Cyclone V SoC System on module Base Board

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Title: Cyclone V - SoM Base Board

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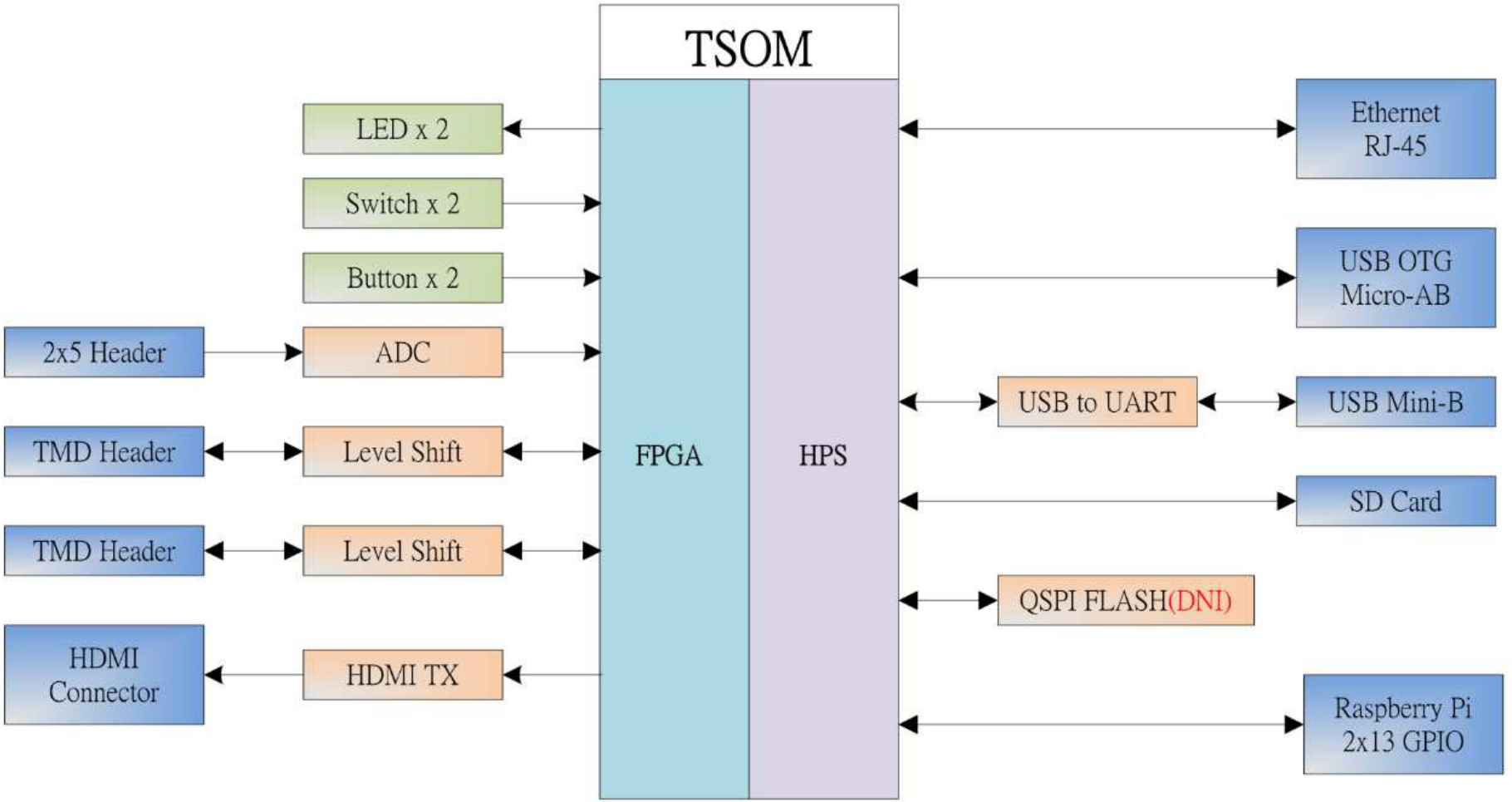

Title
Cyclone V - SoM Base Board

Size	Document Number	Rev
B	Block Diagram	B0

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JTAG Interface

- JTAG_Blaster_TCK
- JTAG_Blaster_TMS
- JTAG_Blaster_TDO
- JTAG_Blaster_TDI
- JTAG_TRST

USB OTG Interface

- USB_VBUS
- USB_DM
- USB_DP
- USB_ID
- USB_CPEN
- USB_EXTVBUS

Ethernet Interface (MDI)

- HPS_ETH_P[3..0]
- HPS_ETH_N[3..0]
- HPS_ETH_LED1
- HPS_ETH_LED2

SD Card Interface

- HPS_SD_DATA[3..0]
- HPS_SD_CMD
- HPS_SD_CLK

QSPI FLASH Interface

- HPS_FLASH_DCLK
- HPS_FLASH_NCSO
- HPS_FLASH_DATA[3..0]

HPS GPIO

- HPS_V3P3_GPIO[18..0]

UART Interface

- UART_TX
- UART_RX
- HPS_UART_RESET_N

HPS Reset

- HPS_WARM_RST_N
- HPS_RESET_N

HDMI TX

- HDMI_TX_D[23..0]
- HDMI_TX_CLK
- HDMI_TX_HS
- HDMI_TX_VS
- HDMI_TX_DE
- HDMI_TX_INT

User Interface

- KEY[1..0]
- SW[1..0]
- LED[1..0]

TMD Interface

- TMD0_D[7..0]
- TMD1_D[7..0]
- FPGA_GPIO[4..0]

