

Customer Notification

QB-78K0LX2™

In-Circuit Emulator

Operating Precautions

Target devices

78K0/LE2

78K0/LF2

78K0/LG2

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QB-78K0LX2

(A) Table of Operating Precautions

| No. | Outline | Control Code ^{Notes 1, 2} | QB-78K0LX2 | | | |
|-----|--|------------------------------------|------------|---|---|---|
| | | | A | B | C | D |
| 1 | Caution on LCD voltage, when using internal voltage booster (Technical Limitation) | | ✘ | ✓ | ✓ | ✓ |
| 2 | Caution on target voltage during break (Direction of use) | | ✘ | ✘ | ✘ | ✘ |
| 3 | Support of specification change for option byte (Technical Limitation) | | ✘ | ✓ | ✓ | ✓ |
| 4 | Caution on power-on-clear function (Direction of use) | | ✘ | ✘ | ✘ | ✘ |
| 5 | Internal ROM area is overwritten during program execution (Technical limitation) | | ✘ | ✘ | ✓ | ✓ |
| 6 | Support for emulation of boot swap function (Specification change) | | - | - | - | ✓ |
| | | | | | | |

✓ : Not applicable

✘ applicable

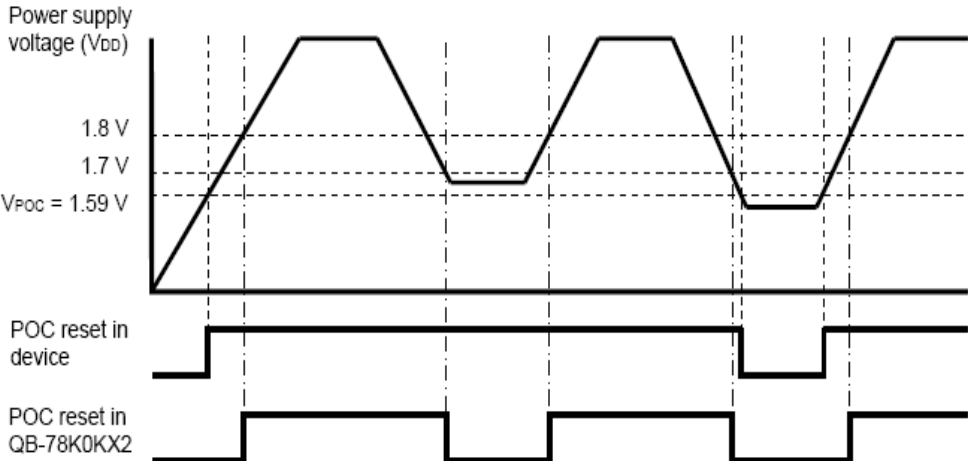
Notes:

1. The “control code” is the second digit from the left in the 10-digit serial number in the warranty supplied with the product you purchased (if it has not been upgraded). If the product has been upgraded, a label indicating the new version is attached to the product and the x in V-UP LEVEL x on this label indicates the control code.
2. Form control code “B” onwards a realchip (uPD78F0547 V2.0) is used.

Caution: Pls. refer to and consider the Operating Precautions mentioned in the Customer Notifications of the according devices, to which this Emulator belongs to.

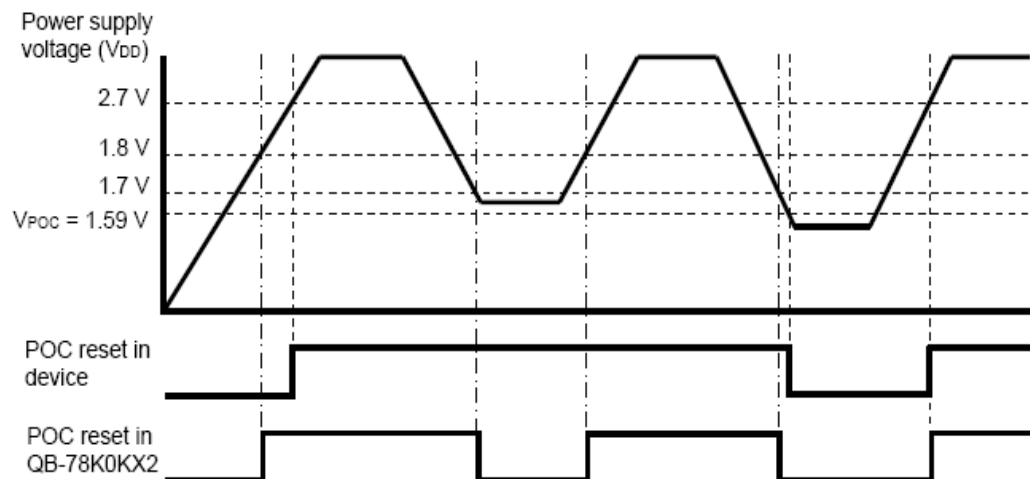
(B) Description of Operating Precautions

