UPWARD FACING PORT(UFP)

P?
USB_C_Plug

VBUS   A4   VBUS
CC   A5   C_CC1
VCONN   B5   VCONN
D−   A7   USB_D−
D+   A6   USB_D+
RX1   B10   CRX1_n
RX1+   B11   CRX1_p
TX1   A3   CTX1_n
TX1+   A2   CTX1_p
RX2   A10   CRX2_n
RX2+   A11   CRX2_p
TX2   B3   CTX2_n
TX2+   B2   CTX2_p
SBU1   A8   CSBU1
SBU2   B8   CSBU2

SHIELD
GND
S1
A1

GND

Connected to computer(host).

+3.3V

U2
HD3SS460

23 VCC
POL   3   TO BE CONTROLLED
AMSEL   8   BY THE PD OR A
EN   18   RETIMER

1   CRX1p
2   CRX1n

SSTX_n 26   TO THE
SSTX_p 27   USB HUB
SSRX_n 29
SSRX_p 30

CRX1_n
CRX1_p

C? 0.1uF
C? 0.1uF
4   CTX1p
5   CTX1n
CTX1_n
CTX1_p

LnA_n   16   TO THE
LnA_p   17   DISPLAY PORT
LnB_n   19   CONTROLLER
LnB_p   20
LnC_n   21
LnC_P   22
LnD_n   24
LnD_P   25

C? 0.1uF
C? 0.1uF
6   CTX2p
7   CTX2n
CTX2_n
CTX2_p

9   CRX2p
10 CRX2n
CRX2_n
CRX2_p

SBU1   14
SBU2   15

11 CSBU1
12 CSBU2
CSBU1
CSBU2

PAD GND GND GND
28   13

GND

CHARGER INPUT TYPE C
RECEPTACLE

J?
USB_C_Receptacle

PWR_IN   A4   VBUS
CC1_PWR   A5   CC1
CC2_PWR   B5   CC2
          A7   D−
          B7   D−
          A6   D+
          B6   D+
          B10   RX1−
          B11   RX1+
          A3   TX1−
          A2   TX1+
          A10   RX2−
          A11   RX2+
          B3   TX2−
          B2   TX2+
          A8   SBU1
          B8   SBU2

UNUSED
IN THE TYPE C
CHARGING INPUT

GND   SHIELD
A1   S1

GND

The input receptacle receives input from a TYPE C
charging brick that can deliver upto 100W
(20V at 5A). the level of power sourced from
the brick is NEGOTIATED by the PD controller

Sheet: ST_PD CHARGING
PWR_IN   PWR_IN
File: ST_PD CHARGING CONTROLLER.sch

Sheet: 3V3_BUCK
File: 3V3_BUCK.sch

Sheet: UFP_PD_CONTROLLER

PRESERVED FOR USE LATER_
NO CONNECTION TO THE SCHEMATIC
(MAYBE NEEDED TO INITIATE THE UFP)

File: UFP_PD_CTRL + VAR_V_SOURCE.sch

Sheet: /
File: USB_C_HUB.sch

Title:

Size: A4   Date:
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LDO_3V3

R?
30K_603

ADCIN1

R?
10K_603

BP_WaitFor3V3_Internal mode
div=0.25, SPI_POCI=1
R1=30K, R2=10K.

GND

LDO_3V3

R?
5K_805

ADCIN2

R?
20K_603

sets the I2C address
DIV = R2/(R1+R2)
R1=5K, R2=20K
DIV=0.8, ADD=011b

GND

R?
100K

C?
0.01uF

+3.3V

C?
10uF

GND

LDO_3V3

C?
10uF

C?
10uF

GND

44 HRESET
5   VIN_3V3
13 VBUS1
14 VBUS1
3   VBUS2
4   VBUS2
11 PP_HV1
12 PP_HV1
1   PP_HV2
2   PP_HV2
25 PP_CABLE
6   ADCIN1
10 ADCIN2
24 C_CC1
26 C_CC2
27 I2C1_SCL
28 I2C1_SDA
29 I2C1_IRQ
32 I2C2_SCL
33 I2C2_SDA
34 I2C2_IRQ
8   DRAIN1
15 DRAIN1
19 DRAIN1
58 DRAIN1
7   DRAIN2
52 DRAIN2
56 DRAIN2
57 DRAIN2

U?
TPS65987D

LDO_3V3 9
LDO_1V8 35

GPIO0   16
GPIO1   17
GPIO2   18
GPIO3/HPD 30
GPIO4   31
GPIO12 40
GPIO13 41
GPIO20 54
GPIO21 55

I2C3_SCL/GPIO5 21
I2C3_SDA/GPIO6 22
I2C3_IRQ/GPIO7 23

GPIO14/PWM 42   POWER_LVL1
GPIO15/PWM 43   POWER_LVL2

GPIO16_/PP_EXT 48   PP_EXT_CNTRL
GPIO17_/PP_EXT2 49   POWER_LVL3

C_USB_P/GPIO18 50   R? 0   USB_D+
C_USB_N/GPIO19 53   R? 0   USB_D-

SPI_POCI 36
SPI_PICO 37
SPI_CLK   38
SPI_CS   39

Thermal_Pad/PPAD

GND 20 45 46 47 51 59

GND

VBUS

VBUS GND

1uF
C?

