CC1310 RF

VDDS Decoupling Capacitors

CC1310_VDD
FL1
2 [BLM18HE152SN1] 1

VDDS
Pin 13 Pin 22 Pin 44 Pin 34

C3 100nF
C4 100nF
C5 100nF
C6 22uF
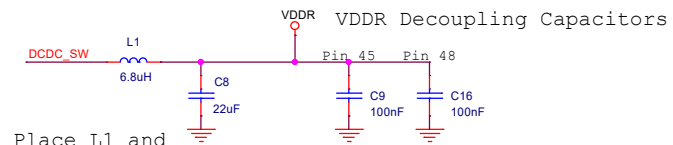C7 100nF

VDDR Decoupling Capacitors

VDDR
DCDC_SW
L1 6.8uH
Pin 45 Pin 48

C8 22uF
C9 100nF
C16 100nF

Place L1 and
C8 close to pin 33

VDDS

R1 100k

CC1310_RESET

C20 100nF

U1A

CC1310_TMS — 24 — JTAG_TMSC
CC1310_TCK — 25 — JTAG_TCKC
— 35 — RESET_N

DCDC_SW — 33 — DCDC_SW

4 — X32K_Q1
5 — X32K_Q2

Y1 32.768kHz
C17 12pF
C18 12pF
C19 1uF

23 — DCOUPL
49 — VSS

CC1310F128RGZ

VDDS
VDDR

13 — VDDS2
22 — VDDS3
44 — VDDS
34 — VDDS_DCDC
45 — VDDR
48 — VDDR

1 — RF_P
2 — RF_N
3 — RX_TX

46 — X24M_N
47 — X24M_P

TR1
0850BM14E0016

4 — BP_RF_P
5 — GND
6 — GND

3 — BP_RF_N
2 — RX/TX
1 — UBP

C15 100pF

CC1190_RFIO

Y2 24MHz
1   3
2   4

CC1190 RF

CC1310_VDD

L163 11nH

C216 220pF
C217 10uF

R153 DNM

CC1190_RFIO

FL2
2 5
3 4
1 6
B39921B3588U410

L111 10nH

C111 0.8pF

R154 0
R155 DNM
R156 DNM
C218 0

C219 0

R141 3.3k

L131 1.5nH
R151 47
L161 15nH

C131 15pF

C161 27pF

CC1190_VDD

U11
11 PA_IN   VDD_LNA   13
                 VDD_PA2   15
                 VDD_PA1   16
             PA_OUT   2
10 LNA_OUT
14 BIAS   TR_SW   4
1   GND
3   GND   LNA_IN   5
9   GND
12 GND   PA_EN   8
17 GND   LNA_EN   7
                 HGM   6
CC1190

