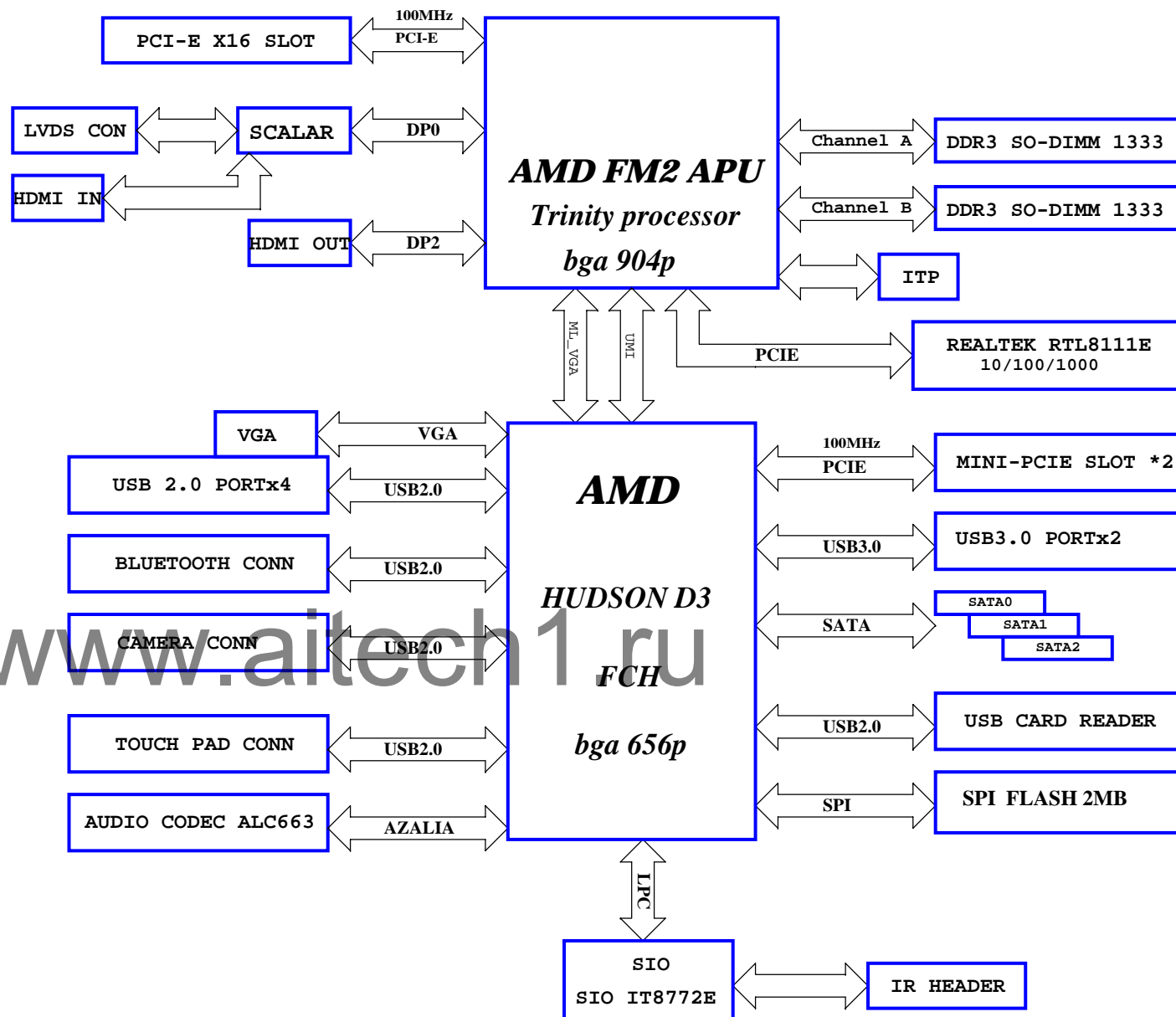


## AAHD3-VL

Rev: 1.01

PAGE	TITLE
01	BLOCK DIAGRAM
02	POWER DISTRIBUTION
03	CLOCKS DISTRIBUTION
04	POWER FLOW
05	XXXX
06	POWER SEQUENCE
07	CHANGE HISTORY
08~11	AMD FM1 SOCKET
12~13	DDR3 DIMM
15	TEMP SENSOR
16~20	FCH HUDSON-D3
21	SPI ROM&BOARD ID
22	PCI EXPRESS X16 SLOT
23	MINI-PCIE SLOT
24	MINI-PCIE SLOT
25	REALTEK RTL8111F
26	LAN JACK
27	REAR USB2.0 PORT
28	SIDE USB3.0 PORT
29	SIDE USB2.0 PORT
31	USB HEADER
32	USB Charger SLG5583
33	+5VA For Charger
34	REALTEK ALC663 AZALIA CODEC
35	AUDIO AMP
36	AUDIO CONNECTOR
37	AUDIO SW
38	SUPER I/O IT8772E
39	FRONT PANEL CIRCUIT
40	FAN CIRCUIT
41	INTEGRATED VGA PORT
42	IR / SPKR
43	RTC/COMS/SCREW
44	DEBUG HEADER
45~46	SCALAR STDP6038
47	I2S AUDIO DAC
48	LVDS CONNECTOR
50	HDMI CONN (OUT)
52	HDMI COMM(IN)
53	SATA CONN
54	CARD READER-AU6437GEF
56	19V OCP -SYS_IN
57	+1P1VSB&+2P5V
58	+19V,+12V,+5V,+3P3V
59	+12VSB, +1P1V
60	+5VSB , +3P3VSB
61	+5V_DUAL
62	+VTT_DDR,EN
63	+1P5V_DUAL , VDDR&VDDP
64	+1P2V , +1P5V
65	DISCHARGE
66	CURRENT SENSE
67	VCORE CONTROLLER

68~69	VCORE DRIVER
70	VDDNB
71	EMI CAPS



PEGATRON DT-MB RESTRICTED SECRET

PEGATRON Title : BLOCK DIAGRAM

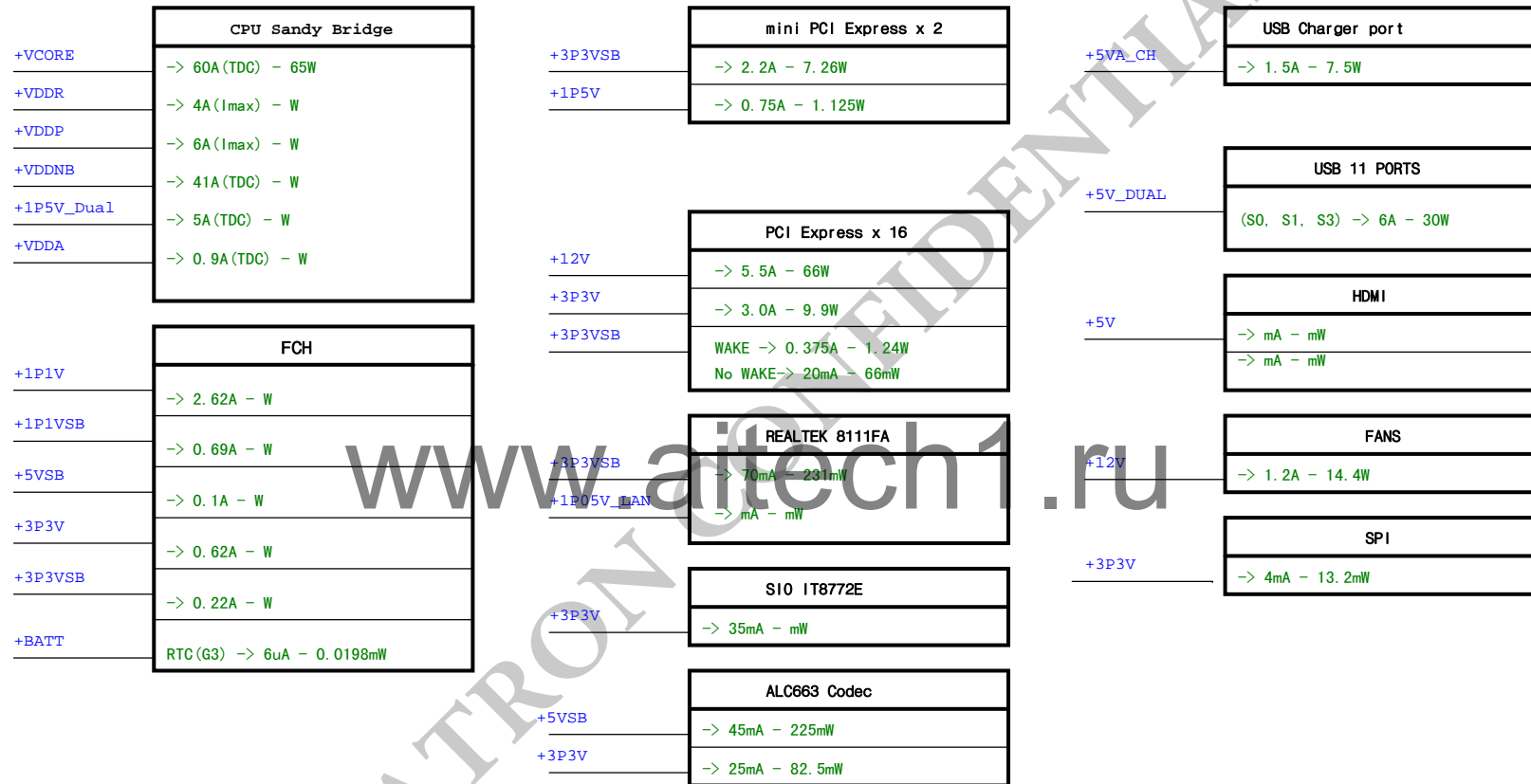
Pegatron Corp. Engineer: Melly\_Liu

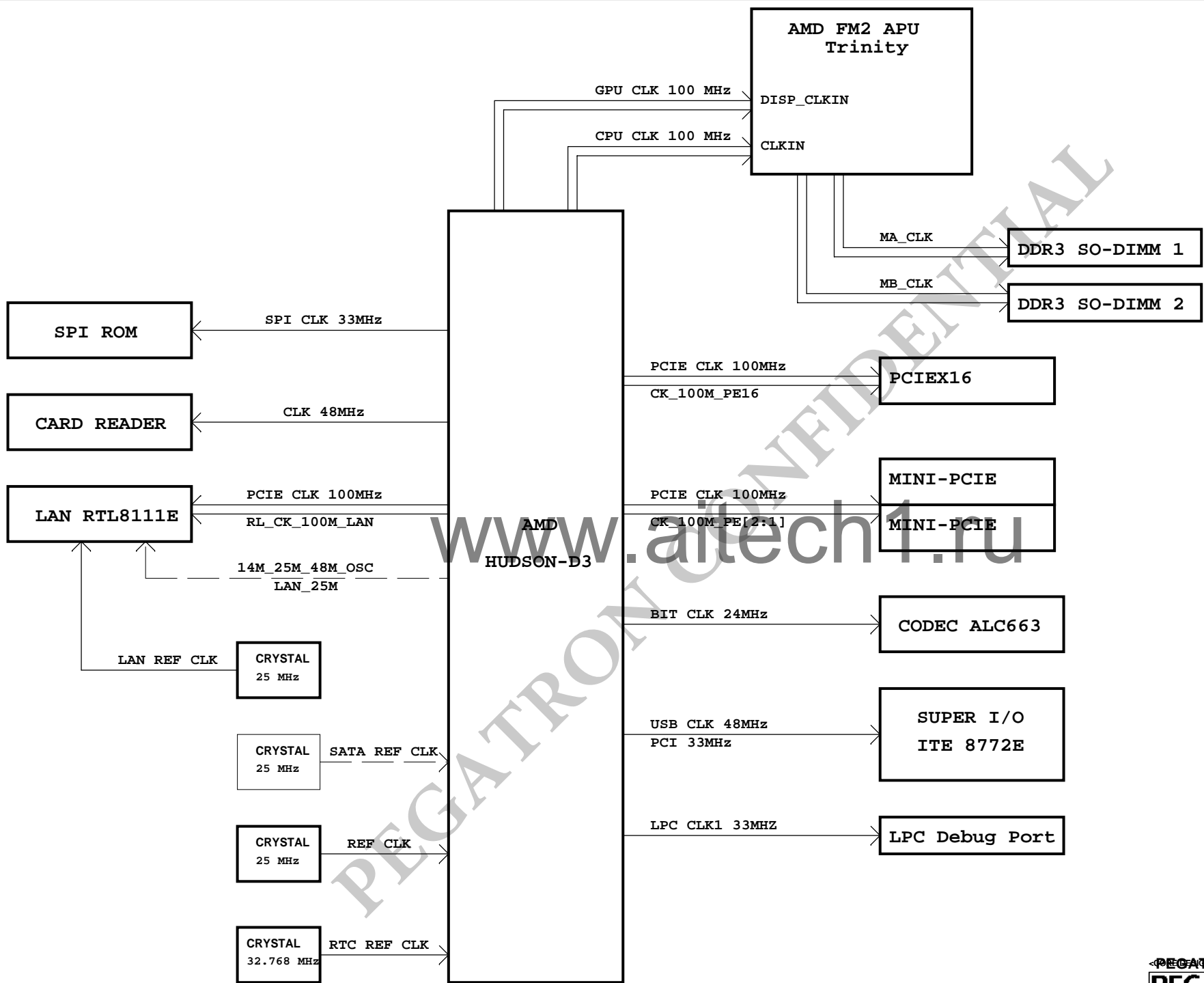
Size Project Name

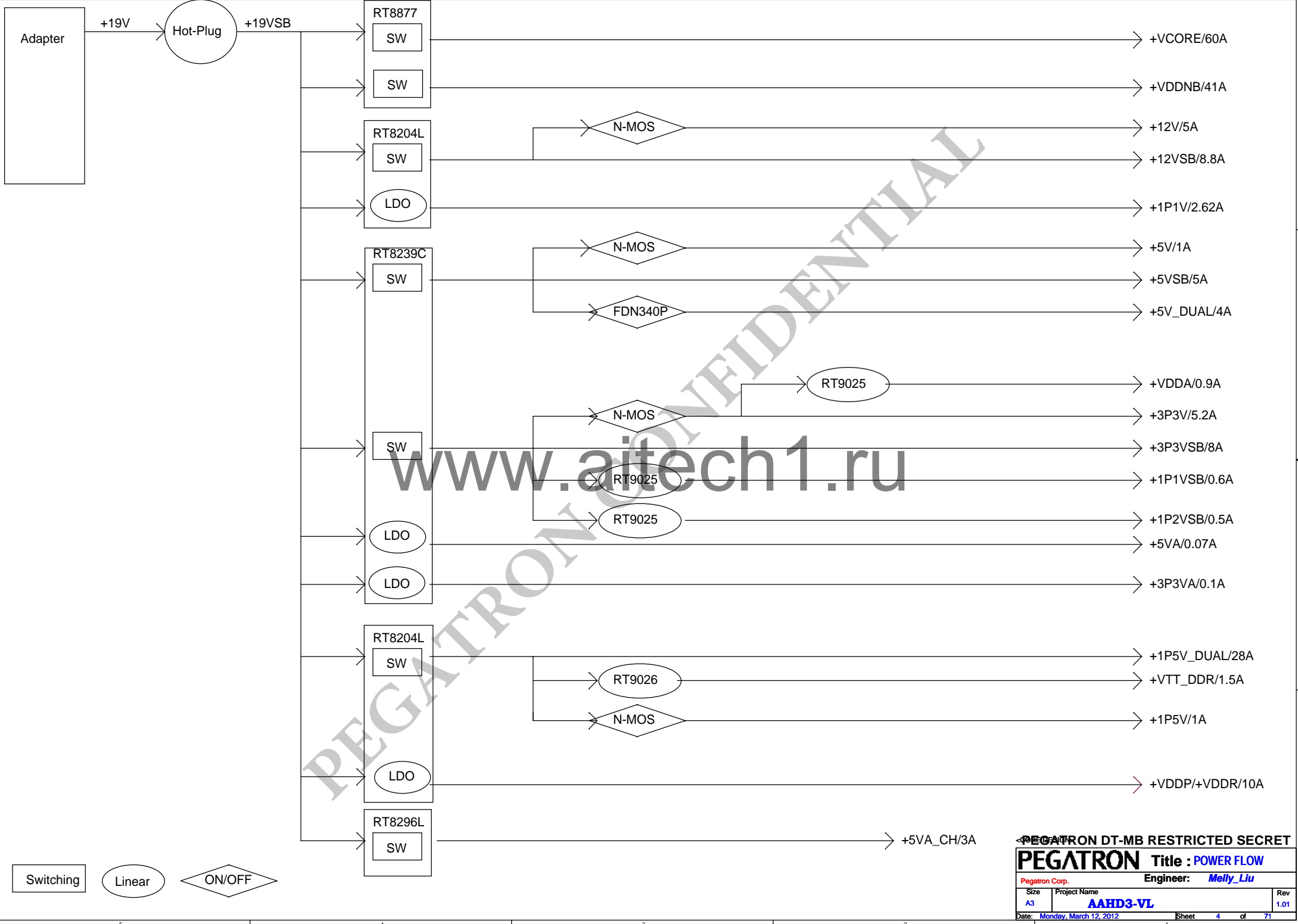
A3 AAHD3-VL

Date: Monday, March 12, 2012 Sheet 1 of 71

Rev 1.01



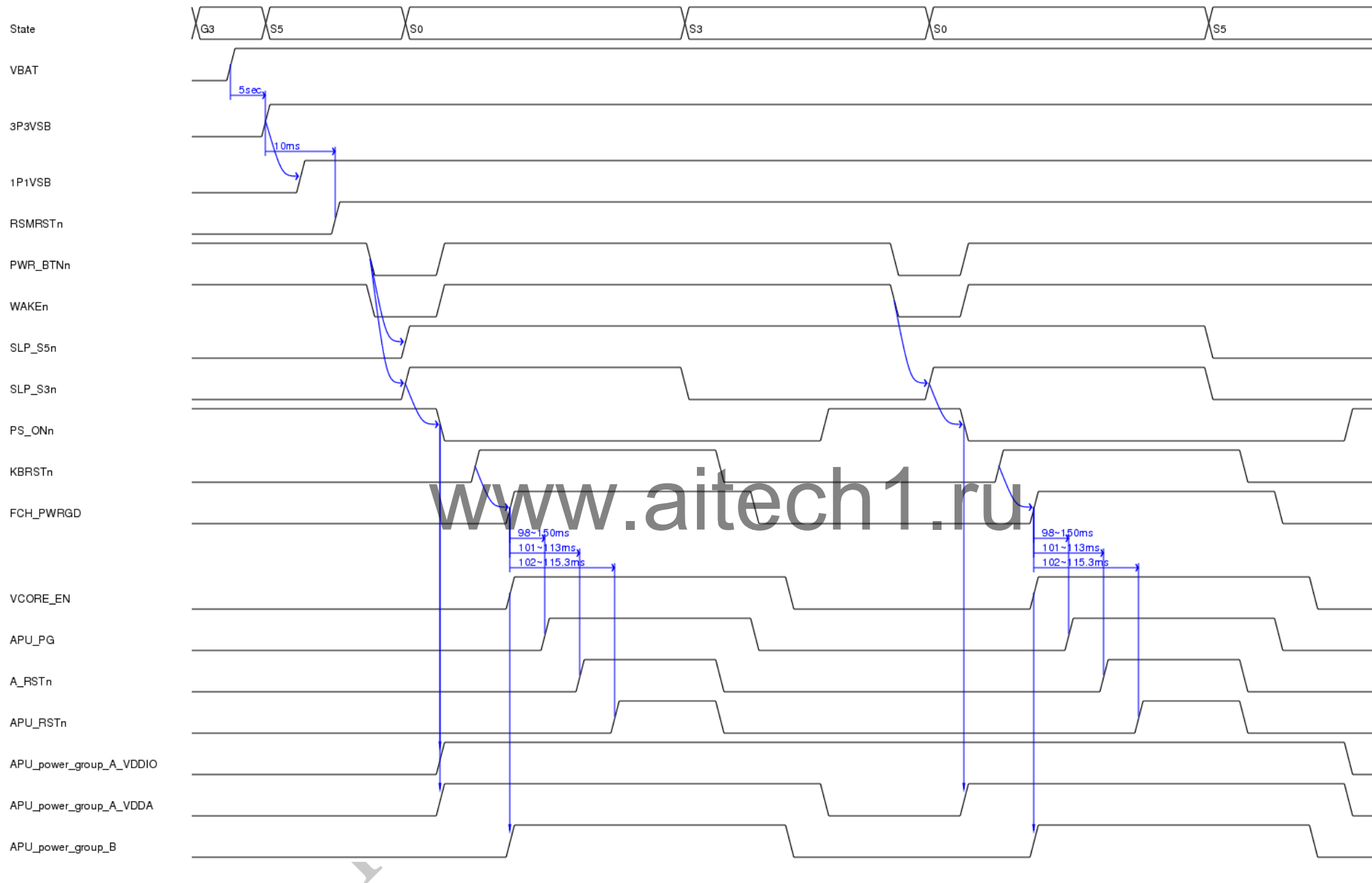




www.aitech1.ru

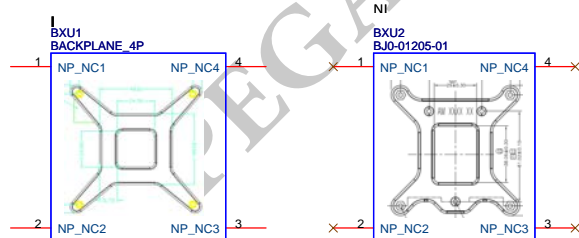
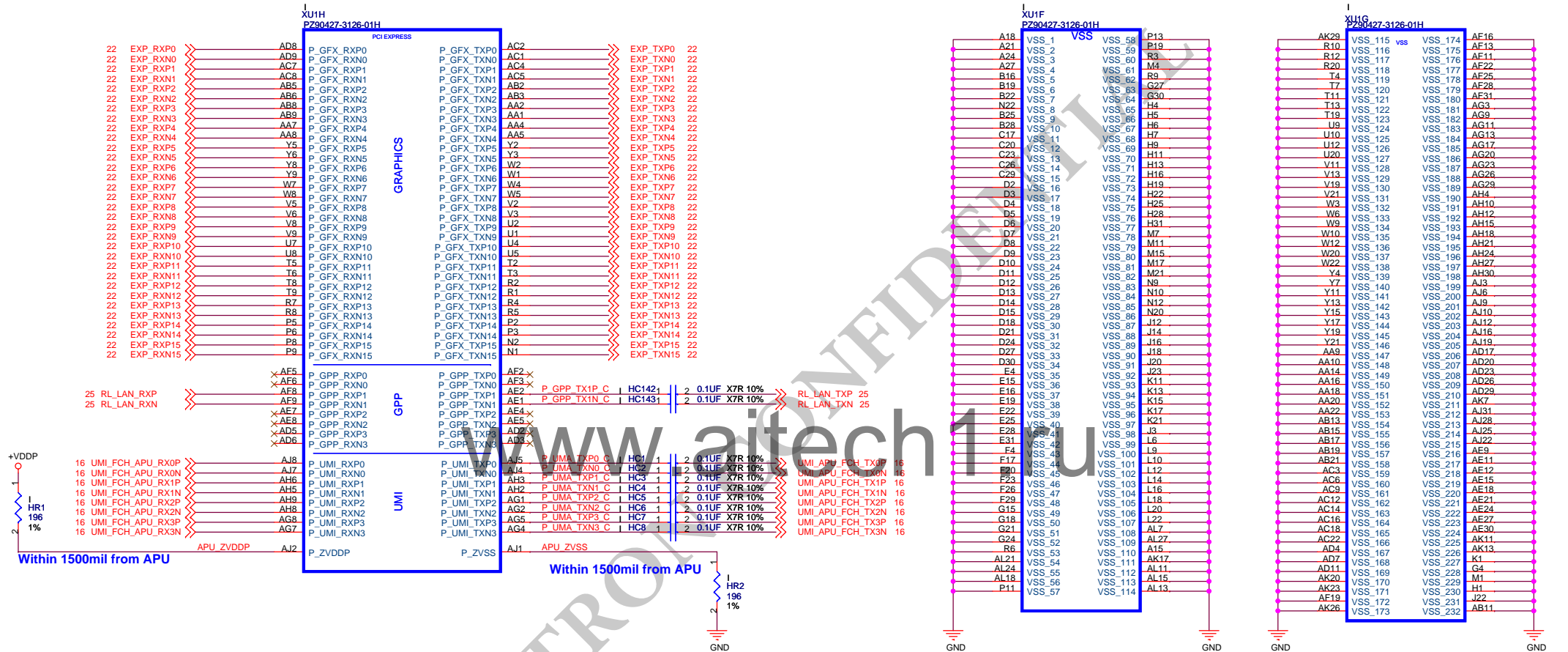
PEGATRON CONFIDENTIAL

PEGATRON DT-MB RESTRICTED SECRET		
<b>PEGATRON</b>		<b>Title : SIGNAL&amp;RESET MAP</b>
Pegatron Corp.		Engineer: <i>Melly_Liu</i>
Size A3	Project Name <b>AAHD3-VL</b>	Rev 1.01
Date: Monday, March 12, 2012		Sheet 5 of 71

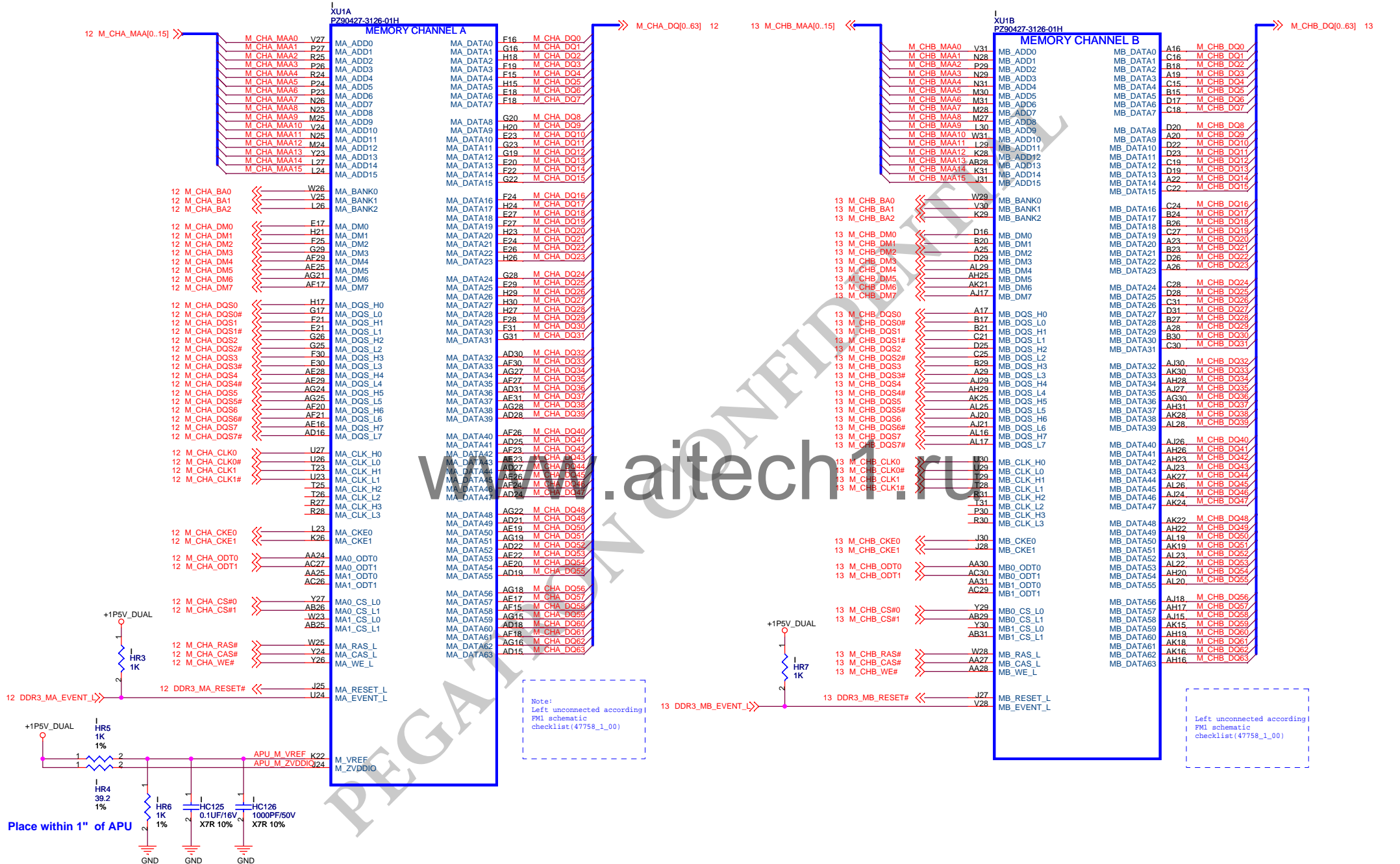


NOTE:  
APU\_power\_group\_B --> VDDP, VDDR, VCORE, VDDNB

[illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible]







