

Design Kit (for AWR Microwave Office)

User's Manual

All information contained in these materials, including products and product specifications, represents information on the product at the time of publication and is subject to change by Renesas Electronics Corp. without notice. Please review the latest information published by Renesas Electronics Corp. through various means, including the Renesas Technology Corp. website (<http://www.renesas.com>).

Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation of these circuits, software, and information in the design of your equipment. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from the use of these circuits, software, or information.
2. Renesas Electronics has used reasonable care in preparing the information included in this document, but Renesas Electronics does not warrant that such information is error free. Renesas Electronics assumes no liability whatsoever for any damages incurred by you resulting from errors in or omissions from the information included herein.
3. Renesas Electronics does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of Renesas Electronics products or technical information described in this document. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
4. You should not alter, modify, copy, or otherwise misappropriate any Renesas Electronics product, whether in whole or in part. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from such alteration, modification, copy or otherwise misappropriation of Renesas Electronics product.
5. Renesas Electronics products are classified according to the following two quality grades: "Standard" and "High Quality". The recommended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below.
"Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; and industrial robots etc.
"High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control systems; anti-disaster systems; anti-crime systems; and safety equipment etc.

Renesas Electronics products are neither intended nor authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems, surgical implantations etc.), or may cause serious property damages (nuclear reactor control systems, military equipment etc.). You must check the quality grade of each Renesas Electronics product before using it in a particular application. You may not use any Renesas Electronics product for any application for which it is not intended. Renesas Electronics shall not be in any way liable for any damages or losses incurred by you or third parties arising from the use of any Renesas Electronics product for which the product is not intended by Renesas Electronics.
6. You should use the Renesas Electronics products described in this document within the range specified by Renesas Electronics, especially with respect to the maximum rating, operating supply voltage range, movement power voltage range, heat radiation characteristics, installation and other product characteristics. Renesas Electronics shall have no liability for malfunctions or damages arising out of the use of Renesas Electronics products beyond such specified ranges.
7. Although Renesas Electronics endeavors to improve the quality and reliability of its products, semiconductor products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Further, Renesas Electronics products are not subject to radiation resistance design. Please be sure to implement safety measures to guard them against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a Renesas Electronics product, such as safety design for hardware and software including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult, please evaluate the safety of the final products or systems manufactured by you.
8. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. Please use Renesas Electronics products in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive. Renesas Electronics assumes no liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
9. Renesas Electronics products and technology may not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You should not use Renesas Electronics products or technology described in this document for any purpose relating to military applications or use by the military, including but not limited to the development of weapons of mass destruction. When exporting the Renesas Electronics products or technology described in this document, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations.
10. It is the responsibility of the buyer or distributor of Renesas Electronics products, who distributes, disposes of, or otherwise places the product with a third party, to notify such third party in advance of the contents and conditions set forth in this document, Renesas Electronics assumes no responsibility for any losses incurred by you or third parties as a result of unauthorized use of Renesas Electronics products.
11. This document may not be reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
12. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products, or if you have any other inquiries.

(Note 1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its majority-owned subsidiaries.

(Note 2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

How to Use This Manual

To gain a general understanding of functions, read this manual in the order of the CONTENTS. The mark “<R>” shows major revised points. The revised points can be easily searched by copying an “<R>” in the PDF file and specifying it in the “Find what:” field.

Table of Contents

1.	INTRODUCTION	5
2.	DESIGN KIT DOWNLOAD AND UNZIPPING FILE.....	5
3.	DESIGN KIT INSTALLATION	6
4.	DESIGN KIT APPLICATION	8
5.	SIMULATION EXAMPLE.....	13

1. INTRODUCTION

<R> This manual describes how to use the design kit (kit that provides the device model parameters and layout information for Renesas Electronics High Frequency Devices 2SC/NE series or NP series for use in Microwave Office, hereafter referred to as “design kit”) from installation to performing simulation on the Designer schematic screen.

Although the required operations can basically be performed by operating the design kit in accordance with the figures in this manual, some operations may differ partially depending on the environment used.

This manual is described based on the following environment. See the manuals for the PC, etc. used in the actual environment.

