# TDK Component Library for Zuken CR-5000 Lightning

ver. 2015.07

**TDK Corporation**
**Passive Application Center**

July 30, 2015

# Caution

**< Applicable condition >**

The data in this library is obtained under the condition of 25ºC, no DC bias, and small signal operation. Proper result might not be obtained if your condition is different from the above one.

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# About this library (1)

**< Feature of this library >**

- The actual property of components can be taken into your circuit simulation because equivalent circuit model that considers inner structure of a part and material property is used.

**< Supported Lightning revisions >**

This library can be used with CR-5000 Lightning revision 13 or latter revisions. However, this library might not be used depending on a simulation environment. Please acknowledge it beforehand.

**< Contents in this document >**

This document is described assuming the following environment.

OS: Windows XP
CR-5000 Lightning: Revision 13

On different OS or Lightning versions, screen display and/or operation procedure may not correspond to the contents of this document. Please acknowledge it beforehand.

**< Inquiries about Zuken CR-5000 Lightning >**

For inquiries about Zuken CR-5000 Lightning please contact:
Zuken Inc. : http://www.zuken.com/

# About this library (2)

**< Files included in this library >**

This library includes the following files.

- TDK_BED_v2015.07.ixf equivalent circuit model for chip beads
- TDK_CMF_v2015.07.ixf equivalent circuit model for common-mode filters
- TDK_3TF_v2015.07.ixf equivalent circuit model for 3-terminal filters
- TDK_VAR_v2015.07.ixf equivalent circuit model for chip varistors
- TDK_3FC_v2015.07.ixf equivalent circuit model for 3-terminal feedthrough MLCCs

# How to install the library

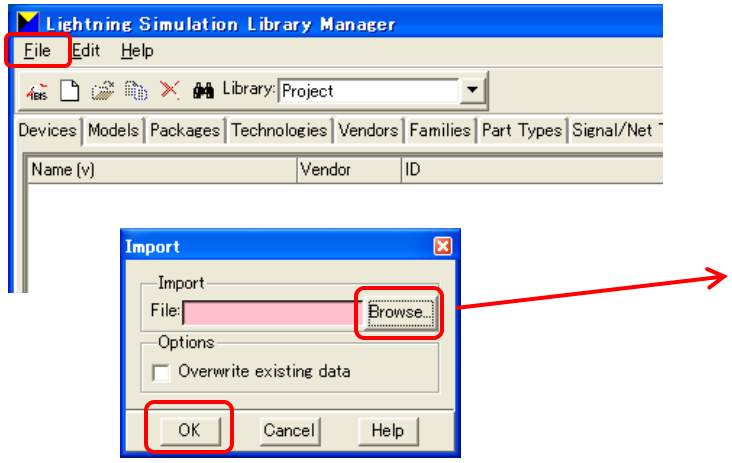
**< Unzip the install file >**

1) Save the zip-formatted install file (e.g. tdk_library_for_lightning_v201507.zip) in an arbitrary directory.
2) Unzip the install file.

**< Import the ixf files >**

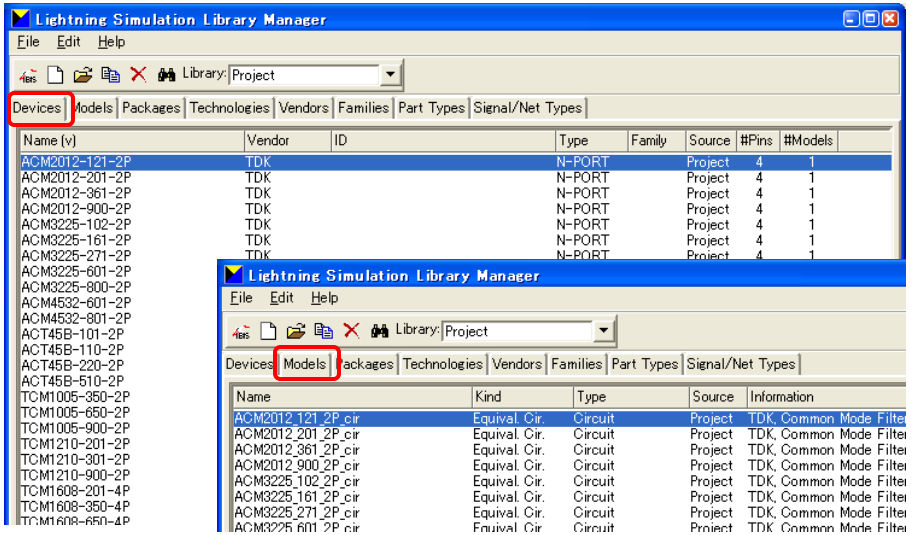
1) Open an Lightning Simulation Library Manager window. Select Import... from File menu, then Import window opens.
2) Click Browse... button and select the unzipped ixf file. Click OK.
3) Simulation models and devices are imported.