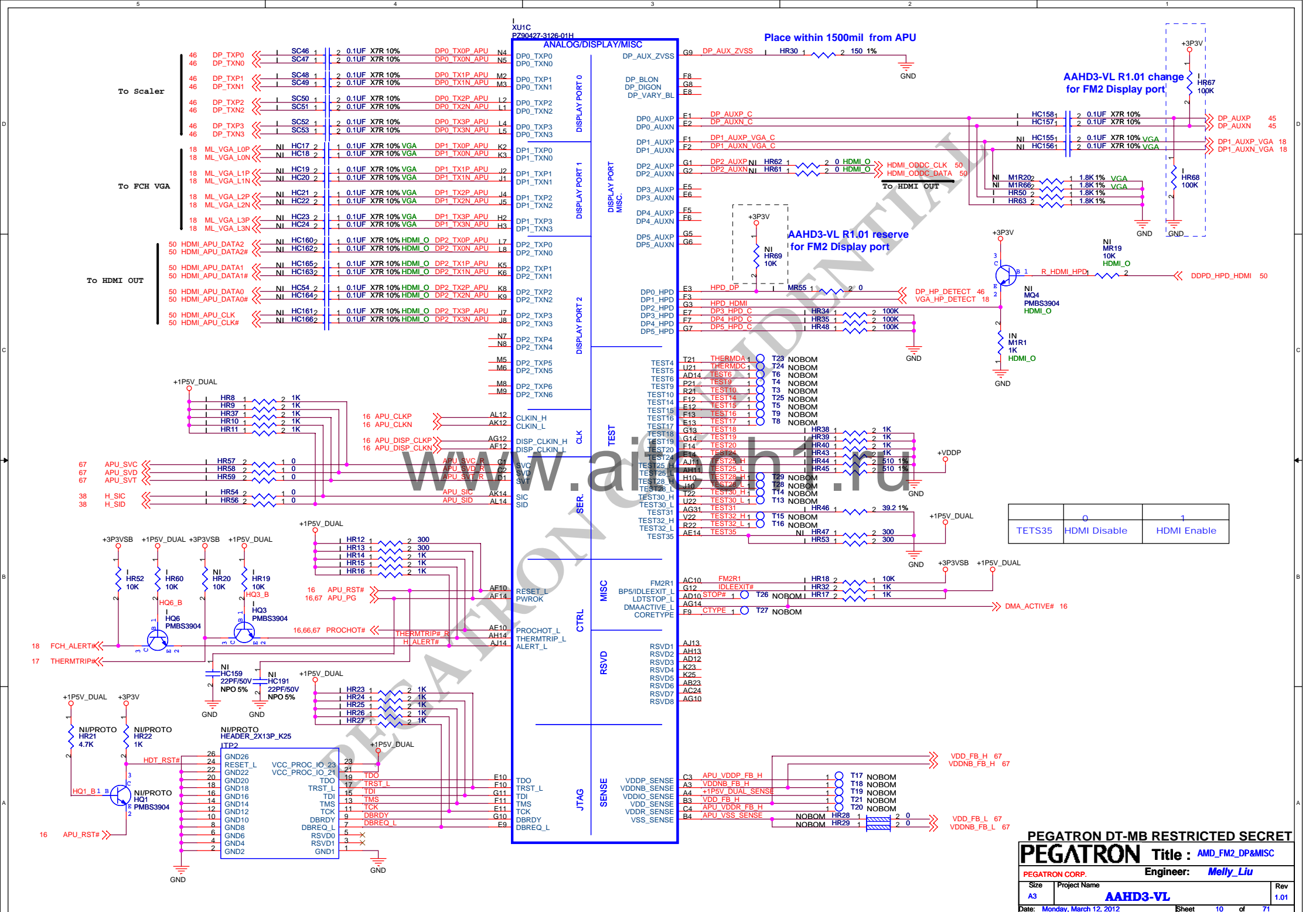
PEGATRON DT-MB RESTRICTED SECRET

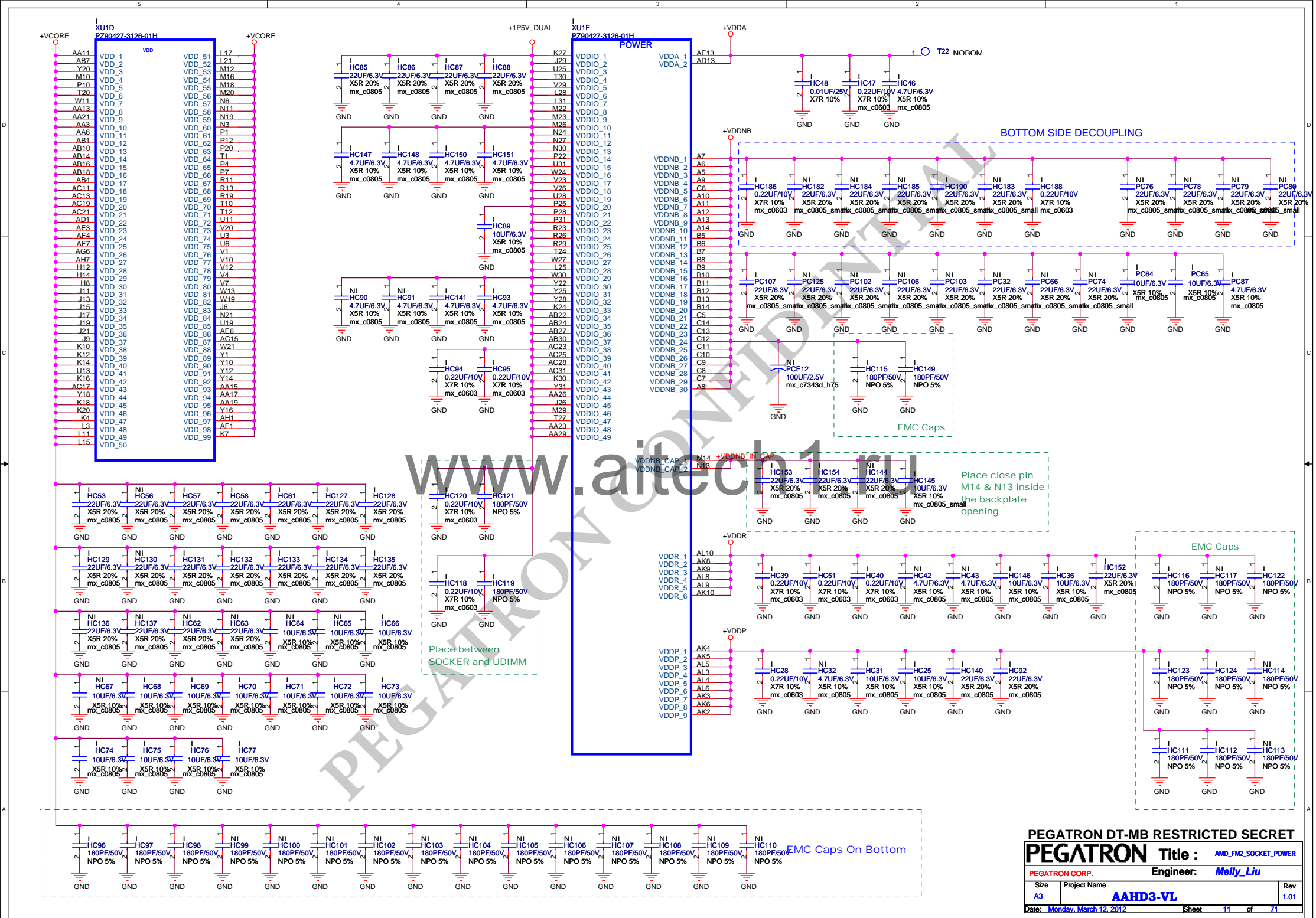
**PEGATRON** Title : **AMD\_FM2\_SOCKET\_DDR3**

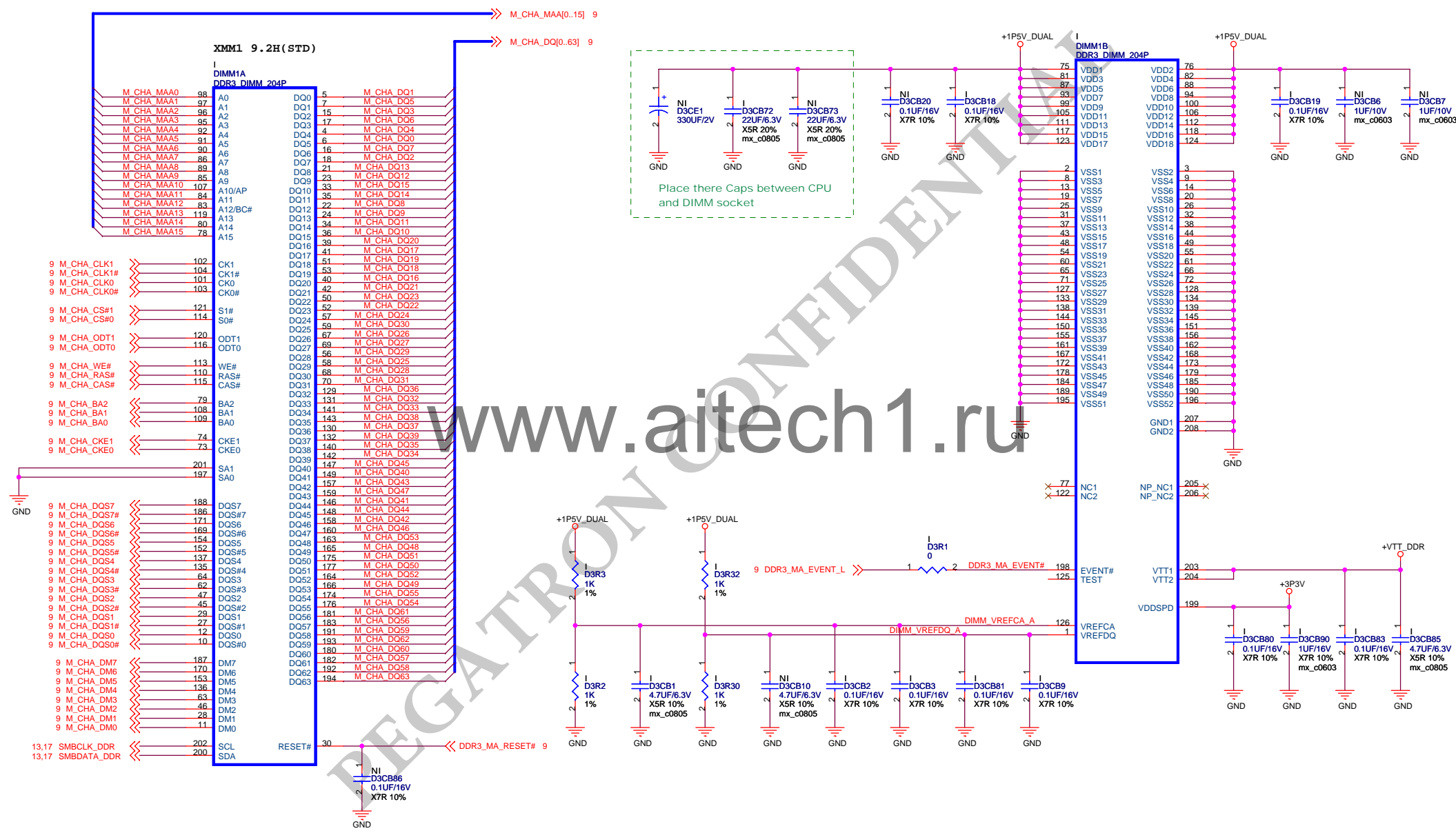
PEGATRON CORP. Engineer: **Melly\_Liu**

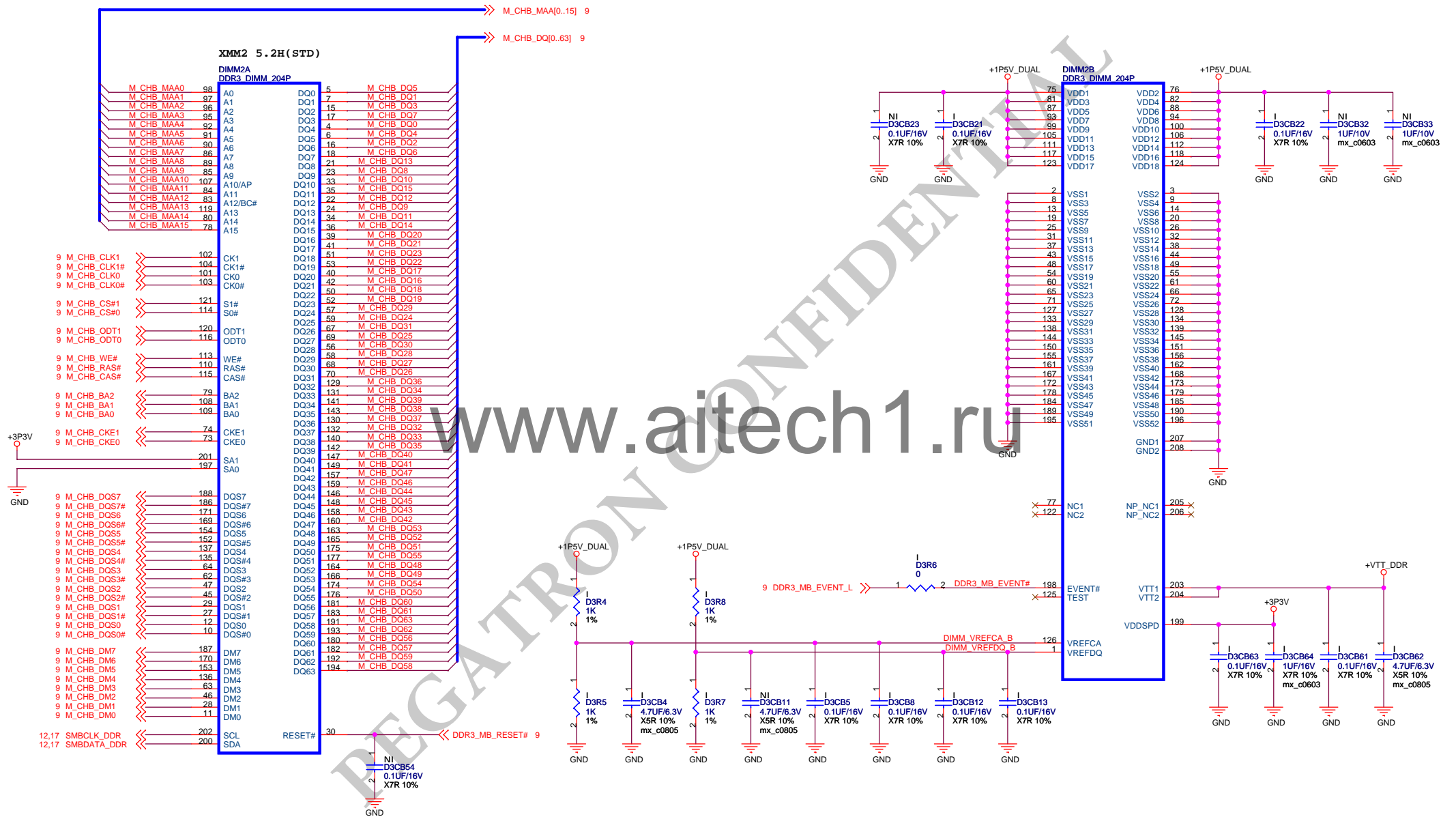
Size A3	Project Name <b>AAHD3-VL</b>	Rev 1.01
------------	---------------------------------	-------------

Date: **Monday, March 12, 2012** Sheet **9** of **71**











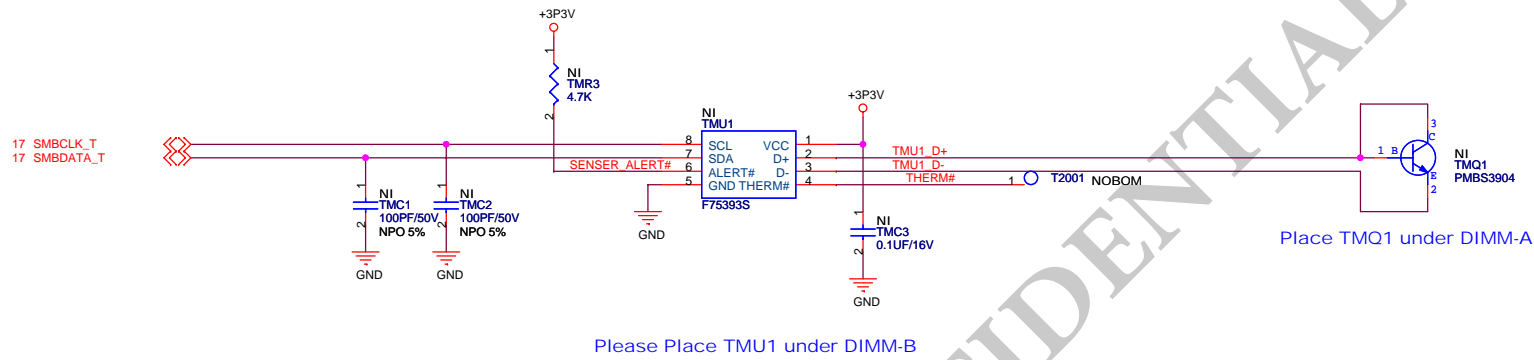
www.aitech1.ru

PEGATRON CONFIDENTIAL

PEGATRON DT-MB RESTRICTED SECRET

<b>PEGATRON</b>		Title : DDR3 TERMINATION	
Pegatron Corp.		Engineer: <u>Melly_Liu</u>	
Size A3	Project Name <b>AAHD3-VL</b>	Rev 1.01	
Date: <u>Monday, March 12, 2012</u>		Sheet <u>14</u> of <u>71</u>	

## DDR3 Thermal Sensor



www.aitech1.ru

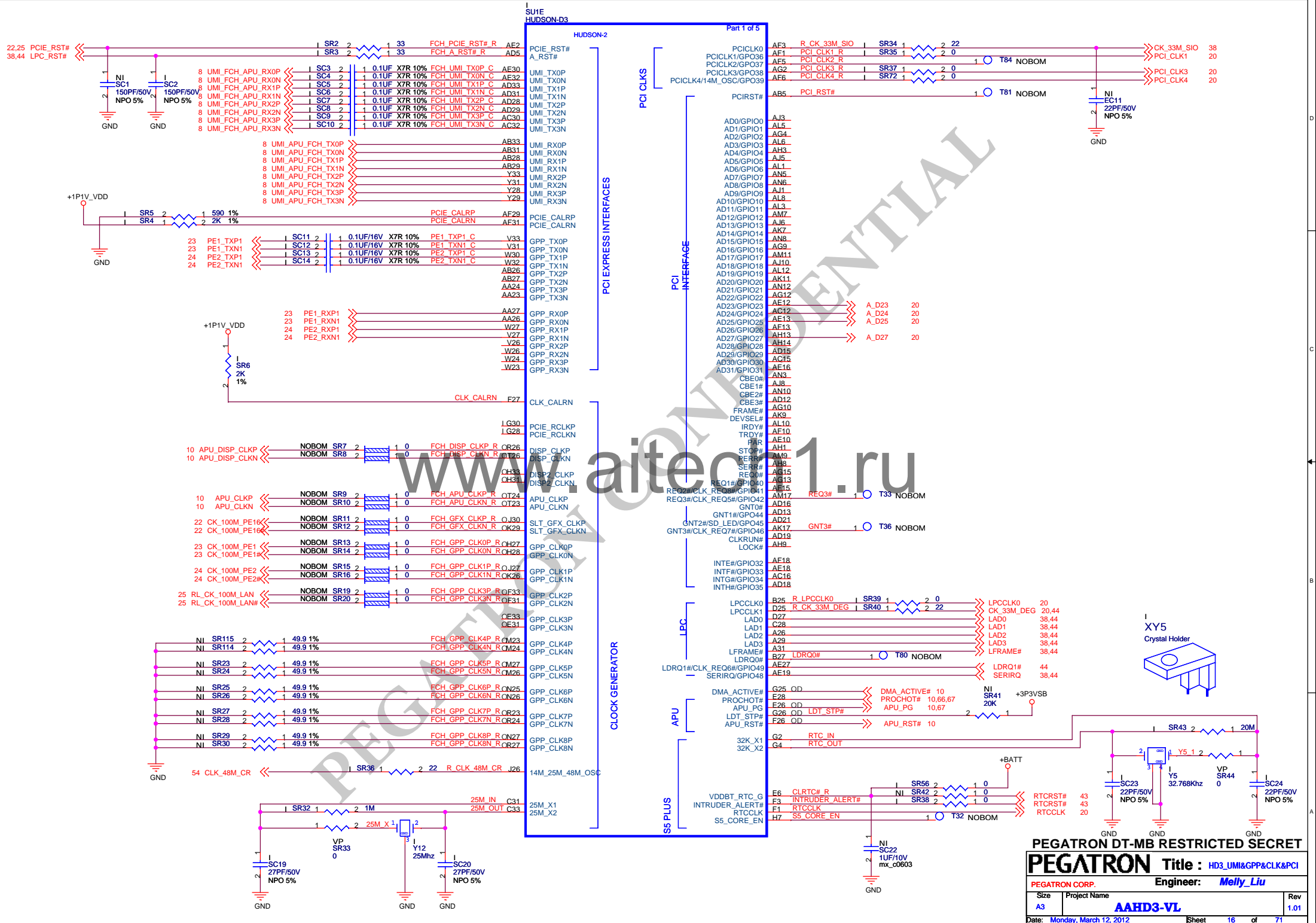
PEGATRON DT-MB RESTRICTED SECRET

**PEGATRON** Title : **TEMP SENSOR**

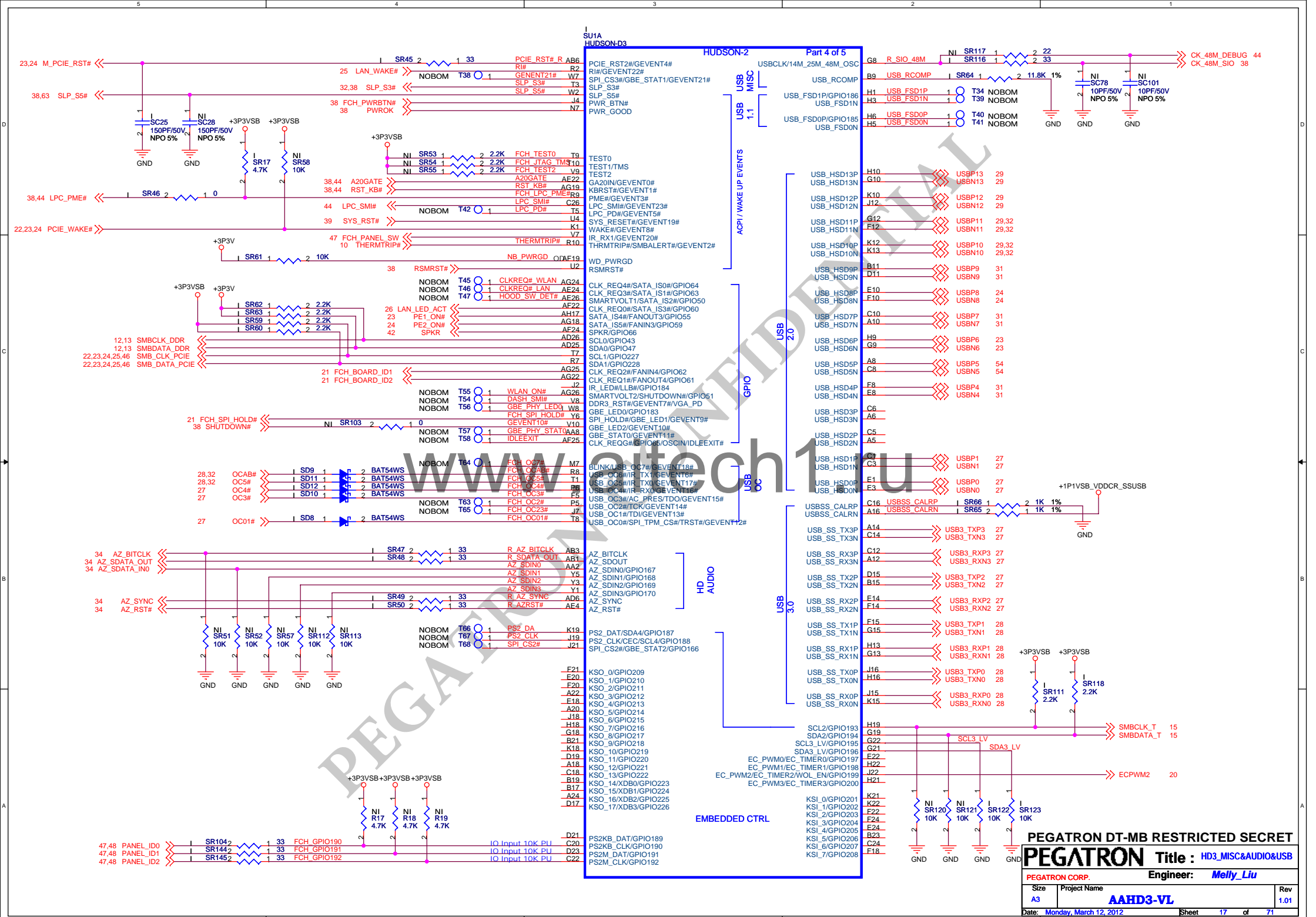
Pegatron Corp. Engineer: **Melly\_Liu**

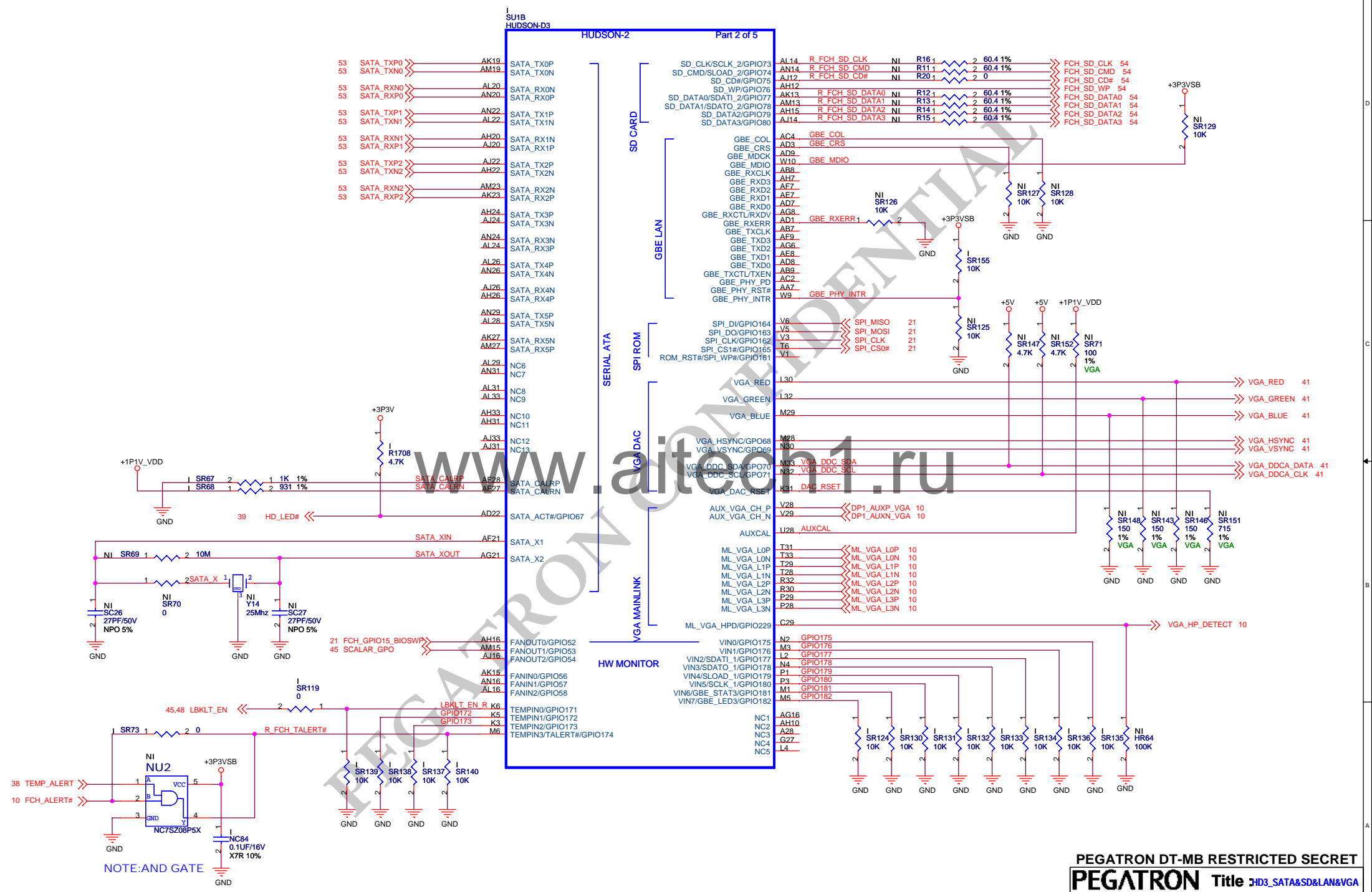
Size A3	Project Name <b>AAHD3-VL</b>	Rev 1.01
------------	---------------------------------	-------------

