

The Quarter Wave Length Calculator. Introducing and calculation.

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1/4 wave impedance transformer calculator

Enter Rz Load >	50	Ohms
Enter Rz Line >	63	Ohms
Rz Input is:	79.38	Ohms

Enter Rz Input >	63	Ohms
Rz Line is:	56.12	Ohms

Rz Line - Impedance

Quarter Wa

Enter the Er effective >	3	Er eff
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Enter the PCB line Length >	1081	MILs
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Transmission PCB line Length is:	27.4574	mm
Er effective sq.root is:	1.7320508	
Velocity of Propagation V is:	0.5773503	Vp
Velocity of E/M waves in PCB is:	173085257	m/sec

Enter the critical Frequency >	1.575	GHz
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Wave whole length (4/4) is:	109.8954	mm
Fraction of wave length is:	0.2499	$\lambda/4$

Return Loss Figure

- First resonance: $F = \text{FREQ}$
- Second resonance: $F = 3 * \text{FREQ}$
- Third resonance: $F = 5 * \text{FREQ}$
- Fourth resonance: $F = 7 * \text{FREQ}$
- First Local minimum: $F = 2 * \text{FREQ}$
- Second Local minimum: $F = 4 * \text{FREQ}$
- Third Local minimum: $F = 6 * \text{FREQ}$

Enter the Effective Dielectric Constant of a transmission line

Enter the transmission line length (MILs)

Enter the critical or operating frequency (GHz)

Length's Calculator

The resonant frequencies. The worst case of S11. (GHz)

Number of the resonance frequencies:

First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth
1.5759	4.728	7.88	11.031	14.183	17.335	20.487	23.639	26.79	29.942

The worst case of Return Loss (S11); shows the results of the ten resonant frequencies (GHz). Depends of the announced length of the transmission line

The length of the S11 worst case. Depends on the critical frequency. (MILs / mm)

Number of the resonance frequencies:

First	Second	third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth
1081.65	3244.95	5408.25	7571.55	9734.85	11898.15	14061.45	16224.75	18388.05	20551.35
27.47	82.42	137.37	192.32	247.27	302.21	357.16	412.11	467.06	522.01

The worst case of Return Loss (S11); shows the 10 results of the transmission line's length (MILs and mm). Depends of the announced critical (operating) frequency of the transmission line.

The frequencies of the S11 local minimum. The best case of S11. (GHz)

Number of the local minimum frequencies:

First	Second	third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth
3.152	6.304	9.455	12.607	15.759	18.911	22.063	25.214	28.366	31.518

The best case of Return Loss (S11); shows the results of the ten local minimum frequencies (GHz). Depends of the announced length of the transmission line.

The recommended length for the S11 local minimum - the best case of S11. Depends on the critical frequency. (MILs / mm)

Number of the local minimum frequencies:

First	Second	third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth
2163.29	4326.58	8653.16	17306.32	34612.64	69225.28	138450.56	276901.12	553802.24	1107604.5
54.95	109.9	219.8	439.6	879.2	1758.4	3516.8	7033.6	14067.2	28134.4

The best case of Return Loss (S11); shows the 10 results of the transmission line's length (MILs and mm). Depends of the announced critical (operating) frequency of the transmission line.

MILs / mm calculator

Enter MILs >	640	16.256	mm
Enter mm >	5.05	198.82	MILs

Additional: MILs to MM and MM to MILs calculator.