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### R0E510Y47LVB00

R20UT2886EJ0100

Rev.1.00

### Low voltage OCD Board for RL78/G10 Groups

Jan 20, 2014

#### 1. Overview

R0E510Y47LVB00 is a debug board for R5F10Y47ASP, R5F10Y46ASP, R5F10Y44ASP, R5F10Y17ASP, R5F10Y16ASP, R5F10Y14ASP in RL78/G10 groups, which is enabled to effective debug of hardware and software on low voltage user system. This product is used with E1 emulator. And a box connector of 2.45mm pitch is needed to connecting user system. Also refer to E1/E20 Emulator Additional Document for User's Manual (Notes on Connecting RL78), when you use this product.

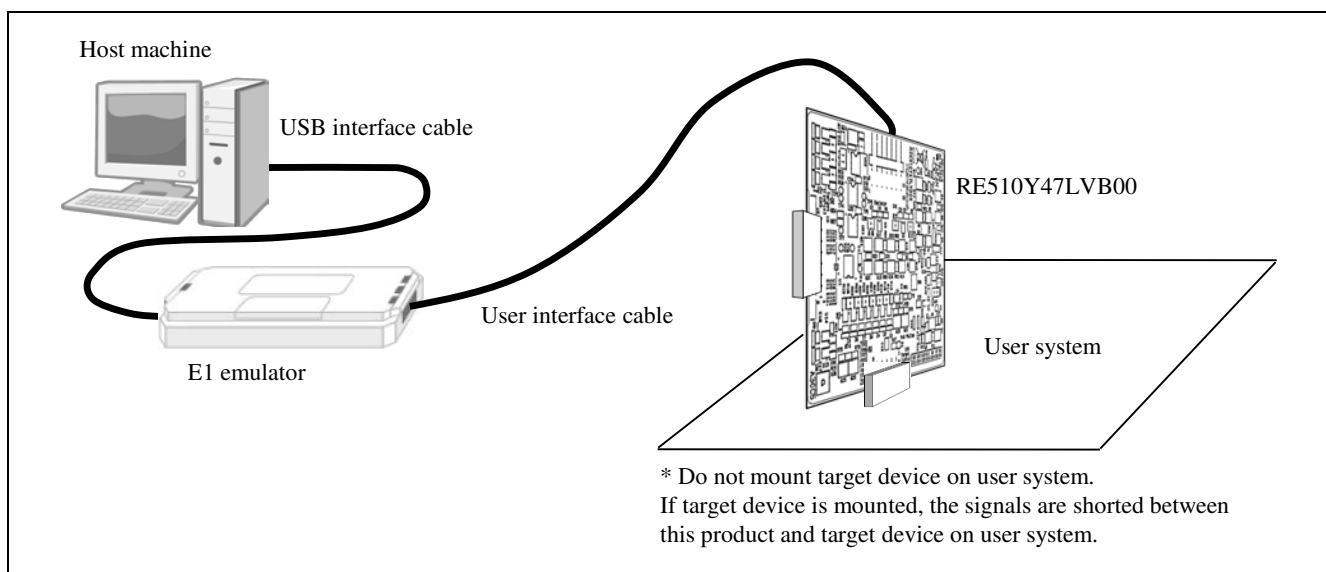


Figure 1 System Configuration

#### 2. Specifications

Table 1 shows the functional specifications of this product.

Table 1 Specifications of this product

Item	Specification
Target MCU	R5F10Y17ASP, R5F10Y16ASP, R5F10Y14ASP (10pin SSOP) R5F10Y47ASP, R5F10Y46ASP, R5F10Y44ASP (16pin SSOP)
Support Emulator	E1 emulator (E20 emulator is not supported )
Target I/F	8510-4500 : 10-pin type connector, Sumitomo 3M Limited 8516-4500 : 16-pin type connector, Sumitomo 3M Limited
Power supply for this product	Emulator or Target system* <sup>1</sup>
Operating voltage	2.0V to 5.0V* <sup>2</sup>
Operating temperature	5 to 35°C (No condensation)
Storage temperature	-15 to 60°C (No condensation)
Dimensions	65mm * 70mm (Does not include projection) Refer to figure2.
Weight	22g

Note\*<sup>1</sup>: If the user system power supply is turned on before starting debugger, this product uses 150mA current from user system.