**1) File>Import...**




**2) Click Browse and select ixf file.**

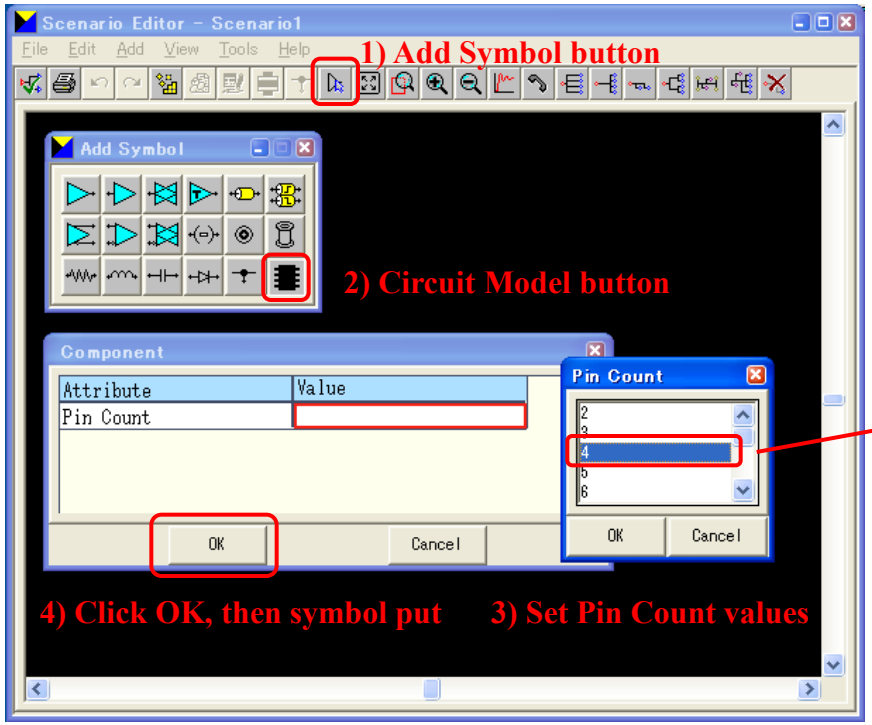
**3) Simulation modes and devices are imported.**

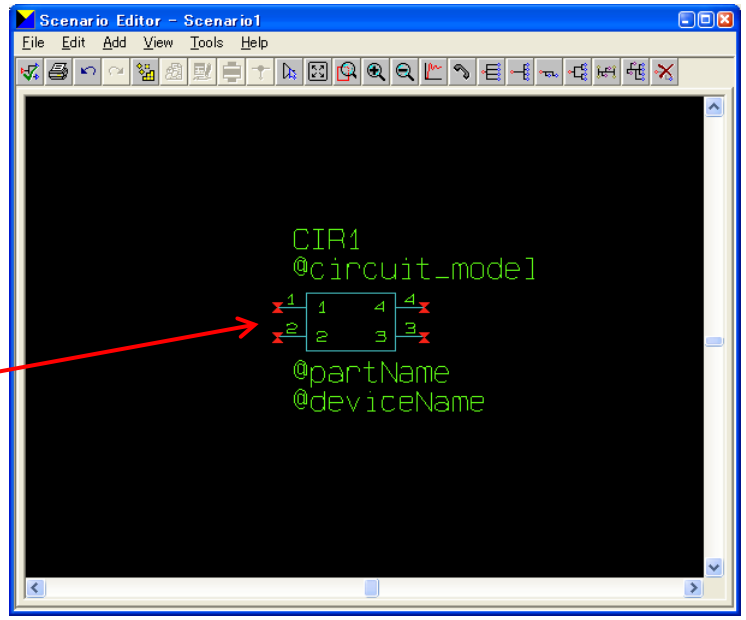


# How to use with Lightning Scenario (1)

**< Putting a symbol >**

1) In the Scenario Editor, click Add Symbol button.
2) Click Circuit Model button.
3) Set Pin Count value in the Component window.
4) Click OK button in the Component window and put a symbol in a Scenario window.