- HPS_RPi_GPIO17
- HPS_RPi_GPIO04
- HPS_RPi_GPIO18
- HPS_RPi_GPIO27
- HPS_RPi_GPIO22
- HPS_RPi_GPIO02
- HPS_RPi_GPIO03
- HPS_RPi_GPIO11
- HPS_RPi_GPIO10
- HPS_RPi_GPIO09
- HPS_RPi_GPIO08
- HPS_RPi_GPIO07
- HPS_RPi_GPIO25
- HPS_RPi_GPIO15
- HPS_RPi_GPIO14
- HPS_RPi_GPIO23
- HPS_RPi_GPIO24

ADC Interface

- ADC_CONVST
- ADC_SCK
- ADC_SDO
- ADC_SDI

HDMI Audio Interface

- HDMI_MCLK
- HDMI_LRCLK
- HDMI_I2S0
- HDMI_SCLK

HDMI I2C Interface

- HDMI_I2C_SDA
- HDMI_I2C_SCL

U1A

DDR4-SODIMM

U1B

DDR4-SODIMM

VCC3P3

C264 6.3V 100u
C265 6.3V 100u
C266 6.3V 100u
C267 6.3V 100u

UART_TX — R81 0 — HPS_UART_RX
UART_RX — R82 0 — HPS_UART_TX
HPS_WARM_RST_N — R83 DNI 4.7K — HPS_nRST
HPS_UART_RESET_N — R84 DNI 0 — HPS_nPOR

