

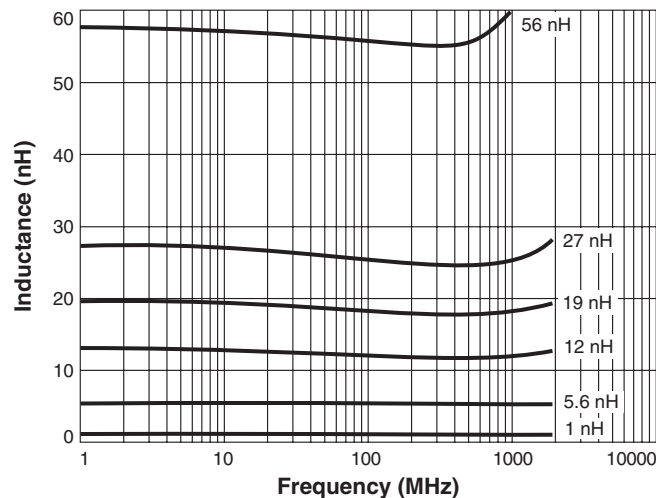
**PRELIMINARY**

# Military Grade Chip Inductors MS235RAA

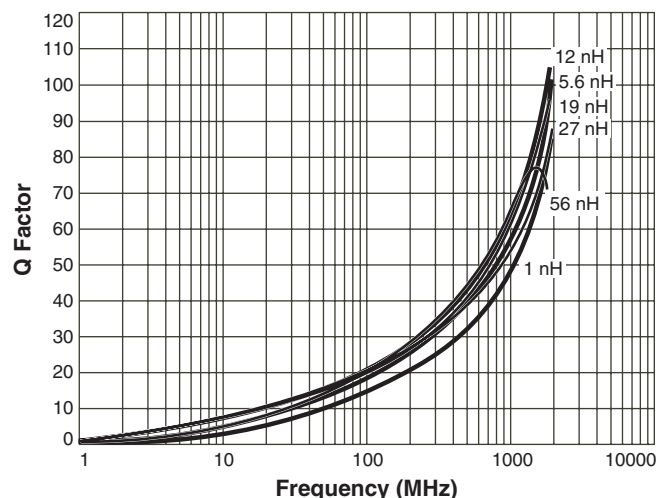
This 0402 size chip inductor series shares all of the characteristics of Coilcraft's other ceramic inductors: exceptionally high Q factors, especially at use frequencies; outstanding self-resonant frequency; tight inductance tolerance; and excellent batch-to-batch consistency.

This robust version of Coilcraft's standard 0402CS series features high temperature materials that allow operation in ambient temperatures up to 155°C and a leach-resistant base metalization with tin-lead (Sn-Pb) terminations that ensures the best possible board adhesion.

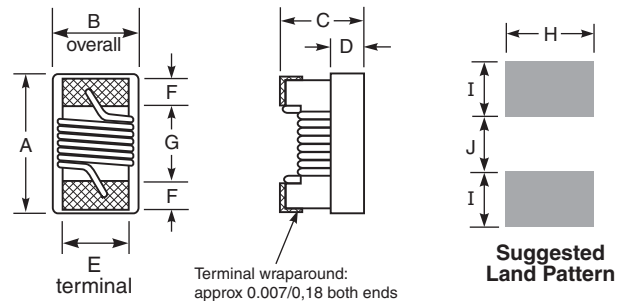
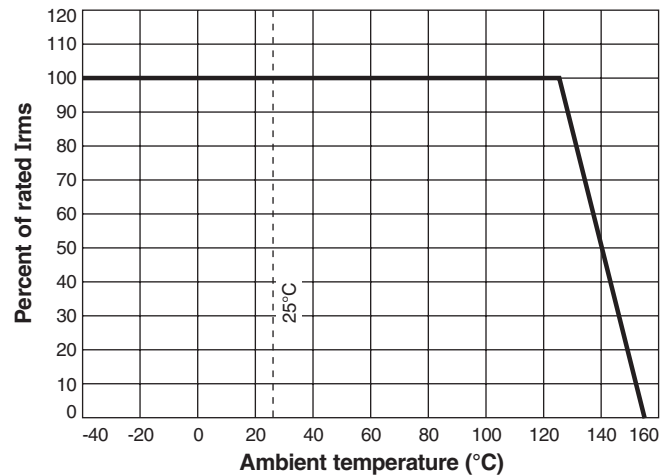
## Typical L vs Frequency



