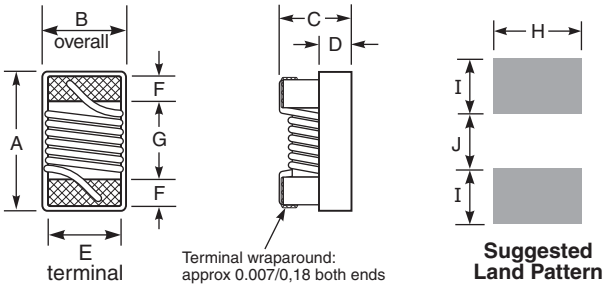
PRELIMINARY

Military Grade Chip Inductors MS235RAG

- Higher Q and lower DCR than other 0402 inductors
- Very high SRF values – as high as 16 GHz
- Excellent current handling capability – up to 2300 mA
- 52 inductance values from 1.0 to 220 nH

This robust version of Coilcraft's standard 0402HP 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.



	A max	B	C max	
1–51 nH	0.043	0.026 ±0.002	0.024	inches
	1,09	0,66 ±0,051	0,61	mm
	A max	**B**	**C max**	
56–220 nH	0.044	0.026 ±0.002	0.026	inches
	1,12	0,66 ±0,051	0,66	mm

D	E	F	G	H	I	J	
0.010	0.020	0.008	0.024	0.026	0.014	0.020	inches
0,25	0,51	0,20	0,61	0,66	0,36	0,51	mm

Core material Ceramic

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

Weight 0.7 – 1.0 mg

Ambient temperature –55°C to +140°C with Irms current, +140°C to +155°C with derated current

Storage temperature Component: –55°C to +155°C. Packaging: –55°C to +80°C

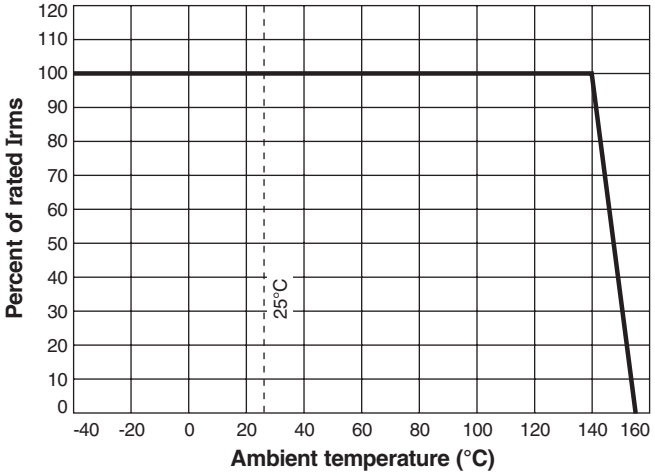
Resistance to soldering heat Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles

Temperature Coefficient of Inductance (TCL) +25 to +125 ppm/°C

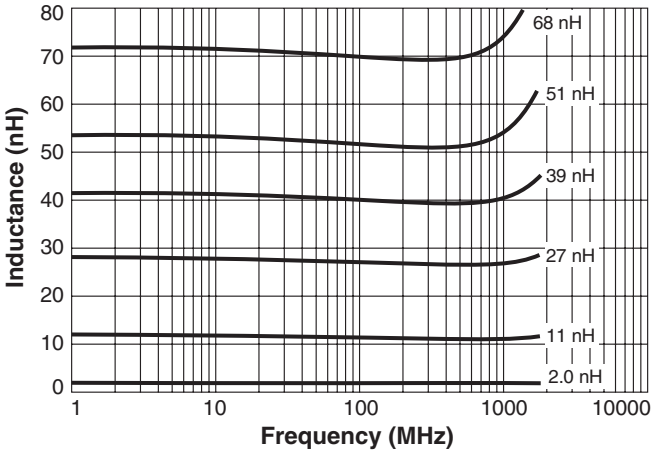
Moisture Sensitivity Level (MSL) 1 (unlimited floor life at <30°C / 85% relative humidity)

