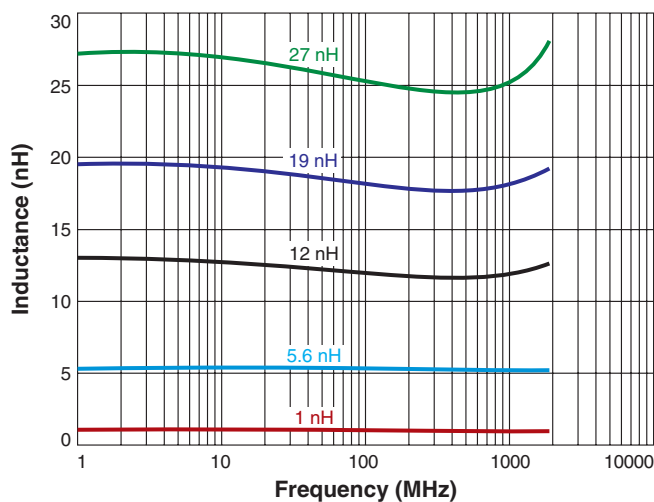


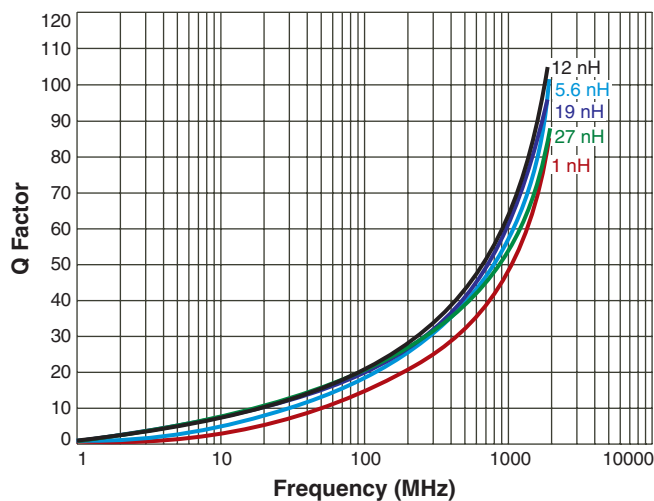
# Chip Inductors for Critical Applications<sup>ST235RAA</sup>

This 0402 size chip inductor 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



**Core material** Ceramic

**Ambient temperature**  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  with  $I_{\text{max}}$  current

**Maximum part temperature**  $+140^{\circ}\text{C}$  (ambient + temp rise).

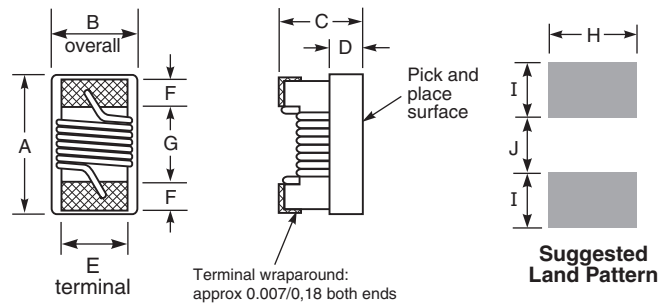
**Storage temperature** Component:  $-55^{\circ}\text{C}$  to  $+140^{\circ}\text{C}$ .  
Tape and reel packaging:  $-55^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$

**Resistance to soldering heat** Max three 40 second reflows at  $+260^{\circ}\text{C}$ , parts cooled to room temperature between cycles

**Temperature Coefficient of Inductance (TCL)**  $+25$  to  $+155$  ppm/ $^{\circ}\text{C}$

**Moisture Sensitivity Level (MSL)** 1 (unlimited floor life at  $<30^{\circ}\text{C}$  / 85% relative humidity)

**Packaging** 2000 per 7" reel Paper tape: 8 mm wide, 0.68 mm thick, 2 mm pocket spacing



A	B	C	D	E	F	G	H	I	J
max	max	max	ref						
0.047	0.025	0.026	0.010	0.020	0.009	0.022	0.026	0.014	0.018
1,19	0,64	0,66	0,25	0,51	0,23	0,56	0,66	0,36	0,46

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.

