

PG-FP6, Renesas Flash Programmer

Additional Document for User's Manual

(Recommended Circuits for Connecting
the Flash Programmer)

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General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Precaution against Electrostatic Discharge (ESD)

A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity. Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.

2. Processing at power-on

The state of the product is undefined at the time when power is supplied. The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the time when power is supplied. In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the time when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the time when power is supplied until the power reaches the level at which resetting is specified.

3. Input of signal during power-off state

Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.

4. Handling of unused pins

Handle unused pins in accordance with the directions given under handling of unused pins in the manual. The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of the LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible.

5. Clock signals

After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is stabilized. When the clock signal is generated with an external resonator or from an external oscillator during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Additionally, when switching to a clock signal produced with an external resonator or by an external oscillator while program execution is in progress, wait until the target clock signal is stable.

6. Voltage application waveform at input pin

Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between V_{IL} (Max.) and V_{IH} (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between V_{IL} (Max.) and V_{IH} (Min.).

7. Prohibition of access to reserved addresses

Access to reserved addresses is prohibited. The reserved addresses are provided for possible future expansion of functions. Do not access these addresses as the correct operation of the LSI is not guaranteed.

8. Differences between products

Before changing from one product to another, for example to a product with a different part number, confirm that the change will not lead to problems. The characteristics of a microprocessing unit or microcontroller unit products in the same group but having a different part number might differ in terms of internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

How to Use This Manual

Purposes and Target Readers

The purpose of this manual is to give users an understanding of the recommended circuits for connecting the PG-FP6 and Renesas Flash Programmer. This manual is intended for users who are using the flash programmer in designing and developing a system that employs a Renesas Electronics microcontroller equipped with on-chip flash memory.

The homepages for the following products have links to the documents for the PG-FP6 and Renesas Flash Programmer. Use the latest versions of the documents.

- [PG-FP6](#)
- [Renesas Flash Programmer](#)

Conventions

- Note: Footnote for item marked with “Note” in the text.
- Caution: Information requiring particular attention
- Remark: Supplementary information

Terminology

Term	Meaning
FP6 main unit	Abbreviation of the flash memory programmer PG-FP6
FP6 Terminal	Windows® application including functions for creating or changing setting files for the FP6 and handling commands for the FP6 main unit
FP6	Collective term for a system consisting of the FP6 main unit and FP6 Terminal
RFP	Abbreviation of “Renesas Flash Programmer”, software for programming flash memory
E1/E20/E2/E2 Lite	Abbreviation of “the E1, E20, E2, or E2 emulator Lite”
COM	COM is a serial interface port of the host PC. When writing data to the target system by using a serial interface of the host PC, select COMx as the tool to be used. Any value from 1 to 256 can be specified for x.
MCU	Abbreviation of “microcontroller unit”
Target device	The Renesas Electronics MCU with on-chip flash memory which is in use by the user
Target system	User-designed board on which the target device is mounted
Host machine	Personal computer used to control the FP6 or emulator

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1. Overview

This chapter gives an overview of the flash programmers (PG-FP6 and Renesas Flash Programmer) and of the user's manuals that provide information required to use the programmers.

1.1 Overview of the PG-FP6 and Renesas Flash Programmer

The PG-FP6 (hereafter referred to as the FP6) and Renesas Flash Programmer (hereafter referred to as the RFP) are tools that are used to erase, write, and verify programs on a target system on which a Renesas Electronics single-chip MCU with on-chip flash memory is mounted.

1.2 Configuration of Manuals

The FP6 and RFP manuals consist of the following.

- FP6 user's manual
- RFP user's manual

Be sure to read the given user's manuals before using the FP6 or RFP. Also read the user's manual of the emulator which is to be used with the RFP.

(1) FP6 user's manual

The FP6 user's manual has the following contents:

- Components of the FP6
- Hardware specifications of the FP6 main unit
- Operation of the FP6 main unit and the FP6 Terminal

(2) RFP user's manual

The RFP user's manual has the following contents:

- Software specifications of the RFP
- Operation of the RFP

(3) E2 emulator user's manual

The E2 emulator user's manual has the following contents:

- Components of the E2
- Hardware specifications of the E2
- Connection to the E2 and the host machine and target system

(4) E2 emulator Lite user's manual

The E2 emulator Lite user's manual has the following contents:

- Components of the E2 Lite
- Hardware specifications of the E2 Lite
- Connection to the E2 Lite and the host machine and target system

(5) E1/E20 emulator user's manual

The E1/E20 emulator user's manual has the following contents:

- Components of the E1/E20
- Hardware specifications of the E1/E20
- Connection to the E1/E20 and the host machine and target system

2. Designing a Target System

This chapter describes the configuration of a target system on which a single-chip MCU with on-chip flash memory runs and is usable with the flash programmer.

2.1 Connection with the Target System

(1) FP6

To connect the FP6 with the target system, mount a target connector for connecting a target cable on the target system. Read this chapter for more information on the pin configurations of the target cables available with the FP6.

(2) RFP

To connect the RFP with the target system, mount a target connector for connecting a target cable which supports an E1, E20, E2, or E2 Lite emulator or a J-Link debug probe, or a USB-to-serial converter on the target system. Read this chapter for more information on the pin configurations of the target cables for the emulators. Also read the additional documents for user's manuals of the emulators which are provided for individual MCU families.

Remark: For details on the J-Link debug probe and support for its connection with the RFP, refer to the following Web page.

https://www.renesas.com/rfp_users

2.2 Connection with the Target System by Using a COM Port

With the RFP, communications can be established by connecting the target device via the USB-to-serial converter from the USB port of the host machine instead of an emulator (e.g., an E2) and using the target device and the serial port as connected to a COM port of the host machine. For details on the connection, refer to section 4.2, Examples of Recommended Connections with the Use of a COM Port.

Refer to [List of MCUs supported by Renesas Flash Programmer V3](#) to confirm whether the target device supports COM port connection.

2.3 Supported Microcontrollers

Microcontrollers supported by the FP6 and RFP are listed on the following Web pages in the Development Tools section of the Renesas site.

- FP6
[List of MCUs supported by PG-FP6](#)
- RFP
[List of MCUs supported by Renesas Flash Programmer V3](#)

2.4 Pin Configurations of the Target Cables

The following lists the pin configurations of the target cables for the emulators (E1, E20, E2, or E2 Lite) used with the FP6 and RFP.

2.4.1 Target Cable (14-pin Type) for the FP6

Table 2-1 Pin Configuration of the Target Cable (14-pin Type) for the FP6

Signal Name*1	15-pin D-sub Male Connector	14-pin 2.54-mm Pitch Multipurpose Female Connector
SCK/IO4	3	1
GND	15	2
CLK/IO5	14	3
FLMD0/IO0	12	4
SI/RxD*2	2	5
IO1	10	6
SO/TxD1*2/IO3	1	7
VCC	8	8
FLMD1	6	9
IO2	13	10
TxD2*2/HS	7	11
GND	15	12
$\overline{\text{RESET}}$	4	13
Not used*3	—	14

- Notes:
1. Leave the unused pin open.
 2. TxD and RxD are signal names of the FP6 side.
 3. Left open in the target cable. If you use the same 14-pin connector for debugging, please also refer to the user's manual of the emulator.

2.4.2 Target Cable (20-pin Conversion Adapter) for the FP6

When the CoreSight 20-pin connector is used on the target system, use the 20-pin conversion adapter for the FP6. When the 10-pin connector is used on the target system, use the 20-pin to 10-pin conversion cable to match it.

Table 2-2 Pin Configuration of the Target Cable (20-pin Type) for the FP6

Signal Name*1	15-Pin D-sub Male Connector	CoreSight 20-pin Female Connector	CoreSight 10-pin Female Connector
VCC	8, 9	1	1
FLMD1/SWDIO	6	2	2
GND	15	3	3
SCK/IO4/SWCLK	3	4	4
GND	15	5	5
SI/RxD*2	2	6	6
Not used	—	7	7
TxD2*2/HS	7	8	8
Not used	—	9	9
RESET	4	10	10
Not used	—	11	—
SO/TxD1*2/IO3	1	12	—
Not used	—	13	—
IO1	10	14	—
GND	15	15	—
CLK/IO5	14	16	—
GND	15	17	—
FLMD0/IO0	12	18	—
GND	15	19	—
IO2	13	20	—

Notes: 1. Leave the unused pin open.

2. TxD and RxD are signal names of the FP6 side.

Caution: The 20-pin conversion adapter for the FP6 is an optional product which is separately available. For details, refer to the Web page for the FP6 product or section 3.22, Optional Products for the FP6.
Product name: 20-pin conversion adapter for the FP6 (type name: RTE0T00001FWRB0000R)

2.4.3 Target Cables (14-pin and 38-pin Types) for Emulators for the RFP

Table 2-3 Pin Configurations of the 14-pin and 38-pin Connectors for the E1, E20, E2, and E2 Lite

Signal Name (RX Family)*1	14 Pins	38 Pins
IO4	1	15
GND	2	—
IO5	3	21
IO0	4	3
TxD*2	5	11
IO1	6	1
IO3	7	8
VCC	8	14
—	9	17
IO2	10	2
RxD*2	11	19
GND	12	—
$\overline{\text{RESET}}$	13	9
GND	14	5

Notes: 1. Leave the unused pin open.

2. TxD and RxD are signal names of the MCU side.

2.4.4 Target Cable (20-pin Type) for Emulators for the RFP

Table 2-4 Pin Configuration of the CoreSight 20-pin Connector for the E2 and E2 Lite

Signal Name (RA Family)*1	Signal Name (RISC-V MCU Family)*1	Signal Name (RE Family)*1, *2	CoreSight 20-pin Connector
VCC	VCC	VCC	1
SWDIO	TMSC*5	RxD*3	2
GND	GND	GND	3
IO4*4/SWCLK	IO4*4/TCKC*5	IO4*4/TxD*3	4
GND	GND	GND	5
TxD*3	TxD*3	—	6
—	—	—	7
RxD*3	RxD*3	—	8
GND	GND	GND	9
$\overline{\text{RESET}}$	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$	10
—	—	—	11
IO3*4	IO3*4	IO3*4	12
—	—	—	13
IO1*4	IO1*4	IO1*4	14
GND	GND	GND	15
IO5*4	IO5*4	IO5*4	16
GND	GND	GND	17
IO0*4	IO0*4	IO0*4	18
GND	GND	GND	19
IO2*4	IO2*4	IO2*4	20

- Notes:
1. Leave the unused pins open-circuit.
 2. The E2 Lite does not support the RE family.
 3. TxD and RxD are the signal names on the MCU side.
 4. The E2 Lite cannot use those signals.
 5. RFP and FP6 does not support the cJTAG.

2.5 Connection with the Target System by Using a USB Interface

For examples of recommended connections by using a USB interface, refer to the hardware manual of each microcontroller.

3. Connections with Microcontrollers (FP6)

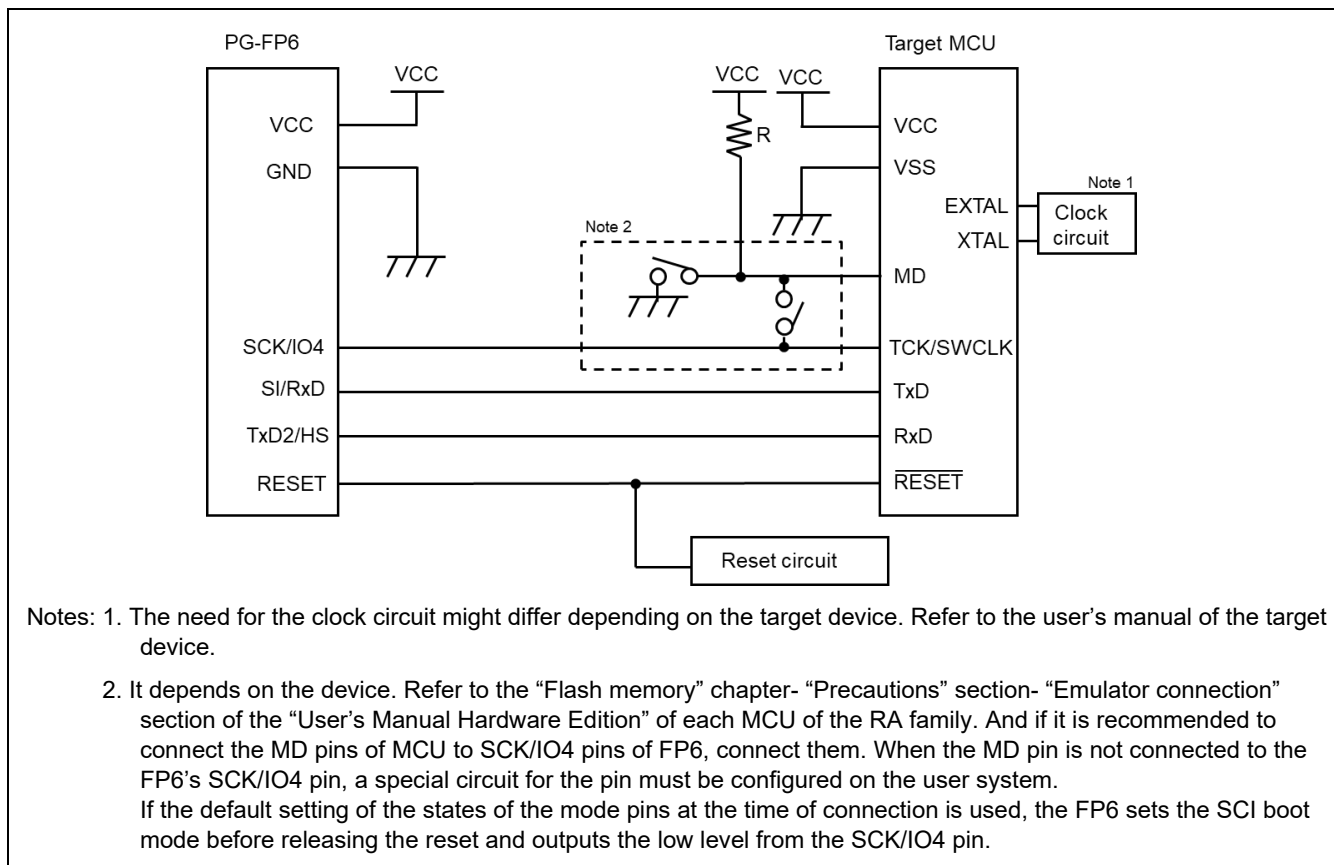
This chapter describes the connections of the FP6 with microcontrollers. Refer to the recommended design for the connection of pins for the MCU. The pin names might differ depending on the target device. For details about the actual pin names, refer to the user’s manual of each target device.