C27 47pF
C28 1nF
C29 1uF

L21 22nH

L25 DNM
C210 DNM

R66 10k
R71 10k
R81 10k

DIO28_CC1190_HGM
DIO29_CC1190_LNA_EN
DIO30_CC1190_PA_EN

C213 12pF

C215 47pF

L26 7.5nH

C214 12pF

C24 DNM

L27 2.9nH

C212 3.3pF

C25 7.5pF

L24 9.1nH

A2
A1 DNM
A3 1pF

R157 DNM

P11 MM5829-2700
1   2
M1 M2

R13 0

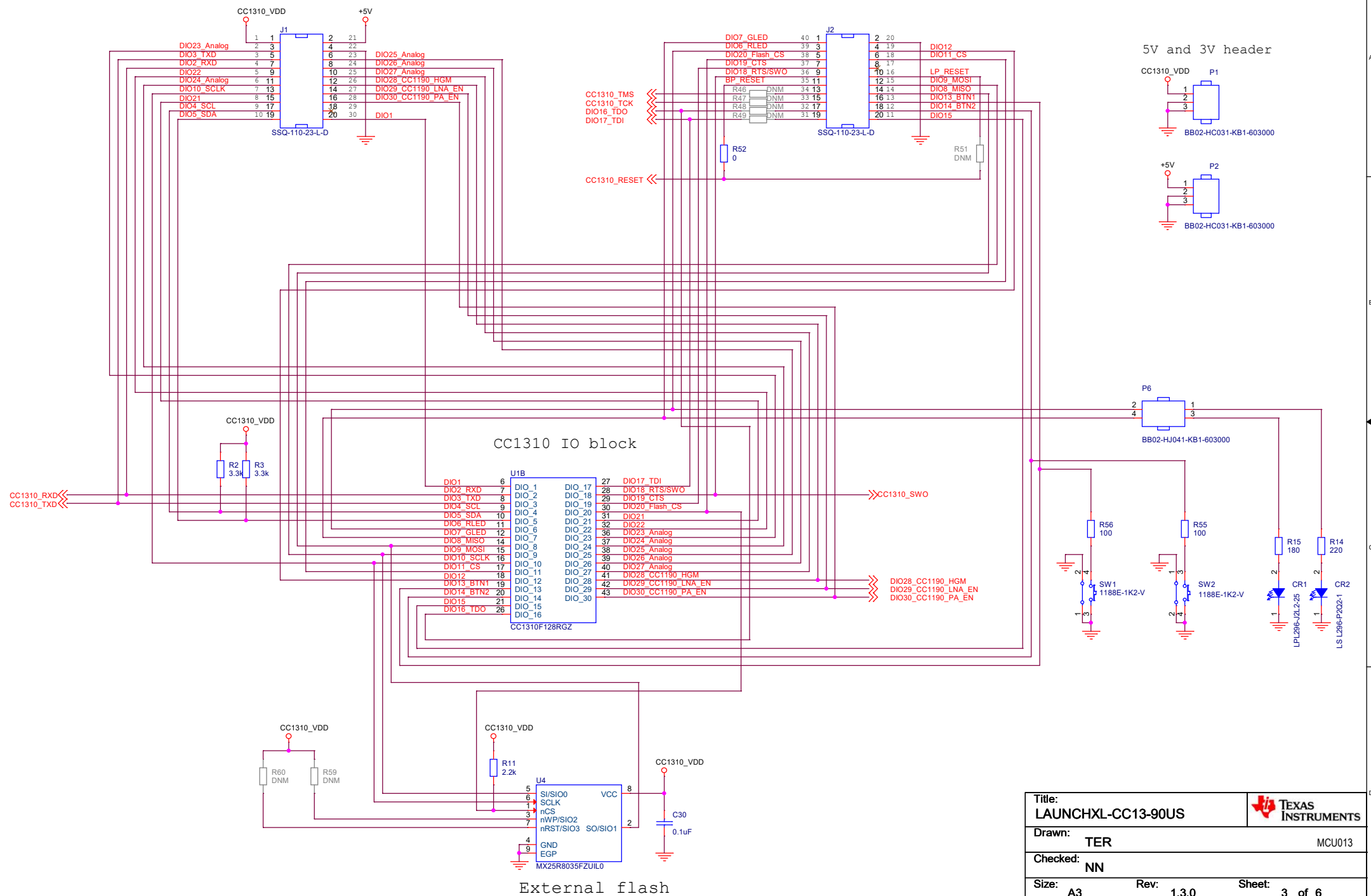P12 142-0721-88
1
M1 M2

R158 DNM

ANT1
868MHz/2440MHz

To use the SMA connector,
remove A2 and mount a 0 ohm resistor for R158

To use the JSC connector, remove A2 and R13
