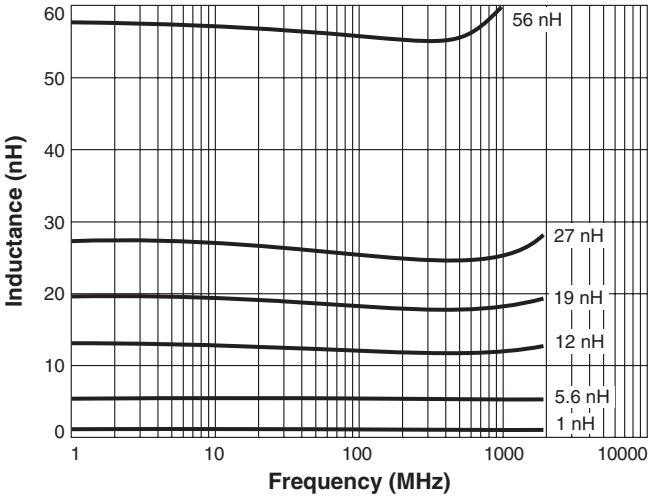
Chip Inductors – 0402CS (1005)

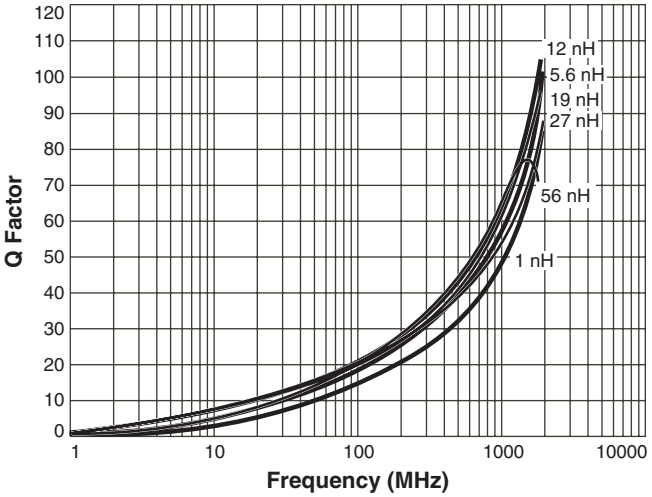
Continuing in our long tradition of innovation and leadership, Coilcraft introduced the industry's first 0402 wirewound inductor.

This series shares all of the characteristics of Coilcraft's other ceramic inductors: exceptionally high Q factors, especially at use frequencies; outstanding self-resonant frequency; tight inductance tolerance; and excellent batch-to-batch consistency.