3.1 RA (UART Communications)

The following shows the conversion of each signal when a 14-pin target cable and 20-pin conversion adapter are connected to the 15-pin D-sub connector of the FP6.

Table 3-1 List of Signal Connections for RA Family

Signal Name (FP6)	15-pin D-sub Male Connector	14-pin 2.54-mm Pitch Multipurpose Female Connector	CoreSight 20-pin Female Connector	RA Signal Name
VCC	8, 9	8	1	VCC
GND	15	2, 12	3, 5, 15, 17, 19	VSS
GND	-	14	9	VSS
SCK/IO4	3	1	4	MD
SI/RxD	2	5	6	TxD
TxD2/HS	7	11	8	RxD
RESET	4	13	10	RESET



Notes: 1. The need for the clock circuit might differ depending on the target device. Refer to the user’s manual of the target device.

2. It depends on the device. Refer to the “Flash memory” chapter- “Precautions” section- “Emulator connection” section of the “User’s Manual Hardware Edition” of each MCU of the RA family. And if it is recommended to connect the MD pins of MCU to SCK/IO4 pins of FP6, connect them. When the MD pin is not connected to the FP6’s SCK/IO4 pin, a special circuit for the pin must be configured on the user system. If the default setting of the states of the mode pins at the time of connection is used, the FP6 sets the SCI boot mode before releasing the reset and outputs the low level from the SCK/IO4 pin.

Figure 3.1 Example of a Circuit for RA6M3 (UART Communications)

3.2 RA (SWD Communications)

The following shows the conversion of each signal when a 14-pin target cable and 20-pin conversion adapter are connected to the 15-pin D-sub connector of the FP6.

Table 3-2 List of Signal Connections for RA Family

Signal Name (FP6)	15-pin D-sub Male Connector	14-pin 2.54-mm Pitch Multipurpose Female Connector	CoreSight 20-pin Female Connector	RA Signal Name
VCC	8, 9	8	1	VCC
GND	15	2, 12	3, 5, 15, 17, 19	VSS
GND	-	14	9	VSS
SCK/IO4	3	1	4	SWCLK
FLMD1	6	9	2	SWDIO
RESET	4	13	10	RESET

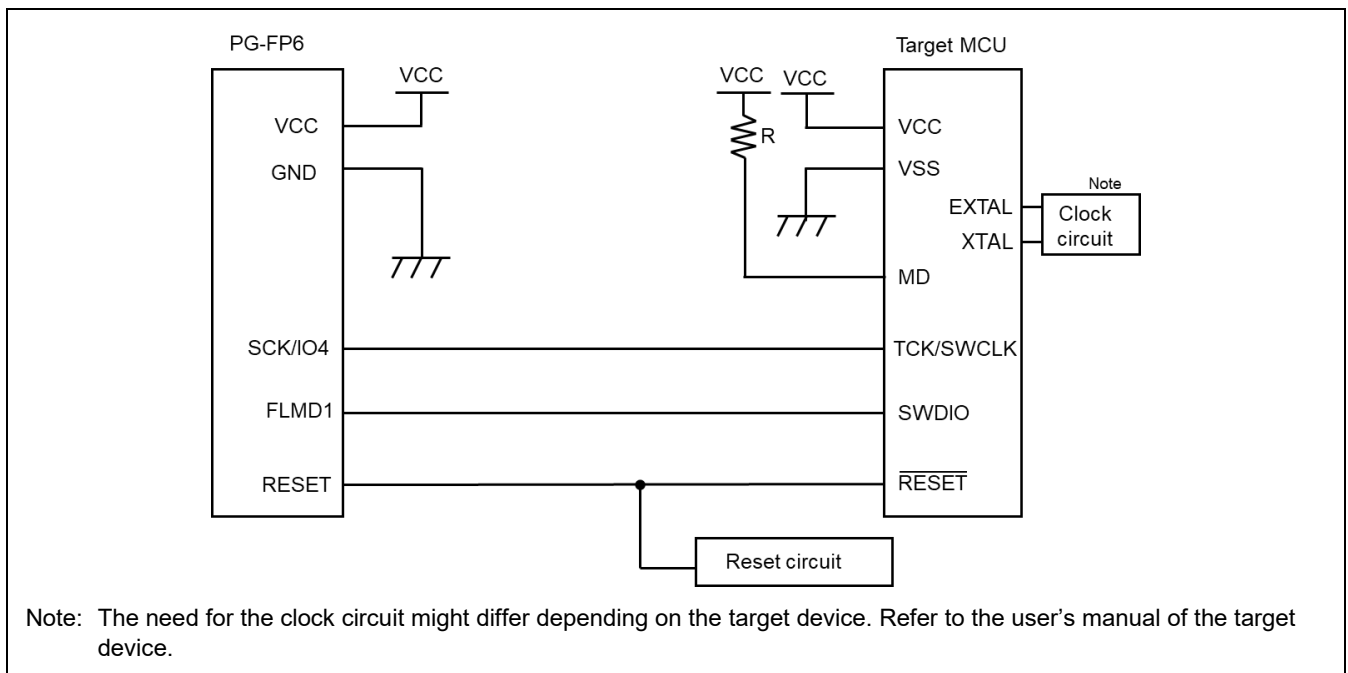


Figure 3.2 Example of a Circuit for RA6M3 (SWD Communications)

3.3 RL78 (Single-wire UART Communications, VDD = EVDD)

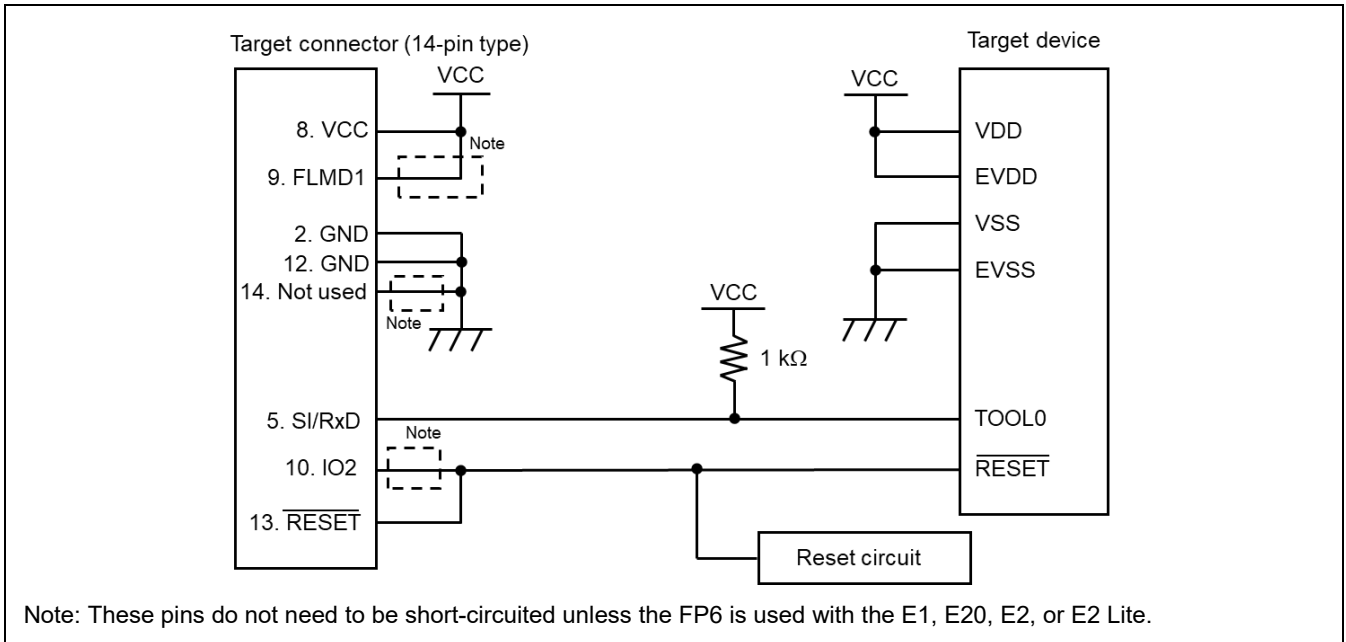


Figure 3.3 Example of a Circuit for RL78 Family (VDD = EVDD)

3.4 RL78 (Single-wire UART Communications, VDD ≠ EVDD)

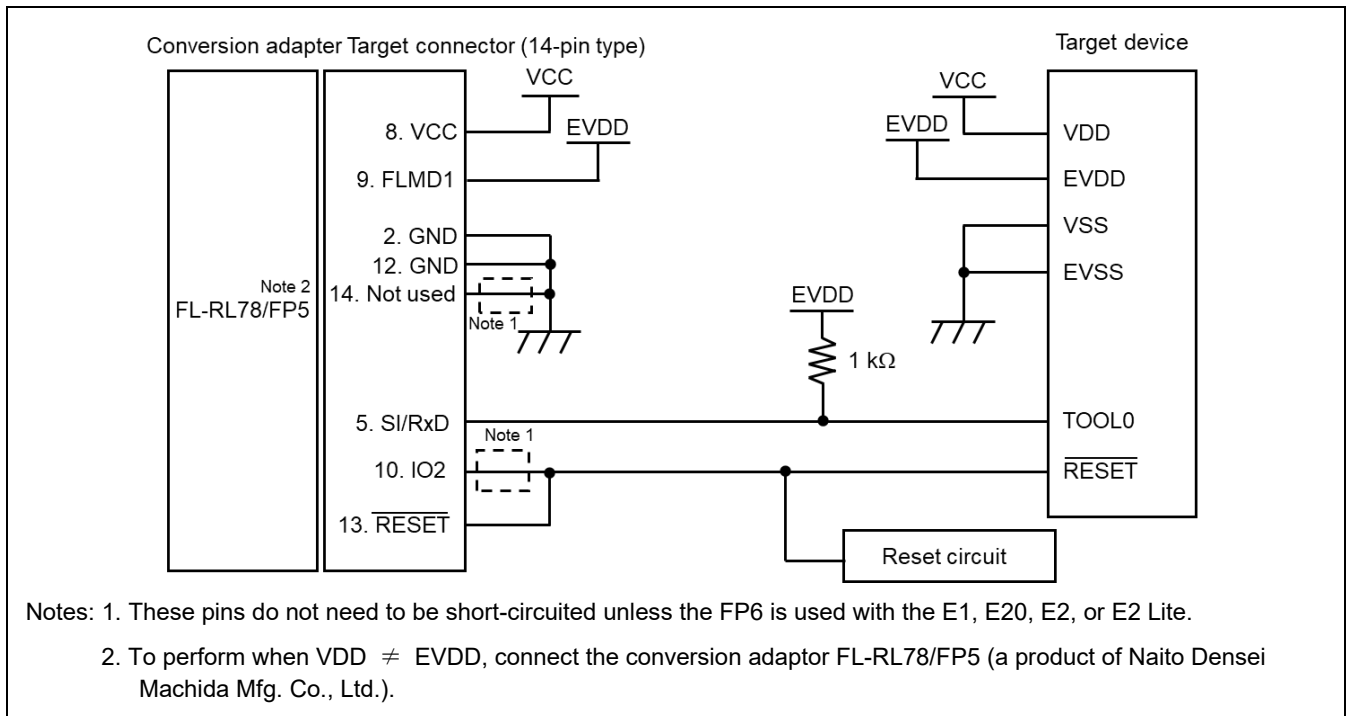


Figure 3.4 Example of a Circuit for RL78 Family (VDD ≠ EVDD)

