

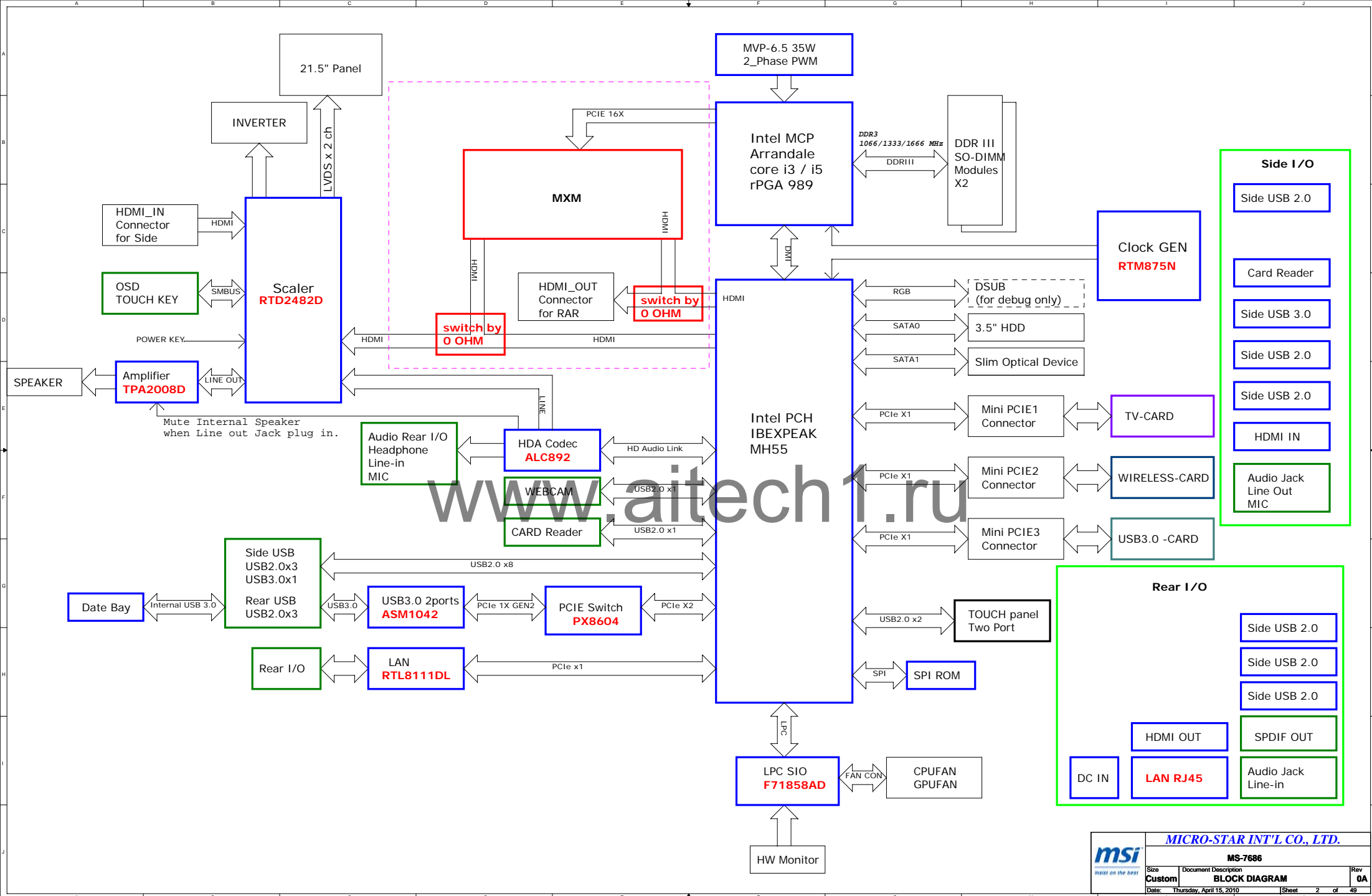
Calpella Platform

01 : BLOCK DIAGRAM
02 : PLATFORM
03 : PROCESSOR-1 (HOST BUS)
04 : PROCESSOR-2 (DDR3)
05 : PROCESSOR-3 (POWER)

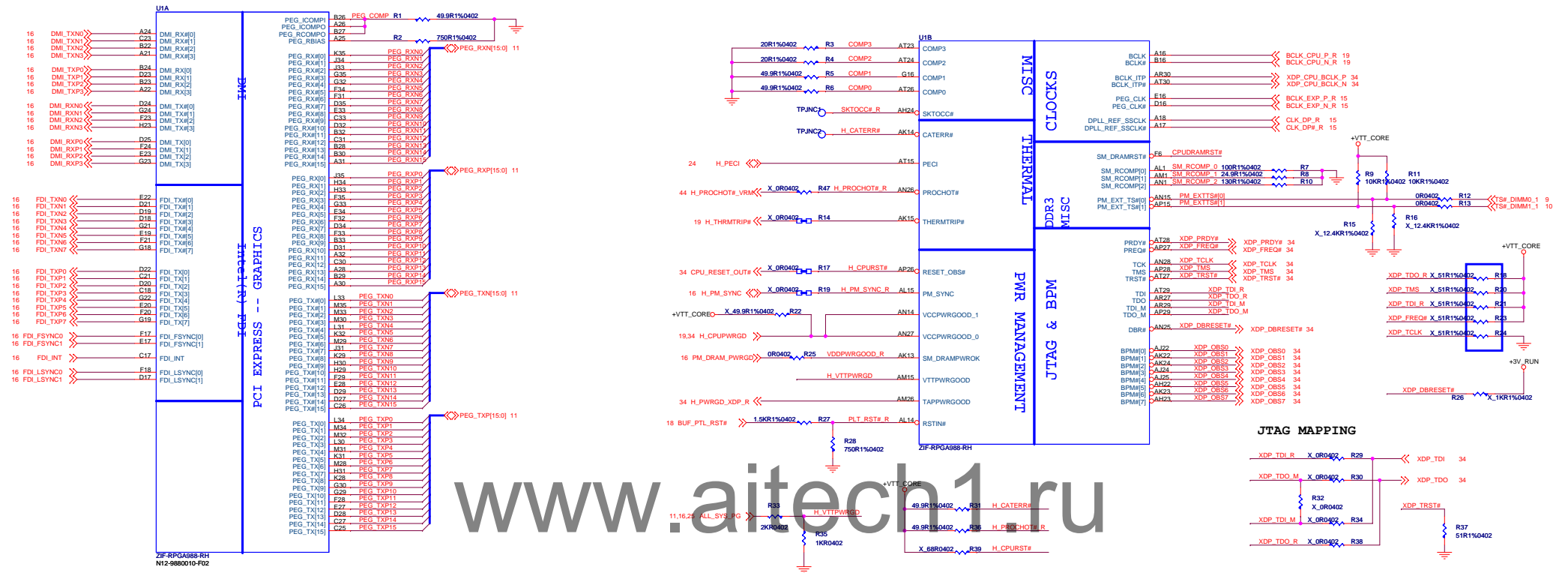
07 : PROCESSOR-5 (GND)
08 : PROCESSOR-6 (RESERVE)
09 : DDR3 SODIMM 0
10 : DDR3 SODIMM 1
11 : MXM3.0 type A slot
12 : SWITCH
13 : CRT, LVDS and HDMI connector
14 : PCH-1 (HDA, JTAG, SATA)
15 : PCH-2 (PCI-E, SMBUS, CLK)
16 : PCH-3 (DMI, FDI, GPIO)
17 : PCH-4 (LVDS, DDI)
18 : PCH-5 (PCI, USB, NVRAM)
19 : PCH-6 (GPIO, VSS, NCTF, RSVD)
20 : PCH-7 (POWER)
21 : PCH-8 (POWER)
22 : PCH-9 (GND)
23 : KBC/EC/uP (KB3926)
24 : Clock Generator (ICS9LPRS113A)
25 : HDD, CDROM, ESATA, USB
26 : Card Reader (RTS5159)
27 : PCI-E Giga Lan (RTL8111DL)
28 : Mini PCI-E, LED, Launch Board
29 : New Card, Audio, Touchpad
30 : M_Battery select
31 : M_Battery Charger
32 : M_System Power
33 : M_DDR Power and 1.5VRUN
34 : M_VTT, 1.8VRUN
35 : M_CPU power
36 : M_Graphic Core
37 : Screw / EMI
38 : 1675A Audio board (ALC888)
39 : 1675A Audio Jacks
40 : 1675B LAUNCH BOARD
41 : 1675C Touch Pad Board
42 : 1675D Cap sense
43 : 1675E Finger printer
44 : Power on Sequency
45 : Power down Sequency
46 : History
47 : Topology

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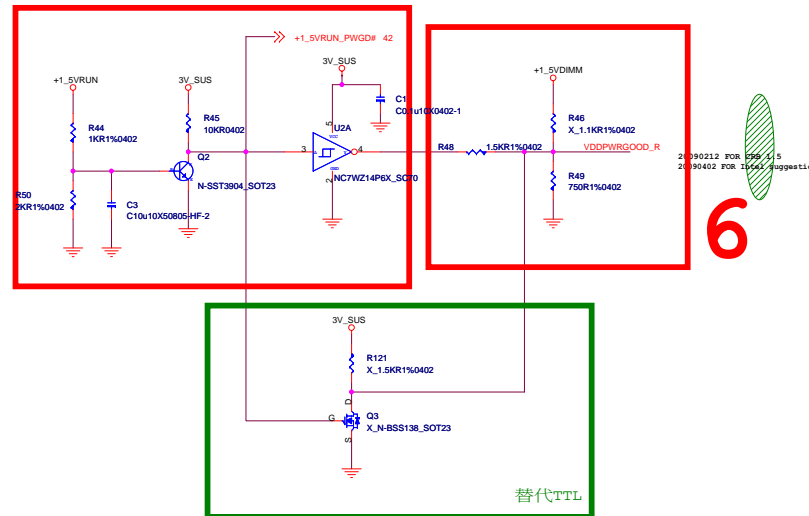
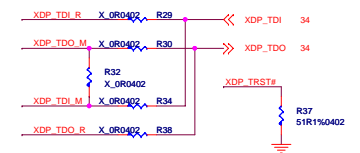
USB 0 : Audio Board Connector
USB 1 : Bluetooth Connector
USB 2 : Finger Printer
USB 3 : Card Reader
USB 4 : Camera Connector
USB 5 : Launch Board Connector
USB 8 : USB Connector on Main Board
USB 9 : E-SATA Connector
USB 10 : Mini_PCIE slot
USB 11 : NEW Card
USB 12 : Mini_PCIE slot
USB 13 : Touch screen Connector



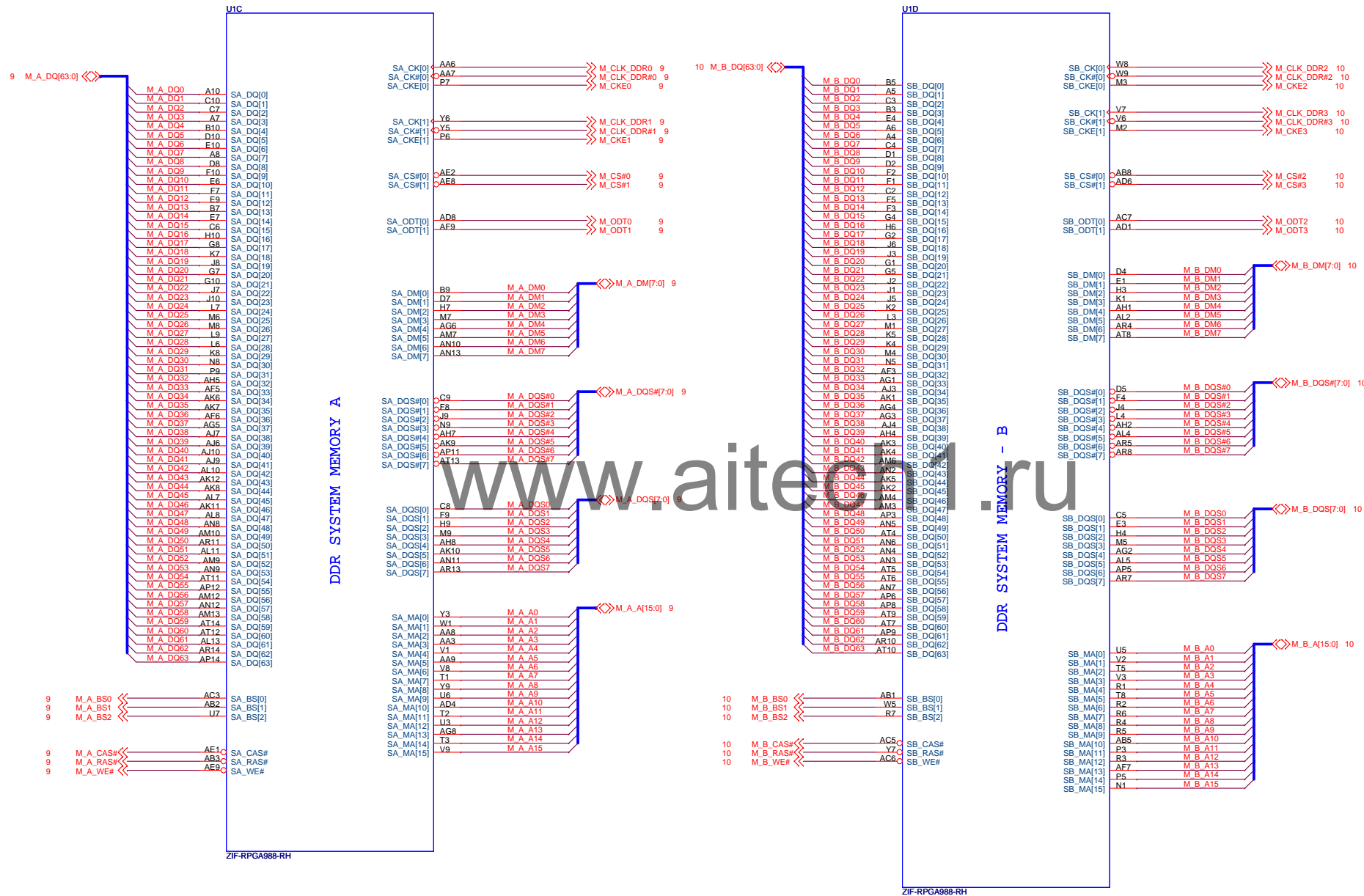
AUBURNDALE/CLARKSFIELD PROCESSOR (CLK,MISC,JTAG)



JTAG MAPPING



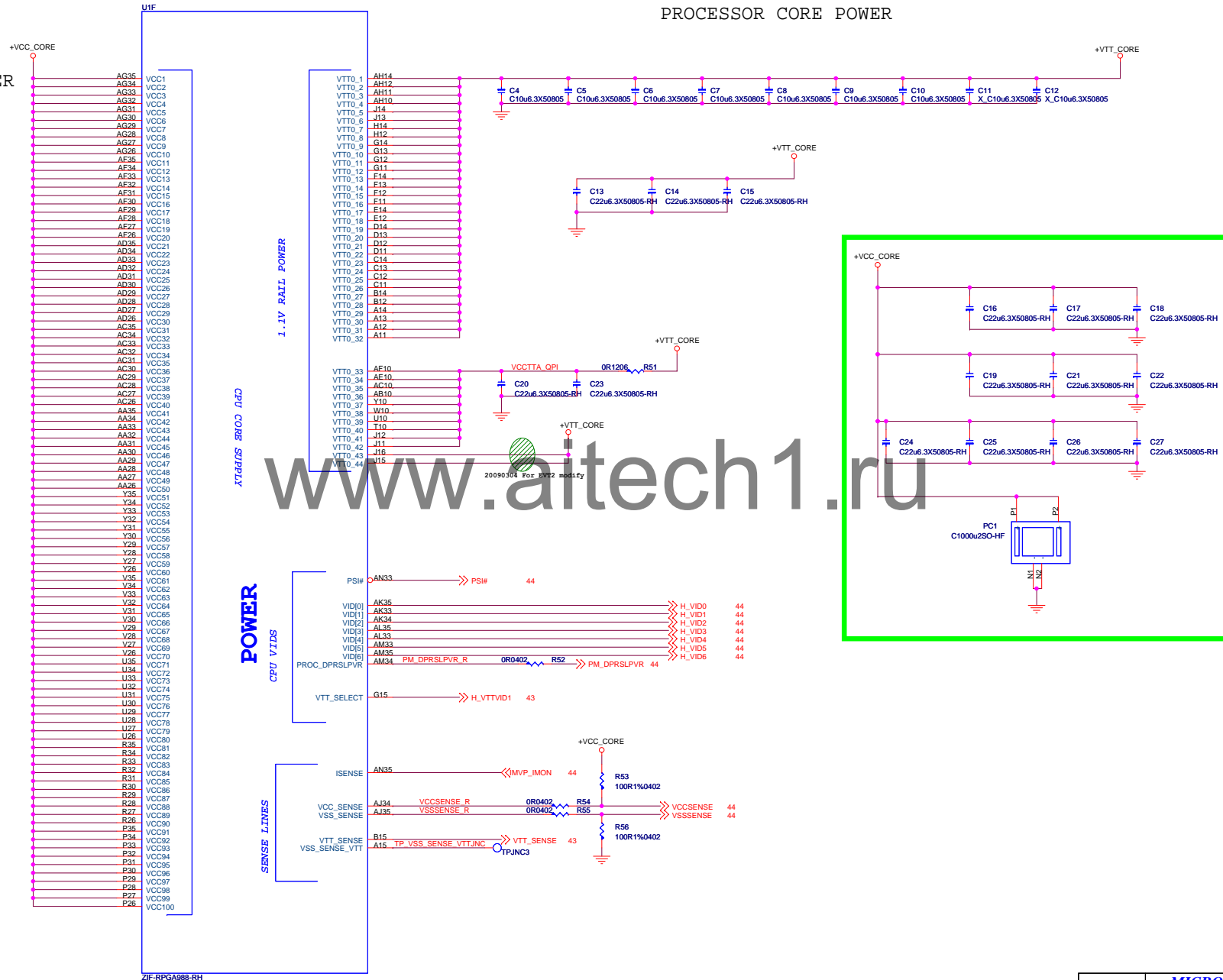
AUBURNDALE/CLARKSFIELD PROCESSOR (DDR3)