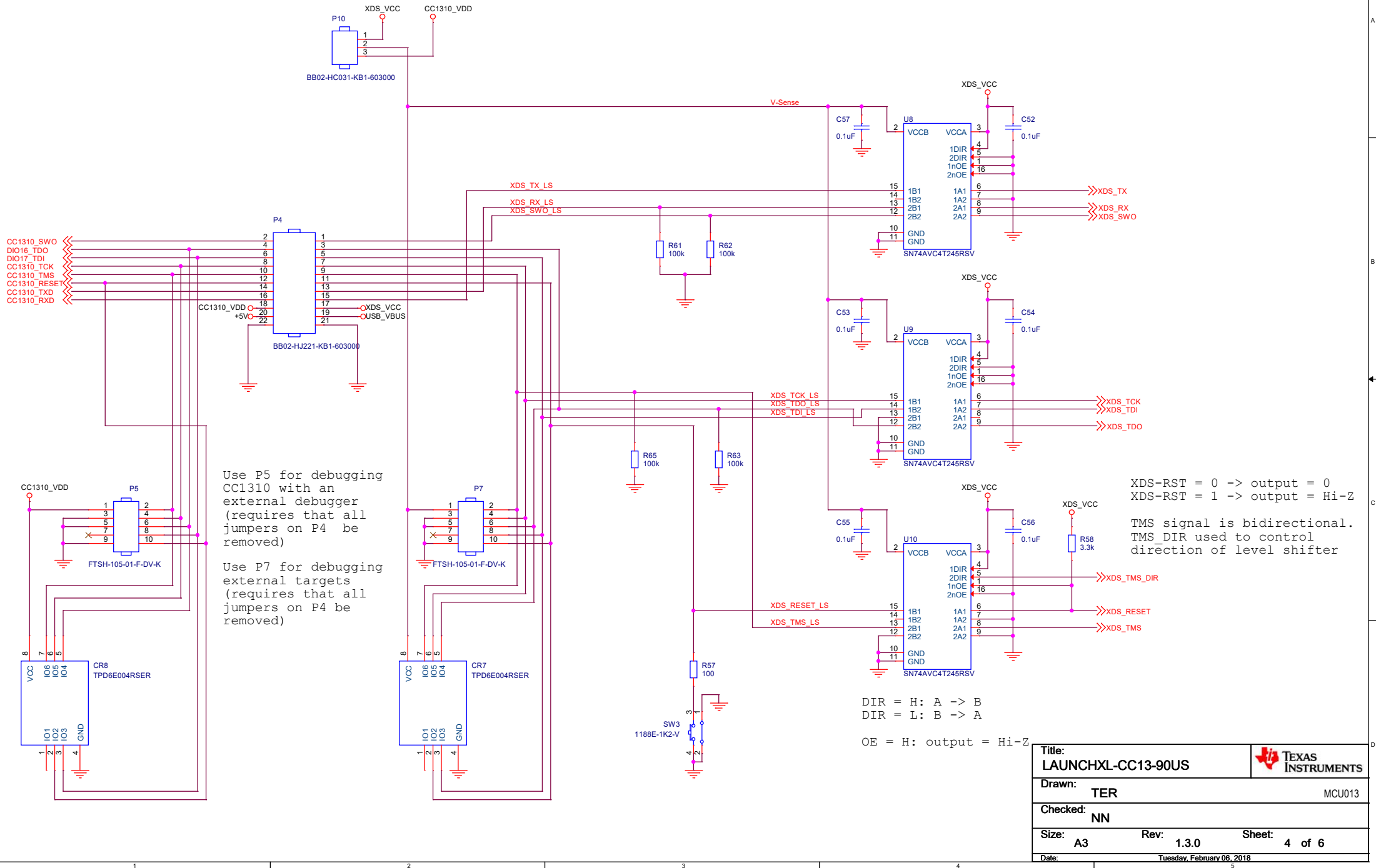and mount a 0 ohm resistor for R157 and R158
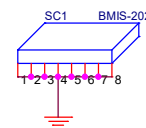
SC1   BMIS-202
1 2 3 4 5 6 7 8

BoosterPack Headers and Peripherals

J1 (SSQ-110-23-L-D)

CC1310_VDD +5V

DIO23_Analog	2 3	4 22
DIO3_TXD	3 5	6 23 DIO25_Analog
DIO2_RXD	4 7	8 24 DIO26_Analog
DIO22	5 9	10 25 DIO27_Analog
DIO24_Analog	6 11	12 26 DIO28_CC1190_HGM
DIO10_SCLK	7 13	14 27 DIO29_CC1190_LNA_EN
DIO21	8 15	16 28 DIO30_CC1190_PA_EN
DIO4_SCL	9 17	18 29
DIO5_SDA	10 19	20 30 DIO1

1 1 2 21

J2 (SSQ-110-23-L-D)

