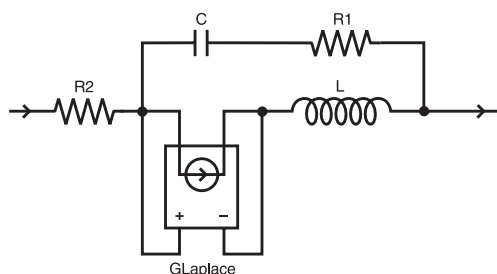


Modeling RF Inductors in PSpICE

An equivalent PSpICE model of a practical inductor is illustrated in schematic form below. This model adequately simulates the behavior of a real inductor up to 1.8 GHz.



PSpICE Equivalent of Circuit

The component values R1, R2, C, and L can be taken from the accompanying tables.

R1 value

R2 value

C value

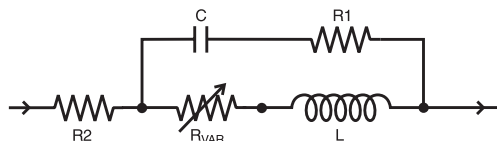
L value

- GLaplace is a model for the ac inductor resistance. The GLaplace statement defines a frequency dependent current which simulates the frequency dependent resistance. GLaplace consists of the two equations:

$$\text{EXPR} = V(\% \text{ IN+}, \% \text{ IN-}) * H$$

$$\text{XFORM} = \frac{1}{\sqrt{S/2\pi}}$$

- If your particular modeling program does not support use of the Laplace transform, you may substitute a variable resistor that has a value of $k * \sqrt{f}$.



- $R_{VAR} = k * \sqrt{f}$ (k can be taken from the accompanying tables).
- k and H are constants which relate to the skin effect and other inductor losses.
- All required values can be taken from the accompanying tables.

0603CS Series

Part number	R1	R2	C(pF)	L(nH)	k	H
0603CS-1N8	1	0.01	0.01	1.65	6.10E-06	115000
0603CS-3N9	1	0.01	0.08	3.5	1.15E-05	61000
0603CS-6N8	1	0.04	0.08	6.6	1.77E-05	39800
0603CS-10N	1	0.025	0.075	9.7	2.60E-05	27000
0603CS-12N	1	0.03	0.013	10.6	2.40E-05	23500
0603CS-15N	2	0.035	0.09	14	3.20E-05	21800
0603CS-18N	2	0.01	0.135	17	3.80E-05	18500
0603CS-22N	5	0.01	0.011	20	4.30E-05	15900
0603CS-27N	1	0.25	0.085	26	5.65E-05	12000
0603CS-33N	19	0.01	0.09	32	6.90E-05	10200
0603CS-39N	20	0.01	0.08	39	9.00E-05	7800
0603CS-47N	15	0.01	0.09	45	1.00E-04	7000
0603CS-56N	20	0.01	0.086	54	1.18E-04	6000
0603CS-68N	15	0.01	0.078	67	1.45E-04	4800
0603CS-72N	28	0.01	0.06	71	1.60E-04	4400
0603CS-82N	25	0.01	0.063	80.5	1.65E-04	4300
0603CS-R10	70	0.01	0.079	95	2.00E-04	3500
0603CS-R11	80	0.01	0.07	112	2.30E-04	3000
0603CS-R12	85	0.01	0.074	120	2.40E-04	2900

0805CS and HS Series

Part number	R1	R2	C(pF)	L(nH)	k	H
0805CS-030	3	0.075	0.14	3.1	7.40E-06	95000
0805CS-060	4	0.081	0.1	6.4	1.62E-05	44500
0805CS-080	0.5	0.018	0.1471	8.2	1.80E-05	39000
0805CS-120	0.5	0.25	0.12	12	2.70E-05	25000
0805CS-150	9	0.13	0.13	14.2	3.80E-05	24000
0805CS-180	5	0.01	0.1	18	3.50E-05	19500
0805CS-220	10	0.05	0.13	22	4.40E-05	16000
0805CS-270	20	0.25	0.17	27	4.30E-05	13700
0805CS-330	10	0.18	0.123	31	4.70E-05	15200
0805CS-390	15	0.1	0.105	37	5.50E-05	12700
0805CS-470	30	0.01	0.13	47	9.60E-05	7300
0805CS-560	30	0.01	0.115	55.5	1.06E-04	7100
0805CS-680	25	0.01	0.105	68	1.09E-04	6400
0805CS-820	15	0.01	0.12	82	1.20E-04	5800
0805CS-101	25	0.001	0.1	96	1.40E-04	5000
0805CS-121	45	0.09	0.11	120	1.60E-04	4100
0805CS-151	35	0.01	0.118	145	2.50E-04	3100
0805CS-181	30	0.01	0.11	180	2.50E-04	2800
0805CS-221	40	0.1	0.084	215	2.90E-04	2400
0805CS-271	60	0.01	0.005	250	1.50E-03	470
0805CS-331	60	0.01	0.0021	315	2.00E-03	339
0805CS-391	60	0.01	0.002	375	2.30E-03	280

