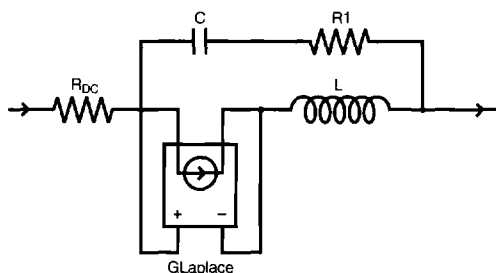


Modeling Inductors in PSPICE

An equivalent PSPICE model of a practical inductor is illustrated in schematic form below. This model adequately simulates the behavior of a real inductor.



PSPICE Equivalent of Circuit

The component values R1, R_{DC}, C, and L can be taken from the accompanying tables.

R1	value
R _{DC}	value
C	value
L	value

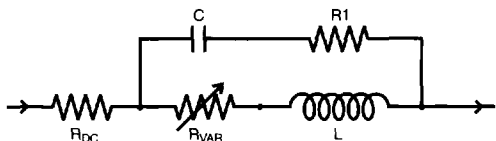
- R_{DC} value = the inductor dc resistance.
- GLaplace is a model for the ac inductor resistance. The GLaplace statement defines a frequency dependent current which simulates the frequency dependent resistance. GLaplace consists of the two equations:

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

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

It can also be taken from the accompanying tables.

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.

0603CS Series

Part number	R1	R _{DC}	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	R _{DC}	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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Modeling Inductors in PSPICE

0805HT Series

Part number	R1	R _{DC}	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

1008CS and HS Series

Part number	R1	R _{DC}	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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