DIO7_GLED	40 1	2 20
DIO6_RLED	39 3	4 19 DIO12
DIO20_Flash_CS	38 5	6 18 DIO11_CS
DIO19_CTS	37 7	8 17
DIO18_RTS/SWO	36 9	10 16 LP_RESET
BP_RESET	35 11	12 15 DIO9_MOSI
R46 DNM	34 13	14 14 DIO8_MISO
R47 DNM	33 15	16 13 DIO13_BTN1
R48 DNM	32 17	18 12 DIO14_BTN2
R49 DNM	31 19	20 11 DIO15

CC1310_TMS
CC1310_TCK
DIO16_TDO
DIO17_TDI

R52 0

CC1310_RESET

R51 DNM

5V and 3V header

CC1310_VDD P1

1
2
3

BB02-HC031-KB1-603000

+5V P2

1
2
3

BB02-HC031-KB1-603000

CC1310 IO block

CC1310_VDD

R2 3.3k   R3 3.3k

CC1310_RXD
CC1310_TXD

U1B (CC1310F128RGZ)

DIO1	6	DIO_1	DIO_17	27 DIO17_TDI
DIO2_RXD	7	DIO_2	DIO_18	28 DIO18_RTS/SWO
DIO3_TXD	8	DIO_3	DIO_19	29 DIO19_CTS
DIO4_SCL	9	DIO_4	DIO_20	30 DIO20_Flash_CS
DIO5_SDA	10	DIO_5	DIO_21	31 DIO21
DIO6_RLED	11	DIO_6	DIO_22	32 DIO22
DIO7_GLED	12	DIO_7	DIO_23	36 DIO23_Analog
DIO8_MISO	14	DIO_8	DIO_24	37 DIO24_Analog
DIO9_MOSI	15	DIO_9	DIO_25	38 DIO25_Analog
DIO10_SCLK	16	DIO_10	DIO_26	39 DIO26_Analog
DIO11_CS	17	DIO_11	DIO_27	40 DIO27_Analog
DIO12	18	DIO_12	DIO_28	41 DIO28_CC1190_HGM
DIO13_BTN1	19	DIO_13	DIO_29	42 DIO29_CC1190_LNA_EN
DIO14_BTN2	20	DIO_14	DIO_30	43 DIO30_CC1190_PA_EN
DIO15	21	DIO_15		
DIO16_TDO	26	DIO_16		

CC1310_SWO

DIO28_CC1190_HGM
DIO29_CC1190_LNA_EN
DIO30_CC1190_PA_EN

P6

2   1
4   3

BB02-HJ041-KB1-603000

R56 100   R55 100

R15 180   R14 220

SW1 1188E-1K2-V
SW2 1188E-1K2-V

CR1 LPL296-J2L2-25   CR2 LS L296-P2Q2-1

External flash

CC1310_VDD

R60 DNM   R59 DNM

CC1310_VDD

R11 2.2k

CC1310_VDD

U4 (MX25R8035FZUIL0)

