

Ellsworth
Arroyo DVT Schematics

PCB Version : 715G4788M0D XTAL LIST

Table with 2 columns: CONTENTS, SHEET. Rows include: 01: TABLE OF CONTENTS (1), 02: SYSTEM BLOCK DIAGRAM (2), 03: CLK/SMBUS/RESET MAP (3), 04: AMD FT1 (1/2) (4), 05: AMD FT1 (2/2) (5), 06: DDR3 SODIMM A-1 CHANNEL (6), 07: DDR3 SODIMM A-2 CHANNEL (7), 08: SCALAR ANX3110 (8), 09: AMD HUDSON D1 (1/3) (9), 10: AMD HUDSON D1 (2/3) (10), 11: AMD HUDSON D1 (3/3) (11), 12: AUDIO ALC269Q-VB (12), 13: LAN RTL8175E-CG/LED (13), 14: CR/HDD/ODD/WEBCAM/D-MIC (14), 15: USB/MINI PCI-E/FAN (15), 16: EC IT8519E (16), 17: DEBUG CIRCUIT (17), 18: SYSTEM +3V/+5V (18), 19: +VDDIO_MEM/MEM_VTT/DC-IN (19), 20: +1.8V/+12V/+1.2V/+1.1V/DIS (20), 21: +1.1V_S3/+1.05V (21), 22: VDDCR_CPU/VDDCR_NB (22), 23: STACK UP 6L (23), 24: SCREW HOLE/SILK SCREEN (24), 25: Power Sequence Diagram (25), 26: POWER SEQUENCE (26), 27: HISTORY (27).

Table with 6 columns: PARTS, DIP/SMT, Frequency, PPM, CL. Rows include: 1 X2 SMT 25MHz ±20 12pF/15pF, 2 X3 SMT NC/25MHz ±20 10pF/10pF, 3 X4 SMT 32.768KHz ±20 10pF/8.2pF, 4 X5 SMT 25MHz ±20 12pF/15pF, 5 X6 SMT NC/32.768KHz ±20 12pF/12pF.

USB LIST

Table with 3 columns: PORT, NET NAME, FUNCTION. Rows include: USB_HSD0P/N, USB0_DEBUG_P/N, REAR IO; USB_HSD1P/N, USB1P/N, REAR IO; USB_HSD2P/N, USB2P/N, REAR IO; USB_HSD3P/N, USB3P/N, REAR IO; USB_HSD4P/N, USB4P/N, SIDE IO; USB_HSD5P/N, USB5P/N, SIDE IO; USB_HSD8P/N, USB8_WLAN_P/N, WLAN/BT; USB_HSD11P/N, USB11_WEBCAM_P/N, WEBCAM.

SATA LIST

Table with 3 columns: PORT, NET NAME, FUNCTION. Rows include: SATA_TX0P/N, SATAA0_TXP/N, SATA HDD; SATA_RX0P/N, SATAA0_RXP/N, SATA HDD; SATA_TX1P/N, SATA1_TXP/N, SATA ODD; SATA_RX1P/N, SATA1_RXP/N, SATA ODD.

PCI-E LIST

Table with 3 columns: PORT, NET NAME, FUNCTION. Rows include: GPP_TX3P/N, PCIE_WLAN_TXP/N, WIRELESS LAN; GPP_RX3P/N, PCIE_WLAN_RXP/N, WIRELESS LAN; GPP_TX1P/N, PCIE_LAN_TXP/N, LAN; GPP_RX1P/N, PCIE_LAN_RXP/N, LAN; GPP_TX2P/N, PCIE_CARD_TXP/N, CARDREADER; GPP_RX2P/N, PCIE_CARD_RXP/N, CARDREADER.

POWER STATES

Table with 7 columns: STATE, SIGNAL, VOTAGE, S0, S3, S5, G3, REMARK. Rows include: FCH_SLP_S3#, FCH_SLP_S5#, S5_PWR_ON, +VBAT_IN, +VIN, +3V_ALW/+5V_ALW, +3V_S5, +1.1V_S5, +5V_S3, +3V_S3, +VDDIO_MEM, +1.1V_S3, +MEM_VTT, +3V_S0/+5V_S0, +1.8V_S0, +1.2V_S0, +1.1V_S0, +1.5V_S0, +1.2V_S0, +1.05V_S0, +VDDCR_CPU, +VDDCR_NB.

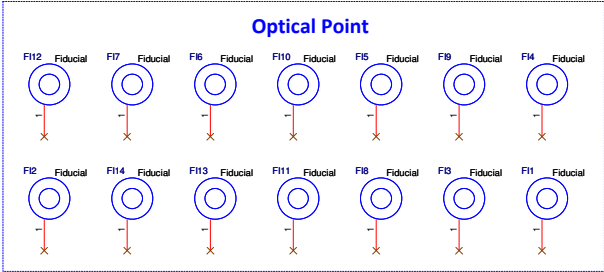
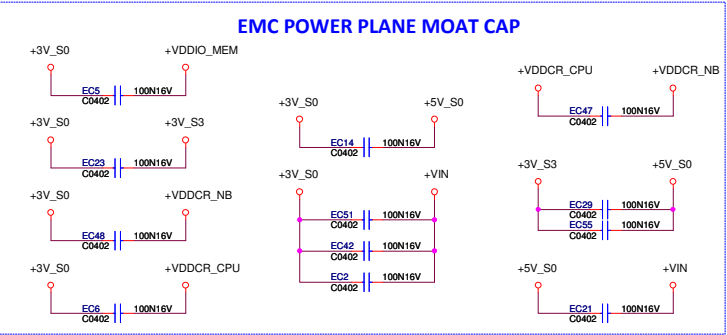
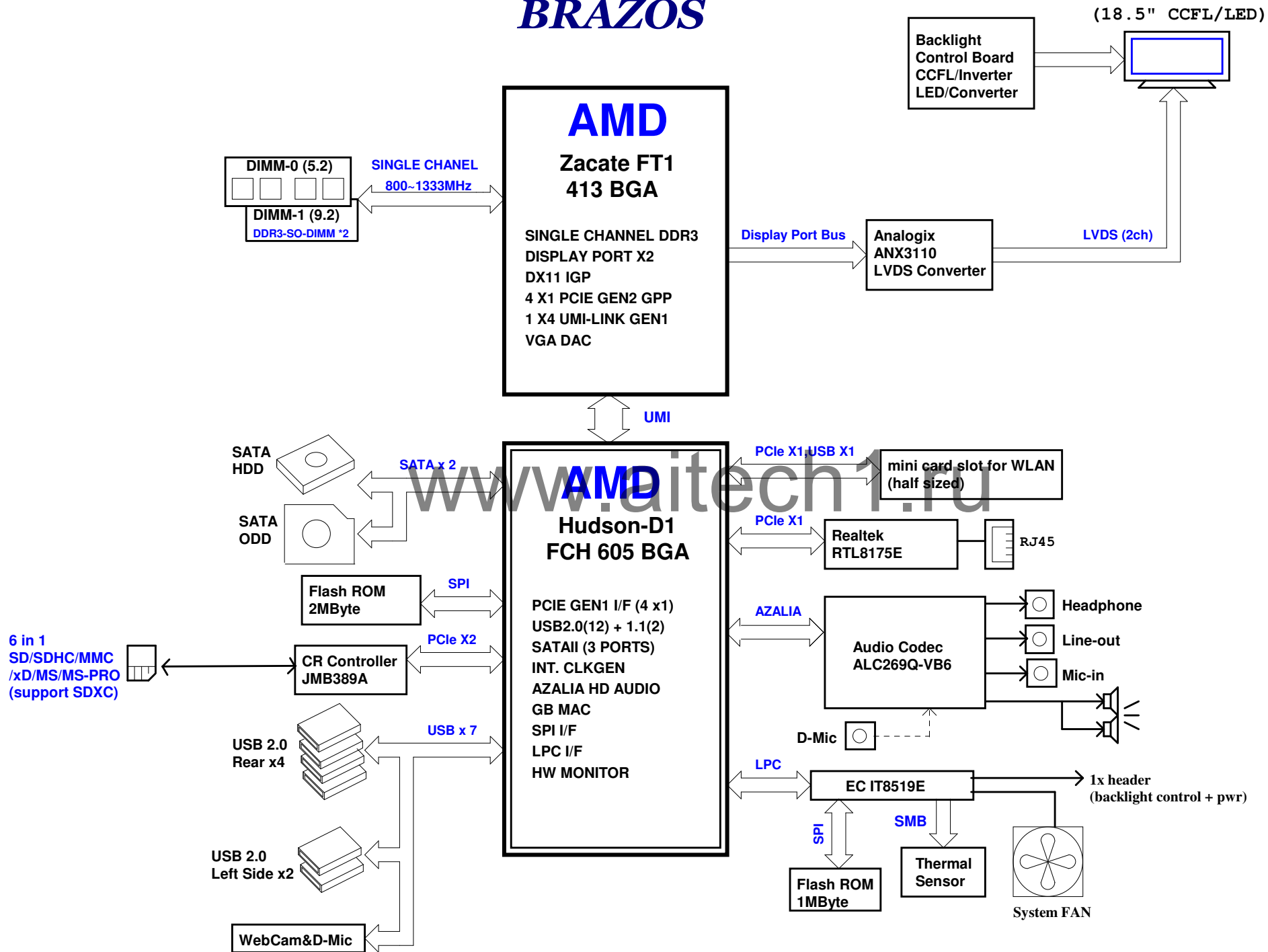


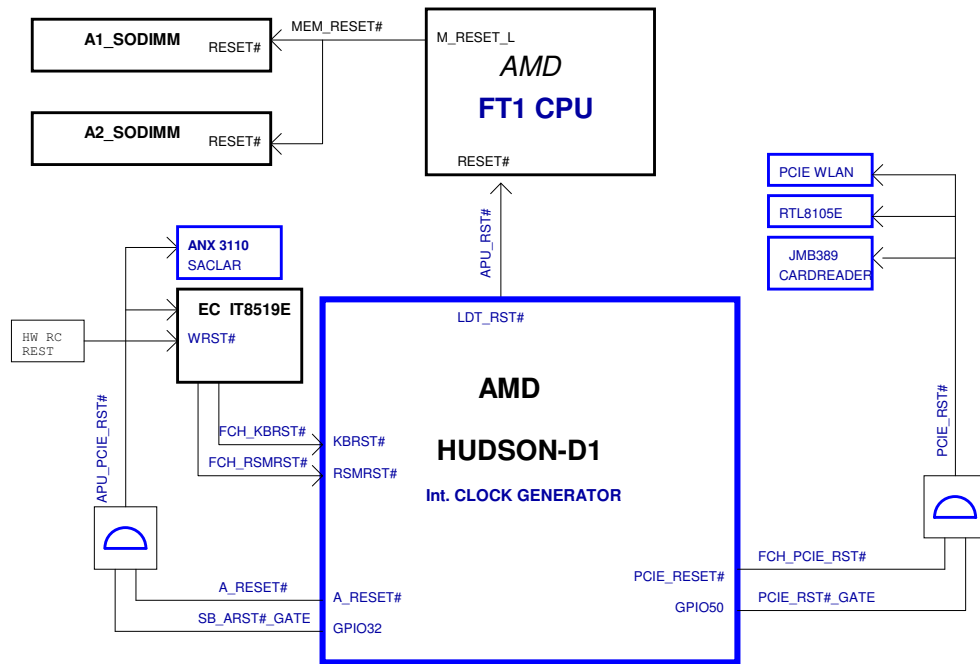
Table with 4 columns: TPV (Top Victory Electronics Co., Ltd.), OEM MODEL, HP, PURISIMA, Ellsworth, Size, C, Rev, MDE. Rows include: 715G4788M0D, HP, PURISIMA, Ellsworth, 1 of 27, 備註 <備註>.

