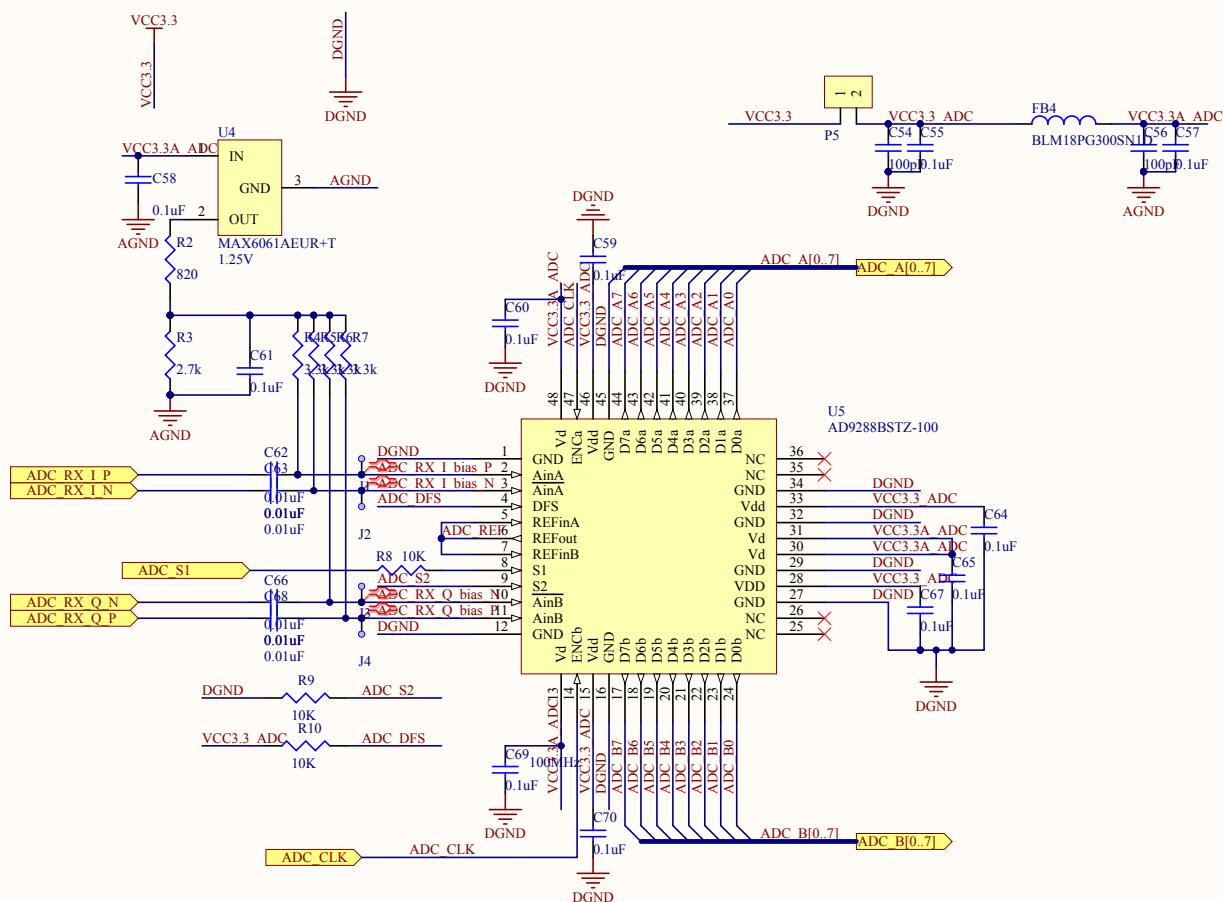


A

B

C

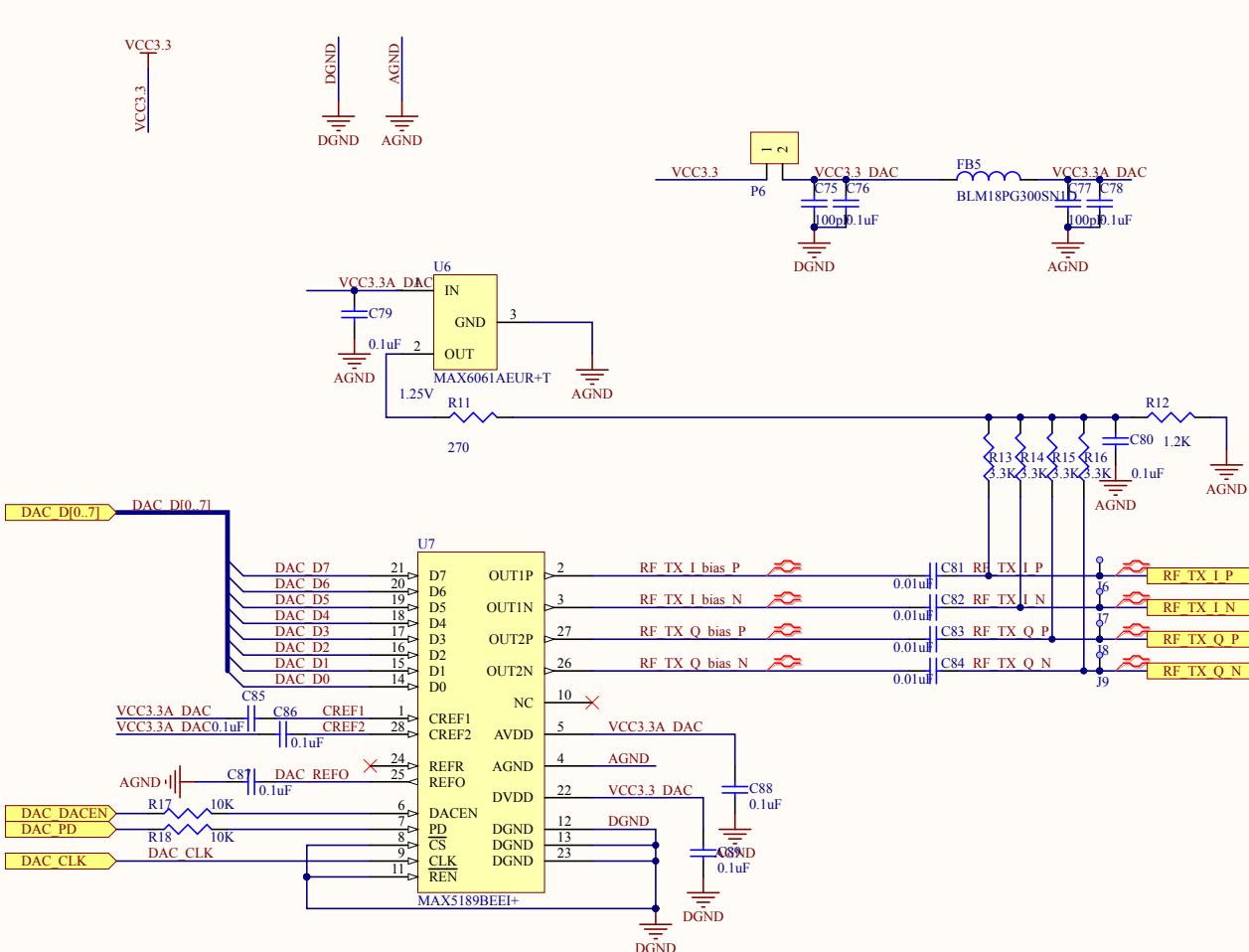
D



Title: ***uSDR schematic***

Title: **uSDR Schematic** Author: **Ye-sheng Kuo** Date: **6/13/2014** File: **ADC\_SchDoc** Revision: **2.0** Sheet **3** of **16**