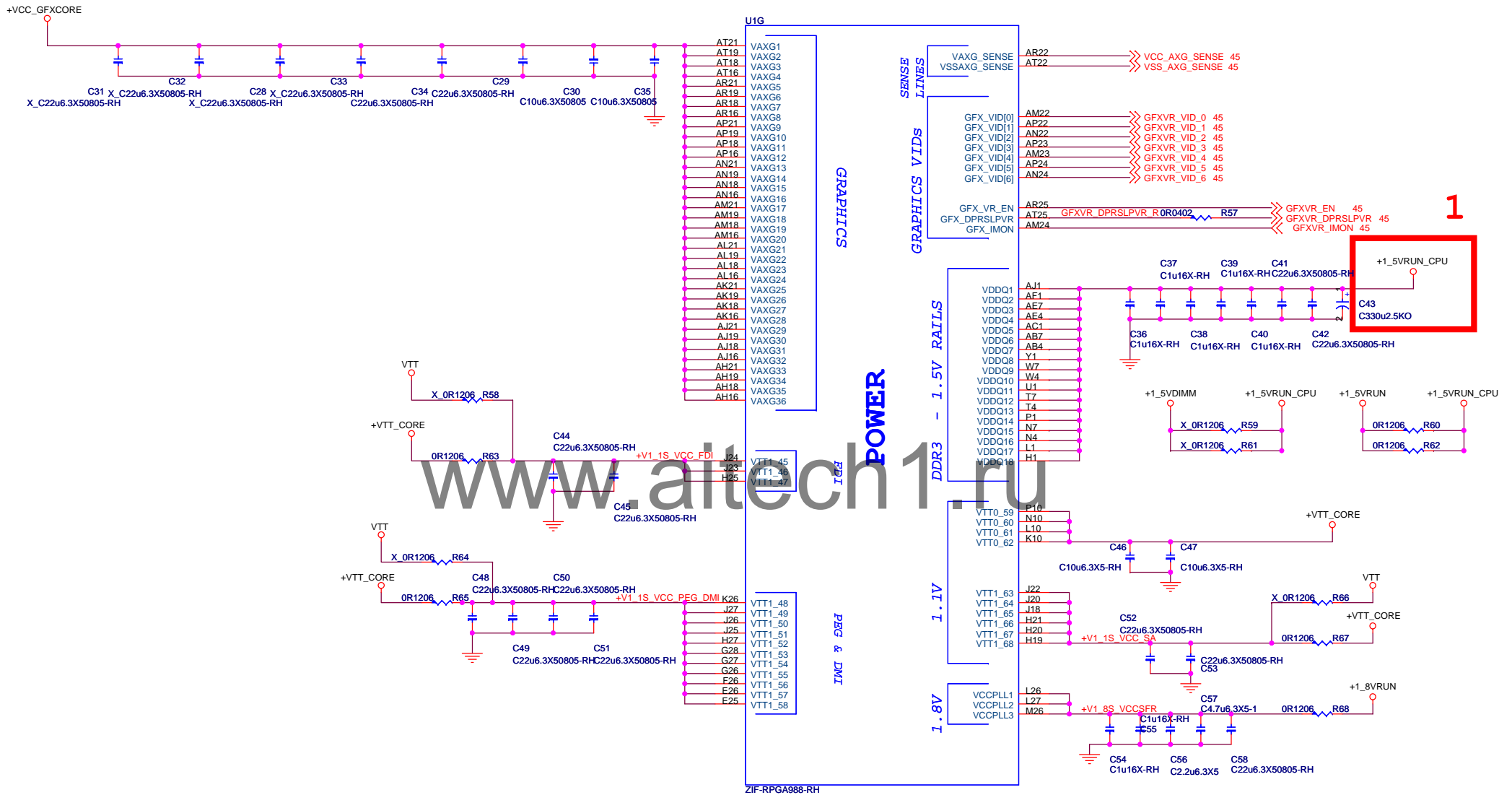
AUBURNDALE/CLARKSFIELD PROCESSOR (POWER)

PROCESSOR CORE POWER

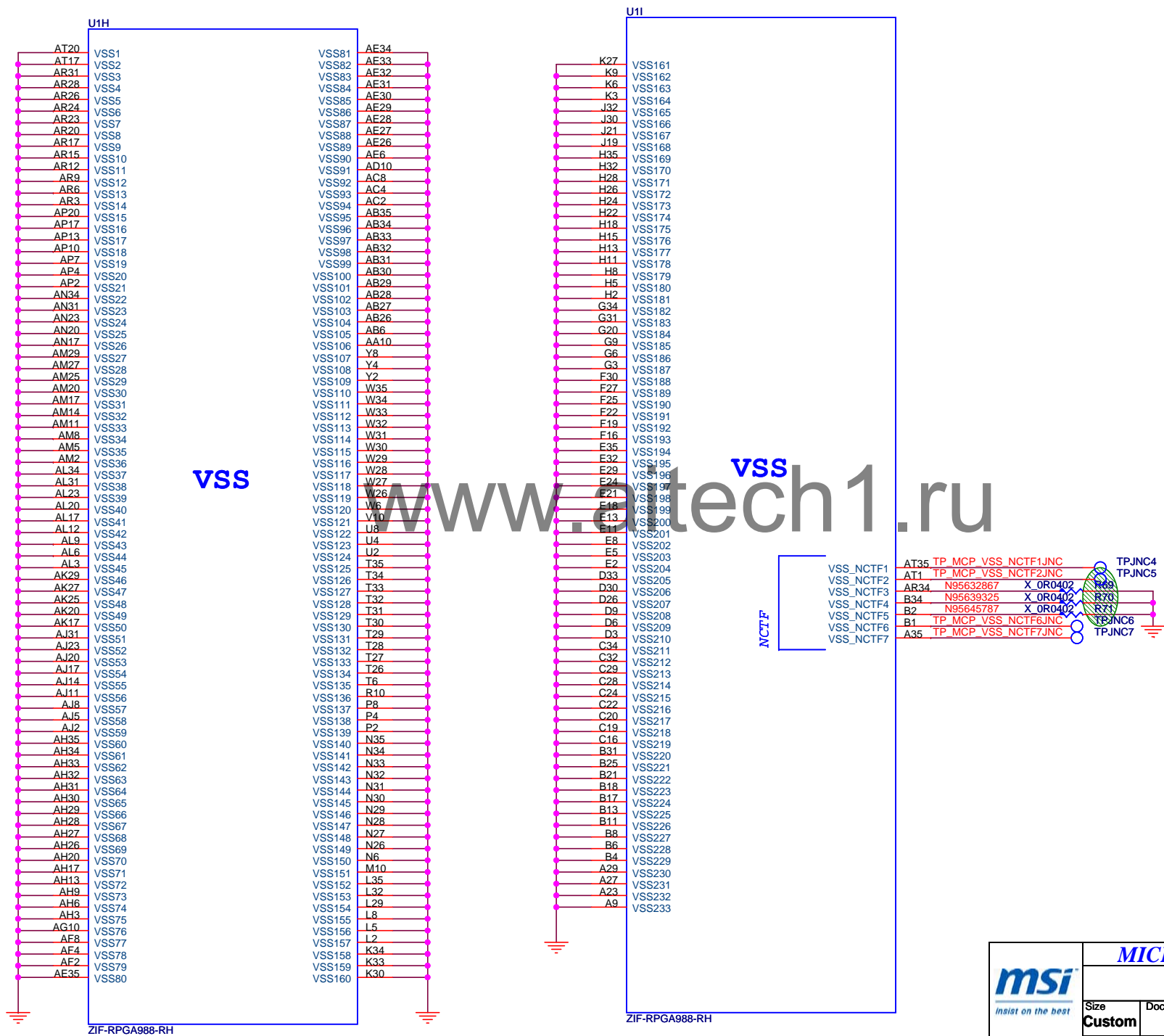
PROCESSOR CORE POWER



AUBURNDALE/CLARKSFIELD PROCESSOR (GRAPHICS POWER)



AUBURNDALE/CLARKSFIELD PROCESSOR (GND)

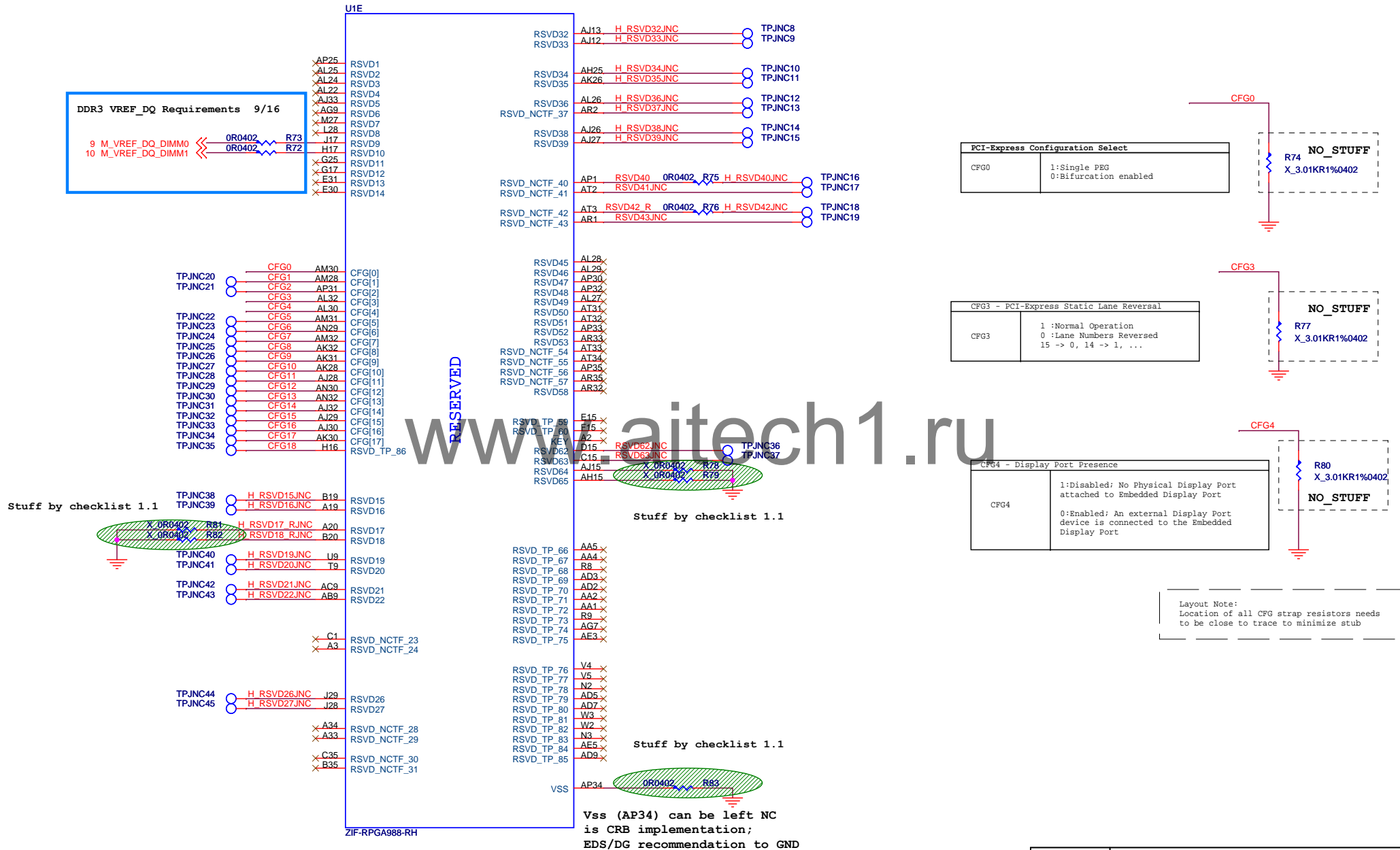


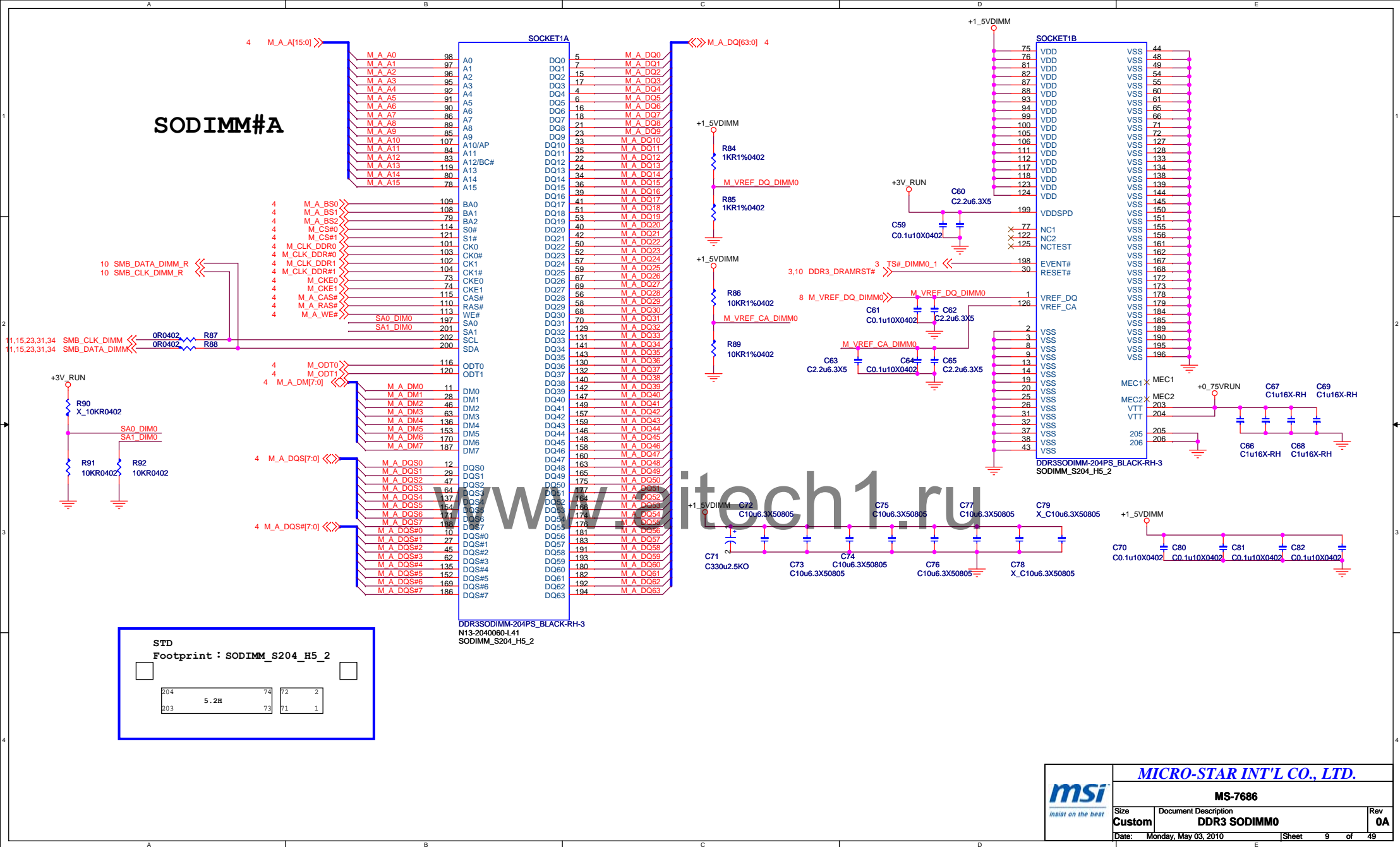
MICRO-STAR INT'L CO., LTD.

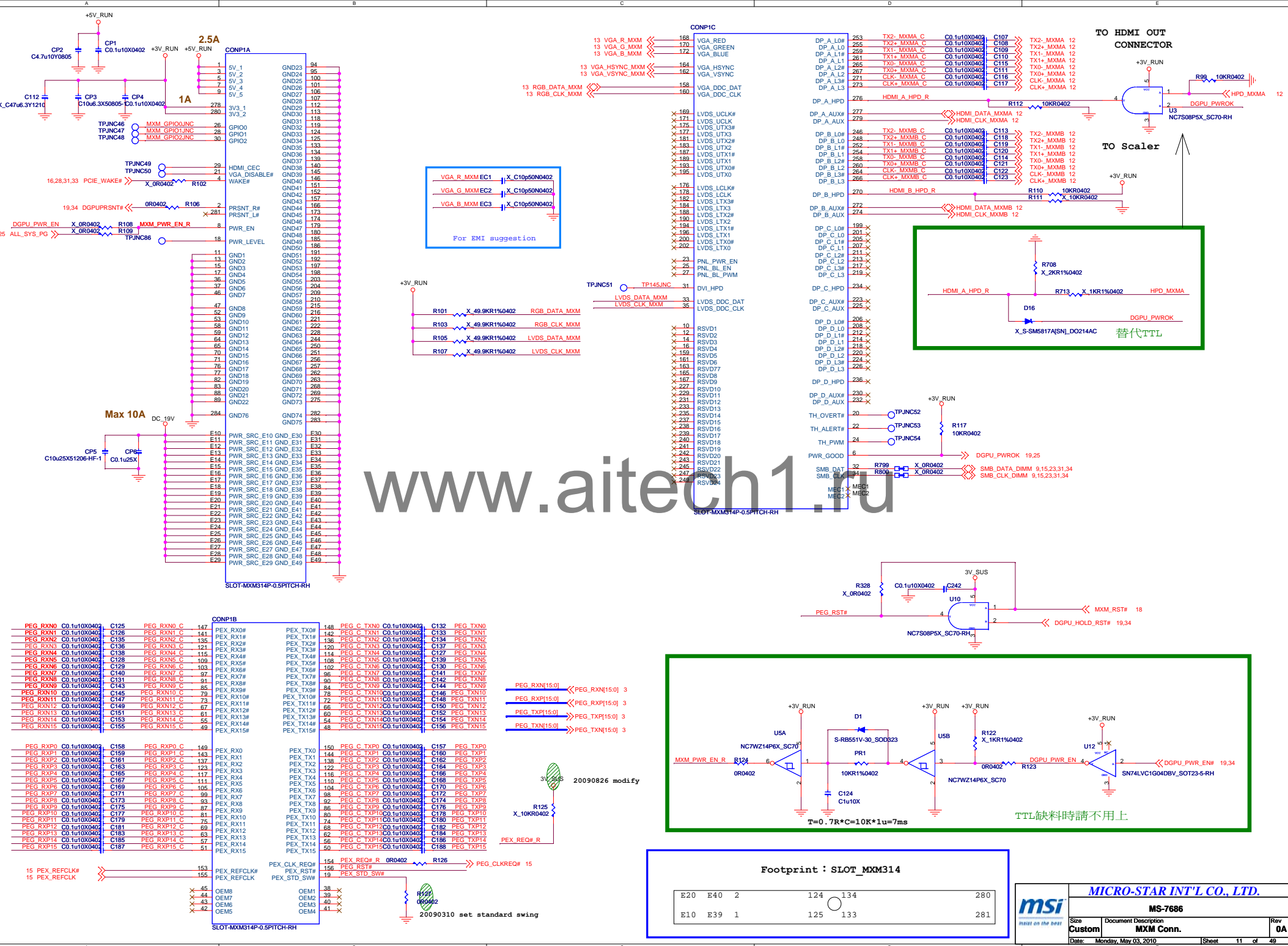
MS-7686

Size	Document Description	Rev
Custom	PROCESSOR GND	0A
Date:	Monday, May 03, 2010	Sheet 7 of 49

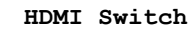
AUBURNDALE/CLARKSFIELD PROCESSOR (RESERVED)



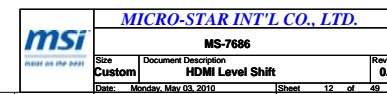
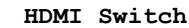


