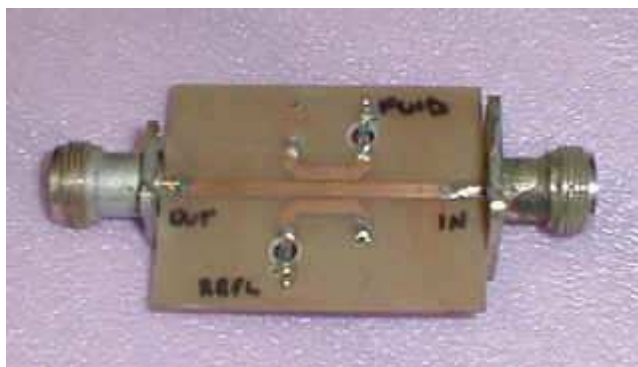


Tos meter by 23 cms and over

f5jtz version

There are materials on the market for making measurements at these frequencies, but is it justified to make such an investment?

And why not build it yourself!.



You will say, "Yes but we must calculate the lines!"

You will not have to do, other than to draw a double-sided printed circuit board and wiring, as I did the calculations and mylar for you.

Access to a soft computing Microstrip on [this page](#)

It is important to know that the type of used printed circuit (dielectric constant, thickness, material), the tracks will not have the same characteristics.

It is possible for it to use the PCB as follows:

Name	Material	Thickness	Fmax	Dielectric constant	Loss factor
FR4	Epoxy	1.5	5.7Ghz	4.6	0.84
FR4	Epoxy	0.8	10 GHz	4.7	0.0197
RO4003	Glass fabrics	0.81	10 GHz	3.4	0.0020
FR4	Epoxy	0.4	10 GHz	4.7	0.0197
ULTRALAM 2000	Teflon Glass Cloth	0.79	?	2.5	0.0019
RT / Duroid 5870	Micro fiber glass	0.79	24 GHz	2.33	0.0012
RT / Duroid 5880	Micro fiber glass	1.58	24 GHz	2.20	0.0009

Some info:

Michel F6BVA:

it is clear that designing a filter of 10 GHz on the epoxy is far from ideal (it's the least we can say!) but simulations show very well, there no real big surprises. For my part epoxy I use is 0.4mm or 0.8mm IC France (marketed by RS) The manufacturer gave me an Er of 4.7 and a tangent delta of 0.0197, it is figures that I use in simulations and again the results are very consistent with the calculations. It is absolutely certain that if you wish to make a filter of 200 MHz wide at 10 GHz with less than 2 dB loss, it will pass with teflon, but when we only have transmission lines, some shock and some decoupling to achieve micro-strip, epoxy still works fine on 10 GHz, it is very easy to supply and much less expensive than Teflon, it'll be a great pity that the Amateur Radio community without completely

private.

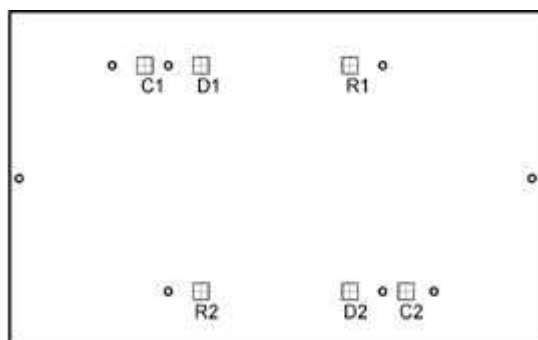
S53MV:

The loss, with FR4, but little dependence of the dielectric above the junction of epoxy-copper ("roughness"?). He used FR4/0.8mm up to 10 GHz.

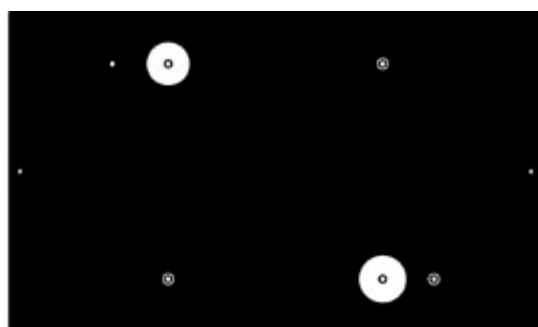
Yves HB9VJV:

The substrate thickness is chosen to minimize the length of the coil formed by the points through mass MMIC (son or rivet connection between the two layers of ICs located at the 2-point mass MMIC). More the substrate is thicker, this choke is high.

