High-Reliability Chip Inductors MS312RAA

Small size, exceptional Q and high SRFs make these inductors ideal for high frequency applications where size is at a premium. They also have excellent DCR and current carrying characteristics.

This robust version of Coilcraft's standard 0603CS series features high temperature materials that allow operation in ambient temperatures up to 155°C and a leach-resistant base metalization with tin-lead (Sn-Pb) terminations that ensures the best possible board adhesion.

Core material Ceramic

Terminations Tin-lead (63/37) over silver-platinum-glass frit

Ambient temperature –55°C to +125°C with Imax current

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

Storage temperature Component: –65°C to +155°C. Packaging: –55°C to +80°C

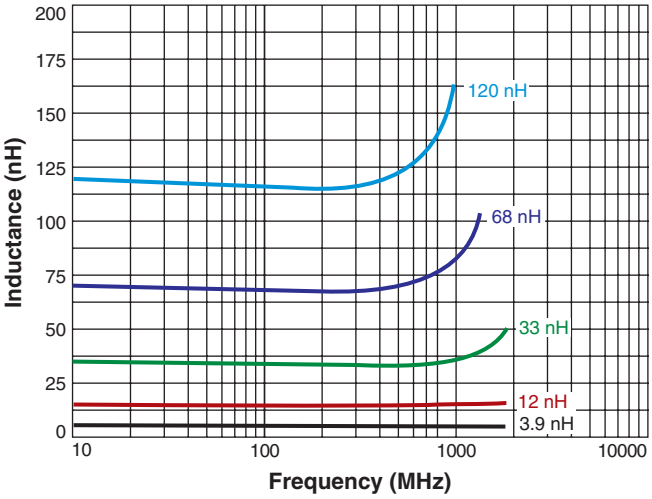
Resistance to soldering heat Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles

Temperature Coefficient of Inductance (TCL) +25 to +155 ppm/°C

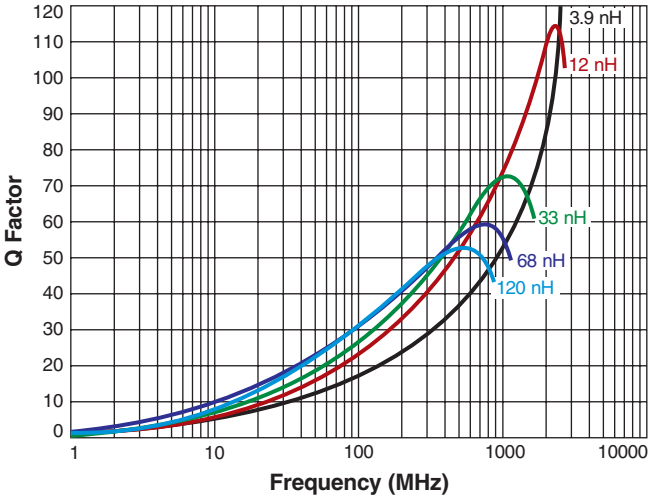
Moisture Sensitivity Level (MSL) 1 (unlimited floor life at <30°C / 85% relative humidity)

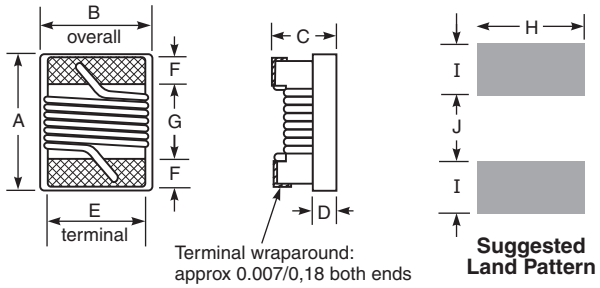
Enhanced crush-resistant packaging 2000 per 7″ reel
Paper tape: 8 mm wide, 1.0 mm thick, 4 mm pocket spacing

Typical L vs Frequency



Typical Q vs Frequency





A max	B max	C max	D ref	E	F	G	H	I	J
0.071	0.044	0.040	0.015	0.030	0.013	0.034	0.040	0.025	0.025
1,80	1,12	1,02	0,38	0,76	0,33	0,86	1,02	0,64	0,64

Note: 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**.