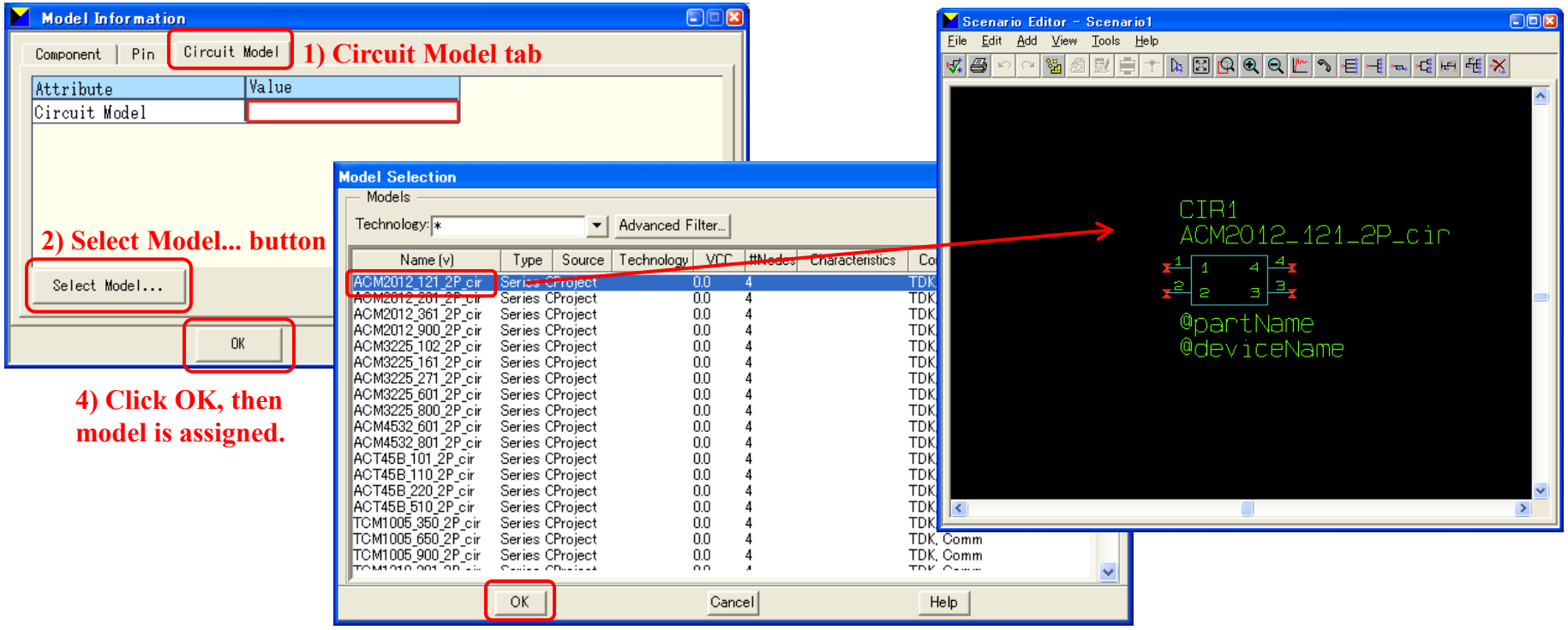


# How to use with Lightning Scenario (2)

**< Assigning a simulation model >**

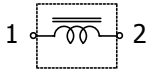
1) Double-click the put symbol. Open a Circuit Model tab in the Model Information window.
2) Click Circuit Model... button, then Model Select window opens.
3) Select a model due to simulation and click OK button.
4) Click OK button in the Model Information window, then the simulation model is assigned to the symbol.



