8-bit MICROCOMPUTER 38000 Series

- Differences Between The 3803L Group/3803H Group/3803 Group -

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REJ99B0048-0401

3803L/3803H/3803 Groups Products

3803L Group Part Number		ROM size	RAM size
Mask ROM ver.	**M38039MFL-XXXSP/HP/KP/WG** (*1)	60 K	2048
Flash Memory ver.	**M38039FFLSP/HP/KP/WG** (*1)	60 K	

*1: 3803L features
- Reduced current consumption in 32 kHz(low-speed) wait mode (Flash memory version)
- Reduced EMI (unwanted radiation) noise level

3803 Group Part Number		ROM size	RAM size
Mask ROM ver.	M38034M4-XXXSP/FP/HP (*2)	16 K	640
	M38037M6-XXXSP/FP/HP (*2)	24 K	1024
	M38037M8-XXXSP/FP/HP (*2)	32 K	
	M38039MC-XXXSP/FP/HP (*2)	48 K	2048
	M38039MF-XXXSP/FP/HP (*2)	60 K	
Flash Memory ver.	M38039FFSP/FP/HP (*2)	60 K	

3803H Group Part Number		ROM size	RAM size
QzROM ver.	**M38039G4H-XXXHP/KP**	16 K	2048
	M38039G6H-XXXHP/KP	24 K	
	M38039G8H-XXXHP/KP	32 K	
	M38039GCH-XXXHP/KP/WG	48 K	
	M38039G4HSP/HP/KP	16 K	
	M38039G6HSP/HP/KP	24 K	
	M38039G8HSP/HP/KP	32 K	
	M38039GCHSP/HP/KP/WG	48 K	
Mask ROM ver.	M38034M4H-XXXSP/FP/HP/KP (*2)	16 K	640
	M38037M6H-XXXSP/FP/HP/KP (*2)	24 K	1024
	M38037M8H-XXXSP/FP/HP/KP (*2)	32 K	
	M38039MCH-XXXSP/FP/HP/KP (*2)	48 K	2048
	M38039MFH-XXXSP/FP/HP/KP/WG (*2)	60 K	
Flash Memory ver.	M38039FFHSP/FP/HP/KP/WG (*2)	60 K	2048

*2: Recommended to replace. Please refer to page 22.

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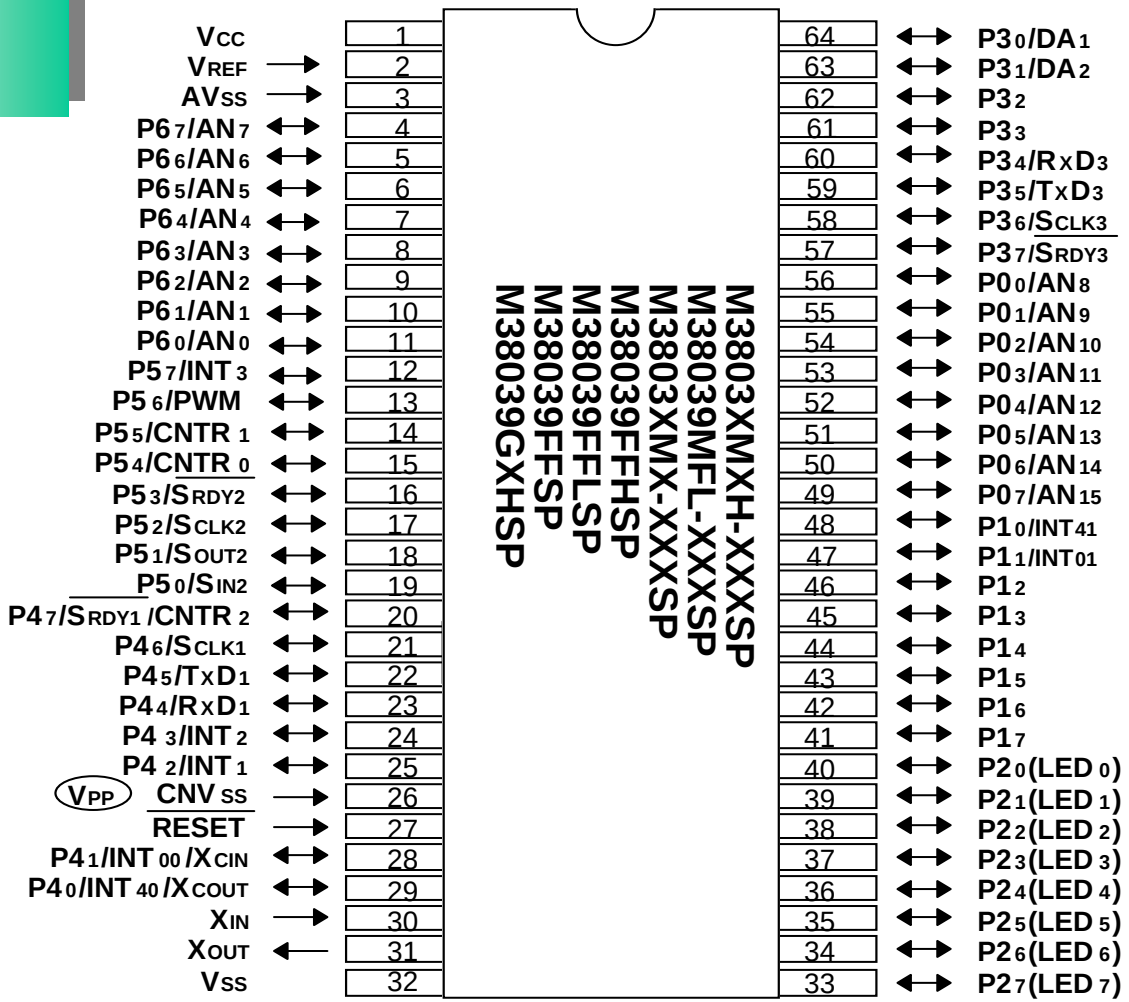
3803L/3803H/3803 Groups Pin Configuration (SP)

Completely Pin Compatible



Outline SP: PRDP0064BA-A (64P4B) (1.78 mm pitch)