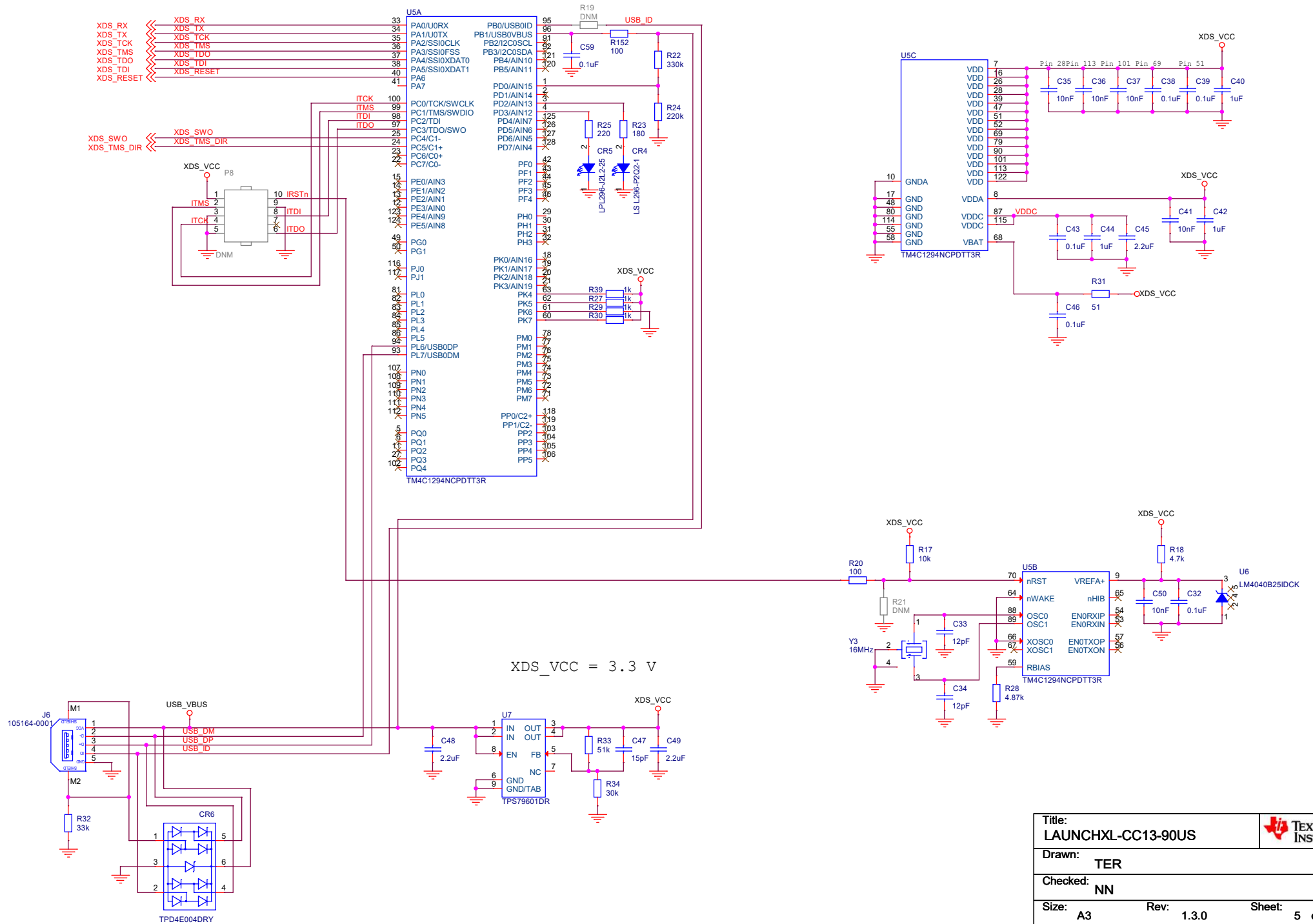|			
SI/SIO0	5	VCC	8
SCLK	6		
nCS	1		
nWP/SIO2	3		
nRST/SIO3	7	SO/SIO1	2
GND	4		
EGP	9		

C30 0.1uF

XDS110 Debugger Interface

P10 selects the voltage source for the level shifters
When powering CC1310 from the XDS supply, connect jumper between pins 1 and 2.
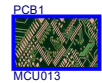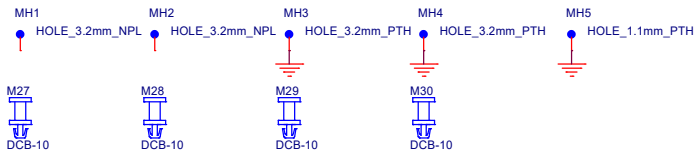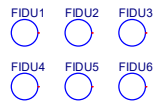When powering CC1310 from the external supply, connect jumper between pins 2 and 3
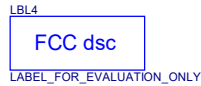
P10
XDS_VCC   CC1310_VDD