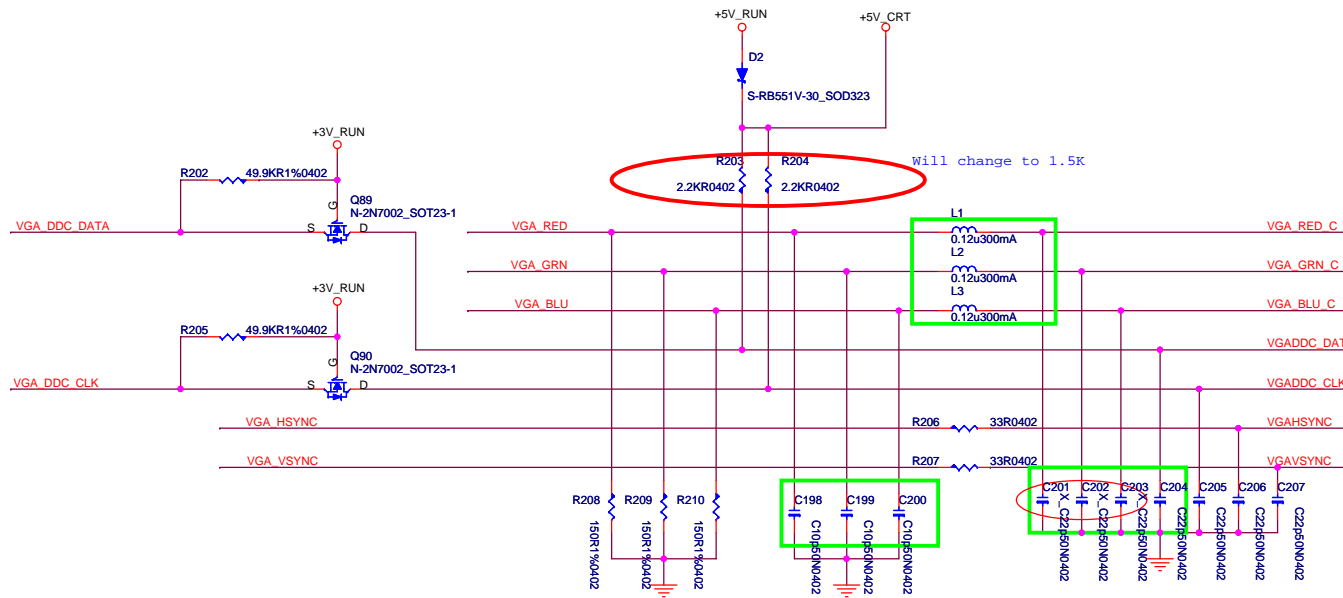


HDMI OUT Level Shift

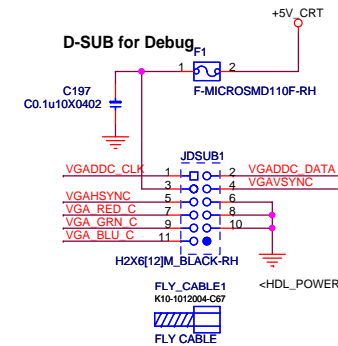


HDMI Level Shift





D-SUB CONNECTOR for Debug

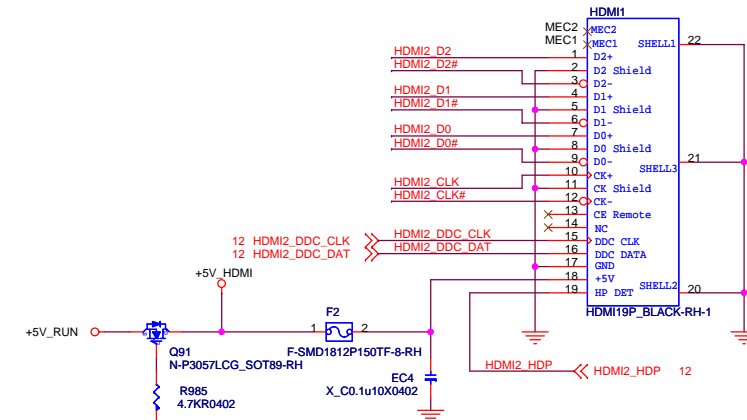
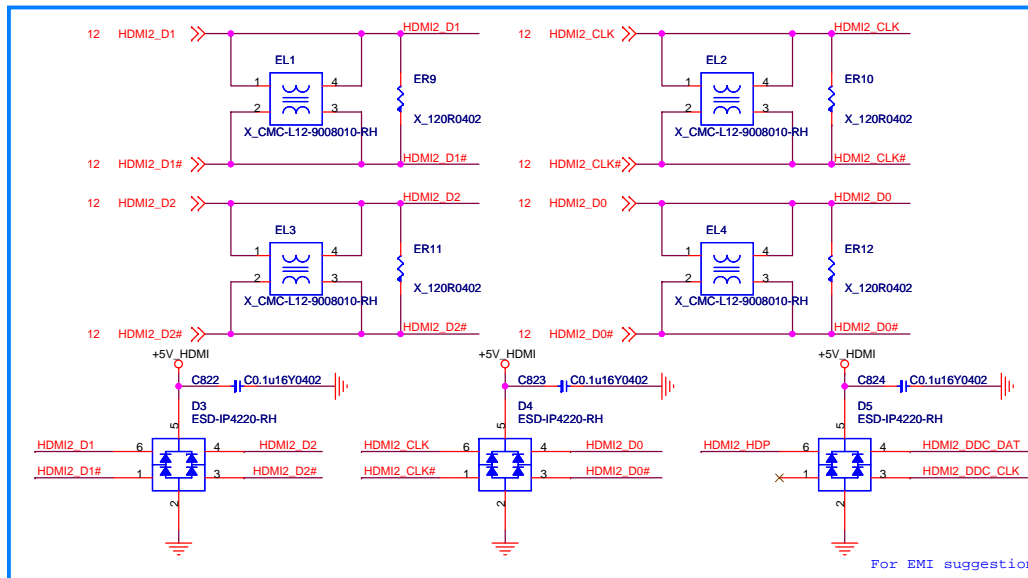


From PCH

From MXM

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HDMI OUT connector



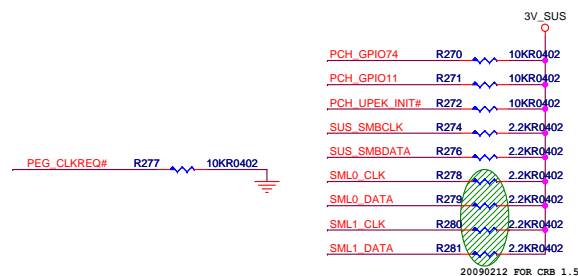
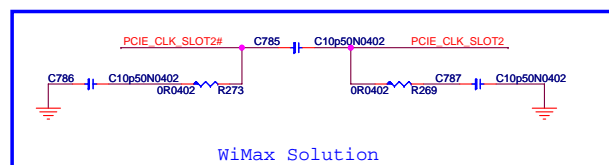
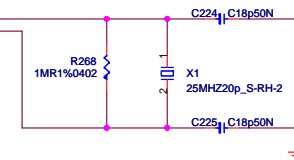
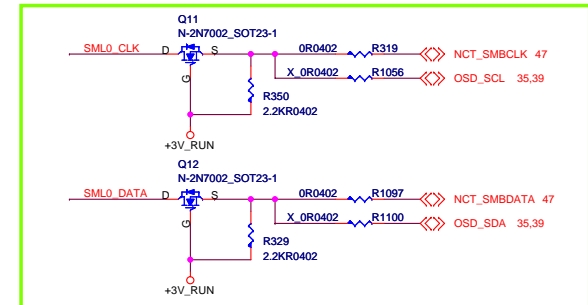
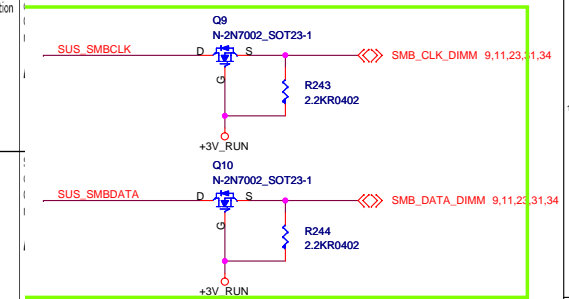
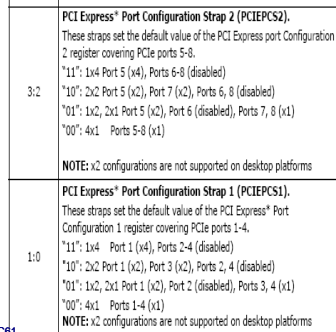
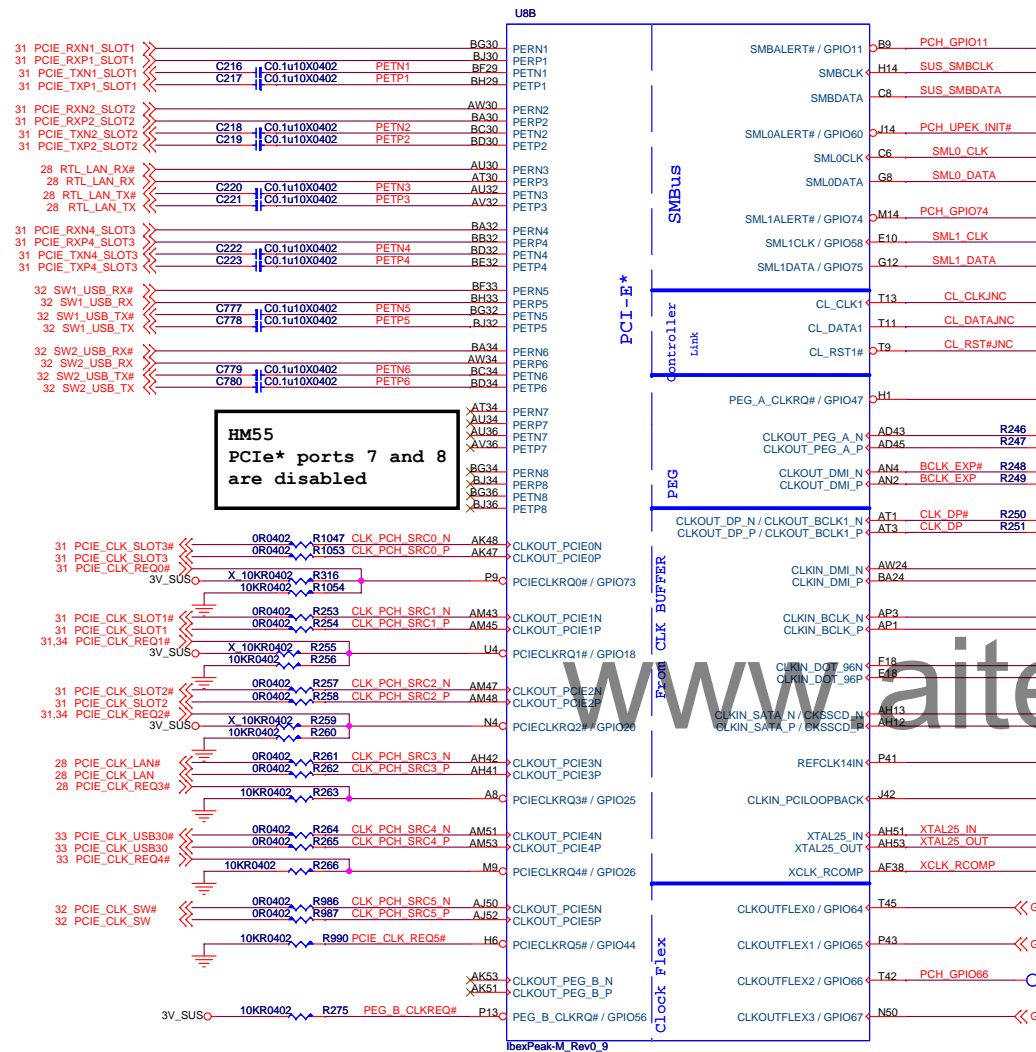
msi		MICRO-STAR INT'L CO., LTD.	
MS-7686		Rev 0A	
Size	Document Description	VGA, LVDS and HDMI connector	
Custom			
Date:	Monday, May 03, 2010	Sheet	13 of 49

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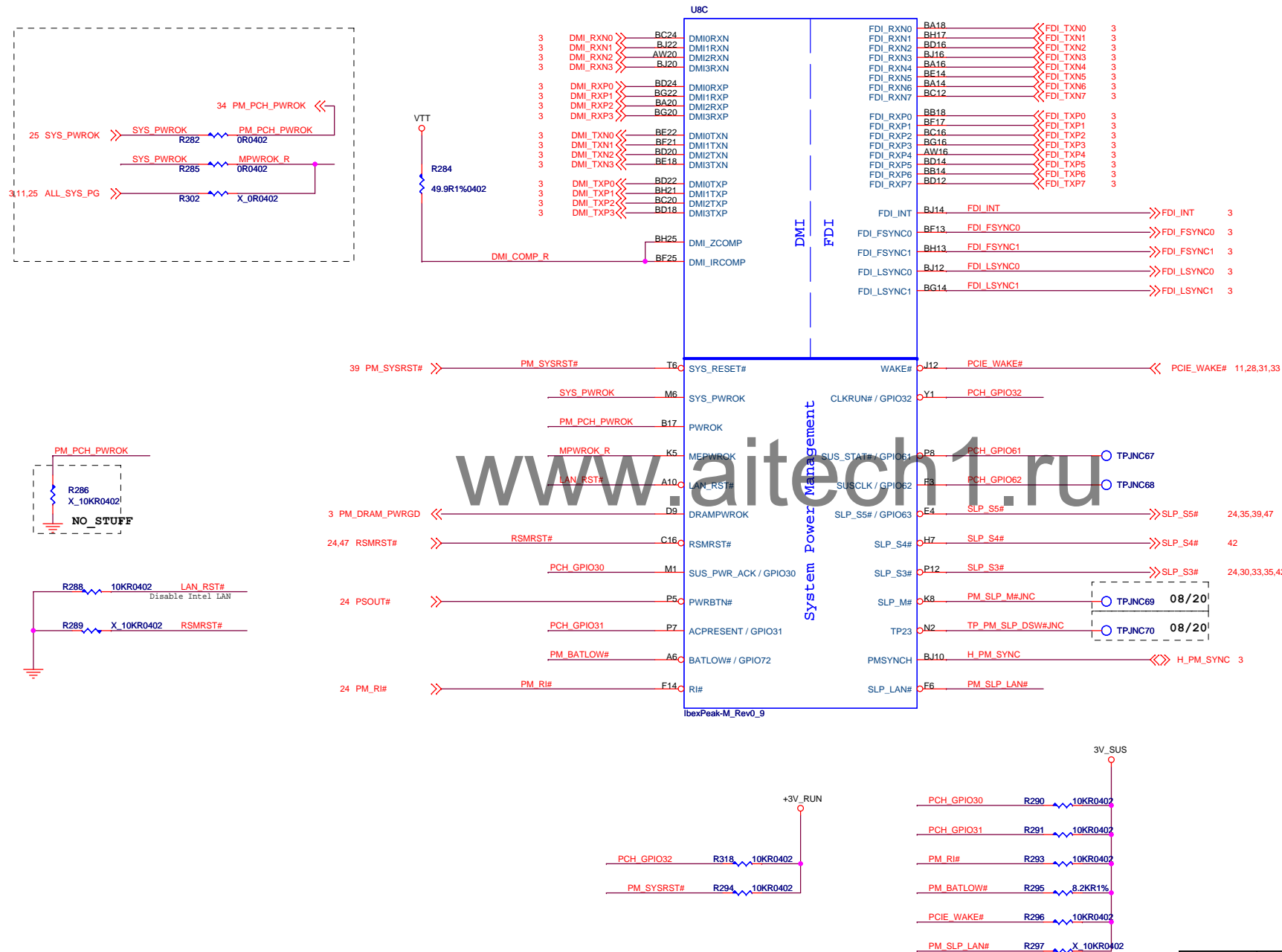
**MS-7686**

Size Custom	Document Description IBEXPEAK - M (HDA,JTAG,SATA)	Rev 0A
Date: Monday, May 03, 2010	Sheet 14 of 49	

IBEXPEAK - M (PCI-E, SMBUS, CLK)

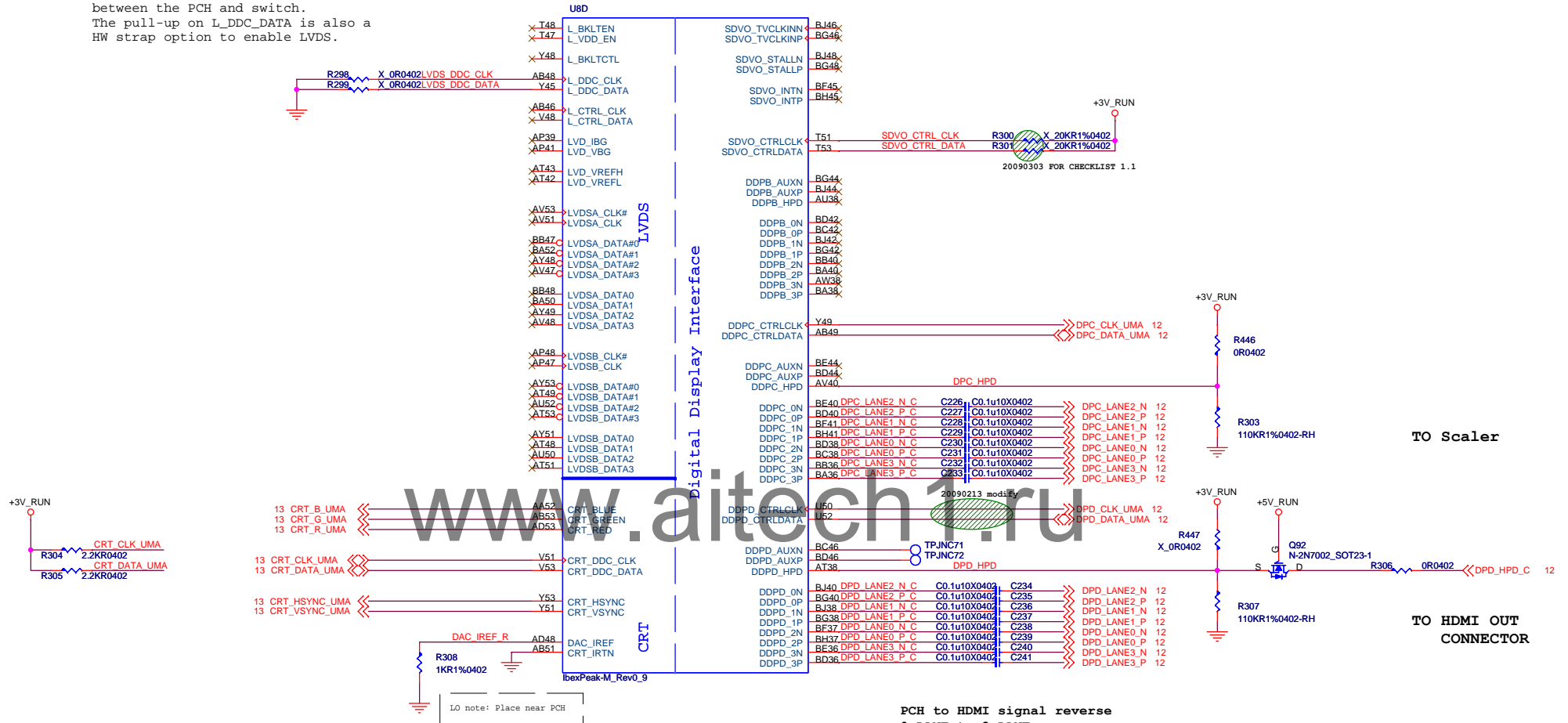


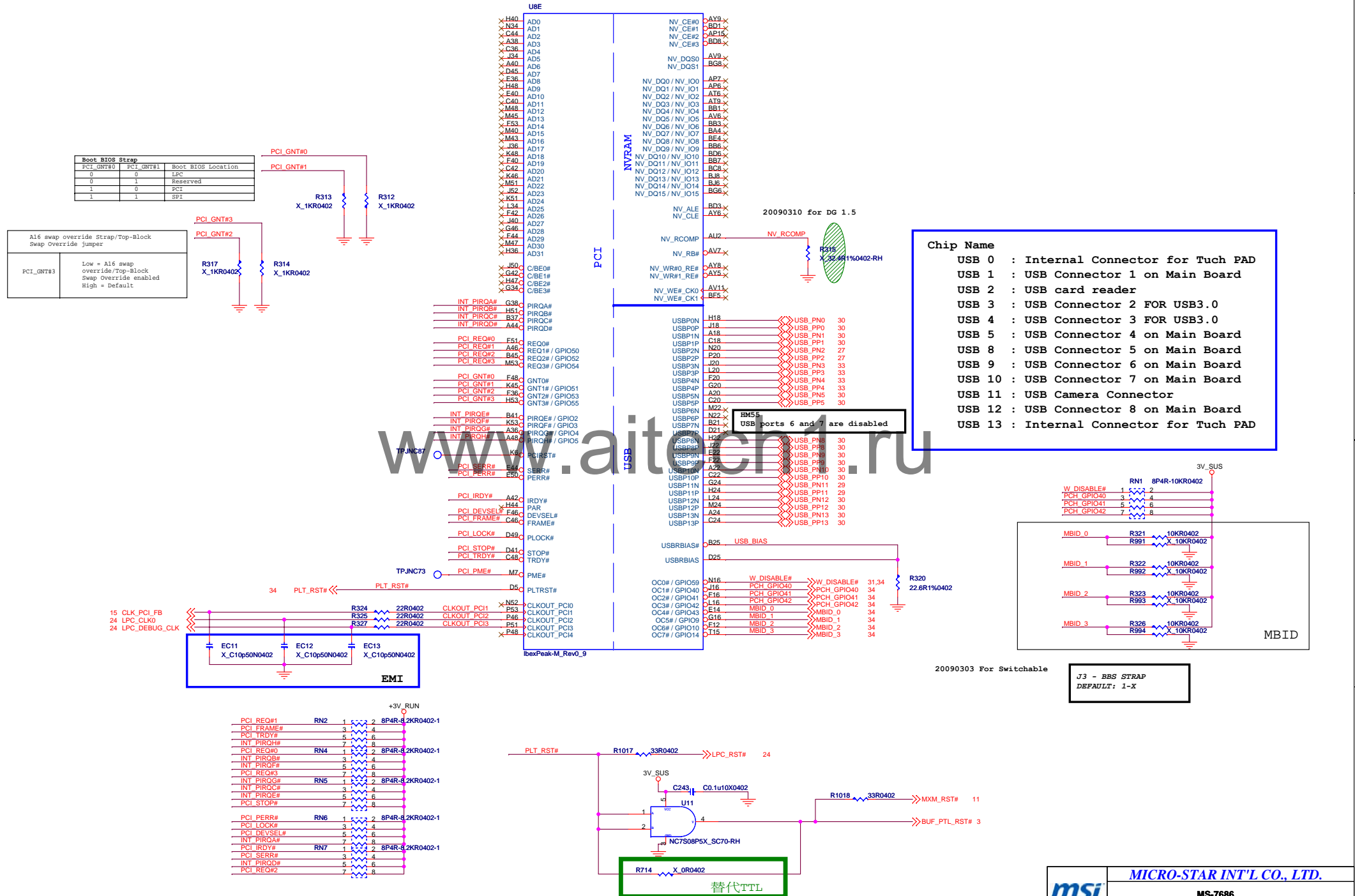
IBEXPEAK - M (DMI, FDI, GPIO)



IBEXPEAK - M (LVDS,DDI)

2.2K to 2.65-k $\pm 5\%$ pull-up resistor to +V3.3S
between the PCH and switch.
The pull-up on L_DDC_DATA is also a
HW strap option to enable LVDS.