<Environment used in this manual>

Platform	: PC
OS	: Windows™ XP Professional
<R> Microwave Office	: Version 9.04
<R> Microwave Office installation directory	: C:\Program Files\AWR\AWR2010

Caution If you are using Microwave Office in an environment that is always connected to the Internet, then you do not need to install this design kit. Device parameters and layout information that is identical to that provided by this design kit can be used by selecting Circuit Elements – Libraries – *AWR web site in the Microwave Office element browser. (However, it may not be possible to use the XML Library depending on the network environment.)

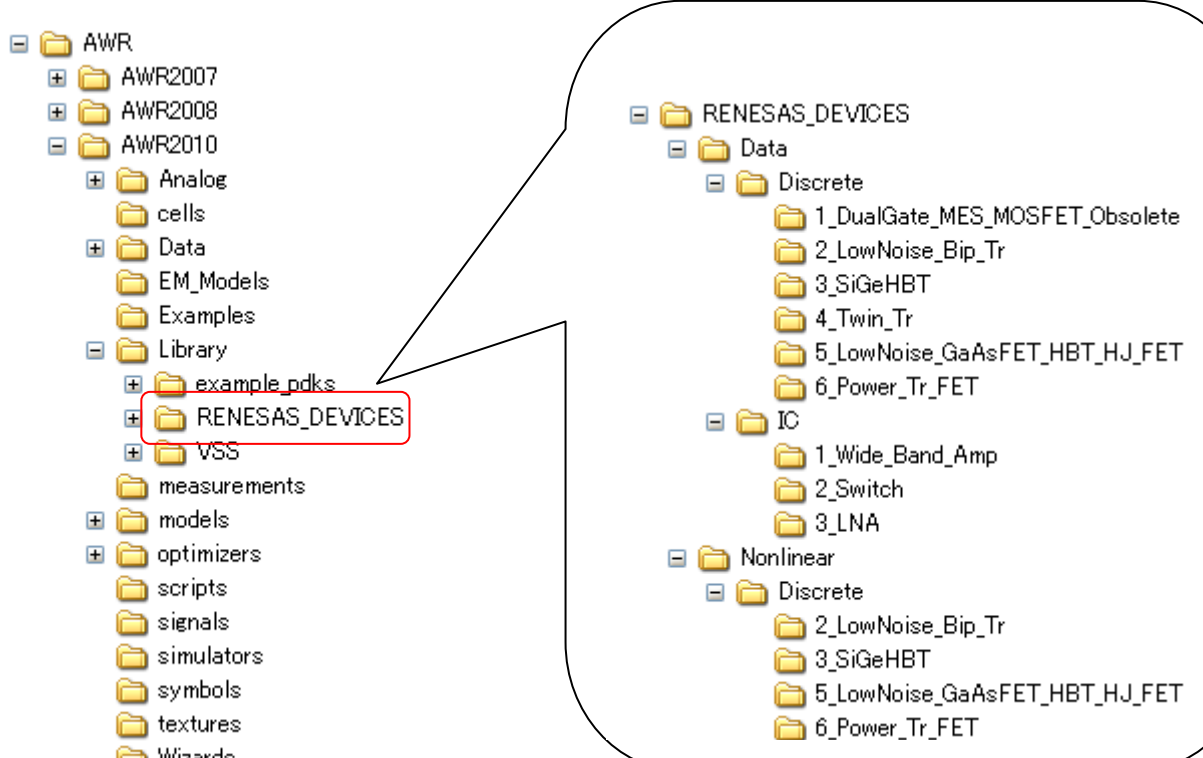
2. DESIGN KIT DOWNLOAD AND UNZIPPING FILE

Download the design kit and unzip it using the compression/extraction application included with the kit.

3. DESIGN KIT INSTALLATION

- <R> (1) Move the unzipped design kit (all files in ¥RENESAS_DEVICES) to C:¥Program Files¥AWR¥AWR2010¥Library.

<R>



The directory in the figure above is included in ¥RENESAS_DEVICES.

Caution If the RENESAS_DEVICES folder already exists in this Library folder, delete the RENESAS_DEVICES folder before moving the decompressed design kit.

Design Kit (for AWR Microwave Office)

- <R> (2) Open lib.xml in C:\Program Files\AWR\AWR2010\Library using a text editor such as MemoPad and add the line shown in the figure below. Save this file and close the text editor.

Caution If the design kit has been installed before and this added line already exists, do not change lib.xml.