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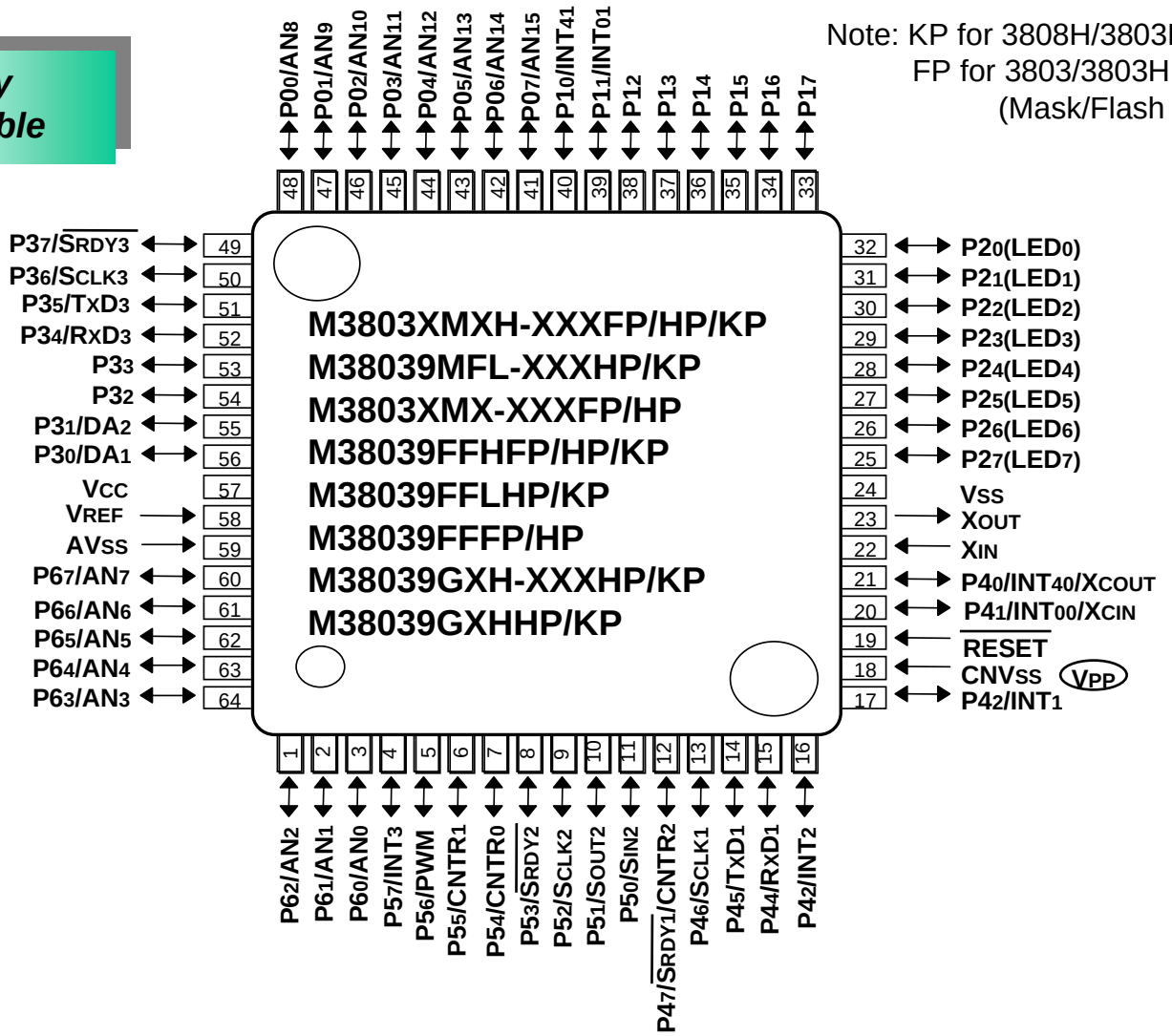
3803L/3803H/3803 Groups Pin Configuration (FP/HP/KP)

Completely Pin Compatible

Note: KP for 3808H/3803L Groups only.
FP for 3803/3803H Groups
(Mask/Flash memory versions) only.



Outline KP: PLQP0064GA-A (64P6U-A) (0.8 mm pitch, 14 mm square, 1.7 mm mounting height)
FP: PRQP0064GA-A (64P6N-A) (0.8 mm pitch, 14 mm square, 3.05 mm mounting height)
HP: PLQP0064KB-A (64P6Q-A) (0.5 mm pitch, 10 mm square, 1.7 mm mounting height)

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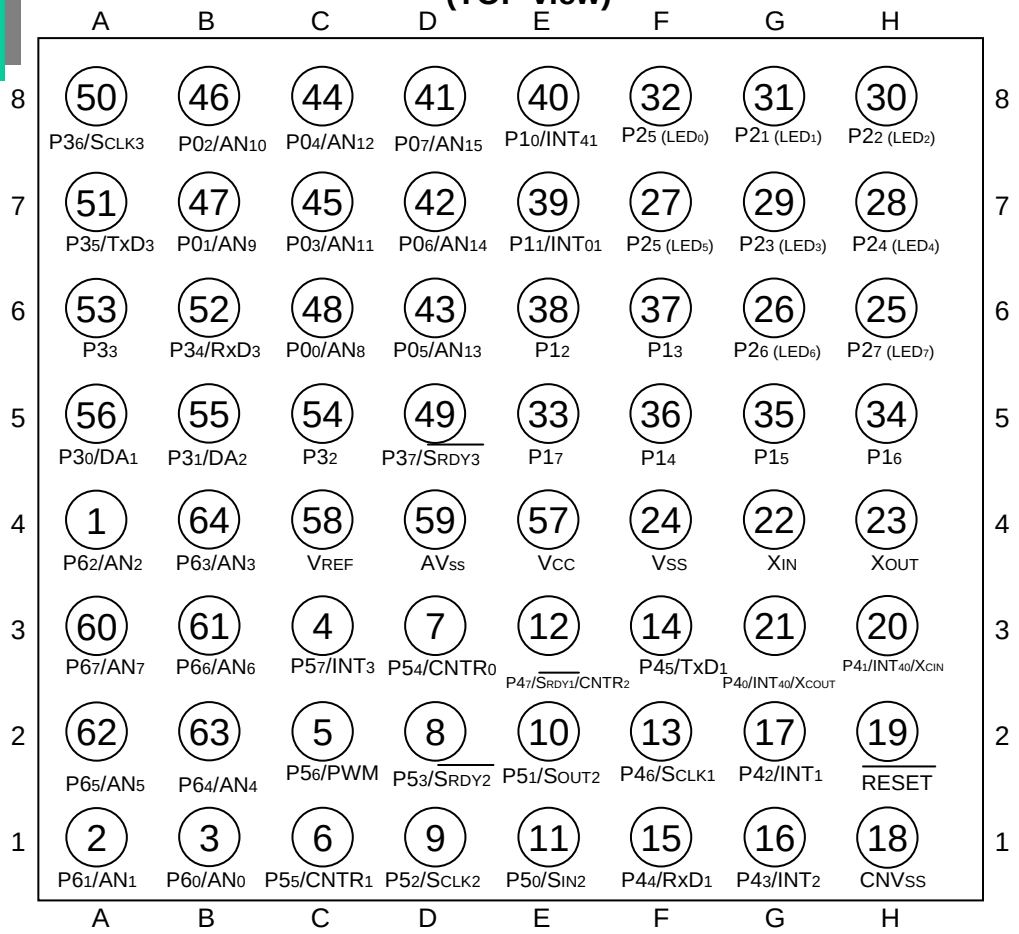
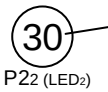
3803L/3803H Groups Pin Configuration (WG)

Completely Pin Compatible

(TOP view)





The pin number corresponds to the flat package.

