RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU			Document No.	TN-SH7-A813A/E	Rev.	1.00
Title	Pin Output Levels when the Microcontroller is Reset			Information Category	Technical Notification		
Applicable Product	SH7147 Series products	Lot No.		Reference Document	See below.		
		All lots					

We would like to inform you of the following point for caution in the handling of input/output pins when microcontrollers of applicable products are reset.

[Point for Caution]

When the microcontroller is externally or internally reset, a high- or low-level signal may be produced on pins that are set for output.

[Phenomeon]

When the microcontroller is reset, a high- or low-level signal may be produced on pins that are set for output. Results of timing simulation show that the output is driven over a period no greater than 10 nsec (see figure 1). The output signal level depends on the pin, as shown in table 1.
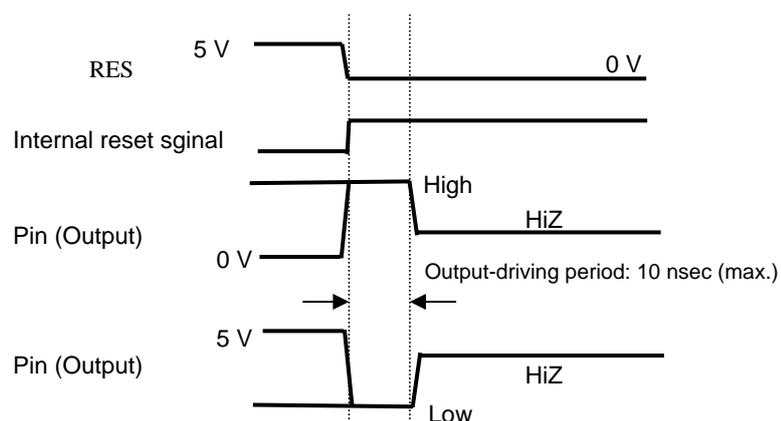

Figure 1. Output Waveforms

Table 1.   Corresponce between Output Signal Level and Pins

Pin No.	Level
2, 4 to 10, 12, 13, 15, 17, 18, 25, 26, 33, 34, 41 to 44, 51, 58, 60 to 62	High
19 to 24, 27 to 32, 35, 37, 38, 40, 45 to 47, 49, 52 to 56, 63, 65 to 69	Low

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[Conditions]

This phenomenon occurs when the pins are initially set as outputs by the port I/O registers (whether as general-purpose or peripheral-module outputs) in the following situations.

1. External resetting of the microcontroller during normal operation ($\overline{\text{RES}}$ = 1, then set to 0)

2. Internal resetting of the microcontroller by the watchdog timer (WDT) during normal operation

[Remedies]

1. Set the affected pins as inputs before resetting the microcontroller.

2. If the microcontroller is reset with affected pins set as outputs, handle the pins appropriately on the board.

[Related manual]

Series	Group	Related Manual	Rev.	Document Number
SH7147	SH7147	SH7147 Group Hardware Manual	3.00	REJ09B0230-0300