## Old Company Name in Catalogs and Other Documents

On April 1<sup>st</sup>, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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# **RENESAS TECHNICAL UPDATE**

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Product Category	MPU&MCU		Document No.	TN-SH7-A558A/E	Rev.	1.00
Title	SH7727 Error Correction of Hardware Manual about LCDC rotation display function		Information Category	Technical Notification		
		Lot No.				
Applicable Product SH3-DSP SH7700 Series SH7727 Group		All	Reference Document	SH3-DSP SH7727 Hardware Manual (ADE-602-209C Rev. 4.0)		

SH3-DSP SH7727 Hardware Manual has following error of description.

## 1. page 741

25.3.1 LCD Module Sizes which can be Displayed in this LCDC

#### Error

The overhead coefficient is 1.375 if the SDRAM in CL2 uses a 32-bit bus and 1.188 if it uses a 16-bit bus.

#### Correction

The overhead coefficient of the SDRAM in CL2 is as follows.

When not use the hardware rotation function (ROT = 0), the overhead coefficient is 1.375 if the SDRAM in CL2 uses a 32-bit bus and 1.188 if it uses a 16-bit bus.

When using the hardware rotation function (ROT = 1), the overhead coefficient of the SDRAM in CL2 is as follows, by Access Unit Select (AU) and Bus Width.

Access Unit Select (AU)	32-bit Bus Width	16-bit Bus Width
4-burst operation	2.500	1.750
8-burst operation	1.750	1.375
16-burst operation	1.375	1.188
32-burst operation	1.188	1.094

## 2. page 742

Table 25.3 Display Resolutions when Using Display Rotation

## Error

Table 25.3 Display Resolutions when Using Display Rotation

Image for Display in Memory	LCD Module		· B: 1
(X-Resolution × Y-Resolution)	(X-Resolution × Y-Resolution)	Number of Colors f	<del></del>
240 × 320	320 × 240	Monochrome	_4 bpp
			8 bpp
		Color	8 bpp
			16 bpp
234 × 320	320 × 234	Monochrome	8 bpp
		Color	16 bpp
80 × 160	160 × 80	Monochrome	2 bpp
			4 bpp
			8 bpp
		Color	4 bpp
			8 bpp
			16bpp
64 × 128	128 × 64	Monochrome	1 bpp
			2 bpp
			4 bpp
			8 bpp
		Color	4 bpp
			8 bpp

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Correction:

Table 25.3.1 Limits on the Resolution of Rotated Displays, Burst Length, and Connected Memory (32-bit SDRAM)

