RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-SH7-A886A/E	Rev.	1.00
Title	Usage Notes on the Multi-Function Timer Pulse Unit (MTU)		Information Category	Technical Notification		
Applicable Product	See below	Lot No.	Reference Document	See below		
		ALL				

We would like to inform you of some points on usage of the multi-function timer pulse unit (MTU). When using this module, please apply the countermeasures listed below. The descriptions in the manual will be corrected in accord with these notes. The corrections are explained using the SH7144 Group, SH7145 Group Hardware Manual as a representative example.

1. Timer Output Master Enable Register (TOER)

1.1 Usage Note

When the corresponding bit in TOER is changed from 1 (MTU output enabled) to 0 (MTU output disabled) while TCNT_3/4 is operating, a PWM waveform with a duty cycle different from that set up by the settings may be output when the corresponding bit is set to 1 again. Therefore, be sure to stop TCNT_3/4 first before changing a bit in TOER to 0.

1.2 Countermeasure

When a bit in TOER is changed from 1 to 0 after TCNT_3/4 is started, follow the procedure below.

(1) Set the bit in the timer start register (TSTR) that corresponds to the counter to 0 (which stops counting).

(2) Set the bit in TOER to 0.

1.3 Correction in the Manual

11.3.10 Timer Output Master Enable Register (TOER)

[Before correction (p.252)]

TOER is an 8-bit readable/writable register that enables/disables output settings for output pins TIOC4D, TIOC4C, TIOC3D, TIOC4B, TIOC4A, and TIOC3B. These pins do not output correctly if the TOER bits have not been set. Set TOER of CH3 and CH4 prior to setting TIOR of CH3 and CH4.

[After correction (p.252)]

TOER is an 8-bit readable/writable register that enables/disables output settings for output pins TIOC4D, TIOC4C, TIOC3D, TIOC4B, TIOC4A, and TIOC3B. These pins do not output correctly if the TOER bits have not been set. Set TOER of CH3 and CH4 prior to setting TIOR of CH3 and CH4. Set TOER when count operation of TCNT channels 3 and 4 is halted (See figures 11.30 and 11.33).

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Applicable Products and Reference Documents

Series	Group	Reference Document Title	Rev.	Document No.
SH7040	SH7040, SH7041, SH7042, SH7043, SH7044, SH7045	SH7040, SH7041, SH7042, SH7043, SH7044, SH7045 Group Hardware Manual	6.00	REJ09B0044-0600O
SH7046	SH7046, SH7048, SH7148	SH7046 Group Hardware Manual	4.00	REJ09B0270-0400
	SH7101, SH7104, SH7106, SH7108	SH7108, SH7109 Group Hardware Manual	1.00	REJ09B0069-0100
SH7047	SH7047, SH7049	SH-2 SH7047 Group Hardware Manual	2.00	REJ09B0020-0200Z
	SH7105, SH7107, SH7109	SH7108, SH7109 Group Hardware Manual	1.00	REJ09B0069-0100
SH7144	SH7144, SH7145	SH7144 Group, SH7145 Group Hardware Manual	4.00	REJ09B0108-0400

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