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April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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7542 Group, 7540 Group

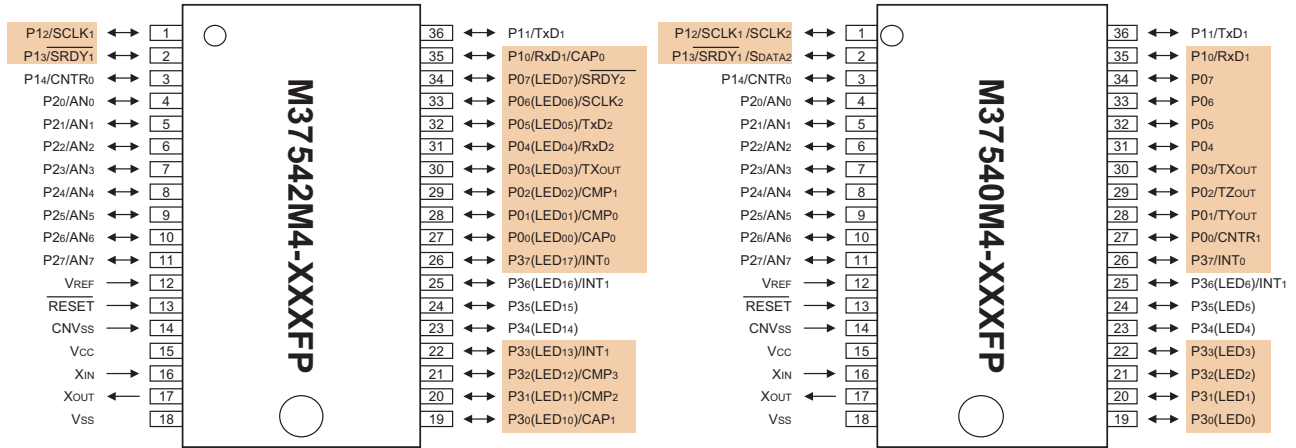
Differences between 7542 Group and 7540 Group

1. Differences between 7542 Group and 7540 Group

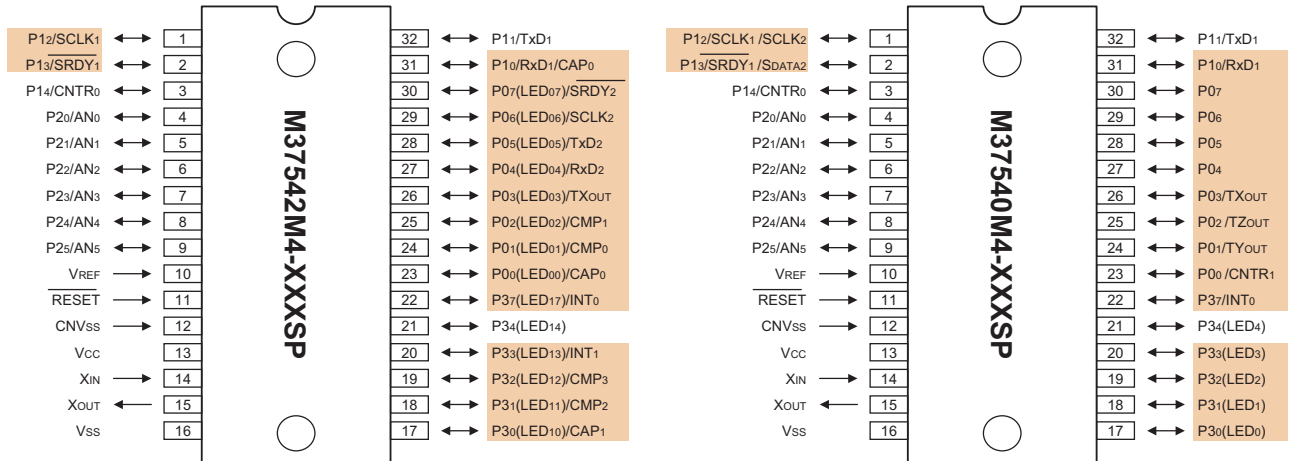
	7542 Group	7540 Group
Application Product	M37542MX-XXXSP/FP/GP/HP M37542MXT-XXXFP/GP M37542MXV-XXXFP/GP M37542F8SP/FP/GP M37542F8TFP/GP M375428VFP/GP	M37540MX-XXXSP/FP/GP M37540MXT/E8T-XXXFP/GP M37540MXV/E8V-XXXFP/GP M37540EXSP/FP/GP
ROM Type : ROM Size	MASK : 8K, 16K Flash : 32K PROM : -	MASK : 8K, 16K Flash : - PROM : 8K, 32K
Instruction Execution Time (shortest instruction)	0.25 μ s (8MHz twice speed mode)	0.32 μ s (6MHz twice speed mode)
Timer	8bit x 2, 16bit x 2	8bit x 4, 16bit x 1
Serial Interface	2 pieces : Serial I/O1 * (UART or Clock synchronous type) Bus collision detection Serial I/O2 * (UART or Clock synchronous type)	2 pieces : Serial I/O1 * (UART or Clock synchronous type) Serial I/O2 * (Clock synchronous type)
On-chip Oscillator mode	ϕ = nothing, $f(XIN)/2$, $f(XIN)/8$, $f(XIN)/128$ Selection is possible. STP instruction can be used.	ϕ = $f(XIN)/8$ STP instruction can not be used.
Oscillation stop detection function	At the time of an oscillation stop. Reset generate or not, Selection is possible.	Reset generate when oscillation stop
P0P3 Pull-up control	The port controlled by each bit of a pull-up control register (address 001616) is changed.	

