Supplement 4508/4509 Group Edition

. General Description

This supplement contains information on matters that require attention for reading and writing data to Renesas Technology Corp. 4508/4509 Group MCU with built-in Q_2ROM

. Operating Environment

Please use the MCU mentioned in this supplement in the environment as follows.

EFP-I
Monitor Version   Ver. 4.18.15 or later
EFP-1M
 Monitor Version   Ver. 4.A8.15 or later
WinEfpRE Control Software
 WinEfpRE Version   Ver. 1.30.05 or later

EFP-S2 or EFP-S2V
Monitor Version   Ver. 1.00.54 or later
EFP-S2 or S2V Control Software
WinEFP2 Version   Ver. 1.02.23b or later

. Pin Connection

Table 3.1 lists the connection of target connection cable pin of the 4508/4509 Group.

Table 3.1: List of Target Connection Pin

Connection Pin No. (EF1SRP-05U side)	Target End Wire Color	Signal	3-Wire Cable Pin No.	MCU Connection Pin in Serial I/O Mode	I/O (Writer side)
	Orange/red dotted 1	GND	NC	Connects to VSS pin *2	
	Orange/black dotted 1				
	Gray/red dotted 1	T_VPP		Connects to CNVSS pin	Output
	Gray/black dotted 1	T_VDD		Connects to VDD pin *1	I/O
	White/black dotted 1	T_PGM/OE/MD		Connects to D3/AIN5 pin	Output
	Yellow/red dotted 1	T_SCLK		P21/AIN1	Output
	Yellow/black dotted 1	T_TXD		Connects to P20/AIN0 pin *3	Output
	Pink/red dotted 1	T_RXD			Input
	Pink/black dotted 1	T_BUSY		Unconnected	NC
	Orange/black dotted 2	T_RESET		Connects to RESET pin *4	Output
	Gray/red dotted 2	GND		Connects to VSS pin *2	
	Gray/black dotted 2				

Supplement of Pin Treatment:

*1 Power Supply Connection

In case user consumption current is high (20mA or more except MCU), please provide VDD power from user target side. VDD power should not be supplied from EFP-I.

Moreover VDD power supply range during serial EPROM mode is to be 2.7V to 4.7V.

*2 GND Connection

The signal GND has 4 pins (No.1, 2, 15 and 16) of EF1SRP-05U side connector. When connecting to the target board, you can connect with using only 1 pin, but connecting 2 or more pins is recommended.

*3 SDA Connection

Please pull up with 1k resistance during serial I/O mode.

*4 RESET Connection

RESET cancel in MCU is not carried out during using a writer. To execute user program, you should therefore unplug the user target connection to the writer. As for RESET output at writer side, see Note 2 in the page 3.