# How to use with Lightning Scenario (3)

**< Pin Names >**

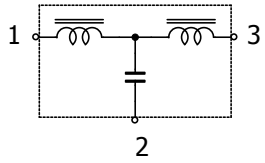
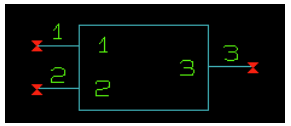
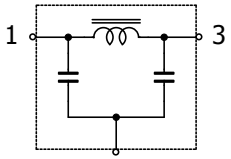
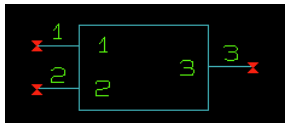
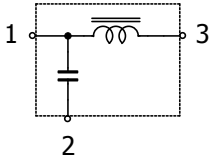
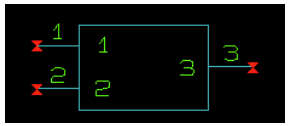
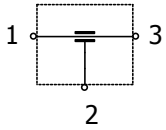
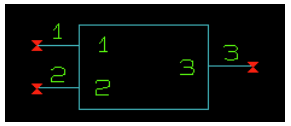
Relation of pin names between simulation modes and Scenario symbol is listed below.

| category | series | pin number | Scenario symbol |
|---|---|---|---|
| chip beads | MMZ<br>MPZ<br>HFxxACC |  |  |
| varistors | AVRL<br>AVRM |  |  |

# How to use with Lightning Scenario (4)

**< Pin Names >**

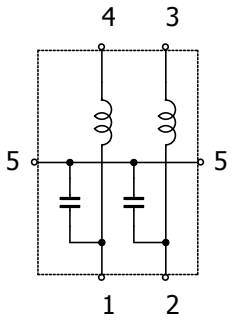
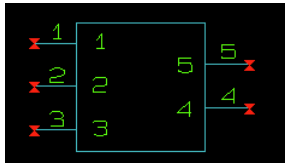
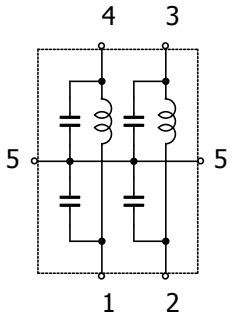
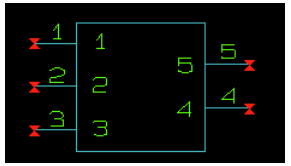
Relation of pin names between simulation modes and Scenario symbol is listed below.

| category | series | pin number | Scenario symbol |
|---|---|---|---|
| 3-terminal filters | ACH<br>MEM2012S |  |  |
| | MEM1608P<br>MEM2012F |  |  |
| | MEM1608D |  |  |
| | YFF |  |  |

# How to use with Lightning Scenario (5)

**< Pin Names >**

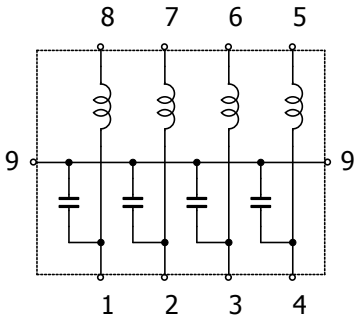
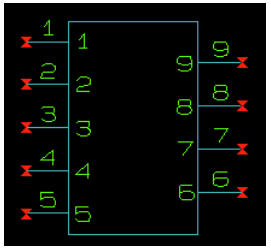
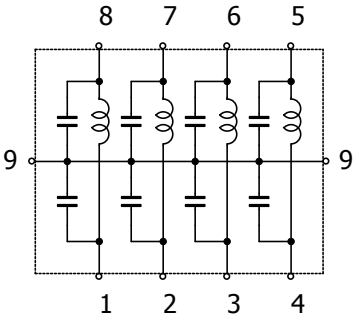
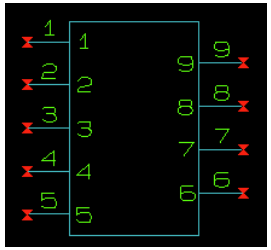
Relation of pin names between simulation modes and Scenario symbol is listed below.

| category | series | pin number | Scenario symbol |
|---|---|---|---|
| 3-terminal filters | MEA1210LC |  |  |
| | MEA1210PE<br>MEA1210PH |  |  |

