NOTES, UNLESS OTHERWISE SPECIFIED:

1. The netname "P1P1V" represents connection to the +1.1V power plane.
2. The netname "P1P2V" represents connection to the +1.2V power plane.
3. The netname "P1P8V" represents connection to the +1.8V power plane.
4. The netname "DSP_P1P8V" represents connection to the +1.8V power plane for use with the DSP.
5. The netname "P2P5V" represents connection to the +2.5V power plane.
6. The netname "P3P3V" represents connection to the +3.3V power plane.
7. The netname "P3P3V_LP" represents connection to the +3.3V power plane for use with ultra-low power mode.
8. The netname "P5V" represents connection to the +5.0V power plane.
9. The netname "P12V" represents connection to the +12.0V power plane.
10. The netname "GND" represents connection to the ground plane.
11. A "Z" suffix on a signal name indicates an active low signal.
12. All components with designators "U*", "Q*", and "D*" are electrostatic discharge sensitive.
13. All components with designators above 500 are mounted solder side of the board.
14. All resistor values are in ohms.
15. All capacitor values in microfarads unless otherwise specified.

COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	ECO 2135517: Initial Release	9/6/2013	DH
B	ECO 2138184: Revision B	12/3/2013	DH
C	ECO 2158403: Revision C	5/24/2016	DH

DLP®

TEXAS INSTRUMENTS

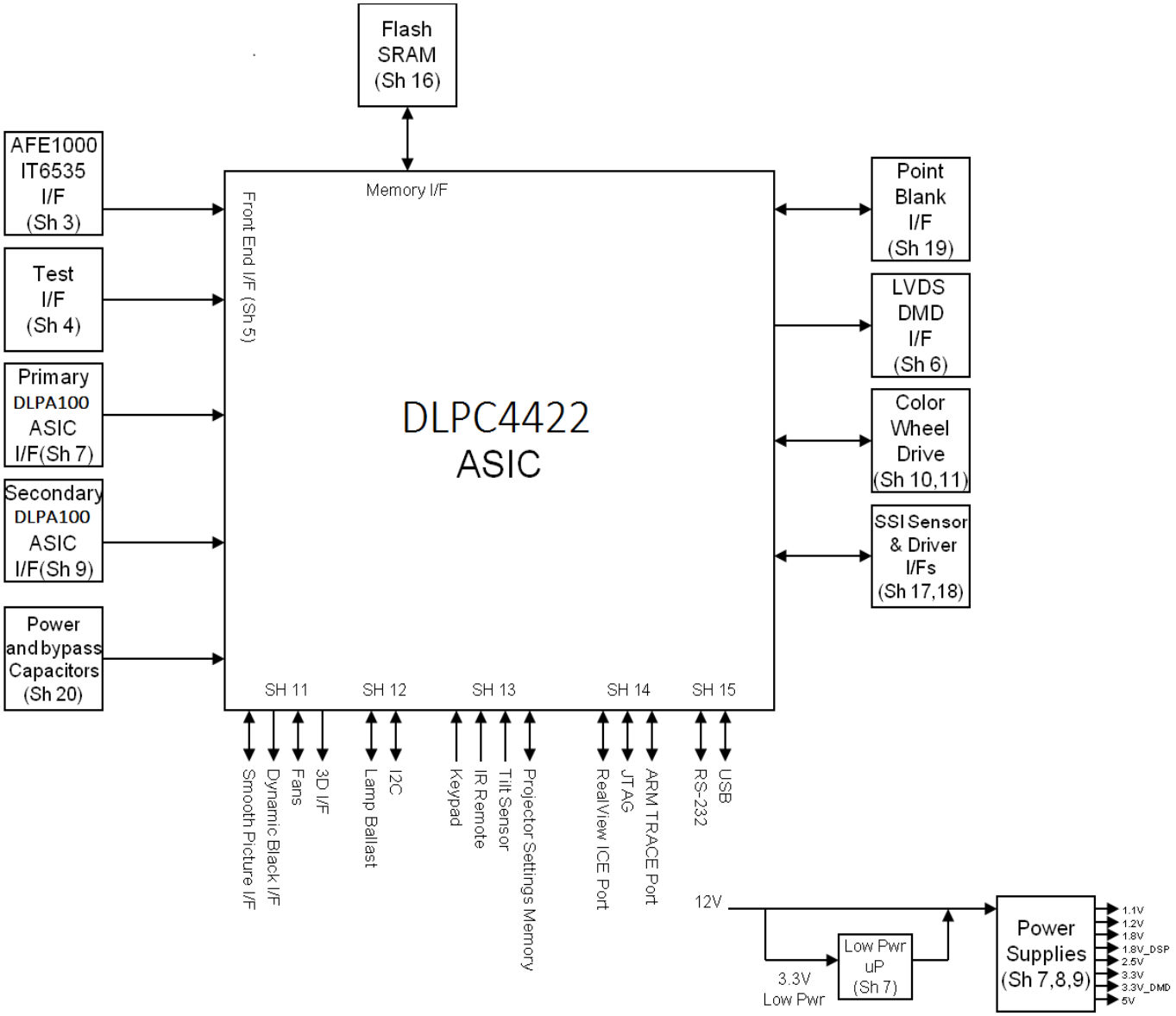
		DWN Amy White	DATE 9/5/2013
		ENGR George Pawlowski	9/5/2013
		SYST Nathan Buettner	9/5/2013
		PRJ	
2513336	0314SS	QA Richard Gall	9/5/2013
NEXT ASSY	USED ON		
APPLICATION		SW	

TEXAS INSTRUMENTS

TITLE

TIDA-01474 Formatter Board Schematic

A3	DRAWING NO 2513334	REV C
SCALE	SHEET 1 of 22	

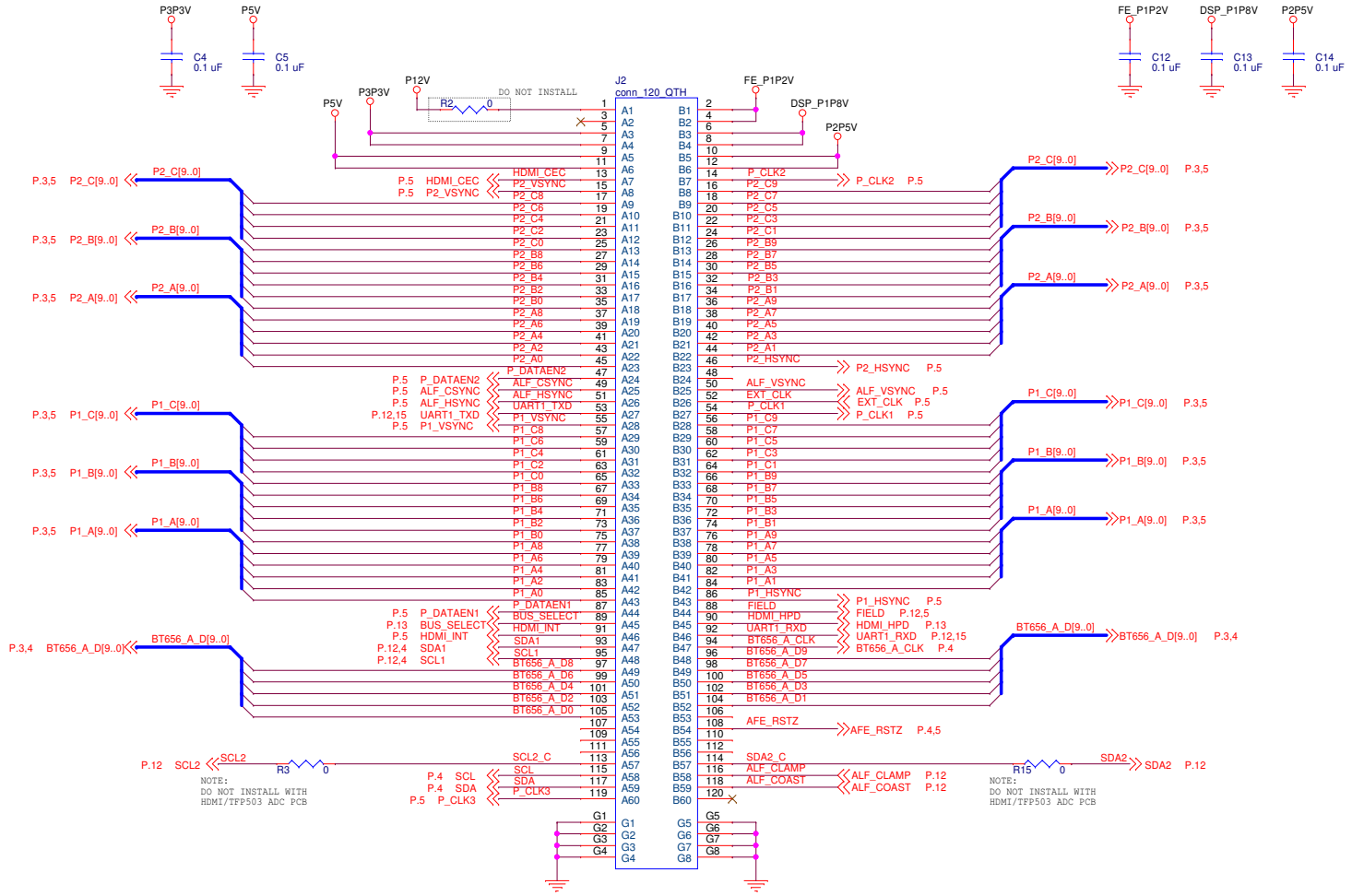


I2C0 Slave Addresses		
I2C Device	**I2C Slave Address**	
Projector Settings Memory, 24C32	0xA8	Sheet 13
Temperature Sensor, TMP100	0x9C	Sheet 13
GPIO Expander, TCA8418	0x68	Sheet 13
TILT Sensor, MXC62355QB	0x2A	Sheet 13
Non-volatile Pot (1.8V PLL), AD5252	0x5A	Sheet 8
Non-volatile Pot (1.1V & 1.8V), AD5252	0x5C	Sheet 8
Non-volatile Pot (1.2V), AD5252	0x5E	Sheet 9
Daughter Card I2C Device	**I2C Slave Address**	
AFE1000	0xB8	
HDMI/DP Receiver, IT6535	0xB0	
GPIO Expander, PCA9539	0xEA	
VGA EDID #1, 24C02B	0xA0	
VGA EDID #2, 24C02B	0xA0	
HDMI EDID, 24C02B	0xA0	
DP EDID, 24C02B	0xA0	
Non-volatile Pot (3.3V), MAX5418	0x50	
Non-volatile Pot (1.9V), MAX5418	0x52	

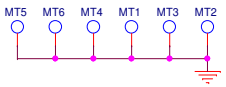
INDEX

Sheet 1: Cover
Sheet 2: Block Diagram
Sheet 3: AFE1000/IT6535 Daughter Card Interface
Sheet 4: Test Interface Connector
Sheet 5: Front End Interface
Sheet 6: DMD Flex Interface
Sheet 7: Input Power and PMD1000/DDP442x Interface
Sheet 8: Primary PMD1000 Power Supplies
Sheet 9: Secondary PMD1000 Power Supplies
Sheet 10: Color Wheel Drive
Sheet 11: Fan, Color Wheel Interface and Peripherals
Sheet 12: GPIO, I2C, and Ballast Control
Sheet 13: GPIO Expander and Keyboard
Sheet 14: Test Points, ARM Trace JTAG and Reset
Sheet 15: RS-232, SSP, and USB
Sheet 16: Flash and SRAM Memory Interface
Sheet 17: SSI Sensor Interface
Sheet 18: SSI Driver Interface
Sheet 19: PointBlank Interface
Sheet 20: DDP442x Power and Bypass Capacitors
Sheet 21: Revision History
Sheet 22: Important Notice

TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334	REV C
	ISSUE DATE 9/5/2013		SCALE	SHEET 2 OF 22	



CCA MOUNTING HOLES



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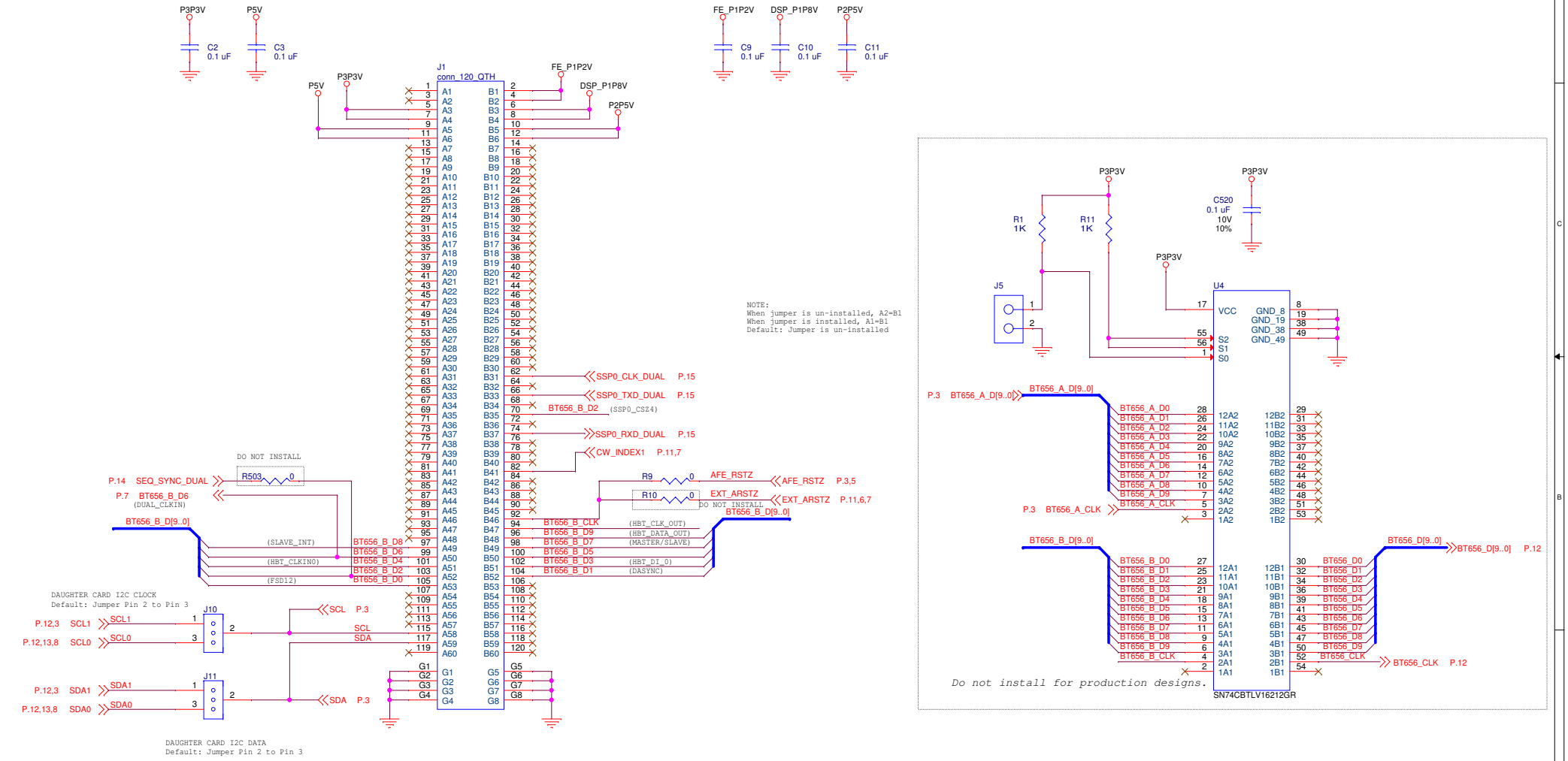
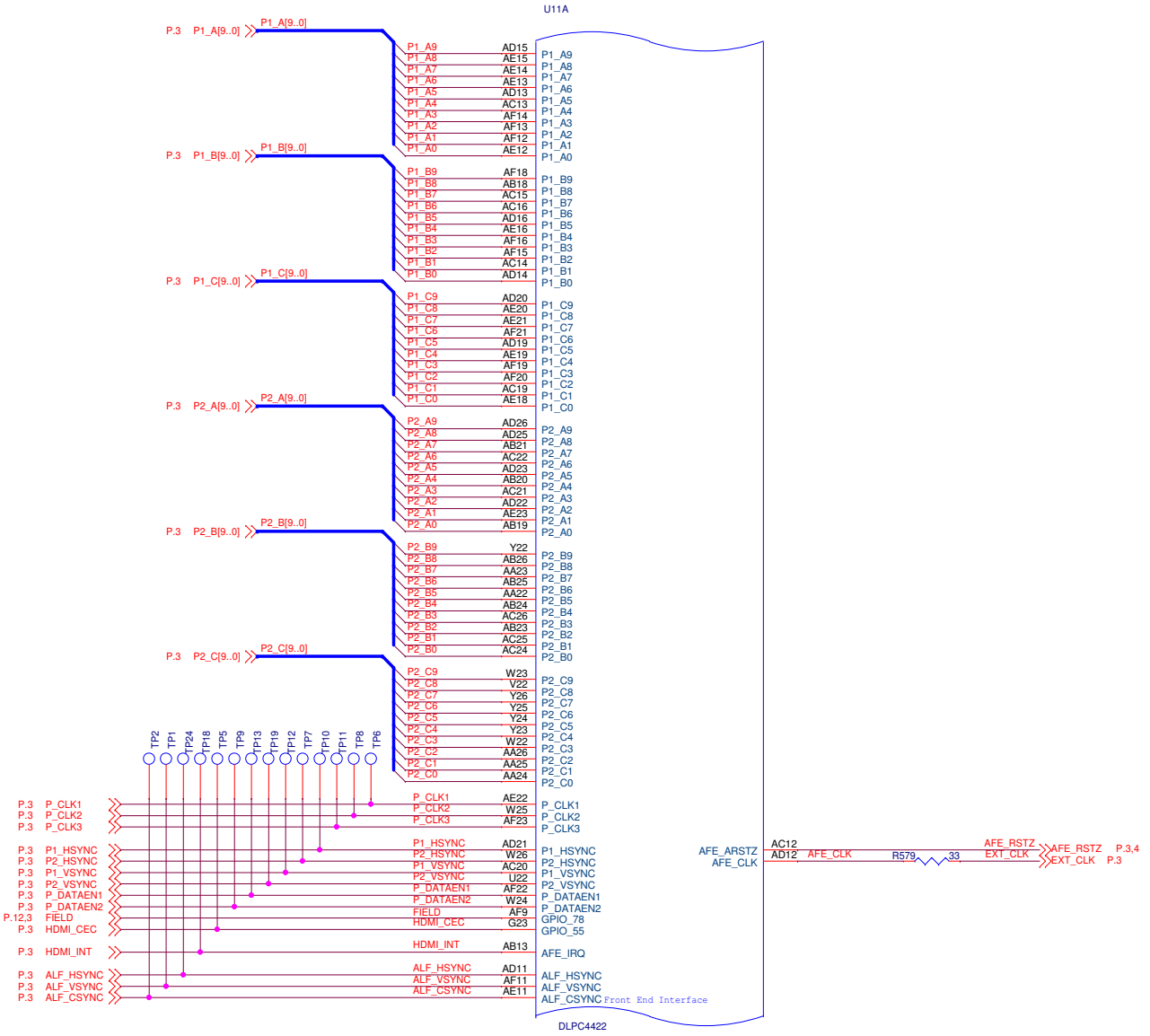
AFE1000/IT6535 Daughter Card Interface

TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334	REV C
	ISSUE DATE 9/5/2013		SCALE	SHEET 3 OF 22	



Test Interface Connector

TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334 REV C
	ISSUE DATE 9/5/2013		SCALE	SHEET 4 OF 22