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MS312RAA Series (0603)

Part number[1]	Inductance[2] (nH)	Percent tolerance	Q min[3]	900 MHz L typ	900 MHz Q typ	1.7 GHz L typ	1.7 GHz Q typ	SRF min[4] (MHz)	DCR max[5] (Ohms)	Imax (mA)	Color code
MS312RAA1N6JSZ	1.6 @ 250 MHz	5	26	1.67	49	1.65	63	>5000	0.022	700	Red
MS312RAA1N8JSZ	1.8 @ 250 MHz	5	21	1.83	35	1.86	50	>5000	0.045	700	Black
MS312RAA3N3_SZ	3.3 @ 250 MHz	5,2	35	3.31	75	3.38	88	>5000	0.045	700	Blue
MS312RAA3N6_SZ	3.6 @ 250 MHz	5,2	18	3.72	53	3.71	65	>5000	0.063	700	Red
MS312RAA3N9_SZ	3.9 @ 250 MHz	5,2	20	3.95	49	3.96	67	>5000	0.080	700	Brown
MS312RAA4N3_SZ	4.3 @ 250 MHz	5,2	29	4.32	50	4.33	70	>5000	0.063	700	Orange
MS312RAA4N7_SZ	4.7 @ 250 MHz	5,2	18	4.72	47	4.75	57	>5000	0.116	605	Violet
MS312RAA5N1_SZ	5.1 @ 250 MHz	5,2	20	4.93	47	4.95	56	>5000	0.140	510	Green
MS312RAA5N6_SZ	5.6 @ 250 MHz	5,2,1	25	5.77	63	6.05	80	4760	0.075	700	Black
MS312RAA6N8_SZ	6.8 @ 250 MHz	5,2,1	28	6.75	60	7.10	81	4660	0.110	700	Red
MS312RAA7N5_SZ	7.5 @ 250 MHz	5,2,1	23	7.70	60	7.82	65	4320	0.106	700	Brown
MS312RAA8N2_SZ	8.2 @ 250 MHz	5,2,1	26	8.25	82	8.37	87	3880	0.115	700	Orange
MS312RAA8N7_SZ	8.7 @ 250 MHz	5,2,1	27	8.86	62	9.32	58	3680	0.109	700	Yellow
MS312RAA9N5_SZ	9.5 @ 250 MHz	5,2,1	22	9.70	59	9.92	61	4100	0.135	700	Blue
MS312RAA10N_SZ	10 @ 250 MHz	5,2,1	28	10.0	66	10.6	83	3860	0.130	700	Orange
MS312RAA11N_SZ	11 @ 250 MHz	5,2,1	26	11.0	53	11.5	56	3640	0.130	700	Gray
MS312RAA12N_SZ	12 @ 250 MHz	5,2,1	29	12.3	72	13.5	83	3220	0.130	620	Yellow
MS312RAA15N_SZ	15 @ 250 MHz	5,2,1	28	15.4	64	16.8	89	3020	0.170	600	Green
MS312RAA16N_SZ	16 @ 250 MHz	5,2,1	29	16.2	55	17.3	52	3040	0.170	600	White
MS312RAA18N_SZ	18 @ 250 MHz	5,2,1	29	18.7	70	21.4	69	2680	0.170	600	Blue
MS312RAA22N_SZ	22 @ 250 MHz	5,2,1	31	22.8	73	26.1	71	2380	0.190	560	Violet
MS312RAA23N_SZ	23 @ 250 MHz	5,2,1	39	24.1	71	28.0	67	2380	0.190	560	Orange
MS312RAA24N_SZ	24 @ 250 MHz	5,2,1	36	24.5	45	28.7	39	2380	0.190	560	Black
MS312RAA27N_SZ	27 @ 250 MHz	5,2,1	32	29.2	74	34.6	65	2380	0.220	530	Gray
MS312RAA30N_SZ	30 @ 250 MHz	5,2,1	32	31.4	47	39.9	28	2240	0.220	500	Brown
MS312RAA33N_SZ	33 @ 250 MHz	5,2,1	33	36.0	67	49.5	42	1900	0.220	500	White
MS312RAA36N_SZ	36 @ 250 MHz	5,2,1	32	39.4	47	52.7	24	1960	0.250	460	Red
MS312RAA39N_SZ	39 @ 250 MHz	5,2,1	36	42.7	60	60.2	40	1740	0.250	460	Black
