

# Device Modeling Report

COMPONENTS: RESISTOR  
PART NUMBER: ERF10AKR33  
MANUFACTURER: MATSUSHITA



**Bee Technologies Inc.**

# Theory: Auto Balancing Bridge Method

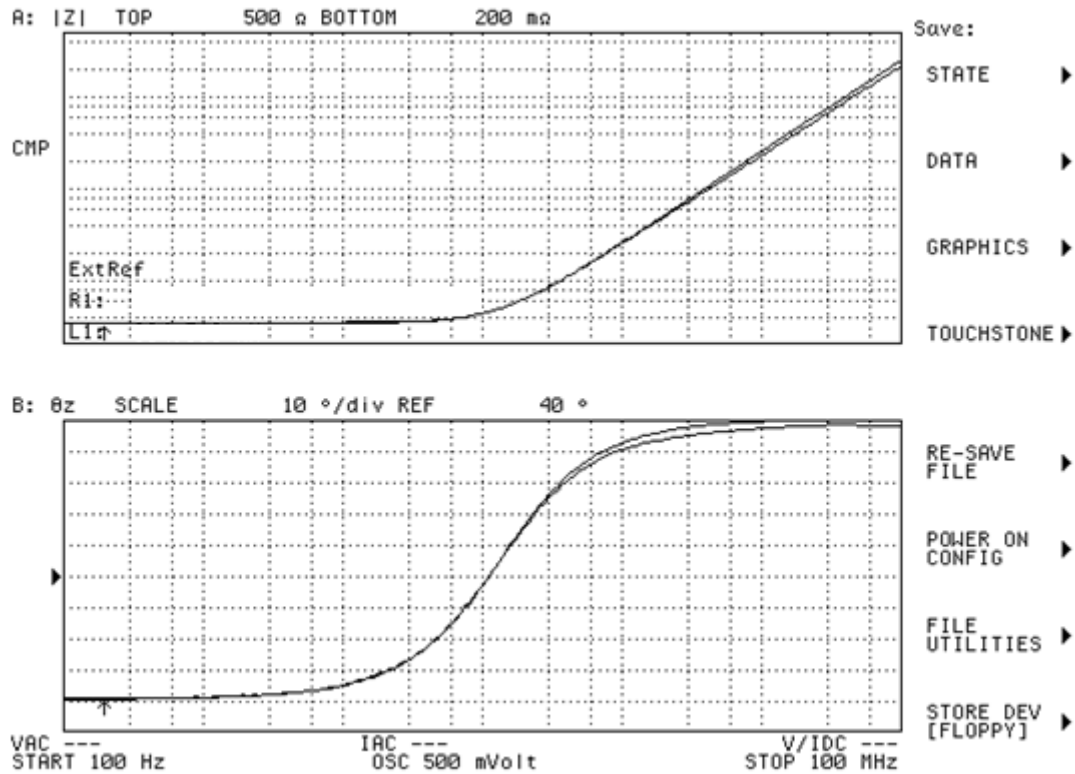
## Optimization of Simulation

Range of adjustment Frequency: 100 to 100M(Hz)