## ST235RAA Series (0402)

**COILCRAFT** ACCURATE  
**PRECISION** REPEATABLE  
 MEASUREMENTS  
 SEE WEB SITE **TEST FIXTURES**

Part number <sup>1</sup>	Inductance <sup>2</sup> (nH)	Percent tolerance	Q min <sup>3</sup>	900 MHz		1.7 GHz		SRF min <sup>5</sup> (GHz)	DCR max <sup>6</sup> (Ohms)	I <sub>max</sub> (mA)
				L typ	Q typ <sup>4</sup>	L typ	Q typ <sup>4</sup>			
ST235RAA1N0JRZ	1.0	5	20	1.02	77	1.02	69	>5.00	0.045	600
ST235RAA1N2JRZ	1.2	5	12	1.17	28	1.17	38	>5.00	0.090	360
ST235RAA1N8JRZ	1.8	5	20	1.78	54	1.78	75	>5.00	0.070	600
ST235RAA1N9JRZ	1.9	5	20	1.72	68	1.74	82	>5.00	0.070	600
ST235RAA2N0_RZ	2.0	5,2	20	1.93	54	1.93	75	>5.00	0.070	600
ST235RAA2N2_RZ	2.2	5,2	20	2.19	59	2.23	100	>5.00	0.070	600
ST235RAA2N4_RZ	2.4	5,2	20	2.24	51	2.27	68	>5.00	0.068	600
ST235RAA2N7_RZ	2.7	5,2	16	2.58	42	2.60	61	>5.00	0.120	425
ST235RAA3N3_RZ	3.3	5,2,1	20	3.10	65	3.12	87	>5.00	0.066	600
ST235RAA3N6_RZ	3.6	5,2,1	20	3.56	45	3.62	71	>5.00	0.066	600
ST235RAA3N9_RZ	3.9	5,2,1	20	3.89	50	4.00	75	>5.00	0.066	600
ST235RAA4N3_RZ	4.3	5,2,1	20	4.19	47	4.30	71	>5.00	0.091	600
ST235RAA4N7_RZ	4.7	5,2,1	20	4.55	48	4.68	68	4.77	0.130	600
ST235RAA5N1_RZ	5.1	5,2,1	20	5.15	56	5.25	82	4.80	0.083	600
ST235RAA5N6_RZ	5.6	5,2,1	20	5.16	54	5.28	81	4.80	0.083	600
ST235RAA6N2_RZ	6.2	5,2,1	20	6.16	52	6.37	76	4.80	0.083	600
ST235RAA6N8_RZ	6.8	5,2,1	20	6.56	63	6.93	78	4.80	0.083	600
ST235RAA7N5_RZ	7.5	5,2,1	22	7.91	60	8.22	88	4.80	0.104	600
ST235RAA8N2_RZ	8.2	5,2,1	22	8.50	57	8.85	84	4.40	0.104	600
ST235RAA8N7_RZ	8.7	5,2,1	20	8.78	54	9.21	73	3.80	0.195	480
ST235RAA9N0_RZ	9.0	5,2,1	22	9.07	62	9.53	78	4.66	0.100	600
ST235RAA9N5_RZ	9.5	5,2,1	20	9.42	54	9.98	69	3.48	0.195	480
ST235RAA10N_RZ	10.0	5,2,1	21	9.8	50	10.10	67	3.68	0.195	480
ST235RAA11N_RZ	11.0	5,2,1	24	10.7	52	11.20	78	3.48	0.120	580
ST235RAA12N_RZ	12.0	5,2,1	24	11.9	53	12.70	71	3.60	0.120	580

Continued on next page

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

ST235RAA12NGRZ

**Tolerance:** F = 1% G = 2% J = 5%

**Termination:** R = Matte tin over nickel over silver-platinum glass frit  
 A = Gold over nickel over moly-mag  
 L = Silver-palladium-platinum glass frit.  
 P = Tin-lead (63/37) over tin over nickel over silver-platinum-glass frit.  
 Q = Tin-silver-copper (95.5/4/0.5) over tin over nickel over silver-platinum-glass frit.  
 C = Tin-lead (63/37) over gold over nickel over moly-mag  
 F = Tin-silver-copper (95.5/4/0.5) over gold over nickel over moly-mag  
 S = Tin-lead (63/37) over silver-platinum-glass frit.  
 T = Tin-silver-copper (95.5/4/0.5) over silver-platinum glass frit.

**Screening:** Z = Unscreened  
 H = Coilcraft CP-SA-10001 Group A  
 • Screening performed to the document's latest revision.  
 • Custom testing also available.  
 • Country of origin restrictions available; prefix options G or F.

- Inductance measured at 250 MHz using a Coilcraft SMD-F test fixture and Coilcraft-provided correlation pieces with an Agilent/HP 4286A impedance analyzer or equivalent.
- Q measured at 250 MHz using an Agilent/HP 4291A with an Agilent/HP 16197A test fixture or equivalents.
- Q measured using an Agilent/HP 4291A with an Agilent/HP 16197A test fixture or equivalents.
- SRF measured using an Agilent/HP 8753ES network analyzer and a Coilcraft CCF1232 test fixture.
- DCR measured on a Keithley 580 micro-ohmmeter and a Coilcraft CCF1010 test fixture.
- Electrical specifications at 25°C.  
Refer to Doc 362 "Soldering Surface Mount Components" before soldering.

