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**Product Types**

**TOSHIBA Microcontrollers TX00 series**
TMPM061

**TOSHIBA Microcontrollers TX03 series**

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|---|---|---|---|---|---|
| TMPM330 | TMPM332 | TMPM333 | TMPM341 | TMPM361 | TMPM362 |
| TMPM363 | TMPM364 | TMPM365 | TMPM366 | TMPM367 | TMPM368 |
| TMPM369 | TMPM36BF10 | TMPM375 | TMPM376 | TMPM380 | TMPM384 |
| TMPM395 | | | | | |

**TOSHIBA Microcontrollers TX19 series**

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|---|---|---|
| TMP19A31 | TMP19A33 | TMP19A44 |

**TOSHIBA Microcontrollers TLCS-900/H1 series**

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|---|---|---|---|
| TMP92CF26 | TMP92CZ26 | TMP92CF29 | TMP92CF30 |

# Restrictions on use of the multi-master function in serial bus interface I2C bus mode

This is to inform you of restrictions on use of the multi-master function in I2C bus mode.
If you need any further information, please contact your local Toshiba sales representative.

## 【Description】

When the multi-master function is used in I2C bus mode, if these masters start the communications simultaneously, the following phenomena may occur:

1) Communications may lock up.
2) SCL pulse widths are short, and these pulses may not satisfy I2C Specifications.

### 【Condition】

These phenomena occur only when the multi-master function is used in I2C bus mode. If a single master is used, these phenomena do not occur.

## 【Workaround】

There is no workaround for this lock-up phenomenon. Perform recovery process using software.

## 【How to recover from this phenomenon】

Perform recovery process by software.

By using a timer, add timeout process to check whether communication is in a lock-up state.

An example of recovery process:

1. Start a timer count synchronously with start of the transmission.
2. If a serial interface interrupt (INTSBIx) does not occur in the certain period, the MCU determines a timeout occurs.
3. If the MCU determines it as a timeout, communications may be locked up. Perform software reset on the I2C BUS circuit. This circuit is initialized to release communication from the lock up state.
4. Resend transmission data.

Mostly, Process 1 to 4 are enough to recovery; however if the muster products are connected to the same bus line, add a delay time between each product's recovery process before Process 4 (resending data). This delay time makes a time difference to avoid generating lock-up state again.

Example: Recovery process after a timeout is detected.