Note\*<sup>2</sup>: It is different from target devices. The operation voltage range of this product is 5.0V(max.)

3. Dimensions of This Product

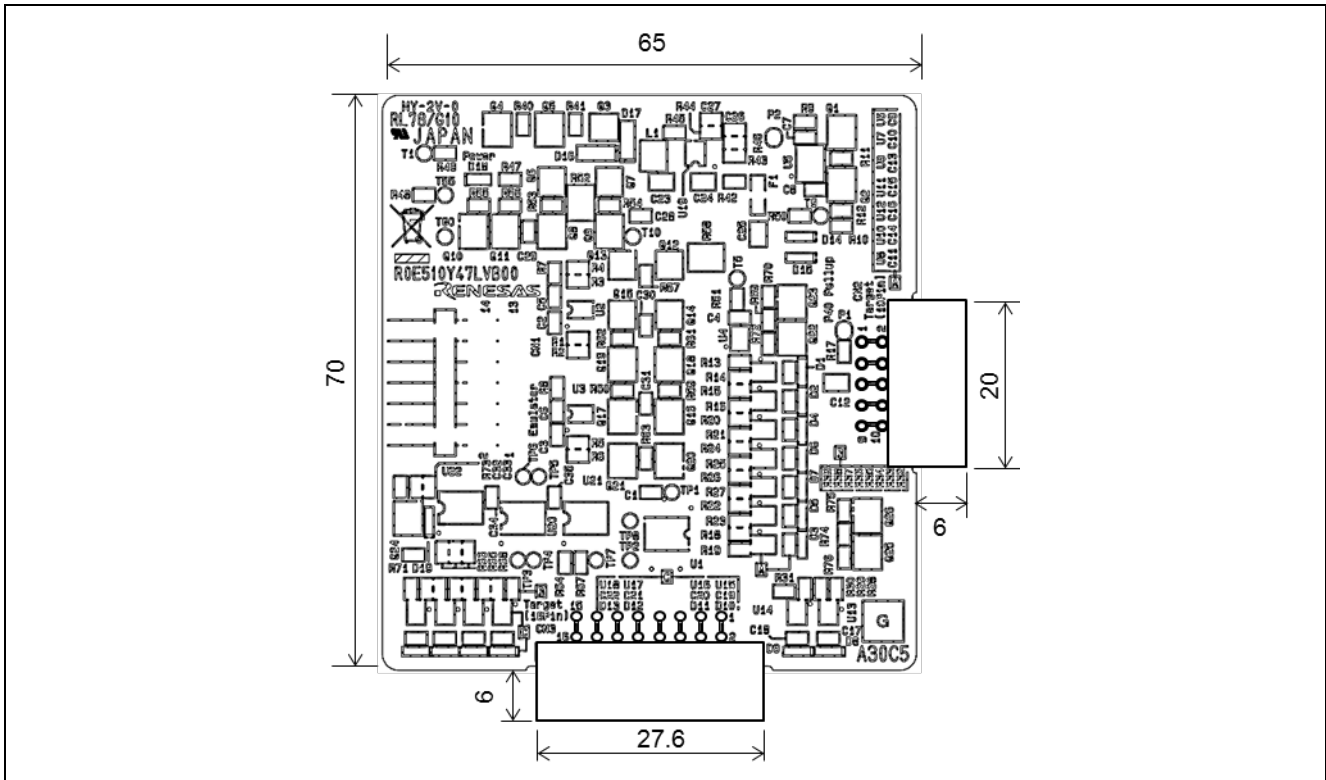


Figure 2 Dimensions of this product (R0E510Y47LVB00)

