

# Device Modeling Report

COMPONENTS: CAPACITOR/ CERAMIC  
PART NUMBER: DE1E3KX332MA5B  
MANUFACTURER: MURATA  
REMARK: TA=80C



**Bee Technologies Inc.**

## Theory: Auto Balancing Bridge Method

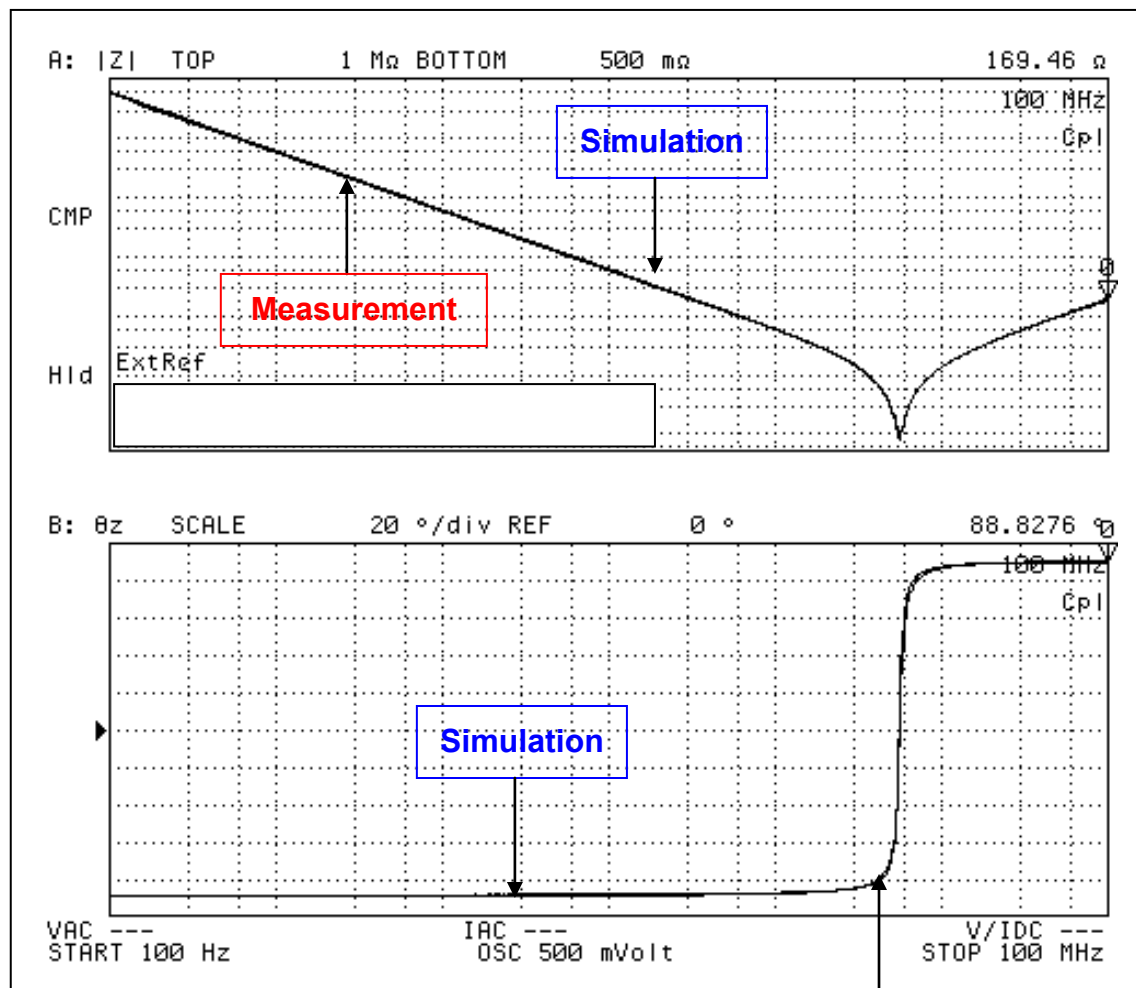
### Optimization of Simulation

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

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

Attention)

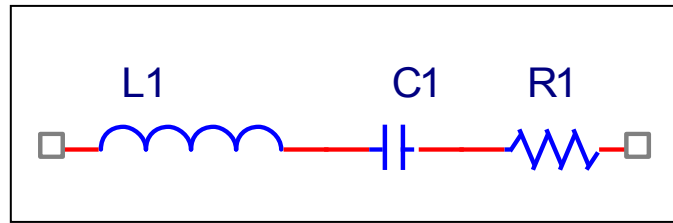
*Please use SPICE MODEL within the range from 100Hz to 100M(Hz)*



