ALTERA MAX10 Development & Education Board (DE10-Lite)

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Title: **DE10-Lite**

Size	Document Number	Rev
B	Cover Page	B1

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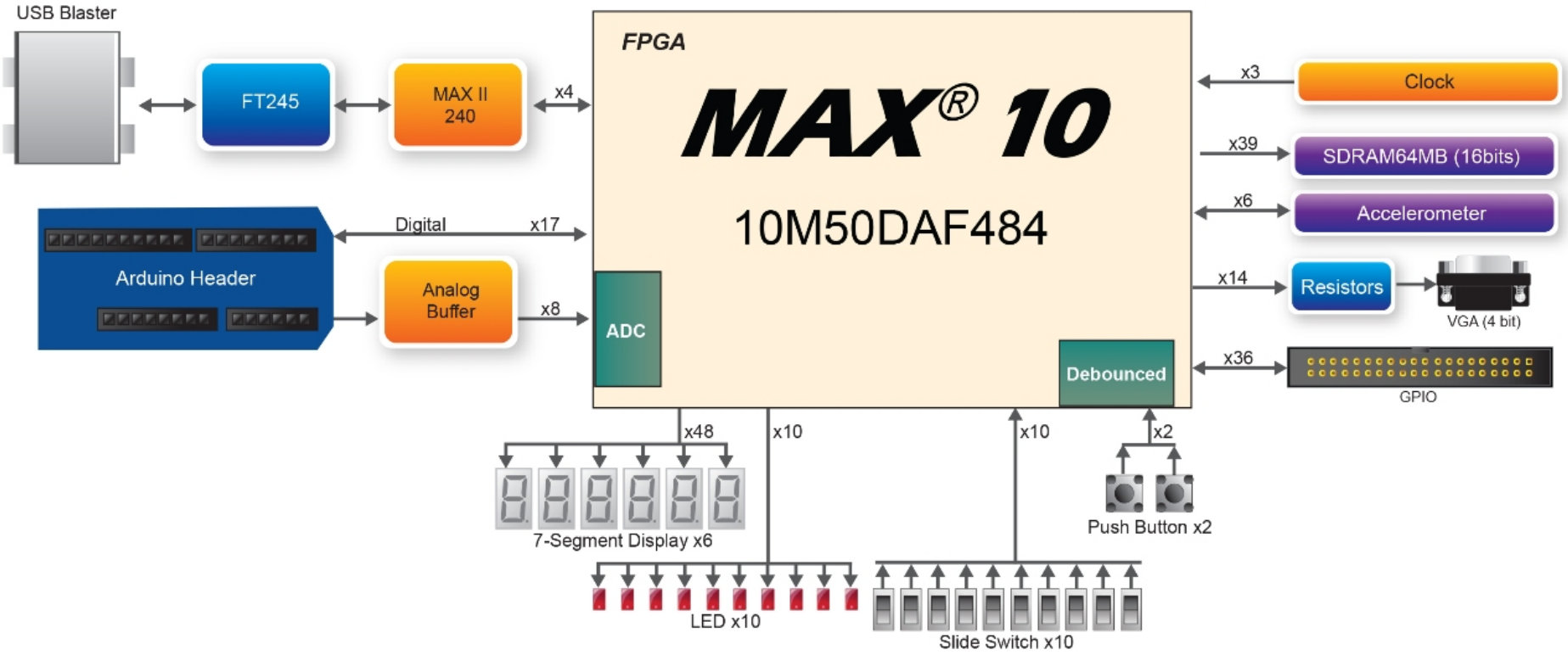

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Title
DE10-Lite

Size	Document Number	Rev
B	Block Diagram	B1

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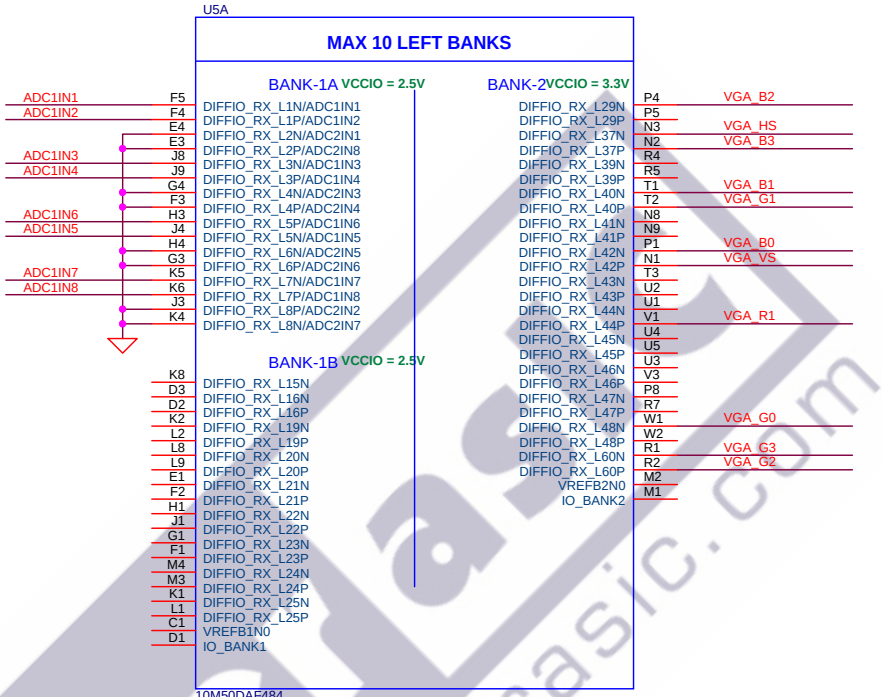
MAX10 Bank 1 & 2

Analog input interface

13 ADC1IN[8..1]

VGA

15 VGA_R[3..0]
15 VGA_G[3..0]
15 VGA_B[3..0]
15 VGA_HS
15 VGA_VS



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Title: DE10-Lite

Size	Document Number	Rev
B	MAX 10 Bank 1 & 2	B1

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MAX10 Bank 3 & 4

GPIO 0

7,13 — GPIO_[35..0]

Arduino Digital Interface

13 — Arduino_IO[15..0]

Digital Accelerometer

15 — GSENSOR_SDI
15 — GSENSOR_SCLK
15 — GSENSOR_INT1
15 — GSENSOR_INT2
15 — GSENSOR_CS_n
15 — GSENSOR_SDO

VGA

15 — VGA_R[3..0]

