

# Outgassing Compliant Chip Inductors AR312RAG

- Higher Q and lower DCR than other 0603 inductors
- Highest SRF values – as high as 16 GHz
- High temperature materials allow operation in ambient temperatures up to 155°C.
- Passes NASA low outgassing specifications
- Standard tin-lead (Sn-Pb) terminations ensures the best possible board adhesion. Note: Nickel barrier termination (tin-lead over tin over nickel over silver-platinum-glass frit, termination code P) is recommended for hand soldering applications.

**Core material** Ceramic

**Terminations** Tin-lead (63/37) over tin over nickel over silver-platinum-glass frit. Other terminations are also available.

**Weight** 2.0 – 4.0 mg

**Ambient temperature** –65°C to +125°C with I<sub>max</sub> current

**Maximum part temperature** +155°C (ambient + temp rise)

**Storage temperature** Component: –65°C to +155°C.

Tape and reel packaging: –55°C to +80°C

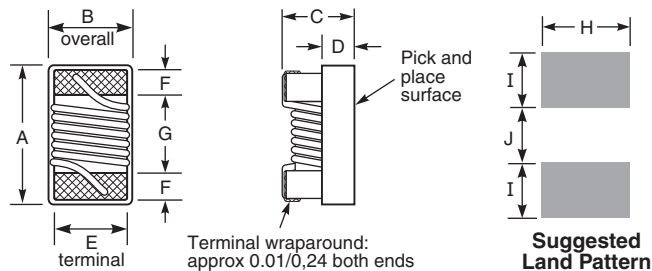
**Resistance to soldering heat** Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles

**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.

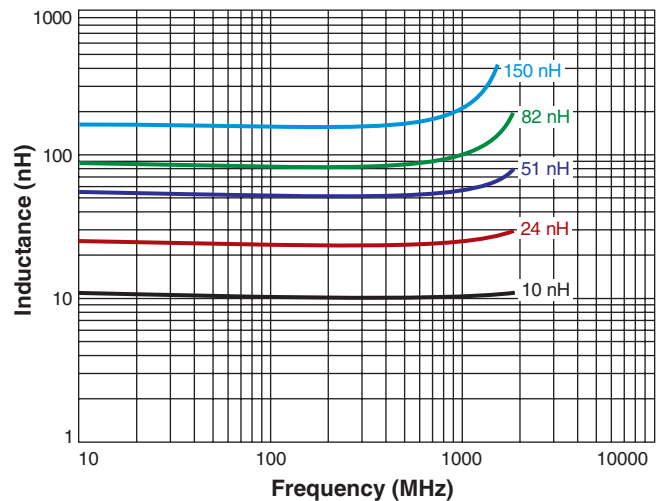
Paper tape: 8 mm wide, 1 mm thick, 4 mm pocket spacing



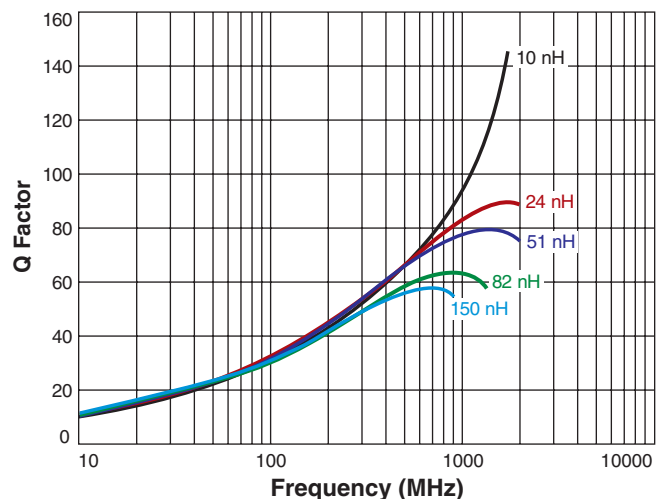
A	B	C	D	E	F	G	H	I	J
max	min-max	max							
0.072	0.034–0.046	0.037	0.015	0.029	0.013	0.038	0.040	0.027	0.028
1.83	0.86–1.17	0.94	0.38	0.74	0.33	0.96	1.02	0.69	0.71

Note: Dimensions are before optional solder application. For maximum overall dimensions including solder, add 0.003 in / 0.072 mm to A and 0.006 in / 0.15 mm to C.