3.5 RX and SuperH (SCI Communications)

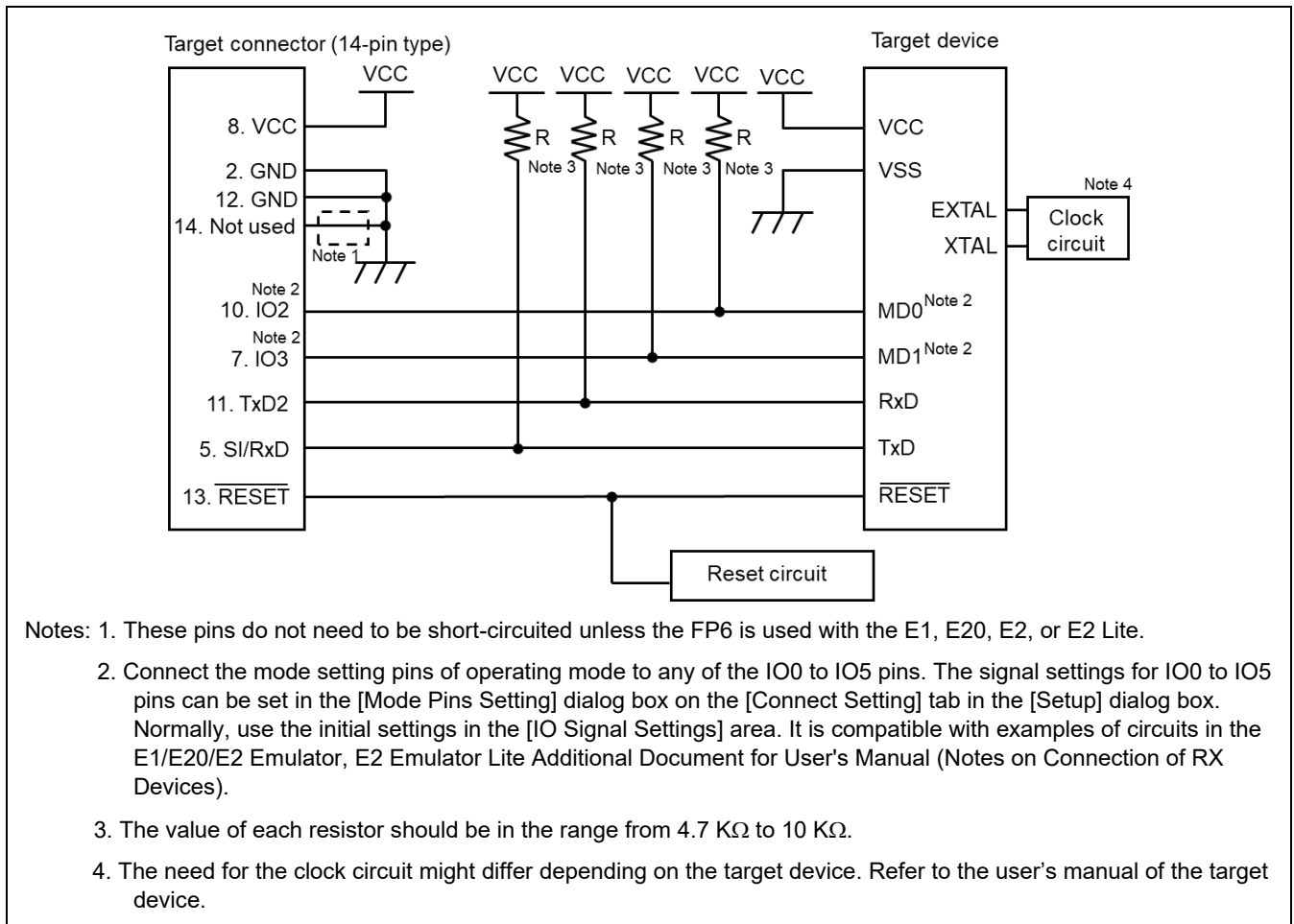


Figure 3.5 Example of a Circuit for RX Family and SuperH Family (SCI) (Case of RX62T)

3.6 RX (FINE Communications)

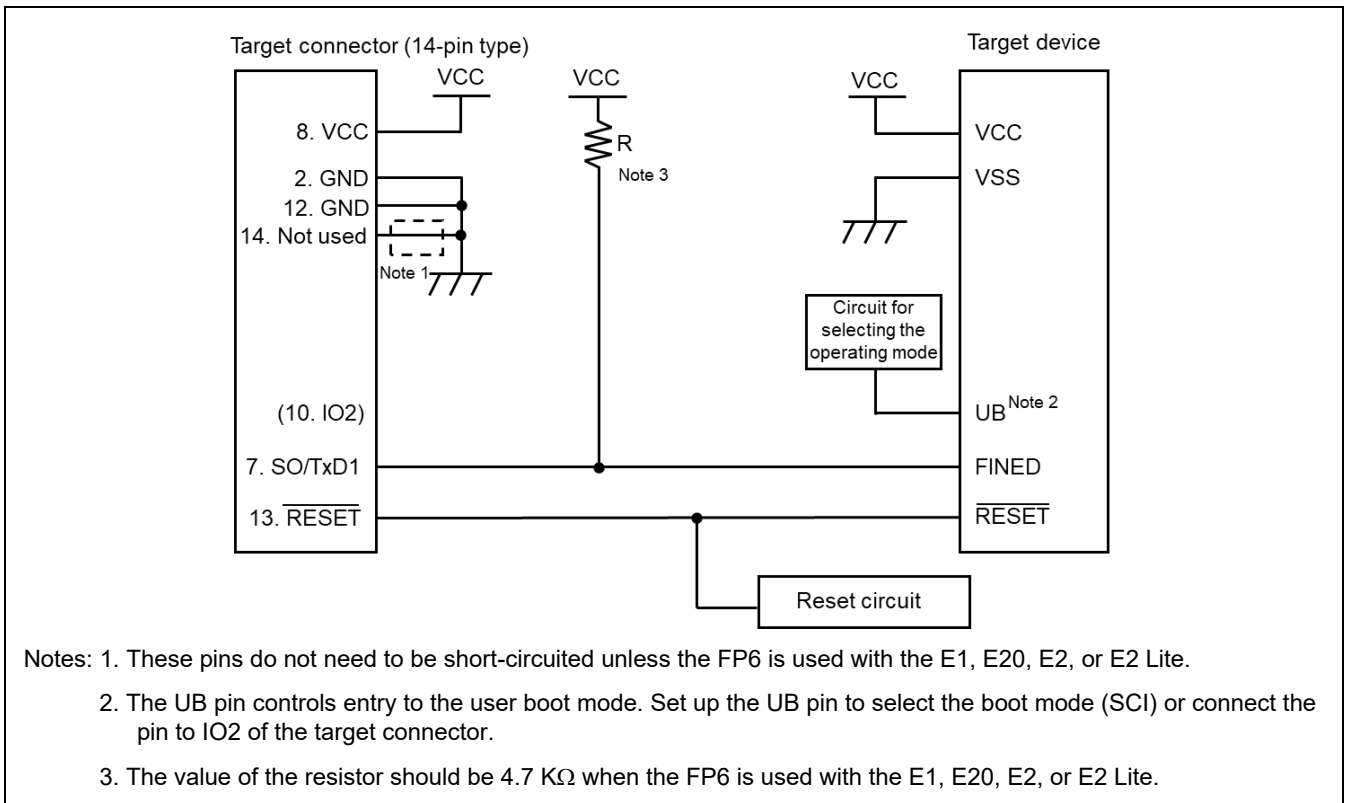


Figure 3.6 Example of a Circuit for RX Family (FINE)

3.7 RISC-V MCU (UART Communications)

The following shows the conversion of each signal when a 14-pin target cable and 20-pin conversion adapter are connected to the 15-pin D-sub connector of the FP6.

Table 3-3 List of Signal Connections for RISC-V MCU Family

Signal Name (FP6)	15-pin D-sub Male Connector	14-pin 2.54-mm Pitch Multipurpose Female Connector	CoreSight 20-pin Female Connector	RISC-V MCU Signal Name
VCC	8, 9	8	1	VCC
GND	15	2, 12	3, 5, 15, 17, 19	VSS
GND	-	14	9	VSS
SI/RxD	2	5	6	TxD
TxD2/HS	7	11	8	RxD
RESET	4	13	10	RESET

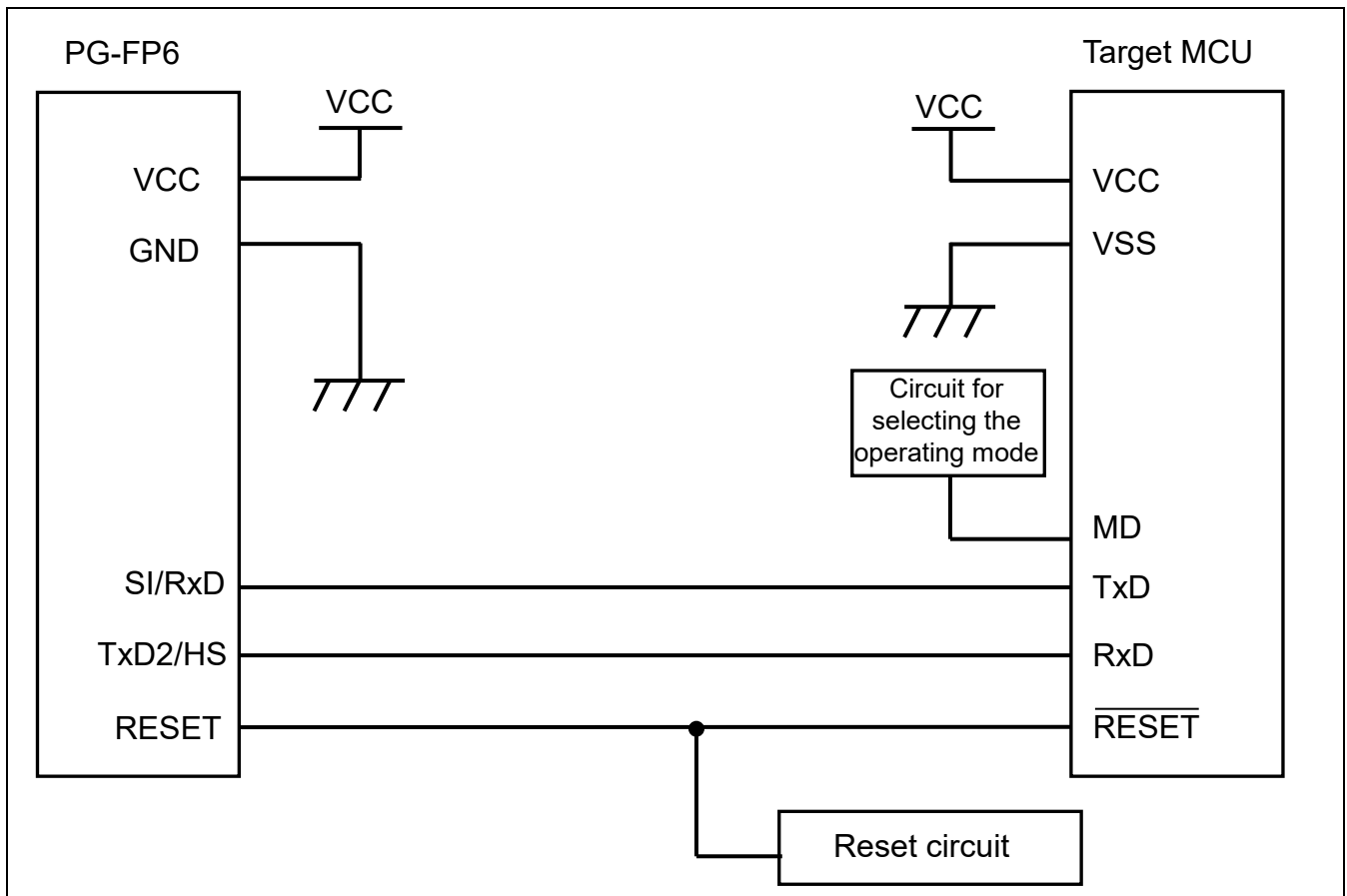


Figure 3.7 Example of a Circuit for RISC-V MCU Family (UART)

3.8 RH850 Type 1 (1-wire UART Communications)

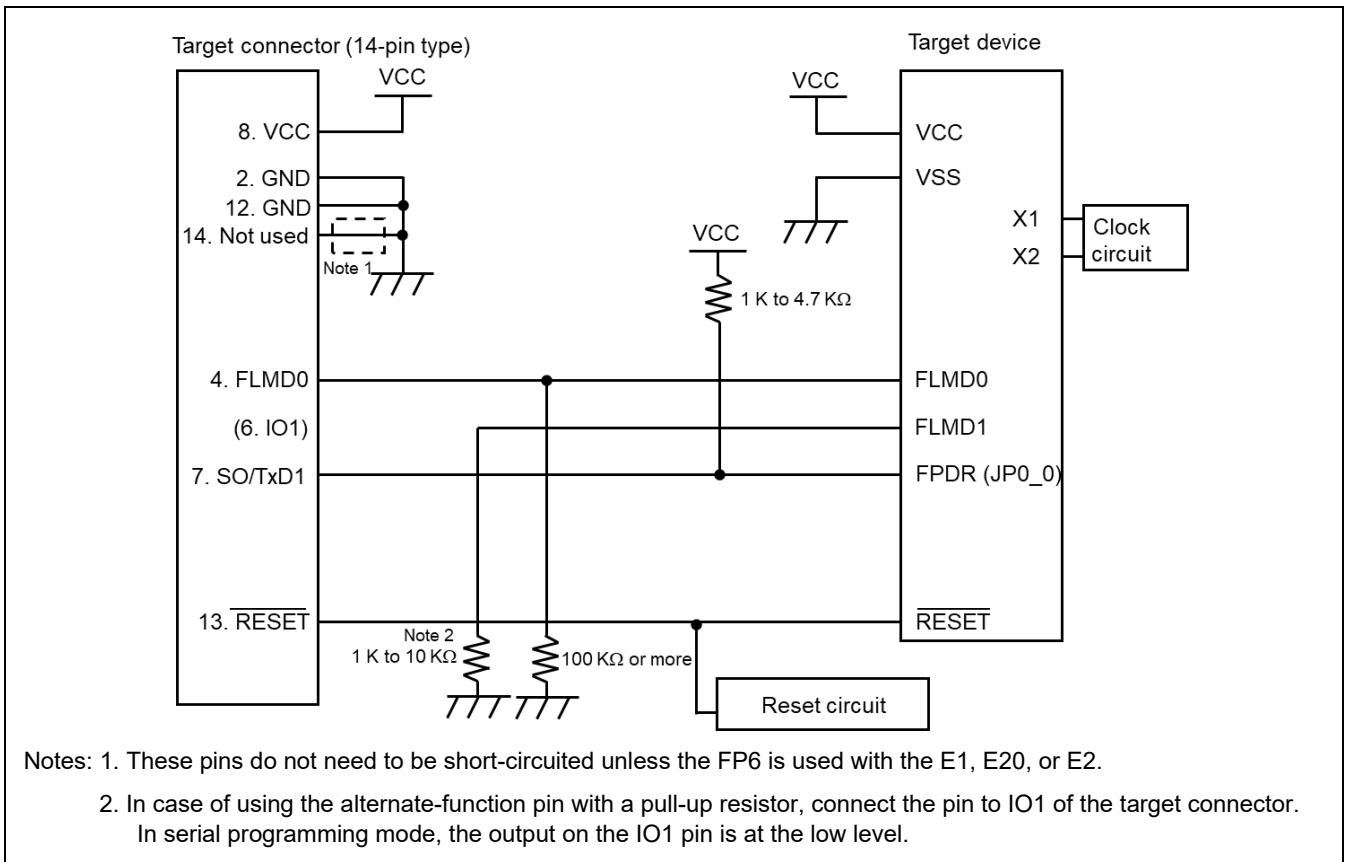


Figure 3.8 Example of a Circuit for RH850 Family (1-wire UART) (Case of RH850/F1x)