BRAZOS

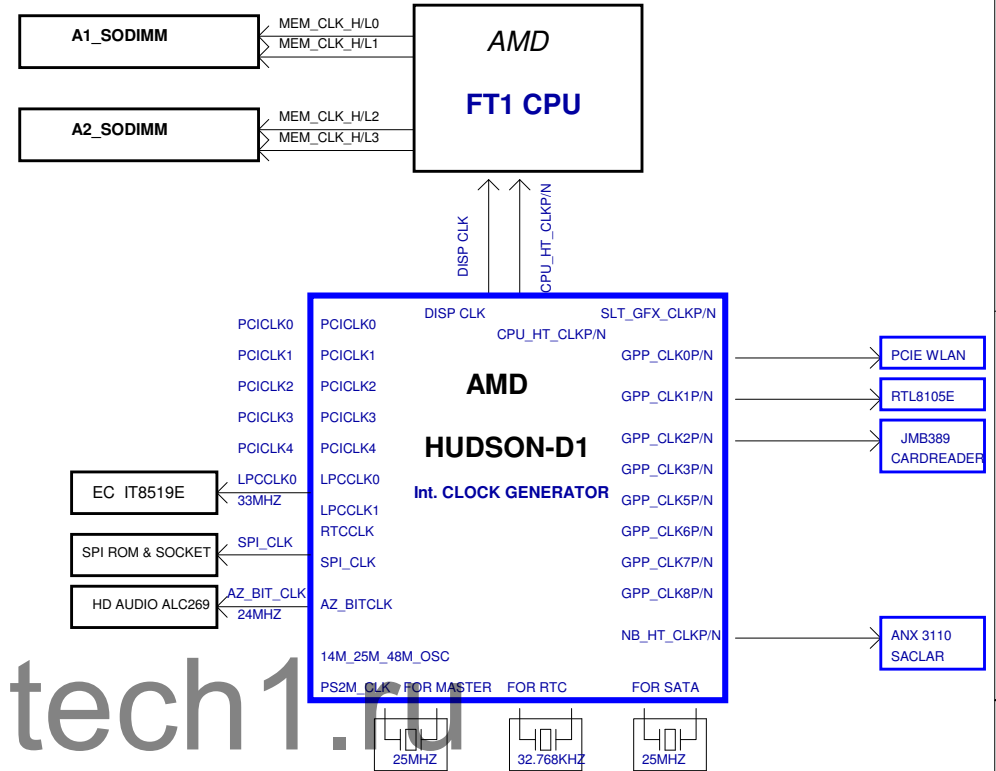


TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	HP_PURISIMA_Ellsworth	Size	C
線路圖編號 715G4788MOD	TPV MODEL	Ellsworth	Rev	M0E
Key Component SYSTEM BLOCK DIAGRAM	PCB NAME	715G4788MOD	Sheet	2 of 27
Date Thursday, February 24, 2011				備註 <備註>

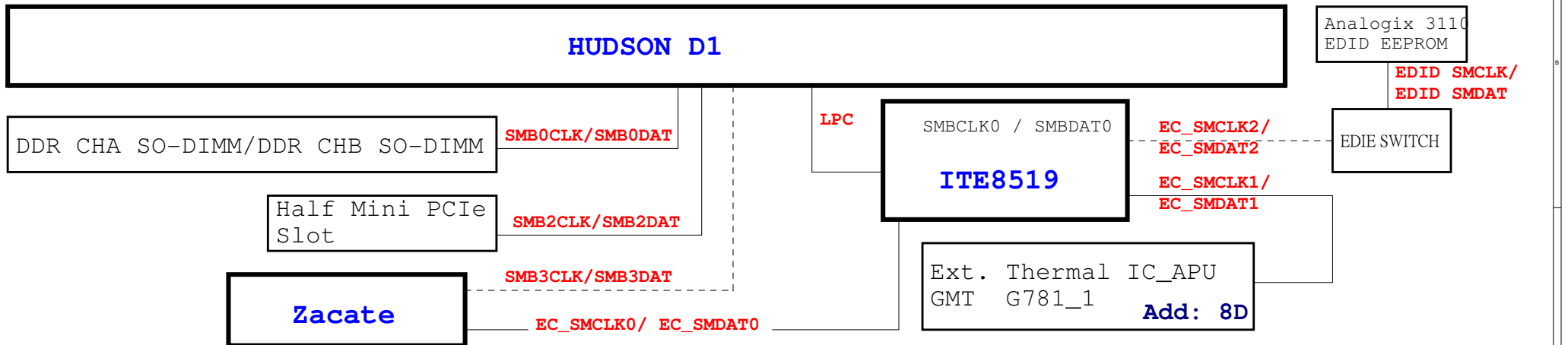
RESET Block Diagram



INTERNAL CLOCK MODE

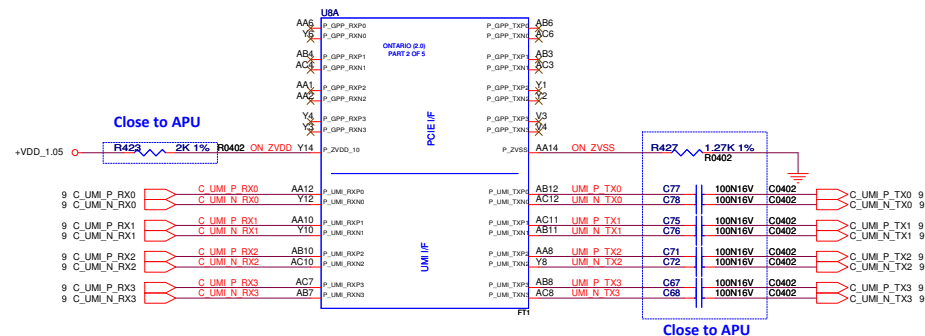


SM Bus MAP

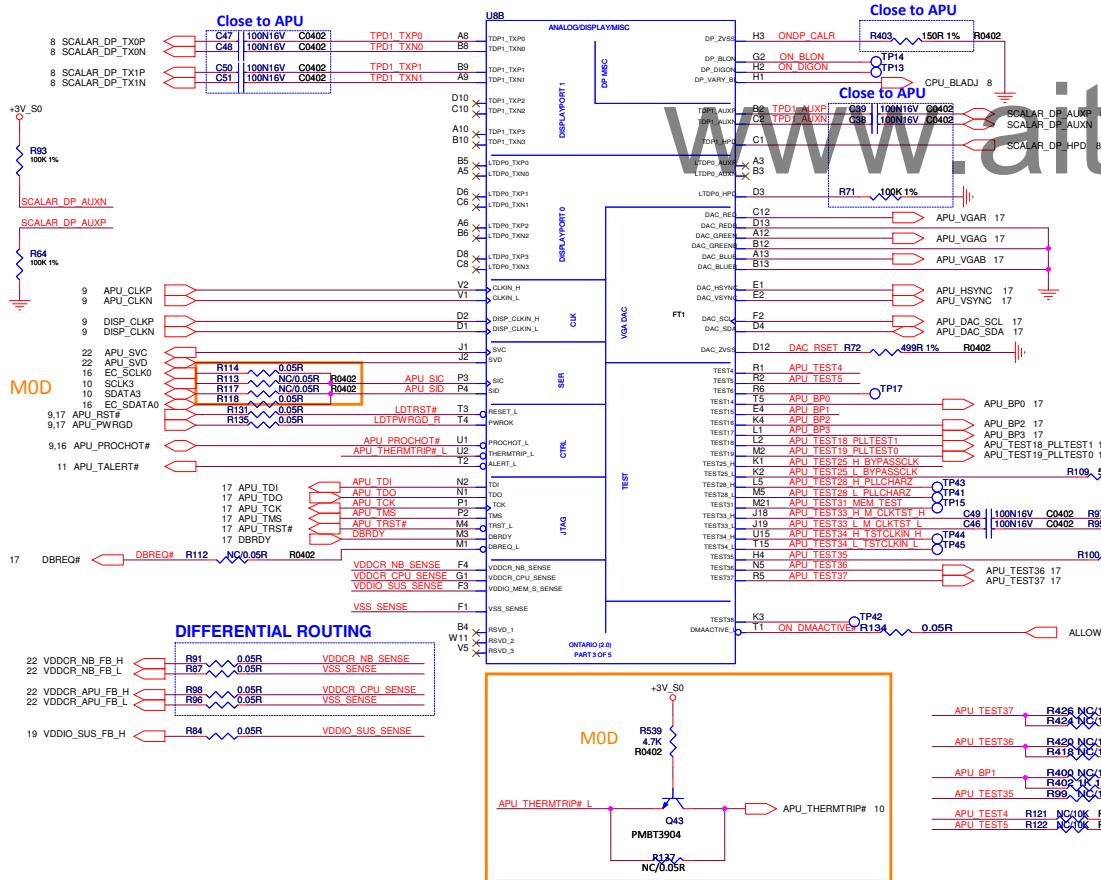


TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	HP_PURISIMA_Ellsworth	Size	C
線路圖編號 71504789M0D	TPV MODEL	Ellsworth	Rev	M0E
Key Component CLK/SMBUS/RESET MAP	PCB NAME	71504789M0D	Sheet	3 of 27
Date Thursday, February 24, 2011				備註 <備註>

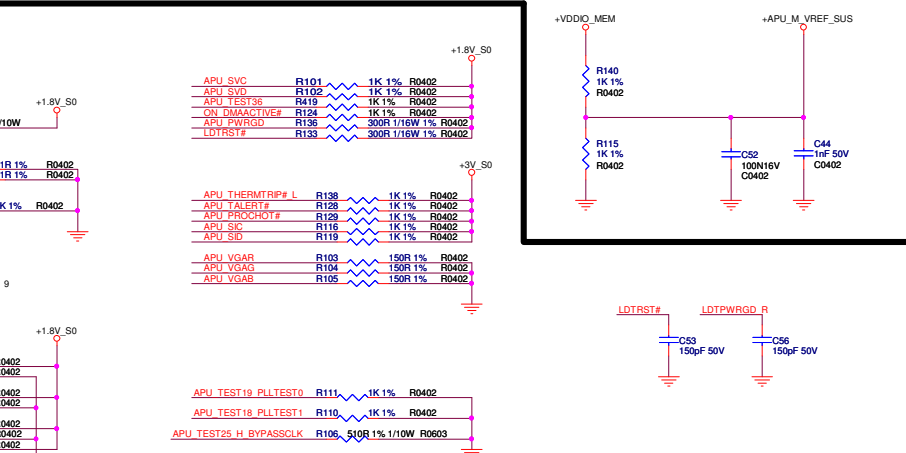
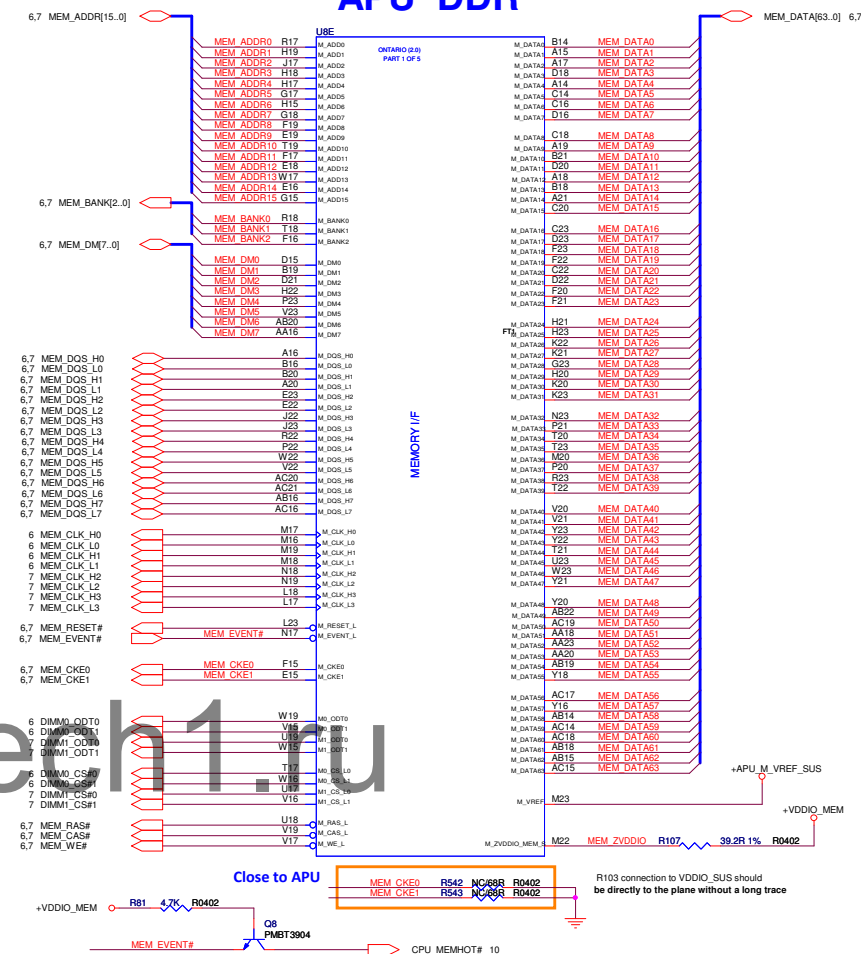
UMI / PCIE