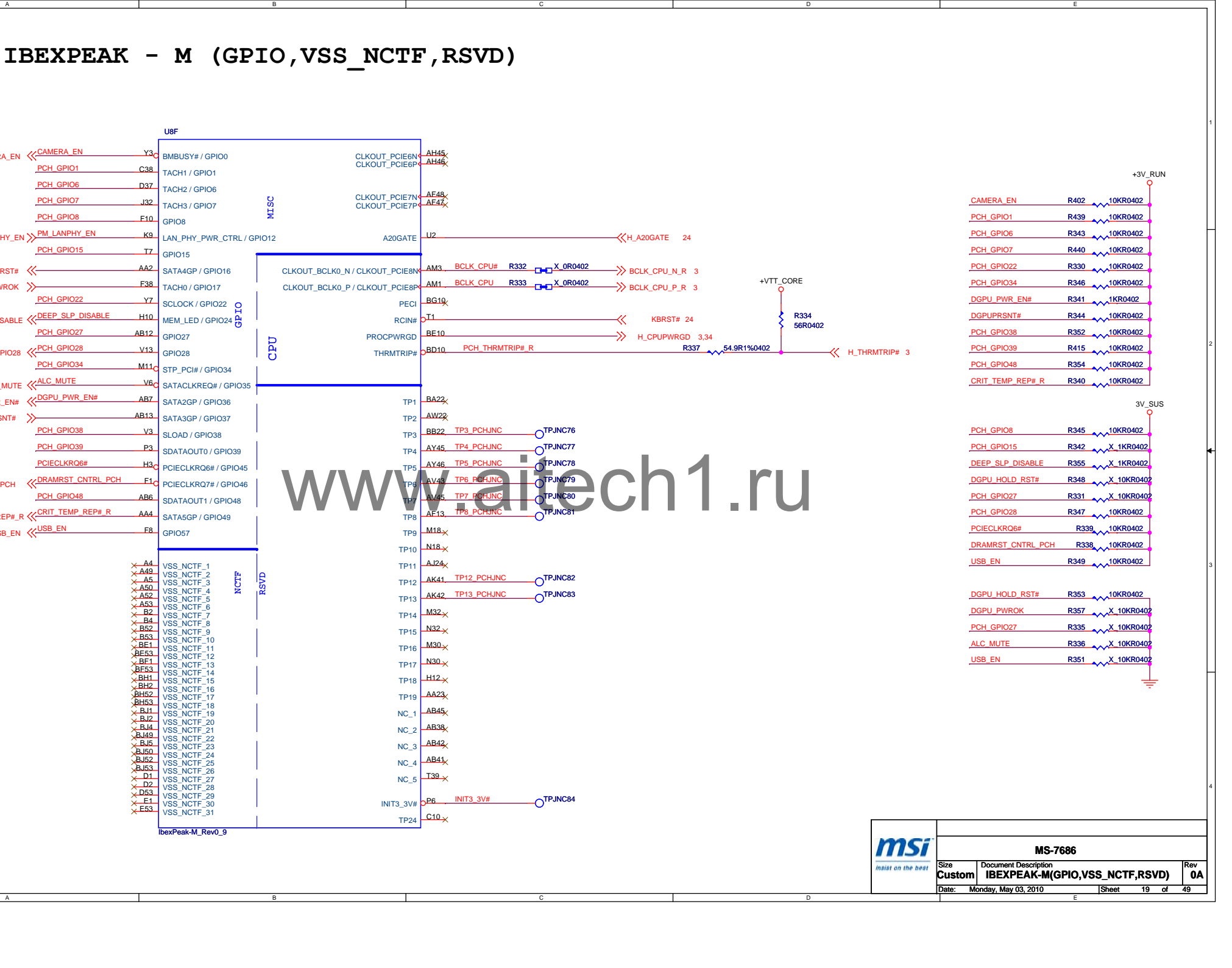
IBEXPEAK - M (PCI,USB,NVRAM)

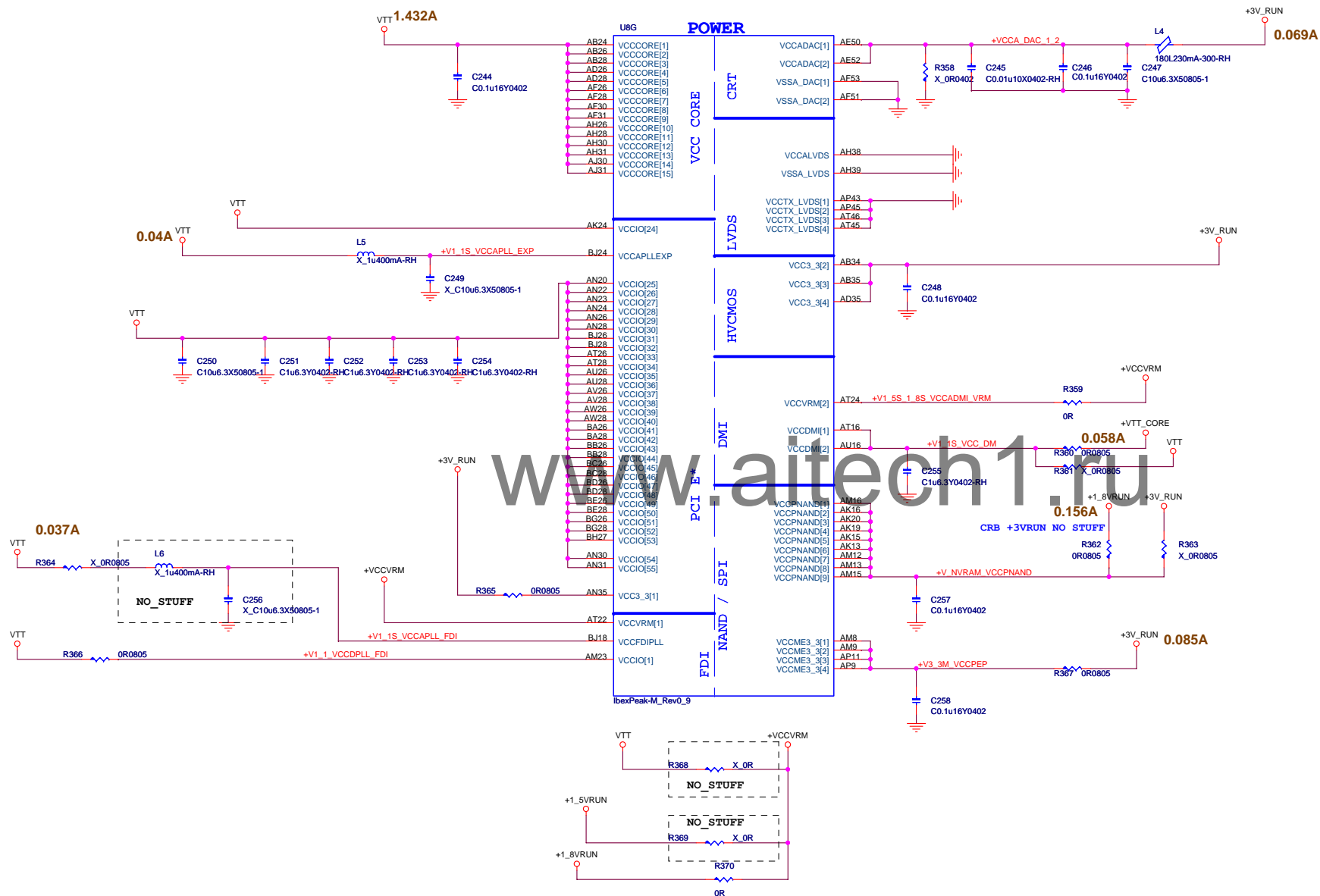
The diagram illustrates the pin connections for the IBEXPEAK - M module, categorized by function: GPIO, VSS_NCTF, and RSVD. It shows the internal connections between the module's pins and the corresponding pins on the CPU, MLSC, and NCTF components. Key components and their connections include:

- CPU:** Connections for BCLK_CPU#, KBRST#, H_CUPWGRD, H_THRMTRIP#, and various GPIO pins (GPIO0, GPIO1, GPIO6, GPIO7, GPIO8, GPIO15, GPIO16, GPIO17, GPIO22, GPIO27, GPIO28, GPIO34, GPIO35, GPIO36, GPIO37, GPIO38, GPIO39, GPIO45, GPIO46, GPIO48, GPIO49, GPIO57).
- MLSC:** Connections for BCLK_CPU#, KBRST#, H_CUPWGRD, H_THRMTRIP#, and various GPIO pins (GPIO0, GPIO1, GPIO6, GPIO7, GPIO8, GPIO15, GPIO16, GPIO17, GPIO22, GPIO27, GPIO28, GPIO34, GPIO35, GPIO36, GPIO37, GPIO38, GPIO39, GPIO45, GPIO46, GPIO48, GPIO49, GPIO57).
- NCTF:** Connections for VSS_NCTF_1 through VSS_NCTF_31.
- RSVD:** Connections for INIT3_3V# and various GPIO pins (GPIO0, GPIO1, GPIO6, GPIO7, GPIO8, GPIO15, GPIO16, GPIO17, GPIO22, GPIO27, GPIO28, GPIO34, GPIO35, GPIO36, GPIO37, GPIO38, GPIO39, GPIO45, GPIO46, GPIO48, GPIO49, GPIO57).

The diagram also includes a table of components at the bottom right, listing the size, document description, date, and revision for the MS-7686 module.

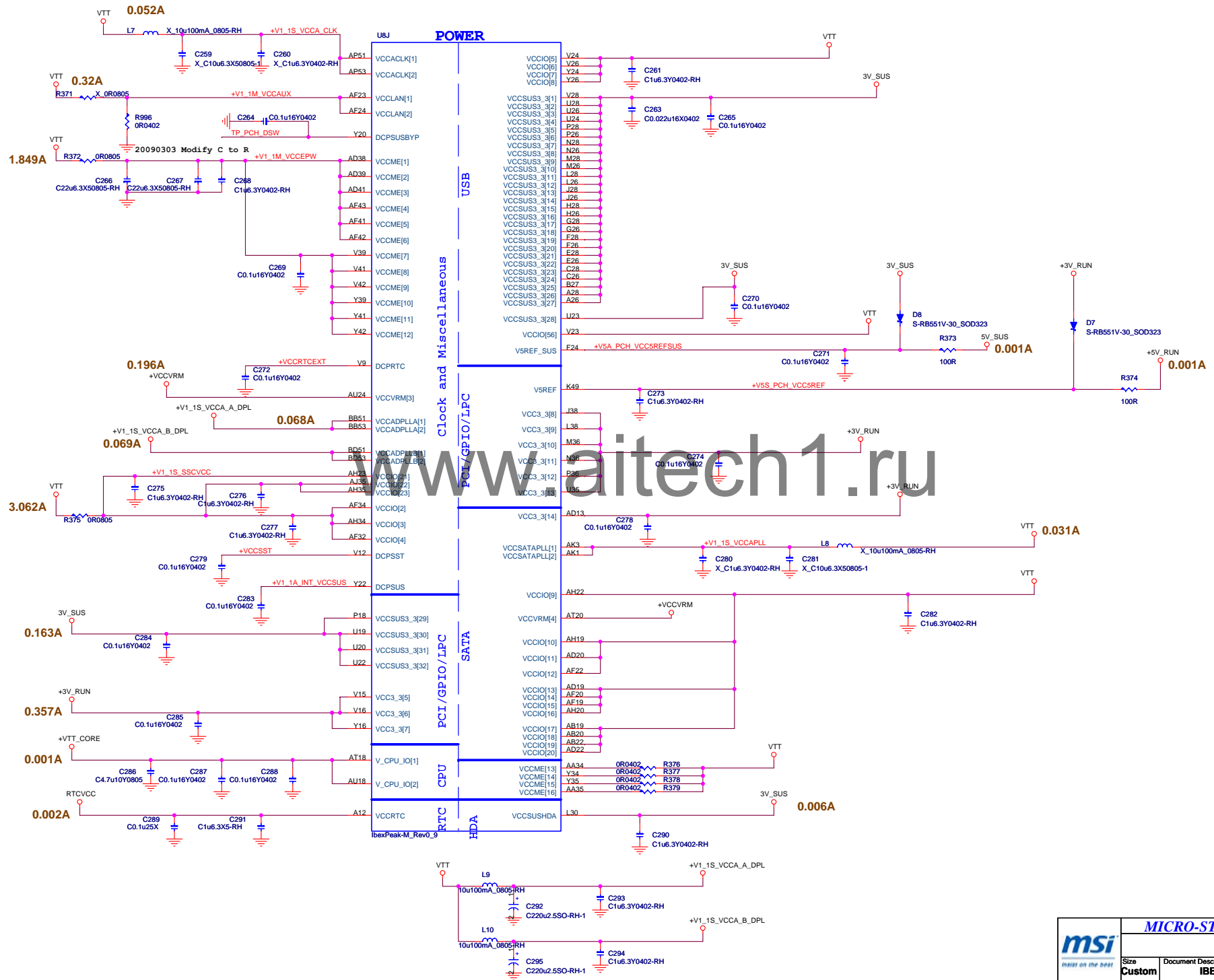
Size	Document Description	Date	Revision
Custom	IBEXPEAK-M(GPIO,VSS_NCTF,RSVD)	Monday, May 03, 2010	0A



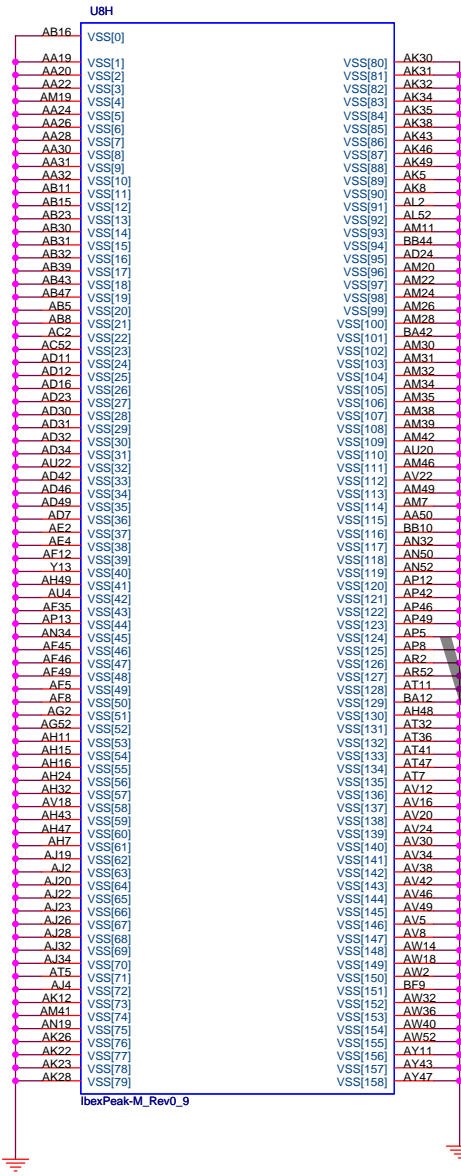
IBEXPEAK - M (POWER)

The VCCVRM rail (1.8 V/1.5 V) powers an internal voltage regulator module (VRM) that regulates clean 1.05-V voltage supply for analog rails (VCCAClk, VccapllEXP, VCCFDIPLL, and VCCSATAPLL). This solution will allow us to remove the LC filter requirements for those rails, thereby reducing platform BOM cost. VCCVRM is enabled by default via internal pull up to GPIO27, therefore GPIO27 should be left as No Connect. The following diagram shows implementation details on how to enable and disable VccVRM.