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1102 Silver Lake Road Cary, Illinois 60013 Phone 847/639-6400 Fax 847/639-1469
E-mail info@coilcraft.com Data by Fax 800/651-6974 Web http://www.coilcraft.com

Modeling Inductors in PSPICE

0805HT Series

Part number	R1	R2	C(pF)	L(nH)	k	H
0805HT-1N8	0.01	0.01	0.1	2	9.10E-06	76400
0805HT-3N9	1	0.001	0.2	3.8	1.05E-05	67000
0805HT-4N7	0.5	0.03	0.1	4.75	1.55E-05	44800
0805HT-6N8	2	0.07	0.03	7.2	2.60E-05	27000
0805HT-8N2	1	0.02	0.07	8.1	2.30E-05	30200
0805HT-10N	45	0.001	0.1	9.8	1.90E-05	37000
0805HT-12N	30	0.001	0.1	11	2.50E-05	28000
0805HT-15N	33	0.001	0.11	14.8	2.80E-05	25000
0805HT-18N	40	0.001	0.1	17	3.30E-05	21300
0805HT-22N	12	0.005	0.065	21.5	5.30E-05	13300
0805HT-27N	8	0.01	0.125	26	6.00E-05	11700
0805HT-33N	9	0.01	0.088	33	6.70E-05	10500
0805HT-39N	10	0.01	0.078	37.5	8.00E-05	8800
0805HT-47N	12	0.001	0.082	45	9.80E-05	7200
0805HT-56N	25	0.01	0.065	55.5	1.17E-04	5900
0805HT-68N	20	0.01	0.086	66	1.40E-04	5000
0805HT-82N	22	0.01	0.075	80	1.60E-05	4400
0805HT-R10	90	0.01	0.078	100	1.80E-04	3900
0805HT-R12	85	0.01	0.082	120	2.00E-04	3500
0805HT-R15	75	0.01	0.085	150	2.65E-04	2650

1008HT Series

Part number	R1	R2	C(pF)	L(nH)	k	H
1008HT-3N3	15	0.001	0.2	3	1.00E-05	70000
1008HT-6N8	30	0.01	0.08	6.6	2.00E-05	35000
1008HT-7N2	30	0.1	0.08	7.2	2.00E-05	34500
1008HT-12N	36	0.07	0.11	11.5	2.00E-05	35100
1008HT-15N	40	0.01	0.1	15	2.80E-05	24300
1008HT-18N	44	0.01	0.1	17.3	3.30E-05	21400
1008HT-22N	51	0.001	0.105	22	3.65E-05	19200
1008HT-27N	52	0.001	0.093	27	4.60E-05	15300
1008HT-33N	30	0.001	0.14	34	5.60E-05	12600
1008HT-39N	30	0.001	0.13	39	5.90E-05	12100
1008HT-47N	25	0.001	0.175	47	8.20E-05	8900
1008HT-56N	35	0.001	0.135	56	8.60E-05	8100
1008HT-68N	35	0.001	0.126	67.5	1.00E-04	7000
1008HT-82N	35	0.001	0.115	82	1.25E-04	5700
1008HT-R10	38	0.001	0.123	100	1.60E-04	4500
1008HT-R12	45	0.001	0.114	120	1.75E-04	4000
1008HT-R14	45	0.001	0.12	140	2.10E-04	3400
1008HT-R15	45	0.001	0.125	150	2.25E-04	3000
1008HT-R18	50	0.001	0.106	180	2.80E-04	2500
1008HT-R22	50	0.001	0.122	220	3.20E-04	2200
1008HT-R24	40	0.001	0.123	240	3.55E-04	1960
1008HT-R27	30	0.001	0.123	270	4.10E-04	1700
1008HT-R33	42	0.001	0.125	330	5.00E-04	1400
1008HT-R39	50	0.001	0.135	390	5.70E-04	1240
1008HT-R47	52	0.001	0.136	470	7.10E-04	980
1008HT-R56	38	0.001	0.123	560	8.50E-04	820