2. Pin Configuration 7542 Group / 7540 Group

7542 Group / 7540 Group Difference =

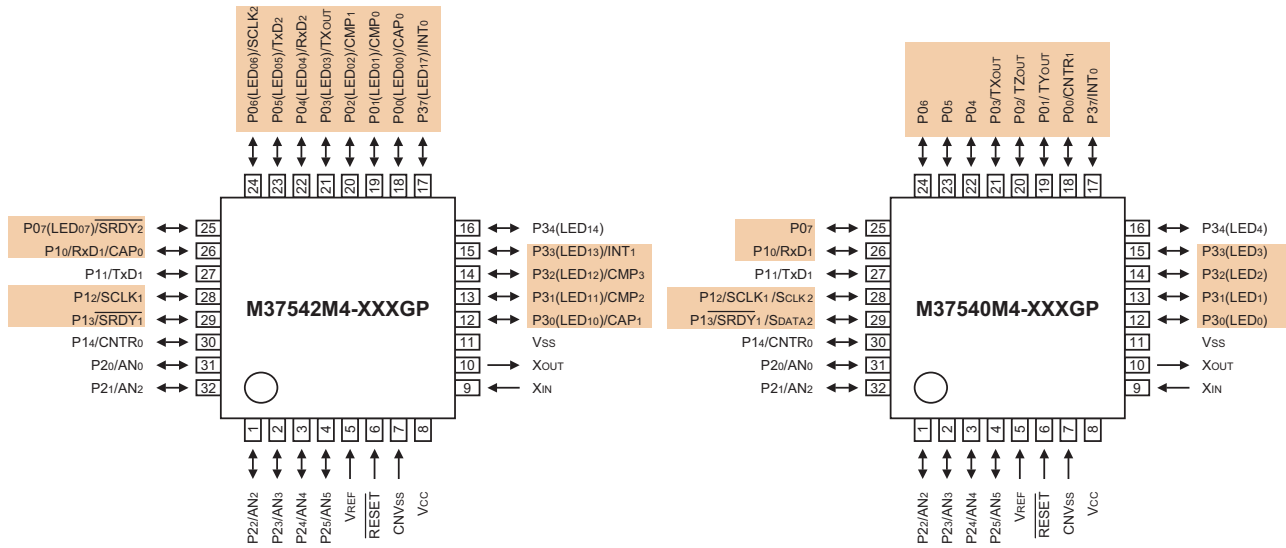


Package Type : 36P2R-A



Package Type : 32P4B

7542 Group / 7540 Group Difference =



Package Type : 32P6U-A

3. Interrupt Vector 7542 Group / 7540 Group

7542 Group / 7540 Group Difference =

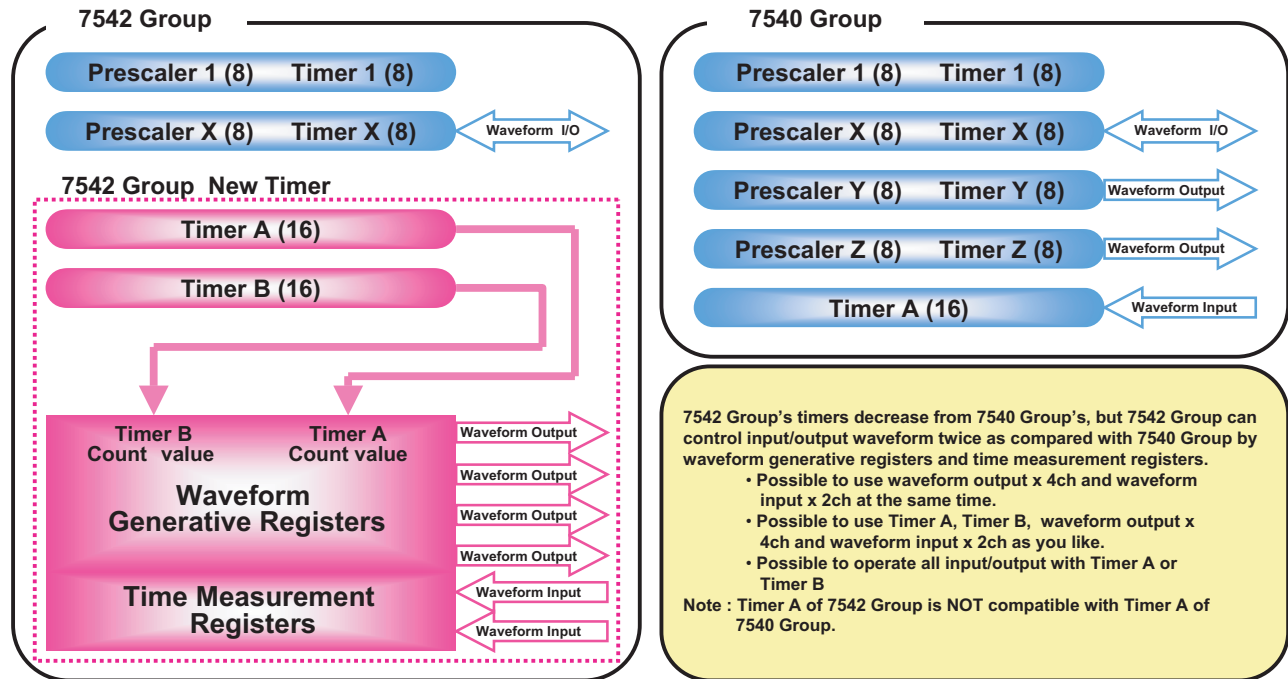
Vector address		Priority	7542 Group Interrupt source	7540 Group Interrupt source
High-order	Low-order			
FFFD ₁₆	FFFC ₁₆	1	Reset	Reset
FFFB ₁₆	FFFA ₁₆	2	Serial I/O1 receive	Serial I/O 1 receive
FFF9 ₁₆	FFF8 ₁₆	3	Serial I/O 1 transmit	Serial I/O 1 transmit
