

BURIED MICROSTRIP TRANSMISSION LINES
(Preliminary Release)

file: bmicrost.mcd

Credits:

Equation Developed by: Martin Maritena ~1985 (Speeding Edge)

Formulas included in this spreadsheet:

Microstrip characteristic impedance ZBMSTRIP()

Variables names used:

H Trace height above ground (inch)
W Trace width (inch)
T Trace thickness (inch)
ER Relative permittivity of material between trace and
 ground plane (dimension less)

Variables values used:

Height above ground (in.): H := .063
Width of trace (in.): W := .06
Thickness of trace (in.): T := .00134
Relative electric permeability: ER := 4.3

Calculations and Results:

$$\text{ZBMSTRIP} := \left[43.037 \cdot \ln\left(\frac{H}{W}\right) + 5.048 \left(\frac{T}{W}\right) + \frac{106.76}{1.09 \sqrt{\text{ER}}} \right]$$

ZBMSTRIP = 49.446

Notes:

- 1) Valid for $5 < W < 15$ mills
- 2) Assumes that 5 mills of dielectric is on trace.
- 3) I don't like this one. I'm just not clear on why the impedance jumped so high. This is a preliminary release at best.