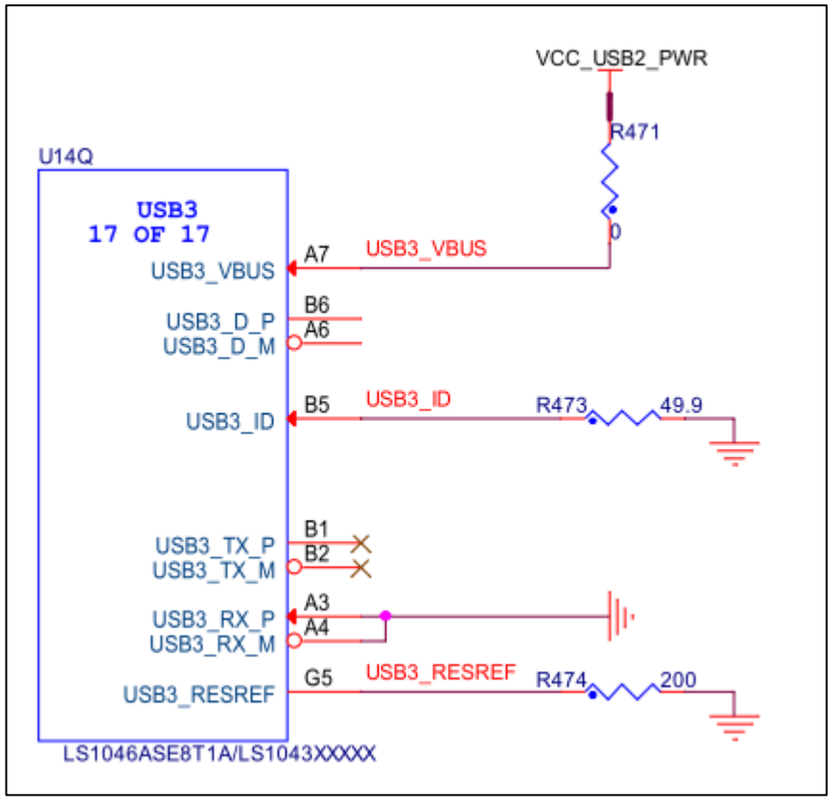
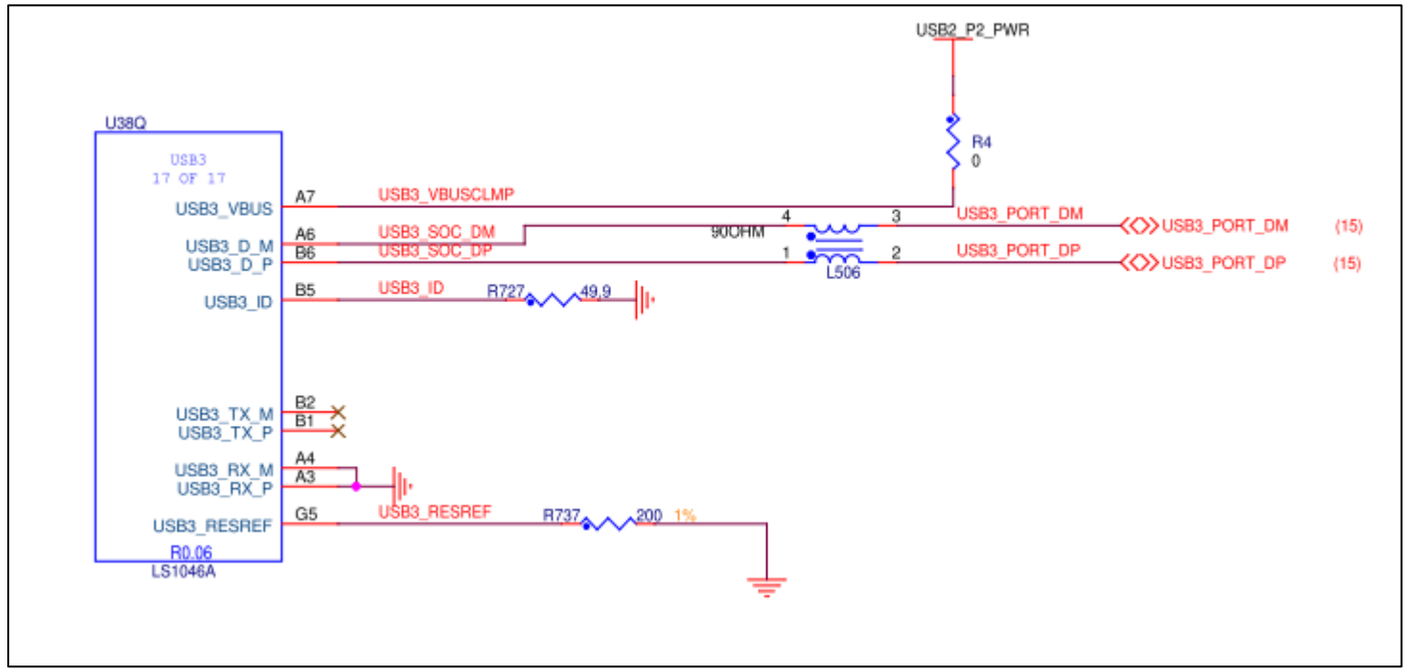
About the USB controller of LS1046A

