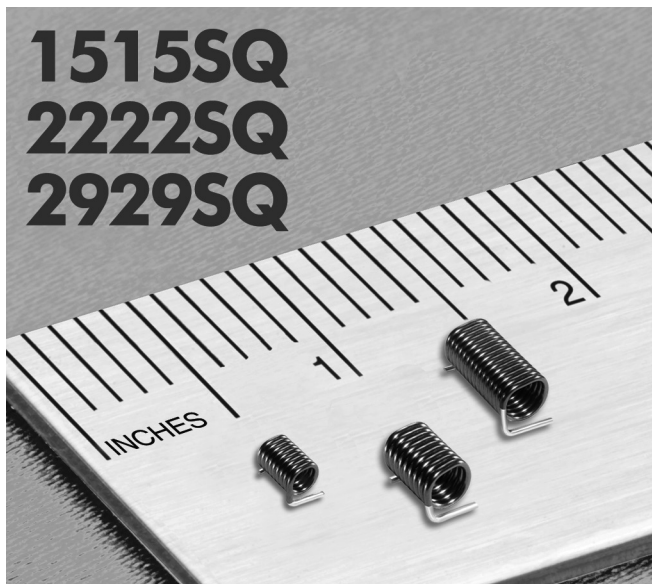


Square Air Core Inductors

1515SQ
2222SQ
2929SQ



- Excellent Q factors – up to 230 at 400 MHz!
- Current handling as high as 5.7 Amps
- Inductance values from 47 to 500 nH
- Flat top and bottom for reliable pick and place and mechanical stability

Designer's Kit C438 contains 10 each of all 5% parts

Terminations RoHS compliant tin-silver over copper

Ambient temperature –40°C to +125°C with Irms current

Maximum part temperature +145°C (ambient + temp rise).

Storage temperature Component: –40°C to +145°C.
Tape and reel packaging: –40°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)

Mean Time Between Failures (MTBF) 1 billion hours

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

Part number ¹	Inductance ² (nH)	Percent tolerance ³	Q ⁴ typ	Test frequency (MHz)	SRF min ⁵ (GHz)	DCR max (mOhm)	Irms ⁶ (A)
1515SQ-47N_E_	47	5,2	230	400	1.87	6.35	4.9
1515SQ-68N_E_	68	5,2	230	400	2.13	8.60	5.5
1515SQ-82N_E_	82	5,2	230	400	1.79	9.40	5.6
2222SQ-90N_E_	90	5,2	140	50	1.15	5.50	5.0
2222SQ-111_E_	110	5,2	140	50	1.00	6.50	5.7
2222SQ-131_E_	130	5,2	140	50	1.00	7.50	5.4
2222SQ-161_E_	160	5,2	140	50	1.00	8.25	5.7
2222SQ-181_E_	180	5,2	140	50	1.10	9.50	5.0
2222SQ-221_E_	220	5,2	140	50	1.00	11.0	5.0
2222SQ-271_E_	270	5,2	140	50	0.800	12.5	4.3
2222SQ-301_E_	300	5,2	150	50	0.720	13.8	3.7
2929SQ-331_E_	330	5,2	180	50	0.660	12.5	4.7
2929SQ-361_E_	360	5,2	180	50	0.620	13.5	4.5
2929SQ-391_E_	390	5,2	180	50	0.590	14.5	4.4
2929SQ-431_E_	430	5,2	180	50	0.550	15.5	4.2
2929SQ-501_E_	500	5,2	180	50	0.500	16.5	4.3

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

1515SQ-82N**J**E**C**

Tolerance: **G** = 2% **J** = 5%
(Table shows stock tolerances in bold.)

Termination: **E** = RoHS compliant tin-silver (96.5/3.5) over copper.
Special order, added cost:
T = RoHS tin-silver-copper (95.5/4/0.5) over copper
or **S** = non-RoHS tin-lead (63/37) over copper.