MS312RAA43N_SZ	43 @ 250 MHz	5,2,1	28	47.0	44	64.9	21	1580	0.280	440	Orange
MS312RAA47N_SZ	47 @ 200 MHz	5,2,1	35	52.2	62	77.2	35	1560	0.280	440	Brown
MS312RAA51N_SZ	51 @ 200 MHz	5,2,1	38	55.5	69	82.2	34	1560	0.300	420	Blue
MS312RAA56N_SZ	56 @ 200 MHz	5,2,1	37	62.5	56	97.0	26	1480	0.310	420	Red
MS312RAA68N_SZ	68 @ 200 MHz	5,2,1	35	80.5	54	168	21	1380	0.340	410	Orange
MS312RAA72N_SZ	72 @ 150 MHz	5,2,1	35	82.0	53	135	20	1360	0.490	340	Yellow
MS312RAA82N_SZ	82 @ 150 MHz	5,2,1	29	96.2	54	177	21	1300	0.540	340	Green
MS312RAAR10_SZ	100 @ 150 MHz	5,2,1	28	124	49	—	—	1140	0.580	310	Blue
MS312RAAR11_SZ	110 @ 150 MHz	5,2,1	30	138	43	—	—	1080	0.610	310	Violet
MS312RAAR12_SZ	120 @ 150 MHz	5,2,1	28	166	39	—	—	1020	0.650	270	Gray
MS312RAAR15_SZ	150 @ 150 MHz	5,2,1	28	250	25	—	—	900	0.915	250	White
MS312RAAR18_SZ	180 @ 100 MHz	5,2,1	25	305	22	—	—	820	1.25	210	Black
MS312RAAR20_SZ	200 @ 100 MHz	5,2	25	—	—	—	—	800	1.98	170	Green
MS312RAAR21_SZ	210 @ 100 MHz	5,2	26	—	—	—	—	780	2.06	160	Gray
MS312RAAR22_SZ	220 @ 100 MHz	5,2	25	—	—	—	—	760	2.10	160	Brown
MS312RAAR25_SZ	250 @ 100 MHz	5,2	25	—	—	—	—	740	3.55	120	Violet
MS312RAAR27_SZ	270 @ 100 MHz	5,2	26	—	—	—	—	700	2.30	150	Red
MS312RAAR33_SZ	330 @ 100 MHz	5,2	26	—	—	—	—	620	3.89	100	Blue
MS312RAAR39_SZ	390 @ 100 MHz	5,2	27	—	—	—	—	580	4.35	100	Yellow

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

MS312RAAR39JSZ

Tolerance: **F** = 1% **G** = 2% **J** = 5%

Termination: **S** = Tin-lead (63/37) over silver-platinum-glass frit.

Special order:

T = Tin-silver-copper (95.5/4/0.5) over silver-platinum-glass frit.

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

Q = Tin-silver-copper (95.5/4/0.5) over tin over nickel over silver-platinum-glass frit.

2. Inductance measured using a Coilcraft SMD-A test fixture and Coilcraft-provided correlation pieces with an Agilent/HP 4286A impedance analyzer or equivalent.
3. Q measured at the same frequency as inductance using an Agilent/HP 4291A with an Agilent/HP 16197A test fixture or equivalents.
4. SRF measured using an Agilent/HP 8753ES network analyzer and a Coilcraft CCF1232 test fixture.
5. DCR measured on a Keithley 580 micro-ohmmeter and a Coilcraft CCF1010 test fixture.
6. Electrical specifications at 25°C.

Refer to Doc 362 “Soldering Surface Mount Components” before soldering.

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