## ST235RAA Series (0402)

**COILCRAFT** ACCURATE  
**PRECISION** REPEATABLE  
 MEASUREMENTS  
 SEE WEB SITE **TEST FIXTURES**

Part number <sup>1</sup>	Inductance <sup>2</sup> (nH)	Percent tolerance	Q min <sup>3</sup>	900 MHz		1.7 GHz		SRF min <sup>5</sup> (GHz)	DCR max <sup>6</sup> (Ohms)	I <sub>max</sub> (mA)
				L typ	Q typ <sup>4</sup>	L typ	Q typ <sup>4</sup>			
ST235RAA13N_RZ	13.0	5,2,1	20	13.4	51	14.63	57	3.28	0.210	440
ST235RAA15N_RZ	15.0	5,2,1	22	14.6	55	15.50	77	3.10	0.172	500
ST235RAA16N_RZ	16.0	5,2,1	23	16.6	46	18.86	47	3.05	0.220	480
ST235RAA18N_RZ	18.0	5,2,1	24	18.3	57	20.28	62	2.68	0.230	420
ST235RAA19N_RZ	19.0	5,2,1	24	19.1	50	21.10	67	3.00	0.202	460
ST235RAA20N_RZ	20.0	5,2,1	24	20.7	52	23.66	53	2.90	0.250	400
ST235RAA22N_RZ	22.0	5,2,1	24	23.2	53	26.75	53	2.80	0.300	380
ST235RAA23N_RZ	23.0	5,2,1	24	23.8	49	26.90	64	2.72	0.300	400
ST235RAA24N_RZ	24.0	5,2,1	24	25.1	51	29.50	50	2.60	0.300	390
ST235RAA27N_RZ	27.0	5,2,1	24	28.7	49	33.50	63	2.48	0.298	380
ST235RAA30N_RZ	30.0	5,2,1	24	31.1	46	38.50	39	2.35	0.300	340
ST235RAA33N_RZ	33.0	5,2,1	20	34.9	31	41.74	32	2.30	0.300	340
ST235RAA36N_RZ	36.0	5,2,1	24	39.5	44	48.40	53	2.20	0.440	310
ST235RAA39N_RZ	39.0	5,2	24	41.7	47	50.23	45	2.10	0.550	200
ST235RAA40N_RZ	40.0	5,2,1	24	39.0	44	47.40	33	2.24	0.440	290
ST235RAA43N_RZ	43.0	5,2	22	45.8	46	61.55	34	2.03	0.810	100
ST235RAA47N_RZ	47.0	5,2	20	50.0	38	—	—	2.10	0.830	150
ST235RAA51N_RZ	51.0	5,2	19	56.6	40	—	—	1.75	0.820	100
ST235RAA56N_RZ	56.0	5,2	22	62.8	42	—	—	1.76	0.966	100
ST235RAA68N_RZ	68.0	5,2	22	78.2	36	—	—	1.62	1.120	100
ST235RAA82N_RZ	82.0	5,2	25	—	—	—	—	1.26	1.550	50
ST235RAAR10_RZ	100.0	5,2	25	—	—	—	—	1.16	2.000	50
ST235RAAR12_RZ	120.0	5,2	22	—	—	—	—	1.20	2.200	50

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

ST235RAAR12GRZ

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C = Tin-lead (63/37) over gold over nickel over moly-mag

F = Tin-silver-copper (95.5/4/0.5) over gold over nickel over moly-mag

S = Tin-lead (63/37) over silver-platinum-glass frit.

T = Tin-silver-copper (95.5/4/0.5) over silver-platinum glass frit.

**Screening:** Z = Unscreened

H = Coilcraft CP-SA-10001 Group A

• Screening performed to the document's latest revision.

• Custom testing also available.

• Country of origin restrictions available; prefix options G or F.

2. Inductance measured at 250 MHz using a Coilcraft SMD-F test fixture and Coilcraft-provided correlation pieces with an Agilent/HP 4286A impedance analyzer or equivalent.

3. Q measured at 250 MHz using an Agilent/HP 4291A with an Agilent/HP 16197A test fixture or equivalents.

4. Q measured using an Agilent/HP 4291A with an Agilent/HP 16197A test fixture or equivalents.

5. SRF measured using an Agilent/HP 8753ES network analyzer and a Coilcraft CCF1232 test fixture.

6. DCR measured on a Keithley 580 micro-ohmmeter and a Coilcraft CCF1010 test fixture.

7. Electrical specifications at 25°C.

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