## Typical L vs Frequency



## Typical Q vs Frequency



# AR312RAG Series (0603)

Part number <sup>1</sup>	Inductance <sup>2</sup> (nH)	Percent tolerance	L test freq (MHz)	Q min <sup>3</sup> at 250 MHz	900 MHz		1.7 GHz		SRF min <sup>4</sup> (GHz)	DCR max <sup>5</sup> (Ohms)	I <sub>max</sub> (mA)
					L typ	Q typ <sup>3</sup>	L typ	Q typ <sup>3</sup>			
AR312RAG1N8JPZ	1.8	5	250	17	1.77	40	1.77	65	>5.00	0.035	800
AR312RAG3N3_PZ	3.3	5,2	250	35	3.28	67	3.32	104	>5.00	0.030	800
AR312RAG3N6_PZ	3.6	5,2	250	32	3.59	70	3.62	116	>5.00	0.033	800
AR312RAG3N9_PZ	3.9	5,2	250	33	3.88	68	3.95	108	>5.00	0.045	800
AR312RAG4N3_PZ	4.3	5,2	250	28	4.29	58	4.31	91	>5.00	0.080	710
AR312RAG4N7_PZ	4.7	5,2	250	22	4.65	48	4.71	75	>5.00	0.100	720
AR312RAG5N1_PZ	5.1	5,2	250	38	5.08	84	5.12	140	>5.00	0.042	800
AR312RAG5N6_PZ	5.6	5,2	250	43	5.6	87	5.73	145	>5.00	0.042	800
AR312RAG6N0_PZ	6.0	5,2	250	40	5.92	94	6.12	154	4.80	0.053	800
AR312RAG6N8_PZ	6.8	5,2	250	34	6.83	88	7.05	143	4.64	0.050	800
AR312RAG7N2_PZ	7.2	5,2	250	36	7.25	96	7.38	139	4.32	0.080	800
AR312RAG7N5_PZ	7.5	5,2	250	32	7.55	81	7.85	112	4.24	0.100	800
AR312RAG8N2_PZ	8.2	5,2	250	37	8.21	96	8.39	148	4.72	0.054	800
AR312RAG8N7_PZ	8.7	5,2	250	33	8.73	97	9.00	149	4.40	0.054	800
AR312RAG9N1_PZ	9.1	5,2	250	38	9.18	76	9.64	109	4.08	0.054	800
AR312RAG9N5_PZ	9.5	5,2	250	40	9.56	98	9.99	149	3.92	0.053	800
AR312RAG10N_PZ	10	5,2	250	38	10.16	90	10.64	142	3.44	0.054	800
AR312RAG11N_PZ	11	5,2	250	36	11.06	78	11.82	108	3.28	0.075	800
AR312RAG12N_PZ	12	5,2	250	32	12.26	69	13.20	91	3.28	0.110	750
AR312RAG15N_PZ	15	5,2	250	36	15.41	83	17.20	124	2.88	0.085	800
AR312RAG16N_PZ	16	5,2	250	32	16.37	77	18.70	116	2.80	0.095	790
AR312RAG18N_PZ	18	5,2	250	34	18.56	76	20.90	100	2.64	0.075	800
AR312RAG22N_PZ	22	5,2	250	30	22.7	77	25.90	88	2.52	0.140	600
AR312RAG23N_PZ	23	5,2	250	36	24.0	69	29.53	80	2.40	0.195	560
AR312RAG24N_PZ	24	5,2	250	43	24.9	77	28.9	91	2.36	0.085	800
AR312RAG27N_PZ	27	5,2	250	34	28.4	74	34.0	84	2.24	0.150	620
AR312RAG30N_PZ	30	5,2	250	40	31.5	82	37.9	82	2.24	0.130	720
AR312RAG33N_PZ	33	5,2	250	38	34.9	76	42.9	80	2.16	0.170	560
AR312RAG36N_PZ <sup>6</sup>	36	5,2	250	36	38.5	69	50.0	64	2.00	0.225	480
AR312RAG39N_PZ	39	5,2	250	38	41.5	78	51.9	74	1.96	0.190	540

Continued on next page

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

AR312RAG39NGPZ

**Tolerance:** G = 2% J = 5%**Termination:** See **Notes about terminations**

P = Tin-lead (63/37) over tin over nickel over silver-platinum-glass frit.

