

# Device Modeling Report

COMPONENTS: CAPACITOR/ CERAMIC  
PART NUMBER: DE1E3KX152MA5B  
MANUFACTURER: MURATA  
REMARK: TA=60C



**Bee Technologies Inc.**

## Theory: Auto Balancing Bridge Method

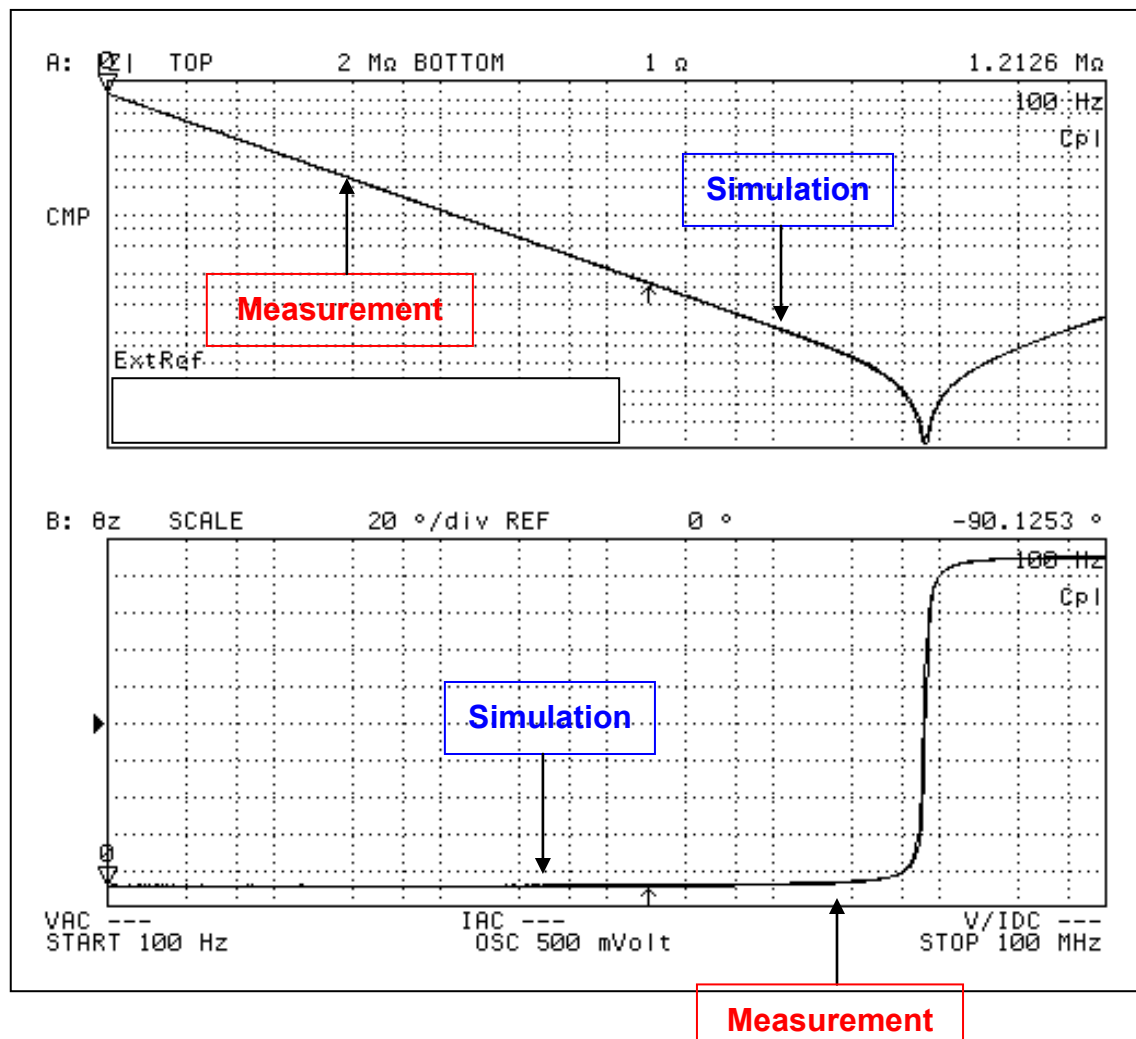
### Optimization of Simulation

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

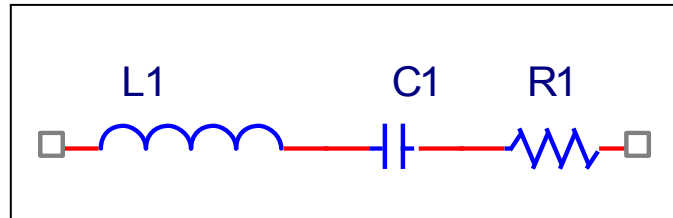
Frequency vs.  $|Z|$  and Frequency vs.  $\theta_z$  Characteristic

