

# Outgassing Compliant Chip Inductors AR235RAG

- Higher Q and lower DCR than other 0402 inductors
- Very high SRF values – up to 5 GHz+
- Excellent current handling capability – up to 700 mA
- 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** 0.65 – 1.3 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

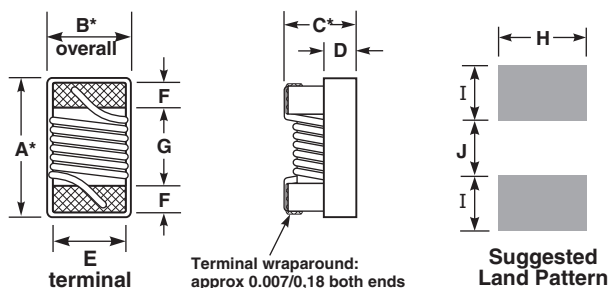
**Resistance to soldering heat** Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles

**Temperature Coefficient of Inductance (TCL)** +25 to +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.

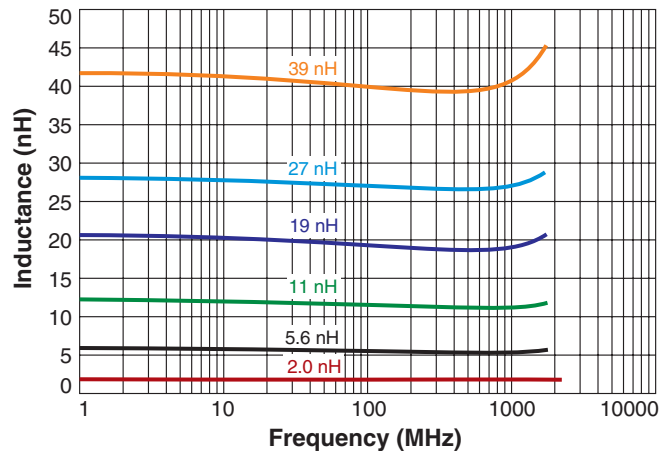
Paper tape: 8 mm wide, 0.66 mm thick, 2 mm pocket spacing



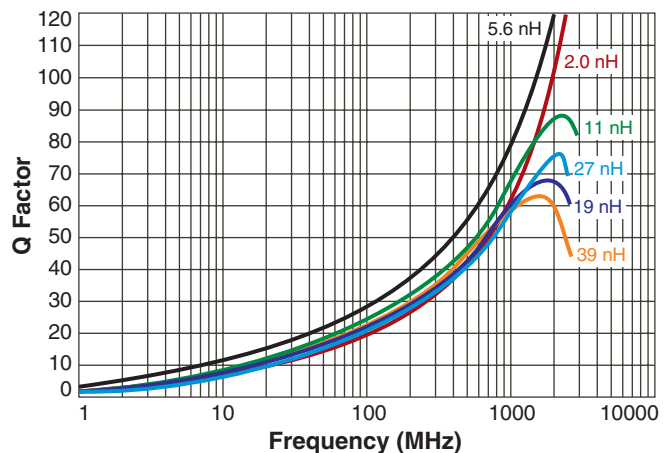
\*Dimensions are before solder application. For maximum overall dimensions including solder, add 0.0025 in / 0.064 mm to B and 0.006 in / 0.15 mm to A and C.

	A max	B	C max				
1–51 nH	0.045	0.020 – 0.028	0.024	inches			
	1,14	0,51 – 0,71	0,61	mm			
	A max	B	C max				
56–220 nH	0.044	0.020 – 0.028	0.026	inches			
	1,12	0,51 – 0,71	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

## Typical Q vs Frequency



## Typical L vs Frequency



**Coilcraft CPS**  
CRITICAL PRODUCTS & SERVICES

1102 Silver Lake Road  
Cary, IL 60013  
Phone 800-981-0363

Fax 847-639-1508  
Email cps@coilcraft.com  
www.coilcraft-cps.com

Document AR526-1 Revised 07/06/22

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.