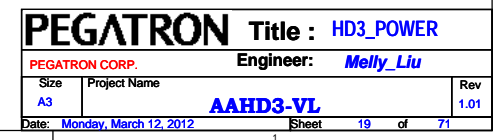
Date: Monday, March 12, 2012 Sheet 15 of 71

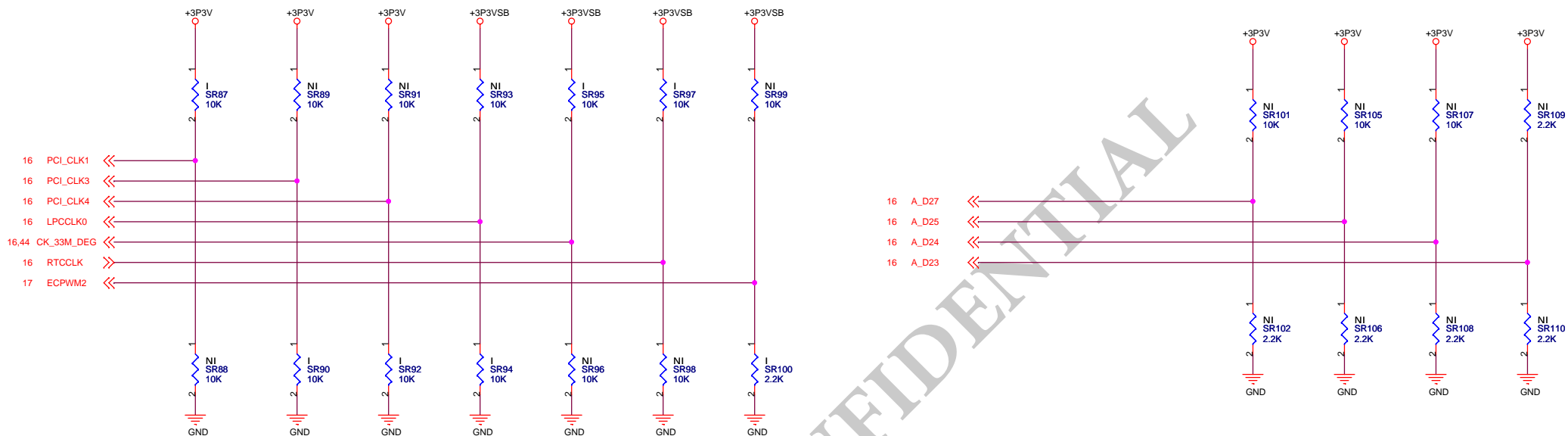




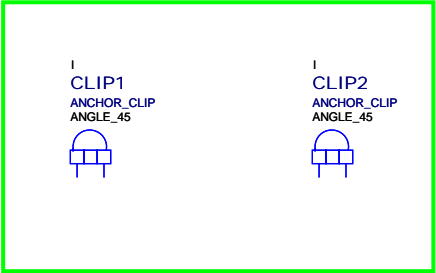
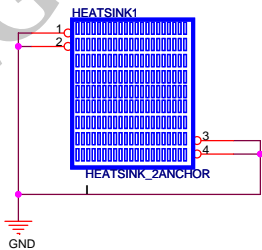








	EC_PWM2 ECPWM2	LPCCLK0 LPCCLK0	LPCCLK1 CK_33M_DEG	PCICLK1 PCI_CLK1	PCICLK3 PCI_CLK3	PCICLK4 PCI_CLK4	RTCCLK RTCCLK
Pull High 1	LPC ROM	ENABLE IMC	ENABLE INTERNAL CLOCK GENERATOR	ALLOW PCIE GEN2	ENABLE DEBUG MODE	INTER CLOCK REQUIRED SETTING	DISABLE S5+ MODE
Pull low 0	SPI ROM	DISABLE IMC	DISABLE INTERNAL CLOCK GENERATOR	FORCE PCIE GEN2	DISABLE DEBUG MODE	RESERVED	ENABLE S5+ MODE



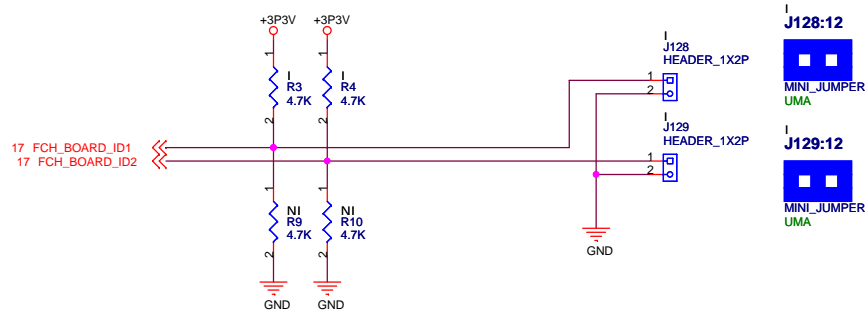
PEGATRON DT-MB RESTRICTED SECRET

PEGATRON Title : FCH\_HudsonD3\_HWSTRAP

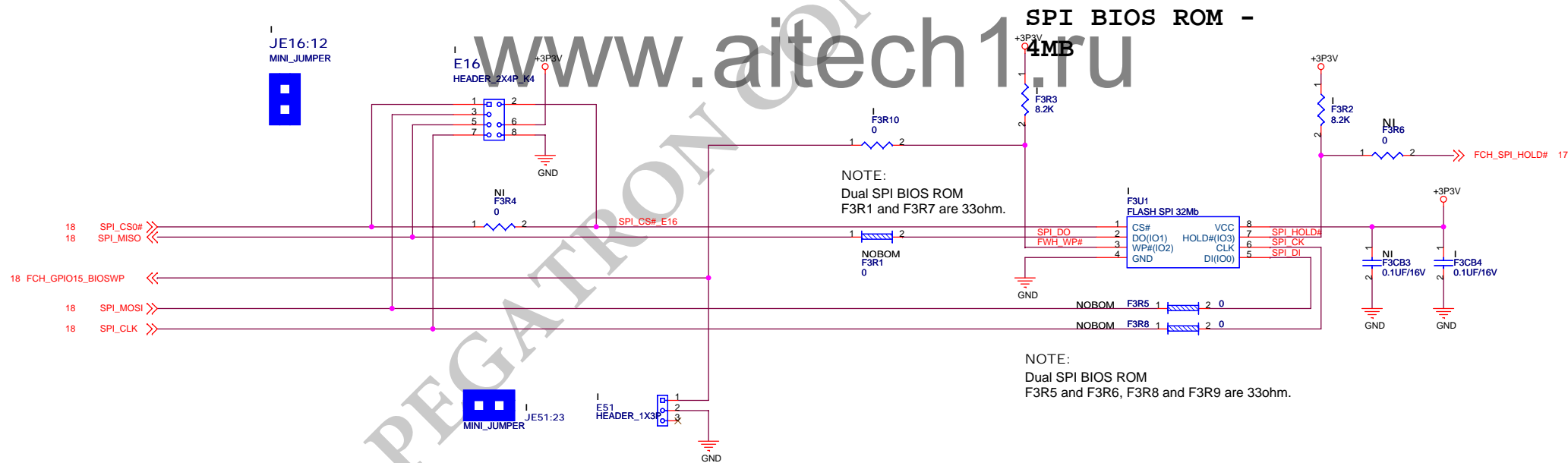
PEGATRON CORP. Engineer: Melly\_Liu

Size A3 Project Name AAHD3-VL Rev 1.01

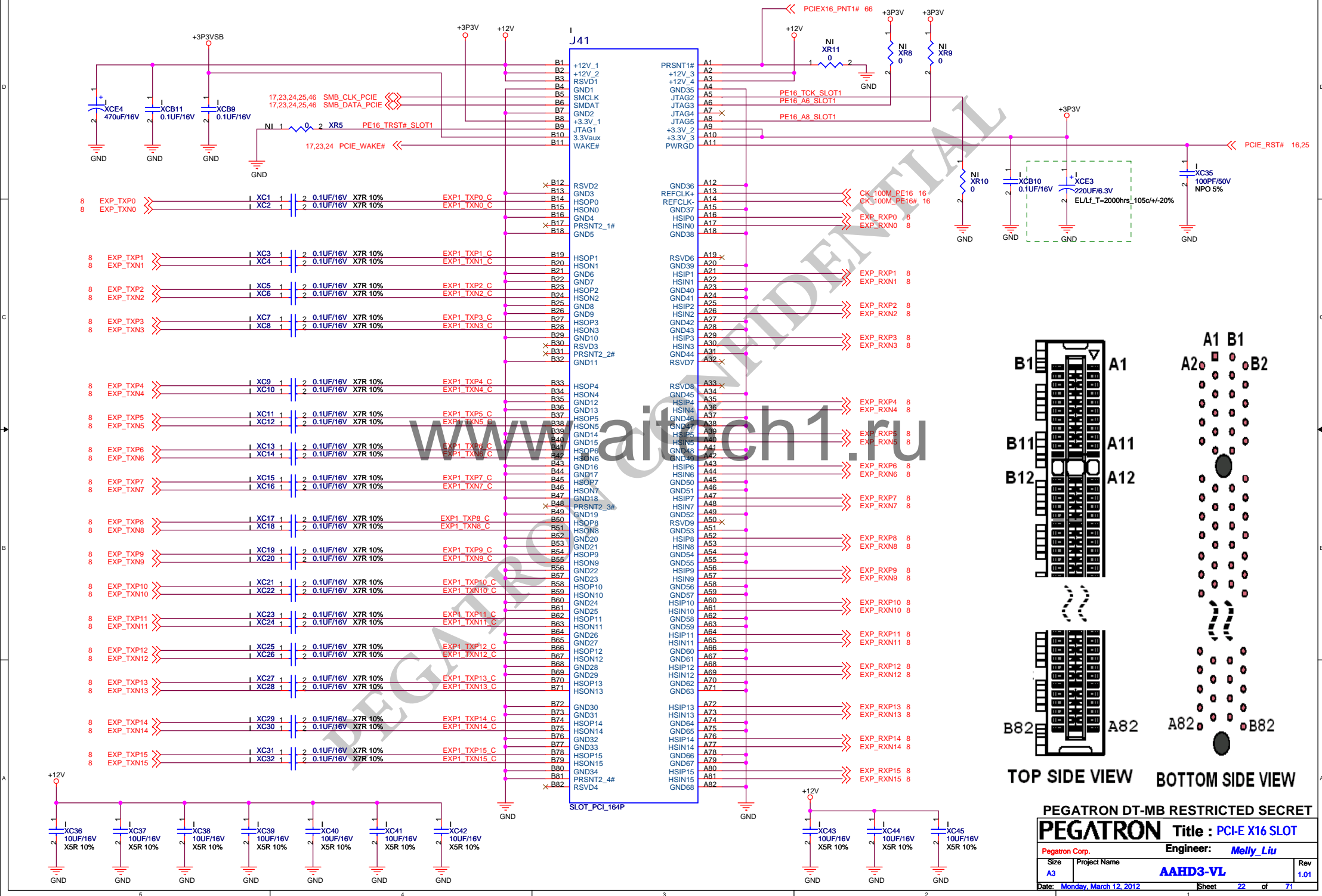
Date: Monday, March 12, 2012 Sheet 20 of 71



J129	J128	FUNCTION
0	0	
0	1	
1	0	
1	1	



# PCI EXPRESS X16 Graphics Card Slot



PEGATRON DT-MB RESTRICTED SECRET

**PEGATRON** Title : PCI-E X16 SLOT

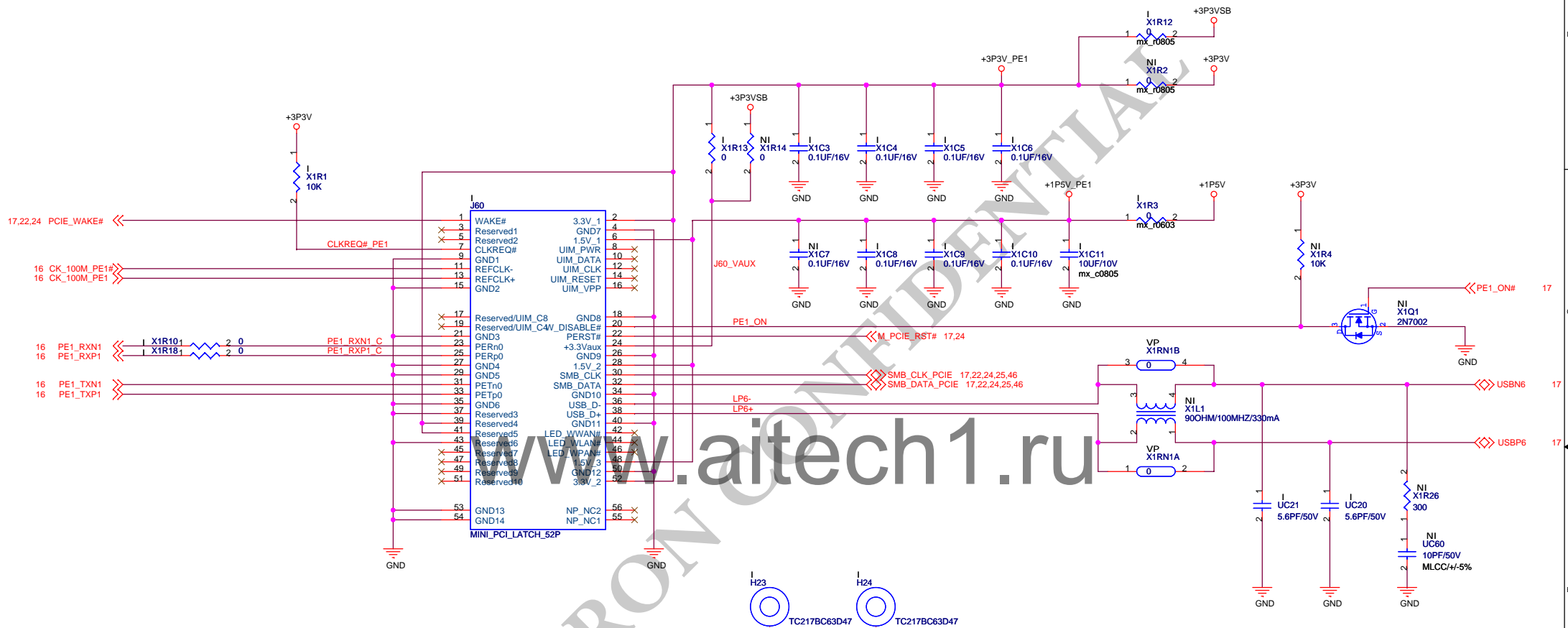
Pegatron Corp. Engineer: **Melly\_Liu**

Size A3 Project Name **AAHD3-VL** Rev 1.01

Date: Monday, March 12, 2012 Sheet 22 of 71



# Mini-PCIE Slot (Half Card) for Wifi



PEGATRON DT-MB RESTRICTED SECRET

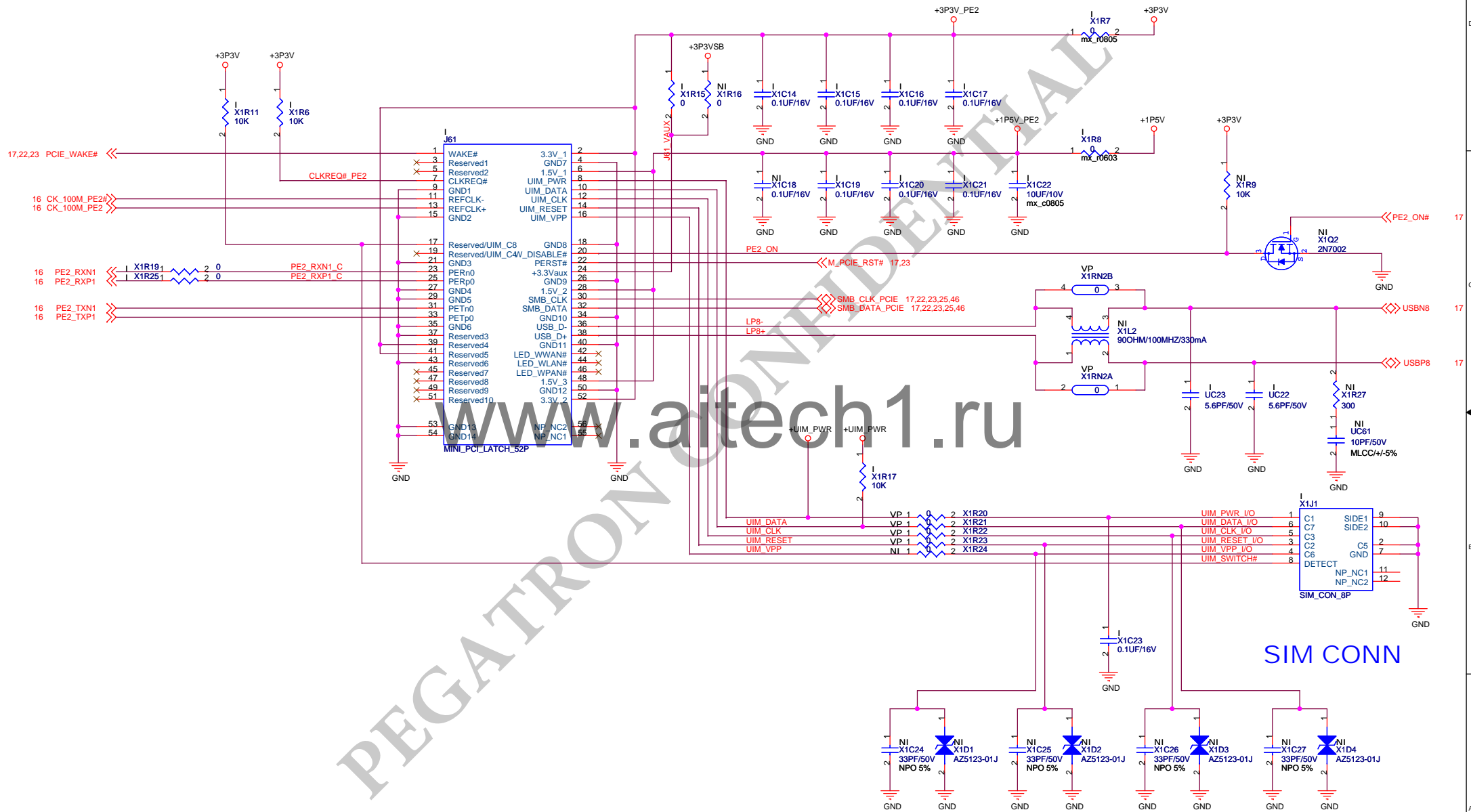
**PEGATRON** Title : MINI-PCIE SLOT-1

Pegatron Corp. Engineer: **Melly Liu**

Size A3 Project Name **AAHD3-VL** Rev 1.01

Date: Monday, March 12, 2012 Sheet 23 of 71

# Mini-PCIE Slot (Full Card)



PEGATRON DT-MB RESTRICTED SECRET

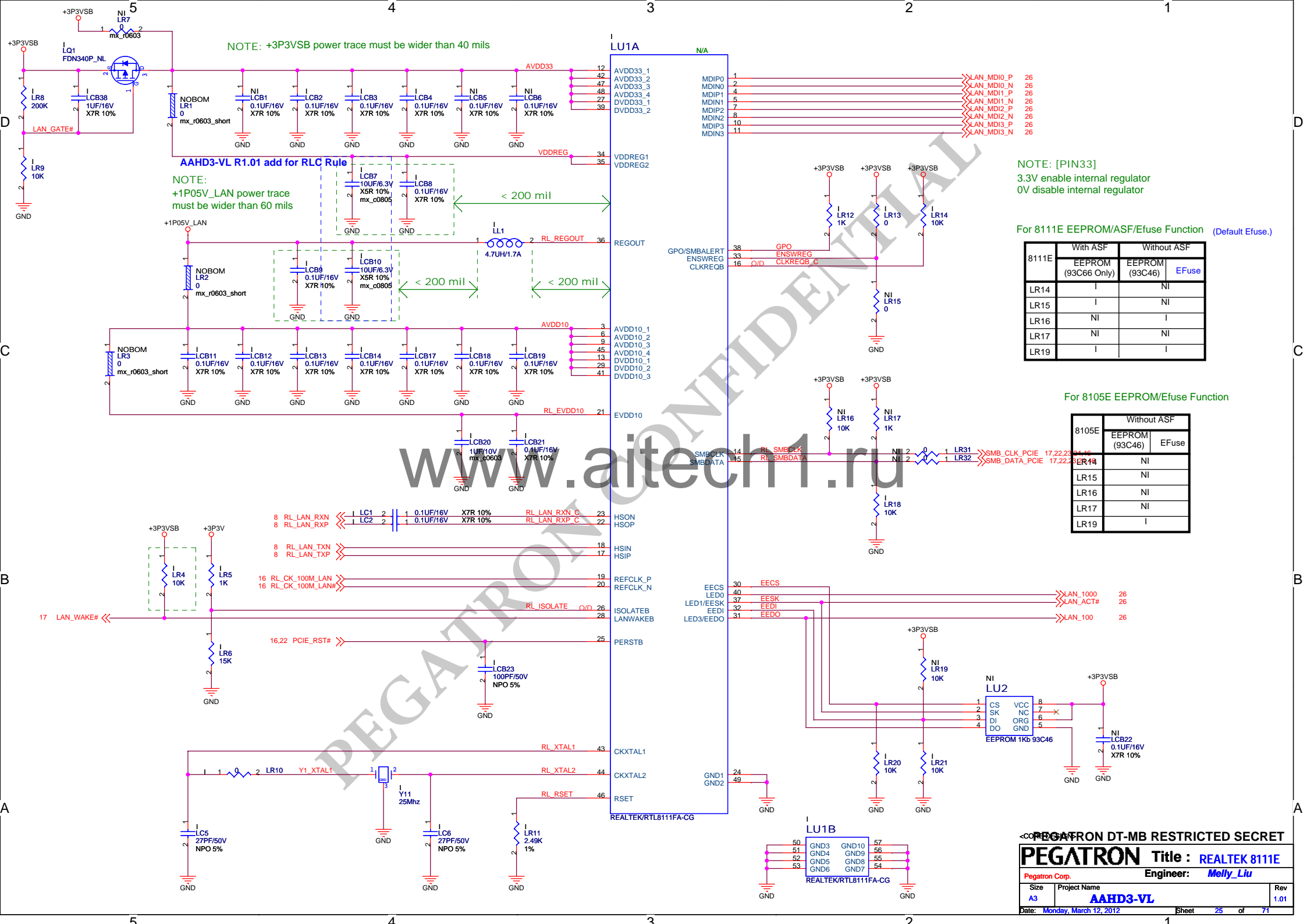
**PEGATRON** Title : MINI-PCIE SLOT-2

Pegatron Corp. Engineer: Melly Liu

Size	Project Name	Rev
A3	AAHD3-VL	1.01

Date: Monday, March 12, 2012 Sheet 24 of 71





NOTE: +3P3VSB power trace must be wider than 40 mils

AAHD3-VL R1.01 add for RLC Rule

NOTE:  
+1P05V\_LAN power trace  
must be wider than 60 mils

NOTE: [PIN33]  
3.3V enable internal regulator  
0V disable internal regulator

For 8111E EEPROM/ASF/Efuse Function (Default Efuse.)

