

Outgassing Compliant Air Core Inductors



**AE422RAS
AE466RAS
AE522RAS
AE573RAS**

- Excellent Q factors – up to 230 at 400 MHz!
- Current handling as high as 5.7 Amps
- Inductance values from 27 to 500 nH
- Flat top for reliable pick and place
- High temperature materials allow operation in ambient temperatures up to 155°C.
- Passes NASA low outgassing specifications
- Constructed with materials that are fungal inert (rating of 0 per MIL-STD-810F)
- Tin-lead (Sn-Pb) terminations ensure the best possible board adhesion

Terminations Tin-lead (63/37) over copper. Other terminations also available.

Ambient temperature –55°C to +125°C with Irms 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) +5 to +70 ppm/°C

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

Part number ¹	Inductance ² (nH)	Percent tolerance	Q ³		Test frequency (MHz)	SRF min ⁴ (GHz)	DCR max (mOhm)	Irms ⁵ (A)
			min	typ				
AE422RAS27N_SZ	27	5,2	170	200	400	2.60	8.1	5.5
AE422RAS30N_SZ	30	5,2	170	200	400	2.40	8.3	5.5
AE422RAS33N_SZ	33	5,2	170	200	400	2.30	9.5	4.8
AE422RAS36N_SZ	36	5,2	170	200	400	2.30	9.8	4.8
AE422RAS39N_SZ	39	5,2	170	200	400	2.20	10.0	4.8
AE422RAS43N_SZ	43	5,2	170	200	400	2.20	10.8	4.4
AE422RAS47N_SZ	47	5,2	170	200	400	2.20	11.3	4.4
AE466RAS47N_SZ	47	5,2	190	230	400	1.40	6.35	4.9
AE466RAS68N_SZ	68	5,2	190	230	400	1.30	8.60	5.5
AE466RAS82N_SZ	82	5,2	190	230	400	1.20	9.40	5.6

Continued on next page

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

AE466RAS82NJSZ

Tolerance: G = 2% J = 5%

Termination: S = Tin-lead (63/37) over copper
T = Tin-silver-copper (95.5/4/0.5) over copper
L = Tin-silver (96.5/3.5) over copper

Screening: Z = Unscreened
H = Group A screening per Coilcraft CP-SA-10001
F = Screening per ESCC 3201
1 = EEE-INST-002 level 1
2 = EEE-INST-002 level 2
3 = EEE-INST-002 level 3
4 = MIL-STD-981 Class B
5 = MIL-STD-981 (Family 50) Class S

- Screening performed to the document's latest revision.
- Screening not available for parts with 2% tolerance.
- 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.

2. Inductance measured at specified test frequency, 0.1 Vrms, 0 A using an Agilent/HP 4286A LCR meter (or equivalent) with the following Coilcraft test fixtures: CCF1197A for AE422RAS and CCF1191C for AE466RAS
 3. Q measured at specified test frequency, using an Agilent/HP 4291A impedance analyzer.
 4. SRF measured using an Agilent/HP 8753ES network analyzer (or equivalent) and the CCF1248 Coilcraft test fixture.
 5. Current that causes a 20°C temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings.
 6. Electrical specifications at 25°C.
- Refer to Doc 362 "Soldering Surface Mount Components" before soldering.

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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.

Square Air Core Inductors AE422RAS, AE466RAS, AE522RAS, AE573RAS

Part number ¹	Inductance ² (nH)	Percent tolerance	Q ³		Test frequency (MHz)	SRF min ⁴ (GHz)	DCR max (mOhm)	Irms ⁵ (A)
			min	typ				
AE522RAS90N_SZ	90	5,2	120	140	50	0.900	5.50	5.0
AE522RAS111_SZ	110	5,2	120	140	50	0.850	6.50	5.7
AE522RAS131_SZ	130	5,2	120	140	50	0.800	7.50	5.4
AE522RAS161_SZ	160	5,2	120	140	50	0.750	8.25	5.7
AE522RAS181_SZ	180	5,2	120	140	50	0.750	9.50	5.0
AE522RAS221_SZ	220	5,2	120	140	50	0.900	11.0	5.0
AE522RAS271_SZ	270	5,2	120	140	50	0.800	12.5	4.3
AE522RAS301_SZ	300	5,2	130	150	50	0.720	13.8	3.7
AE573RAS331_LZ	330	5,2	120	180	50	0.660	12.5	4.7
AE573RAS361_LZ	360	5,2	120	180	50	0.620	13.5	4.5
AE573RAS391_LZ	390	5,2	120	180	50	0.590	14.5	4.4
AE573RAS431_LZ	430	5,2	120	180	50	0.550	15.5	4.2
AE573RAS501_LZ	500	5,2	120	180	50	0.500	16.5	4.3