Enhanced crush-resistant packaging 2000 per 7″ reel. Paper tape: 8 mm wide, 0.66 mm thick, 2 mm pocket spacing

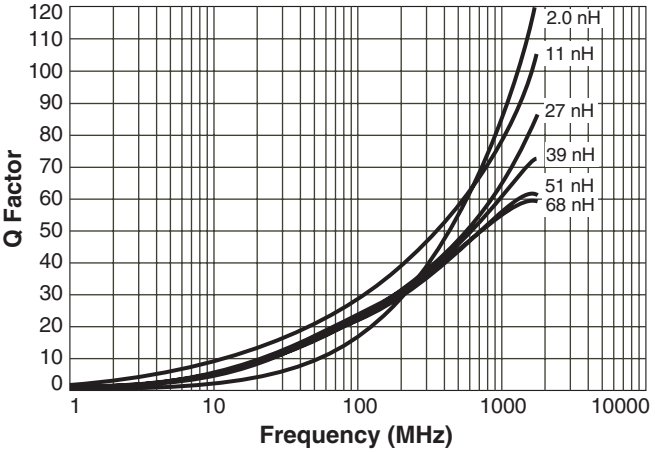
Current Derating



Typical L vs Frequency



Typical Q vs Frequency



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PRELIMINARY

MS235RAG Series (0402)