8111E	With ASF	Without ASF	
	EEPROM (93C66 Only)	EEPROM (93C46)	EFuse
LR14	I	NI	
LR15	I	NI	
LR16	NI	I	
LR17	NI	NI	
LR19	I	I	

For 8105E EEPROM/Efuse Function

8105E	Without ASF	
	EEPROM (93C46)	EFuse
LR14	NI	
LR15	NI	
LR16	NI	
LR17	NI	
LR19	I	

PEGATRON DT-MB RESTRICTED SECRET

PEGATRON Title : REALTEK 8111E

Pegatron Corp. Engineer: Melly\_Liu

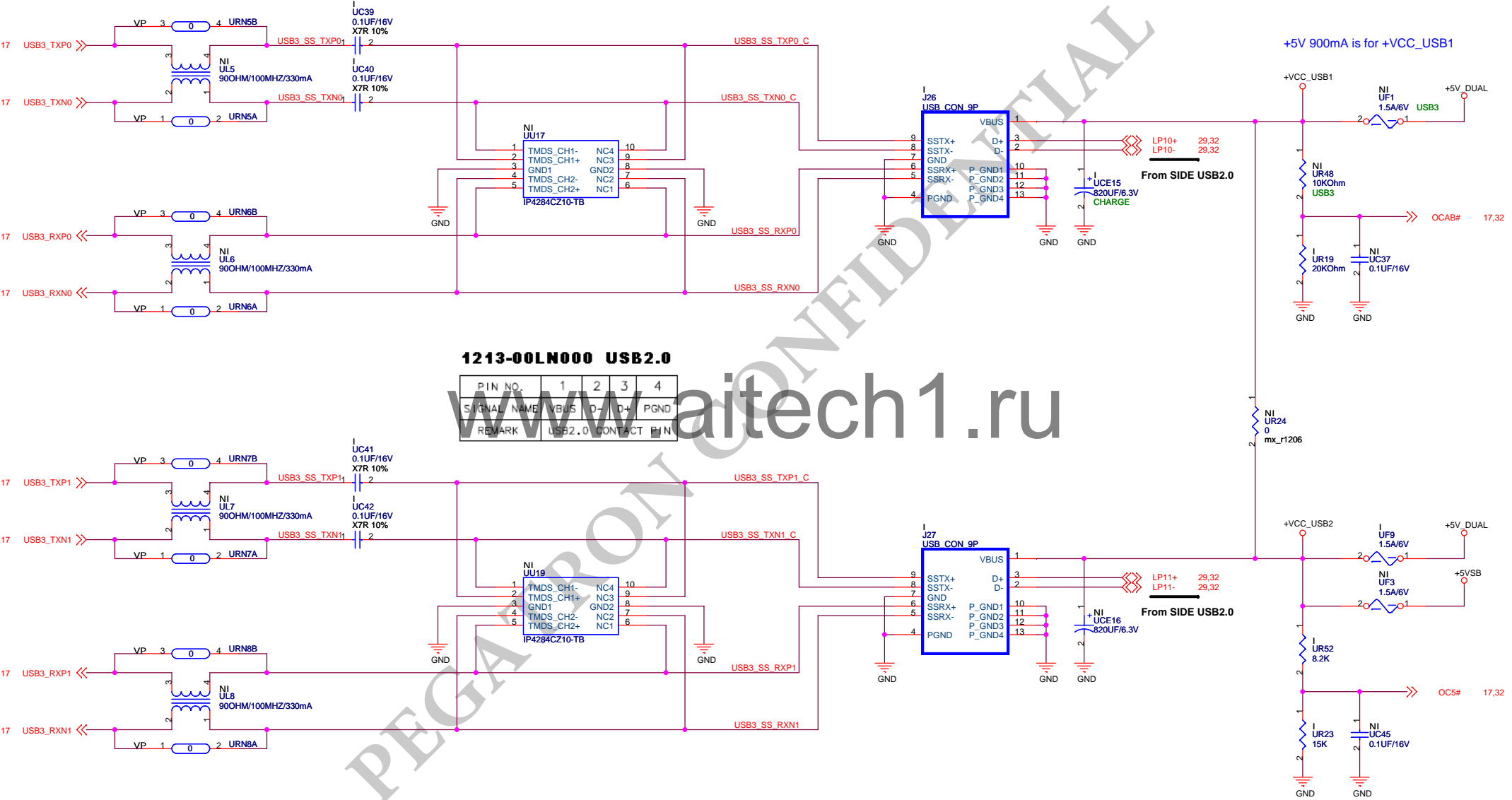
Size Project Name  
A3 AAHD3-VL

Date: Monday, March 12, 2012 Sheet 25 of 71





SIDE USB3.0



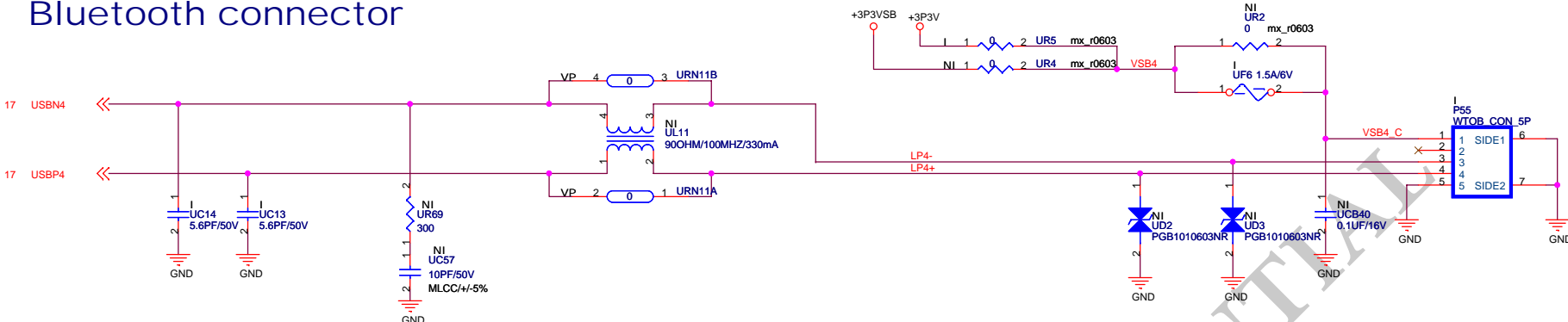


www.aitech1.ru

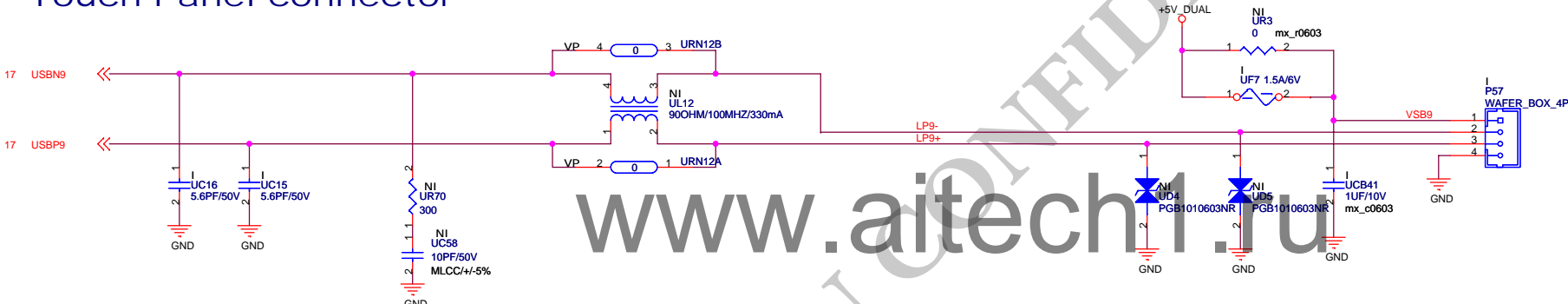
PEGATRON CONFIDENTIAL

PEGATRON DT-MB RESTRICTED SECRET		
<b>PEGATRON</b>		<b>Title :</b> USB PORT CONTROL
Pegatron Corp.		<b>Engineer:</b> <i>Melly_Liu</i>
Size A3	Project Name <b>AAHD3-VL</b>	Rev 1.01
Date: Monday, March 12, 2012		Sheet 30 of 71

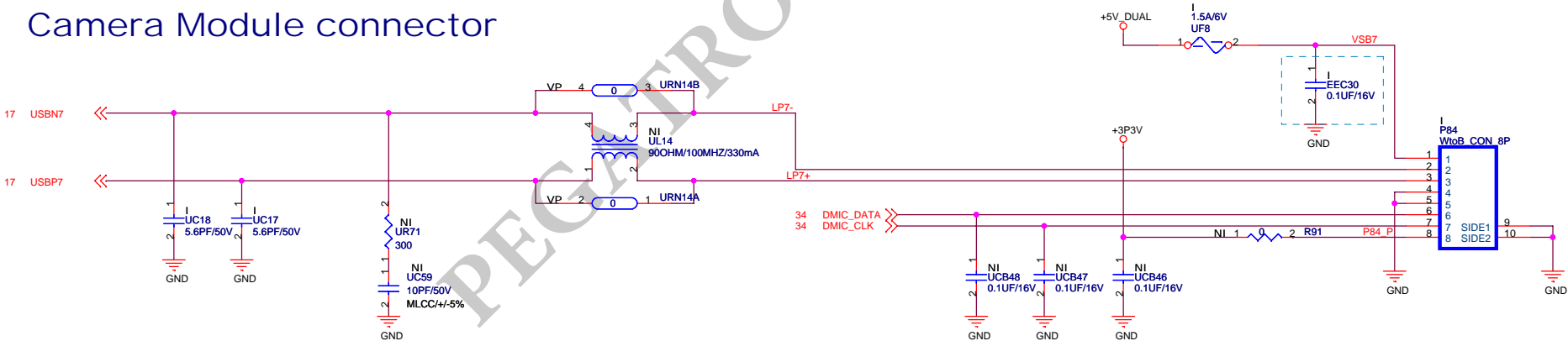
## Bluetooth connector



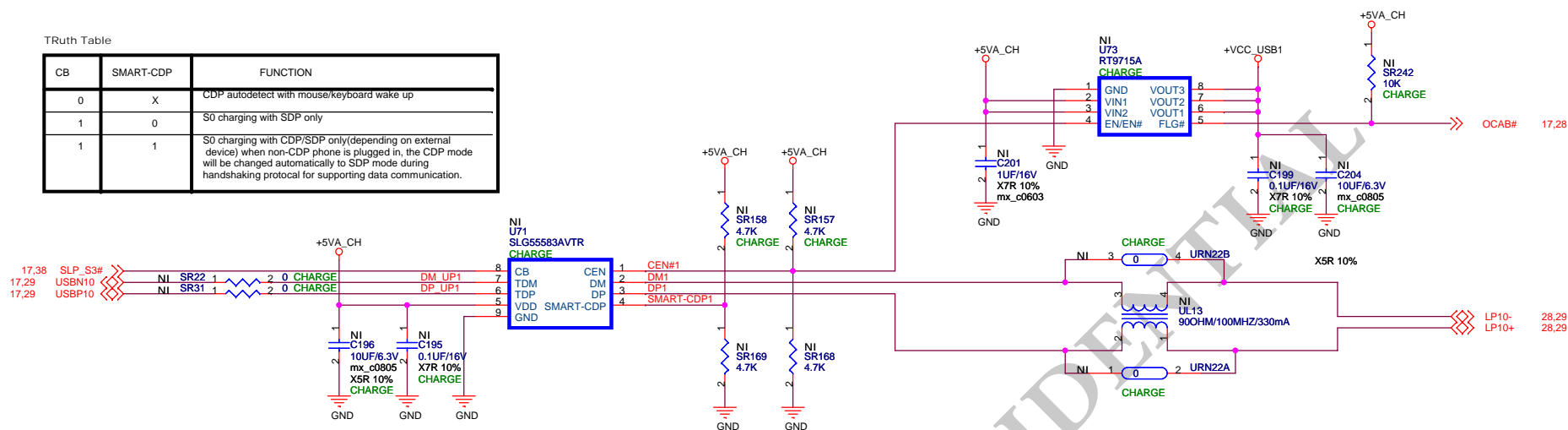
## Touch Panel connector



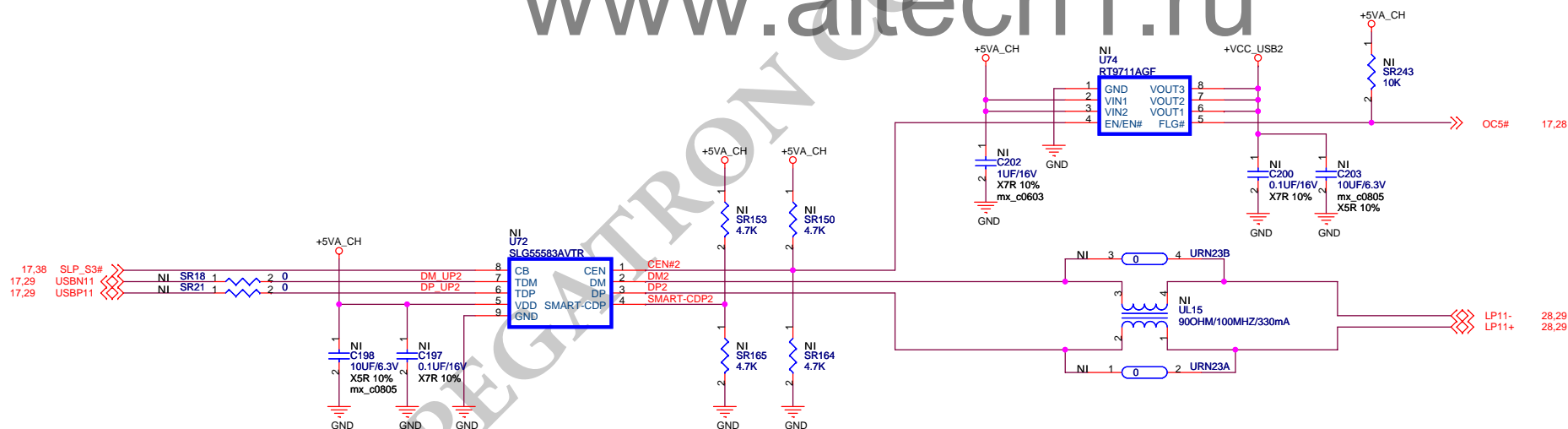
## Camera Module connector



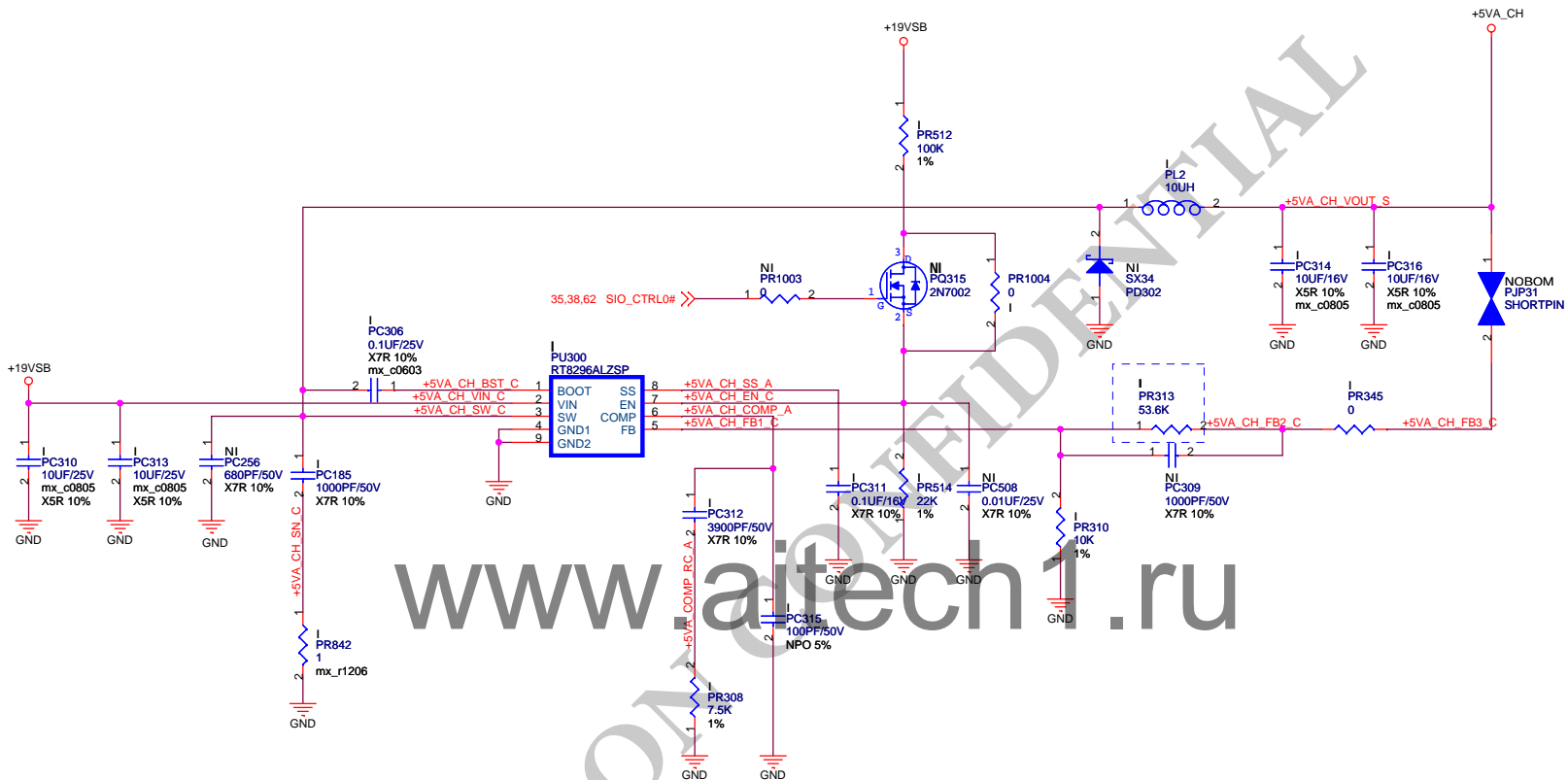
CB	SMART-CDP	FUNCTION
0	X	CDP autodetect with mouse/keyboard wake up
1	0	S0 charging with SDP only
1	1	S0 charging with CDP/SDP only(depending on external device) when non-CDP phone is plugged in, the CDP mode will be changed automatically to SDP mode during handshaking protocol for supporting data communication.



www.aitech1.ru

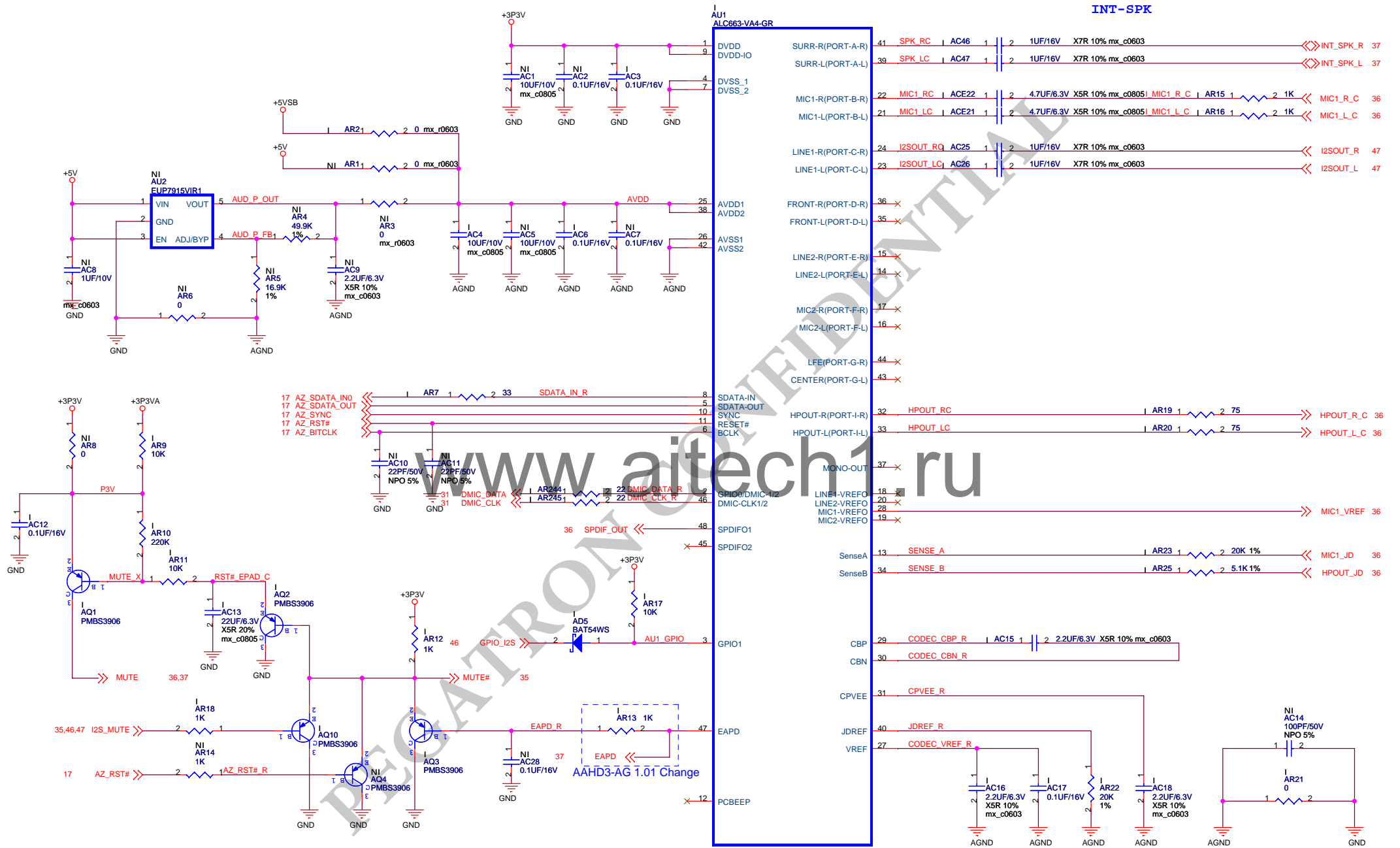






<Variant Name>

<b>PEGATRON</b>		Title : +5VA_CH	
PEGATRON COMPUTER INC		Engineer: Melly_Liu	
Size A3	Project Name <b>AAHD3-VL</b>		Rev 1.01
Date: Monday, March 12, 2012		Sheet 33	of 71



INT-SPK

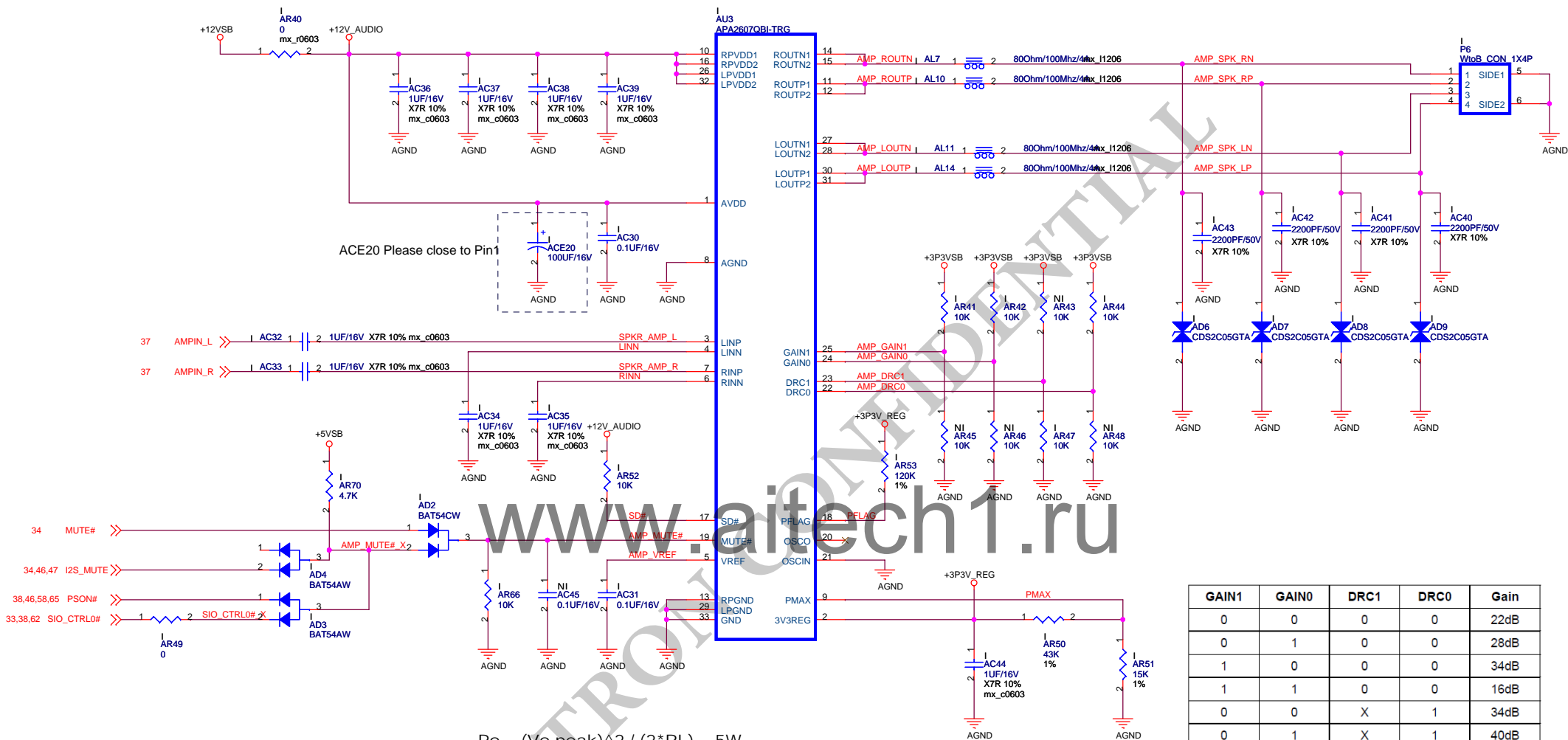
PEGATRON DT-MB RESTRICTED SECRET

**PEGATRON** Title : ALC663 CODEC

Pegatron Corp. Engineer: Melly\_Liu

Size	Project Name	Rev
A3	AAHD3-VL	1.01

Date: Monday, March 12, 2012 Sheet 34 of 71



$$P_o = (V_{o,peak})^2 / (2 \cdot R_L) = 5W$$

$$\rightarrow V_{o,peak} = 8.945V$$

$$V_{o,peak} = (1.65 - V_{pmax}) \cdot 11.23$$

$$\rightarrow V_{pmax} = 0.85V$$

$$V_{pmax} = 0.853V$$

$$\rightarrow V_{o,peak} = (1.65 - V_{pmax}) \cdot 11.23 = 8.95V$$

$$\rightarrow P_o = (V_{o,peak})^2 / (2 \cdot R_L) = 5.006W$$

GAIN1	GAIN0	DRC1	DRC0	Gain
0	0	0	0	22dB
0	1	0	0	28dB
1	0	0	0	34dB
1	1	0	0	16dB
0	0	X	1	34dB
0	1	X	1	40dB
1	0	X	1	46dB
1	1	X	1	28dB
0	0	1	X	34dB
0	1	1	X	40dB
1	0	1	X	46dB
1	1	1	X	28dB

PEGATRON DT-MB RESTRICTED SECRET

**PEGATRON** Title : **AUDIO AMP**

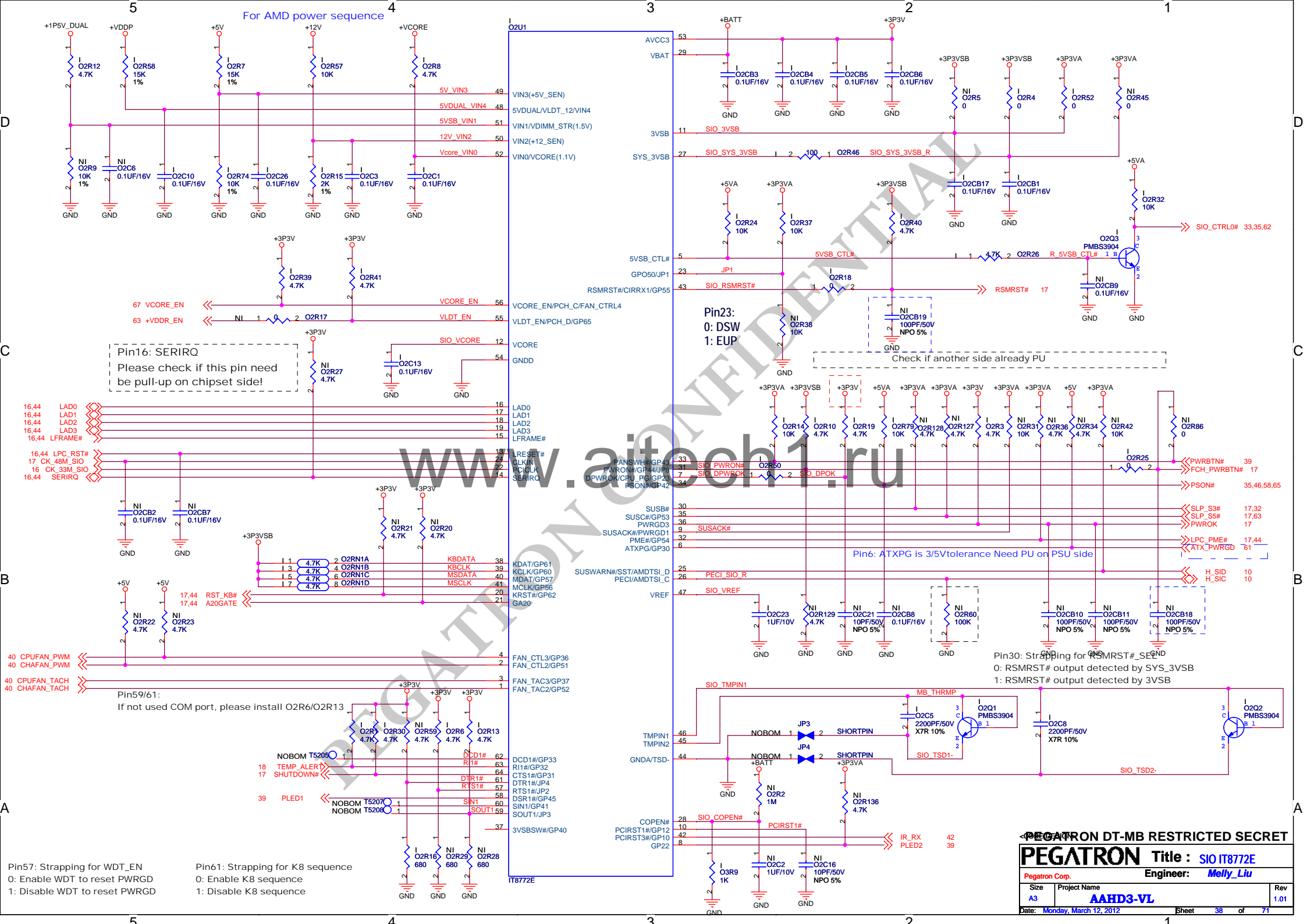
Pegatron Corp. Engineer: **Melly\_Liu**

Size A3 Project Name **AAHD3-VL** Rev 1.01

Date: Monday, March 12, 2012 Sheet 35 of 71







For AMD power sequence

Pin16: SERIRQ  
Please check if this pin need  
be pull-up on chipset side!

