



# Chip Inductors – 0402CS(1005)

## SPECIFICATIONS

Part number	Inductance <sup>1</sup> (nH)	Percent tolerance <sup>2</sup>	900 MHz		1.7 GHz		SRF min <sup>4</sup> (GHz)	DCR max <sup>5</sup> (Ohms)	Irms <sup>6</sup> (mA)
			L typ	Q typ <sup>3</sup>	L typ	Q typ <sup>3</sup>			
0402CS-1N0J	1.0 @ 250MHz	5	1.02	77	1.02	69	12.70	0.045	1360
0402CS-1N2J	1.2 @ 250MHz	5	1.17	28	1.17	38	12.90	0.090	754
0402CS-1N8J	1.8 @ 250MHz	5	1.78	54	1.78	75	12.00	0.070	1040
0402CS-1N9J	1.9 @ 250MHz	5	1.72	68	1.74	82	11.30	0.070	1040
0402CS-2N0_	2.0 @ 250MHz	5,2	1.93	54	1.93	75	11.10	0.070	1040
0402CS-2N2_	2.2 @ 250MHz	5,2	2.19	59	2.23	100	10.80	0.070	960
0402CS-2N4_	2.4 @ 250MHz	5,2	2.24	51	2.27	68	10.50	0.068	790
0402CS-2N7_	2.7 @ 250MHz	5,2	2.58	42	2.60	61	10.40	0.120	640
0402CS-3N3_	3.3 @ 250MHz	5,2	3.10	65	3.12	87	7.00	0.066	840
0402CS-3N6_	3.6 @ 250MHz	5,2	3.56	45	3.62	71	6.80	0.066	840
0402CS-3N9_	3.9 @ 250MHz	5,2	3.89	50	4.00	75	6.00	0.066	840
0402CS-4N3_	4.3 @ 250MHz	5,2	4.19	47	4.30	71	6.00	0.091	700
0402CS-4N7_	4.7 @ 250MHz	5,2	4.55	48	4.68	68	4.77	0.130	640
0402CS-5N1_	5.1 @ 250MHz	5,2	5.15	56	5.25	82	4.80	0.083	800
0402CS-5N6_	5.6 @ 250MHz	5,2	5.16	54	5.28	81	4.80	0.083	760
0402CS-6N2_	6.2 @ 250MHz	5,2	6.16	52	6.37	76	4.80	0.083	760
0402CS-6N8_	6.8 @ 250MHz	5,2	6.56	63	6.93	78	4.80	0.083	680
0402CS-7N5_	7.5 @ 250MHz	5,2	7.91	60	8.22	88	4.80	0.100	680
0402CS-8N2_	8.2 @ 250MHz	5,2	8.50	57	8.85	84	4.40	0.100	680
0402CS-8N7_	8.7 @ 250MHz	5,2	8.78	54	9.21	73	4.10	0.200	480
0402CS-9N0_	9.0 @ 250MHz	5,2	9.07	62	9.53	78	4.16	0.100	681
0402CS-9N5_	9.5 @ 250MHz	5,2	9.42	54	9.98	69	4.00	0.200	480
0402CS-10N_	10 @ 250MHz	5,2	9.80	50	10.10	67	3.90	0.200	480
0402CS-11N_	11 @ 250MHz	5,2	10.70	52	11.15	78	3.68	0.120	640
0402CS-12N_	12 @ 250MHz	5,2	11.90	53	12.68	71	3.60	0.120	640
0402CS-13N_	13 @ 250MHz	5,2	13.40	51	14.63	57	3.45	0.210	440
0402CS-15N_	15 @ 250MHz	5,2	14.60	55	15.50	77	3.28	0.170	560
0402CS-16N_	16 @ 250MHz	5,2	16.60	46	18.86	47	3.10	0.220	560
0402CS-18N_	18 @ 250MHz	5,2	18.30	57	20.28	62	3.10	0.230	420
0402CS-19N_	19 @ 250MHz	5,2	19.10	50	21.11	67	3.04	0.200	480
0402CS-20N_	20 @ 250MHz	5,2	20.70	52	23.66	53	3.00	0.250	420
0402CS-22N_	22 @ 250MHz	5,2	23.20	53	26.75	53	2.80	0.300	400
0402CS-23N_	23 @ 250MHz	5,2	23.80	49	26.85	64	2.72	0.300	400
0402CS-24N_	24 @ 250MHz	5,2	25.10	51	29.50	50	2.70	0.300	400
0402CS-27N_	27 @ 250MHz	5,2	28.70	49	33.50	63	2.48	0.300	400
0402CS-30N_	30 @ 250MHz	5,2	31.10	46	38.50	39	2.35	0.300	400
0402CS-33N_	33 @ 250MHz	5,2	34.90	31	41.74	32	2.35	0.300	400
0402CS-36N_	36 @ 250MHz	5,2	39.50	44	48.40	53	2.32	0.440	320
0402CS-39N_	39 @ 250MHz	5,2	41.70	47	50.23	45	2.10	0.550	200
0402CS-40N_	40 @ 250MHz	5,2	39.00	44	47.41	33	2.24	0.440	320