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Title ***uSDR schematic***

Author: Ye-sheng Kuo

Revision:2.0

Date: 6/13/2014

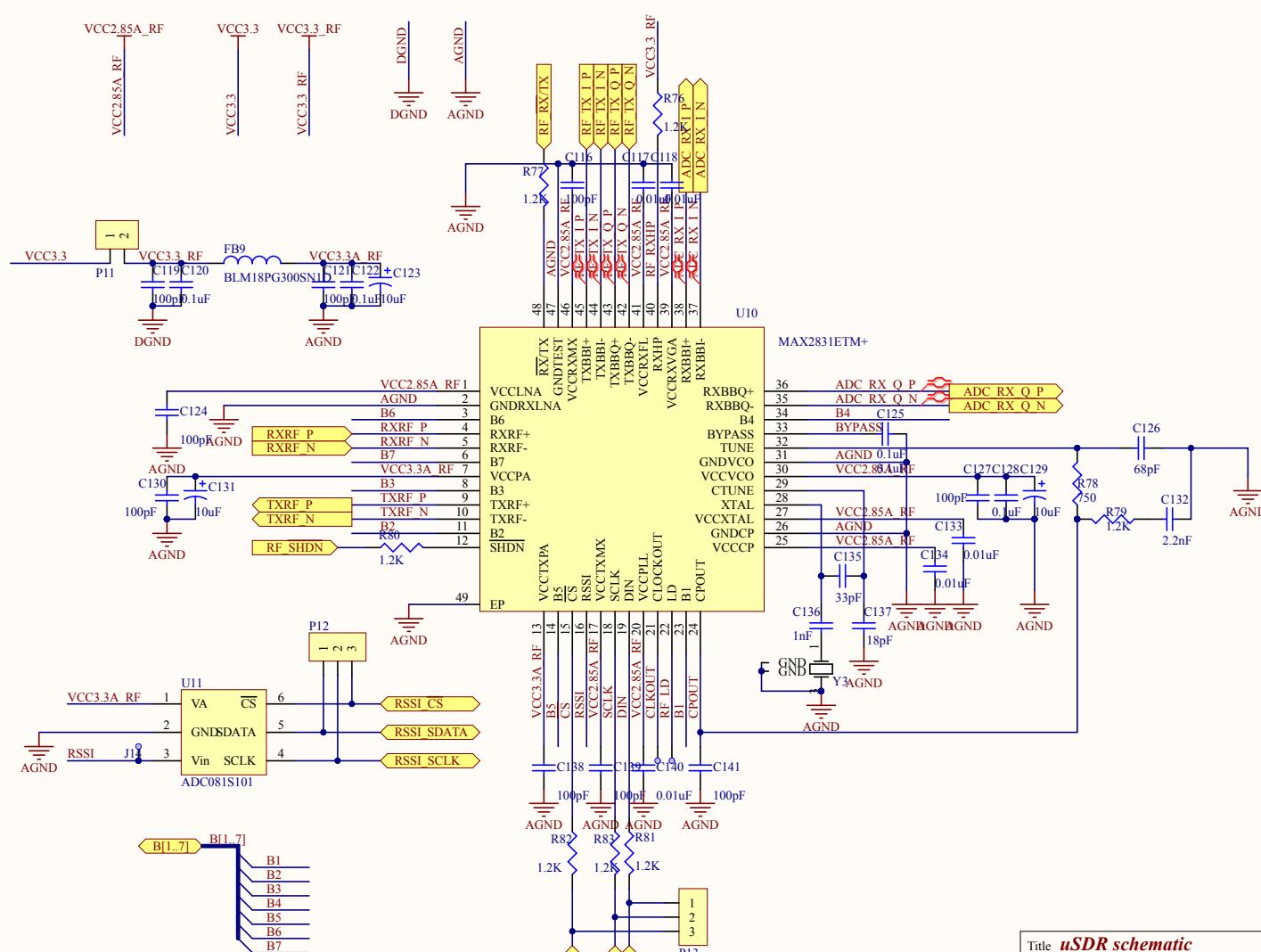
Sheet 4 of 16

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A

Title ***uSDR schematic***

Author: Ye-sheng Kuo

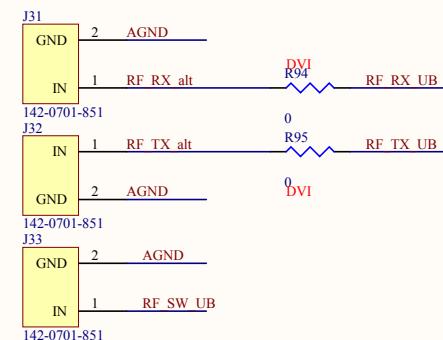
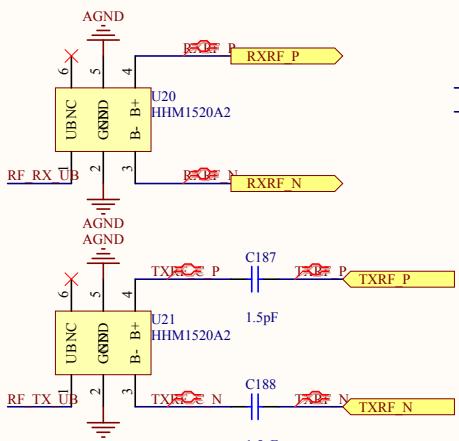
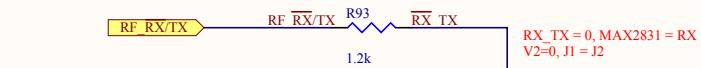
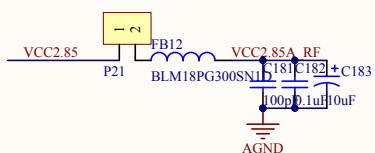
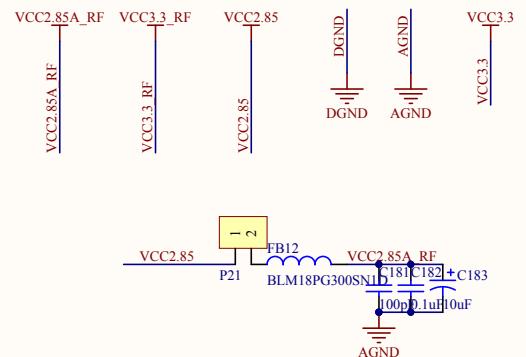
Revision: 2.0

Date: 6/13/2014

Sheet 5 of 16

File: RF.SchDoc

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Title ***uSDR schematic***

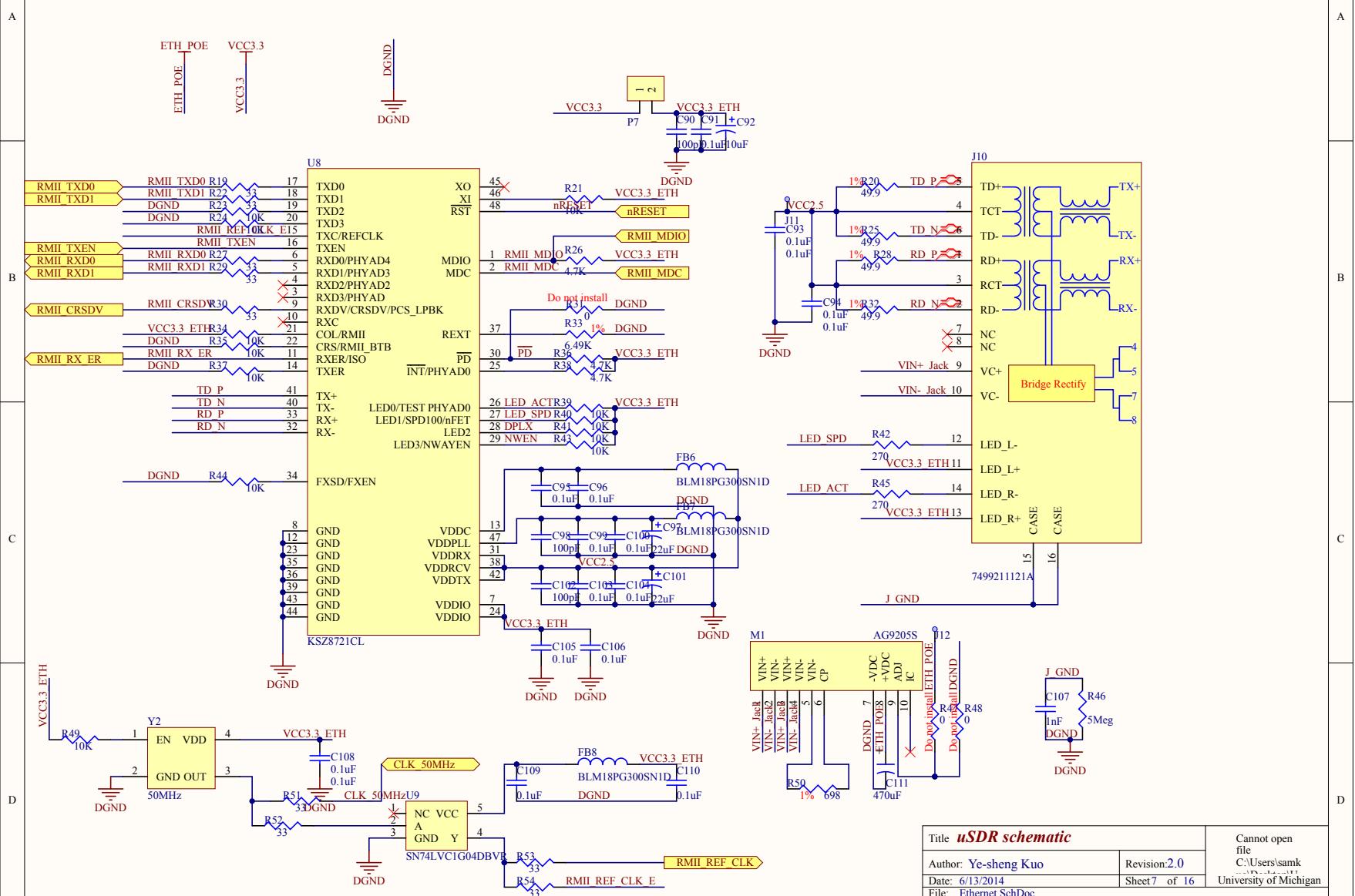
Author: Ye-sheng Kuo

Revision: 2.0

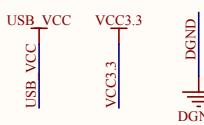
Date: 6/13/2014

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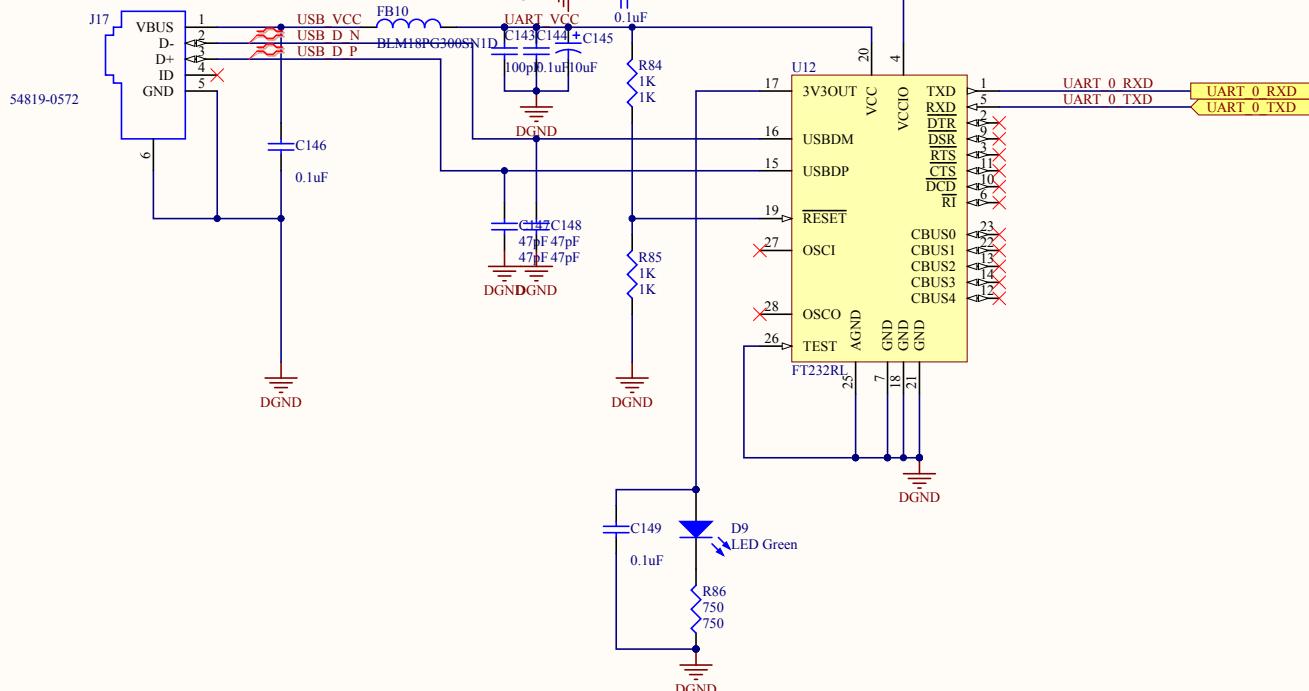
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A