FFF7 ₁₆	FFF6 ₁₆	4	Serial I/O 2 receive	INT ₀
FFF5 ₁₆	FFF4 ₁₆	5	Serial I/O 2 transmit	INT ₁
FFF3 ₁₆	FFF2 ₁₆	6	INT ₀	Key-on wake-up
FFF1 ₁₆	FFF0 ₁₆	7	INT ₁	CNTR ₀
FFEF ₁₆	FFEE ₁₆	8	Key-on wake-up/UART bit error	CNTR ₁
FFED ₁₆	FFEC ₁₆	9	CNTR ₀	Timer X
FFEB ₁₆	FFEA ₁₆	10	Capture ₀	Timer Y
FFE9 ₁₆	FFE8 ₁₆	11	Capture ₁	Timer Z
FFE7 ₁₆	FFE6 ₁₆	12	Compare	Timer A
FFE5 ₁₆	FFE4 ₁₆	13	Timer X	Serial I/O 2
FFE3 ₁₆	FFE2 ₁₆	14	Timer A	A/D conversion
FFE1 ₁₆	FFE0 ₁₆	15	Timer B	Timer 1
FFDF ₁₆	FFDE ₁₆	16	A/D conversion/Timer 1	Reserved area
FFDD ₁₆	FFDC ₁₆	17	BRK instruction	BRK instruction

