Model Name: SOM-DB2500

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Title	Cover	
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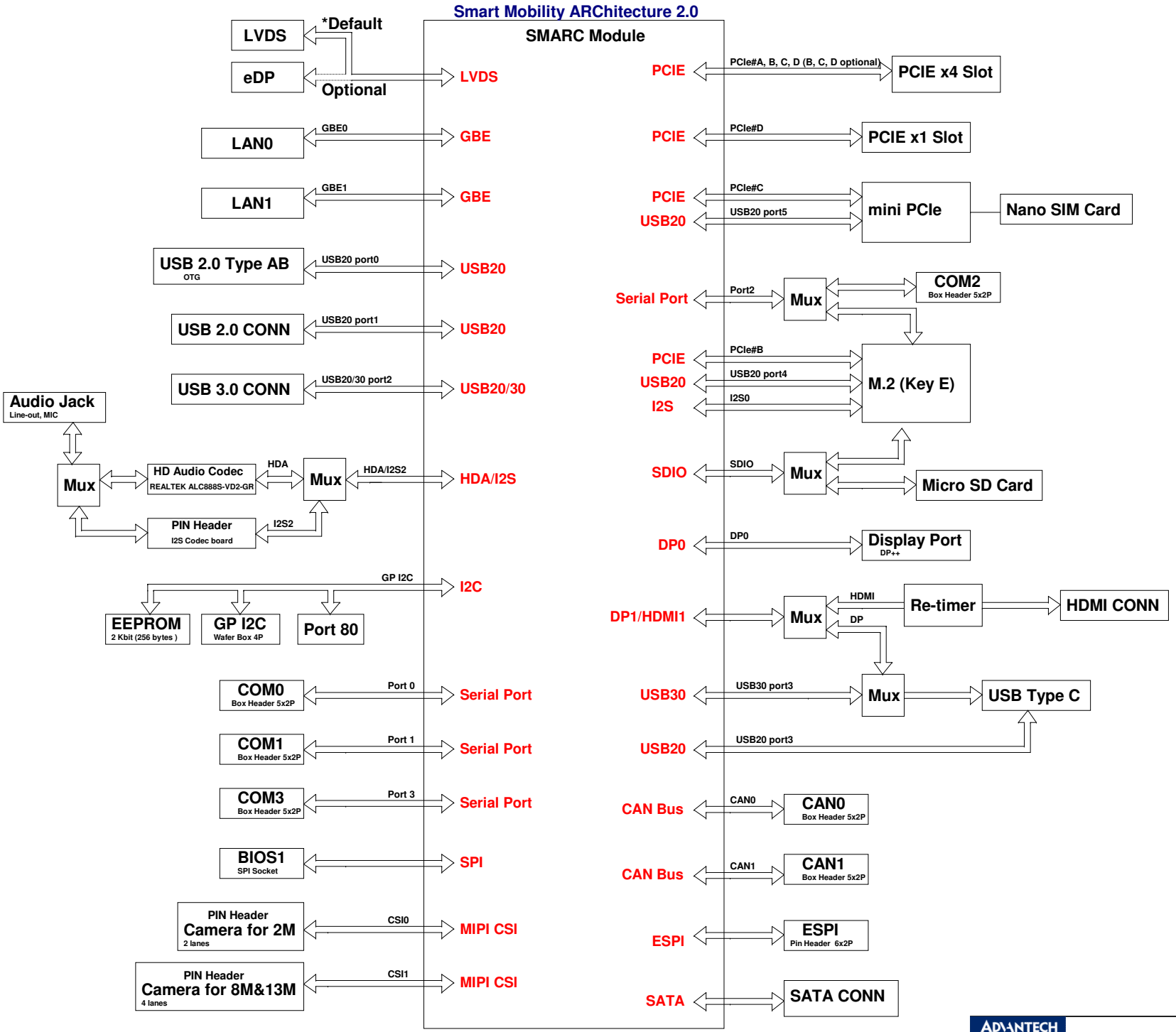
Smart Mobility ARChitecture 2.0
SMARC Module
LVDS
eDP
*Default
Optional
LVDS
LAN0
GBE0
GBE
LAN1
GBE1
GBE
USB 2.0 Type AB
OTG
USB20 port0
USB20
USB 2.0 CONN
USB20 port1
USB20
USB 3.0 CONN
USB20/30 port2
USB20/30
Audio Jack
Line-out, MIC
Mux
HD Audio Codec
REALTEK ALC888S-VD2-GR
HDA
Mux
HDA/I2S2
HDA/I2S
PIN Header
I2S Codec board
I2S2
GP I2C
I2C
EEPROM
2 Kbit (256 bytes)
GP I2C
Wafer Box 4P
Port 80
COM0
Box Header 5x2P
Port 0
Serial Port
COM1
Box Header 5x2P
Port 1
Serial Port
COM3
Box Header 5x2P
Port 3
Serial Port
BIOS1
SPI Socket
SPI
PIN Header
Camera for 2M
2 lanes
CSI0
MIPI CSI
PIN Header
Camera for 8M&13M
4 lanes
CSI1
MIPI CSI
PCIE
PCIe#A, B, C, D (B, C, D optional)
PCIE x4 Slot
PCIE
PCIe#D
PCIE x1 Slot
PCIE
USB20
PCIe#C
USB20 port5
mini PCIe
Nano SIM Card
Serial Port
Port2
Mux
COM2
Box Header 5x2P
PCIE
USB20
I2S
PCIe#B
USB20 port4
I2S0
M.2 (Key E)
SDIO
SDIO
Mux
Micro SD Card
DP0
DP0
Display Port
DP++
DP1/HDMI1
Mux
HDMI
DP
Re-timer
HDMI CONN
USB30
USB30 port3
Mux
USB Type C
USB20
USB20 port3
CAN Bus
CAN0
CAN0
Box Header 5x2P
CAN Bus
CAN1
CAN1
Box Header 5x2P
ESPI
ESPI
Pin Header 6x2P
SATA
SATA CONN
ADVANTECH
Title
Block Diagram
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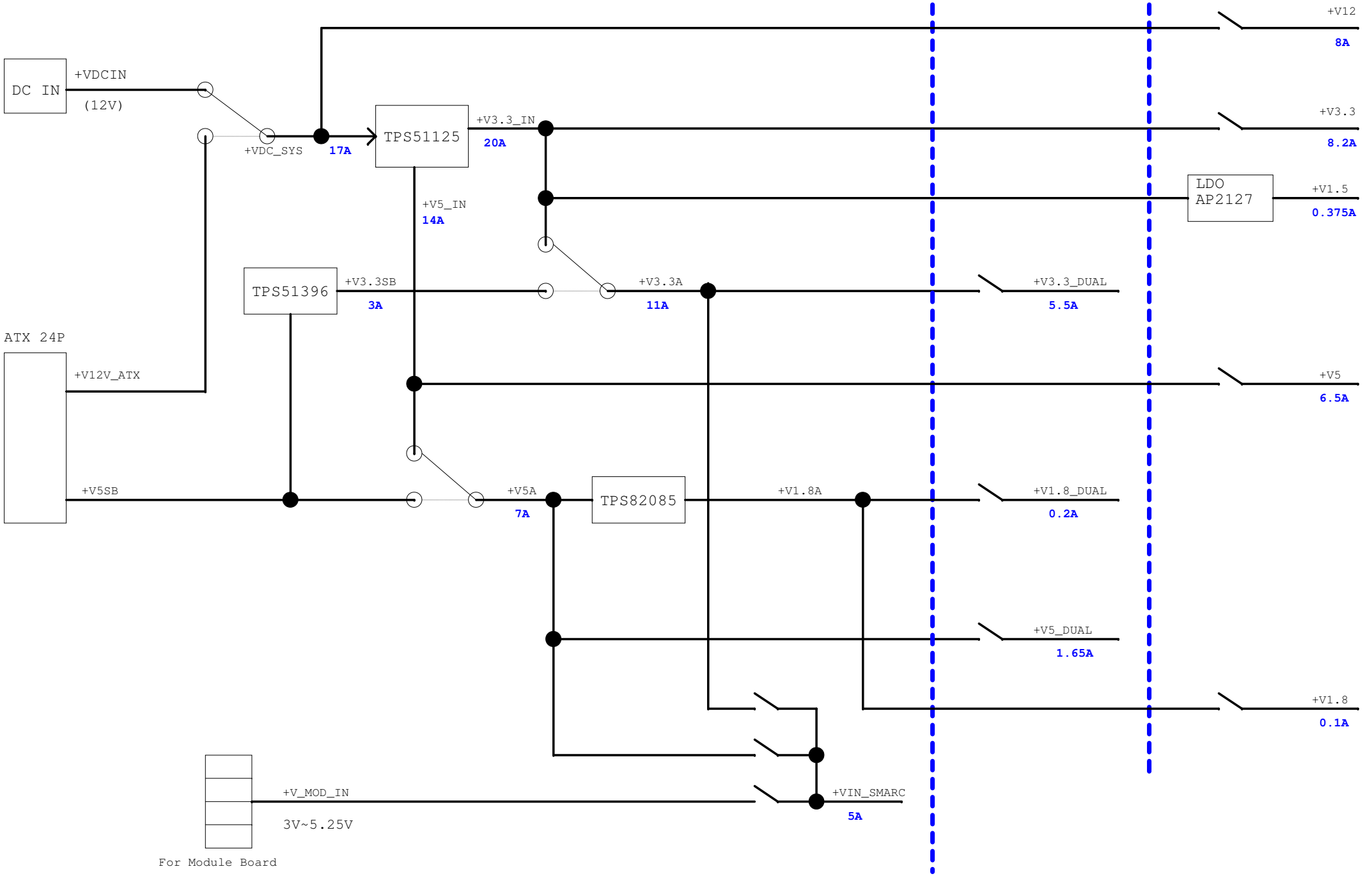