DP / VGA / CLK / CTRL / SENSE

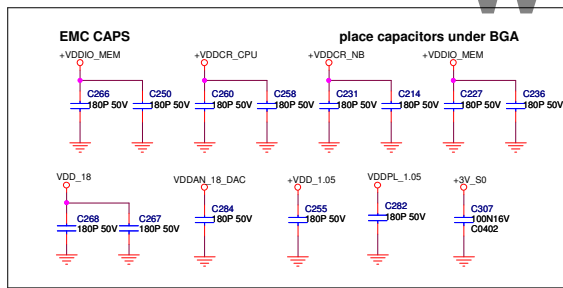


APU DDR



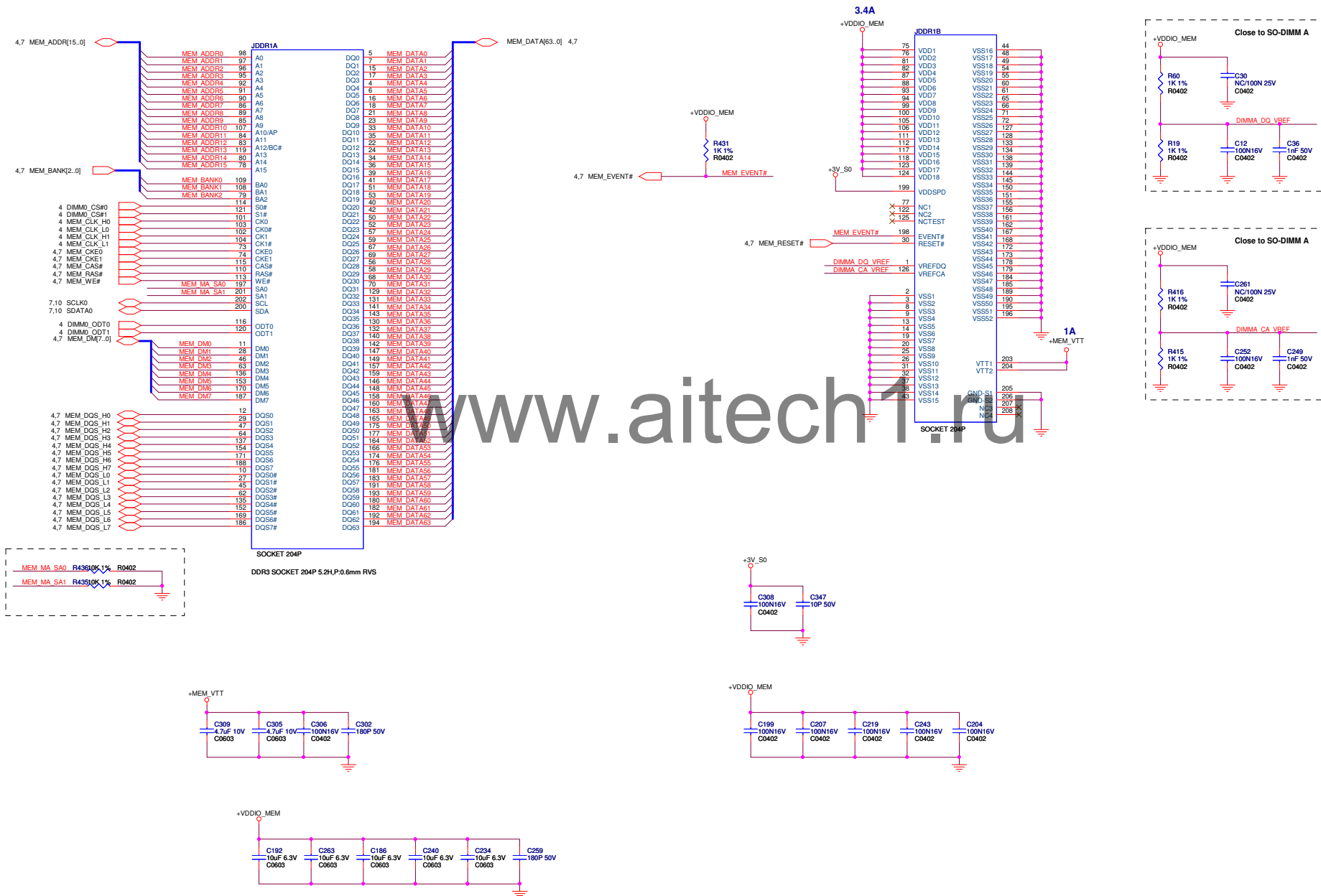
T P V (Top Victory Electronics Co., Ltd.)		OEM MODEL	HP_PURISIMA_Ellsworth	Size	C
線路圖編號 715G478BMDA		TPV MODEL	Ellsworth	Rev	MDE
Key Component	AMD FT1 (1/2)	PCB NAME	715G478BMDA	備註 <備註>	
Date	Thursday, February 24, 2011	Sheet	4 of 27		

www.aitech1.ru



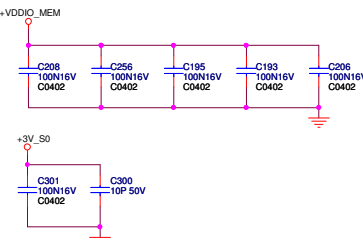
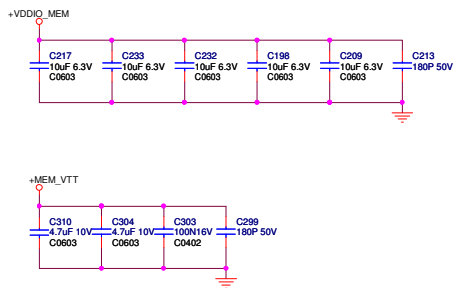
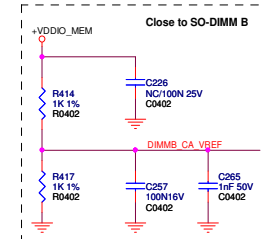
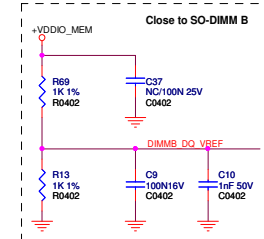
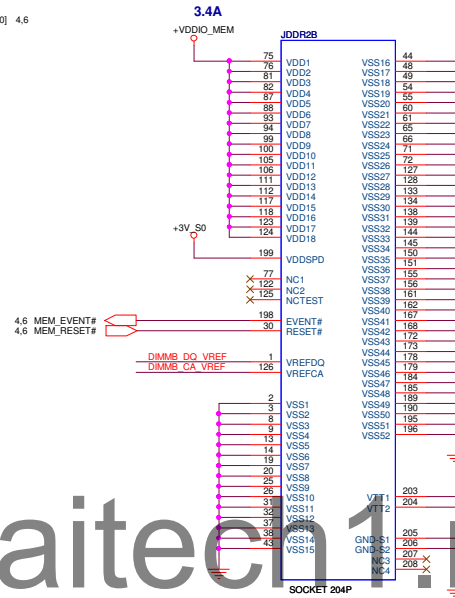
TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL	HP_PURISIMA_Ellsworth	Size	C
線路圖編號	715G4788MDA	TPV MODEL	Ellsworth	Rev	MDE
Key Component	AMD FT1 (2/2)	PCB NAME	715G4788MDA	備註	<備註>
Date	Thursday, February 24, 2011	Sheet	5 of 27		

CHA DDR 5.2H(DIMM-0)



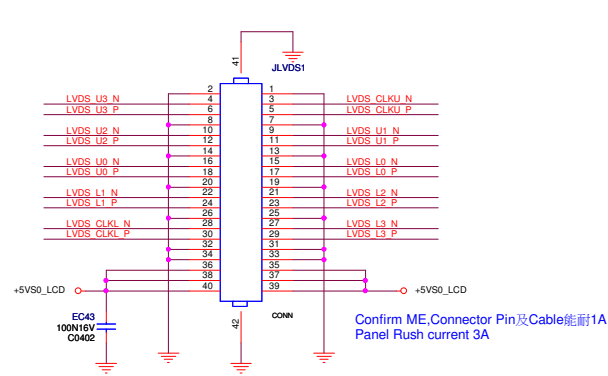
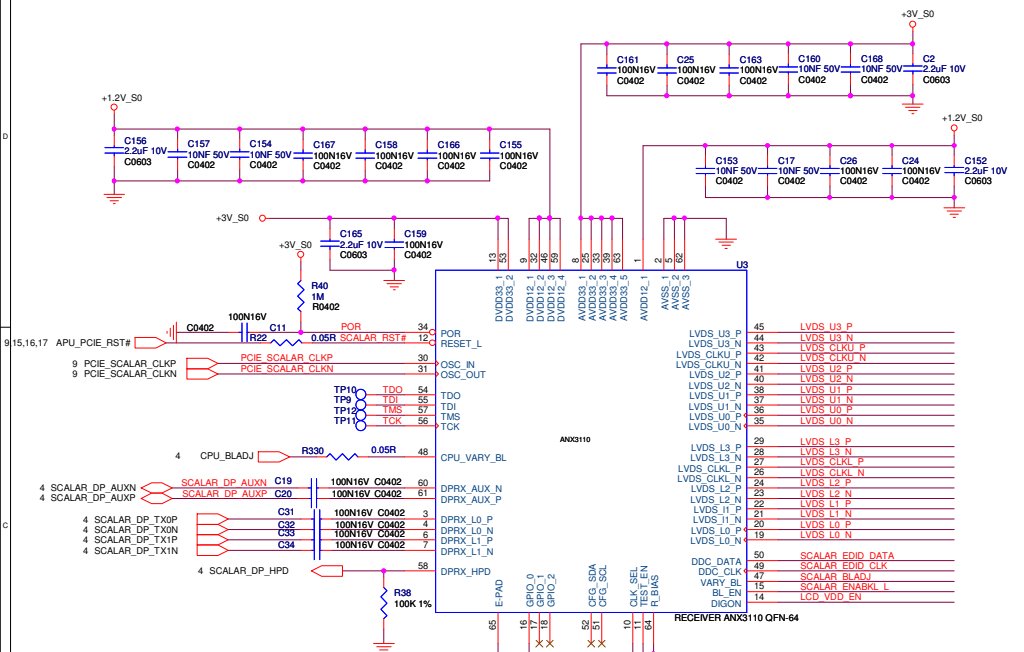
TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	HP_PURISMA_Elleworth	Size	C
線路圖編號 715G4788M0A	TPV MODEL	Elleworth	Rev	M0E
Key Component	DDR3 SODIMM A-1 CHANNEL	PCB NAME	715G4788M0A	備註
Date	Thursday, February 24, 2011	Sheet	6 of 27	<備註>

CHB DDR 9.2H(DIMM-1)

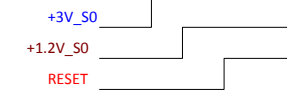


TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	HP_PURISMA_Ellsworth	Size	C
TPV MODEL	715G4788M0A	Ellsworth	Rev	M0E
Key Component	DDR3 SODIMM A-2 CHANNEL	PCB NAME	715G4788M0A	備註 <備註>
Date	Thursday, February 24, 2011	Sheet	7 of 27	

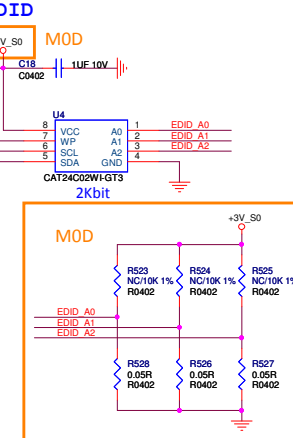
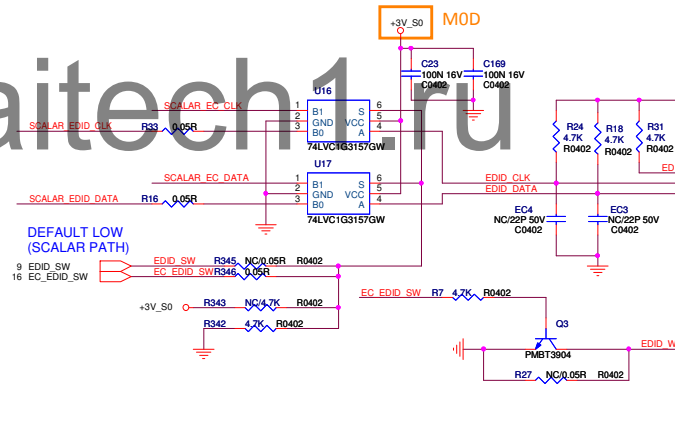
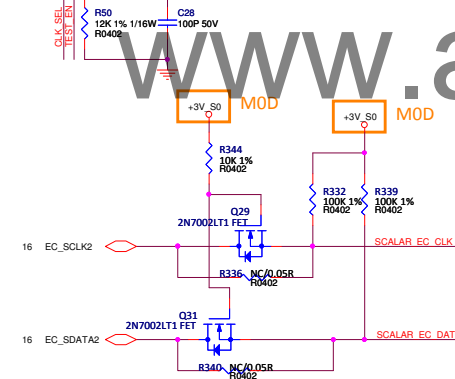
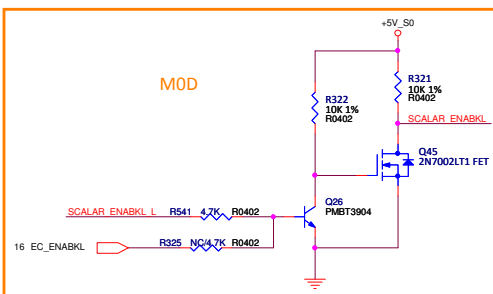
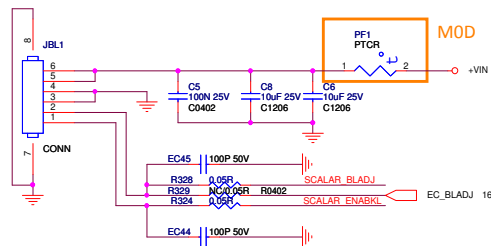
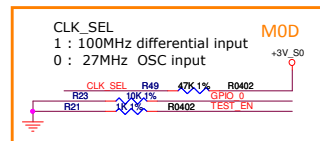
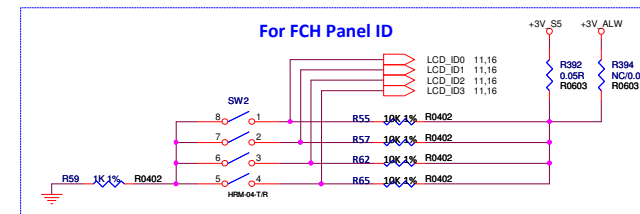
ANX3110



