KwikStik-K40

Hardware Errata

Rev. 5

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Revision History

Revision	Date	Changes
0	April 18, 2011	Initial Release
1	April 29, 2011	Added KWIKSTIK_03 and KWIKSTIK_04
2	June 7, 2011	Added Version 4 implementation information
3	Sept 9, 2011	Added Version 5 information; added barcode label revision information
4	Oct 13, 2011	Added KWIKSTIK_05
5	March 2, 2011	Updated KWIKSTIK_05 and added KWIKSTIK_06-07

Introduction

This report describes hardware errata of the Kinetis KwikStik (KWIKSTIK-K40) development tool hardware.

Errata ID	Errata Title	Board Version Affected
KWIKSTIK_01	K40X256 cannot be turned off using the ON/OFF switch	Ver3
KWIKSTIK_02	TWRPI connectors populated in a wrong orientation	Ver3
KWIKSTIK_03	VBat not powered	Ver3
KWIKSTIK_04	SD Card signals connected to incorrect pins	Ver3 / Ver4
KWIKSTIK_05	Incorrect UART_RTS on UART5 Header	All versions
KWIKSTIK_06	Undersized VOUT33 Capacitor	All versions
KWIKSTIK_07	Failure to Power from J-Link USB	All versions

Refer to the silkscreen marking on the bottom right corner on the top side of the KwikStik to identify the board version.

Additionally, the revision of the hardware can be determined by the revision indicator on the barcode label on the back side of the KwikStik box.

Barcode label behind KwikStik box

Barcode Label	Hardware Revision
Rev: A0	Version 3
Rev: B0	Version 4
Rev: C0	Version 5

KWIKSTIK_01: K40X256 MCU cannot be turned OFF using the ON/OFF switch

Description

When the ON/OFF switch SW1 is in the OFF position, the K40 MCU is not turned off. This can cause unexpected behavior when trying to use the JTAG connector for external device programming and debugging.

Workaround

Removing power supply to VREFH will allow the K40 to be switched off. To do so, remove ferrite F5.

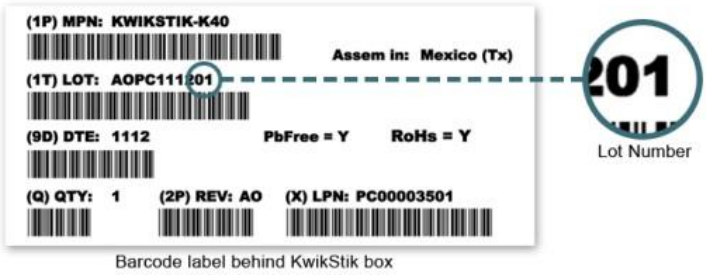
Status

This issue is fixed starting in version 4.

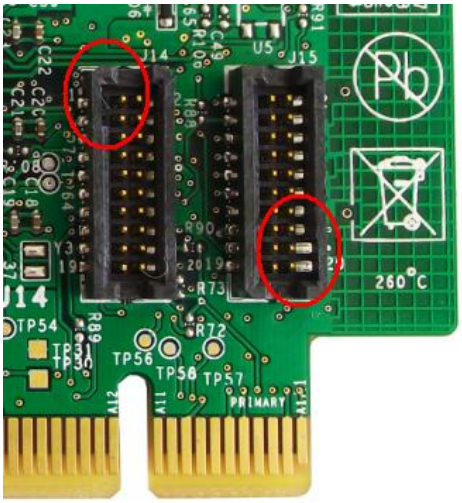
KWIKSTIK_02: TWRPI connectors populated in a wrong orientation

Description

KWIKSTIK-K40 PWA Rev A/3.0 Boards of shipment lots 01-04 may have the TWRPI connectors (J14, J15) populated in a wrong orientation.

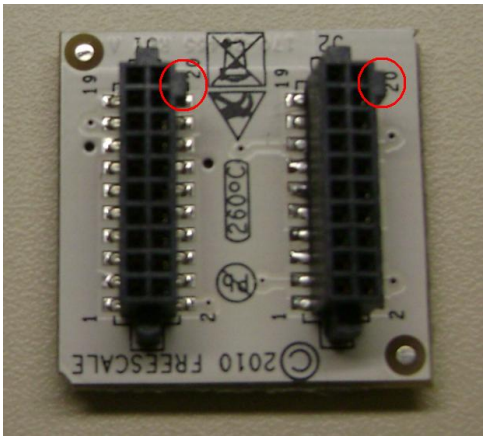


Barcode label behind KwikStik box



Workaround

To use the TWRPI interface you will need to remove the key/notch from the female connectors of the TWRPI boards.