U5B

MAX 10 BOTTOM BANKS

		BANK-3 VCCIO = 3.3V	BANK-4 VCCIO = 3.3V		
GPIO_25	Y7	DIFFIO_RX_B10N	DIFFIO_RX_B25N	W11	GPIO_19
GPIO_23	Y8	DIFFIO_RX_B10P	DIFFIO_RX_B25P	Y11	GPIO_17
GPIO_34	AB2	DIFFIO_RX_B12N	DIFFIO_RX_B27N	AB10	GPIO_20
GPIO_32	AB3	DIFFIO_RX_B12P	DIFFIO_RX_B27P	AB11	GPIO_18
GPIO_33	Y3	DIFFIO_RX_B14N	DIFFIO_RX_B29N	AB12	GPIO_16
GPIO_31	Y4	DIFFIO_RX_B14P	DIFFIO_RX_B29P	AB13	GPIO_15
GPIO_30	AA5	DIFFIO_RX_B17N	DIFFIO_RX_B35N	W12	GPIO_14
Arduino_IO0	AB5	DIFFIO_RX_B17P	DIFFIO_RX_B35P	W13	GPIO_13
Arduino_IO1	AB6	DIFFIO_RX_B19N	DIFFIO_RX_B38N	AA14	GPIO_12
Arduino_IO2	AB7	DIFFIO_RX_B19P	DIFFIO_RX_B38P	AB15	GSENSOR_SCLK
GPIO_24	AA8	DIFFIO_RX_B21N	DIFFIO_RX_B40N	AA15	GPIO_11
Arduino_IO3	AB8	DIFFIO_RX_B21P	DIFFIO_RX_B40P	Y16	
GPIO_22	AA9	DIFFIO_RX_B23N	DIFFIO_RX_B42N	AB16	GSENSOR_CS_n
Arduino_IO4	AB9	DIFFIO_RX_B23P	DIFFIO_RX_B42P	AA16	
	V4	DIFFIO_RX_B2N	DIFFIO_RX_B44N	AB19	Arduino_IO10
GPIO_9	V5	DIFFIO_RX_B2P	DIFFIO_RX_B44P	AB20	Arduino_IO13
VGA_R3	Y1	DIFFIO_RX_B4N	DIFFIO_RX_B46N	AA19	Arduino_IO11
VGA_R2	Y2	DIFFIO_RX_B4P	DIFFIO_RX_B46P	Y18	
VGA_R0	AA1	DIFFIO_RX_B6N	DIFFIO_RX_B50N	AB21	Arduino_IO14
GPIO_35	AA2	DIFFIO_RX_B6P	DIFFIO_RX_B50P	AA20	Arduino_IO15
GPIO_29	Y5	DIFFIO_RX_B8N	DIFFIO_RX_B58N	AB17	Arduino_IO8
GPIO_27	Y6	DIFFIO_RX_B8P	DIFFIO_RX_B58P	AB18	
GPIO_3	W9	DIFFIO_TX_RX_B11N	DIFFIO_TX_RX_B24N	V11	GSENSOR_SDI
GPIO_1	W10	DIFFIO_TX_RX_B11P	DIFFIO_TX_RX_B24P	V12	GSENSOR_SDO
GPIO_7	W7	DIFFIO_TX_RX_B13N	DIFFIO_TX_RX_B26N	R12	
GPIO_5	W8	DIFFIO_TX_RX_B13P	DIFFIO_TX_RX_B26P	P12	
	R10	DIFFIO_TX_RX_B15N	DIFFIO_TX_RX_B28N	AA11	Arduino_IO6
	P10	DIFFIO_TX_RX_B15P	DIFFIO_TX_RX_B28P	AA12	Arduino_IO7
GPIO_28	AA6	DIFFIO_TX_RX_B16N	DIFFIO_TX_RX_B34N	V13	
GPIO_26	AA7	DIFFIO_TX_RX_B16P	DIFFIO_TX_RX_B34P	W14	
GPIO_10	W5	DIFFIO_TX_RX_B1N	DIFFIO_TX_RX_B36N	R13	
GPIO_8	W6	DIFFIO_TX_RX_B1P	DIFFIO_TX_RX_B36P	P13	
Arduino_IO5	Y10	DIFFIO_TX_RX_B22N	DIFFIO_TX_RX_B37N	Y13	GSENSOR_INT2
GPIO_21	AA10	DIFFIO_TX_RX_B22P	DIFFIO_TX_RX_B37P	Y14	GSENSOR_INT1
	U6	DIFFIO_TX_RX_B3N	DIFFIO_TX_RX_B39N	V14	
	U7	DIFFIO_TX_RX_B3P	DIFFIO_TX_RX_B39P	W15	
	W4	DIFFIO_TX_RX_B5N	DIFFIO_TX_RX_B41N	U15	
	W3	DIFFIO_TX_RX_B5P	DIFFIO_TX_RX_B41P	V16	
GPIO_6	V7	DIFFIO_TX_RX_B7N	DIFFIO_TX_RX_B43N	AA17	Arduino_IO9
GPIO_4	V8	DIFFIO_TX_RX_B7P	DIFFIO_TX_RX_B43P	Y17	
	R9	DIFFIO_TX_RX_B9N	DIFFIO_TX_RX_B45N	V15	
	P9	DIFFIO_TX_RX_B9P	DIFFIO_TX_RX_B45P	W16	
	AA3	VREFB3N0	DIFFIO_TX_RX_B49N	Y19	Arduino_IO12
	AB4	IO_BANK3	DIFFIO_TX_RX_B49P	W18	
			VREFB4N0	AA13	
			IO_BANK4	AB14	

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Title: **DE10-Lite**

Size	Document Number	Rev
B	MAX 10 Bank 3 & 4	B1

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MAX10 Bank 5 & 6

SDRAM

12 DRAM_ADDR[12..0]
12 DRAM_DQ[15..0]

12 DRAM_CKE
12 DRAM_LDQM
12 DRAM_UDQM
12 DRAM_WE_N
12 DRAM_CAS_N
12 DRAM_RAS_N
12 DRAM_CS_N
12 DRAM_BA0
12 DRAM_BA1

SWITCH

14 SW[9..0]

KEY

14 KEY[1..0]

LED

14 LEDR[9..0]

7-segment Display

14 HEX0[7..0]
14 HEX1[7..0]
14 HEX2[7..0]
14 HEX3[7..0]
14 HEX4[7..0]
14 HEX5[7..0]

U5C

MAX 10 RIGHT BANKS

		BANK-5 VCCIO = 3.3V
DRAM_ADDR4	U19	DIFFIO_RX_R19N
DRAM_ADDR2	V18	DIFFIO_RX_R19P
DRAM_ADDR3	U18	DIFFIO_RX_R1P/RUP
DRAM_ADDR0	U17	DIFFIO_RX_R1N/RDN
DRAM_DQ5	W22	DIFFIO_RX_R20N
DRAM_DQ4	Y22	DIFFIO_RX_R20P
DRAM_DQ6	W20	DIFFIO_RX_R21N
DRAM_ADDR1	W19	DIFFIO_RX_R21P
DRAM_DQ0	Y21	DIFFIO_RX_R22N
DRAM_DQ1	Y20	DIFFIO_RX_R22P
DRAM_CS_N	U20	DIFFIO_RX_R23N
DRAM_WE_N	V20	DIFFIO_RX_R23P
DRAM_LDQM	V22	DIFFIO_RX_R24N
DRAM_DQ7	V21	DIFFIO_RX_R24P
	R14	DIFFIO_RX_R25N/DQ1R
	R15	DIFFIO_RX_R25P/DQ1R
DRAM_BA1	T22	DIFFIO_RX_R26N
DRAM_BA0	T21	DIFFIO_RX_R26P
DRAM_ADDR5	T18	DIFFIO_RX_R27N/DM1R
DRAM_ADDR6	T19	DIFFIO_RX_R27P/DQ1R
DRAM_ADDR12	R20	DIFFIO_RX_R28N/DQ1R
DRAM_ADDR10	T20	DIFFIO_RX_R28P/DQ1R
DRAM_RAS_N	U22	DIFFIO_RX_R29N
DRAM_CAS_N	U21	DIFFIO_RX_R29P
DRAM_DQ2	AA22	DIFFIO_RX_R2N
DRAM_DQ3	AA21	DIFFIO_RX_R2P
	P14	DIFFIO_RX_R30N/DQ1R
	P15	DIFFIO_RX_R30P/DQ1R
DRAM_CKE	N22	DIFFIO_RX_R31N
DRAM_DQ8	P21	DIFFIO_RX_R31P
DRAM_ADDR8	P18	DIFFIO_RX_R32N/DQSN1R
DRAM_ADDR7	R18	DIFFIO_RX_R32P/DQS1R
DRAM_ADDR11	P20	DIFFIO_RX_R33N/DQ1R
DRAM_ADDR9	P19	DIFFIO_RX_R33P/DQ1R
	L22	DIFFIO_RX_R34N
	M21	DIFFIO_RX_R34P
	M22	DIFFIO_RX_R35N
	N21	DIFFIO_RX_R35P
	P22	VREFB5N0
	R22	IO_BANK5

		BANK-6 VCCIO = 3.3V
	H21	DIFFIO_RX_R39N
DRAM_DQ10	H22	DIFFIO_RX_R39P
DRAM_DQ11	J21	DIFFIO_RX_R41N
DRAM_UDQM	J22	DIFFIO_RX_R41P
DRAM_DQ9	G19	DIFFIO_RX_R42N
DRAM_DQ14	G20	DIFFIO_RX_R42P
DRAM_DQ13	F22	DIFFIO_RX_R43N
DRAM_DQ15	G22	DIFFIO_RX_R43P
DRAM_DQ12	M14	DIFFIO_RX_R44N/DQ2R
	M15	DIFFIO_RX_R44P/DQ2R
	E21	DIFFIO_RX_R45N
HEX32	E22	DIFFIO_RX_R45P
HEX31	N19	DIFFIO_RX_R46N/DM2R
HEX55	N18	DIFFIO_RX_R46P/DQ2R
HEX53	M20	DIFFIO_RX_R47P/DQ2R
HEX54	N20	DIFFIO_RX_R47N/DQ2R
HEX56	F20	DIFFIO_RX_R48N
HEX46	F21	DIFFIO_RX_R48P
HEX30	C22	DIFFIO_RX_R49N
HEX25	D22	DIFFIO_RX_R49P
HEX37	L18	DIFFIO_RX_R51N/DQ2R
HEX52	M18	DIFFIO_RX_R51P/DQ2R
	L20	DIFFIO_RX_R52N/DQ2R
	L19	DIFFIO_RX_R52P/DQ2R
HEX57	F18	DIFFIO_RX_R53N
HEX40	E19	DIFFIO_RX_R53P
HEX42	E20	DIFFIO_RX_R54N
HEX41	F19	DIFFIO_RX_R54P
HEX45	K15	DIFFIO_RX_R55N/DQSN3R
	K14	DIFFIO_RX_R55P/DQS3R
	D19	DIFFIO_RX_R56N
HEX35	C20	DIFFIO_RX_R56P
HEX34	J18	DIFFIO_RX_R57N/DQ3R
HEX43	K18	DIFFIO_RX_R57P/DQ3R
	K20	DIFFIO_RX_R58N/DQ3R
HEX51	K19	DIFFIO_RX_R58P/DQ3R
	E17	DIFFIO_RX_R59N
HEX36	F17	DIFFIO_RX_R59P
HEX47	B21	DIFFIO_RX_R60N
HEX24	B22	DIFFIO_RX_R60P
HEX26	J15	DIFFIO_RX_R61N/DM3R
	J14	DIFFIO_RX_R61P/DQ3R
	A21	DIFFIO_RX_R62N
HEX23	B20	DIFFIO_RX_R62P
HEX20	H18	DIFFIO_RX_R63N/DQ3R
	H19	DIFFIO_RX_R63P/DQ3R
HEX44	H20	DIFFIO_RX_R64N/DQ3R
	J20	DIFFIO_RX_R64P/DQ3R
HEX50	E18	DIFFIO_RX_R70N/CK#_6
HEX12	D18	DIFFIO_RX_R70P/CK_6
HEX11	D21	VREFB6N0
	C21	IO_BANK6