3.9 RH850 Type 1 (2-wire UART or CSI Communications)

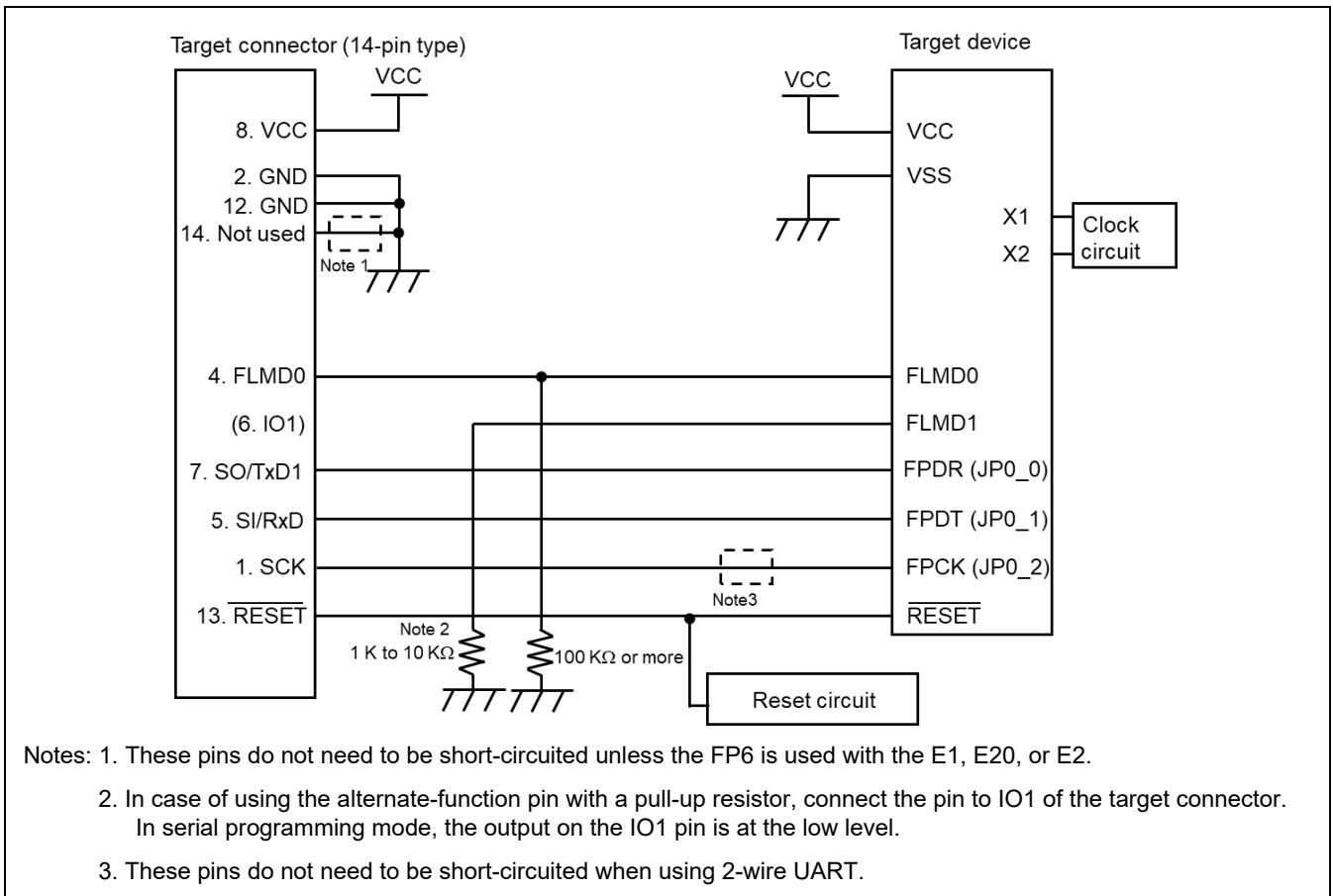


Figure 3.9 Example of a Circuit for RH850 Family (2-wire UART or CSI) (Case of RH850/F1x)

3.10 RH850 Type 2 (2-wire UART or CSI Communications)

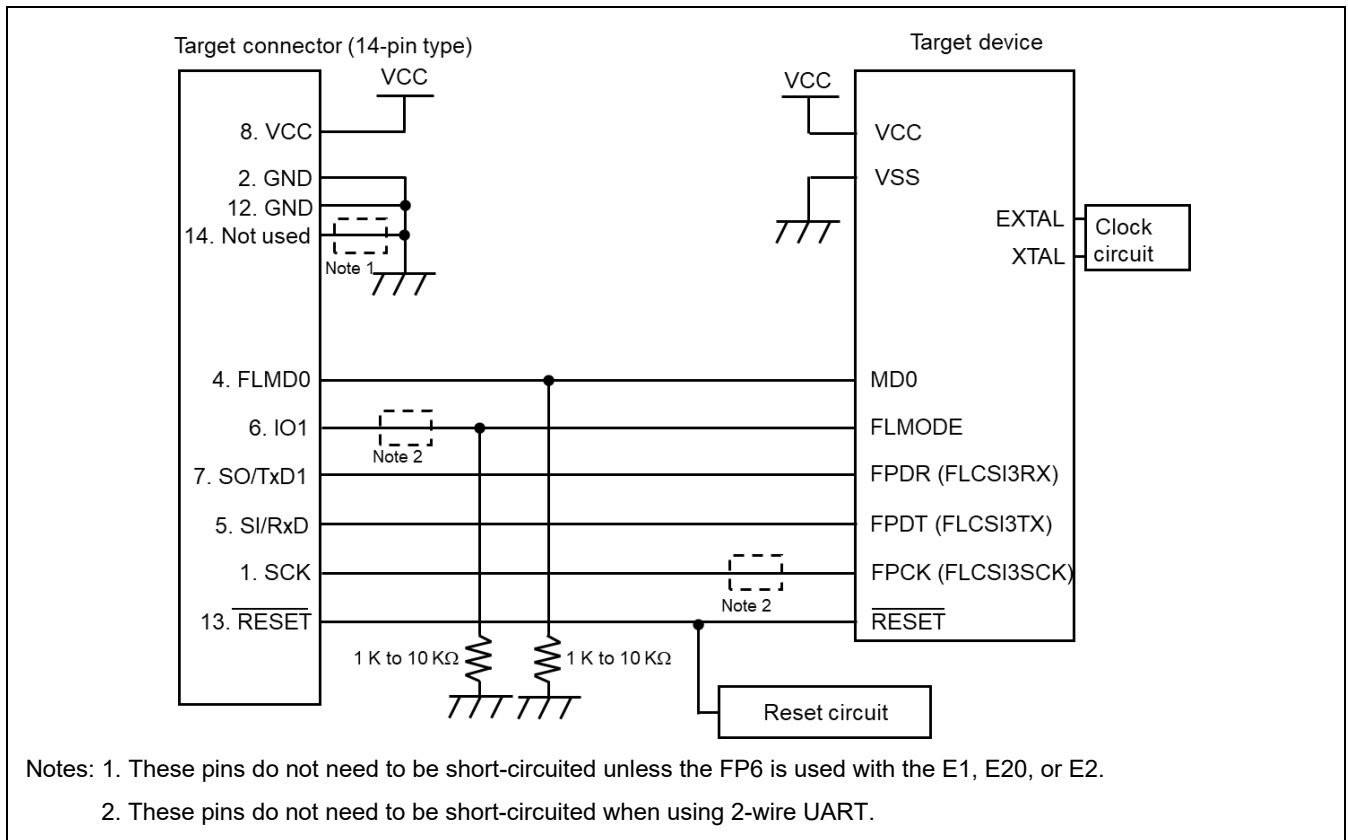


Figure 3.10 Example of a Circuit for RH850 Family (2-wire UART or CSI Communications) (Case of RH850/E1x)

3.11 Renesas Synergy™ (UART Communications)

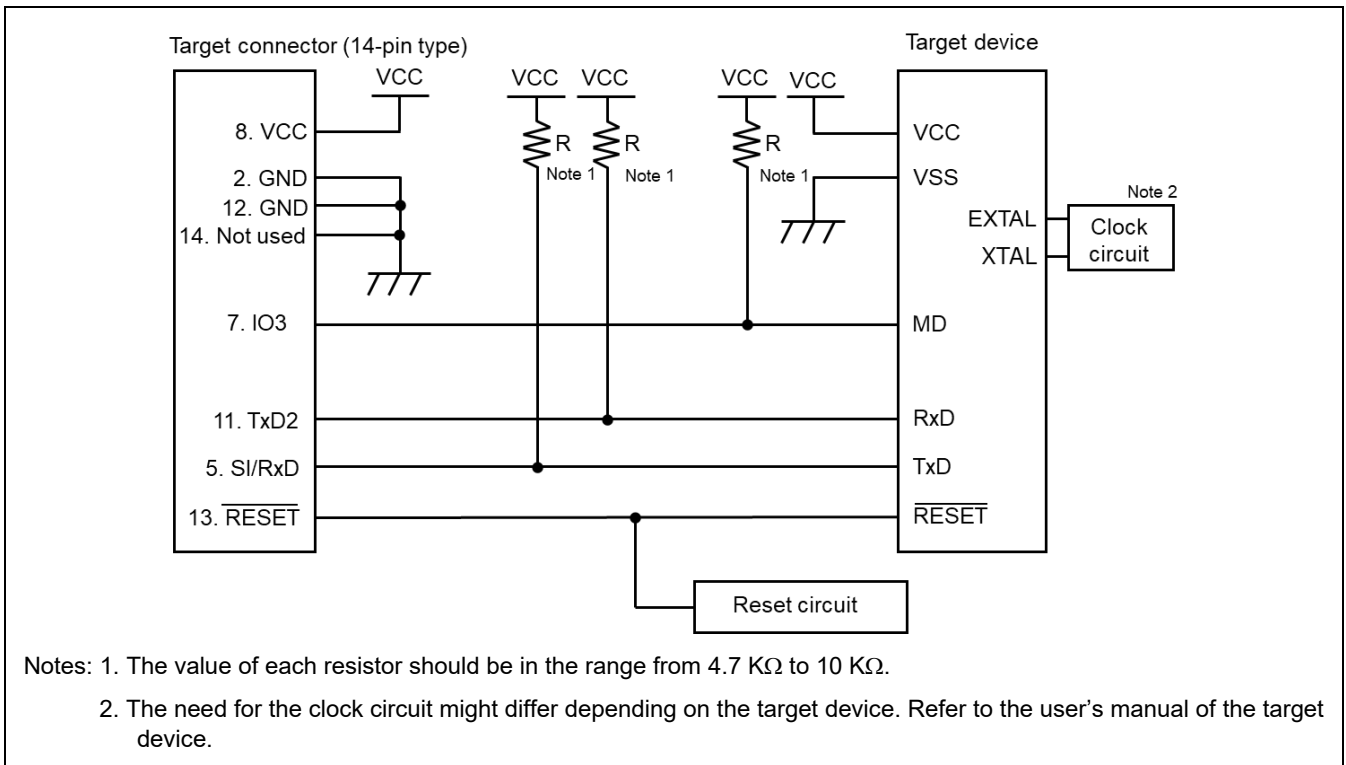


Figure 3.11 Example of a Circuit for an S7G2 (UART Communications)