Title

Size	Document Number	Rev
B	SOM Connector	B0

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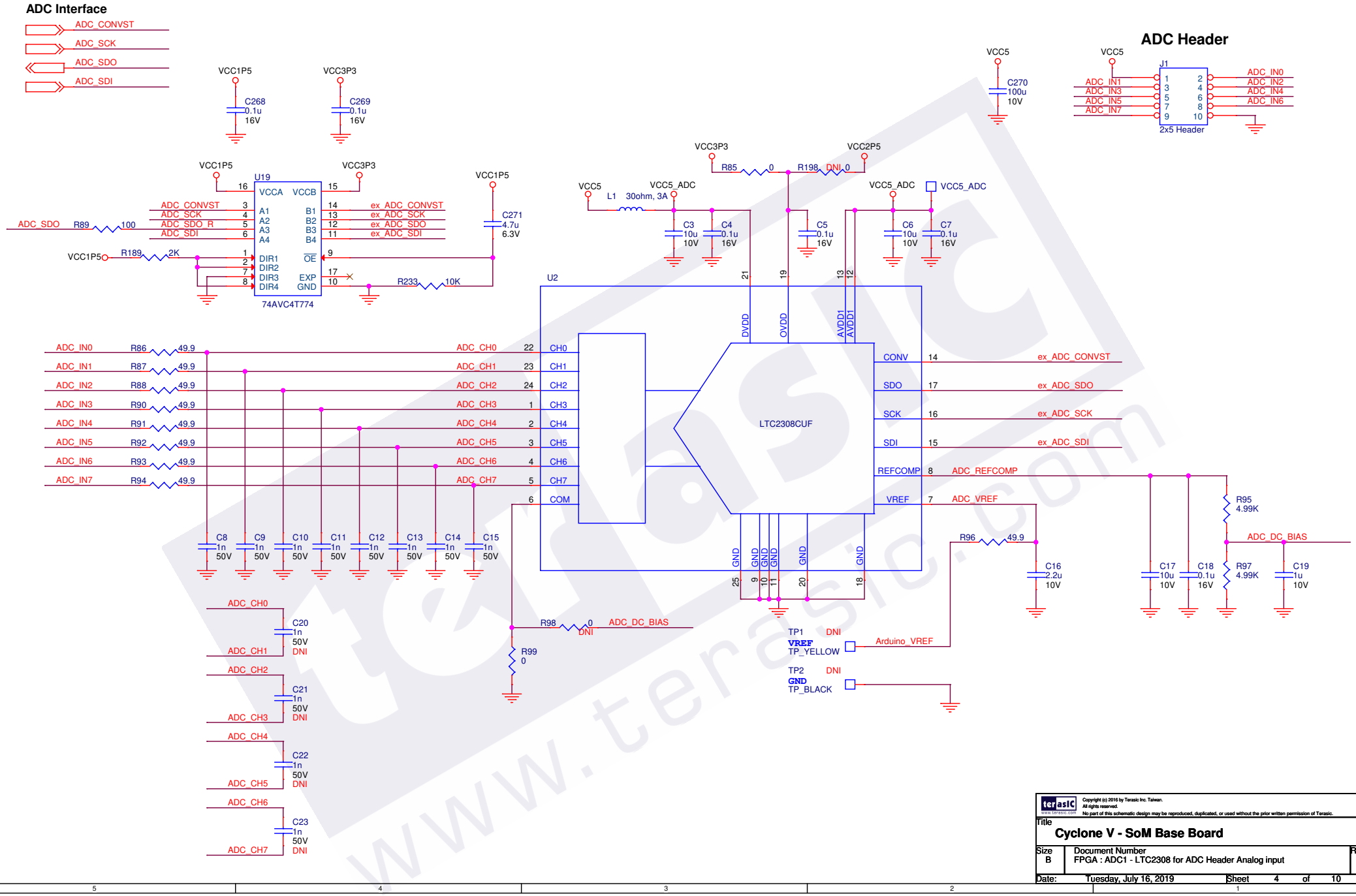
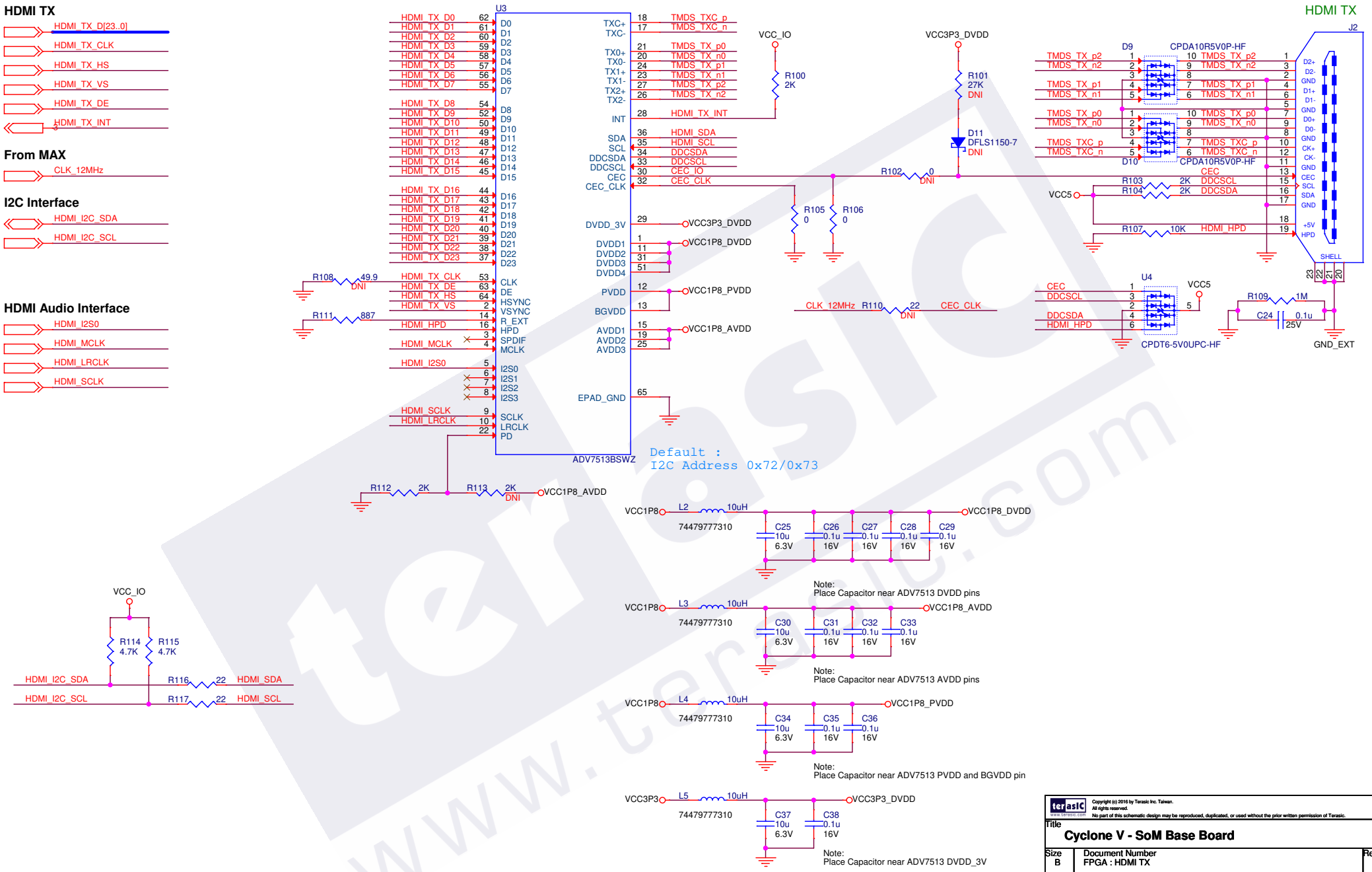
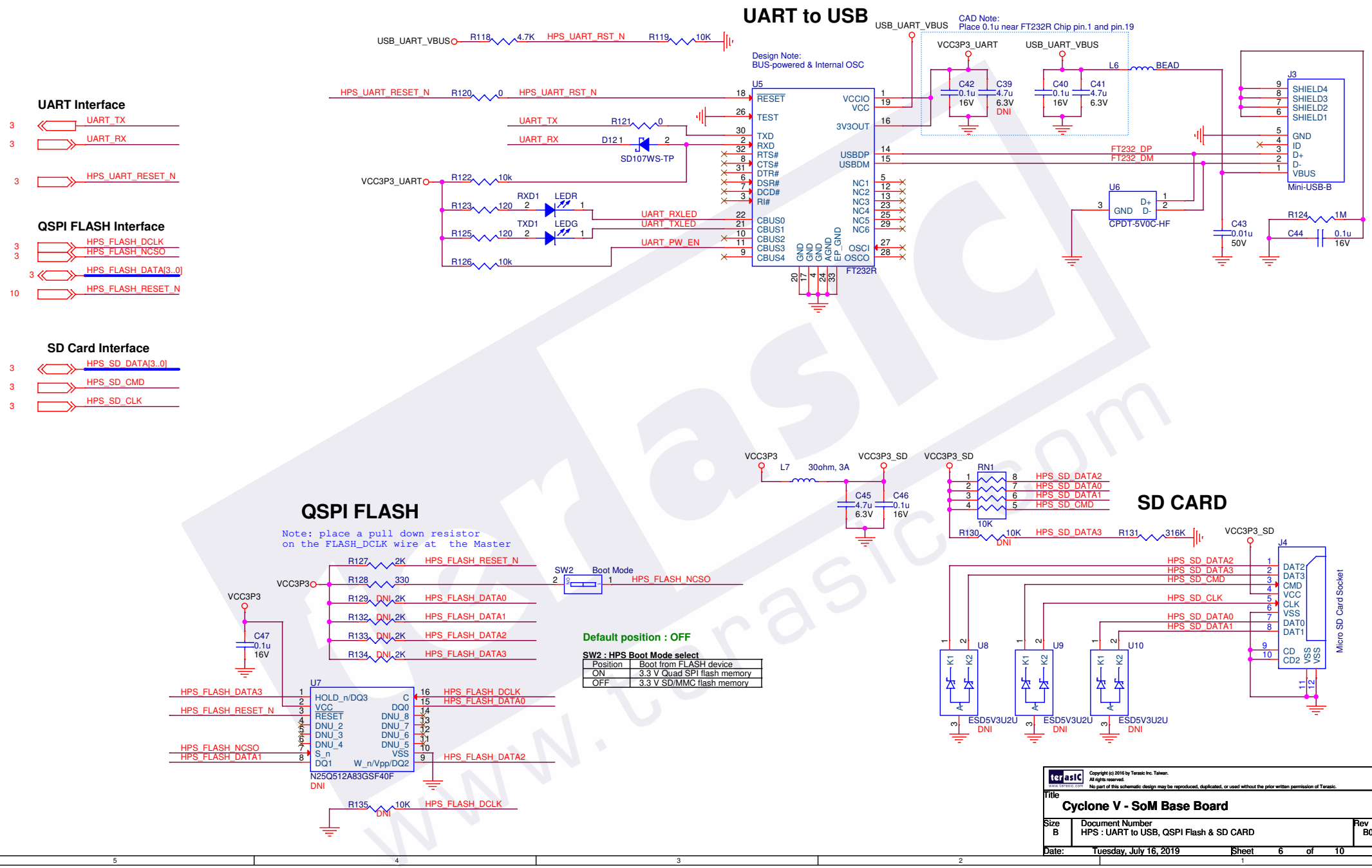