Status

This issue affected a small subset of version 3 hardware only.

KWIKSTIK_03: VBAT not powered

Description

VBAT signal is not powered in KWIKSTIK-K40 PWA Rev A/3.0 boards, making the RTC module unusable.

Workaround

To use the RTC module, power must be supplied to VBat on TP30.

Status

This issue is fixed starting in version 4.

KWIKSTIK_04: SD Card signals connected to incorrect pins

Description

The SD card connector's data pins (DATA0-DATA3) are connected to SDHC0_D4-SDHC0_D7 which are unused in 4 bit mode.

Workaround

No practical workaround is available.

Status

This issue is fixed in version 5.

KWIKSTIK_05: Incorrect Signal and Labels on UART5 Header

Description

The UART communication header provides access to the UART5 RX, TX and CTS signals on test points. The RTS signal used is pin PTE7. However, this pin provides access to UART3_RTS. The signal is incorrectly labelled as UART5_RTS.

Additionally, the test points labelling is incorrect:

- TP28 is labelled as "RTS" but is connected to "PTE8/UART_TX".
- TP17 is labelled as "TX" but is connected to pin "PTE7/UART_RTS".
- TP18 is correctly labelled as "RX" and connected to "PTE9/UART_RX".
- TP19 is correctly labelled as "CTS" and connected to "PTE10/UART_CTS"

Workaround

UART5_RTS is available on two pins of the K40X256. One, PTE12, is connected to a voltage divider and is unusable as RTS. The other, PTD10, is used for the VOLUME_UP control of the audio amplifier. This signal could be used as UART5_RTS and is available on a test point, TP52, or on pin 1 of R3. It is recommended that the Audio Amplifier be put into standby mode by driving the AUDIO_AMP_ON, PTE28, signal low.

Status

This issue affects all revisions of the KwikStik.

KWIKSTIK_06: Undersized VOUT33 Capacitor

Description

The recommended value for the capacitor from VOUT33 to GND is from 1.76uF to 8.16uF with 2.2uF being the typical value. The capacitor (C34) connected to VOUT33 on the KwikStik is only 0.1uF. This can result in unstable or non-functioning USB operation.

Workaround

Replace C34 with a capacitor of value 1.76uF to 8.16uF.

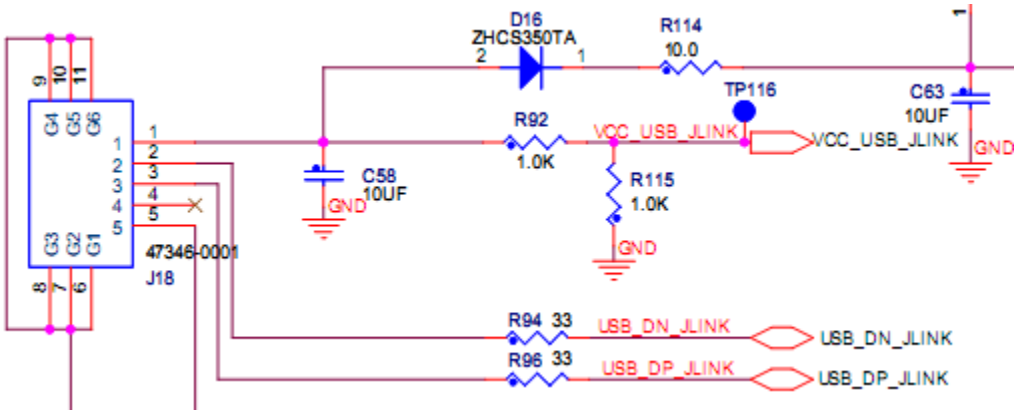
Status

This issue affects all revisions of the KwikStik.

KWIKSTIK_07: Failure to Power from J-Link USB

Description

R114 is identified as a 10.0Ω resistor on the schematics but may be populated with a 0Ω resistor. When power is applied to the J-Link USB connector, J18, current will flow through D16 and R114 to charge C63 and provide power to the +5V_USB supply. D16 is rated for 500mA. Without a resistance on R114 D16 may exceed its rating and it may fail to operate correct resulting in the inability to power the KwikStik from the J-Link USB connector.