B



C

D

Title ***uSDR schematic***

Author: Ye-sheng Kuo

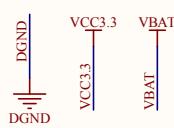
Revision: 2.0

Date: 6/13/2014

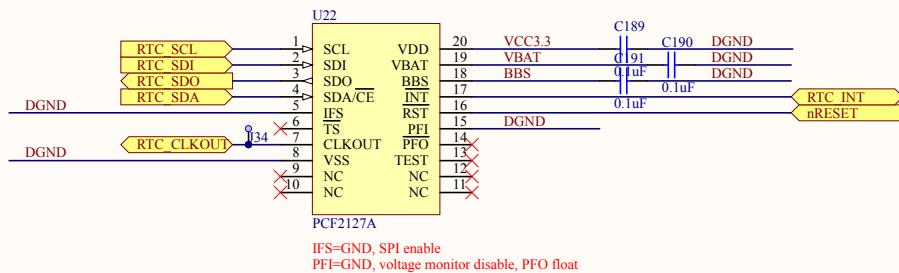
Sheet 8 of 16

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A



B



C

D

### Title *uSDR schematic*

Author: Ye-sheng Kuo

Revision: 2.0

Date: 6/13/2014

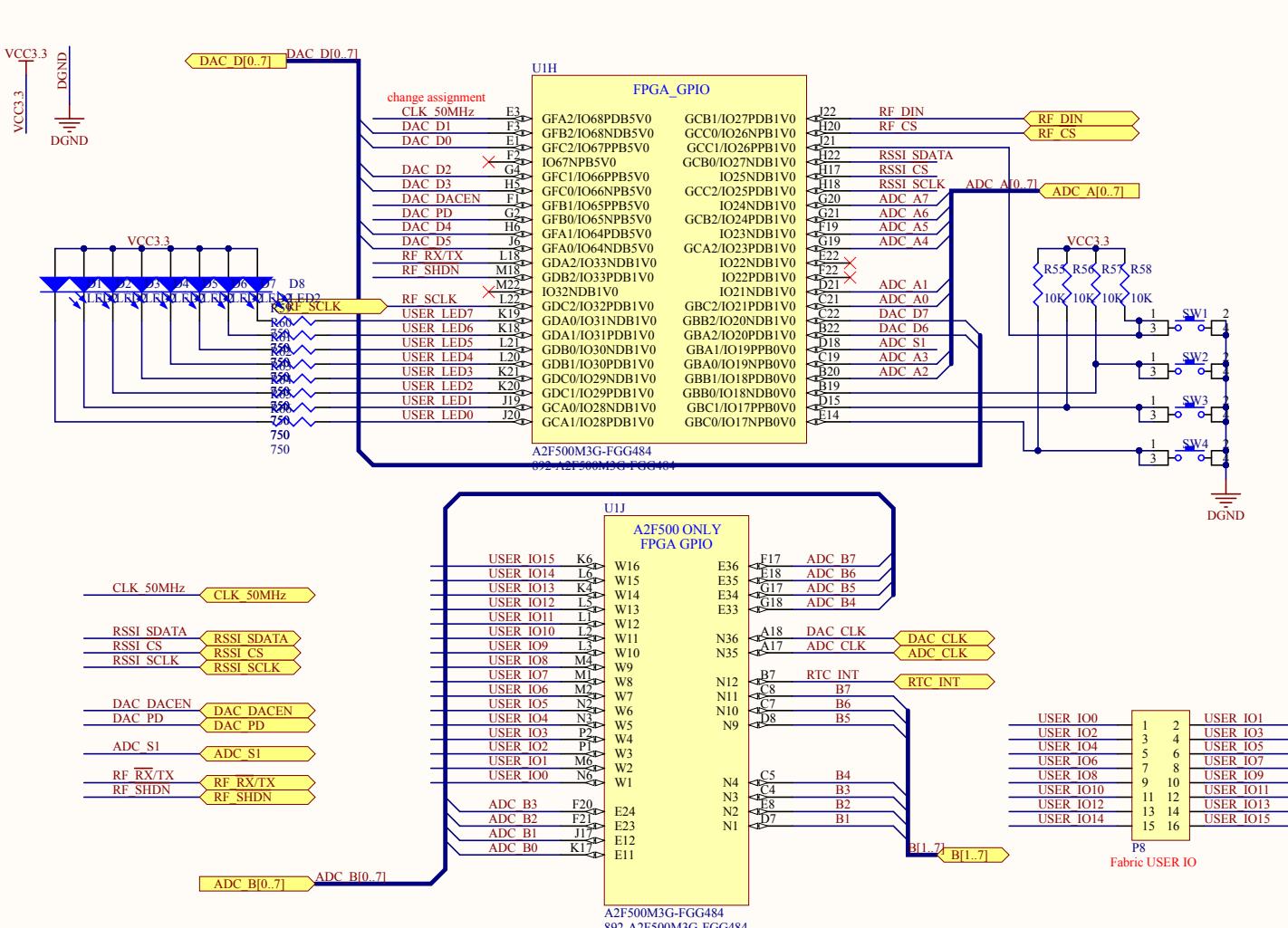
Sheet 9 of 16

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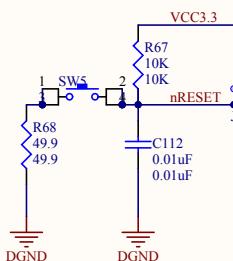
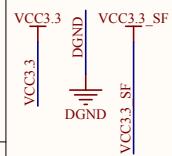


Title: ***uSDR schematic***

Title: **uSDR Schematic**  
 Author: **Ye-sheng Kuo**      Revision: **2.0**  
 Date: **6/13/2014**      Sheet **10** of **16**  
 File: **Fabric IO.SchDoc**

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A



**U1F**  
MSS I/O  
MSS\_RESET\_N  
I2C\_0\_SDA/GPIO\_22  
I2C\_0\_SCL/GPIO\_23  
I2C\_1\_SDA/GPIO\_30  
I2C\_1\_SCL/GPIO\_31  
U17  
V18  
W19  
Y20  
SPL\_0\_D0/GPIO\_16  
SPL\_0\_D1/GPIO\_17  
SPL\_0\_CLK/GPIO\_18  
SPL\_0\_SS/GPIO\_19  
RTC\_SDI  
RTC\_SDO  
RTC\_SCL  
RTC\_SDA  
UART\_0\_TXD  
UART\_0\_RXD  
UART\_0\_RXD  
UART\_0\_RXD  
nRESET  
nRESET  
JTAG\_TMS  
JTAG\_TCK  
JTAG\_TDI  
JTAG\_TRSTB  
TMS  
TCK  
TDI  
TRSTB  
TDO  
P20  
P18  
P17  
P22  
P21  
V20  
W22  
UART\_1\_TXD/GPIO\_28  
UART\_1\_RXD/GPIO\_29  
UART\_0\_RXD/GPIO\_20  
UART\_0\_RXD/GPIO\_21  
MAC\_MDC/I048RSB4V0  
MAC\_MDIO/I049RSB4V0  
MAC\_CRSDV/I051RSB4V0  
MAC\_RXER/I050RSB4V0  
MAC\_TXEN/I052RSB4V0  
MAC\_TXD[0]/I056RSB4V0  
MAC\_TXD[1]/I055RSB4V0  
MAC\_RXD[0]/I054RSB4V0  
MAC\_RXD[1]/I053RSB4V0  
MAC\_CLK  
VJTAG  
M19  
VCC3.3\_SF  
M21  
VCC3.3\_SF  
R71  
R16  
JTAGSEL  
A2F500M3G-FGG484  
892-A2F500M3G-FGG484

GPIO\_0/I047RSB4V0  
GPIO\_1/I046RSB4V0  
GPIO\_2/I045RSB4V0  
GPIO\_3/I044RSB4V0  
GPIO\_4/I043RSB4V0  
GPIO\_5/I042RSB4V0  
GPIO\_6/I041RSB4V0  
GPIO\_7/I040RSB4V0  
GPIO\_8/I039RSB4V0  
GPIO\_9/I038RSB4V0  
GPIO\_10/I038RSB4V0  
GPIO\_11/I037RSB4V0  
GPIO\_12/I037RSB4V0  
GPIO\_13/I036RSB4V0  
GPIO\_14/I035RSB4V0  
GPIO\_15/I034RSB4V0

MSS\_USER\_IO0  
MSS\_USER\_IO1  
MSS\_USER\_IO2  
MSS\_USER\_IO3  
MSS\_USER\_IO4  
MSS\_USER\_IO5  
MSS\_USER\_IO6  
MSS\_USER\_IO7

P9

AA3 RMII\_MDC  
V4 RMII\_MDIO  
W4 RMII\_CRSDV  
AA4 RMII\_RX\_ER

Y4 RMII\_TXEN

AA5 RMII\_TXD0

W5 RMII\_TXD1

V5 RMII\_RXD0

U5 RMII\_RXD1

T6 RMII\_REF\_CLK

M19 VCC3.3\_SF

M21 VCC3.3\_SF

C113 100pF

C114 0.1uF

C115 0.1uF

100pF

0.1uF

0.1uF

100pF

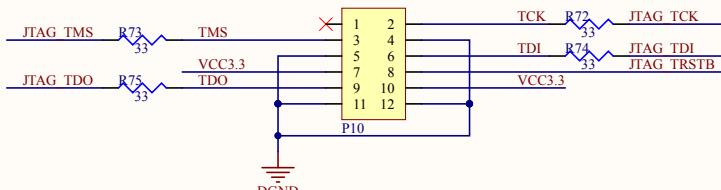
DGND

DGND

DGND

C

D

Title: **uSDR schematic**

Author: Ye-sheng Kuo

Revision: 2.0

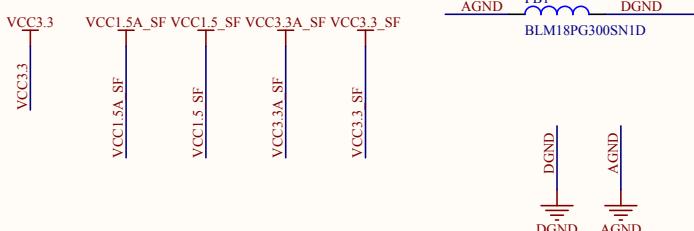
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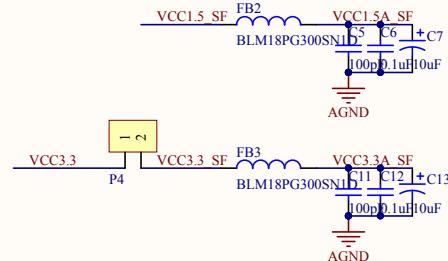
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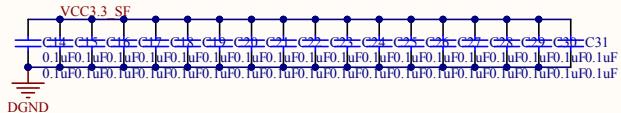
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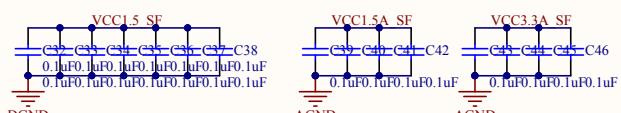
3