<R>

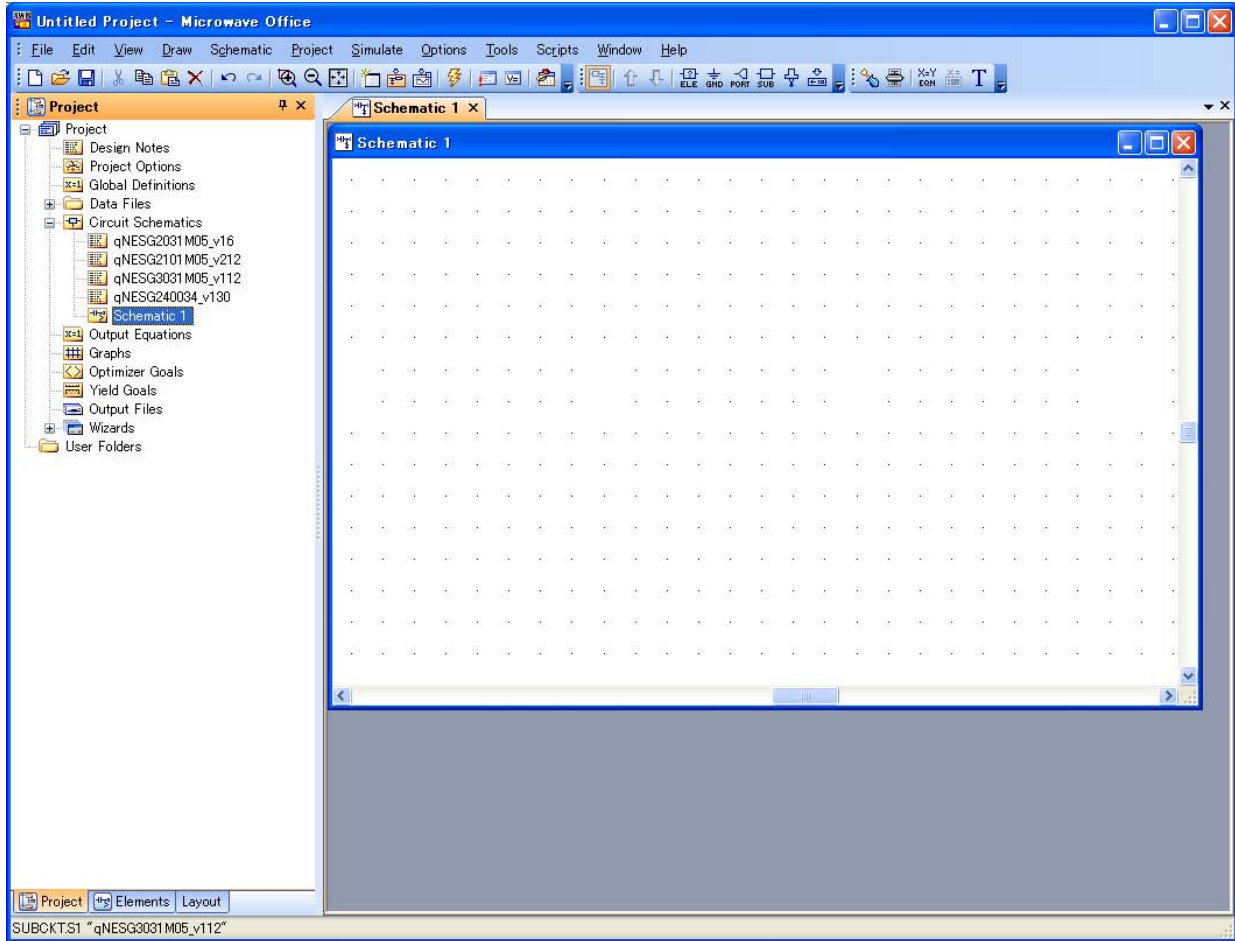
```
<?xml version="1.0"?>
<XML_COMPONENT_DATA xmlns="urn:awr-lib-data">

  <COPYRIGHT>AWR</COPYRIGHT>
  <SUMMARY>Entry point XML file for circuit libraries</SUMMARY>
  <FILE Name="* AWR web site" http://www.awrcorp.com/weblibs/0_0/top_v0.xml</FILE>
  <FILE Name="RENESAS_DEVICES" Icon="FOLDER">RENESAS_DEVICES\RENESAS_DEVICES.xml</FILE>
</XML_COMPONENT_DATA>
```

