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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

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7546/7547 Group, 7542 Group

Differences between 7546/7547 Group and 7542 Group

1. Differences between 7546/7547 Group / 7542 Group

	7546 Group	7547 Group	7542 Group	
			Mask ROM version	FLASH ROM version
Applicable Product	M37546G2GP/SP/HP M37546G4GP/SP/HP M37546G2-XXXGP/SP/HP M37546G4-XXXGP/SP/HP	M37547G2FP M37547G4FP M37547G2-XXXFP M37547G4-XXXFP	M37542M2-XXXGP /SP/HP/FP M37542M4-XXXGP /SP/HP/FP	M37542F8GP/SP/FP/ HP * HP: ES only M37542F4GP/SP/FP
Package	PLQP0032GB-A (Previous name 32P6U-A): 32-pin LQFP PRDP0032BA-A (Previous name 32P4B) : 32-pin SDIP PWQN0036KA-A (Previous name 36PJW-A) : 36-pin WQFN	PRSP0036GA-A (Previous name 36P2R-A) : 36-pin SSOP	PLQP0032GB-A (Previous name 32P6U-A) : 32-pin LQFP PRSP0036GA-A (Previous name 36P2R-A) : 36-pin SSOP PRDP0032BA-A (Previous name 32P4B) : 32-pin SDIP PWQN0036KA-A (Previous name 36PJW-A): 36-pin WQFN	
ROM Type: ROM/RAM Size (bytes)	QzROM: 8K/384, 16K/512		MASK: 8K/384,16K/512	FLASH: 32K/1024,16K/1024
Programmable I/O Port	25	29	29 (36-pin version), 25 (32-pin version)	
A/D Converter	10 bits X 6ch	10 bits X 8ch	10 bits X 8ch (36-pin version), 10 bits X 6ch (32-pin version)	
Power-on Reset	Built-in type		Not built-in type	
Low Voltage Detection Circuit	Built-in type		Not built-in type	
FLASH ROM ID code area	Not available.		Not available.	Addresses FFD4$_{16}$ to FFDB$_{16}$
Function Set ROM Area	Addresses FFD4$_{16}$ to FFDB$_{16}$		Not available.	
Function Set ROM Data	Built-in type Refer to Page 3.		Not built-in type	
Oscillation Mode Selection	Can be fixed by program.		Selected by program	
Stop of On-chip Oscillator disabled	Available		Not available.	
Selection of STP Instruction function	Can be fixed after reset.		Selected by program	
Watchdog Timer H Count Source	Can be fixed after reset.		Selected by program	
Watchdog Timer Source Clock	Can be selected.		Source clock is fixed.	
Start of Watchdog Timer	Can start automatically after reset by program.		Starts by program	
Power Source Voltage	1.8 V to 5.5V		2.2 V to 5.5 V	2.7 V to 5.5 V

- The 7546,7547 Group is pin-compatible with the 7542 Group.
  The electrical characteristics of the 7546, 7547 Group is different from that of the 7542 Group.

2. Function Set ROM Area

Function Set ROM Area

As one of new function, the function set ROM is added to the 7546/7547 Group.

This function is not equipped with the 7542 Group.

The function set ROM consists of the followings:

- Renesas shipment test area where random data are written in when shipment test is performed by Renesas.
- Function set ROM data to set the start of watchdog timer, disable of STP instruction, or select of clock to be active immediately after releasing reset,
- ROM code protect to disable the reading of the built-in PROM area by ROM writer,