## Typical Q vs Frequency



## Current 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
1,19	0,64	0,66	0,25	0,51	0,23	0,56	0,66	0,36	0,46

**Core material** Ceramic

**Terminations** Tin-lead (63/37) over silver-palladium-platinum-glass frit

**Ambient temperature** -55°C to +125°C with I<sub>max</sub> current, +125°C to +155°C with derated current

**Storage temperature** Component: -55°C to +155°C.  
Packaging: -55°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 +155 ppm/°C

**Moisture Sensitivity Level (MSL)** 1 (unlimited floor life at <30°C / 85% relative humidity)

**Enhanced crush-resistant packaging** 2000 per 7" reel  
Paper tape: 8 mm wide, 0.68 mm thick, 2 mm pocket spacing

**PRELIMINARY****MS235RAA Series (0402)**

Part number <sup>1</sup>	Inductance <sup>2</sup> (nH)	Percent tolerance	900 MHz		1.7 GHz		SRF min <sup>4</sup> (GHz)	DCR max <sup>5</sup> (Ohms)	Imax (mA)
			L typ	Q typ <sup>3</sup>	L typ	Q typ <sup>3</sup>			
MS235RAA1N0_SZ	1.0	5	1.02	77	1.02	69	12.70	0.045	1360
MS235RAA1N2_SZ	1.2	5	1.17	28	1.17	38	12.90	0.090	740
MS235RAA1N8_SZ	1.8	5	1.78	54	1.78	75	12.00	0.070	1040
MS235RAA1N9_SZ	1.9	5	1.72	68	1.74	82	11.30	0.070	1040
MS235RAA2N0_SZ	2.0	5,2	1.93	54	1.93	75	11.10	0.070	1040
MS235RAA2N2_SZ	2.2	5,2	2.19	59	2.23	100	10.80	0.070	960
MS235RAA2N4_SZ	2.4	5,2	2.24	51	2.27	68	10.50	0.068	790
MS235RAA2N7_SZ	2.7	5,2	2.58	42	2.60	61	10.40	0.120	640
MS235RAA3N3_SZ	3.3	5,2	3.10	65	3.12	87	7.00	0.066	840
MS235RAA3N6_SZ	3.6	5,2	3.56	45	3.62	71	6.80	0.066	840
MS235RAA3N9_SZ	3.9	5,2	3.89	50	4.00	75	6.00	0.066	840
MS235RAA4N3_SZ	4.3	5,2	4.19	47	4.30	71	6.00	0.091	700
MS235RAA4N7_SZ	4.7	5,2	4.55	48	4.68	68	4.77	0.130	640
MS235RAA5N1_SZ	5.1	5,2	5.15	56	5.25	82	4.80	0.083	800
MS235RAA5N6_SZ	5.6	5,2	5.16	54	5.28	81	4.80	0.083	760
MS235RAA6N2_SZ	6.2	5,2	6.16	52	6.37	76	4.80	0.083	760
MS235RAA6N8_SZ	6.8	5,2	6.56	63	6.93	78	4.80	0.083	680
MS235RAA7N5_SZ	7.5	5,2	7.91	60	8.22	88	4.80	0.10	680
MS235RAA8N2_SZ	8.2	5,2	8.50	57	8.85	84	4.40	0.10	680
MS235RAA8N7_SZ	8.7	5,2	8.78	54	9.21	73	4.10	0.20	480
MS235RAA9N0_SZ	9.0	5,2	9.07	62	9.53	78	4.16	0.10	680
MS235RAA9N5_SZ	9.5	5,2	9.42	54	9.98	69	4.00	0.20	480
MS235RAA10N_SZ	10.0	5,2	9.8	50	10.10	67	3.90	0.20	480
MS235RAA11N_SZ	11.0	5,2	10.7	52	11.20	78	3.68	0.12	640
MS235RAA12N_SZ	12.0	5,2	11.9	53	12.70	71	3.60	0.12	640
MS235RAA13N_SZ	13.0	5,2	13.4	51	14.63	57	3.45	0.21	440
