

BURIED MICROSTRIP IMPEDANCE EQUATION

Z_0 = TRANSMISSION LINE IMPEDANCE (OHMS)

H = HEIGHT OF LINE ABOVE POWER PLANE

W = TRACE WIDTH

T = TRACE THICKNESS

e_r = RELATIVE DIELECTRIC CONSTANT

Valid for $5 < W < 15$ mils, valid for any dimension system

Assumes at least 5 mils of dielectric lying on top of trace.

A more precise calculation can be obtained using a 2D field solver which the author recommends.

$$Z_0 = \left(43.037 \ln \frac{H}{W} \right) + 5.048 \left(\frac{T}{W} \right) + \frac{106.76}{1.09 \sqrt{e_r}}$$

Equation developed by Martin Marietta in mid 1980s.