

# Device Modeling Report

COMPONENTS: RESISTOR  
PART NUMBER: ERF10AK2R0  
THERMAL:TA=120(degree)  
MANUFACTURER: MATSUSHITA



**Bee Technologies Inc.**

# Theory: Auto Balancing Bridge Method

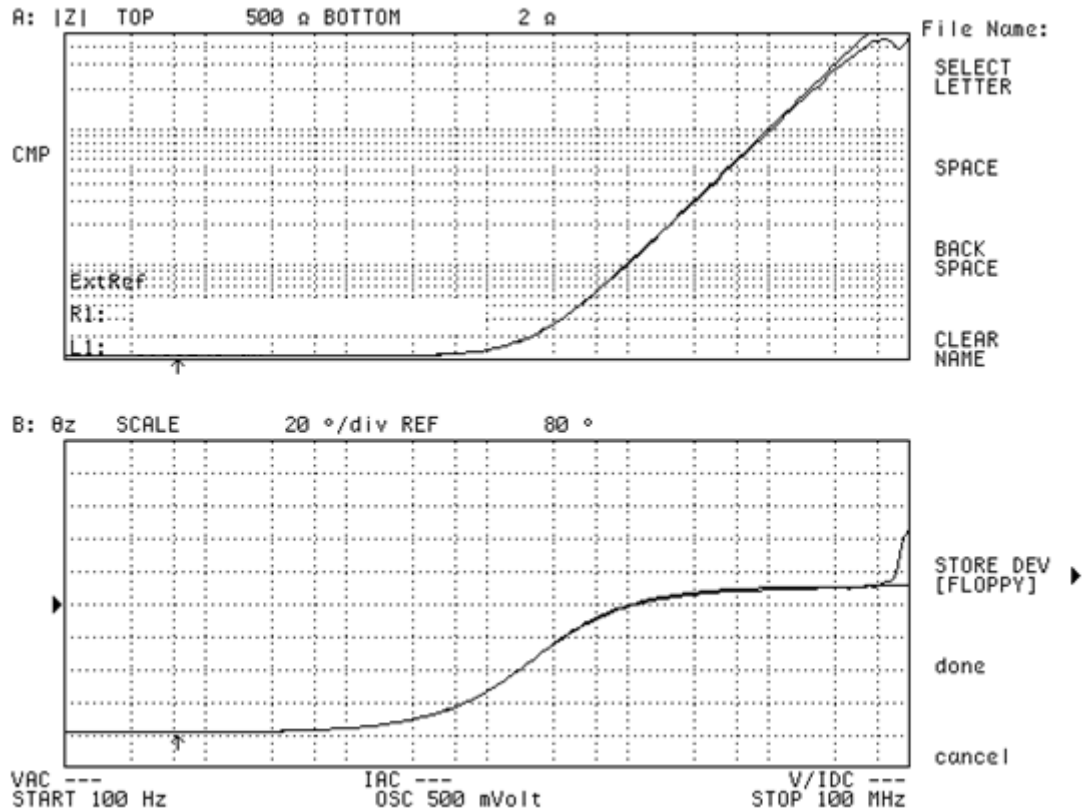
## Optimization of Simulation

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

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

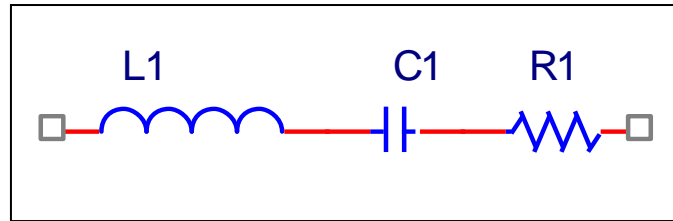
Attention

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