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Title	Power Map	
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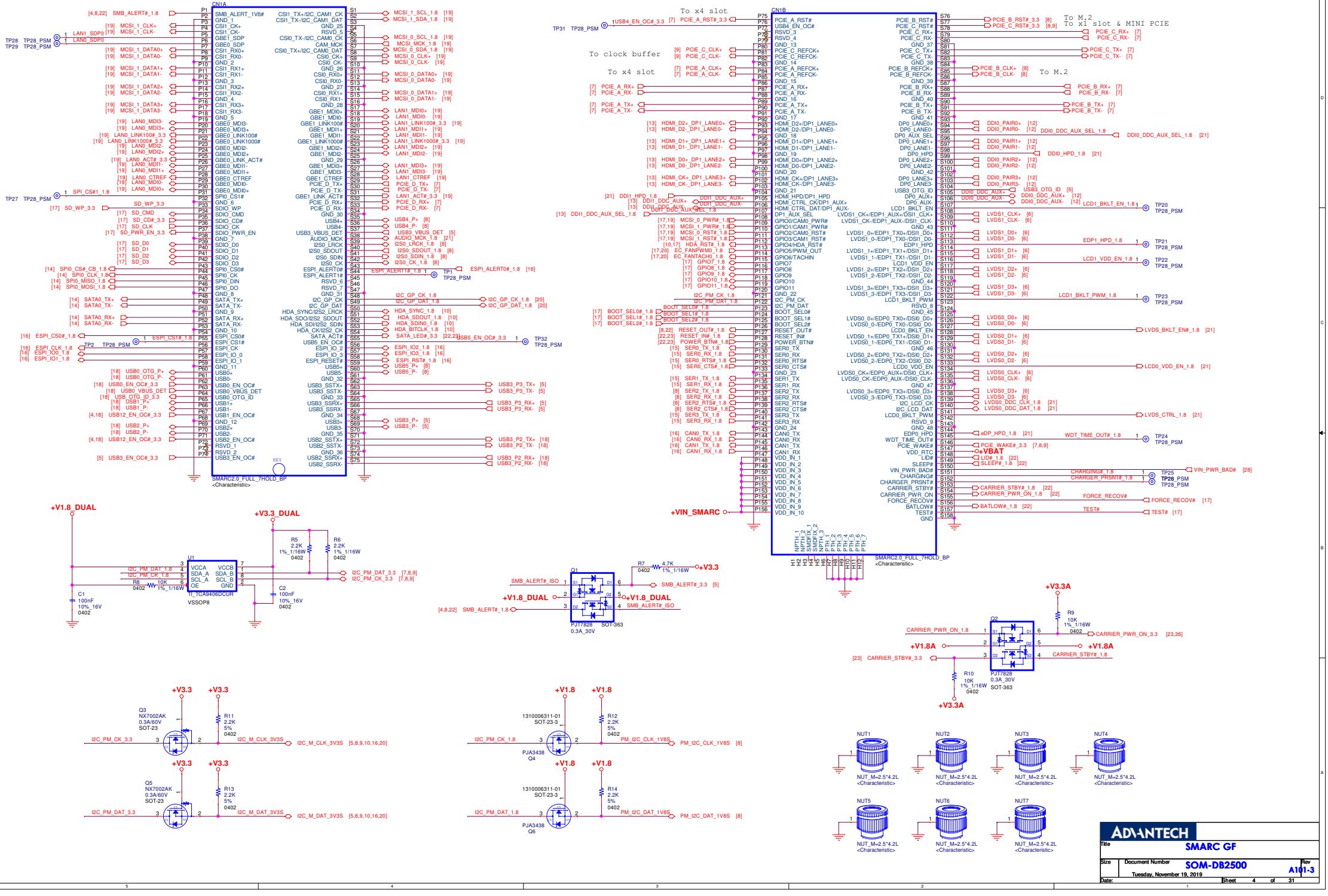
CN1A
SMB_ALERT_1V8#
GND_1
CSI1_CK+
CSI1_CK-
GBE1_SDP
GBE0_SDP
CSI1_RX0+
CSI1_RX0-
GND_2
CSI1_RX1+
CSI1_RX1-
GND_3
CSI1_RX2+
CSI1_RX2-
GND_4
CSI1_RX3+
CSI1_RX3-
GND_5
GBE0_MDI3-
GBE0_MDI3+
GBE0_LINK100#
GBE0_LINK1000#
GBE0_MDI2-
GBE0_MDI2+
GBE0_LINK_ACT#
GBE0_MDI1-
GBE0_MDI1+
GBE0_CTREF
GBE0_MDI0-
GBE0_MDI0+
SPI0_CS1#
GND_6
SDIO_WP
SDIO_CMD
SDIO_CD#
SDIO_CLK
SDIO_PWR_EN
GND_7
SDIO_D0
SDIO_D1
SDIO_D2
SDIO_D3
SPI0_CS0#
SPI0_CK
SPI0_DIN
SPI0_DO
GND_8
SATA_TX+
SATA_TX-
GND_9
SATA_RX+
SATA_RX-
GND_10
ESPI_CS0#
ESPI_CS1#
ESPI_CK
ESPI_IO_0
ESPI_IO_1
GND_11
USB0+
USB0-
USB0_EN_OC#
USB0_VBUS_DET
USB0_OTG_ID
USB1+
USB1-
USB1_EN_OC#
GND_12
USB2+
USB2-
USB2_EN_OC#
RSVD_1
RSVD_2
USB3_EN_OC#
CSI1_TX+/I2C_CAM1_CK
CSI1_TX-/I2C_CAM1_DAT
GND_25
RSVD_5
CSI0_TX-/I2C_CAM0_CK
CAM_MCK
CSI0_TX+/I2C_CAM0_DAT
CSI0_CK+
CSI0_CK-
GND_26
CSI0_RX0+
CSI0_RX0-
GND_27
CSI0_RX1+
CSI0_RX1-
GND_28
GBE1_MDI0+
GBE1_MDI0-
GBE1_LINK100#
GBE1_MDI1+
GBE1_MDI1-
GBE1_LINK1000#
GBE1_MDI2+
GBE1_MDI2-
GND_29
GBE1_MDI3+
GBE1_MDI3-
GBE1_CTREF
PCIE_D_TX+
PCIE_D_TX-
GBE1_LINK_ACT#
PCIE_D_RX+
PCIE_D_RX-
GND_30
USB4+
USB4-
USB3_VBUS_DET
AUDIO_MCK
I2S0_LRCK
I2S0_SDOUT
I2S0_SDIN
I2S0_CK
ESPI_ALERT0#
ESPI_ALERT1#
RSVD_6
RSVD_7
GND_31
I2C_GP_CK
I2C_GP_DAT
HDA_SYNC/I2S2_LRCK
HDA_SDO/I2S2_SDOUT
HDA_SDI/I2S2_SDIN
HDA_CK/I2S2_CK
SATA_ACT#
USB5_EN_OC#
ESPI_IO_2
ESPI_IO_3
ESPI_RESET#
USB5+
USB5-
GND_32
USB3_SSTX+
USB3_SSTX-
GND_33
USB3_SSRX+
USB3_SSRX-
GND_34
USB3+
USB3-
GND_35
USB2_SSTX+
USB2_SSTX-
GND_36
USB2_SSRX+
USB2_SSRX-
MCSI_1_SCL_1.8
MCSI_1_SDA_1.8
MCSI_0_SCL_1.8
MCSI_MCK_1.8
MCSI_0_SDA_1.8
MCSI_0_CLK+
MCSI_0_CLK-
MCSI_0_DATA0+
MCSI_0_DATA0-
MCSI_0_DATA1+
MCSI_0_DATA1-
LAN1_MDI0+
LAN1_MDI0-
LAN1_LINK100#_3.3
LAN1_MDI1+
LAN1_MDI1-
LAN1_LINK1000#_3.3
LAN1_MDI2+
LAN1_MDI2-
LAN1_MDI3+
LAN1_MDI3-
LAN1_CTREF
PCIE_D_TX+
PCIE_D_TX-
LAN1_ACT#_3.3
PCIE_D_RX+
PCIE_D_RX-
USB4_P+
USB4_P-
USB3_VBUS_DET
AUDIO_MCK_1.8
I2S0_LRCK_1.8
I2S0_SDOUT_1.8
I2S0_SDIN_1.8
I2S0_CK_1.8
ESPI_ALERT#_1.8
TP1
TP28_PSM
ESPI_ALERT0#_1.8
I2C_GP_CK_1.8
I2C_GP_DAT_1.8
HDA_SYNC_1.8
HDA_SDOUT_1.8
HDA_SDIN0_1.8
HDA_BITCLK_1.8
SATA_LED#_3.3
USB5_EN_OC#_3.3
ESPI_IO2_1.8
ESPI_IO3_1.8
ESPI_RST#_1.8
USB5_P+
USB5_P-
USB3_P3_TX+
USB3_P3_TX-
USB3_P3_RX+
USB3_P3_RX-
USB3_P2_TX+
USB3_P2_TX-
USB3_P2_RX+
USB3_P2_RX-
SMARC2.0_FULL_7HOLD_BP
<Characteristic>
To x4 slot
To clock buffer
To x4 slot
To M.2
To x1 slot & MINI PCIE
To M.2
CN1B
PCIE_A_RST#
USB4_EN_OC#
RSVD_3
RSVD_4
GND_13
PCIE_C_REFCK+
PCIE_C_REFCK-
GND_14
PCIE_A_REFCK+
PCIE_A_REFCK-
GND_15
PCIE_A_RX+
PCIE_A_RX-
GND_16
PCIE_A_TX+
PCIE_A_TX-
GND_17
HDMI_D2+/DP1_LANE0+
HDMI_D2-/DP1_LANE0-
GND_18
HDMI_D1+/DP1_LANE1+
HDMI_D1-/DP1_LANE1-
GND_19
HDMI_D0+/DP1_LANE2+
HDMI_D0-/DP1_LANE2-
GND_20
HDMI_CK+/DP1_LANE3+
HDMI_CK-/DP1_LANE3-
GND_21
HDMI_HPD/DP1_HPD
HDMI_CTRL_CK/DP1_AUX+
HDMI_CTRL_DAT/DP1_AUX-
DP1_AUX_SEL
GPIO0/CAM0_PWR#
GPIO1/CAM1_PWR#
GPIO2/CAM0_RST#
GPIO3/CAM1_RST#
GPIO4/HDA_RST#
GPIO5/PWM_OUT
GPIO6/TACHIN
GPIO7
GPIO8
GPIO9
GPIO10
GPIO11
GND_22
I2C_PM_CK
I2C_PM_DAT
BOOT_SEL0#
BOOT_SEL1#
BOOT_SEL2#
RESET_OUT#
RESET_IN#
POWER_BTN#
SER0_TX
SER0_RX
SER0_RTS#
SER0_CTS#
GND_23
SER1_TX
SER1_RX
SER2_TX
SER2_RX
SER2_RTS#
SER2_CTS#
SER3_TX
SER3_RX
GND_24
CAN0_TX
CAN0_RX
CAN1_TX
CAN1_RX
VDD_IN_1
VDD_IN_2
VDD_IN_3
VDD_IN_4
VDD_IN_5
VDD_IN_6
VDD_IN_7
VDD_IN_8
VDD_IN_9
VDD_IN_10
PCIE_B_RST#
PCIE_C_RST#
PCIE_C_RX+
PCIE_C_RX-
GND_37
PCIE_C_TX+
PCIE_C_TX-
GND_38
PCIE_B_REFCK+
PCIE_B_REFCK-
GND_39
PCIE_B_RX+
PCIE_B_RX-
GND_40
PCIE_B_TX+
PCIE_B_TX-
GND_41
DP0_LANE0+
DP0_LANE0-
DP0_AUX_SEL
DP0_LANE1+
DP0_LANE1-
DP0_HPD
DP0_LANE2+
DP0_LANE2-
GND_42
DP0_LANE3+
DP0_LANE3-
USB3_OTG_ID
DP0_AUX+
DP0_AUX-
LCD1_BKLT_EN
LCD1_BKLT_PWM
RSVD_8
GND_45
LVDS0_0+/EDP0_TX0+/DSI0_D0+
LVDS0_0-/EDP0_TX0-/DSI0_D0-
LCD0_BKLT_EN
LVDS0_1+/EDP0_TX1+/DSI0_D1+
LVDS0_1-/EDP0_TX1-/DSI0_D1-
GND_46
LVDS0_2+/EDP0_TX2+/DSI0_D2+
LVDS0_2-/EDP0_TX2-/DSI0_D2-
LCD0_VDD_EN
LVDS0_CK+/EDP0_AUX+/DSI0_CLK+
LVDS0_CK-/EDP0_AUX-/DSI0_CLK-
GND_47
LVDS0_3+/EDP0_TX3+/DSI0_D3+
LVDS0_3-/EDP0_TX3-/DSI0_D3-
I2C_LCD_CK
I2C_LCD_DAT
LCD0_BKLT_PWM
RSVD_9
GND_48
EDP0_HPD
WDT_TIME_OUT#
PCIE_WAKE#
VDD_RTC
LID#
SLEEP#
VIN_PWR_BAD#
CHARGING#
CHARGER_PRSNT#
CARRIER_STBY#
CARRIER_PWR_ON
FORCE_RECOV#
BATLOW#
TEST#
GND
USB4_EN_OC#_3.3
PCIE_A_RST#_3.3
PCIE_C_CLK+
PCIE_C_CLK-
PCIE_A_CLK+
PCIE_A_CLK-
HDMI_D2+_DP1_LANE0+
HDMI_D2-_DP1_LANE0-
HDMI_D1+_DP1_LANE1+
HDMI_D1-_DP1_LANE1-
HDMI_D0+_DP1_LANE2+
HDMI_D0-_DP1_LANE2-
HDMI_CK+_DP1_LANE3+
HDMI_CK-_DP1_LANE3-
HPD_1.8
DDI1_DDC_AUX+
DDI1_DDC_AUX-
DDI1_DDC_AUX_SEL_1.8
MCSI_0_PWR#_1.8
MCSI_1_PWR#_1.8
MCSI_0_RST#_1.8
MCSI_1_RST#_1.8
HDA_RST#_1.8
EC_FANPWM0_1.8
EC_FANTACH0_1.8
GPIO7_1.8
GPIO8_1.8
GPIO9_1.8
GPIO10_1.8
GPIO11_1.8
I2C_PM_CK_1.8
I2C_PM_DAT_1.8
BOOT_SEL0#_1.8
BOOT_SEL1#_1.8
BOOT_SEL2#_1.8
RESET_OUT#_1.8
RESET_IN#_1.8
POWER_BTN#_1.8
SER0_TX_1.8
SER0_RX_1.8
SER0_RTS#_1.8
SER0_CTS#_1.8
SER1_TX_1.8
SER1_RX_1.8
SER2_TX_1.8
SER2_RX_1.8
SER2_RTS#_1.8
SER2_CTS#_1.8
SER3_TX_1.8
SER3_RX_1.8
CAN0_TX_1.8
CAN0_RX_1.8
CAN1_TX_1.8
CAN1_RX_1.8
+VIN_SMARC
PCIE_B_RST#_3.3
PCIE_C_RST#_3.3
PCIE_C_RX+
PCIE_C_RX-
PCIE_C_TX+
PCIE_C_TX-
PCIE_B_CLK+
PCIE_B_CLK-
PCIE_B_RX+
PCIE_B_RX-
PCIE_B_TX+
PCIE_B_TX-
DDI0_PAIR0+
DDI0_PAIR0-
DDI0_DDC_AUX_SEL_1.8
DDI0_PAIR1+
DDI0_PAIR1-
DDI0_HPD_1.8
DDI0_PAIR2+
DDI0_PAIR2-
DDI0_PAIR3+
DDI0_PAIR3-
USB3_OTG_ID
DDI0_DDC_AUX+
DDI0_DDC_AUX-
LCD1_BKLT_EN_1.8
LVDS1_CLK+
LVDS1_CLK-
LVDS1_D0+
LVDS1_D0-
EDP1_HPD_1.8
LVDS1_D1+
LVDS1_D1-
LCD1_VDD_EN_1.8
LVDS1_D2+
LVDS1_D2-
LVDS1_D3+
LVDS1_D3-
LCD1_BKLT_PWM_1.8
LVDS_BKLT_EN#_1.8
LVDS0_D0+
LVDS0_D0-
LVDS0_D1+
LVDS0_D1-
LVDS0_D2+
LVDS0_D2-
LCD0_VDD_EN_1.8
LVDS0_CLK+
LVDS0_CLK-
LVDS0_D3+
LVDS0_D3-
I2C_LCD_CK_1.8
LVDS0_DDC_DAT_1.8
LVDS_CTRL_1.8
eDP_HPD_1.8
WDT_TIME_OUT#_1.8
PCIE_WAKE#_3.3
+VBAT
LID#_1.8
SLEEP#_1.8
CHARGING#_1.8
CHARGER_PRSNT#_1.8
CARRIER_STBY#_1.8
CARRIER_PWR_ON_1.8
FORCE_RECOV#
BATLOW#_1.8
TEST#
SMARC2.0_FULL_7HOLD_BP
<Characteristic>
+V1.8_DUAL
+V3.3_DUAL
U1
TI_TCA9406DCUR
VSSOP8
VCCA
SDA_A
SCL_A
OE
VCCB
SDA_B
SCL_B
GND
C1
100nF
10%_16V
0402
C2
100nF
10%_16V
0402
R5
2.2K
1%_1/16W
0402
R6
2.2K
1%_1/16W
0402
R8
10K
1%_1/16W
0402
I2C_PM_DAT_1.8
I2C_PM_CK_1.8
I2C_PM_DAT_3.3 [7,8,9]
I2C_PM_CK_3.3 [7,8,9]
Q1
PJT7828
0.3A_30V
SOT-363
R7
4.7K
1%_1/16W
0402
+V3.3
SMB_ALERT#_ISO
SMB_ALERT#_3.3 [5]
SMB_ALERT#_1.8 [4,8,22]
+V3.3A
Q2
PJT7828
0.3A_30V
SOT-363
R9
10K
1%_1/16W
0402
R10
10K
1%_1/16W
0402
CARRIER_PWR_ON_1.8
CARRIER_PWR_ON_3.3 [23,26]
+V1.8A
CARRIER_STBY#_3.3 [23]
CARRIER_STBY#_1.8
Q3
NX7002AK
0.3A/60V
SOT-23
R11
2.2K
5%
0402
I2C_PM_CK_3.3
I2C_M_CLK_3V3S
I2C_M_CLK_3V3S [5,8,9,10,16,20]
Q5
NX7002AK
0.3A/60V
SOT-23
R13
2.2K
5%
0402
I2C_PM_DAT_3.3
I2C_M_DAT_3V3S
I2C_M_DAT_3V3S [5,8,9,10,16,20]
1310006311-01
SOT-23-3
PJA3438
Q4
R12
2.2K
5%
0402
I2C_PM_CK_1.8
PM_I2C_CLK_1V8S
PM_I2C_CLK_1V8S [8]
Q6
R14
2.2K
5%
0402
I2C_PM_DAT_1.8
PM_I2C_DAT_1V8S
PM_I2C_DAT_1V8S [8]
NUT1
NUT2
NUT3
NUT4
NUT5
NUT6
NUT7
NUT_M=2.5*4.2L
<Characteristic>
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SMARC GF
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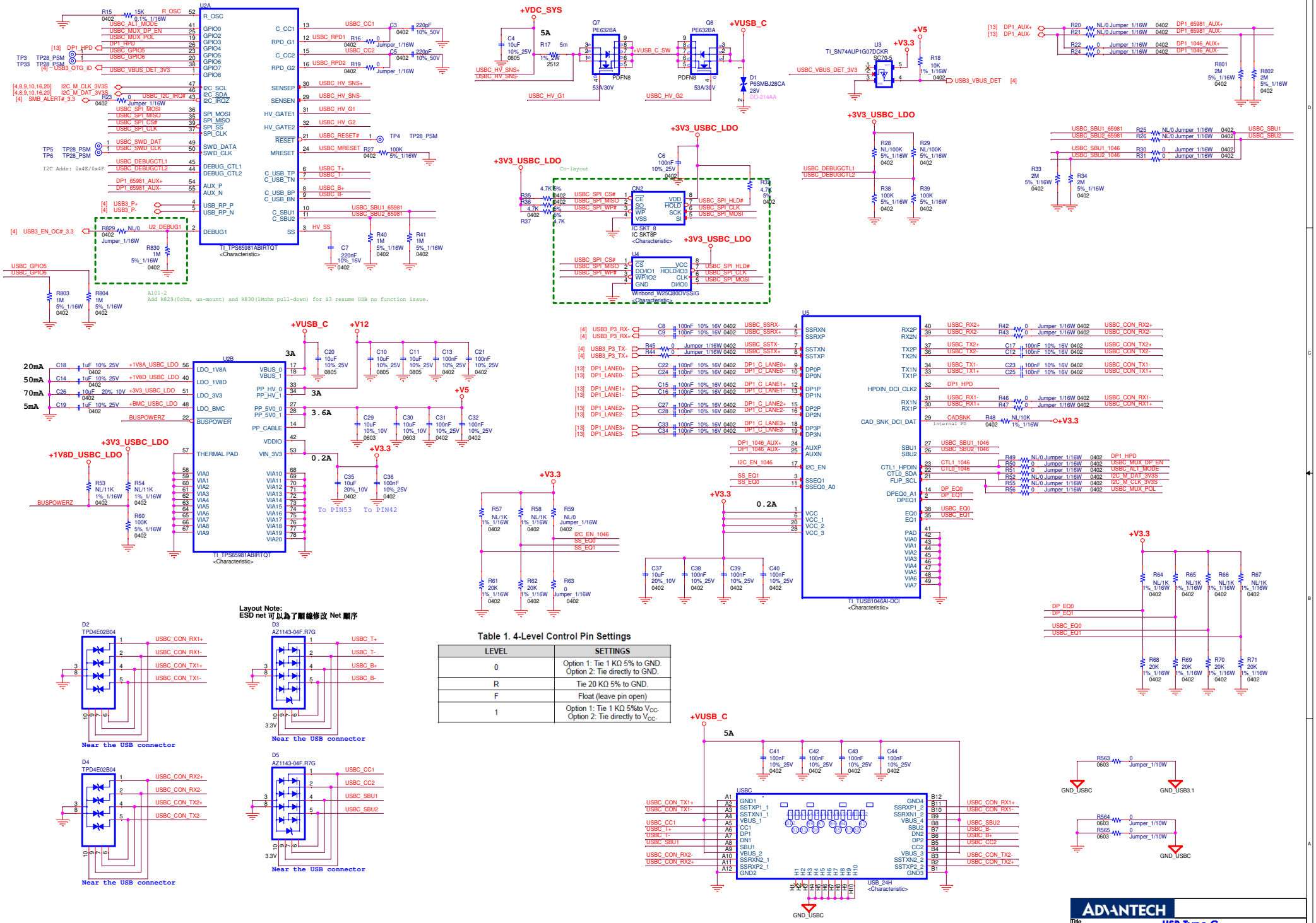

Table 1. 4-Level Control Pin Settings

LEVEL	SETTINGS
0	Option 1: Tie 1 KΩ 5% to GND. Option 2: Tie directly to GND.
R	Tie 20 KΩ 5% to GND.
F	Float (leave pin open)
1	Option 1: Tie 1 KΩ 5%to V_{CC}. Option 2: Tie directly to V_{CC}.

Title	USB Type C		
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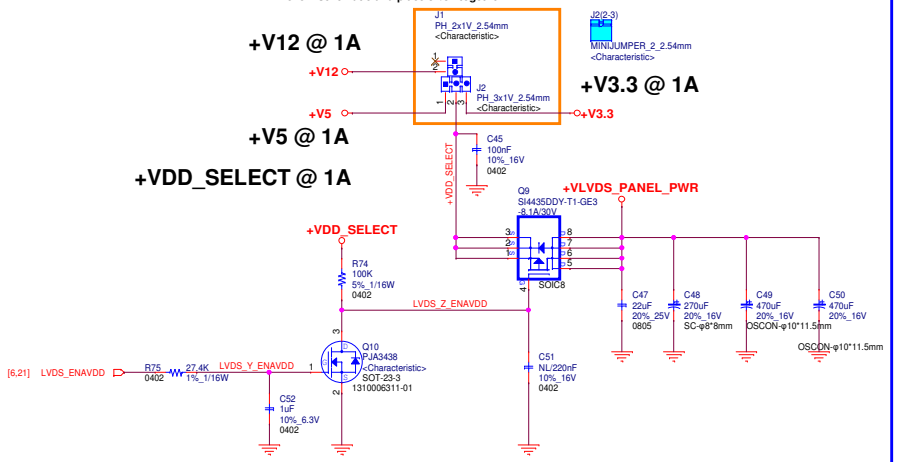
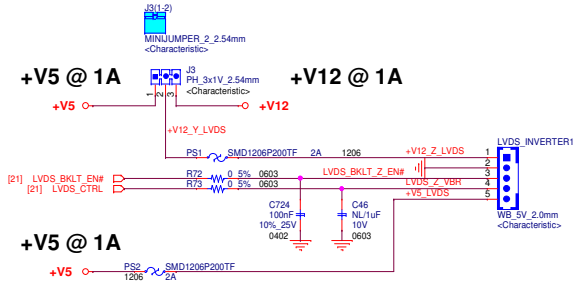
LVDS PWR selection

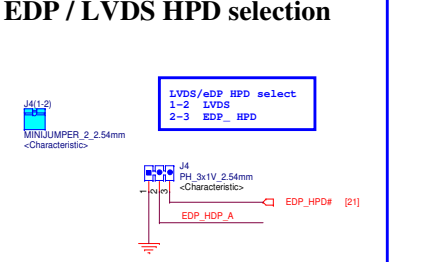
CAD Note :
Follow schematic and place J1/J2 together.



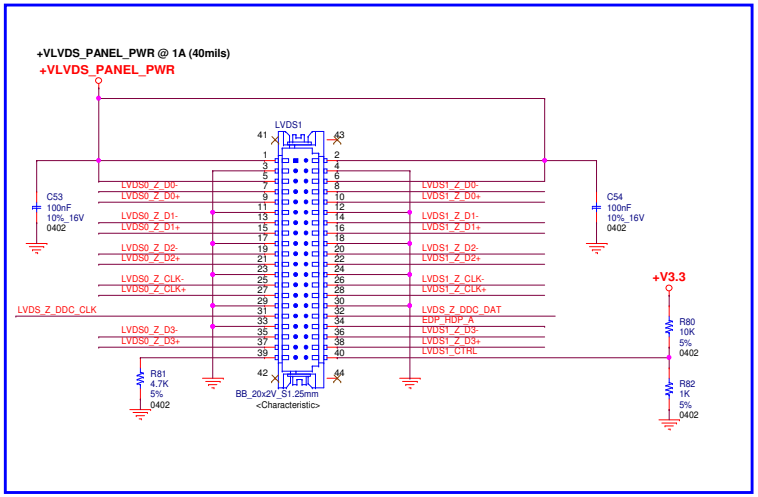
LVDS INVERTER



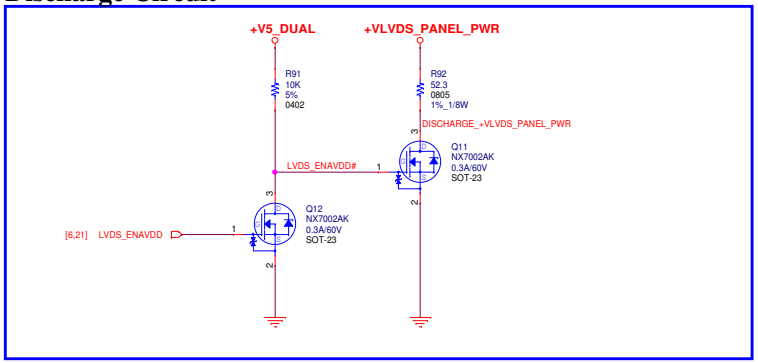
EDP / LVDS HPD selection

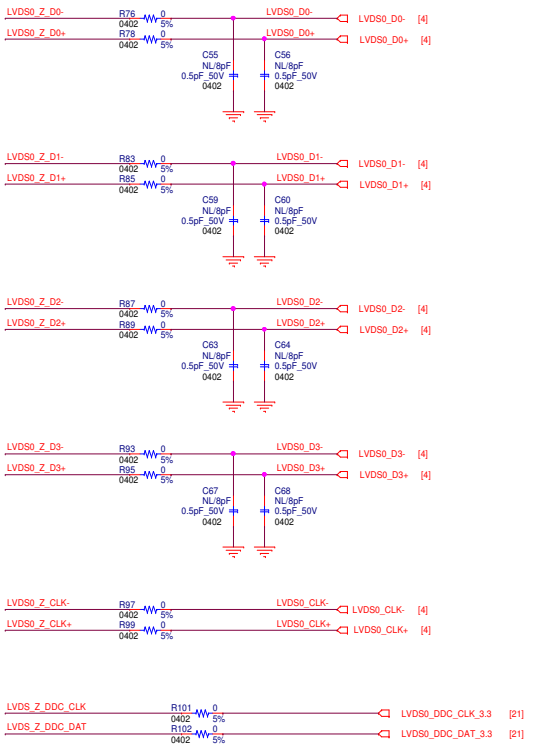


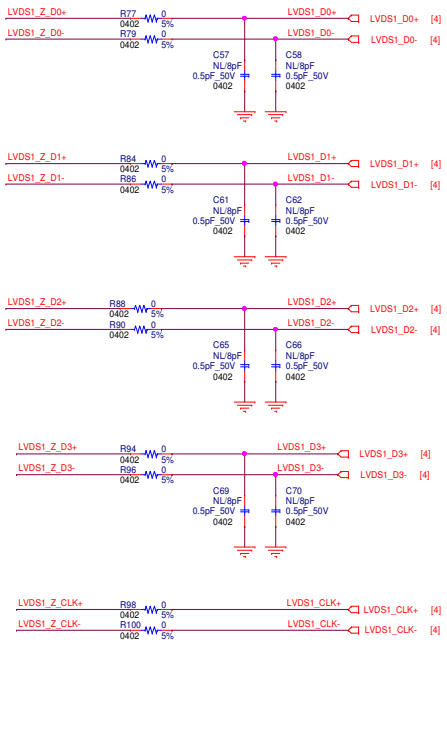
LVDS Connector



Discharge Circuit







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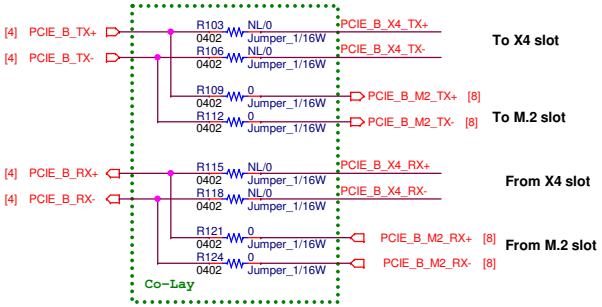
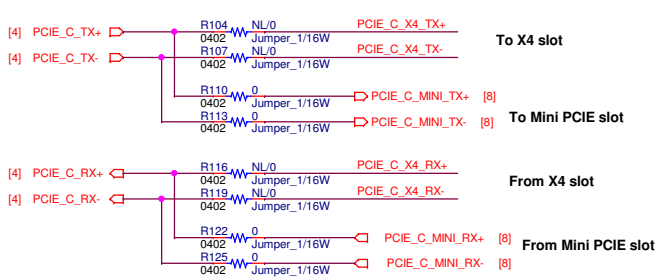
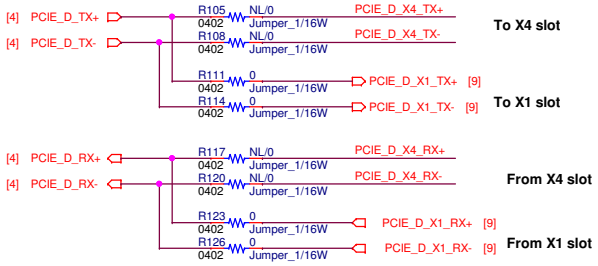
PCIE port B



