HDSDI-Daughter Board

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Microsemi

Project Name: **HDSDI-Daughter Board**

Rev **1**

Part Number:

MICROSEMI **DVP-100-000514-001**

PACTRON:

Originator: **GHURU KUMARAVELU**

Size **A**

Date: **Monday, July 09, 2018**

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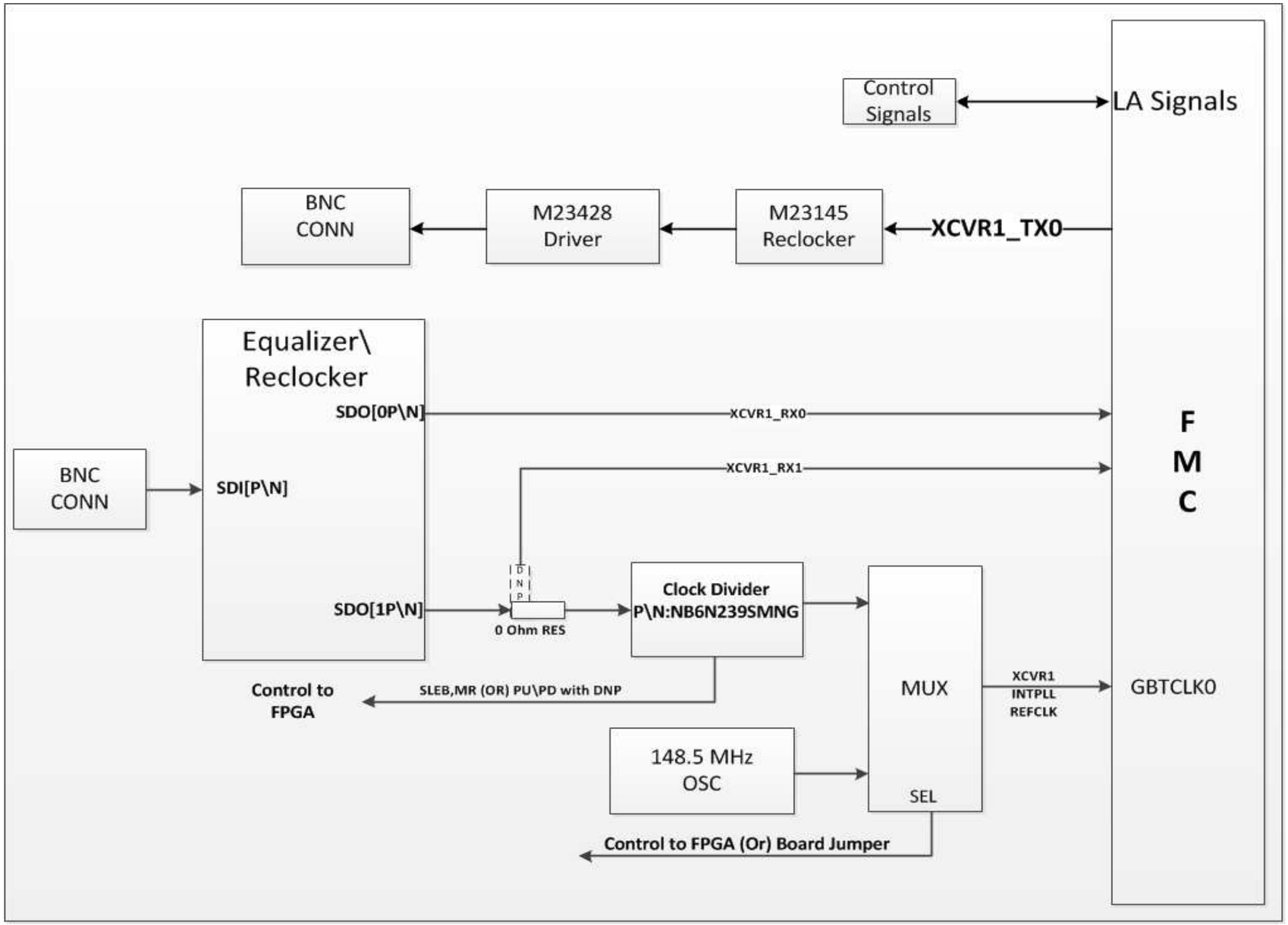
HD-SDI_FMC_DAUGHTER_BOARD

