

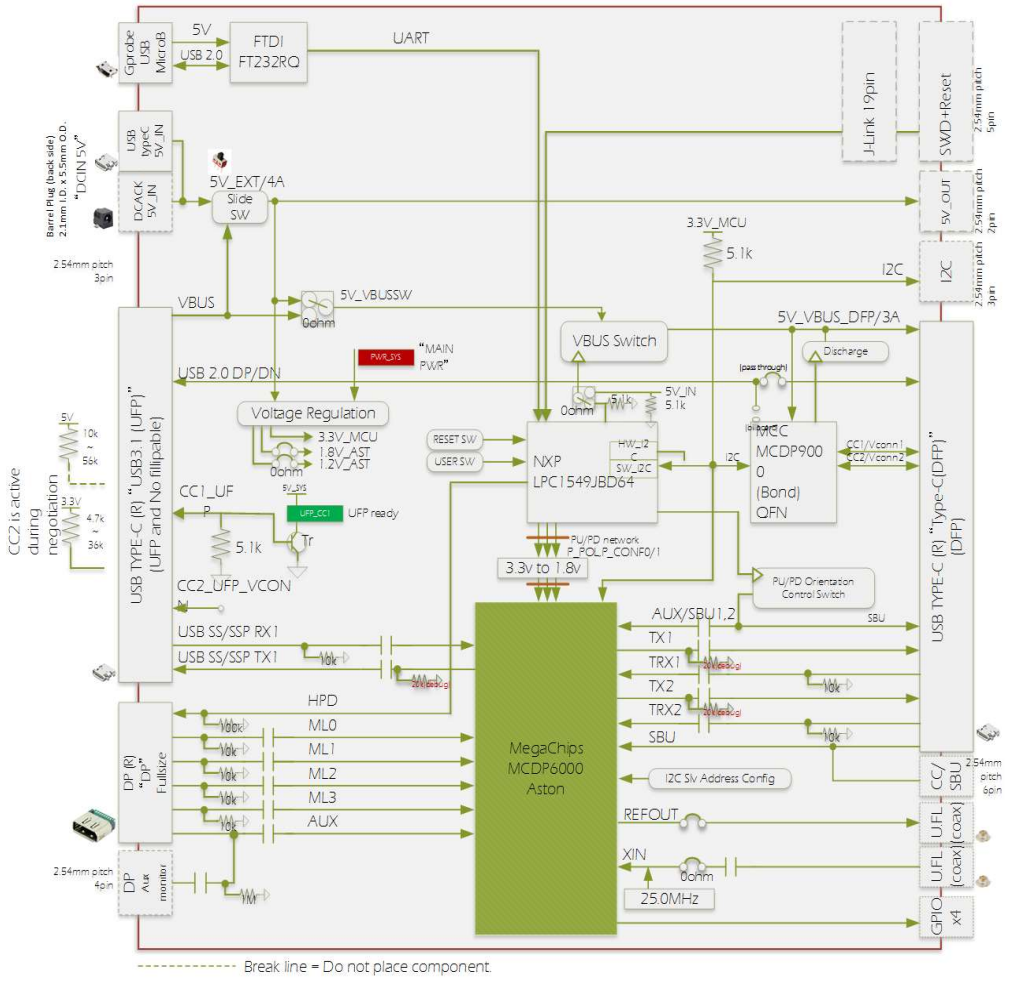
B0704-RD4-6000-QFN, RevB1 "Aston RD4" MCDP6000 USB Type-C DP Alt-Mode Switching Retimer (UFP: DP Full size, USB TypeC, DPF: TypeC)

Revision History

Date	Author	Version	Comments
04/13/2018	H. Takeuchi	Rev. A	1st release "Aston RD4"
12/19/2018	Koji.A	Rev. B1	* Updated regulators on 7/3 by H.Takeuchi