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Title: **DE10-Lite**

Size	Document Number	Rev
B	MAX 10 Bank 5 & 6	B1

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MAX10 Bank 7 & 8

7-segment Display

14 HEX0[7..0]
14 HEX1[7..0]
14 HEX2[7..0]
14 HEX3[7..0]
14 HEX4[7..0]
14 HEX5[7..0]

SWITCH

14 SW[9..0]

KEY

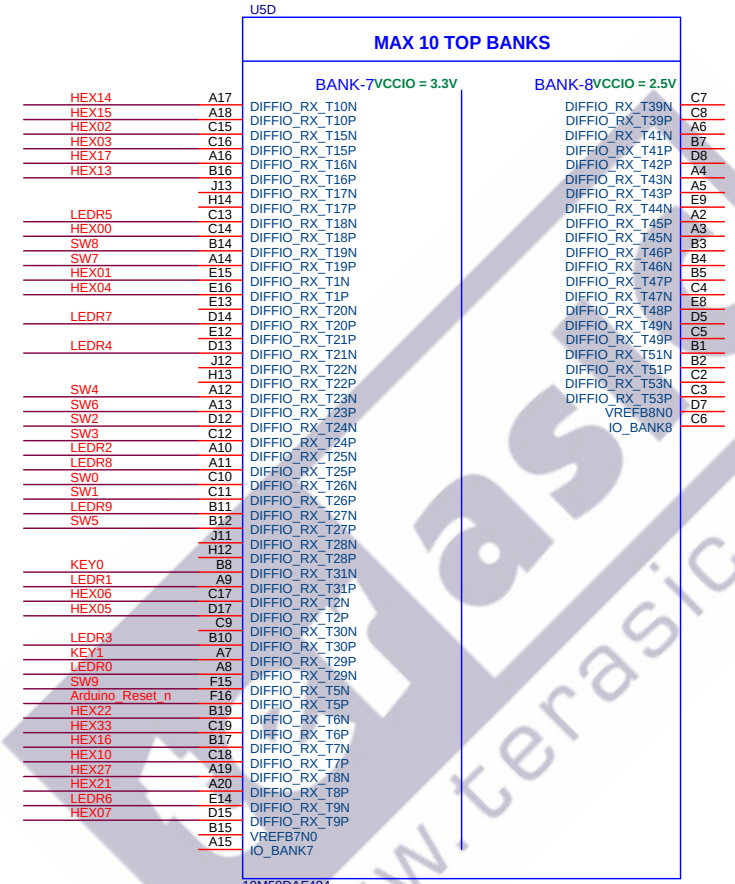
14 KEY[1..0]

LED

14 LEDR[9..0]

Arduino Digital Interface

13 Arduino_Reset_n



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Title: DE10-Lite

Size	Document Number	Rev
B	MAX 10 Bank 7 & 8	B1

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MAX10 Clock

18 UBT_CLK_24

GPIO 0

4,13 GPIO_[35..0]

SDRAM

12 DRAM_CLK

U5E

MAX 10 CLOCK

BANK-2 VCCIO = 3.3V

ADC_CLK_10	N4	DIFFIO_RX_L28N/CLK0N	DIFFIO_RX_L38N/DPCLK0	P3	
	N5	DIFFIO_RX_L28P/CLK0P	DIFFIO_RX_L38P/DPCLK1	R3	
	M8	DIFFIO_RX_L36N/CLK1N	DIFFIO_RX_L59N/PLL_L_CLKOUTN	T5	
	M9	DIFFIO_RX_L36P/CLK1P	DIFFIO_RX_L59P/PLL_L_CLKOUTP	T6	

BANK-3 VCCIO = 3.3V

GPIO_2	V9	DIFFIO_TX_RX_B18N/CLK6N
GPIO_0	V10	DIFFIO_TX_RX_B18P/CLK6P
	R11	DIFFIO_TX_RX_B20N/CLK7N
MAX10_CLK1_50	P11	DIFFIO_TX_RX_B20P/CLK7P

BANK-4 VCCIO = 3.3V

		DIFFIO_TX_RX_B57N/PLL_B_CLKOUTN	W17
		DIFFIO_TX_RX_B57P/PLL_B_CLKOUTP	V17

BANK-6 VCCIO = 3.3V

MAX10_CLK2_50	N15	DIFFIO_RX_R38N/CLK2N	DIFFIO_RX_R50N/DPCLK2/DQSn2R	L15	
	N14	DIFFIO_RX_R38P/CLK2P	DIFFIO_RX_R50P/DPCLK3/DQS2R	L14	DRAM_CLK
	K21	DIFFIO_RX_R40N/CLK3N	DIFFIO_RX_R69N/PLL_R_CLKOUTN	G17	
	K22	DIFFIO_RX_R40P/CLK3P	DIFFIO_RX_R69P/PLL_R_CLKOUTP	H17	

BANK-8 VCCIO = 2.5V

	E10	DIFFIO_RX_T38N/CLK4N		
	E11	DIFFIO_RX_T38P/CLK4P		
	J10	DIFFIO_RX_T40P/CLK5P	DIFFIO_RX_T52N/PLL_T_CLKOUTN	E6
	H11	DIFFIO_RX_T40N/CLK5N	DIFFIO_RX_T52P/PLL_T_CLKOUTP	D6

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CAD Note: Place near pin 3 and 5 (C3 & C322)

CAD Note: Place near IC power pin

VCC1P8 — C50 0.01u 50V — C51 1n 50V — L3 220 ohm, 0.4A — VCC3P3

C53 0.1u 10V — C56 0.1u 10V — C52 0.1u 10V — C8 4.7u 6.3V

U3 CDCE937PWRG4

C9 4p 6.3V DNI — C11 4p 6.3V DNI — Y1 24.00MHz

1	Xin/Clk	Y1	17	R57 18.2 UBT_CLK_24
20	Xout	Y2	15	
2	S0	Y3	14	R17 18.2 ADC_CLK_10
19	S1/SDA	Y4	7	R10 18.2 MAX10_CLK2_50
18	S2/SCL	Y5	8	R9 18.2 MAX10_CLK1_50
4	Vctrl	Y6	12	
		Y7	11	

VCC3P3 — R19 4.7K — R18 4.7K

Default: 24MHz
Default: 24MHz
Default: 10MHz
Default: 50MHz
Default: 50MHz
Default: 50MHz
Default: 50MHz

Default : I2C Address 0xDA/0xDB

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Title: DE10-Lite

Size: B | Document Number: MAX 10 Clocks | Rev: B1

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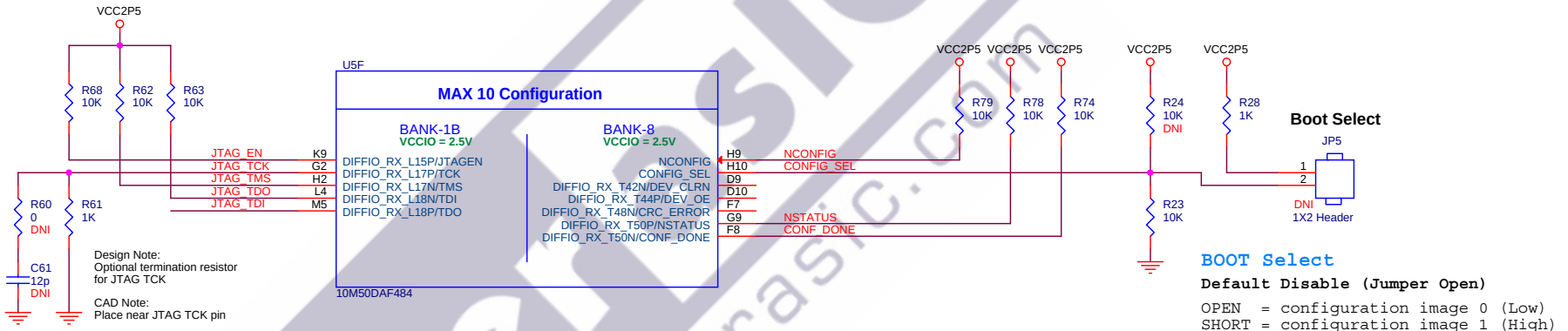
MAX10 Configuration