Front End Interface

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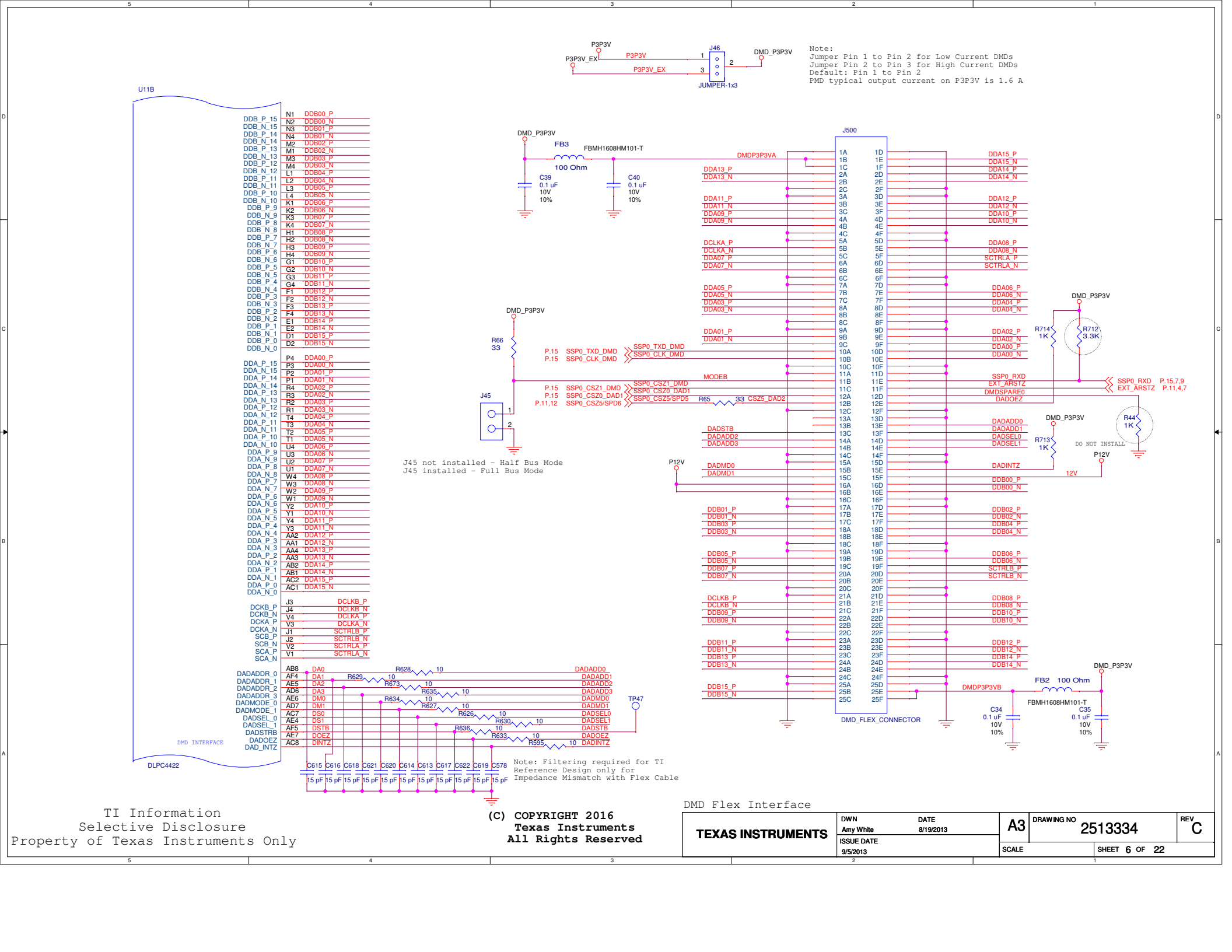
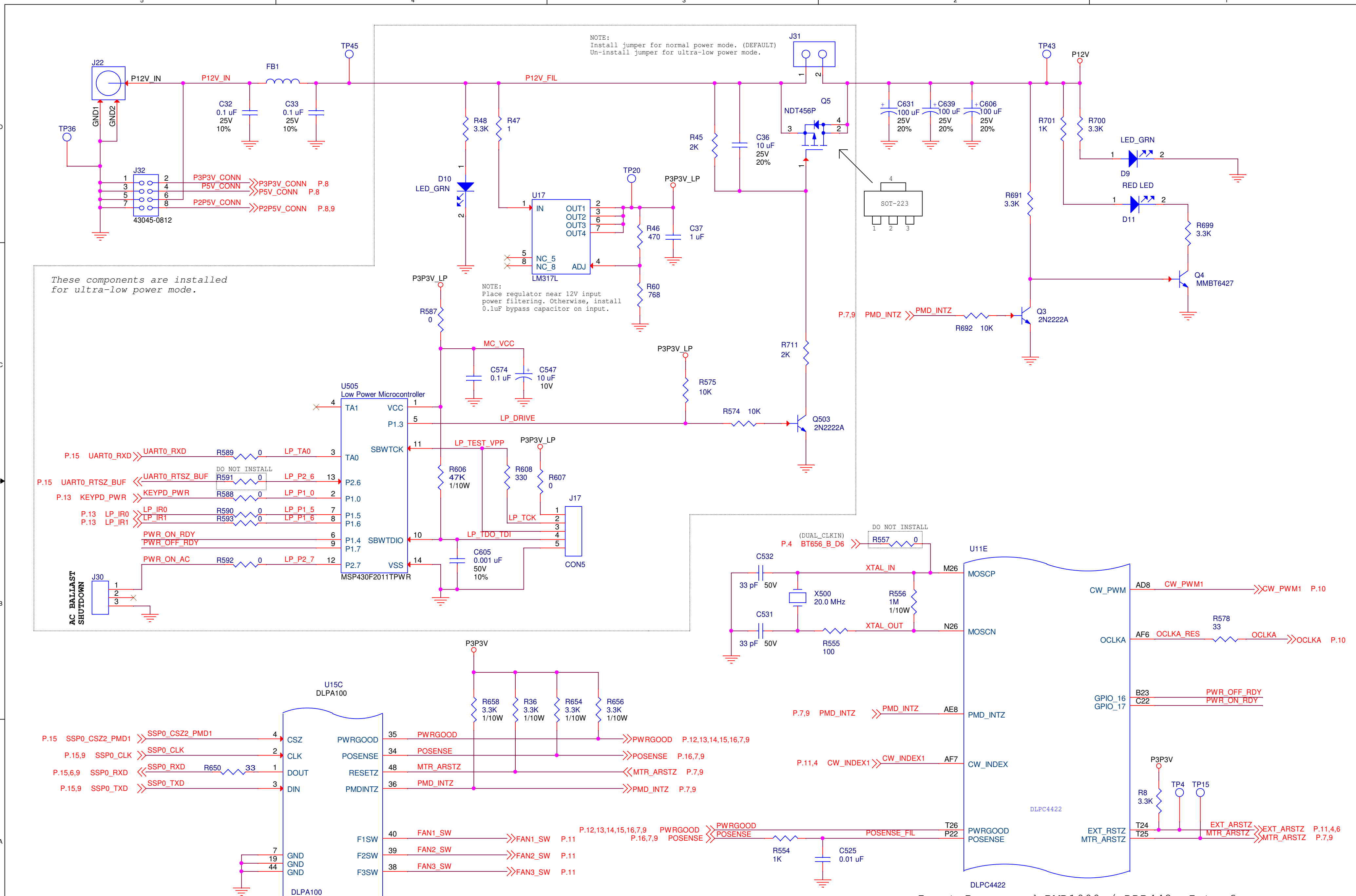
	ISSUE DATE 9/5/2013		SCALE	SHEET 5 OF 22	



DMD Flex Interface

TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334	REV C
	ISSUE DATE 9/5/2013			SCALE	SHEET 6 OF 22



Input Power and PMD1000 / DDP442x Interface

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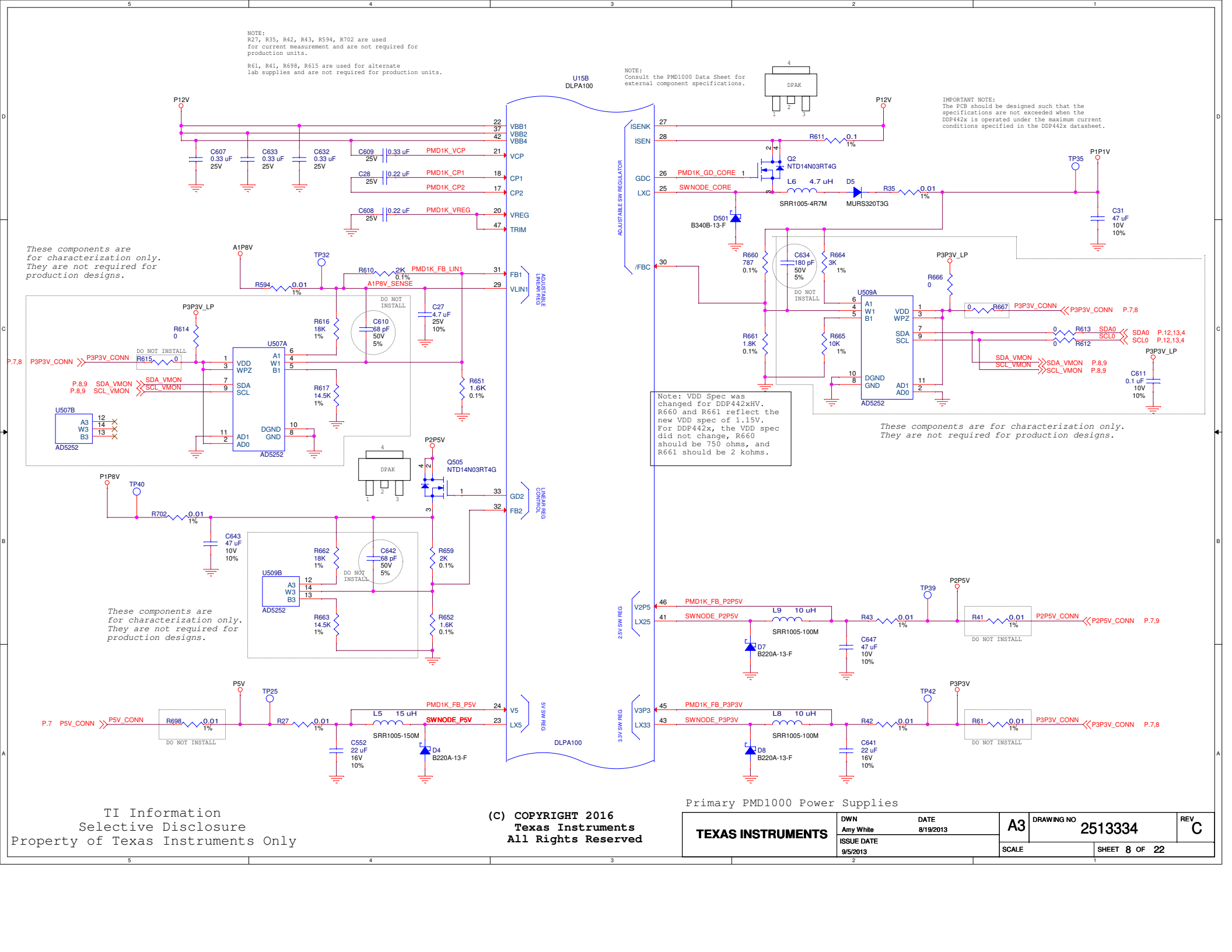
TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334	REV C
	ISSUE DATE 9/5/2013		SCALE	SHEET 7 OF 22	