MS235RAA15N_SZ	15.0	5,2	14.6	55	15.50	77	3.28	0.17	560
MS235RAA16N_SZ	16.0	5,2	16.6	46	18.86	47	3.10	0.22	560
MS235RAA18N_SZ	18.0	5,2	18.3	57	20.28	62	3.10	0.23	420
MS235RAA19N_SZ	19.0	5,2	19.1	50	21.10	67	3.04	0.20	480
MS235RAA20N_SZ	20.0	5,2	20.7	52	23.66	53	3.00	0.25	420
MS235RAA22N_SZ	22.0	5,2	23.2	53	26.75	53	2.80	0.30	400
MS235RAA23N_SZ	23.0	5,2	23.8	49	26.90	64	2.72	0.30	400
MS235RAA24N_SZ	24.0	5,2	25.1	51	29.50	50	2.70	0.30	400
MS235RAA27N_SZ	27.0	5,2	28.7	49	33.50	63	2.48	0.30	400
MS235RAA30N_SZ	30.0	5,2	31.1	46	38.50	39	2.35	0.30	400
MS235RAA33N_SZ	33.0	5,2	34.9	31	41.74	32	2.35	0.30	400
MS235RAA36N_SZ	36.0	5,2	39.5	44	48.40	53	2.32	0.44	320
MS235RAA39N_SZ	39.0	5,2	41.7	47	50.23	45	2.10	0.55	200
MS235RAA40N_SZ	40.0	5,2	39.0	44	47.40	33	2.24	0.44	320
MS235RAA43N_SZ	43.0	5,2	45.8	46	61.55	34	2.03	0.81	100
MS235RAA47N_SZ	47.0	5,2	50.0	38	—	—	2.10	0.83	150
MS235RAA51N_SZ	51.0	5,2	56.6	40	—	—	1.75	0.82	100
MS235RAA56N_SZ	56.0	5,2	62.8	42	—	—	1.76	0.97	100
MS235RAA68N_SZ	68.0	5,2	78.2	36	—	—	1.62	1.12	100
MS235RAA82N_SZ	82.0	5,2	—	—	—	—	1.26	1.55	50
MS235RAAR10_SZ	100	5,2	—	—	—	—	1.16	2.00	30
MS235RAAR12_SZ	120	5,2	—	—	—	—	1.30	2.20	50

1. When ordering, please specify **tolerance** and **testing** codes:

**MS235RAAR10 G SZ**

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

**Testing:** Z = Coilcraft Critical Products Environmental Stress Conditions Testing.

H = Coilcraft Qual + Coilcraft Hi-Rel Burn-in

P = Coilcraft Qual + MIL-STD-981 Class S Group A screening

N = Coilcraft Qual + MIL-STD-981 Class B Group A screening

C = Coilcraft Qual + MIL-STD-981 Class S Group A screening + MIL-STD-981 Class S Group B qualification

W = Coilcraft Qual + MIL-STD-981 Class B Group A screening + MIL-STD-981 Class S Group B qualification

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. Q measured using an Agilent/HP 4291A with an Agilent/HP 16193 test fixture.

4. 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.

5. DCR measured on a micro-ohmmeter.

6. Electrical specifications at 25°C.

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

**COILCRAFT** ACCURATE  
**PRECISION** REPEATABLE  
MEASUREMENTS  
SEE INDEX **TEST FIXTURES**



These parts are preproduction products for electrical evaluation only.  
Specification subject to change without notice.

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