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

AE573RAS501JLZ

Tolerance: G = 2% J = 5%

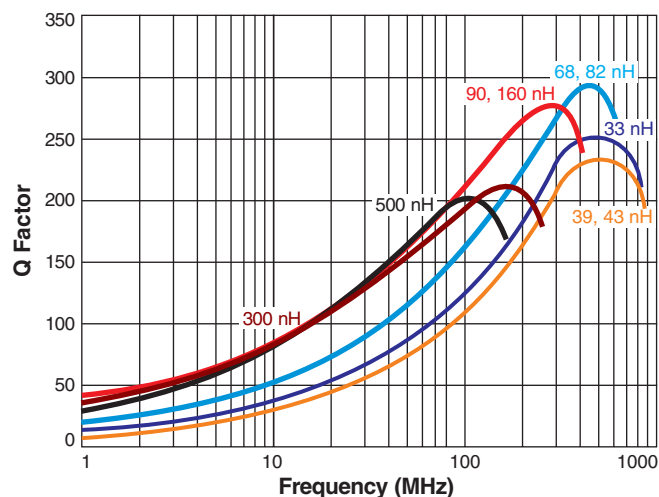
Termination: S = Tin-lead (63/37) over copper
T = Tin-silver-copper (95.5/4/0.5) over copper
L = Tin-silver (96.5/3.5) over copper

Screening: Z = Unscreened
H = Group A screening per Coilcraft CP-SA-10001
F = Screening per ESCC 3201
1 = EEE-INST-002 level 1
2 = EEE-INST-002 level 2
3 = EEE-INST-002 level 3
4 = MIL-STD-981 Class B
5 = MIL-STD-981 Class S
Screening performed to the document's latest revision.

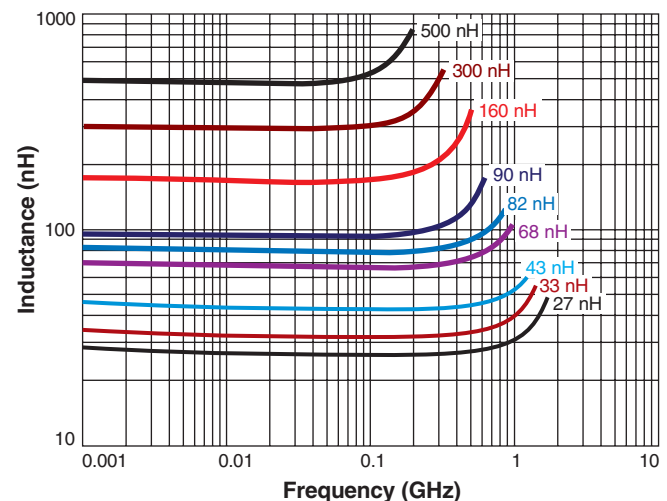
- Screening not available for parts with 2% tolerance.
- Lot qualification (Group B) available.
- Testing T and U have been replaced with more detailed codes 4, 5, and 1, 2, 3, respectively. Codes T and U can still be used, if necessary. Custom testing also available.
- Country of origin restrictions available; prefix option G.

2. Inductance measured at specified test frequency, 0.1 Vrms, 0 A using an Agilent/HP 4286A LCR meter (or equivalent) with the CCF1197A Coilcraft test fixture.
3. Q measured at specified test frequency, using an Agilent/HP 4291A impedance analyzer (or equivalent).
4. SRF measured using an Agilent/HP 8753ES network analyzer (or equivalent) and the following Coilcraft test fixture: CCF1199 for AE522RAS 90 nH through 160 nH; and CCF1200 for all others.
5. Current that causes a 20°C temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings.
6. Electrical specifications at 25°C.
Refer to Doc 362 "Soldering Surface Mount Components" before soldering.

Typical Q vs Frequency



Typical L vs Frequency



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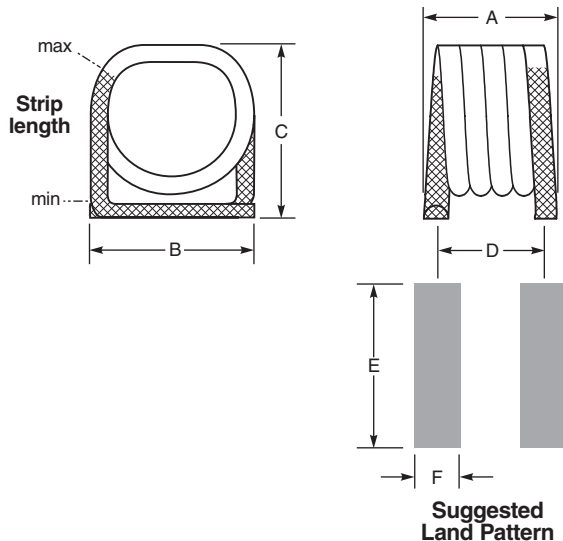
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Square Air Core Inductors AE422RAS, AE466RAS, AE522RAS, AE573RAS



