

# Appendix I

## Equivalent Circuit Values

The following equivalent circuit values are for the circuit model in Figure 121.

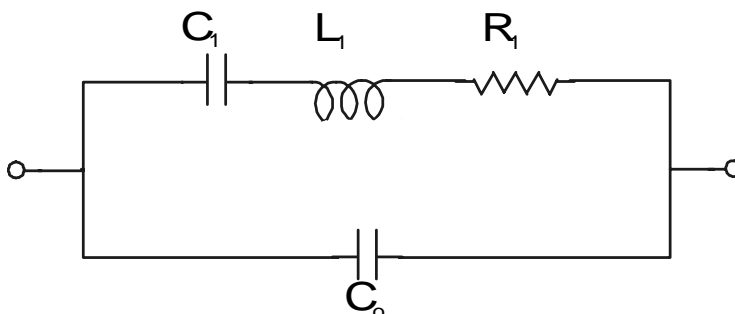


Figure 121: Equivalent Circuit Model For Ceramic Resonator

Ceralok Type	Fr (kHz)	Fa (kHz)	R1 ( $\Omega$ )	L1 (mH)	C1(pF)	Co (pF)
CSB400P	388.5	402.4	6.2	6.704	25.046	344.364
CSB455E	443.9	457.3	10.1	7.68	16.74	272.76
CSB500E	487.2	503.2	8.5	7.163	14.907	222.824
CSB600P	586.5	604.2	11.8	6.186	11.912	194.269
CSB700J	682	706.5	11.1	5.387	10.068	146.862
CSB1000J	978.5	1013.3	13.7	4.441	5.958	82.481
CSB1200J	1179.6	1220.8	45.4	4.533	4.018	56.489
CSB456F11	436.6	457.9	11.4	4.163	31.924	320.378
CSB456F14	435.9	457.4	11	3.947	33.785	333.517
CSB500F2	506.1	549.8	8.5	1.321	74.896	415.585
CSB500F9	489	543.9	27.9	0.909	116.569	490.913
CSB503F2	509.5	554	8.5	1.246	78.33	429.017
CSB912JF103	851.8	920.7	23.1	1.344	25.971	154.401
CSB912JF104	853	925.3	20.7	1.247	27.909	157.875
CSKCC455E	451.3	459.5	144.5	46.912	2.651	72.895
CSA2.00MG	1922.9	2046.7	18.3	1.397	4.908	36.942
CSA2.50MG	2391.4	2575	17.3	0.755	5.867	36.786
CSA3.00MG	2856.1	3083.5	12.9	0.439	7.073	42.741
CSA3.58MG	3424.5	3670.2	6.7	0.361	5.993	40.324
CSA4.00MG	3812.8	4118.6	6.8	0.284	6.125	36.719
CSA4.19MG	4008	4310.4	5.1	0.266	5.948	37.978
CSA5.00MG	4801.3	5133.6	4.9	0.217	5.046	35.692
CSA6.00MG	5750.8	6176.7	5.6	0.154	4.987	32.469
CSTS0400MG03	3372.5	3722.5	8.6	0.474	4.694	21.5
CSTS0358MG03	3818	4138	10.8	0.534	3.254	18.63
CSTS0500MG03	4757.5	5190	8.2	0.34	3.288	17.296
CSTS0600MG03	5760	6305	7.5	0.227	3.367	16.991
CSTS0800MG03	7667.5	8282.5	8.5	0.137	3.147	18.863

Table 16. Resonator Equivalent Circuit Values

CSTC2.00MG	1950.6	2098	94.9	4.651	1.431	9.124
CSTC2.50MG	2433.9	2638	75	2.095	2.021	11.612
CSTC3.00MG	2877.5	3098.9	10	0.779	3.931	24.598
CSTCC3.58MG	3488.7	3723.2	38	2.072	1.014	7.228
CSTCC4.00MG	3796	4166	8.6	0.476	3.689	18.045
CSTCC5.00MG	4746.8	5100	13.4	0.358	3.144	20.37
CSTCC6.00MG	5725	6250	9.9	0.232	3.326	17.337
CSTCC8.00MG	7585	8340	6.9	0.111	3.969	18.992
CSTCC10.0MG	9530	10465	6.3	0.081	3.459	16.802
CSA8.00MTZ	7650.9	8247.6	4.5	0.068	6.419	39.6
CSA10.0MTZ	9628.7	10357.2	4.6	0.054	5.074	32.313
CSA11.0MTZ	10586.9	11403.8	5.3	0.043	5.245	32.784
CSA12.0MTZ	11511.2	12348.5	5.8	0.034	5.603	67.196
CSACV10.0MTJ	9539.3	10102.9	6.3	0.061	4.565	37.515
CSACV12.0MTJ	11408.1	12107.3	5.3	0.035	5.499	43.527
CSA16.00MXZ040	15966.7	16067.4	14.2	0.564	0.176	13.922
CSA20.00MXZ040	19929.6	20055.3	13.3	0.493	0.129	10.217
CSA27.00MXZ040	26930.8	27087.1	14.8	0.407	0.086	7.365
CSA30.00MXZ040	29893.1	30060.8	12.7	0.31	0.091	8.163
CSA33.86MXZ040	33766.3	33921.1	15.1	0.26	0.085	9.273
CSA40.00MXZ040	39932.2	40090.8	15.1	0.216	0.073	9.314
CSA50.00MXZ040	49918.6	50102.6	15.8	0.143	0.071	9.572
CSA60.00MXZ040	59973	60190	26.7	0.128	0.055	7.834
CSACV16.00MXJ040	15934.1	16030.1	14.4	0.651	0.153	12.685
CSACV20.00MXJ040	19957.8	20073.4	13.5	0.471	0.135	11.636
CSACV27.00MXJ040	26916.8	27066.2	13.6	0.315	0.111	9.967
CSACV30.00MXJ040	29912.3	30069.8	12.6	0.272	0.104	9.867
CSACV33.86MXJ040	33779.2	33952.9	11.7	0.213	0.104	10.126
CSACV40.00MXJ040	39917.8	40112.5	14.3	0.217	0.073	7.548
CSACV50.00MXJ040	49903.4	50127	15.1	0.169	0.059	6.72
CSACV60.00MXJ040	59913	60216.4	23	0.164	0.043	4.315
CSACW1600MX03	15962.8	16026.7	86.4	1.069	0.093	16.876
CSACW2000MX03	19955.2	20042.3	32.7	0.629	0.101	11.557
CSACW2700MX03	26952.3	27026.8	19	0.364	0.096	17.327
CSACW3386MX03	33822.6	33914.2	16.3	0.253	0.088	16.131
CSACW4000MX03	39913.5	40037.1	13.9	0.217	0.072	11.875
CSACW5000MX03	49949.6	50083.1	16.4	0.177	0.056	10.843

**Table 16. Resonator Equivalent Circuit Values**