Packaging: **C** = 7" machine-ready reel. EIA-481 embossed plastic tape.

B = Less than full reel. In tape, but not machine ready.
To have a leader and trailer added (\$25 charge),
use code letter C instead.

D = 13" machine-ready reel. EIA-481 embossed plastic
tape. Factory order only, not stocked.

2. Inductance measured at specified test frequency, 0.1 Vrms, 0 A using an Agilent/HP 4287A LCR meter with the following Coilcraft test fixtures: CCF1191C for 1515SQ; CCF1197A for 2222SQ and 2929SQ.

3. Tolerances in bold are stocked for immediate shipment.

4. Q measured at specified test frequency, using an Agilent/HP 4291A impedance analyzer.

5. SRF measured using an Agilent/HP 8753 network analyzer and the following Coilcraft test fixtures: CCF1143 for 1515SQ; CCF1199 for 2222SQ-90N and 2222SQ-161; CCF1200 for 2222SQ-301 and 2929SQ-501.

6. 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.

7. Electrical specifications at 25°C.

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



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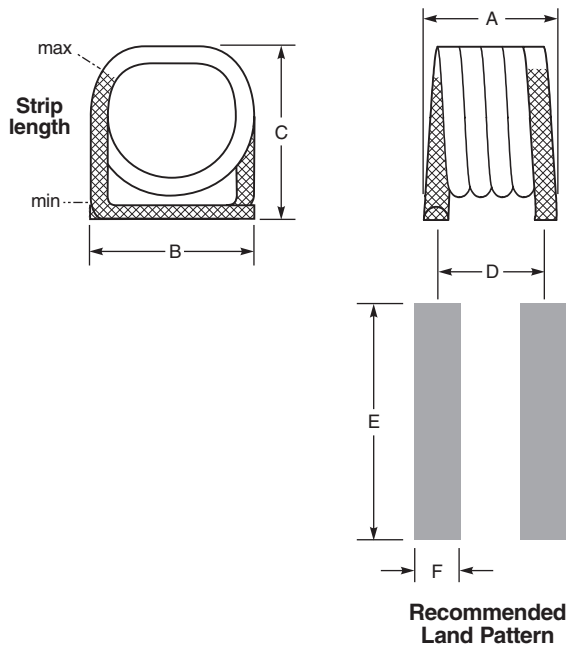
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Square Air Core Inductors – 1515SQ, 2222SQ, 2929SQ



Part number	A	B	C	D	E	F	Weight (mg)
1515SQ-47N	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
1515SQ-68N	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
1515SQ-82N	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
2222SQ-90N	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
2222SQ-111	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
2222SQ-131	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
2222SQ-161	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
2222SQ-181	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
2222SQ-221	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
2222SQ-271	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
2222SQ-301	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
2929SQ-331	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
2929SQ-361	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
2929SQ-391	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
2929SQ-431	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
2929SQ-501	0.550 ±0.015 14.00 ±0.381	0.290 ±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 $\frac{\text{inches}}{\text{mm}}$.

Packaging:

- 1515SQ-47N** 500/7" reel; 2000/13" reel Plastic tape: 12 mm wide, 0.26 mm thick, 8 mm pocket spacing, 4.06 mm pocket depth
- 1515SQ-68N** 500/7" reel; 2000/13" reel Plastic tape: 12 mm wide, 0.26 mm thick, 8 mm pocket spacing, 4.06 mm pocket depth
- 1515SQ-82N** 500/7" reel; 2000/13" reel Plastic tape: 12 mm wide, 0.26 mm thick, 8 mm pocket spacing, 4.06 mm pocket depth
- 2222SQ-90N** 250/7" reel; 750/13" reel Plastic tape: 16 mm wide, 0.32 mm thick, 12 mm pocket spacing, 5.97 mm pocket depth
- 2222SQ-111** 250/7" reel; 750/13" reel Plastic tape: 16 mm wide, 0.40 mm thick, 12 mm pocket spacing, 6.10 mm pocket depth
- 2222SQ-131** 250/7" reel; 750/13" reel Plastic tape: 16 mm wide, 0.40 mm thick, 12 mm pocket spacing, 6.10 mm pocket depth
- 2222SQ-161** 250/7" reel; 750/13" reel Plastic tape: 16 mm wide, 0.33 mm thick, 12 mm pocket spacing, 5.97 mm pocket depth
- 2222SQ-181** 250/7" reel; 750/13" reel Plastic tape: 16 mm wide, 0.40 mm thick, 12 mm pocket spacing, 6.10 mm pocket depth
- 2222SQ-221** 250/7" reel; 750/13" reel Plastic tape: 24 mm wide, 0.40 mm thick, 12 mm pocket spacing, 6.10 mm pocket depth
- 2222SQ-271** 250/7" reel; 750/13" reel Plastic tape: 24 mm wide, 0.40 mm thick, 12 mm pocket spacing, 6.10 mm pocket depth
- 2222SQ-301** 250/7" reel; 750/13" reel Plastic tape: 24 mm wide, 0.33 mm thick, 12 mm pocket spacing, 5.97 mm pocket depth
- 2929SQ-331** 150/7" reel; 600/13" reel Plastic tape: 24 mm wide, 0.40 mm thick, 12 mm pocket spacing, 6.99 mm pocket depth
- 2929SQ-361** 150/7" reel; 600/13" reel Plastic tape: 24 mm wide, 0.40 mm thick, 12 mm pocket spacing, 7.75 mm pocket depth
- 2929SQ-391** 150/7" reel; 600/13" reel Plastic tape: 24 mm wide, 0.45 mm thick, 12 mm pocket spacing, 7.75 mm pocket depth
- 2929SQ-431** 150/7" reel; 600/13" reel Plastic tape: 24 mm wide, 0.45 mm thick, 12 mm pocket spacing, 7.75 mm pocket depth
- 2929SQ-501** 150/7" reel; 600/13" reel Plastic tape: 24 mm wide, 0.33 mm thick, 12 mm pocket spacing, 7.49 mm pocket depth

Recommended pick and place nozzles

- 1515SQ:** OD: 0.170 inch; ID: 0.059 inch
- 2222SQ, 47 – 200 nH:** 3.5 mm x 7 mm (rubber). This nozzle is available [here](#).
- 2222SQ, 270 – 300 nH:** 4.0 mm x 12 mm (rubber). This nozzle is available [here](#).
- 2929SQ:** 4.0 mm x 12 mm (rubber). This nozzle is available [here](#).



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S-Parameter files

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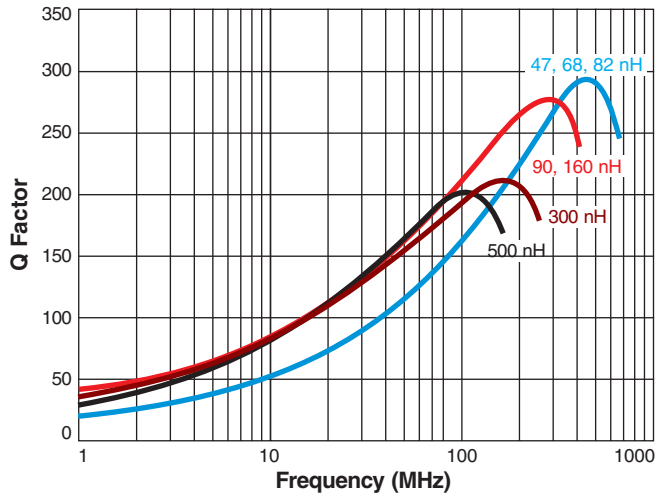
SPICE models

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Square Air Core Inductors – 1515SQ, 2222SQ, 2929SQ

Typical Q vs Frequency



Typical L vs Frequency