Package top view

M38039GCH
-XXXWG
M38039GCHWG
M38039MFH
-XXXWG
M38039MFL
-XXXWG
M38039FFHWG
M38039FFLWG

Outline WG: PTLG0064JA-A (64F0G) (6 mm square FLGA package, 1.05 mm height)

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Differences Between 3803L/3803H/3803 Groups (1)

	3803L Group		3803H Group			3803 Group	
	Mask ROM ver.	**Flash Memory ver.**	**Mask ROM ver.**	**Flash Memory ver.**	**QzROM ver.**	**Mask ROM ver.**	**Flash Memory ver.**
Program Memory	Mask ROM	Flash memory	Mask ROM	Flash memory	QzROM	Mask ROM	Flash memory
Program Memory /RAM size	60K/2K	60K/2K	16K/640, 24K/1K, 32K/1K, 48K/2K, 60K/2K	60K/2K	16K/2K, 24K/2K, 32K/2K, 48K/2K	16K/640, 24K/1K, 32K/1K, 48K/2K, 60K/2K	60K/2K
Package	SP, HP, KP, WG	SP, HP, KP, WG	SP, FP, HP, KP, WG	SP, FP, HP, KP, WG	SP, HP, KP, WG	SP, FP, HP	SP,FP,HP
Operating Power Source Voltage	1.8 to 5.5 V	2.7 to 5.5 V	1.8 to 5.5 V	2.7 to 5.5V	1.8 to 5.5 V	2.7 to 5.5 V	4.0 to 5.5V
Power Source Voltage When using A/D Converter	2.0 to 5.5 V (8-bit A/D mode) 2.2 to 5.5 V (10-bit A/D mode)	2.7 to 5.5 V (8-bit A/D mode) 2.7 to 5.5 V (10-bit A/D mode)	2.0 to 5.5 V (8-bit A/D mode) 2.2 to 5.5 V (10-bit A/D mode)	2.7 to 5.5V (8-bit A/D mode) 2.7 to 5.5 V (10-bit A/D mode)	2.0 to 5.5 V (8-bit A/D mode) 2.2 to 5.5 V (10-bit A/D mode)	2.7 to 5.5 V (8-bit A/D mode) 2.7 to 5.5 V (10-bit A/D mode)	4.0 to 5.5V (8-bit A/D mode) 4.0 to 5.5 V (10-bit A/D mode)
Flash Memory ID Code	–	Addresses FFD4 to FFDAh	–	Addresses FFD4 to FFDAh	–	–	–
Flash Memory ROM Code Protect	–	Address FFDBh	–	Address FFDBh	–	–	–
QzROM ROM Code Protect	–	–	–	–	Address FFDBh	–	–
Flash Memory Control Register	–	Flash Memory control registers 0 to 2 Addresses 0FE0h to 0FE2h	–	Flash Memory control registers 0 to 2 Addresses 0FE0h to 0FE2h	–	–	Flash Memory control register Address 0FFEh Flash command register Address 0FFFh
Program/Erase Power Source (Program-only for QzROM ver.)	–	Single power source (Vcc = 2.7 to 5.5 V)	–	Single power source (Vcc = 2.7 to 5.5 V)	Dual power source (Vcc = 2.7 V to 5.5 V, Vpp = 7.9 V ± 0.1 V)	–	Dual power source (Vcc = 5 V ± 0.5 V, Vpp = 11.7 to 12.6 V)
Program/Erase Mode (Program-only for QzROM ver.)	–	CPU Rewrite Mode Parallel I/O Mode Standard serial I/O Mode	–	CPU Rewrite Mode Parallel I/O Mode Standard serial I/O Mode	Serial I/O mode	–	CPU Rewrite Mode Parallel I/O Mode Standard serial I/O Mode

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Differences Between 3803L/3803H/3803 Groups (2)

	3803L Group		3803H Group			3803 Group	
	Mask ROM ver.	**Flash Memory ver.**	**Mask ROM ver.**	**Flash Memory ver.**	**QzROM ver.**	**Mask ROM ver.**	**Flash Memory ver.**
A/D Converter Bit 4 of AD Conversion Register 2	0 when reading (*1)	0 when reading	Same as bit 4 of AD Conversion Register 2 (*1)	0 when reading	0 when reading (*1)	0 when reading	0 when reading
Time until Flash Memory can Operate after Returning from Stop Mode	Not needed	Needed: 100 µsec	Not needed	Needed: 100 µsec	Not needed	Not needed	Not needed
Power Source Circuit Characteristics Internal Power Source Stable Time at Power-on : td (P-R)	Not needed	Needed	Not needed	Needed	Not needed	Not needed	Not needed
Electrical Characteristics Recommended Operating Conditions	The power source current of the Flash memory version differs between the Groups. Also, the operating conditions differs according to different operating voltages. For details, refer to the corresponding datasheet.						

*1: Refer to the technical update, Note on 3803 Group A/D Converter (TN-380-A067B/E Rev.2.00).

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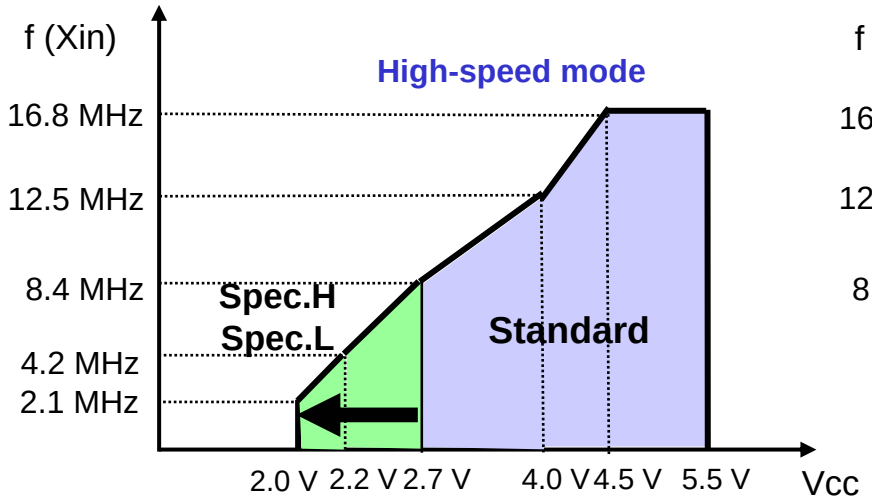
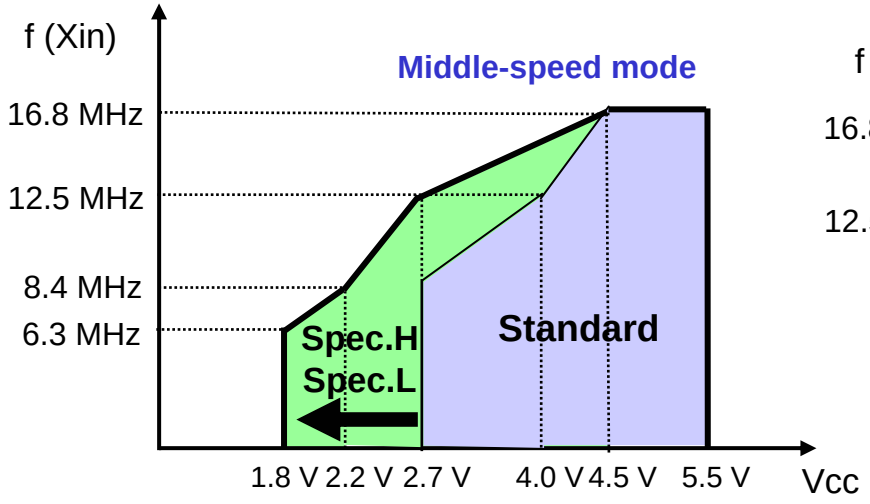
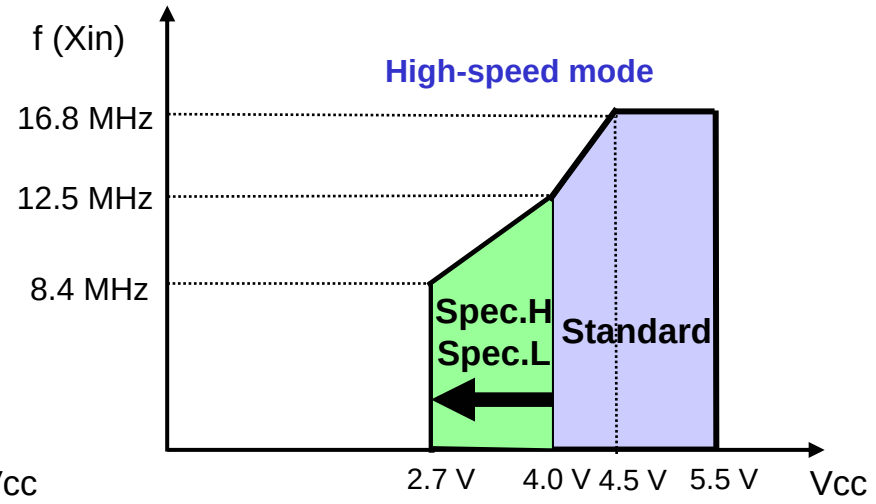
Improvement in 3803H (L) & 3803 Groups Operating Frequency Characteristics

