

# Device Modeling Report

COMPONENTS: RESISTOR  
PART NUMBER: ERF10AJ120  
THERMAL:TA=150(degree)  
MANUFACTURER: MATSUSHITA



**Bee Technologies Inc.**

## Theory: Auto Balancing Bridge Method

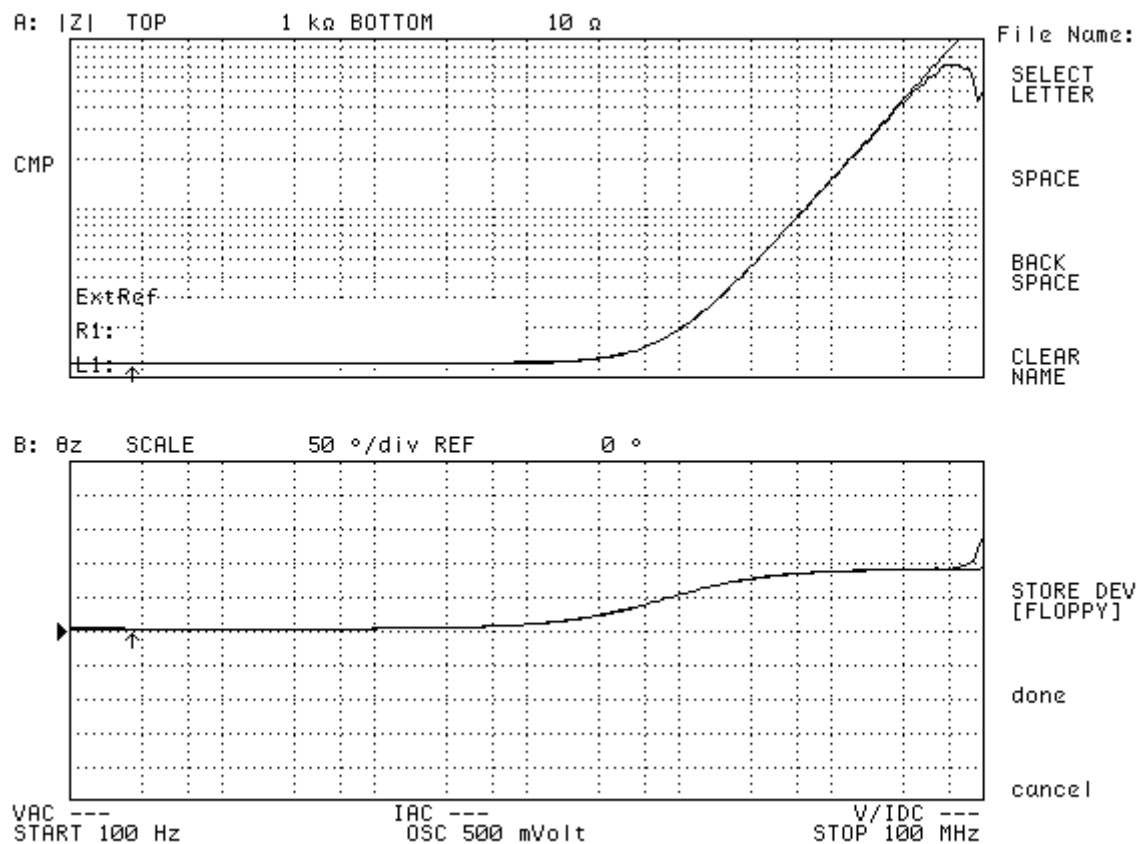
### Optimization of Simulation

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

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

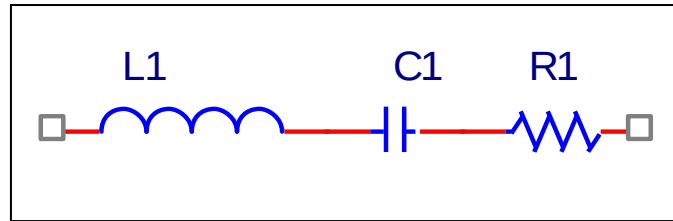
Attention

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



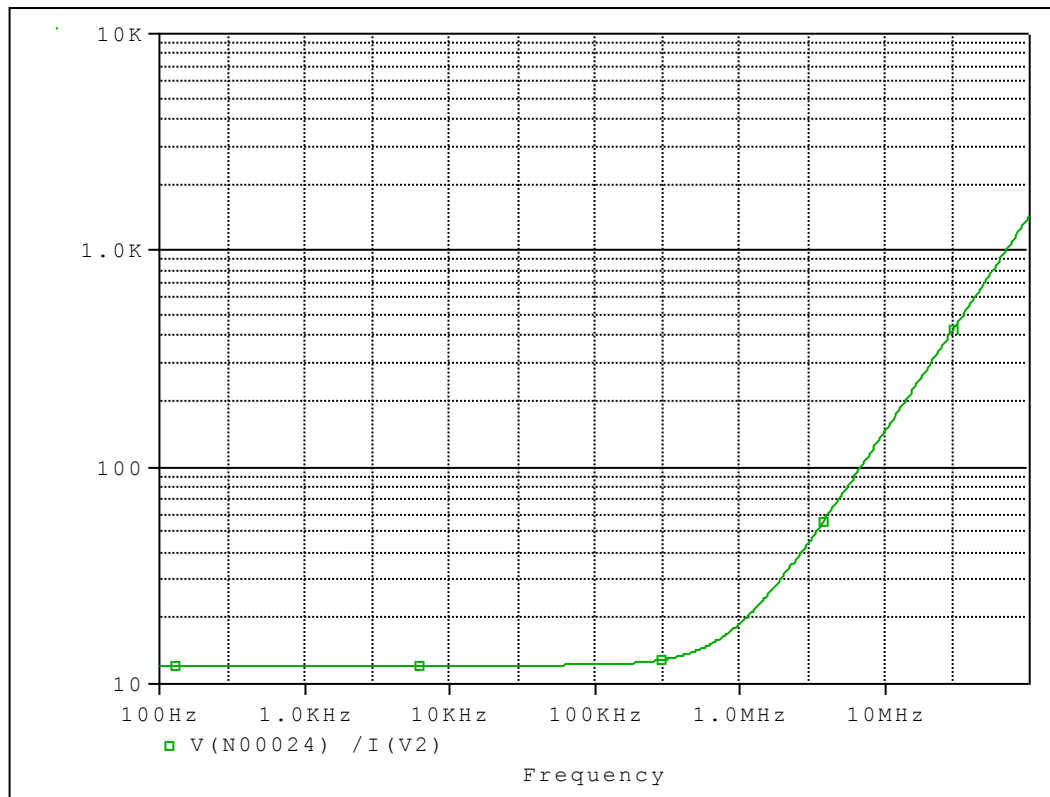
| Measurement |  |  |
|-------------|--|--|
| R1          |  |  |
| L1          |  |  |
| C1          |  |  |

Equivalent circuit

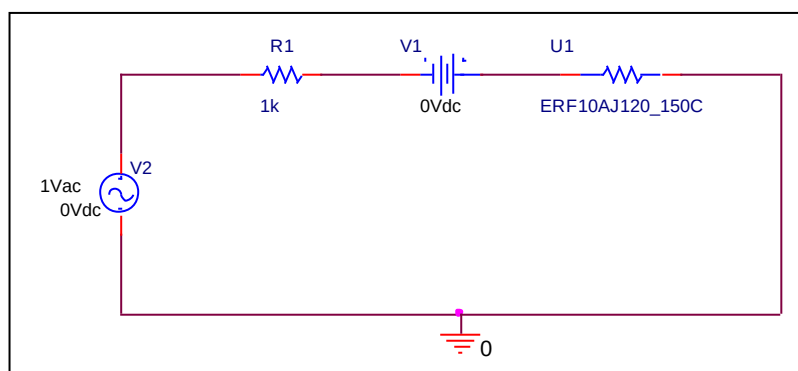


## Frequency vs. $|Z|$ Characteristic

Circuit simulation result



Evaluation Circuit



## Simulation Result

| Frequency(HZ) | Z (ohm)<br>Measurement | Z (ohm)<br>Circuit Simulation | %Error |
|---------------|------------------------|-------------------------------|--------|
| 100           | 12.040                 | 12.217                        | 1.470  |
| 1K            | 12.042                 | 12.204                        | 1.344  |
| 10K           | 12.047                 | 12.205                        | 1.315  |
| 100K          | 12.148                 | 12.290                        | 1.170  |
| 1M            | 19.453                 | 18.963                        | 2.517  |
| 10M           | 145.141                | 145.657                       | 0.356  |