ADC Interface
ADC_CONVST
ADC_SCK
ADC_SDO
ADC_SDI
ADC Header
J1
2x5 Header
ADC_IN0
ADC_IN1
ADC_IN2
ADC_IN3
ADC_IN4
ADC_IN5
ADC_IN6
ADC_IN7
U19
74AVC4T774
U2
LTC2308CUF
L1 30ohm, 3A
ex_ADC_CONVST
ex_ADC_SCK
ex_ADC_SDO
ex_ADC_SDI
ADC_REFCOMP
ADC_VREF
ADC_DC_BIAS
Arduino_VREF
TP_YELLOW
TP_BLACK
DNI
Cyclone V - SoM Base Board
FPGA : ADC1 - LTC2308 for ADC Header Analog input
Tuesday, July 16, 2019





Title: **Cyclone V - SoM Base Board**

Size	Document Number	Rev
B	HPS : UART to USB, QSPI Flash & SD CARD	B0

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User Interface

KEY
3 — KEY[1..0]

SWITCH
3 — SW[1..0]

LED
3 — LED[1..0]

HPS Reset

3,10 — HPS_WARM_RST_N
3,10 — HPS_RESET_N

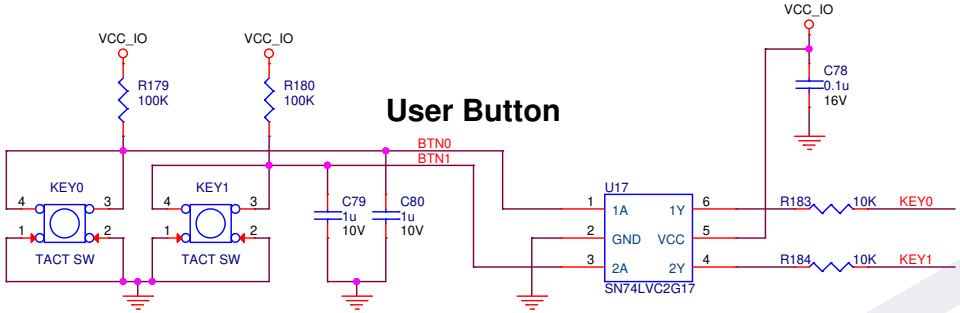
USB OTG Interface

3 — USB_VBUS
3 — USB_DM
3 — USB_DP
3 — USB_ID
3 — USB_CPEN
3 — USB_EXTVBUS

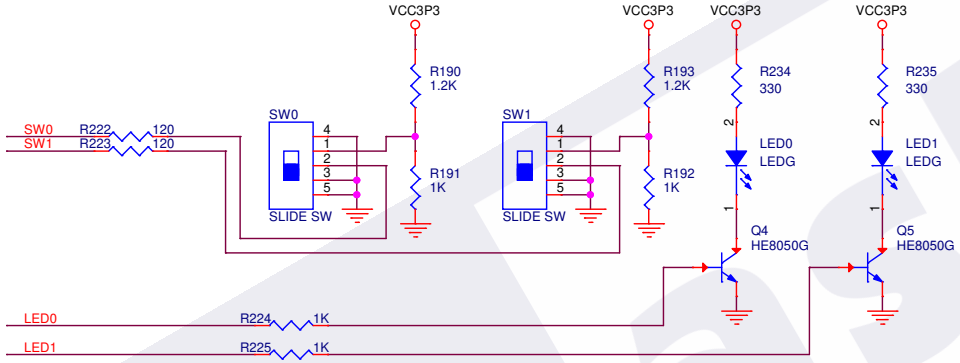
Ethernet Interface (MDI)

