TEXAS INSTRUMENTS

Errata Sheet

TUSB2140

4-Port Hub with an Embedded Function for the Universal Serial Bus

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Mixed-Signal Linear Products

TUSB2140 Errata Report

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ISSUE ONE:

Control Endpoint Setup Stage Transaction bit (SETUP) not set when the Set Address Request is automatically processed by the TUSB2140 device.

The SETUP bit is set at the end of a successful setup stage transaction to indicate that a setup stage transaction occurred. To read the data packet from the receive FIFO, the Microcontroller Unit (MCU) must first clear the SETUP bit. The SETUP bit in conjunction with the Receive FIFO Setup Stage Transaction Data Packet Write bit (RXFSW) keeps the MCU from reading the receive FIFO while a new setup stage transaction is being received. The scenario of the MCU attempting to access the receive FIFO while a new setup stage transaction is being received can occur when the host aborts the current control transfer before completing the current control transfer. When a new setup stage transaction is received, the TUSB2140 device flushes the receive FIFO before receiving the new data packet. However, if the new setup stage transaction is a Set Address Request, the MCU can still access the receive FIFO since the SETUP bit does not get set. The MCU continues to attempt to process the current transaction while the TUSB2140 device processes the Set Address Request. The result is that the MCU could read an empty receive FIFO, which will generate a receive FIFO under-run condition.

Suggested work-around:

When the next Control Transfer Setup Stage occurs, the TUSB2140 will automatically clear the EP0 receive FIFO and write the Setup Stage data packet to the receive FIFO. Therefore the MCU does not need to do anything to recover from the issue described above.

Change implemented in the TUSB2040A:

Proposed next TUSB2140 revision device modification:
The TUSB2140 device will set the SETUP bit when the Set Address Request is automatically processed by the device. In addition, a new receive status bit indicating that the Set Address Request was processed will be set to inform the MCU that the current control transfer was aborted because a Set Address Request occurred.

ISSUE TWO:

The I2C Interface will not function after a transaction occurs on the I2C bus with a device address other than the TUSB2140 device address of “0101110”. Stated another way, the current TUSB2140 chip can only support one device on the I2C bus.

Suggested work-around:

Use the TUSB2140 I2C Interface as a dedicated serial interface to the TUSB2140. Also, when using the interface, ensure that the only I2C device address used is “0101110”. For now, if another device is needed, use another I/O address.

Change implemented in the TUSB2040A

The TUSB2140 I2C Interface will be fixed to allow normal I2C bus operation with multiple I2C devices with unique device addresses to exist on the same bus.

SPECIAL NOTE:

Both of these bugs can be worked around using software until we have our new TUSB2140AN part available.