The board layout



The ground plane



[Load the ground plane \(Bottom\)](#)

The circuits are in. BMP

The image size is:

Width: 6.38 cms

Height: 3.77 cms

Resolution: 600 dpi for printing.

Components

C1 - C2 = 1nF CMS.

D1 - D2 = HP5082-2401 (paired) or HP5082-2800 or 1N5711 / 1N5712 (Electronic Release)

R1 - R2 = 50 ohms or 51 CMS (preferably 1%)

A galvanometer 100μA

A 10K linear potentiometer

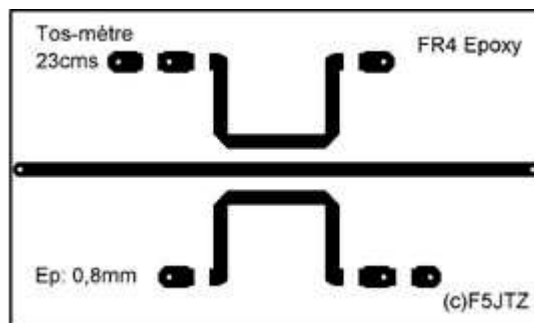
A simple switch / break

2 sockets N or SMA.

1 box (a build in CI)

[Doc on the diodes 5711 - HP5082-2800](#)

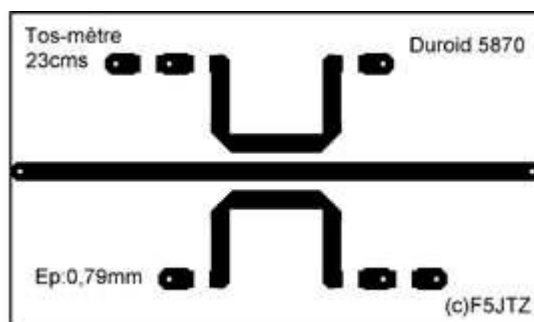
Production on epoxy FR4 - 0.8mm - 35μ



Download [Version 0.8 mm thick FR4 Epoxy.](#)

A print at 600 dpi.

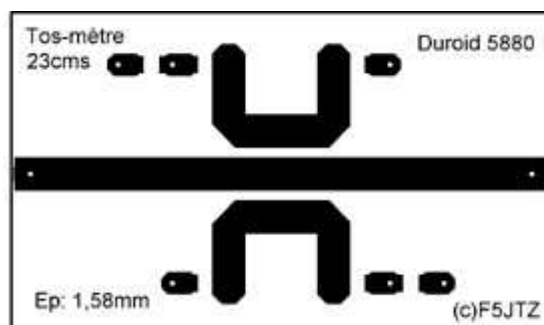
Production on RT / Duroid 5870 to 0.79 mm - 35 μ



Download [the version 0.79 mm thick Duroid 5870](#)

A print at 600 dpi.

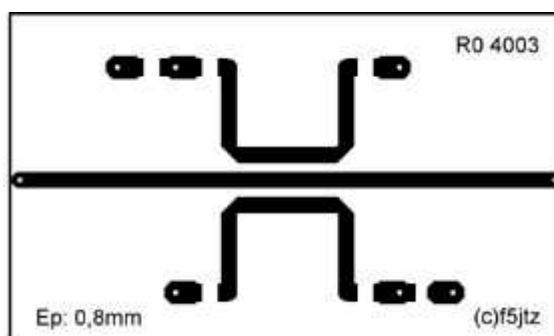
Production on RT / Duroid 5880 to 1.58 mm - 35 μ



Download [version 1.58 mm thick Duroid 5880.](#)

A print at 600 dpi.

Production on glass fabric RO 4003 to 0.81 mm - 35 μ



Download [the version in glass fabric 0.81 mm thick RO 4003.](#)

A print at 600 dpi

2x print at 600 dpi.

The underside is identical to that of the epoxy standart version.