L1	
C1	
R1	

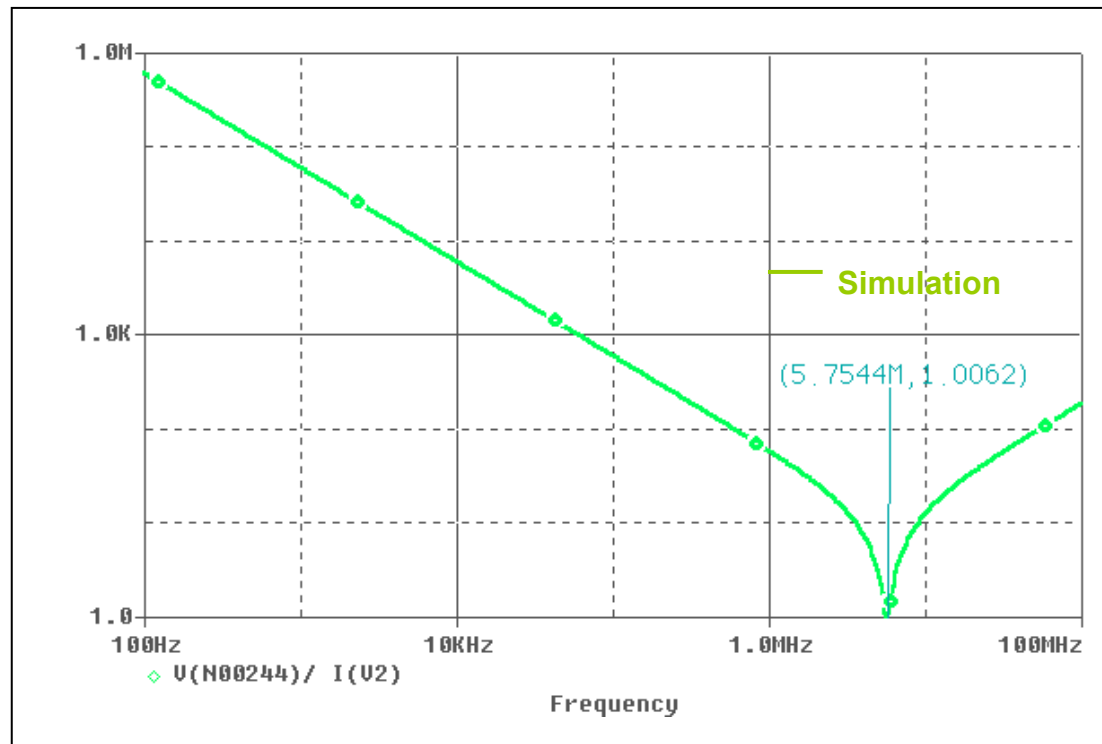
Measurement

Equivalent circuit

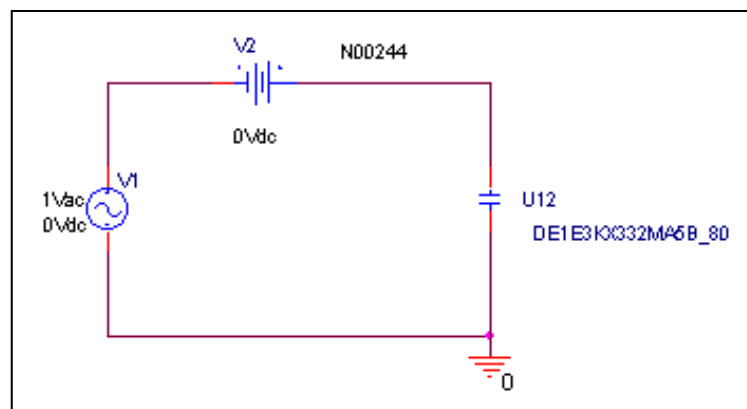


## Frequency vs. |Z| Characteristic

### 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	573.423K	607.093K	5.8718
1K	56.1961K	60.709K	8.0306
10K	5.68372K	6.0709K	6.8121
100K	574.956	606.906	5.5569
1M	56.807	58.842	3.5823
10M	12.6786	12.722	0.3423
100M	169.46	186.953	10.3228

	<b>Measurement</b>	<b>Simulation</b>	<b>%Error</b>
<b>FSRF(Hz)</b>	5.4954M	5.7544M	4.7359
<b>IZI (ohm)</b>	0.997	1.0060	0.9331