Renesas Synergy™ Platform

S5D9 MCU Group to S5D5 MCU Group Migration Guide

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Introduction

This Application Note compares hardware peripherals, port select features, and functional differences between the S5D9 Synergy MCU Group and S5D5 Synergy MCU Group. This document is designed to provide the user with an overview of the functional, hardware, and electrical characteristic differences when migrating from the Synergy S5D9 MCU Group to the S5D5 MCU Group. Users are expected to have a technical understanding of the peripherals provided in the S5D9 MCU Group. This application note should be used in conjunction with the S5D5 MCU Group User's Manual: Microcontrollers.

The application note presents two major sections. The first section specifies functional and specification differences between the S5D9 MCU Group and the S5D5 MCU Group's, respectively. The second section details the differences in port functionality between the two MCU's.

Target Device or Required Hardware

S5D5 Synergy MCU Group

References

Renesas provides the following documents for the Synergy S5 Series MCUs. Before using any of these documents, visit our web site to obtain the latest versions.

Synergy Kits - https://www.renesas.com/en-us/products/synergy/tools-kits.html#kits
Synergy Microcontrollers - https://www.renesas.com/en-us/products/synergy/microcontrollers.html
Synergy Software - https://www.renesas.com/en-us/products/synergy/software.html
Synergy Solutions - https://www.renesas.com/en-us/products/synergy/solutions.html
The Renesas Synergy Knowledge Base: Renesas Synergy Knowledge Base contains many useful articles for Synergy developers.

Document Type	Description	Title	Document No.
Datasheet S5D5 MCU Group	Overview and electrical characteristics of MCU.	S5D5 MCU Group Datasheet	R01DS0317EU0110
S5D5 MCU Group User's Manual: Microcontrollers	MCU specifications (pin assignments, memory maps, peripheral functions, electrical characteristics, and timing charts) and operation descriptions.	S5D5 MCU Group User's Manual: Microcontrollers	R01UM0009EU0100
Datasheet S5D9 MCU Group	Overview and electrical characteristics of MCU.	S5D9 MCU Group Datasheet	R01DS0303EU0100
S5D9 User's Manual: Microcontrollers	MCU specifications (pin assignments, memory maps, peripheral functions, electrical characteristics, and timing charts) and operation descriptions.	S5D9 MCU Group User's Manual: Microcontrollers	R01UM0004EU0100
Renesas Synergy Software Package (SSP) user's manual	API reference and introduction to SSP architecture and programming.	Renesas Synergy Software Package (SSP) User's Manual	R01US0171EU100

Contents

1. Typography Notations Table

The following numbering notations are used throughout this manual:

Example	Description
011b	Binary number. For example, the binary equivalent of the number 3 is 011b
1Fh	Hexadecimal number. For example, the hexadecimal equivalent of the number 31 is described 1Fh. In some cases, a hexadecimal number is shown with the prefix 0x.
1234	Decimal number. A decimal number is followed by this symbol only when the possibility of confusion exists. Decimal numbers are generally shown without a suffix.
Bit 4	Specifies the bit position in field or register.

2. Specification and Hardware Differences: S5D9 and S5D5 Synergy MCU Groups

Table 2 on the following page compares hardware compatibility and differences between the S5D9 Synergy MCU Group and S5D5 Synergy MCU Group. The table is ordered with increasing specifics from left to right. The left most column corresponds to a system as noted in the user's manual for the S5D5 Synergy MCU Group or S5D9 Synergy MCU Group. Values in the S5D9 column represent whether a system, subsystem, or field in register exists/has a certain value. Values in the S5D5 column show the change in hardware, new feature addition, or notes a deprecated feature. The Reference column specifies the section in the *S5D5 Synergy MCU Group User's Manual* that can be referred to for more information and the url can be found in the Reference section of this application note.

Note: The following terms describe the functionality of the peripherals mentioned in the table below.

Table 1 Compatibility and differences

Terms	Description
Exists or Available	The peripheral or function is implemented for a MCU Group
Does Not Exist or Not Available	The peripheral specified has been removed (when compared to the other MCU Groups) or does not exist in the MCU Groups
Not Applicable	The criteria for comparison is invalid for the MCU Groups

Table 2 Specification difference (1 of 2)