2021.05.26

Reference Board



LS1046ARDB-PB



FRWYLS1046A-PA

【 LS1046ARDB-PB】

When not using the USB controller, connect as follows.

① USB3_VBUS is connected to a 5V power supply.

② USB_ID is connected to GND with 49.9Ω.

③ USB3_RESREF is connected to GND with 200Ω.

【 FRWYLS1046A-PA 】

When using only USB 2.0, the connection is as follows.

① USB3_VBUS is connected to a 5V power supply.

② USB_ID is connected to GND with 49.9Ω.

③ USB3_RESREF is connected to GND with 200Ω.

QorIQ LS1046A Design Checklist

5.12 USB PHY pin termination recommendations

Table 22. USB 1/2/3 PHY pin termination checklist

Signal Name	IO type	Used	Not Used	Completed
USB[1/2/3]_D_P	IO	USB PHY Data Plus	Do not connect. These pins should be left floating.	
USB[1/2/3]_D_M	IO	USB PHY Data Minus	Do not connect.These pins should be left floating.	
USB[1/2/3]_VBUS	I	USB1 power supply pin. A charge pump external to the USB 3.0 PHY must provide power to this pin. The nominal voltage for this pin is 5 V.	Do not connect.These pins should be left floating.	
USB[1/2/3]_ID	I	USB PHY ID Detect	Pull low through a 1kΩ resistor to GND.	
USB[1/2/3]_TX_P	O	USB PHY 3.0 Transmit Data (positive)	Do not connect.These pins should be left floating.	
USB[1/2/3]_TX_M	O	USB PHY 3.0 Transmit Data (negative)	Do not connect.These pins should be left floating.	
USB[1/2/3]_RX_P	I	USB PHY 3.0 Receive Data (positive)	Connect to ground (GND)	
USB[1/2/3]_RX_M	I	USB PHY 3.0 Receive Data (negative)	Connect to ground (GND)	
USB[1/2/3]_RESREF	IO	Attach a 200-Ω 1% 100-ppm/ ^{0}C precision resistor-to-ground on the board.	Do not connect.These pins should be left floating.	

【 Application Note】

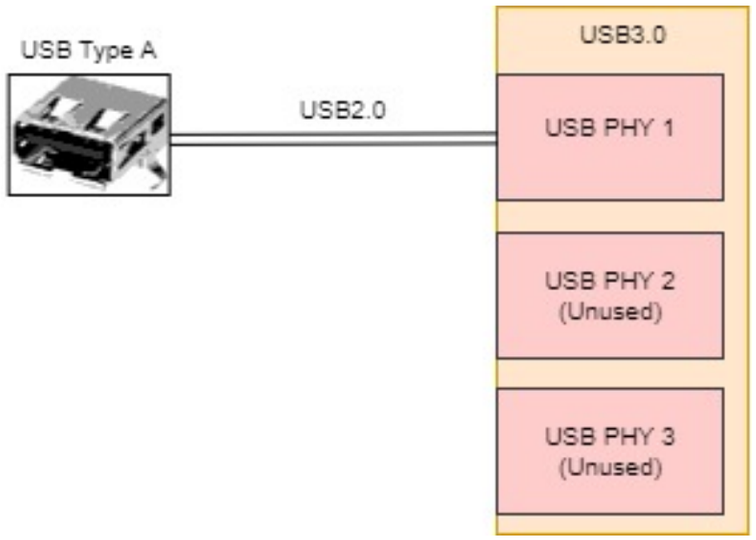
AN5252.pdf　(QorIQ LS1046A Design Checklist , Rev. 2, 06/2020)

Question

【 Conditions】

・USB1 works with USB2.0.

・USB2 / 3 is unused.



【Check】

1. Does USB [2/3] _VBUS need a 5V power supply?
2. Is the USB [2/3] _ID 1kΩ connection correct?
3. Does USB [1] _RESREF require 200Ω?
4. Does USB [2/3] _RESREF require 200Ω?