

**PRELIMINARY**

# High-Reliability Chip Inductors ML312RAG

- Higher Q and lower DCR than other 0603 inductors
- Highest SRF values – as high as 16 GHz
- Excellent current handling capability – up to 2100 mA
- 54 inductance values from 1.8 to 390 nH

This robust version of Coilcraft's standard 0603HP series features high temperature materials that allow operation in ambient temperatures up to 155°C.

**Core material** Ceramic

**Terminations** Silver-palladium-platinum-glass frit

**Weight** 2.0 – 3.2 mg

**Ambient temperature** –55°C to +140°C with I<sub>rms</sub> current, +140°C to +155°C with derated current

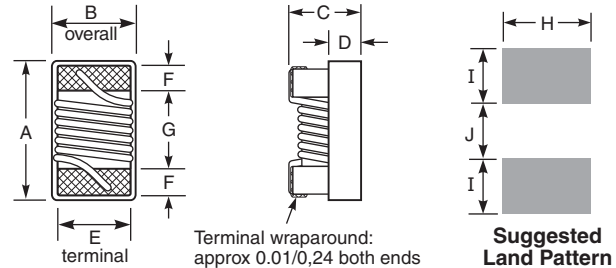
**Storage temperature** Component: –55°C to +155°C.  
Packaging: –55°C to +80°C

**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

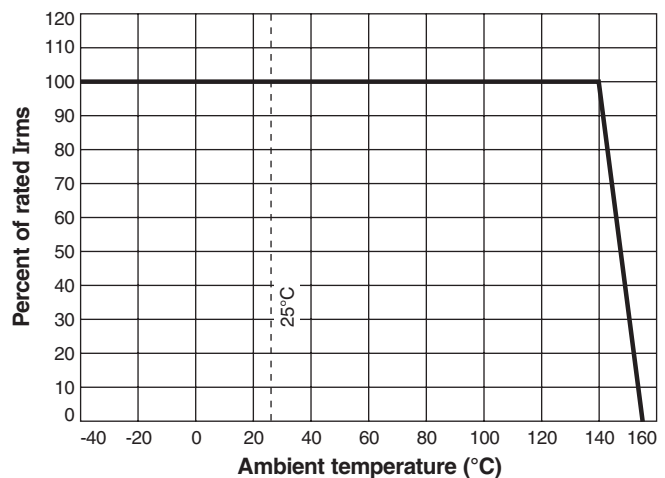
**Moisture Sensitivity Level (MSL)** 1 (unlimited floor life at <30°C / 85% relative humidity)

**Enhanced Crush-Resistant Packaging** 2000 per 7" reel.  
Paper tape: 8 mm wide, 1 mm thick, 4 mm pocket spacing

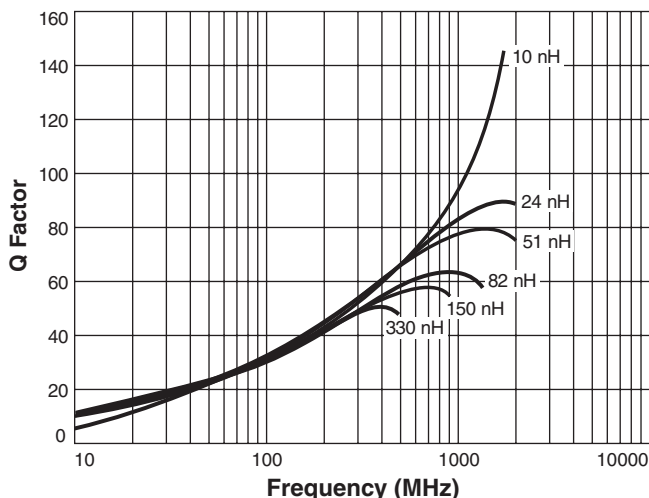


A	B	C	D	E	F	G	H	I	J
max	min-max	max							
0.069	0.034-0.043	0.034	0.015	0.029	0.013	0.038	0.040	0.027	0.028
1.75	0.86-1.09	0.86	0.38	0.74	0.33	0.96	1.02	0.69	0.71

