December 2005

Important Notices

Thank you for your continued patronage of Toshiba microcontrollers.

This page gives you important information on using Toshiba microcontrollers. Please be sure to check each item for proper use of our products.

Announcement of Restrictions on Use of 16-bit Timer (December 2005)

* If your datasheet is dated 26 October 2005 or earlier, please download the latest datasheet or request it from your local Toshiba office.

Datasheet Modifications regarding I^2C Bus Mode Control (October 2004)

* If your datasheet is dated 19 July 2000 or earlier, please download the latest datasheet or request it from your local Toshiba office.

TOSHIBA Microcontrollers 870 Family

TLCS-870/C Series

TMP86C407/I/S	TMP86C807/I/S	TMP86F807	TMP86P807	TMP86C408/I/S
TMP86C808/I/S	TMP86F808	TMP86P808	TMP86CP24	TMP86FP24
TMP86CM41	TMP86CS41	TMP86FS41	TMP86CS43	TMP86PS43
TMP86CS44	TMP86PS44	TMP86C846	TMP86CH46/A	TMP86CM46/A
TMP86FH46/A	TMP86PH46	TMP86PM46	TMP86C847/I/S	TMP86CH47/A/I/S
TMP86CM47/A	TMP86FH47/A	TMP86PH47	TMP86PM47/A	TMP86FM48
TMP86CH49	TMP86CM49	TMP86CS49	TMP86FS49/A	TMP86PM49
TMP86CS64/A	TMP86FS64	TMP86PS64	TMP86CK74A	TMP86CM74A
TMP86PM74A	TMP86CH87/R	TMP86CM87/R	TMP86PM87/R	

TLCS-870/X Series

TMP88CH40/I	TMP88PH40	TMP88CH41	TMP88PH41	TMP88CS42
TMP88PS42	TMP88CS43	TMP88PS43	TMP88CU74	TMP88PU74
TMP88CP77	TMP88CS77	TMP88CU77	TMP88PU77	TMP88CP34
TMP88CS34	TMP88PS34	TMP88CM38A	TMP88CM38B	TMP88CP38A
TMP88CP38B	TMP88CS38	TMP88CS38B	TMP88PS38/B	

Dear Customer

December 2005

Announcement of Restrictions on Use of 16-bit Timer

With regards to our 8-bit microcontroller TLCS870/C series and TLCS/870X series, we have found restrictions on use of 16-bit timers. We would therefore like to inform customers about them. If you have any questions or require any further information, please contact your local Toshiba sales office.

[Operation of a 16-bit timer TC1]

Automatic capture function

1. Please use the auto-capture function in the operative condition of TC1.
   A captured value may not be fixed if it's read after the execution of the timer stop or auto-capture disable. Please read the capture value in a capture enabled condition.

2. Since the up-counter value is captured into TC1DRB by the source clock of up-counter after setting TC1CR<ACAP1> to "1". Therefore, wait at least one cycle of the internal source clock before reading TC1DRB for the first time.

Pulse width measuring mode

The first captured value after the timer starts may be read incorrectively, therefore, ignore the first captured value.

TOSHIBA Microcontrollers
870 Family
(TMP88CP76) (TMP88CS76) (TMP88PS76)
(TMP88CP77) (TMP88CS77) (TMP88CU77) (TMP88PU77)

October 2004

Datasheet Modifications: I²C Bus Mode Control

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

Section: "I²C 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) 001 : Reserved (Note) 010 : 58.8 kHz 011 : 30.3 kHz 100 : 15.4 kHz 101 : 7.75 kHz 110 : 3.89 kHz 111 : reserved	at fc = 8MHz (Output on SCL pin)	Write only

Note: This I²C bus circuit does not support the Fast mode. It supports the Standard mode only. Although the I²C bus circuit itself allows the setting of a baud rate over 100 kbps, the compliance with the I²C 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 SBICR1) is used to select a maximum transfer frequency output from the SCL pin in the master mode. **Set a communication baud rate that meets the I²C bus specification, such as the shortest pulse width of t_{LOW}, based on the equations shown below.** In both master mode and slave mode, a pulse width of at least 4 machine cycles is required for both high and low levels.

$t_{LOW} = 2^n/f_c$
$t_{HIGH} = 2^n/f_c + 8/f_c$
$fscl = 1/(t_{Low} + t_{HIGH})$