JTAG Interface

18 JTAG_TCK
18 JTAG_TMS
18 JTAG_TDI
18 JTAG_TDO
18 JTAG_EN

FPGA CONFIG

18 NCONFIG
18 NSTATUS
18 CONF_DONE
18 CONFIG_SEL



BOOT Select

Default Disable (Jumper Open)

OPEN = configuration image 0 (Low)
SHORT = configuration image 1 (High)

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Size	Document Number	Rev
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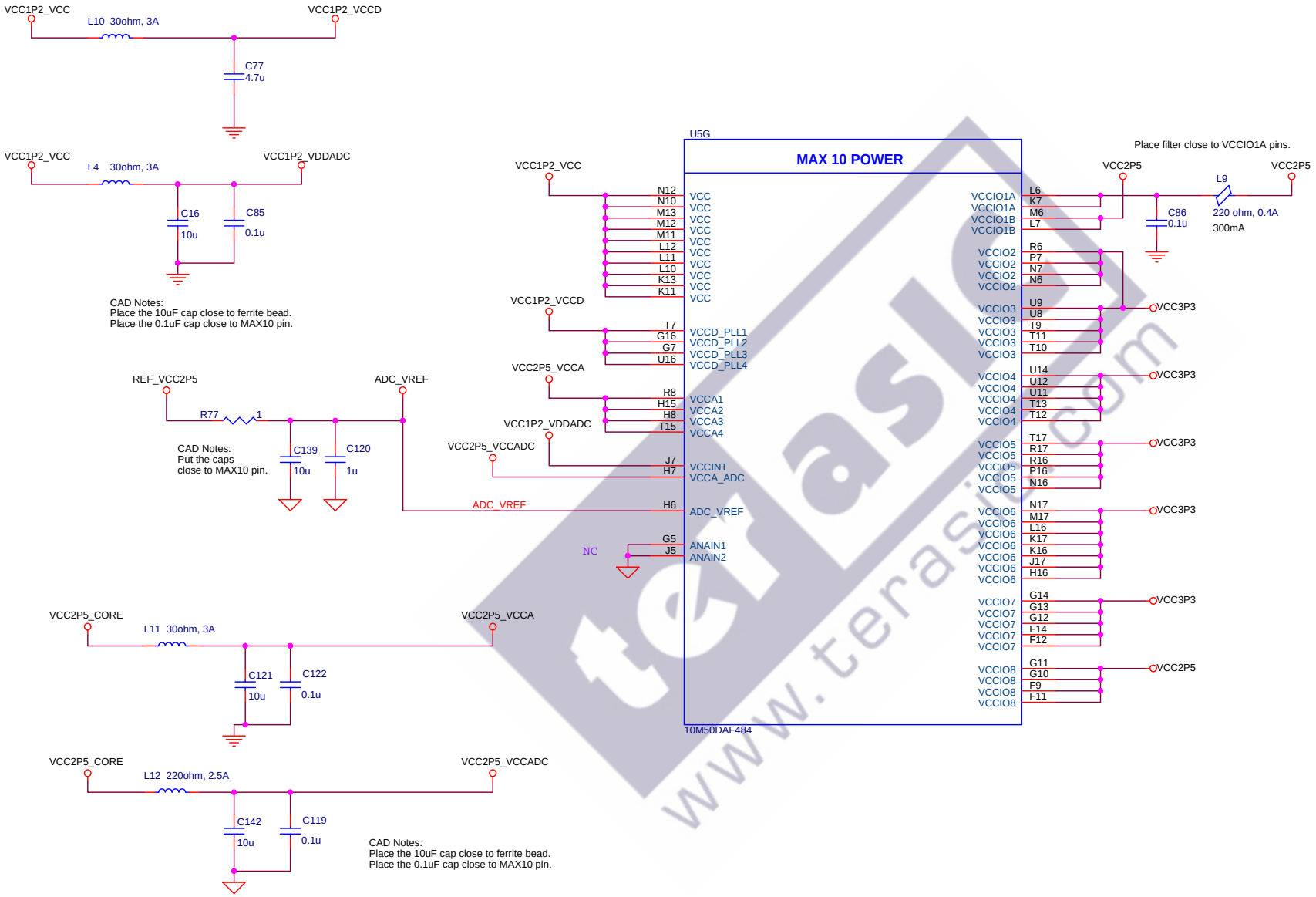
MAX10 Power



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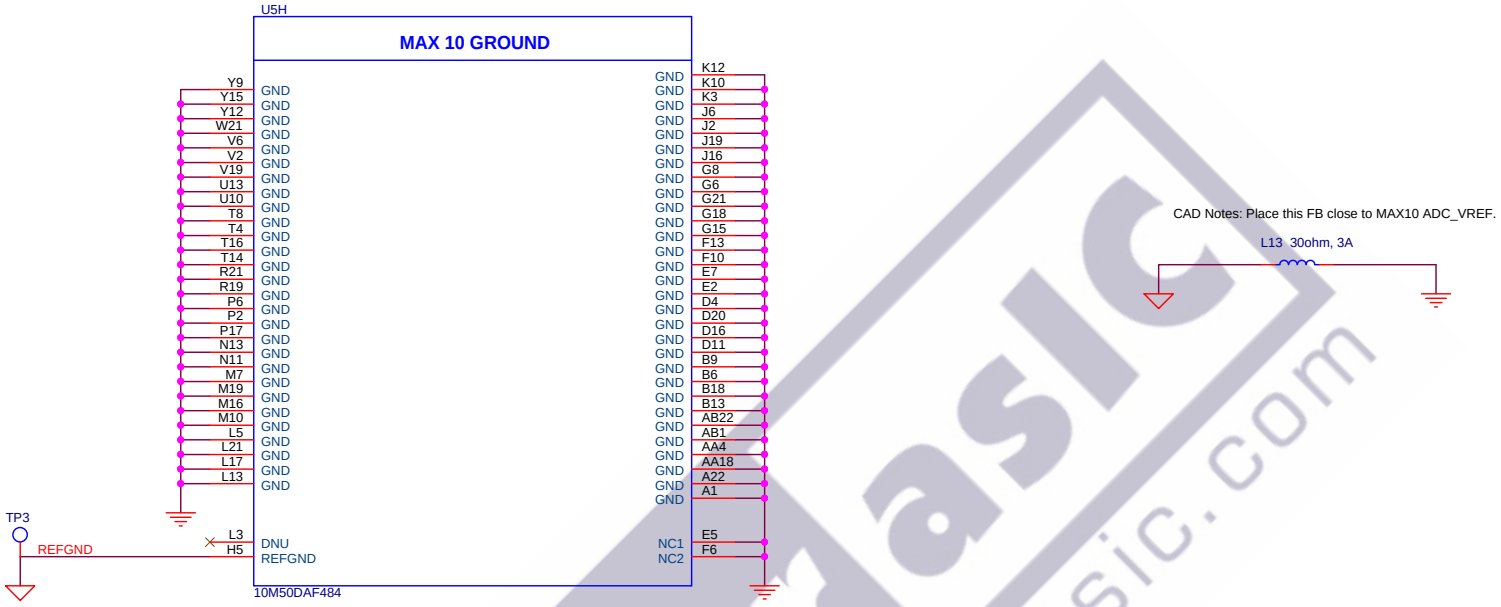
MAX10 Ground



CAD Notes: Place this FB close to MAX10 ADC_VREF.

1. Use REFGND as ground reference.
2. Route analog input signal adjacent to AVSSREF as possible.

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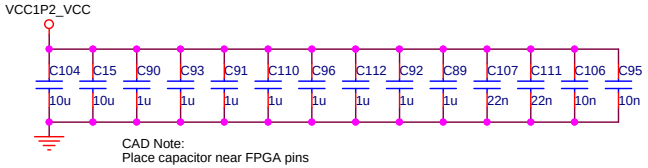
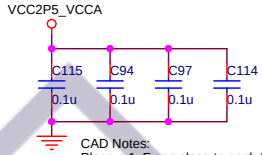
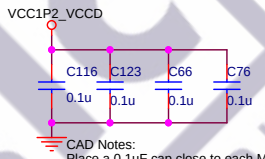
MAX10 Decoupling



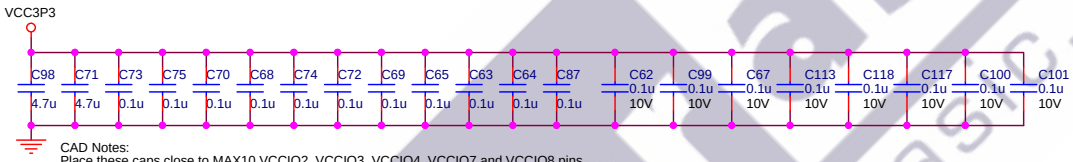
CAD Note:
Place capacitor near FPGA pins



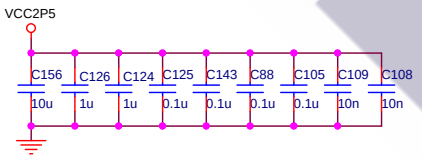
CAD Notes:
Place a 1uF cap close to each MAX10 VCCA pins.