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

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

A = Gold over nickel over moly-mag

L = Silver-palladium-platinum-glass frit

**Screening:** Z = Unscreened

H = Coilcraft CP-SA-10001 Group A

1 = EEE-INST-002 (Family 3) Level 1

2 = EEE-INST-002 (Family 3) Level 2

3 = EEE-INST-002 (Family 3) Level 3

4 = MIL-STD-981 (Family 50) Class B

5 = MIL-STD-981 (Family 50) Class S

F = ESCC3201 (F4 operational life performed at 90°C)

• Screening performed to the document's latest revision.

• Lot qualification (Group B) available.

• Testing T and U have been replaced with more detailed codes 4, 5, and 1, 2, 3, respectively. Codes T and U can still be used, if necessary. Custom testing also available.

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

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

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

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

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

6. Part is not compliant with MIL-STD-981 Family 50, Class S due to wire gauge

7. Electrical specifications at 25°C.

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

**Notes about terminations**

For hand soldering applications, the nickel barrier termination (tin-lead over tin over nickel over silver-platinum-glass frit, termination code P) is recommended. Exposed gold or tin in the terminations migrates into the solder.



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This product may not be used in medical or high risk applications without prior Coilcraft approval. Specifications subject to change without notice. Please check our web site for latest information.

# AR312RAG Series (0603)

Part number <sup>1</sup>	Inductance <sup>2</sup> (nH)	Percent tolerance	L test freq (MHz)	Q min <sup>3</sup> at 250 MHz	900 MHz		1.7 GHz		SRF min <sup>4</sup> (GHz)	DCR max <sup>5</sup> (Ohms)	I <sub>max</sub> (mA)
					L typ	Q typ <sup>3</sup>	L typ	Q typ <sup>3</sup>			
AR312RAG43N_PZ	43	5,2	250	36	45.7	83	58.1	76	1.96	0.170	630
AR312RAG47N_PZ	47	5,2	200	39	50.6	77	66.9	72	1.84	0.270	440
AR312RAG51N_PZ	51	5,2	200	37	54.6	73	71.3	62	1.84	0.280	440
AR312RAG56N_PZ	56	5,2	200	36	60.3	74	79.9	56	1.76	0.30	420
AR312RAG68N_PZ	68	5,2	200	37	75.5	73	113.3	49	1.60	0.33	400
AR312RAG72N_PZ <sup>6</sup>	72	5,2	150	36	80.8	69	—	—	1.52	0.42	380
AR312RAG75N_PZ <sup>6</sup>	75	5,2	150	36	84.6	71	—	—	1.52	0.52	340
AR312RAG82N_PZ <sup>6</sup>	82	5,2	150	36	94.0	62	—	—	1.44	0.46	350
AR312RAG91N_PZ <sup>6</sup>	91	5,2	150	36	103.0	64	—	—	1.32	0.58	310
AR312RAGR10_PZ <sup>6</sup>	100	5,2	150	36	114.0	69	—	—	1.36	0.54	340
AR312RAGR11_PZ <sup>6</sup>	110	5,2	150	35	126.2	63	—	—	1.28	0.58	310
AR312RAGR12_PZ <sup>6</sup>	120	5,2	150	36	142.4	61	—	—	1.24	0.72	280
AR312RAGR15_PZ <sup>6</sup>	150	5,2	150	36	188.8	57	—	—	1.08	0.82	260
AR312RAGR18_PZ <sup>6</sup>	180	5,2	100	36	232.2	50	—	—	1.04	1.50	190
AR312RAGR20_PZ <sup>6</sup>	200	5,2	100	36	265.0	47	—	—	1.00	2.00	180
AR312RAGR21_PZ <sup>6</sup>	210	5,2	100	36	288.0	45	—	—	0.96	2.00	170
AR312RAGR22_PZ <sup>6</sup>	220	5,2	100	36	315.0	41	—	—	0.88	2.00	170
AR312RAGR27_PZ <sup>6</sup>	270	5,2	100	35	—	—	—	—	0.84	2.40	160
AR312RAGR30_PZ <sup>6</sup>	300	5,2	100	35	—	—	—	—	0.79	2.40	170

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

## AR312RAG30NGPZ

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**Termination:** See **Notes about terminations**

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