

# **InfiniiMax Spice Models for the N5381A and N5382A Probe Heads**

## **User's Guide**



**Agilent Technologies**

# Notices

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## Input Impedance SPICE Models for InfiniiMax Series N5381A and N5382A Probe Heads

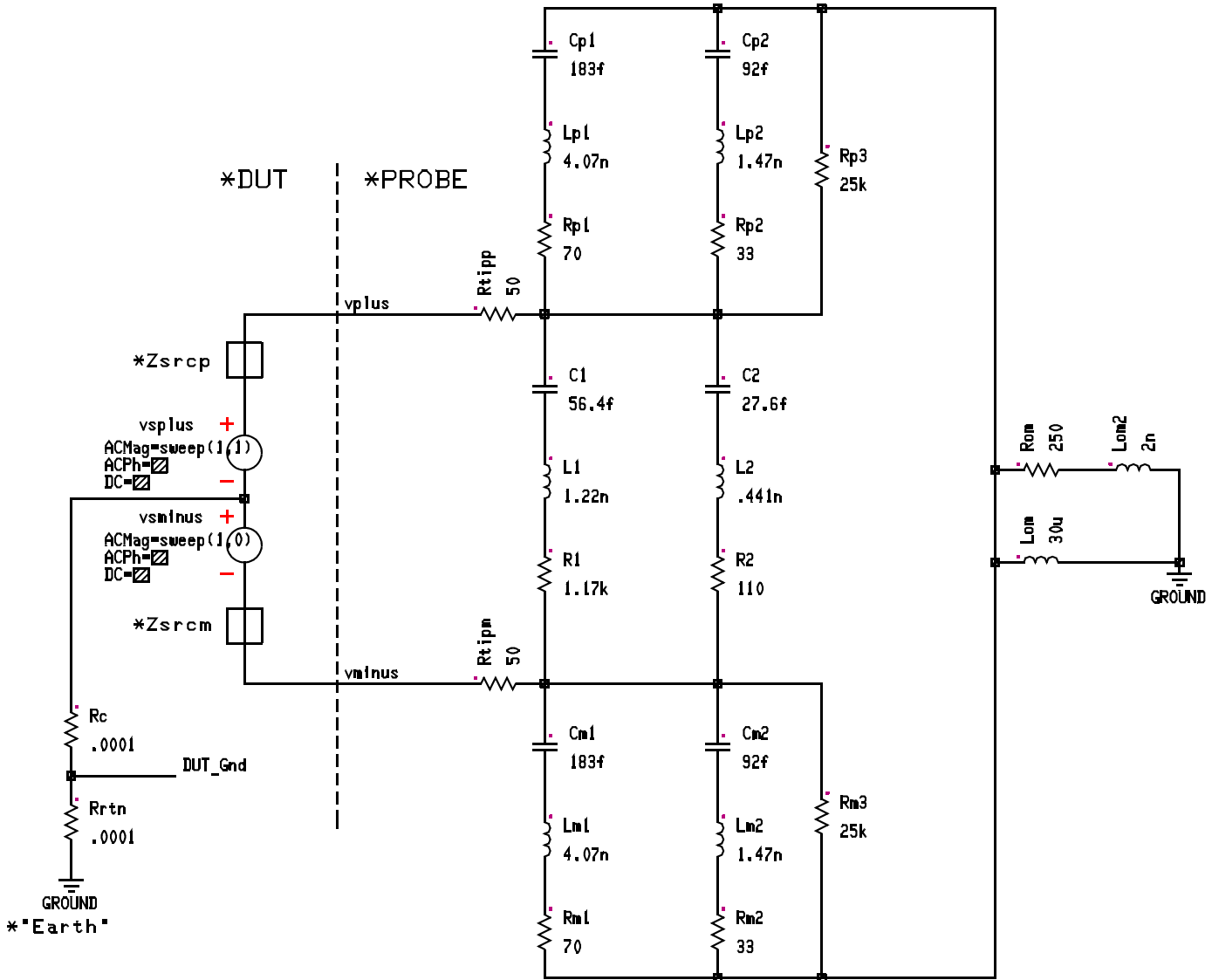
This document contains SPICE models that can be used to predict the probe loading effects of the InfiniiMax II active probes. Important points about these SPICE models are:

- ❑ SPICE models shown here are only for input impedance which allows modeling of the probe loading effects. Probe transfer function is generally flat to the specified BW.
- ❑ These input impedance is a function of the probe head type only. The probe amp bandwidth (10 GHz 1168A or 12 GHz 1169A) does not have any effect on the input impedance of the probe heads.
- ❑ The input loading models shown here are for the N5381A differential solder-in probe head and the N5382A differential browser probe head.

An input impedance plot is given that shows the matching of the measured data to the modeled data. Matching is generally very good up to the specified BW of the probe head.

## Input Impedance SPICE Models for InfiniiMax Series N5381A and N5382A Probe Heads

\*SPICE Model for InfiniiMax 1160 Series  
\*N5381A (&N5382A) Differential Probe Heads



- Rrtn (or Zrtn) is dependent on connection from DUT ground to "Earth" ground. Most likely modeled by a parallel RL similar to Rom || Lom. Will have slight effect on single-ended input Z and no effect on differential input Z.