Specification			S5D9	S5D5	S5D5 HWM Reference
Option-Setting Memory	OCD/Serial Programmer ID Setting Register (OSIS)	Protection of Test Mode Entry	Not Available	Available	7.2.4
Clock Generation Circuit	Restriction on selection of Frequency multiplication ratio when Oscillation Stop Detection is enabled		Applicable Refer to Manual	Not Applicable	Table 9.1
USB 2.0 High-Speed Module (USBHS)	It operates as a host or a device controller compliant with the USB Specification revision 2.0		Available	Not Available	
Serial Sound Interface Enhanced (SSIE)	Number of Channels		2	1	Table 39.1
	Communication Mode		SSIE0: Full-duplex SSIE1: Half-duplex	SSIE0: Full-duplex or Half-duplex	
Ethernet PTP Controller (EPTPC)	Handle timing and synchronization between devices, an on-chip Precision Time Protocol module		Available	Not Available	
12-Bit A/D Converter (ADC12)	Programmable Gain Amplifier (PGA)		Available	Not Available	
JPEG Codec	Provides JPEG baseline compression and decompression standard		Available	Not Available	
Graphics LCD Controller (GLCDC)	Provides multiple functions and supports various data formats and panels		Available	Not Available	
2D Drawing Engine (DRW)	Provides flexible functions that can support almost any object geometry		Available	Not Available	

Table 3 Specification Difference (2 of 2)

Specificaion			**S5D9**	**S5D5**	**S5D5 HWM Reference**
SRAM	Capacity		640 KB ECC area: 32 KB Parity area: 608 KB High-speed area: 128 KB	384 KB ECC area: 32 KB Parity area: 352 KB High-speed area: 128 KB	Table 51.1
Flash Memory	Capacity	Code Flash	Upto 2 MB	Upto 1 MB	Table 53.1
		Data Flash	Upto 64 KB	Upto 32 KB	
Electrical Characteristics			Refer to Manual	Refer to Manual	Chapter 55

3. Port Select Function Difference

Tables 2, 3, and 4 on the following pages compare the PSEL, ASEL, and ISEL functions for the S5D9 Synergy MCU Group and S5D5 Synergy MCU Group respectively. For each port number, the first row specifies the bitwise select values. The second row specifies the functionality enabled by the select values on the S5D9 Synergy MCU Group. The third column specifies the functionality enabled by the select values on the S5D5 MCU. Differences in functionality are notated with bold text and highlighted background. The comments section provides additional details or specifies the migration type from S5D9 Synergy MCU Group to S5D5 Synergy MCU Group. For more information on the comments column please refer to the Typography Notation table after the contents page in the How to use this Application Note section.

Note: Some pin names have the added suffix of _A, _B, _C, _D, _E and _F. When assigning the GPT, IIC, SPI, SSIE, ETHERC (RMII), SDHI, and GLCDC functionality, select the functional pins with the same suffix. The other pins can be selected regardless of the suffix. Assigning the same function to two or more pins simultaneously is prohibited.

The following typographic notation is used for the pin differences sections of the document to denote the changes happening at the individual ports:

Example	Description
▲PIXD0_B	The '▲' denotes that signal PIXD0_B is being added to the previously unused/reserved or replacing a deprecated function.
▼ET1_TX_CLK	The '▼' denotes that signal ET1_TX_CLK is being deprecated at the bit position and being replaced by a new signal or remain unused/reserved.

The following gradients visualize whether signals are added, replaced, or removed from the S5D9 and S5D5 MCU Group.

Example	Description
	Highlights a bit position where a new function is being added to the previously unused/reserved bit position.
	Highlights a bit position where a new function is replacing an existing function in the bit position.
	Highlights a bit position it is being reserved by deprecating the function that existed at that bit position.

Appendix 1. 100 Pin Package

Table 4 100 Pin Package Difference (1 of 3)