NOTE:
R27, R35, R42, R43, R594, R702 are used for current measurement and are not required for production units.
R61, R41, R698, R615 are used for alternate lab supplies and are not required for production units.
U15B
DLPA100
NOTE:
Consult the PMD1000 Data Sheet for external component specifications.
IMPORTANT NOTE:
The PCB should be designed such that the specifications are not exceeded when the DDP442x is operated under the maximum current conditions specified in the DDP442x datasheet.
These components are for characterization only. They are not required for production designs.
Note: VDD Spec was changed for DDP442xHV. R660 and R661 reflect the new VDD spec of 1.15V. For DDP442x, the VDD spec did not change, R660 should be 750 ohms, and R661 should be 2 kohms.
ADJUSTABLE SW REGULATOR
ADJUSTABLE LINEAR REG
LINEAR REG CONTROL
2.5V SW REG
3.3V SW REG
5V SW REG
DLPA100
P12V
P1P1V
P1P8V
P2P5V
P3P3V
P3P3V_LP
A1P8V
P5V
U507A
U507B
U509A
U509B
AD5252
Q2 NTD14N03RT4G
Q505 NTD14N03RT4G
L6 4.7 uH
SRR1005-4R7M
MURS320T3G
L9 10 uH
L8 10 uH
L5 15 uH
SRR1005-100M
SRR1005-150M
D501 B340B-13-F
D7 B220A-13-F
D8 B220A-13-F
D4 B220A-13-F
DPAK
DO NOT INSTALL
SWNODE_CORE
SWNODE_P2P5V
SWNODE_P3P3V
SWNODE_P5V
PMD1K_GD_CORE
PMD1K_VCP
PMD1K_CP1
PMD1K_CP2
PMD1K_VREG
PMD1K_FB_LIN1
PMD1K_FB_P2P5V
PMD1K_FB_P3P3V
PMD1K_FB_P5V
A1P8V_SENSE
P3P3V_CONN
P2P5V_CONN
P3P3V_CONN
P5V_CONN
SDA_VMON
SCL_VMON
SDA0
SCL0
TP25
TP32
TP35
TP39
TP40
TP42
C607 0.33 uF 25V
C633 0.33 uF 25V
C632 0.33 uF 25V
C609 0.33 uF 25V
C28 0.22 uF 25V
C608 0.22 uF 25V
C610 68 pF 50V 5%
C27 4.7 uF 25V 10%
C634 180 pF 50V 5%
C642 68 pF 50V 5%
C31 47 uF 10V 10%
C611 0.1 uF 10V 10%
C643 47 uF 10V 10%
C647 47 uF 10V 10%
C641 22 uF 16V 10%
C552 22 uF 16V 10%
R610 2K 0.1%
R611 0.1 1%
R660 787 0.1%
R664 3K 1%
R666 0
R667 0
R661 1.8K 0.1%
R665 10K 1%
R613 0
R612 0
R614 0
R615 0
R616 18K 1%
R617 14.5K 1%
R651 1.6K 0.1%
R594 0.01 1%
R662 18K 1%
R663 14.5K 1%
R659 2K 0.1%
R652 1.6K 0.1%
R702 0.01 1%
R35 0.01 1%
R43 0.01 1%
R41 0.01 1%
R42 0.01 1%
R61 0.01 1%
R698 0.01 1%
R27 0.01 1%
TEXAS INSTRUMENTS
Primary PMD1000 Power Supplies
DWN Amy White
DATE 8/19/2013
ISSUE DATE 9/5/2013
A3
DRAWING NO 2513334
REV C
SCALE
SHEET 8 OF 22
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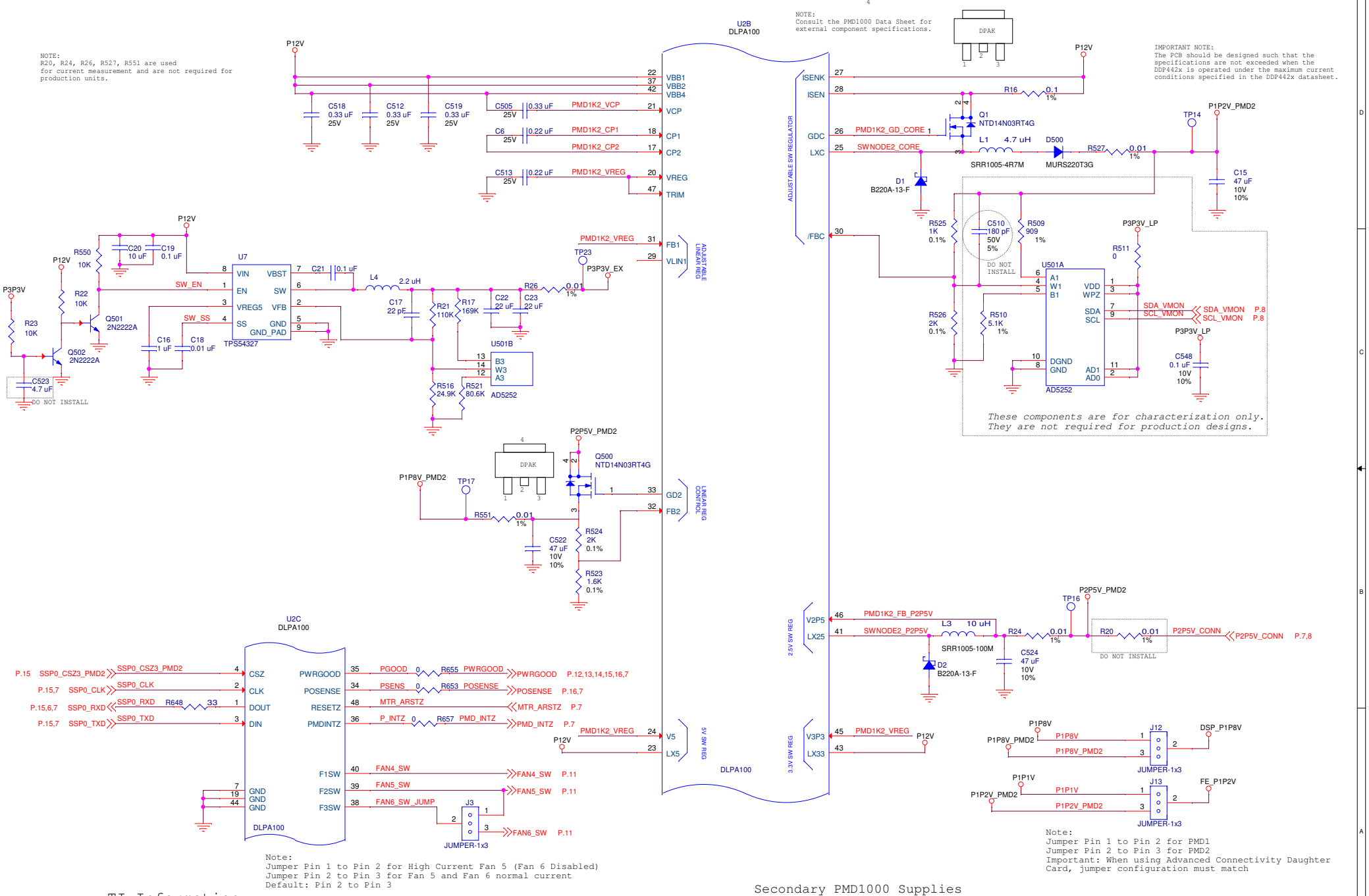

Secondary PMD1000 Supplies

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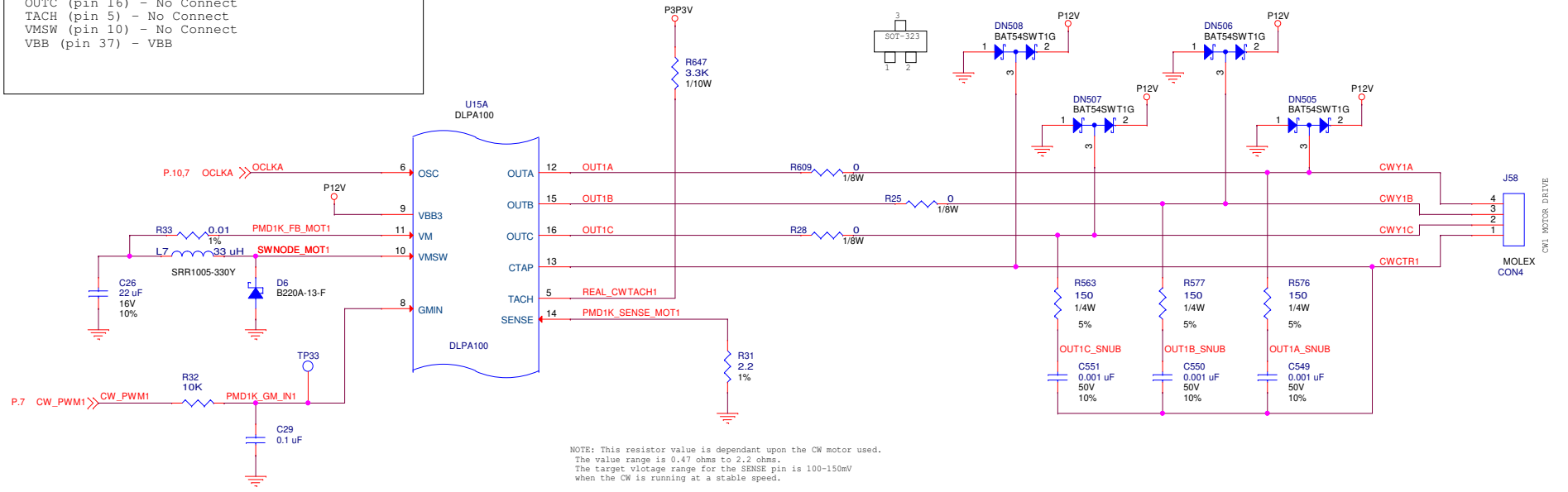
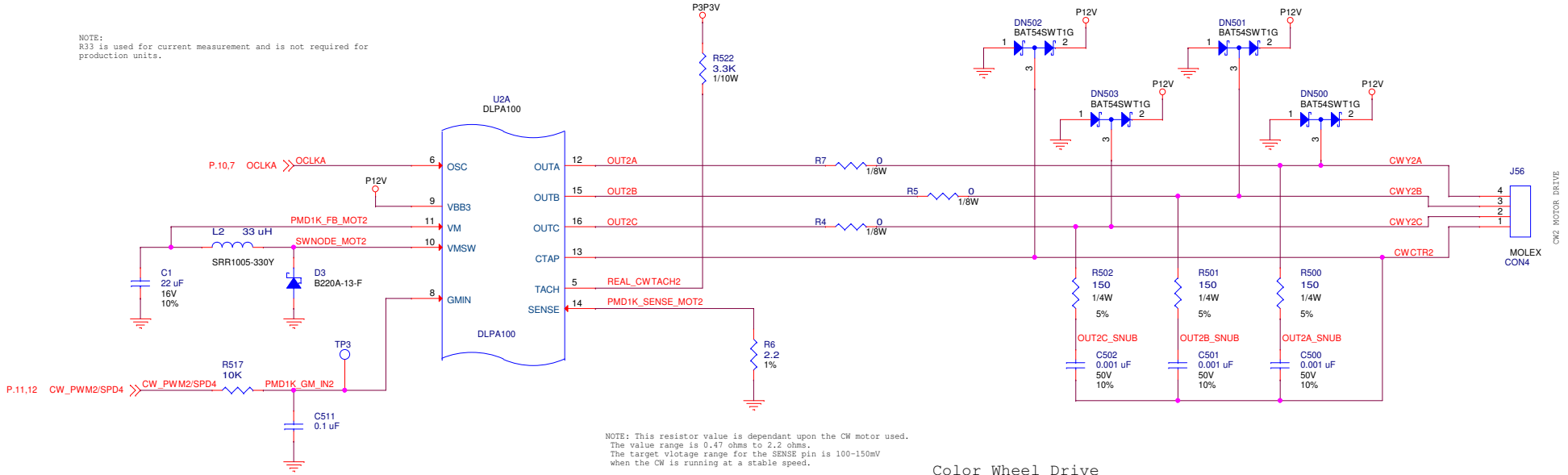
TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334	REV C
	ISSUE DATE 9/5/2013			SCALE	SHEET 9 OF 22

Note: If not using the motor driver on the PMD1000 follow these guidelines for unused pins:
GMIN (pin 8) - Ground
OSC (pin 6) - Ground
SENSE (pin 14) - Ground
CTAP (pin 13) - VBB
VM (pin 11) - VBB
OUTA (pin 12) - No Connect
OUTB (pin 15) - No Connect
OUTC (pin 16) - No Connect
TACH (pin 5) - No Connect
VMSW (pin 10) - No Connect
VBB (pin 37) - VBB



NOTE: This resistor value is dependant upon the CW motor used.
The value range is 0.47 ohms to 2.2 ohms.
The target vlotage range for the SENSE pin is 100-150mV
when the CW is running at a stable speed.

NOTE:
R33 is used for current measurement and is not required for production units.



NOTE: This resistor value is dependant upon the CW motor used.
The value range is 0.47 ohms to 2.2 ohms.
The target vlotage range for the SENSE pin is 100-150mV
when the CW is running at a stable speed.