(1) Fig3.1. shows an example of target MCU peripheral circuit when using 4508/4509 group.
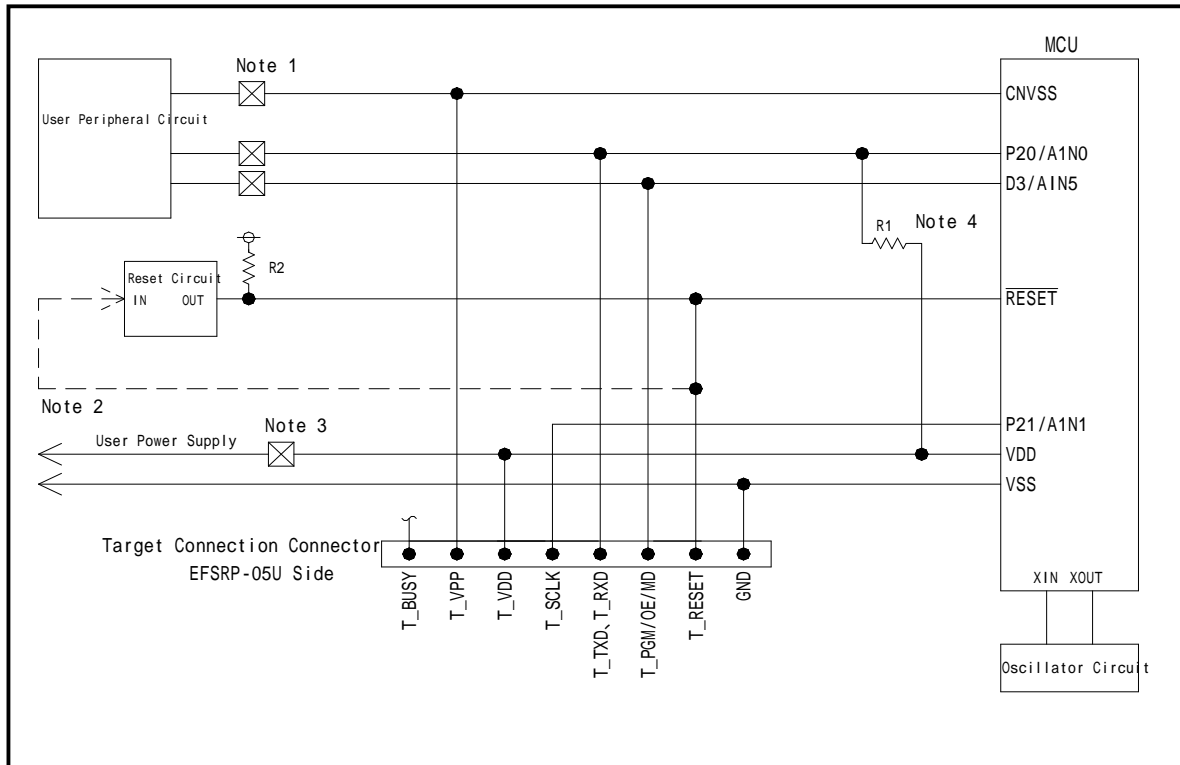

Fig .1: Target MCU Peripheral Circuit Example

Notes:
1: If the user peripheral circuit is an output circuit, you should disconnect by jumper
   to avoid output collision when executing serial I/O mode.

2: EFP-I side RESET output is an open collector, therefore connect to the RESET pin
   with 1k pull-up processing if RESET circuit is open collector output. If the RESET
   circuit is CMOS output, disconnect by jumper as described in Notes 1, or connect the EFP-I
   side T_RESET signal to RESET circuit input.

3: In case user consumption current is high (20mA or more except MCU), user power supply should
   be separated. Please connect so that EFP-I side T_VDD is to be supplied to MCU

4: Please pull up with 1k resistance during serial I/O mode.