# How to use with Lightning Scenario (6)

**< Pin Names >**

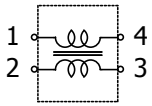
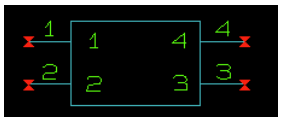
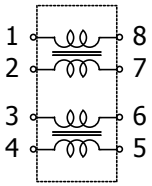
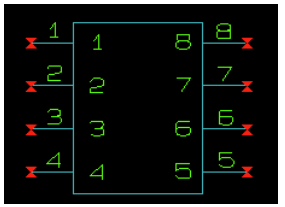
Relation of pin names between simulation modes and Scenario symbol is listed below.

| category | series | pin number | Scenario symbol |
|---|---|---|---|
| 3-terminal filters | MEA1608L<br>MEA1608LC<br>MEA2010L<br>MEA2010LC |  |  |
| | MEA1608PE<br>MEA1608PH<br>MEA2010PE |  |  |

# How to use with Lightning Scenario (7)

**< Pin Names >**

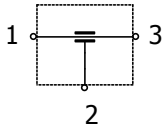
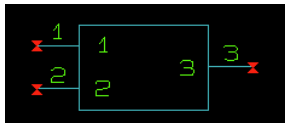
Relation of pin names between simulation modes and Scenario symbol is listed below.

| category | type | pin number | Scenario symbol |
|---|---|---|---|
| common mode filters | with 2 lines |  |  |
| | with 4 lines |  |  |

# How to use with Lightning Scenario (8)

**< Pin Names >**

Relation of pin names between simulation modes and Scenario symbol is listed below.

| category | series | pin number | Scenario symbol |
|---|---|---|---|
| 3-terminal feedthrough MLCCs | CKD |  |  |