3 — HPS_ETH_P[3..0]
3 — HPS_ETH_N[3..0]
3 — HPS_ETH_LED1
3 — HPS_ETH_LED2

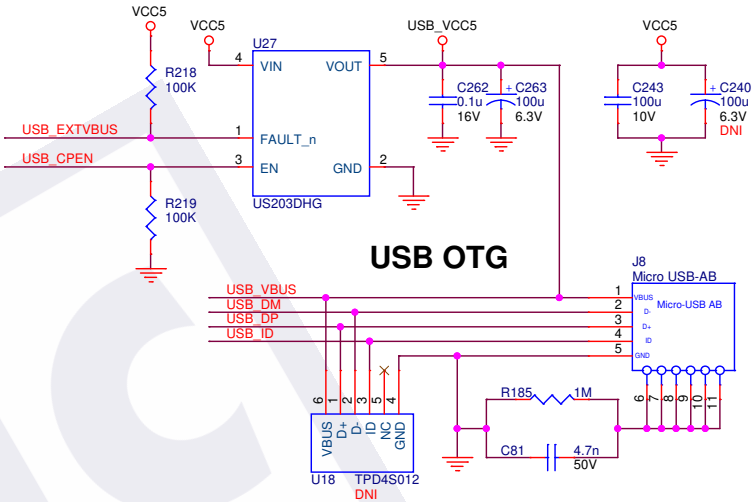
User Button



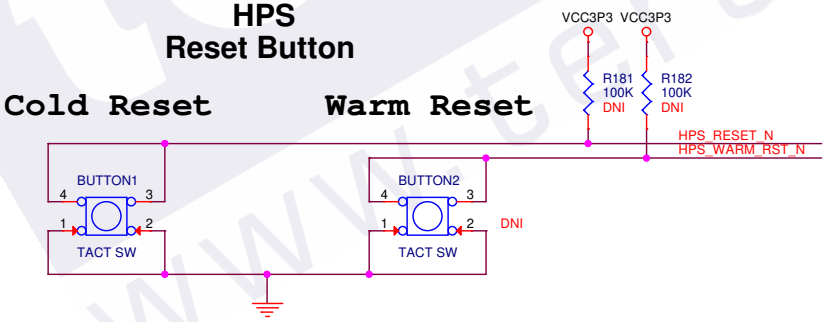
User LED and Switch



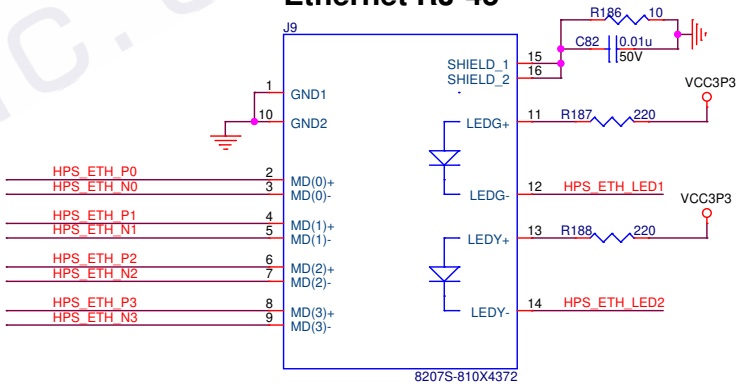
USB OTG



HPS Reset Button



Ethernet RJ-45



Title: **Cyclone V - SoM Base Board**

Size	Document Number	Rev
B	FPGA : LED, KEY, SW and HPS USB-OTG, Ethernet and Reset	B0

