

# Device Modeling Report

COMPONENTS: CAPACITOR/CERAMIC  
PART NUMBER: DE1E3KX102MA5B  
MANUFACTURER: MURATA  
REMARK: TA=80C



**Bee Technologies Inc.**

## Theory: Auto Balancing Bridge Method

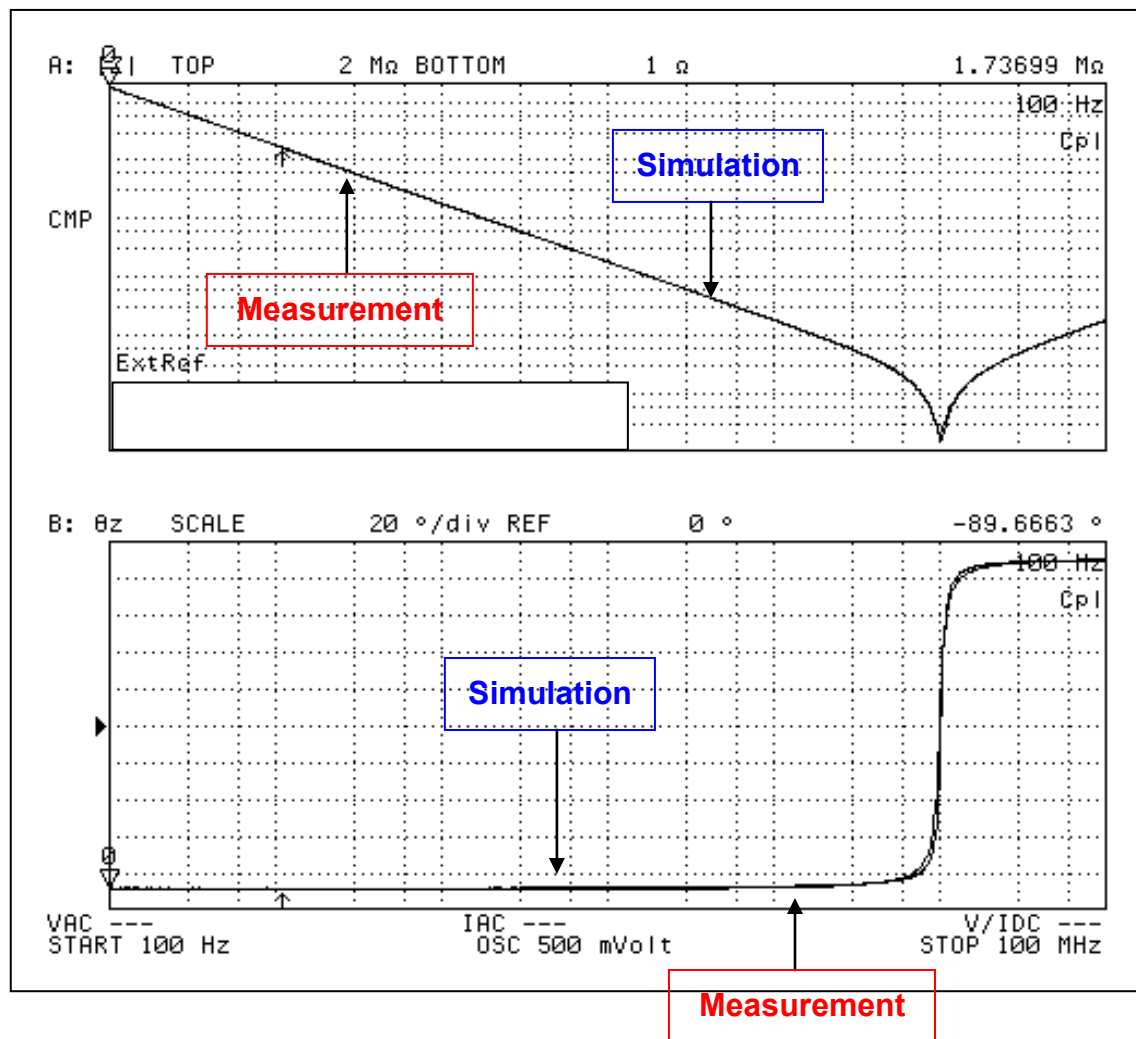
### Optimization of Simulation

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

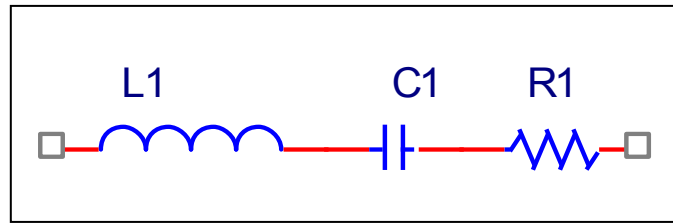
Frequency vs.  $|Z|$  and Frequency vs.  $\theta_z$  Characteristic