Port	MCU	Select								Comments
P113		PSEL 00011B	PSEL 00100B	PSEL 01011B	PSEL 10010B	PSEL 11001B				▼LCD_DATA10
	S5D9	GTIOC2A	RXD2	A3	SSIWS0	LCD_DATA10				
	S5D5	GTIOC2A	RXD2	A3	SSIWS0	-				
P202		PSEL 00011B	PSEL 00100B	PSEL 00101B	PSEL 00110B	PSEL 01011B	PSEL 10000B	PSEL 10101B	PSEL 10110B	▼LCD_TCON3
	S5D9	GTIOC5B	SCK2	RXD9	MISOB	WR1/BC1/-	CRX0	SD0DAT6	ET0_ERXD2	
	S5D5	GTIOC5B	SCK2	RXD9	MISOB	WR1/BC1/-	CRX0	SD0DAT6	ET0_ERXD2	
		PSEL 11001B	ISEL							
	S5D9	LCD_TCON3	IRQ3-DS							
	S5D5	-	IRQ3-DS							
P204		PSEL 00001B	PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00101B	PSEL 00110B	PSEL 00111B	PSEL 01010B	▲SSISCK0 ▼SSISCK1
	S5D9	AGTIO1	GTIW	GTIOC4B	SCK4	SCK9	RSPCKB	SCL0	CACREF	
	S5D5	AGTIO1	GTIW	GTIOC4B	SCK4	SCK9	RSPCKB	SCL0	CACREF	
		PSEL 01011B	PSEL 01100B	PSEL 10010B	PSEL 10011B	PSEL 10101B	PSEL 10110B			
	S5D9	A18	TS0	SSISCK1	USB_OVRCURB_A-DS	SD0DAT4	ET0_RX_DV			
	S5D5	A18	TS0	SSISCK0	USB_OVRCURB_A-DS	SD0DAT4	ET0_RX_DV			
P205		PSEL 00001B	PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00101B	PSEL 00110B	PSEL 00111B	PSEL 01001B	▲SSIWS0 ▼SSIWS1
	S5D9	AGTO1	GTIV	GTIOC4A	TXD4	CTS9	SSLB0	SCL1	CLKOUT	
	S5D5	AGTO1	GTIV	GTIOC4A	TXD4	CTS9	SSLB0	SCL1	CLKOUT	
		PSEL 01011B	PSEL 01100B	PSEL 10010B	PSEL 10011B	PSEL 10101B	PSEL 10110B	PSEL 10111B	ISEL	
	S5D9	A16	TSCAP	SSIWS1	USB_OVRCURA_A-DS	SD0DAT3	ET0_WOL	ET0_WOL	IRQ1-DS	
	S5D5	A16	TSCAP	SSIWS0	USB_OVRCURA_A-DS	SD0DAT3	ET0_WOL	ET0_WOL	IRQ1-DS	

Table 4 100 Pin Package Difference (2 of 3)

Port	MCU	Select								Comments
P206		PSEL 00010B	PSEL 00100B	PSEL 00110B	PSEL 00111B	PSEL 01011B	PSEL 01100B	PSEL 10010B	PSEL 10011B	▲SSIDATA0 ▼SSIDATA1
	S5D9	GTIU	RXD4	SSLB1	SDA1	WAIT	TS1	SSIDATA1	USB_VBUSEN	
	S5D5	GTIU	RXD4	SSLB1	SDA1	WAIT	TS1	SSIDATA0	USB_VBUSEN	
		PSEL 10101B	PSEL 10110B	PSEL 10111B	ISEL					
	S5D9	SD0DAT2	ET0_LINKSTA	ET0_LINKSTA	IRQ0-DS					
	S5D5	SD0DAT2	ET0_LINKSTA	ET0_LINKSTA	IRQ0-DS					
P208		PSEL 00010B	PSEL 10001B	PSEL 10101B	PSEL 10110B	PSEL 10111B	PSEL 11001B	PSEL 11010B		▲CS4# ▼LCD_DATA18
	S5D9	GTOVLO	-	QIO3	SD0DAT0	ET0_LINKSTA	ET0_LINKSTA	LCD_DATA18	TDATA3	
	S5D5	GTOVLO	CS4#	QIO3	SD0DAT0	ET0_LINKSTA	ET0_LINKSTA	-	TDATA3	
P210		PSEL 00010B	PSEL 01011B	PSEL 10001B	PSEL 10101B	PSEL 10110B	PSEL 10111B	PSEL 11001B	PSEL 11010B	▲CS6# ▼LCD_DATA20
	S5D9	GTIW	-	QIO1	SD0CD	ET0_WOL	ET0_WOL	LCD_DATA20	TDATA1	
	S5D5	GTIW	CS6#	QIO1	SD0CD	ET0_WOL	ET0_WOL	-	TDATA1	
P211		PSEL 00010B	PSEL 01011B	PSEL 10001B	PSEL 10101B	PSEL 10110B	PSEL 10111B	PSEL 11001B	PSEL 11010B	▲CS7# ▼LCD_DATA21
	S5D9	GTIV	-	QIO0	SD0CMD	ET0_MDIO	ET0_MDIO	LCD_DATA21	TDATA0	
	S5D5	GTIV	CS7#	QIO0	SD0CMD	ET0_MDIO	ET0_MDIO	-	TDATA0	
P214		PSEL 00010B	PSEL 10001B	PSEL 10101B	PSEL 10110B	PSEL 10111B	PSEL 11001B	PSEL 11010B		▼LCD_DATA22
	S5D9	GTIU	QSPCLK	SD0CLK	ET0_MDC	ET0_MDC	LCD_DATA22	TCLK		
	S5D5	GTIU	QSPCLK	SD0CLK	ET0_MDC	ET0_MDC	-	TCLK		
P306		PSEL 00010B	PSEL 00100B	PSEL 01011B	PSEL 10001B	PSEL 11001B				▼LCD_DATA18
	S5D9	GTOULO	SCK6	A11	QSSL	LCD_DATA18				
	S5D5	GTOULO	SCK6	A11	QSSL	-				
P307		PSEL 00010B	PSEL 00100B	PSEL 01011B	PSEL 10001B	PSEL 11001B				▼LCD_DATA19
	S5D9	GTOUUP	CTS6	A12	QIO0	LCD_DATA19				
	S5D5	GTOUUP	CTS6	A12	QIO0	-				