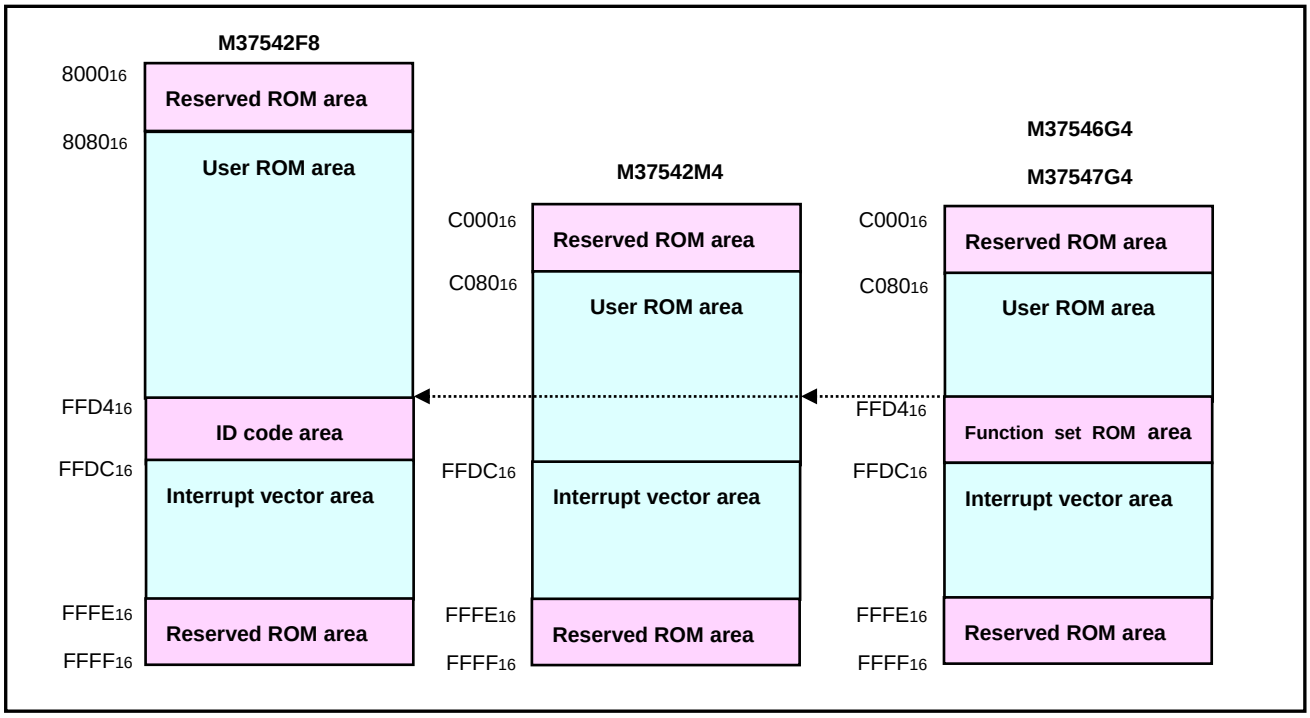


Fig.2.1 Memory map

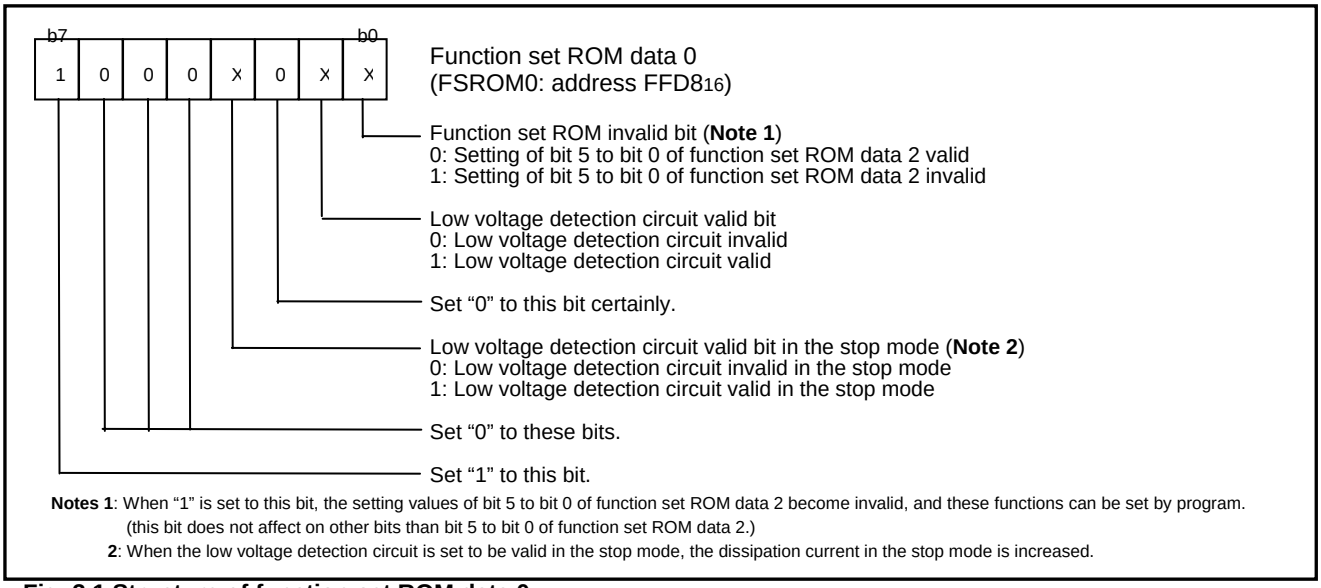
Address	
FFD4₁₆	Renesas shipment test area
FFD5₁₆	Renesas shipment test area
FFD6₁₆	Renesas shipment test area
FFD7₁₆	Renesas shipment test area
FFD8₁₆	Function Set ROM Data 0
FFD9₁₆	Function Set ROM Data 1
FFDA₁₆	Function Set ROM Data 2
FFDB₁₆	ROM Code Protect