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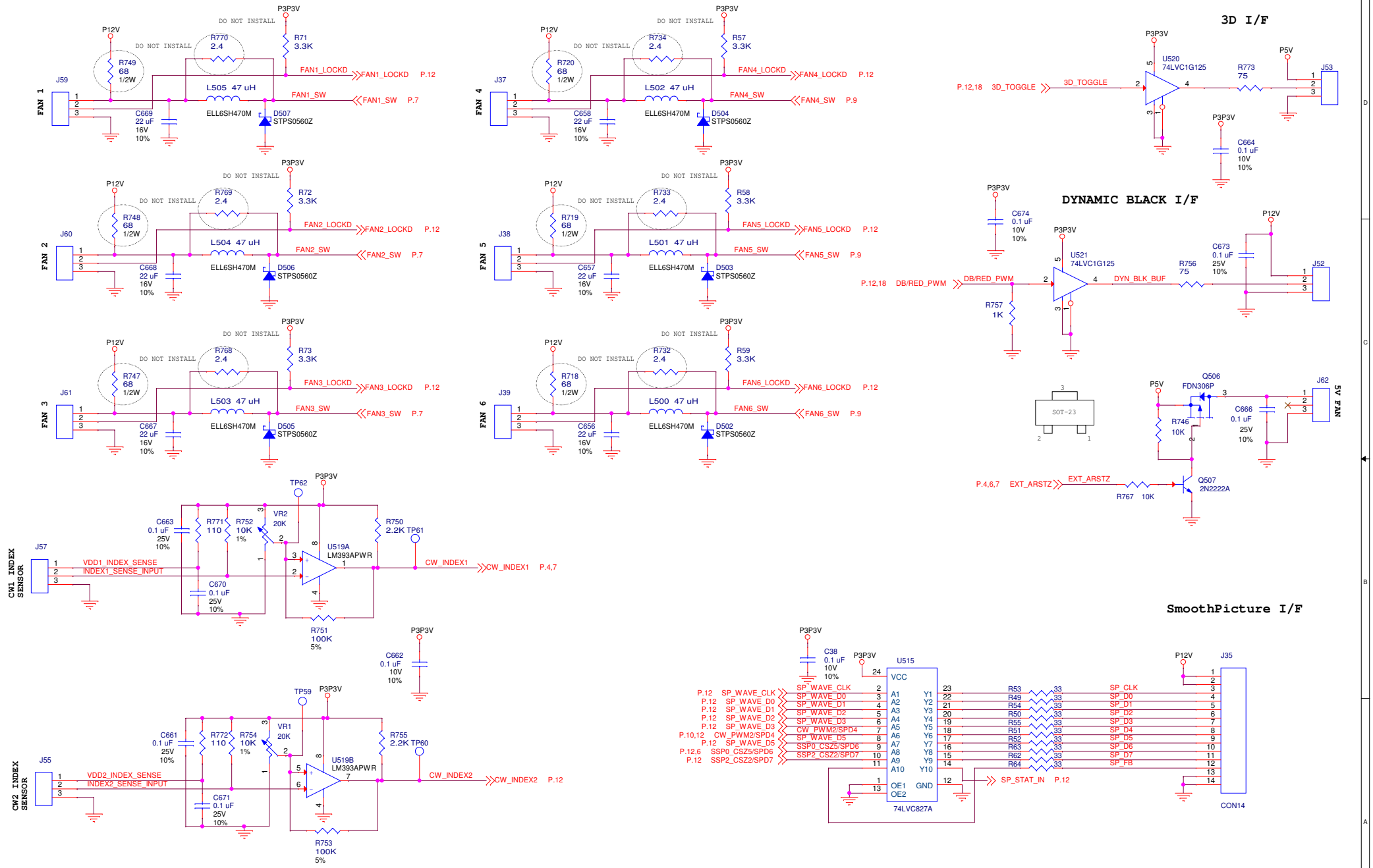
Color Wheel Drive

TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334	REV C
	ISSUE DATE 9/5/2013		SCALE	SHEET 10 OF 22	



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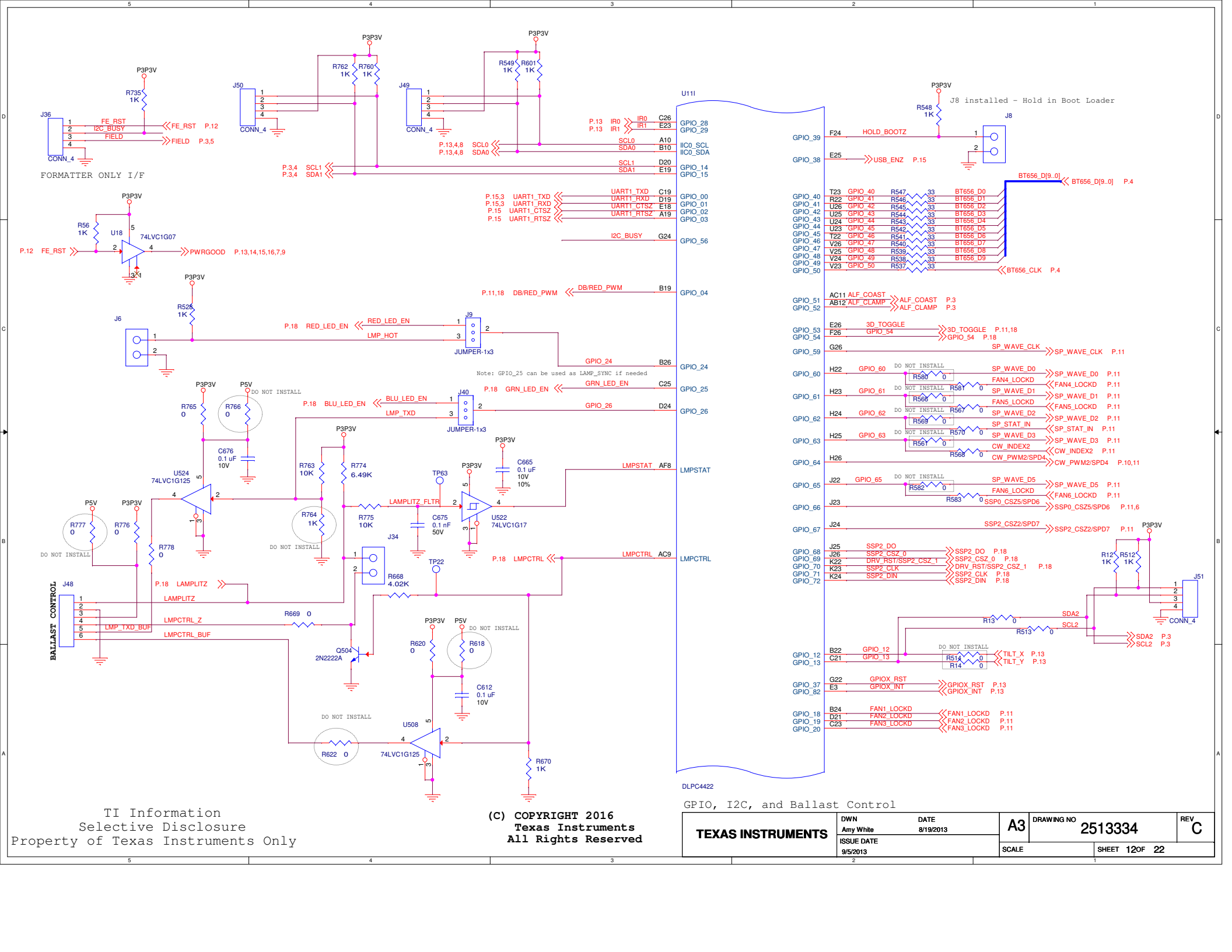
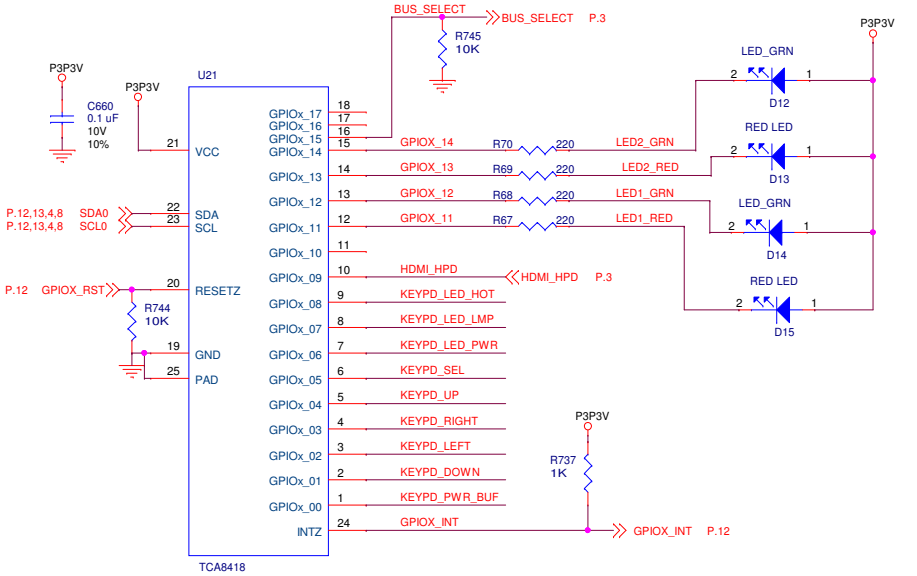
Fan, Color Wheel Interface and Peripherals

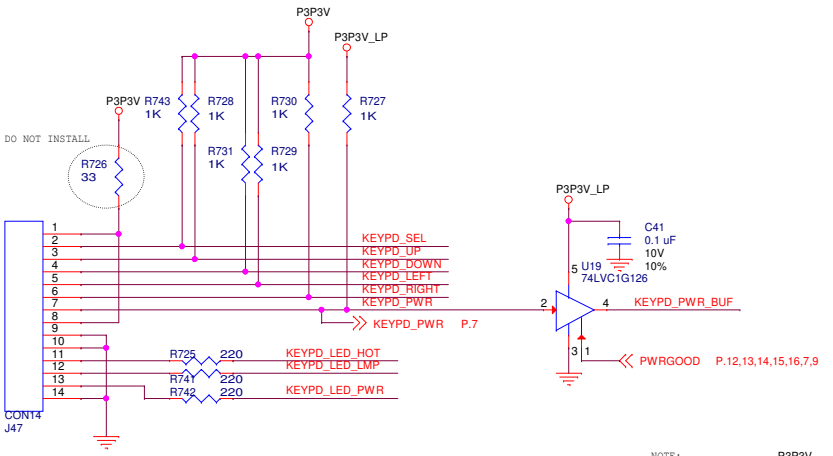
TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334	REV C
	ISSUE DATE 9/5/2013		SCALE	SHEET 11 OF 22	