BLOCK_DIAGRAM



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Microsemi		
SIZE: Custom	DOCUMENT NO.: DVP-100-000514-001	REV: 1
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12G HD-SDI Transmitter

Reclocker

DATA SPEED IS UP TO 12Gbps
100 OHM DIFF IMPEDANCE BETWEEN DIFF PAIRS

PLACE 3_C7 AND 3_C8 BESIDE EACH OTHER AND CLOSE TO 3_U1

FMC_TX

{12} 3_HD-SDI_TX_P
{12} 3_HD-SDI_TX_N
3_C8 4.7uF/10V
3_C7 4.7uF/10V
3_HD-SDI_DEV0_P
3_HD-SDI_DEV0_N

3_VCCIO_HPC_VADJ_2P5V
3_C1 0.01uF/16V
3_C2 0.01uF/16V
3_C3 4.7UF/16V
3_GND

3_U1
M23145G-14

AVDD_1 (24)
AVDD_2 (20)
AVDDI (2)

SDI_P (3)
SDI_N (4)
RX

MF0_LOS (10)
MF1_SERIAL_OUT (19)
MF2_SCLK (21)
MF3_SERIAL_IN (22)
MF4_xALARM (8)

{12} 3_HD-SDI-MF0
{12} 3_HD-SDI-SPI_MISO
{12} 3_HD-SDI-SPI_SCLK
{12} 3_HD-SDI-SPI_MOSI
3_R117 0R_NL
3_VCCIO_HPC_VADJ_2P5V
3_R2 10K/1%
{12} 3_HD-SDI-XALARM_TX_OD

SDO0_P (15)
SDO0_N (14)
3_HD-SDI_DEV1_P
3_HD-SDI_DEV1_N

SDO1_P (18)
SDO1_N (17)
3_R35 1K/1%
3_R36 1K/1%
3_VCCIO_HPC_VADJ_2P5V
3_GND

SD_XHD (9)
3_HD-SDI-SDXHD

PU: SW MODE (SPI)
PU: DISABLE UNUSED OUTPUT
3_VCCIO_HPC_VADJ_2P5V
3_R5 10K/1%
3_R6 10K/1%
{12} 3_HD-SDI-SPI_CS_RCLKR

MODE_SEL (6)
SDO1_DISABLE (7)
XCS (13)
NC (11)
3_R7 10K/1%_NL
3_GND

AVSS_1 (1)
AVSS_2 (5)
AVSS_3 (12)
AVSS_4 (16)
AVSS_5 (23)
GNDPAD (25)
3_GND

Output Amplitude control
Set to 800mVpp single-ended

M23145G-14
Part Number = M23145G-14
Manufacturer = MACOM

Driver

3_VCCIO_HPC_VADJ_2P5V
3_C4 0.01uF/16V
3_C5 0.01uF/16V
3_C6 4.7UF/16V
3_GND

3_U2
M23428G-33

AVDD_1 (2)
AVDD_2 (7)

PLACE 3_R1 CLOSE TO 3_U2
3_R1 100R/1%_NL

SDI_P (16)
SDI_N (1)

{12} 3_HD-SDI-SPI_CS_DRVR
3_HD-SDI-SPI_MOSI (4)
3_HD-SDI-SPI_MISO (6)
3_HD-SDI-SPI_SCLK (9)
MF0_xCS (14)
MF1_SERIAL_IN
MF2_SERIAL_OUT
MF3_SERIAL_CLK