Pin23:  
0: DSW  
1: EUP

Check if another side already PU

Pin6: ATXPG is 3/5Vtolerance Need PU on PSU side

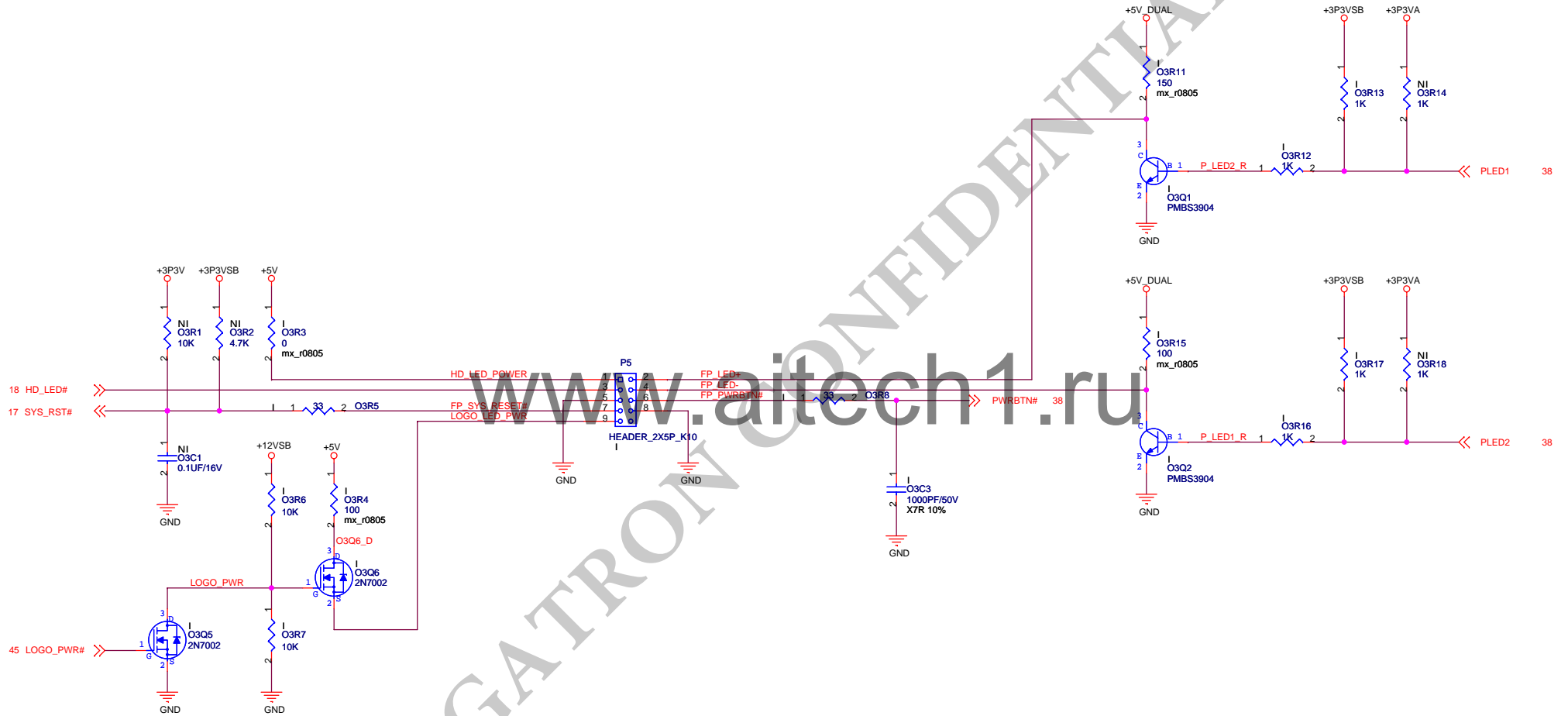
Pin30: Strapping for RSMRST#\_SEL  
0: RSMRST# output detected by SYS\_3VSB  
1: RSMRST# output detected by 3VSB

Pin59/61:  
If not used COM port, please install O2R6/O2R13

Pin61: Strapping for K8 sequence  
0: Enable K8 sequence  
1: Disable K8 sequence

Pin57: Strapping for WDT\_EN  
0: Enable WDT to reset PWRGD  
1: Disable WDT to reset PWRGD

# FRONT PANEL / LED CIRCUITRY



PEGATRON DT-MB RESTRICTED SECRET

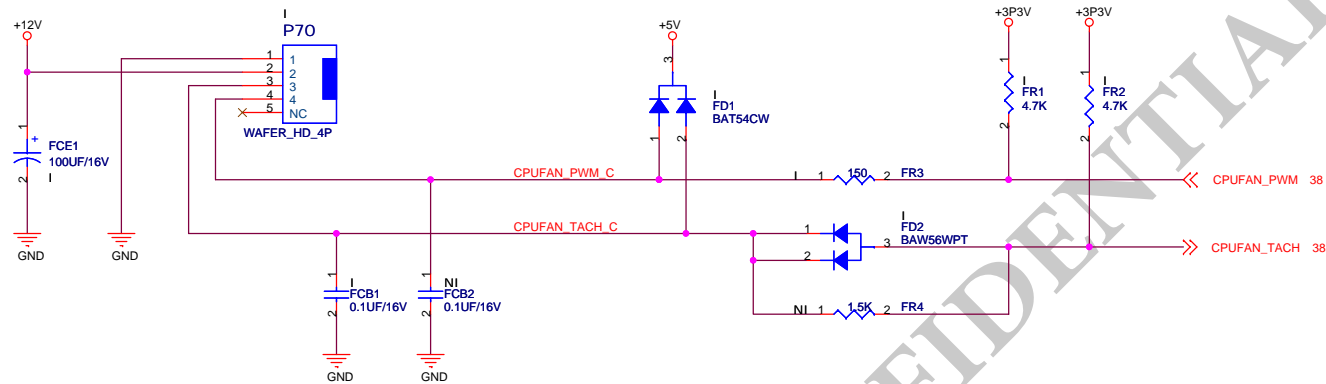
**PEGATRON** Title : FRONT PANEL

Pegatron Corp. Engineer: Melly Liu

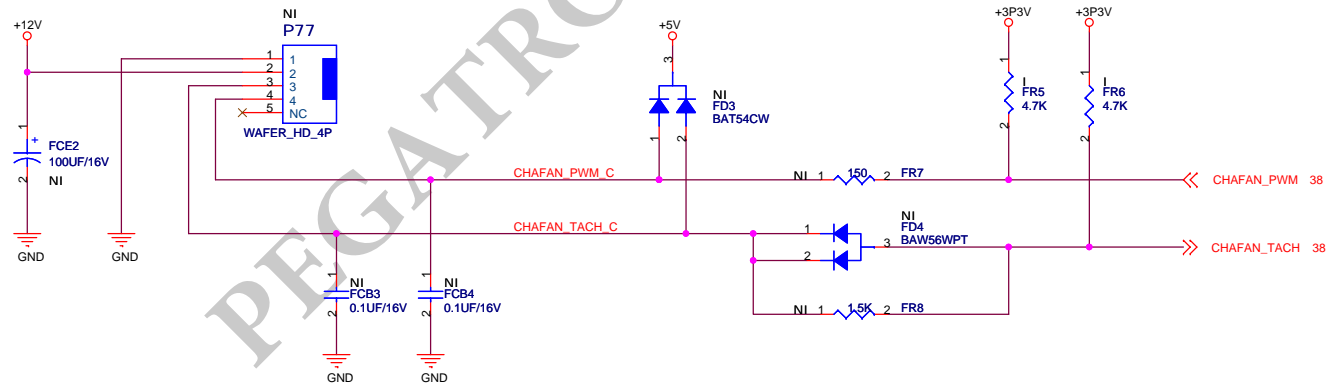
Size	Project Name	Rev
A3	AAHD3-VL	1.01

Date: Monday, March 12, 2012 Sheet 39 of 71

## CPU FAN CONNECTOR



## SYS FAN CONNECTOR



PEGATRON DT-MB RESTRICTED SECRET

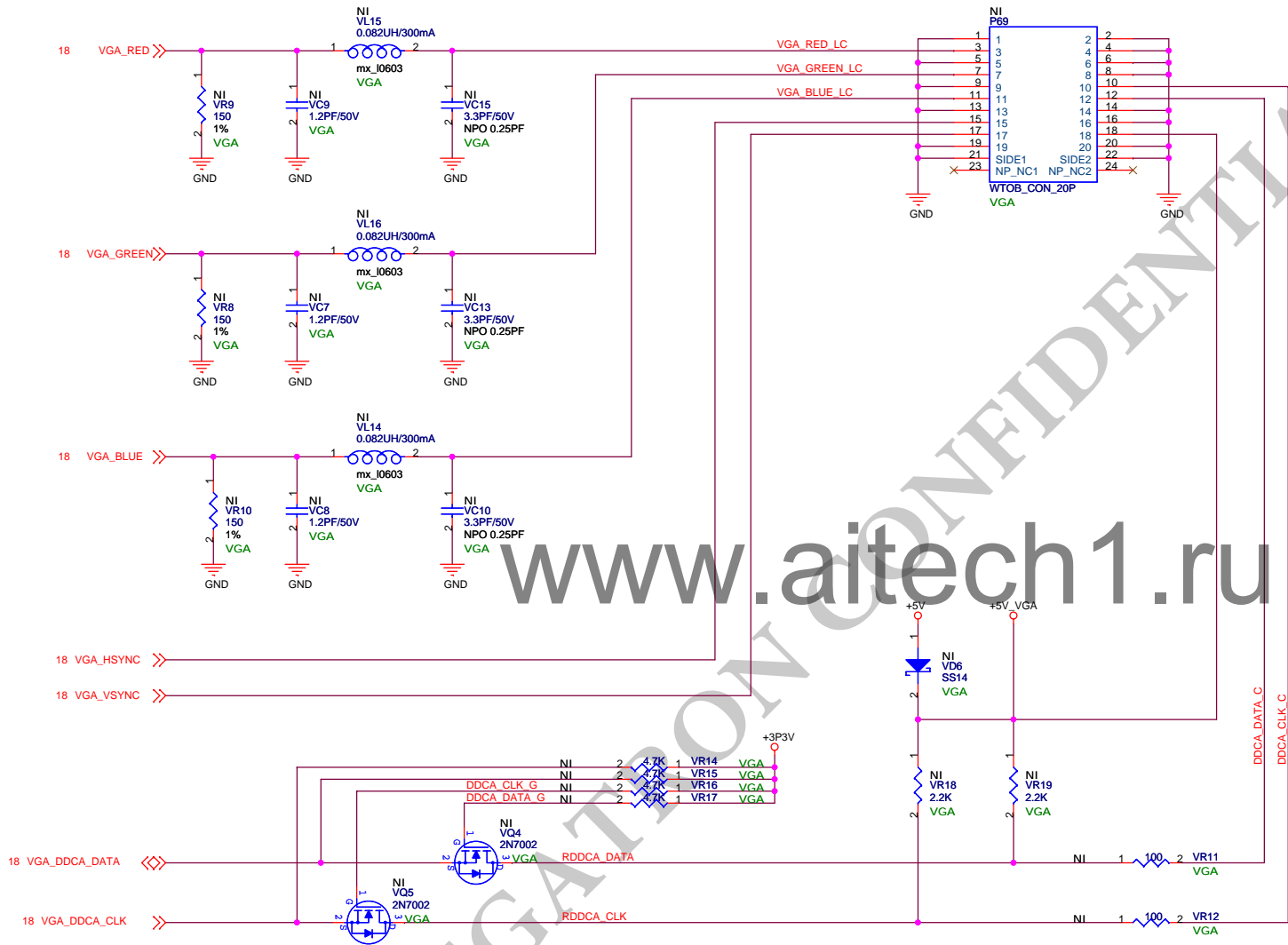
**PEGATRON** Title : FAN CIRCUIT

Pegatron Corp. Engineer: Melly\_Liu

Size A3	Project Name AAHD3-VL	Rev 1.01
------------	--------------------------	-------------

Date: Monday, March 12, 2012 Sheet 40 of 71





PEGATRON DT-MB RESTRICTED SECRET

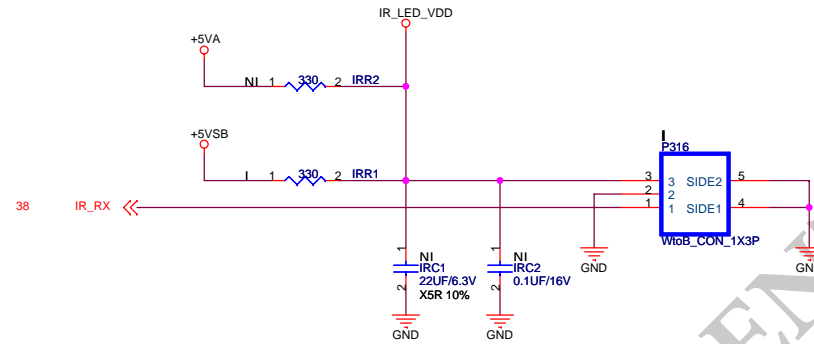
**PEGATRON** Title : **VGA PORT**

Pegatron Corp. Engineer: **Melly\_Liu**

Size A3 Project Name **AAHD3-VL** Rev 1.01

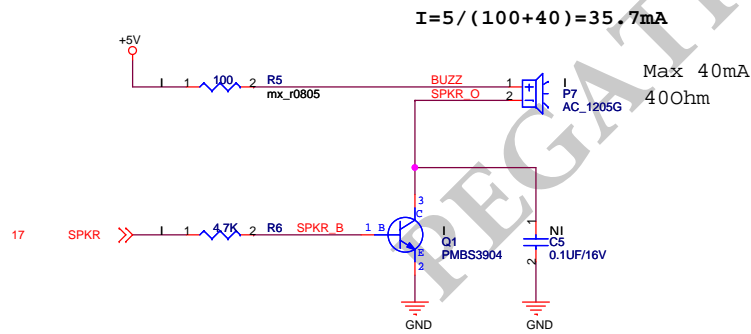
Date: Monday, March 12, 2012 Sheet 41 of 71

# IR LED

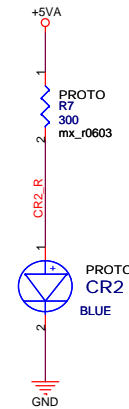


www.aitech1.ru

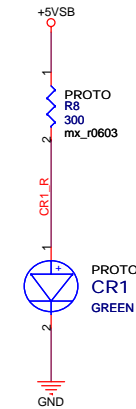
# SPEAKER



+5VA : BLUE



+5VSB : GREEN

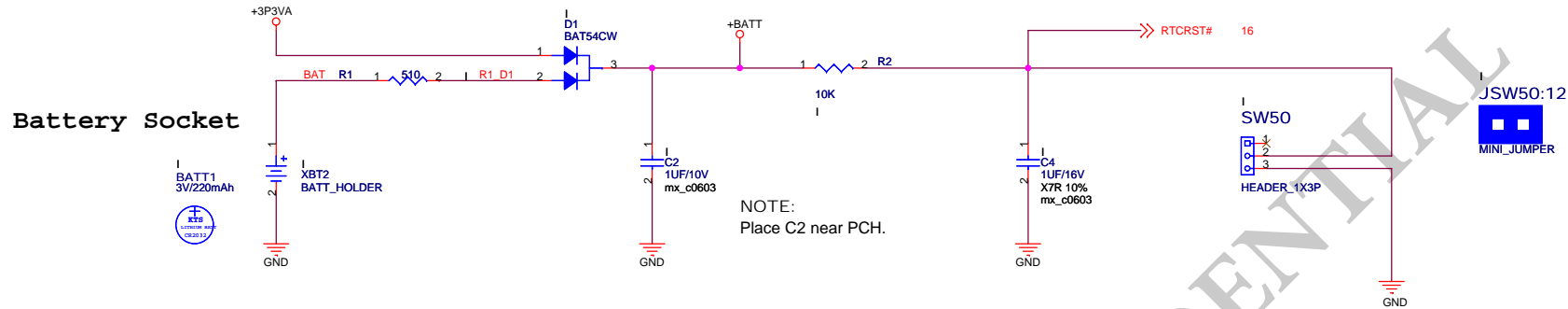


PEGATRON DT-MB RESTRICTED SECRET

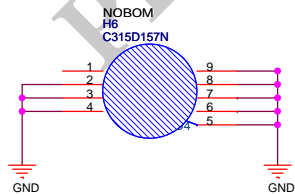
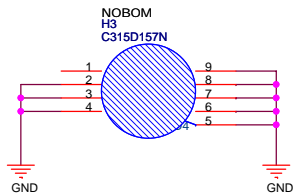
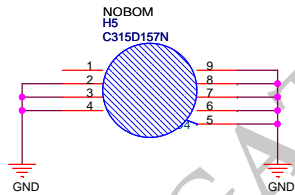
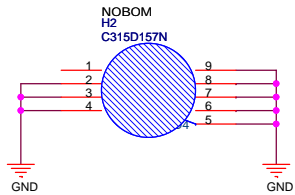
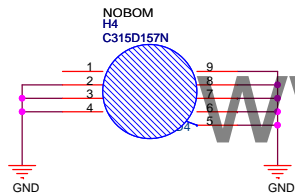
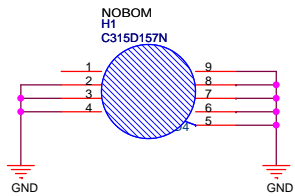
<b>PEGATRON</b>		Title :	IR / SPKR
Pegatron Corp.		Engineer:	Melly_Liu
Size A3	Project Name AAHD3-VL	Rev 1.01	
Date: Monday, March 12, 2012	Sheet 42 of 71		

## External RTC Circuitry

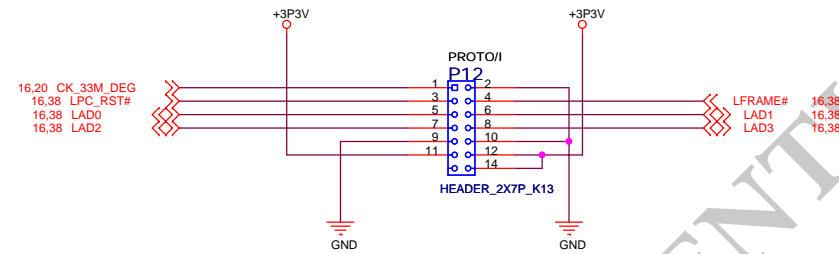
## CLEAR CMOS



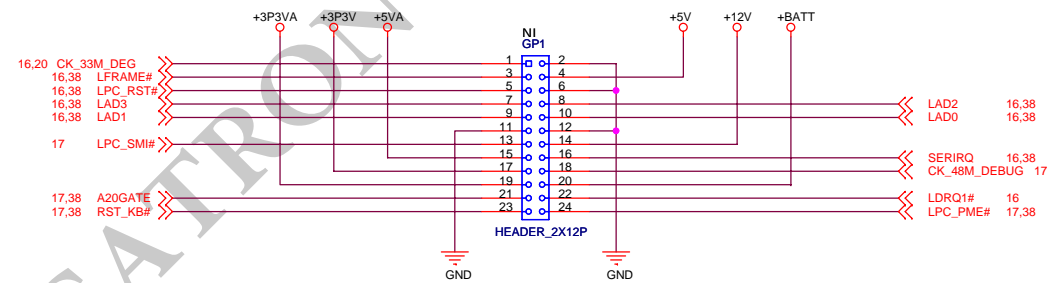
RTC DATA	
1-2	Default
2-3	CLEAR



## LPC DEBUG



www.aitech1.ru



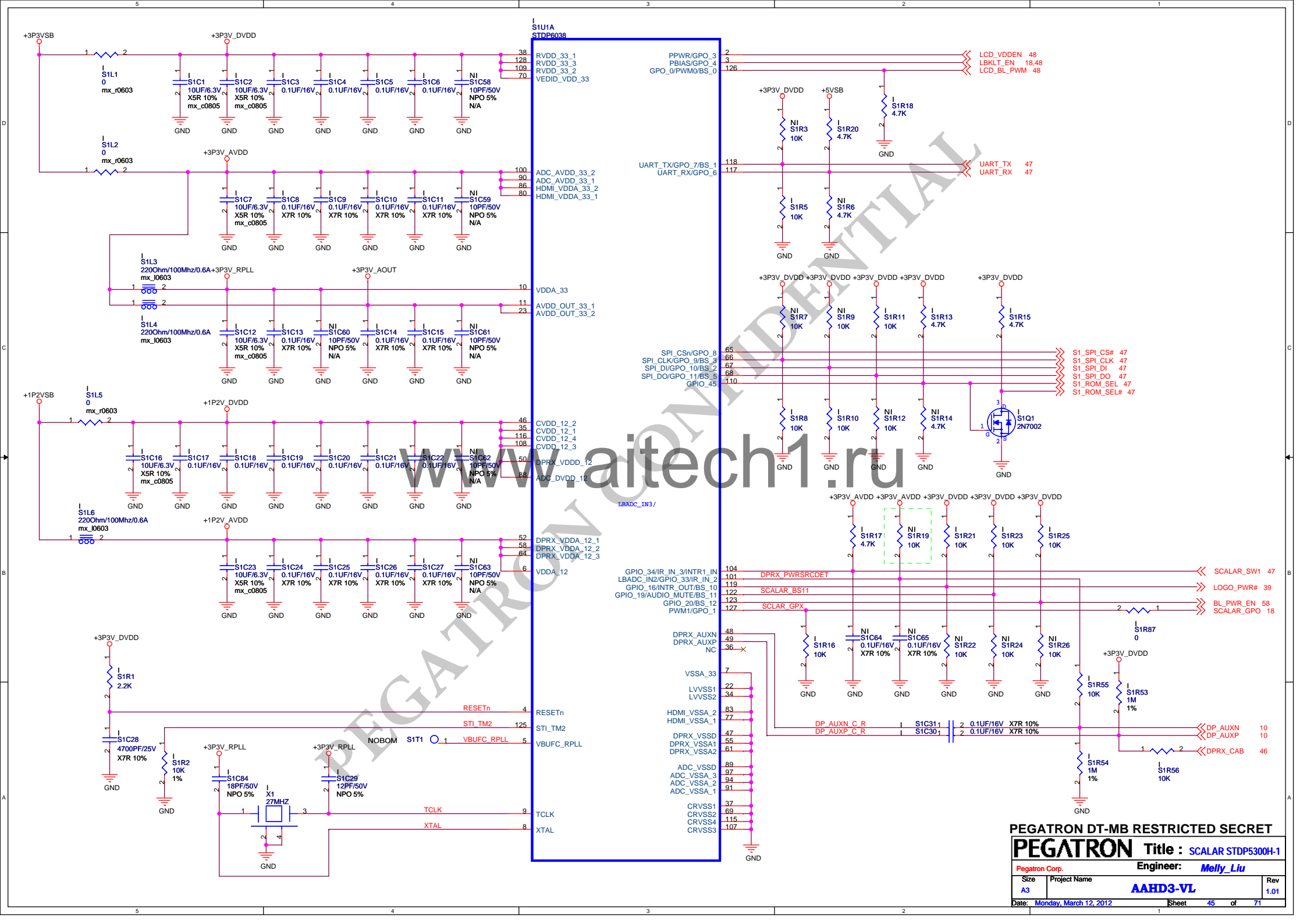
PEGATRON DT-MB RESTRICTED SECRET

**PEGATRON** Title : **DEBUG HEADER**

Pegatron Corp. Engineer: **Melly\_Liu**

Size A3	Project Name <b>AAHD3-VL</b>	Rev 1.01
------------	---------------------------------	-------------