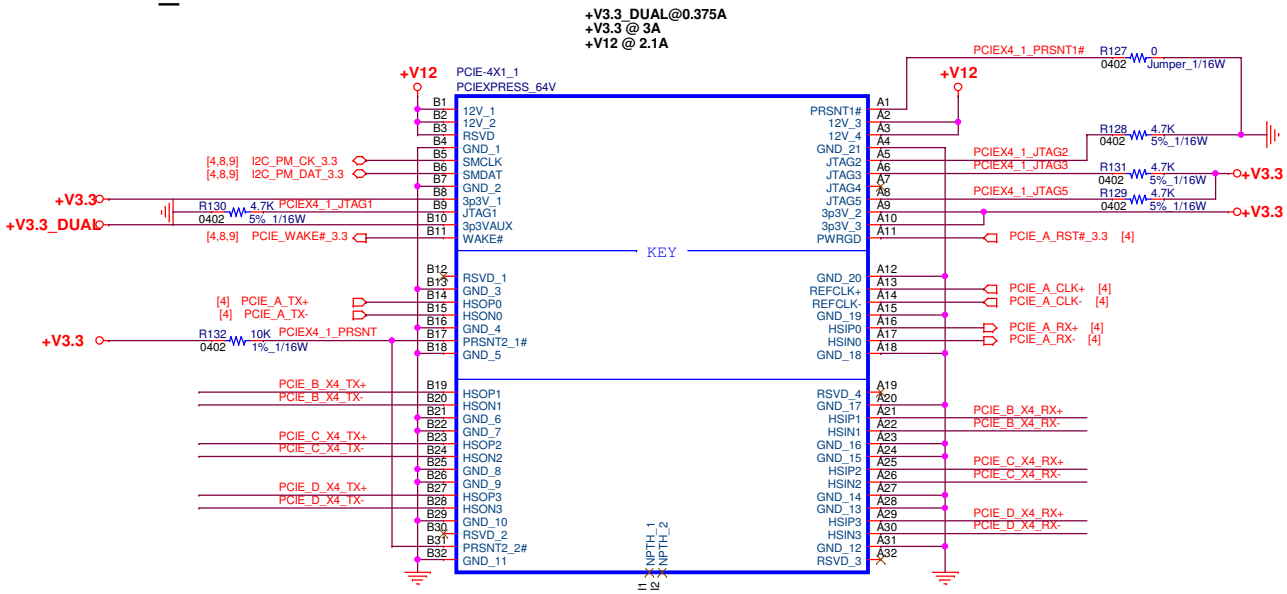
PCIE port C

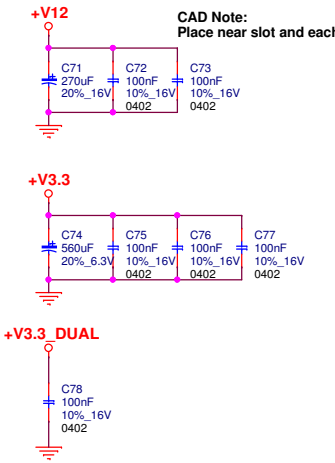


PCIE port D



PCI-E X4 _Slot



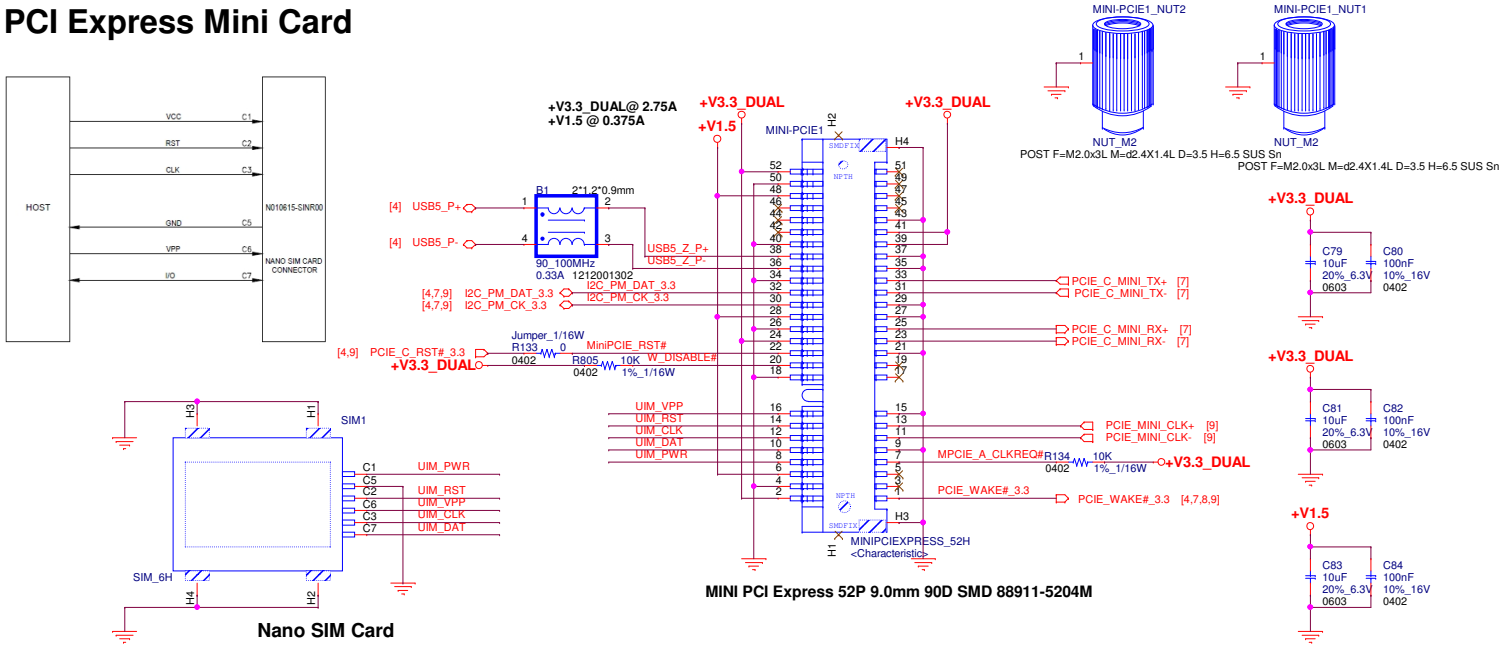


CAD Note:
Place near slot and each PWR pin.

ADVANTECH

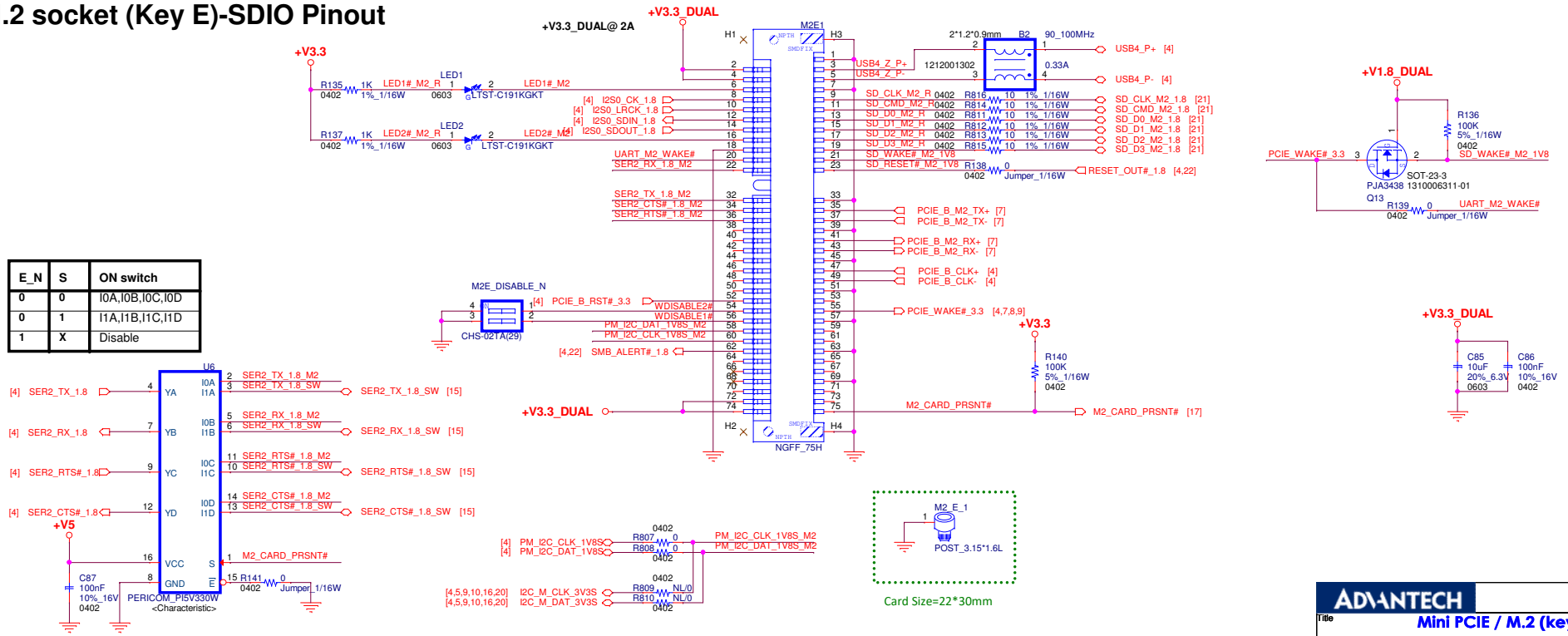
Title	PCIE X4 slot	
Size	Document Number: SOM-DB2500	Rev: A101-3
Date: Tuesday, November 19, 2019	Sheet 7 of 31	

PCI Express Mini Card



Mini PCI-E Ver 1.2			
Pin#	Name	Pin#	Name
1	WAKE#	2	3.3Vaux
3	COEX1	4	GND
5	COEX2	6	1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RESET
15	GND	16	UIM_VPP
Mechanical Key			
17	Reserved (UIM_C8	18	GND
19	Reserved (UIM_C4	20	W_DISABLE#
21	GND	22	PERST#
23	PERn0	24	3.3Vaux
25	PERp0	26	GND
27	GND	28	1.5V
29	GND	30	SMB_CLK
31	PETn0	32	SMB_DATA
33	PETp0	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	3.3VAUX	40	GND
41	3.3VAUX	42	LED_WWAN#
43	GND	44	LED_WLAN#
45	Reserved	46	LED_WPAN#
47	Reserved	48	1.5V
49	Reserved	50	GND
51	Reserved	52	3.3VAUX

M.2 socket (Key E)-SDIO Pinout



E_N	S	ON switch
0	0	I0A,I0B,I0C,I0D
0	1	I1A,I1B,I1C,I1D
1	X	Disable

Title	Mini PCIE / M.2 (key E)	
Size	Document Number: SOM-DB2500	Rev: A101-3
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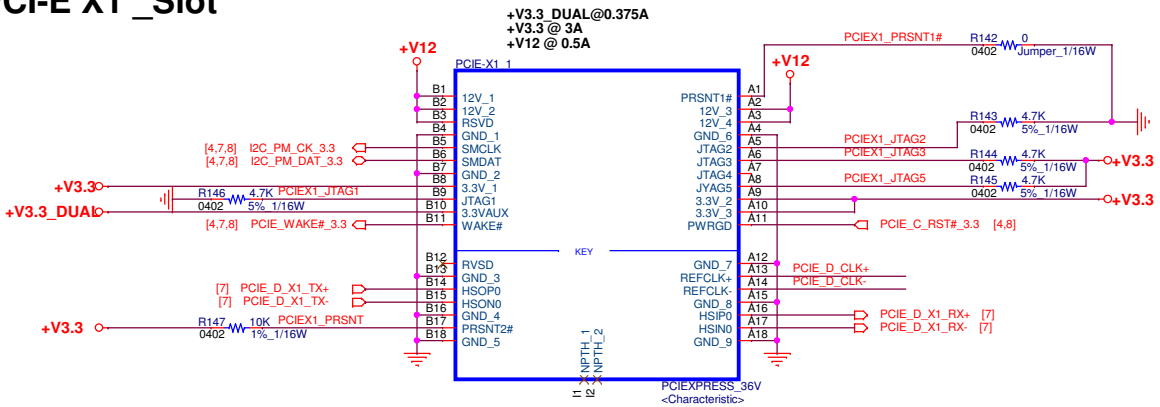
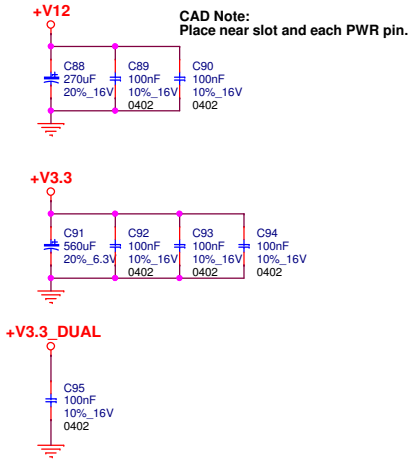
PCI-E X1 _Slot

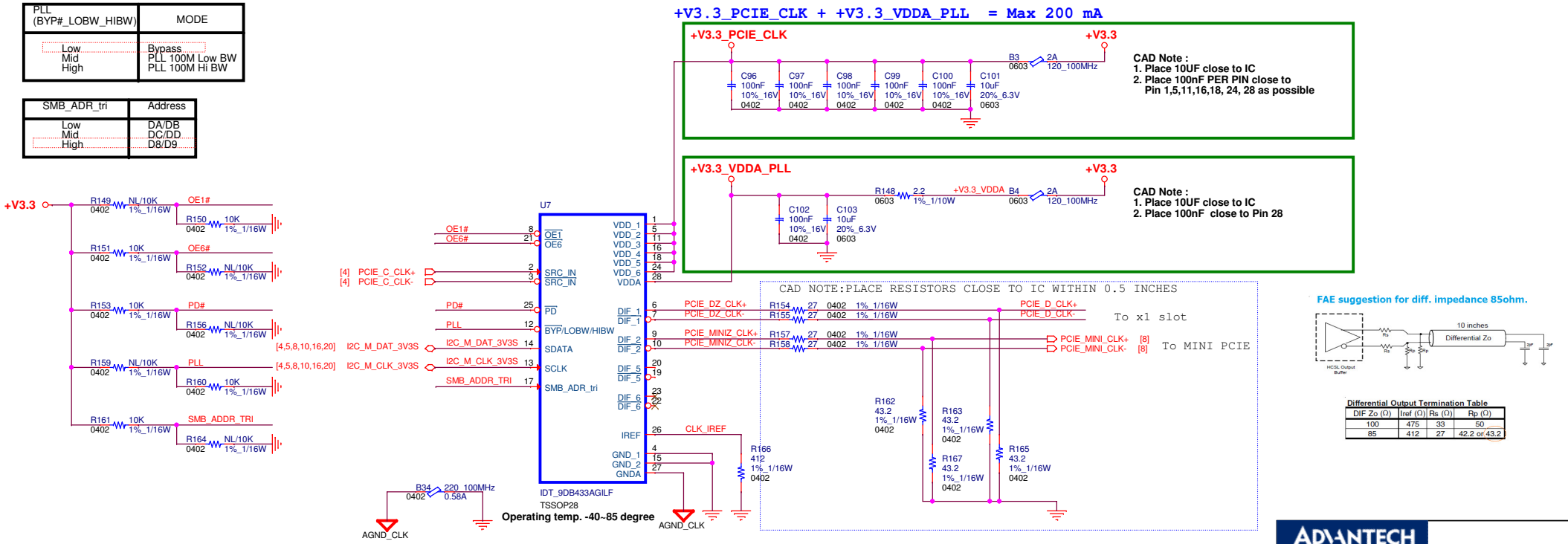




PCIE Clock Buffer

PLL (BYP#_LOBW_HIBW)	MODE
Low	Bypass
Mid	PLL 100M Low BW
High	PLL 100M Hi BW

SMB_ADR_tri	Address
Low	DA/DB
Mid	DC/DD
High	D8/D9



Differential Output Termination Table

DIF Zo (Ω)	Iref (Ω)	Rs (Ω)	Rp (Ω)
100	475	33	50
85	412	27	42.2 or 43.2

ADVANTECH

Title	PCIE CLK buffer / PCIE X1 slot	
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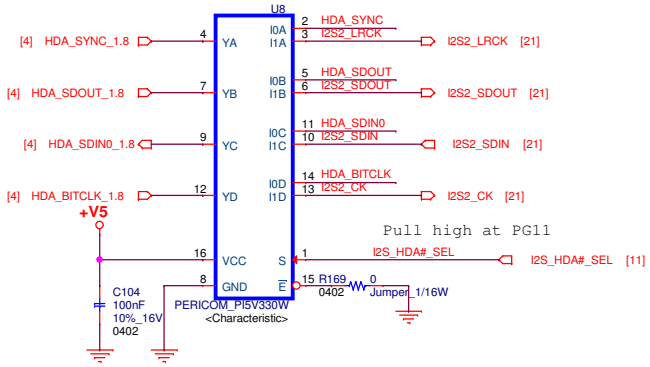
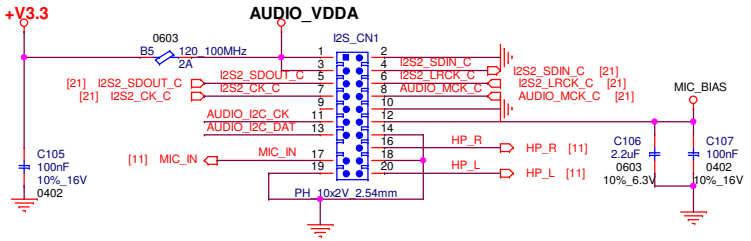
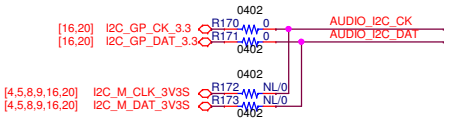
I2S2 connect to CODEC
(SOM-EA52 with TI_TLV320AIC3107IRSBR,Address:0x18)



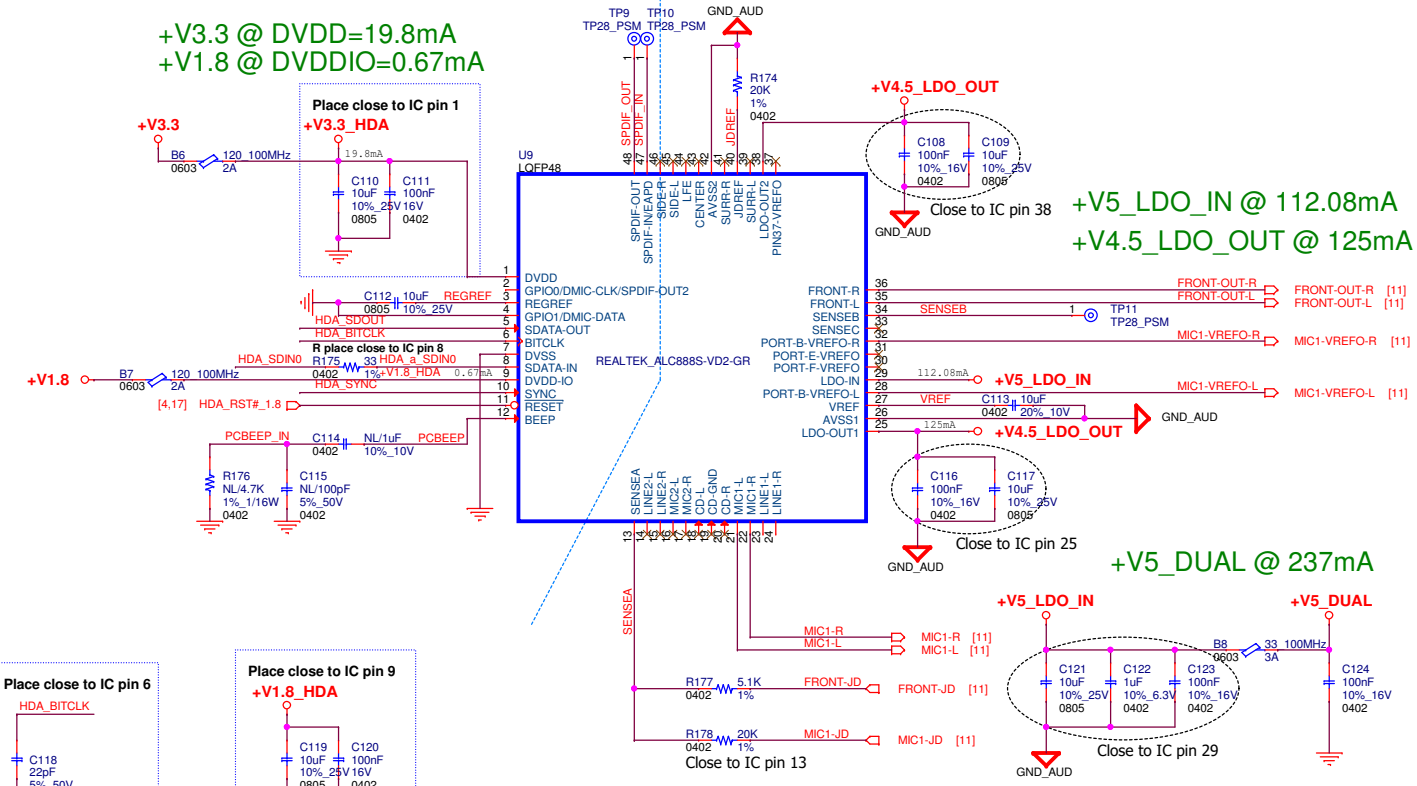
E_N	S	ON switch
0	0	I0A,I0B,I0C,I0D
0	1	I1A,I1B,I1C,I1D
1	X	Disable