Image for Display in Memory (X-Resolution × Y-Resolution)	LCD Module (X-Resolution × Y-Resolution)	. ,		Number of Column Address Bits of SDRAM	Limitation on the Burst Length of LCDC (LDSMR*)
240 × 320	320 × 240	Monochrome	4 bpp (packed)	8bit	Not more than 8 bursts
				9bit	Not more than 16 bursts
				10bit	_
			4 bpp (unpacked)	8bit	4 bursts
				9bit	Not more than 8 bursts
				10bit	Not more than 16 bursts
			6 bpp	8bit	4 bursts
				9bit	Not more than 8 bursts
				10bit	Not more than 16 bursts
		Color	8 bpp	8bit	4 bursts
				9bit	Not more than 8 bursts
				10bit	Not more than 16 bursts
			16 bpp	8bit	Unusable
			• •	9bit	4 bursts
				10bit	Not more than 8 bursts
234 × 320	320 × 234	Monochrome	6 bpp	8bit	4 bursts
				9bit	Not more than 8 bursts
				10bit	Not more than 16 bursts
		Color	16 bpp	8bit	Unusable
		1	* = F F	9bit	4 bursts
				10bit	Not more than 8 bursts
80 × 160	160 × 80	Monochrome	2 bpp	8bit	
00 100	100 × 00	Wichioonii omo	2 000	9bit	_
				10bit	<del>                                     </del>
			4 bpp (packed)	8bit	Not more than 16 bursts
			Popp (packed)	9bit	—
				10bit	_
			4 bpp (unpacked)	8bit	Not more than 8 bursts
			+ ppp (unpacked)	9bit	
					Not more than 16 bursts
			6 hnn	10bit	Not more than 0 harmets
			6 bpp	8bit	Not more than 8 bursts
				9bit	Not more than 16 bursts
			41 / 1 1	10bit	
		Color	4 bpp (packed)	8bit	Not more than 16 bursts
				9bit	_
				10bit	_
			4 bpp (unpacked)	8bit	Not more than 8 bursts
				9bit	Not more than 16 bursts
				10bit	_
			8 bpp	8bit	Not more than 8 bursts
				9bit	Not more than 16 bursts
				10bit	_
			16 bpp	8bit	4 bursts
			1.1	9bit	Not more than 8 bursts
		i	i		
					Not more than 16 bursts
64 × 128	128 × 64	Monochrome	1 bpp	10bit	Not more than 16 bursts  —
64 × 128	128 × 64	Monochrome	1 bpp	10bit 8bit	Not more than 16 bursts  — — —
64 × 128	128 × 64	Monochrome	1 bpp	10bit 8bit 9bit	_
64 × 128	128 × 64	Monochrome		10bit 8bit 9bit 10bit	_
64 × 128	128 × 64	Monochrome	1 bpp 2 bpp	10bit 8bit 9bit 10bit 8bit	_
64 × 128	128 × 64	Monochrome		10bit 8bit 9bit 10bit 8bit 9bit	_
64 × 128	128 × 64	Monochrome	2 bpp	10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit	- - - - - -
64 × 128	128 × 64	Monochrome		10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit	_
64 × 128	128 × 64	Monochrome	2 bpp	10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit	- - - - - -
64 × 128	128 × 64	Monochrome	2 bpp 4 bpp (packed)	10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit	- - - - - - - - -
64 × 128	128 × 64	Monochrome	2 bpp	10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 10bit 10bit 8bit 10bit 8bit 9bit 10bit	- - - - - -
64 × 128	128 × 64	Monochrome	2 bpp 4 bpp (packed)	10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 10bit 10bit 8bit 9bit 10bit 8bit 9bit	- - - - - - - - -
64 × 128	128 × 64	Monochrome	2 bpp 4 bpp (packed) 4 bpp (unpacked)	10bit 8bit 9bit 10bit	— — — — — — — — — — — — — — — — — — Not more than 16 bursts — — — — — — — — — — — — — — — — — —
64 × 128	128 × 64	Monochrome	2 bpp 4 bpp (packed)	10bit 8bit 9bit 10bit 8bit	- - - - - - - - -
64 × 128	128 × 64	Monochrome	2 bpp 4 bpp (packed) 4 bpp (unpacked)	10bit 8bit 9bit	— — — — — — — — — — — — — — — — — — Not more than 16 bursts — — — — — — — — — — — — — — — — — —
64 × 128	128 × 64		2 bpp 4 bpp (packed) 4 bpp (unpacked) 6 bpp	10bit 8bit 9bit 10bit	— — — — — — — — — — — — — — — — — — Not more than 16 bursts — — — — — — — — — — — — — — — — — —
64 × 128	128 × 64	Monochrome	2 bpp 4 bpp (packed) 4 bpp (unpacked)	10bit 8bit 9bit 10bit	— — — — — — — — — — — — — — — — — — Not more than 16 bursts — — — — — — — — — — — — — — — — — —
64 × 128	128 × 64		2 bpp 4 bpp (packed) 4 bpp (unpacked) 6 bpp	10bit 8bit 9bit 10bit	— — — — — — — — — — — — — — — — — — Not more than 16 bursts — — — — — — — — — — — — — — — — — —
64 × 128	128 × 64		2 bpp  4 bpp (packed)  4 bpp (unpacked)  6 bpp  4 bpp (packed)	10bit 8bit 9bit	
64 × 128	128 × 64		2 bpp 4 bpp (packed) 4 bpp (unpacked) 6 bpp	10bit 8bit 9bit 10bit	— — — — — — — — — — — — — — — — — — Not more than 16 bursts — — — — — — — — — — — — — — — — — —
64 × 128	128 × 64		2 bpp  4 bpp (packed)  4 bpp (unpacked)  6 bpp  4 bpp (packed)	10bit 8bit 9bit	
64 × 128	128 × 64		2 bpp  4 bpp (packed)  4 bpp (unpacked)  6 bpp  4 bpp (packed)	10bit 8bit 9bit 10bit	
64 × 128	128 × 64		2 bpp  4 bpp (packed)  4 bpp (unpacked)  6 bpp  4 bpp (packed)  4 bpp (unpacked)	10bit 8bit 9bit 10bit	
64 × 128	128 × 64		2 bpp  4 bpp (packed)  4 bpp (unpacked)  6 bpp  4 bpp (packed)	10bit 8bit 9bit 10bit	

Note: \* Specify the data of the number of line specified as burst length can be stored in the same row address alignment of SDRAM.



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Table 25.3.2 Limits on the Resolution of Rotated Displays, Burst Length, and Connected Memory (16-bit SDRAM)