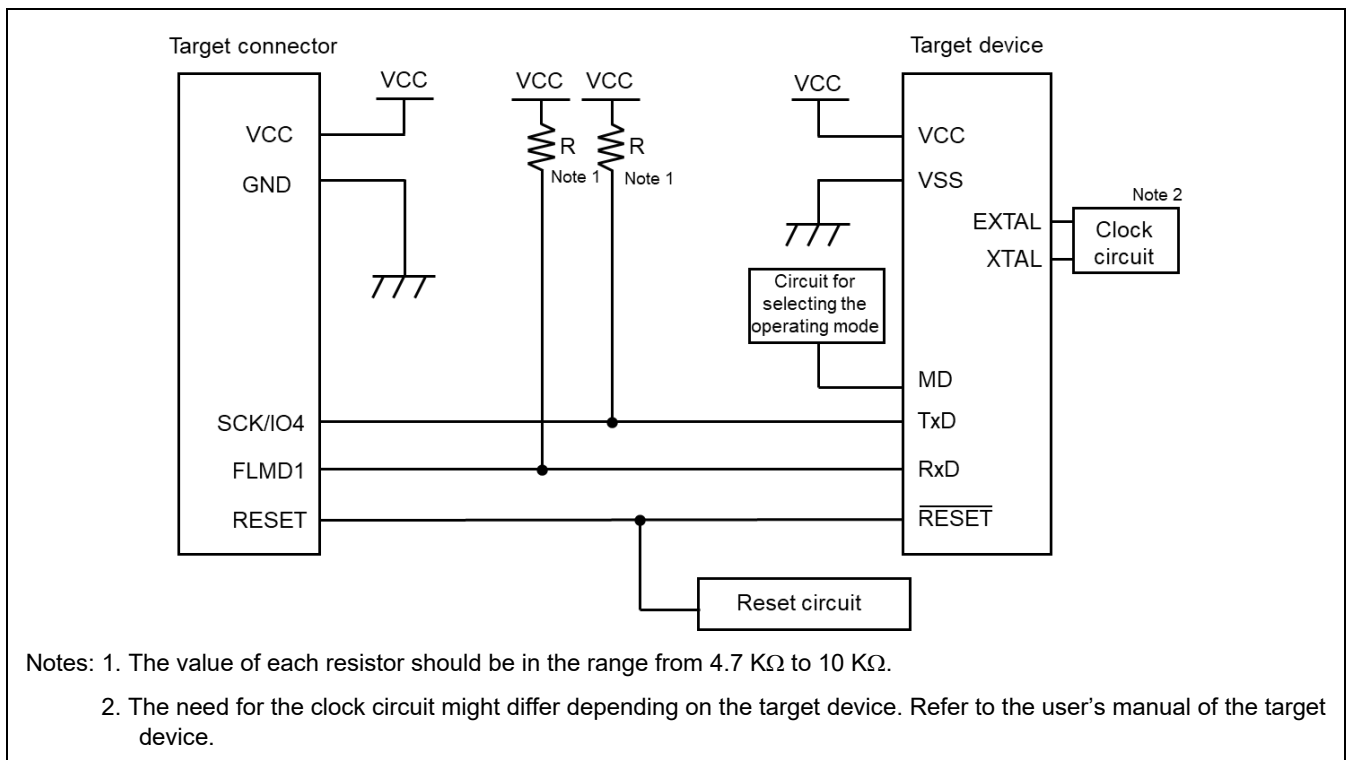
3.12 RE (UART Communications)

The following shows the conversion of each signal when a 14-pin target cable and 20-pin conversion adapter are connected to the 15-pin D-sub connector of the FP6.

Table 3-4 List of Signal Connections for RE Family

Signal Name (FP6)	15-Pin D-sub Male Connector	14-pin 2.54-mm Pitch Multipurpose Female Connector	CoreSight 20-pin Female Connector	RE Signal Name
VCC	8, 9	8	1	VCC
GND	15	2, 12	3, 5, 15, 17, 19	VSS
GND	-	14	9	VSS
TxD2/HS	7	11	8*	MD
SCK/IO4	3	1	4	TxD
FLMD1	6	9	2	RxD
RESET	4	13	10	RESET

Note: Switching pin 8 between use as the MD pin and as the TDI pin during debugging requires a switching circuit.



Notes: 1. The value of each resistor should be in the range from 4.7 KΩ to 10 KΩ.
 2. The need for the clock circuit might differ depending on the target device. Refer to the user's manual of the target device.

Figure 3.12 Example of a Circuit for R7F0E017D (UART Communications)

3.13 78K and V850 (UART Communications)

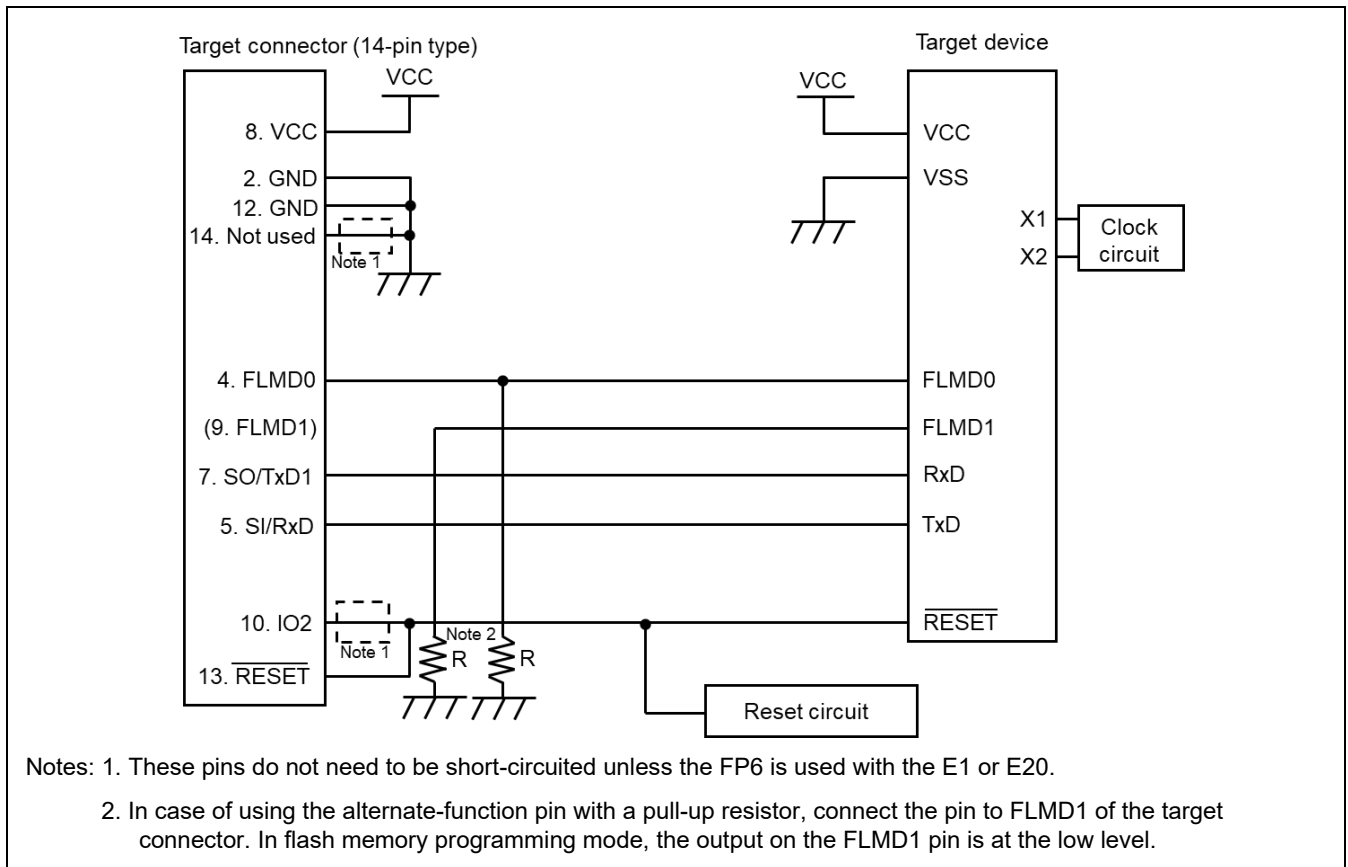


Figure 3.13 Example of a Circuit for 78K and V850 (UART – On-Chip Single-power-supply Flash Memory Microcontroller)

3.14 78K and V850 (CSI Communications)

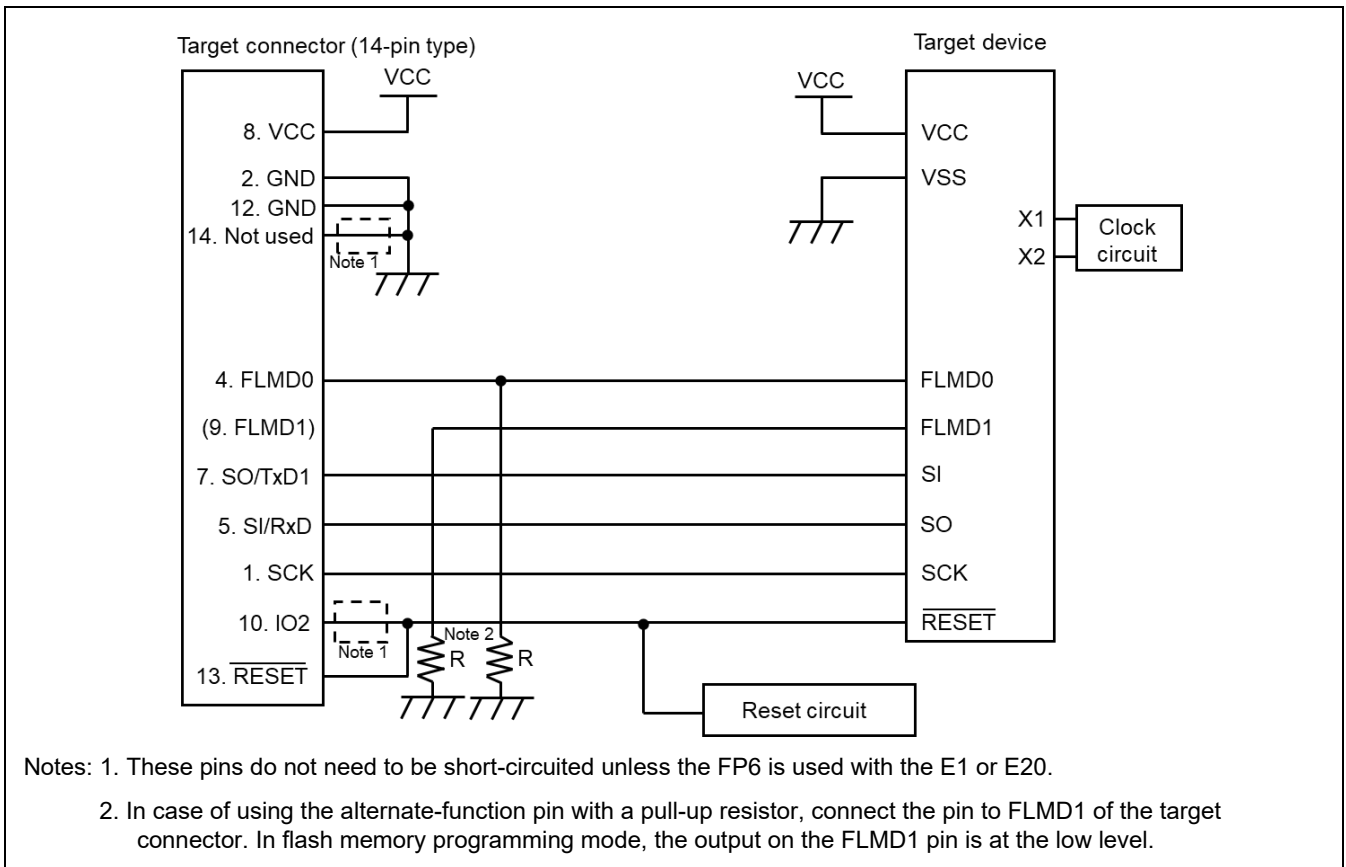


Figure 3.14 Example of a Circuit for 78K and V850 (CSI – On-chip Single-power-supply Flash Memory Microcontroller)

3.15 78K and V850 (CSI-H/S Communications)