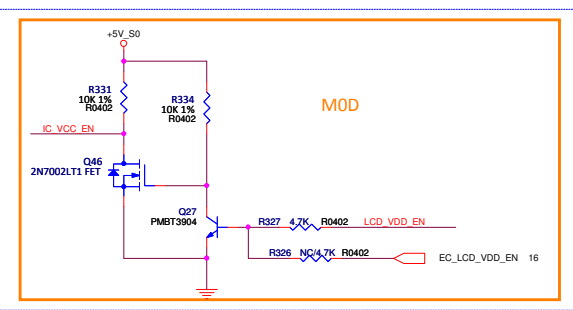
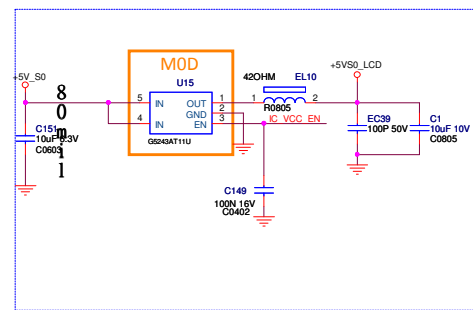
ANX3110 Power Sequence

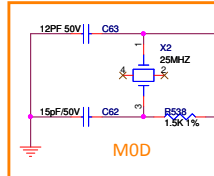


	ID0	ID1	ID2	ID3
	0	0	0	0
	0	0	0	1
	0	0	1	0
	0	0	1	1
	0	1	0	0
	0	1	0	1
	0	1	1	0



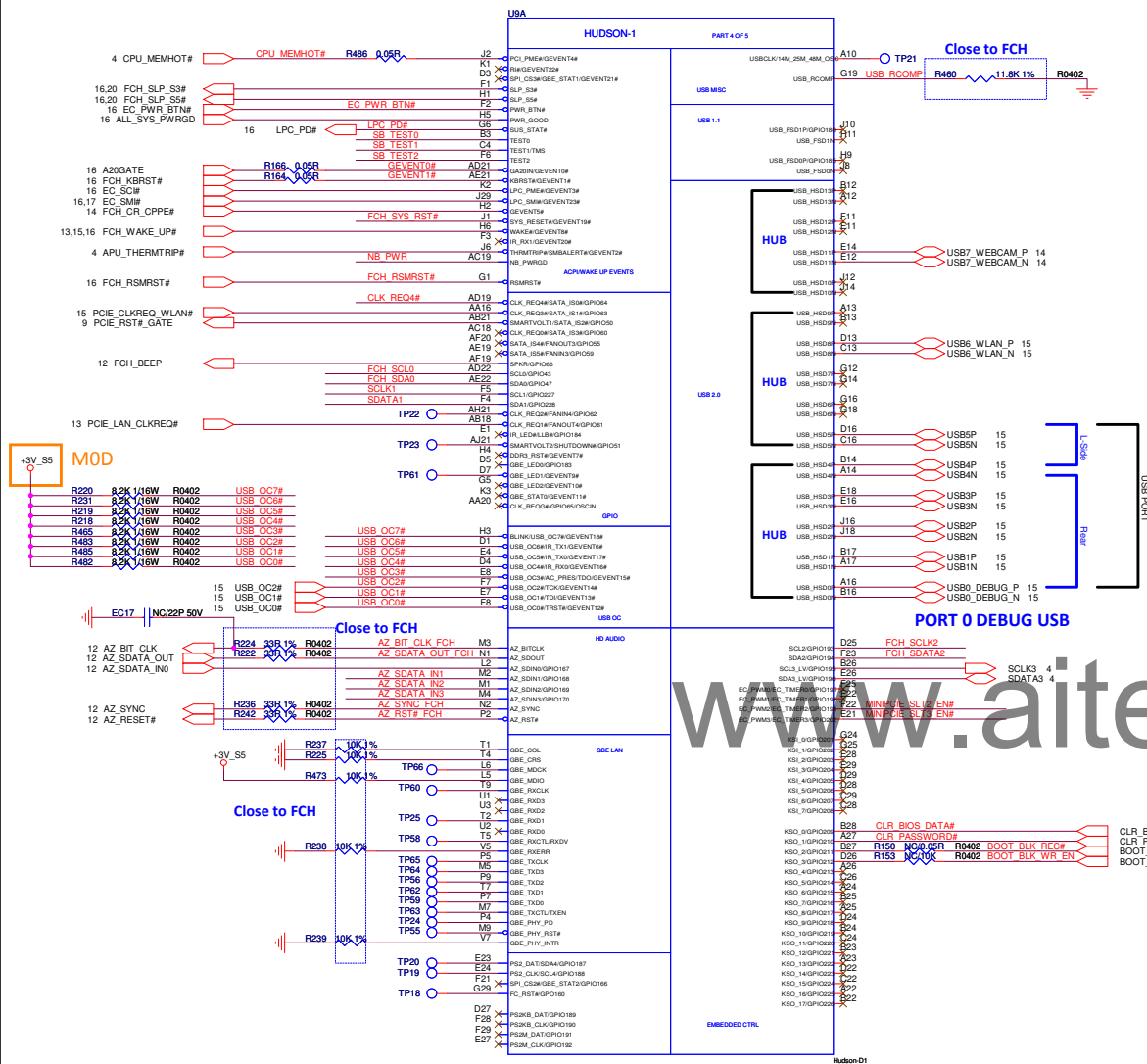
PANEL VCC CONTROL



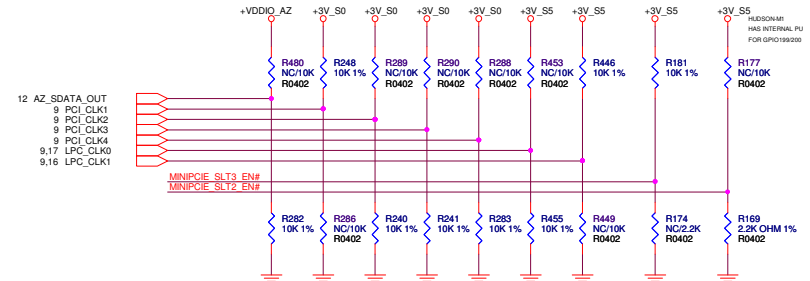
[illegible]

TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL	HP_PURISIMA_Ellsworth	Size	C
線路圖編號	715G4788MOA	TPV MODEL	Ellsworth	Rev	MDE
Key Component	AMD HUDSON D1 (1/3)	PCB NAME	715G4788MOA		
Date	Thursday, February 24, 2011	Sheet	9 of 27	備註	<備註>

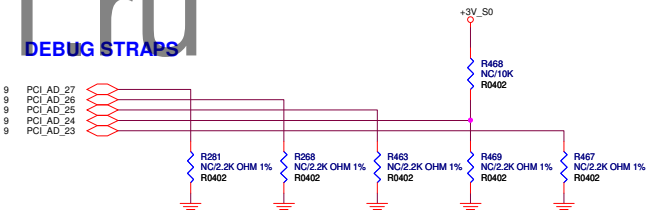
FCH CTL / HDA / USB



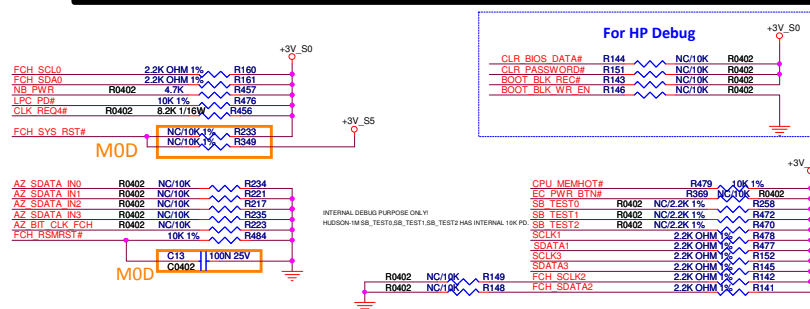
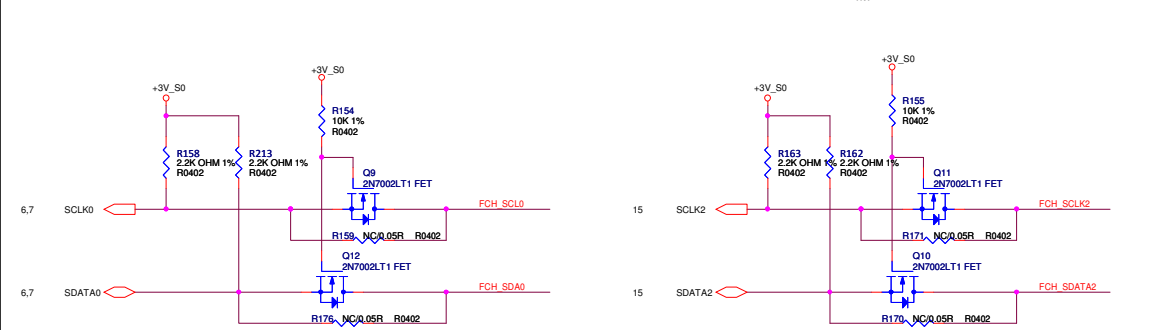
STRAP PINS



	AZ_50OUT	PCI_CLK1	PCI_CLK2	PCI_CLK3	PCI_CLK4	UPC_CLK0	UPC_CLK1	MINIPCE_SLT3_ENW GPIO300	MINIPCE_SLT2_ENW GPIO199
PULL "HIGH"	LOW POWER MODE	ALLOW PCIe Gen2	WATCHDOG TIMER ENABLE	USE SERIAL STRAP	non-Fusion Clock MODE	EC ENABLE	CLKGEN ENABLE DEFAULT	H4 = Reserved H5 = SPI ROM	
PULL "LOW"	PERFORMANCE MODE DEFAULT	FORCE PCIe Gen2 DEFAULT	WATCHDOG TIMER DISABLE DEFAULT	IGNORE DEBIAS STRAP DEFAULT	PUSION CLOCK MODE DEFAULT	EC DISABLE DEFAULT	CLKGEN DISABLED	LL+ = LPC ROM (DEFAULT) LL+ = FWH ROM	