4. Internal Circuit

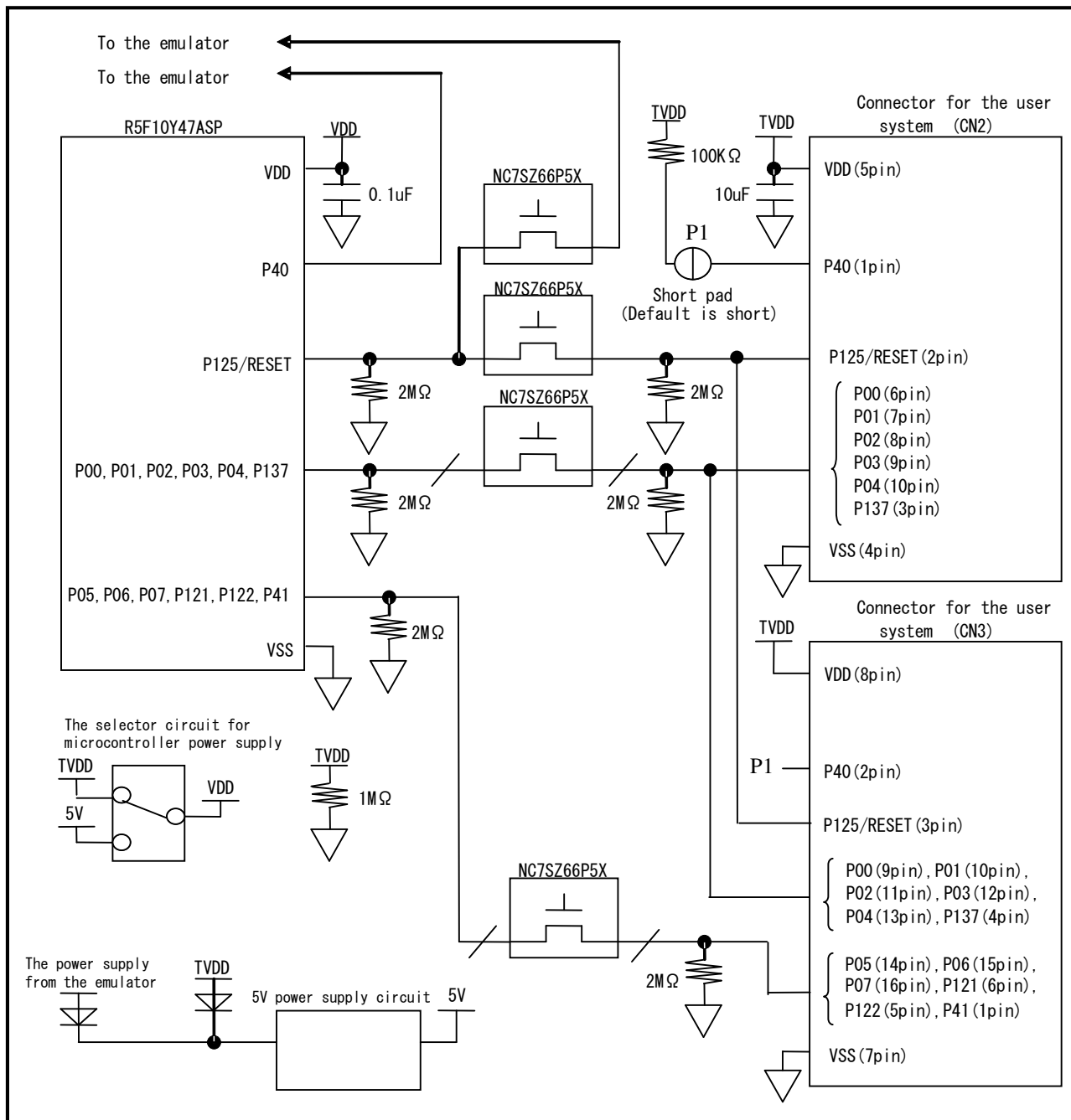


Figure 3 Internal circuit of this product (R0E510Y47LVB00)

### 5. Connecting Low voltage OCD board with user system

For connecting Low voltage OCD board with user system, need to mount a connector on user system. Refer to this chapter and user manual of devices, when you design your system.