4. SFR 7542 Group / 7540 Group

	7542 Group	7540 Group	
000016	Port P0 (P0)	Port P0 (P0)	
000116	Port P0 direction register (P0D)	Port P0 direction register (P0D)	
000216	Port P1 (P1)	Port P1 (P1)	
000316	Port P1 direction register (P1D)	Port P1 direction register (P1D)	
000416	Port P2 (P2)	Port P2 (P2)	
000516	Port P2 direction register (P2D)	Port P2 direction register (P2D)	
000616	Port P3 (P3)	Port P3 (P3)	
000716	Port P3 direction register (P3D)	Port P3 direction register (P3D)	
000816	Reserved	Reserved	
000916	Reserved	Reserved	
000A16	Interrupt source selection register (INTSEL)	Reserved	
000B16	Interrupt source discrimination register (INTDIS)	Reserved	
000C16	Capture register 0 (low-order) (CAP0L)	Reserved	
000D16	Capture register 0 (high-order) (CAP0H)	Reserved	Same name, but changed function
000E16	Capture register 1 (low-order) (CAP1L)	Reserved	Different name, but same function
000F16	Capture register 1 (high-order) (CAP1H)	Reserved	Different name, but same function
001016	Compare register (low-order) (CMPL)	Reserved	New SFR
001116	Compare register (high-order) (CMPH)	Reserved	
001216	Capture/Compare register R/W pointer (CCRP)	Reserved	
001316	Capture software trigger register (CSTR)	Reserved	
001416	Compare register re-load register (CMPR)	Reserved	
001516	Port P0P3 drive capacity control register (DCCR)	Reserved	
001616	Pull-up control register (PULL)	Pull-up control register (PULL)	
001716	Port P1P3 control register (P1P3C)	Port P1P3 control register (P1P3C)	
001816	Transmit 1/Receive 1 buffer register 1 (TB1/RB1)	Transmit/Receive buffer register (TB/RB)	Same name, but changed function
001916	Serial I/O1 status register (SIO1STS)	Serial I/O1 status register (SIO1STS)	
001A16	Serial I/O1 control register (SIO1CON)	Serial I/O1 control register (SIO1CON)	
001B16	UART1 control register (UART1CON)	UART control register (UARTCON)	
001C16	Baud rate generator 1 (BRG1)	Baud rate generator (BRG)	
001D16	Timer A,B mode register (TABM)	Timer A mode register (TAM)	
001E16	Capture/Compare port register (CCPR)	Timer A (low-order) (TAL)	
001F16	Timer source selection register (TMSR)	Timer A (high-order) (TAH)	
002016	Capture mode register (CAPM)	Timer Y, Z mode register (TYZM)	
002116	Compare output mode register (CMOM)	Prescaler Y (PREY)	
002216	Capture / Compare status register (CCSR)	Timer Y secondary (TYS)	
002316	Capture interrupt source register (CISR)	Timer Y primary (TYP)	
002416	Timer A register (low-order) (TAL)	Timer Y, Z waveform output control register (PUM)	
002516	Timer A register (high-order) (TAH)	Prescaler Z (PREZ)	
002616	Timer B register (low-order) (TBL)	Timer Z secondary (TZS)	
002716	Timer B register (high-order) (TBH)	Timer Z primary (TZP)	
002816	Prescaler 1 (PRE1)	Prescaler 1 (PRE1)	
002916	Timer 1 (T1)	Timer 1 (T1)	
002A16	Timer count source set register (TCSS)	One-shot start register (ONS)	
002B16	Timer X mode register (TXM)	Timer X mode register (TXM)	
002C16	Prescaler X (PREX)	Prescaler X (PREX)	
002D16	Timer X (TX)	Timer X (TX)	
002E16	Transmit 2/Receive 2 buffer register (TB2/RB2)	Timer count source set register (TCSS)	
002F16	Serial I/O2 status register (SIO2STS)	Reserved	
003016	Serial I/O2 control register (SIO2CON)	Serial I/O2 control register (SIO2CON)	
003116	UART2 control register (UART2CON)	Serial I/O2 register (SIO2)	
003216	Baud rate generator 2 (BRG2)	Reserved	
003316	Reserved	Reserved	
003416	A/D control register (ADCON)	A-D control register (ADCON)	
003516	A/D conversion register (low-order) (ADL)	A-D conversion register (low-order) (ADL)	
003616	A/D conversion register (high-order) (ADH)	A-D conversion register (high-order) (ADH)	
003716	On-chip oscillation division ratio selection register (RODR)	Reserved	
003816	MISRG	MISRG	
003916	Watchdog timer control register (WDTCN)	Watchdog timer control register (WDTCN)	
003A16	Interrupt edge selection register (INTEDGE)	Interrupt edge selection register (INTEDGE)	
003B16	CPU mode register (CPUM)	CPU mode register (CPUM)	
003C16	Interrupt request register 1 (IREQ1)	Interrupt request register 1 (IREQ1)	
003D16	Interrupt request register 2 (IREQ2)	Interrupt request register 2 (IREQ2)	
003E16	Interrupt control register 1 (ICON1)	Interrupt control register 1 (ICON1)	
003F16	Interrupt control register 2 (ICON2)	Interrupt control register 2 (ICON2)	

