

**TOSHIBA Microcontrollers**

**870 Family**

(TMP87C444) (TMP87C844) (TMP87P844)

(TMP87CH36) (TMP87CK36) (TMP87CM36)(TMP87PM36)

(TMP87CH38) (TMP87CK38) (TMP87CM38) (TMP87CP38) (TMP87CS38) (TMP87PS38)

(TMP87CM39) (TMP87CP39) (TMP87CS39) (TMP87PS39)

(TMP87CH74A) (TMP87CM74A) (TMP87PM74)

(TMP87CH75) (TMP87CM75) (TMP87PM75)

(TMP8701CH) (TMP8701CK) (TMP8701CM)

(TMPA8700CH) (TMPA8700CK) (TMPA8700CM) (TMPA8700CP) (TMPA8700CS)

October 2004

## Datasheet Modifications: I<sup>2</sup>C Bus Mode Control

The following changes (shown in red) will be made to the technical datasheets in the next revision.

### Section: "I<sup>2</sup>C Bus Mode Control"

▪ **In the explanation of the Serial Bus Interface Control Register 1**

1. Delete the setting examples where the serial clock frequency exceeds 100 kHz.
2. Add the following note.

SCK	Serial clock selection	000 : Reserved (Note)	} at fc = 8MHz (Output on SCL pin)	Write only
		001 : Reserved (Note)		
		010 : 57.1 kHz		
		011 : 29.9 kHz		
		100 : 15.3 kHz		
		101 : 7.72 kHz		
		110 : 3.88 kHz		
		111 : reserved		

**Note:** This I<sup>2</sup>C bus circuit does not support the Fast mode. It supports the Standard mode only. Although the I<sup>2</sup>C bus circuit itself allows the setting of a baud rate over 100 kbps, the compliance with the I<sup>2</sup>C specification is not guaranteed in that case.

▪ **In "(3) Serial clock"**

1. Add the following sentence about the communication baud rate.

a. Clock source

The SCK (bits 2 to 0 in the SBICR1) is used to select a maximum transfer frequency outputted on the SCL pin in the master mode. **Set a communication baud rate that meets the I<sup>2</sup>C bus specification, such as the shortest pulse width of t<sub>LOW</sub>, based on the equations shown below.**

Four or more machine cycles are required for both the high and low levels of the pulse width of a clock which is input externally in both the master and slave mode.

$$t_{LOW} = 2^n / f_c$$

$$t_{HIGH} = 2^n / f_c + 12 / f_c$$

$$f_{scl} = 1 / (t_{LOW} + t_{HIGH})$$