PCB# 0704

MCDP6000 , Reference Design RD4
System Block Diagram rev.001



Transmission line characteristic impedance

[Display Port]	90 ohm differential
[USB3.1]	90 ohm differential
[USB3.1+Display Port (shared)]	90 ohm differential

1. Features

Full functionality of MCDP6000 Type-C DP Alt-mode Switching Retimer
MCDP9010 USB Type-C Port Controller + MCU(NXP LPC1549JBD64 + Firmware)

Form factor: 48mm x 69mm
Material: FR4 t=1.6mm, 6 layers

- 1x Type-C Connector for USB Input
- 1x Full size Display Port Connector for Display Port Input
- 1x Type-C Connector for DP Alt mode support USB Type-C at DFP(Downstream Facing Port)
- 1x U.FL(Hirose) External Clock input
- 1x U.FL(Hirose) Clock output for external device

- 1x Power Slide Switch for the system power
- 1x Power Supply: DC+5V Input (Alternate input barrel plug or Type-C Connector)
- ** VBUS in the USB Input at UFP can be used as an external power supply for this system. (Default: Disabled)

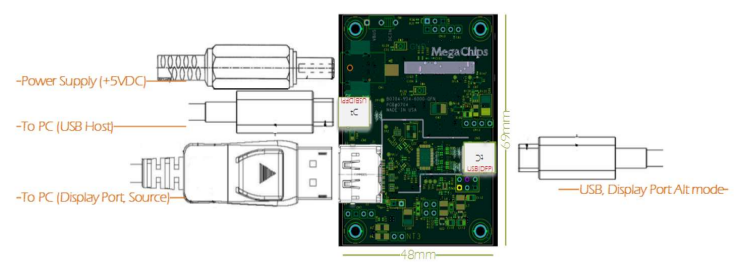
- 1x MCU Reset button
- 1x USB Micro-B (Communication to the MCU)

- 1x Type-C at UFP Polarity Detection Indicator(LED)

[Debug Connectors]

- 1x Display Port AUX Channel Monitor pins at DP Input
- 1x CC Communication & SBU Signal Monitor pins at DFP Type-C
- 1x I2C Interface pins (this net is connected to MCU(as I2C master) and MCDP6000(as I2C slave)
- 1x GPIOx4 pins from MCDP6000
- 1x SWD(Single Wire Debug) Interface for J-Link debugger

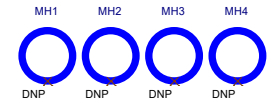
2. Outline



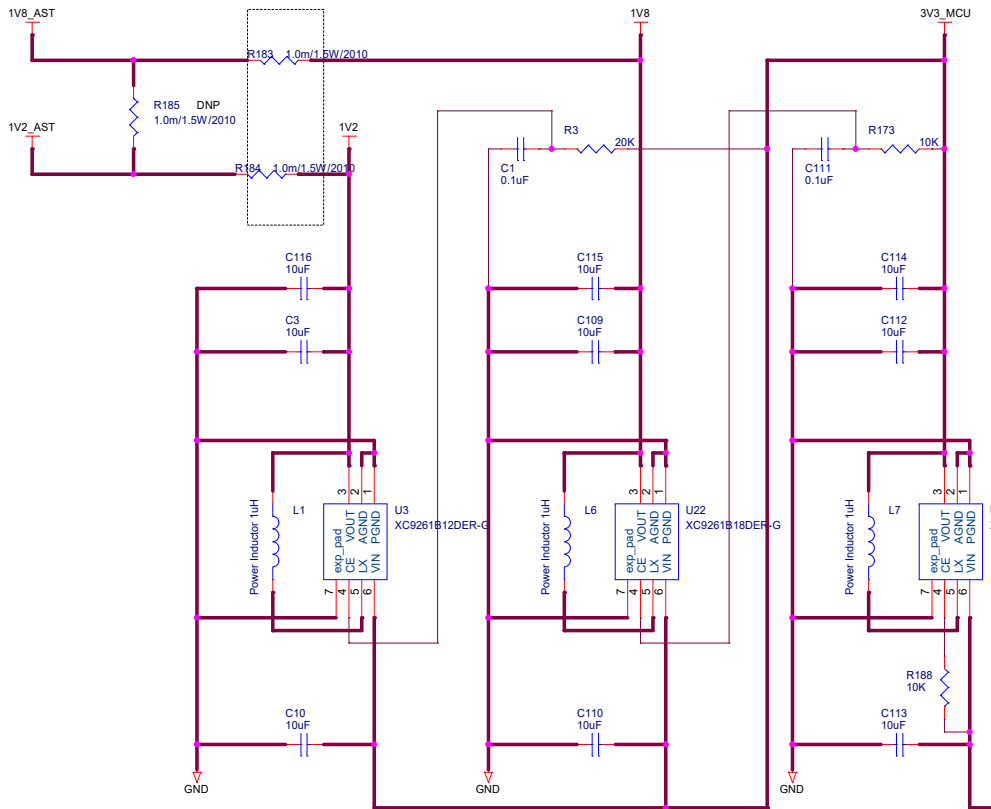
MegaChips		
Title	01. Contents	
Size B	Document Number	Rev
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[External Power Supply Input and Voltage Regulation]