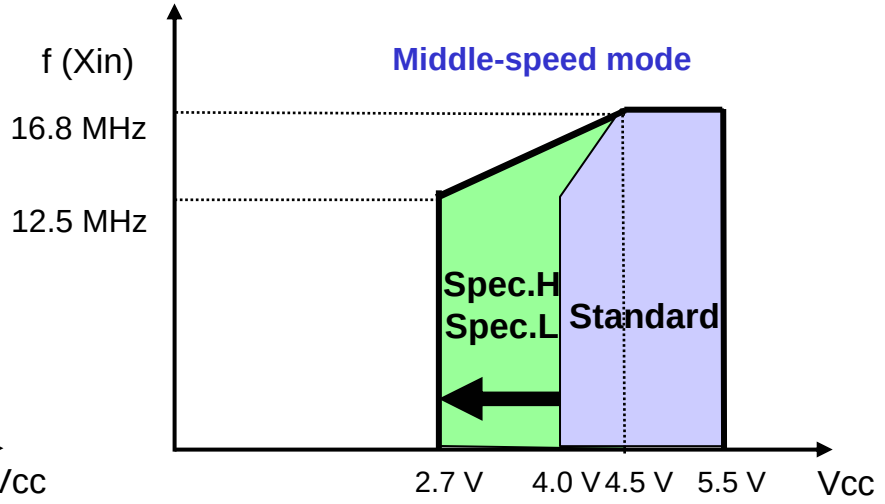
Mask & QzROM versions





Flash memory version





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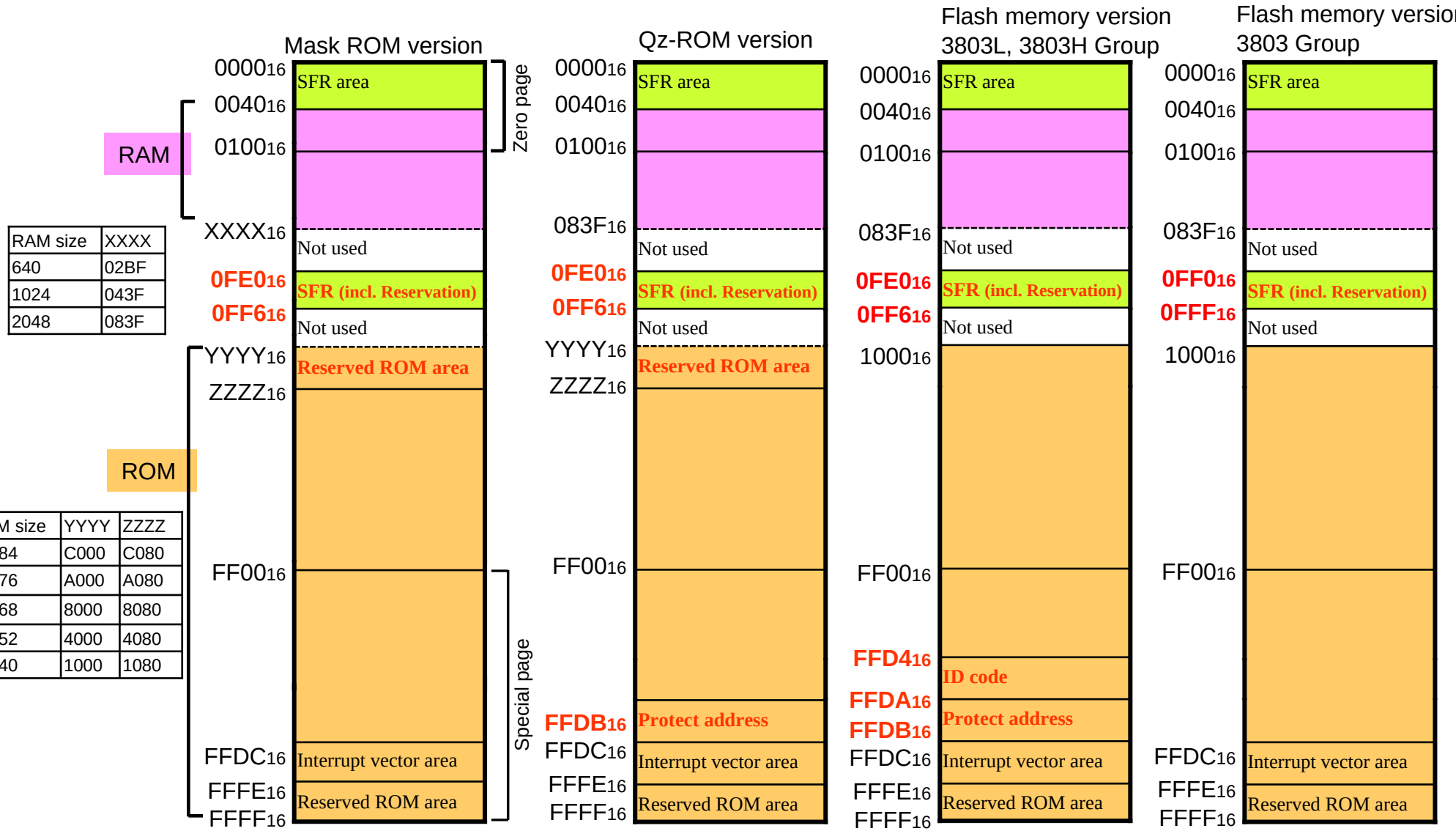
Differences Between Memory Maps of 3803L/3803H/3803 Groups



RAM size	XXXX
640	02BF
1024	043F
2048	083F

ROM size	YYYY	ZZZZ
16384	C000	C080
24576	A000	A080
32768	8000	8080
49152	4000	4080
61440	1000	1080

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Replacement Notes (1)

According to the differences in the specifications shown in P.6 and 7, the following notes are suggested.
Please also refer to P.6 and 7.

1. Program Memory

Depending on the memory type, program/erase specifications as well as applicable programmers and adaptors differ.
Confirm the programmer applicable for your product.

2. Program Memory/ RAM Sizes

- As for the combination of the program memory and RAM sizes, the RAM of the QzROM version is 2K regardless of the program memory size. Even with the same program memory size, the RAM size may differ between the QzROM/Mask ROM versions.
- In the QzROM version, 60K program memory is not available.