Image for Display in Memory (X-Resolution × Y-Resolution)	LCD Module (X-Resolution × Y-Resolution)			Number of Column Address Bits of SDRAM	Limitation on the Burst Length of LCDC (LDSMR*)	
240 × 320	320 × 240	Monochrome	4 bpp (packed)	8bit	Not more than 4 bursts	
				9bit	Not more than 8 bursts	
				10bit	Not more than 16 bursts	
			4 bpp (unpacked)	8bit	Unusable	
				9bit	4 bursts	
				10bit	Not more than 8 bursts	
			6 bpp	8bit	Unusable	
				9bit	4 bursts	
				10bit	Not more than 8 bursts	
		Color	8 bpp	8bit	Unusable	
				9bit	4 bursts	
				10bit	Not more than 8 bursts	
			16 bpp	8bit	Unusable	
				9bit	Unusable	
				10bit	4 bursts	
234 × 320	320 × 234	Monochrome	6 bpp	8bit	Unusable	
				9bit	4 bursts	
				10bit	Not more than 8 bursts	
		Color	16 bpp	8bit	Unusable	
				9bit	Unusable	
		<u> </u>		10bit	4 bursts	
80 × 160	160 × 80	Monochrome	2 bpp	8bit	Not more than 16 bursts	
			- 1- 1-	9bit		
				10bit	_	
			4 bpp (packed)	8bit	Not more than 8 bursts	
			'' '' '	9bit	Not more than 16 bursts	
				10bit	_	
			4 bpp (unpacked)	8bit	4 bursts	
				9bit	Not more than 8 bursts	
				10bit	Not more than 16 bursts	
			6 bpp	8bit	4 bursts	
				9bit	Not more than 8 bursts	
				10bit	Not more than 16 bursts	
		Color	4 bpp (packed)	8bit	Not more than 8 bursts	
			4 орр (раскей)	9bit	Not more than 16 bursts	
				10bit	_	
			4 bpp (unpacked)	8bit	4 bursts	
			. opp (anpaonoa)	9bit	Not more than 8 bursts	
				10bit	Not more than 16 bursts	
			8 bpp	8bit	4 bursts	
			o ppp	9bit	Not more than 8 bursts	
				10bit	Not more than 16 bursts	
			16 bpp	8bit	Unusable	
			10 phh	9bit	4 bursts	
				10bit	Not more than 8 bursts	
64 x 128	128 × 64	Monochromo	1 hnn		- NOUTHORE UNAIL & DUISES	
64 × 128	128 × 64	Monochrome	1 bpp	8bit 9bit	<del>-</del>	
					+ = =	
			2 hnn	10bit	<del>-</del>	
			2 bpp	8bit		
				9bit		
			4 hnn (ncalcad)	10bit	Not more than 10 historia	
			4 bpp (packed)	8bit 9bit	Not more than 16 bursts	
				1 900	_	
			Alban (	10bit	Not make then 0 hursts	
			4 bpp (unpacked)	10bit 8bit	Not more than 8 bursts	
			4 bpp (unpacked)	10bit 8bit 9bit		
			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	10bit 8bit 9bit 10bit	Not more than 8 bursts Not more than 16 bursts —	
			4 bpp (unpacked) 6 bpp	10bit 8bit 9bit 10bit 8bit	Not more than 8 bursts Not more than 16 bursts — Not more than 8 bursts	
			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	10bit 8bit 9bit 10bit 8bit 9bit	Not more than 8 bursts Not more than 16 bursts —	
			6 bpp	10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit	Not more than 8 bursts Not more than 16 bursts  Not more than 8 bursts Not more than 16 bursts  Not more than 16 bursts	
		Color	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit	Not more than 8 bursts Not more than 16 bursts — Not more than 8 bursts	
		Color	6 bpp	10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit	Not more than 8 bursts Not more than 16 bursts  Not more than 8 bursts Not more than 16 bursts  Not more than 16 bursts	
		Color	6 bpp 4 bpp (packed)	10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit	Not more than 8 bursts Not more than 16 bursts  —  Not more than 8 bursts Not more than 16 bursts  —  Not more than 16 bursts  —  Not more than 16 bursts  —  Not more than 16 bursts —  —	
		Color	6 bpp	10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit	Not more than 8 bursts Not more than 16 bursts	
		Color	6 bpp 4 bpp (packed)	10bit 8bit 9bit	Not more than 8 bursts Not more than 16 bursts  —  Not more than 8 bursts Not more than 16 bursts  —  Not more than 16 bursts  —  Not more than 16 bursts  —  Not more than 16 bursts —  —	
		Color	6 bpp 4 bpp (packed) 4 bpp (unpacked)	10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit 9bit 10bit 8bit	Not more than 8 bursts Not more than 16 bursts  Not more than 8 bursts Not more than 16 bursts  Not more than 16 bursts  Not more than 16 bursts  Not more than 8 bursts Not more than 8 bursts Not more than 16 bursts	
		Color	6 bpp 4 bpp (packed)	10bit 8bit 9bit	Not more than 8 bursts Not more than 16 bursts	
		Color	6 bpp  4 bpp (packed)  4 bpp (unpacked)	10bit 8bit 9bit 10bit	Not more than 8 bursts Not more than 16 bursts  Not more than 8 bursts Not more than 16 bursts  Not more than 16 bursts  Not more than 16 bursts  Not more than 8 bursts Not more than 8 bursts Not more than 16 bursts	

Note: \* Specify the data of the number of line specified as burst length can be stored in the same row address alignment of SDRAM.