1
2
3

BB02-HC031-KB1-603000

V-Sense

C57 0.1uF
C52 0.1uF
XDS_VCC

U8
VCCB   VCCA
1DIR
2DIR
1nOE
2nOE
1B1   1A1
1B2   1A2
2B1   2A1
2B2   2A2
GND
GND
SN74AVC4T245RSV

XDS_TX_LS
XDS_RX_LS
XDS_SWO_LS

XDS_TX
XDS_RX
XDS_SWO

P4

CC1310_SWO
DIO16_TDO
DIO17_TDI
CC1310_TCK
CC1310_TMS
CC1310_RESET
CC1310_TXD
CC1310_RXD

2   1
4   3
6   5
8   7
10 9
12 11
14 13
16 15
18 17
20 19
22 21

CC1310_VDD
+5V

XDS_VCC
USB_VBUS

BB02-HJ221-KB1-603000

R61 100k   R62 100k

C53 0.1uF
C54 0.1uF
XDS_VCC

U9
VCCB   VCCA
1DIR
2DIR
1nOE
2nOE
1B1   1A1
1B2   1A2
2B1   2A1
2B2   2A2
GND
GND
SN74AVC4T245RSV

XDS_TCK_LS
XDS_TDO_LS
XDS_TDI_LS

XDS_TCK
XDS_TDI
XDS_TDO

Use P5 for debugging
CC1310 with an
external debugger
(requires that all
jumpers on P4 be
removed)

Use P7 for debugging
external targets
(requires that all
jumpers on P4 be
removed)

CC1310_VDD

P5
1   2
3   4
5   6
7   8
9   10
FTSH-105-01-F-DV-K

P7
1   2
3   4
5   6
7   8
9   10
FTSH-105-01-F-DV-K

R65 100k   R63 100k

XDS-RST = 0 -> output = 0
XDS-RST = 1 -> output = Hi-Z

TMS signal is bidirectional.
TMS_DIR used to control
direction of level shifter

XDS_VCC

C55 0.1uF
C56 0.1uF
XDS_VCC

R58 3.3k

U10
VCCB   VCCA
1DIR
2DIR
1nOE
2nOE
1B1   1A1
1B2   1A2
2B1   2A1
2B2   2A2
GND
GND
SN74AVC4T245RSV

XDS_RESET_LS
XDS_TMS_LS

XDS_TMS_DIR
XDS_RESET
XDS_TMS

CR8
TPD6E004RSER
VCC
IO6 IO5 IO4
IO1
IO2
IO3
GND

CR7
TPD6E004RSER
VCC
IO6 IO5 IO4
IO1
IO2
IO3
GND

R57 100

SW3
1188E-1K2-V

DIR = H: A -> B
DIR = L: B -> A

OE = H: output = Hi-Z

Title:
LAUNCHXL-CC13-90US

Drawn: TER   MCU013
Checked: NN
Size: A3   Rev: 1.3.0   Sheet: 4 of 6
Date: Tuesday, February 06, 2018