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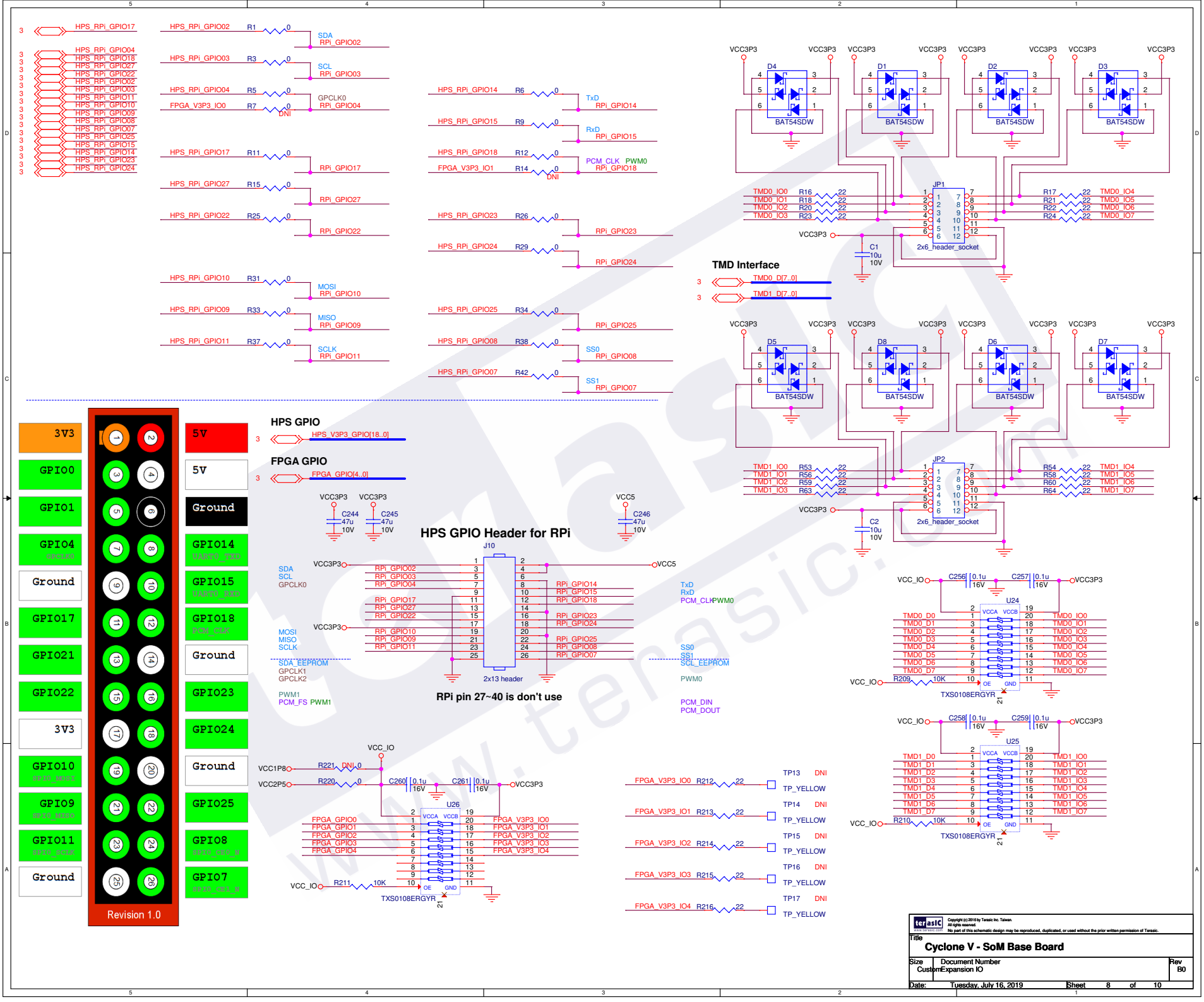
HPS_RPi_GPIO17
HPS_RPi_GPIO04
HPS_RPi_GPIO18
HPS_RPi_GPIO27
HPS_RPi_GPIO22
HPS_RPi_GPIO02
HPS_RPi_GPIO03
HPS_RPi_GPIO11
HPS_RPi_GPIO10
HPS_RPi_GPIO09
HPS_RPi_GPIO08
HPS_RPi_GPIO07
HPS_RPi_GPIO25
HPS_RPi_GPIO15
HPS_RPi_GPIO14
HPS_RPi_GPIO23
HPS_RPi_GPIO24
HPS_RPi_GPIO02 R1 0 SDA RPi_GPIO02
HPS_RPi_GPIO03 R3 0 SCL RPi_GPIO03
HPS_RPi_GPIO04 R5 0 GPCLK0 RPi_GPIO04
FPGA_V3P3_IO0 R7 0 DNI
HPS_RPi_GPIO17 R11 0 RPi_GPIO17
HPS_RPi_GPIO27 R15 0 RPi_GPIO27
HPS_RPi_GPIO22 R25 0 RPi_GPIO22
HPS_RPi_GPIO10 R31 0 MOSI RPi_GPIO10
HPS_RPi_GPIO09 R33 0 MISO RPi_GPIO09
HPS_RPi_GPIO11 R37 0 SCLK RPi_GPIO11
HPS_RPi_GPIO14 R6 0 TxD RPi_GPIO14
HPS_RPi_GPIO15 R9 0 RxD RPi_GPIO15
HPS_RPi_GPIO18 R12 0 PCM_CLK PWM0 RPi_GPIO18
FPGA_V3P3_IO1 R14 0 DNI
HPS_RPi_GPIO23 R26 0 RPi_GPIO23
HPS_RPi_GPIO24 R29 0 RPi_GPIO24
HPS_RPi_GPIO25 R34 0 RPi_GPIO25
HPS_RPi_GPIO08 R38 0 SS0 RPi_GPIO08
HPS_RPi_GPIO07 R42 0 SS1 RPi_GPIO07
TMD Interface
TMD0_D[7..0]
TMD1_D[7..0]
VCC3P3
D4 D1 D2 D3 D5 D8 D6 D7
BAT54SDW
TMD0_IO0 R16 22
TMD0_IO1 R18 22
TMD0_IO2 R20 22
TMD0_IO3 R23 22
R17 22 TMD0_IO4
R21 22 TMD0_IO5
R22 22 TMD0_IO6
R24 22 TMD0_IO7
JP1
C1 10u 10V
2x6_header_socket
TMD1_IO0 R53 22
TMD1_IO1 R56 22
TMD1_IO2 R59 22
TMD1_IO3 R63 22
R54 22 TMD1_IO4
R58 22 TMD1_IO5
R60 22 TMD1_IO6
R64 22 TMD1_IO7
JP2
C2 10u 10V
3V3
GPIO0
GPIO1
GPIO4
Ground
GPIO17
GPIO21
GPIO22
3V3