#### 5.1 The connector for connecting user system and mounting connector

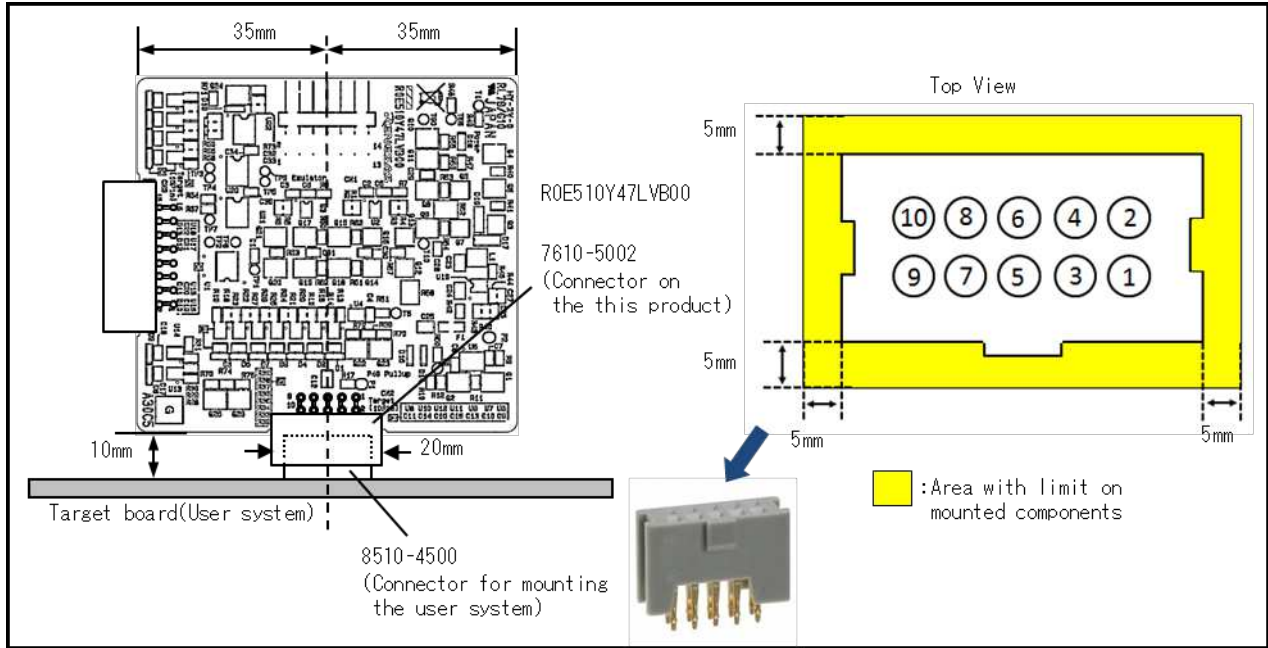


Figure 4 The connector for mounting user system and mounting connector  
(Target MCU: R5F10Y17ASP, R5F10Y16ASP, R5F10Y14ASP)