# AR235RAG Series (0402)

Part number <sup>1</sup>	Inductance <sup>2</sup> (nH)	Percent tolerance	Test freq (MHz)	Q min at test freq	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>			
AR235RAG1N0JPZ	1.0	5	250	18	0.97	46	0.99	72	>5.00	0.030	700
AR235RAG2N0JPZ	2.0	5	250	21	1.96	58	1.98	85	>5.00	0.038	700
AR235RAG2N2JPZ	2.2	5	250	24	2.17	60	2.17	86	>5.00	0.038	700
AR235RAG2N4_PZ	2.4	5,2	250	26	2.37	60	2.38	83	>5.00	0.042	700
AR235RAG2N7_PZ <sup>6</sup>	2.7	5,2	250	18	2.66	62	2.68	85	>5.00	0.090	510
AR235RAG3N3_PZ	3.3	5,2	250	26	3.26	66	3.28	95	>5.00	0.045	700
AR235RAG3N6_PZ	3.6	5,2	250	31	3.56	65	3.58	94	>5.00	0.045	700
AR235RAG3N9_PZ	3.9	5,2	250	31	3.87	64	3.91	98	>5.00	0.045	700
AR235RAG4N3_PZ	4.3	5,2	250	25	4.26	63	4.33	90	>5.00	0.055	700
AR235RAG4N7_PZ <sup>6</sup>	4.7	5,2	250	24	4.67	58	4.74	83	>5.00	0.085	700
AR235RAG5N1_PZ <sup>6</sup>	5.1	5,2	250	18	5.07	54	5.16	76	>5.00	0.125	510
AR235RAG5N6_PZ	5.6	5,2	250	29	5.56	73	5.66	105	4.70	0.055	700
AR235RAG6N2_PZ	6.2	5,2	250	27	6.18	73	6.25	100	4.20	0.055	700
AR235RAG6N8_PZ	6.8	5,2	250	27	6.78	68	6.97	94	4.00	0.070	700
AR235RAG7N5_PZ <sup>6</sup>	7.5	5,2	250	23	7.49	60	7.77	82	3.80	0.100	690
AR235RAG8N2_PZ	8.2	5,2	250	27	8.10	68	8.40	95	3.80	0.065	700
AR235RAG8N7_PZ	8.7	5,2	250	26	8.73	66	9.04	95	3.40	0.070	700
AR235RAG9N0_PZ	9.0	5,2	250	30	8.99	67	9.21	92	3.60	0.080	700
AR235RAG9N5_PZ	9.5	5,2	250	25	9.52	64	9.97	90	3.40	0.090	700
AR235RAG10N_PZ	10	5,2	250	24	9.98	62	10.4	90	3.20	0.110	700
AR235RAG11N_PZ	11	5,2	250	27	11.0	68	11.6	98	3.20	0.092	700
AR235RAG12N_PZ	12	5,2	250	27	12.0	66	12.6	100	3.00	0.100	700
AR235RAG13N_PZ <sup>6</sup>	13	5,2	250	23	13.1	62	13.9	82	2.95	0.155	600
AR235RAG15N_PZ	15	5,2	250	25	15.1	62	16.0	85	2.70	0.115	700
AR235RAG16N_PZ <sup>6</sup>	16	5,2	250	26	16.2	57	17.3	77	2.55	0.150	580
AR235RAG18N_PZ	18	5,2	250	25	18.2	58	19.5	74	2.40	0.125	650
AR235RAG19N_PZ	19	5,2	250	25	19.2	61	20.7	88	2.20	0.150	600
AR235RAG20N_PZ <sup>6</sup>	20	5,2	250	24	20.3	58	22.0	76	2.15	0.185	520
AR235RAG21N_PZ <sup>6</sup>	21	5,2	250	24	21.3	48	23.2	62	2.20	0.460	340
AR235RAG22N_PZ	22	5,2	250	26	22.3	60	24.4	74	1.80	0.165	570