3. Packages

- In the QzROM version, the SP-package product is not available for programming before shipment.
- The WG-package product is available only with 60K program memory version in the 3803H/3803L Groups.
- In the 3803H Group QzROM version and the 3803L Group, the FP-package product is not available, but the thin KP package product is available for 0.8 mm-pitch.
  Even if the FP package product is available in other products, the KP package is recommended as 0.8 mm-pitch, because of its excellence in thinness, heat radiation, and stress characteristics.
  Confirm the mounting pad design standards of FP package and KP package on Renesas Surface Mount Package User's Manual (Document No.: REJ11K0001)

4. Operating Power Source Voltage

- The operating power source voltage for the 3803H Group Mask ROM/QzROM versions and the 3803L Group Mask ROM version ranges from 1.8 to 5.5V.
  This range differs for other products, so confirm the operating power source voltage for your product.

5. Power Source Voltage when Using A/D Converter

- As the operating power source differs, the power source voltage range when using an A/D converter also differs.
  Confirm the voltage when using an A/D converter for your product.
- In the 3803H Group Mask ROM/QzROM versions and the 3803L Group Mask ROM version, the power source voltage ranges from 2.0 to 5.5 V for 8-bit A/D mode, and 2.2 to 5.5 V for 10-bit A/D mode.

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Replacement Notes (2)

6. Flash Memory ID code and ROM Code Protect

In the 3803H/3803L Groups Flash memory version, ID codes are assigned to addresses FFD to $FFDA_{16}$, and ROM code protect is assigned to address $FFDB_{16}$. Please note that these addresses are included in the user ROM area. The data of these addresses must be set to programming data before programming.

7. QzROM ROM Code Protect

In the QzROM version, ROM code protect is assigned to address $FFDB_{16}$. If you select write to protect bit with a serial programmer or select programming by Renesas Technology before shipment to enable protect, "00_{16}" (all area protected) or "FE_{16}" (protect area 1 protected) is written into this address. Otherwise, "FF_{16}" is written to this address. The address cannot be used by user programs.

8. Flash Memory Control Registers

- In the 3803H/3803L Group Flash memory version, Flash Memory control registers 0 to 2 are assigned to addresses 0FE0 to $0FE2_{16}$.
- In the 3803 Group Flash memory version, Flash Memory control register is assigned to address $0FFE_{16}$ and Flash command register is assigned to address $0FFF_{16}$.
- In the Mask ROM/QzROM versions, nothing is allocated to these addresses, so writing can be performed to them. When read, their values are undefined.

9. Program/Erase Power Source

The program/erase power source voltage as well as the absolute maximum ratings of the pins differ for each product. Ensure that the specified programmer is connected to your product to prevent a voltage that exceeds the ratings from being applied to the pins.

10. Program/Erase Mode

In the QzROM version, only serial I/O mode is available in program/erase mode. When requesting off-board programming, please prepare a separate board for that purpose. MCU units for serial programming may also be available from the programmer manufacturer.

11. Time until Flash Memory can Operate after Returning from Stop Mode

In the 3803H/3803L Group Flash memory version, the internal power supply circuit is switched to low power consumption mode for reducing consumption current during STP instruction. Although the internal power supply circuit is automatically switched to the normal operation mode when returning from the STP instruction, a certain time is required until the flash memory can operate after the power supply restarts. Therefore, set 100 μsec or more by the oscillation stabilization time setting function after the STP instruction which uses timer 1 is released.

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Replacement Notes (3)

12. Internal Power Source Stable Time at Power-on

In the 3803H/3803L Group Flash memory version, input to the RESET pin at power-on (power-on reset) in the following procedure.

(1) Input “L” level to RESET pin.
(2) Increase the power source voltage to 2.7 V.
(3) Wait for td(P-R) (*1) until internal power source has stabilized.
(4) Input clock for 16 cycles or more to XIN pin.
(5) Input “H” level to RESET pin.

(*1) td(P-R): Internal power source stable time at power-on. Refer to Power Source Circuit timing Characteristics in the data sheet.

13. Oscillation Circuit Constants

The oscillation circuit structure differs between the 3803, 3803H, and 3803L Groups.
This also applies between the 3803H Group Mask ROM/Flash memory versions and the QzROM version.
Furthermore, the XIN-XOUT and XCIN-XCOUT oscillation circuit constants differ from product to product.
Contact the oscillator manufacturer to select an appropriate oscillator and oscillation circuit constants so that the product used for mass production will obtain an stable operating clock with your system and conditions.
Additional consideration is required when the voltage range or the temperature range is wide.
Also, we recommend considering the wiring patterns of the feedback resistors, the damping resistors, and the load capacity beforehand when designing circuits.

14. Differences between Mask ROM, Flash Memory, and QzROM Versions

The Flash memory, Mask ROM, and QzROM versions differ in their manufacturing processes and mask patterns because of the different ROM types used. This also applies when the ROM type is the same but the memory capacities differ. Because of these differences, characteristics values, operation margins, noise immunity, noise radiation, and oscillation circuit constants may vary.
When developing application products, perform careful system evaluations for each product.
Additional care is required when replacing products (for example, replacing a Mask ROM version with a QzROM version).
Careful system evaluations should be performed with replacement products before the mass production phase of application products.

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Program change at replacing (1)

Details about a program are described as follows. Please make sure to check there are some differences of memory size every product.

Note: Program checksum

When calculating the checksum of ROM area by a program, make sure to check the difference of areas for calculation.
When the unused area and reserved ROM area are included in target areas of replaced products, the read values are undefined and calculated values of the checksum are also undefined.

(1) Standard mask ROM version → Spec. L mask ROM version

Basically, to change a program is not necessary. Refer to the technical update, Note on 3803 Group A/D Converter (TN-380-A067B/E Rev.2.00).

(2) Standard flash memory version → Spec. L flash memory version

1. When using the addresses FFD4h to FFDAh, check the followings:
   The codes written in these addresses are the ID codes of the Spec. L flash memory version when using a serial programmer. To input this code is necessary as the ID code for flash memory reprogramming by a serial programmer. Check the above only when using a serial programmer because the addresses can be executed as an instruction.
2. The bits 7 to 2 of the address FFDBh are the protect set bits of the Spec. L flash memory version when using a parallel programmer. When the set condition is not unexpected, to change a program is necessary. Since the protect set bits do not affect when using a serial programmer, there is no problem. This address can be executed as an instruction same as the addresses FFD4h to FFDAh.
3. When accessing the addresses 0FE0h to 0FEFh, to change a program not to access these addresses is necessary.
4. Nothing is assigned on the addresses 0FFEh and 0FFFh of Spec. L flash memory version. To change a program is not necessary even if programming in standard flash memory version is performed.
5. To change a program is necessary when the oscillation stabilization time after the STP instruction is released is less than 100 μ sec in stop mode. Set 100 μ sec or more by the oscillation stabilization time setting function after the STP instruction which uses timer 1 is released.
6. When using CPU rewrite mode, to change general processes regarding CPU rewrite mode is necessary.

(3) Spec. H mask ROM version → Spec. L mask ROM version

Basically, to change a program is not necessary. Refer to the technical update, Note on 3803 Group A/D Converter (TN-380-A067B/E Rev.2.00).

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Program change at replacing (2)

Details about a program are described as follows. Please make sure to check there are some differences of memory size every product.

Note: Program checksum

When calculating the checksum of ROM area by a program, make sure to check the difference of areas for calculation.
When the unused area and reserved ROM area are included in target areas of replaced products, the read values are undefined and calculated values of the checksum are also undefined.

(4) Spec. H flash memory version → Spec. L flash memory version

To change a program is not necessary.

(5) Standard mask ROM version → Spec. H QzROM version

1. QzROM version does not have the ROM 60 Kbytes version.
2. When using address FFDBh, to change a program is necessary. Address FFDBh of QzROM version is the ROM code protect address. Set this address FFh on a user program.
3. Refer to the technical update, Note on 3803 Group A/D Converter (TN-380-A067B/E Rev.2.00).