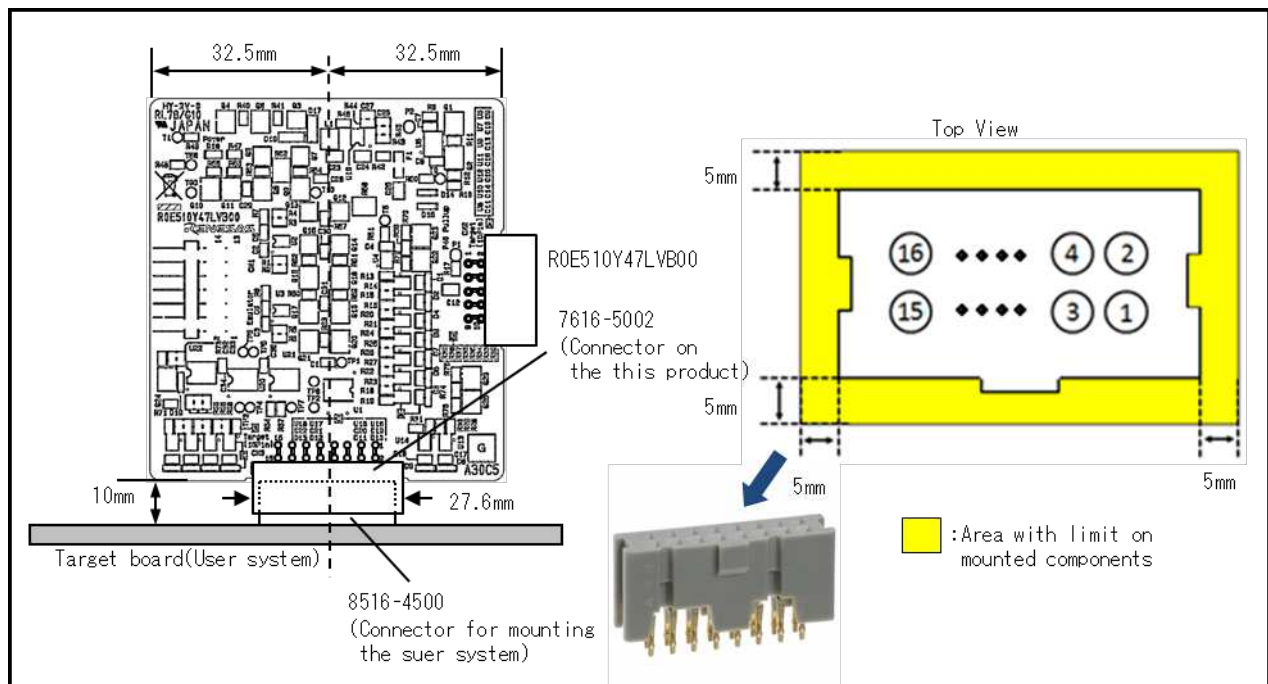


Figure 5 The connector for mounting user system and mounting connector  
(Target MCU: R5F10Y47ASP, R5F10Y46ASP, R5F10Y44ASP)

## 5.2 Pin assignments of the connector on the user system

Table 2 Pin assignments of the connector (Target MCU: R5F10Y17ASP, R5F10Y16ASP, R5F10Y14ASP)

Pin No.	Pin Name	Input/Output*	Remarks
1	P40	-	P40 is connected with target power supply through 100k ohm.
2	P125/RESET	Output	-
3	P137	Output	-
4	VSS	-	-
5	VDD	-	-
6	P00	Input / Output	-
7	P01	Input / Output	-
8	P02	Input / Output	-
9	P03	Input / Output	-
10	P04	Input / Output	-

Note\* As seen from this product (R0E510Y47LVB00)

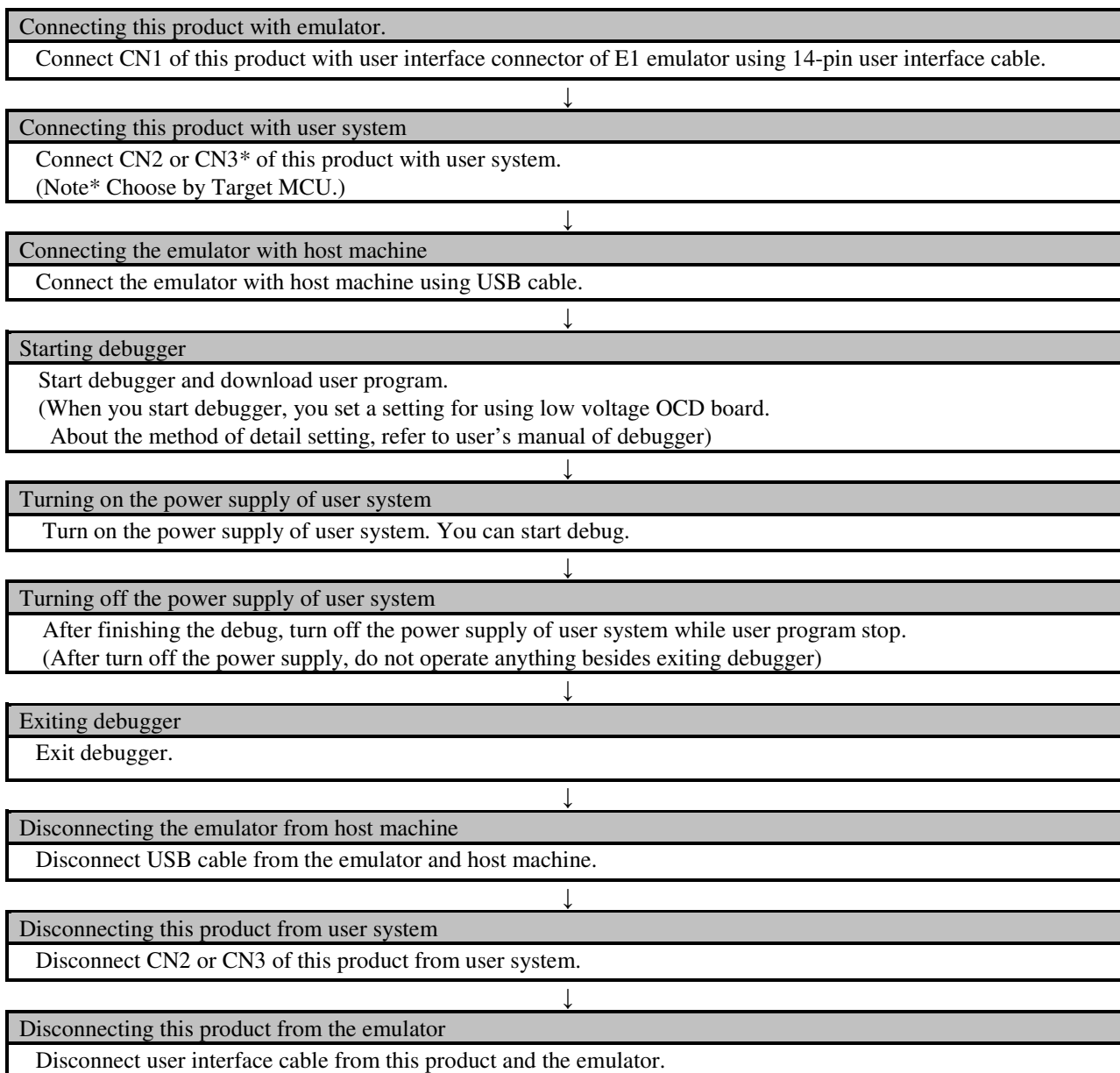
Table 3 Pin assignments of the connector (Target MCU: R5F10Y47ASP, R5F10Y46ASP, R5F10Y44ASP)