1



1



U1A

FPGA BLOCK

U1

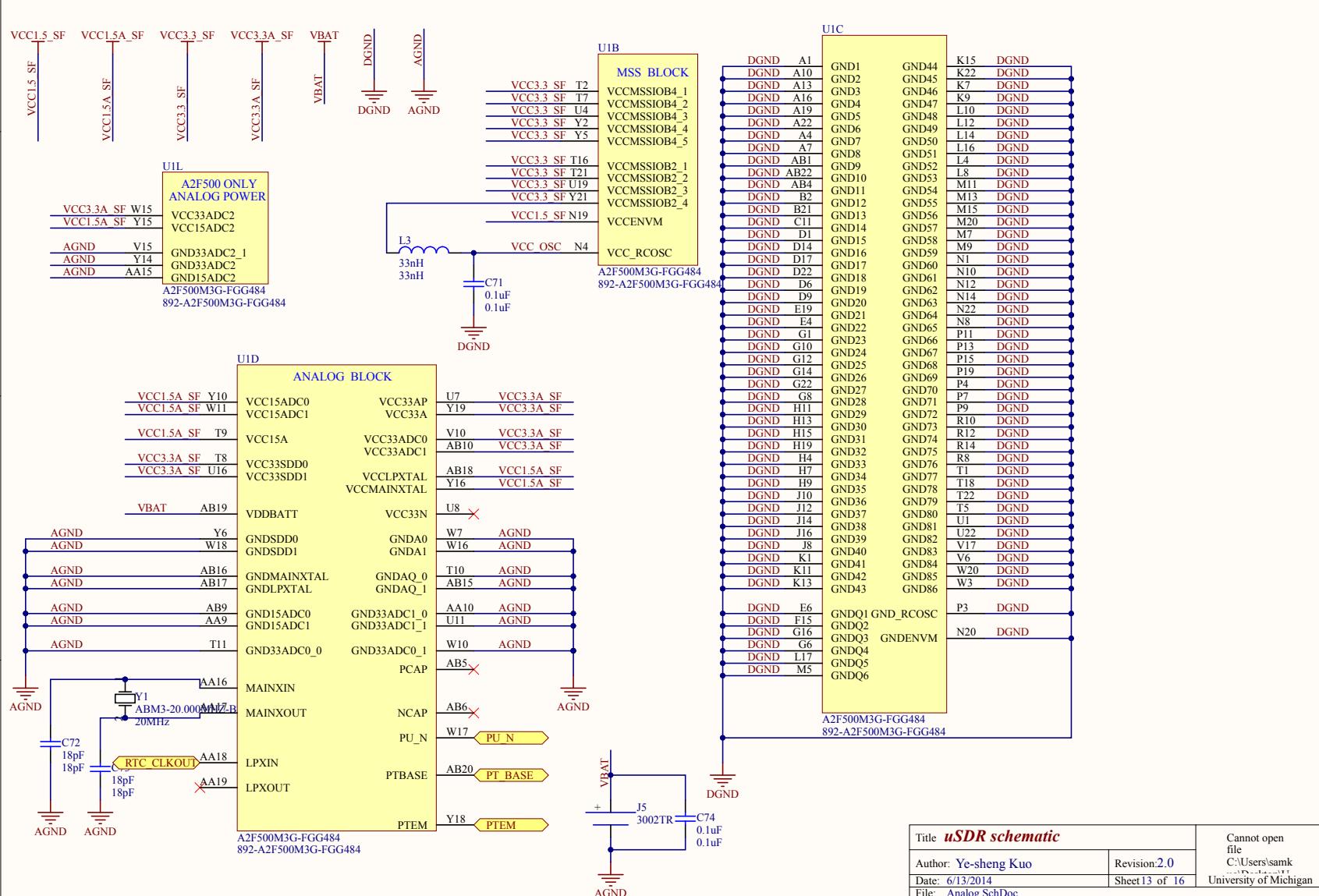
A2F500 ONLY  
FPGA POWER

16 GND  
A2F500M3G-FGG484  
892-A2F500M3G-EGG484

Title *uSDR schematic*

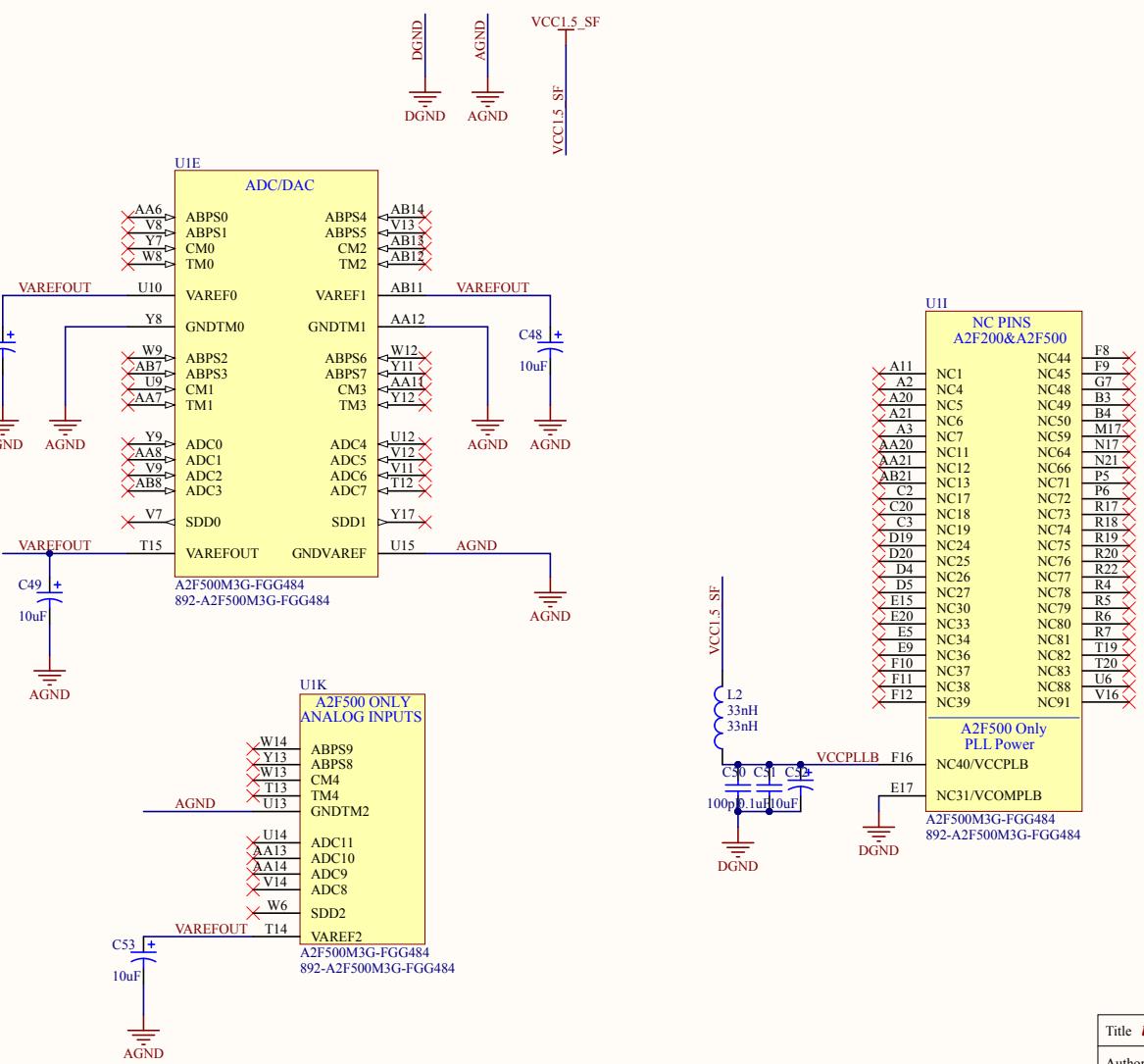
Title: **USDR Schematic** Author: **Ye-sheng Kuo** Revision: **2.0**  
 Date: **6/13/2014** Sheet **12** of **16** File: **Digital PWR.SchDoc**

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A

A

Title ***uSDR schematic***

Author: Ye-sheng Kuo

Revision: 2.0

Date: 6/13/2014

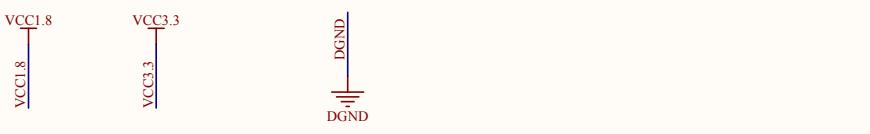
Sheet 14 of 16

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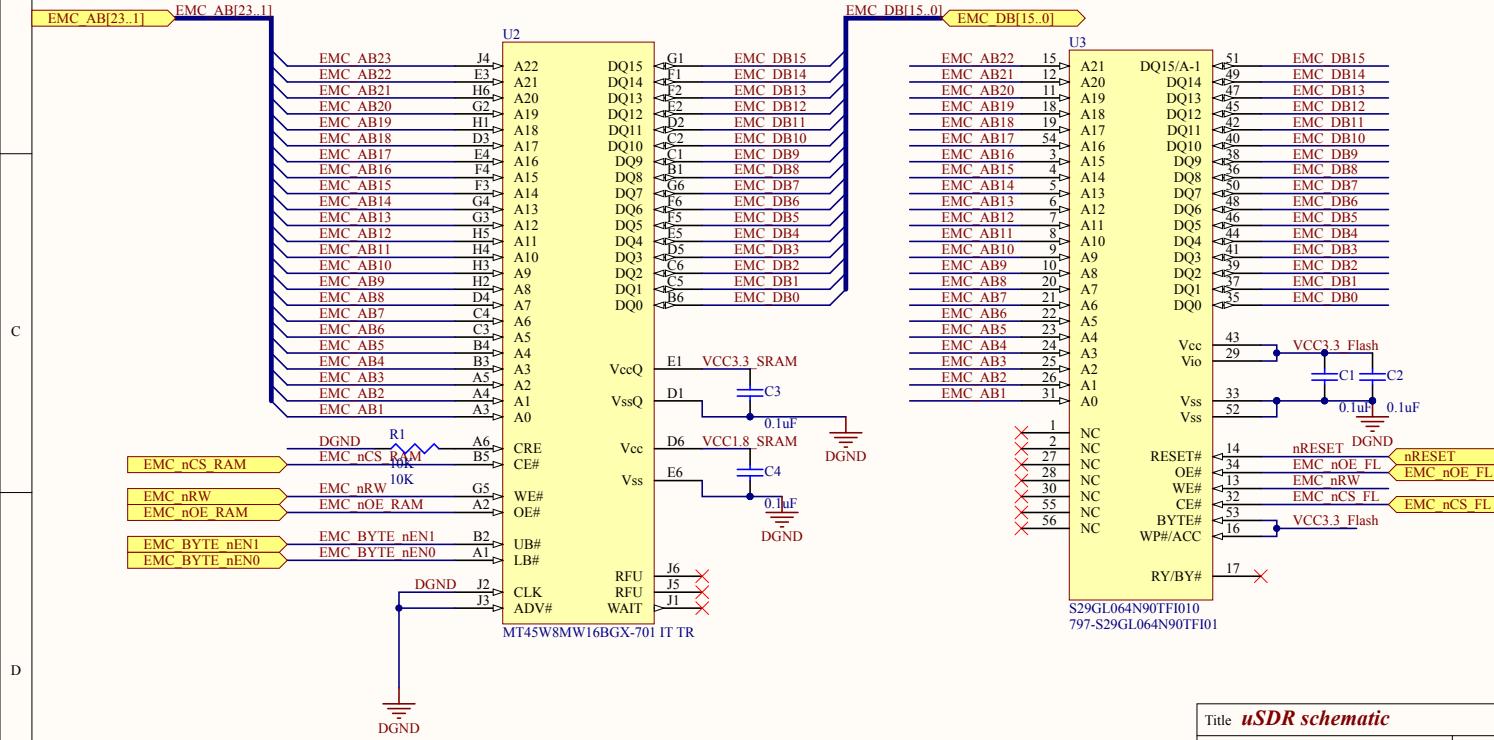
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A