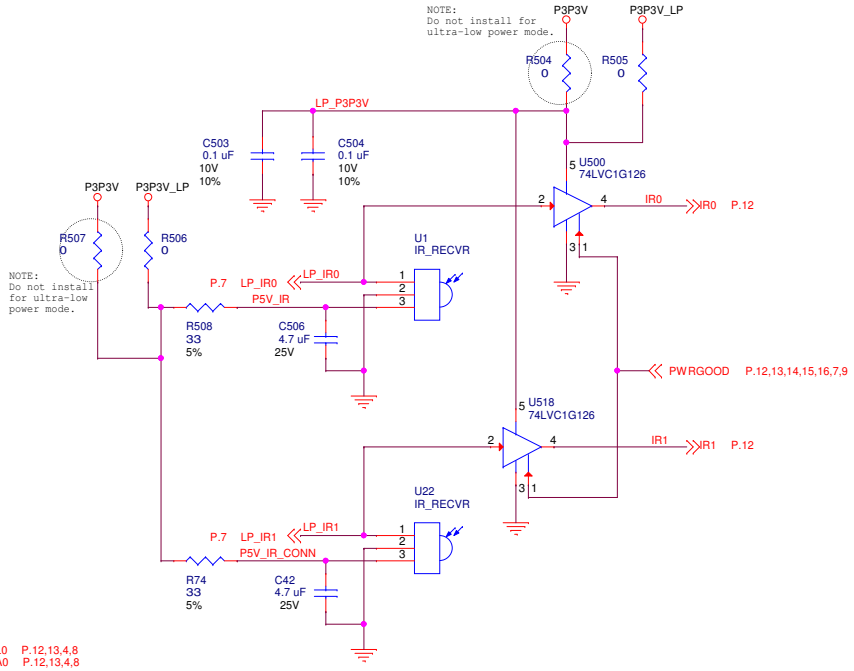


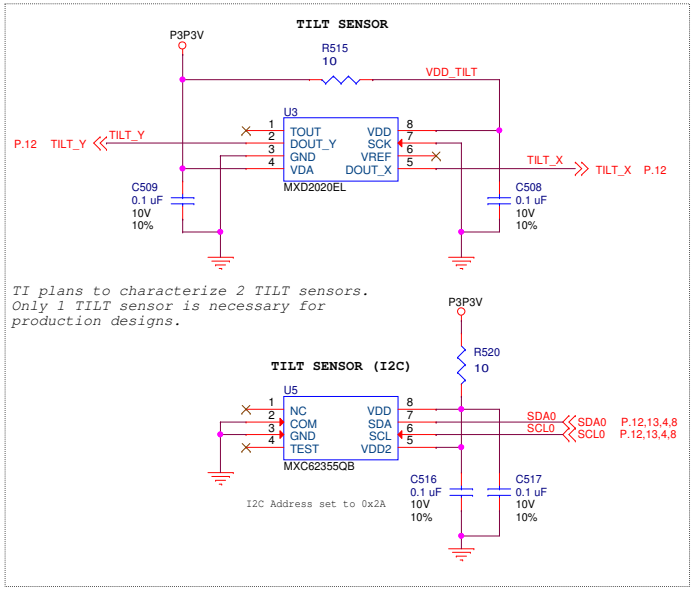
TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3
	ISSUE DATE 9/5/2013		DRAWING NO 2513334
			REV C
			SCALE
			SHEET 12 OF 22