Digital GND | Audio GND

+V3.3 @ DVDD=19.8mA
+V1.8 @ DVDDIO=0.67mA



ADVANTECH

Title	HDA / I2S	
Size	Document Number SOM-DB2500	Rev A101-3
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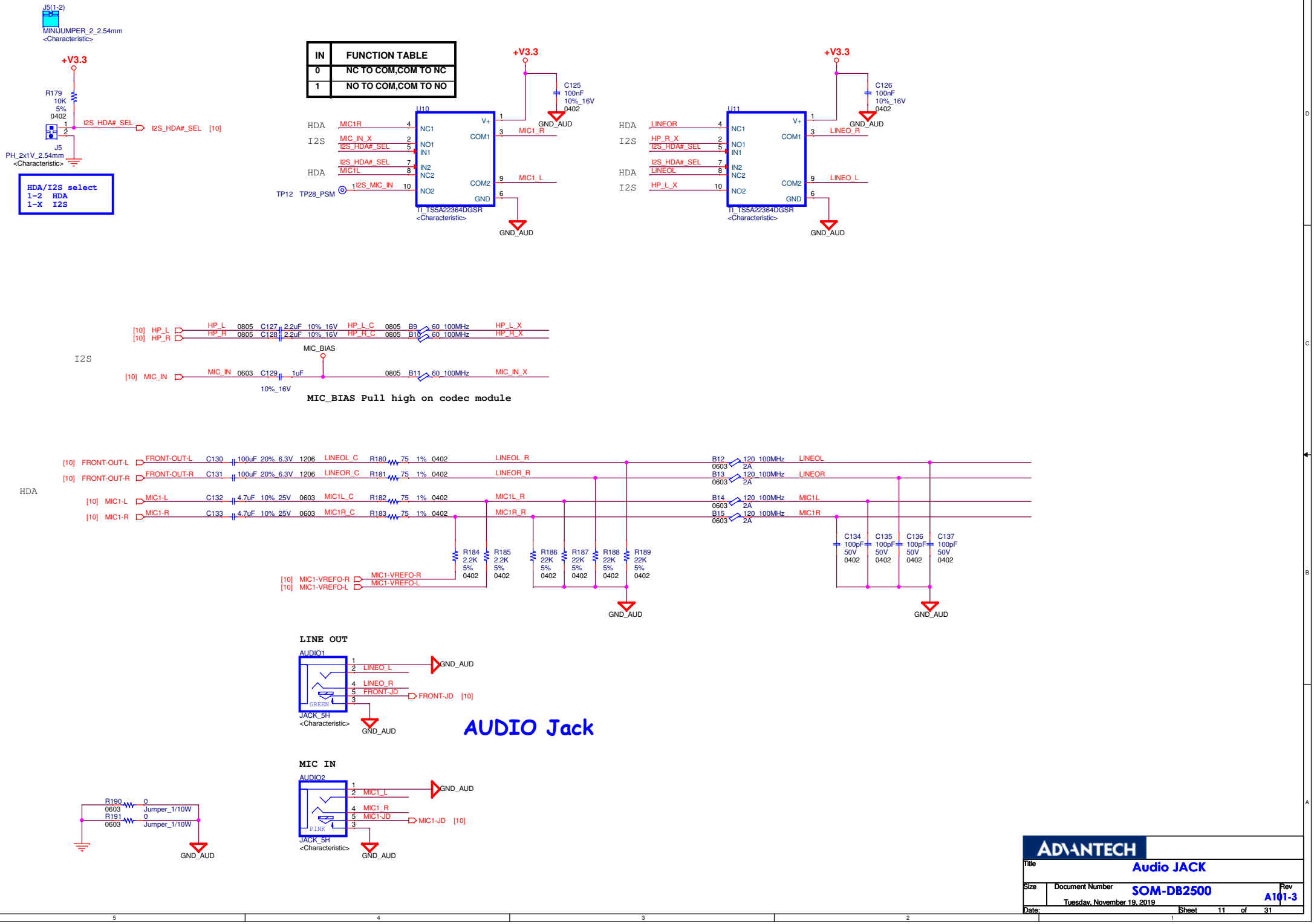

ADVANTECH

Title	Audio JACK		
Size	Document Number	SOM-DB2500	Rev A101-3
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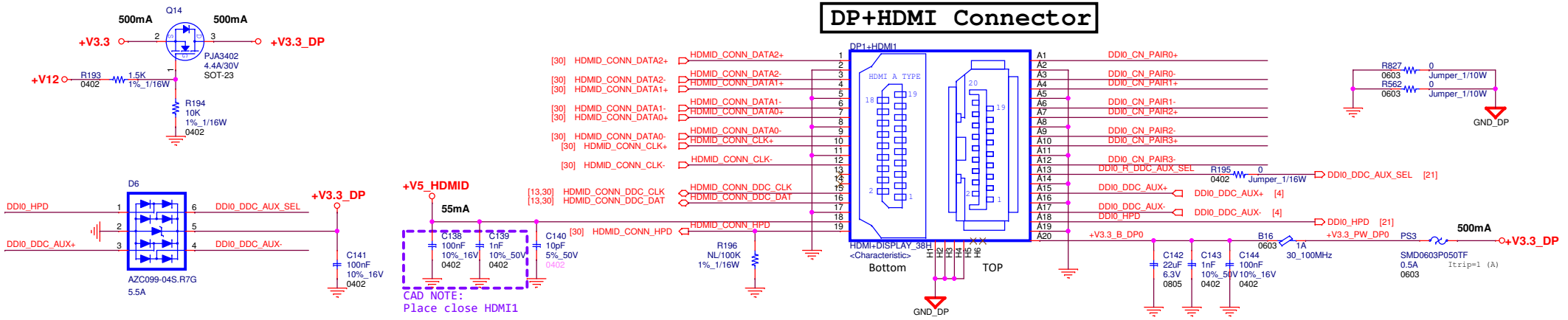
DP0

DP+HDMI Connector

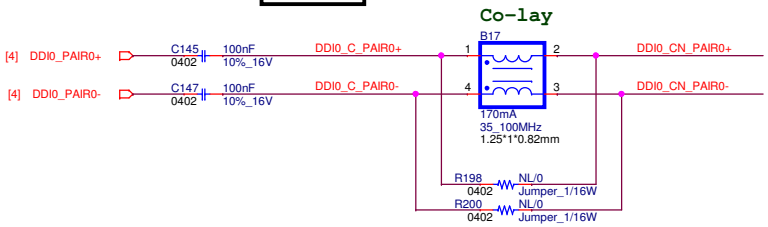


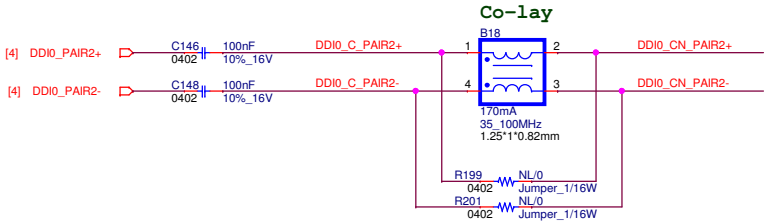

```
Pin  A13 : Config 1
   High : HDMI device detect
   Low  : DP device detect
```

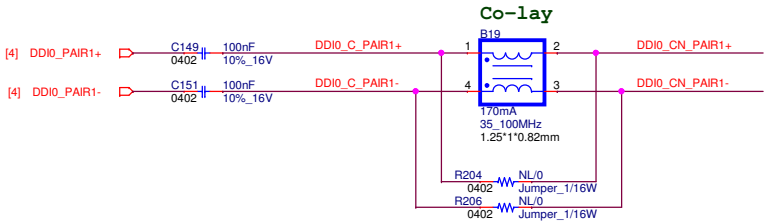
Oprerating Temperature: -25~85 degree

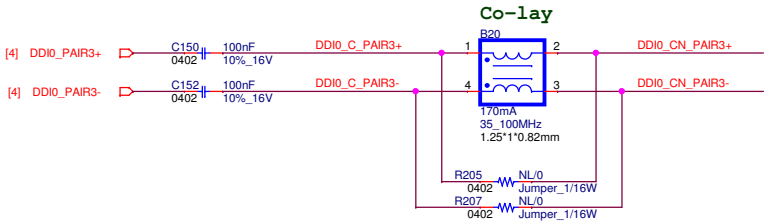
Bead

CAD Note:
Bead place them close to connector

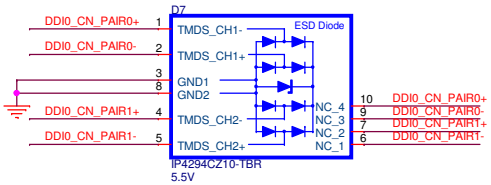


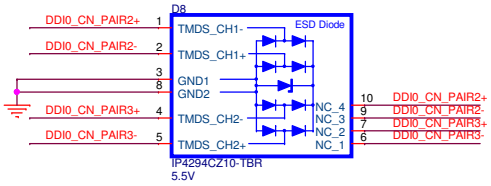






CAD Note:
ESD Diode place them close to connector





ADVANTECH		
Title	DP0 for DP++	
Size	Document Number SOM-DB2500	Rev A101-3
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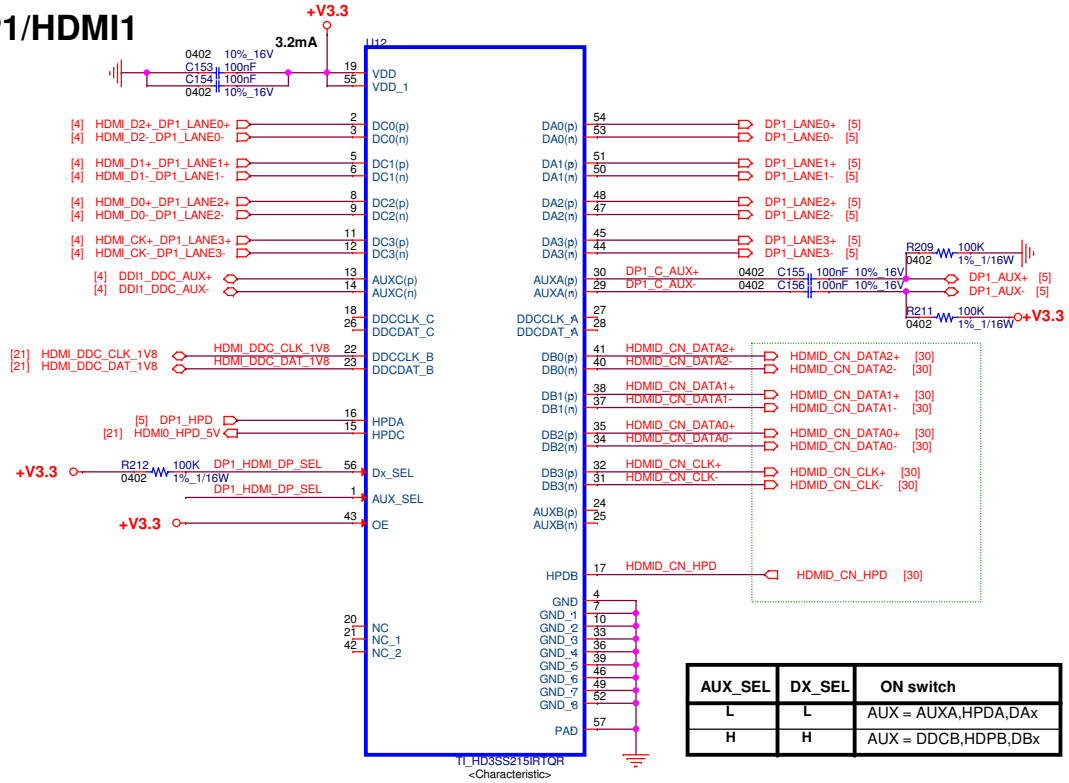
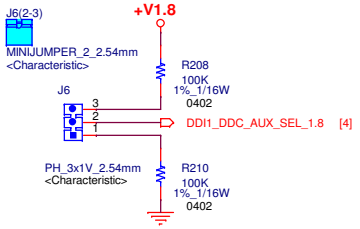
DP1/HDMI1

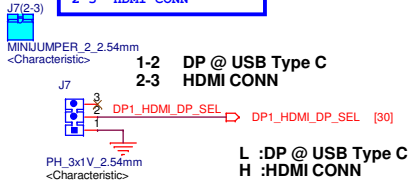


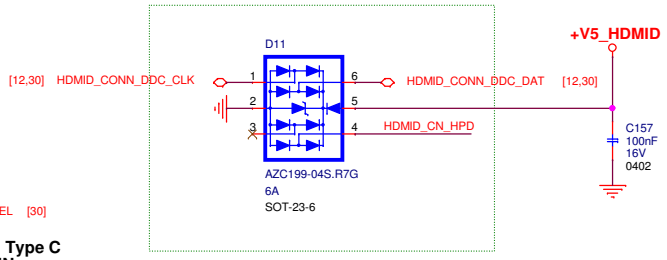
AUX_SEL	DX_SEL	ON switch
L	L	AUX = AUXA,HPDA,DAx
H	H	AUX = DDCB,HDPB,DBx

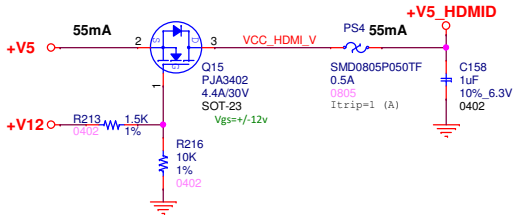
only for modules supporting
DP++ at HDMI/DP1
1-2 AUX
2-3 DDC



DP1/HDMI1 select
1-2 DP @ USB Type C
2-3 HDMI CONN







ADVANTECH			
Title	DP1/HDMI1		
Size	Document Number	SOM-DB2500	Rev A101-3
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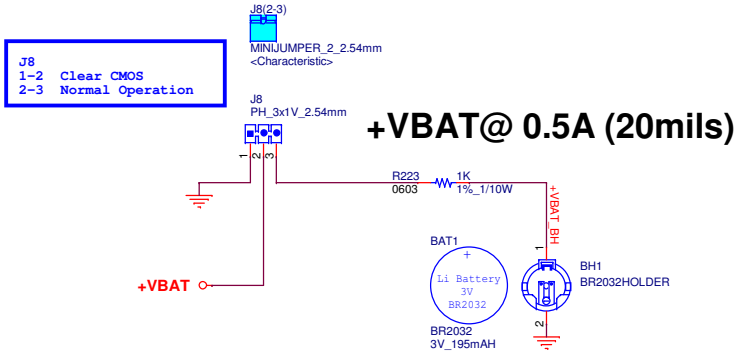
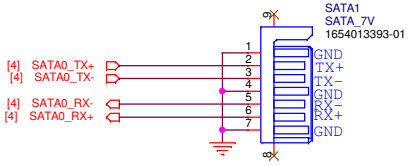
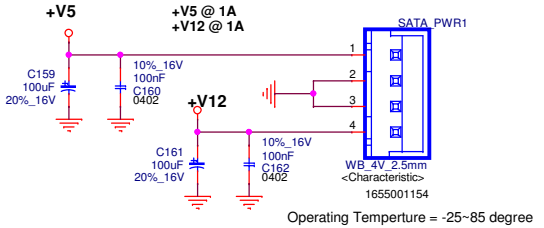
RTC BATTERY

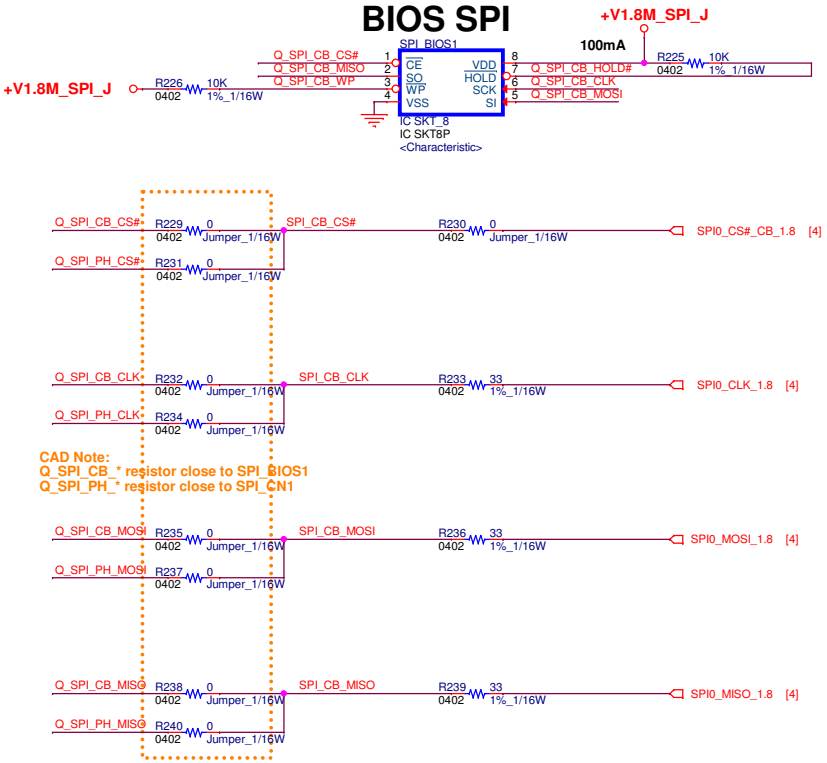


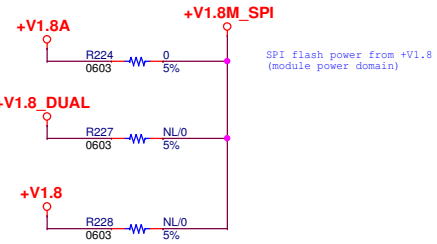
SATA

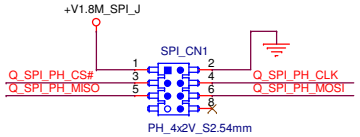


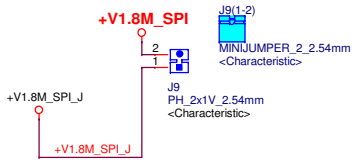


SPI









ADVANTECH

Title	BIOS socket/SATA/RTC	
Size	Document Number: SOM-DB2500	Rev: A101-3
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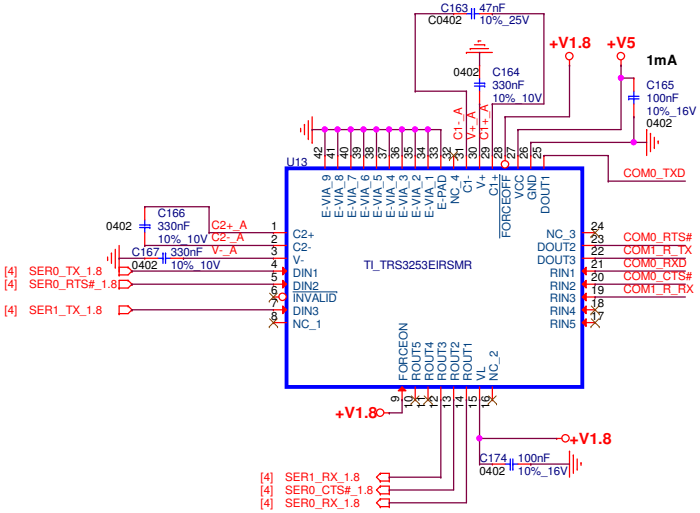
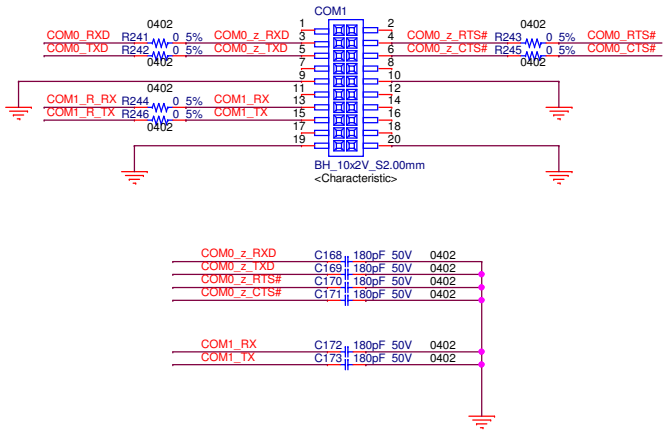
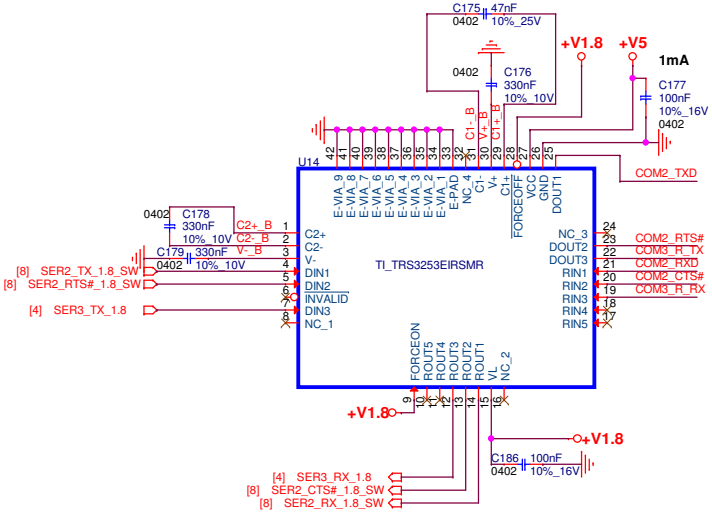
COM0/1:RS232