CAD Notes:
Place a 0.1uF cap close to each MAX10 VCCD pins.



CAD Notes:
Place these caps close to MAX10 VCCIO2, VCCIO3, VCCIO4, VCCIO7 and VCCIO8 pins.



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Title
DE10-Lite

Size	Document Number	Rev
B	MAX10 Decoupling	B1

Date: Friday, January 20, 2017 Sheet 11 of 18

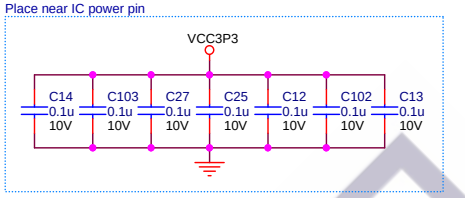
SDRAM

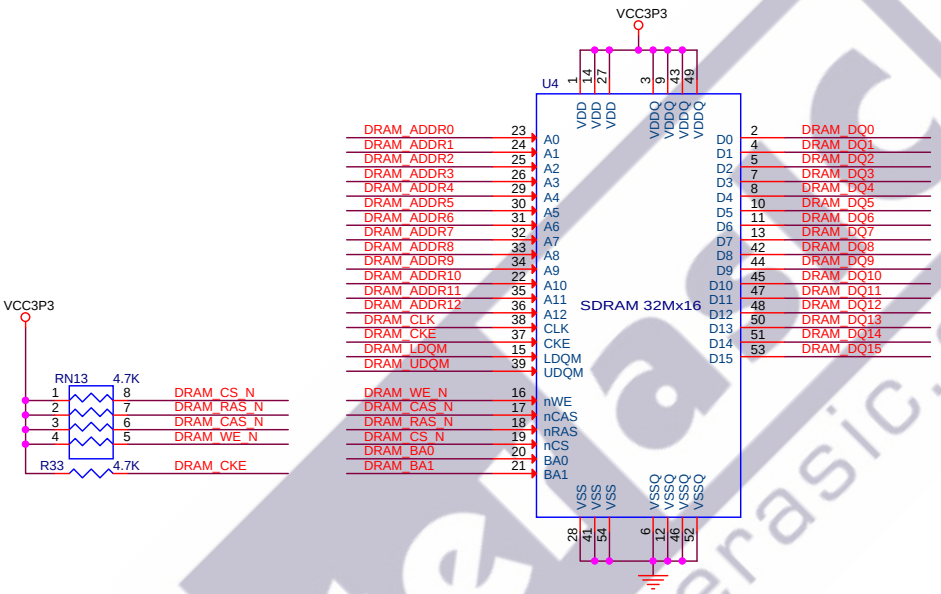
5 DRAM_ADDR[12..0]
5 DRAM_DQ[15..0]

7 DRAM_CLK
5 DRAM_CKE
5 DRAM_LDQM
5 DRAM_UDQM

5 DRAM_WE_N
5 DRAM_CAS_N
5 DRAM_RAS_N
5 DRAM_CS_N
5 DRAM_BA0
5 DRAM_BA1

CAD Note:
Place near IC power pin





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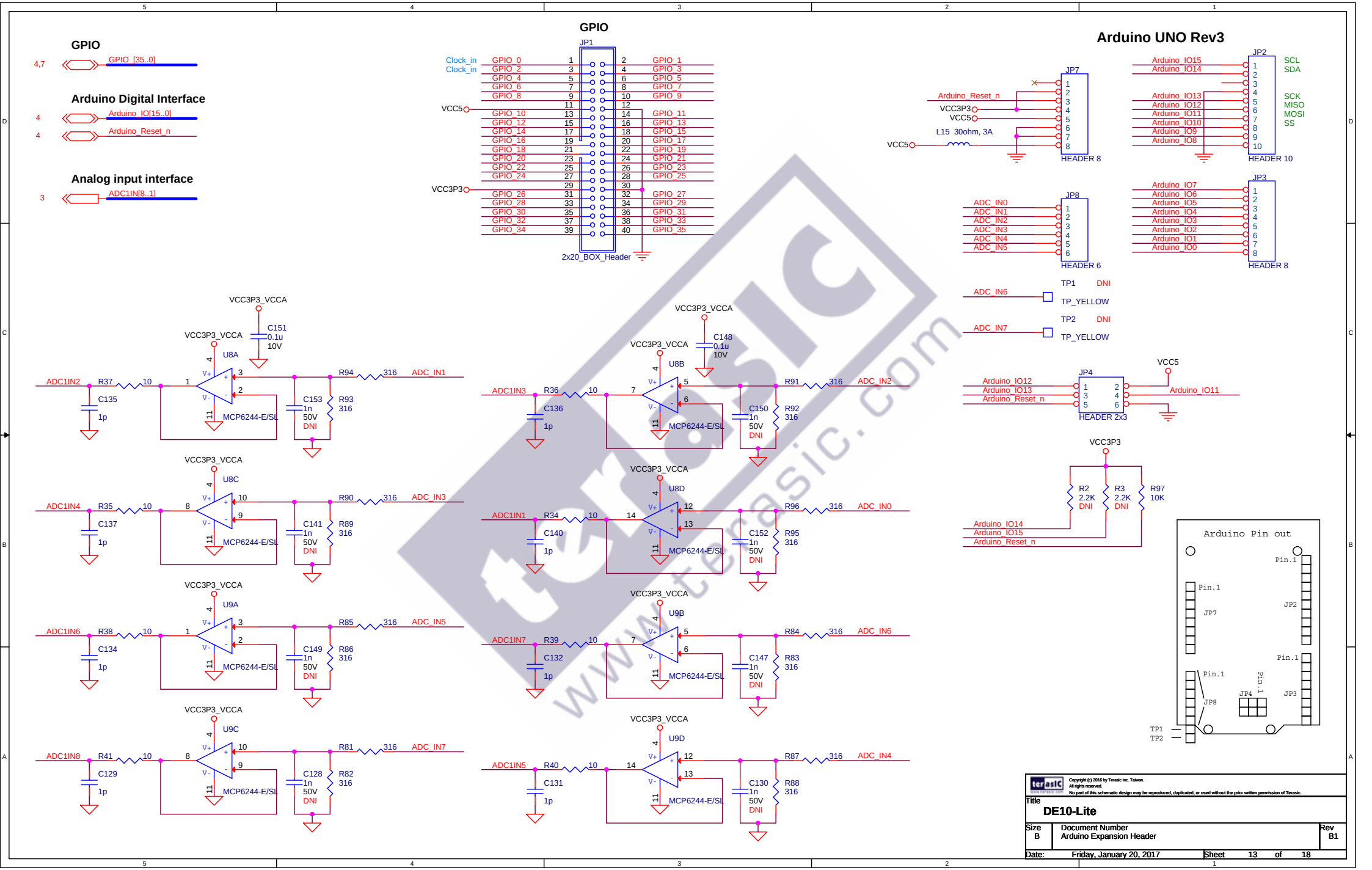
Title: **DE10-Lite**