Table 3 100 Pin Package Difference (3 of 3)

Port	MCU	Select								Comments
P313		PSEL 01011B	PSEL 10101B	PSEL 10110B	PSEL 11001B					▼LCD_TCON2
	S5D9	A20	SD0DAT7	ET0_ERXD3	LCD_TCON2					
	S5D5	A20	SD0DAT7	ET0_ERXD3	-					
P408		PSEL 00010B	PSEL 00011B	PSEL 00101B	PSEL 00111B	PSEL 01100B	PSEL 10011B	PSEL 10100B	PSEL 10110B	▼USBHS_ID
	S5D9	GTOWLO	GTIOC10B	RXD3	SCL0	TS4	USB_ID	USBHS_ID	ET0_CRS	
	S5D5	GTOWLO	GTIOC10B	RXD3	SCL0	TS4	USB_ID	-	ET0_CRS	
		PSEL 10111B	PSEL 11000B	ISEL						
	S5D9	RMII0_CRS_DV	PIXCLK	IRQ7						
	S5D5	RMII0_CRS_DV	PIXCLK	IRQ7						
P409		PSEL 00010B	PSEL 00011B	PSEL 00101B	PSEL 01100B	PSEL 10011B	PSEL 10100B	PSEL 10110B	PSEL 10111B	▼USBHS_EXICEN
	S5D9	GTOWUP	GTIOC10A	TXD3	TS5	USB_EXICEN	USBHS_EXICEN	ET0_RX_CLK	RMII0_RX_ER	
	S5D5	GTOWUP	GTIOC10A	TXD3	TS5	USB_EXICEN	-	ET0_RX_CLK	RMII0_RX_ER	
		PSEL 11000B	ISEL							
	S5D9	HSYNC	IRQ6							
	S5D5	HSYNC	IRQ6							
P608		PSEL 00011B	PSEL 01011B	PSEL 11001B						▼LCD_DATA7
	S5D9	GTIOC4B	A0/BC0/A0/DQM1	LCD_DATA7						
	S5D5	GTIOC4B	A0/BC0/A0/DQM1	-						

Appendix 2. 144 Pin Package

Table 4 144 Pin Package Difference (1 of 8)

Port	MCU	Select								Comments
P003		ASEL ADC								▼PGAVSS000
	S5D9	PGAVSS000/AN007								
	S5D5	AN007								
P007		ASEL ADC								▼PGAVSS100
	S5D9	PGAVSS100/AN107								
	S5D5	AN107								
P100		PSEL 00001B	PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00101B	PSEL 00110B	PSEL 00111B	PSEL 01000B	▼LCDEXTCLK
	S5D9	AGTIO0	GTETRGA	GTIOC5B	RXD0	SCK1	MISOA	SCL1	KR00	
	S5D5	AGTIO0	GTETRGA	GTIOC5B	RXD0	SCK1	MISOA	SCL1	KR00	
		PSEL 01011B	PSEL 11001B	ISEL						
	S5D9	D0/DQ0	LCD_EXTCLK	IRQ2						
	S5D5	D0/DQ0	-	IRQ2						
P101		PSEL 00001B	PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00101B	PSEL 00110B	PSEL 00111B	PSEL 01000B	▼LCD_CLK
	S5D9	AGTEE0	GTETRGB	GTIOC5A	TXD0	CTS1	MOSIA	SDA1	KR01	
	S5D5	AGTEE0	GTETRGB	GTIOC5A	TXD0	CTS1	MOSIA	SDA1	KR01	
		PSEL 01011B	PSEL 11001B	ISEL						
	S5D9	D1/DQ1	LCD_CLK	IRQ1						
	S5D5	D1/DQ1	-	IRQ1						
P102		PSEL 00001B	PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00110B	PSEL 01000B	PSEL 01010B	PSEL 01011B	▼LCD_TCON0
	S5D9	AGTO0	GTOWLO	GTIOC2B	SCK0	RSPCKA	KR02	ADTRG0	D2/DQ2	
	S5D5	AGTO0	GTOWLO	GTIOC2B	SCK0	RSPCKA	KR02	ADTRG0	D2/DQ2	
		PSEL 10000B	PSEL 11001B							
	S5D9	CRX0	LCD_TCON0							
	S5D5	CRX0	-							