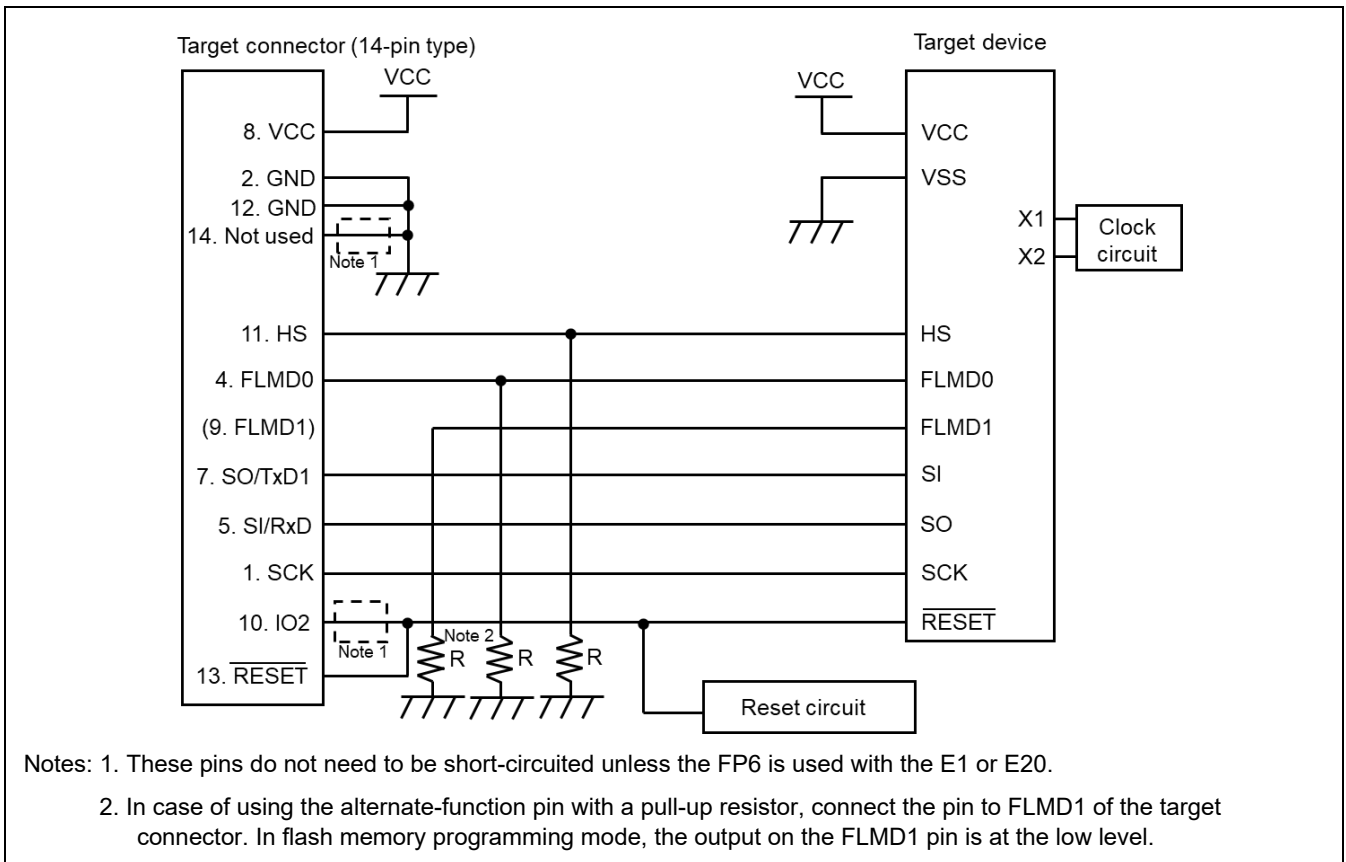


Figure 3.15 Example of a Circuit for 78K and V850 (CSI-H/S – On-chip Single-power-supply Flash Memory Microcontroller)

3.16 78K0S (Single-wire UART Communications)

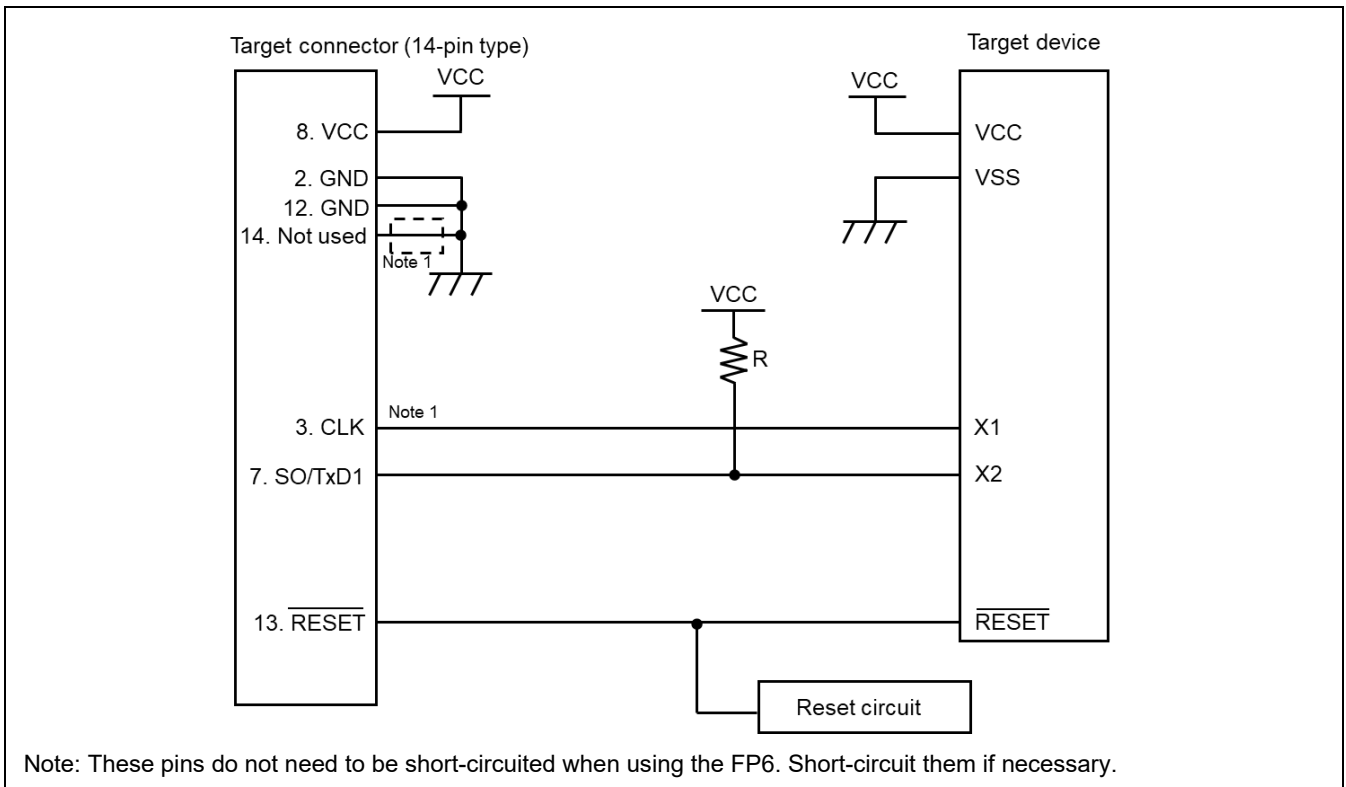


Figure 3.16 Example of a Circuit for 78K0S (Single-wire UART)

3.17 78K0R (Single-wire UART Communications)

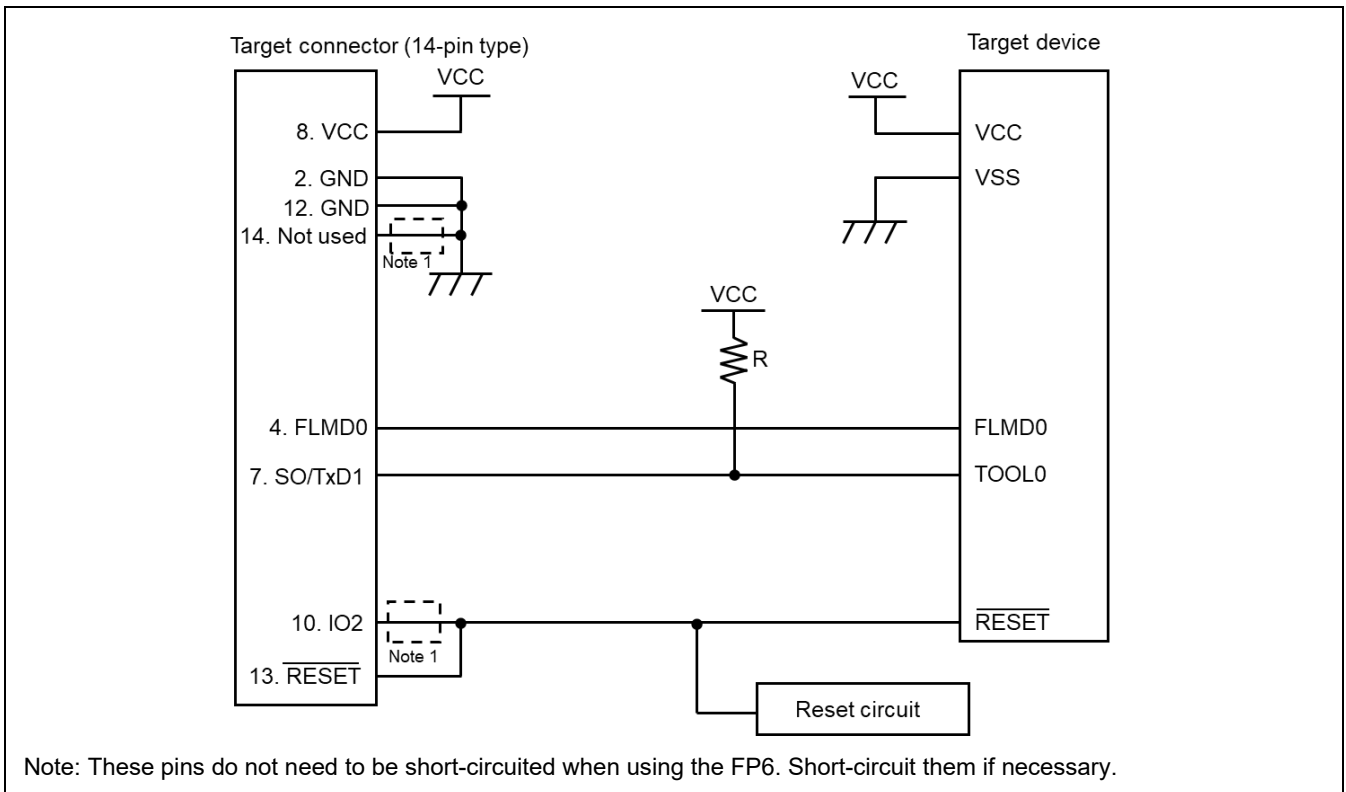


Figure 3.17 Example of a Circuit for 78K0R (Single-wire UART)

3.18 78K0 (TOOLCx and TOOLDx Communications)

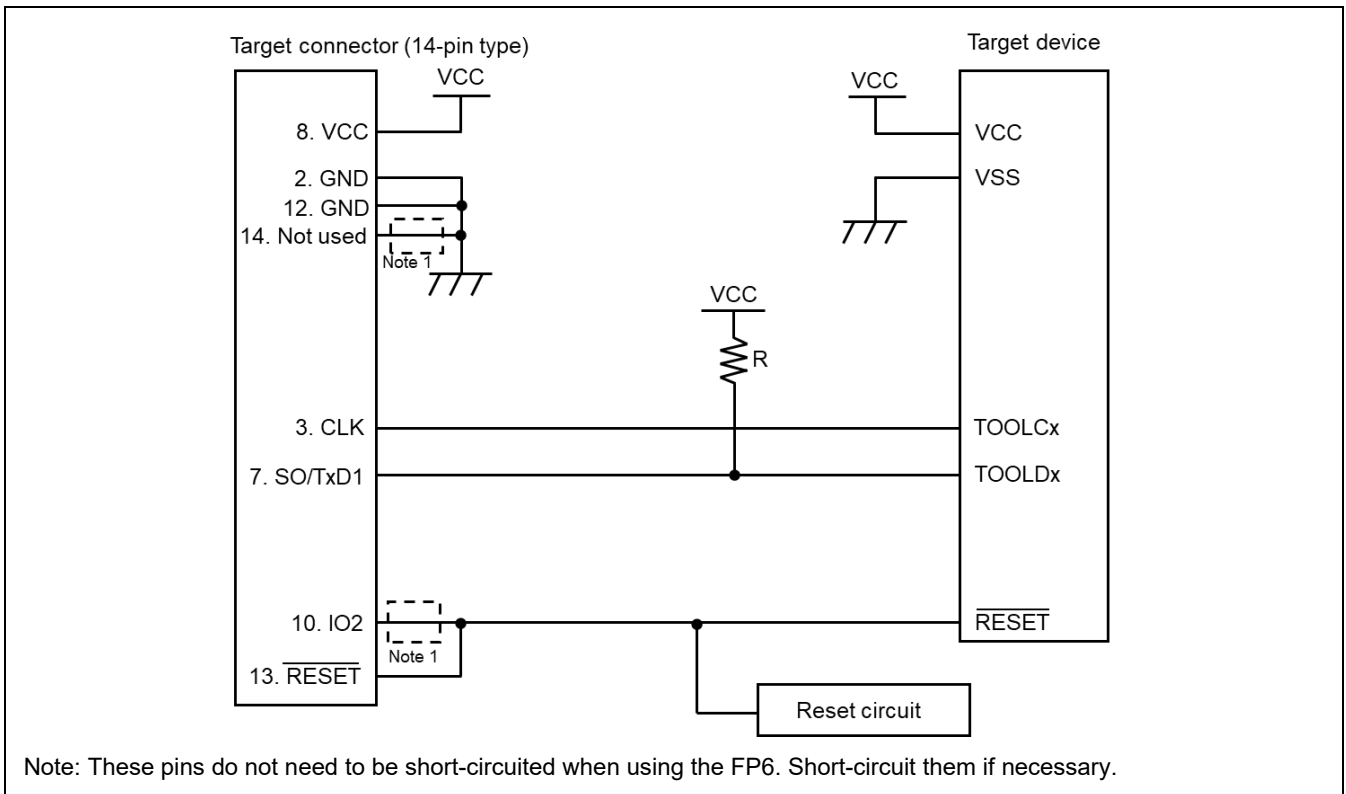


Figure 3.18 Example of a Circuit for 78K0 (TOOLCx and TOOLDx)