Size	Document Number	Rev
B	SDRAM	B1

Date: Friday, January 20, 2017 Sheet 12 of 18


GPIO
4,7
GPIO_[35..0]
Arduino Digital Interface
4
Arduino_IO[15..0]
4
Arduino_Reset_n
Analog input interface
3
ADC1IN[8..1]
GPIO
JP1
Clock_in
Clock_in
GPIO_0
GPIO_2
GPIO_4
GPIO_6
GPIO_8
GPIO_1
GPIO_3
GPIO_5
GPIO_7
GPIO_9
VCC5
GPIO_10
GPIO_12
GPIO_14
GPIO_16
GPIO_18
GPIO_20
GPIO_22
GPIO_24
GPIO_11
GPIO_13
GPIO_15
GPIO_17
GPIO_19
GPIO_21
GPIO_23
GPIO_25
VCC3P3
GPIO_26
GPIO_28
GPIO_30
GPIO_32
GPIO_34
GPIO_27
GPIO_29
GPIO_31
GPIO_33
GPIO_35
2x20_BOX_Header
Arduino UNO Rev3
JP7
Arduino_Reset_n
VCC3P3
VCC5
L15 30ohm, 3A
VCC5
HEADER 8
JP2
Arduino_IO15
Arduino_IO14
Arduino_IO13
Arduino_IO12
Arduino_IO11
Arduino_IO10
Arduino_IO9
Arduino_IO8
SCL
SDA
SCK
MISO
MOSI
SS
HEADER 10
JP8
ADC_IN0
ADC_IN1
ADC_IN2
ADC_IN3
ADC_IN4
ADC_IN5
HEADER 6
JP3
Arduino_IO7
Arduino_IO6
Arduino_IO5
Arduino_IO4
Arduino_IO3
Arduino_IO2
Arduino_IO1
Arduino_IO0
HEADER 8
ADC_IN6
TP1 DNI
TP_YELLOW
ADC_IN7
TP2 DNI
TP_YELLOW
VCC5
JP4
Arduino_IO12
Arduino_IO13
Arduino_Reset_n
Arduino_IO11
HEADER 2x3
VCC3P3
R2 2.2K DNI
R3 2.2K DNI
R97 10K
Arduino_IO14
Arduino_IO15
Arduino_Reset_n
Arduino Pin out
VCC3P3_VCCA
C151 0.1u 10V
U8A
ADC1IN2
R37 10
C135 1p
MCP6244-E/SL
C153 1n 50V DNI
R93 316
R94 316
ADC_IN1
U8B
ADC1IN3
R36 10
C136 1p
C148 0.1u 10V
C150 1n 50V DNI
R92 316
R91 316
ADC_IN2
U8C
ADC1IN4
R35 10
C137 1p
C141 1n 50V DNI
R89 316
R90 316
ADC_IN3
U8D
ADC1IN1
R34 10
C140 1p
C152 1n 50V DNI
R95 316
R96 316
ADC_IN0
U9A
ADC1IN6
R38 10
C134 1p
C149 1n 50V DNI
R86 316
R85 316
ADC_IN5
U9B
ADC1IN7
R39 10
C132 1p
C147 1n 50V DNI
R83 316
R84 316
ADC_IN6
U9C
ADC1IN8
R41 10
C129 1p
C128 1n 50V DNI
R82 316
R81 316
ADC_IN7
U9D
ADC1IN5
R40 10
C131 1p
C130 1n 50V DNI
R88 316
R87 316
ADC_IN4
MCP6244-E/SL
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Title
DE10-Lite
Size B
Document Number
Arduino Expansion Header
Rev B1
Date: Friday, January 20, 2017
Sheet 13 of 18

User IO, 7-Seg, LED

SWITCH

5 SW[9..0]

KEY

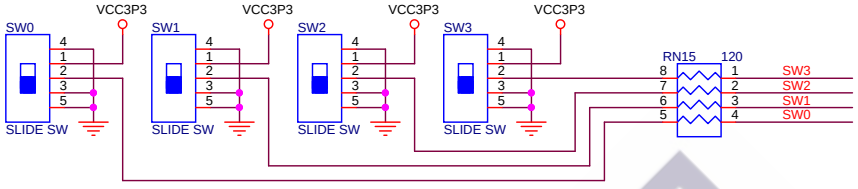
5 KEY[1..0]

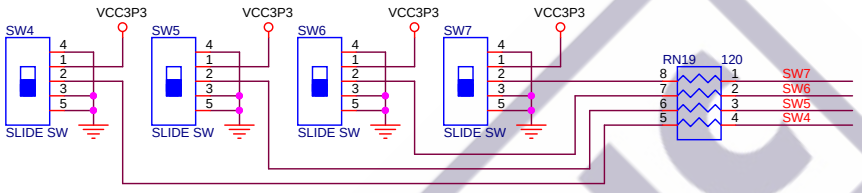
LED

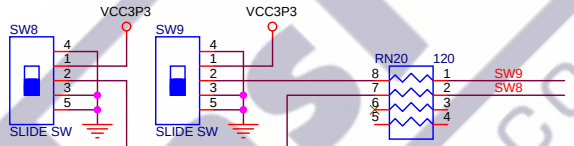
5 LEDR[9..0]

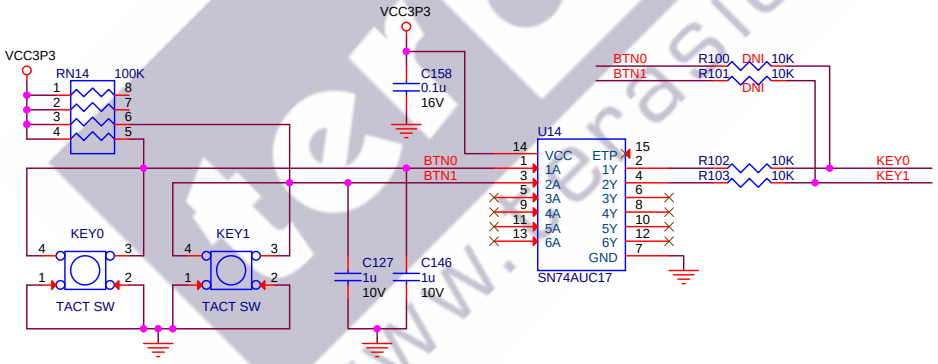
7-segment Display

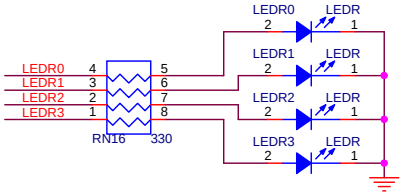
6 HEX0[7..0]
6 HEX1[7..0]
6 HEX2[7..0]
6 HEX3[7..0]
6 HEX4[7..0]
6 HEX5[7..0]

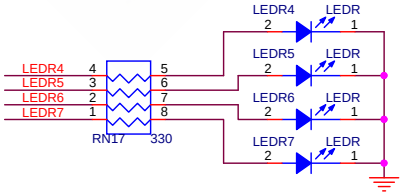


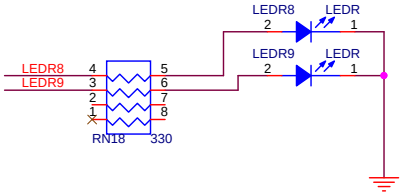


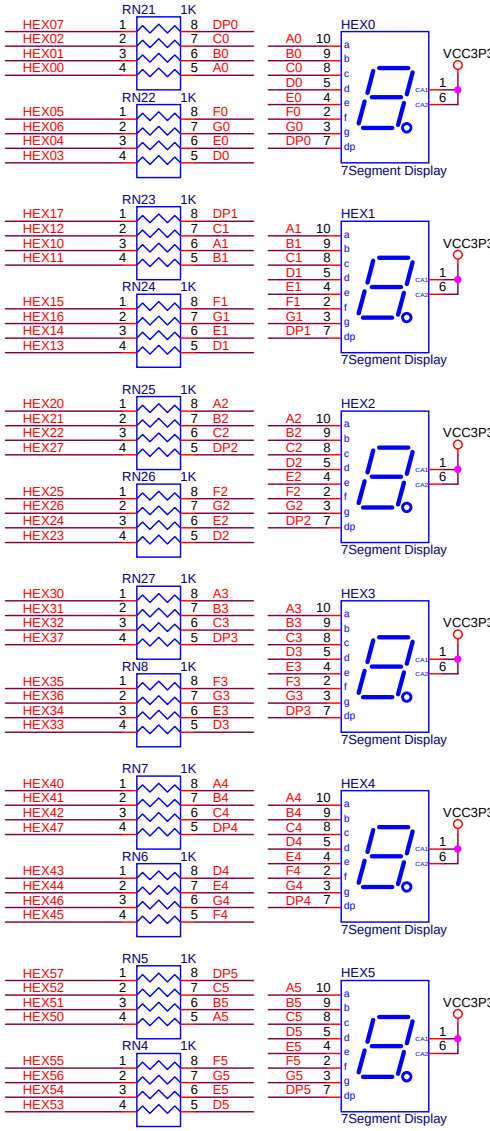












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Title: **DE10-Lite**

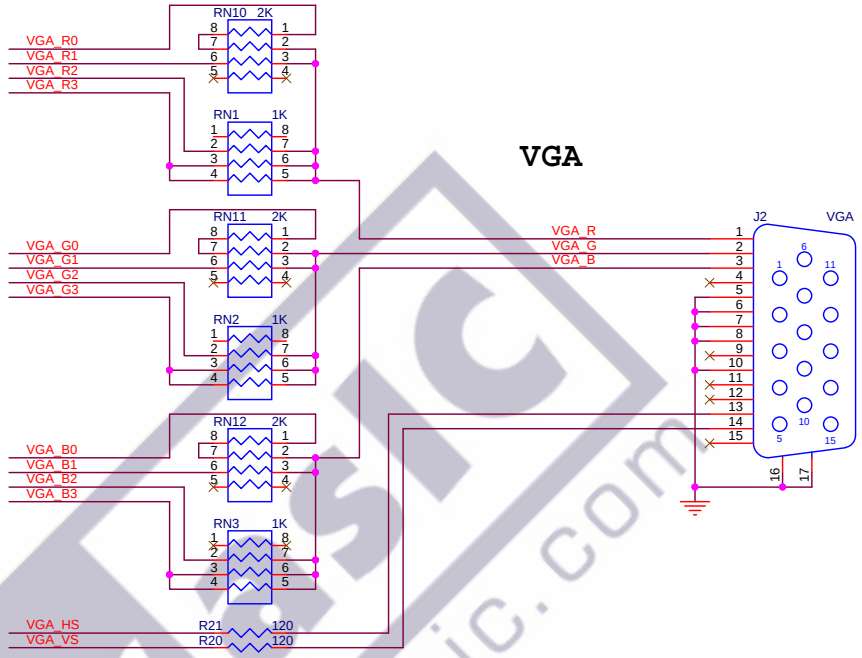
Size	Document Number	Rev
B	LED, 7'Segment, User I/O	B1