Table 4 144 Pin Package Difference (2 of 8)

Port	MCU	Select								CommentsS
P103		PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00110B	PSEL 01000B	PSEL 01011B	PSEL 10000B	PSEL 11001B	▼LCD_TCON1
	S5D9	GTOWUP	GTIOC2A	CTS0	SSLA0	KR03	D3/DQ3	CTX0	LCD_TCON1	
	S5D5	GTOWUP	GTIOC2A	CTS0	SSLA0	KR03	D3/DQ3	CTX0	-	
P104		PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00110B	PSEL 01000B	PSEL 01011B	PSEL 11001B	ISEL	▼LCD_TCON2
	S5D9	GTETRGB	GTIOC1B	RXD8	SSLA1	KR04	D4/DQ4	LCD_TCON2	IRQ1	
	S5D5	GTETRGB	GTIOC1B	RXD8	SSLA1	KR04	D4/DQ4	-	IRQ1	
P105		PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00110B	PSEL 01000B	PSEL 01011B	PSEL 11001B	ISEL	▼LCD_TCON3
	S5D9	GTETRGA	GTIOC1A	TXD8	SSLA2	KR05	D5/DQ5	LCD_TCON3	IRQ0	
	S5D5	GTETRGA	GTIOC1A	TXD8	SSLA2	KR05	D5/DQ5	-	IRQ0	
P106		PSEL 00001B	PSEL 00011B	PSEL 00100B	PSEL 00110B	PSEL 01000B	PSEL 01011B	PSEL 11001B		▼LCD_DATA0
	S5D9	AGTOB0	GTIOC8B	SCK8	SSLA3	KR06	D6/DQ6	LCD_DATA0		
	S5D5	AGTOB0	GTIOC8B	SCK8	SSLA3	KR06	D6/DQ6	-		
P107		PSEL 00001B	PSEL 00011B	PSEL 00100B	PSEL 01000B	PSEL 01011B	PSEL 11001B			▼LCD_DATA1
	S5D9	AGTOA0	GTIOC8A	CTS8	KR07	D7/DQ7	LCD_DATA1			
	S5D5	AGTOA0	GTIOC8A	CTS8	KR07	D7/DQ7	-			
P111		PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00101B	PSEL 00110B	PSEL 01011B	PSEL 11001B	ISEL	▼LCD_DATA12
	S5D9	HRMON0	GTIOC3A	SCK2	SCK9	RSPCKB	A5	LCD_DATA12	IRQ4	
	S5D5	HRMON0	GTIOC3A	SCK2	SCK9	RSPCKB	A5	-	IRQ4	
P112		PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00101B	PSEL 00110B	PSEL 01011B	PSEL 10010B	PSEL 11001B	▼LCD_DATA11
	S5D9	HRMON1	GTIOC3B	TXD2	SCK1	SSLB0	A4	SSISCK0	LCD_DATA11	
	S5D5	HRMON1	GTIOC3B	TXD2	SCK1	SSLB0	A4	SSISCK0	-	
P113		PSEL 00011B	PSEL 00100B	PSEL 01011B	PSEL 10010B	PSEL 11001B				▼LCD_DATA10
	S5D9	GTIOC2A	RXD2	A3	SSIWS0	LCD_DATA10				
	S5D5	GTIOC2A	RXD2	A3	SSIWS0	-				

Table 4 144 Pin Package Difference (3 of 8)