Frequency vs.  $|Z|$  and Frequency vs.  $\theta z$  Characteristic

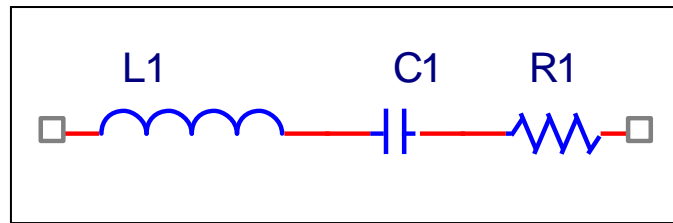
Attention

*Please use SPICE MODEL within the range from 100 to 100M(Hz)*



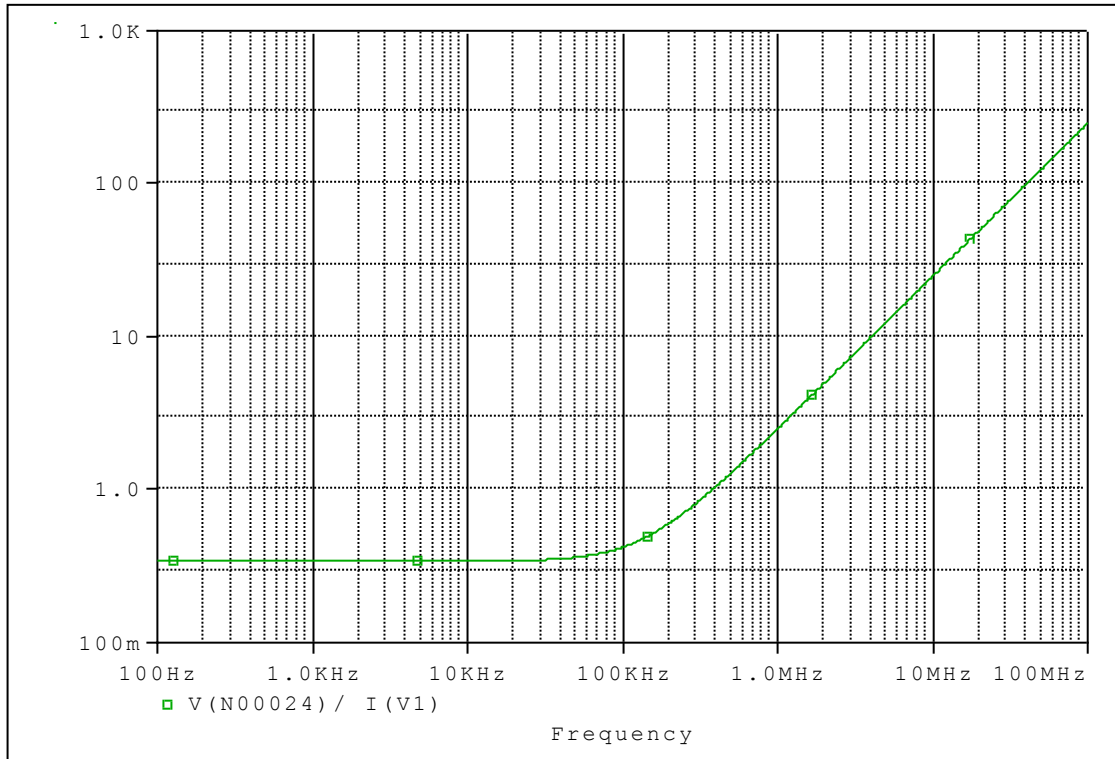
Measurement		
R1		
L1		
C1		

Equivalent circuit

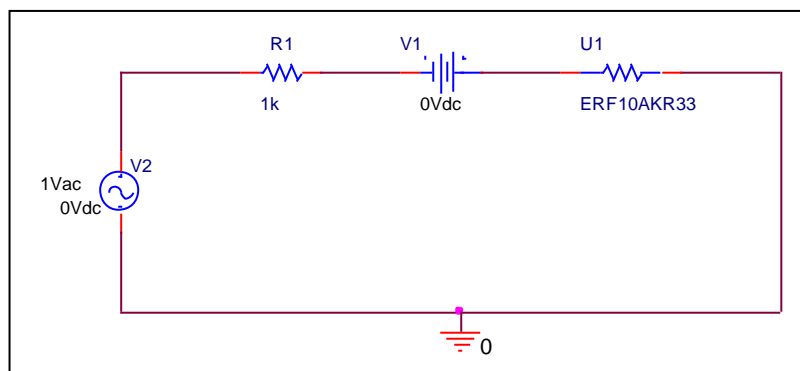


# Frequency vs. |Z| Characteristic

Circuit simulation result



Evaluation Circuit



Simulation Result

<b>Frequency(HZ)</b>	<b> Z (ohm) Measurement</b>	<b> Z (ohm) Circuit Simulation</b>	<b>%Error</b>
<b>100</b>	<b>333.197</b>	<b>339.687</b>	<b>1.948</b>
<b>1K</b>	<b>334.755</b>	<b>339.667</b>	<b>1.467</b>
<b>10K</b>	<b>336.039</b>	<b>340.561</b>	<b>1.346</b>
<b>100K</b>	<b>419.299</b>	<b>420.491</b>	<b>0.284</b>
<b>1M</b>	<b>2.442</b>	<b>2.502</b>	<b>2.474</b>