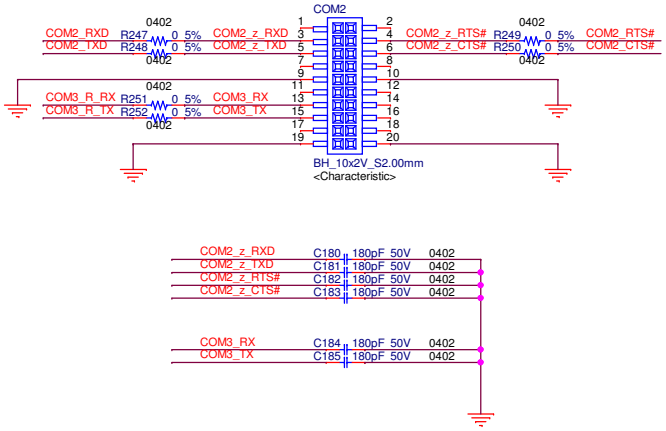
COM0/1 BOX HEADER



COM2/3:RS232



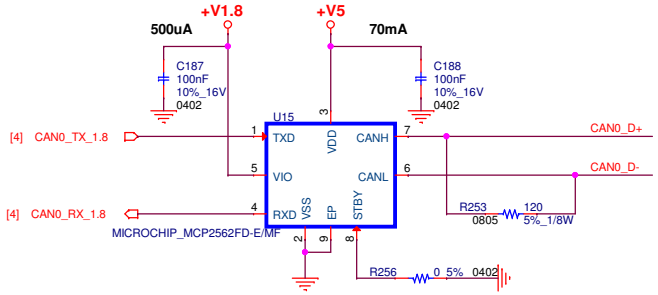
COM2/3 BOX HEADER

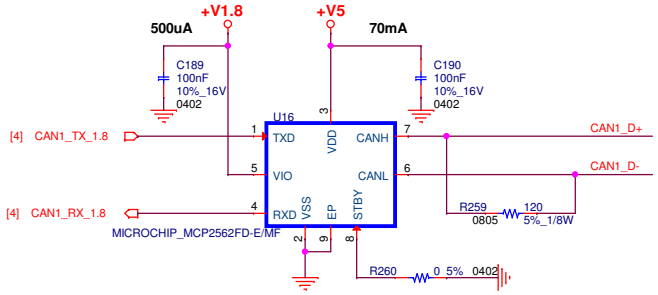


ADVANTECH

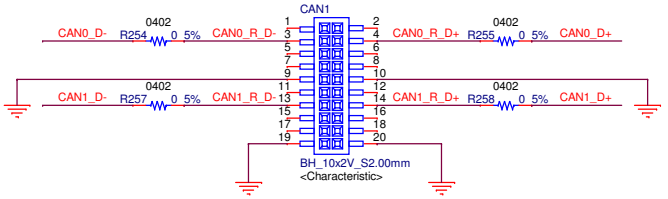
Title	COM port	
Size	Document Number SOM-DB2500	Rev A101-3
Date: Tuesday, November 19, 2019	Sheet 15 of 31	

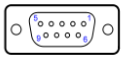
CAN Transceiver





CAN BOX HEADER

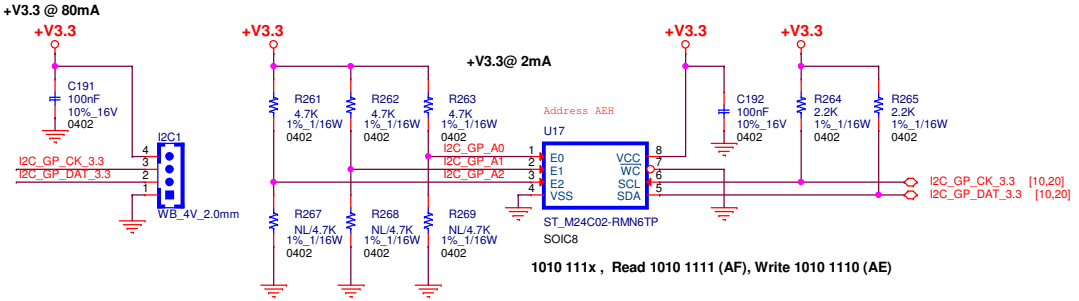




9 Pin (male) D-Sub CAN Bus PinOut

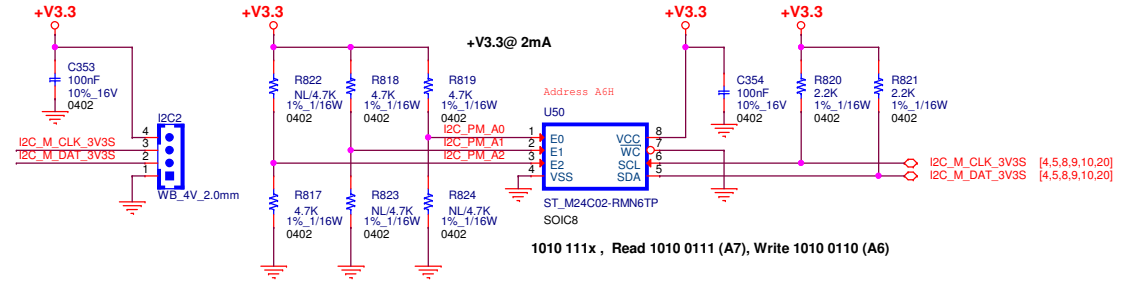
Pin #	Signal names	Signal Description
1	Reserved	Upgrade Path
2	CAN_L	Dominant Low
3	CAN_GND	Ground
4	Reserved	Upgrade Path
5	CAN_SHLD	Shield, Optional
6	GND	Ground, Optional
7	CAN_H	Dominant High
8	Reserved	Upgrade Path
9	CAN_V+	Power, Optional

I2C GP



1010 111x , Read 1010 1111 (AF), Write 1010 1110 (AE)

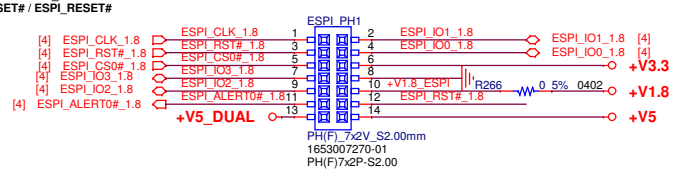
I2C PM



1010 111x , Read 1010 0111 (A7), Write 1010 0110 (A6)

eSPI Pin Header

LPC CLK / ESPI_CLK
LAD_0 / ESPI_IO_0
LAD_1 / ESPI_IO_1
LAD_2 / ESPI_IO_2
LAD_3 / ESPI_IO_3
LFRAME# / ESPI_CS
SERIRQ / ESPI_ALERT
LRESET# / ESPI_RESET#



Device type identifier(1)				Chip Enable address			RW
b7	b6	b5	b4	b3	b2	b1	b0
1	0	1	0	E2	E1	E0	R/W

1. The most significant bit, b7, is sent first.

ADVANTECH

Title	CAN BUS/eSPI/I2C		
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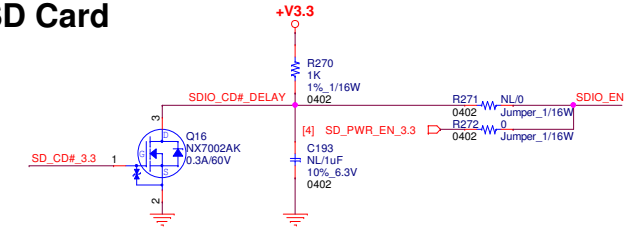
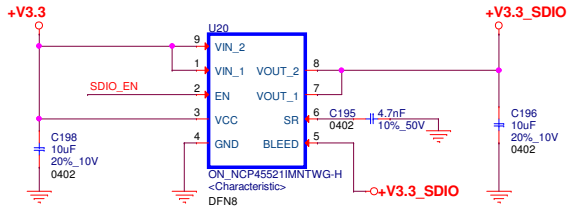
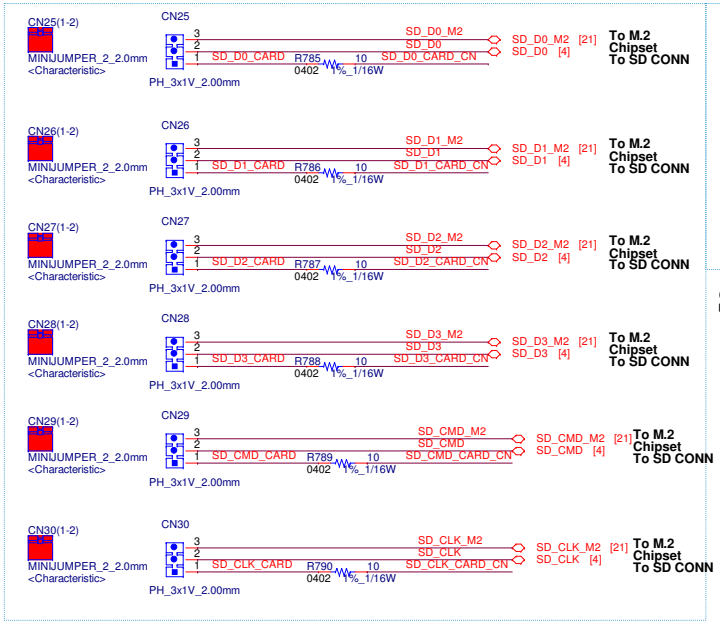
SD Card

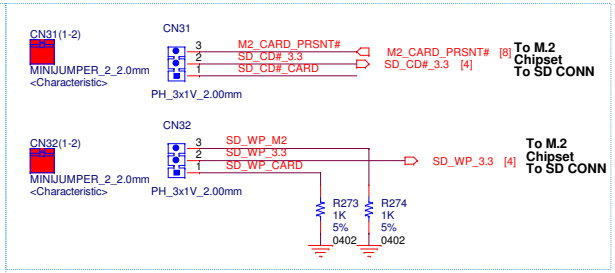


+V3.3

+V3.3_SDIO @ 0.5A

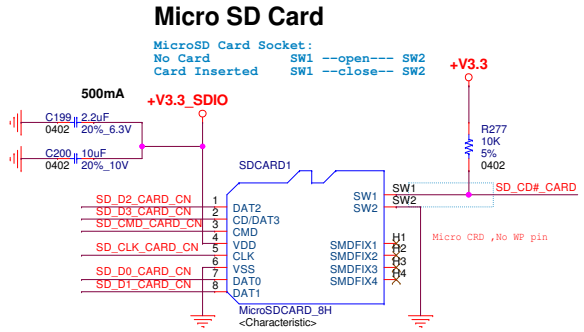






SD to SD CARD CONN or M.2

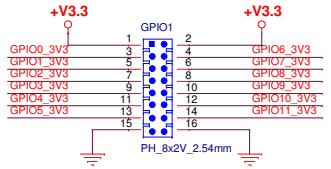
Micro SD Card



BOOT SELECT

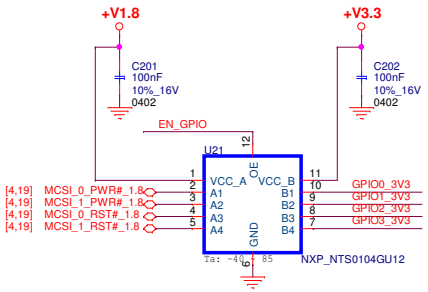
Operating Temperture = -25~70 degree

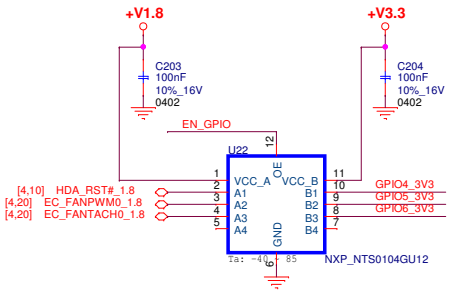
	Carrier Connection			Boot Source
	BOOT_SEL2#	BOOT_SEL1#	BOOT_SEL0#	
0	GND	GND	GND	Carrier SATA
1	GND	GND	Float	Carrier SD Card
2	GND	Float	GND	Carrier eSPI (CS0#)
3	GND	Float	Float	Carrier SPI (CS0#)
4	Float	GND	GND	Module device (NAND, NOR) – vendor specific
5	Float	GND	Float	Remote boot (GBE, serial) – vendor specific
6	Float	Float	GND	Module eMMC Flash
7	Float	Float	Float	Module SPI

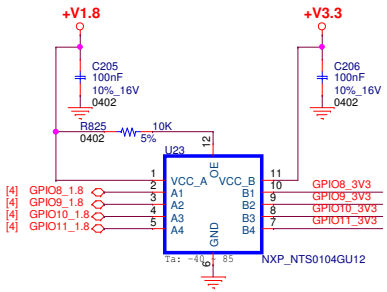


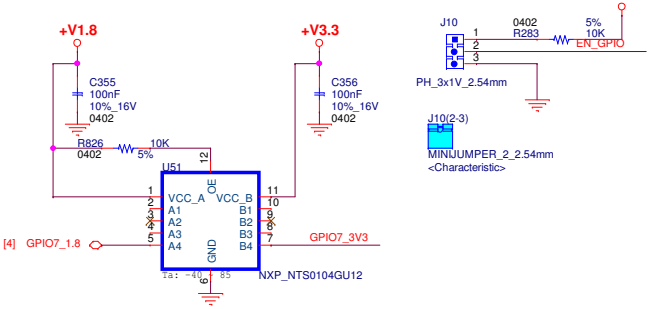
Enable GPIO Setting
1-2 Enable GPIO
2-3 Disable GPIO

GPIO Pin Header









ADVANTECH			
Title	SDCARD/Boot SEL/GPIO		
Size	Document Number	SOM-DB2500	Rev A101-3
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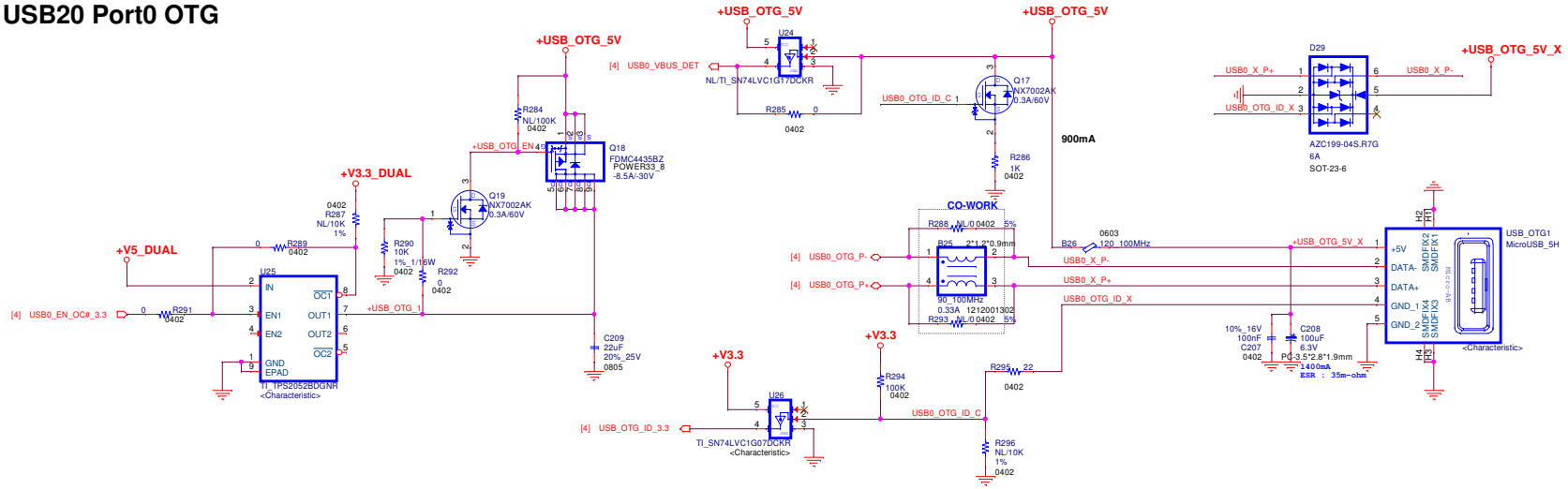
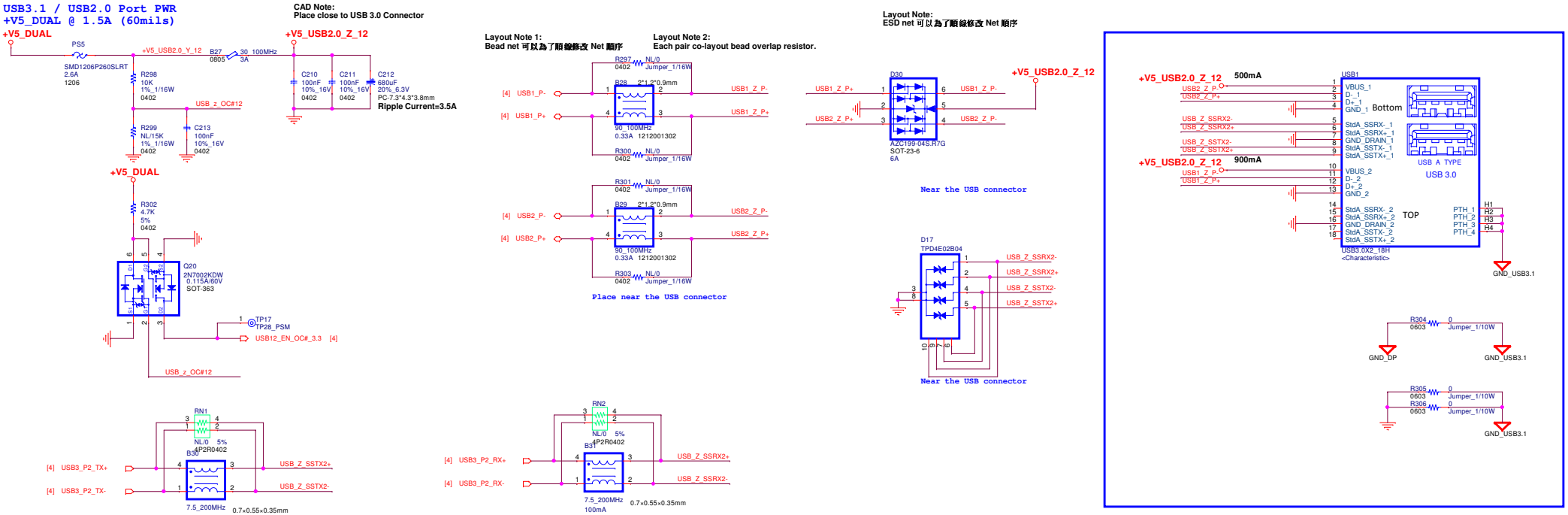
USB20 Port0 OTG