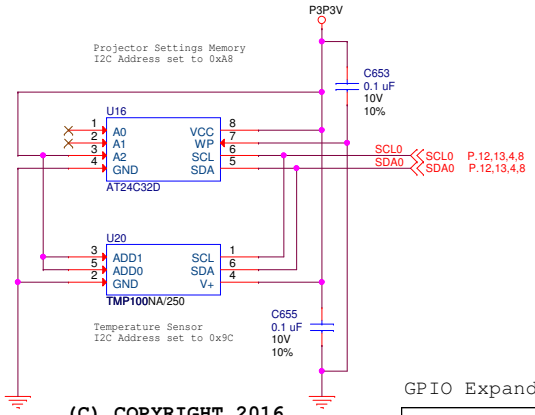
KEYBOARD INTERFACE





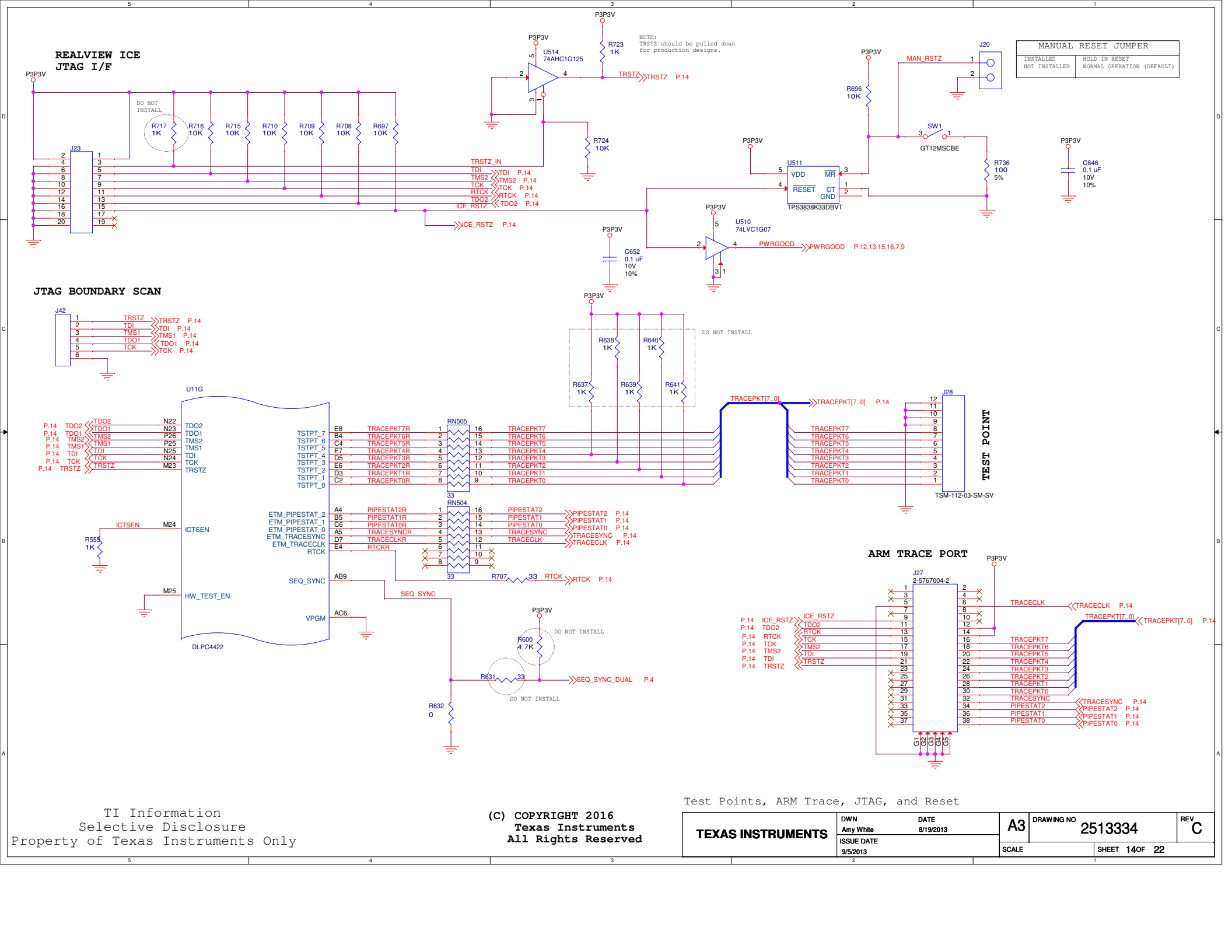






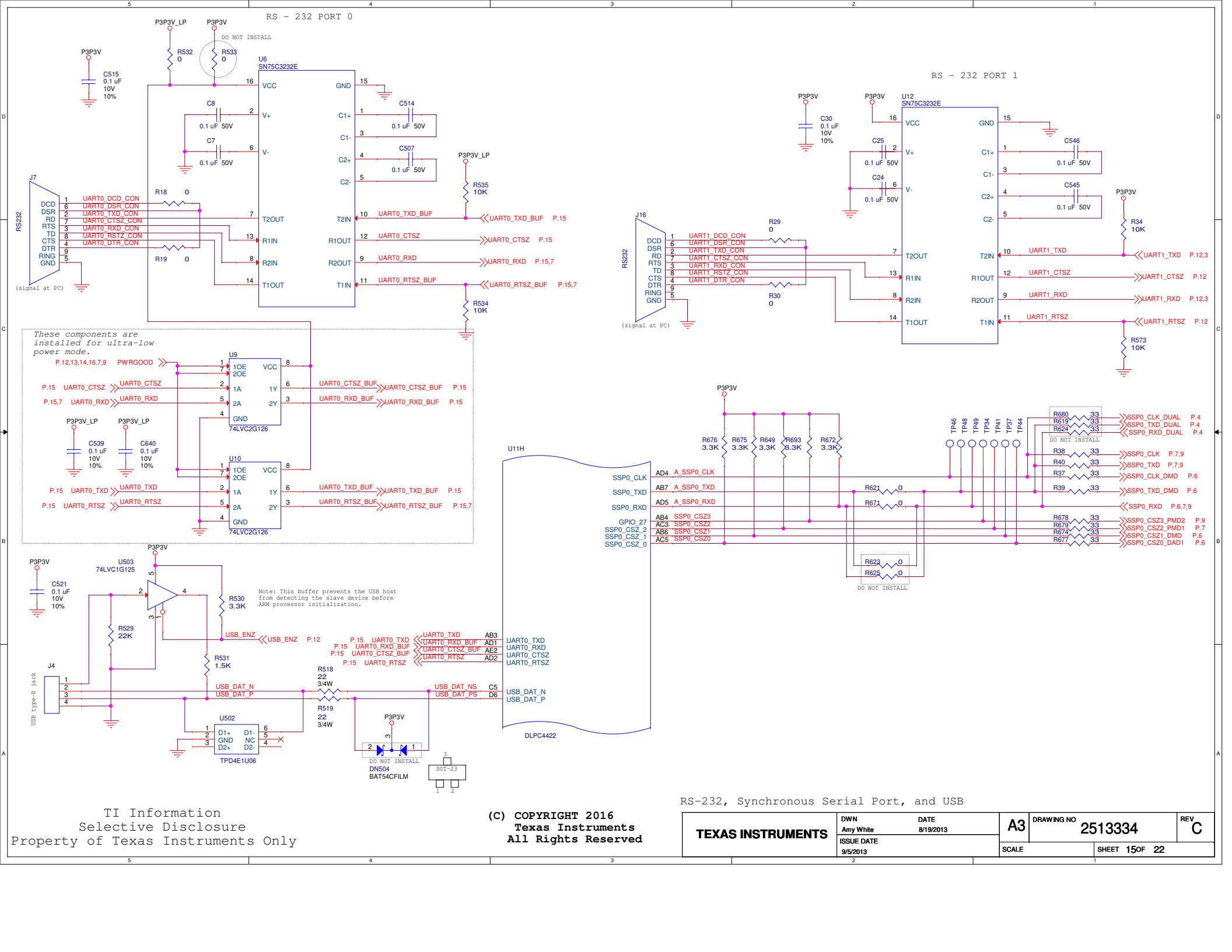
GPIO Expander and Keyboard

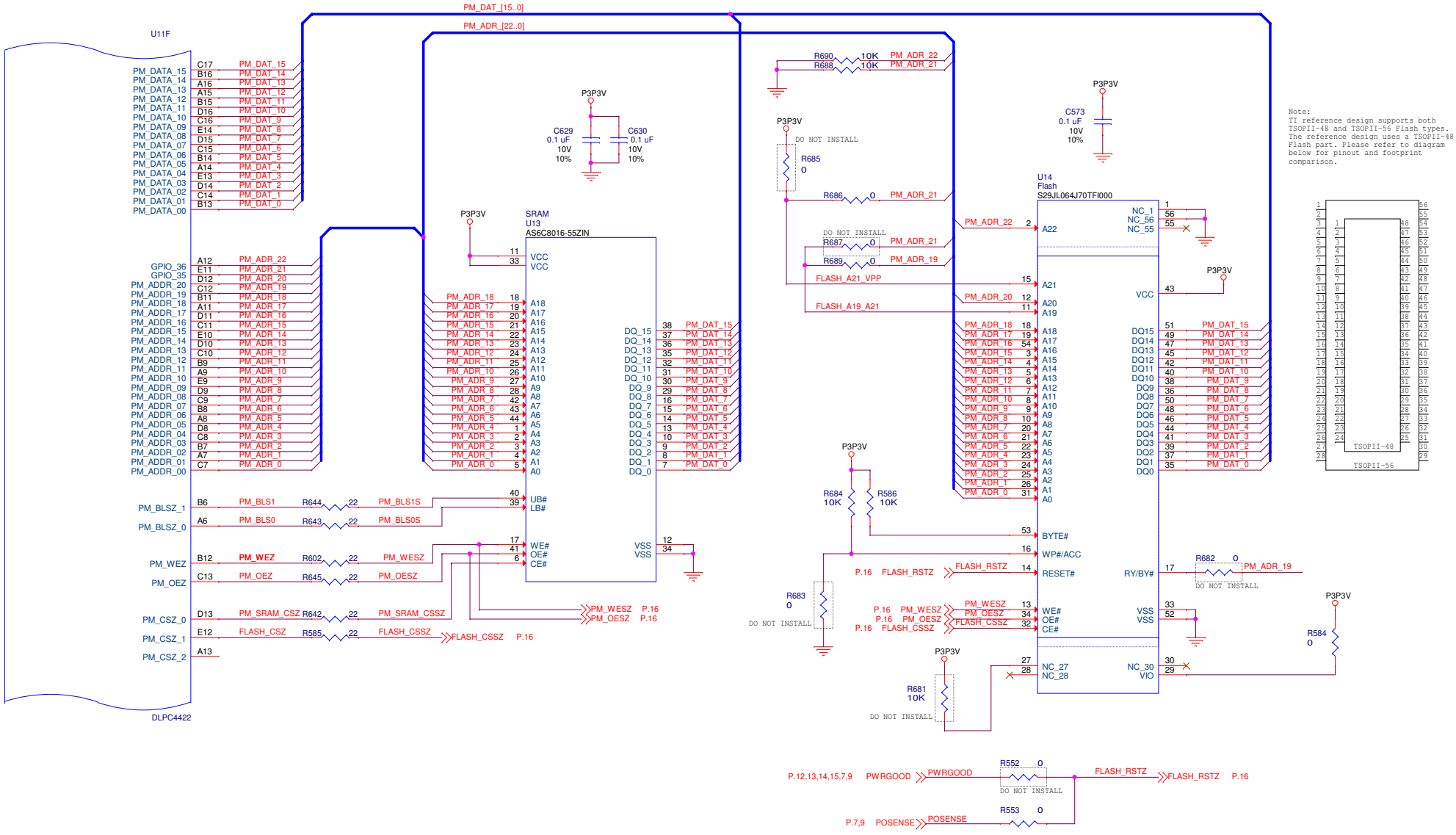
TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334	REV C
	ISSUE DATE 9/5/2013		SCALE	SHEET 13 OF 22	



Test Points, ARM Trace, JTAG, and Reset

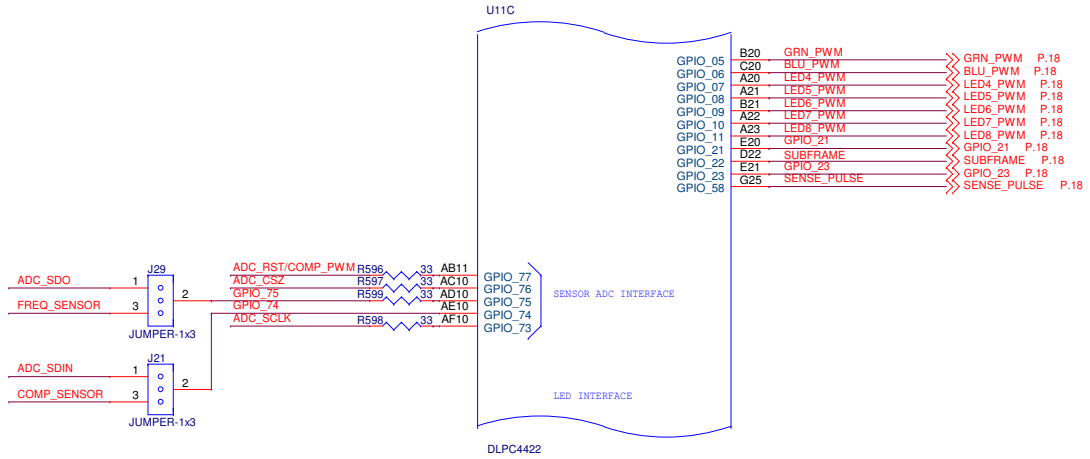
TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334	REV C
	ISSUE DATE 9/5/2013		SCALE	SHEET 14 OF 22	



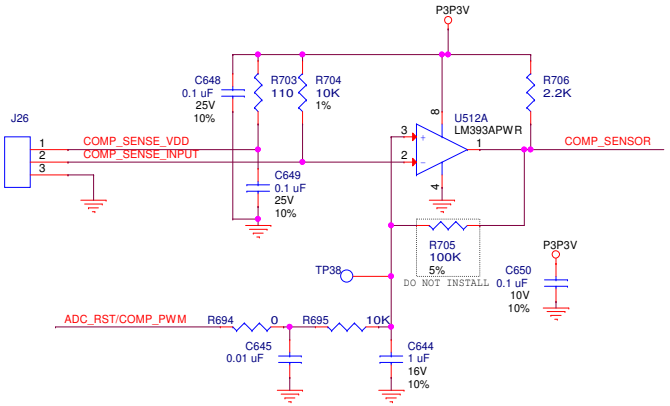


Flash and SRAM Memory Interface

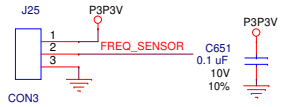
TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334 REV C
	ISSUE DATE 9/5/2013		SCALE	SHEET 16 OF 22



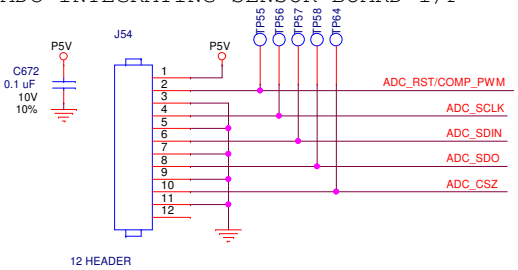
COMPARATOR SENSOR I/F



LIGHT TO FREQUENCY SENSOR I/F



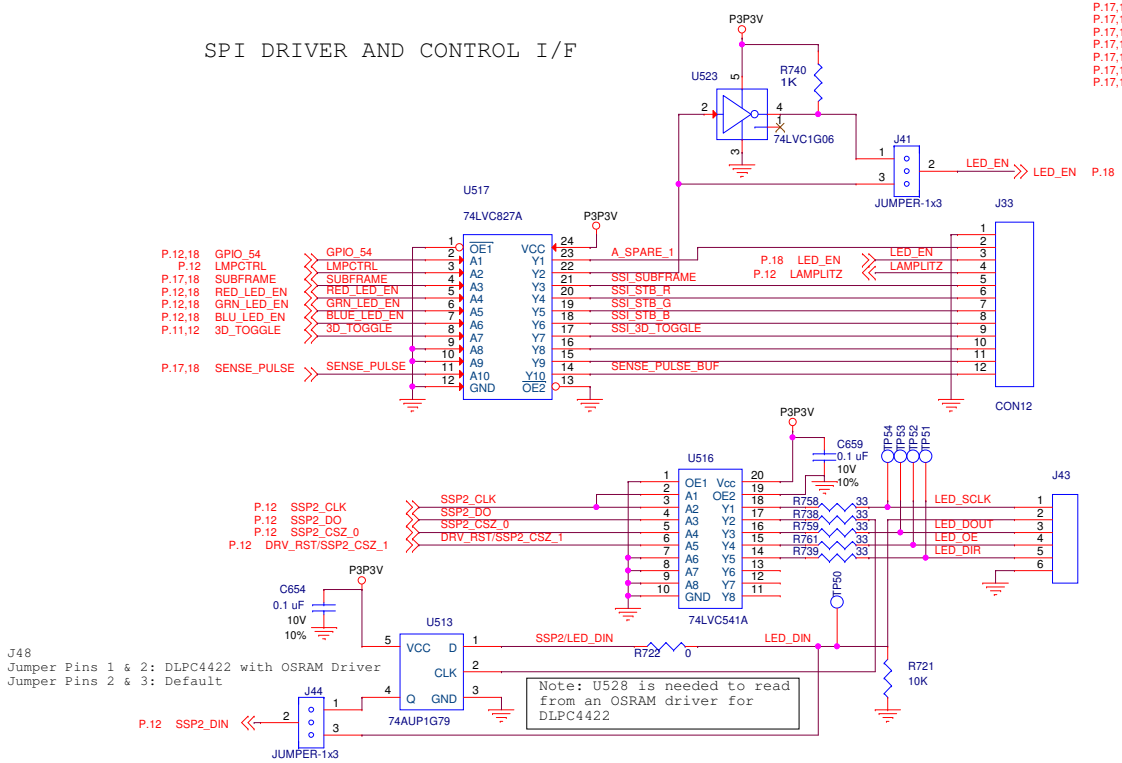
ADC INTEGRATING SENSOR BOARD I/F



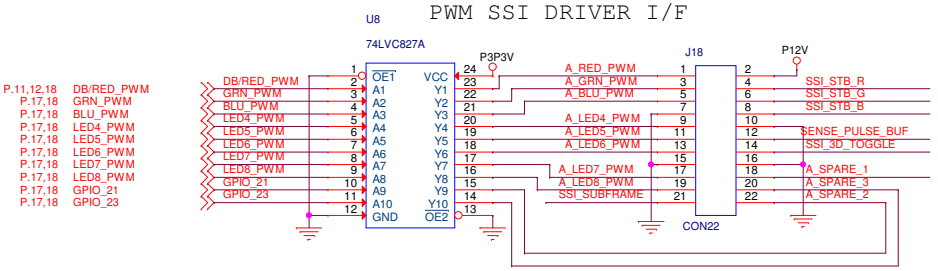
SSI SENSOR INTERFACE

TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334	REV C
	ISSUE DATE 9/5/2013		SCALE	SHEET 17 OF 22	

