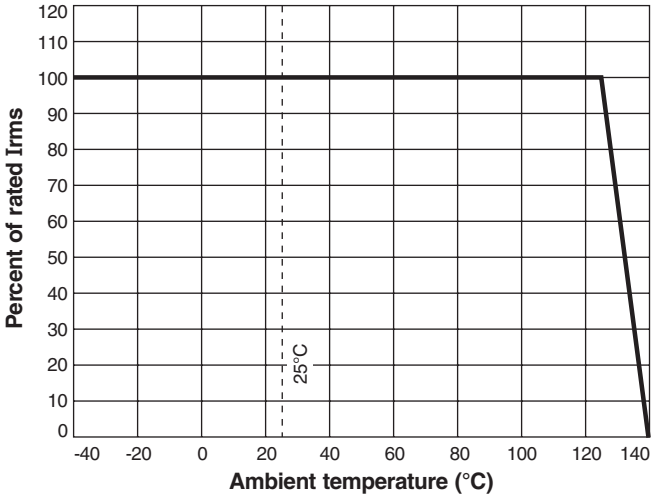
Typical Q vs Frequency

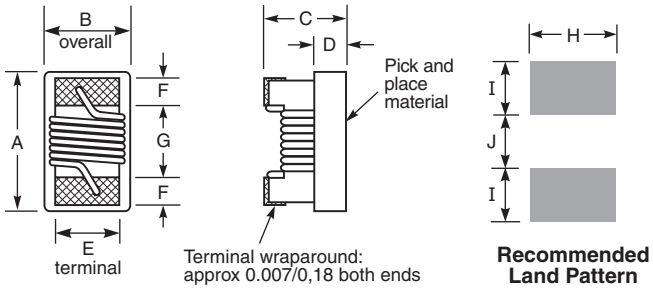


Typical L vs Frequency



Irms Derating





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

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 optional

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, +125°C to +140°C with derated current

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 Only pure water or alcohol recommended