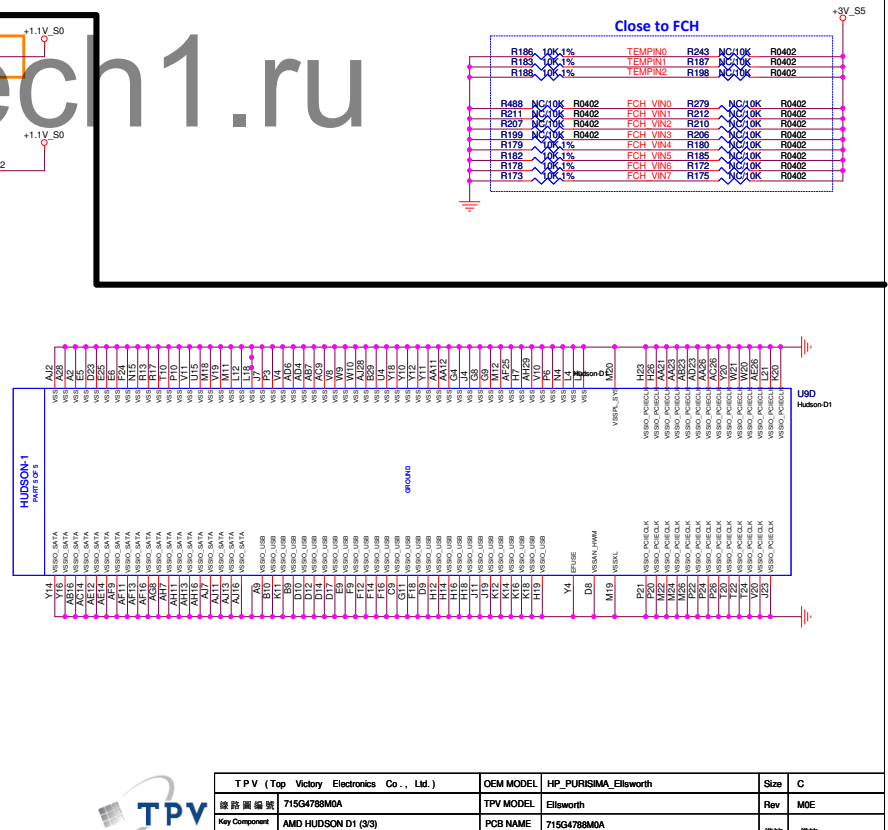
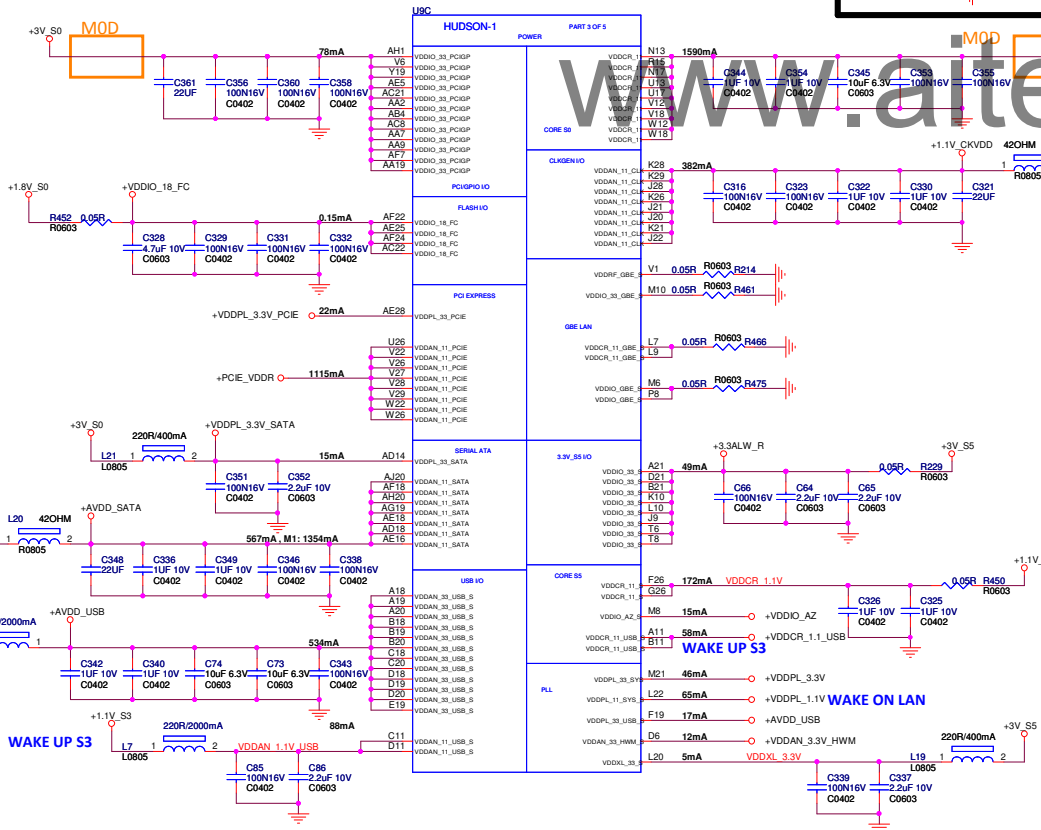
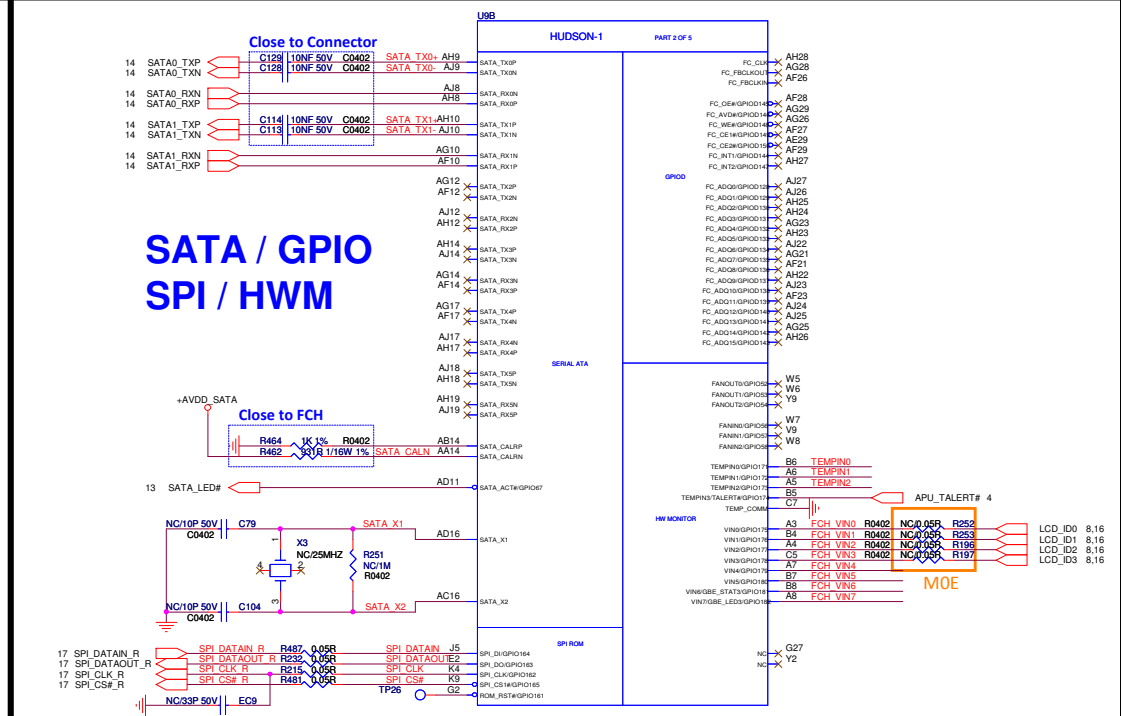
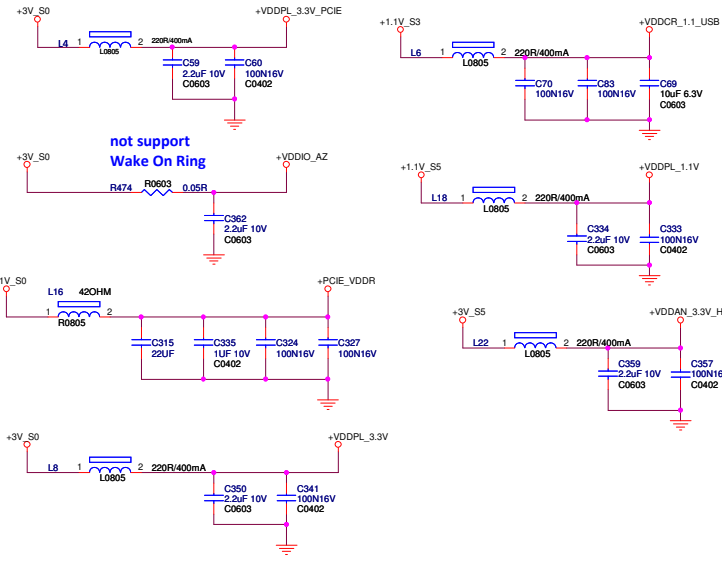


	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL "HIGH"	USE PCI PULL DEFAULT	DISABLE I/LA AUTORUN DEFAULT	USE PCI PULL DEFAULT	USE DEFAULT PCI STRAPS DEFAULT	DISABLE PCI MEM BOOT DEFAULT
PULL "LOW"	BYPASS PCI PULL	ENABLE I/LA AUTORUN	BYPASS PCI PULL	USE EEPROM POE STRAPS	ENABLE PCI MEM BOOT



TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	HP_PURISIMA_Ellsworth	Size	C
線路圖編號	715G4788MOA	TPV MODEL	Ellsworth	Rev MDE
Key Component	AMD HUDSON D1 (2/3)	PCB NAME	715G4788MOA	備註 <備註>
Date	Thursday, February 24, 2011	Sheet	10 of 27	

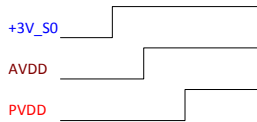
FCH PWR



TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL		HP_PURISIMA_Ellsworth	Size	C
線路圖編號	715G4788M0A	TPV MODEL	Ellsworth		Rev	MOE
Key Component	AMD HUDSON D1 (3/3)	PCB NAME	715G4788M0A			
Date	February 24, 2011	Sheet	11 of 27		備註	<備註>

AUDIO CODEC (ALC269Q)