Pory	MCU	Select								Comments
P114		PSEL 00011B	PSEL 01011B	PSEL 10010B	PSEL 11001B					▼LCD_DATA9
	S5D9	GTIOC2B	A2	SSIRXD0	LCD_DATA9					
	S5D5	GTIOC2B	A2	SSIRXD0	-					
P115		PSEL 00011B	PSEL 01011B	PSEL 10010B	PSEL 11001B					▼LCD_DATA8
	S5D9	GTIOC4A	A1	SSITXD0	LCD_DATA8					
	S5D5	GTIOC4A	A1	SSITXD0	-					
P202		PSEL 00011B	PSEL 00100B	PSEL 00101B	PSEL 00110B	PSEL 01011B	PSEL 10000B	PSEL 10101B	PSEL 10110B	▼LCD_TCON3
	S5D9	GTIOC5B	SCK2	RXD9	MISOB	WR1/BC1/-	CRX0	SD0DAT6	ET0_ERXD2	
	S5D5	GTIOC5B	SCK2	RXD9	MISOB	WR1/BC1/-	CRX0	SD0DAT6	ET0_ERXD2	
		PSEL 11001B	ISEL							
	S5D9	LCD_TCON3	IRQ3-DS							
	S5D5	-	IRQ3-DS							
P204		PSEL 00001B	PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00101B	PSEL 00110B	PSEL 00111B	PSEL 01010B	▲SSISCK0 ▼SSISCK1
	S5D9	AGTIO1	GTIW	GTIOC4B	SCK4	SCK9	RSPCKB	SCL0	CACREF	
	S5D5	AGTIO1	GTIW	GTIOC4B	SCK4	SCK9	RSPCKB	SCL0	CACREF	
		PSEL 01011B	PSEL 01100B	PSEL 10010B	PSEL 10011B	PSEL 10101B	PSEL 10110B			
	S5D9	A18	TS0	SSISCK1	USB_OVRCURB_A-DS	SD0DAT4	ET0_RX_DV			
	S5D5	A18	TS0	SSISCK0	USB_OVRCURB_A-DS	SD0DAT4	ET0_RX_DV			
P205		PSEL 00001B	PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00101B	PSEL 00110B	PSEL 00111B	PSEL 01001B	▲SSIWS0 ▼SSIWS1
	S5D9	AGTO1	GTIV	GTIOC4A	TXD4	CTS9	SSLB0	SCL1	CLKOUT	
	S5D5	AGTO1	GTIV	GTIOC4A	TXD4	CTS9	SSLB0	SCL1	CLKOUT	
		PSEL 01011B	PSEL 01100B	PSEL 10010B	PSEL 10011B	PSEL 10101B	PSEL 10110B	PSEL 10111B	ISEL	
	S5D9	A16	TSCAP	SSIWS1	USB_OVRCURA_A-DS	SD0DAT3	ET0_WOL	ET0_WOL	IRQ1-DS	
	S5D5	A16	TSCAP	SSIWS0	USB_OVRCURA_A-DS	SD0DAT3	ET0_WOL	ET0_WOL	IRQ1-DS	

Table 4 144 Pin Package Difference (4 of 8)

Port	MCU	Select								COMMENTS
P206		PSEL 00010B	PSEL 00100B	PSEL 00110B	PSEL 00111B	PSEL 01011B	PSEL 01100B	PSEL 10010B	PSEL 10011B	▲SSIDATA0 ▼SSIDATA1
	S5D9	GTIU	RXD4	SSLB1	SDA1	WAIT	TS1	SSIDATA1	USB_VBUSEN	
	S5D5	GTIU	RXD4	SSLB1	SDA1	WAIT	TS1	SSIDATA0	USB_VBUSEN	
		PSEL 10101B	PSEL 10110B	PSEL 10111B	ISEL					
	S5D9	SD0DAT2	ET0_LINKSTA	ET0_LINKSTA	IRQ0-DS					
	S5D5	SD0DAT2	ET0_LINKSTA	ET0_LINKSTA	IRQ0-DS					
P207		PSEL 00110B	PSEL 01011B	PSEL 01100B	PSEL 10001B	PSEL 11001B				▼LCD_DATA23
	S5D9	SSLB2	A17	TS2	QSSL	LCD_DATA23				
	S5D5	SSLB2	A17	TS2	QSSL	-				
P208		PSEL 00010B	PSEL 10001B	PSEL 10101B	PSEL 10110B	PSEL 10111B	PSEL 11001B	PSEL 11010B		▲CS4# ▼LCD_DATA18
	S5D9	GTOVLO	-	QIO3	SD0DAT0	ET0_LINKSTA	ET0_LINKSTA	LCD_DATA18	TDATA3	
	S5D5	GTOVLO	CS4#	QIO3	SD0DAT0	ET0_LINKSTA	ET0_LINKSTA	-	TDATA3	
P209		PSEL 00010B	PSEL 01011B	PSEL 10001B	PSEL 10101B	PSEL 10110B	PSEL 10111B	PSEL 11001B	PSEL 11010B	▲CS5# ▼LCD_DATA19
	S5D9	GTOVUP	-	QIO2	SD0WP	ET0_EXOUT	ET0_EXOUT	LCD_DATA19	TDATA2	
	S5D5	GTOVUP	CS5#	QIO2	SD0WP	ET0_EXOUT	ET0_EXOUT	-	TDATA2	
P210		PSEL 00010B	PSEL 01011B	PSEL 10001B	PSEL 10101B	PSEL 10110B	PSEL 10111B	PSEL 11001B	PSEL 11010B	▲CS6# ▼LCD_DATA20
	S5D9	GTIW	-	QIO1	SD0CD	ET0_WOL	ET0_WOL	LCD_DATA20	TDATA1	
	S5D5	GTIW	CS6#	QIO1	SD0CD	ET0_WOL	ET0_WOL	-	TDATA1	
P211		PSEL 00010B	PSEL 01011B	PSEL 10001B	PSEL 10101B	PSEL 10110B	PSEL 10111B	PSEL 11001B	PSEL 11010B	▲CS7# ▼LCD_DATA21
	S5D9	GTIV	-	QIO0	SD0CMD	ET0_MDIO	ET0_MDIO	LCD_DATA21	TDATA0	
	S5D5	GTIV	CS7#	QIO0	SD0CMD	ET0_MDIO	ET0_MDIO	-	TDATA0	
P214		PSEL 00010B	PSEL 10001B	PSEL 10101B	PSEL 10110B	PSEL 10111B	PSEL 11001B	PSEL 11010B		▼LCD_DATA22
	S5D9	GTIU	QSPCLK	SD0CLK	ET0_MDC	ET0_MDC	LCD_DATA22	TCLK		
	S5D5	GTIU	QSPCLK	SD0CLK	ET0_MDC	ET0_MDC	-	TCLK		

