USB Device Application Kit

Hardware Reference

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Contents

1 Overview

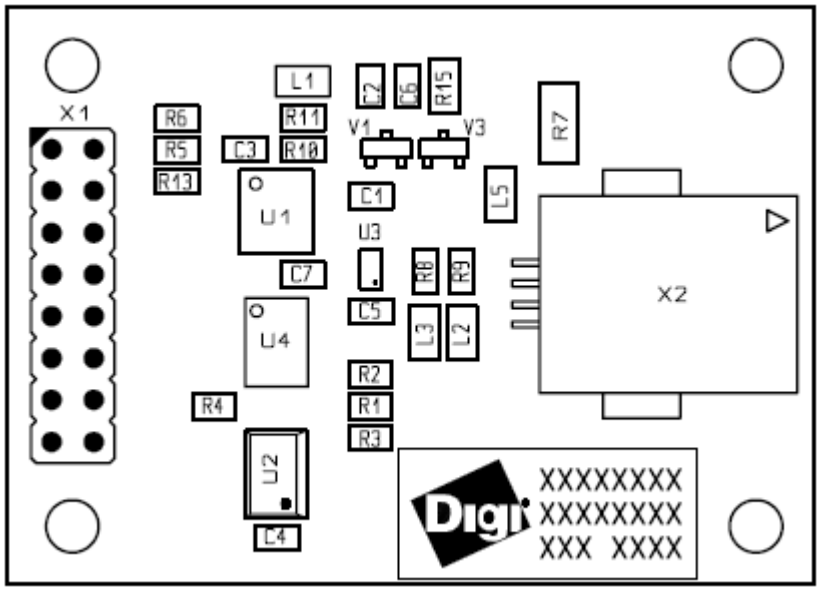
This document describes the details of the USB Device application kit hardware board.

The Application Kit provides the transceiver and physical connector for the USB Device functionality present in JSCC9P9360 and CCW9C_LC JumpStart kits.

It connects to the USB_APPLICATION header of the JumpStart board by means of a 16-pin flat ribbon cable and it is powered from the main board.

2 Basic description

The following figure shows the placement of the USBDEV_JS board.



3 Detailed description

3.1 USB Device application board header

On the CC9C/Wi-9C and CC9P Jump Start boards a specific USB Device application header has been defined.

Below is a pin description of the USB Device header:

Pin	Description	Comments
1	+3.3V	
2	GND	
3	+5V	
4	GND	
5	USB_VP	
6	USB_VM	
7	GND	
8	GND	
9	USB_OE#	
10	USB_SPND	
11	USB_SPEED	
12	USB_RCV	
13	USB_ENUM#	
14	GND	
15	I2C_SDA	
16	I2C_SCL	

3.2 USB Device and pin usage on the CC9C Jump Start board

In the table below is listed how the USB Device signals are currently used on the ConnectCore 9C/Wi-9C Jump Start board.

USB Device Signal	CC9C/Wi-9C Module Pin	CC9C Jump Start usage – availability	Comments
USB_VP	52	Module signal rail (P3) UART C header (P10) Platform application header (P17) Peripheral application header (P16) (peripheral GPIO)	NS9360 GPIO42 Signal protected by the bus switch + 10k pull-up on board

USB Device Signal	CC9C/Wi-9C Module Pin	CC9C Jump Start usage – availability	Comments
USB_VM	48	Module signal rail (P3) UART C header (P10) Platform application header (P17) Peripheral application header (P16) (peripheral GPIO)	NS9360 GPIO43 Signal protected by the bus switch + 10k pull-up on board
USB_OE#	47	Module signal rail (P3) UART D header (P11) Platform application header (P17)	NS9360 GPIO44 Signal protected by the bus switch
USB_SPND	98	Module signal rail (P3) UART D header (P11) Platform application header (P17)	NS9360 GPIO48 Signal protected by the bus switch
USB_SPEED	96	Module signal rail (P3) User LED 1	NS9360 GPIO49
USB_RCV	45	Module signal rail (P3) User LED 2	NS9360 GPIO45 Signal protected by the bus switch
USB_ENUM#	43	Module signal rail (P3) UART D header (P11)	NS9360 GPIO46 Signal protected by the bus switch

3.3 USB Device and pin usage on the CC9P Jump Start board

In the table below is listed how the USB Device signals are currently used on the ConnectCore 9P Jump Start board.

Signal	CC9P Module Pin	CC9P Jump Start usage - availability	Comments
USB_VP	56	Module system connector (X11) UART C header (X19) Peripheral application header (X33)	NS9360 GPIO42
USB_VM	57	Module system connector (X10) UART C header (X19) Peripheral application header (X33)	NS9360 GPIO43
USB_OE#	58	Module system connector (X10) UART D header (X22)	NS9360 GPIO44
USB_SPND	101	Module system connector (X10)	NS9360 GPIO48
USB_SPEED	-	Connected to an external 2k2 pull-up	

Signal	CC9P Module Pin	CC9P Jump Start usage - availability	Comments
USB_RCV	59	Module system connector (X11) UART D header (X22)	NS9360 GPIO45
USB_ENUM#	-	Module system connector (X10)	NS9360 GPIO17

3.4 USB Device implementation

USB-Device Application Board for JumpStart ConnectCore 9C/Wi-9C and ConnectCore 9P 9360 is based on MAX3454E USB transceiver.

This transceiver is able to support low-speed and full-speed USB interfaces.

The USB Device application board can be configured in low-speed or high-speed with the USB_SPEED signal.

The speed configuration feature is not supported in the application kit.

The USB device speed is fixed to Full-speed.

The USB signals at the output of the transceiver are 5V tolerant.

The USB Device application board has no switch and so doesn't need any user intervention.

MAX3454E is bus-powered, that's to say, that the VBUS signal receives its 5V from the USB port. The +5V power supply on the USB-Device application header is only foreseen, but not used.

3.5 USB Device I2C EEPROM

The application board is populated with an I2C EEPROM located at the address 0x0A8/0x0A9. The address 0x0A8/0x0A9 is reserved for application board connected on the USB Device application header.

This EEPROM is only intended to make the board recognition easier since the bootloader can check if an EEPROM is available or not at the address and can read out then some information like board name, board revision and board patch level. This identification mechanism allows software to recognize the application board and configure the module signals accordingly.

4 Connectors pinout

4.1 USB Device application board header

Pin	Description	Comments
1	+3.3V	
2	GND	
3	+5V	
4	GND	
5	USB_VP	
6	USB_VM	
7	GND	
8	GND	
9	USB_OE#	
10	USB_SPND	
11	USB_SPEED	
12	USB_RCV	
13	USB_ENUM#	
14	GND	
15	I2C_SDA	
16	I2C_SCL	

4.2 USB Type B connector

Pin	Description	Comments
1	VBUS	
2	USB_DEVICE-	
3	USB_DEVICE+	
4	GND	