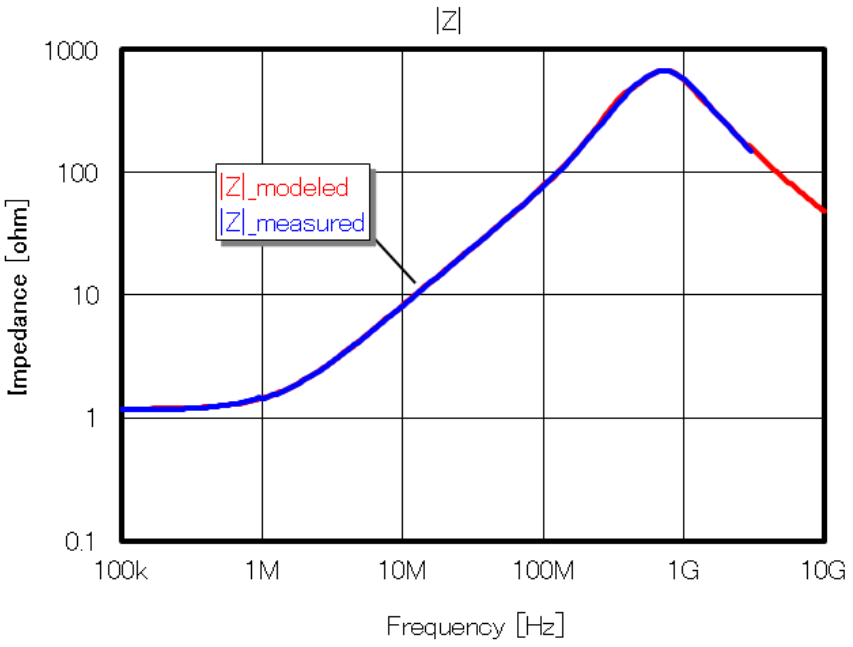
# Comparison of model and measurement

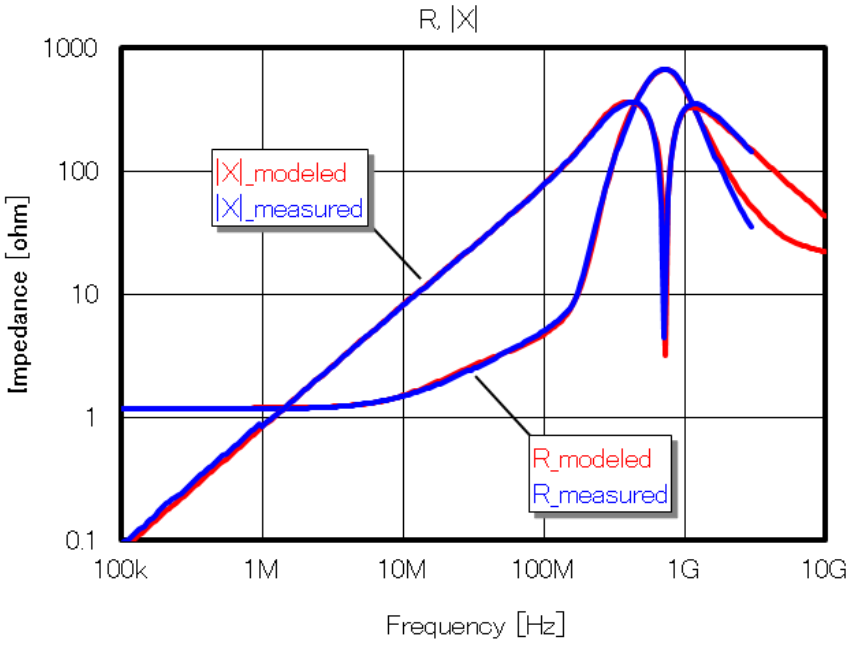
**< Comparison between equivalent circuit models and measured data >**

Comparison between the equivalent circuit models and measured data are shown in the following. Since the equivalent circuit models well match to measured results as shown in the following pages, simulation result that matches to actual property can be obtained.

# Comparison of model and measurement (1)

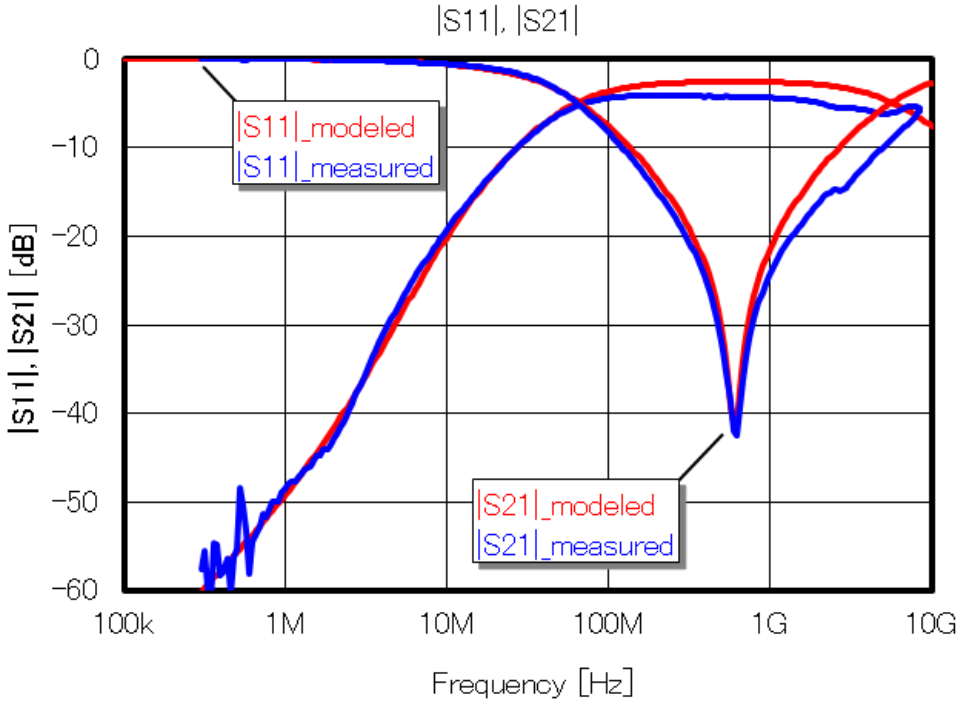
## Chip Bead "MMZ0603D800CT000"