Table 4 144 Pin Package Difference (5 of 8)

Port	MCU	Select								Comments
P301		PSEL 00001B	PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00101B	PSEL 00110B	PSEL 01011B	PSEL 11001B	▼LCD_DATA13
	S5D9	AGTIO0	GTOULO	GTIOC4B	RXD2	CTS9	SSLB2	A6	LCD_DATA13	
	S5D5	AGTIO0	GTOULO	GTIOC4B	RXD2	CTS9	SSLB2	A6	-	
		ISEL								
	S5D9	IRQ6								
	S5D5	IRQ6								
P302		PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 00110B	PSEL 01011B	PSEL 11001B	ISEL		▼LCD_DATA14
	S5D9	GTOUUP	GTIOC4A	TXD2	SSLB3	A7	LCD_DATA14	IRQ5		
	S5D5	GTOUUP	GTIOC4A	TXD2	SSLB3	A7	-	IRQ5		
P303		PSEL 00011B	PSEL 01011B	PSEL 11001B						▼LCD_DATA15
	S5D9	GTIOC7B	A8	LCD_DATA15						
	S5D5	GTIOC7B	A8	-						
P304		PSEL 00010B	PSEL 00011B	PSEL 00100B	PSEL 01011B	PSEL 11001B	ISEL			▼LCD_DATA16
	S5D9	GTOWLO	GTIOC7A	RXD6	A9	LCD_DATA16	IRQ9			
	S5D5	GTOWLO	GTIOC7A	RXD6	A9	-	IRQ9			
P305		PSEL 00010B	PSEL 00100B	PSEL 01011B	PSEL 10001B	PSEL 11001B	ISEL			▼LCD_DATA17
	S5D9	GTOWUP	TXD6	A10	QSPCLK	LCD_DATA17	IRQ8			
	S5D5	GTOWUP	TXD6	A10	QSPCLK	-	IRQ8			
P306		PSEL 00010B	PSEL 00100B	PSEL 01011B	PSEL 10001B	PSEL 11001B				▼LCD_DATA18
	S5D9	GTOULO	SCK6	A11	QSSL	LCD_DATA18				
	S5D5	GTOULO	SCK6	A11	QSSL	-				
P307		PSEL 00010B	PSEL 00100B	PSEL 01011B	PSEL 10001B	PSEL 11001B				▼LCD_DATA19
	S5D9	GTOUUP	CTS6	A12	QIO0	LCD_DATA19				
	S5D5	GTOUUP	CTS6	A12	QIO0	-				

Table 4 144 Pin Package Difference (6 of 8)