| | |
|-------|--|
| No. 1 | <p>Caution on LCD voltage, when using internal voltage booster (Technical Limitation)</p> <p>When the internal voltage booster of the LCD function is used (VLCON = 1), a LCD drive voltage ($V_{LC0}, V_{LC1}, V_{LC2}$) is approximately 20% lower than the typical value. This behavior will be corrected in the next version.</p> |
| No. 2 | <p>Caution on target voltage during break</p> <p>Do not decrease the target voltage during a break. If a reset by LVI or POC occurs during a break, the debugger operation may become illegal or a communication error may occur.</p> |
| No. 3 | <p>Support of specification change for option byte (Technical Limitation)</p> <p><u>Details</u> The POC mode (POCMODE) of the option byte is available in control code B or later. Please refer also to item No. 4 "Caution on power-on-clear function."</p> |

| | |
|-------|--|
| No. 4 | <p>Caution on power-on-clear function (Direction of use)</p> |
| | <p><u>Details</u> The POC detection voltage differs between the QB-78K0LX2 and the device.</p> <p>1. In 1.59 V POC mode (option byte: POCMODE = 0)</p> <ul style="list-style-type: none"> • Device: An internal reset signal is generated at power application, and the reset state is released when the power supply voltage (V_{DD}) exceeds the detection voltage ($V_{POC} = 1.59\text{ V} \pm 0.15\text{ V}$). The power supply voltage (V_{DD}) and detection voltage ($V_{POC} = 1.59\text{ V} \pm 0.15\text{ V}$) are compared, an internal reset signal is generated when V_{DD} drops lower than V_{POC} ($V_{DD} < V_{POC}$), and the reset state is released when V_{DD} becomes V_{POC} or higher ($V_{DD} \geq V_{POC}$). • QB-78K0LX2: An internal reset signal is generated at power application, and the reset state is released when the power supply voltage (V_{DD}) exceeds 1.80 V. An internal reset signal is generated when V_{DD} drops lower than 1.70 V ($V_{DD} < 1.70\text{ V}$), and the reset state is released when V_{DD} becomes 1.80 V or higher ($V_{DD} \geq 1.80\text{ V}$).  |

2. In 2.7 V/1.59 V POC mode (option byte: POCMODE = 1)

- Device: An internal reset signal is generated at power application, and the reset state is released when the power supply voltage (V_{DD}) exceeds V_{POC} (power detection voltage at power application; $V_{POC} = 2.7\text{ V} \pm 0.2\text{ V}$).
The power supply voltage (V_{DD}) and detection voltage ($V_{POC} = 1.59\text{ V} \pm 0.15\text{ V}$) are compared, an internal reset signal is generated when V_{DD} drops lower than V_{POC} ($V_{DD} < V_{POC}$), and the reset state is released when V_{DD} becomes 2.7 V or higher ($V_{DD} \geq 2.7\text{ V}$).
- QB-78K0LX2: An internal reset signal is generated at power application, and the reset state is released when the power supply voltage (V_{DD}) exceeds 1.80 V.
An internal reset signal is generated when the detection voltage ($V_{POC} = 1.59\text{ V} \pm 0.15\text{ V}$) $< V_{DD} < 1.70\text{ V}$, and the reset state is released when V_{DD} becomes 1.80 V or higher ($V_{DD} \geq 1.80\text{ V}$).
If the power supply voltage (V_{DD}) drops to a level of the detection voltage ($V_{POC} = 1.59\text{ V} \pm 0.15\text{ V}$), the reset state is released the next time the power supply voltage (V_{DD}) exceeds V_{POC} (power detection voltage at power application; $V_{POC} = 2.7\text{ V} \pm 0.2\text{ V}$).



No. 5 Internal ROM area is overwritten during program execution
(Technical Limitation)

Details

Data in the internal ROM area may be overwritten if the Source window or Assemble window is open during program execution. As a result, an unexpected fail-safe break (such as Write Protect Break or Non Map Break) may occur.

[Workaround]

There is no workaround.
This limitation has been removed in products with control code C or later.

Operating Precautions for QB-78K0LX2™

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|-------|--|
| No. 6 | Support for emulation of boot swap function (Specification change) |
| | <u>Details</u> Emulation for the boot swap function is now supported. |

(C) Valid Specification

| Item | Date published | Document No. | Document Title |
|-------------|-----------------------|---------------------|-----------------------|
| 1 | March, 2005 or later | U17468EJ | User's Manual |
| | | | |
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(D) Revision History

| Item | Date published | Document No. | Comment |
|-------------|-----------------------|---------------------|--|
| 1 | June 28, 2004 | TPS-LE-OP-TQBLX2-1 | 1 st Release |
| 2 | March 2006 | TPS-LE-OP-TQBLX2-2 | 2 nd Release new control code |
| 3 | February 2007 | TPS-LE-OP-TQBLX2-3 | 3 rd Release new control code, item 5 added |
| 4 | December 2008 | TPS-LE-OP-TQBLX2-4 | 4 th Release new control code, item 6 added |