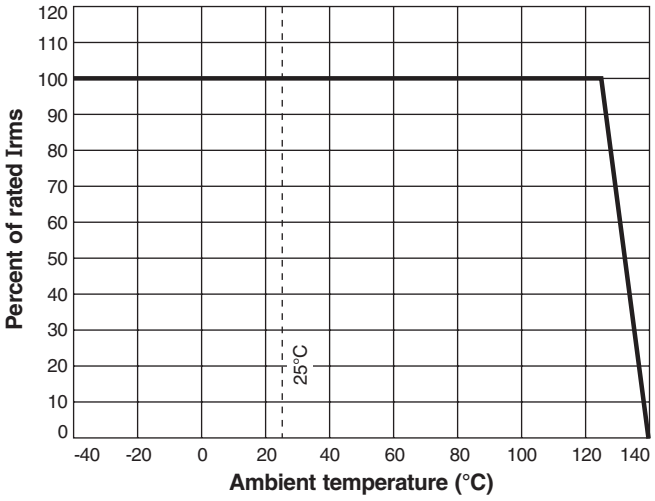
Typical L vs Frequency

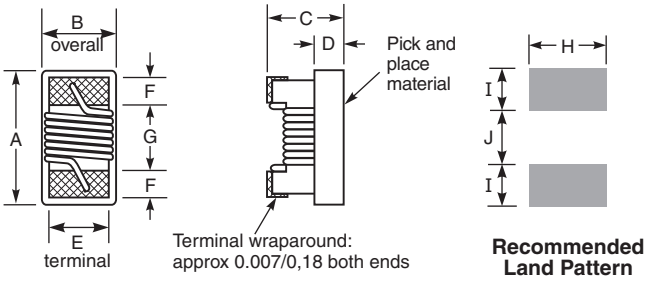


Typical Q vs Frequency



Irms Derating





A max	B max	C max	D ref	E	F	G	H	I	J	
0.047	0.025	0.026	0.010	0.020	0.009	0.022	0.026	0.014	0.018	inches
1,19	0,64	0,66	0,25	0,51	0,23	0,56	0,66	0,36	0,46	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 0.8 – 1.0 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 or 5000 per 7″ reel Paper tape: 8 mm wide, 1.68 mm thick, 2 mm pocket spacing

PCB washing Tested with pure water or alcohol only. For other solvents, see Doc787_PCB_Washing.pdf.

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Document 198-1 Revised 05/03/13

0402CS Series (1005)

Designer's Kits C328A and **B** contain 20 each of all 5% values
Designer's Kits C328A-2 and **B-2** contain 20 each of all 2% values

