

# Device Modeling Report

COMPONENTS: RESISTOR  
PART NUMBER: ERF10AJ331  
THERMAL: TA=120 (degree)  
MANUFACTURER: MATSUSHITA



**Bee Technologies Inc.**

## Theory: Auto Balancing Bridge Method

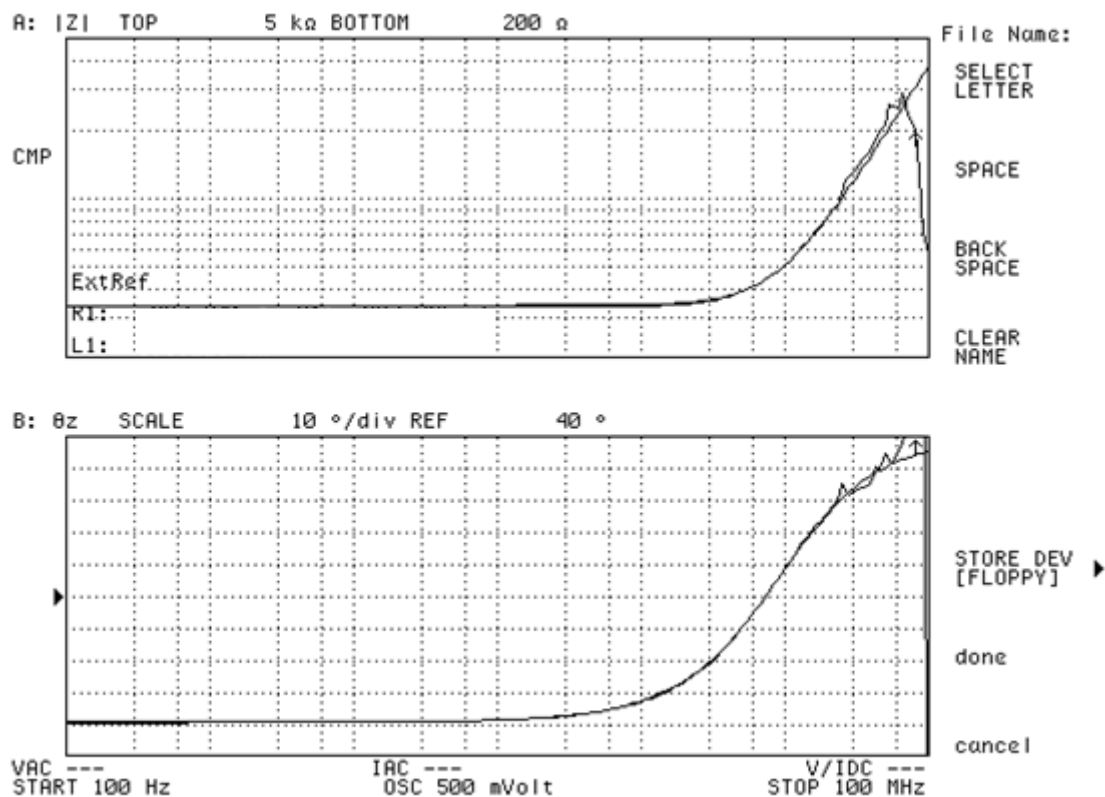
### Optimization of Simulation

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)*



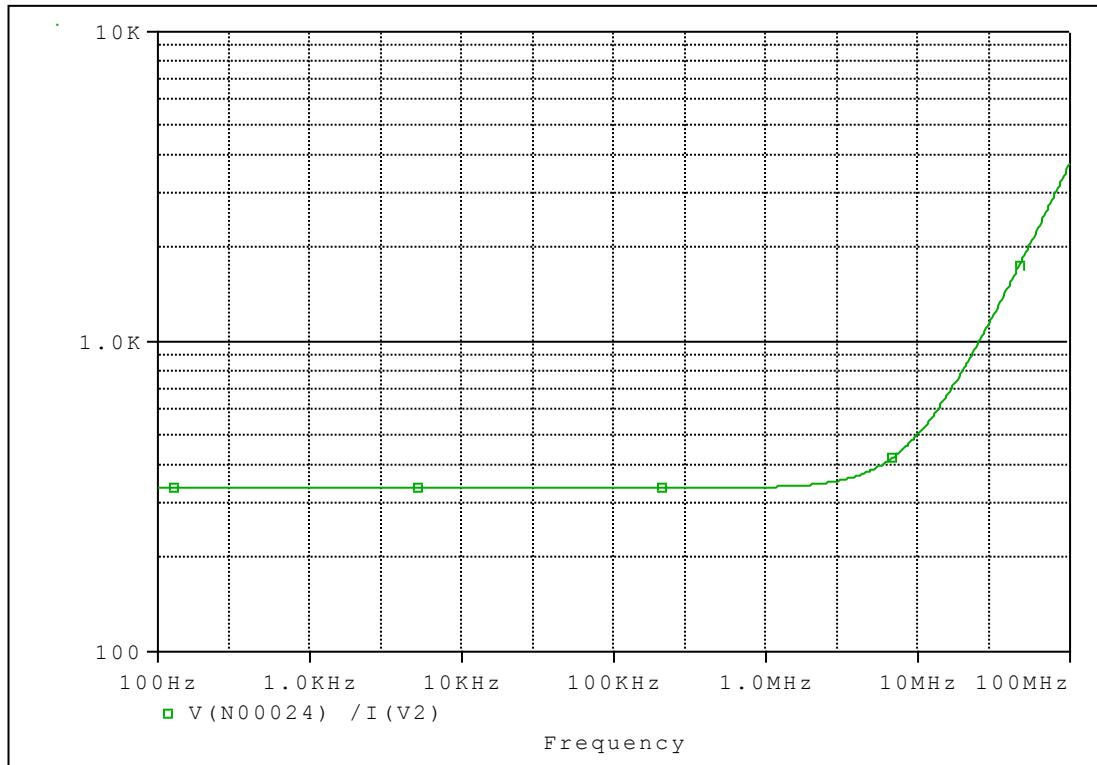
| Measurement |  |  |
|-------------|--|--|
| R1          |  |  |
| L1          |  |  |
| C1          |  |  |

Equivalent circuit

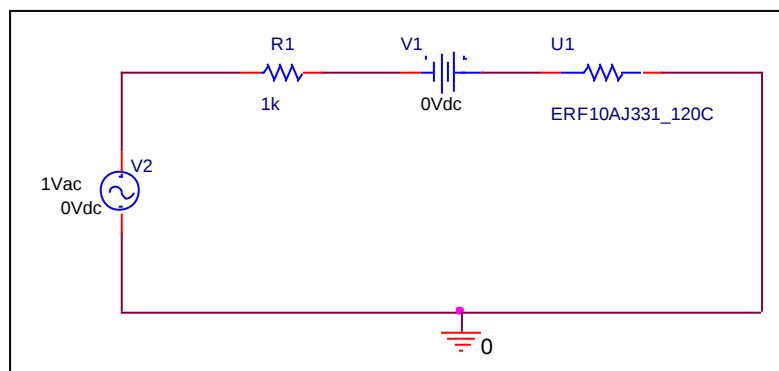


## Frequency vs. $|Z|$ Characteristic

Circuit simulation result



Evaluation Circuit



## Simulation Result

| Frequency(HZ) | Z (ohm)<br>Measurement | Z (ohm)<br>Circuit Simulation | %Error |
|---------------|------------------------|-------------------------------|--------|
| 100           | 332.656                | 337.665                       | 1.506  |
| 1K            | 332.793                | 337.641                       | 1.457  |
| 10K           | 332.682                | 337.641                       | 1.491  |
| 100K          | 332.552                | 337.662                       | 1.537  |
| 1M            | 335.278                | 339.706                       | 1.321  |
| 10M           | 511.655                | 503.754                       | 1.544  |