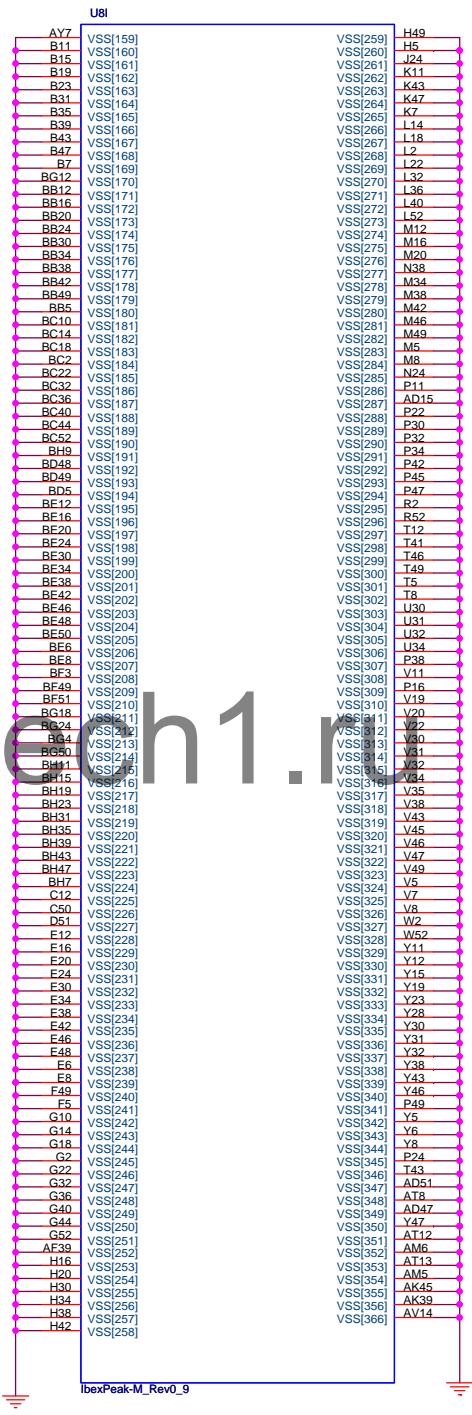
IBEXPEAK - M (POWER)



IBEXPEAK - M (GND)

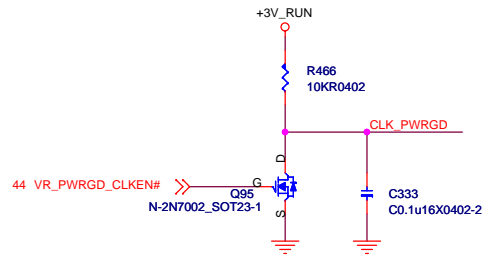
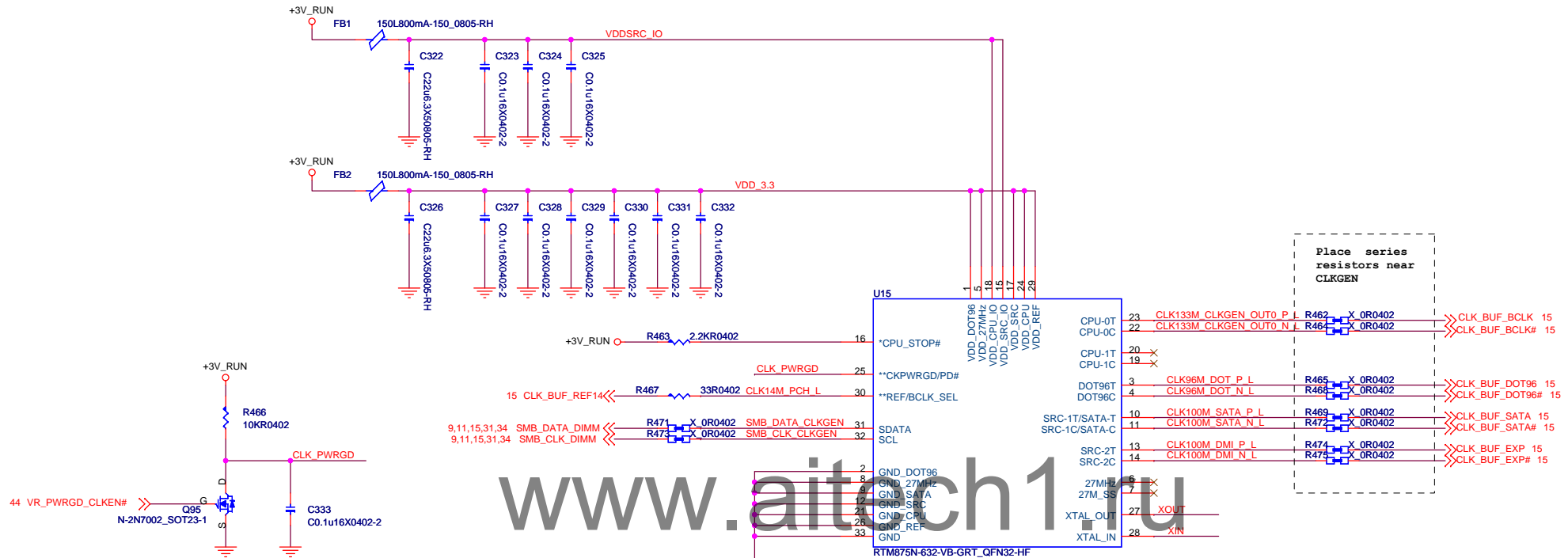


ibexPeak-M_Rev0_9

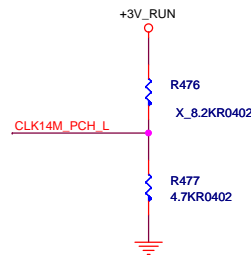


ibexPeak-M_Rev0_9

CLOCK Gen / RTM875N-632



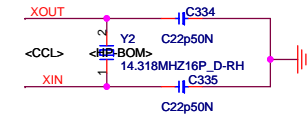
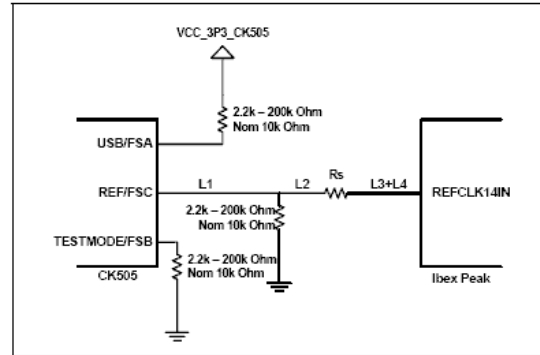
CLK14M_PCH_L	CPU_0	CPU_1
0 1 (0.7~1.5V)	133 100	133 100

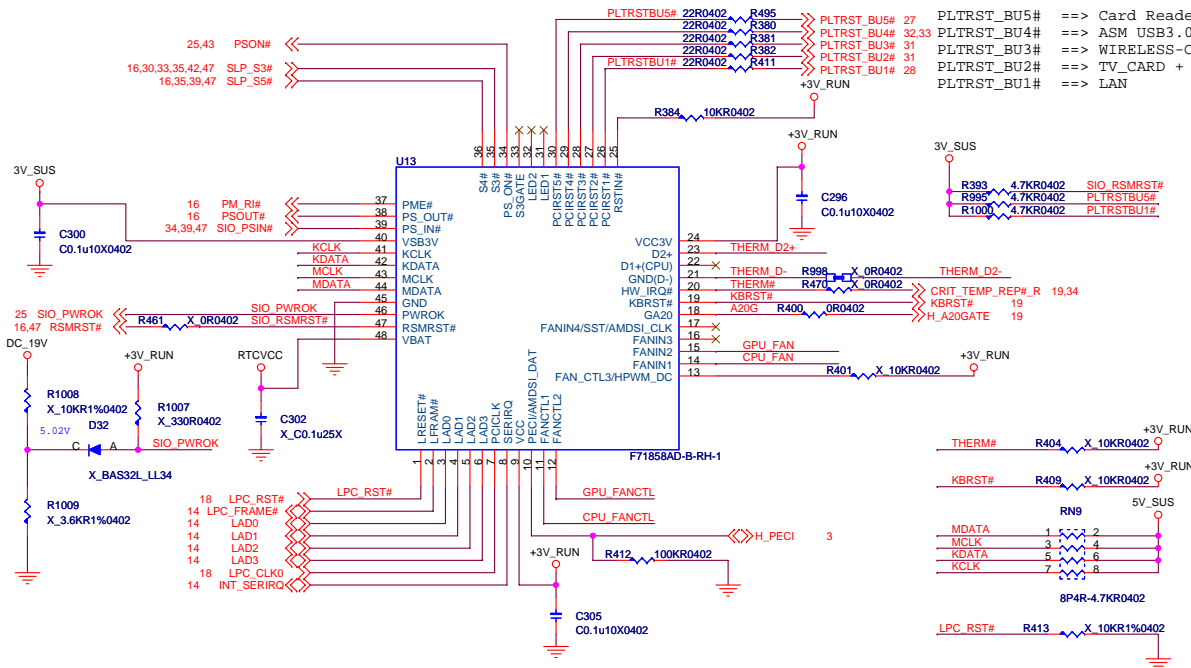


CLOCK EMI CAPS: DEFAULT EMPTY

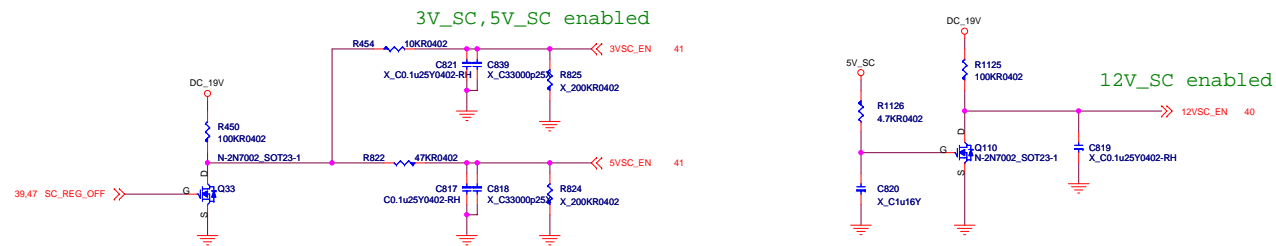


Figure 9-16. REFCLK Topology from CK505 to Ibex Peak with BCLK Frequency Strapping

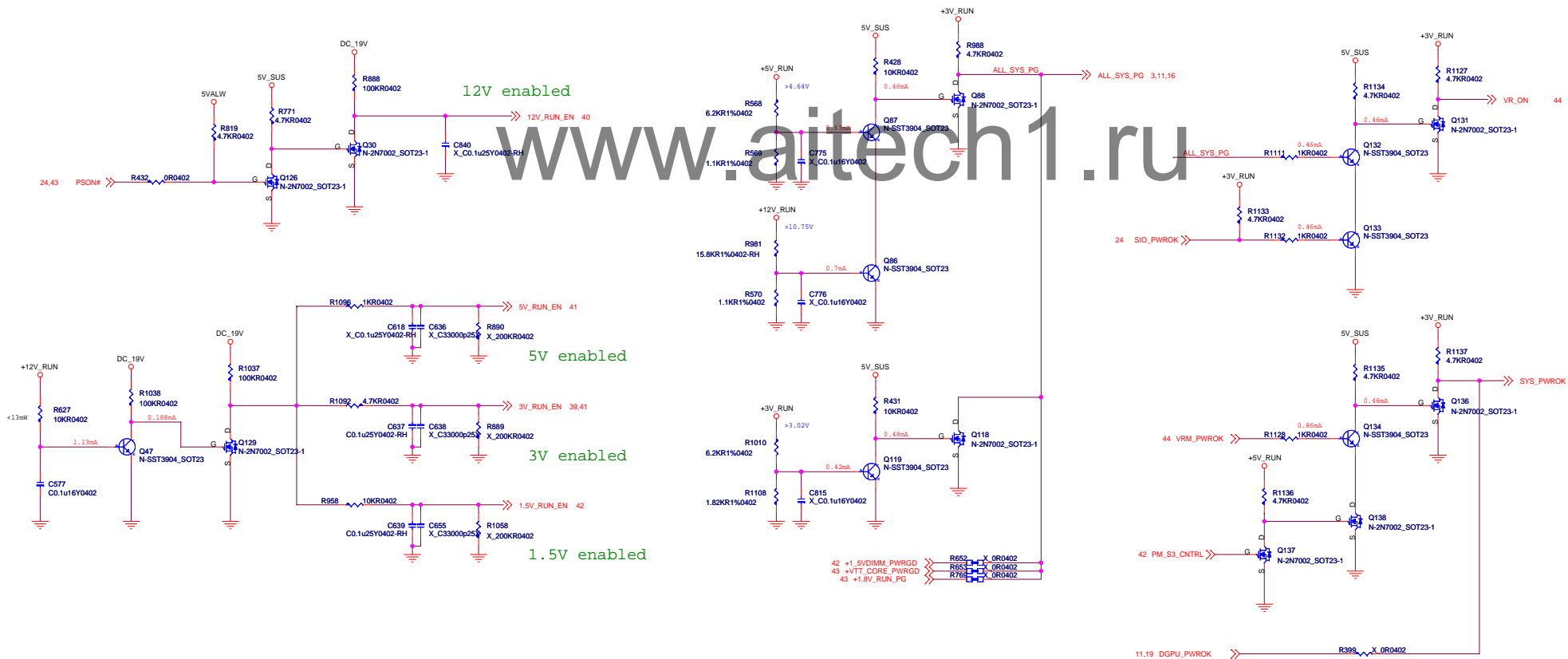




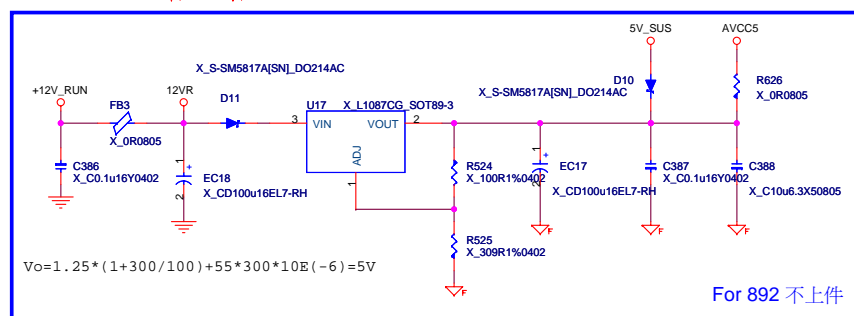
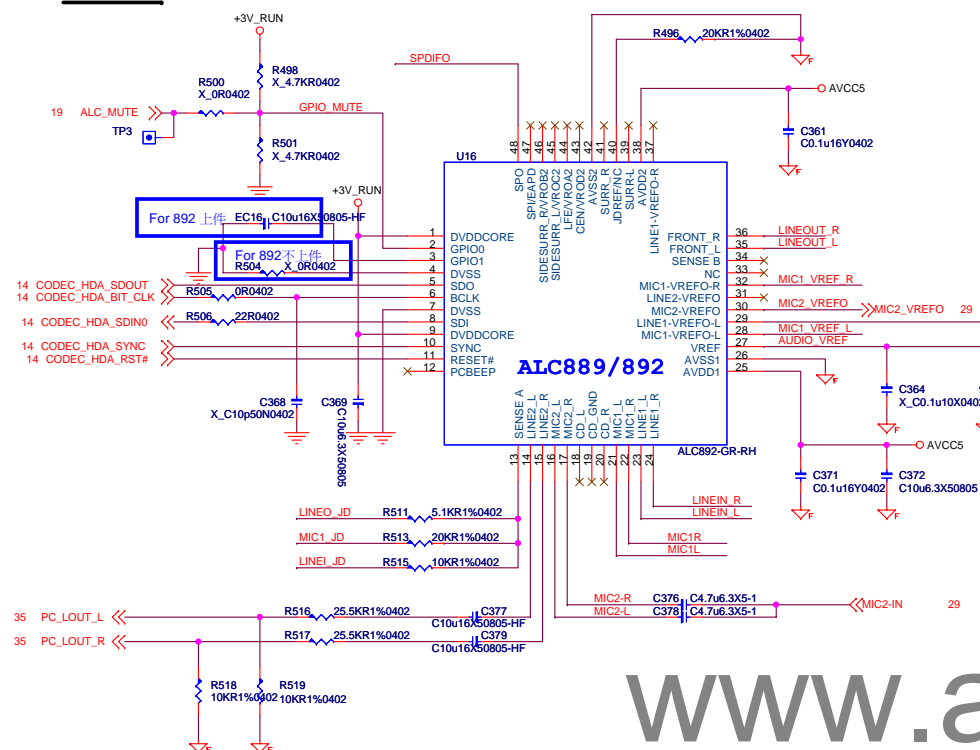
SC POWER ACPI



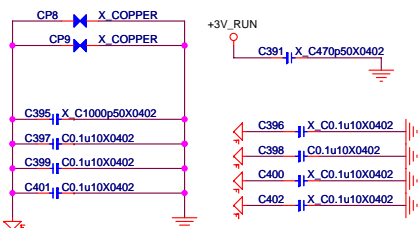
RUN POWER ACPI



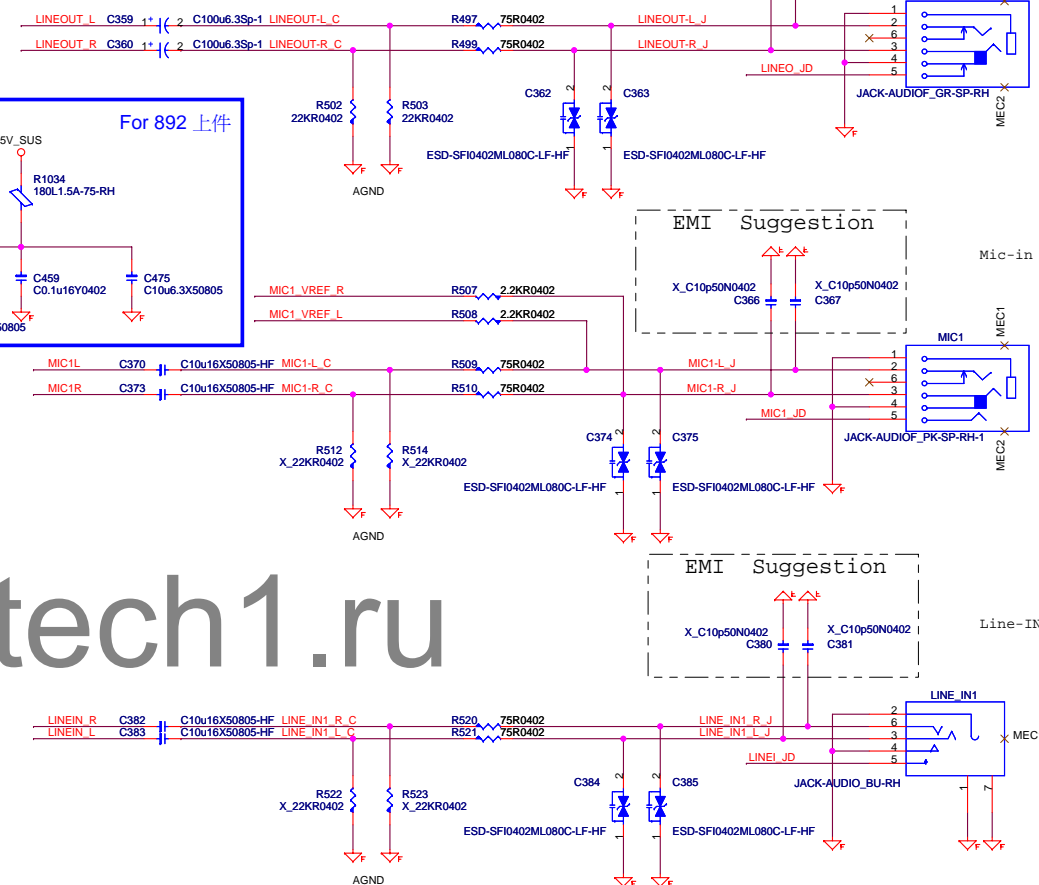
ALC889



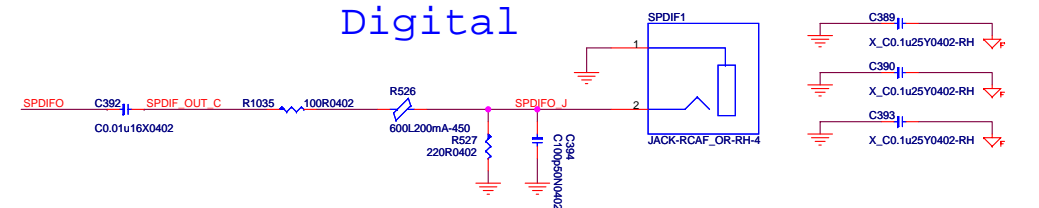
Place caps near Audio Connector /
MH4 / JMD1