Attention)

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

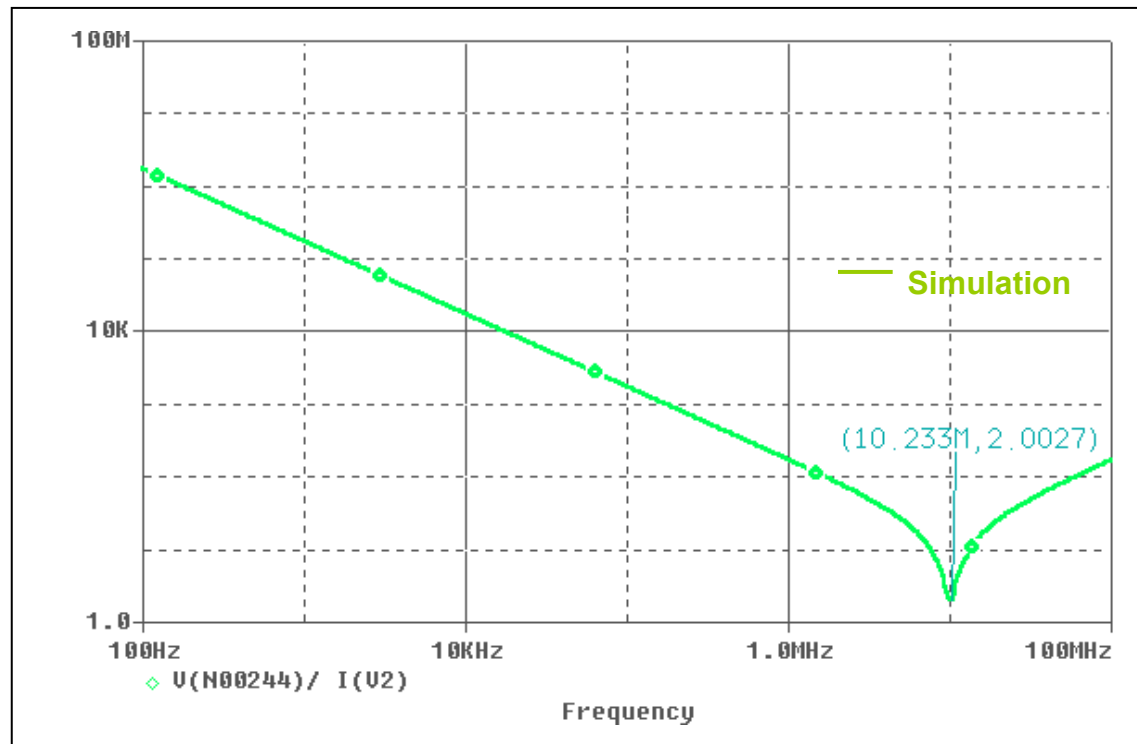


Equivalent circuit

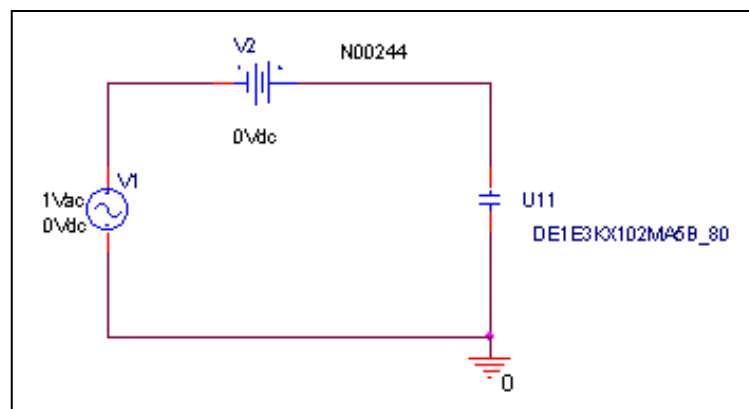


## Frequency vs. |Z| Characteristic

### 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	1.73699M	1.7559M	1.0887
1K	175.961K	175.585K	0.2137
10K	17.7203K	17.559K	0.9103
100K	1.82259K	1.756K	3.6701
1M	183.067	173.881	5.0178
10M	2.00852	2.0050	0.1753
100M	166.607	169.786	1.9081

	<b>Measurement</b>	<b>Simulation</b>	<b>%Error</b>
<b>FSRF(Hz)</b>	9.885M	10.233M	3.5205
<b>IZI (ohm)</b>	2.04869	2.00270	2.2448