Pin No.	Pin Name	Input/Output*	Remarks
1	P41	Input / Output	-
2	P40	-	P40 is connected with target power supply through 100k ohm.
3	P125/RESET	Output	-
4	P137	Output	-
5	P122/X2/EXCLK	Input	-
6	P121/X1	Input	-
7	VSS	-	-
8	VDD	-	-
9	P01	Input / Output	-
10	P02	Input / Output	-
11	P03	Input / Output	-
12	P04	Input / Output	-
13	P05	Input / Output	-
14	P06	Input / Output	-
15	P07	Input / Output	-

Note\* As seen from this product (R0E510Y47LVB00)

## 6. Use procedure

Use this product (R0E510Y47LVB00) by the following procedure.



## 7. Notes on Usage

Read the following notes before using this product. Incorrect operation will damage this product, the user system and the user program.

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### Note on the operation voltage:

- The operation voltage range is different from target devices.  
The operation voltage range of this product is 5.0V(max.).

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### Notes on Connecting the Low voltage OCD board:

- Cables must not be connected or disconnected while the user system power is on.
- Before connecting this product with the user system, check that the pin 1 locations on both sides.

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### Note on Rewriting the Flash Memory:

- The number of MCU's flash memory rewriting on this product is limited.  
If an erasing error occurs during debugging, replace this product.

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### Notes on Debugging:

- P40 is not connected microcontroller for debug on this product.  
It is not possible to debug of P40 port function in this product.

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### Note on the Flash Programming Software Products (Renesas Flash Programmer, etc.):

- Do not use the flash programming software products for this product.

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### Note on the RESET:

- After resetting, It occurs the break of hundreds msec for internal debugger process

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### Note on the data retention power supply voltage:

- Minimum value of the data retention power supply voltage differs from target devices.  
The data retention power supply voltage of this product is 1.8V(typ.) / 2.0V(max.).

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### Note on the A/D Converter:

- The characteristic of the A/D converter differs from target devices because there are some analog selectors and other devices between the MCU and the user system.
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## Appendix Compliance Sheet

### CAUTION

This is a Test- and Measurement equipment with possibility to be significantly altered by user through hardware enhancements/modifications and/or test or application software. Thus, with respect to Council Directive 2004/108/EC (Directive on compliance with the EMC protection requirements), this equipment has no autonomous function. Consequently this equipment is not marked by the CE-symbol.

EEDT-ST-005-20

### CAUTION

This equipment should be handled like a CMOS semiconductor device. The user must take all precautions to avoid build-up of static electricity while working with this equipment. All test and measurement tool including the workbench must be grounded. The user/operator must be grounded using the wrist strap. The connectors and/or device pins should not be touched with bare hands.

EEDT-ST-004-10

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## Device files and sample code download(\*1)

For target boards the device files and ready-to-use sample Application(s) are available for download from the Renesas TOOLWEB, [www.renesas.eu/update](http://www.renesas.eu/update).

Please mark "Target-Board/Adapter" as tool type and then Select your target board from the list of products.

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