[Mounting Holes]



{For 1.8V operation (option):
R 1 : Place, R 2 : DNP }

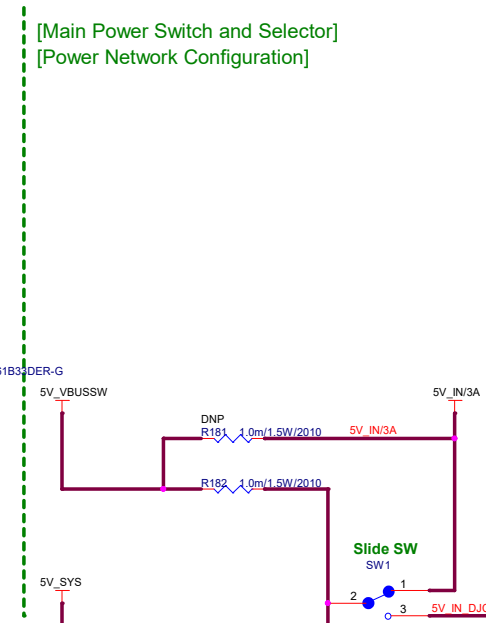


[5V to 1.2V Buck Regulator]

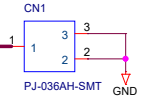
[5V to 1.8V Buck Regulator]

[5V to 3.3V Buck Regulator]

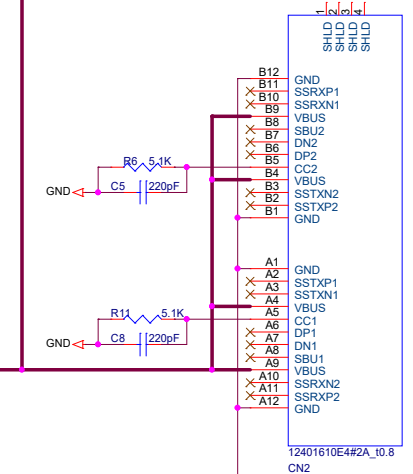
[Main Power Switch and Selector]
[Power Network Configuration]



[DC Jack for Power Supply: 5V Input]



[TypeC for Power Supply: 5V Input]



[Main System Power LED]

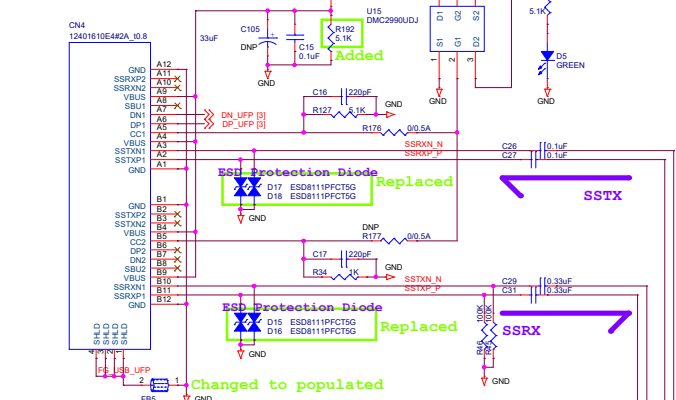
[For External Periheral Device/Boards]