Date: **Monday, March 12, 2012** Sheet **44** of **71**



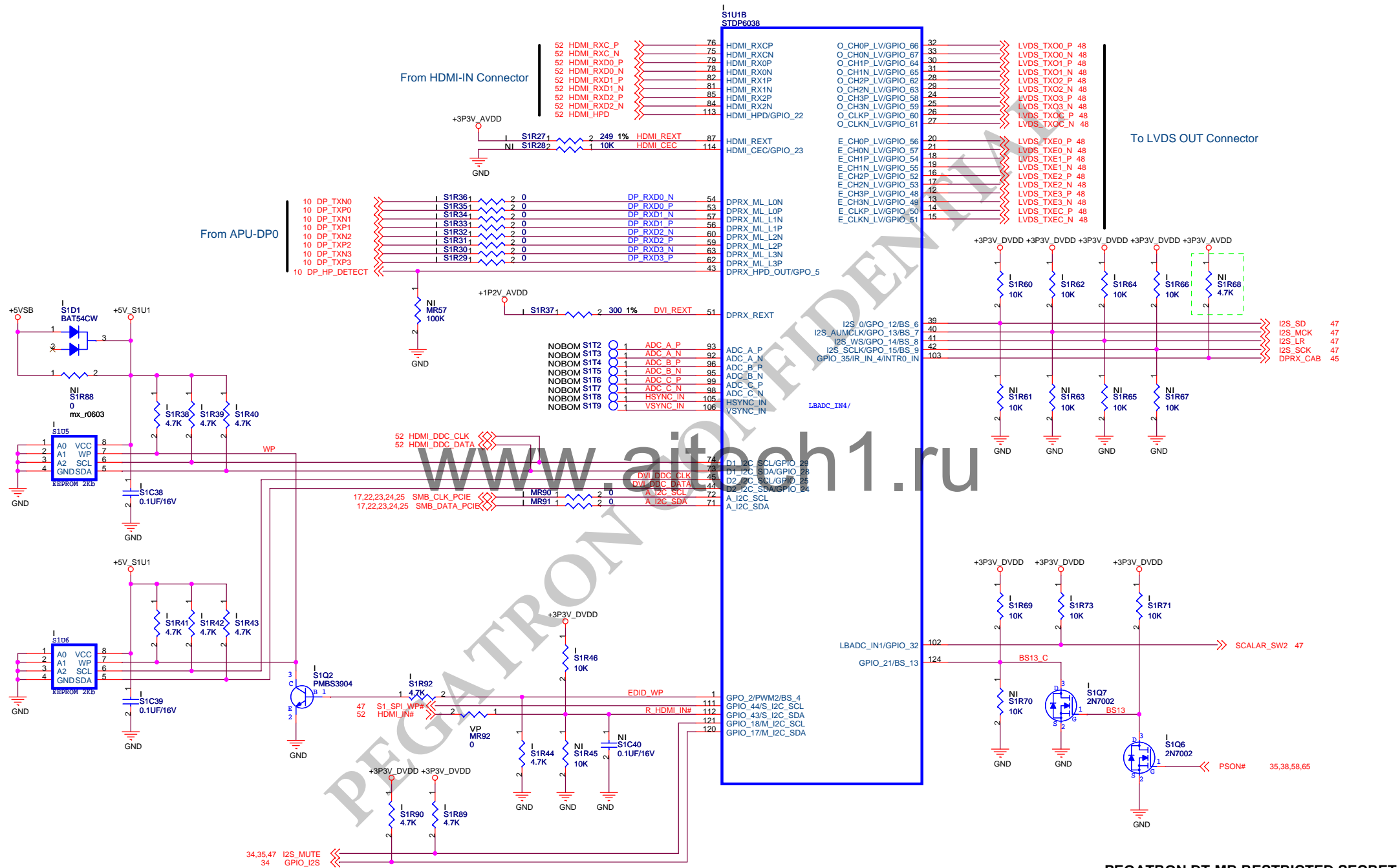
PEGATRON DT-MB RESTRICTED SECRET

**PEGATRON** Title : SCALAR STDP5300H-1

Pegatron Corp. Engineer: **Melly Liu**

Size	Project Name	Rev
A3	<b>AAHD3-VL</b>	1.01

Date: Monday, March 12, 2012 Sheet 45 of 71



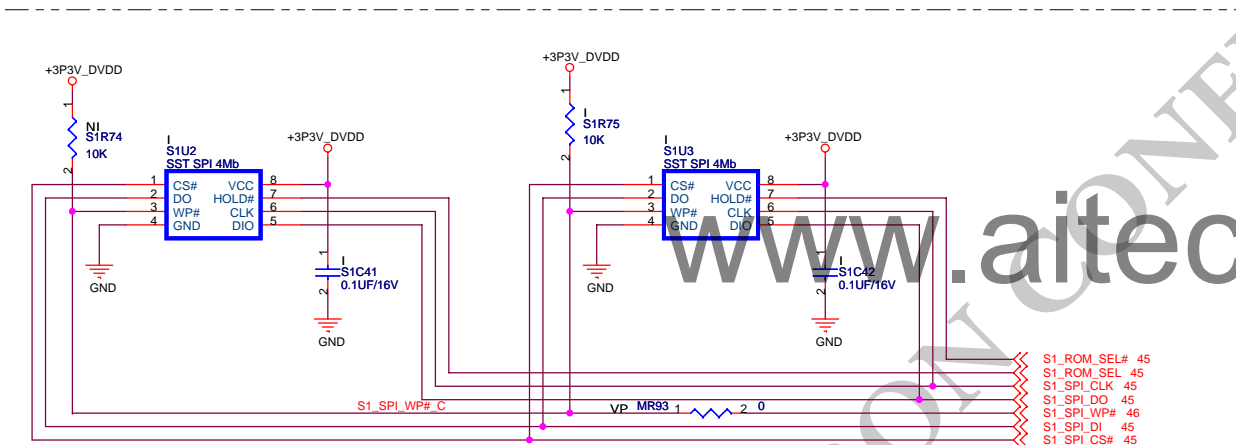
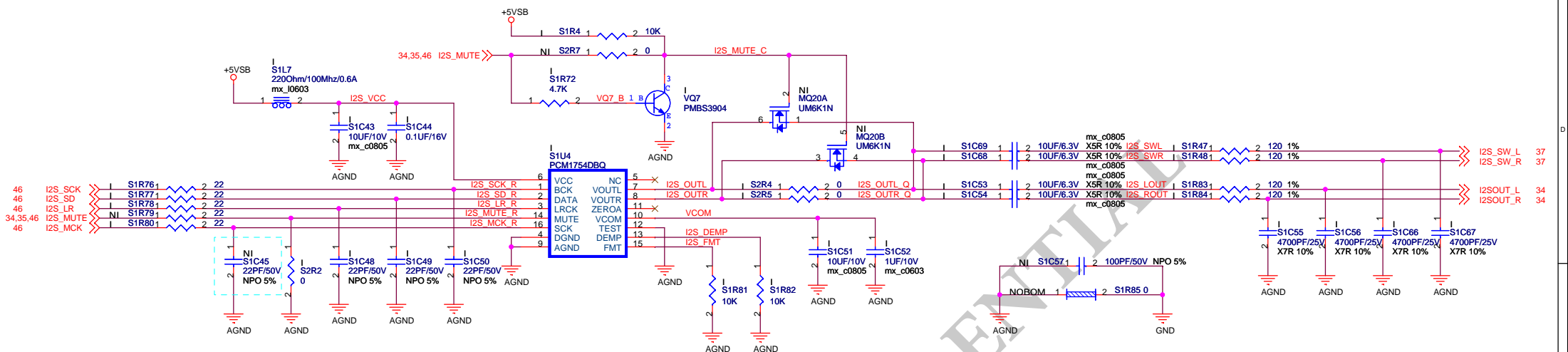
PEGATRON DT-MB RESTRICTED SECRET

**PEGATRON** Title : SCALAR STDP5300H-2

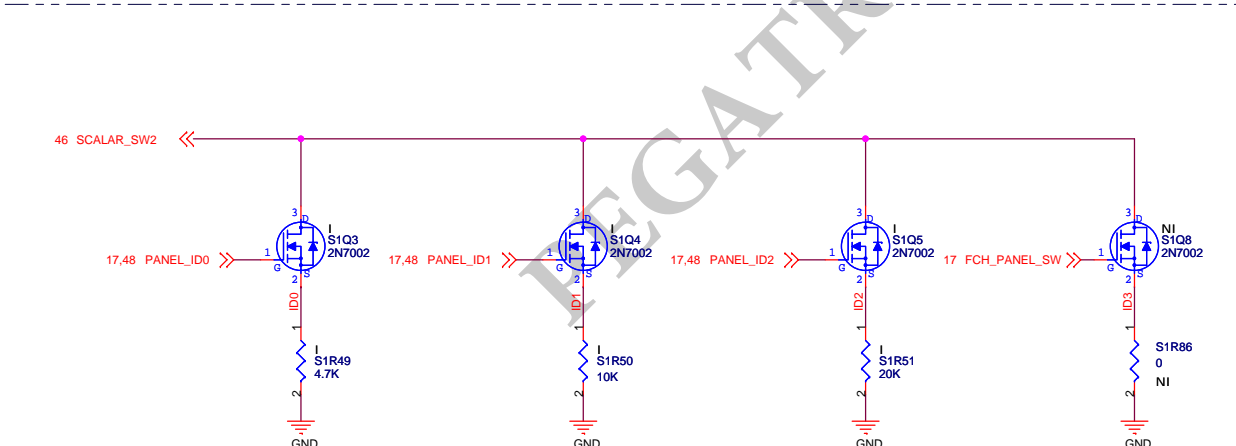
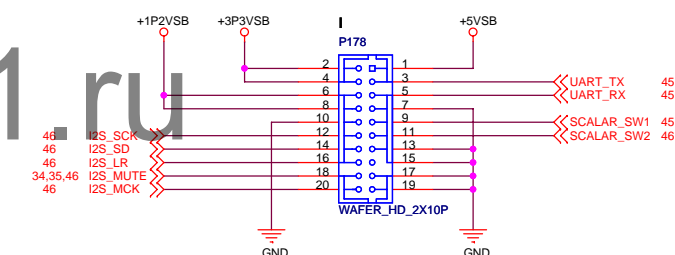
Pegatron Corp. Engineer: Melly\_Liu

Size A3 Project Name AAHD3-VL Rev 1.01

Date: Monday, March 12, 2012 Sheet 46 of 71

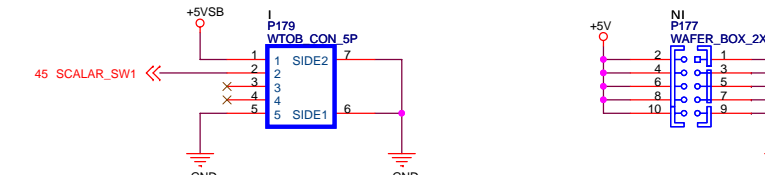


### 3D Scaler

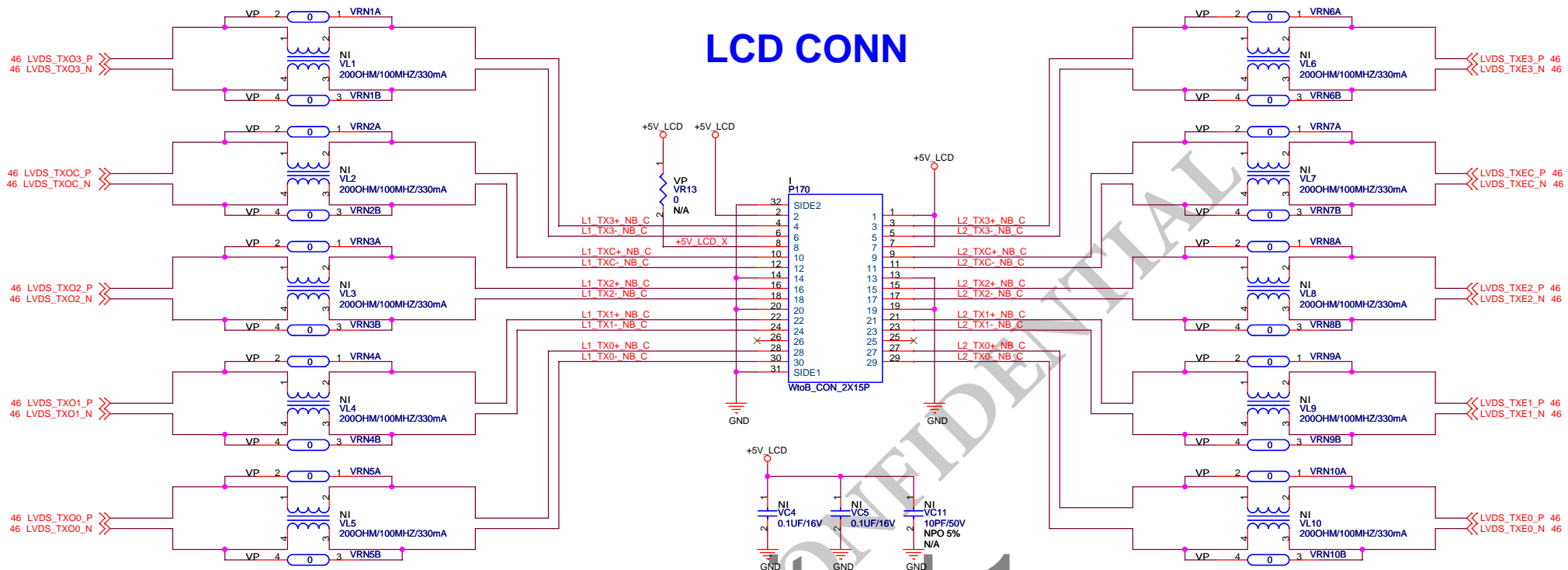


### KEYPAD

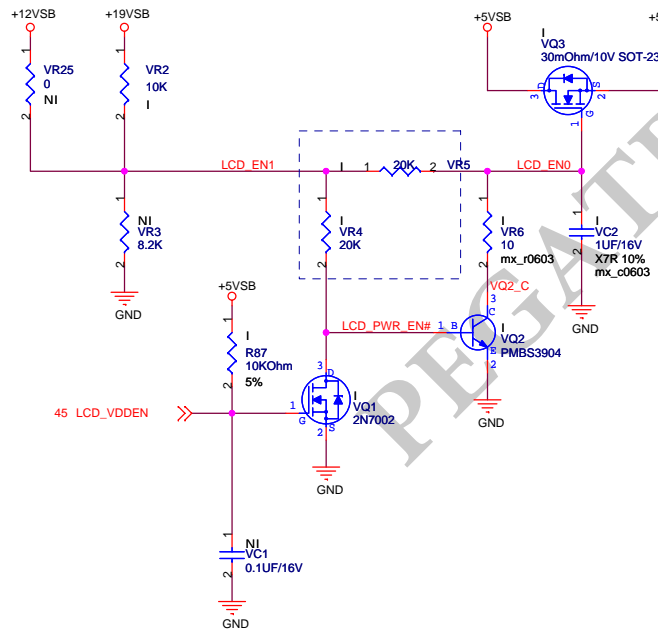
### 3D PANEL



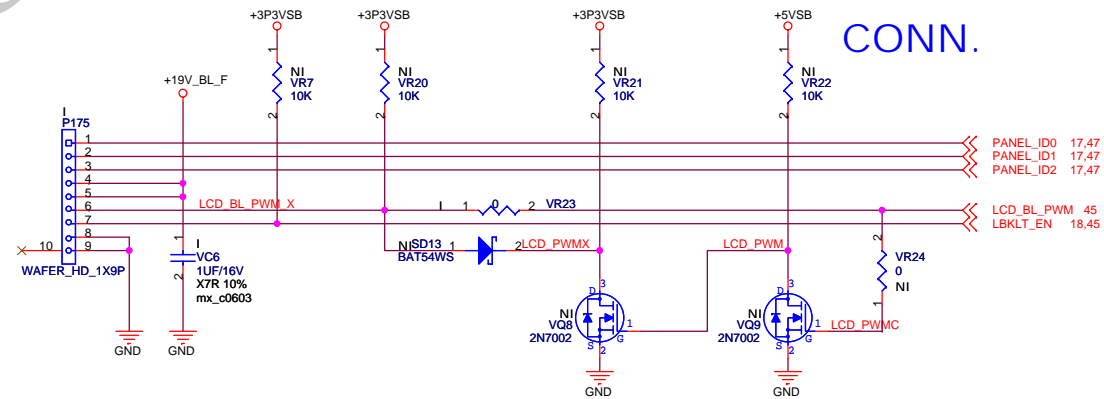
## LCD CONN



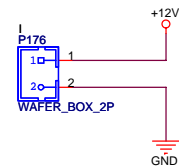
## LCD ON/OFF



CONVERTER  
CONN.



## TOUCH



~~CONFIDENTIAL~~ **PECATRON DT-MB RESTRICTED SECRET**

**PEGATRON** Title : LVDS CONNECTOR

Pegatron Corp. Engineer: *Melly\_Liu*

Size	Project Name	Rev
A3	<b>AAHD3-VL</b>	1.01

Date: Monday, March 12, 2012 Sheet 48 of 71



www.aitech1.ru

PEGATRON CONFIDENTIAL

PEGATRON DT-MB RESTRICTED SECRET

PEGATRON				Title :	XXX
Pegatron Corp.				Engineer:	Melly_Liu
Size	Project Name				Rev
A3	AAHD3-VL				1.01
Date:	Monday, March 12, 2012			Sheet	49 of 71

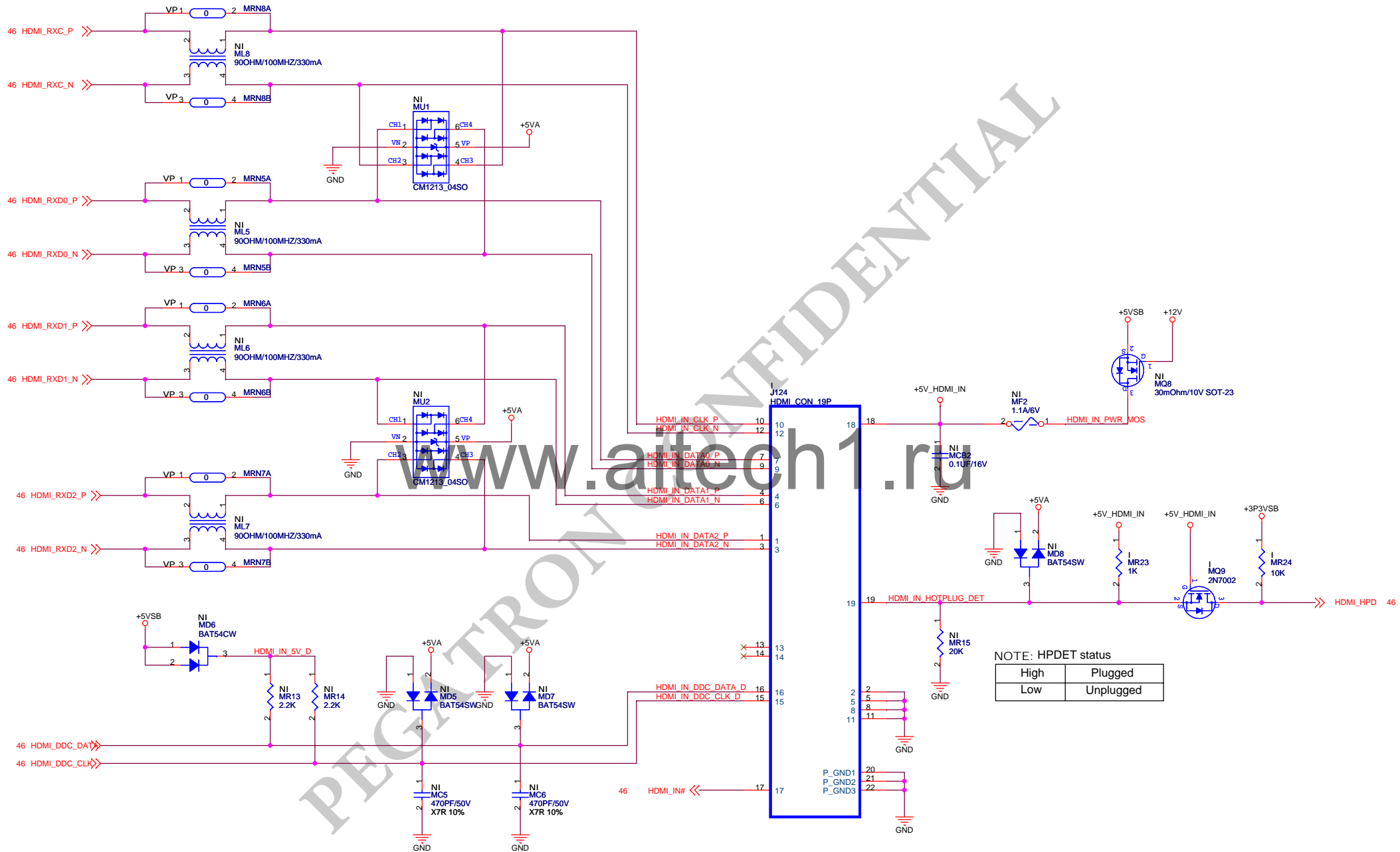


www.aitech1.ru

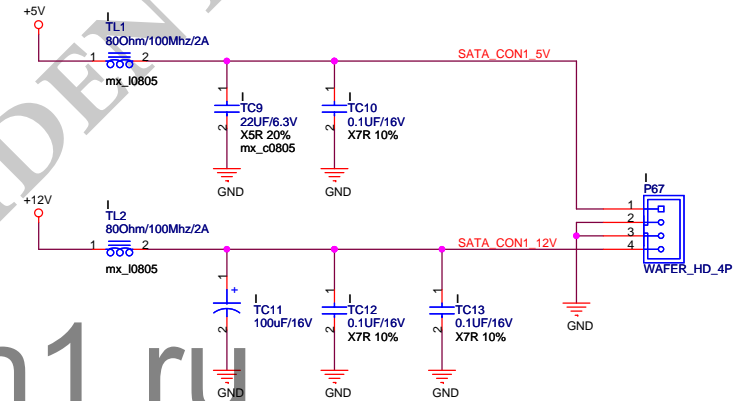
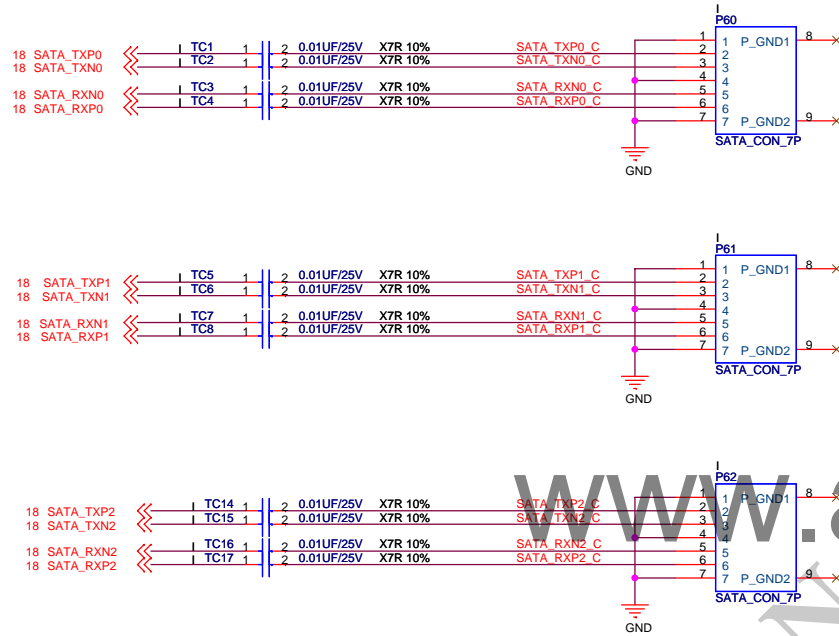
PEGATRON CONFIDENTIAL

PEGATRON DT-MB RESTRICTED SECRET

<b>PEGATRON</b>		Title : XXXX	
Pegatron Corp.		Engineer: <u>Melly_Liu</u>	
Size A3	Project Name <b>AAHD3-VL</b>		Rev 1.01
Date: <u>Monday, March 12, 2012</u>		Sheet <u>51</u> of <u>71</u>	



# SATA CONNECTOR



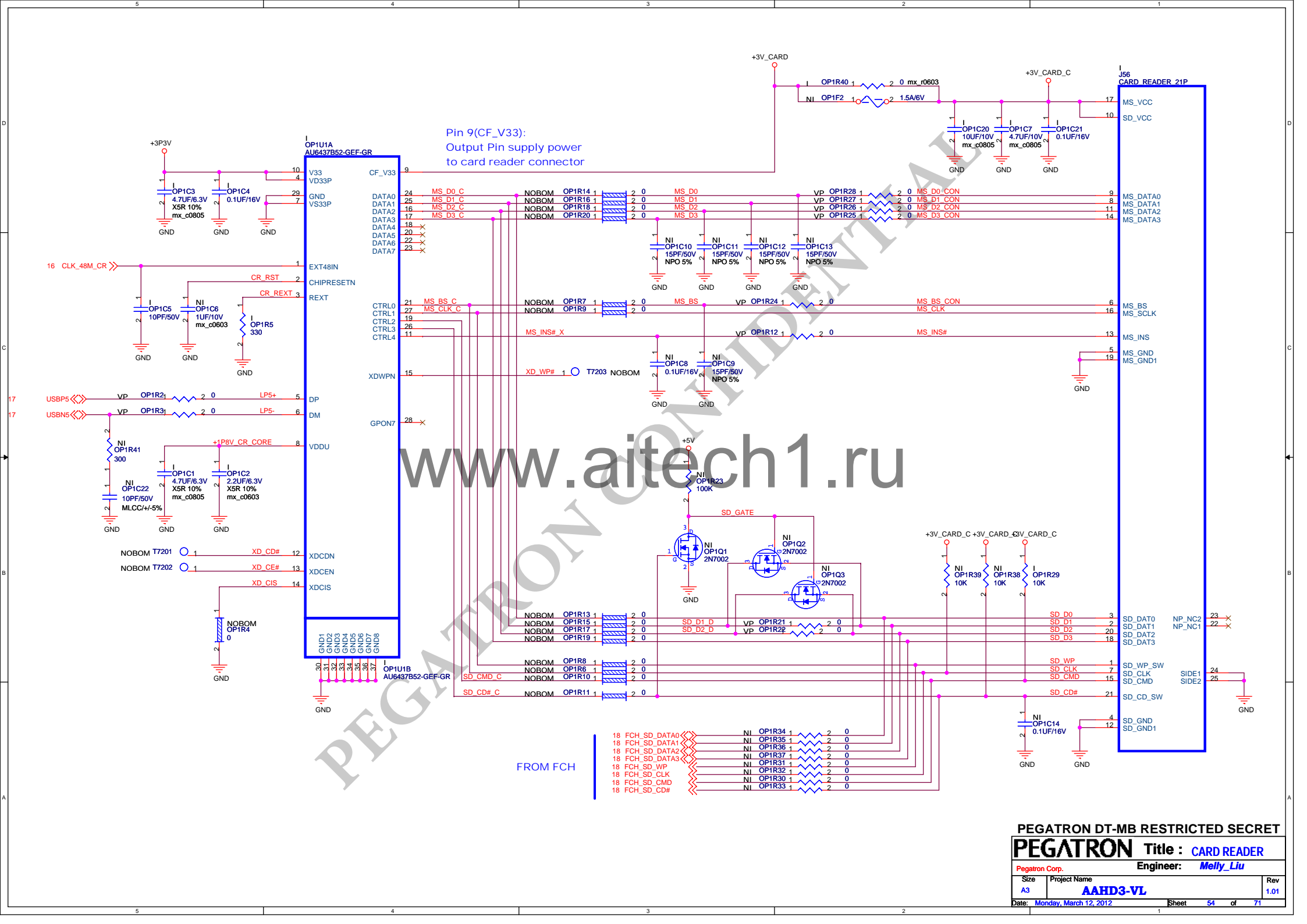
PEGATRON DT-MB RESTRICTED SECRET

**PEGATRON** Title : SATA CONNECTOR

Pegatron Corp. Engineer: Melly Liu

Size	Project Name	Rev
A3	AAHD3-VL	1.01

Date: Monday, March 12, 2012 Sheet 53 of 71



Pin 9(CF\_V33):  
Output Pin supply power  
to card reader connector

www.aitech1.ru

FROM FCH

PEGATRON DT-MB RESTRICTED SECRET

**PEGATRON** Title : **CARD READER**

Pegatron Corp. Engineer: **Melly\_Liu**

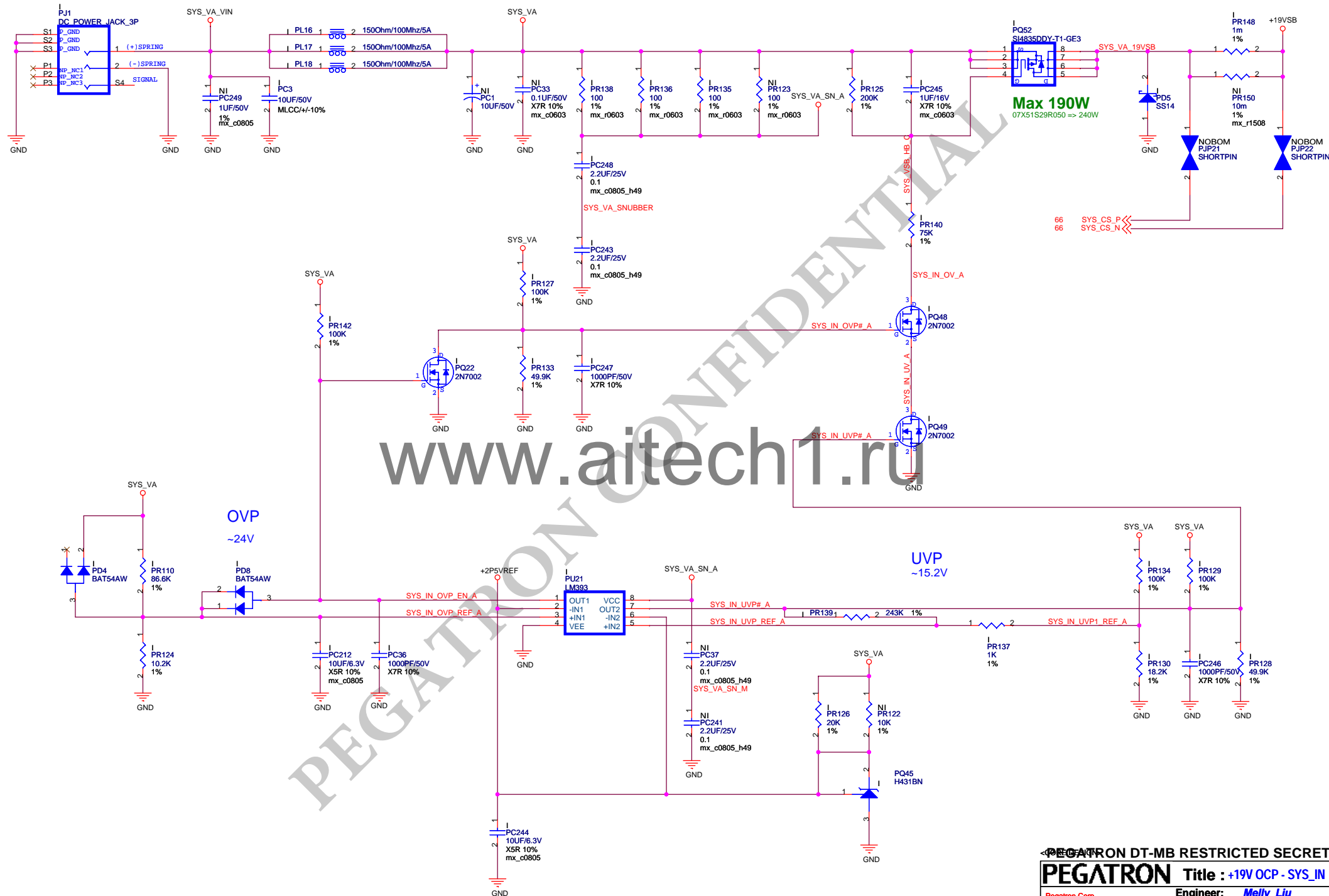
Size	Project Name	Rev
A3	<b>AAHD3-VL</b>	1.01