Packaging:

AE422RAS 600/7" reel; Plastic tape: 12 mm wide, 0.35 mm thick, 8 mm pocket spacing, 3.05 mm pocket depth

AE466RAS 500/7" reel; Plastic tape: 12 mm wide, 0.26 mm thick, 8 mm pocket spacing, 4.06 mm pocket depth

AE522RAS90N 250/7" reel; Plastic tape: 16 mm wide, 0.32 mm thick, 12 mm pocket spacing, 5.97 mm pocket depth

AE522RAS111 250/7" reel; Plastic tape: 16 mm wide, 0.40 mm thick, 12 mm pocket spacing, 6.10 mm pocket depth

AE522RAS131 250/7" reel; Plastic tape: 16 mm wide, 0.40 mm thick, 12 mm pocket spacing, 6.10 mm pocket depth

AE522RAS161 250/7" reel; Plastic tape: 16 mm wide, 0.33 mm thick, 12 mm pocket spacing, 5.97 mm pocket depth

AE522RAS181 250/7" reel; Plastic tape: 16 mm wide, 0.40 mm thick, 12 mm pocket spacing, 6.10 mm pocket depth

AE522RAS221 250/7" reel; Plastic tape: 24 mm wide, 0.40 mm thick, 12 mm pocket spacing, 6.10 mm pocket depth

AE522RAS271 250/7" reel; Plastic tape: 24 mm wide, 0.40 mm thick, 12 mm pocket spacing, 6.10 mm pocket depth

AE522RAS301 250/7" reel; Plastic tape: 24 mm wide, 0.33 mm thick, 12 mm pocket spacing, 5.97 mm pocket depth

AE573RAS331 150/7" reel; Plastic tape: 24 mm wide, 0.40 mm thick, 12 mm pocket spacing, 6.99 mm pocket depth

AE573RAS361 150/7" reel; Plastic tape: 24 mm wide, 0.40 mm thick, 12 mm pocket spacing, 7.75 mm pocket depth

AE573RAS391 150/7" reel; Plastic tape: 24 mm wide, 0.45 mm thick, 12 mm pocket spacing, 7.75 mm pocket depth

AE573RAS431 150/7" reel; Plastic tape: 24 mm wide, 0.45 mm thick, 12 mm pocket spacing, 7.75 mm pocket depth

AE573RAS501 150/7" reel; Plastic tape: 24 mm wide, 0.33 mm thick, 12 mm pocket spacing, 7.49 mm pocket depth

Recommended pick and place nozzles

AE422RAS: OD: 0.054"; ID: 0.031"

AE466RAS: OD: 0.170 inch; ID: 0.059 inch

AE522RAS, 47 – 200 nH: 3.5 mm × 7 mm (rubber). This nozzle is available [here](#).

AE522RAS, 270 – 300 nH: 4.0 mm × 12 mm (rubber). This nozzle is available [here](#).

AE573RAS: 4.0 mm × 12 mm (rubber). This nozzle is available [here](#).

PCB washing Tested to MIL-STD-202 Method 215 plus an additional aqueous wash. See [Doc787_PCB_Washing.pdf](#).