4. DESIGN KIT APPLICATION

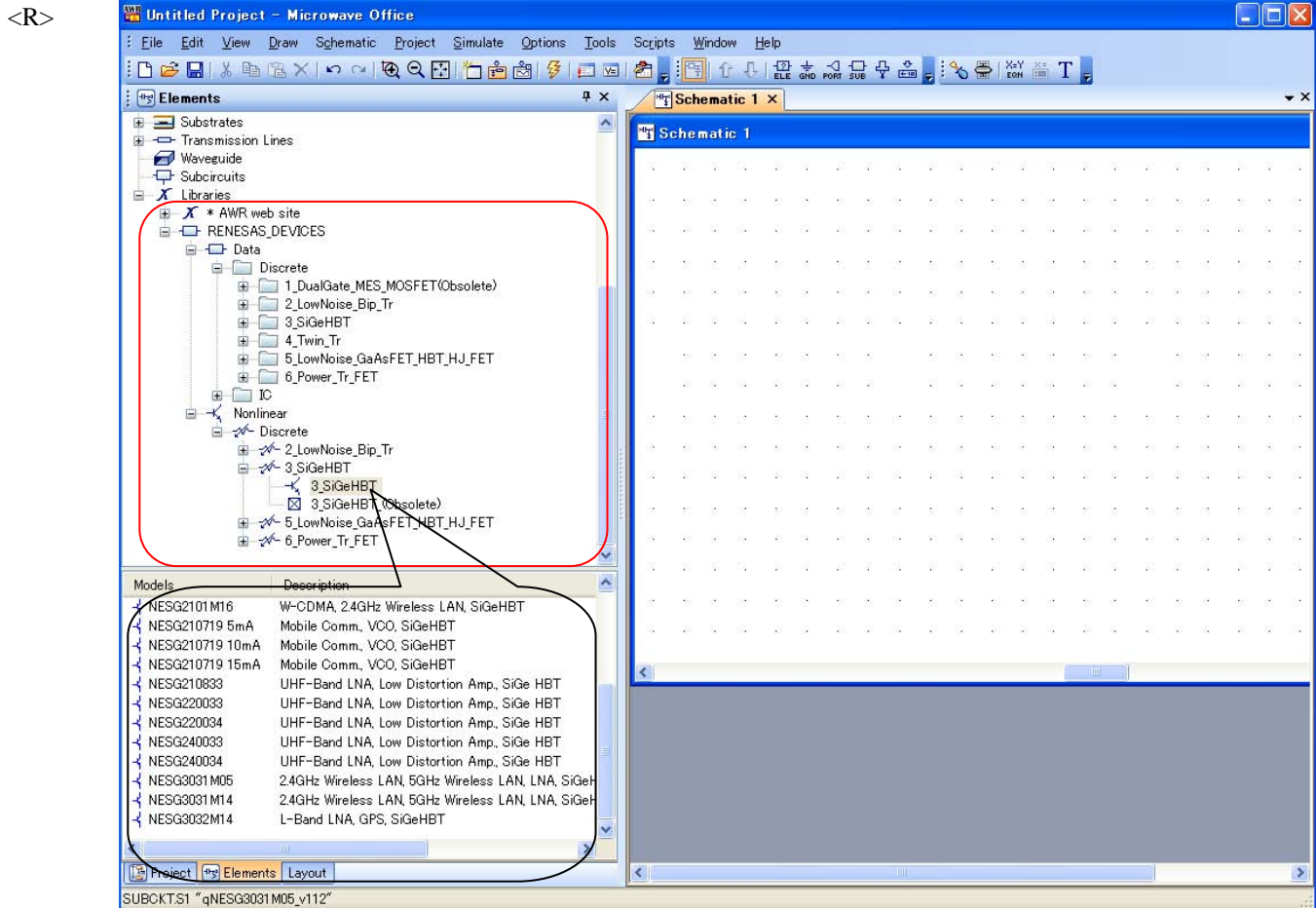
- (1) Start up Microwave Office (or restart it if it is already running) and open a circuit diagram screen (Schematic).