Date: **Monday, March 12, 2012** Sheet **54** of **71**

www.aitech1.ru

PEGATRON CONFIDENTIAL

< PEGATRON DT-MB RESTRICTED SECRET		
<b>PEGATRON</b>		Title : <b>XXX</b>
Pegatron Corp.		Engineer: <b>Melly_Liu</b>
Size A3	Project Name <b>AAHD3-VL</b>	Rev 1.01
Date: Monday, March 12, 2012		Sheet 55 of 71



PEGATRON DT-MB RESTRICTED SECRET

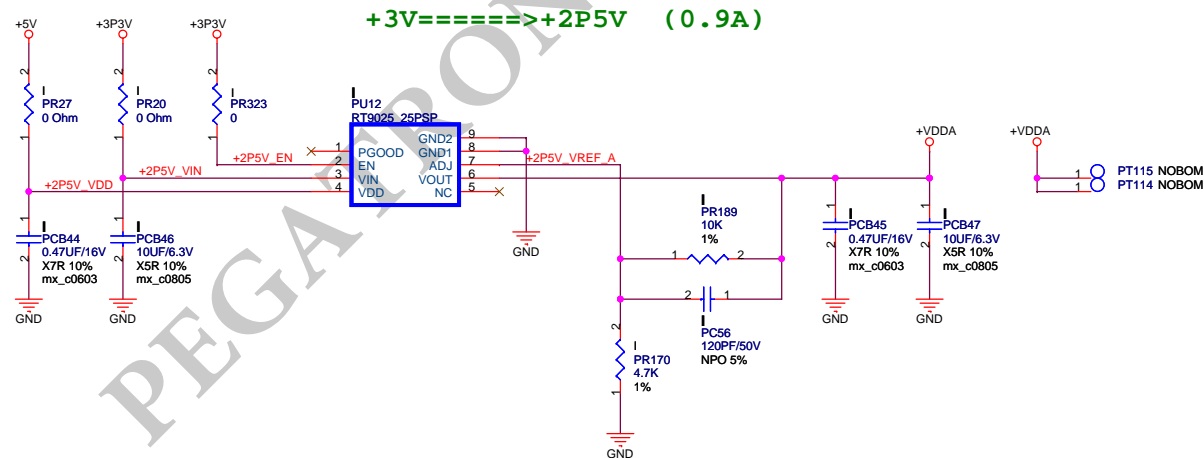
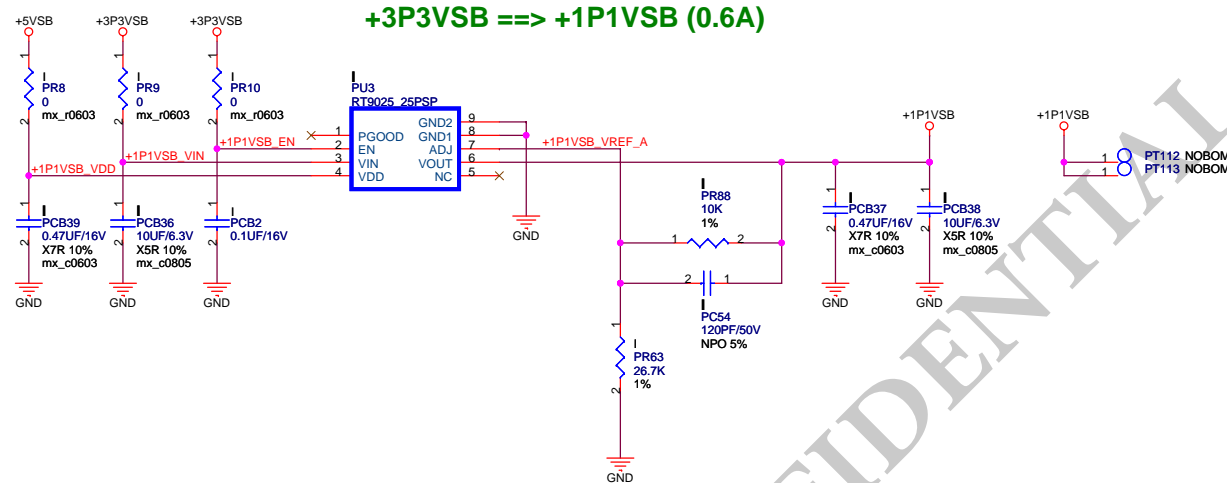
**PEGATRON** Title : +19V OCP - SYS\_IN

Pegatron Corp. Engineer: Melly\_Liu

Size	Project Name	Rev
A3	AAHD3-VL	1.01

Date: Monday, March 12, 2012 Sheet 56 of 71

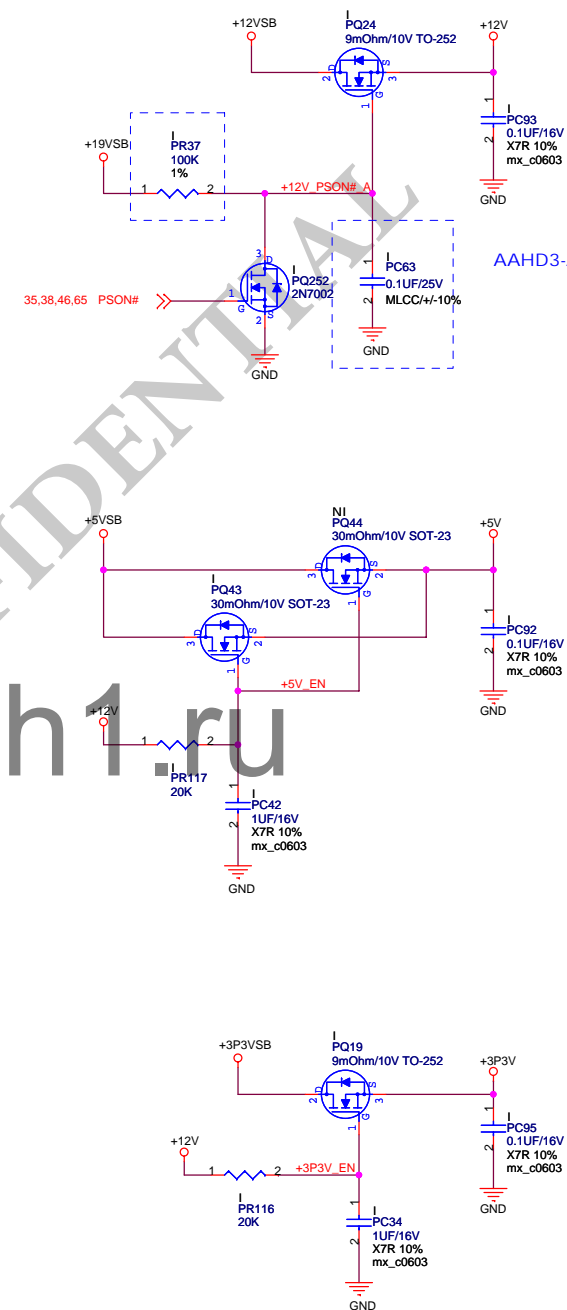
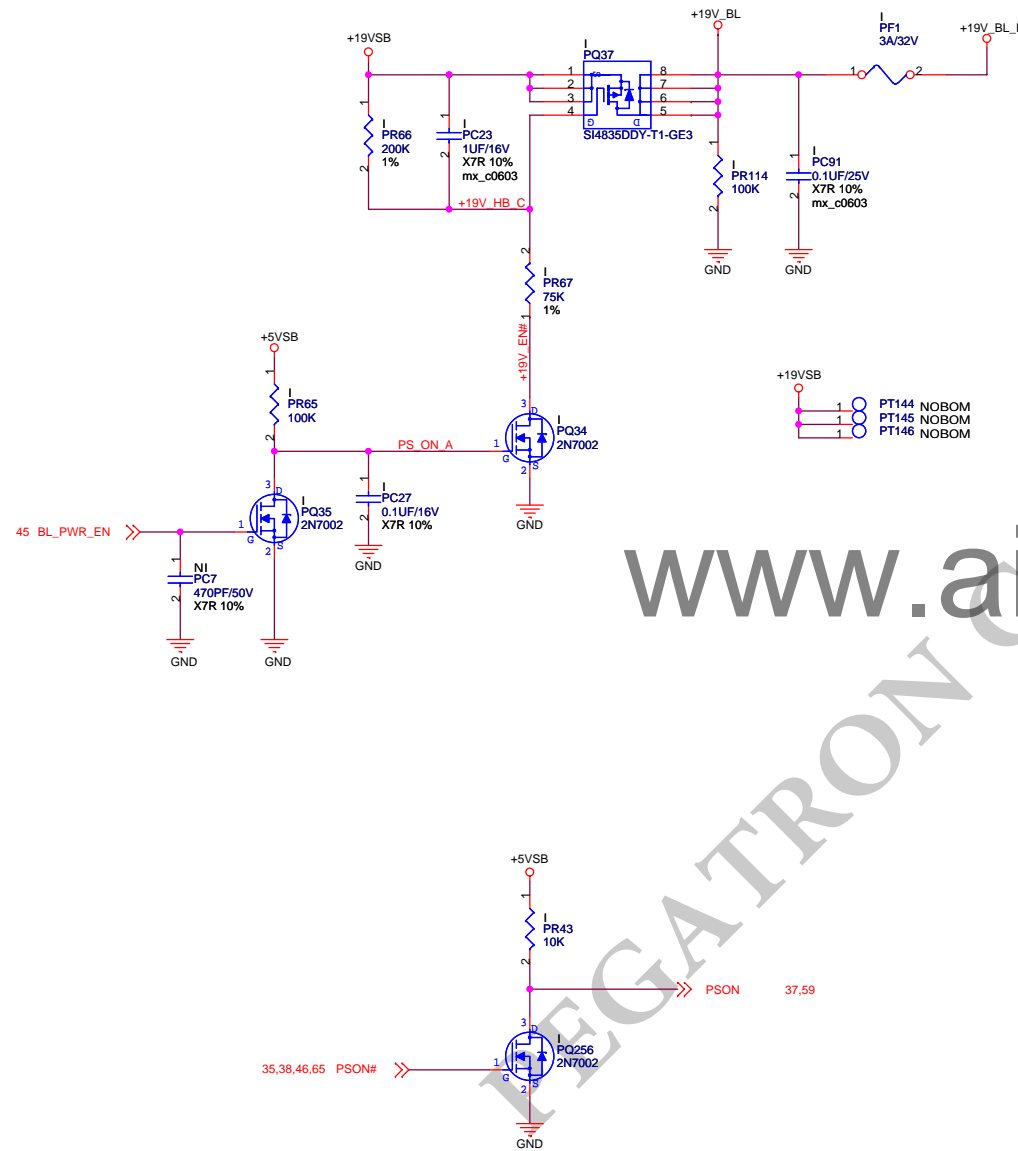




<Core Design>

PEGATRON			Title : +1P1V&+1P1V&+2P5V	
PEGATRON COMPUTER INC			Engineer: Melly_Liu	
Size	Project Name			Rev
A3	AAHD3-VL			1.01
Date: Monday, March 12, 2012		Sheet 57 of 71		

**+19V / max=2.1A / TDC:1.58A**  
Vdroop:  $2.1A \cdot 0.03\Omega = 0.063V$

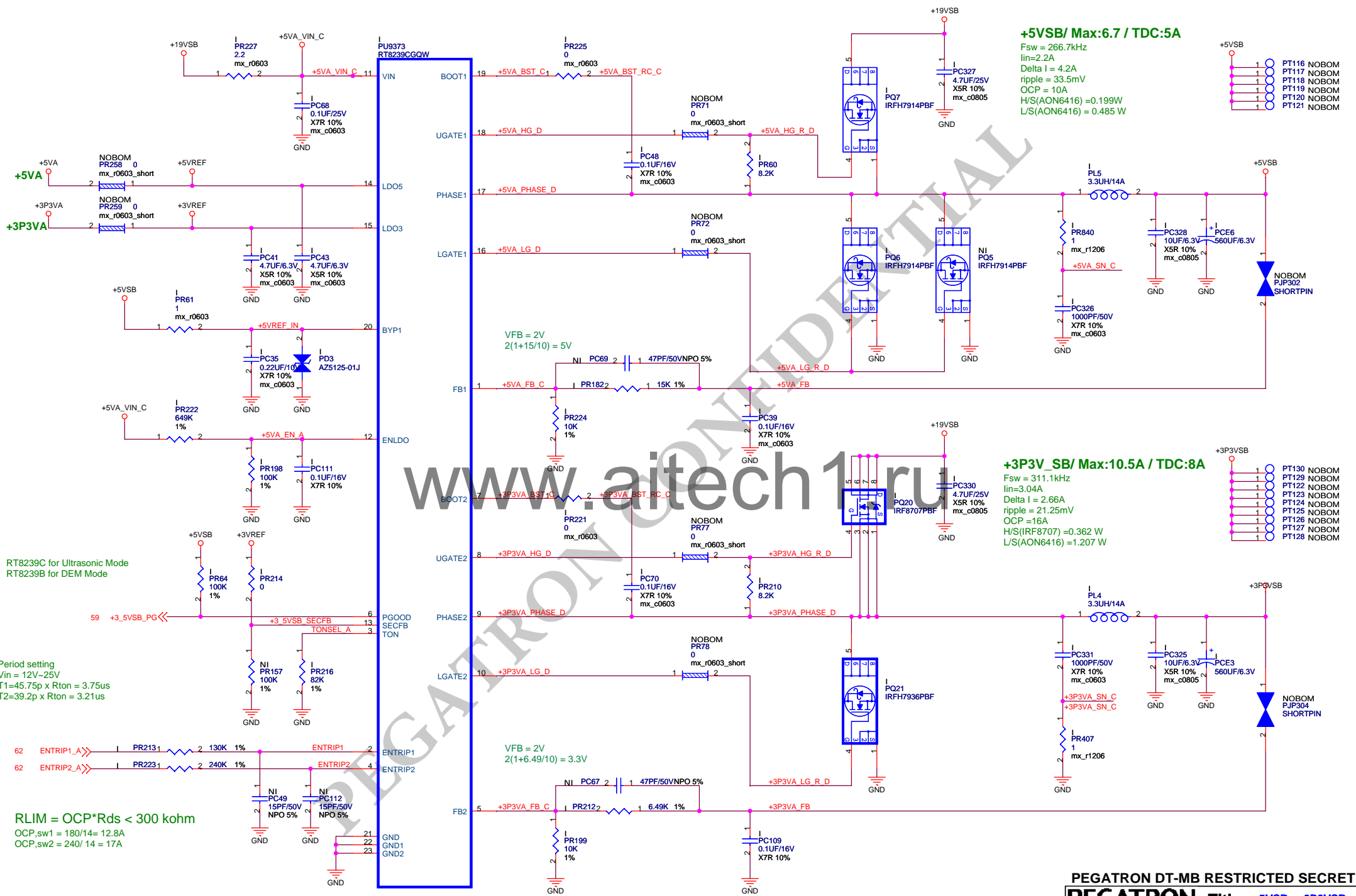


AAHD3-AG 1.01 Change for ErP

**+5V / I<sub>max</sub>:1.3A / TDC:1A**  
Vdroop:  $1A \cdot 16m\Omega = 16mV$

**+3P3V / max:6.879A / TDC:5.2A**  
Vdroop:  $5.2A \cdot 9m\Omega = 46mV$





**+5VSB/ Max:6.7 / TDC:5A**  
Fsw = 266.7kHz  
lin=2.2A  
Delta I = 4.2A  
ripple = 33.5mV  
OCP = 10A  
H/S(AON6416) = 0.199W  
L/S(AON6416) = 0.485 W

- PT116 NOBOM
- PT117 NOBOM
- PT118 NOBOM
- PT119 NOBOM
- PT120 NOBOM
- PT121 NOBOM

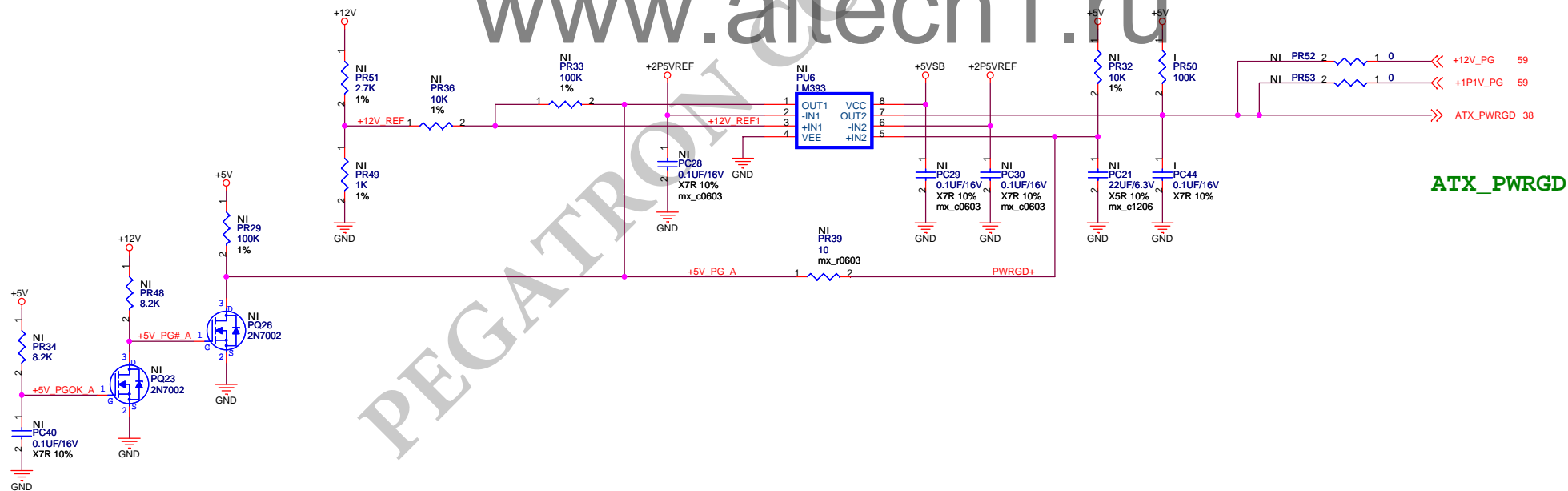
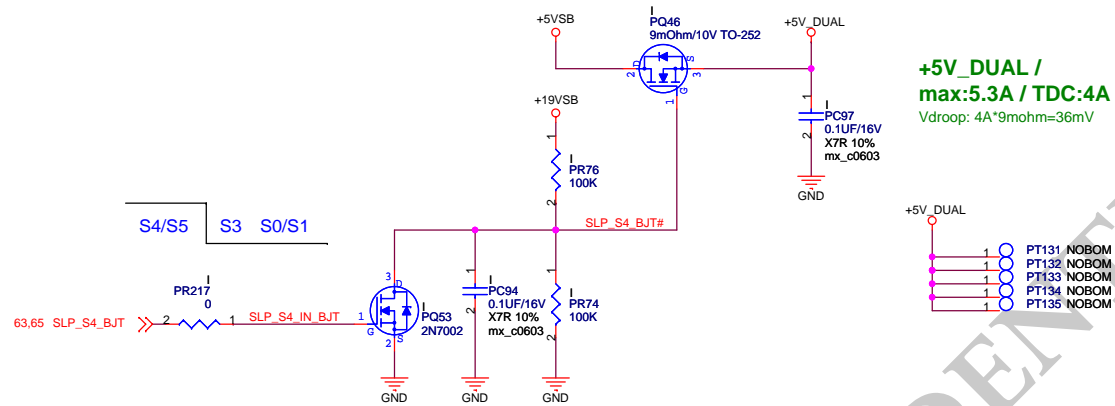
**+3P3V\_SB/ Max:10.5A / TDC:8A**  
Fsw = 311.1kHz  
lin=3.04A  
Delta I = 2.66A  
ripple = 21.25mV  
OCP = 16A  
H/S(IRF8707) = 0.362 W  
L/S(AON6416) = 1.207 W

- PT130 NOBOM
- PT129 NOBOM
- PT122 NOBOM
- PT123 NOBOM
- PT124 NOBOM
- PT125 NOBOM
- PT126 NOBOM
- PT127 NOBOM
- PT128 NOBOM

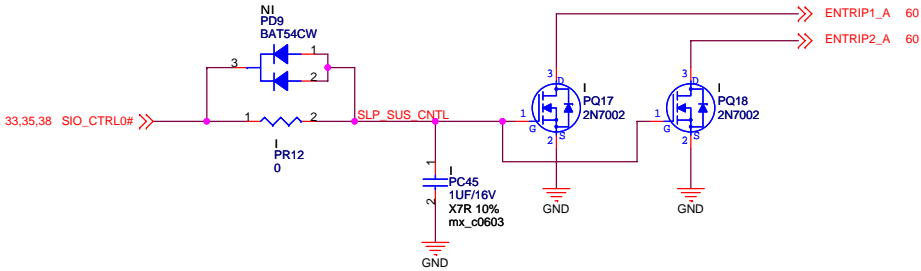
RT8239C for Ultrasonic Mode  
RT8239B for DEM Mode

Period setting  
Vin = 12V~25V  
T1=45.75p x Rton = 3.75us  
T2=39.2p x Rton = 3.21us

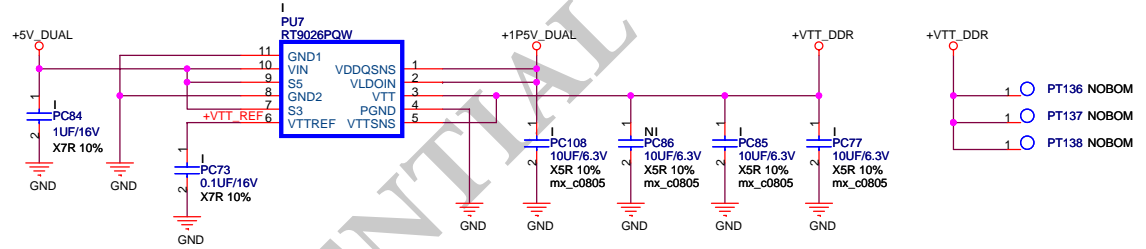
**RLIM = OCP\*Rds < 300 kohm**  
OCP.sw1 = 180/14= 12.8A  
OCP.sw2 = 240/ 14 = 17A