Part number	A	B	C	D	E	F	Weight ±20% (mg)
AE422RAS27N	0.105±0.010 2,67 ±0,254	0.105 ±0.015 2,67 ±0,381	0.110 ±0.005 2,79 ±0,127	0.090 2,29	0.120 3,05	0.040 1,02	32.9
AE422RAS30N	0.105 ±0.010 2,67 ±0,254	0.105 ±0.015 2,67 ±0,381	0.110 ±0.005 2,79 ±0,127	0.090 2,29	0.120 3,05	0.040 1,02	33.9
AE422RAS33N	0.115 ±0.010 2,92 ±0,254	0.105 ±0.015 2,67 ±0,381	0.110 ±0.005 2,79 ±0,127	0.100 2,54	0.120 3,05	0.040 1,02	37.6
AE422RAS36N	0.115 ±0.010 2,92 ±0,254	0.105 ±0.015 2,67 ±0,381	0.110 ±0.005 2,79 ±0,127	0.100 2,54	0.120 3,05	0.040 1,02	40.3
AE422RAS39N	0.115 ±0.010 2,92 ±0,254	0.105 ±0.015 2,67 ±0,381	0.110 ±0.005 2,79 ±0,127	0.100 2,54	0.120 3,05	0.040 1,02	42.6
AE422RAS43N	0.130 ±0.010 3,30 ±0,254	0.105 ±0.015 2,67 ±0,381	0.110 ±0.005 2,79 ±0,127	0.110 2,79	0.120 3,05	0.040 1,02	47.6
AE422RAS47N	0.130 ±0.010 3,30 ±0,254	0.105 ±0.015 2,67 ±0,381	0.110 ±0.005 2,79 ±0,127	0.110 2,79	0.120 3,05	0.040 1,02	49.9
AE466RAS47N	0.160±0.010 4,06 ±0,254	0.140 ±0.007 3,56 ±0,178	0.147 ±0.007 3,73 ±0,178	0.140 3,56	0.175 4,45	0.070 1,78	110
AE466RAS68N	0.210 ±0.010 5,33 ±0,254	0.140 ±0.007 3,56 ±0,178	0.147 ±0.007 3,73 ±0,178	0.190 4,83	0.175 4,45	0.070 1,78	145
AE466RAS82N	0.230 ±0.010 5,84 ±0,254	0.140 ±0.007 3,56 ±0,178	0.147 ±0.007 3,73 ±0,178	0.210 5,33	0.175 4,45	0.070 1,78	165
AE522RAS90N	0.205 ±0.015 5,21 ±0,381	0.215 ±0.010 5,46 ±0,254	0.224 ±0.010 5,69 ±0,254	0.175 4,45	0.255 6,48	0.085 2,16	280
AE522RAS111	0.250 ±0.015 6,35 ±0,381	0.220±0.010 5,59 ±0,254	0.224 ±0.010 5,69 ±0,254	0.230 5,84	0.265 6,73	0.085 2,16	330
AE522RAS131	0.265 ±0.015 6,73 ±0,381	0.220 ±0.010 5,59 ±0,254	0.224 ±0.010 5,69 ±0,254	0.245 6,22	0.265 6,73	0.085 2,16	371
AE522RAS161	0.290 ±0.015 7,37 ±0,381	0.220 ±0.010 5,59 ±0,254	0.224 ±0.010 5,69 ±0,254	0.260 6,60	0.265 6,73	0.085 2,16	425
AE522RAS181	0.320 ±0.015 8,13 ±0,381	0.220 ±0.010 5,59 ±0,254	0.224 ±0.010 5,69 ±0,254	0.290 7,37	0.265 6,73	0.085 2,16	460
AE522RAS221	0.390 ±0.015 9,91 ±0,381	0.220 ±0.010 5,59 ±0,254	0.224 ±0.010 5,69 ±0,254	0.360 9,14	0.265 6,73	0.085 2,16	550
AE522RAS271	0.460 ±0.015 11,68 ±0,381	0.220 ±0.010 5,59 ±0,254	0.224 ±0.010 5,69 ±0,254	0.420 10,67	0.265 6,73	0.085 2,16	640
AE522RAS301	0.470 ±0.015 11,94 ±0,381	0.225 ±0.010 5,72 ±0,254	0.224 ±0.010 5,69 ±0,254	0.440 11,18	0.265 6,73	0.085 2,16	650
AE573RAS331	0.405 ±0.015 10,29 ±0,381	0.295 ±0.010 7,49 ±0,254	0.285 ±0.010 7,24 ±0,254	0.375 9,53	0.325 8,26	0.09 2,29	855
AE573RAS361	0.445 ±0.015 11,30 ±0,381	0.295 ±0.010 7,49 ±0,254	0.285 ±0.010 7,24 ±0,254	0.415 10,541	0.325 8,26	0.09 2,29	928
AE573RAS391	0.485 ±0.015 12,32 ±0,381	0.295 ±0.010 7,49 ±0,254	0.285 ±0.010 7,24 ±0,254	0.455 11,56	0.325 8,26	0.09 2,29	990
AE573RAS431	0.520 ±0.015 13,21 ±0,381	0.295 ±0.010 7,49 ±0,254	0.285 ±0.010 7,24 ±0,254	0.490 12,45	0.325 8,26	0.09 2,29	1072
AE573RAS501	0.550 ±0.015 13,97 ±0,381	0.295 ±0.010 7,49 ±0,254	0.285 ±0.010 7,24 ±0,254	0.520 13,21	0.325 8,26	0.09 2,29	1160

All dimensions are in $\frac{\text{inches}}{\text{mm}}$.

S-Parameter files
ON OUR WEB SITE

SPICE models
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