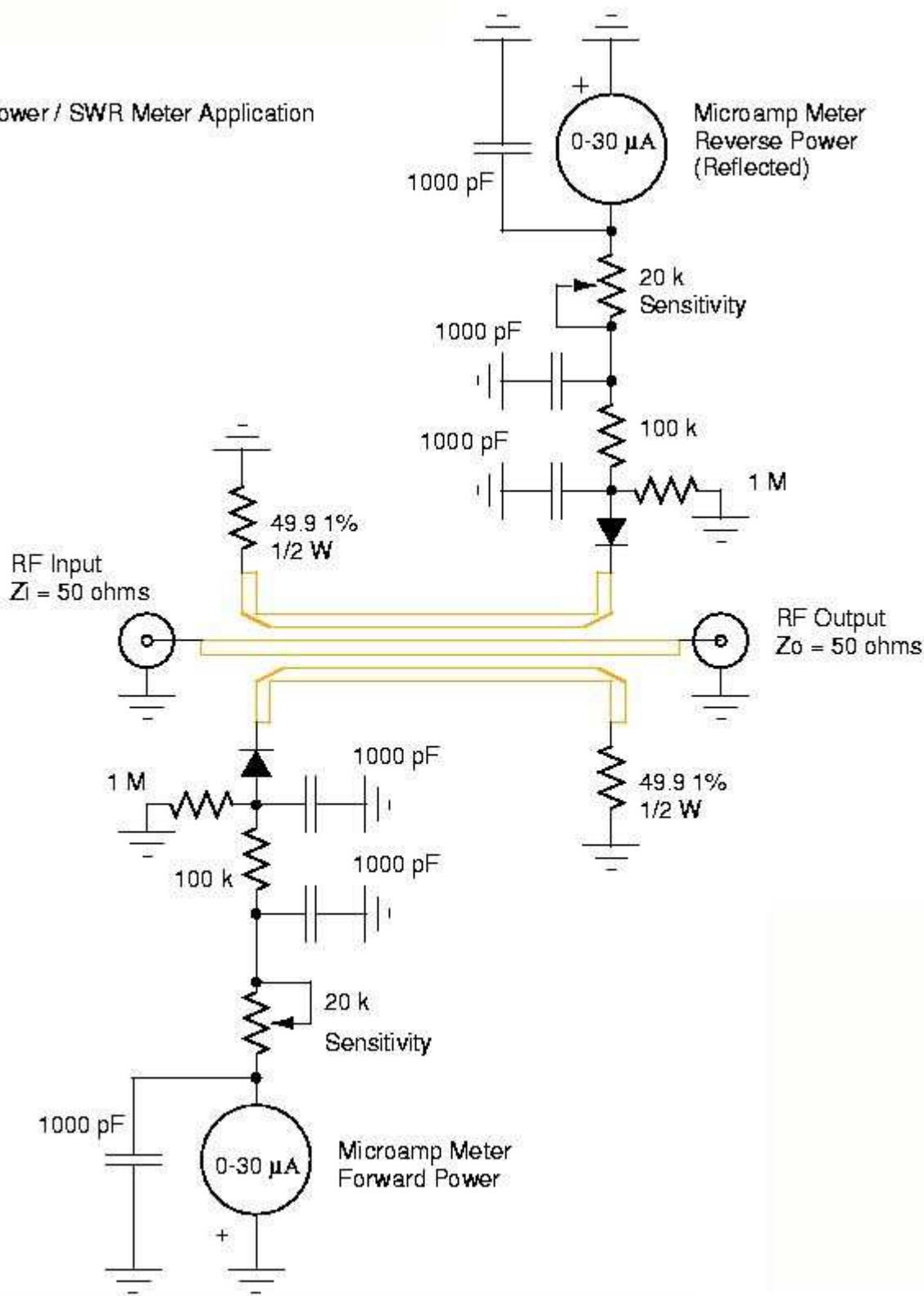
It is preferable to mount diodes paired.

Side resistance, it is easy to sort with a digital multimeter for 2 components of equal value.

The perfect balance of the 2 branches of detection and precision final assembly will depend on your choice.

Scheme

RF Power / SWR Meter Application



Calculations

Calculations of lines microstrip were performed using the softwares:

- AppCAD v2.5.0 Agilent Technologies.
- SI 6000B v2.10 Polar Instruments.

Page made 19 May 2002 by F5JTZ

Last updated: May 27, 2002