3_VCCIO_HPC_VADJ_2P5V
PU: SW MODE (SPI)
3_R4 10K/1%
MODE_SEL (15)
RSET (5)
3_R8 750R/1%
3_GND

SDO1_P (13)
SDO1_N (12)
SDO2_P (11)
SDO2_N (10)
SD_XHD (9)
3_HD-SDI-SDXHD
3_HD-SDI-SDXHD {12}

AVSS (3)
GNDPAD (17)
3_GND

M23428G-33
Part Number = M23428G-33
Manufacturer = MACOM

75oHM

3_HD-SDO1_DEV2_P
3_HD-SDO1_DEV2_N
3_C38 4.7uF/10V
3_C37 4.7uF/10V
3_R34 75R/1%
3_R33 75R/1%
3_GND

3_HD-SDO2_DEV2_P
3_HD-SDO2_DEV2_N
3_C9 4.7uF/10V
3_C10 4.7uF/10V
3_R3 75R/1%
3_GND

3_J1
BNC CONN
3_GND

Part Number = BNC7T-J-P-GN-ST-EM1
Manufacturer = Samtec Inc

12G HD-SDI Receiver

Equalizer/ Reclocker

Place the caps close to the FMC connector

FMC_RX
{12} 3_HD-SDO0_RX_P
{12} 3_HD-SDO0_RX_N
3_C36 4.7uF/10V
3_C35 4.7uF/10V

MUX
FMC_RX
{11} 3_HD-SDO1_DIV_RX_P
{11} 3_HD-SDO1_DIV_RX_N
{12} 3_HD-SDO1_RX_P
{12} 3_HD-SDO1_RX_N
3_R122 0R
3_R123 0R
3_C42 4.7uF/10V_NL
3_C43 4.7uF/10V_NL

Place the 3_R122 & 3_C42 as Share PAD
Place the 3_R123 & 3_C43 as Share PAD
Either of (3_R122 & 3_R123) or (3_C42 & 3_C43) must be loaded at a time

Place the caps close to the FMC connector

3_VCCIO_HPC_VADJ_2P5V
3_R121 DNL
{12} 3_SDO1_DISABLE
3_R120 0R
2 3_J6 1
Default Jumper= OPEN
3_GND

3_U3
M23544G-14

{12} 3_HD-SDO_SD_XHD
SD_XHD (9)
SDO0P (15)
SDO0N (14)
TX
SDO1P (18)
SDO1N (17)
SDO1_DISABLE (7)

AVSS_1 (1)
AVSS_2 (5)
AVSS_3 (12)
AVSS_4 (16)
AVSS_5 (23)
GNDPAD (25)
3_GND

M23544G-14
Part Number = M23544G-14
Manufacturer = MACOM

3_VCCIO_HPC_VADJ_2P5V
3_C11 0.01uF/16V
3_C12 0.01uF/16V
3_C13 10uF/6.3V
3_GND

AVDD_1 (20)
AVDD_2 (24)

3_C14 and 3_C15 should place close to 3_U3 and connect without any vias
VICM (2)
3_C14 1uF/6.3V
3_C15 10uF/6.3V
3_GND

3_L1
1.5nH/0.3A/100mOHM
744784015A

75oHM

SDIP (3)
SDIN (4)
3_HD-SDI_BNC_P
3_HD-SDI_BNC_N
3_C16 10uF/6.3V
3_C17 10uF/6.3V
3_R9 75R/1%
3_R10 75R/1%
3_GND

3_J2
BNC CONN
3_GND

Part Number = BNC7T-J-P-GN-ST-EM1
Manufacturer = Samtec Inc

MF0_SIGNAL_DET (10)
MF1_SERIAL_OUT (19)
MF2_SCLK (21)
MF3_SERIAL_IN (22)
MF4_xALARM (8)
3_R118 0R_NL
3_HD-SDI_MF0_SIGNAL DET {12}
3_HD-SDI-SPI_MISO
3_HD-SDI-SPI_SCLK
3_HD-SDI-SPI_MOSI
3_VCCIO_HPC_VADJ_2P5V
3_R12 10K/1%
3_HD-SDO-XALARM_RX_OD {12}