Power Sequence



close to codec

close to codec

ANALOG

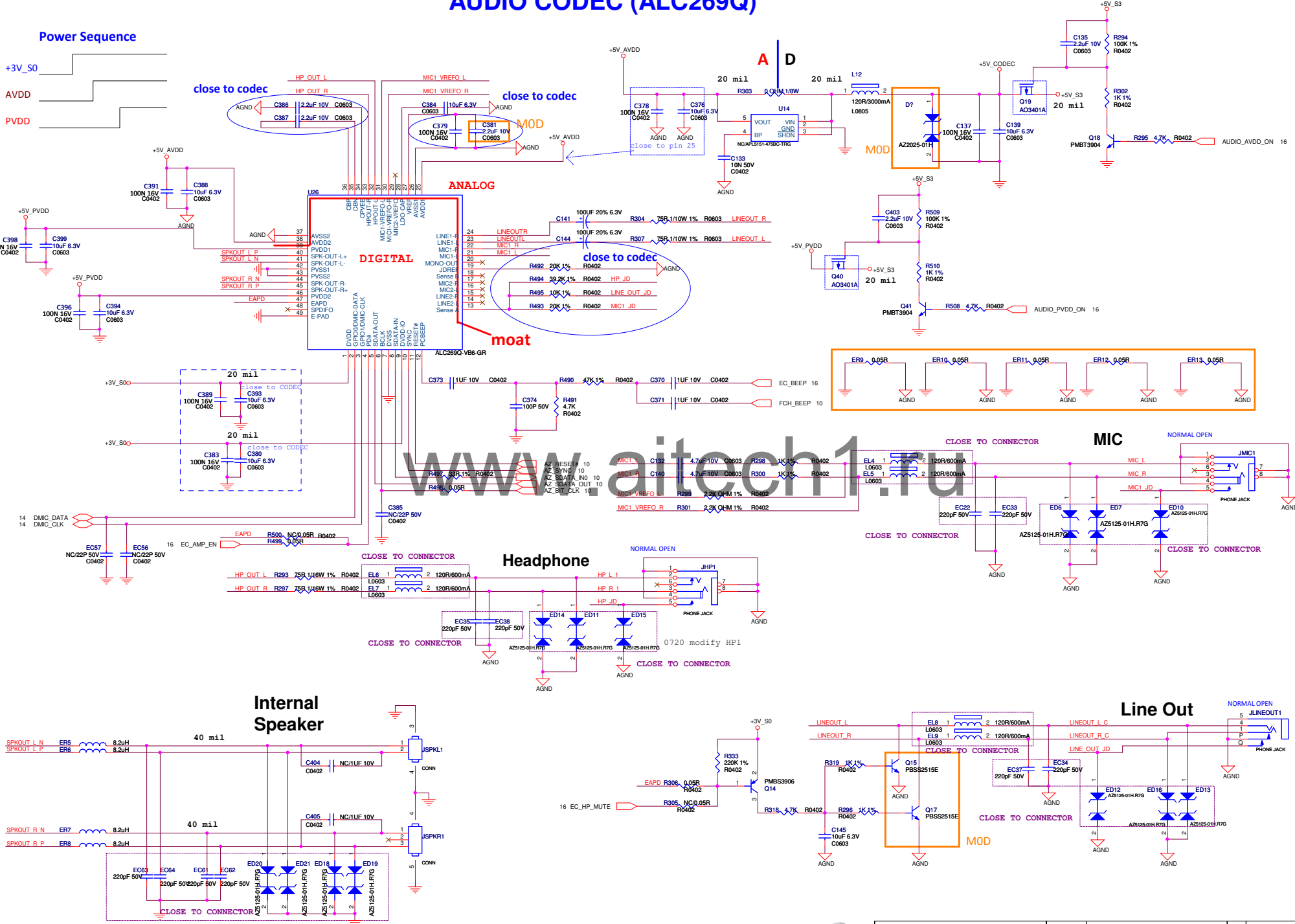
DIGITAL

moat

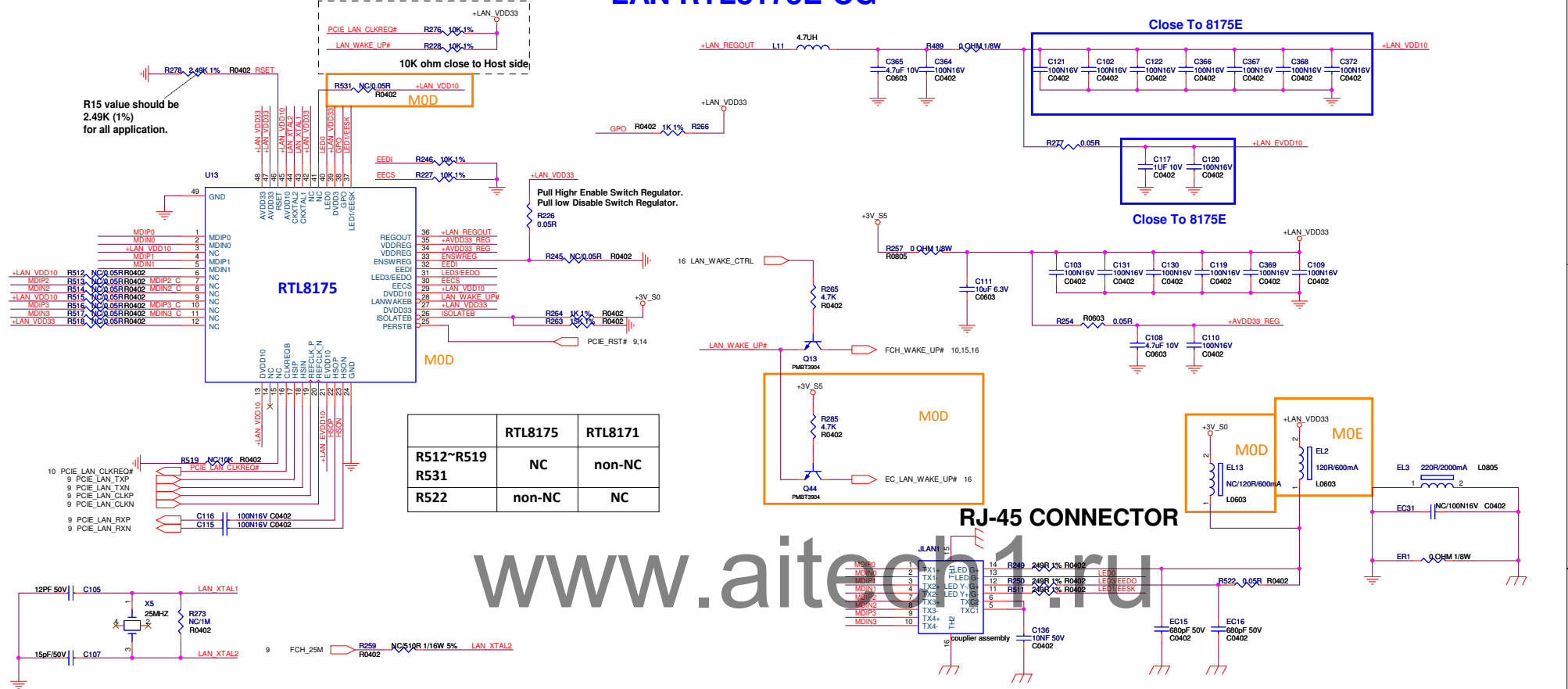
Headphone

Internal Speaker

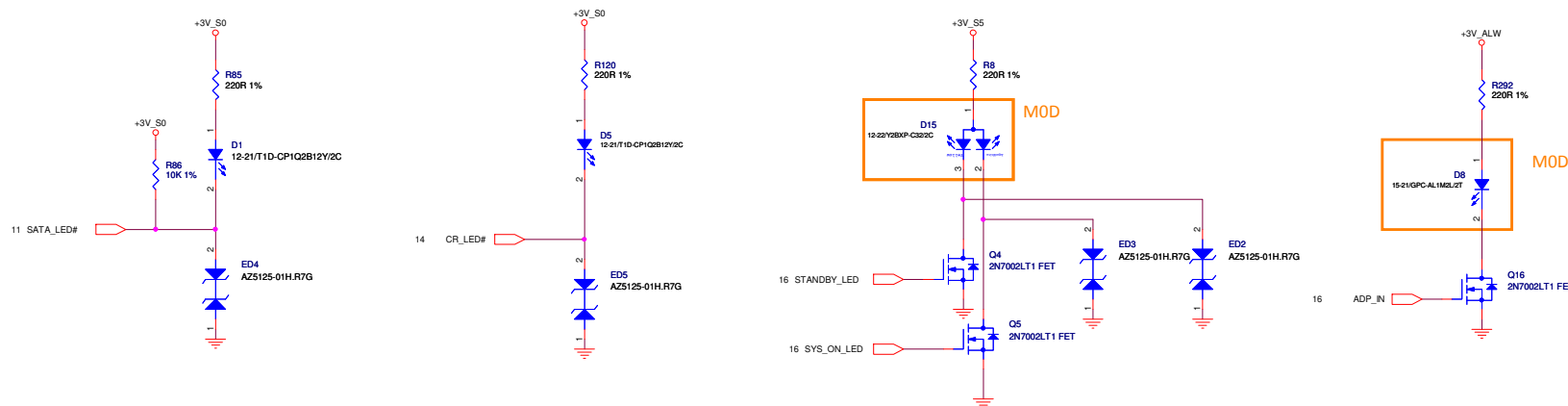
Line Out



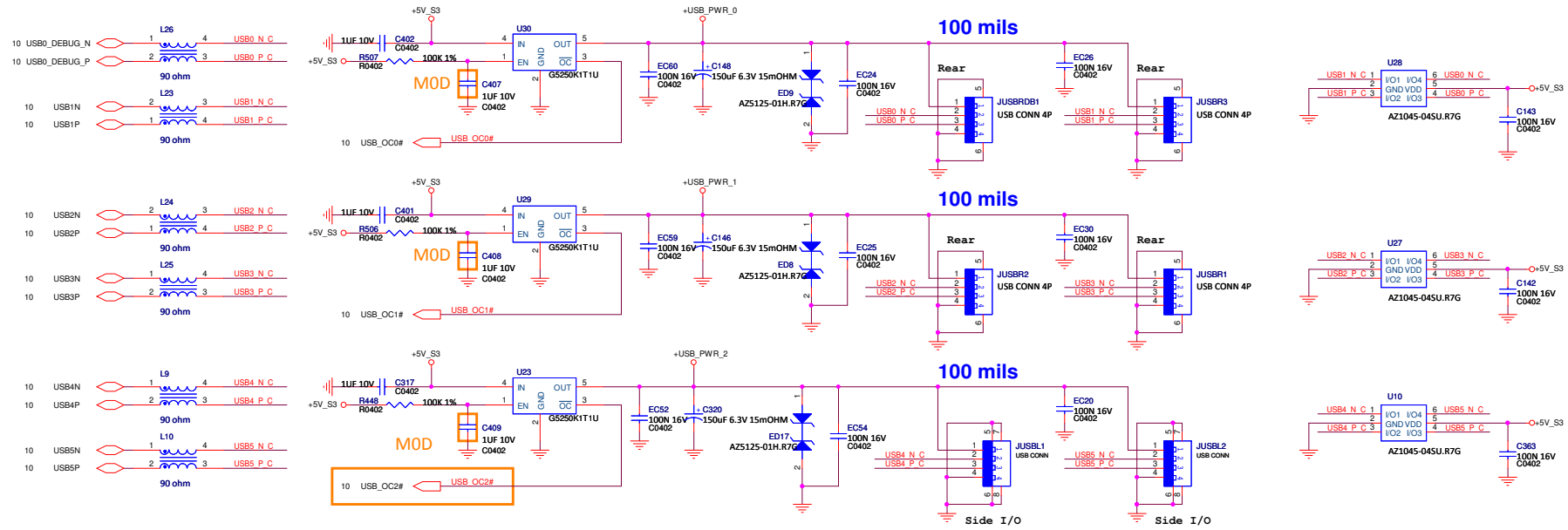
LAN RTL8175E-CG



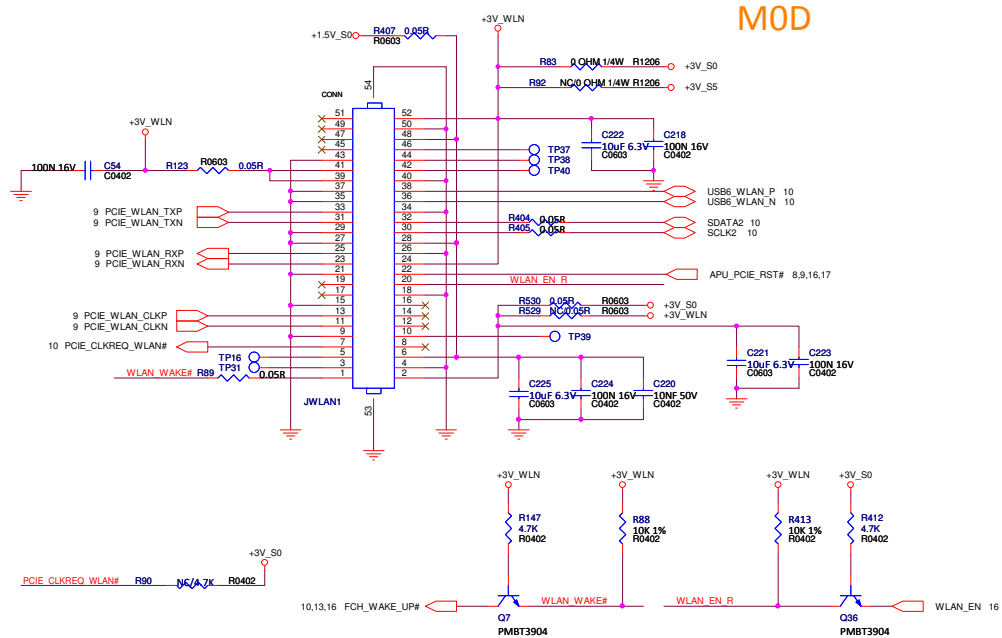
LED



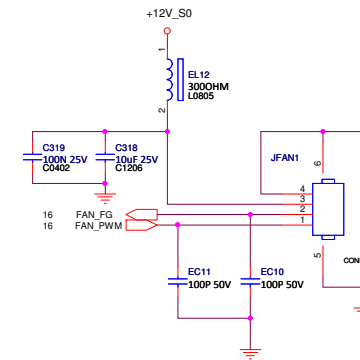
USB 2.0 (Rear/L-Side)