Analog



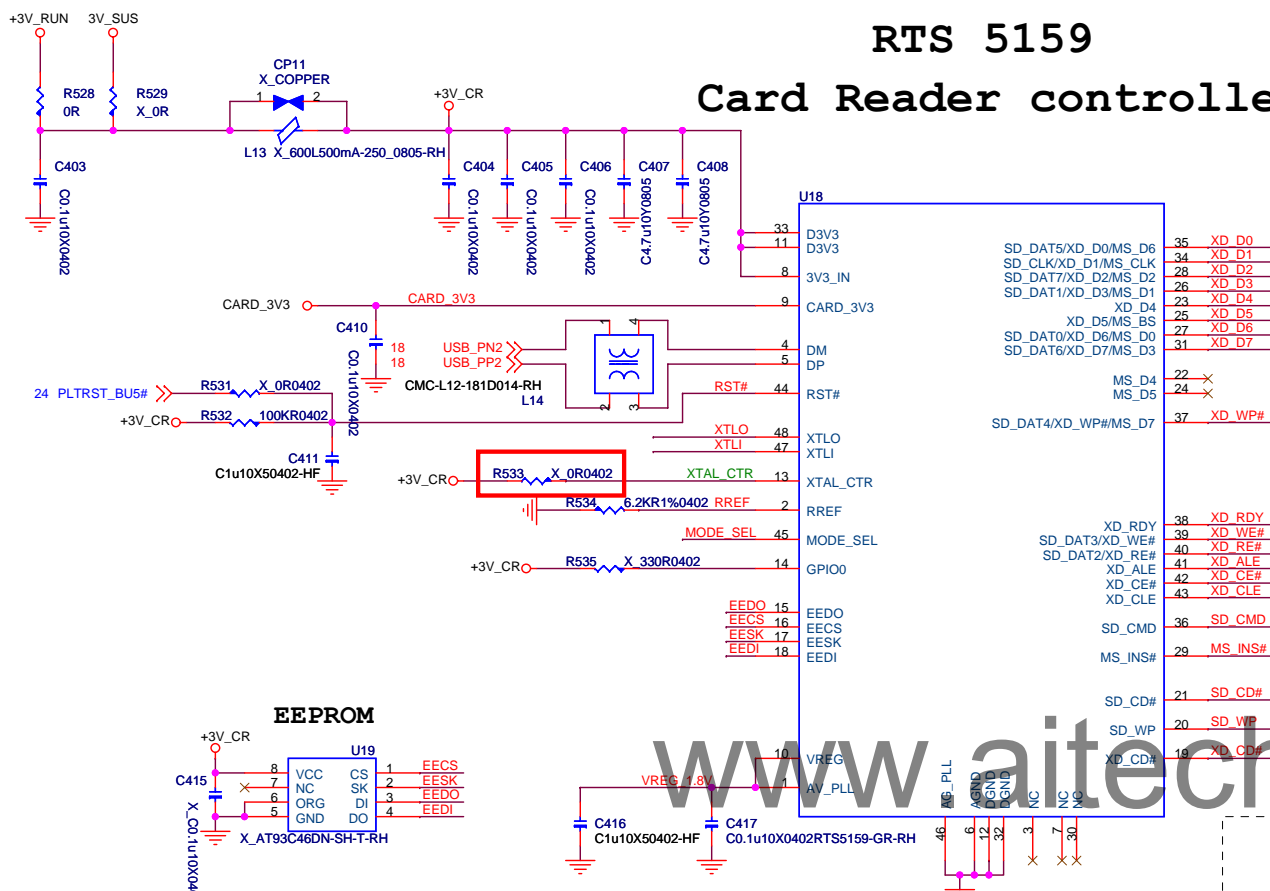
Digital



RTS 5159

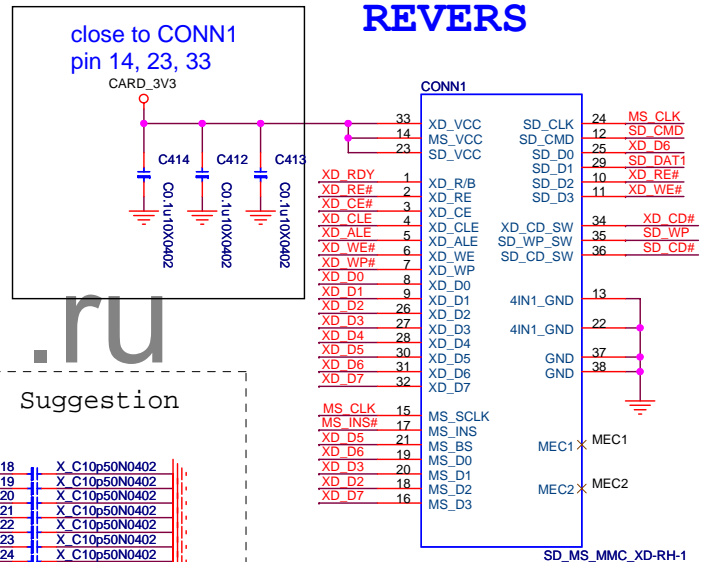
Card Reader controller

Symbol	Description	Conditions	Min.	Typ.	Max.	Unit
V _{DD}	Supply Voltage		3.0	3.3	3.6	V
V _{IH}	Input Voltage High		2			V
V _{IL}	Input Voltage Low				0.8	V
V _{OH}	Output Voltage High		85%* V _{DD}			V
V _{OL}	Output Voltage Low				0.4	V
C _{in}	Input Pin Capacitance				10	pF
I _{DD}	Supply Current	8051 is running @ 6MHz (Without memory card)		43		mA
I _{SUS}	Suspend Current	D+ 1.5KΩ resistor is included		350		uA



Flash Card Socket

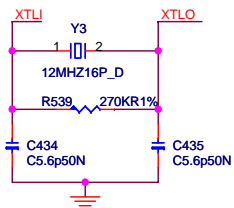
REVERS



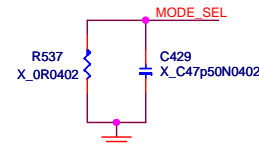
EMI Suggestion

XD D0	C418	X C10p50N0402
XD D2	C419	X C10p50N0402
XD D3	C420	X C10p50N0402
XD D4	C421	X C10p50N0402
XD D5	C422	X C10p50N0402
XD D6	C423	X C10p50N0402
XD D7	C424	X C10p50N0402
XD WP#	C425	X C10p50N0402
XD RDY	C426	X C10p50N0402
XD WE#	C427	X C10p50N0402
XD RE#	C428	X C10p50N0402
XD ALE	C430	X C10p50N0402
XD CE#	C431	X C10p50N0402
XD CLE	C432	X C10p50N0402
SD CMD	C433	X C10p50N0402
MS INS#	C436	X C10p50N0402
SD CD#	C437	X C10p50N0402
SD WP	C438	X C10p50N0402
XD CD#	C439	X C10p50N0402

XTAL_CTR:
Stuff R=48MHz CLK
Unstuff R=12MHz Crystal



R2/C8= 10K/47pF => R242 ON
R100/C110 = NC / NC => R245 ON



Reserved



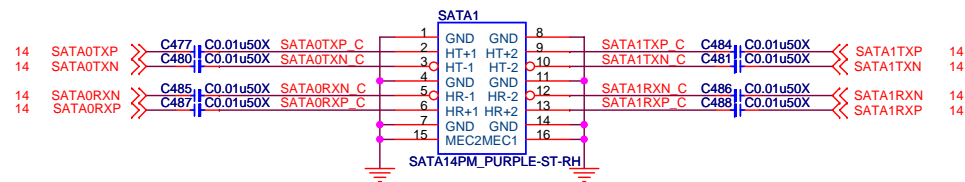
MICRO-STAR INT'L CO., LTD.

MS-7686

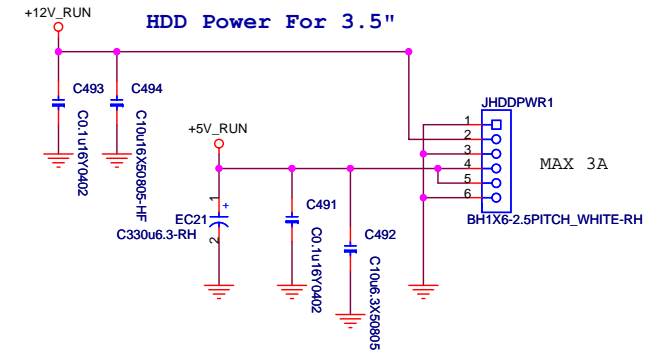
Size	Document Description	Rev
B	Card Reader(RTS5159)	0A

Date: Monday, May 03, 2010 Sheet 27 of 49

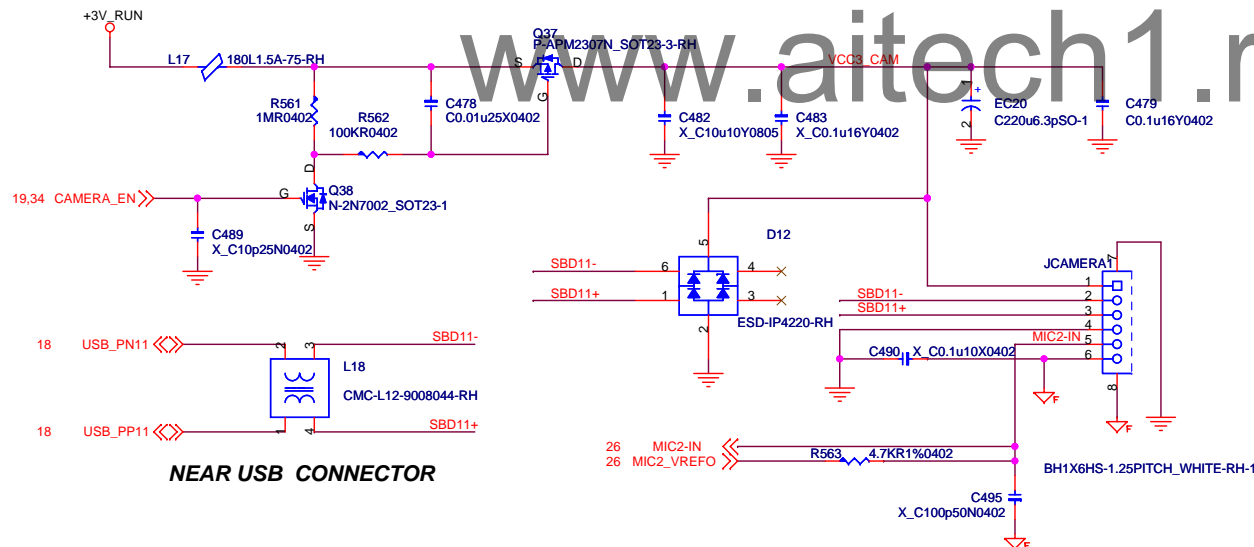
SERIAL ATA CONNECTOR HDD & ODD



12V 5V POWER CONNECTOR



CAMERA

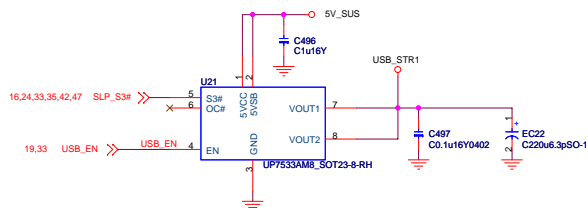


NEAR USB CONNECTOR

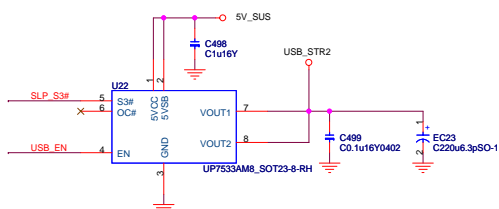
MICRO-STAR INT'L CO., LTD.			
MS-7686			
Size B	Document Description HDD,CDROM,ESATA,USB,FAN		Rev 0A
Date:	Monday, May 03, 2010	Sheet	29 of 49

USB POWER

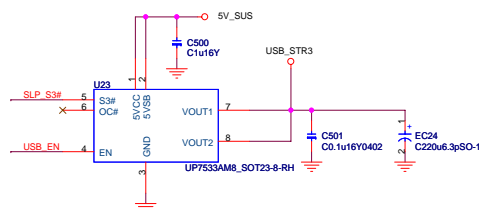
POWER CIRCUIT FOR USB PORT 0,1



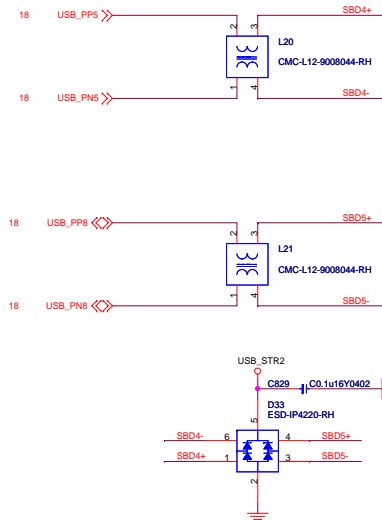
POWER CIRCUIT FOR USB PORT 4,5



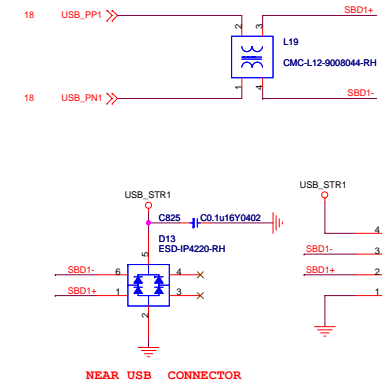
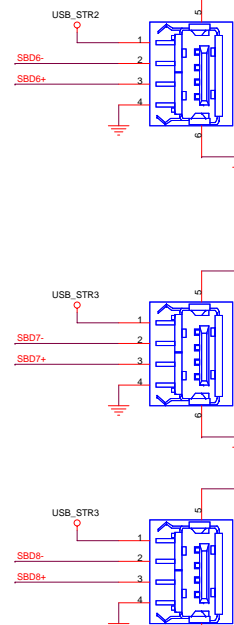
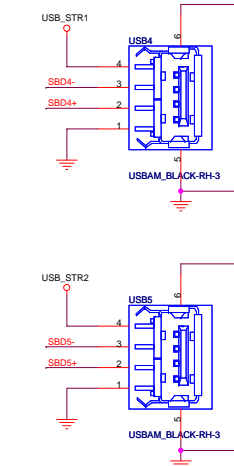
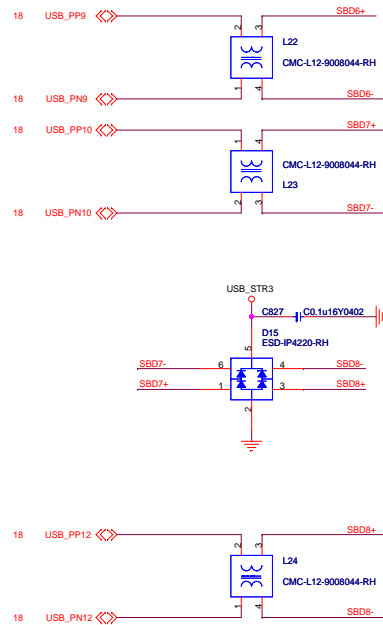
POWER CIRCUIT FOR USB PORT 6,7



USB SIDE ALL REVERSE



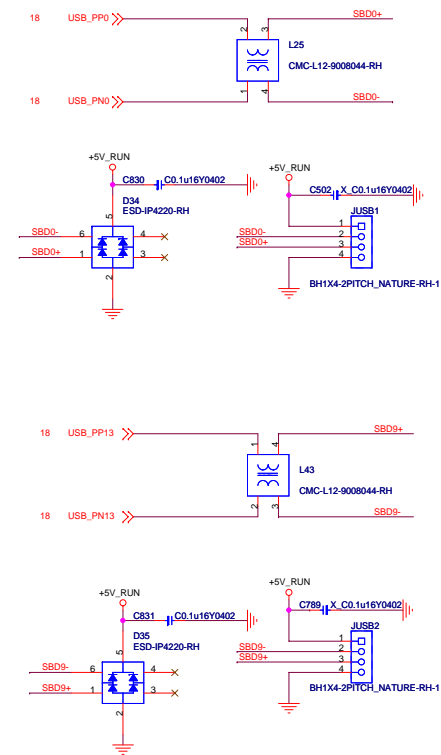
USB BACK



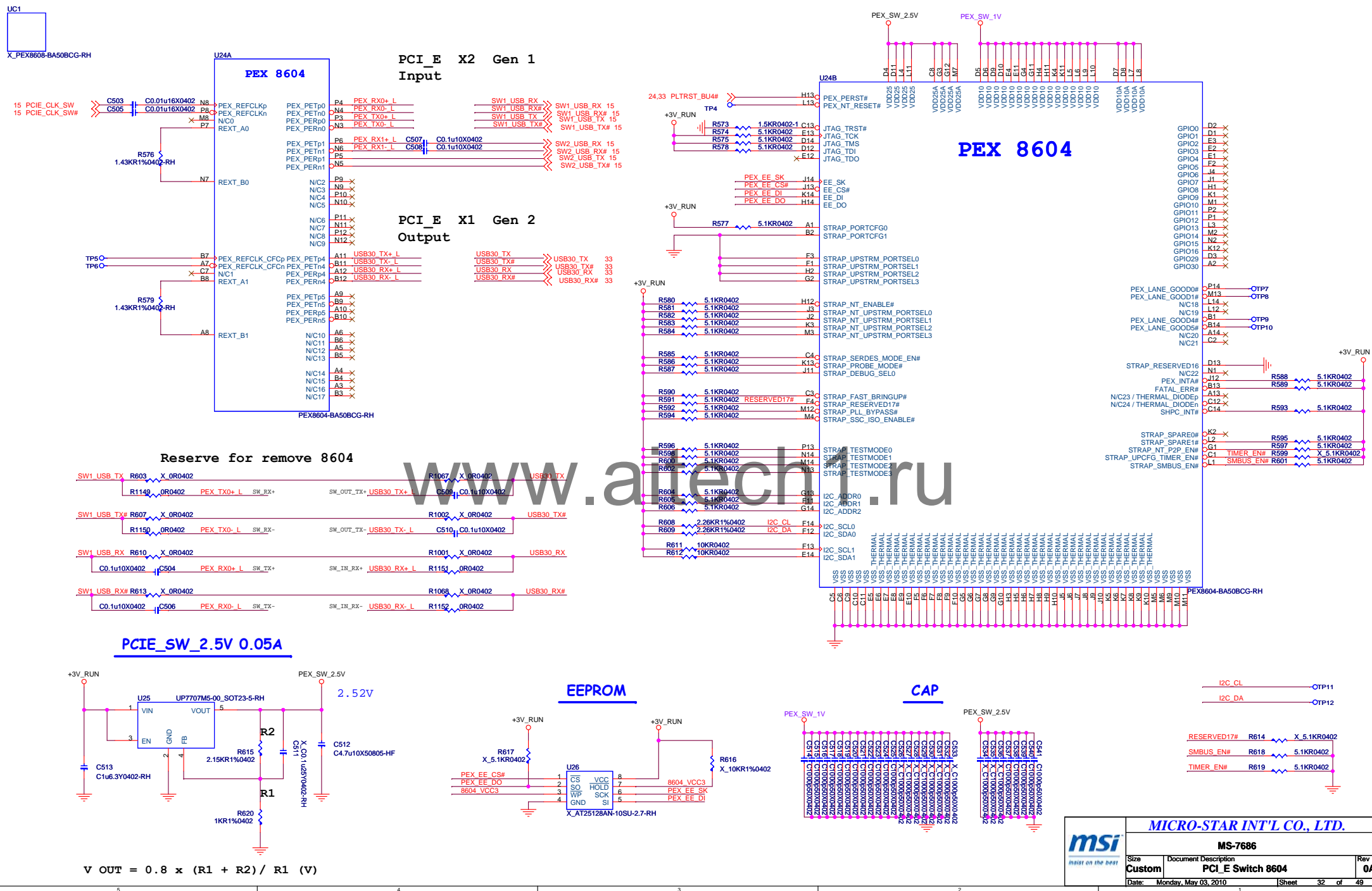
NEAR USB CONNECTOR

For USB dongle use

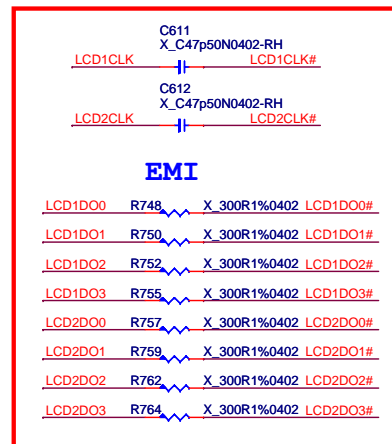
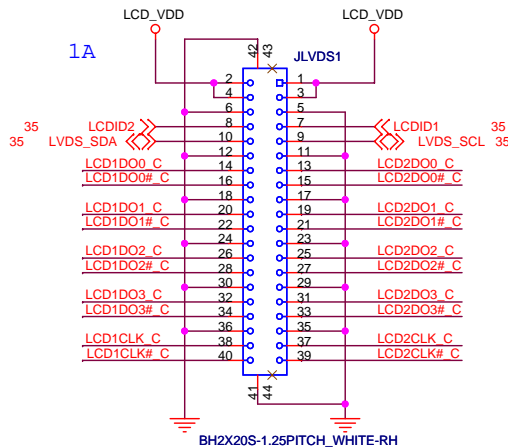
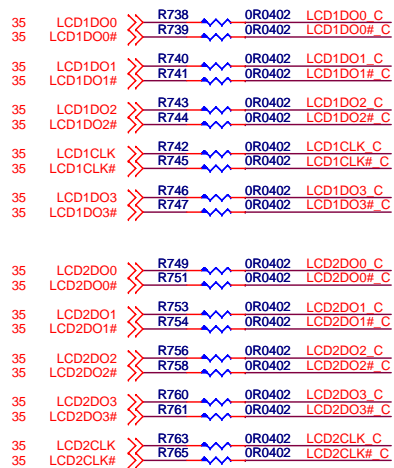
USB internal connector For Tuch Pad