MegaChips

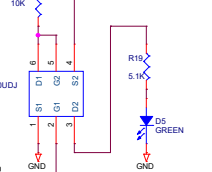
Title		
02. Regulators		
Size	Document Number	Rev
A3	B0704-RD4-6000-QFN, AstonRD4	B1
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[MCP6000 USB, DisplayPort Retimer]

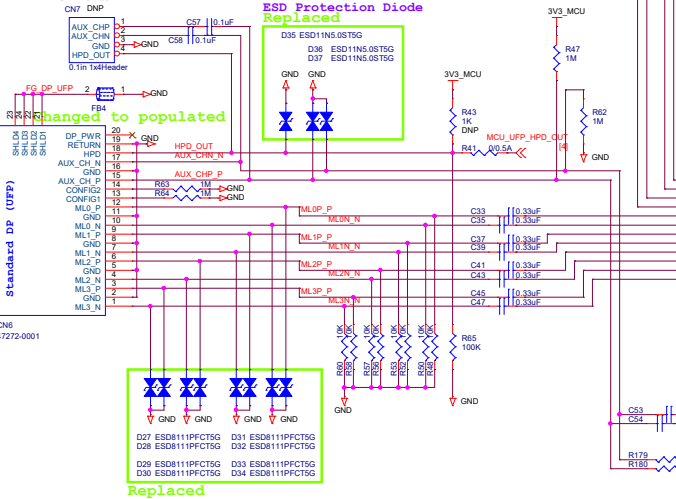
[USB - UFP]



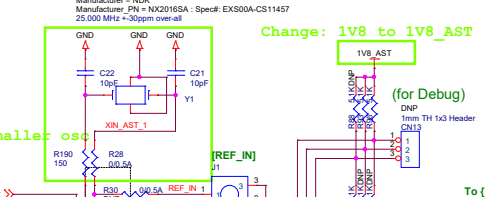
[Plug Orientation Detect Indicator(LED)]



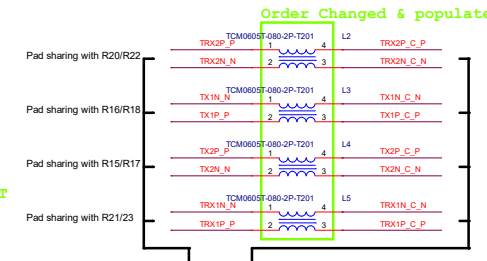
[Display Port - UFP]



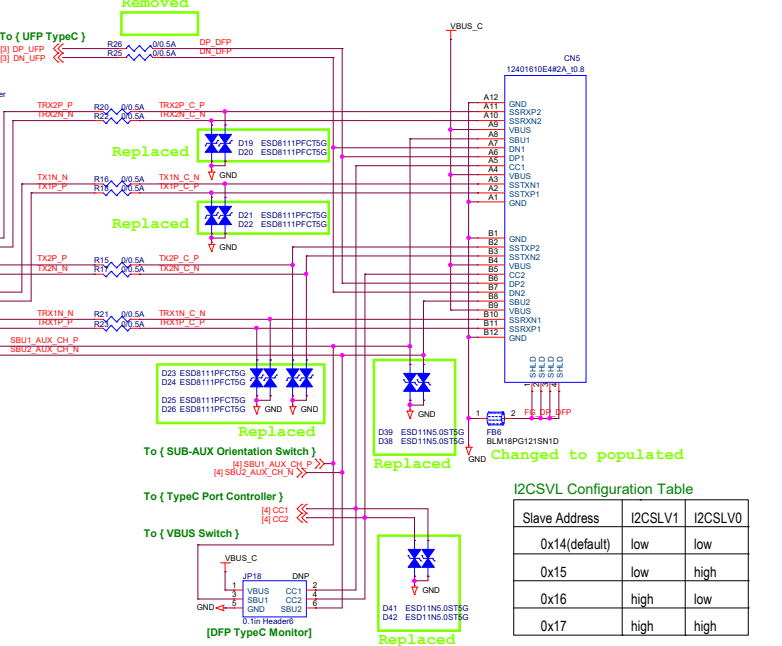
Shared Footprint with NX3225SA as previous selection.