B

Title ***uSDR schematic***

Author: Ye-sheng Kuo

Revision: 2.0

Date: 6/13/2014

Sheet 15 of 16

File: MEM.SchDoc

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A

B

C

D

A

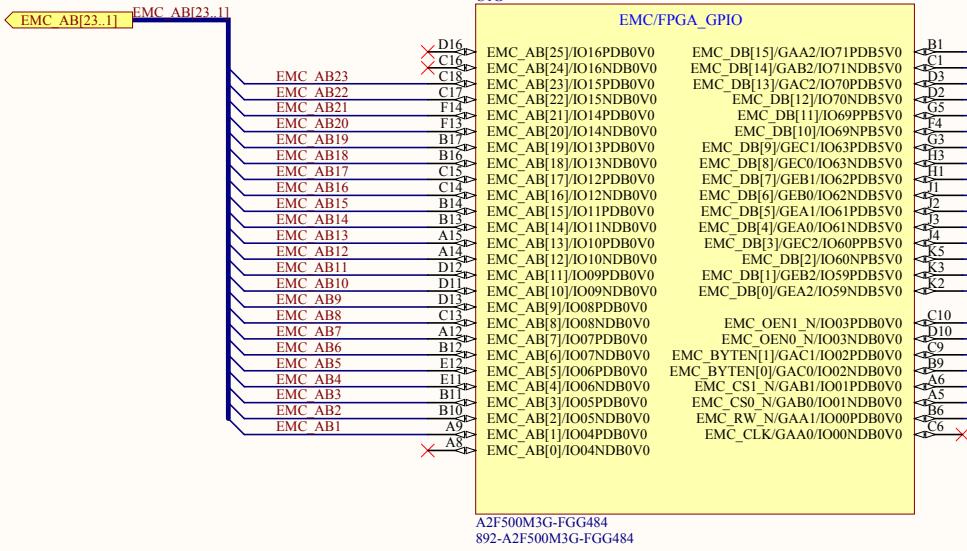
B

C

D

U1G

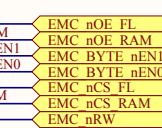
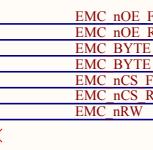
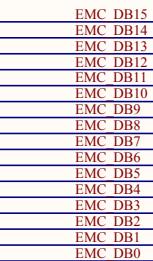
## EMC/FPGA\_GPIO



A2F500M3G-FGG484  
892-A2F500M3G-FGG484

EMC\_DB[15..0]

EMC\_DB[15..0]