GPIO10
GPIO9
GPIO11
Ground
5V
5V
Ground
GPIO14
GPIO15
GPIO18
Ground
GPIO23
GPIO24
Ground
GPIO25
GPIO8
GPIO7
Revision 1.0
HPS GPIO
HPS_V3P3_GPIO[18..0]
FPGA GPIO
FPGA_GPIO[4..0]
VCC5
C244 47u 10V
C245 47u 10V
C246 47u 10V
HPS GPIO Header for RPi
J10
2x13 header
SDA
SCL
GPCLK0
MOSI
MISO
SCLK
SDA_EEPROM
GPCLK1
GPCLK2
PWM1
PCM_FS PWM1
TxD
RxD
PCM_CLK PWM0
SS0
SS1
SCL_EEPROM
PWM0
PCM_DIN
PCM_DOUT
RPi pin 27~40 is don't use
VCC_IO
C256 0.1u 16V
C257 0.1u 16V
U24
TMD0_D0 TMD0_D1 TMD0_D2 TMD0_D3 TMD0_D4 TMD0_D5 TMD0_D6 TMD0_D7
TMD0_IO0 TMD0_IO1 TMD0_IO2 TMD0_IO3 TMD0_IO4 TMD0_IO5 TMD0_IO6 TMD0_IO7
R209 10K
OE GND
TXS0108ERGYR
C258 0.1u 16V
C259 0.1u 16V
U25
TMD1_D0 TMD1_D1 TMD1_D2 TMD1_D3 TMD1_D4 TMD1_D5 TMD1_D6 TMD1_D7
TMD1_IO0 TMD1_IO1 TMD1_IO2 TMD1_IO3 TMD1_IO4 TMD1_IO5 TMD1_IO6 TMD1_IO7
R210 10K
VCC1P8
VCC2P5
R221 DNI 0
R220 0
C260 0.1u 16V
C261 0.1u 16V
U26
FPGA_GPIO0 FPGA_GPIO1 FPGA_GPIO2 FPGA_GPIO3 FPGA_GPIO4
FPGA_V3P3_IO0 FPGA_V3P3_IO1 FPGA_V3P3_IO2 FPGA_V3P3_IO3 FPGA_V3P3_IO4
R211 10K
FPGA_V3P3_IO0 R212 22 TP13 DNI TP_YELLOW
FPGA_V3P3_IO1 R213 22 TP14 DNI TP_YELLOW
FPGA_V3P3_IO2 R214 22 TP15 DNI TP_YELLOW
FPGA_V3P3_IO3 R215 22 TP16 DNI TP_YELLOW
FPGA_V3P3_IO4 R216 22 TP17 DNI TP_YELLOW
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Title
Cyclone V - SoM Base Board
Size Custom
Document Number Expansion IO
Rev B0
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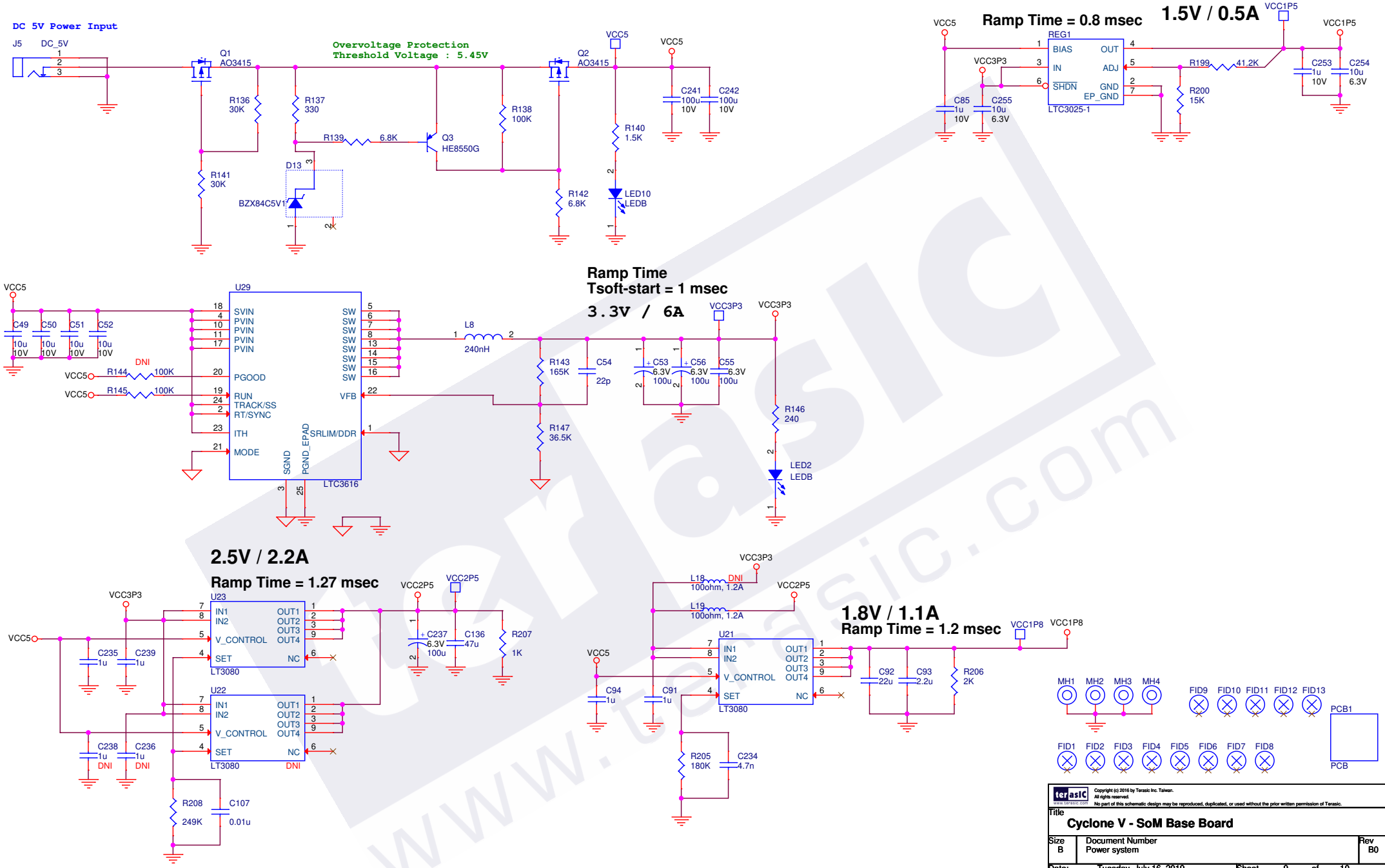