<R>



Design Kit (for AWR Microwave Office)

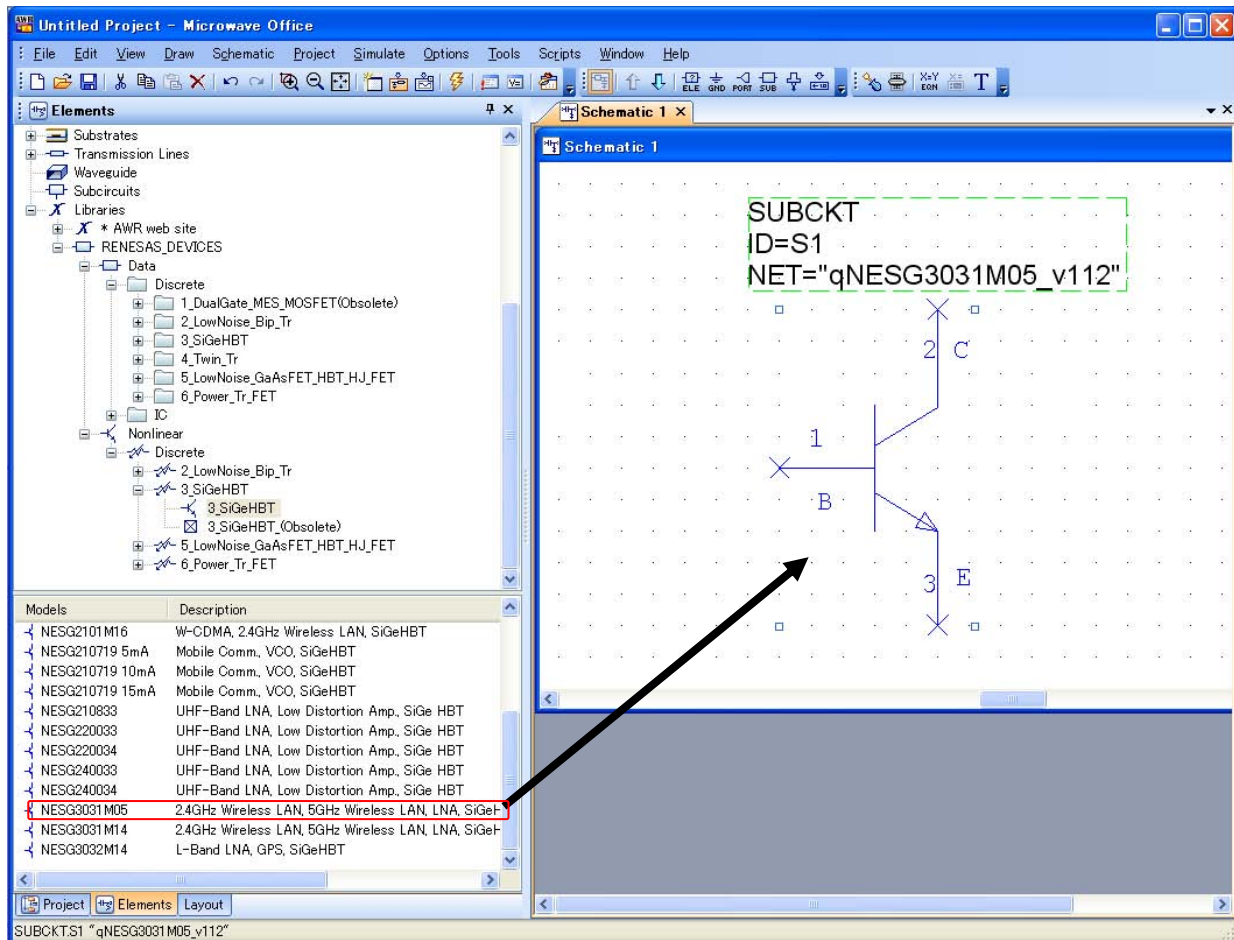
- <R> (2) Open the element browser and select [Libraries] → [RENESAS_DEVICES].
The device model categories included in this design kit are displayed in the upper panel.
When a category is selected, a list of the device models included in that category is displayed in the lower panel.



Design Kit (for AWR Microwave Office)

- Drag the device model and place it on the schematic.
Select the device to be simulated from the lower frame of the element browser and drag it to the schematic. The device can be placed as shown below by clicking it.