CMF (Common Mode Filter), PAD Sharing with 0ohm



[USB Type-C Display Port Alternate mode - DFP]



Pin name updated



I2CSLV Configuration Table

Slave Address	I2CSLV1	I2CSLV0
0x14 (default)	low	low
0x15	low	high
0x16	high	low
0x17	high	high

Layout Guide for ESD diodes:
Equal distance from the footprint of connector to the ESD diodes to manage the characteristic impedance.

Layout Guide for ESD diodes:
Place nearby the interface connector.

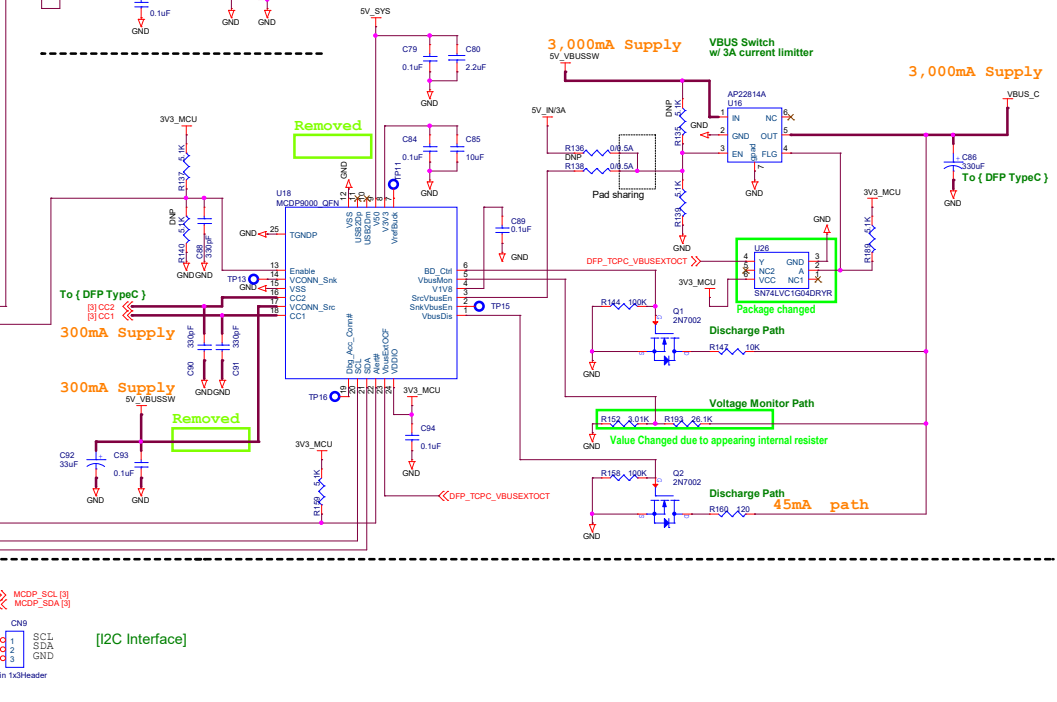
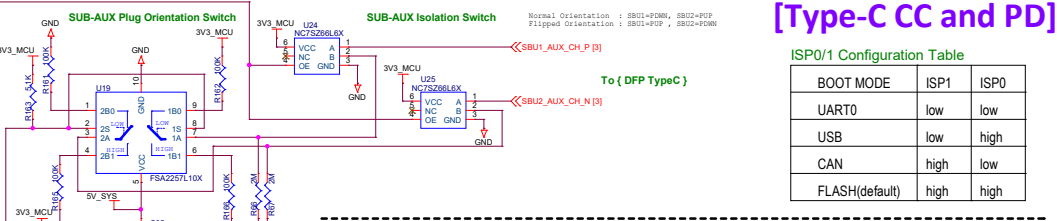
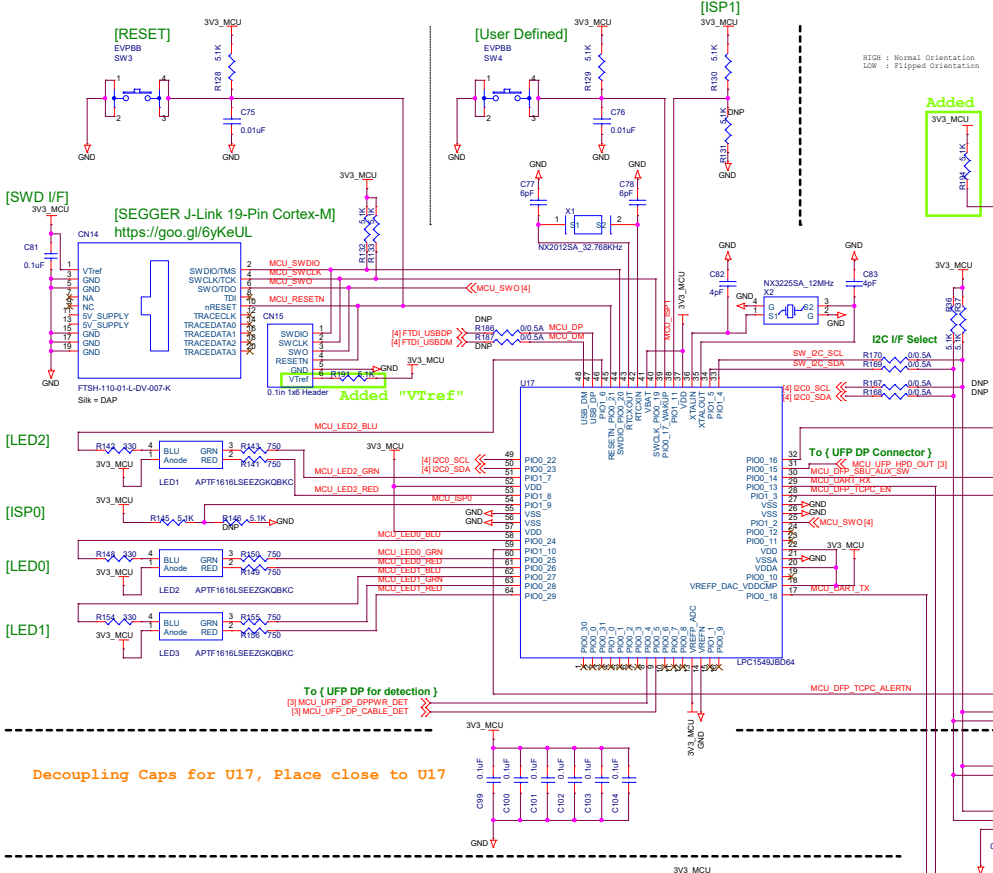
ISPO/1 Configuration Table

BOOT MODE	ISP1	ISP0
UART0	low	low
USB	low	high
CAN	high	low
FLASH(default)	high	high

Normal Orientation : SB01+P080, SB02+P080
Flipped Orientation : SB01+P0P, SB02+P080

RGH : Normal Orientation
L9R : Flipped Orientation

[MCU+TypeC Port Controller]



[USB - UART for GProbe]