(6) Standard flash memory version → Spec. H QzROM version

1. QzROM version does not have the ROM 60 Kbytes version.
2. When using the first 128 bytes and last 2 bytes of ROM area, to change a program is necessary. Since the first 128 bytes and last 2 bytes of ROM area for QzROM version are reserved areas for the product inspection, those area cannot be used by a user program.
3. When using address FFDBh, to change a program is necessary. Address FFDBh of QzROM version is the ROM code protect address. Set this address FFh on a user program.
4. When accessing the addresses 0FE3h to 0FEFh, to change a program not to access these addresses is necessary.
5. Nothing is assigned on the addresses 0FFEh and 0FFFh of Spec. H QzROM version. To change a program is not necessary even if programming in standard flash memory version is performed.
6. When using CPU rewrite mode, delete processes regarding CPU rewrite mode.
7. Refer to the technical update, Note on 3803 Group A/D Converter (TN-380-A067B/E Rev.2.00).

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Program change at replacing (3)

Details about a program are described as follows. Please make sure to check there are some differences of memory size every product.

Note: Program checksum

When calculating the checksum of ROM area by a program, make sure to check the difference of areas for calculation.
When the unused area and reserved ROM area are included in target areas of replaced products, the read values are undefined and calculated values of the checksum are also undefined.

(7) Spec. H/L mask ROM version → Spec. H QzROM version

1. QzROM version does not have the ROM 60 Kbytes version.
2. When using address FFDBh, to change a program is necessary. Address FFDBh of QzROM version is the ROM code protect address. Set this address FFh on a user program.
3. Refer to the technical update, Note on 3803 Group A/D Converter (TN-380-A067B/E Rev.2.00).

(8) Spec. H/L flash memory version → Spec. H QzROM version

1. QzROM version does not have the ROM 60 Kbytes version.
2. When using the first 128 bytes and last 2 bytes of ROM area, to change a program is necessary. Since the first 128 bytes and last 2 bytes of ROM area for QzROM version are reserved areas for the product inspection, those area cannot be used by a user program.
3. When using address FFDBh, to change a program is necessary. Address FFDBh of QzROM version is the ROM code protect address. Set this address FFh on a user program.
4. Although the ID code (addresses FFD4h to FFDAh) does not have any functions in Spec. H QzROM version, to change a program is not necessary.
5. Nothing is assigned on the addresses 0FE0h to 0FE2h of Spec. H QzROM version. To change a program is not necessary even if programming in Spec. H/L flash memory version is performed.
6. When using CPU rewrite mode, delete processes regarding CPU rewrite mode.
7. Refer to the technical update, Note on 3803 Group A/D Converter (TN-380-A067B/E Rev.2.00).

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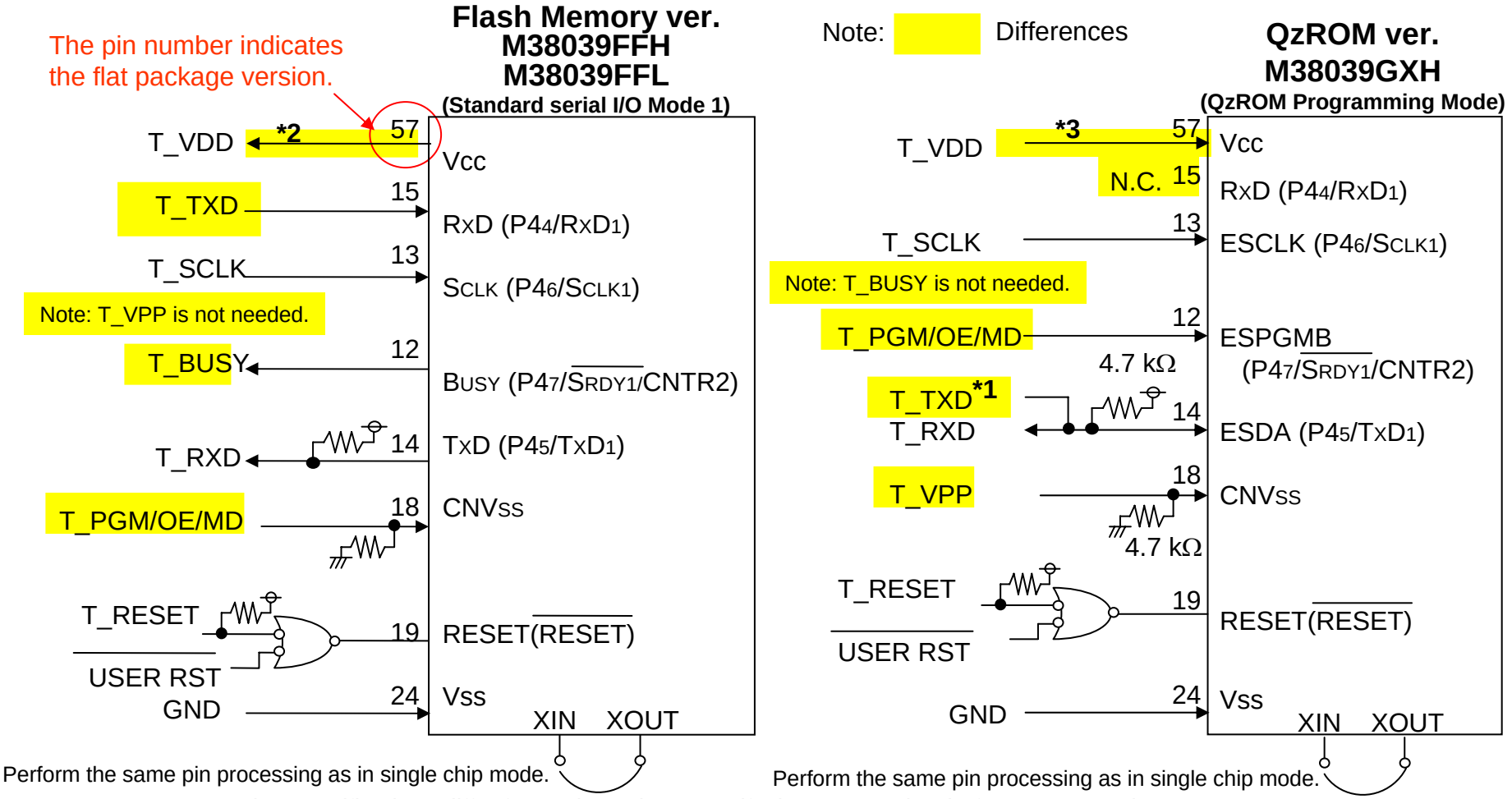
Reference: M38039FFH (L) and M38039GXH Serial Rewriting Circuit when Using a Suisei Electronics System Serial Unit



- As programming specifications differ for each product, specify the part number before programming.
- As the MCU programming pins are common, writing can be performed on the same board in the QzROM/Flash Memory versions.

*1: For the QzROM version, connect both the serial unit's T_TXD and T_RXD to TxD pin, and leave RxD pin open.
*2: Supply the power source voltage (Vcc) from the user so that it will meet the Vcc of the output buffer used on the programmer.
*3: The VDD power source is supplied from the programmer. When the user power consumption is high (20 mA or more for other than the MCU), supply the VDD from the user.