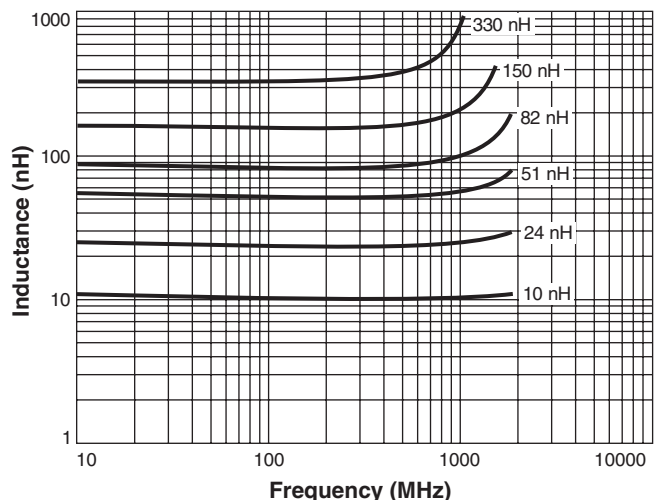
## Current Derating



## Typical Q vs Frequency



## Typical L vs Frequency



**Coilcraft CPS**  
CRITICAL PRODUCTS & SERVICES

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

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**PRELIMINARY****ML312RAG Series (0603)**

