MSP430i2030 Device Erratasheet

1 Functional Errata Revision History

Errata impacting device's operation, function or parametrics.

✓ The check mark indicates that the issue is present in the specified revision.

Errata Number	Rev C
USCI41	✓
USCI47	✓
USCI50	✓

2 Preprogrammed Software Errata Revision History

Errata impacting pre-programmed software into the silicon by Texas Instruments.

✓ The check mark indicates that the issue is present in the specified revision.

The device doesn't have Software in ROM errata.

3 Debug only Errata Revision History

Errata only impacting debug operation.

✓ The check mark indicates that the issue is present in the specified revision.

The device doesn't have Debug errata.

4 Fixed by Compiler Errata Revision History

Errata completely resolved by compiler workaround. Refer to specific erratum for IDE and compiler versions with workaround.

✓ The check mark indicates that the issue is present in the specified revision.

The device doesn't have Compiler-Fixed errata.

5 Package Markings

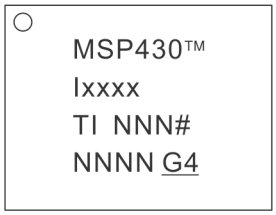
PW28

TSSOP (PW), 28 Pin

#	= Die revision
○	= Pin 1 location
N	= Lot trace code

RHB32

QFN (RHB), 32 Pin



#	= Die revision
○	= Pin 1 location
N	= Lot trace code

6 Detailed Bug Description

USCI41 *eUSCI Module*

Category Functional

Function UCBUSY bit of eUSCIA module might not work reliable when device is in SPI mode.

Description When eUSCIA is configured in SPI mode, the UCBUSY bit might get stuck to 1 or start toggling after transmission is completed. This happens in all four combinations of Clock Phase and Clock Polarity options (UCAxCTLW0.UCCKPH & UCAxCTLW0.UCCKPL bits) as well as in Master and Slave mode. There is no data loss or corruption. However the UCBUSY cannot be used in its intended function to check if transmission is completed. Because the UCBUSY bit is stuck to 1 or toggles, the clock request stays enabled and this adds additional current consumption in low power mode operation.

Workaround For correct functional implementation check on transmit or receive interrupt flag UCTXIFG/UCRXIFG instead of UCBUSY to know if the UCAxTXBUF buffer is empty or ready for the next complete character.

To reduce the additional current it is recommended to either reset the SPI module (UCAxCTLW0.UCSWRST) in the UCBxCTLW0 or send a dummy byte 0x00 after the intended SPI transmission is completed.

USCI47 *eUSCI Module*

Category Functional

Function eUSCI SPI slave with clock phase UCCKPH = 1

Description The eUSCI SPI operates incorrectly under the following conditions:

1. The eUSCI_A or eUSCI_B module is configured as a SPI slave with clock phase mode UCCKPH = 1

AND

2. The SPI clock pin is not at the appropriate idle level (low for UCCKPL = 0, high for UCCKPL = 1) when the UCSWRST bit in the UCxxCTLW0 register is cleared.

If both of the above conditions are satisfied, then the following will occur:

eUSCI_A: the SPI will not be able to receive a byte (UCAxRXBUF will not be filled and UCRXIFG will not be set) and SPI slave output data will be wrong (first bit will be missed and data will be shifted).

eUSCI_B: the SPI receives data correctly but the SPI slave output data will be wrong (first byte will be duplicated or replaced by second byte).

Workaround Use clock phase mode UCCKPH = 0 for MSP SPI slave if allowed by the application.

OR

The SPI master must set the clock pin at the appropriate idle level (low for UCCKPL = 0, high for UCCKPL = 1) before SPI slave is reset (UCSWRST bit is cleared).

OR

For eUSCI_A: to detect communication failure condition where UCRXIFG is not set, check both UCRXIFG and UCTXIFG. If UCTXIFG is set twice but UCRXIFG is not set, reset the MSP SPI slave by setting and then clearing the UCSWRST bit, and inform the SPI master to resend the data.

USCI50 *eUSCI Module*

Category Functional

Function Data may not be transmitted correctly from the eUSCI when operating in SPI 4-pin master mode with UCSTEM = 0

Description When the eUSCI is used in SPI 4-pin master mode with UCSTEM = 0 (STE pin used as an input to prevent conflicts with other SPI masters), data that is moved into UCxTXBUF while the UCxSTE input is in the inactive state may not be transmitted correctly. If the eUSCI is used with UCSTEM = 1 (STE pin used to output an enable signal), data is transmitted correctly.

Workaround When using the STE pin in conflict prevention mode (UCSTEM = 0), only move data into UCxTXBUF when UCxSTE is in the active state. If an active transfer is aborted by UCxSTE transitioning to the master-inactive state, the data must be rewritten into UCxTXBUF to be transferred when UCxSTE transitions back to the master-active state.

7 Document Revision History

Changes from device specific erratasheet to document Revision A.

1. Description for USCI41 was updated.

Changes from document Revision A to Revision B.

1. USCI47 was added to the errata documentation.

Changes from document Revision B to Revision C.

1. Function for USCI47 was updated.
2. Description for USCI47 was updated.
3. Workaround for USCI47 was updated.

Changes from document Revision C to Revision D.

1. Workaround for USCI47 was updated.

Changes from document Revision D to Revision E.

1. USCI50 was added to the errata documentation.

Changes from document Revision E to Revision F.

1. Erratasheet format update.
2. Added errata category field to "Detailed bug description" section

Changes from document Revision F to Revision G.

1. Function for USCI41 was updated.
2. Description for USCI41 was updated.
3. Workaround for USCI41 was updated.

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