

Power to Voltage Conversion Table

P (dBm)	P (mW)	V _{RMS} (V)	V _p (V) ¹	V _{pp} (V)	P (dBm)	P (mW)	V _{RMS} (V)	V _p (V) ¹	V _{pp} (V)
-30	0.001	0.007	0.010	0.020	0	1.000	0.224	0.316	0.632
-29	0.001	0.008	0.011	0.022	1	1.259	0.251	0.355	0.710
-28	0.002	0.009	0.013	0.025	2	1.585	0.282	0.398	0.796
-27	0.002	0.010	0.014	0.028	3	1.995	0.316	0.447	0.893
-26	0.003	0.011	0.016	0.032	4	2.512	0.354	0.501	1.002
-25	0.003	0.013	0.018	0.036	5	3.162	0.398	0.562	1.125
-24	0.004	0.014	0.020	0.040	6	3.981	0.446	0.631	1.262
-23	0.005	0.016	0.022	0.045	7	5.012	0.501	0.708	1.416
-22	0.006	0.018	0.025	0.050	8	6.310	0.562	0.794	1.589
-21	0.008	0.020	0.028	0.056	9	7.943	0.630	0.891	1.783
-20	0.010	0.022	0.032	0.063	10	10.000	0.707	1.000	2.000
-19	0.013	0.025	0.035	0.071	11	12.589	0.793	1.122	2.244
-18	0.016	0.028	0.040	0.080	12	15.849	0.890	1.259	2.518
-17	0.020	0.032	0.045	0.089	13	19.953	0.999	1.413	2.825
-16	0.025	0.035	0.050	0.100	14	25.119	1.121	1.585	3.170
-15	0.032	0.040	0.056	0.112	15	31.623	1.257	1.778	3.557
-14	0.040	0.045	0.063	0.126	16	39.811	1.411	1.995	3.991
-13	0.050	0.050	0.071	0.142	17	50.119	1.583	2.239	4.477
-12	0.063	0.056	0.079	0.159	18	63.096	1.776	2.512	5.024
-11	0.079	0.063	0.089	0.178	19	79.433	1.993	2.818	5.637
-10	0.100	0.071	0.100	0.200	20	100.000	2.236	3.162	6.325
-9	0.126	0.079	0.112	0.224	21	125.893	2.509	3.548	7.096
-8	0.158	0.089	0.126	0.252	22	158.489	2.815	3.981	7.962
-7	0.200	0.100	0.141	0.283	23	199.526	3.159	4.467	8.934
-6	0.251	0.112	0.158	0.317	24	251.189	3.544	5.012	10.024
-5	0.316	0.126	0.178	0.356	25	316.228	3.976	5.623	11.247
-4	0.398	0.141	0.200	0.399	26	398.107	4.462	6.310	12.619
-3	0.501	0.158	0.224	0.448	27	501.187	5.006	7.079	14.159
-2	0.631	0.178	0.251	0.502	28	630.957	5.617	7.943	15.887
-1	0.794	0.199	0.282	0.564	29	794.328	6.302	8.913	17.825
0	1.000	0.224	0.316	0.632	30	1000.000	7.071	10.000	20.000

¹For Square wave signal, V_p = V_{RMS}.

Note: The converted voltages in the above table are for R = 50 Ω

$$P_{(dBm)} = 10 \log_{10} P_{(mW)}$$

$$P_{(mW)} = 10^{(P_{(dBm)}/10)}$$

$$P_{(mW)} = [V_{RMS}(V)]^2 * 10^3/R$$

$$V_{RMS}(V) = \sqrt{(P_{(mW)} * R / 10^3)}$$

$$V_p = \sqrt{2} * V_{RMS}, \text{ for sinusoid - Fig. a.}$$

$$V_p = V_{RMS}, \text{ for square wave - Fig. b.}$$

$$V_{p-p} = 2 * V_p$$

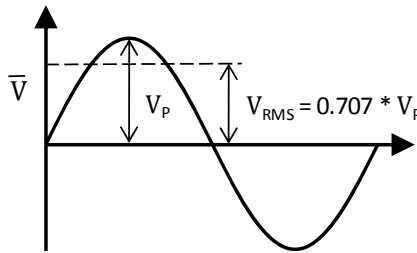


Fig. a. Sinusoidal signal

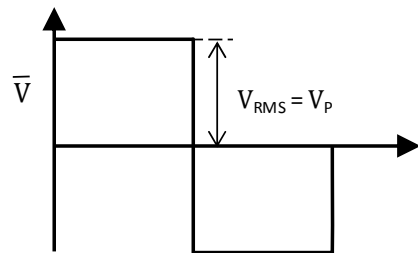


Fig. b. Square wave signal