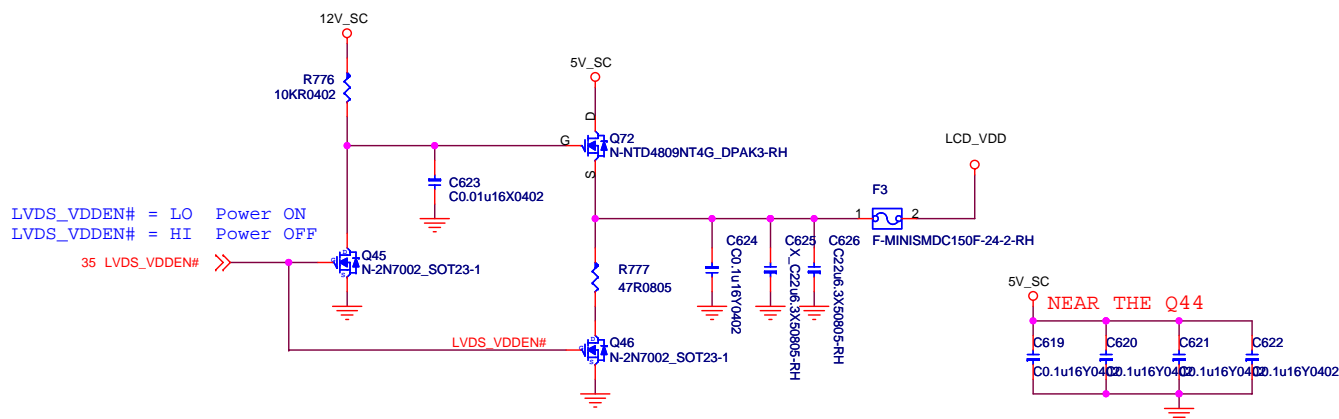
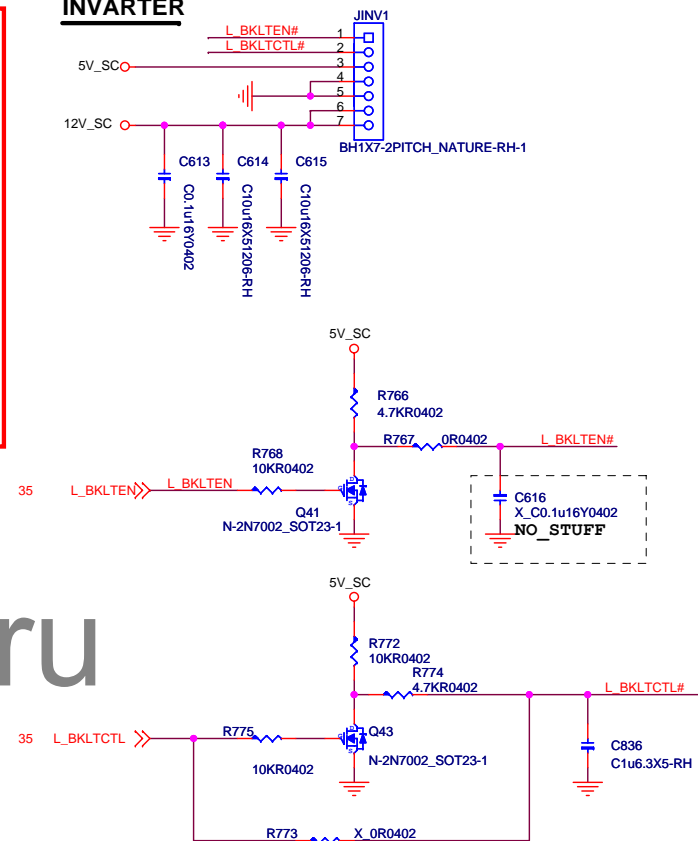
MSI			MICRO-STAR INT'L CO., LTD.	
Size C			Document Description	Rev 0A
Date: Monday, May 03, 2010			USB Connector_side+PS2 KB/MS	Sheet 30 of 49



LVDS



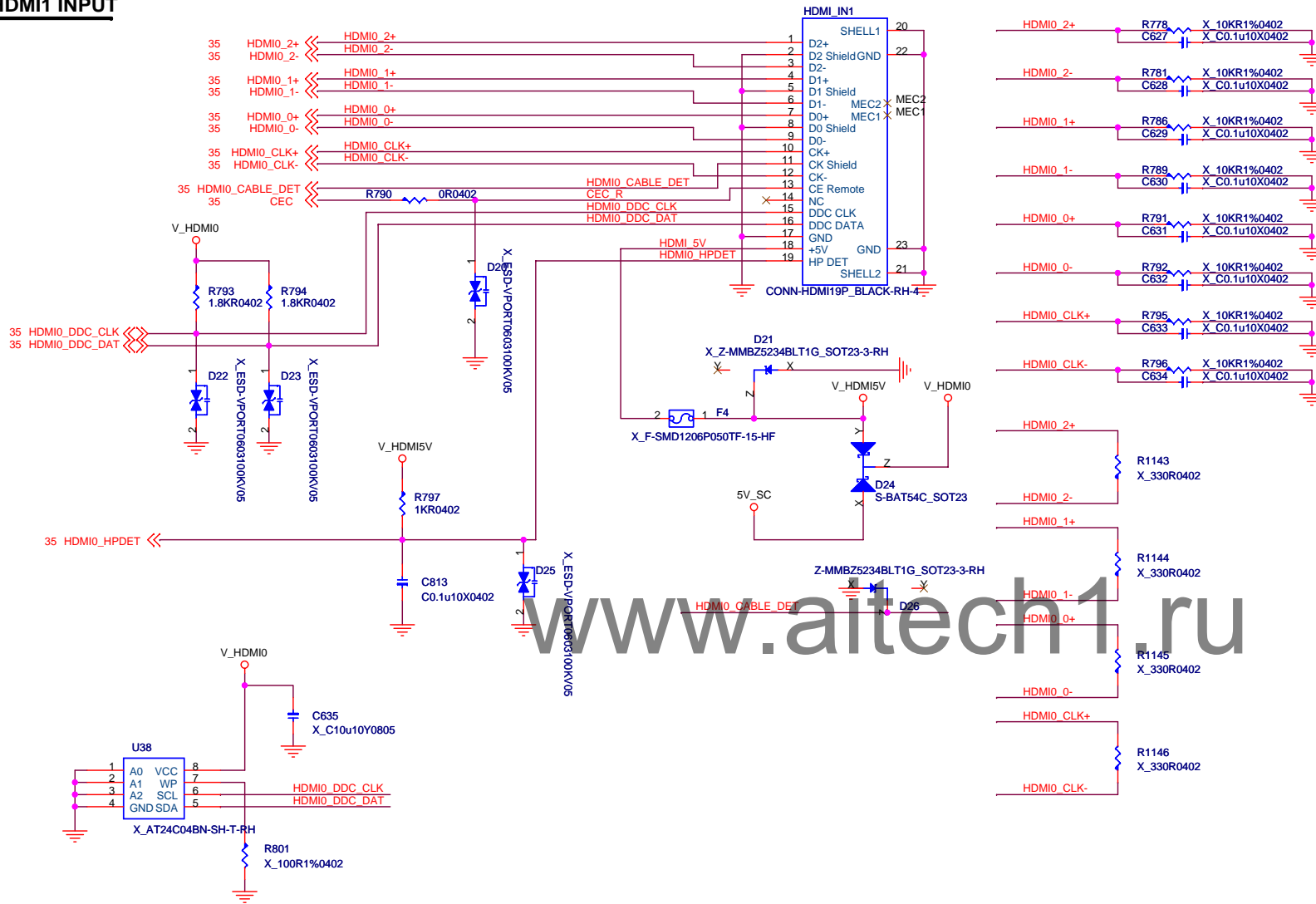
INVERTER



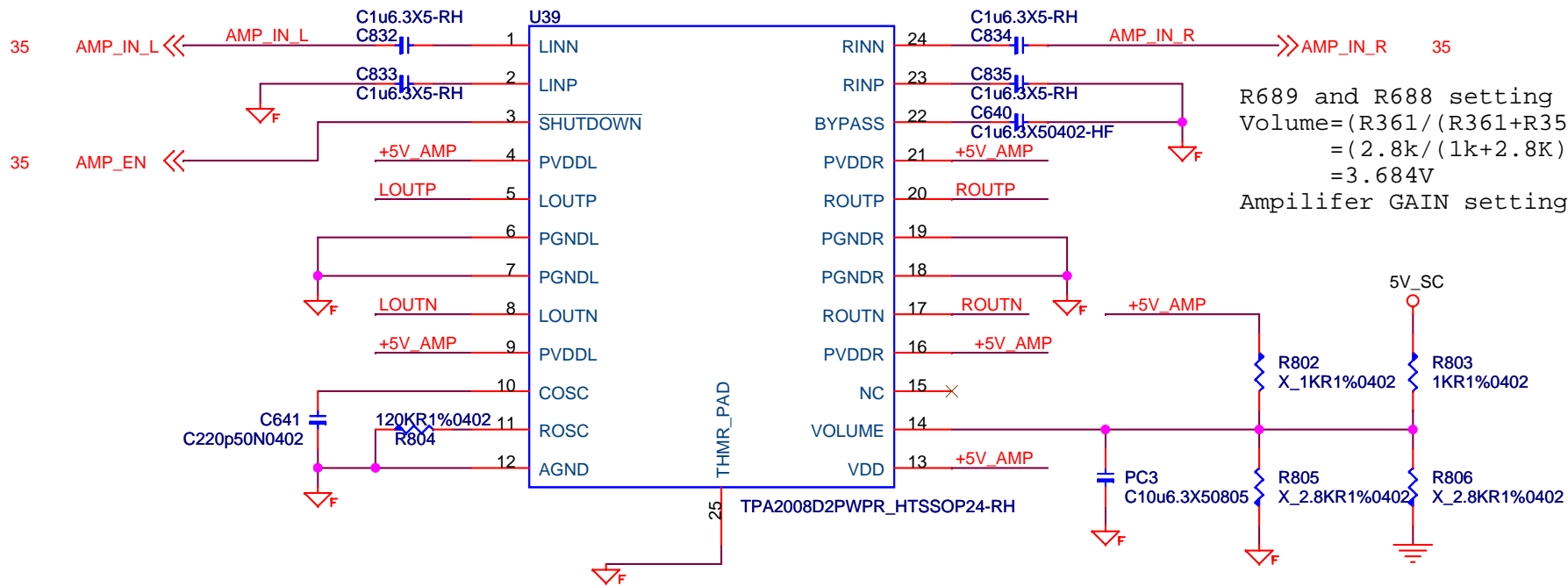
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		MS-7686		
Size B	Document Description SCALER(LVDS & INV)			Rev 0A
Date:	Monday, May 03, 2010			Sheet 36 of 49

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HDMI1 INPUT

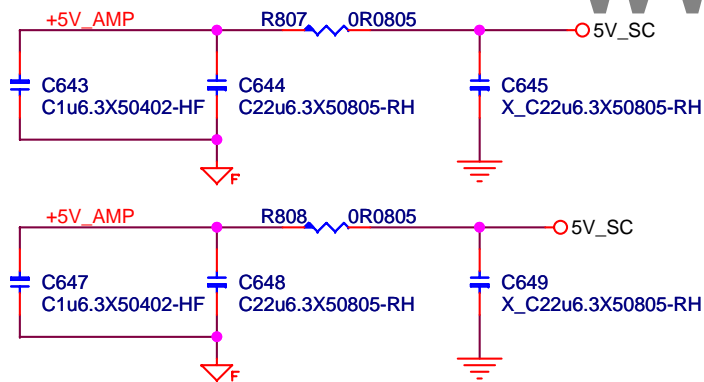


msi Insist on the best		MICRO-STAR INT'L CO., LTD.	
Size B		MS-7686	
Document Description		SCALER(HDMI1-IN)	
Date: Monday, May 03, 2010	Sheet 37 of 49	Rev 0A	

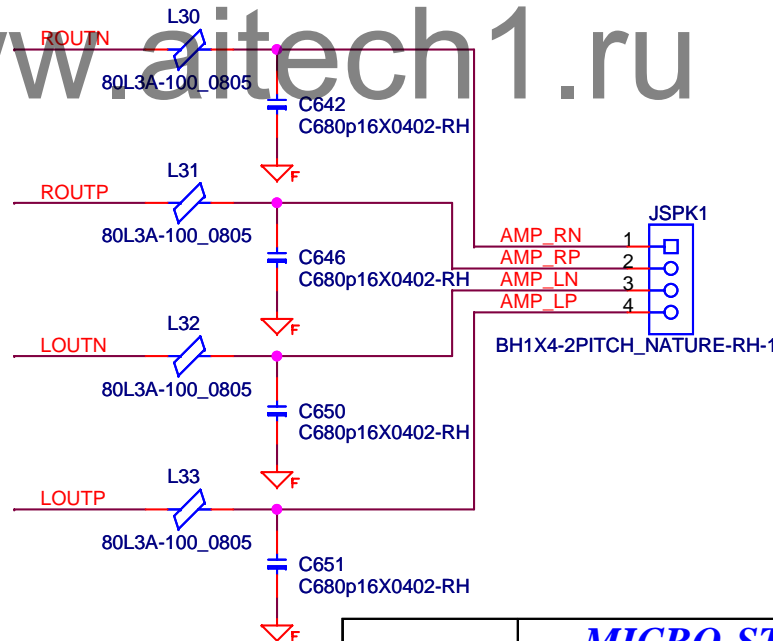



R689 and R688 setting GIAN
 Volume=(R361/(R361+R352))*PVCC
 =(2.8k/(1k+2.8K))*5
 =3.684V
 Amplifier GAIN setting to 18dB

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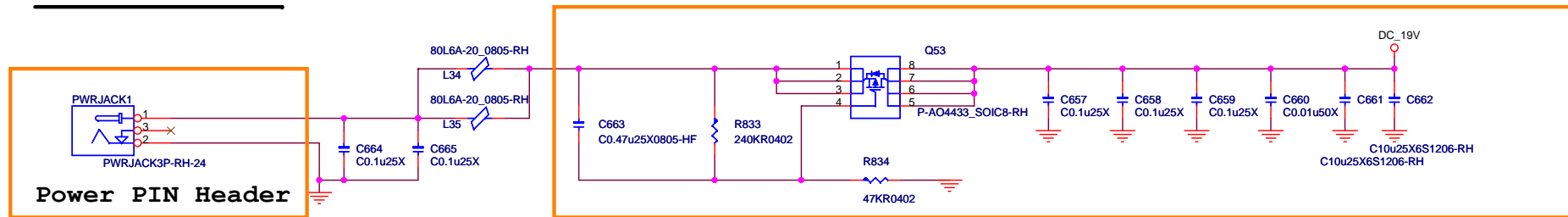


As close as chip possible



		MICRO-STAR INT'L CO., LTD.	
		MS-7686	
Size	Document Description		Rev
A	SCALER(AMP)		0A
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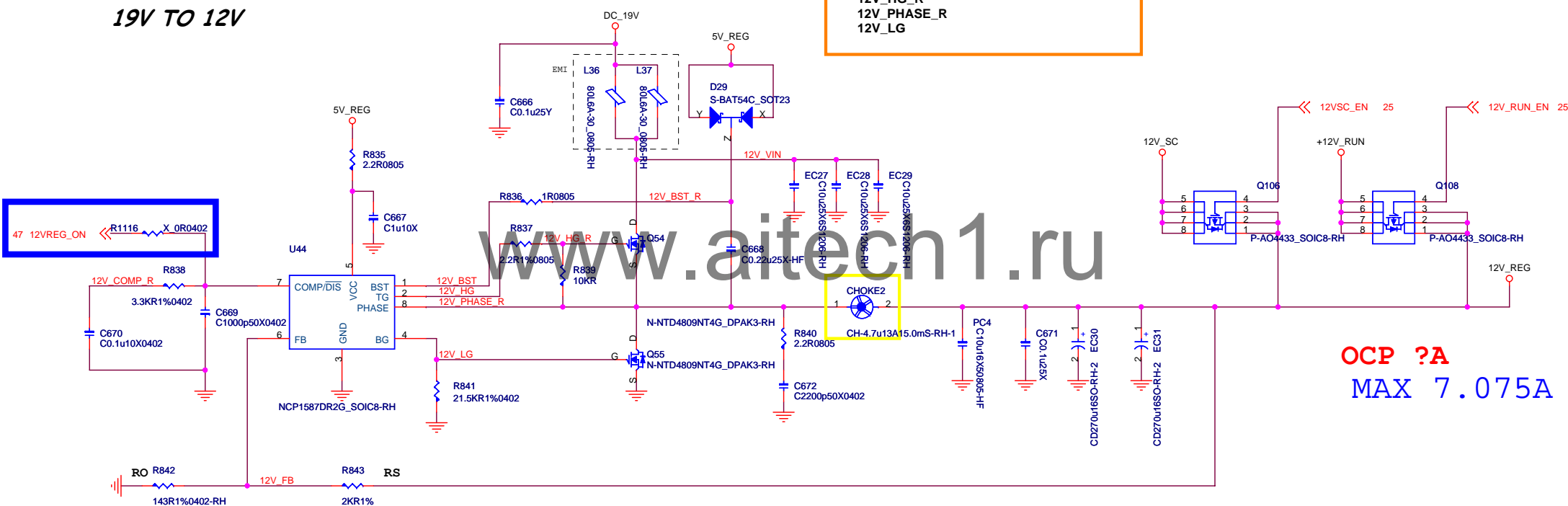
DC Voltage IN