MINI PCI-E WLAN & BT

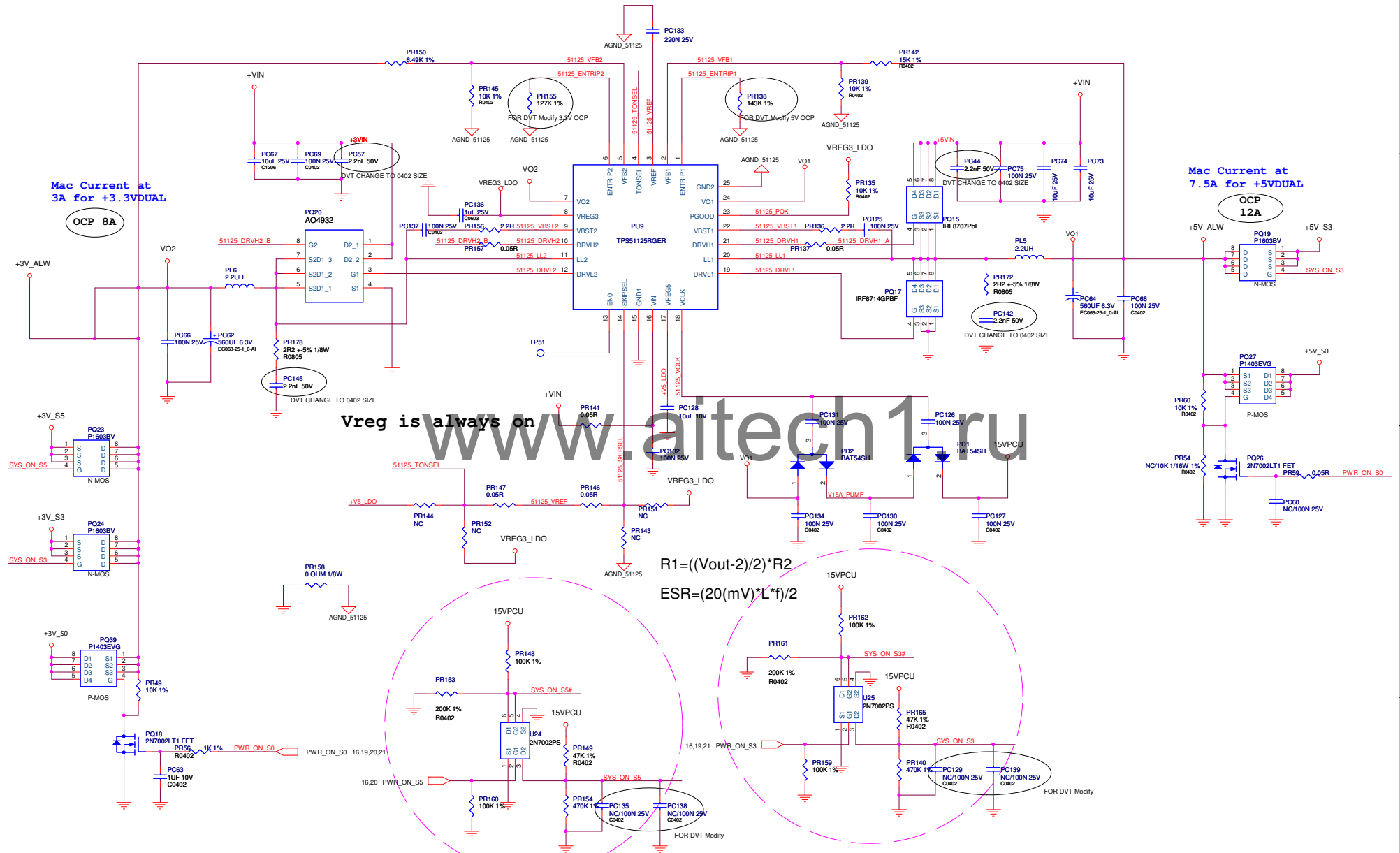


CPU Linear FAN Control



TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	HP, PURISIMA, Ellsworth	Size	C
TPV MODEL	715G4788M0A	Ellsworth	Rev	M0E
PCB NAME	715G4788M0A		備註	<備註>
Date	Thursday, February 24, 2011	Sheet	15 of 27	

SYSTEM +3V_ALW/+3V_S5/+3V_S3/+3V_S0 +5V_ALW/+5V_S3/+5V_S0

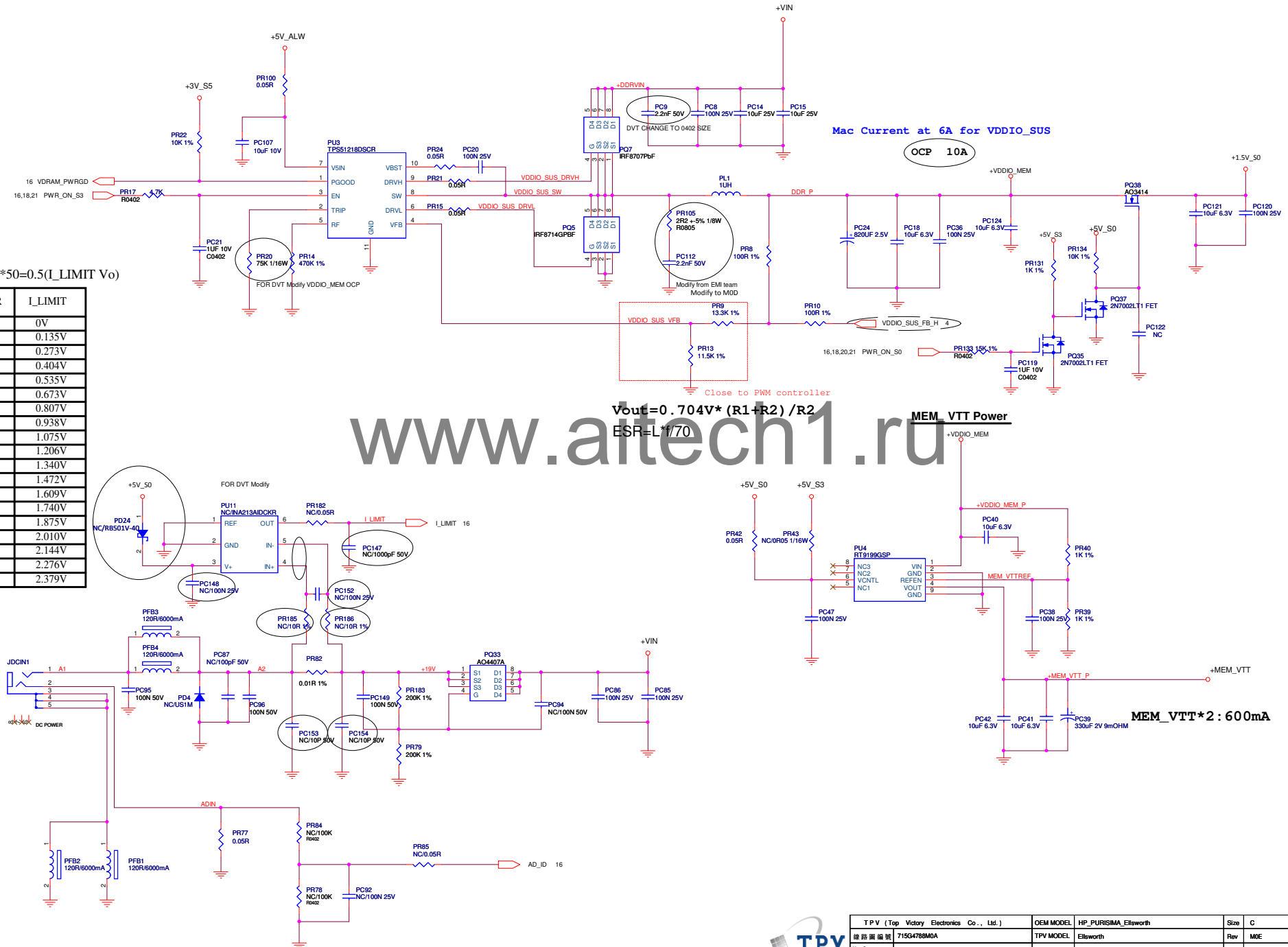


TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	HP_PURISMA_Ellsworth	Size	C
線路圖編號 715G4788M0A	TPV MODEL	Ellsworth	Rev	M0E
Key Component	SYSTEM +3V/+5V	PCB NAME	715G4788M0A	備註 <備註>
Date	Thursday, February 24, 2011	Sheet	18 of 27	

VDDIO_SUS, MEM_VTT, DC-IN

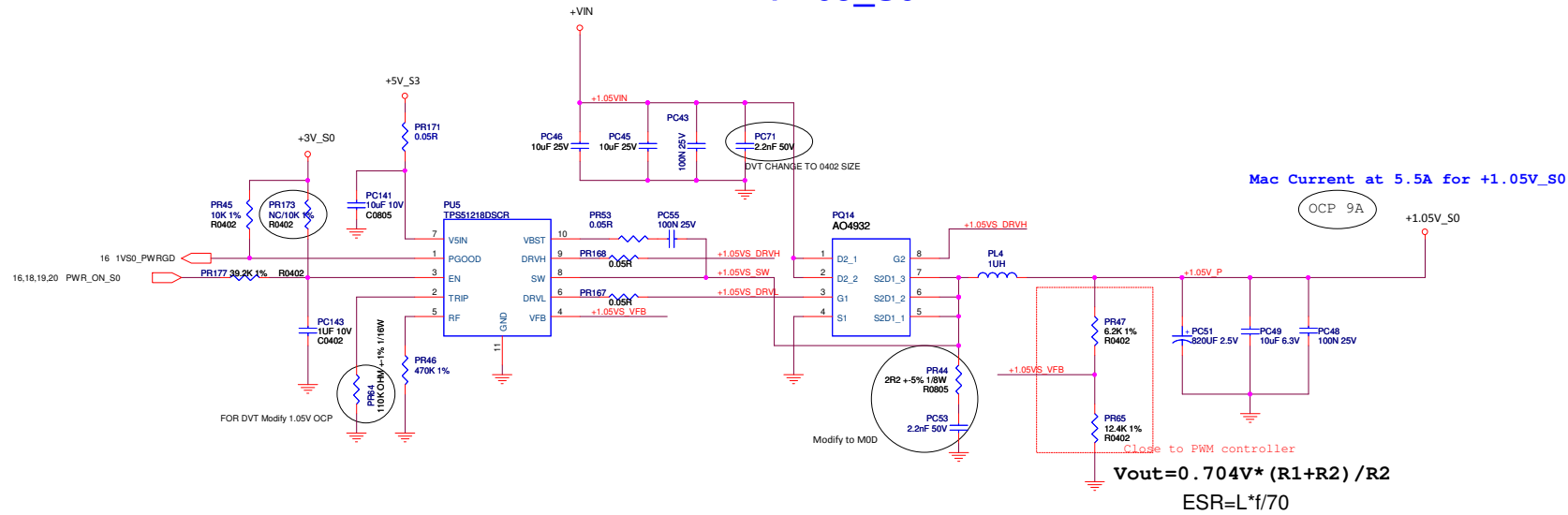
$$1A \cdot 0.01\Omega = 0.01V$$

TOTAL POWER	I_LIMIT
0W	0V
5W	0.135V
10W	0.273V
15W	0.404V
20W	0.535V
25W	0.673V
30W	0.807V
35W	0.938V
40W	1.075V
45W	1.206V
50W	1.340V
55W	1.472V
60W	1.609V
65W	1.740V
70W	1.875V
75W	2.010V
80W	2.144V
85W	2.276V
90W	2.379V



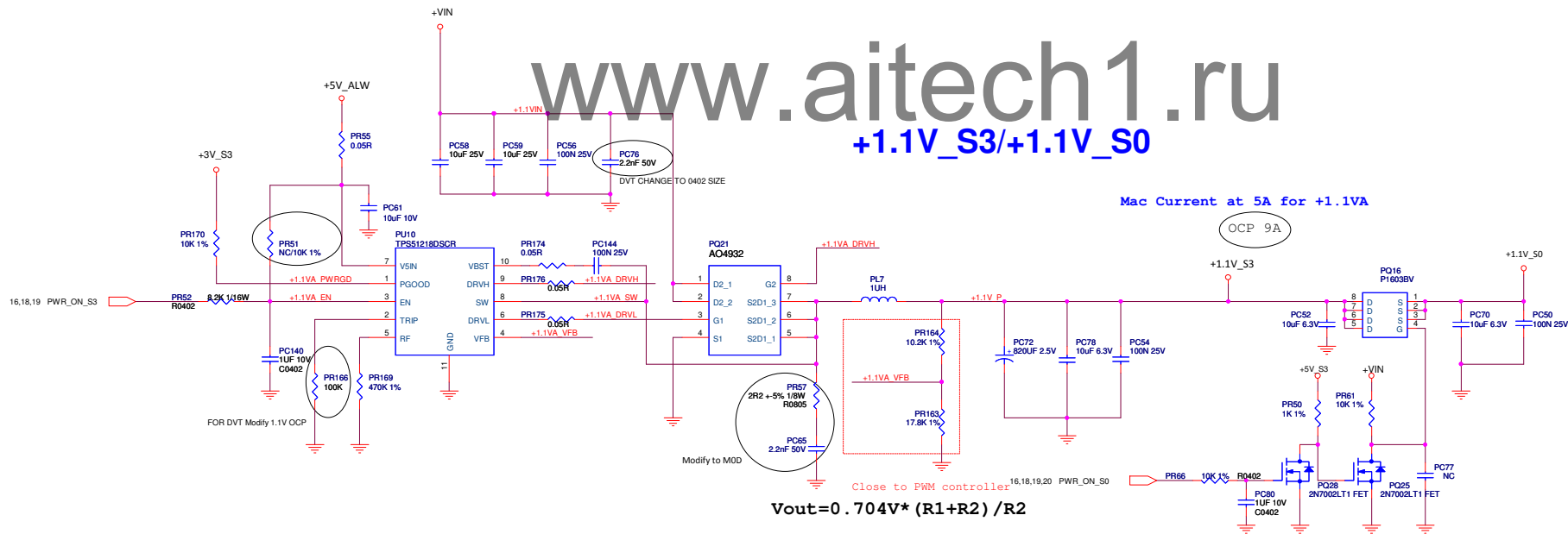
TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	HP_PURISIMA_Ellsworth	Size	C
TPV MODEL	715G4788M0A	Ellsworth	Rev	M0E
Key Component	+VDDIO_MEM/MEM_VTT/DC-IN	715G4788M0A	Sheet	19 of 27
Date	Thursday, February 24, 2011		備註	<備註>