3.19 V850E2 (Single-wire UART Communications)

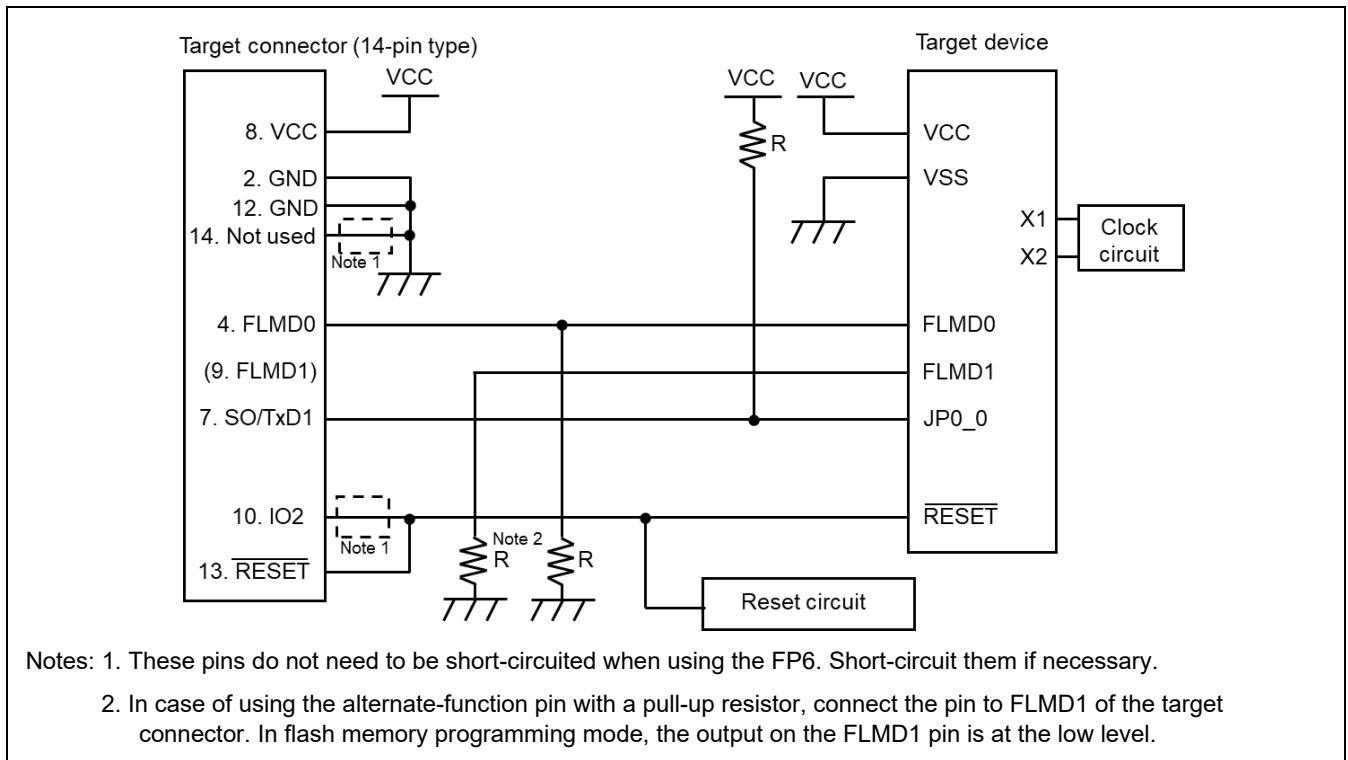


Figure 3.19 Example of a Circuit for V850E2 (Single-wire UART)

3.20 V850E2 (CSI Communications)

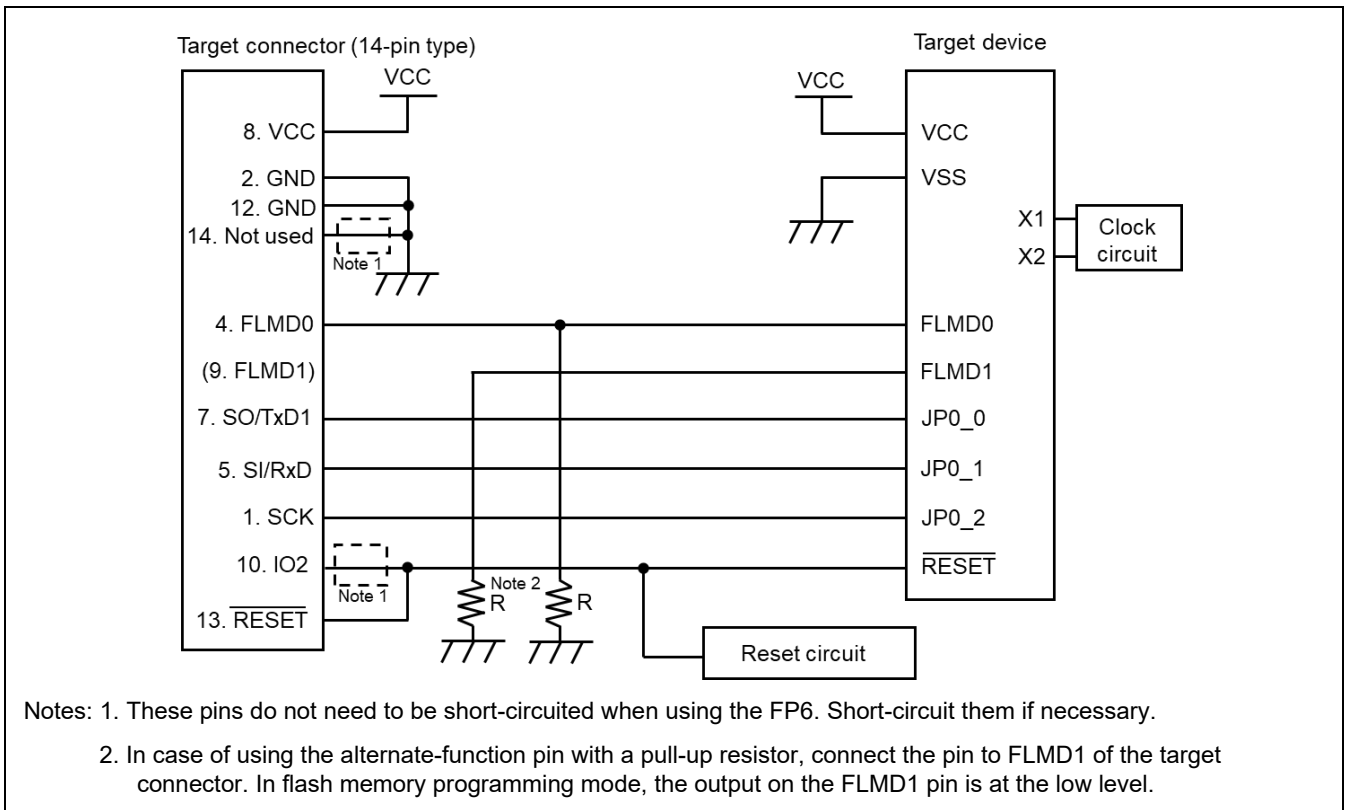


Figure 3.20 Example of a Circuit for V850E2 (CSI)

3.21 R8C

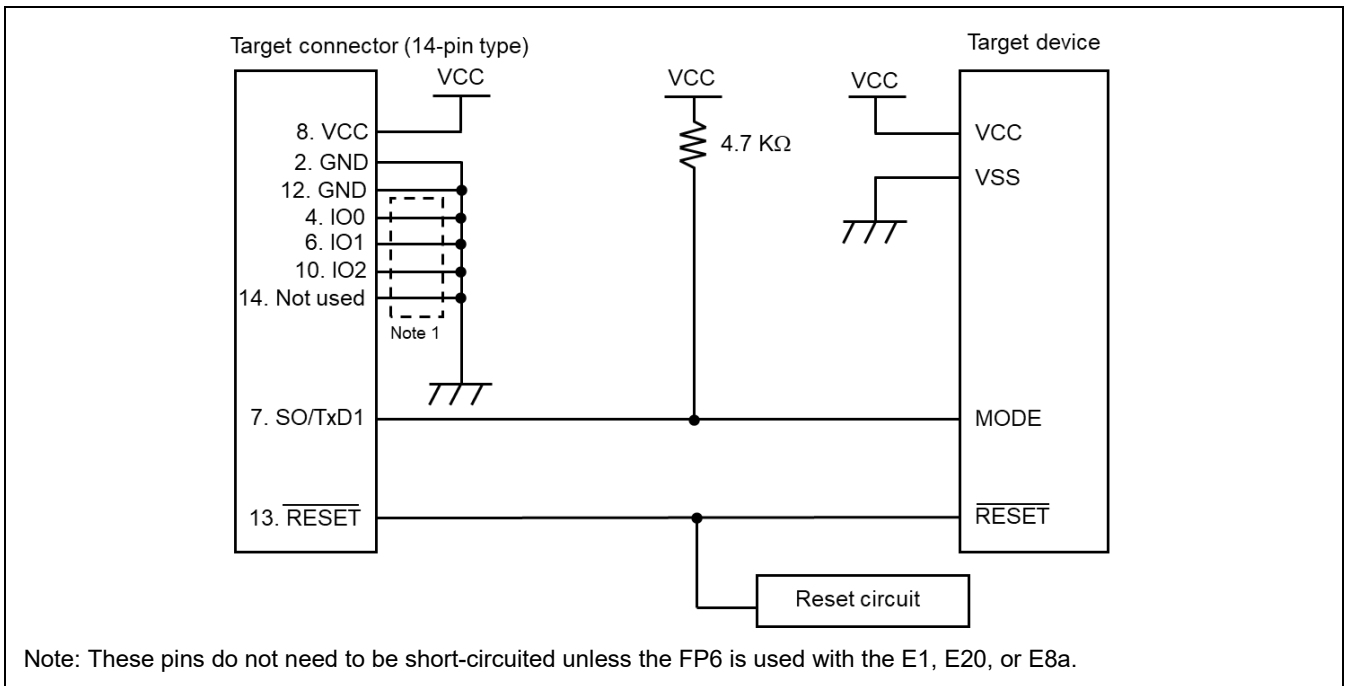


Figure 3.21 Example of a Circuit for R8C Family

3.22 Optional Products for the FP6

We provide useful optional products (separately sold) for use with the FP6.

- 14-pin to 16-pin conversion adapter for the E1 emulator (type name: QB-F14T16-01)
- 20-pin conversion adapter for the FP6 (type name: RTE0T00001FWRB0000R)
- User system interface cable (20-pin to 20-pin) for the E2 emulator (type name: RTE0T00020KCAC0000J)
- User system interface cable (20-pin to 10-pin) for the E2 emulator (type name: RTE0T00020KCAC1000J)

For details on the optional products, refer to the following Web page in the Development Tools section of the Renesas site.

<https://www.renesas.com/pg-fp6>

The optional products are also available for purchase from Naito Densei Machida Mfg. Co., Ltd. Contact the company through the following site for details.

- Web site for Naito Densei Machida Mfg Co., Ltd:

<https://www.ndk-m.co.jp>

4. Connections with Microcontrollers (RFP)

This chapter describes the connections of the RFP with microcontrollers. Refer to the recommended design for the connection of pins for the MCU. The pin names might differ depending on the target device. For details about the actual pin names, refer to the user's manual of each target device.

4.1 Connection with the Use of an Emulator

For details on the connections of the RFP with microcontrollers via an emulator, refer to the additional document for user's manual of the emulator you are using.

4.2 Examples of Recommended Connections with the Use of a COM Port

The following shows examples of recommended connections between the USB-to-serial converter and MCUs with the use of a COM port. The examples are labeled as four types, A, B, C, and D, according to differences in the methods of communications and connections of the reset pins. For the corresponding names and types of MCUs, refer to [List of MCUs Supported by Renesas Flash Programmer V3](#), which is on the Web site. For the names and handling of pins used for writing, refer to the user's manual of the MCU.

Remark: For examples of recommended connections of type D, refer to the [RL78 Debugging Functions Using the Serial Port Application Note](#).

Caution: Although the operation of the examples of circuits has been checked, timing may differ depending on the characteristics of the target system or PC.