PORT	MCU	SELECT								COMMENTS
P308		PSEL 01011B	PSEL 10001B	PSEL 11001B						▼LCD_DATA20
	S5D9	A13	QIO1	LCD_DATA20						
	S5D5	A13	QIO1	-						
P309		PSEL 00101B	PSEL 01011B	PSEL 10001B	PSEL 11001B					▼LCD_DATA21
	S5D9	RXD3	A14	QIO2	LCD_DATA21					
	S5D5	RXD3	A14	QIO2	-					
P310		PSEL 00001B	PSEL 00101B	PSEL 01011B	PSEL 10001B	PSEL 11001B				▼LCD_DATA22
	S5D9	AGTEE1	TXD3	A15	QIO3	LCD_DATA22				
	S5D5	AGTEE1	TXD3	A15	QIO3	-				
P311		PSEL 00001B	PSEL 00101B	PSEL 01011B	PSEL 11001B					▼LCD_DATA23
	S5D9	AGTOB1	SCK3	CS2#/RAS	LCD_DATA23					
	S5D5	AGTOB1	SCK3	CS2#/RAS	-					
P313		PSEL 01011B	PSEL 10101B	PSEL 10110B	PSEL 11001B					▼LCD_TCON2
	S5D9	A20	SD0DAT7	ET0_ERXD3	LCD_TCON2					
	S5D5	A20	SD0DAT7	ET0_ERXD3	-					
P408		PSEL 00010B	PSEL 00011B	PSEL 00101B	PSEL 00111B	PSEL 01100B	PSEL 10011B	PSEL 10100B	PSEL 10110B	▼USBHS_ID
	S5D9	GTOWLO	GTIOC10B	RXD3	SCL0	TS4	USB_ID	USBHS_ID	ET0_CRS	
	S5D5	GTOWLO	GTIOC10B	RXD3	SCL0	TS4	USB_ID	-	ET0_CRS	
		PSEL 10111B	PSEL 11000B	ISEL						
	S5D9	RMII0_CRS_DV	PIXCLK	IRQ7						
	S5D5	RMII0_CRS_DV	PIXCLK	IRQ7						

Table 4 Pin Package Difference (7 of 8)

Port	MCU	Select								Comments
P409		PSEL 00010B	PSEL 00011B	PSEL 00101B	PSEL 01100B	PSEL 10011B	PSEL 10100B	PSEL 10110B	PSEL 10111B	▼USBHS_EXICEN
	S5D9	GTOWUP	GTIOC10A	TXD3	TS5	USB_EXICEN	USBHS_EXICEN	ET0_RX_CLK	RMII0_RX_ER	
	S5D5	GTOWUP	GTIOC10A	TXD3	TS5	USB_EXICEN	-	ET0_RX_CLK	RMII0_RX_ER	
		PSEL 11000B	ISEL							
	S5D9	HSYNC	IRQ6							
	S5D5	HSYNC	IRQ6							
P508		PSEL 00100B	PSEL 00101B	PSEL 10101B	ASEL ADC					▼SD1DAT3
	S5D9	SCK6	SCK5	-	AN020					
	S5D5	SCK6	SCK5	SD1DAT3	AN020					
P600		PSEL 00011B	PSEL 00101B	PSEL 01001B	PSEL 01010B	PSEL 01011B	PSEL 11001B			▼LCD_DATA2
	S5D9	GTIOC6B	SCK9	CLKOUT	CACREF	RD	LCD_DATA2			
	S5D5	GTIOC6B	SCK9	CLKOUT	CACREF	RD	-			
P601		PSEL 00011B	PSEL 00101B	PSEL 01011B	PSEL 11001B					▼LCD_DATA3
	S5D9	GTIOC6A	RXD9	WR/WR0/DQM0	LCD_DATA3					
	S5D5	GTIOC6A	RXD9	WR/WR0/DQM0	-					
P602		PSEL 00011B	PSEL 00101B	PSEL 01011B	PSEL 11001B					▼LCD_DATA4
	S5D9	GTIOC7B	TXD9	BCLK/SDCLK	LCD_DATA4					
	S5D5	GTIOC7B	TXD9	BCLK/SDCLK	-					
P608		PSEL 00011B	PSEL 01011B	PSEL 11001B						▼LCD_DATA7
	S5D9	GTIOC4B	A0/BC0/A0/DQM1	LCD_DATA7						
	S5D5	GTIOC4B	A0/BC0/A0/DQM1	-						
P609		PSEL 00011B	PSEL 01011B	PSEL 10000B	PSEL 11001B					▼LCD_DATA6
	S5D9	GTIOC5A	CS1#/CKE	CTX1	LCD_DATA6					
	S5D5	GTIOC5A	CS1#/CKE	CTX1	-					

Table 4 144 Pin Package Difference (8 of 8)

Port	MCU	Select								Comments
P610		PSEL 00011B	PSEL 01011B	PSEL 10000B	PSEL 11001B					▼LCD_DATA5
	S5D9	GTIOC5B	CS0#/WE	CRX1	LCD_DATA5					
	S5D5	GTIOC5B	CS0#/WE	CRX1	-					
P801		PSEL 01011B	PSEL 10101B							▼SD1DAT4
	S5D9	D15/DQ15	SD1DAT4							
	S5D5	D15/DQ15	-							

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Revision History

		Description	
Rev.	**Date**	**Page**	**Summary**
1.00	Sep 1, 2017		Initial release

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