Date: Friday, January 20, 2017 Sheet 14 of 18

VGA and Accelerometer

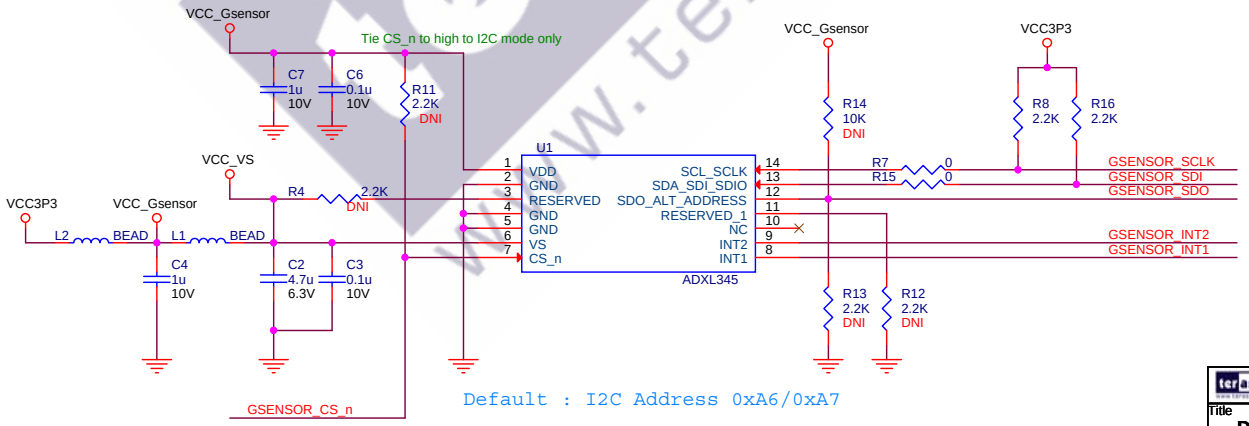
VGA

3 VGA_R[3..0]
3 VGA_G[3..0]
3 VGA_B[3..0]
3 VGA_HS
3 VGA_VS



Digital Accelerometer

4 GSENSOR_SDI
4 GSENSOR_SCLK
4 GSENSOR_INT1
4 GSENSOR_INT2
4 GSENSOR_CS_n
4 GSENSOR_SDO



Default : I2C Address 0xA6/0xA7

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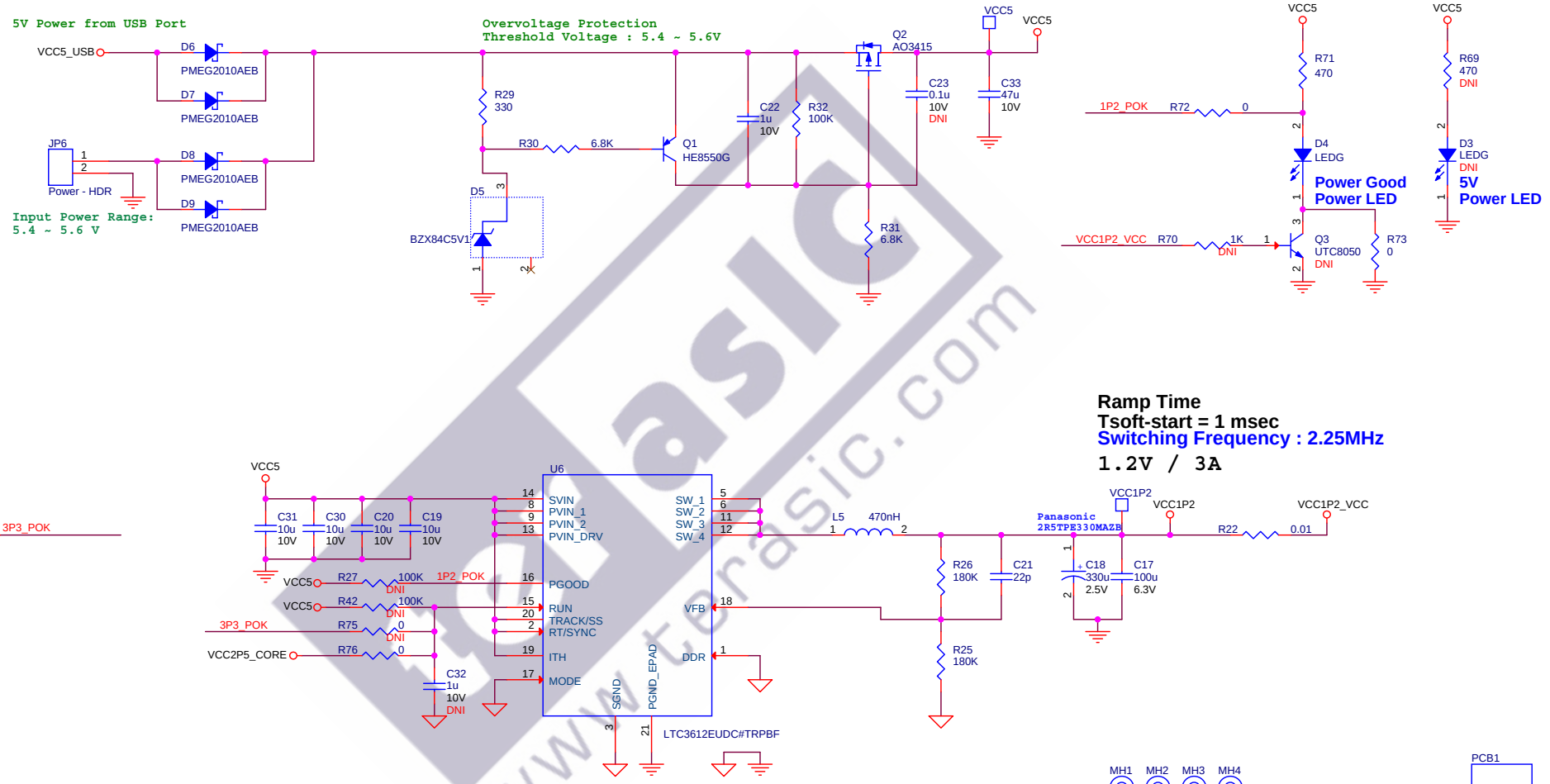
Title: DE10-Lite		
Size: B	Document Number: VGA and Accelerometer	Rev: B1
Date: Friday, January 20, 2017	Sheet 15 of 18	

Power - 5V_DCIN / 1.2V

Power up Sequence:
VCC5--->
VCC2P5, VCC3P3 --->
VCC1P2_VCC



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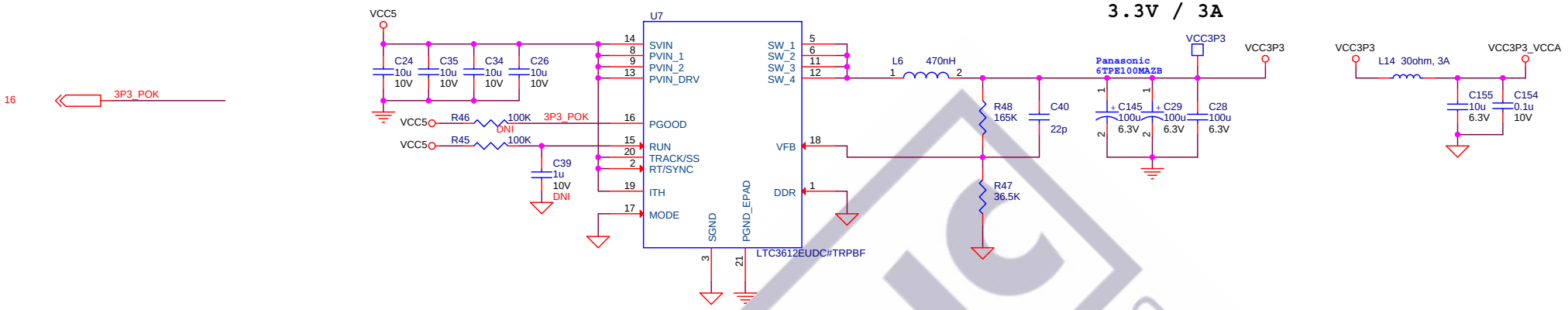
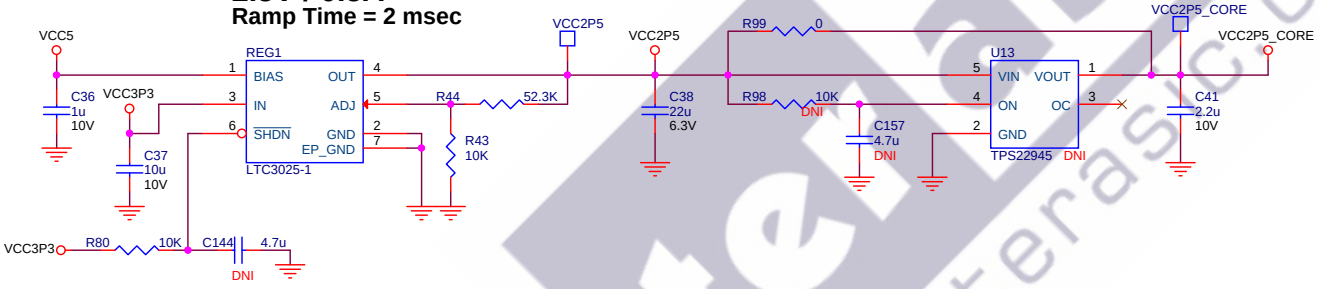
Title	DE10-Lite	
Size B	Document Number Power - 12V, 5V	Rev B1
Date: Friday, January 20, 2017	Sheet 16 of 18	