4.2.1 Example of a Circuit of Type A (2-wire UART)

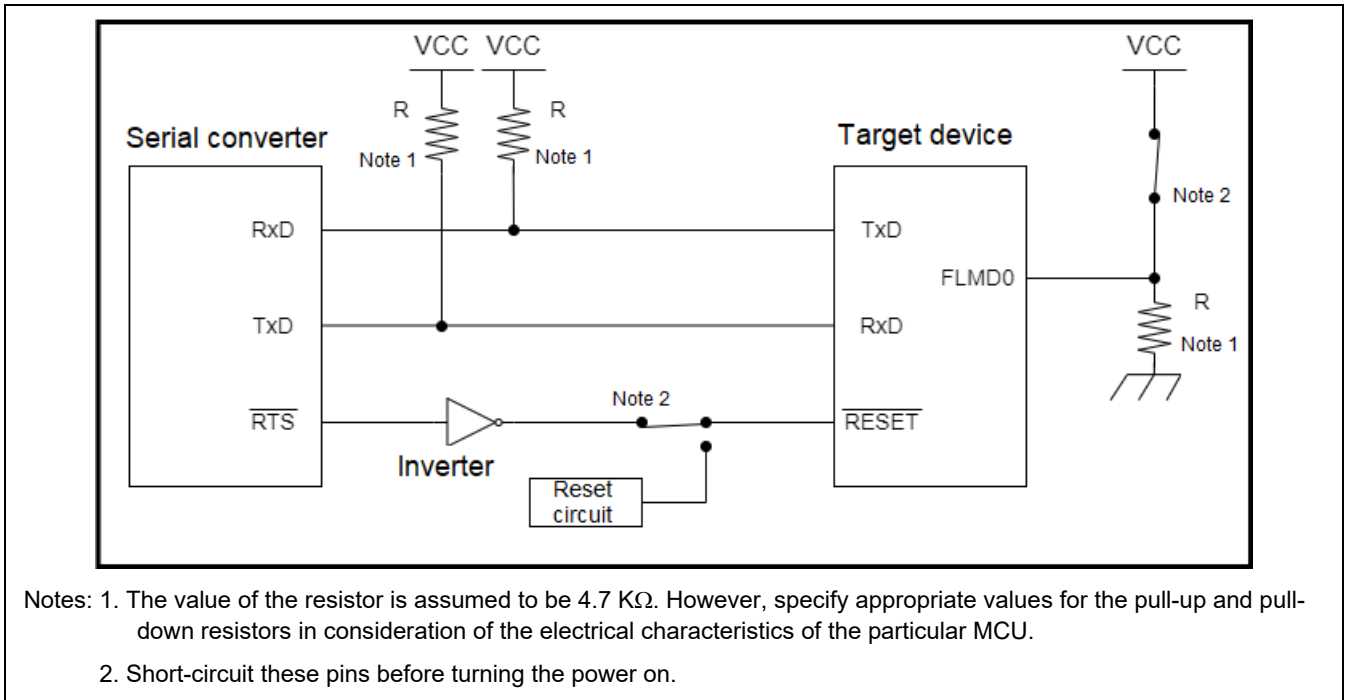


Figure 4.1 Example of a Recommended Circuit when Using a COM Port (Type A)

4.2.2 Example of a Circuit of Type B (1-wire UART)

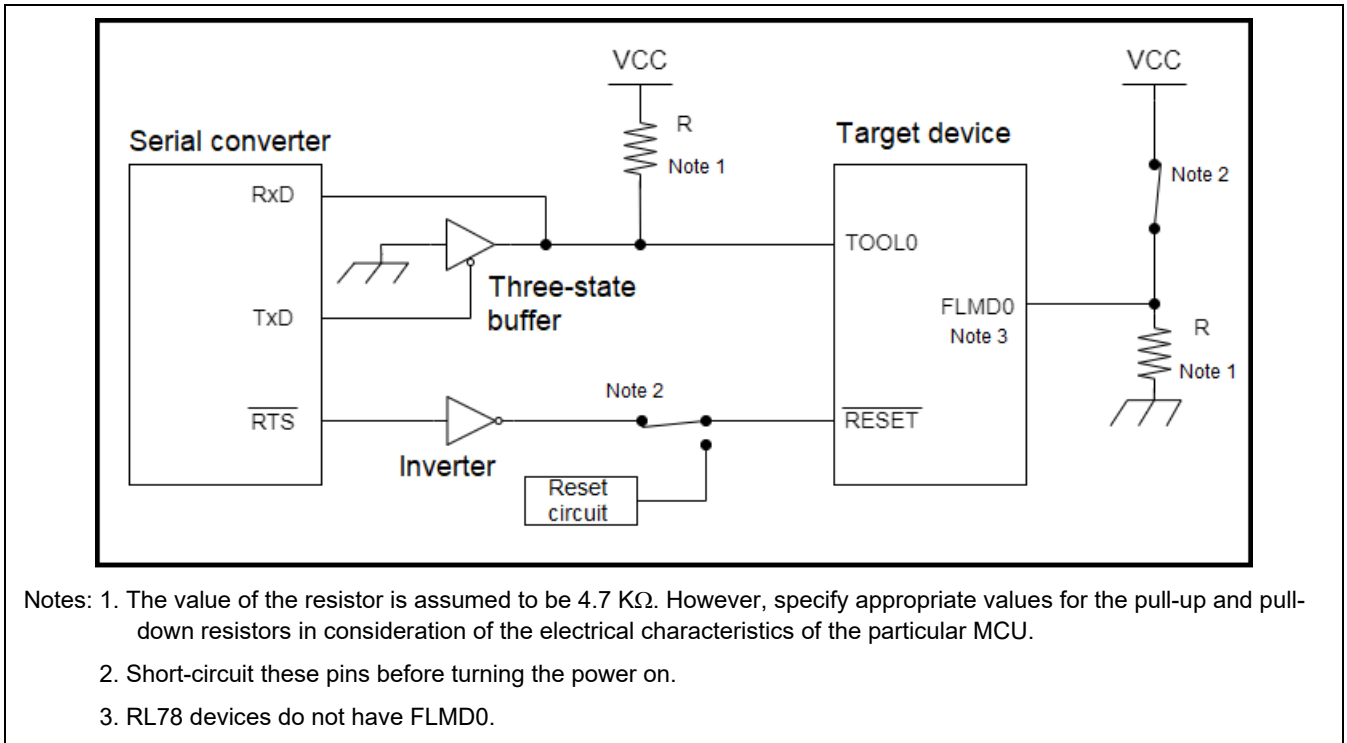


Figure 4.2 Example of a Recommended Circuit when Using a COM Port (Type B)

4.2.3 Example of a Circuit of Type C (2-wire UART)

This example is on the assumption that the circuit is for an RX62T-group MCU.

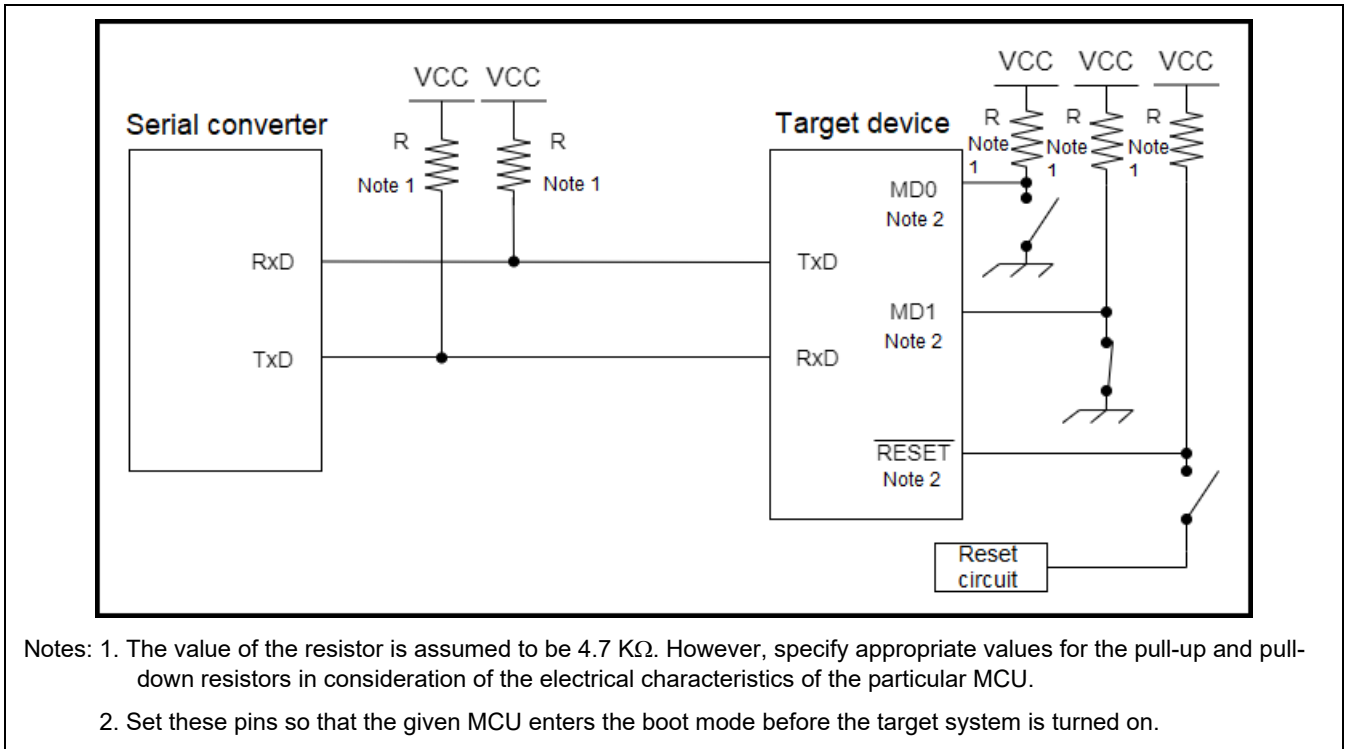


Figure 4.3 Example of a Recommended Circuit when Using a COM Port (Type C)

4.3 Settings for Reset Signals for the RFP

For the reset pins shown in the examples of circuits in section 4.2, Examples of Recommended Connections with the Use of a COM Port, since the reset signals can be set in the software for the RFP, a circuit using an inverter without applying a reset through the RTS signal can be used. For details on the examples of recommended connections for pins other than the RTS pin, refer to the [RL78 Debugging Functions Using the Serial Port Application Note](#).

The following lists the settings for reset signals for the RFP in the examples of recommended connections of each type. For details on the settings for reset signals, refer to the RFP user's manual.

Table 4-1 Settings for Reset Signals for the RFP in Connections of Each Type

	RTS	RTS-Invert	DTR	DTR-Invert
Type A	√	X	X	X
Type B	√	X	X	X
Type C	X	X	X	X
Type D	X	X	√	√

Note: √: Selected, X: Deselected

4.4 Points for Caution

- Compatibility with the host PC or the USB-to-serial converter
 We do not recommend the use of a USB-to-serial converter because it may cause delays in timing and data being lost due to the specifications of the converter. Check the operation of the USB-to-serial converter you are using. If timing is delayed or data are being lost, you may consider using a different USB-to-serial converter.

Remark: Recommended product for use as a USB-to-serial converter: FT232R from FTDI

- Use of the USB-to-serial conversion chip from FTDI
 The settings of the USB-to-serial conversion chip may prevent establishing the connection through a COM port. In such cases, deselect the [Serial Enumerator] checkbox in the [Advanced Settings] dialog box for the target COM port in the Windows device manager.

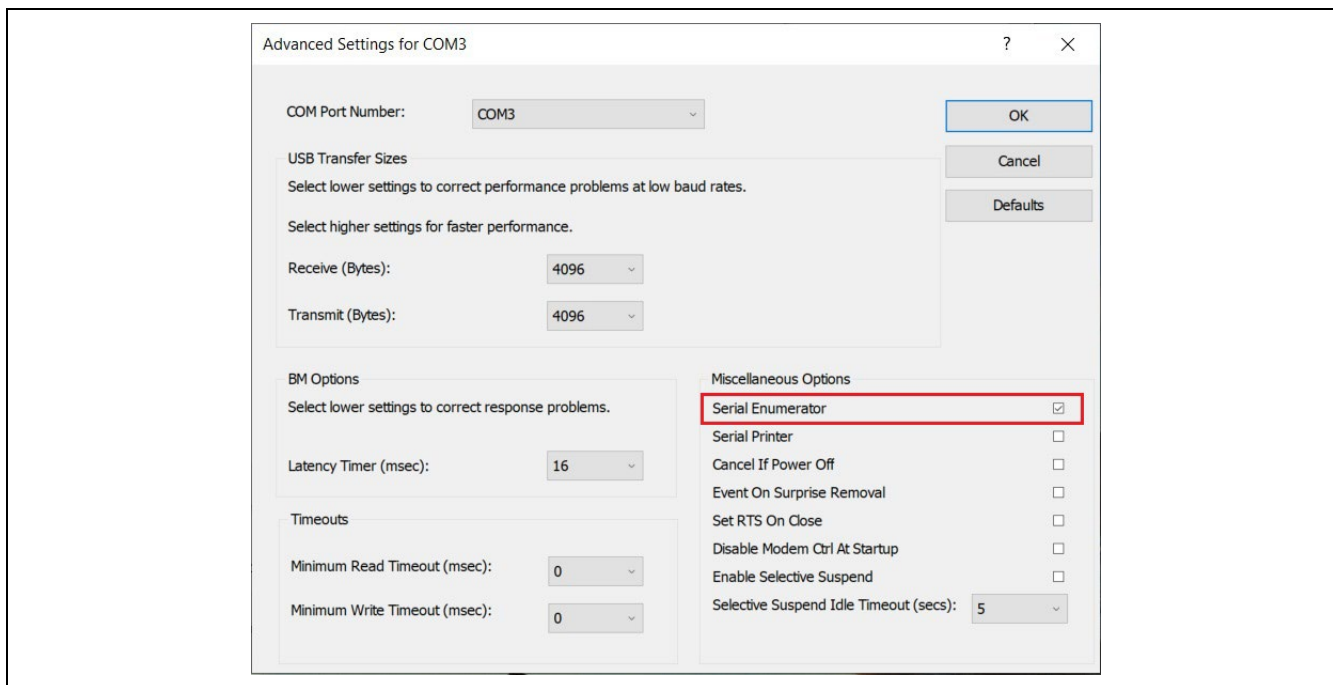


Figure 4.4 Checking the Setting of [Serial Enumerator]

Revision History	PG-FP6, Renesas Flash Programmer Additional Document for User's Manual (Recommended Circuits for Connecting the Flash Programmer)
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Rev.	Date	Description	
		Page	Summary
1.00	Oct.01.22	—	First Edition issued
2.00	Dec.29.22	12	Section 2.5, Connection with the Target System by Using a USB Interface, was added.
3.00	Apr.01.23	13	An example of a circuit for RA (UART communications) was revised but an example of a recommended circuit for Rev. 2.00 is also available.
		14	Section 3.2, RA (SWD Communications), was added.
4.00	Dec.29.23	13,20	RISC-V MCU (2-wire UART Communications) was added.
5.00	Apr.01.24	18	Notes 3 in Figure 3.6, Example of a Circuit for RX Family (FINE), were modified.

PG-FP6, Renesas Flash Programmer
Additional Document for User's Manual (Recommended
Circuits for Connecting the Flash Programmer)

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Additional Document for User's Manual
(Recommended Circuits for Connecting
the Flash Programmer)