XCS (13)
3_HD-SDO-SPI_CS_RCVR {12}

3_VCCIO_HPC_VADJ_2P5V
3_R13 10K/1%
3_R14 10K/1%_NL
PU: SW MODE (SPI)

MODE_SEL (6)
MUTEREF (11)
3_R15 10K/1%
3_GND

Control Input Function Table

J6 (SDO1 State)	SDO1 (High Speed HDSDI Rx Clock)
OPEN (1)	Disabled
SHRT 1-2 (0)	Enabled

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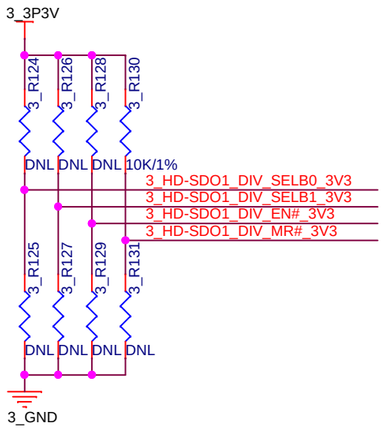
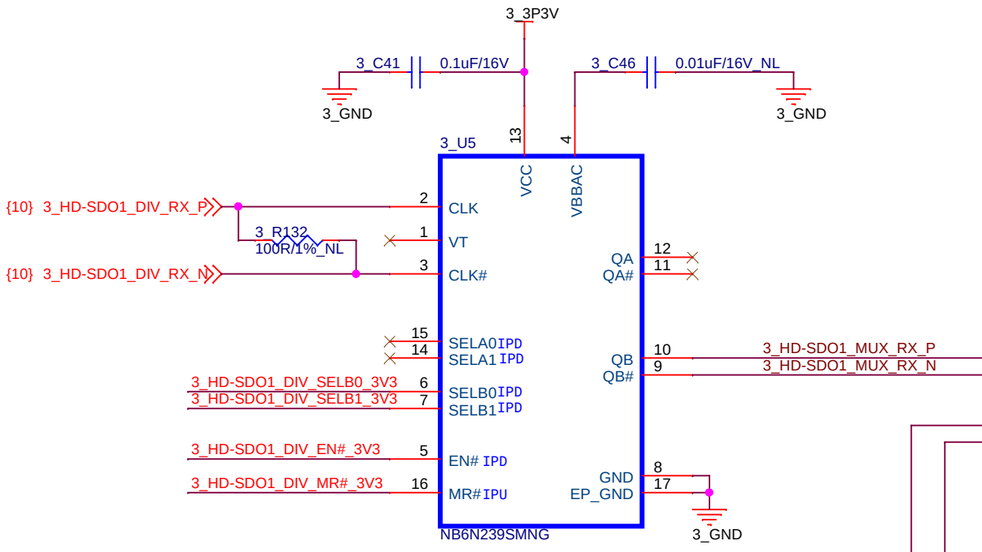
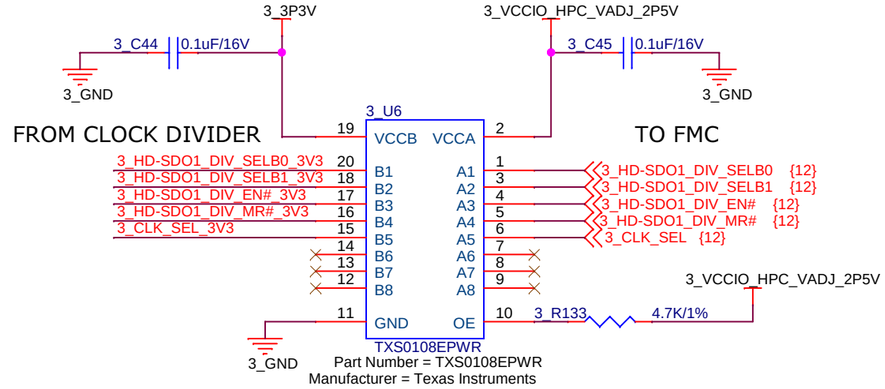
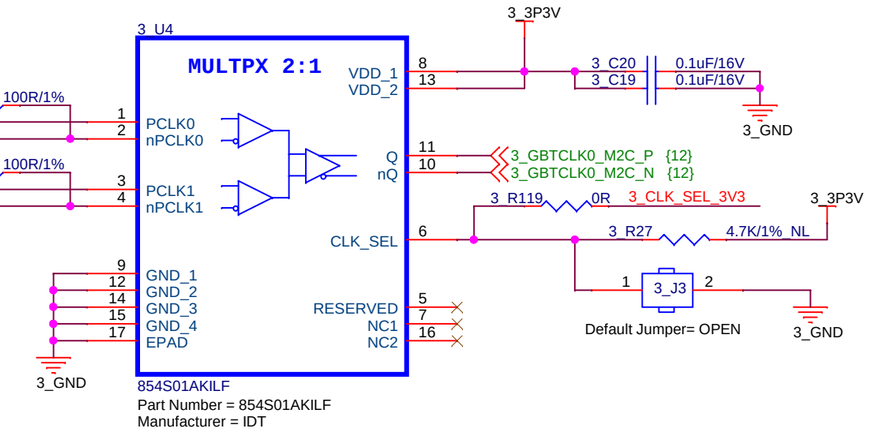
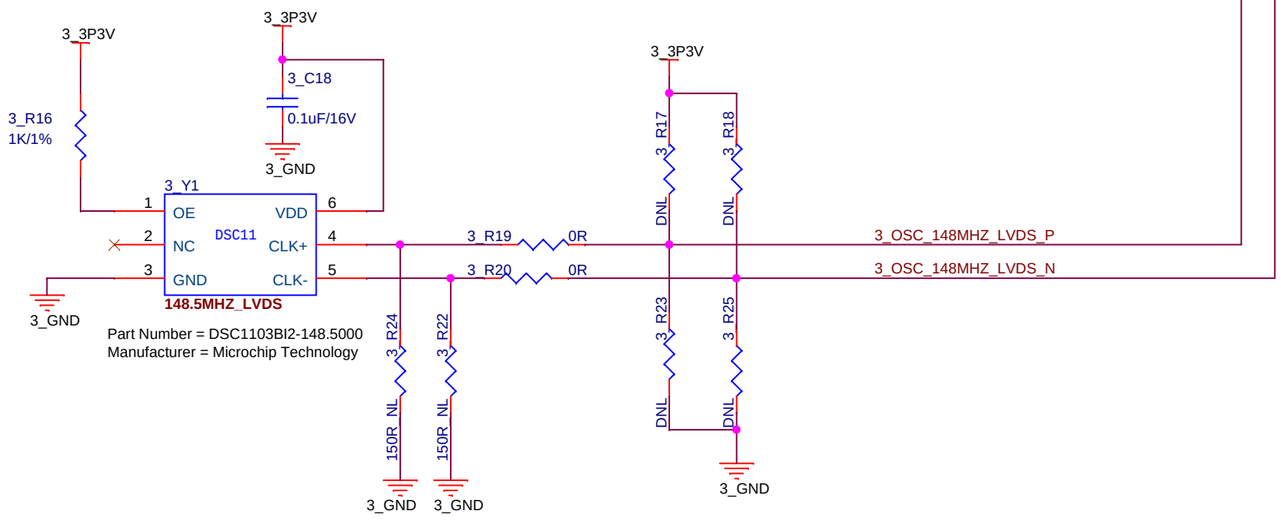
DIFFERENTIAL-TO-LVDS CLOCK MULTIPLEXER
FMC-GBTCLK0