USB20 Port1/2 & USB30 Port2



ADVANTECH			
Title	USB20/30 OTG		
Size	Document Number	SOM-DB2500	Rev A101-3
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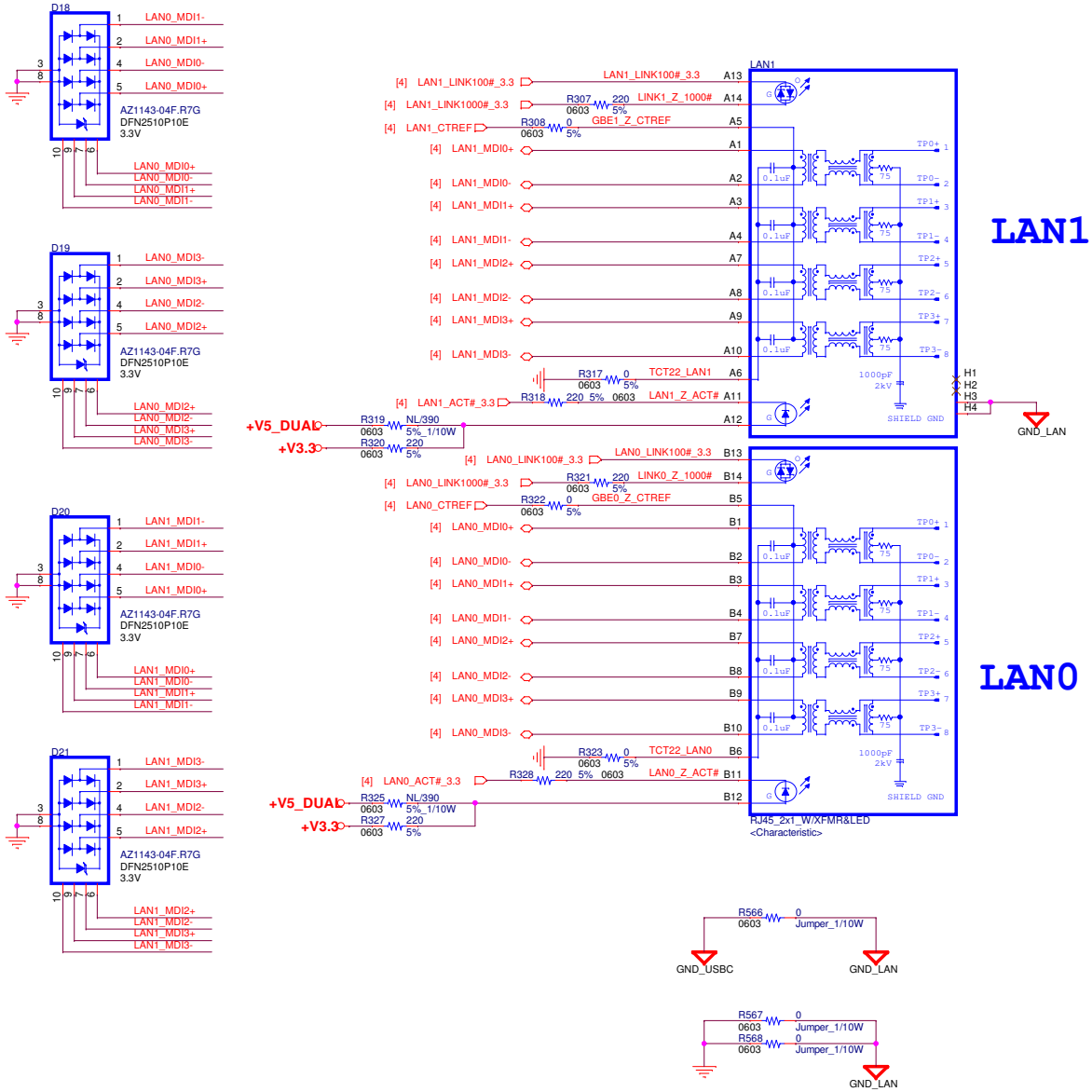
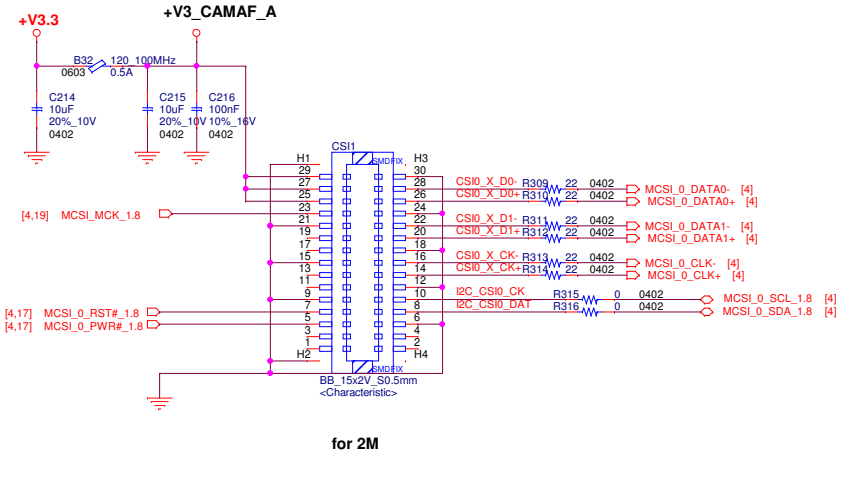
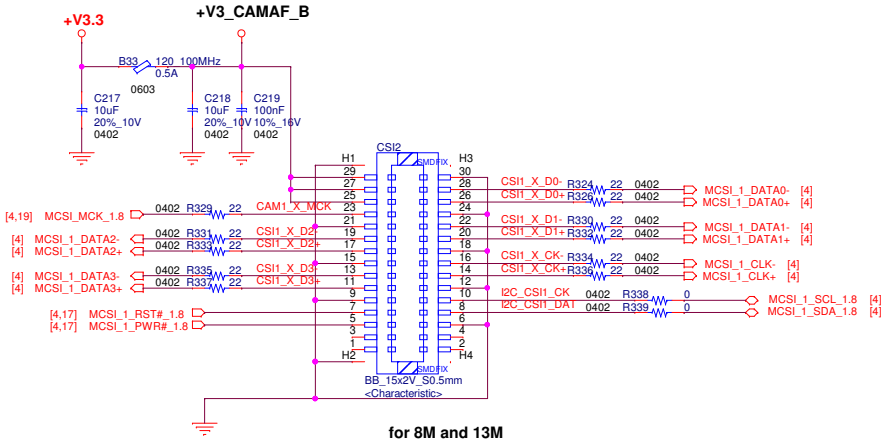


CSI0(2 lanes)



for 2M

CSI1(2 or 4 lanes)



for 8M and 13M

ADVANTECH

Title	GBE X2 / MIPI CSI	
Size	Document Number SOM-DB2500	Rev A101-3
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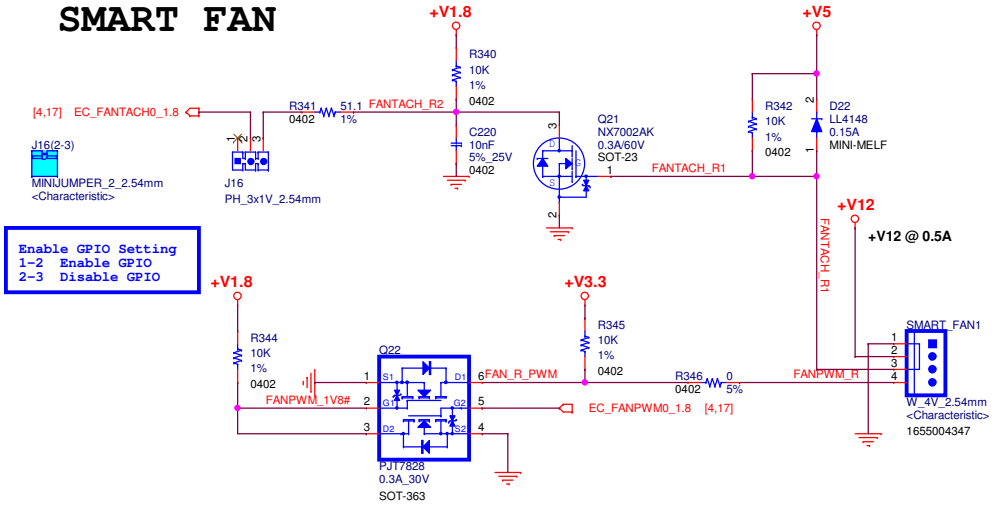
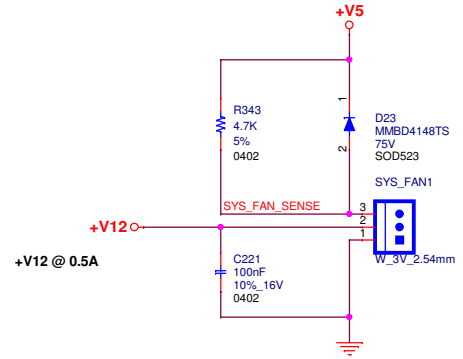
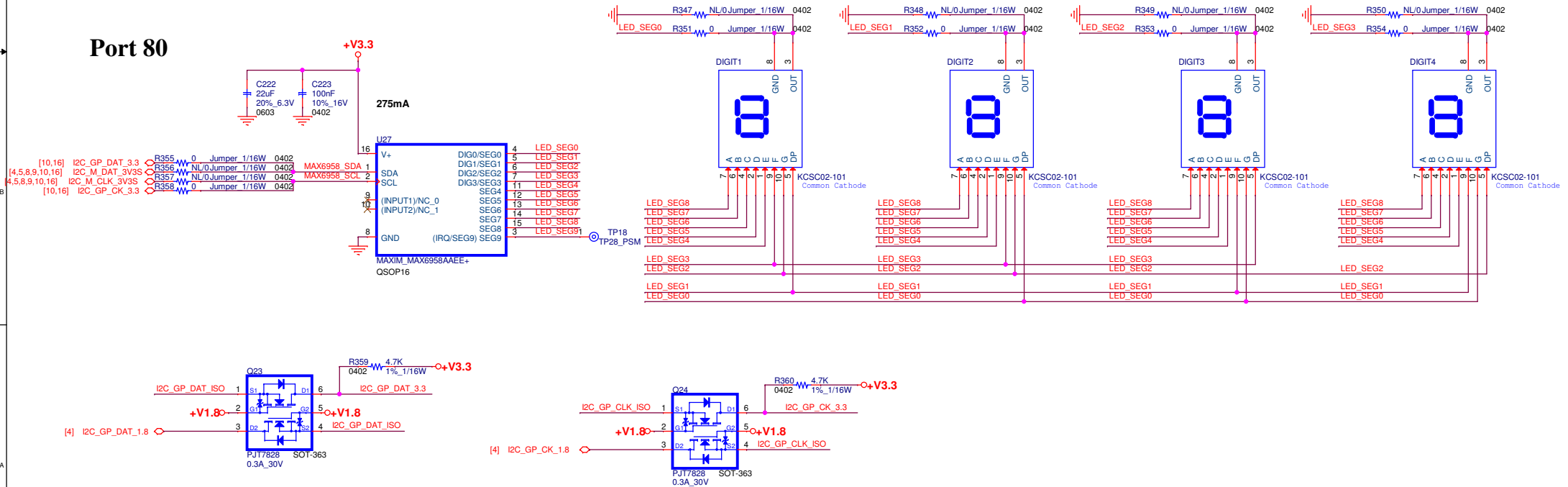
SMART FAN



SYSTEM FAN



Port 80



ADVANTECH

Title	FAN / Port 80	
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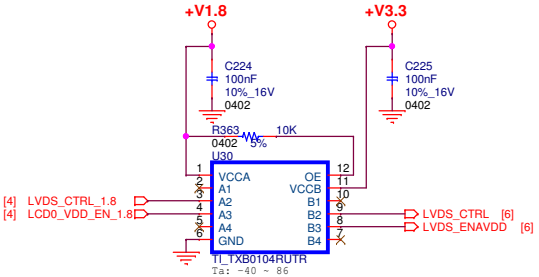
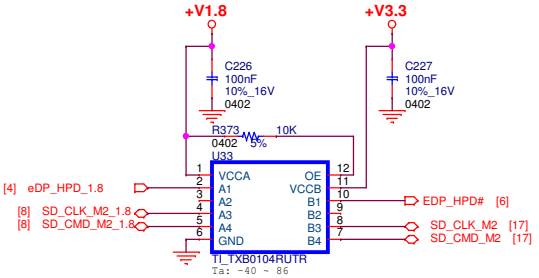
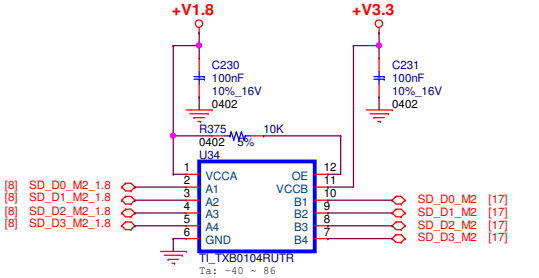
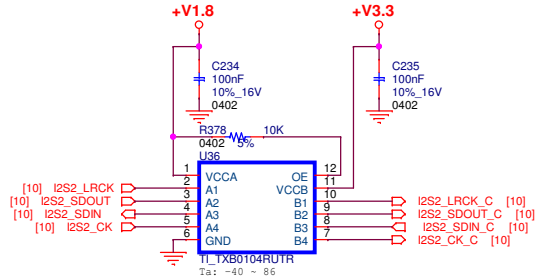
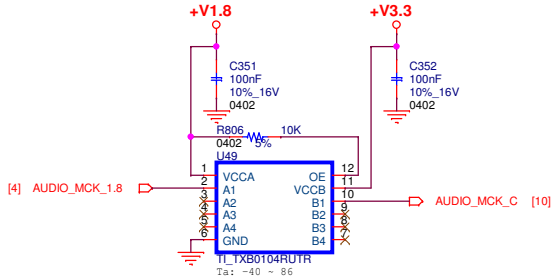
Push-Pull Level shifter

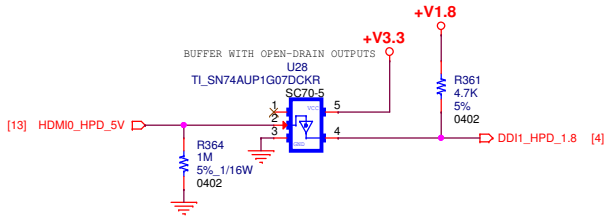


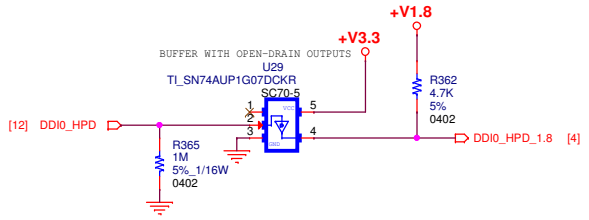


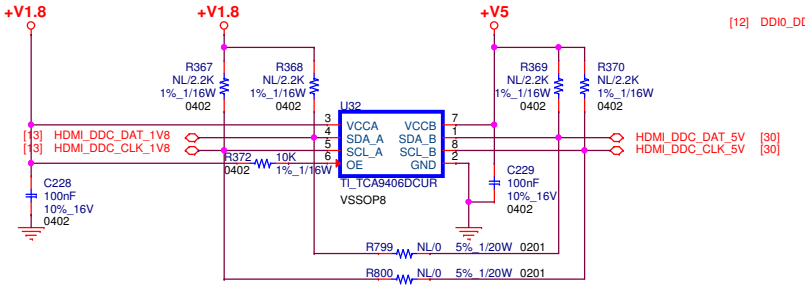




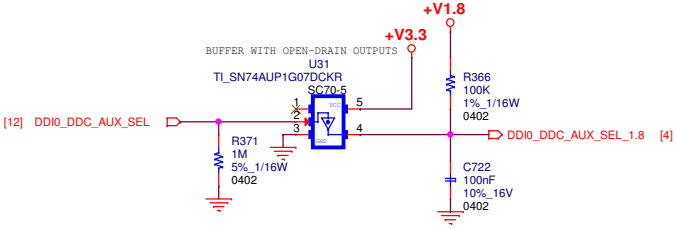


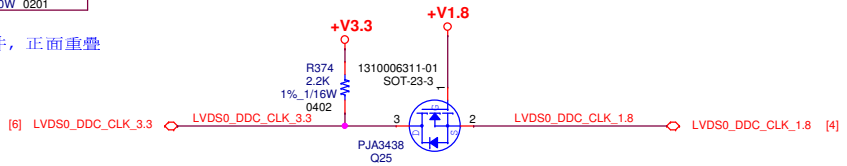


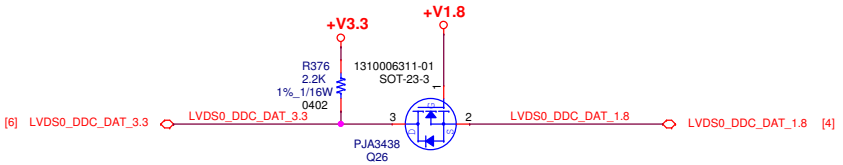




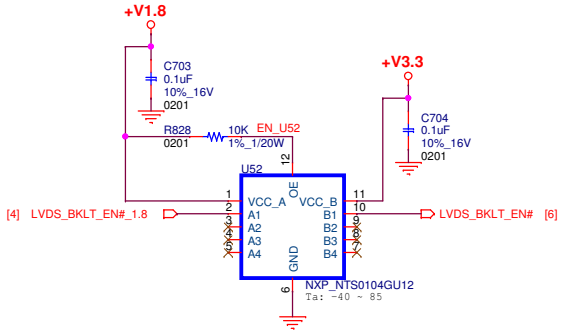
U32與R799/R800 Co-layout 單一上件，正面重疊







Open-Drain Level shifter



ADVANTECH

Title	Level shifter	
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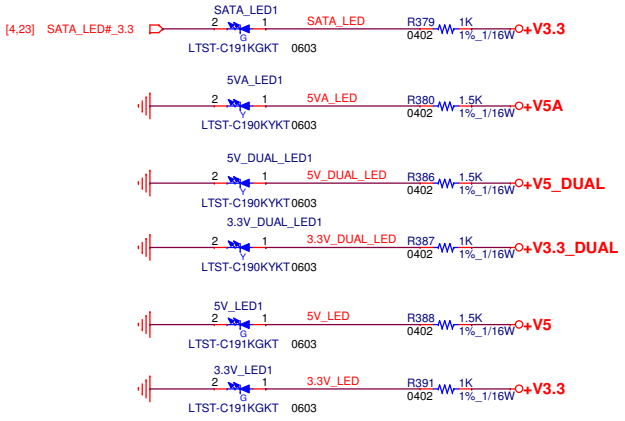
LED



SATA LED

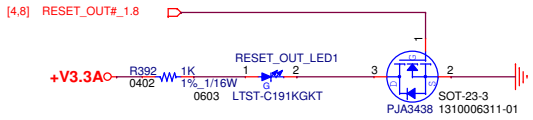
+V5A LED

+V5_DUAL LED

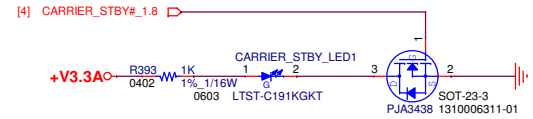
+V3.3_DUAL LED

+V5 LED

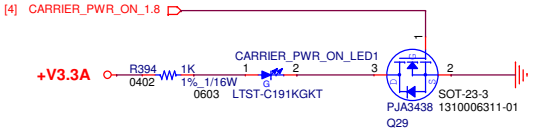
+V3.3 LED



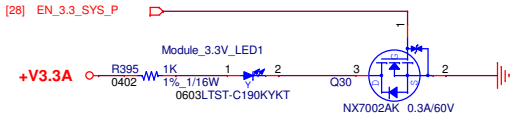
RESET_OUT#_1.8 LED



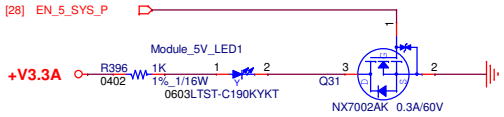
CARRIER_STBY# LED



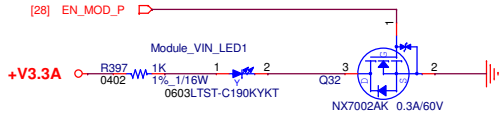
CARRIER_PWR_ON LED



Module 3.3V LED



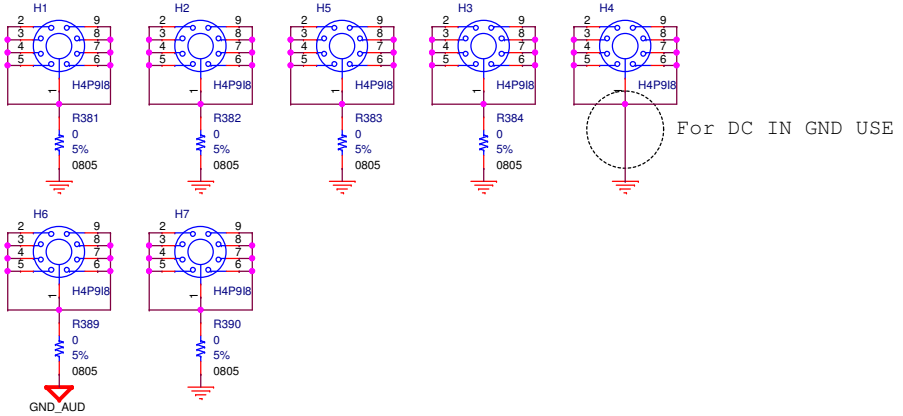
Module 5V LED



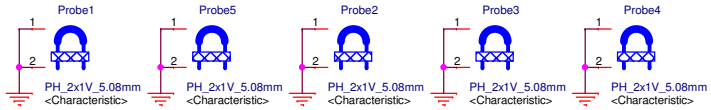
Module +V_MOD_IN LED

FM/PCB

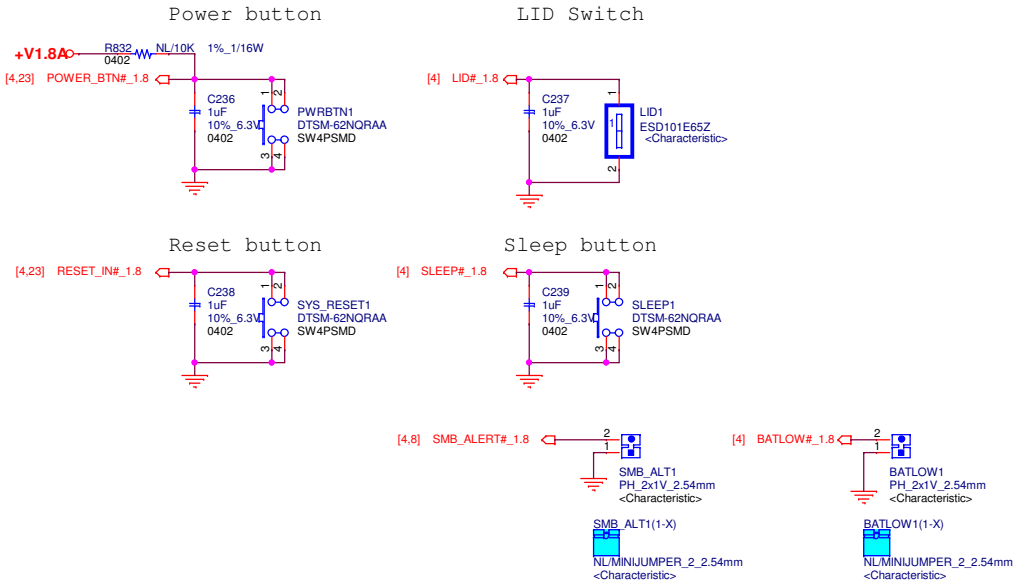
SCREW HOLE



PROBE



Button / Pin Header / Switch



ADVANTECH

Title	LED/SCREW/PROBE/BTN/PCB	
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+V12 @ 17A
+V5SB @ 3A