1008CS and HS Series

Part number	R1	R2	C(pF)	L(nH)	k	H
1008CS-040	1	0.05	0.03	3.7	1.58E-05	44000
1008CS-080	8	0.06	0.12	7.7	2.40E-05	28700
1008CS-100	6	0.05	0.13	9.6	2.00E-05	34800
1008CS-120	13	0.01	0.15	12	2.05E-05	34000
1008CS-150	8	0.01	0.22	13	2.70E-05	26000
1008CS-180	35	0.01	0.97	18	3.70E-05	19000
1008CS-220	22	0.04	0.15	21	3.30E-05	21000
1008CS-270	20	0.01	0.25	26.5	3.90E-05	18500
1008CS-330	21	0.01	0.145	32	5.00E-05	14000
1008CS-390	25	0.01	0.185	39	5.60E-05	12400
1008CS-470	21	0.01	0.145	46	7.00E-05	10200
1008CS-560	20	0.01	0.209	54	7.50E-05	9300
1008CS-680	16	0.01	0.159	66.5	7.20E-05	9500
1008CS-820	20	0.01	0.23	81	1.10E-04	6300
1008CS-101	15	0.01	0.17	95	1.35E-04	5200
1008CS-121	27	0.01	0.16	115	1.60E-04	4400
1008CS-151	25	0.01	0.17	147	1.85E-04	3800
1008CS-181	20	1	0.165	175	2.50E-04	2700
1008CS-221	40	0.001	0.16	220	2.70E-03	2600
1008CS-271	40	0.01	0.135	260	3.30E-04	2100
1008CS-331	25	0.01	0.158	330	3.80E-04	1850
1008CS-391	45	0.01	0.1815	375	4.10E-04	1700
1008CS-471	50	0.01	0.175	470	5.30E-04	1300
1008CS-561	50	0.01	0.2	560	6.90E-04	1000
1008CS-621	80	0.01	0.167	620	7.00E-04	1000
1008CS-681	50	0.01	0.17	670	7.80E-04	900
1008CS-751	45	0.01	0.179	750	9.50E-04	740
1008CS-821	35	0.01	0.187	820	1.05E-03	680
1008CS-911	50	0.01	0.177	925	1.10E-03	640
1008CS-102	80	0.01	0.217	1000	1.20E-03	590
1008CS-122	85	0.01	0.216	1200	1.30E-03	520
1008CS-152	85	0.01	0.3	1500	1.70E-03	410
1008CS-182	90	0.01	0.29	1800	2.20E-03	320
1008CS-222	80	0.01	0.36	2200	2.75E-03	280
1008CS-272	95	0.01	0.285	2700	3.40E-03	220
1008CS-332	155	0.01	0.4	3300	4.40E-03	160
1008CS-392	150	0.01	0.465	3900	4.80E-03	150
1008CS-472	90	0.01	0.45	4700	5.90E-03	120



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1102 Silver Lake Road Cary, Illinois 60013 Phone 847/639-6400 Fax 847/639-1469
E-mail info@coilcraft.com Data by Fax 800/651-6974 Web <http://www.coilcraft.com>

Modeling Inductors in PSPICE

1008LS Series

Part number	R1	R2	C(pF)	L(nH)	k	H
1008LS-122	280	0.001	0.22	1180	1.15E-03	610
1008LS-152	280	0.001	0.27	1500	1.35E-03	510
1008LS-182	310	0.001	0.23	1800	1.50E-03	470
1008LS-222	300	0.001	0.23	2200	1.70E-03	420
1008LS-272	325	0.001	0.23	2700	2.10E-03	340
1008LS-332	325	0.001	0.31	3300	2.60E-03	270
1008LS-392	325	0.001	0.35	3900	3.20E-03	220
1008LS-472	325	0.001	0.36	4700	3.90E-03	180
1008LS-562	325	0.001	0.385	5600	4.40E-03	160
1008LS-682	325	0.001	0.393	6800	5.60E-03	125
1008LS-822	325	0.001	0.39	8200	6.30E-03	110
1008LS-103	325	0.001	0.35	10000	7.40E-03	95