. **Relation Between VDD Voltage and Clock Timing**
Transfer rate of clock synchronization type communication for T_SCLK signal needs to be changed according to the level of VDD voltage supplied to target MCU. In case VDD power is supplied from writer, baud rate should be set automatically. On the other hand, the baud rate should be set manually in case VDD power is supplied from user target.
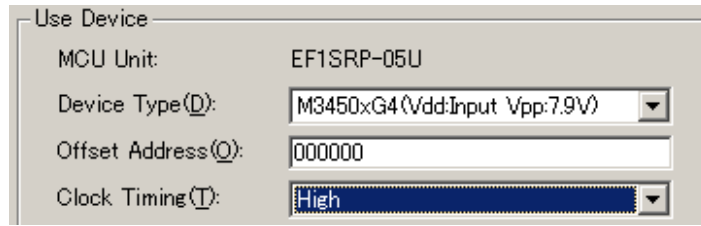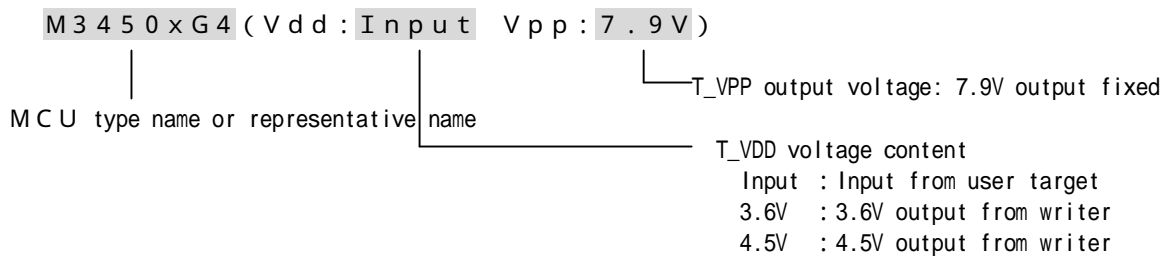
```
┌─ Use Device ──────────────────────────────────┐
│  MCU Unit:          EF1SRP-05U                 │
│                                                 │
│  Device Type(D):    M3450xG4(Vdd:Input Vpp:7.9V) ▼│
│                                                 │
│  Offset Address(O): 000000                      │
│                                                 │
│  Clock Timing(T):   High                      ▼ │
└─────────────────────────────────────────────────┘
```
Fig. 4.1: Clock Timing Setting Screen

< How to Switch T_VDD Power Supply >
VDD I/O can be switched with the setting of Device Type in Environment Setting dialog.

```
  ┌──────┐      ┌──────┐      ┌──────┐
  │      │      │      │      │      │
       │              │              └──── T_VPP output voltage: 7.9V output fixed
  type name or representative name
                      └──── T_VDD voltage content
                            Input    Input from user target
                            3.6V     3.6V output from writer
                            4.5V     4.5V output from writer
```

< Switch Condition and Setting Method of T_SCLK Baud Rate >
Please switch the setting of Clock Timing in Environment Setting dialog, according to voltage value of T_VDD supplied as MCU operation power.

  2.7V to 4.7V: Clock transfer rate should be 500kbps or below. Clock Timing setting should be Low.
  4.0V to 4.7V: Clock transfer rate should be 1Mbps or below. Clock Timing setting should be High.

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. **Read Protect Function**

4508/4509 group MCU is equipped with a read protect function to prevent unauthorized data read, and thereby the protect function can be set on writer side. The below shows how to set the read protect function.

<How to Set Read Protect>
The command can be executed after a box of "Writing of a Protection bit (W)" in the execution dialog of Program, Verify and Device Micro Command is checked
Only when each command is terminated normally, the read function is set to take effect. (Refer to Fig . 1.)

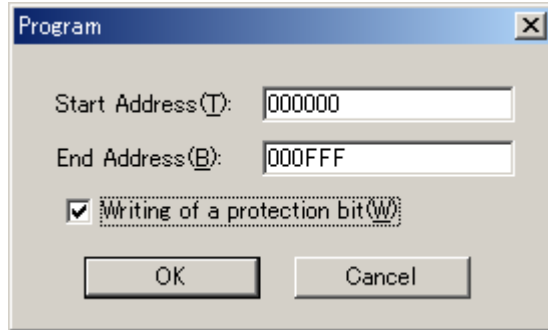

Fig . 1: Read Protect Function Setting Screen

<MCU After Setting Read Protect>
If read and program are conducted for MCU whose read protect function gets valid, read protect error occurs and the command is suspended.
* There is no way to cancel out the read protect function. Setting of read protect function should require attention.

. **Writing Adapter**

In order for MCU single writing, writing adapter for serial I/O mode is on sale.
Fig . 1 lists products of writing adapter.

Fig . 1: Writing Adapters for 4508/4509 Group Serial I/O mode

Product Type	Corresponding Package	Corresponding MCU
M54238-20F	20P2Q-A	M34508G4FP
M54502-24F	24P2Q-A	M34509G4FP

* For price, etc. of each writing adapter, please contact our distributor or us.