ATX12V POWER

ATX1

ATX_12x2V_4.2mm

PSON1 Power Setting
1-2 AT Mode
2-3 ATX Mode

PSON1(2-3)
MINIJUMPER_2_2.54mm
<Characteristic>

PSON1
PH_3x1V_2.54mm
<Characteristic>

R398
4.7K
0402
5%

CN_PSON#

J11 Corepower Voltage control
1-2 Controlled by CARRIER_STBY#
2-3 Controlled by CARRIER_PWRON

Q33
PJA3438
SOT-23-3
1310006311-01

EN_COREPWR

R400
100K
1%_1/16W
0402

[4] CARRIER_STBY#_3.3
[4,26] CARRIER_PWR_ON_3.3
[27] EN_COREPWR

J11
PH_3x1V_2.54mm
<Characteristic>

J11(1-2)
MINIJUMPER_2_2.54mm
<Characteristic>

TP30 TP28_PSM
PWR_OK
+V5SB
+V12_ATX

C240
100nF
10%_16V
0402

C241
100nF
10%_16V
0402

PWRBTN Pin Header

[4,22] POWER_BTN#_1.8

PWRBTN_PH1
PH_2x1V_2.54mm
<Characteristic>

PWRBTN_PH1(1-X)
NL/MINIJUMPER_2_2.54mm
<Characteristic>

SYS RESET Pin Header

[4,22] RESET_IN#_1.8

SYS_RESET_PH1
PH_2x1V_2.54mm
<Characteristic>

SYS_RESET_PH1(1-X)
NL/MINIJUMPER_2_2.54mm
<Characteristic>

SATA ACT# Pin Header

+V3.3

R522
330
5%
0402

HDD_LED

[4,22] SATA_LED#_3.3

SATA_ACT_PH1
PH_2x1V_2.54mm
<Characteristic>

SATA_ACT_PH1(1-X)
NL/MINIJUMPER_2_2.54mm
<Characteristic>

Power LED Pin Header

+V5

R518
330
5%
0402

PWR_LED

PWR_LED_PH1
PH_2x1V_2.54mm
<Characteristic>

PWR_LED_PH1(1-X)
NL/MINIJUMPER_2_2.54mm
<Characteristic>

DC-IN (12v)

DC-in level check

+VDCIN_ADP_IN

DCIN1
JACK_3H
JACK3P
1654013679-01

FUSE_2P_379_398X123
FS1
0456030.ER
30A
10.1x3.12mm

+VDCIN_ADP_F

VIN(target)=1.5V x (1+R1/R2)

C242
1uF
25V
0603

C243
100nF
25V
0402

C244
1nF
50V
0402

R401
54.9K
1%_1/10W
0603

R402
10
1%_1/16W
0402

C249
470nF
10%_16V
0603

D24
P6SMBJ18CA
18V
SMB

R403
10K
1%_1/10W
0603

C245
22uF
20%_25V
0805

C246
22uF
20%_25V
0805

Q34
PK5C8EA
82A/30V
PDFN8

VIN_GATE_R

RDS(ON) (at VGS=-4.5V) < 3.6 mohm

Q35
PK5C8EA
82A/30V
PDFN8

+VDCIN

C247
100nF
25V
0402

C248
270uF
20%_16V
OSCON-φ8*8mm
5A
ESR : 10m-ohm

+VDCIN_PWRGD

[25] +VDCIN_PWRGD

R404
140K
1%_1/10W
0603

R406
100K
1%_1/16W
0402

EN is pulled high by
an internal current source

U37
ANPEC_APL3542AQBI-TRG
<Characteristic>

POK
VCNTL
VINSEL
VIN
ISENSE
DRV
EN
DELAY
OCSET
EPAD_GND
VOUT

VIN_ISENSE
VIN_GATE

R405
100K
1%_1/16W
0402

R407
47
1%_1/10W
0603

C250
10nF
5%_25V
0402

C251
100nF
10%_50V
0603

R408
30K
1%_1/16W

Iocp (A) = 1000 / (Rds(ON)(mΩ)*Rocset(KΩ))
= 1000 / (3.6//3.6*24)
= 23.14(A)

UVP = VOUT is under 85% of VIN

ADVANTECH

Title	DC / ATX	
Size	Document Number: SOM-DB2500	Rev: A101-3
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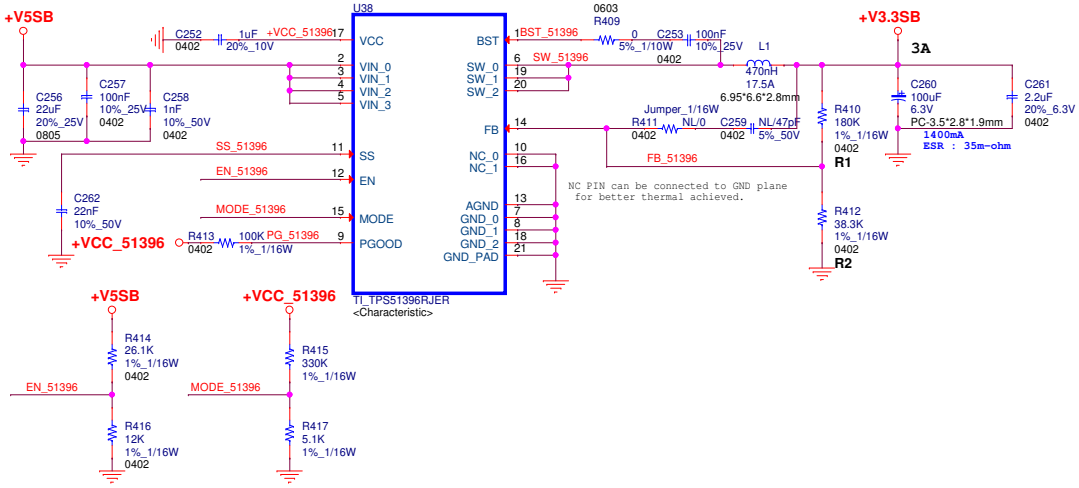
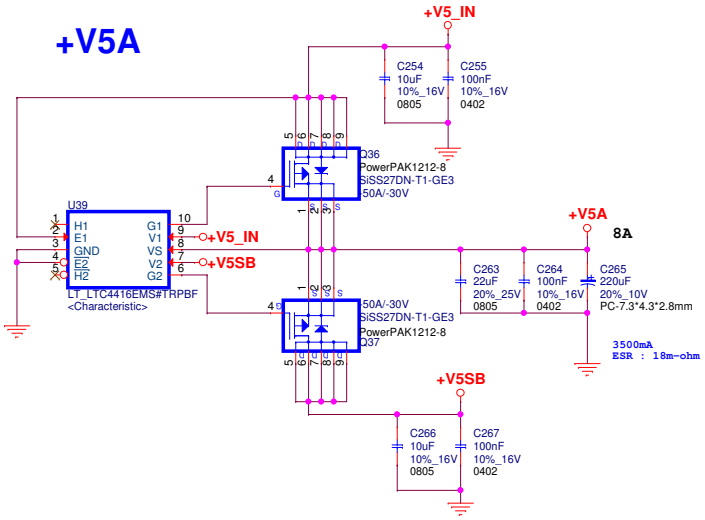
+V3.3SB

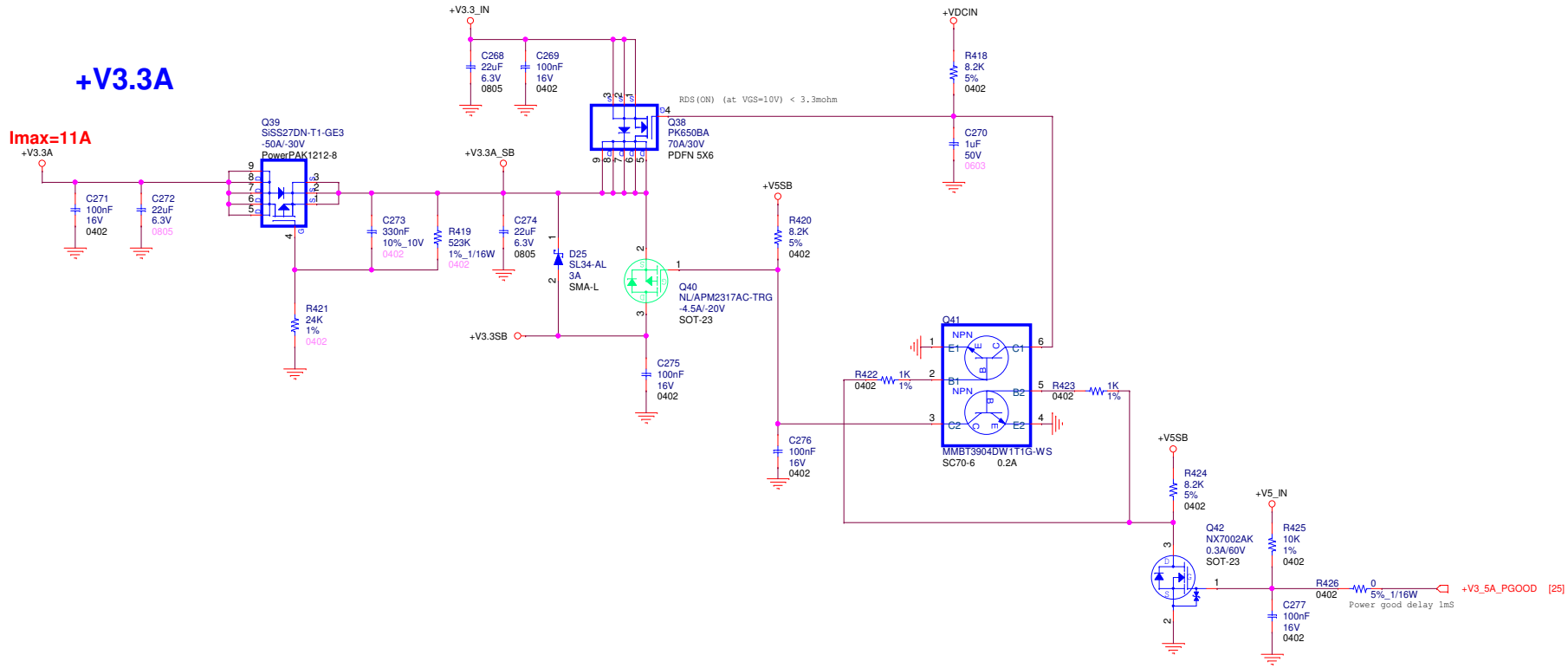


+V5A



+V3.3A

Imax=11A



Title	+V5A/+V3.3A		
Size	Document Number	SOM-DB2500	Rev A101-3
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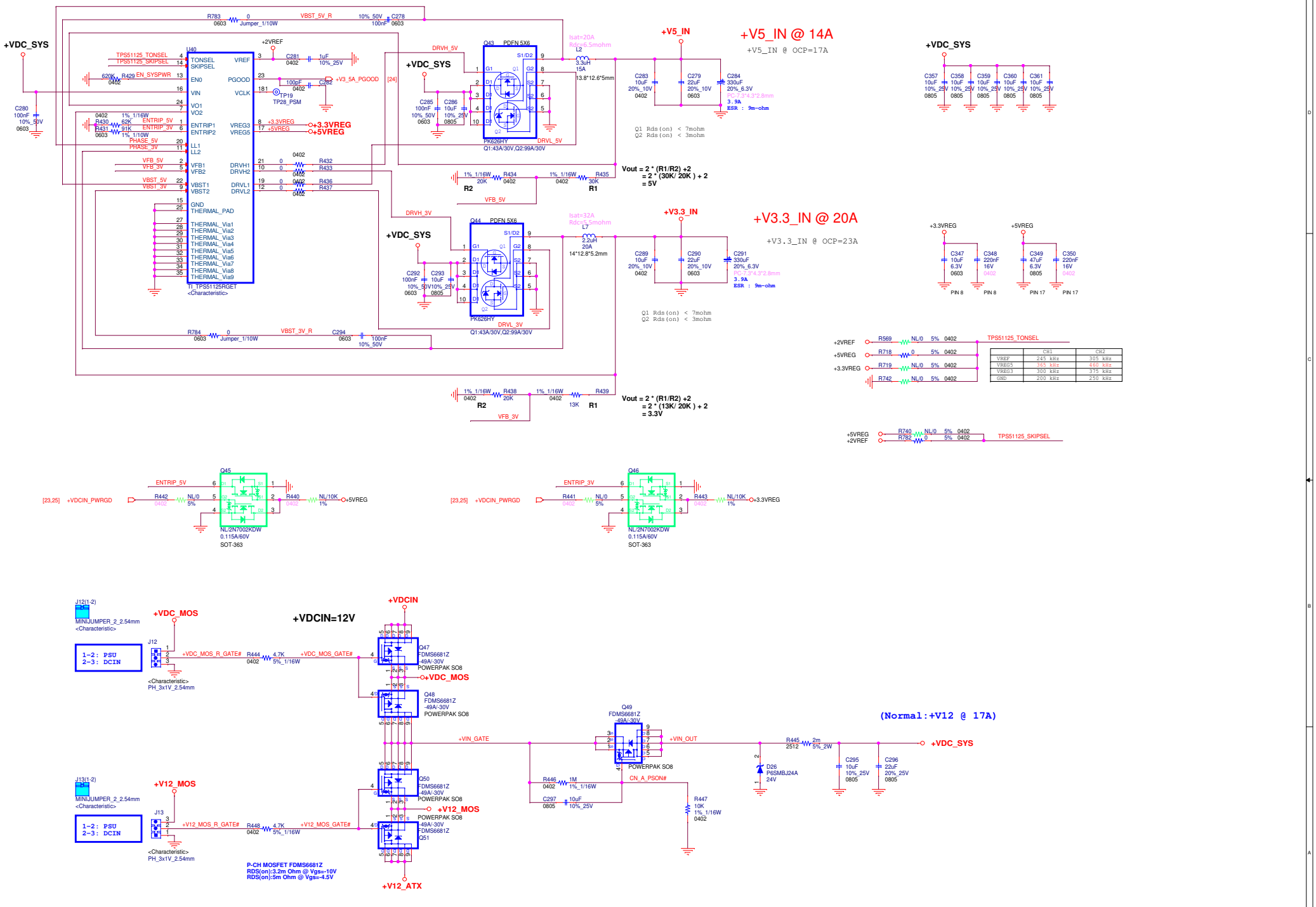

Title	+V5_IN/+V3.3_IN
Size	Document Number: SOM-DB2500 Rev: A101-3
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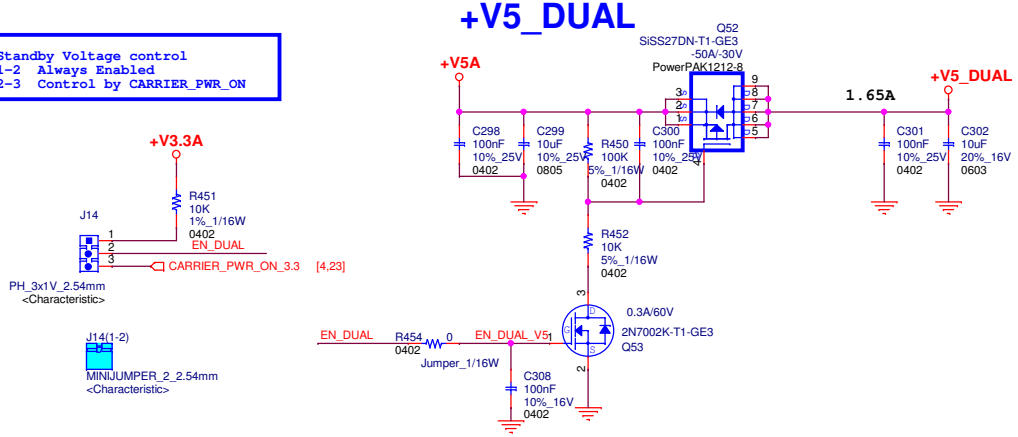
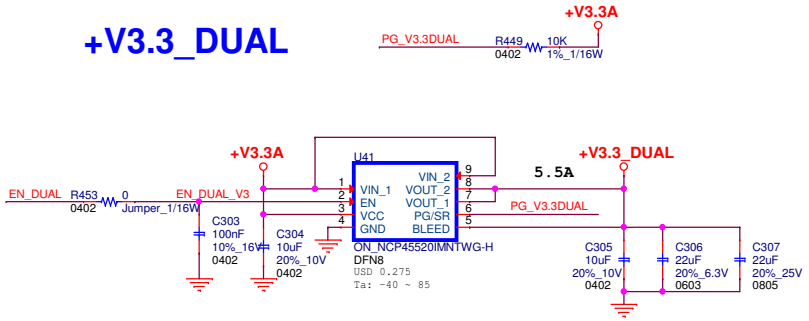
Standby Voltage control
1-2 Always Enabled
2-3 Control by CARRIER_PWR_ON