Attention)

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

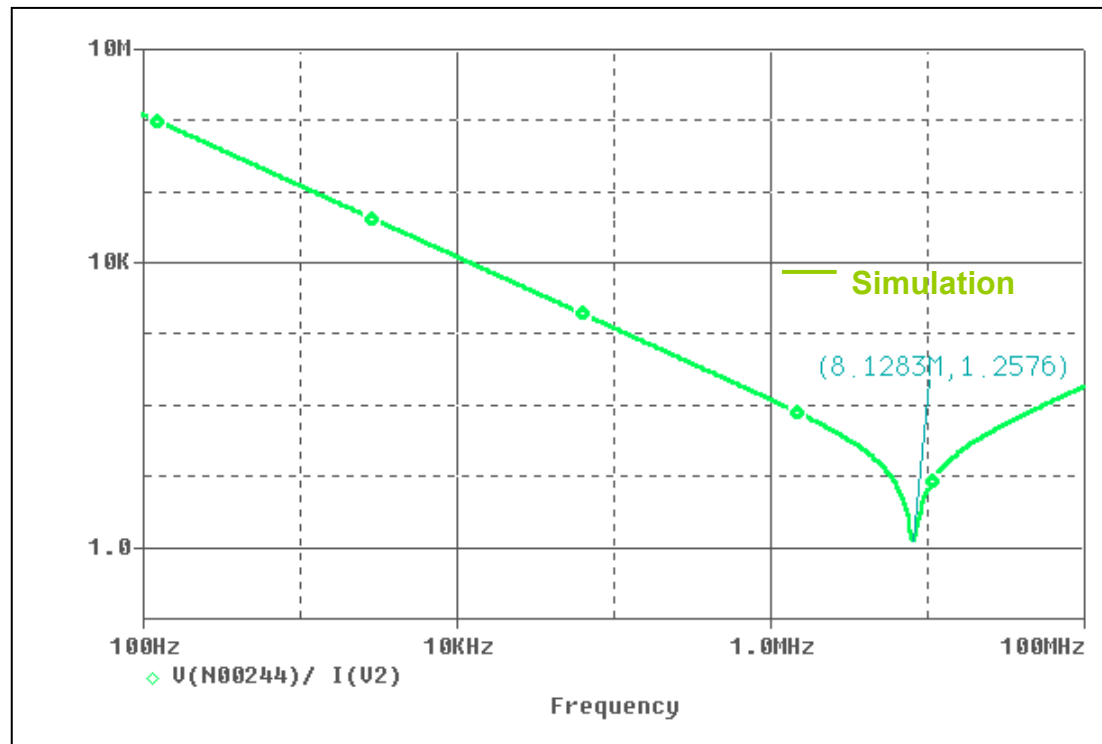


Equivalent circuit

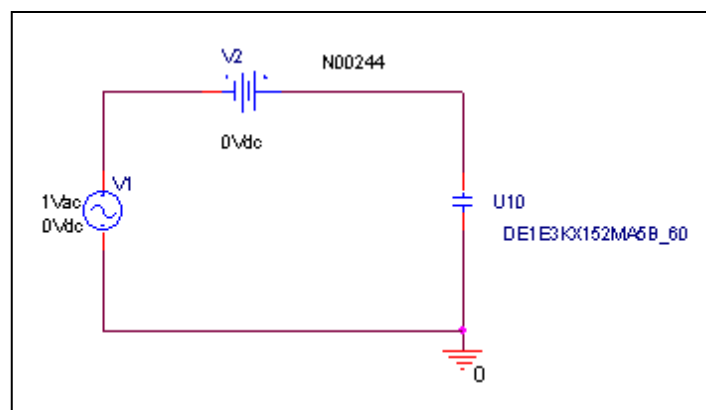


## Frequency vs. |Z| Characteristic

### Circuit Simulation result



### Evaluation Circuit



**Simulation result**

<b>Frequency (Hz)</b>	<b>IZI (ohm) :Measurement</b>	<b>IZI (ohm) :Simulation</b>	<b>% Error</b>
100	1.23686M	1.2102M	2.1555
1K	122.987K	121.024K	1.5961
10K	12.5012K	12.102K	3.1933
100K	1.25945K	1.210K	3.9184
1M	126.042	119.215	5.4164
10M	5.39837	5.9948	11.0483
100M	168.127	180.327	7.2564

	<b>Measurement</b>	<b>Simulation</b>	<b>%Error</b>
<b>FSRF(Hz)</b>	8.31763M	8.1283M	2.2762
<b>IZI (ohm)</b>	1.21754	1.25760	3.2902