Note : Do not access to the SFR area including nothing.

5. Timer Composition 7542Group / 7540Group



Timer Function		7542	Correspond Timer	7540	Correspond Timer
Free Run		4ch	Timer 1 Timer X Timer A Timer B	5ch	Timer 1 Timer X Timer Y Timer Z Timer A
Input	Event Counter	1ch	Timer X	2ch	Timer X Timer A
	Pulse Width Measurement (Width: H or L)	1ch	Timer X	1ch	Timer X
	Pulse Width Measurement (Continuously Measurement: Width H and L)	2ch	Timer A or Timer B (Capture input)	1ch	Timer A
	Pulse period measurement	2ch	Timer A or Timer B (Capture input)	1ch	Timer A
Output	Pulse Output	5ch	Timer X Timer A or Timer B (Compare output)	3ch	Timer X Timer Y Timer Z
	PWM	4ch	Timer A or Timer B (Compare output)	2ch	Timer Y Timer Z
	One-shot output	-	-	2ch	Timer Y Timer Z
	Delayed one-shot output	-	-	2ch	Timer Y Timer Z

6. Serial Interface composition 7542Group / 7540Group

Serial Interface Function		7542	7540
Serial I/O1	Clock Synchronous Type	○	○
	UART	○	○
	BRG	8-bit count	8-bit count
	Bus Collision Detection	○ (Interrupt occurs, at the same as collision)	×
Serial I/O2	Clock Synchronous Type	○	○
	UART	○	×
	BRG	8-bit count	Fixed 6 patterns
	Forward Direction Selection (LSB/MSB)	×	○

7. Reference

Data Sheet

7542 Group Datasheet

7540 Group Datasheet

User's Manual

7540 Group User's Manual

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Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Aug.04.03	—	First Edition issued
1.01	Mar.18.05	—	Change to application note format and issue
1.02	Jun.01.05	—	Words standardized:

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