Fig.2.2 Assignment of Function set ROM area

3. Function Set ROM Data 0, 1, 2

The function set ROM data 0 to 2 (addresses FFD8$_{16}$ to FFDA$_{16}$) are used to set the peripheral function.

Data set to these areas become valid after releasing reset. As for details, refer to the Data Sheet.



Notes 1: When "1" is set to this bit, the setting values of bit 5 to bit 0 of function set ROM data 2 become invalid, and these functions can be set by program. (this bit does not affect on other bits than bit 5 to bit 0 of function set ROM data 2.)

2: When the low voltage detection circuit is set to be valid in the stop mode, the dissipation current in the stop mode is increased.

Fig. 3.1 Structure of function set ROM data 0

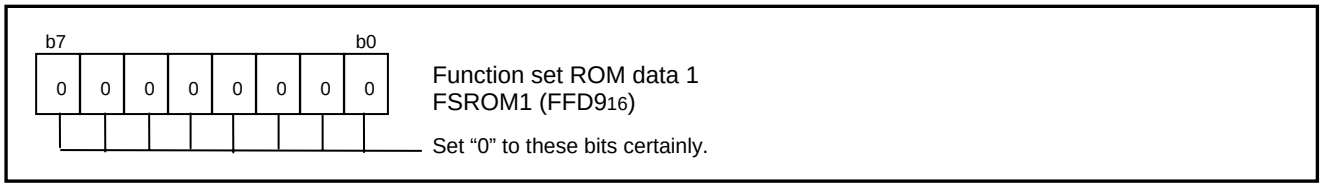
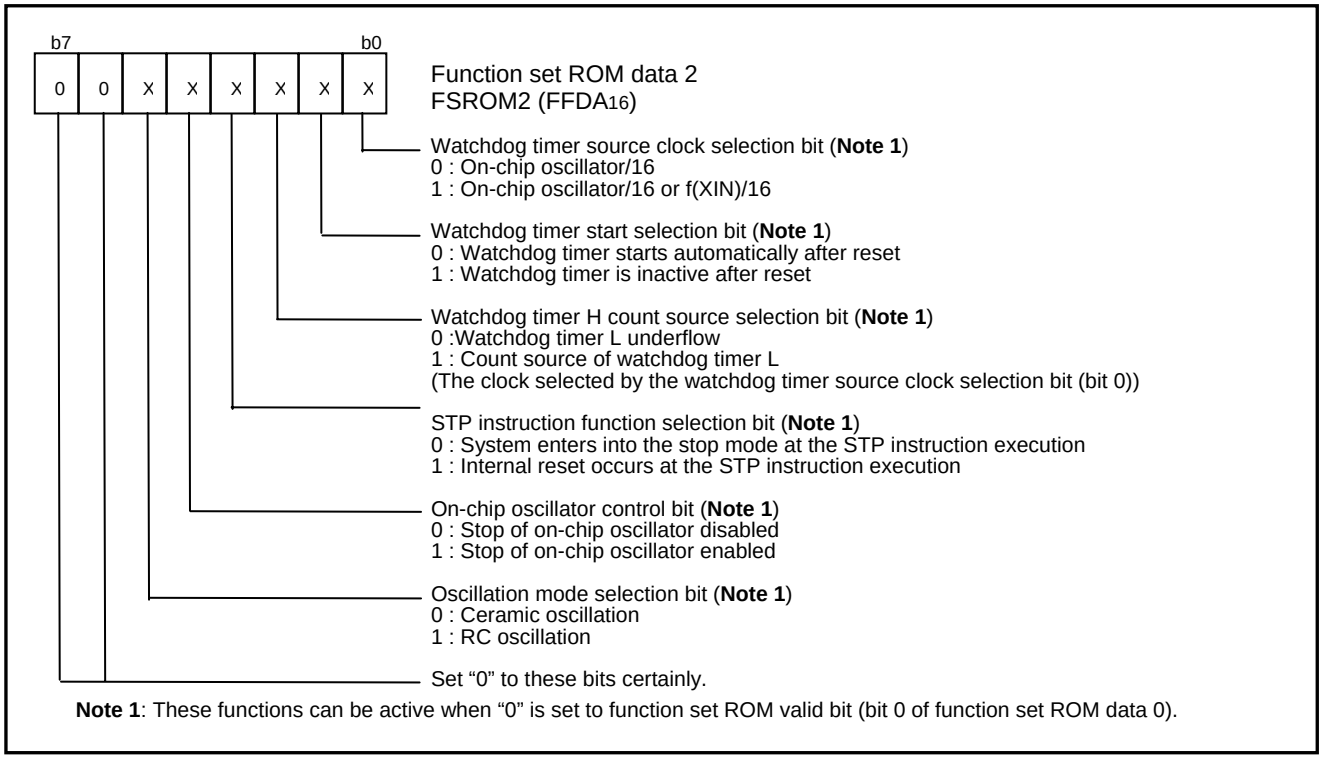