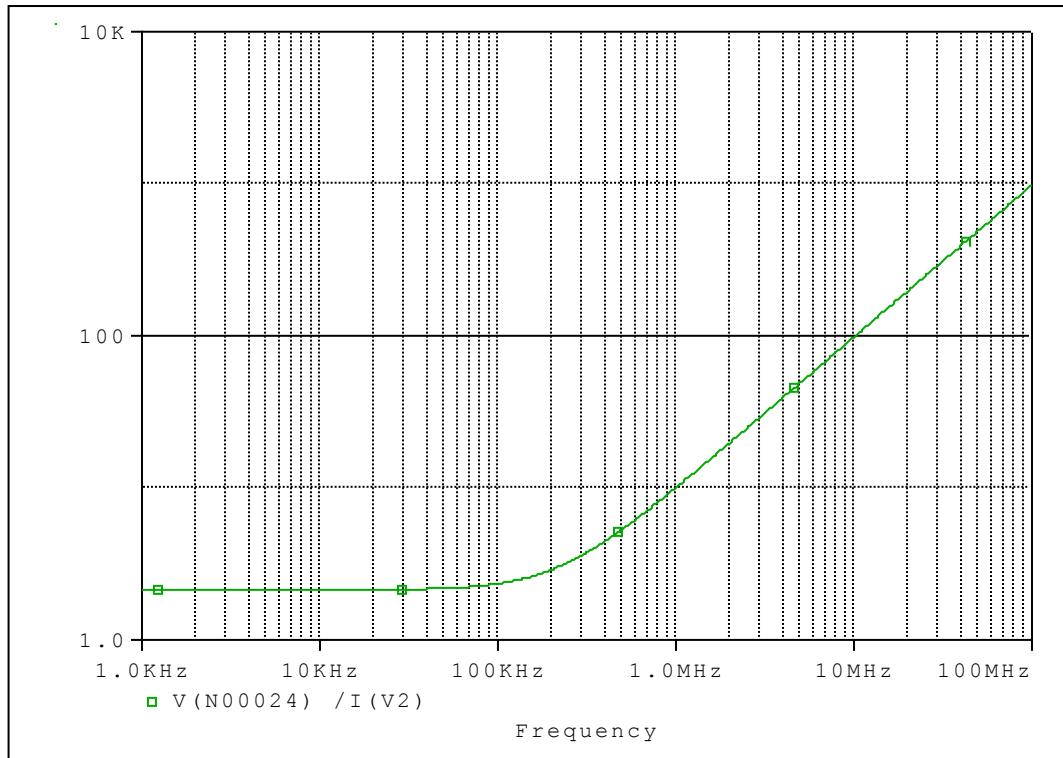
Measurement		
R1		
L1		
C1		

Equivalent circuit

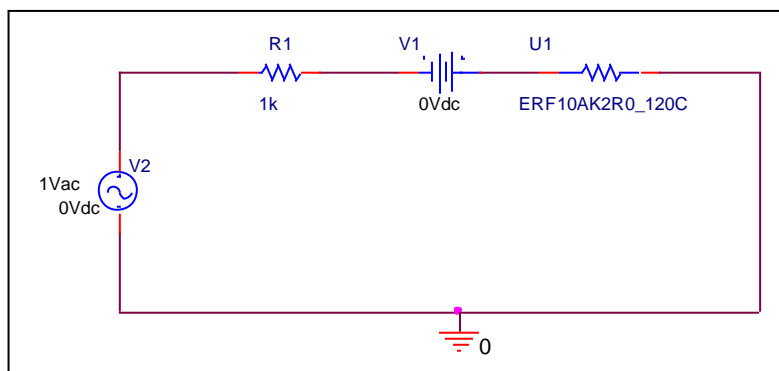


# Frequency vs. |Z| Characteristic

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>1K</b>	<b>2.112</b>	<b>2.134</b>	<b>1.032</b>
<b>10K</b>	<b>2.116</b>	<b>2.131</b>	<b>0.695</b>
<b>100K</b>	<b>2.342</b>	<b>2.344</b>	<b>0.077</b>
<b>1M</b>	<b>10.356</b>	<b>10.045</b>	<b>3.003</b>
<b>10M</b>	<b>95.462</b>	<b>98.195</b>	<b>2.863</b>