Title ***uSDR schematic***

Author: Ye-sheng Kuo

Revision:2.0

Date: 6/13/2014

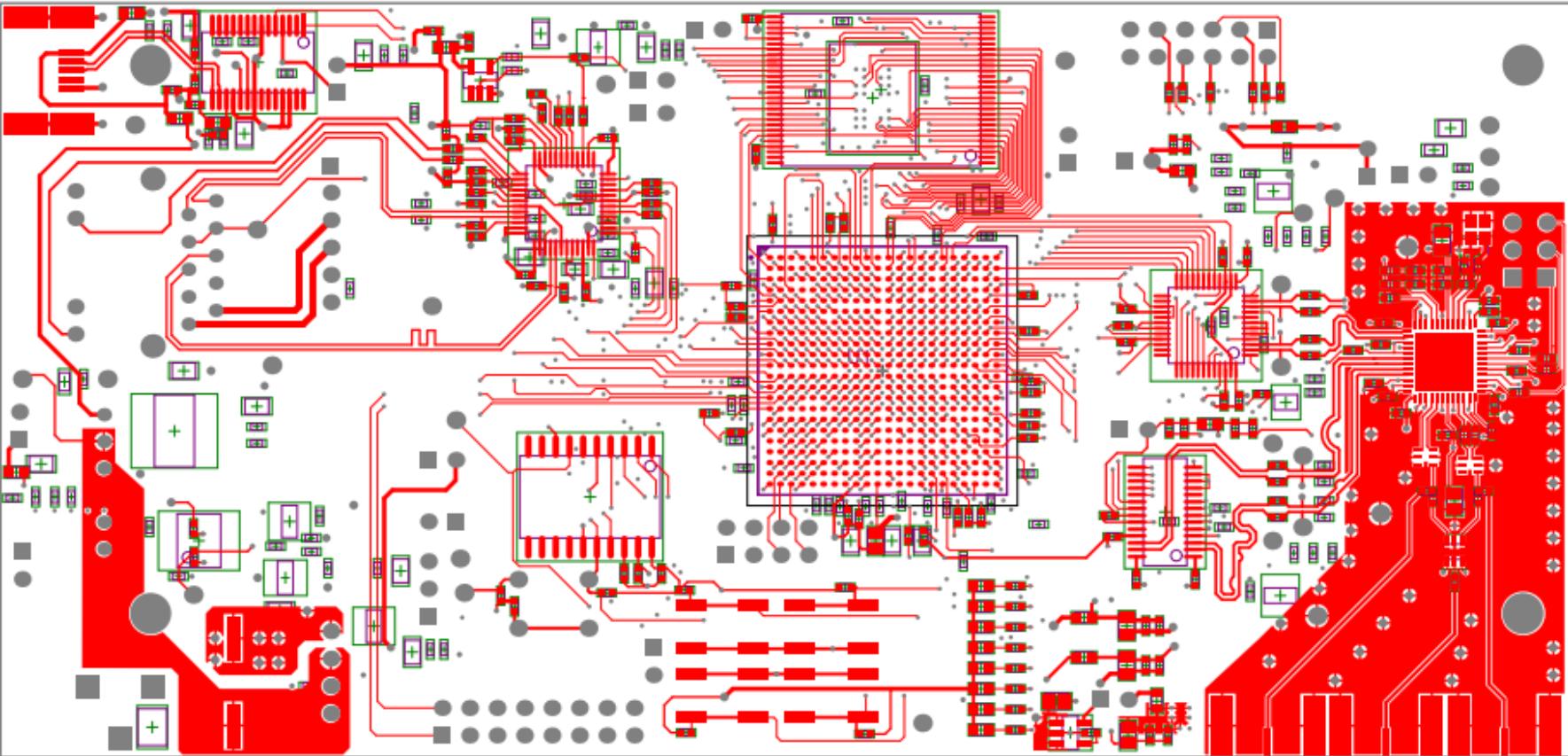
Sheet 16 of 16

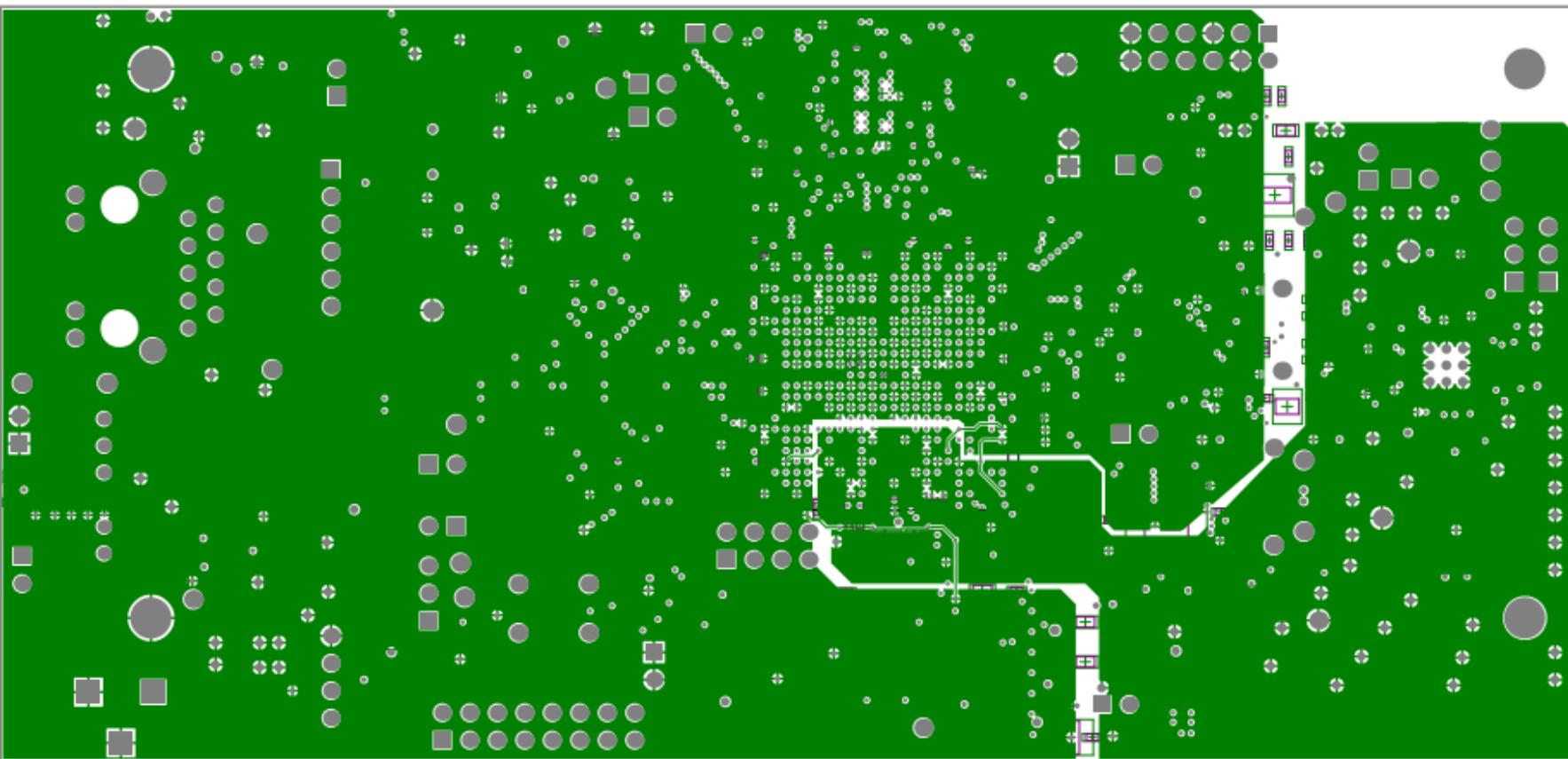
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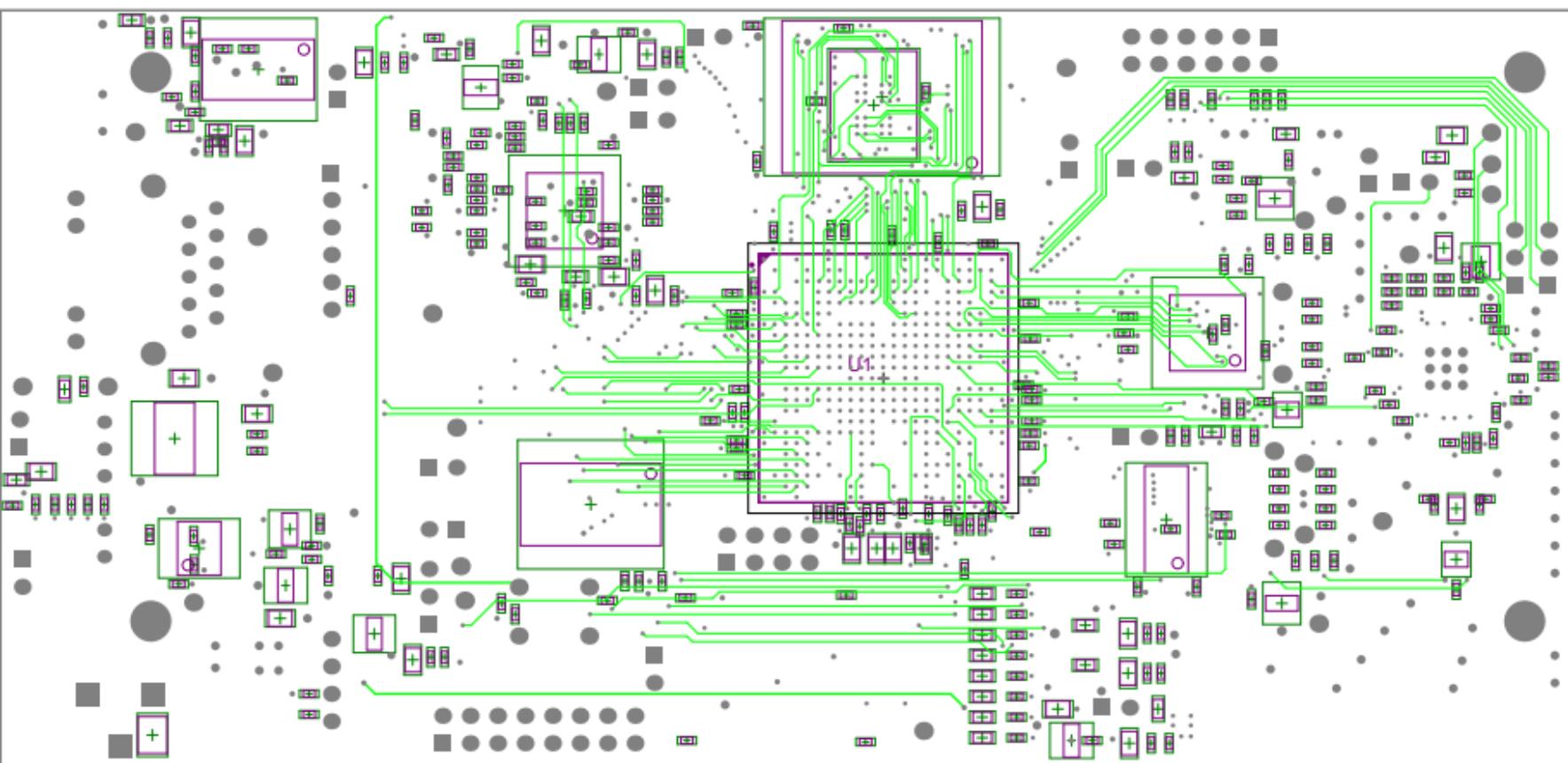