Fig. 3.2 Structure of function set ROM data 1



Note 1: These functions can be active when "0" is set to function set ROM valid bit (bit 0 of function set ROM data 0).

Fig. 3.3 Structure of function set ROM data 2

4. CPU Mode Register

7546/7547 Group is pin-compatible with the 7542 Group.
The power-on reset circuit, the low voltage detection circuit, and function set ROM data area are added to the 7546/7547 Group.

Function set ROM area (addresses FFD4$_{16}$ to FFDB$_{16}$) of 7546/7547 Group is the same area as the ID code area of the FLASH ROM version of 7542 Group.
This area overlaps with the user ROM area of the mask ROM version.

The random data are written to the Renesas shipment test areas (addresses FFD4$_{16}$ to address FFD7$_{16}$). Do not rewrite the data of these areas.
When the checksum is included in the user program, avoid assigning it to these areas.

Set the values matched to the system to function set ROM data 0 to 2 regardless of use/unused of an additional function. If this setting is not performed, program error may occur because this area is identified as the reserved area of ROM.
Set the following value to make it to the same function as 7542 Group.
FSROM0: 81$_{16}$, FSROM1: 00$_{16}$, FSROM2: 00$_{16}$
Setting of the function set ROM data 0 to 2 affects the CPU mode register and the watchdog timer register. As for details, refer to the Data Sheet.

Although the 7546/7547 group has been considered compatibility and designed for characteristics, actual values such as operation margin, A/D conversion accuracy, noise immunity, and noise radiation in electrical characteristics depending on the differences in the manufacturing processes may be different.
Perform sufficient evaluations every individual product.
Contact an oscillator manufacturer. Select an oscillator and oscillation circuit constants to obtain the stabilized operation clock on the user system and its condition for mass-production since oscillation circuit constants of X_{IN}-X_{OUT} are different every product.

5. Reference

Data Sheet
- 7546 Group
- 7547 Group
- 7542 Group

Technical News/Technical Update

Before using this manual, please visit our website to verify that this is the most updated document available.

6. Website and Support

Renesas Technology Corporation Semiconductor Home Page
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REVISION HISTORY	Differences between 7546/7547 Group and 7542 Group

Rev.	Date	Description	
		Page	Summary
1.00	Oct.01.05	—	First edition issued

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