TEXAS INSTRUMENTS

XDS110 Debugger

XDS_RX
XDS_TX
XDS_TCK
XDS_TMS
XDS_TDO
XDS_TDI
XDS_RESET

XDS_SWO
XDS_TMS_DIR

XDS_VCC   P8

ITMS   IRSTn
ITCK   ITDI
       ITDO
DNM

U5A TM4C1294NCPDTT3R

33	PA0/U0RX	PB0/USB0ID	95
34	PA1/U0TX	PB1/USB0VBUS	96
35	PA2/SSI0CLK	PB2/I2C0SCL	91
36	PA3/SSI0FSS	PB3/I2C0SDA	92
37	PA4/SSI0XDAT0	PB4/AIN10	121
38	PA5/SSI0XDAT1	PB5/AIN11	120
40	PA6		
41	PA7	PD0/AIN15	1
100	PC0/TCK/SWCLK	PD1/AIN14	2
99	PC1/TMS/SWDIO	PD2/AIN13	3
98	PC2/TDI	PD3/AIN12	4
97	PC3/TDO/SWO	PD4/AIN7	125
25	PC4/C1-	PD5/AIN6	126
24	PC5/C1+	PD6/AIN5	127
23	PC6/C0+	PD7/AIN4	128
22	PC7/C0-	PF0	42
15	PE0/AIN3	PF1	43
14	PE1/AIN2	PF2	44
13	PE2/AIN1	PF3	45
12	PE3/AIN0	PF4	46
123	PE4/AIN9	PH0	29
124	PE5/AIN8	PH1	30
49	PG0	PH2	31
50	PG1	PH3	32
116	PJ0	PK0/AIN16	18
117	PJ1	PK1/AIN17	19
81	PL0	PK2/AIN18	20
82	PL1	PK3/AIN19	21
83	PL2	PK4	63
84	PL3	PK5	62
85	PL4	PK6	61
86	PL5	PK7	60
94	PL6/USB0DP	PM0	78
93	PL7/USB0DM	PM1	77
107	PN0	PM2	76
108	PN1	PM3	75
109	PN2	PM4	74
110	PN3	PM5	73
111	PN4	PM6	72
112	PN5	PM7	71
5	PQ0	PP0/C2+	118
6	PQ1	PP1/C2-	119
11	PQ2	PP2	303
27	PQ3	PP3	104
102	PQ4	PP4	305
		PP5	106

R19 DNM
C59 0.1uF
R152 100
USB_ID
R22 330k
R24 220k
R25 220
R23 180
CR5 LPL296-J2L2-25
CR4 LS L296-P2Q2-1

R39 1k
R27 1k
R29 1k
R30 1k
XDS_VCC

U5C TM4C1294NCPDTT3R

VDD 7, 16, 26, 28, 39, 47, 51, 52, 69, 79, 90, 101, 113, 122
GNDA 10
GND 17, 48, 80, 114, 55, 58
VDDA 8
VDDC 87, 115 VDDC
VBAT 68

Pin 28 Pin 113 Pin 101 Pin 69 Pin 51
C35 10nF C36 10nF C37 10nF C38 0.1uF C39 0.1uF C40 1uF
XDS_VCC
C43 0.1uF C44 1uF C45 2.2uF C41 10nF C42 1uF
R31
C46 51
0.1uF XDS_VCC

XDS_VCC = 3.3 V

U5B TM4C1294NCPDTT3R

70	nRST	VREFA+	9
64	nWAKE	nHIB	65
88	OSC0	EN0RXIP	54
89	OSC1	EN0RXIN	53
66	XOSC0	EN0TXOP	57
67	XOSC1	EN0TXON	56
59	RBIAS		

R20 100
R17 10k
XDS_VCC
R21 DNM
Y3 16MHz
C33 12pF
C34 12pF
R28 4.87k

R18 4.7k
XDS_VCC
C50 10nF C32 0.1uF
U6 LM4040B25IDCK

J6 105164-0001
M1
M2
USB_VBUS
USB_DM
USB_DP
USB_ID
R32 33k
CR6 TPD4E004DRY

C48 2.2uF

U7 TPS79601DR
IN OUT
IN OUT
EN FB
NC
GND
GND/TAB
R33 51k
C47 15pF
C49 2.2uF
R34 30k
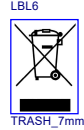XDS_VCC

Title: LAUNCHXL-CC13-90US
Drawn: TER   MCU013
Checked: NN
Size: A3   Rev: 1.3.0   Sheet: 5 of 6
Date: Tuesday, February 06, 2018

TEXAS INSTRUMENTS

PCB_SPEC

LBL1
CE_label

LBL6
TRASH_7mm

LBL4
FCC dsc
LABEL_FOR_EVALUATION_ONLY

LBL5
TEXAS INSTRUMENTS
TI_LOGO

FIDU1 FIDU2 FIDU3

FIDU4 FIDU5 FIDU6

MH1
HOLE_3.2mm_NPL

MH2
HOLE_3.2mm_NPL

MH3
HOLE_3.2mm_PTH

MH4
HOLE_3.2mm_PTH

MH5
HOLE_1.1mm_PTH

M27
DCB-10

M28
DCB-10

M29
DCB-10

M30
DCB-10

PCB1
MCU013

Jumpers to be mounted
on header P4

M13 M14 M15 M16 M17 M18 M19 M20 M21 M22 M23

Jumper to be mounted on P10

M24

Jumpers to be mounted on P6

M25 M26