

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 –55°C to +125°C with I_{max} current

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

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

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

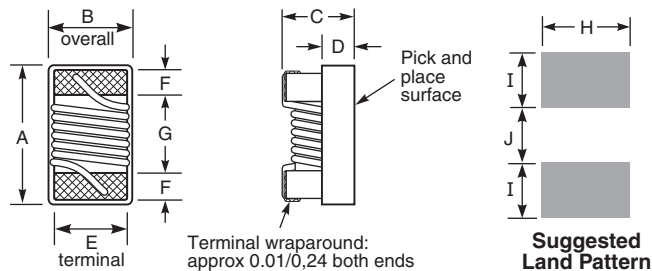
Resistance to soldering heat Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles

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.

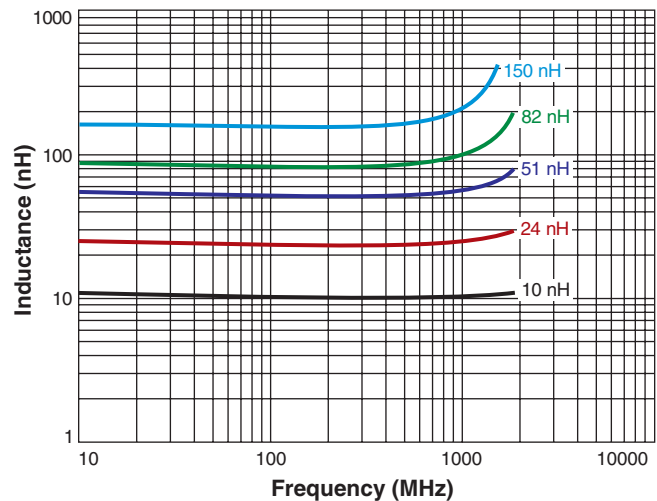
Paper tape: 8 mm wide, 1 mm thick, 4 mm pocket spacing



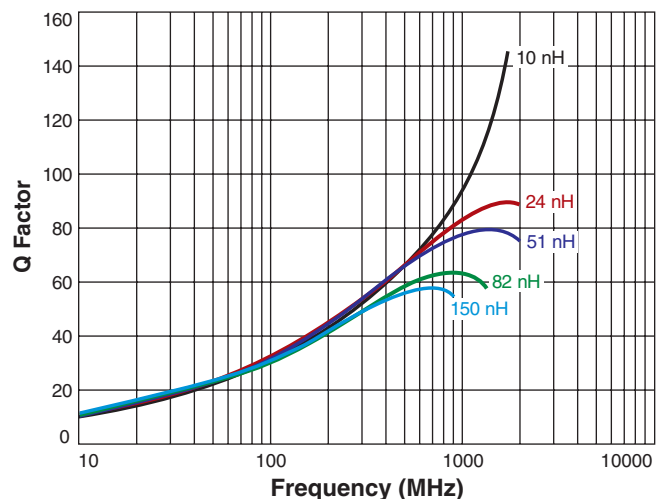
A	B	C	D	E	F	G	H	I	J
max	min-max	max							
0.072	0.034–0.046	0.037	0.015	0.029	0.013	0.038	0.040	0.027	0.028
1.83	0.86–1.17	0.94	0.38	0.74	0.33	0.96	1.02	0.69	0.71

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 ¹	Inductance ² (nH)	Percent tolerance	L test freq (MHz)	Q min ³ at 250 MHz	900 MHz		1.7 GHz		SRF min ⁴ (GHz)	DCR max ⁵ (Ohms)	I _{max} (mA)
					L typ	Q typ ³	L typ	Q typ ³			
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 ⁶	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.



CRITICAL PRODUCTS & SERVICES

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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 ¹	Inductance ² (nH)	Percent tolerance	L test freq (MHz)	Q min ³ at 250 MHz	900 MHz		1.7 GHz		SRF min ⁴ (GHz)	DCR max ⁵ (Ohms)	I _{max} (mA)
					L typ	Q typ ³	L typ	Q typ ³			
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 ⁶	72	5,2	150	36	80.8	69	—	—	1.52	0.42	380
AR312RAG75N_PZ ⁶	75	5,2	150	36	84.6	71	—	—	1.52	0.52	340
AR312RAG82N_PZ ⁶	82	5,2	150	36	94.0	62	—	—	1.44	0.46	350
AR312RAG91N_PZ ⁶	91	5,2	150	36	103.0	64	—	—	1.32	0.58	310
AR312RAGR10_PZ ⁶	100	5,2	150	36	114.0	69	—	—	1.36	0.54	340
AR312RAGR11_PZ ⁶	110	5,2	150	35	126.2	63	—	—	1.28	0.58	310
AR312RAGR12_PZ ⁶	120	5,2	150	36	142.4	61	—	—	1.24	0.72	280
AR312RAGR15_PZ ⁶	150	5,2	150	36	188.8	57	—	—	1.08	0.82	260
AR312RAGR18_PZ ⁶	180	5,2	100	36	232.2	50	—	—	1.04	1.50	190
AR312RAGR20_PZ ⁶	200	5,2	100	36	265.0	47	—	—	1.00	2.00	180
AR312RAGR21_PZ ⁶	210	5,2	100	36	288.0	45	—	—	0.96	2.00	170
AR312RAGR22_PZ ⁶	220	5,2	100	36	315.0	41	—	—	0.88	2.00	170
AR312RAGR27_PZ ⁶	270	5,2	100	35	—	—	—	—	0.84	2.40	160
AR312RAGR30_PZ ⁶	300	5,2	100	35	—	—	—	—	0.79	2.40	170

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AR312RAG30NGPZ

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Termination: See **Notes about terminations**

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