1206CS Series

Part number	R1	R2	C(pF)	L(nH)	k	H
1206CS-030	20	0.15	0.2	3.3	1.25E-05	54000
1206CS-060	10	0.65	0.15	6.4	1.40E-05	41000
1206CS-100	10	0.5	0.17	10	1.45E-05	38000
1206CS-120	11	0.25	0.22	12	1.60E-05	40100
1206CS-150	12	0.2	0.17	15	2.30E-05	29000
1206CS-180	12	0.27	0.17	18	3.40E-05	19800
1206CS-220	18	0.6	0.16	22	4.00E-05	16000
1206CS-270	25	0.2	0.14	27	3.50E-05	19300
1206CS-330	25	0.1	0.17	33	5.00E-05	14000
1206CS-390	45	0.1	0.11	39	5.10E-05	13800
1206CS-470	45	0.1	0.14	47	6.00E-05	11600
1206CS-560	53	0.13	0.125	56	7.30E-05	9600
1206CS-680	50	0.17	0.147	68	9.00E-05	7700
1206CS-820	48	0.12	0.13	82	9.30E-05	7500
1206CS-101	52	0.1	0.12	100	1.15E-04	6100
1206CS-121	52	0.1	0.105	120	1.50E-04	4700
1206CS-151	55	0.1	0.124	150	1.90E-04	3700
1206CS-181	65	0.2	0.104	180	2.10E-04	3300
1206CS-221	60	0.1	0.12	228	2.70E-04	2600
1206CS-271	60	0.1	0.12	270	3.30E-04	2100
1206CS-331	50	0.01	0.12	330	4.15E-04	1700
1206CS-391	50	0.001	0.11	390	4.90E-04	1430
1206CS-471	50	0.001	0.11	470	6.00E-04	1170
1206CS-561	50	0.001	0.11	560	7.40E-04	950
1206CS-681	50	0.001	0.11	680	8.00E-04	870
1206CS-821	50	0.001	0.1	820	1.10E-03	640
1206CS-102	50	0.001	0.1	1000	1.20E-03	580
1206CS-122	50	0.001	0.1	1200	1.50E-03	460

1812CS Series

Part number	R1	R2	C(pF)	L(nH)	k	H
1812CS-122	90	0.001	0.24	1200	8.20E-04	860
1812CS-152	90	0.001	0.24	1460	1.05E-03	670
1812CS-182	80	0.001	0.24	1800	1.15E-03	610
1812CS-222	100	0.001	0.24	2250	1.50E-03	470
1812CS-272	105	0.001	0.24	2650	1.70E-03	410
1812CS-332	115	0.001	0.24	3100	1.70E-03	410
1812CS-392	120	0.001	0.23	3900	2.20E-03	320
1812CS-472	150	0.001	0.23	4700	2.50E-03	280
1812CS-562	150	0.001	0.25	5700	3.30E-03	210
1812CS-682	200	0.001	0.27	6800	4.00E-03	175
1812CS-822	220	0.001	0.29	8200	4.80E-03	146
1812CS-103	240	0.001	0.29	10000	5.80E-03	120
1812CS-123	200	0.001	0.29	12000	7.00E-03	100
1812CS-153	200	0.001	0.4	15000	9.50E-03	74
1812CS-183	200	0.001	0.45	18000	1.10E-02	64
1812CS-223	200	0.001	0.44	21500	1.30E-02	53
1812CS-273	200	0.001	1.9	27000	1.30E-02	54
1812CS-333	200	0.001	1.1	33000	1.50E-02	46

1812LS Series

Part number	R1	R2	C(pF)	L(μH)	k	H
1812LS-123	200	0.001	0.35	12	7.00E-03	107
1812LS-153	200	0.001	0.37	15	9.00E-03	78
1812LS-183	200	0.001	0.44	18	1.00E-02	70
1812LS-223	250	0.001	0.41	22	1.20E-02	58
1812LS-273	300	0.001	0.53	27	1.20E-02	58
1812LS-333	200	0.001	0.53	34	1.50E-02	46
1812LS-393	200	0.001	0.79	39	1.60E-02	44
1812LS-473	200	0.001	0.91	48	1.60E-02	44
1812LS-563	300	0.001	1.7	56	1.70E-02	41
1812LS-683	300	0.001	1.8	68	2.30E-02	31
1812LS-823	300	0.001	2.1	82	2.30E-02	31
1812LS-104	300	0.001	2.1	100	2.50E-02	29
1812LS-124	350	0.001	1.37	120	3.10E-02	23
1812LS-154	350	0.001	1.17	135	3.50E-02	20.5
1812LS-184	370	0.001	1.37	185	4.10E-02	18
1812LS-224	390	0.001	2.6	220	5.00E-02	15
1812LS-274	440	0.001	1.5	272	5.70E-02	12.3
1812LS-334	480	0.001	1.75	330	7.20E-02	9.9
1812LS-394	480	0.001	2.55	390	7.50E-02	9.2
1812LS-474	520	0.001	4.2	470	9.80E-02	7.7
1812LS-564	520	0.001	5.2	560	9.80E-02	7.2
1812LS-684	400	0.001	8.2	680	1.30E-01	6.3
1812LS-824	350	0.001	7.1	820	1.40E-01	5.6
1812LS-105	350	0.001	6.9	1000	1.50E-01	4.8