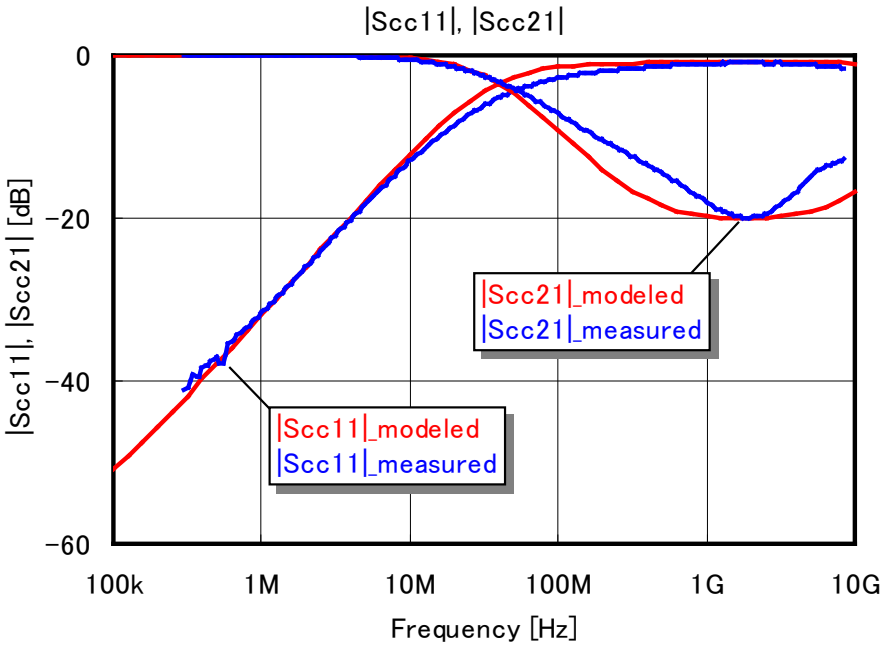
# Comparison of model and measurement (2)

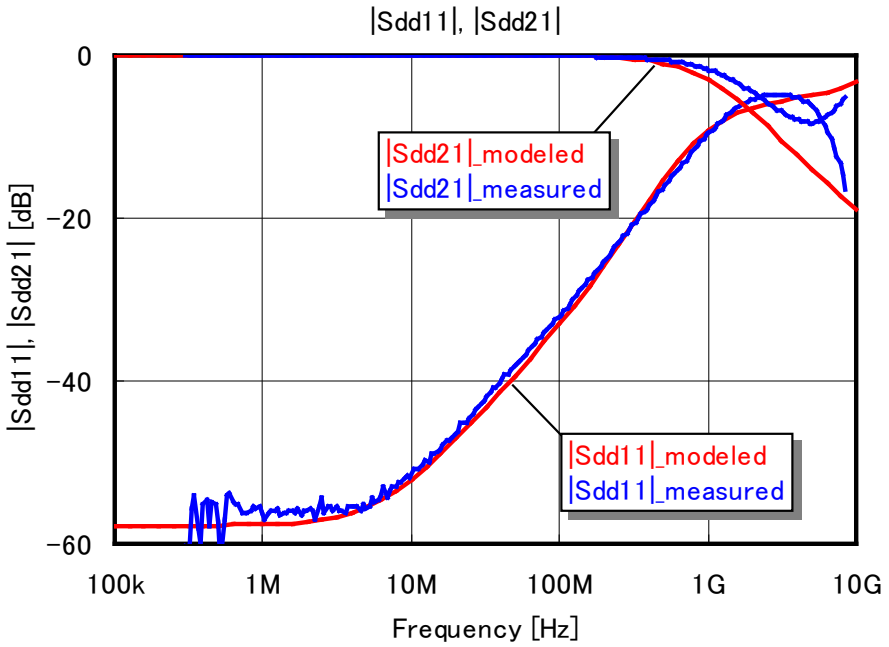
## 3-Terminal Filter “ACH32C-101”