19V TO 12V

Trace list for layout==>Width:25 , Spacing:20

12V_HG_R
12V_PHASE_R
12V_LG



OCP ?A
MAX 7.075A

OCP A
MAX 6.957A

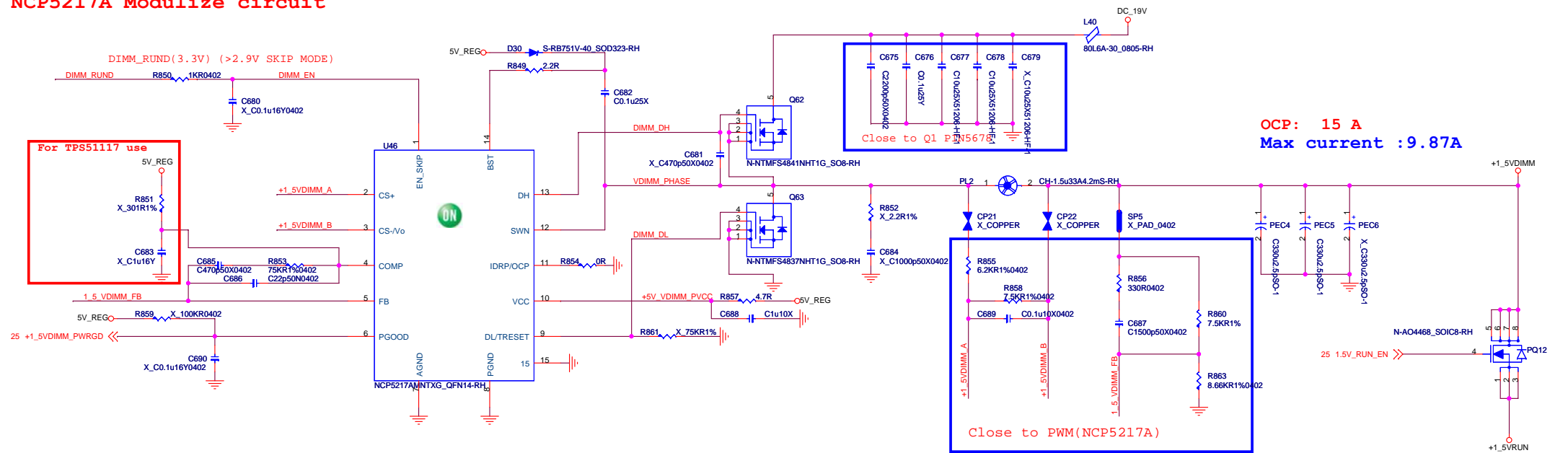
OCP A
MAX 16.332A

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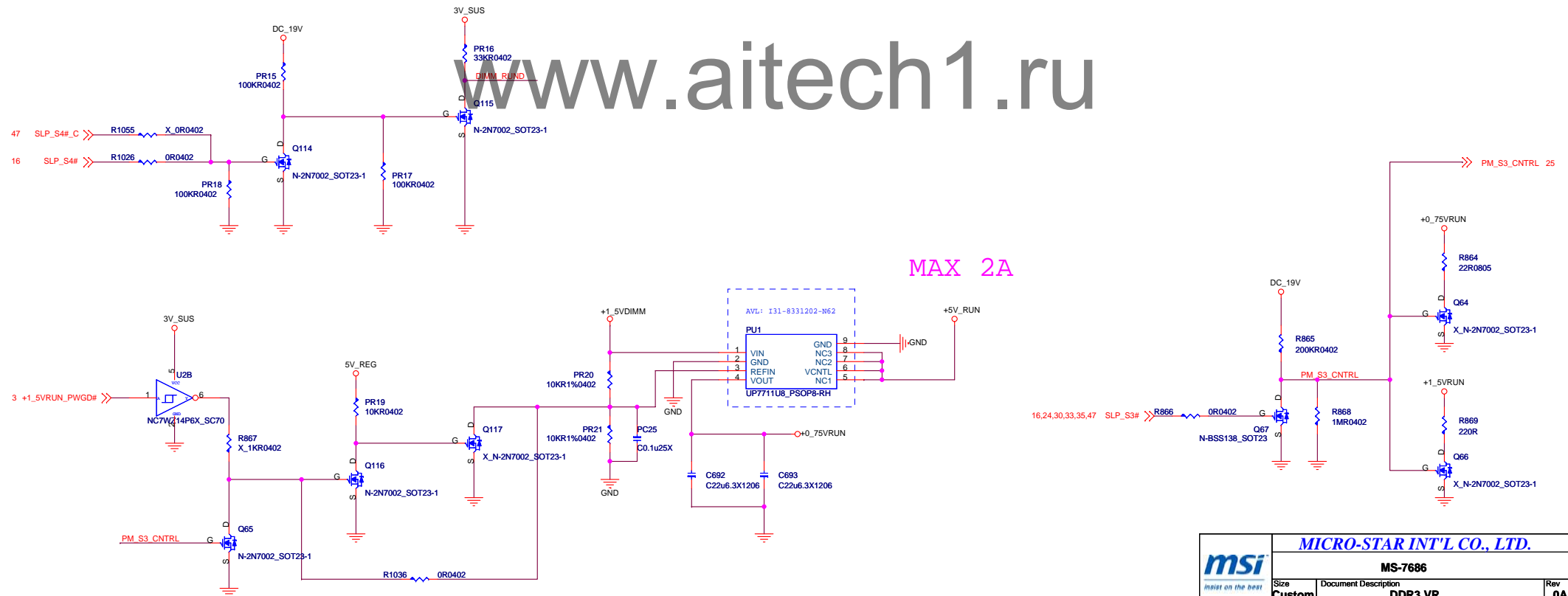
Add discharge circuit

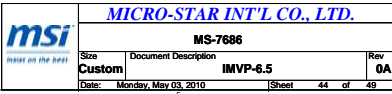
msi many on the way				MICRO-STAR INT'L CO., LTD.	
MS-7686		Rev 0A			
Size	Custom	Document Description	SYSTEM POWER VR		
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NCP5217A Modulize circuit

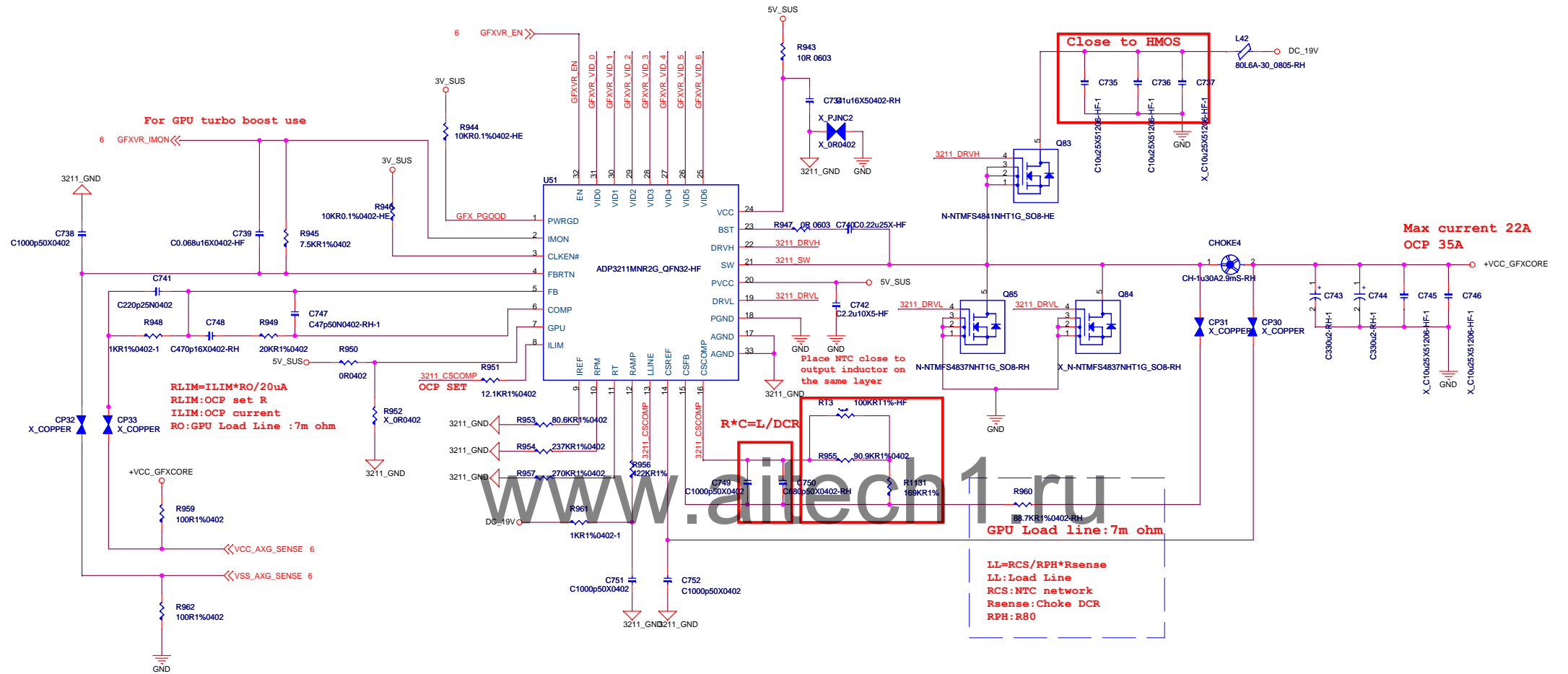


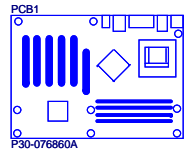
PR16
33KR0402
DIMM_ROUND
C115



[illegible]

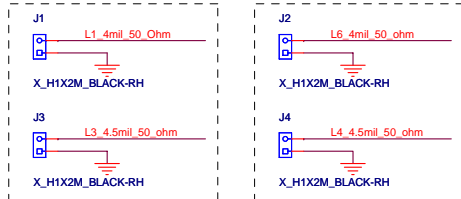
Modulize of ADP 3211 for GPU



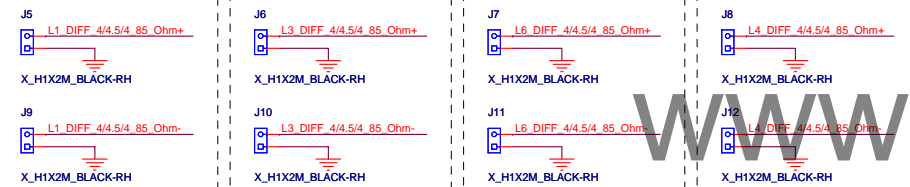


AVL:P30-076860A-G37

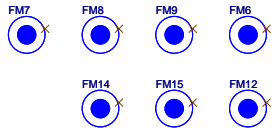
Single End 50ohm



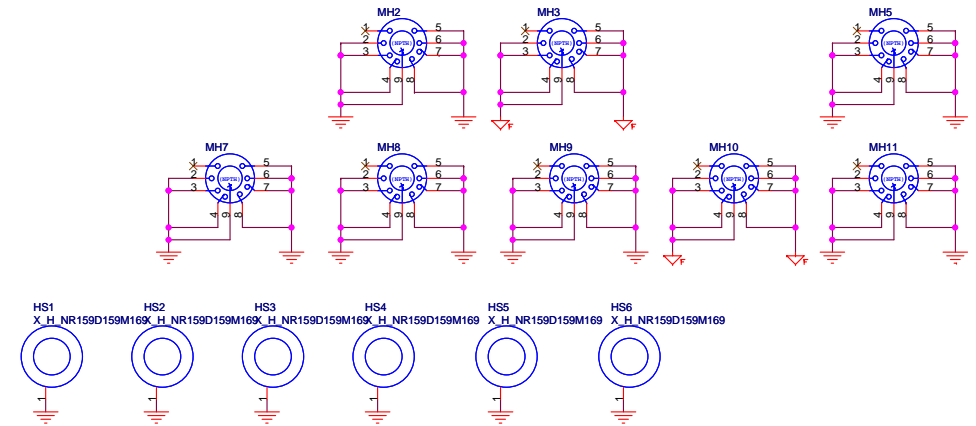
Diff 85ohm



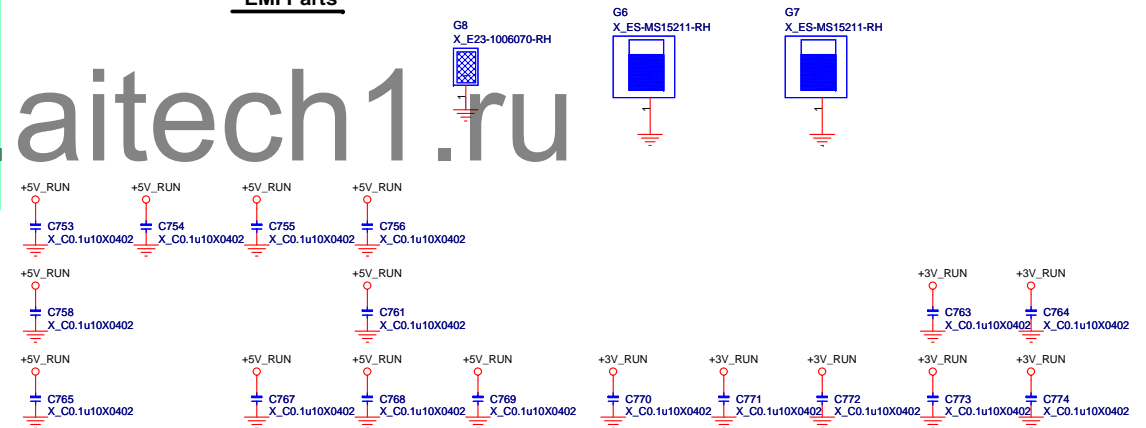
Optics Orientation Holes



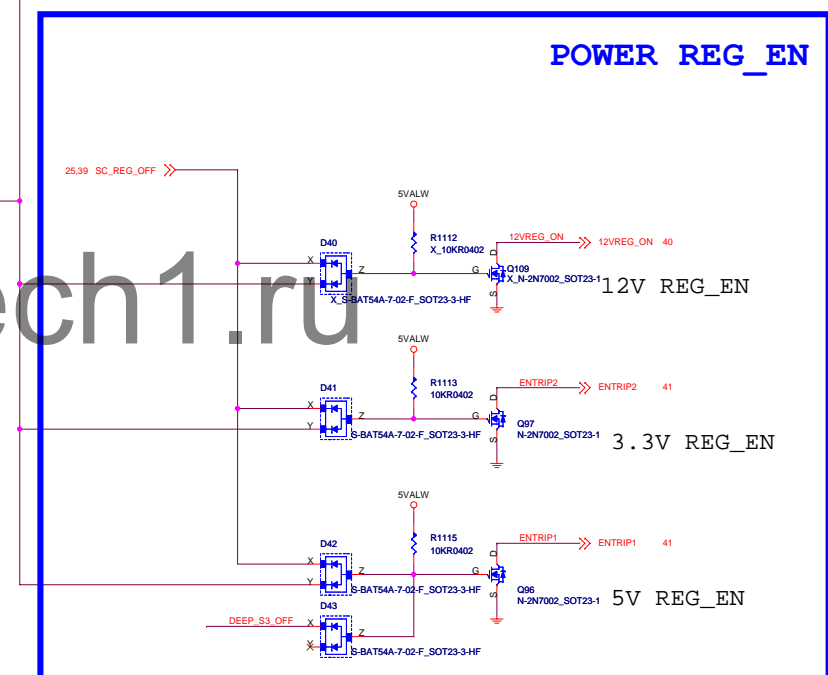
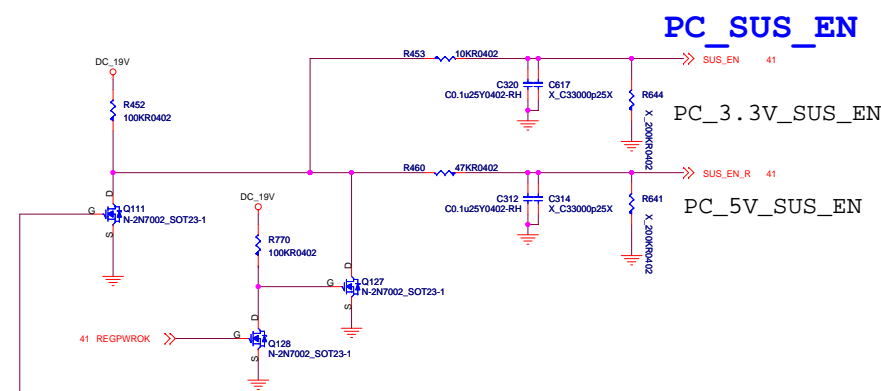
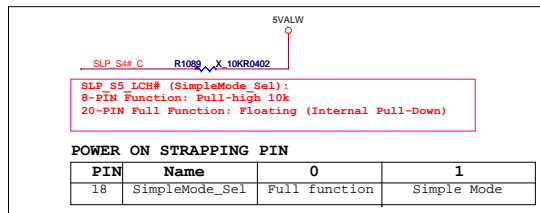
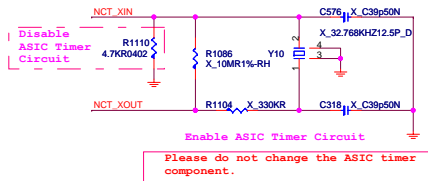
Mounting Holes



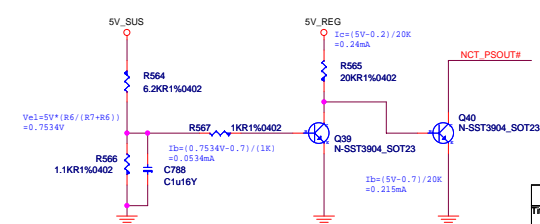
EMI Parts



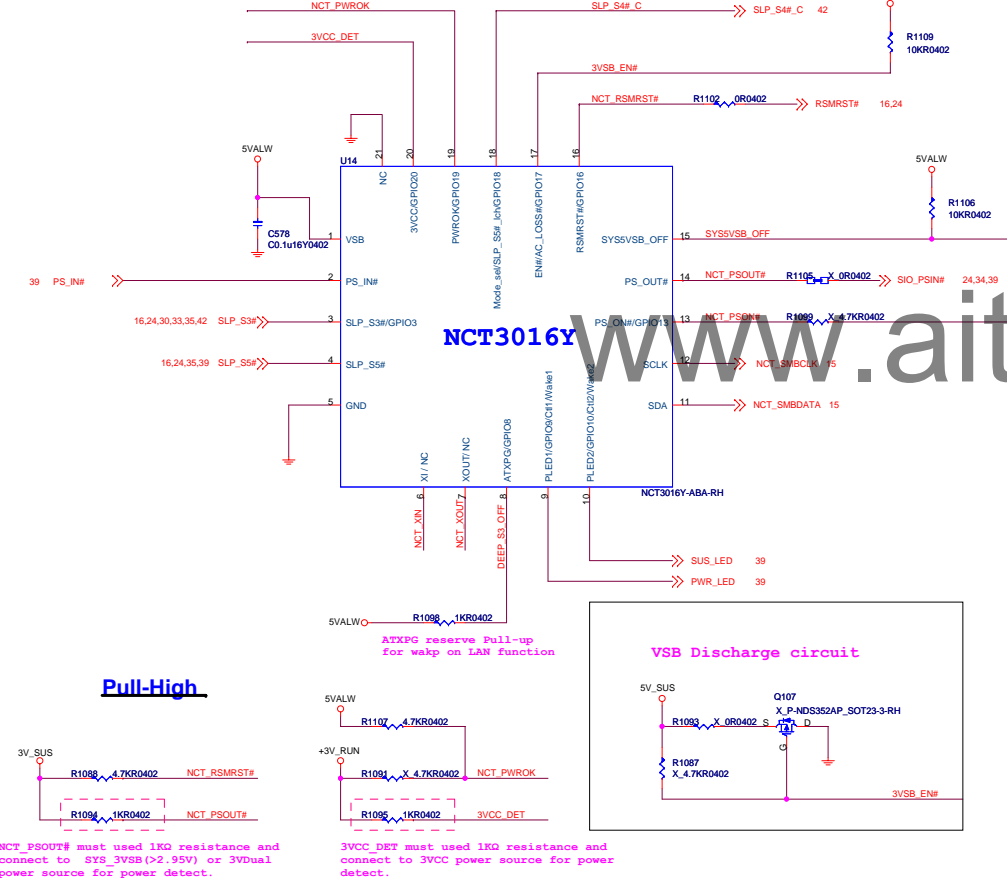
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WHEN 5VSUS & 3VSUS READY



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Pull-High