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			L typ	Q typ <sup>3</sup>	L typ	Q typ <sup>4</sup>			
0402CS-43N	<b>43 @ 250MHz</b>	5,2	45.80	<b>46</b>	61.55	<b>34</b>	2.03	0.810	100
0402CS-47N	<b>47 @ 250MHz</b>	5,2	50.00	<b>38</b>	–	–	2.10	0.830	150
0402CS-51N	<b>51 @ 250MHz</b>	5,2	56.60	<b>40</b>	–	–	1.75	0.820	100
0402CS-56N	<b>56 @ 250MHz</b>	5,2	62.80	<b>42</b>	–	–	1.76	0.970	100
0402CS-68N	<b>68 @ 250MHz</b>	5,2	78.19	<b>36</b>	–	–	1.62	1.120	100
0402CS-82N	<b>82 @ 250MHz</b>	5,2	–	–	–	–	1.26	1.550	50
0402CS-R10	<b>100 @ 250MHz</b>	5,2	–	–	–	–	1.16	2.000	30
0402CS-R12J	<b>120 @ 250MHz</b>	5	–	–	–	–	1.90	2.200	50

- Inductance measured at 250 MHz using a Frcoil SMD-F test fixture and Frcoil-provided correlation pieces with an Agilent/HP 4286 impedance analyzer.
- Tolerances in bold are stocked for immediate shipment.
- Q measured using an Agilent/HP 4291A with an Agilent/HP 16193 test fixture.
- For SRF >6 GHz, measured using an Agilent/HP 8722ES network analyzer and a Frcoil SMD -D test fixture. For SRF ≤6 GHz, measured using an Agilent/HP 8753D network analyzer and a Frcoil SMD-D test fixture.
- DCR measured on a micro-ohmmeter.
- Current that causes a 15°C temperature rise from 25°C ambient.
- Electrical specifications at 25°C.

**Core material** Ceramic

**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. 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

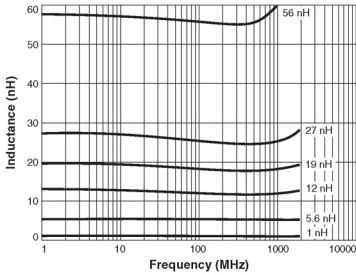
Continuing in our long tradition of innovation and leadership, Frcoil introduced the industry's first 0402 wirewound inductor.

This series shares all of the characteristics of Frcoil'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.

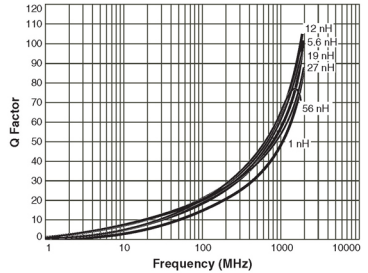
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## TYPICAL ELECTRICAL CHARACTERISTICS

Typical L vs Frequency



Typical Q vs Frequency



Irms Derating