If using diff probe to probe single-ended signals:

- vplus connected to DUT signal
- vminus connected to DUT ground which means that Rc = 0, vsminus = 0, and Zsrcm = 0.
- Input impedance is defined to be  $vplus/i(vplus)$

If using diff probe to probe differential signals:

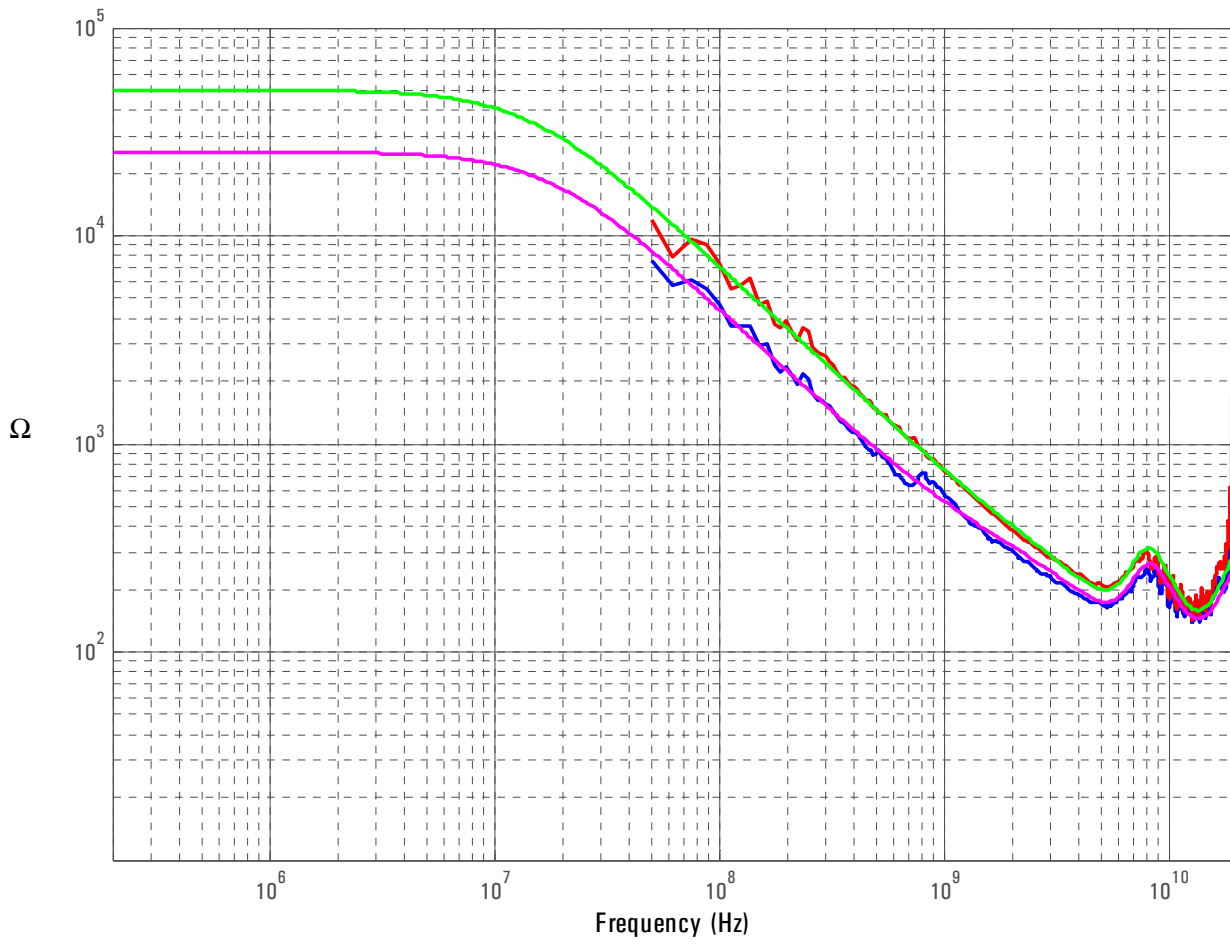
- Rc (or Zc) will depend on the DUT circuit.
- vplus connected to DUT plus signal
- vminus connected to DUT minus signal.
- Input impedance is defined to be  $(vplus - vminus)/i(vplus)$

SPICE Deck and Measured/Modeled Data Matching For the  
Differential Solder-in and Differential Browser Probe Heads

```
C2 %44 %40 27.6f
Cm2 %41 %38 92f
Cp2 %43 %36 92f
Cp1 %43 %34 183f
Cm1 %41 %31 183f
C1 %44 %28 56.4f
vsminus %16 %vminus ACMag=sweep(1,0)
vsplus %vplus %16 ACMag=sweep(1,1)
Lom2 %47 %0 2n
Lom %43 %0 30u
L2 %40 %39 .441n
Lm2 %38 %37 1.47n
Lp2 %36 %35 1.47n
Lp1 %34 %33 4.07n
Lm1 %31 %30 4.07n
L1 %28 %32 1.22n
Rm3 %41 %43 25k
Rp3 %43 %44 25k
Rom %43 %47 250
R2 %39 %41 110
Rm2 %37 %43 33
Rp2 %35 %44 33
Rp1 %33 %44 70
Rm1 %30 %43 70
R1 %32 %41 1.17k
Rtipm %vminus %41 50
Rtipp %vplus %44 50
Rrtn %15 %0 .0001
Rc %16 %15 .0001

.END
```

# SPICE Deck and Measured/Modeled Data Matching For the Differential Solder-in and Differential Browser Probe Heads





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