

**Product Types**  
TOSHIBA Microcontroller TX00, TX03 Series  
TMPM037      TMPM375      TMPM395

Notes on the MCU Startup in Single-boot Mode

With regard to TOSHIBA microcontrollers listed above, please be advised that the MCU starts up in single-boot mode under the following condition. If you need any further information, please contact your local Toshiba sales representative.

1 . Problem

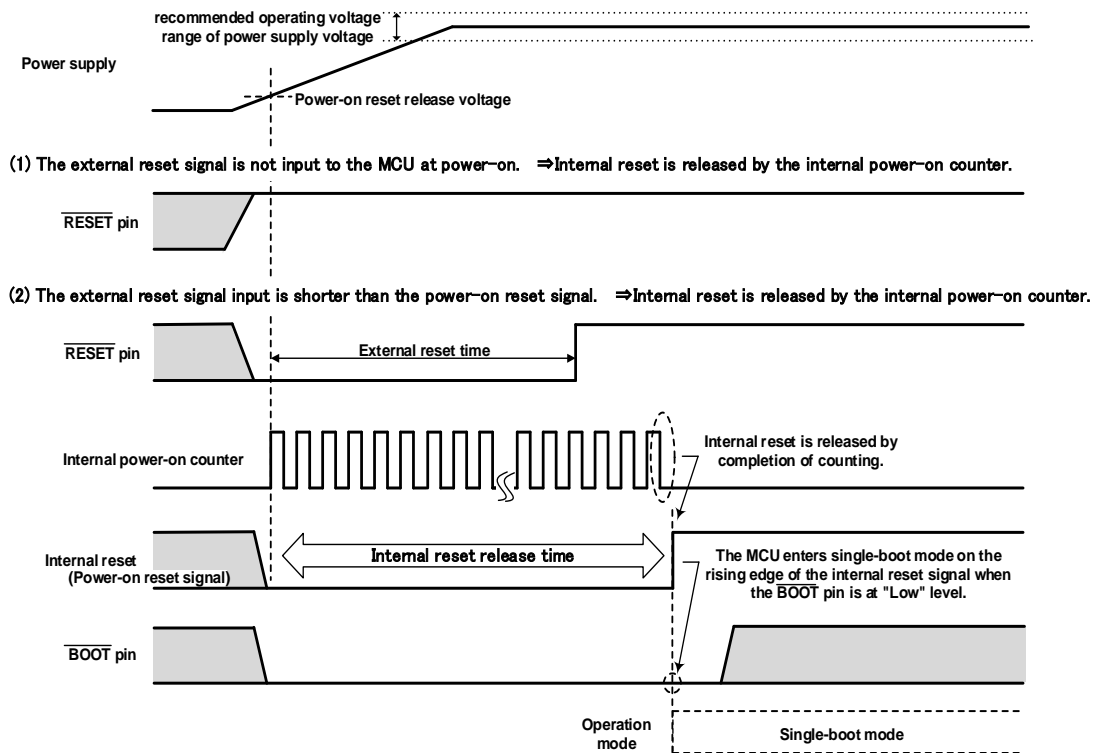
The MCUs listed above start up in single boot mode at power-on.

2 . Conditions

- ( 1 ) The external reset signal is not input to the MCU at power-on.
- ( 2 ) The external reset signal input is shorter than the power-on reset signal.

If the  $\overline{\text{BOOT}}$  pin is "Low" level, the MCU starts up in single-boot mode.

**【Boot-up timing】**



【Releasing time for the internal reset】

Product	TMPM037	TMPM375	TMPM395
Releasing time for the internal reset	Approximately 1.8 ms	Approximately 3.2 ms	Approximately 826.6 us

Note: A releasing time for the internal reset slightly varies depending on the slope of the rising voltage, or other factors. Provide enough margin for the external reset time.

### 3 . Workaround

Following is the workaround to avoid the MCU starting up in single mode:

- Workaround : The  $\overline{\text{BOOT}}$  pin must be at "High" level at power-on until reset release operation is completed.

Since the  $\overline{\text{BOOT}}$  pin of the listed MCUs is a shared pin with the other functions shown as table below, use it as the  $\overline{\text{BOOT}}$  dedicated pin or give special consideration to the design of the pin at power-on state if the  $\overline{\text{BOOT}}$  pin is used as a shared pin.

<Shared functions of the  $\overline{\text{BOOT}}$  pin>

Product	TMPM037	TMPM375	TMPM395
Port name	PB0	PF0	PH0
Shared function (1)	$\overline{\text{BOOT}}$ pin	$\overline{\text{BOOT}}$ pin	$\overline{\text{BOOT}}$ pin
Shared function (2)	Port (Input/output)	Port (Input/output)	Port (Input/output)
Shared function (3) (Peripheral IPs)	-	<ul style="list-style-type: none"> <li>• TB7IN (Input)</li> <li>• SO0/SDA0 (Output, Input/output)</li> <li>• TXD1 (Output)</li> <li>• INTC (Input)</li> </ul>	<ul style="list-style-type: none"> <li>• TB0IN0 (Input)</li> </ul>