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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[1]	Inductance[2] (nH)	Percent tolerance[3]	Q min[4]	900 MHz L typ	900 MHz Q typ	1.7 GHz L typ	1.7 GHz Q typ	SRF min[5] (GHz)	DCR max[6] (Ohms)	Irms[7] (mA)	Color dot
0603CS-1N6X_L_	1.6 @ 250 MHz	**5**	24	1.67	49	1.65	63	12.5	0.030	700	Red
0603CS-1N8X_L_	1.8 @ 250 MHz	**5**	16	1.83	35	1.86	50	12.5	0.045	700	Black
0603CS-2N2X_L_	2.2 @ 250 MHz	**5**	13	2.22	31	2.24	44	12.5	0.250	100	Yellow
0603CS-3N3X_L_	3.3 @ 250 MHz	**5,2**	35	3.31	75	3.38	88	5.90	0.045	700	Blue
0603CS-3N6X_L_	3.6 @ 250 MHz	**5,2**	22	3.72	53	3.71	65	5.90	0.063	700	Red
0603CS-3N9X_L_	3.9 @ 250 MHz	**5,2**	22	3.95	49	3.96	67	6.90	0.080	700	Brown
0603CS-4N3X_L_	4.3 @ 250 MHz	**5,2**	22	4.32	50	4.33	70	5.90	0.063	700	Orange
0603CS-4N7X_L_	4.7 @ 250 MHz	**5,2**	20	4.72	47	4.75	57	5.80	0.116	700	Violet
0603CS-5N1X_L_	5.1 @ 250 MHz	**5,2**	20	4.93	47	4.95	56	5.70	0.140	700	Green
0603CS-5N6X_L_	5.6 @ 250 MHz	**5,2**	26	5.77	63	6.05	80	4.76	0.075	700	Black
0603CS-6N8X_L_	6.8 @ 250 MHz	**5,2**	27	6.75	60	7.10	81	5.80	0.110	700	Red
0603CS-7N5X_L_	7.5 @ 250 MHz	**5,2**	28	7.70	60	7.82	65	4.80	0.106	700	Brown
0603CS-8N2X_L_	8.2 @ 250 MHz	**5,2**	30	8.25	82	8.37	87	4.20	0.115	700	Orange
0603CS-8N7X_L_	8.7 @ 250 MHz	**5,2**	28	8.86	62	9.32	58	4.60	0.109	700	Yellow
0603CS-9N5X_L_	9.5 @ 250 MHz	**5,2**	28	9.7	59	9.92	61	5.40	0.135	700	Blue
0603CS-10NX_L_	10 @ 250 MHz	**5,2**	31	10.0	66	10.6	83	4.80	0.130	700	Orange
0603CS-11NX_L_	11 @ 250 MHz	**5,2**	30	11.0	53	11.5	56	4.00	0.130	700	Gray
0603CS-12NX_L_	12 @ 250 MHz	**5,2**	35	12.3	72	13.5	83	4.00	0.130	700	Yellow
0603CS-15NX_L_	15 @ 250 MHz	**5,2**	35	15.4	64	16.8	89	4.00	0.170	700	Green
0603CS-16NX_L_	16 @ 250 MHz	**5,2**	34	16.2	55	17.3	52	3.30	0.170	700	White
0603CS-18NX_L_	18 @ 250 MHz	**5,2**	35	18.7	70	21.4	69	3.10	0.170	700	Blue
0603CS-22NX_L_	22 @ 250 MHz	**5,2**	38	22.8	73	26.1	71	3.00	0.190	700	Violet
0603CS-23NX_L_	23 @ 250 MHz	**5,2**	38	24.1	71	28.0	67	2.85	0.190	700	Orange
0603CS-24NX_L_	24 @ 250 MHz	**5,2**	36	24.5	45	28.7	39	2.65	0.190	700	Black
0603CS-27NX_L_	27 @ 250 MHz	**5,2**	40	29.2	74	34.6	65	2.80	0.220	600	Gray
0603CS-30NX_L_	30 @ 250 MHz	**5,2**	37	31.4	47	39.9	28	2.25	0.220	600	Brown
0603CS-33NX_L_	33 @ 250 MHz	**5,2**	40	36.0	67	49.5	42	2.30	0.220	600	White
0603CS-36NX_L_	36 @ 250 MHz	**5,2**	37	39.4	47	52.7	24	2.08	0.250	600	Red
0603CS-39NX_L_	39 @ 250 MHz	**5,2**	40	42.7	60	60.2	40	2.20	0.250	600	Black
0603CS-43NX_L_	43 @ 250 MHz	**5,2**	38	47.0	44	64.9	21	2.00	0.280	600	Orange
0603CS-47NX_L_	47 @ 200 MHz	**5,2**	38	52.2	62	77.2	35	2.00	0.280	600	Brown
0603CS-51NX_L_	51 @ 200 MHz	**5,2**	35	55.5	69	82.2	34	1.90	0.270	600	Blue
0603CS-56NX_L_	56 @ 200 MHz	**5,2**	38	62.5	56	97.0	26	1.90	0.310	600	Red
0603CS-68NX_L_	68 @ 200 MHz	**5,2**	37	80.5	54	168	21	1.70	0.340	600	Orange
0603CS-72NX_L_	72 @ 150 MHz	**5,2**	34	82.0	53	135	20	1.70	0.490	400	Yellow
0603CS-82NX_L_	82 @ 150 MHz	**5,2**	34	96.2	54	177	21	1.70	0.540	400	Green
0603CS-R10X_L_	100 @ 150 MHz	**5,2**	34	124	49	—	—	1.40	0.580	400	Blue
0603CS-R11X_L_	110 @ 150 MHz	**5,2**	32	138	43	—	—	1.35	0.610	300	Violet
0603CS-R12X_L_	120 @ 150 MHz	**5,2**	32	166	39	—	—	1.30	0.650	300	Gray
0603CS-R15X_L_	150 @ 150 MHz	**5,2**	28	250	25	—	—	0.990	0.920	280	White
0603CS-R18X_L_	180 @ 100 MHz	**5,2**	25	305	22	—	—	0.990	1.25	240	Black
0603CS-R20X_L_	200 @ 100 MHz	**5,2**	25	—	—	—	—	0.900	1.98	200	Green
0603CS-R21X_L_	210 @ 100 MHz	**5,2**	27	—	—	—	—	0.895	2.06	200	Gray
0603CS-R22X_L_	220 @ 100 MHz	**5,2**	25	—	—	—	—	0.900	2.10	200	Brown
0603CS-R25X_L_	250 @ 100 MHz	**5,2**	25	—	—	—	—	0.822	3.55	120	Violet
0603CS-R27X_L_	270 @ 100 MHz	**5,2**	26	—	—	—	—	0.830	2.16	170	Red
0603CS-R33X_L_	330 @ 100 MHz	**5,2**	25	—	—	—	—	0.900	3.89	100	Blue
0603CS-R39X_L_	390 @ 100 MHz	**5,2**	25	—	—	—	—	0.780	4.35	100	Yellow

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

0603CS-R39XJLW

Tolerance: **G** = 2% **J** = 5% (Table shows stock tolerances in bold.)
Termination: **L** = RoHS compliant silver-palladium-platinum-glass frit.
E = Halogen free component. RoHS compliant 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).
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.
8. Electrical specifications at 25°C.

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

S-Parameter files
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