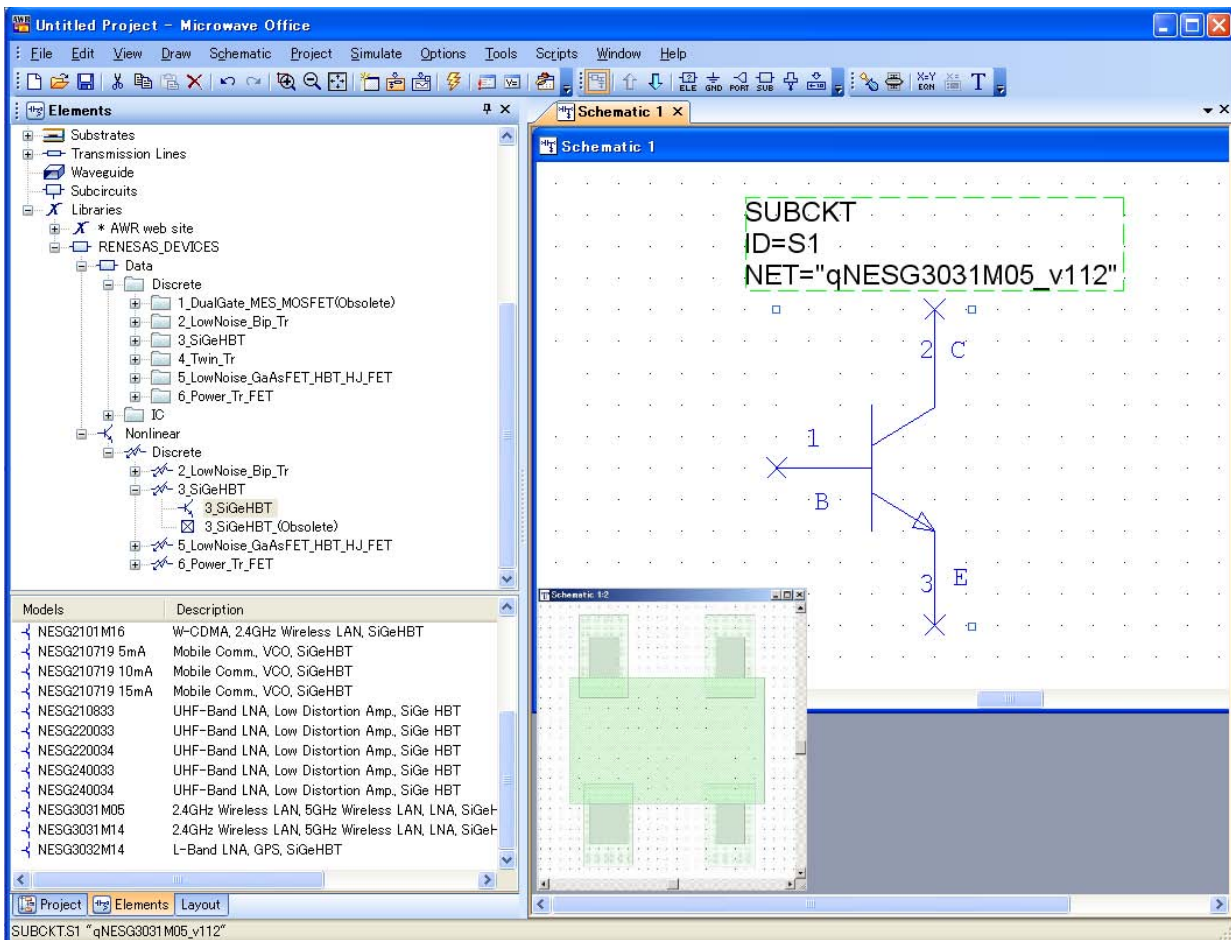
<R>



Design Kit (for AWR Microwave Office)