Workaround

Replace R114 with a 10Ω resistor. Power may still be applied to the other USB connector, J17 to source power to the entire Kwikstik, including the J-Link circuit. If powered from J17, the J-Link interface will continue to operate properly as a debug interface.

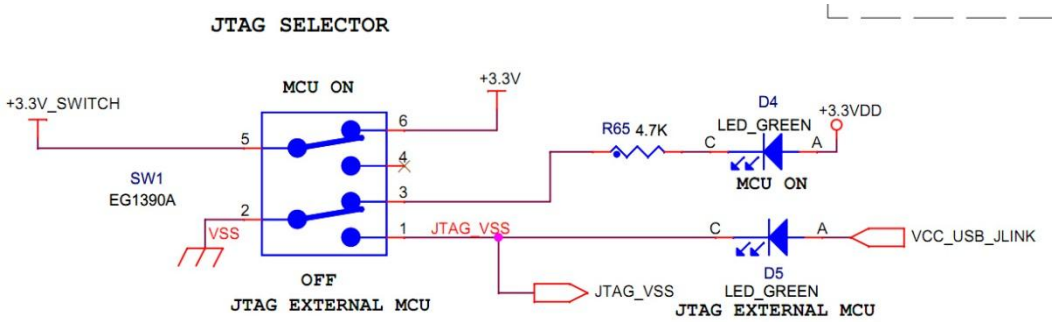
Status

This issue affects all revisions of the KwikStik.

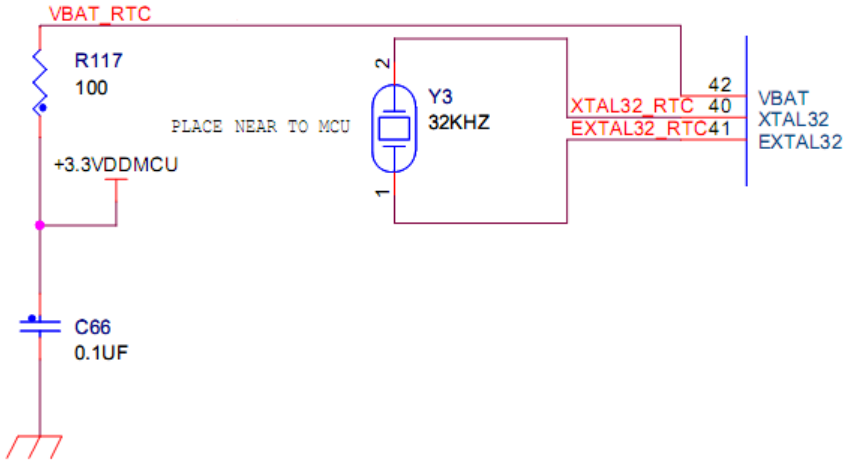
KwikStik Version 4 Changes

The changes to version 4 of the KwikStik development tool hardware are listed below.

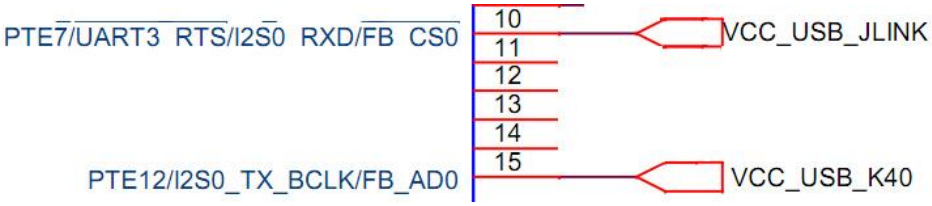
1) KWIKSTIK_01 Errata was corrected. SW1 switch effectively powers down the K40 MCU



2) Added R117 and C66 connecting the RTC VBAT (K40X256 pin 42) to the 3.3V MCU supply.



3) Moved VCC_USB_JLINK and VCC_USB_K40 to GPIO pins (previously comparator pins)



4) Layout improvements
   - Corrected U1 footprint
   - Added solder mask to vias
   - Added fiducials inside boards
   - Added fiducials for MCUs

KwikStik Version 5 Changes

KWIKSTIK_04 Errata (SD Card slot) was corrected.