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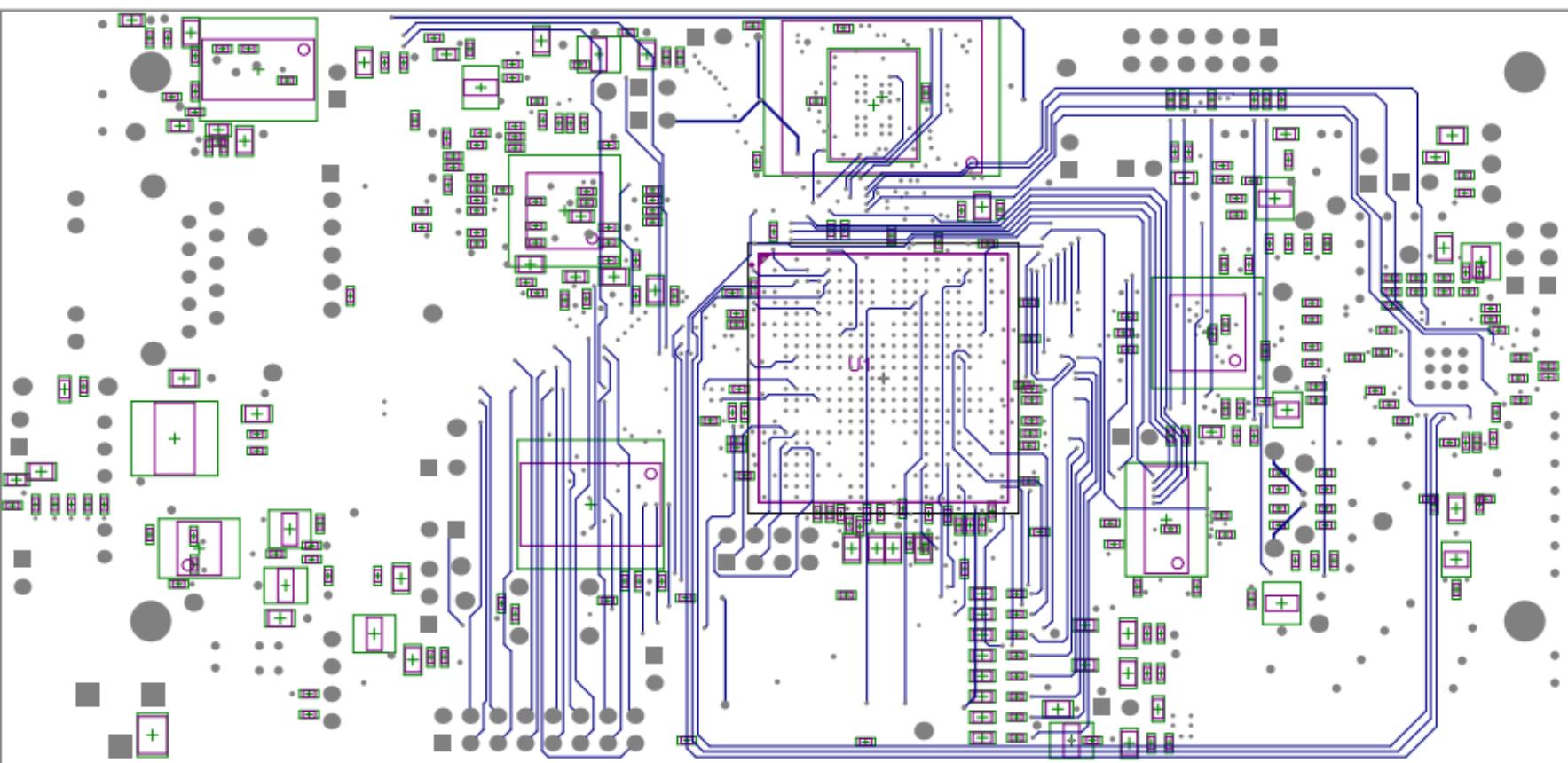
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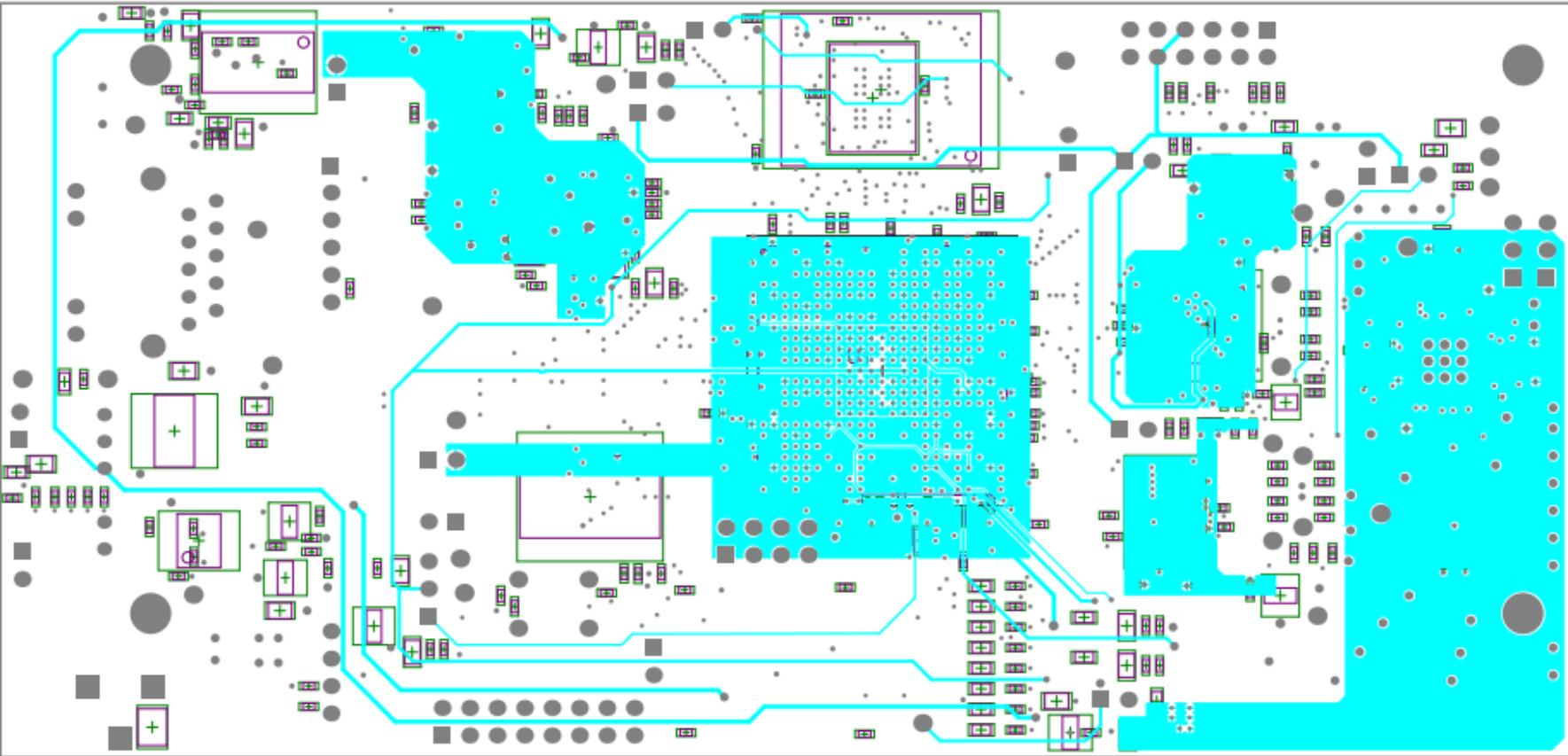
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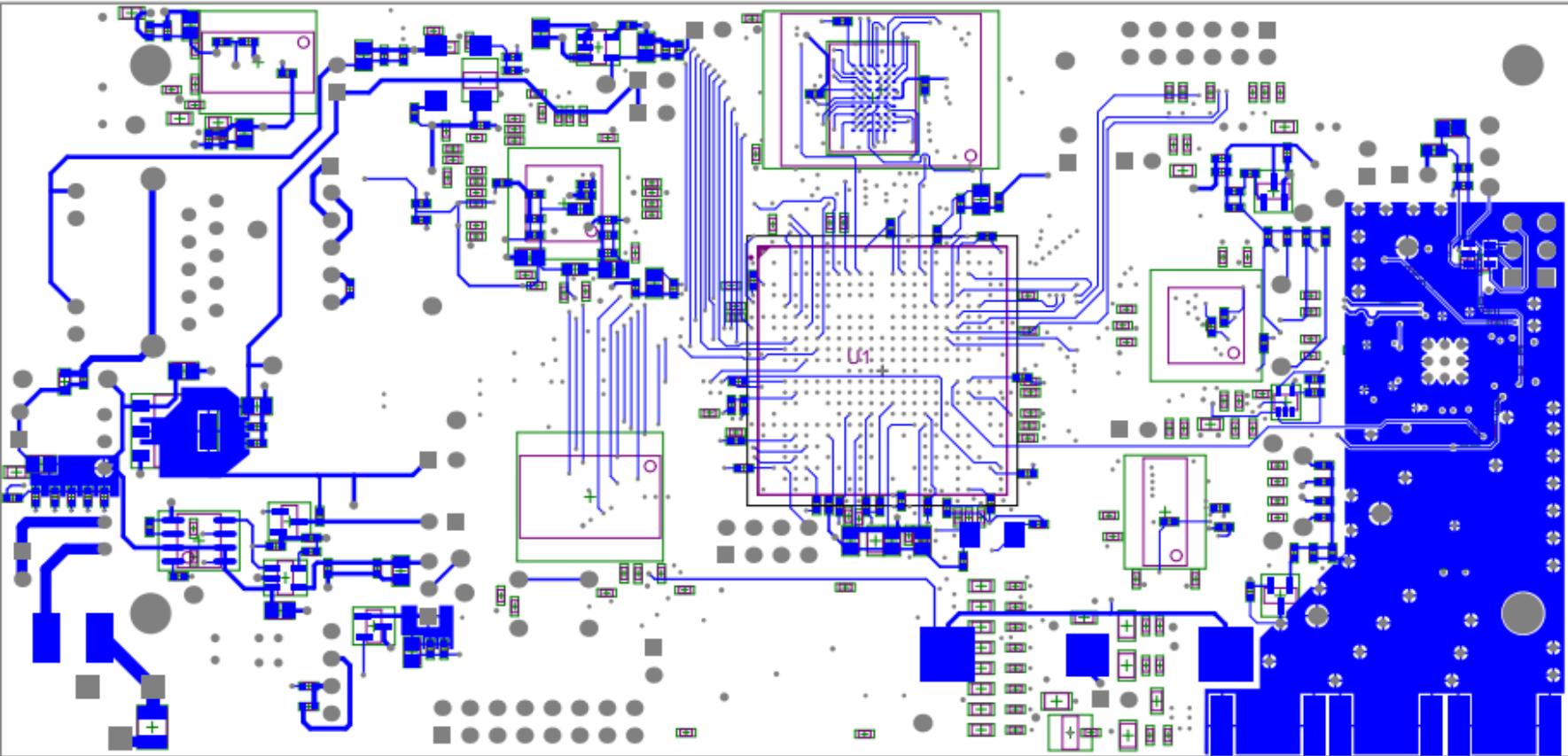