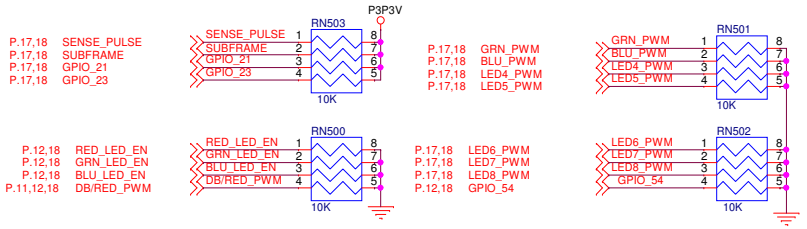
SPI DRIVER AND CONTROL I/F



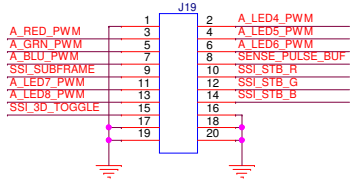
PWM SSI DRIVER I/F



PULL-UP/PULL-DOWN RESISTORS



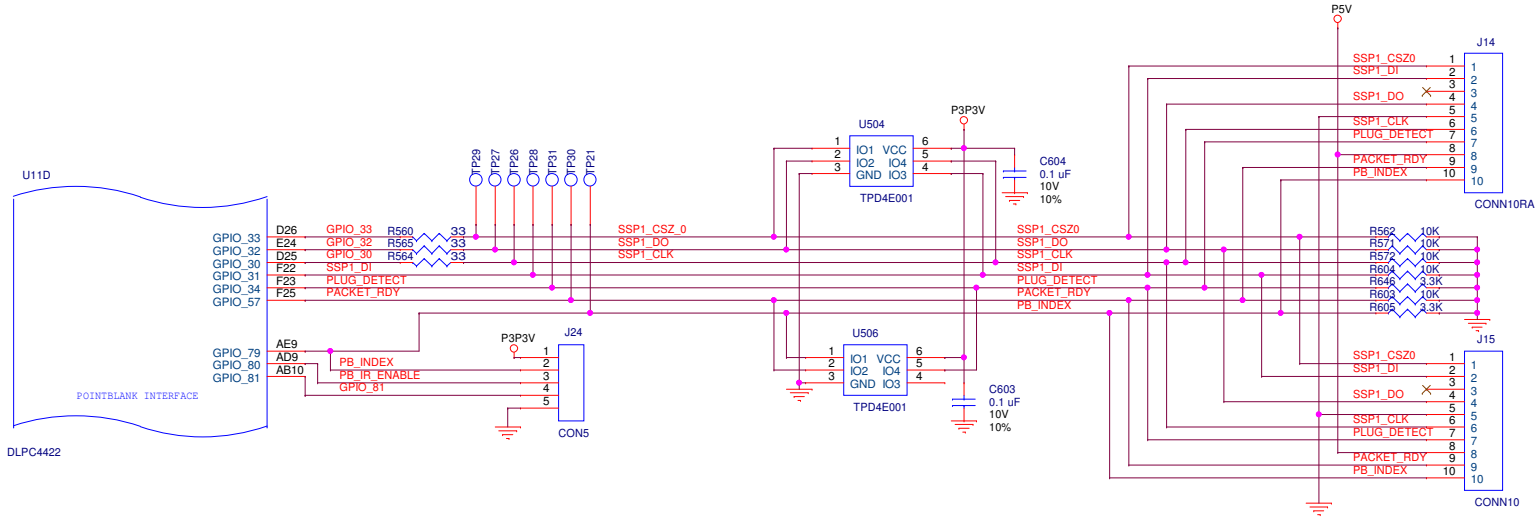
TESTPOINTS



SSI Driver Interfaces

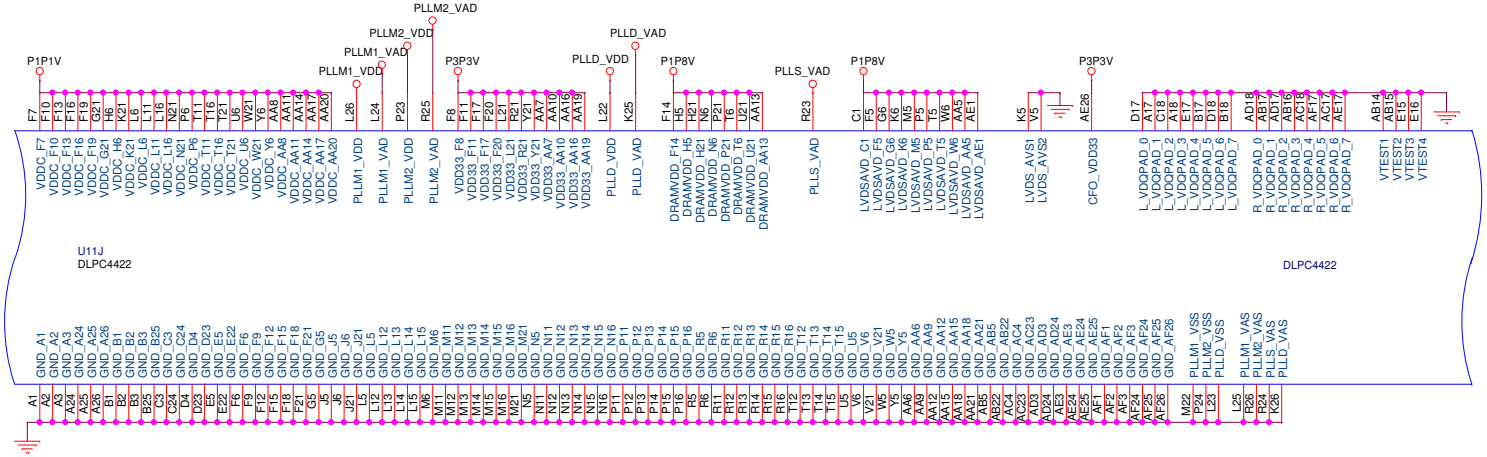
TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334	REV C
	ISSUE DATE 9/5/2013			SCALE	SHEET 18 OF 22

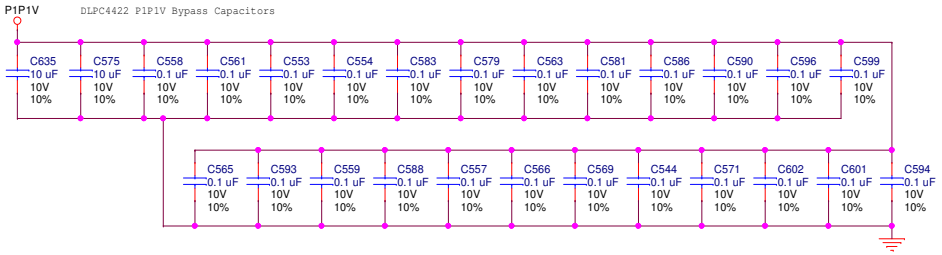
Note: Only one connector is needed for production designs (J68 or J20)

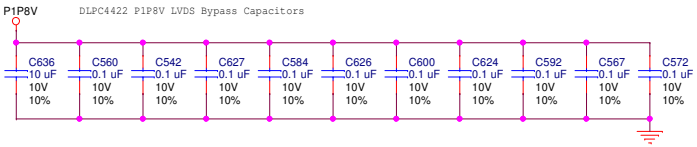


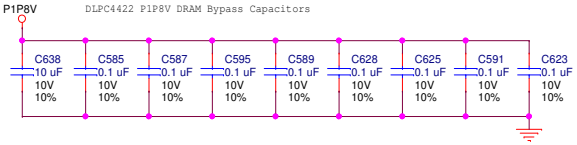
PointBlank Interface

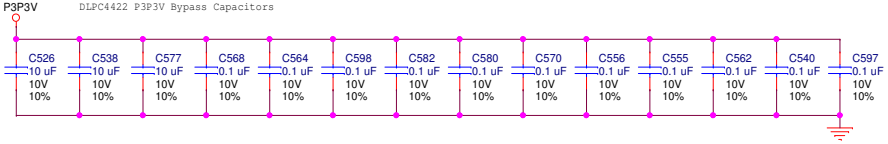
TEXAS INSTRUMENTS	DWN Amy White	DATE 8/19/2013	A3	DRAWING NO 2513334	REV C
	ISSUE DATE 9/5/2013		SCALE	SHEET 19 OF 22	

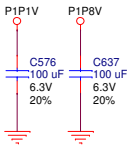


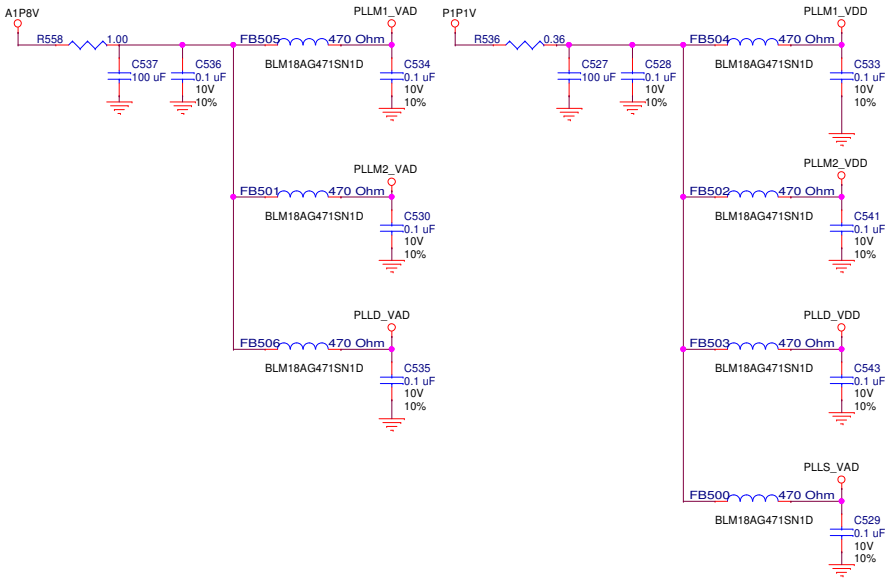












DDP442x Power and Bypass Capacitors

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Rev B

Sheet 8: Changed R660 and R661 resistor values for new VDD Spec for DLPC4422
Added note about R660 and R661 for DLPC4422

Rev C

Sheet 7: Deleted obsolete D9 and D10 dual package (Red/Green) LEDs. Added D9, D10, and D11 single package discrete Red and Green LEDs.
Updated obsolete X500 crystal device with RoHS compliant replacement.
Sheet 8: Updated obsolete Q2 and Q505 Devices with equivalent RoHS compliant replacement.
Sheet 9: Updated obsolete Q1 and Q500 Devices with equivalent RoHS compliant replacement.
Sheet 13: Deleted obsolete D11 and D12 dual package (Red/Green) LEDs. Added D12, D13, D14, and D15 single package discrete Red and Green LEDs.
Updated U3 and U16 with equivalent RoHS compliant device.
Sheet 16: Updated U14 with equivalent RoHS compliant device.
Sheet 20: Updated obsolete R536 with equivalent replacement

REVISION HISTORY

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