**+5VSB-EN**  
**+3VSB-EN**



**+VTT\_DDR / Max:2A / TDC:1.5A**  
Pd=7.8W



www.aitech1.ru

~~CONFIDENTIAL~~ **PECATRON DT-MB RESTRICTED SECRET**

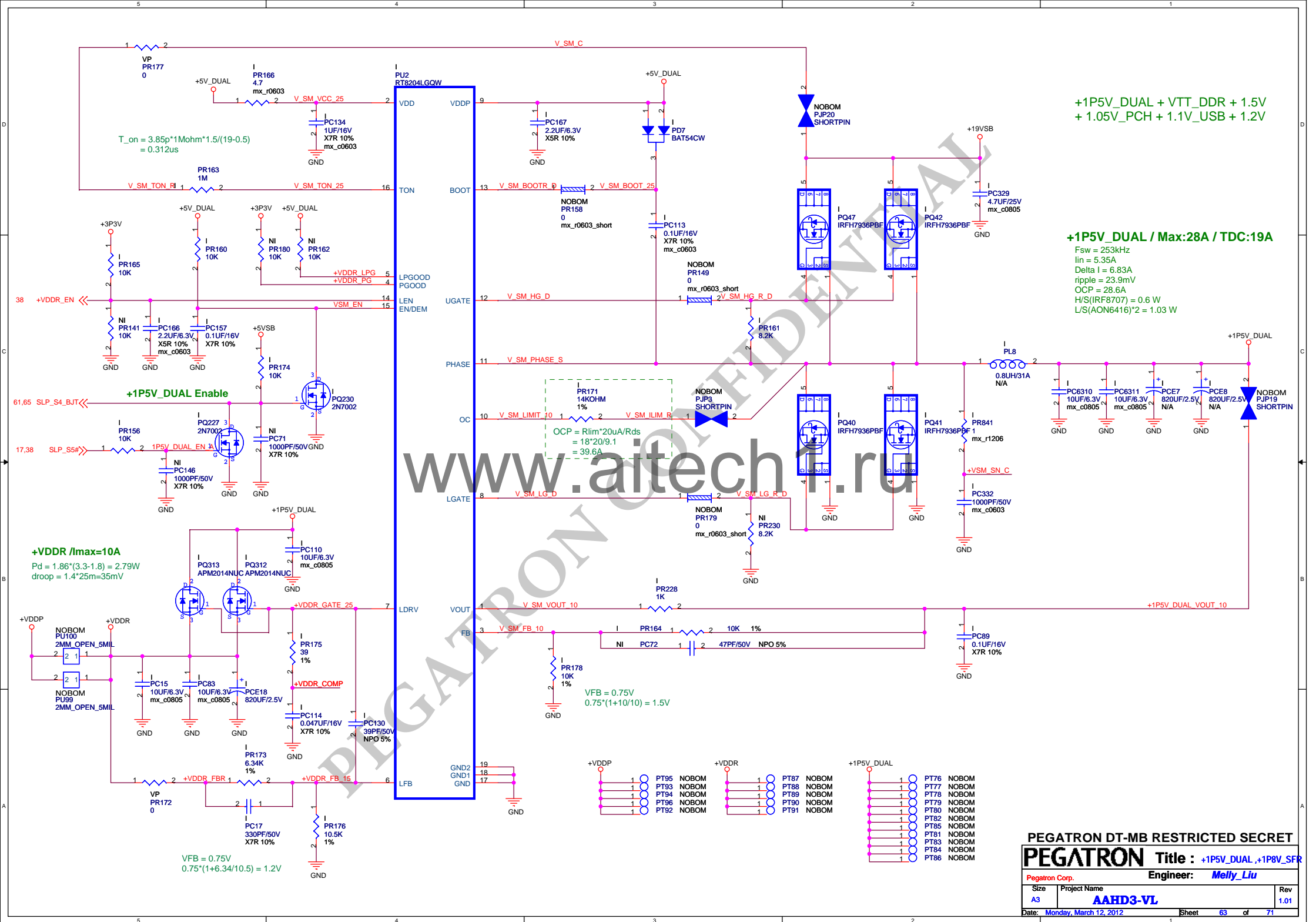
**PEGATRON** Title : +VTT\_DDR

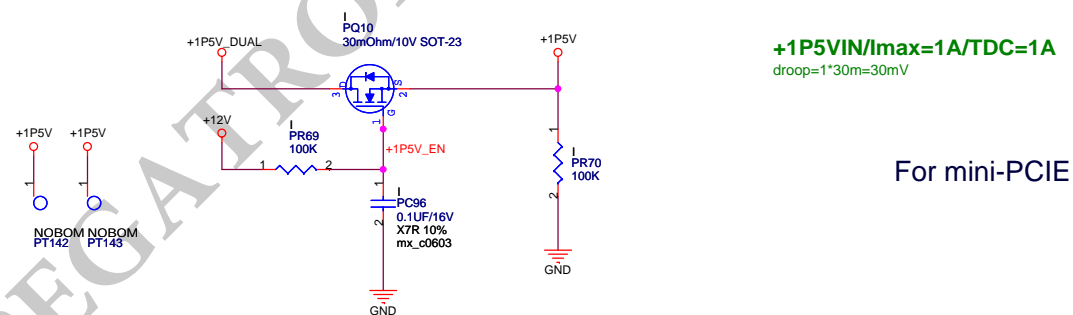
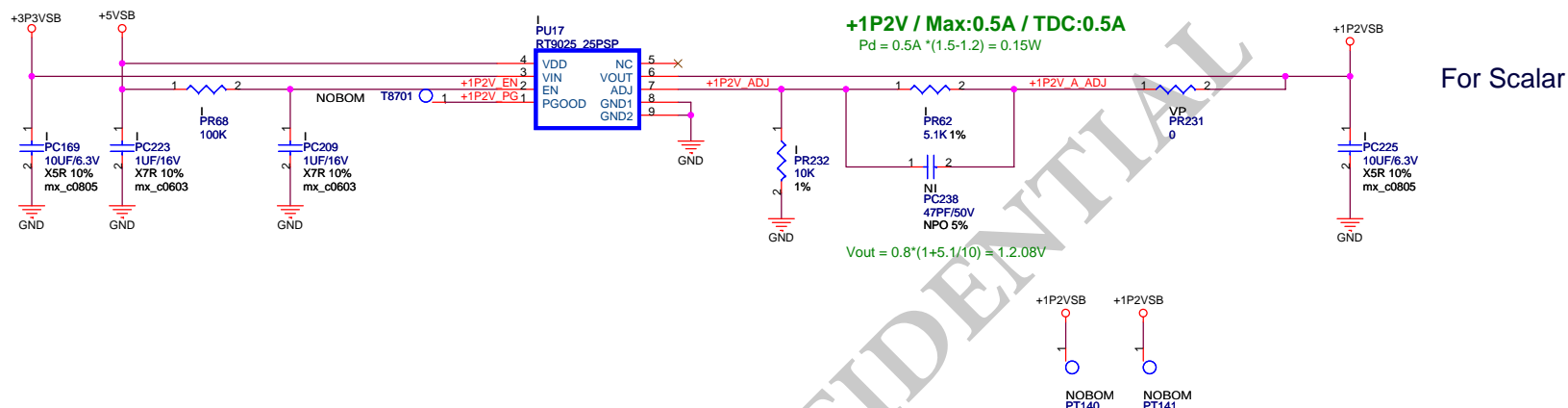
Pegatron Corp. Engineer: *Melly\_Liu*

Size	Project Name	Rev
------	--------------	-----

A3	<b>AAHD3-VL</b>	1.01
----	-----------------	------

Date: Monday, March 12, 2012 Sheet 62 of 71

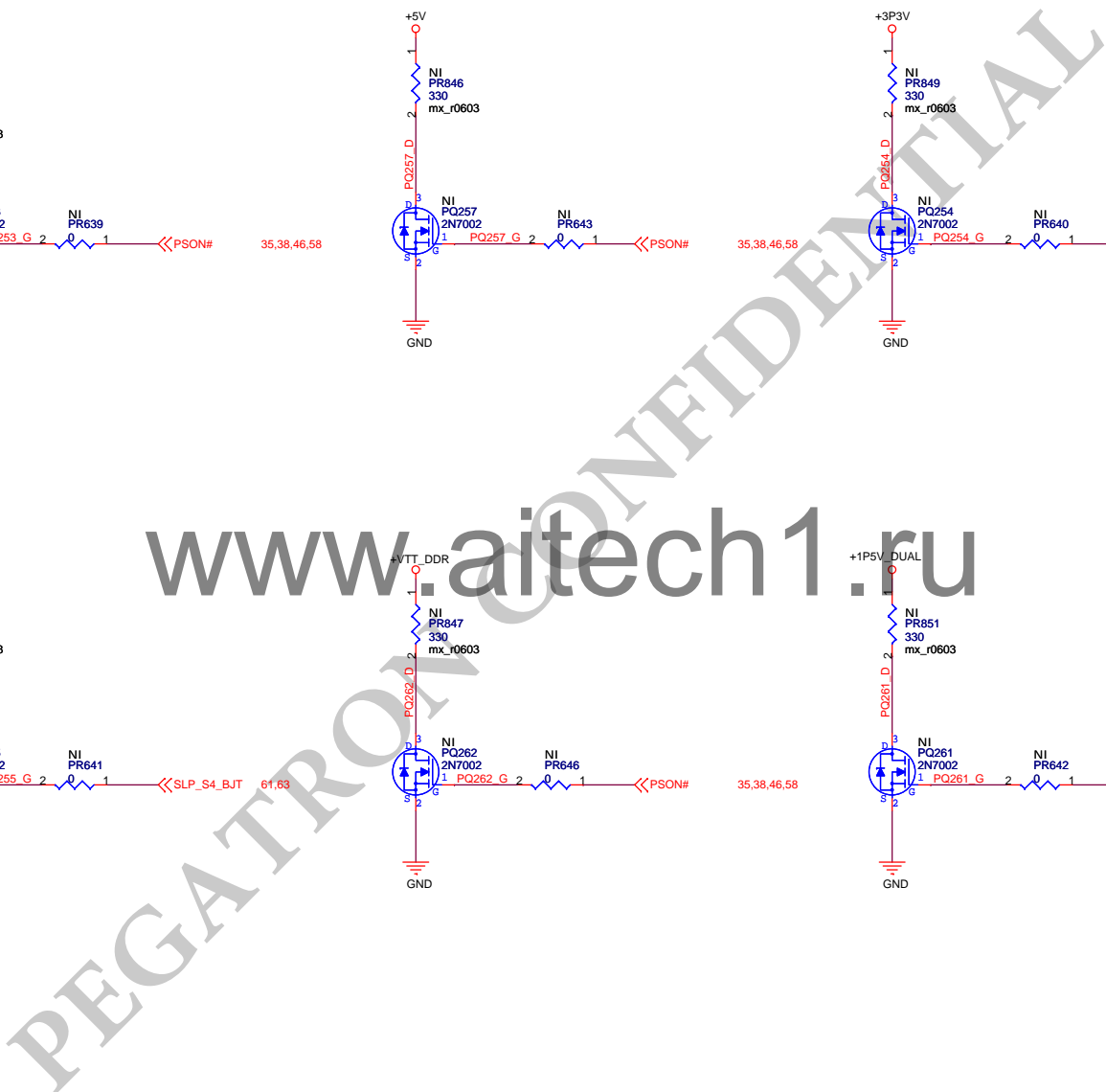


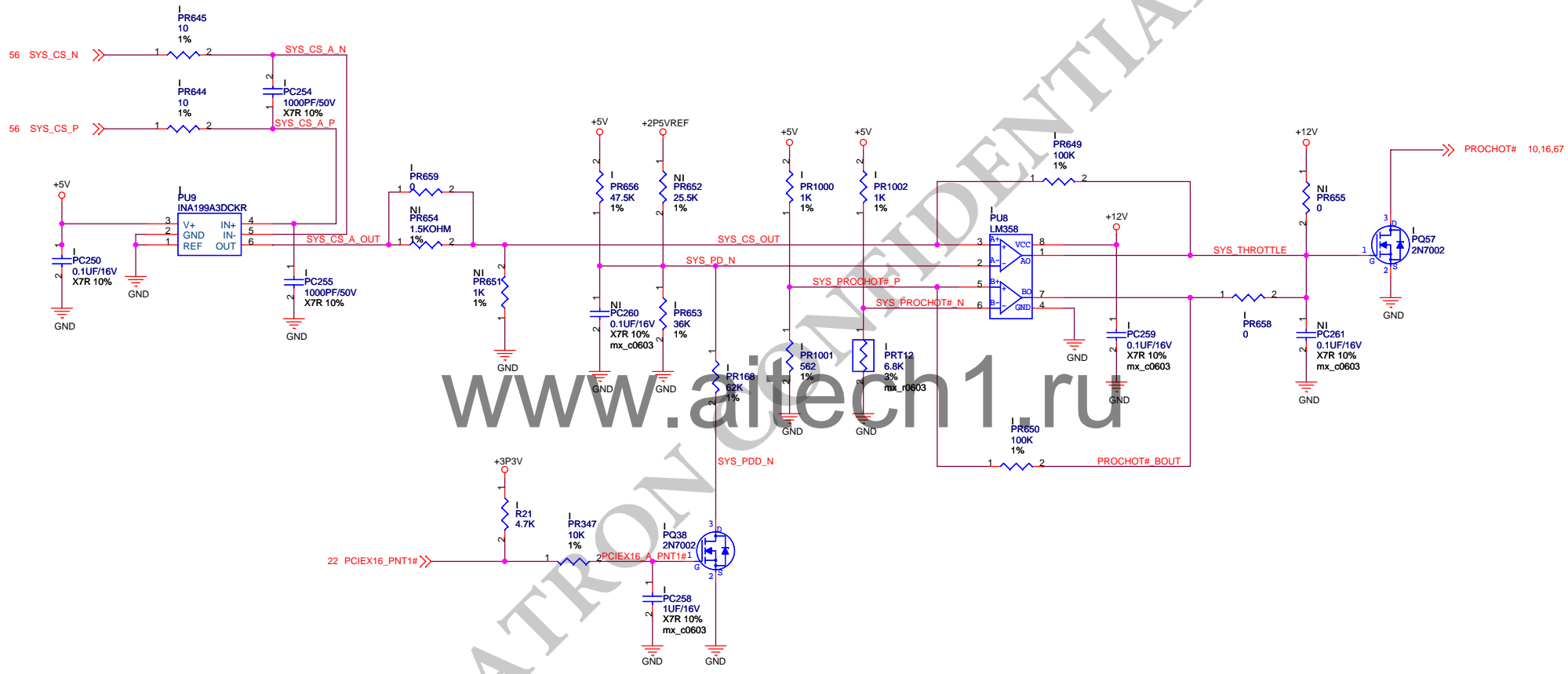


PEGATRON DT-MB RESTRICTED SECRET

<b>PEGATRON</b>		Title : +1P2V , +1P5V	
Pegatron Corp.		Engineer: <i>Melly_Liu</i>	
Size A3	Project Name <b>AAHD3-VL</b>	Rev 1.01	
Date: Monday, March 12, 2012		Sheet 64 of 71	

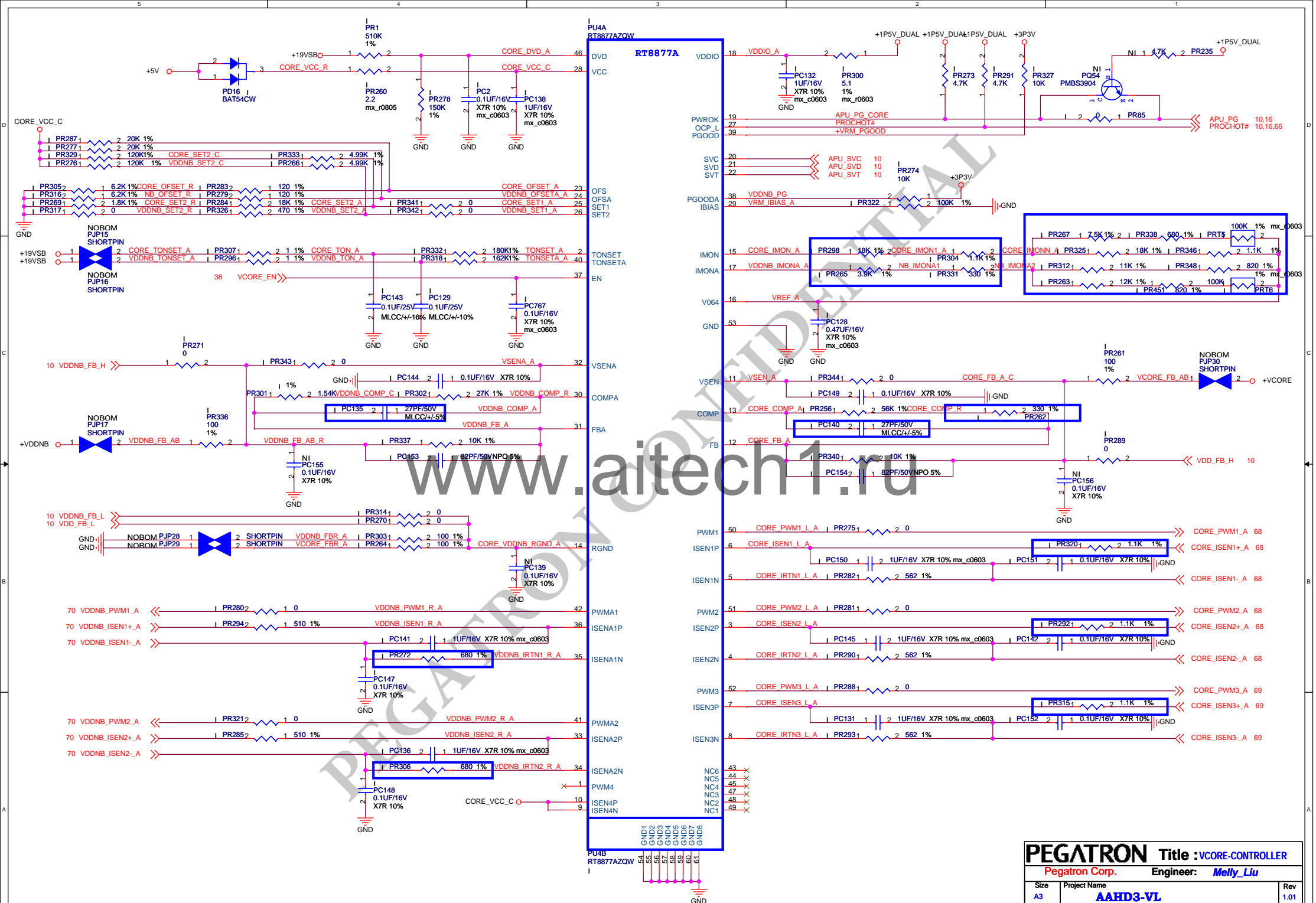


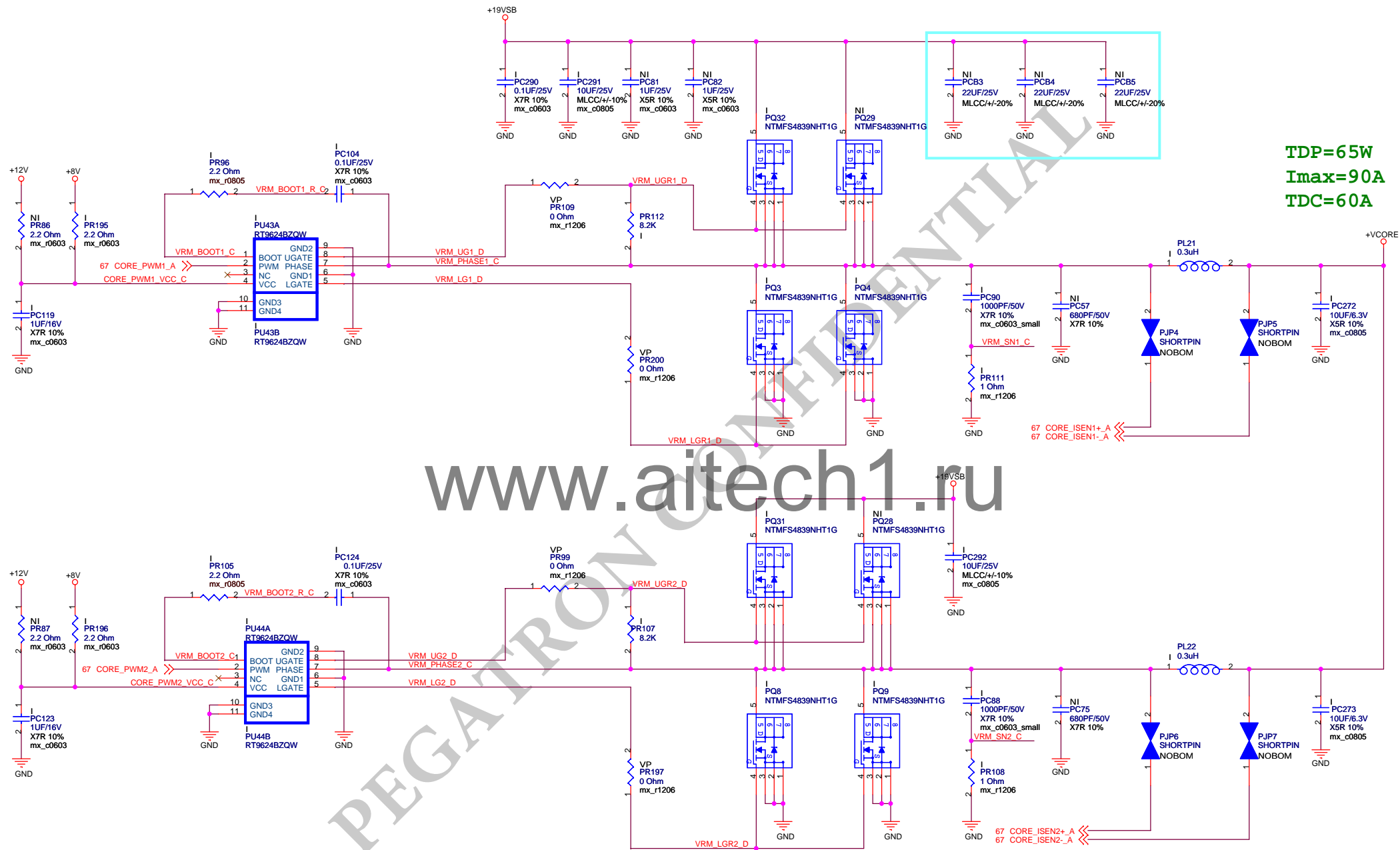




www.aitech1.ru

PEGATRON





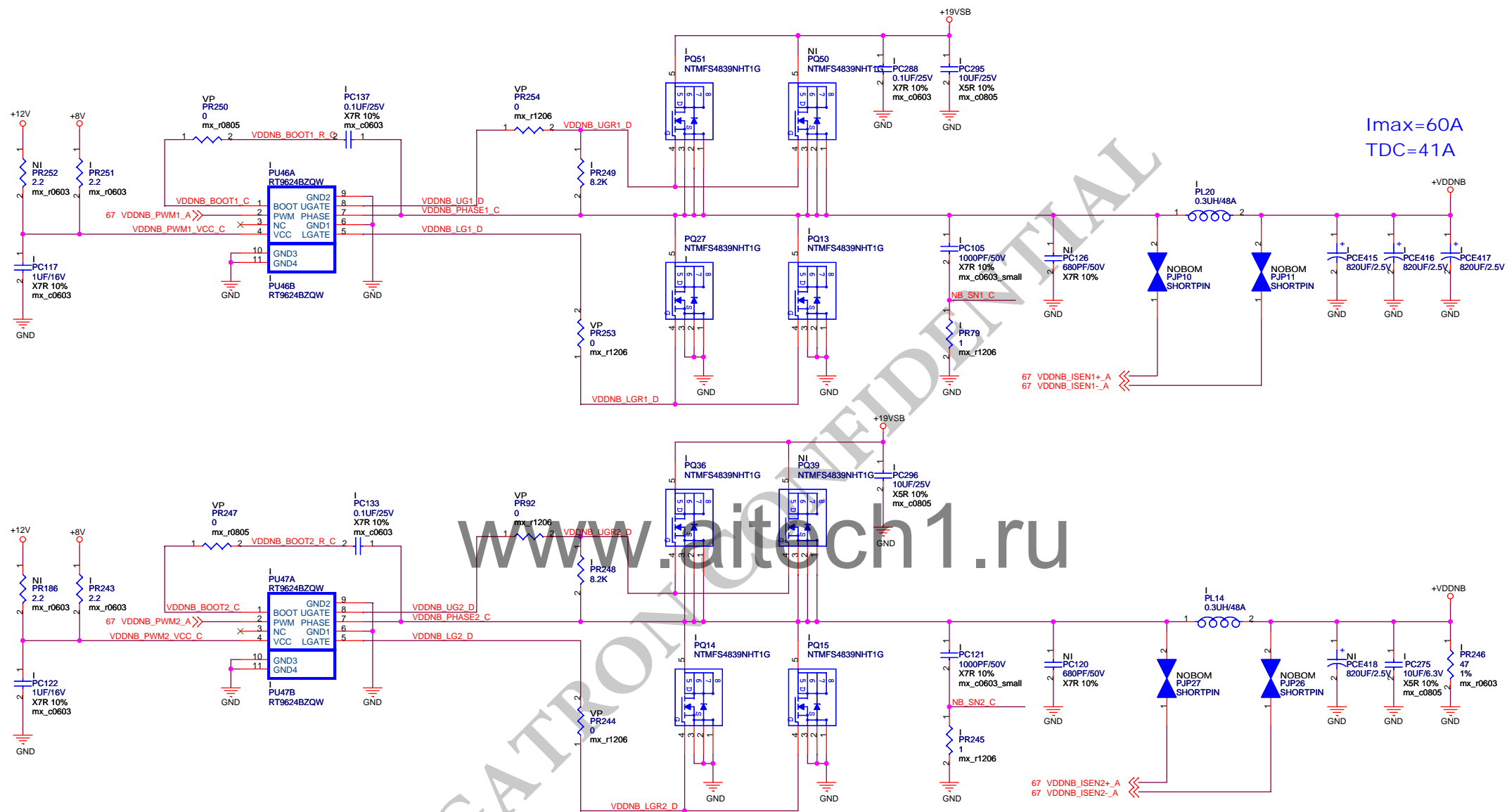
TDP=65W  
Imax=90A  
TDC=60A

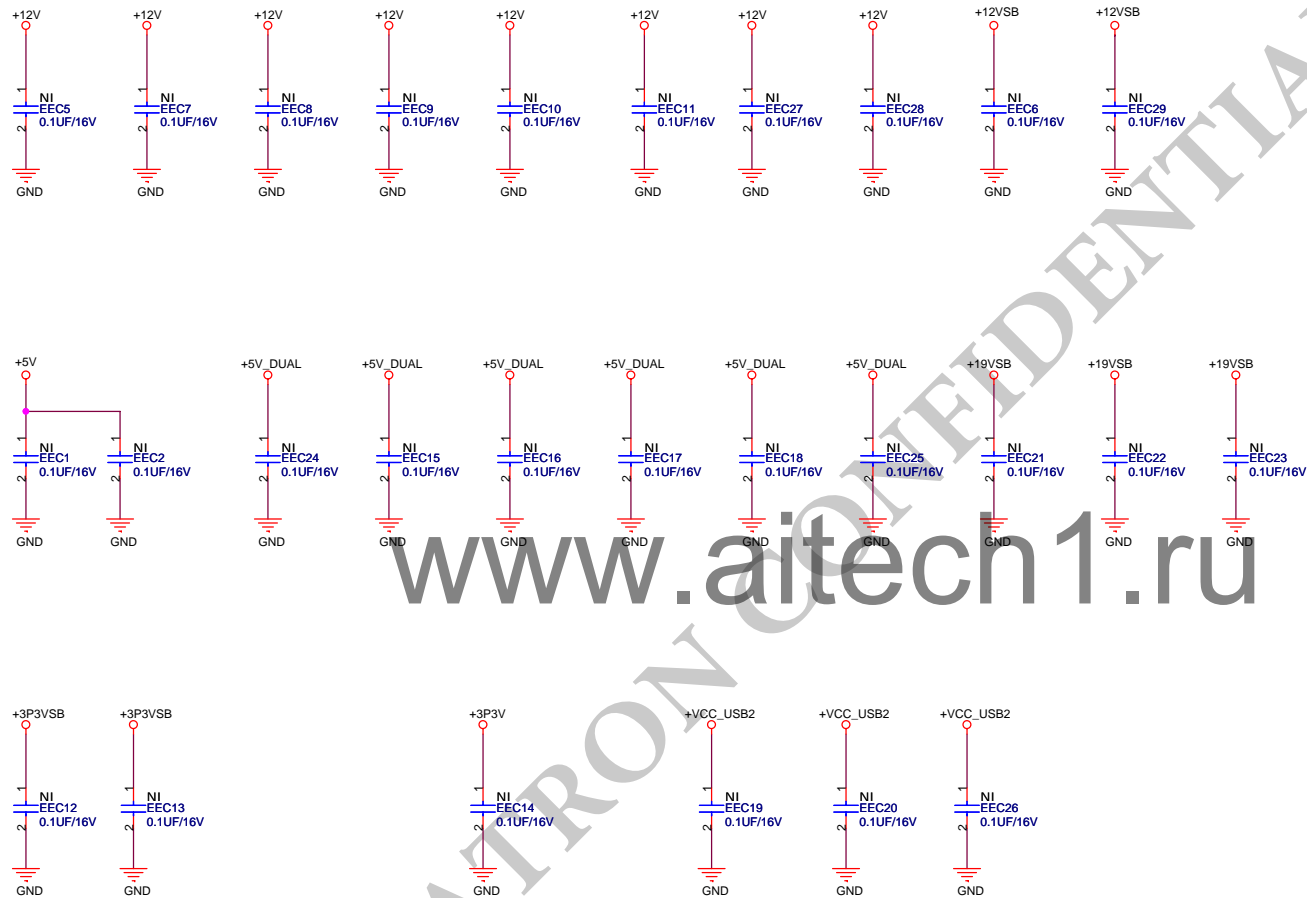


1011

**PEGATRON** Title :VCORE-DRIVER2

Pegatron Corp.		Engineer:	Melly_Liu
Size A3	Project Name AAHD3-VL		Rev 1.01
Date:	Monday, March 12, 2012	Sheet	69 of 71





<Variant Name>		
<b>PEGATRON</b> Title : EMI		
PEGATRON COMPUTER INC Engineer: Melly_Liu		
Size A3	Project Name AAHD3-VL	Rev 1.01
Date: Monday, March 12, 2012 Sheet 71 of 71		