Part number <sup>1</sup>	Inductance <sup>2</sup> (nH)	Percent tolerance	L test freq (MHz)	Q typ at 250 MHz	900 MHz		1.7 GHz		SRF typ <sup>4</sup> (GHz)	DCR max <sup>5</sup> (Ohms)	Irms <sup>6</sup> (mA)	Color code
					L typ	Q typ <sup>3</sup>	L typ	Q typ <sup>3</sup>				
ML312RAG1N8JLZ	1.8	5	250	23	1.77	40	1.77	65	>5.00	0.033	2100	Black
ML312RAG2N2JLZ	2.2	5	250	13	2.14	25	2.12	35	>5.00	0.180	900	Yellow
ML312RAG3N3_LZ	3.3	5,2	250	32	3.28	67	3.32	104	>5.00	0.024	1900	Blue
ML312RAG3N6_LZ	3.6	5,2	250	40	3.59	70	3.62	116	>5.00	0.031	1900	Red
ML312RAG3N9_LZ	3.9	5,2	250	35	3.88	68	3.95	108	>5.00	0.039	1600	Brown
ML312RAG4N3_LZ	4.3	5,2	250	30	4.29	58	4.31	91	>5.00	0.080	1300	Orange
ML312RAG4N7_LZ	4.7	5,2	250	26	4.65	48	4.71	75	>5.00	0.100	1100	Violet
ML312RAG5N1_LZ	5.1	5,2	250	40	5.08	84	5.12	140	>5.00	0.036	1700	Green
ML312RAG5N6_LZ	5.6	5,2	250	48	5.60	87	5.73	145	>5.00	0.036	1700	Black
ML312RAG6N0_LZ	6.0	5,2	250	49	5.92	94	6.12	154	>5.00	0.036	1700	White
ML312RAG6N8_LZ	6.8	5,2	250	42	6.83	88	7.05	143	>5.00	0.042	1400	Red
ML312RAG7N2_LZ	7.2	5,2	250	48	7.25	96	7.38	139	>5.00	0.052	1400	Green
ML312RAG7N5_LZ	7.5	5,2	250	41	7.55	81	7.85	112	>5.00	0.080	1300	Brown
ML312RAG8N2_LZ	8.2	5,2	250	46	8.21	96	8.39	148	>5.00	0.054	1400	Orange
ML312RAG8N7_LZ	8.7	5,2	250	46	8.73	97	9.00	149	>5.00	0.054	1400	Yellow
ML312RAG9N1_LZ	9.1	5,2	250	40	9.18	76	9.64	109	>5.00	0.037	1400	Black
ML312RAG9N5_LZ	9.5	5,2	250	49	9.56	98	9.99	149	4.90	0.053	1400	Blue
ML312RAG10N_LZ	10	5,2	250	49	10.16	90	10.64	142	4.30	0.048	1400	Orange
ML312RAG11N_LZ	11	5,2	250	41	11.06	78	11.82	108	4.10	0.042	1400	Gray
ML312RAG12N_LZ	12	5,2	250	37	12.26	69	13.20	91	4.10	0.088	1100	Yellow
ML312RAG15N_LZ	15	5,2	250	48	15.41	83	17.20	124	3.60	0.078	1200	Green
ML312RAG16N_LZ	16	5,2	250	45	16.37	77	18.70	116	3.50	0.085	1100	White
ML312RAG18N_LZ	18	5,2	250	41	18.56	76	20.90	100	3.30	0.066	1200	Blue
ML312RAG22N_LZ	22	5,2	250	44	22.7	77	25.90	88	3.15	0.140	850	Violet
ML312RAG23N_LZ	23	5,2	250	40	24.0	69	29.53	80	3.00	0.150	850	Orange
ML312RAG24N_LZ	24	5,2	250	42	24.9	77	28.90	91	2.95	0.074	1100	Black
ML312RAG27N_LZ	27	5,2	250	44	28.4	74	34.00	84	2.80	0.150	780	Gray
ML312RAG30N_LZ	30	5,2	250	49	31.5	82	37.90	82	2.80	0.130	920	Brown
ML312RAG33N_LZ	33	5,2	250	45	34.9	76	42.90	80	2.70	0.170	680	White
ML312RAG36N_LZ	36	5,2	250	44	38.5	69	50.00	64	2.50	0.20	720	Red
ML312RAG39N_LZ	39	5,2	250	48	41.5	78	51.90	74	2.45	0.19	680	Black
ML312RAG43N_LZ	43	5,2	250	45	45.7	83	58.10	76	2.45	0.17	810	Orange
ML312RAG47N_LZ	47	5,2	200	47	50.6	77	66.90	72	2.30	0.24	680	Brown
ML312RAG51N_LZ	51	5,2	200	49	54.6	73	71.30	62	2.30	0.28	660	Blue
ML312RAG56N_LZ	56	5,2	200	50	60.3	74	79.90	56	2.20	0.30	610	Red
ML312RAG68N_LZ	68	5,2	200	46	75.5	73	113.3	49	2.00	0.33	600	Orange
ML312RAG72N_LZ	72	5,2	150	46	80.8	69	—	—	1.90	0.42	550	Yellow
ML312RAG75N_LZ	75	5,2	150	46	84.6	71	—	—	1.90	0.52	500	Violet
ML312RAG82N_LZ	82	5,2	150	45	94.0	62	—	—	1.80	0.46	510	Green
ML312RAG91N_LZ	91	5,2	150	45	103.0	64	—	—	1.65	0.58	440	White
ML312RAGR10_LZ	100	5,2	150	49	114.0	69	—	—	1.70	0.54	470	Blue
ML312RAGR11_LZ	110	5,2	150	47	126.2	63	—	—	1.60	0.58	440	Violet
ML312RAGR12_LZ	120	5,2	150	47	142.4	61	—	—	1.55	0.72	420	Gray
ML312RAGR15_LZ	150	5,2	150	47	188.8	57	—	—	1.35	0.82	390	White
ML312RAGR18_LZ	180	5,2	100	48	232.2	50	—	—	1.30	1.50	310	Black
ML312RAGR20_LZ	200	5,2	100	47	265.0	47	—	—	1.25	2.00	280	Green
ML312RAGR21_LZ	210	5,2	100	48	288.0	45	—	—	1.20	2.00	280	Gray
ML312RAGR22_LZ	220	5,2	100	47	315.0	41	—	—	1.10	2.00	280	Brown
ML312RAGR25_LZ	250	5,2	100	45	—	—	—	—	1.05	3.00	240	Violet
ML312RAGR27_LZ	270	5,2	100	46	—	—	—	—	1.05	2.25	260	Red
ML312RAGR30_LZ	300	5,2	100	47	—	—	—	—	0.99	2.80	220	Green
ML312RAGR33_LZ	330	5,2	100	46	—	—	—	—	0.93	3.60	180	Blue
ML312RAGR36_LZ	360	5,2	100	47	—	—	—	—	0.93	4.00	170	Gray
ML312RAGR39_LZ	390	5,2	100	47	—	—	—	—	0.88	4.00	170	Yellow

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

ML312RAGR39 **G** **LZ**

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

**Testing:** Z = COTS

H = Screening per Coilcraft CP-SA-10001

N = Screening per Coilcraft CP-SA-10003

C = Custom screening (please specify when ordering)

2. Inductance measured using a Coilcraft SMD-A fixture in an Agilent/HP 4286 impedance analyzer or equivalent with Coilcraft-provided correlation pieces.

3. Q measured at the same frequency as inductance using an Agilent/HP 4291A with an Agilent/HP 16197 test fixture or equivalents.

4. SRF measured using an Agilent/HP 8753ES network analyzer or equivalent and a Coilcraft SMD-D test fixture.

5. DCR measured on a Keithley 580 micro-ohmmeter or equivalent and a Coilcraft CCF1010 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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