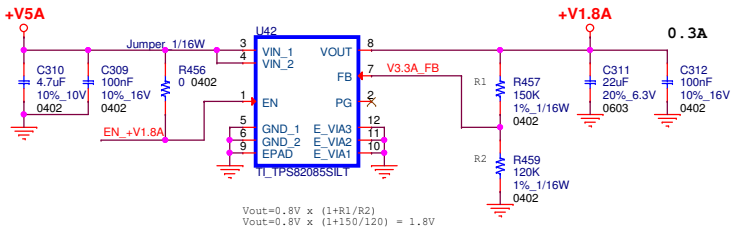
+V5_DUAL



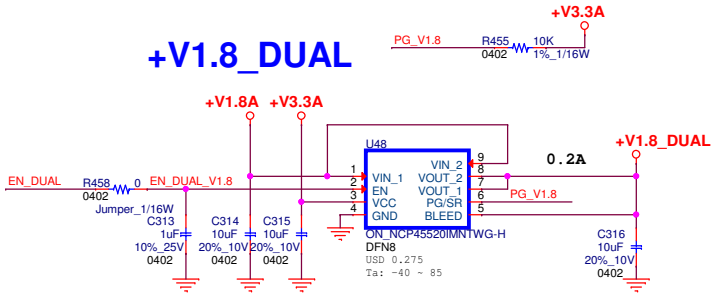
+V3.3_DUAL



+V1.8A



+V1.8_DUAL



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Title	Suspend Power Rail	
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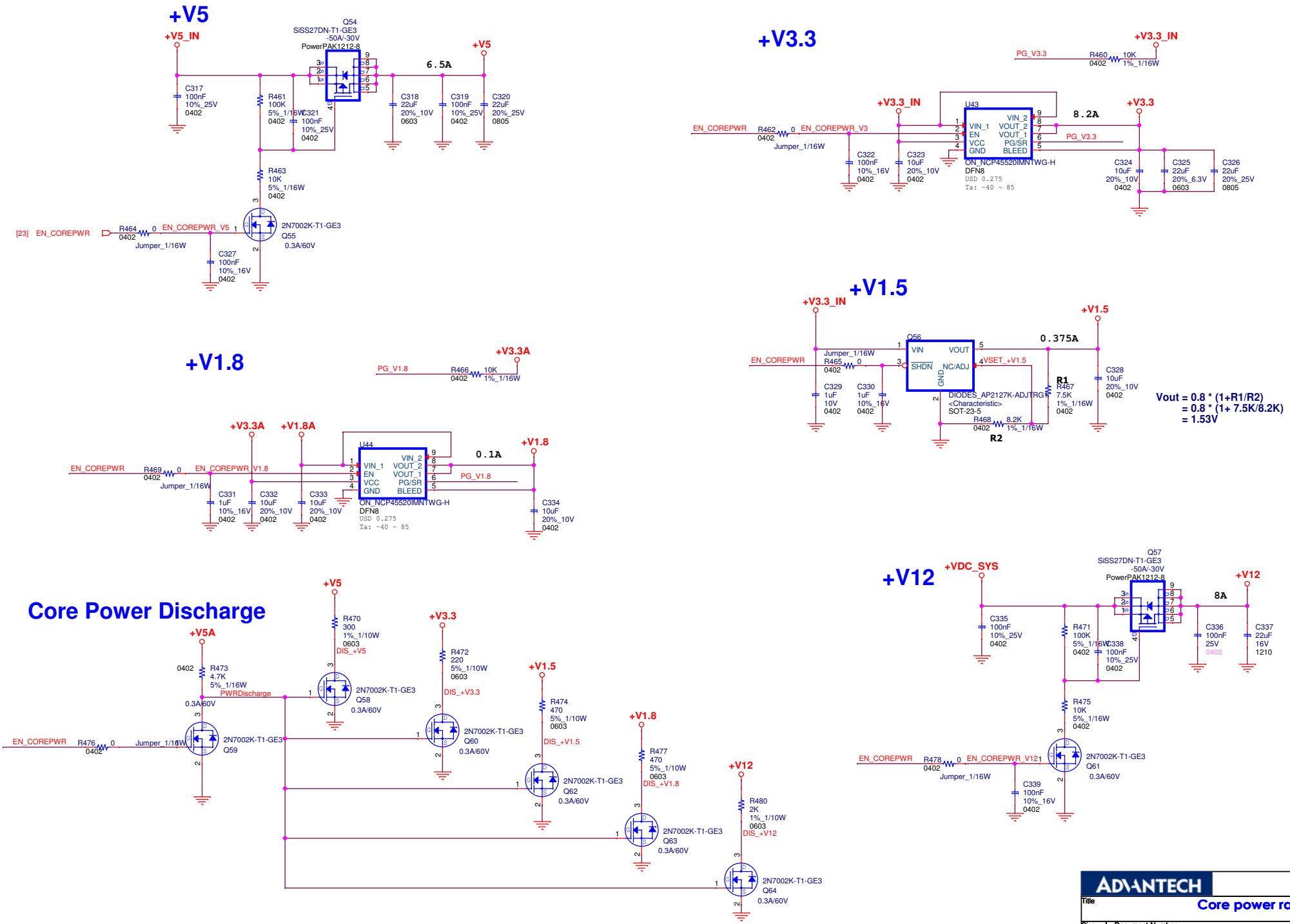
+V5
+V5_IN
Q54
SiSS27DN-T1-GE3
-50A/-30V
PowerPAK1212-8
6.5A
+V5
C317
100nF
10%_25V
0402
R461
100K
5%_1/16W
0402
C321
100nF
10%_25V
0402
C318
22uF
20%_10V
0603
C319
100nF
10%_25V
0402
C320
22uF
20%_25V
0805
R463
10K
5%_1/16W
0402
[23] EN_COREPWR
R464
0
0402
Jumper_1/16W
EN_COREPWR_V5
2N7002K-T1-GE3
Q55
0.3A/60V
C327
100nF
10%_16V
0402
+V3.3
+V3.3_IN
PG_V3.3
R460
10K
1%_1/16W
0402
EN_COREPWR
R462
0
0402
Jumper_1/16W
EN_COREPWR_V3
U43
VIN_1
EN
VCC
GND
VIN_2
VOUT_2
VOUT_1
PG/SR
BLEED
8.2A
ON_NCP45520IMNTWG-H
DFN8
USD 0.275
Ta: -40 ~ 85
C322
100nF
10%_16V
0402
C323
10uF
20%_10V
0402
C324
10uF
20%_10V
0402
C325
22uF
20%_6.3V
0603
C326
22uF
20%_25V
0805
+V1.8
+V3.3A
PG_V1.8
R466
10K
1%_1/16W
0402
+V1.8A
EN_COREPWR
R469
0
0402
Jumper_1/16W
EN_COREPWR_V1.8
U44
0.1A
PG_V1.8
ON_NCP45520IMNTWG-H
DFN8
USD 0.275
Ta: -40 ~ 85
C331
1uF
10%_16V
0402
C332
10uF
20%_10V
0402
C333
10uF
20%_10V
0402
C334
10uF
20%_10V
0402
+V1.5
+V3.3_IN
Q56
VIN
VOUT
SHDN
NC/ADJ
GND
0.375A
VSET_+V1.5
DIODES_AP2127K-ADJTRG1
<Characteristic>
SOT-23-5
R1
R467
7.5K
1%_1/16W
0402
R2
R468
8.2K
1%_1/16W
0402
C328
10uF
20%_10V
0402
C329
1uF
10V
0402
C330
1uF
10%_16V
0402
Vout = 0.8 * (1+R1/R2)
= 0.8 * (1+ 7.5K/8.2K)
= 1.53V
Core Power Discharge
+V5
+V5A
+V3.3
+V1.5
+V1.8
+V12
R470
300
1%_1/10W
0603
DIS_+V5
R472
220
5%_1/10W
0603
DIS_+V3.3
R474
470
5%_1/10W
0603
DIS_+V1.5
R477
470
5%_1/10W
0603
DIS_+V1.8
R480
2K
1%_1/10W
0603
DIS_+V12
0402
R473
4.7K
5%_1/16W
PWRDischarge
0.3A/60V
EN_COREPWR
R476
0
0402
Jumper_1/16W
2N7002K-T1-GE3
Q58
Q60
Q62
Q63
Q64
Q59
0.3A/60V
+VDC_SYS
Q57
SiSS27DN-T1-GE3
-50A/-30V
PowerPAK1212-8
8A
+V12
C335
100nF
10%_25V
0402
R471
100K
5%_1/16W
0402
C338
100nF
10%_25V
0402
C336
100nF
25V
0402
C337
22uF
16V
1210
R475
10K
5%_1/16W
0402
EN_COREPWR
R478
0
0402
Jumper_1/16W
EN_COREPWR_V12
2N7002K-T1-GE3
Q61
0.3A/60V
C339
100nF
10%_16V
0402
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Core power rail
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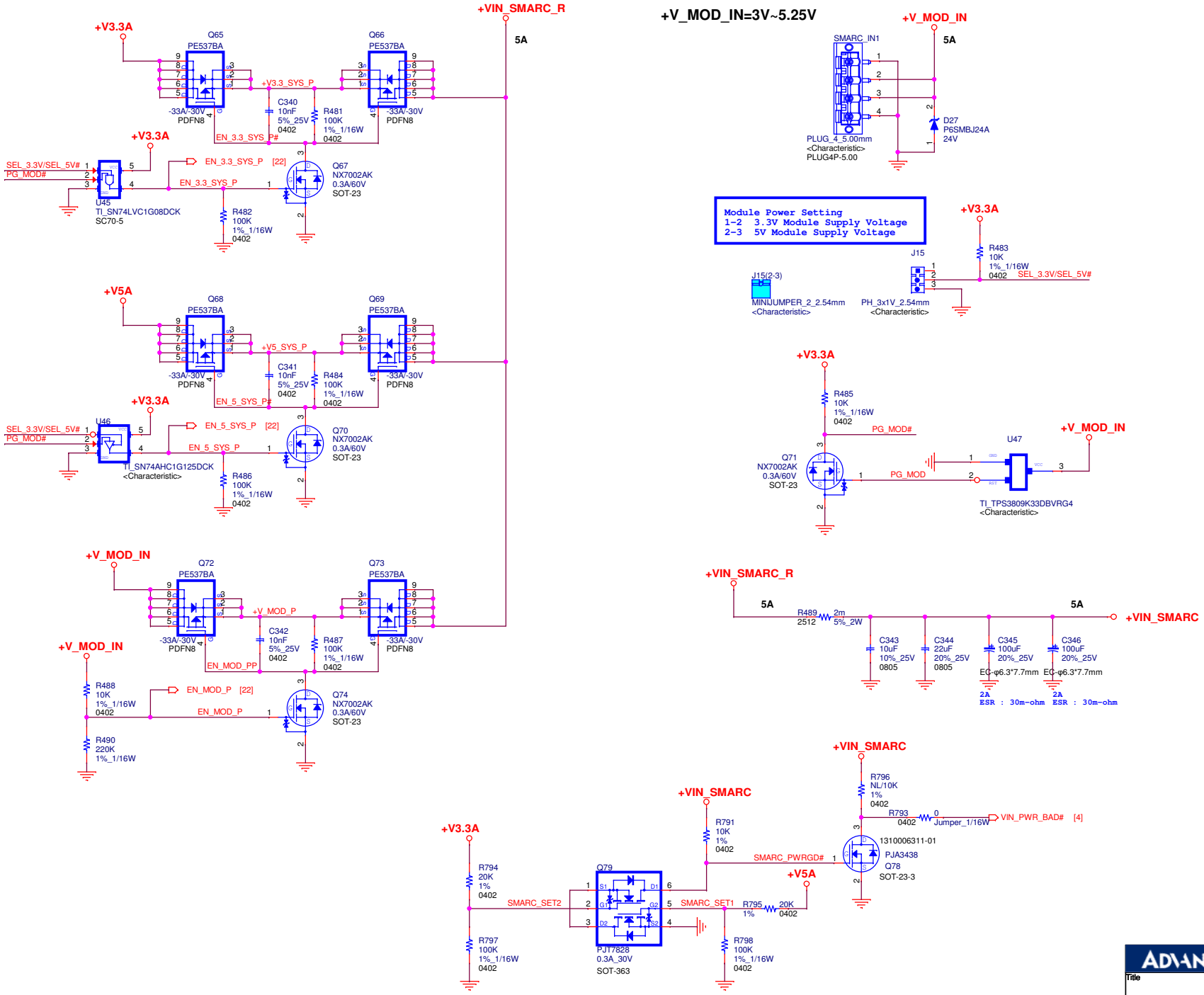

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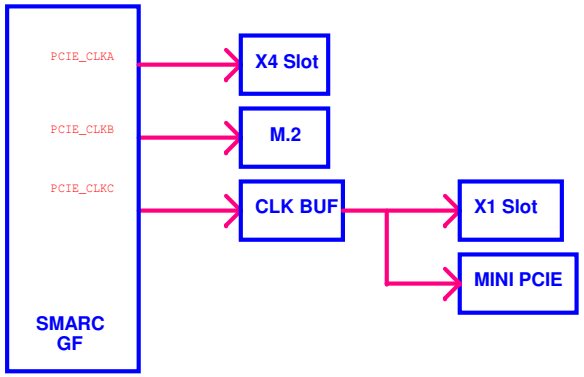
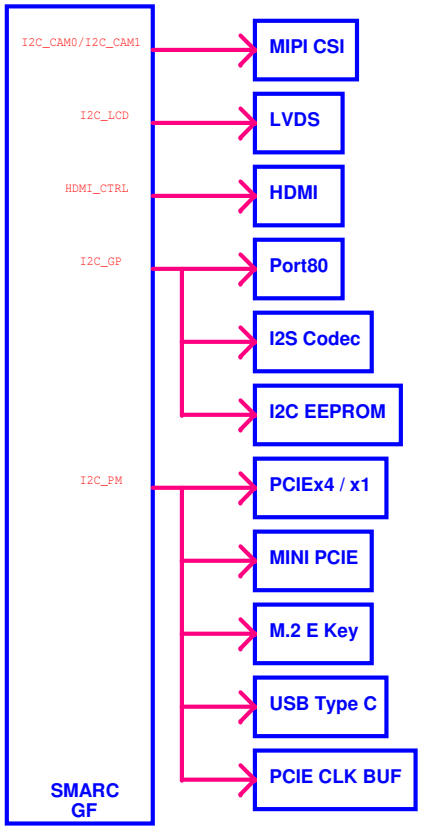
PCIE Clock



I2C



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Title	Function Diagram	
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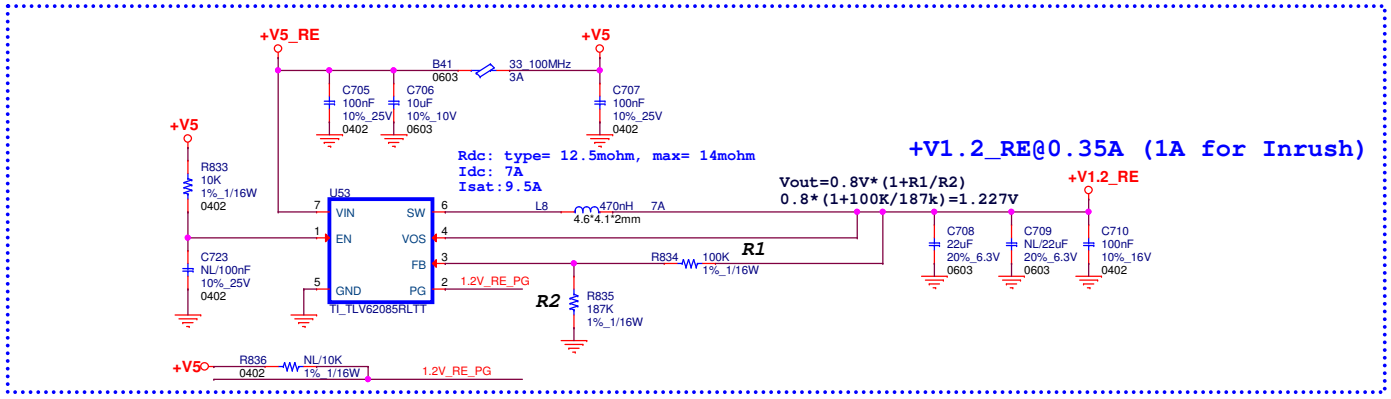
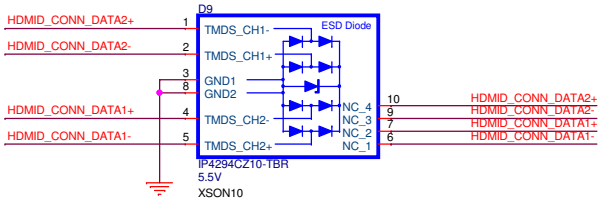
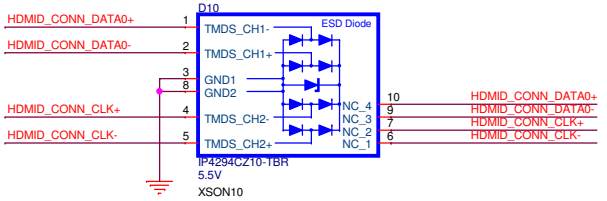
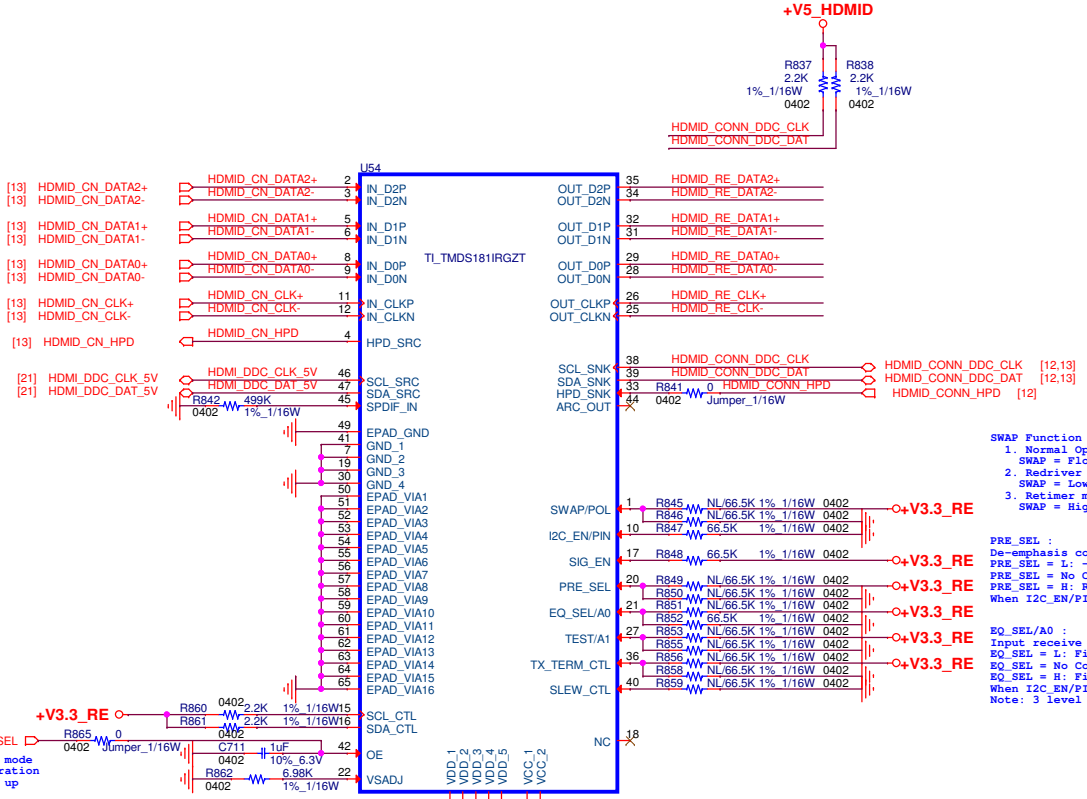
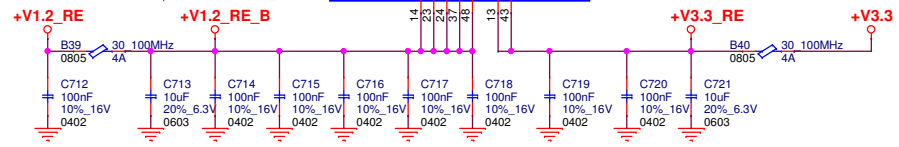
HDMI Re-Timer







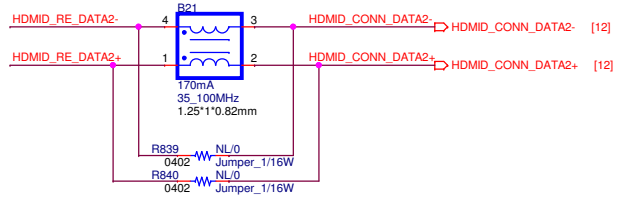


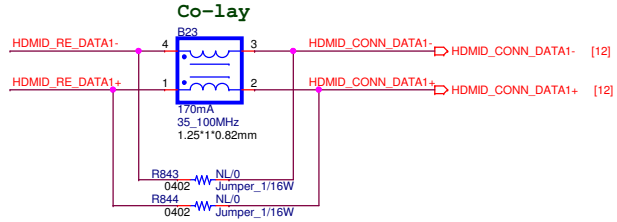


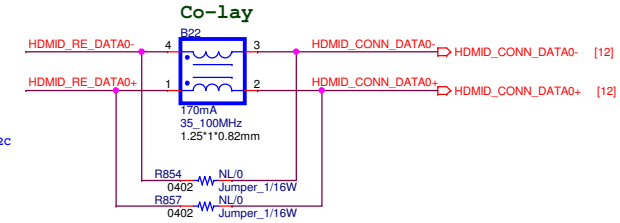
SWAP Function :
1. Normal Operation :
SWAP = Floating , IN_D2/D1/D0/CLK -> OUT_D2/D1/D0/CLK
2. Redriver and Retimer mode :
SWAP = Low , IN_D2/D1/D0/CLK -> OUT_CLK/D0/D1/D2
3. Retimer mode only :
SWAP = High , IN_D2/D1/D0/CLK -> OUT_CLK/D0/D1/D2

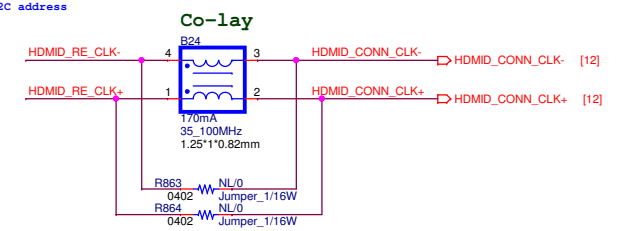
PRE_SEL :
De-emphasis control when I2C_EN/PIN = Low.
PRE_SEL = L: -2 dB
PRE_SEL = No Connect: 0 dB ---->Default
PRE_SEL = H: Reserved
When I2C_EN/PIN = High de-emphasis is controlled through I2C

EQ_SEL/A0 :
Input receive equalization pin strap when I2C_EN/PIN = Low
EQ_SEL = L: Fixed EQ at 7.5 dB at 3 GHz ---->Default
EQ_SEL = No Connect: Adaptive EQ
EQ_SEL = H: Fixed at 14 dB at 3 GHz
When I2C_EN/PIN = High address bit 1
Note: 3 level for pin strap programming but 2 level when I2C address









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