HD-SDI default clock is 148.25 MHz

Control Input Function Table

CLK_SEL	PCLK Selected
0	PCLK0, nPCLK0
1	PCLK1, nPCLK1

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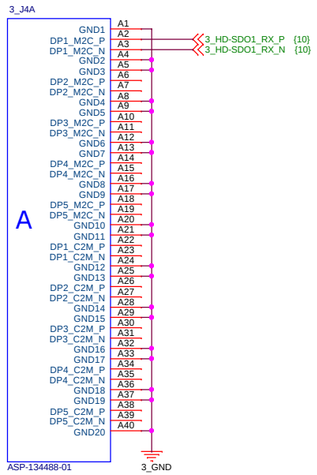
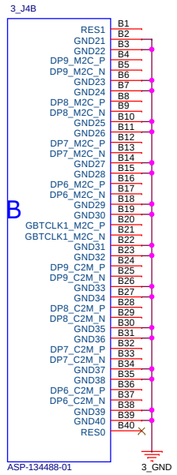
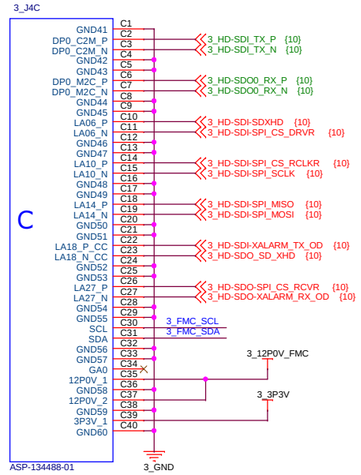
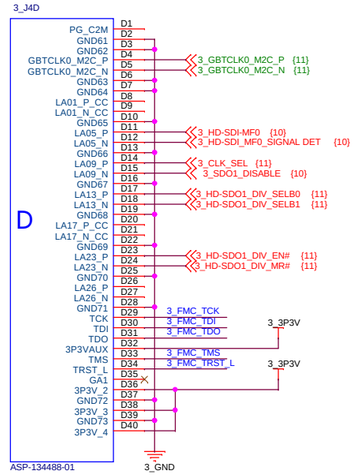
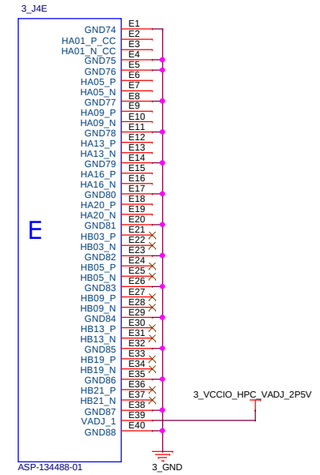
FMC Male Connection



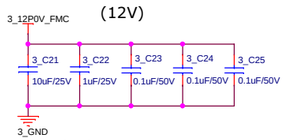




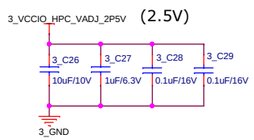




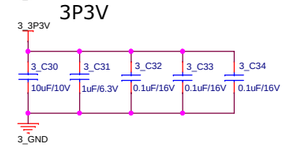
12P0V_FMC



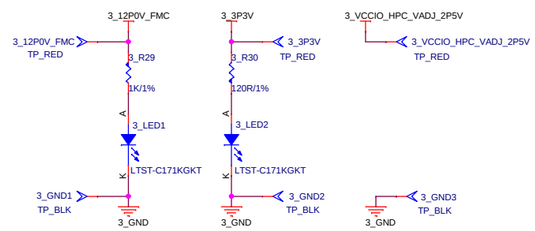
VCCIO_HPC_VADJ



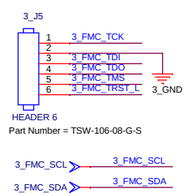
3P3V



INDICATION LED



JTAG HEADER



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