Continued on next page

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

AR235RAG22NGPZ

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

**Termination:** 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 option G or F.

- Inductance measured at test frequency using a Coilcraft SMD-F fixture in an Agilent/HP 4286A impedance analyzer or equivalent with Coilcraft-provided correlation pieces.
  - Q measured using an Agilent/HP 4291A with an Agilent/HP 16197 test fixture or equivalents.
  - SRF measured using an Agilent/HP 8753ES network analyzer or equivalent and a Coilcraft CCF1232 test fixture.
  - DCR measured on a Keithley 580 micro-ohmmeter and a Coilcraft CCF1010 test fixture.
  - Part is not compliant with MIL-STD-981 Family 50, Class S due to wire gauge.
  - 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

1102 Silver Lake Road  
 Cary, IL 60013  
 Phone 800-981-0363

Fax 847-639-1508  
 Email cps@coilcraft.com  
 www.coilcraft-cps.com

Document AR526-2 Revised 07/06/22

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.

# AR235RAG Series (0402)

Part number <sup>1</sup>	Inductance <sup>2</sup> (nH)	Percent tolerance	Test freq (MHz)	Q min at test freq	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>			
AR235RAG23N_PZ	23	5,2	250	25	23.3	60	25.5	77	1.75	0.165	520
AR235RAG24N_PZ <sup>6</sup>	24	5,2	250	25	24.5	55	27.1	71	1.75	0.210	480
AR235RAG25N_PZ <sup>6</sup>	25	5,2	250	24	25.5	57	28.3	73	1.75	0.260	440
AR235RAG26N_PZ <sup>6</sup>	26	5,2	250	24	26.6	56	29.3	74	1.75	0.290	440
AR235RAG27N_PZ <sup>6</sup>	27	5,2	250	24	27.3	62	29.5	86	1.75	0.350	340
AR235RAG30N_PZ <sup>6</sup>	30	5,2	250	25	30.8	61	35.0	87	1.75	0.350	340
AR235RAG33N_PZ <sup>6</sup>	33	5,2	250	25	34.0	61	38.3	80	1.65	0.310	340
AR235RAG36N_PZ <sup>6</sup>	36	5,2	250	25	37.1	59	42.2	76	1.65	0.390	320
AR235RAG37N_PZ <sup>6</sup>	37	5,2	250	25	38.2	57	44.0	72	1.65	0.480	300
AR235RAG39N_PZ <sup>6</sup>	39	5,2	250	25	40.5	56	47.0	84	1.65	0.420	320
AR235RAG40N_PZ <sup>6</sup>	40	5,2	250	24	41.3	56	47.4	75	1.65	0.420	320
AR235RAG43N_PZ <sup>6</sup>	43	5,2	250	24	45.0	52	54.1	68	1.60	0.520	290
AR235RAG47N_PZ <sup>6</sup>	47	5,2	250	24	49.0	48	58.9	62	1.60	0.580	270
AR235RAG51N_PZ <sup>6</sup>	51	5,2	250	24	49.1	52	58.8	59	1.65	0.700	240
AR235RAG56N_PZ <sup>6</sup>	56	5,2	250	23	58.8	56	72.2	64	1.65	0.900	250
AR235RAG68N_PZ <sup>6</sup>	68	5,2	250	24	72.2	56	91.4	64	1.60	1.00	230
AR235RAG82N_PZ <sup>6</sup>	82	5,2	250	24	89.7	52	–	–	1.60	1.10	200
AR235RAGR10_PZ <sup>6</sup>	100	5,2	250	26	–	–	–	–	1.40	1.20	180
AR235RAGR12JPZ <sup>6</sup>	120	5	250	26	–	–	–	–	1.40	1.20	170

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

AR235RAGR12JPZ

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

**Termination:** 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 option G or F.

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

3. Q measured 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 CCF1232 test fixture.

5. DCR measured on a Keithley 580 micro-ohmmeter 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

© Coilcraft, Inc. 2022

1102 Silver Lake Road  
Cary, IL 60013  
Phone 800-981-0363

Fax 847-639-1508  
Email cps@coilcraft.com  
www.coilcraft-cps.com

Document AR526-3 Revised 07/06/22

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.