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Old Company Name in Catalogs and Other Documents

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Renesas Electronics Corporation

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

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HITACHI SEMICONDUCTOR TECHNICAL UPDATE

Classification of Production	Microprocessor		No	TN-SH7-405A/E	Rev	1
THEME	SH7727 usage notice on SIOF		Classification of Information	1. Spec change 2. Supplement of Documents ③ 3. Limitation of Use 4. Change of Mask 5. Change of Production Line		
PRODUCT NAME	HD6417727	Lot No.	Reference Documents	SH7727 Hardware Manual	Effective Date	
		All			Eternity	

HD6417727's SIOF module has the following usage notice.

1. Phenomenon :

When using SIOF, the following phenomenon may occur.

- (1) During SIOF transmit with DMA transferring, SIOF may suddenly stop internal DMA transfer request, then underflow error occurs and transmit operation stops.
- (2) During SIOF transmit and transmit FIFO empty, underflow or overflow, some data transmit may fail, depending on the timing relationship between transmit FIFO write in and read out.
- (3) During SIOF receive operation with DMA internal peripheral module request mode, some data receive may fail, due to unexpected overflow errors caused on the manner that only one data transfer request exceeding watermark of receive FIFO.
- (4) During receive operation, some receive data may fail when a write occurs at reading from receive FIFO.
- (5) During SIOF receive operation and receive FIFO empty, underflow or overflow, some data receive may fail, depending on the timing relationship between receive FIFO write in and read out. In this case, the statuses of full, underflow, and overflow may not be reflected to flags.

2. Work around :

In order to avoid these phenomena, please take the following work around with software at using SIOF.

- (1) Work around for the phenomena (1) and (2)

With referring to transmit FIFO transfer request interrupt (SIFTXI) caused by under watermark of transmit FIFO, write the exactly same number of data with that of transmit FIFO empty slots with DMA auto request.

At that time, make sure to set the watermark value so as not to occur transmit FIFO empty nor underflow when transmit operation

Ex.) When 12 empty slots are set to transmit FIFO, write 12 data to transmit FIFO with DMA auto request by transmit FIFO transfer interrupt (SIFTXI).

- (2) Work around for the phenomena (3),(4), and (5)

With referring to receive FIFO transfer request interrupt (SIFRXI) caused by over watermark of receive FIFO, read the (valid number - 2) of data from receive FIFO with DMA auto request. Read operation shall be done before next receive data write.

At that time, make sure to set the watermark value so as not to receive FIFO full nor overflow when receive operation

Ex.) When 12 empty slots are set to receive FIFO, read 12 data from receive FIFO with DMA auto request by receive FIFO transfer interrupt (SIFRXI).

3. Etc.

- (1) Not to use DMA 16 bytes transfer. (Refer to SH7727 hardware manual P.387)
- (2) Recommend DMA auto request for SIOF access. When from CPU, not to use continuous access.
- (3) When newly use SIOF after transmit/receive operation, proceed transfer operation after transmit reset (TXRST) or receive reset (RXRST).