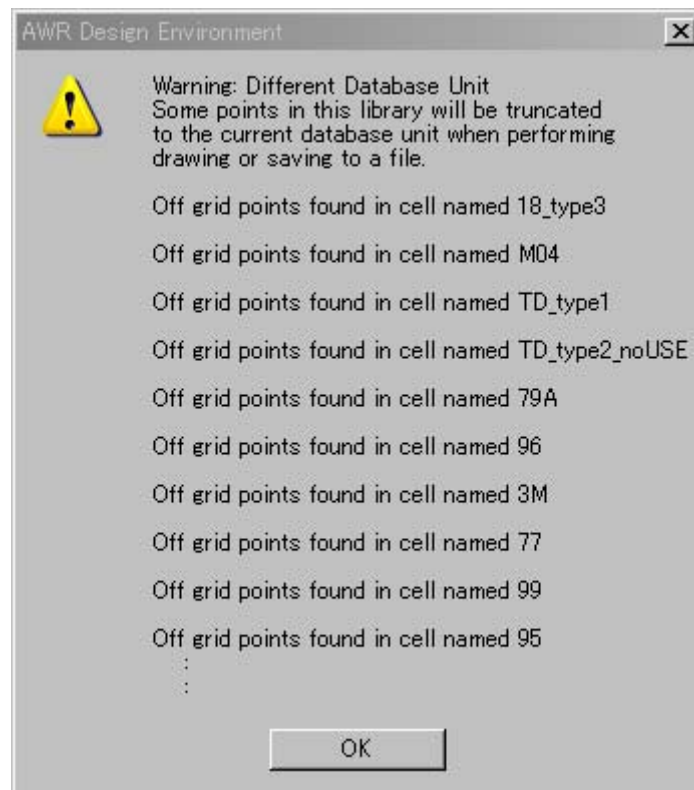
(4) When the layout display command is selected, the corresponding package is displayed.

<R>



Design Kit (for AWR Microwave Office)

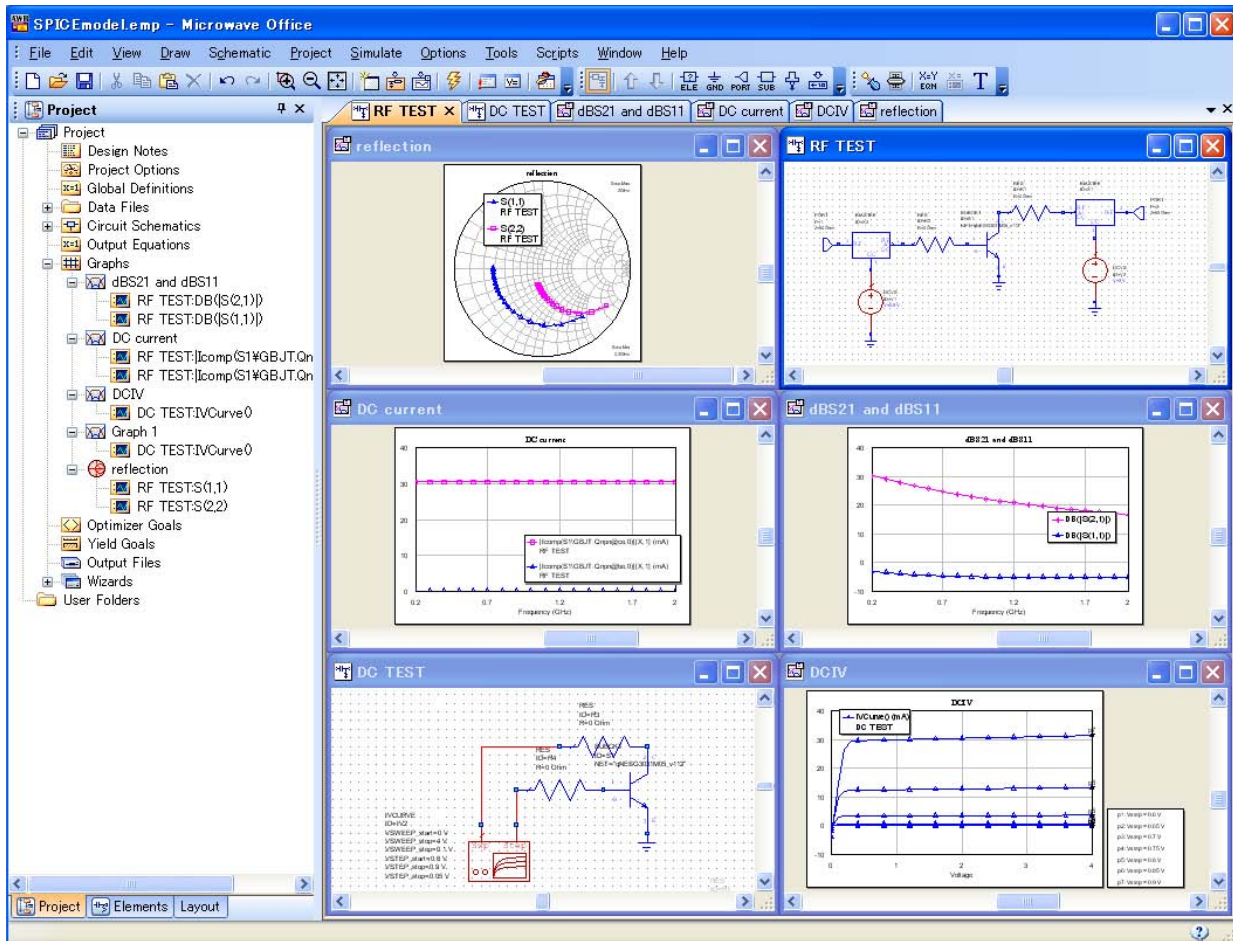
- <R> Caution When the RENESAS_DEVICES library is called on the circuit diagram, the following warning message may be displayed. This warning message is displayed as a result of a mismatch between the size of the layout database currently in use and the database size of the RENESAS_DEVICES library. The database size of the RENESAS_DEVICES library is 0.0005 mm.