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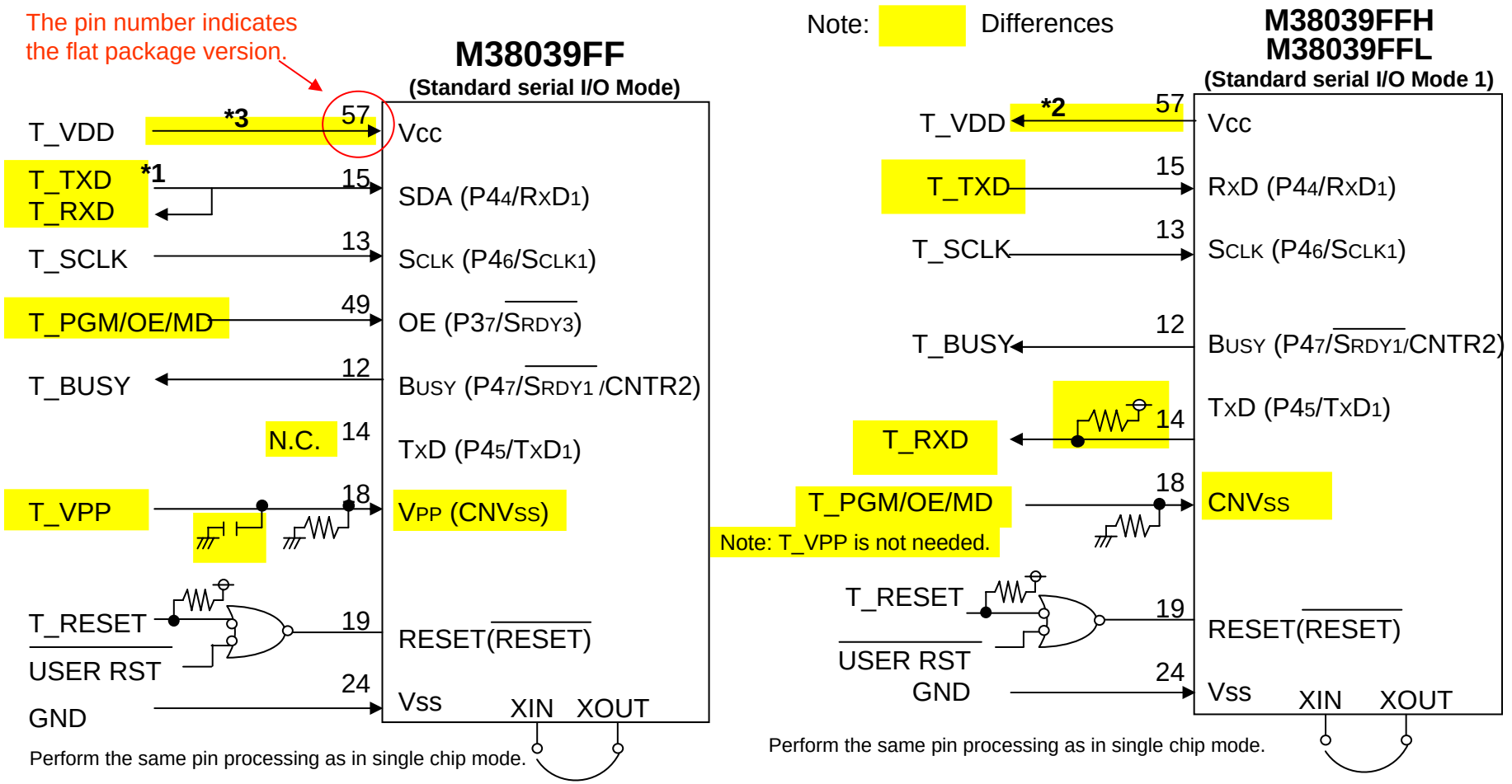
Reference: M38039FF and M38039FFH (L) Serial Rewriting Circuit when Using a Suisei Electronics System Serial Unit



- As programming specifications differ for each product, specify the part number before programming.
- As the MCU programming pins are common, writing can be performed on the same board in the QzROM/Flash memory versions.

*1: For the standard version, connect both the serial unit's T_TXD and T_RXD to SDA (RxD pin), and leave TxD pin open.
*2: Supply the power source voltage (Vcc) from the user so that it will meet the Vcc of the output buffer used on the programmer.
*3: The VDD power source is supplied from the programmer. When the user power consumption is high (20 mA or more for other than the MCU), supply the VDD from the user.

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Renesas
3803L/3803H/3803 Groups Development Support Tools

Except programmers, development support tools are common to the Groups.

Development Support Tool		Part Number
Assembler package		M3T-SRA74 (Simulator debugger incl. Integrated Development Environment with HEW)
Compiler Package		M3T-ICC740 (Simulator debugger incl. Integrated Development Environment with HEW)
Simulator Debugger		M3T-SRA74, M3T-ICC740 or M3T-PD38SIM accessory (discontinued)
On-chip Debugging Emulator (3803L Group)		E8a (incl. HEW, 740 E8a emulator debugger, M3T-SRA74 free evaluation version, M3T-ICC740 free evaluation version, FDT free evaluation version, and more)
Compact Emulator System	Compact Emulator	M38000T2-CPE (incl. 740 Compact emulator debugger, M3T-ICC740 (with HEW), and M3T-SRA74 (with HEW))
	Emulator MCU	M38049RLSS
PC4701 Emulator System (Discontinued Product)	Emulator Debugger	740 PC4701 emulator debugger or M3T-PD38 (discontinued)
	Emulator	PC4701U (emulator debugger license bundled)
	Emulation Pod	M38000TL2-FPD (low voltage operation supported) (discontinued)
	Emulator MCU	M38049RLSS
RSK (Renesas Starter Kit for 3803L)		R0K338039S001BR
Accessory	Package Converter	(Refer to the next page)
	Pin processing board	M38007T-ADS (pin processing board for Emulator MCU)

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Connecting Emulator and Target System

PC4701 System (discontinued)

Emulation Pod
M38000TL2-FPD
(discontinued)

*Emulator Pod Probe type
30-pin narrow pitch connector x 1

Compact emulator system

Compact emulator
M38000T-CPE

M3T-28DP-WS *1 M3T-28DP-WT

RSS type emulator MCU
M38049RLSS

*1. This converter is included in Emulator Pod Package.
*2. These 3 parts are as one set.
*3. These 4 parts are as one set.
*4. Available from Tokyo Eletech Corporation.
* The ● mark indicates the location of No.1 pin.