Part number[1]	Inductance[2] (nH)	Percent tolerance	900 MHz L typ	900 MHz Q typ[3]	1.7 GHz L typ	1.7 GHz Q typ[3]	SRF typ[4] (GHz)	DCR max[5] (Ohms)	Irms[6] (mA)
MS235RAG1N0JSZ	1.0	5	0.97	46	0.99	72	16.0	0.030	2300
MS235RAG2N0JSZ	2.0	5	1.96	58	1.98	85	15.2	0.038	2100
MS235RAG2N2JSZ	2.2	5	2.17	60	2.17	86	15.1	0.038	2100
MS235RAG2N4_SZ	2.4	5,2	2.37	60	2.38	83	14.0	0.042	2000
MS235RAG2N7_SZ	2.7	5,2	2.66	62	2.68	85	13.0	0.056	1500
MS235RAG3N3_SZ	3.3	5,2	3.26	66	3.28	95	12.8	0.045	1700
MS235RAG3N6_SZ	3.6	5,2	3.56	65	3.58	94	11.7	0.045	1700
MS235RAG3N9_SZ	3.9	5,2	3.87	64	3.91	98	9.50	0.045	1700
MS235RAG4N3_SZ	4.3	5,2	4.26	63	4.33	90	7.15	0.040	1600
MS235RAG4N7_SZ	4.7	5,2	4.67	58	4.74	83	6.85	0.060	1500
MS235RAG5N1_SZ	5.1	5,2	5.07	54	5.16	76	6.80	0.100	1200
MS235RAG5N6_SZ	5.6	5,2	5.56	73	5.66	105	6.50	0.048	1600
MS235RAG6N2_SZ	6.2	5,2	6.18	73	6.25	100	5.80	0.050	1600
MS235RAG6N8_SZ	6.8	5,2	6.78	68	6.97	94	5.80	0.055	1500
MS235RAG7N5_SZ	7.5	5,2	7.49	60	7.77	82	5.40	0.080	1400
MS235RAG8N2_SZ	8.2	5,2	8.10	68	8.40	95	5.40	0.054	1500
MS235RAG8N7_SZ	8.7	5,2	8.73	66	9.04	95	5.00	0.058	1500
MS235RAG9N0_SZ	9.0	5,2	8.99	67	9.21	92	5.00	0.070	1400
MS235RAG9N5_SZ	9.5	5,2	9.52	64	9.97	90	4.70	0.075	1400
MS235RAG10N_SZ	10	5,2	9.98	62	10.4	90	4.70	0.085	1300
MS235RAG11N_SZ	11	5,2	11.0	68	11.6	98	4.70	0.065	1400
MS235RAG12N_SZ	12	5,2	12.0	66	12.6	100	4.40	0.070	1200
MS235RAG13N_SZ	13	5,2	13.1	62	13.9	82	4.20	0.140	870
MS235RAG15N_SZ	15	5,2	15.1	62	16.0	85	3.90	0.078	1100
MS235RAG16N_SZ	16	5,2	16.2	57	17.3	77	3.70	0.130	850
MS235RAG18N_SZ	18	5,2	18.2	58	19.5	74	3.55	0.120	900
MS235RAG19N_SZ	19	5,2	19.2	61	20.7	88	3.50	0.145	850
MS235RAG20N_SZ	20	5,2	20.3	58	22.0	76	3.50	0.155	780
MS235RAG21N_SZ	21	5,2	21.3	48	23.2	62	1.70	0.460	450
MS235RAG22N_SZ	22	5,2	22.3	60	24.4	74	3.30	0.160	800
MS235RAG23N_SZ	23	5,2	23.3	60	25.5	77	3.30	0.160	800
MS235RAG24N_SZ	24	5,2	24.5	55	27.1	71	3.15	0.170	700
MS235RAG25N_SZ	25	5,2	25.5	57	28.3	73	3.15	0.170	700
MS235RAG26N_SZ	26	5,2	26.6	56	29.3	74	3.15	0.170	700
MS235RAG27N_SZ	27	5,2	27.3	62	29.5	86	3.20	0.275	450
MS235RAG30N_SZ	30	5,2	30.8	61	35.0	87	2.90	0.275	450
MS235RAG33N_SZ	33	5,2	34.0	61	38.3	80	2.80	0.330	490
MS235RAG36N_SZ	36	5,2	37.1	59	42.2	76	2.80	0.360	480
MS235RAG37N_SZ	37	5,2	38.2	57	44.0	72	2.70	0.480	470
MS235RAG39N_SZ	39	5,2	40.5	56	47.0	84	2.60	0.380	450
MS235RAG40N_SZ	40	5,2	41.3	56	47.4	75	2.60	0.380	450
MS235RAG43N_SZ	43	5,2	45.0	52	54.1	68	2.50	0.520	450
MS235RAG47N_SZ	47	5,2	49.0	48	58.9	62	2.40	0.580	420
MS235RAG51N_SZ	51	5,2	49.1	52	58.8	59	2.30	0.700	360
MS235RAG56N_SZ	56	5,2	58.8	56	72.2	64	2.07	0.900	330
MS235RAG68N_SZ	68	5,2	72.2	56	91.4	64	1.84	1.00	320
MS235RAG82N_SZ	82	5,2	89.7	52	–	–	1.75	1.10	315
MS235RAGR10_SZ	100	5,2	–	–	–	–	1.58	1.20	310
MS235RAGR12JSZ	120	5	–	–	–	–	1.25	1.20	310
MS235RAGR15JSZ	150	5	–	–	–	–	1.14	2.0	240
MS235RAGR18JSZ	180	5	–	–	–	–	1.08	2.1	240
MS235RAGR22JSZ	220	5	–	–	–	–	0.96	3.1	160

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

MS235RAGR10GSZ

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 fixture in an Agilent/HP 4286 impedance analyzer with Coilcraft-provided correlation pieces.
3. Q measured using an Agilent/HP 4287A with an Agilent/HP 16197 test fixture.
4. SRF measured using an Agilent/HP 8722ES network analyzer and a Coilcraft SMD-D test fixture.
5. DCR measured on a micro-ohmmeter and a Coilcraft CCF858 test fixture.
6. Current that causes a 15°C temperature rise from 25°C ambient.
7. Electrical specifications at 25°C.

Refer to Doc 362 “Soldering Surface Mount Components” before soldering.

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