Otherwise, the basic part usage is the same as for the standard component of Microwave Office.

5. SIMULATION EXAMPLE

<R>



REVISION HISTORY	Design Kit (for AWR Microwave Office) User's Manual
-------------------------	--

Rev.	Date	Description	
		Page	Summary
1.00	Oct 06, 2003	—	First Edition issued
4.00	Dec 21, 2006	p.5	1. INTRODUCTION <ul style="list-style-type: none"> · Change the name of our corporation to NEC Electronics Corporation Compound Semiconductor Devices Division. · Modification of Microwave Office Version · Modification of Microwave Office installation directory C:\Program Files\AWR\AWR2006\ · Change the name of directory "XML Library" to "Libraries"
		pp.6,7	3. DESIGN KIT INSTALLATION <ul style="list-style-type: none"> · Modification of Microwave Office installation directory C:\Program Files\AWR\AWR2006\ · Addition of directory .\Library\NEC_DEVICES\IC\3LNA
		pp.9 to 11	4. DESIGN KIT APPLICATION <ul style="list-style-type: none"> · Change the name of directory "XML Libraries" to "Libraries" · Addition of directory .\Library\NEC_DEVICES\IC\3LNA
5.00	Jul 20, 2012	Throughout the manual	The company name is changed to Renesas Electronics Corporation.
		p.5	The name of company who offers this design kit is changed to Renesas Electronics
			The version of Microwave Office is updated to 9.04.
			The installation directory of Microwave Office is changed to C:\Program Files\AWR\AWR2010.
		pp.6,7	The name of folder that saves the design kit is changed to "RENESAS_DEVICE."
			The installation directory of Microwave Office is changed to C:\Program Files\AWR\AWR2010.
		p.8	The schematics image is revised.
		p.9	The name of folder that saves the design kit is changed to "RENESAS_DEVICE." The figure where the design kit is shown is also revised because the corresponding folder is shown in it.
		pp.10,11	The figure where the design kit is shown is revised because the changed folder is shown in it.
p.12	The name of folder that saves the design kit is changed to "RENESAS_DEVICE."		
p.13	The figure related to simulation function is changed.		

Design Kit (for AWR Microwave Office) User's Manual

Publication Date:	Rev.1.00	Oct 06, 2003
	Rev.2.00	May 28, 2004
	Rev.3.00	Jul 22, 2005
	Rev.4.00	Dec 21, 2006
	Rev.5.00	Jul 20, 2012

Published by: Renesas Electronics Corporation

**SALES OFFICES**

Renesas Electronics Corporation

<http://www.renesas.com>Refer to "<http://www.renesas.com/>" for the latest and detailed information.

Renesas Electronics America Inc.
2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K
Tel: +44-1628-585-100, Fax: +44-1628-585-900

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-65030, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China
Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

Renesas Electronics Hong Kong Limited
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2886-9318, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
1 harbourFront Avenue, #06-10, keppel Bay Tower, Singapore 098632
Tel: +65-6213-0200, Fax: +65-6278-8001

Renesas Electronics Malaysia Sdn.Bhd.
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.
11F., Samik Laviel'or Bldg., 720-2 Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141

Design Kit (for AWR Microwave Office)