Power - 3.3V / 2.5V

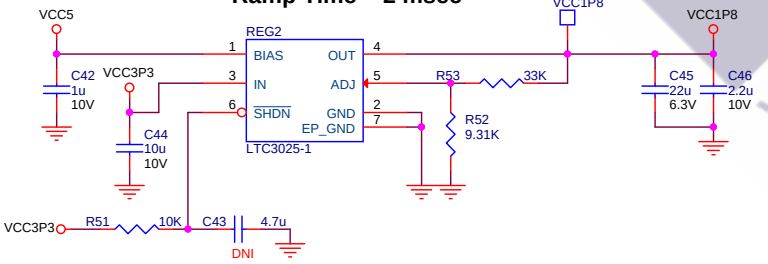
Ramp Time
Tsoft-start = 1 msec
Switching Frequency : 2.25MHz
3.3V / 3A



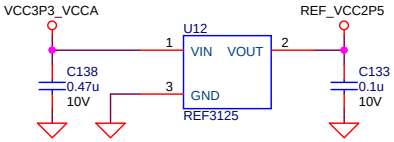
2.5V / 0.5A
Ramp Time = 2 msec



1.8V / 0.5A
Ramp Time = 2 msec



Voltage Reference



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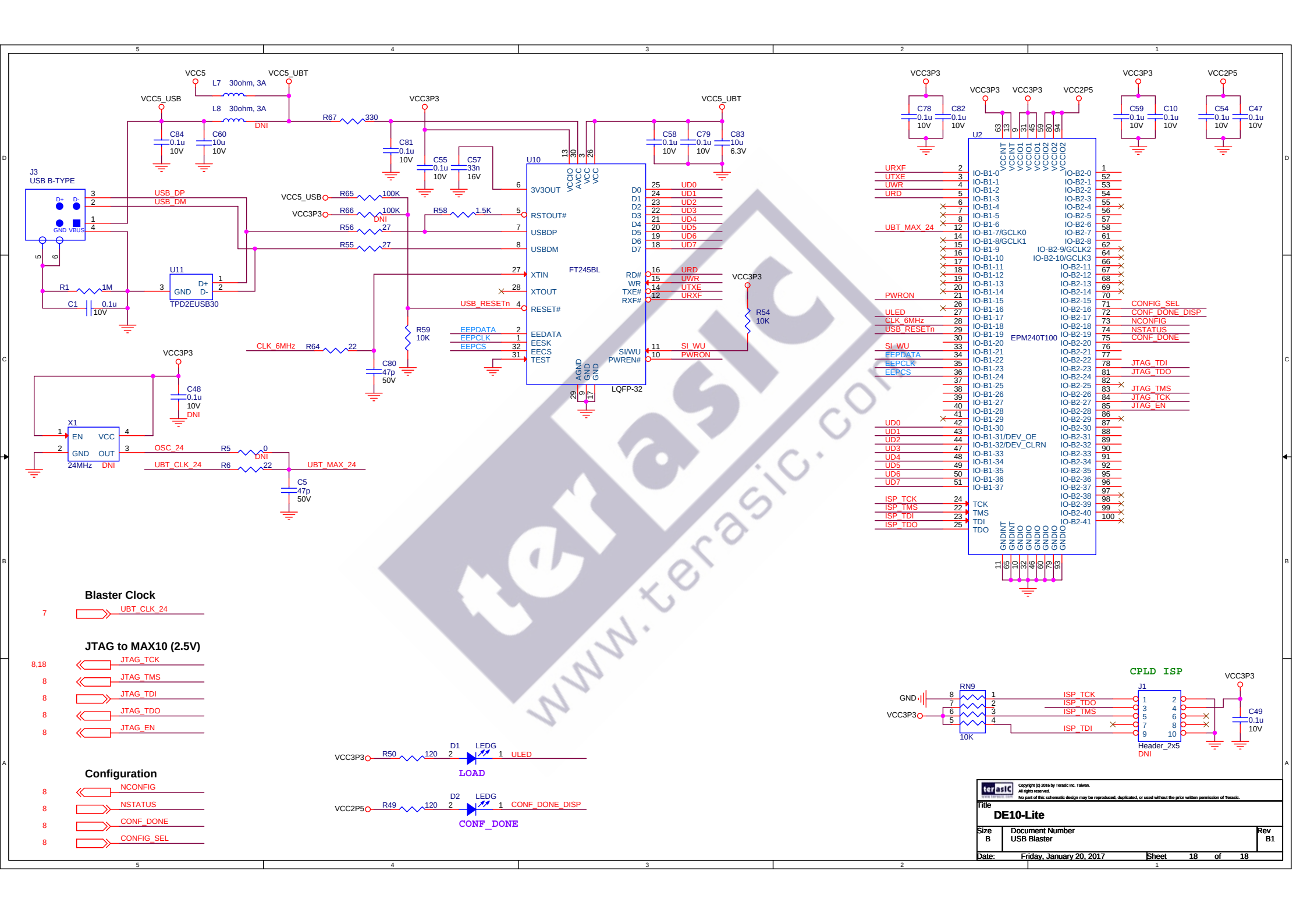
Title: DE10-Lite		
Size: B	Document Number: Power - 1.8V, 2.5V, 3.3V	Rev: B1
Date: Friday, January 20, 2017	Sheet 17 of 18	


VCC5
VCC5_UBT
L7 30ohm, 3A
VCC5_USB
L8 30ohm, 3A
DNI
R67 330
VCC3P3
C84 0.1u 10V
C60 10u 10V
C81 0.1u 10V
C55 0.1u 10V
C57 33n 16V
C58 0.1u 10V
C79 0.1u 10V
C83 10u 6.3V
U10
J3
USB B-TYPE
USB_DP
USB_DM
R65 100K
R66 100K DNI
R58 1.5K
R56 27
R55 27
U11
TPD2EUSB30
R1 1M
C1 0.1u 10V
3V3OUT
RSTOUT#
USBDP
USBDM
XTIN
XTOUT
RESET#
EEDATA
EESK
EECS
TEST
FT245BL
LQFP-32
D0 UD0
D1 UD1
D2 UD2
D3 UD3
D4 UD4
D5 UD5
D6 UD6
D7 UD7
RD# URD
WR UWR
TXE# UTXE
RXF# URXF
SI/WU SI_WU
PWREN# PWRON
USB_RESETn
EEPDATA
EEPCLK
EEPCS
R54 10K
R59 10K
CLK_6MHz R64 22
C80 47p 50V
X1
24MHz DNI
C48 0.1u 10V DNI
OSC_24
R5 0 DNI
UBT_CLK_24
R6 22
UBT_MAX_24
C5 47p 50V
U2
EPM240T100
URXF
UTXE
UWR
URD
UBT_MAX_24
PWRON
ULED
CLK_6MHz
USB_RESETn
SI_WU
EEPDATA
EEPCLK
EEPCS
UD0
UD1
UD2
UD3
UD4
UD5
UD6
UD7
ISP_TCK
ISP_TMS
ISP_TDI
ISP_TDO
CONFIG_SEL
CONF_DONE_DISP
NCONFIG
NSTATUS
CONF_DONE
JTAG_TDI
JTAG_TDO
JTAG_TMS
JTAG_TCK
JTAG_EN
VCC3P3
VCC2P5
C78 0.1u 10V
C82 0.1u 10V
C59 0.1u 10V
C10 0.1u 10V
C54 0.1u 10V
C47 0.1u 10V
Blaster Clock
UBT_CLK_24
JTAG to MAX10 (2.5V)
JTAG_TCK
JTAG_TMS
JTAG_TDI
JTAG_TDO
JTAG_EN
Configuration
NCONFIG
NSTATUS
CONF_DONE
CONFIG_SEL
R50 120
D1 LEDG
ULED
LOAD
R49 120
D2 LEDG
CONF_DONE_DISP
CONF_DONE
CPLD ISP
RN9 10K
J1
Header_2x5
DNI
C49 0.1u 10V
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Title
DE10-Lite
Size B
Document Number
USB Blaster
Rev B1
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