M38007T-PRB

64-pin SDIP socket
(SP package)

M3T-64LCC-QSD
64-pin 0.5 mm pitch QFP
(HP package)

M3T-64LCC-QSD

YQSOCKET064SDF2
(Sold Separately) *4

YQPACK064SD
(Sold Separately) *4

NQPACK064SD-ND (Sold Separately) *4
64-pin 0.5 mm pitch QFP
(HP package)

HP package sample
Board-mounted evaluation

HQPACK064SD
(Sold Separately) *4

HP package version

M3T-64DIP-DMS

*2

M3T-DUMMY64
64-pin 0.8 mm pitch QFP
(FP package)

*3

M3T-FLX-64NSA
64pin
0.8 mm pitch QFP/LQFP
(FP/KP package)

FP/KP package board-mounted evaluation

FP package :
HQPACK064SA
(Sold Separately) *4
KP package :
HQPACK064SA160
(Sold Separately) *4

FP/KP package version

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3803H/3803L Groups
Suisei Electronics System Flash Memory/QzROM Programmers

<table>
<tr><td rowspan="2">Main unit</td><td colspan="4">Serial/Parallel Unit</td></tr>
<tr><td colspan="2">On-board reprogramming/programming</td><td colspan="2">Off-board reprogramming/programming</td></tr>
<tr><td></td><td colspan="2">M38039FFH
M38039FFL
Flash memory version
(Serial programming)</td><td>M38039GXH
QzROM version
(Serial programming)</td><td>M38039FFH
M38039FFL
Flash memory version
(Parallel programming)</td><td>M38039GXH
QzROM version
(Serial programming +
MCU unit for programming)</td></tr>
<tr><td rowspan="2">EFP-S2V
EFP-S2
in common</td><td colspan="2">EF1SRP-01US2</td><td rowspan="2">EF1CNT-96P
+ Parallel unit
EF3803F-64H (for HP)
EF3803F-64F (for FP)
EF3803F-64U (for KP)
EF3803F-64S (for SP)
EF3803F-64FL (for WG)</td><td rowspan="2">EF1SRP-01US2
(or EF1CNT-96P
+ EF1SRP-05U)
+ MCU unit
MS3803-64H (for HP)
MS3803-64U (for KP)
MS3803-64S (for SP)</td></tr>
<tr><td>EF1CNT-96P
+
EF1SRP-01U</td><td>EF1CNT-96P
+
EF1SRP-05U</td></tr>
<tr><td>EFP-I</td><td>EF1SRP-01U</td><td>EF1SRP-05U</td><td>Parallel unit
EF3803F-64H (for HP)
EF3803F-64F (for FP)
EF3803F-64U (for KP)
EF3803F-64S (for SP)
EF3803F-64FL (for WG)</td><td>EF1SRP-05U
+ MCU unit
MS3803-64H (for HP)
MS3803-64U (for KP)
MS3803-64S (for SP)</td></tr>
</table>

EF1CNT-96P: Connector converter unit
Each unit for EFP-I can be connected to EFP-S2 or EFP-S2V by EF1CNT-96P.

As a Renesas Flash memory/QzROM programmer, the **Flash Development Toolkit (FDT)** and the **E8** can be used together for on-board programming. (IC socket boards are required for the QzROM on-board programming.)

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3803 Group Programmers

Tools	3803 Group Products
RENESAS Programming Adapter	PCA4738HF-64 (for 0.5 mm-pitch LQFP package)
	PCA4738FF-64 (for 0.8 mm-pitch QFP package)
	PCA4738SF-64 (for 1.778 mm-pitch SDIP package)
Flash Memory Programmer	EFP-I for Serial Interface Available from Suisei Electronics System Co., Ltd.
	R4945, R4945A for Parallel Interface Available from ADVANTEST Corp. (RENESAS Programming Adapter required)
	AF9709, AF9708, AF9723 for Standard Parallel Interface Available from Flash Support Group, Inc. (RENESAS Programming Adapter required)

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Recommended 3803 Group Replacements

The following 3803 Group products are recommended to replace with the products shown as below.
Please consider these replacements when adopting the applicable products to a new system.

Applicable Products		Replacement product	
3803 Group	M38034M4-XXXSP	3803H Group	M38039G4HSP (*1)
	M38034M4-XXXFP		M38039G4H-XXXKP
	M38034M4-XXXHP		M38039G4H-XXXHP
	M38037M6-XXXSP		M38039G6HSP (*1)
	M38037M6-XXXFP		M38039G6H-XXXK
	M38037M6-XXXHP		M38039G6H-XXXHP
	M38037M8-XXXSP		M38039G8HSP (*1)
	M38037M8-XXXFP		M38039G8H-XXXKP
	M38037M8-XXXHP		M38039G8H-XXXHP
	M38039MC-XXXSP		M38039GCHSP (*1)
	M38039MC-XXXFP		M38039GCH-XXXKP
	M38039MC-XXXHP		M38039GCH-XXXHP
	M38039MF-XXXSP	3803L Group	M38039MFL-XXXSP
	M38039MF-XXXFP		M38039MFL-XXXKP
	M38039MF-XXXHP		M38039MFL-XXXHP
	M38039FFSP		M38039FFLSP
	M38039FFFP		M38039FFLKP
	M38039FFHP		M38039FFLHP

(*1): If requesting writing by Renesas, M38039MFL-XXXSP in the 3803L Group mask ROM version is recommended as replacement.

Please refer to the ***Differences between the 3803L/3803H/3803 Groups*** (P.6 and 7).

Applicable Products		Replacement product	
3803H Group	M38034M4H-XXXSP	3803H Group	M38039G4HSP (*1)
	M38034M4H-XXXFP		M38039G4H-XXXKP
	M38034M4H-XXXHP		M38039G4H-XXXHP
	M38034M4H-XXXKP		M38039G4H-XXXKP
	M38037M6H-XXXSP		M38039G6HSP (*1)
	M38037M6H-XXXFP		M38039G6H-XXXKP
	M38037M6H-XXXHP		M38039G6H-XXXHP
	M38037M6H-XXXKP		M38039G6H-XXXKP
	M38037M8H-XXXSP		M38039G8HSP (*1)
	M38037M8H-XXXFP		M38039G8H-XXXKP
	M38037M8H-XXXHP		M38039G8H-XXXHP
	M38037M8H-XXXKP		M38039G8H-XXXKP
	M38039MCH-XXXSP		M38039GCHSP (*1)
	M38039MCH-XXXFP		M38039GCH-XXXKP
	M38039MCH-XXXHP		M38039GCH-XXXHP
	M38039MCH-XXXKP		M38039GCH-XXXKP
	M38039MFH-XXXSP	3803L Group	M38039MFL-XXXSP
	M38039MFH-XXXFP		M38039MFL-XXXKP
	M38039MFH-XXXHP		M38039MFL-XXXHP
	M38039MFH-XXXKP		M38039MFL-XXXKP
	M38039MFH-XXXWG		M38039MFL-XXXWG
	M38039FFHSP		M38039FFLSP
	M38039FFHFP		M38039FFLKP
	M38039FFHHP		M38039FFLHP
	M38039FFHKP		M38039FFLKP
	M38039FFHWG		M38039FFLWG

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REVISION HISTORY

Rev.	Date	Page	Summary
4.00	May 08, 2008	1	Title revised Page 2 to 4 in the previous version (Rev.3.03) deleted
		2	Table layout revised
		2 to 5	3803L Group Flash memory version: Marks (**) for under development products deleted
		6	(1) added at end of the page title Program/erase power supply of QzROM version: Vcc revised
		7	Page added because of new items
		9	Newly added
		10	(1) Added at end of the page title
		11	Page title added Item 7: Values to be written for protection added Item 11, 12: Added
		12	Page title added Item No. revised according to additions
		13 to 15	Newly added
		18	On-chip debugging emulator added Renesas Starter Kit for 3803L: Part number added
		19	PC4701 system: “(discontinued)” added Part number revised: NQPACK064SD → NQPACK064SD-ND Version revised: Flash memory version → HP package version, FP/KP package version
		20	3803L Group Flash memory version: Marks (**) for under development products deleted
		22	Replacements QzROM version SP package products: Note added
4.01	Jun. 16, 2008	9	ROM size in table changed: ZZZZ 1000 → 1080
		10	Item 3: Information about mounting pad added
		7,13,14,15	Spec.H QzROM version: “Refer to the technical update, Note on 3803 Group A/D Converter (TN-380-A067B/E).” added

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April 1st, 2010
Renesas Electronics Corporation

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