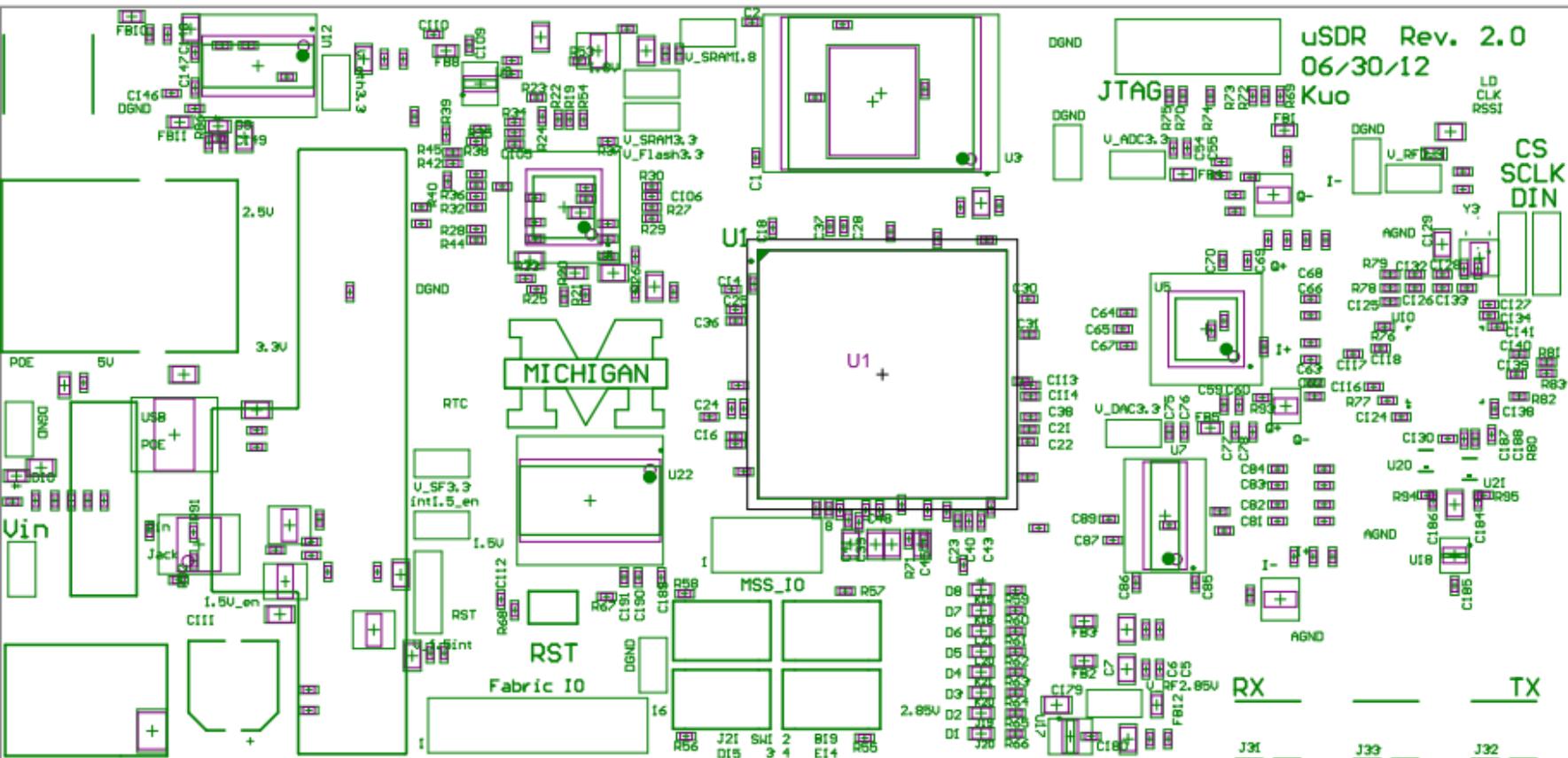


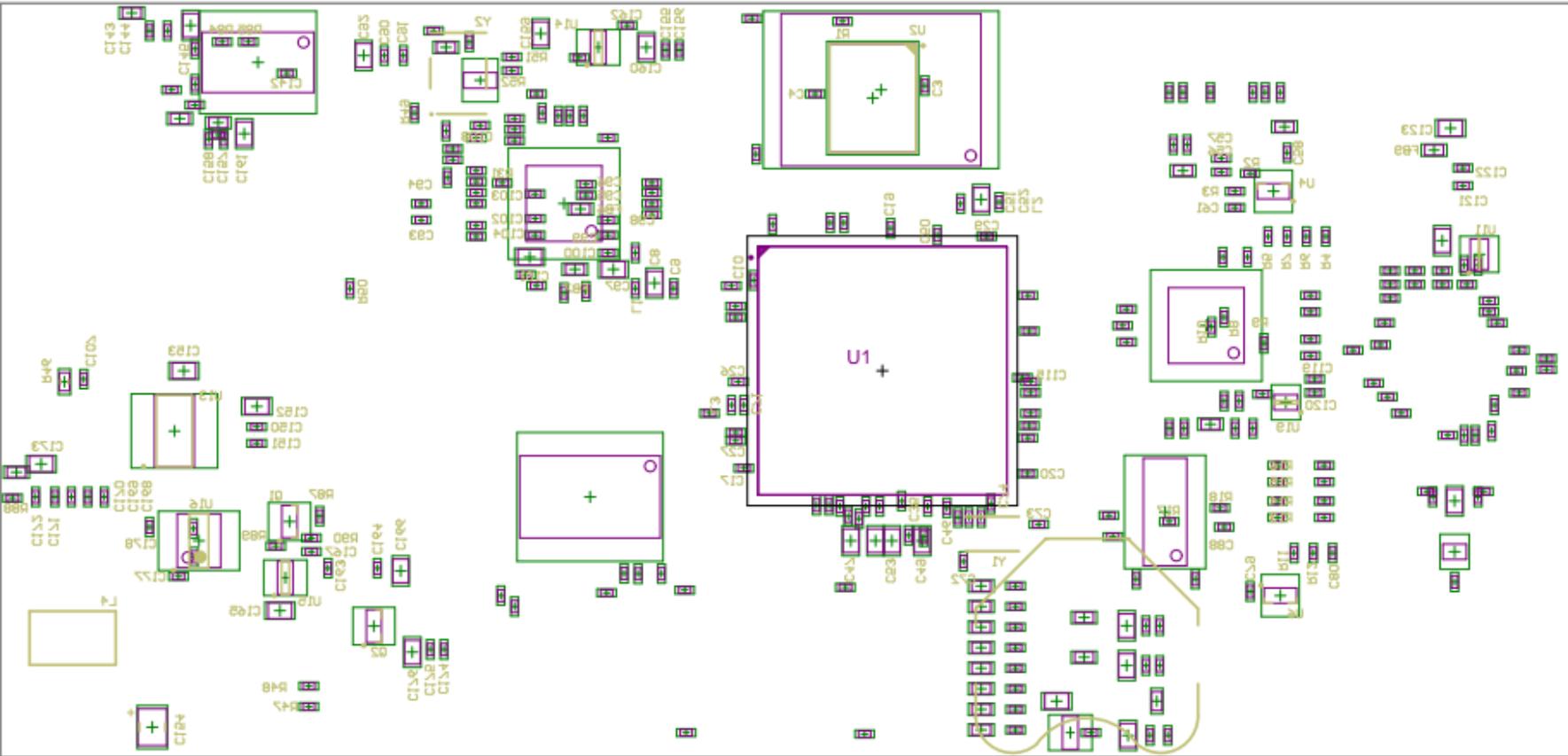


uSDR Rev. 2.0  
06/30/12

Kuo

CS  
SCLK  
DIN





## uSDR V2 BOM 6/28 '12

<b>Designator</b>	<b>Value</b>	<b>Footprint</b>	<b>QTY</b>	<b>Supplier Part Number</b>	<b>Description</b>
C187, C188	1.5pF	0402	2	445-4859-1-ND	capacitor
C72, C73, C137	18pF	0402	3	445-1238-1-ND	capacitor
C135	33pF	0402	1	490-3220-1-ND	capacitor
C147, C148	47pF	0402	2	490-1287-1-ND	capacitor
C126	68pF	0402	1	490-1289-1-ND	capacitor
C5, C10, C11, C50, C54, C56, C75, C77, C90, C98, C102, C113, C116, C119, C121, C124, C127, C130, C138, C139, C141, C143, C150, C155, C157, C163, C168, C174, C178, C181, C184, C185, C186	100pF	0402	33	399-1022-1-ND	capacitor
C107, C136	1nF	0402	2	445-6848-1-ND	capacitor
C132	2.2nF	0402	1	490-5419-1-ND	capacitor
C62, C63, C66, C68, C81, C82, C83, C84, C112, C117, C118, C133, C134, C140, C162, C167, C180	0.01uF	0402	17	478-1114-1-ND	capacitor
C1, C2, C3, C4, C6, C9, C12, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32, C33, C34, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C51, C55, C57, C58, C59, C60, C61, C64, C65, C67, C69, C70, C71, C74, C76, C78, C79, C80, C85, C86, C87, C88, C89, C91, C93, C94, C95, C96, C99, C100, C103, C104, C105, C106, C108, C109, C110, C114, C115, C120, C122, C125, C128, C142, C144, C146, C149, C151, C156, C158, C164, C169, C170, C171, C172, C175, C177, C182, C189, C190, C191	0.1uF	0402	101	490-1318-1-ND	capacitor
C7, C8, C13, C47, C48, C49, C52, C53, C92, C123, C129, C131, C145, C152, C153, C159, C160, C161, C165, C166, C173, C176, C179, C183	10uF	0805	24	445-7660-1-ND	capacitor
C97, C101	22uF	0805	2	445-1422-1-ND	capacitor
C154	47uF	1210	1	478-1692-1-ND	capacitor
C111	470uF		1	PCE3184CT-ND	capacitor
R31, R47, R48, R94, R95	0	0402	5	P0.0JCT-ND	Resistor ( <b>Do not install</b> )
R19, R22, R27, R29, R30, R51, R52, R53, R54, R72, R73, R74, R75	33	0402	13	P33.0LCT-ND	Resistor
R20, R25, R28, R32, R68	49.9	0402	5	P49.9LCT-ND	Resistor
R11, R42, R45	270	0402	3	P270LCT-ND	Resistor
R50	698	0402	1	P698LCT-ND	Resistor
R59, R60, R61, R62, R63, R64, R65, R66, R78, R86	750	0402	10	P750LCT-ND	Resistor
R2	820	0402	1	P820LCT-ND	Resistor
R69, R70, R71, R84, R85, R88	1K	0402	6	P1.00KLCT-ND	Resistor
R12, R76, R77, R79, R80, R81, R82, R83, R93	1.2K	0402	9	P1.20KLCT-ND	Resistor
R3	2.7K	0402	1	P2.70KLCT-ND	Resistor
R4, R5, R6, R7, R13, R14, R15, R16	3.3K	0402	8	P3.30KLCT-ND	Resistor
R26, R36, R38	4.7K	0402	3	P4.70KLCT-ND	Resistor
R33, R90	6.49K	0402	2	P6.49KLCT-ND	Resistor
R35, R37, R39, R40, R41, R43, R44, R49, R55, R56, R57, R58, R67, R87, R89, R91, R92	10K	0402	27	P10.0KLCT-ND	Resistor
R46	5Meg	0603	1	541-5.23MHCT-ND	Resistor
D1, D2, D3, D4, D5, D6, D7, D8	Red	0603	8	516-2230-1-ND	Typical RED, GREEN, YELLOW, AMBER GaAs LED
D9	Green	0603	1	516-1797-1-ND	Typical RED, GREEN, YELLOW, AMBER GaAs LED
D10	Blue	0603	1	475-2816-1-ND	Typical RED, GREEN, YELLOW, AMBER GaAs LED
FB1, FB2, FB3, FB4, FB5, FB6, FB7, FB8, FB9, FB10, FB11, FB12		0603	12	490-1035-1-ND	FERRITE CHIP 30 OHM 1000MA 0603
J1, J2, J3, J4, J6, J7, J8, J9, J11, J12, J13, J14, J15, J16, J18, J20, J21, J22, J23, J24, J25, J26, J27, J28, J29, J30, J34	TestPoint		27	5004K-ND	TEST POINT PC MINI .040"D YELLOW
J5	3002TR		1	3002KCT-ND	HOLDER BATTERY COIN 20MM DIA SMD
J10	7499211121A		1	732-1654-ND	CONN RJ45 8-8 W/TRANSFORMER
J17	Mini USB		1	WM17116CT-ND	CONN RECEP MINIUSB R/A SPOS SMD
J19	PJ-102AH		1	CP-102AH-ND	CONN PWR JACK 2.1X5.5MM HIGH CUR
J31, J32, J33	SMA_SMD		3	J658-ND	CONN JACK END LAUNCH PC GOLD SMA
L1, L2, L3	33nH	0402	3	490-2629-1-ND	Inductor
L4	8.2uH	FLAT-PAC	1	513-1552-1-ND	Inductor
M1	5V	AG9205S	1	AG9205S	Silver Telecom AG9205S POE
P1, P2, P3, P4, P5, P6, P7, P11, P14, P15, P17, P18, P19, P20, P21		1x2 header	15	3M9447-ND	100 mils standard header
P8		2x8 header	1	67996-416HLF	100 mils standard header
P9		2x4 header	1	67997-108HLF	100 mils standard header
P10		2x6 header	1	68021-212HLF	100 mils standard header
P12, P13, P16		1x3 header	3	3M9448-ND	100 mils standard header

Q1, Q2		SOT23-3N	2 MMBT2222ATPMSC-ND	TRANSISTOR NPN GP 40V SOT23
SW1, SW2, SW3, SW4		KSC403	4 401-1776-1-ND	Switch
SW5		EVQPA PB	1 P8008S-ND	Switch
SW6		STS1400PC04	1 450-1615-ND	Switch Slide 4 postions
U1		BGA	1 1100-1008-ND	FPGA - Field Programmable Gate Array 500K System Gates
U2		BGA	1 557-1444-1-ND	IC PSRAM 128MBIT 70NS 54VFBGA
U3		TSSOP	1 797-S29GL064N90TFI01	Flash 3V 64Mb Float Gate highest address 90s
U4, U6	1.25V	SOT23-3N	2 MAX6061AEUR-TCT-ND	IC REF VOLT LDO SOT23-3
U5	100MHz	LQFP	1 AD9288BSTZ-100-ND	IC ADC 8BIT DUAL 100MSPS 48-LQFP
U7		QSOP	1 MAX5189BEEI+-ND	IC DAC 8BIT DUAL 40MHZ 28-QSOP
U8		LQFP	1 576-1673-ND	IC TXRX PHY 10/100 3.3V 48-LQFP
U9		SOT23-5	1 296-11599-1-ND	IC SINGLE INVERTER-GATE SOT-23-5
U10		TQFN-48	1 700-MAX2831ETM+	RF Transceiver 2.4-2.5GHz 802.11g/b RF Transceiver
U11		SOT23-6	1 ADC081S101CIMFTR-ND	IC ADC 8BIT 1MSPS SOT23-6
U12		SSOP	1 768-1007-2-ND	USB to UART interface in SSOP-28 package
U13	3.3V	SOT223-4L	1 LT1117CST-3.3#PBF-ND	IC REG LDO 3.3V SOT-223
U14	1.8V	SOT23-5	1 296-8147-1-ND	IC 1.8V 100MA LDO REG SOT-23-5
U15	1.5V	SOT23-5	1 296-15801-1-ND	IC LDO REG 150MA 1.5V SOT23-5
U16		SOIC	1 296-15017-1-ND	IC SUPPLY VOLT SUPERVISOR 8-SOIC
U17	2.85V	SOT23-5	1 REG102NA-2.85CT-ND	IC REG LDO 2.85V 250MA SOT23-5
U18		SOT363-6N	1 863-1238-1-ND	IC SW SPDT 0.1-3GHZ GAAS SC88
U19		SOT353-5N	1 568-2573-1-ND	IC UNBUFFERED INVERTER LP 5TSSOP
U20, U21		HHM1520A2	2 445-3985-1-ND	XFRMR BALUN RF 2.4GHZ SMD
U22		SOIC	1 568-4961-5-ND	IC REAL TIME CLK/CALENDAR 20SOIC
Y1	20MHz	ABM3	1 535-10641-1-ND	CRYSTAL 20.000MHZ 18PF SMD
Y2	50MHz	CB3_CB3LV	1 CTX283LVCT-ND	OSC 50.000 MHZ 3.3V SMD
Y3	40MHz	CX-2520SB	1 478-4818-1-ND	CRYSTAL 40.000MHZ 12PF SMD