Title
Cyclone V - SoM Base Board

Size	Document Number	Rev
B	Power system	B0

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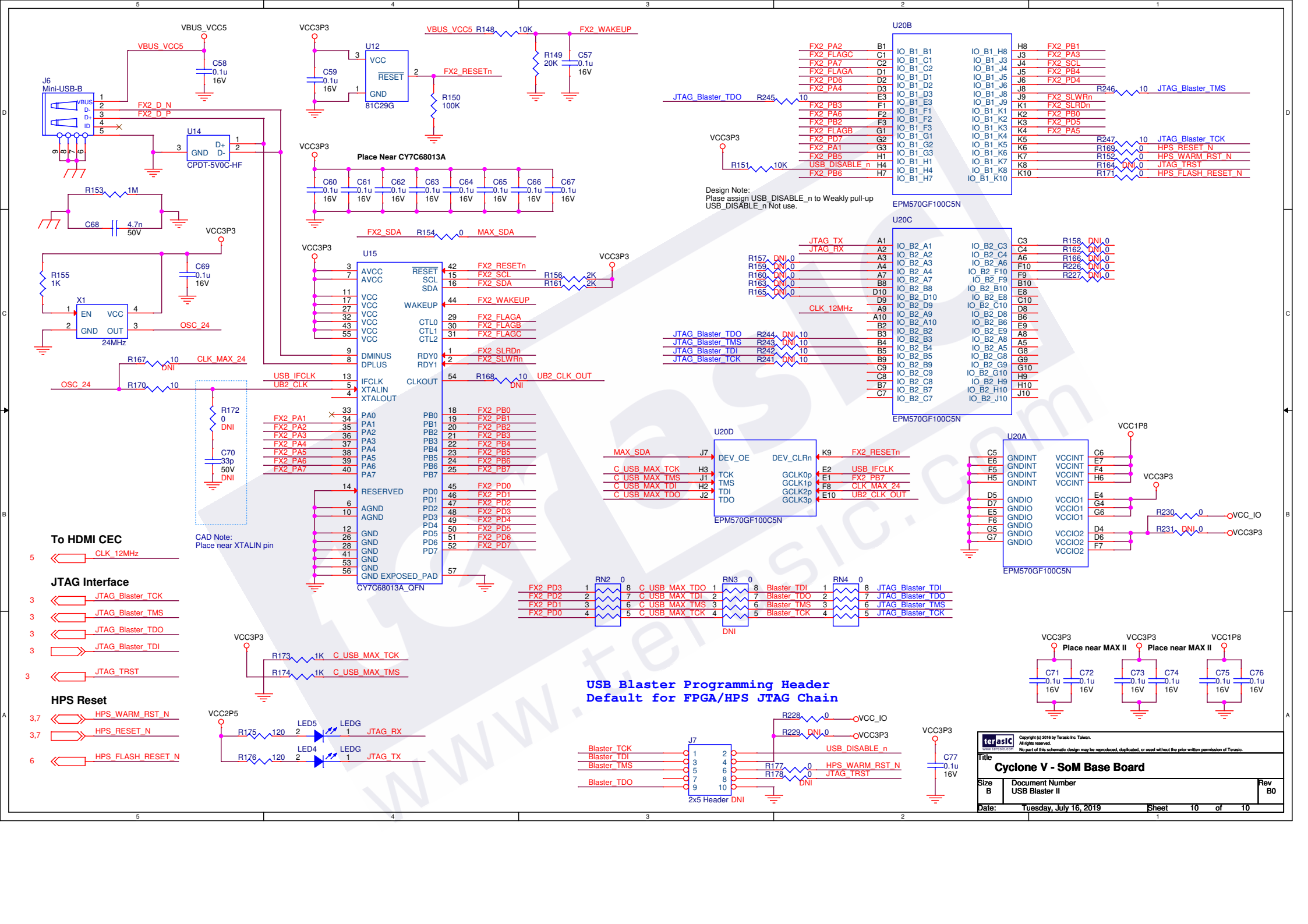
VBUS_VCC5
VCC3P3
J6
Mini-USB-B
FX2_D_N
FX2_D_P
U14
CPDT-5V0C-HF
U12
81C29G
FX2_RESETn
FX2_WAKEUP
Place Near CY7C68013A
FX2_SDA
MAX_SDA
U15
CY7C68013A_QFN
OSC_24
24MHz
CLK_MAX_24
USB_IFCLK
UB2_CLK
UB2_CLK_OUT
CAD Note:
Place near XTALIN pin
To HDMI CEC
CLK_12MHz
JTAG Interface
JTAG_Blaster_TCK
JTAG_Blaster_TMS
JTAG_Blaster_TDO
JTAG_Blaster_TDI
JTAG_TRST
HPS Reset
HPS_WARM_RST_N
HPS_RESET_N
HPS_FLASH_RESET_N
VCC2P5
LED5
LED4
JTAG_RX
JTAG_TX
U20B
U20C
U20D
U20A
EPM570GF100C5N
Design Note:
Plase assign USB_DISABLE_n to Weakly pull-up
USB_DISABLE_n Not use.
RN2
RN3
RN4
USB Blaster Programming Header
Default for FPGA/HPS JTAG Chain
2x5 Header DNI
VCC1P8
Place near MAX II
VCC_IO
Cyclone V - SoM Base Board
Document Number
USB Blaster II
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