Part number[1]	Inductance[2] (nH)	Percent tolerance[3]	900 MHz L typ	900 MHz Q typ[4]	1.7 GHz L typ	1.7 GHz Q typ[4]	SRF min[5] (GHz)	DCR max[6] (Ohms)	Irms[7] (mA)
0402CS-1N0XJL_	1.0	**5**	1.02	77	1.02	69	12.70	0.045	1360
0402CS-1N2XJL_	1.2	**5**	1.17	28	1.17	38	12.90	0.090	740
0402CS-1N8XJL_	1.8	**5**,3,**2**	1.78	54	1.78	75	12.00	0.070	1040
0402CS-1N9XJL_	1.9	**5**,3,**2**	1.72	68	1.74	82	11.30	0.070	1040
0402CS-2N0X_L_	2.0	**5**,3,**2**	1.93	54	1.93	75	11.10	0.070	1040
0402CS-2N2X_L_	2.2	**5**,3,**2**	2.19	59	2.23	100	10.80	0.070	960
0402CS-2N4X_L_	2.4	**5**,3,2	2.24	51	2.27	68	10.50	0.068	790
0402CS-2N7X_L_	2.7	**5**,3,**2**	2.58	42	2.60	61	10.40	0.120	640
0402CS-3N3X_L_	3.3	**5**,3,**2**	3.10	65	3.12	87	7.00	0.066	840
0402CS-3N6X_L_	3.6	**5**,3,**2**	3.56	45	3.62	71	6.80	0.066	840
0402CS-3N9X_L_	3.9	**5**,3,**2**	3.89	50	4.00	75	6.00	0.066	840
0402CS-4N3X_L_	4.3	**5**,3,**2**	4.19	47	4.30	71	6.00	0.091	700
0402CS-4N7X_L_	4.7	**5**,3,**2**	4.55	48	4.68	68	4.77	0.130	640
0402CS-5N1X_L_	5.1	**5**,3,**2**	5.15	56	5.25	82	4.80	0.083	800
0402CS-5N6X_L_	5.6	**5**,3,**2**	5.16	54	5.28	81	4.80	0.083	760
0402CS-6N2X_L_	6.2	**5**,3,**2**	6.16	52	6.37	76	4.80	0.083	760
0402CS-6N8X_L_	6.8	**5**,3,**2**	6.56	63	6.93	78	4.80	0.083	680
0402CS-7N5X_L_	7.5	**5**,3,**2**	7.91	60	8.22	88	4.80	0.10	680
0402CS-8N2X_L_	8.2	**5**,3,**2**	8.50	57	8.85	84	4.40	0.10	680
0402CS-8N7X_L_	8.7	**5**,3,**2**	8.78	54	9.21	73	4.10	0.20	480
0402CS-9N0X_L_	9.0	**5**,3,**2**	9.07	62	9.53	78	4.16	0.10	680
0402CS-9N5X_L_	9.5	**5**,3,**2**	9.42	54	9.98	69	4.00	0.20	480
0402CS-10NX_L_	10	**5**,3,**2**	9.8	50	10.10	67	3.90	0.20	480
0402CS-11NX_L_	11	**5**,3,**2**	10.7	52	11.20	78	3.68	0.12	640
0402CS-12NX_L_	12	**5**,3,**2**	11.9	53	12.70	71	3.60	0.12	640
0402CS-13NX_L_	13	**5**,3,**2**	13.4	51	14.63	57	3.45	0.21	440
0402CS-15NX_L_	15	**5**,3,**2**	14.6	55	15.50	77	3.28	0.17	560
0402CS-16NX_L_	16	**5**,3,**2**	16.6	46	18.86	47	3.10	0.22	560
0402CS-18NX_L_	18	**5**,3,**2**	18.3	57	20.28	62	3.10	0.23	420
0402CS-19NX_L_	19	**5**,3,**2**	19.1	50	21.10	67	3.04	0.20	480
0402CS-20NX_L_	20	**5**,3,**2**	20.7	52	23.66	53	3.00	0.25	420
0402CS-22NX_L_	22	**5**,3,**2**	23.2	53	26.75	53	2.80	0.30	400
0402CS-23NX_L_	23	**5**,3,**2**	23.8	49	26.90	64	2.72	0.30	400
0402CS-24NX_L_	24	**5**,3,**2**	25.1	51	29.50	50	2.70	0.30	400
0402CS-27NX_L_	27	**5**,3,**2**	28.7	49	33.50	63	2.48	0.30	400
0402CS-30NX_L_	30	**5**,3,**2**	31.1	46	38.50	39	2.35	0.30	400
0402CS-33NX_L_	33	**5**,3,**2**	34.9	31	41.74	32	2.35	0.30	400
0402CS-36NX_L_	36	**5**,3,**2**	39.5	44	48.40	53	2.32	0.44	320
0402CS-39NX_L_	39	**5**,3,**2**	41.7	47	50.23	45	2.10	0.55	200
0402CS-40NX_L_	40	**5**,3,**2**	39.0	44	47.40	33	2.24	0.44	320
0402CS-43NX_L_	43	**5**,3,**2**	45.8	46	61.55	34	2.03	0.81	100
0402CS-47NX_L_	47	**5**,3,**2**	50.0	38	–	–	2.10	0.83	150
0402CS-51NX_L_	51	**5**,3,**2**	56.6	40	–	–	1.75	0.82	100
0402CS-56NX_L_	56	**5**,3,**2**	62.8	42	–	–	1.76	0.97	100
0402CS-68NX_L_	68	**5**,3,**2**	78.2	36	–	–	1.62	1.12	100
0402CS-82NX_L_	82	**5**,3,**2**	–	–	–	–	1.26	1.55	50
0402CS-R10X_L_	100	**5**,3,**2**	–	–	–	–	1.16	2.00	30
0402CS-R12X_L_	120	**5**,3,2	–	–	–	–	1.90	2.20	50

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

0402CS-68NXJLW

Tolerance: **G** = 2% **H** = 3% **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).
Q = 7″ machine-ready reel. EIA-481 punched paper tape (5000 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 at 250 MHz using a Coilcraft SMD-F test fixture and Coilcraft-provided correlation pieces with an Agilent/HP 4286 impedance analyzer.
3. Tolerances in bold are stocked for immediate shipment.
4. Q measured using an Agilent/HP 4291A with an Agilent/HP 16193 test fixture.
5. For SRF >6 GHz, measured using an Agilent/HP 8722ES network analyzer and a Coilcraft SMD-D test fixture. For SRF ≤6 GHz, measured using an Agilent/HP 8753D network analyzer and a Coilcraft SMD-D test fixture.
6. DCR measured on a micro-ohmmeter.
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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SPICE models
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Document 198-2 Revised 05/03/13