# Comparison of model and measurement (3)

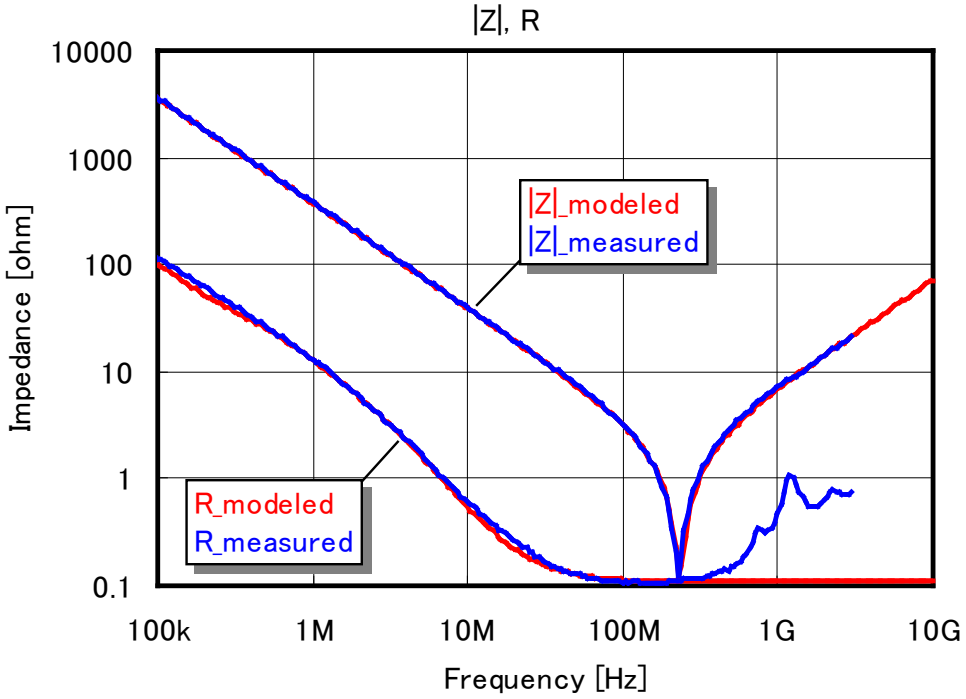
## Common-Mode Filter "ACM2012-900-2P"



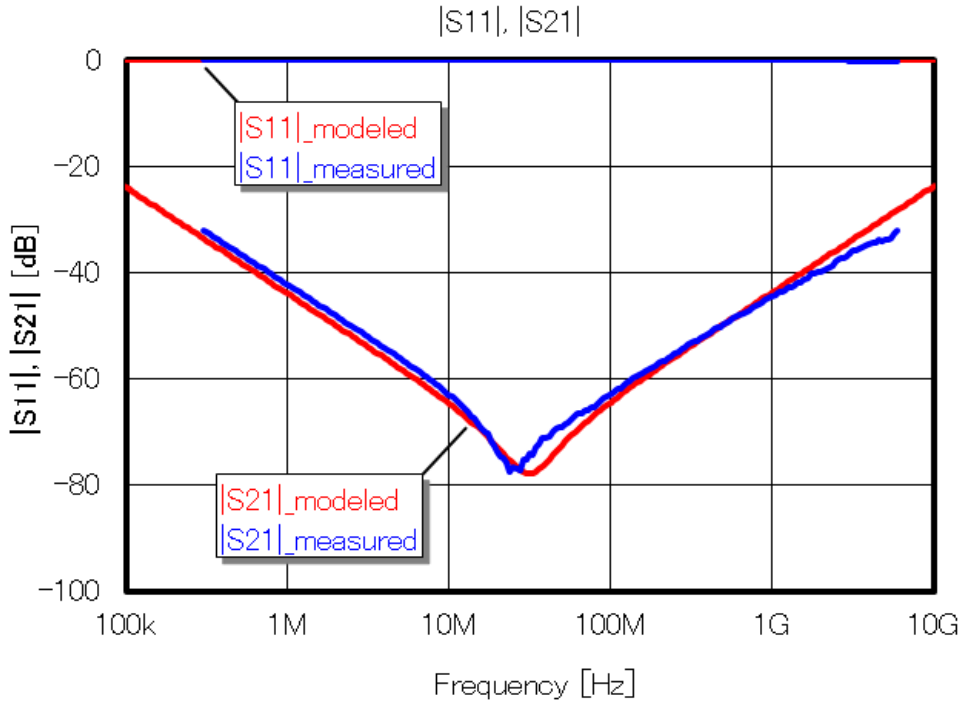
# Comparison of model and measurement (4)

## Varistor “AVR-M2012C390KT6AB”



# Comparison of model and measurement (5)

## 3-Terminal Feedthrough MLCC “CKD710JB0G105S030EA”




TDK