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1102 Silver Lake Road Cary, Illinois 60013 Phone 847/639-6400 Fax 847/639-1469
E-mail info@coilcraft.com Data by Fax 800/651-6974 Web http://www.coilcraft.com

Modeling Inductors in PSPICE

Micro Springs

Part number	R1	R2	C(pF)	L(nH)	k	H
0906-2	14	0.003	0.22	1.65	1.00E-06	700000
0906-3	18	0.003	0.12	2.55	2.70E-06	260000
0906-4	22	0.003	0.1	3.8	4.50E-06	158000
0906-5	35	0.003	0.085	5.3	6.50E-06	109000
0906-6	45	0.001	0.06	5.35	7.20E-06	98000
0906-7	55	0.001	0.055	7	1.00E-05	71000
0906-8	68	0.001	0.042	8	1.17E-05	60500
0906-9	70	0.001	0.045	9.2	1.51E-05	46500
0906-10	70	0.001	0.056	11.7	1.78E-05	40000

Mini Springs

Part number	R1	R2	C(pF)	L(nH)	k	H
A01T	8	0.001	0.23	2.6	1.00E-06	704000
A02T	8	0.001	0.17	4.5	2.00E-06	353000
A03T	8	0.001	0.14	7.6	5.50E-06	128000
A04T	8	0.001	0.15	11.4	9.50E-06	74000
A05T	14	0.001	0.2	18.4	1.33E-05	53000
B06T	14	0.001	0.15	16	1.28E-05	55000
B07T	14	0.001	0.16	21	1.35E-05	52000
B08T	23	0.001	0.14	28	1.70E-05	41500
B09T	23	0.001	0.14	35.5	2.60E-05	27000
B10T	12	0.001	0.235	43	2.70E-05	26000

Midi Springs

Part number	R1	R2	C(pF)	L(nH)	k	H
1812SMS-22	12	0.001	0.2	22	1.33E-05	53000
1812SMS-27	18	0.001	0.185	26.5	1.70E-05	42000
1812SMS-33	25	0.001	0.155	33	2.20E-05	32000
1812SMS-39	24	0.001	0.217	39	2.50E-05	28000
1812SMS-47	24	0.001	0.184	47	2.20E-05	32000
1812SMS-56	15	0.001	0.29	56	3.50E-05	20300
1812SMS-68	15	0.001	0.22	68	3.60E-05	19600
1812SMS-82	15	0.001	0.34	82	5.00E-05	14100
1812SMS-R10	20	0.001	0.26	100	6.40E-05	11000
1812SMS-R12	16	0.001	0.205	1200	6.60E-05	10800

Maxi Springs

Part number	R1	R2	C(pF)	L(nH)	k	H
132-09SM	2	0.001	0.393	90	3.30E-05	21300
132-10SM	2	0.001	0.38	110	3.20E-05	22100
132-11SM	2	0.001	0.385	130	4.20E-05	16800
132-12SM	2	0.001	0.39	169	7.00E-05	10300
132-13SM	3	0.001	0.34	200	6.00E-05	11800
132-14SM	3	0.001	0.33	222	9.50E-05	7400
132-15SM	4	0.001	0.38	246	9.00E-05	7850
132-16SM	4	0.001	0.355	307	1.20E-04	5900
132-17SM	4	0.001	0.375	380	1.50E-04	4700
132-18SM	4	0.001	0.4	422	1.75E-04	4050
132-19SM	4	0.001	0.31	491	1.85E-04	3800
132-20SM	5	0.001	0.34	538	2.00E-04	3550



Specifications subject to change without notice. Document 158-4 Revised 9/17/98

1102 Silver Lake Road Cary, Illinois 60013 Phone 847/639-6400 Fax 847/639-1469
 E-mail info@coilcraft.com Data by Fax 800/651-6974 Web <http://www.coilcraft.com>