GND

D?
D_Schottky

+5V

GND

C?
47uF

+5V

GND

C?
47uF

GND

ADCIN1
ADCIN2

CC_CC1D
VCONND

C?
220pF

C?
220pF

GND

VARIABLE VOLTAGE PROVIDER(SOURCE)

SYS_PWR

D?
SMAJ30A

D?
SMAJ30A

D?
SMAJ30A

GND

C?
22uF

C?
22uF

C?
0.1uF

GND

R?
100K

R?
11K

GND

C?
1nF

R?
47.5K

U?
LM3489QMM

5 ADJ   PGATE 7
8 VIN   ISENSE 1
3 EN   GND PGND   FB 4
         2   6

GND

U?
CWDM3011P
3 6
4

R?
270

D?
ESDA25P35

GND

L?
10uH

R?
30K

C?
100pF

FEEDBACK PATH
(USED TO SET THE DESIRED VOLTAGE)

C?
100pF

R?
9.53K

Q? BSH105,215
POWER_LVL1D

R?
100K

R?
8.87K_603

Q? BSH105,215
POWER_LVL2D

R?
100K

R?
3.65K_603

Q? BSH105,215
POWER_LVL3D

R?
100K

R?
2.2K_805

PWR_IND

D?
ESDA25P35
GND

D?
MBRAF440T3G

R?
470

C?
1uF

R?
1K

+3.3V

1uF C?

2V7

C?
1uF

GND

R?
100K

R?
22K

Q?A
STL6P3LLH6

R?
22K

C?
0.1uF

R?
1K

D?
ESDA25P35
GND

SYS_PWR

D?
SBR10B45P5-13

VBUS

6	RESET	VDD	VSYS	VREG_1V2	VREG_2V7		24 22 21 23

CC1_PWR   2 CC1
           1 CC1DB
CC2_PWR   4 CC2
           5 CC2DB

18 VBUS_VS_DISCH

7   SCL
8   SDA
19 ALERT
12 ADDR0
13 ADDR1

VBUS_EN_SNK   16

POWER_OK2   20
POWER_OK3   14
DISCH   9

A_B_SIDE   17
ATTACH   11
GPIO   15

GND   10

GND

U?
STUSB4500QTR

Title:

Size: A4   Date:
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Low ESR caps at
1uF, Check DC Equivalent
resistance at 20V

VBUS

C? 1uF_GRT155C81E105KE13_402
C? 1uF_GRT155C81E105KE13_402
C? 1uF_GRT155C81E105KE13_402

C? 100nF

GND

Ron 65.4K

U? LM3150MH

3 EN
2 VIN
7 RON
1 VCC
6 SS

11 HG
12 BST
10 SW
8 ILIM
13 LG
4 FB

5 SGND
14 PGND

GND

C? 2.2uF(1mOHM)
C? 15nF

GND

Q? SI4842BDY-T1-GE3
4

R? 1.24K

C? 470nF(0.mOHM)

L? 4.5uH_13.5mOHM.

+3V3

Q? IRF3710ZSTRLPBF
1

GND

C? 56pF(1.mOHM)

R? 46.3K

R? 10K

GND

C? 220uF
+

GND

R? 1K
GND
R? 2.94K
FB

+3V3

C? 220uF
+
C? 100nF

C? 1nF

C? 22nF

R? 2.55K
R? 26.7K

GND

U? LM3478MM_NOPB

8 VIN
1 ISEN
2 COMP
3 FB
7 FA/SD

DR 6

AGND PGND
4   5

GND

ISENSE
FB

L? 1uH_5.6mOHM.

D? STPS30L30DJF-TR

+5V

Q? SI4842BDY-T1-GE3
4

ISENSE
R? 100

C? 10pF
R? 6m

GND

C? 270uF(8mOHM)
+
C? 270uF(8mOHM)
+

electrolytic alluminium
hv little esr

Sheet: /3V3_BUCK/
File: 3V3_BUCK.sch

Title:

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