

Product Types:					
Toshiba Microcontrollers TX03 and TX04 series					
TMPM330	TMPM333	TMPM341	TMPM365	TMPM366	TMPM367
TMPM368	TMPM369	TMPM36B	TMPM370	TMPM372	TMPM376
TMPM380	TMPM384	TMPM395	TMPM440		

Restrictions on use of the $\overline{\text{TRST}}$ pin

This is to inform you of restrictions on use of the $\overline{\text{TRST}}$ pin. If you need any further information, please contact your local Toshiba sales representative.

1. Description

In JTAG debug mode, when four pins (TDI, TDO, TMS, and TCK) are connected to the JTAG tool, if the $\overline{\text{TRST}}$ pin is used for other functions including general-purpose port, debugging cannot be performed using JTAG connection.

*JTAG debug mode: A mode in which JTAG pins (TDI, TDO, TMS, TCK, and $\overline{\text{TRST}}$) are used.

*There is no restrictions on use of serial-wire debug mode (SWCLK, SWDIO) regarding this problem.

2. Conditions

This problem occurs when the $\overline{\text{TRST}}$ pin is used as a shared pin including general-purpose port when four pins are used in JTAG debug mode. Other factors do not cause this problem.

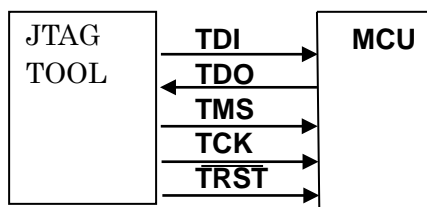
3. Restrictions (Workarounds)

This problem can be avoided by the following two methods:

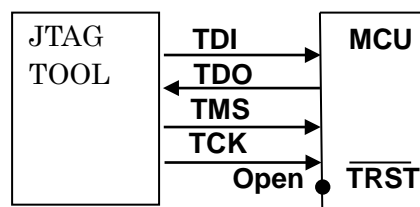
1) In JTAG debug mode, five pins (TDI, TDO, TMS, TCK, and $\overline{\text{TRST}}$) should be used as the debug pins.

2) In JTAG debug mode, when four pins (TDI, TDO, TMS, and TCK) of the above five pins are connected to the JTAG tool, these four pins should be set as the debug pins. At this time, do not change the port function setting by program, and all five pins including the $\overline{\text{TRST}}$ pin should be used as the debug pins.

The $\overline{\text{TRST}}$ pin should be set to OPEN or High. (Refer to the figure below.)



Connection example of (1)



Connection example of (2)