+1.05V_S0



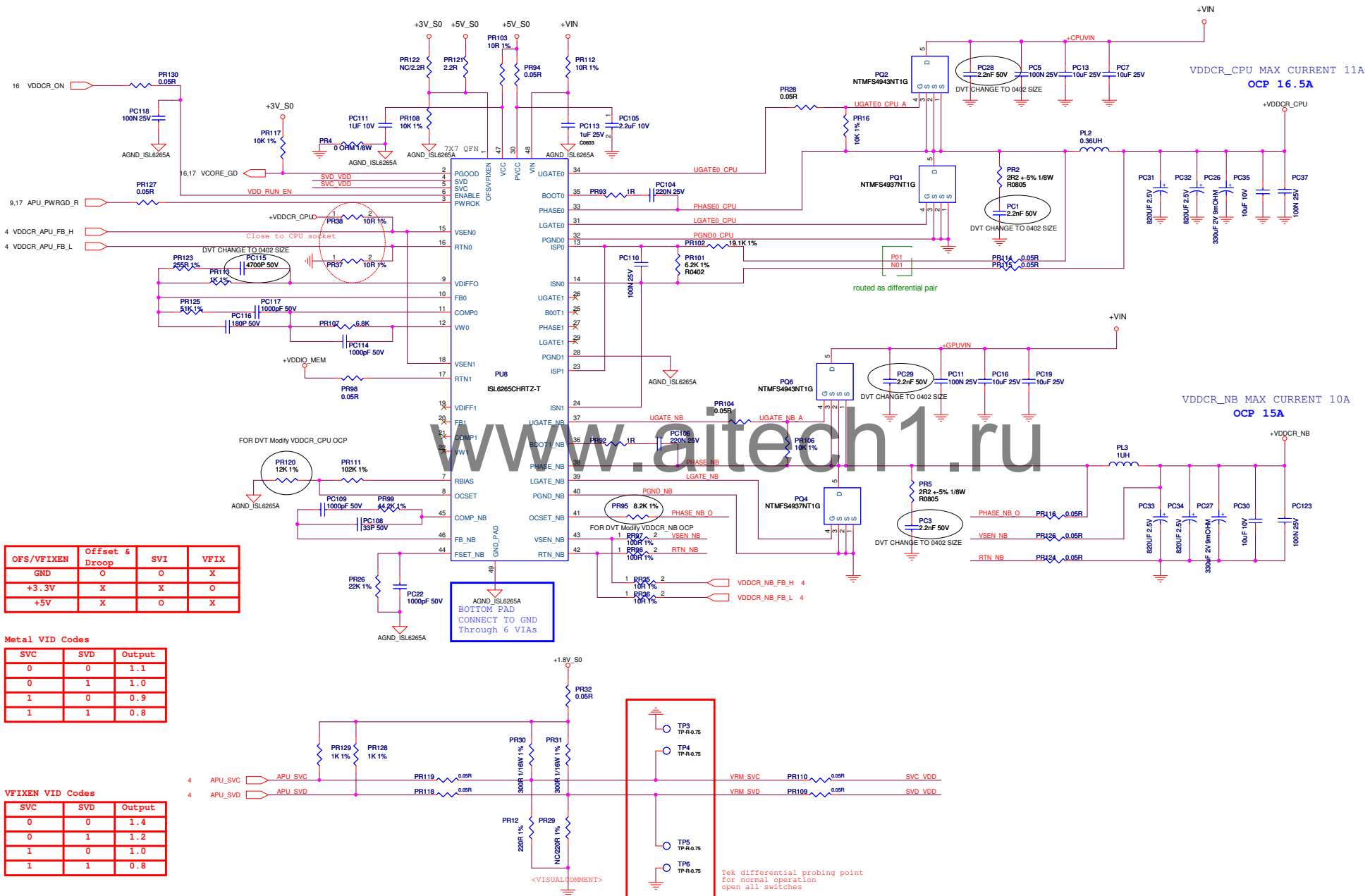
www.aitech1.ru

+1.1V_S3/+1.1V_S0



TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	HP_PURISIMA_Ellsworth	Size	C
線路圖編號	715G4789M0A	TPV MODEL	Ellsworth	Rev
Key Component	+1.1V_S3/+1.05V	PCB NAME	715G4789M0A	M0E
Date	Thursday, February 24, 2011	Sheet	21 of 27	備註 <備註>

VDDCR_CPU & VDDCR_NB



OFS/VFIXEN	Offset & Droop	SVI	VFIX
GND	O	O	X
+3.3V	X	X	O
+5V	X	O	X

SVC	SVD	Output
0	0	1.1
0	1	1.0
1	0	0.9
1	1	0.8

SVC	SVD	Output
0	0	1.4
0	1	1.2
1	0	1.0
1	1	0.8

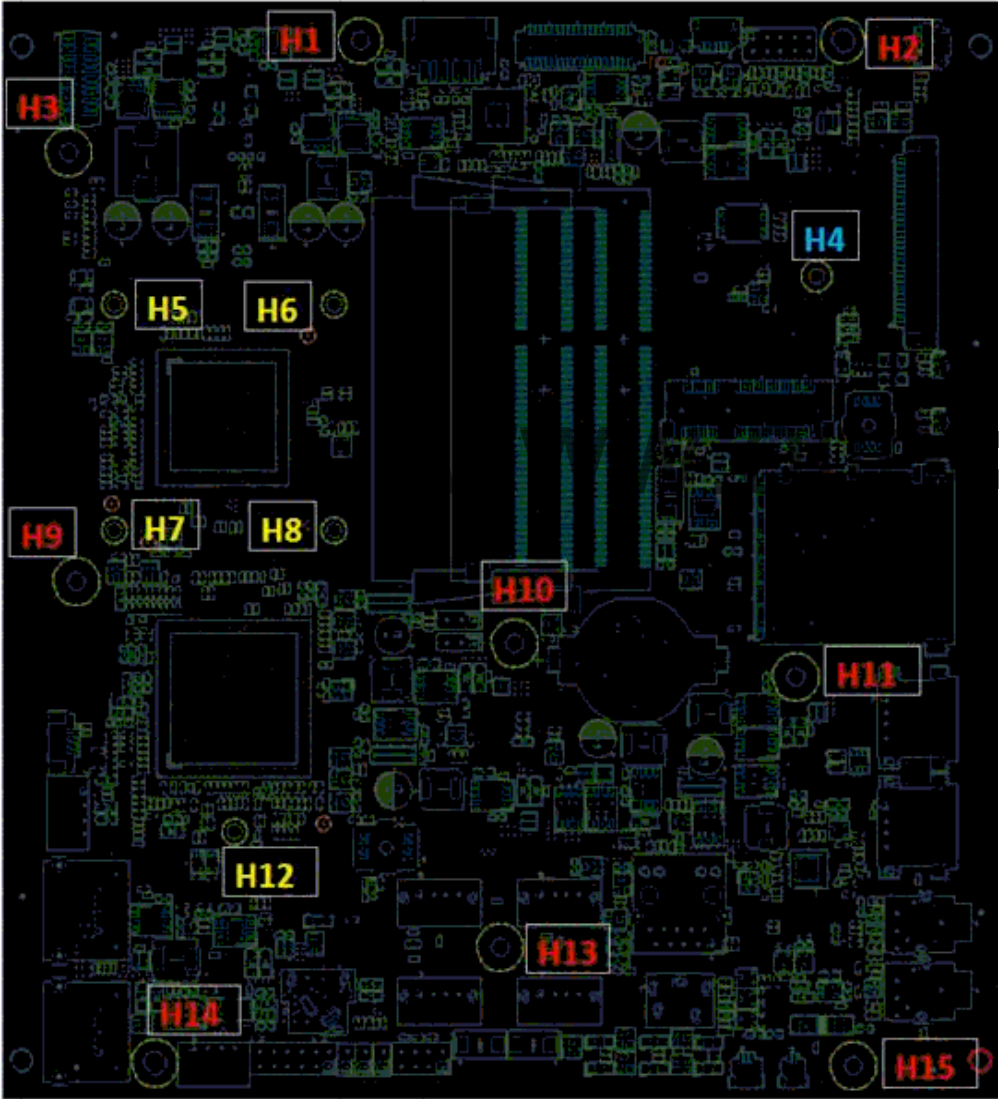
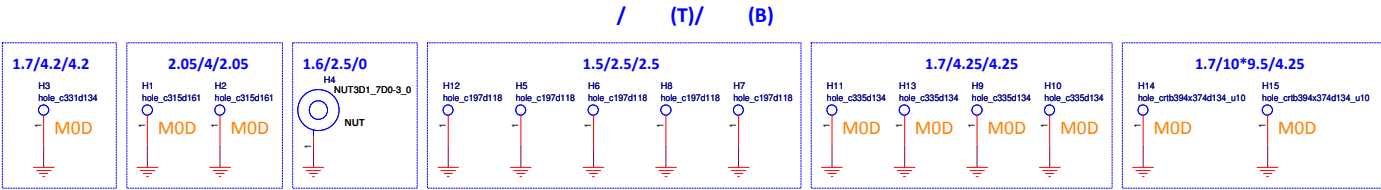
STACK UP 6L

Stack Up								
PCB Stack Up				Impedance				
Layer	Type	Thickness (mil)						
Top side solder mask			1.00 mils		Single end	理論値	differential	理論値
L1	TOP	copper+plating	1.58 mils		4 mils , 50Ω±15% 8 mils , 40Ω ±10% 10 mils , 35Ω ±15%	53.94Ω 38.75Ω 34.22Ω	5/6/5 mils , 85Ω±10% 4/8/4 mils , 100Ω±10% 4/5/4 mils , 90Ω±10% 7/5/7 mils , 72Ω±10%	83.03Ω 97.18Ω 86.49Ω 70.72Ω
		Prepreg	3.50 mils					
L2		copper	1.30 mils					
		core	4.00 mils					
L3	IN1	copper	0.70 mils		4 mils , 50Ω±15% 8.5 mils , 40Ω ±10% 10 mils , 35Ω ±15%	56Ω 39.1Ω 35.68Ω	5/5/5 mils , 85Ω±10% 4/7/4 mils , 100Ω±10% 5/6/5 mils , 90Ω±10% 7.5/5/7.5 mils , 72Ω±10%	84.33Ω 98.09Ω 87.21Ω 70.39Ω
		Prepreg+core	36.00 mils					
L4	IN2	copper	0.70 mils		4 mils , 50Ω±15% 8.5 mils , 40Ω ±10% 10 mils , 35Ω ±15%	56Ω 39.1Ω 35.68Ω	5/5/5 mils , 85Ω±10% 4/7/4 mils , 100Ω±10% 5/6/5 mils , 90Ω±10% 7.5/5/7.5 mils , 72Ω±10%	84.33Ω 98.09Ω 87.21Ω 70.39Ω
		core	4.00 mils					
L5		copper	1.30 mils					
		Prepreg	3.50 mils					
L6	Bottom	copper+plating	1.58 mils		4 mils , 50Ω±15% 8 mils , 40Ω ±10% 10 mils , 35Ω ±15%	53.94Ω 38.75Ω 34.22Ω	5/6/5 mils , 85Ω±10% 4/8/4 mils , 100Ω±10% 4/5/4 mils , 90Ω±10% 7/5/7 mils , 72Ω±10%	83.03Ω 97.18Ω 86.49Ω 70.72Ω
Bottom side solder mask			1.00 mils					
TOTAL			60.16 mils					
			1.53 mm					



TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	HP_PURISIMA_Elleworth	Size	C
線路圖編號 715G4788M0A	TPV MODEL	Elleworth	Rev	M0E
Key Component STACK UP 6L	PCB NAME	715G4788M0A	備註 <備註>	
Date Thursday, February 24, 2011	Sheet	23 of 27		

SCREW HOLE PLACEMENT



PCB SILK SCREEN

PCB color codes:
EVT (Red); Silkscreen (White)
DVT (Blue); Silkscreen (White)
PVT (Gold); Silkscreen (White)
Production (Green); Silkscreen (White)

- HW_PWRGD --> D713,G (PS_ON#)
- VCORE_GD --> D721,G (VRM_PWRGD)
- FCH_PWRGD --> D715,G (POWERGOOD_140MS)
- AUX_POWER --> D720,G
- SLP_S3 --> D716,G
- SLP_S5 --> D717,G
- AMD HDT --> JHDT1
- LPC HEADER --> JLPADB1
- ROM Recovery --> JHPDB5
- BBW_EN --> JHPDB4
- USB WinDbg --> JUSBRDB1
- DIMM0 --> JDDR52
- DIMM1 --> JDDR92

T&I PCB Version = 0A , 0B , 0C.....
MP = M01 , M02.....

<Variant Name>

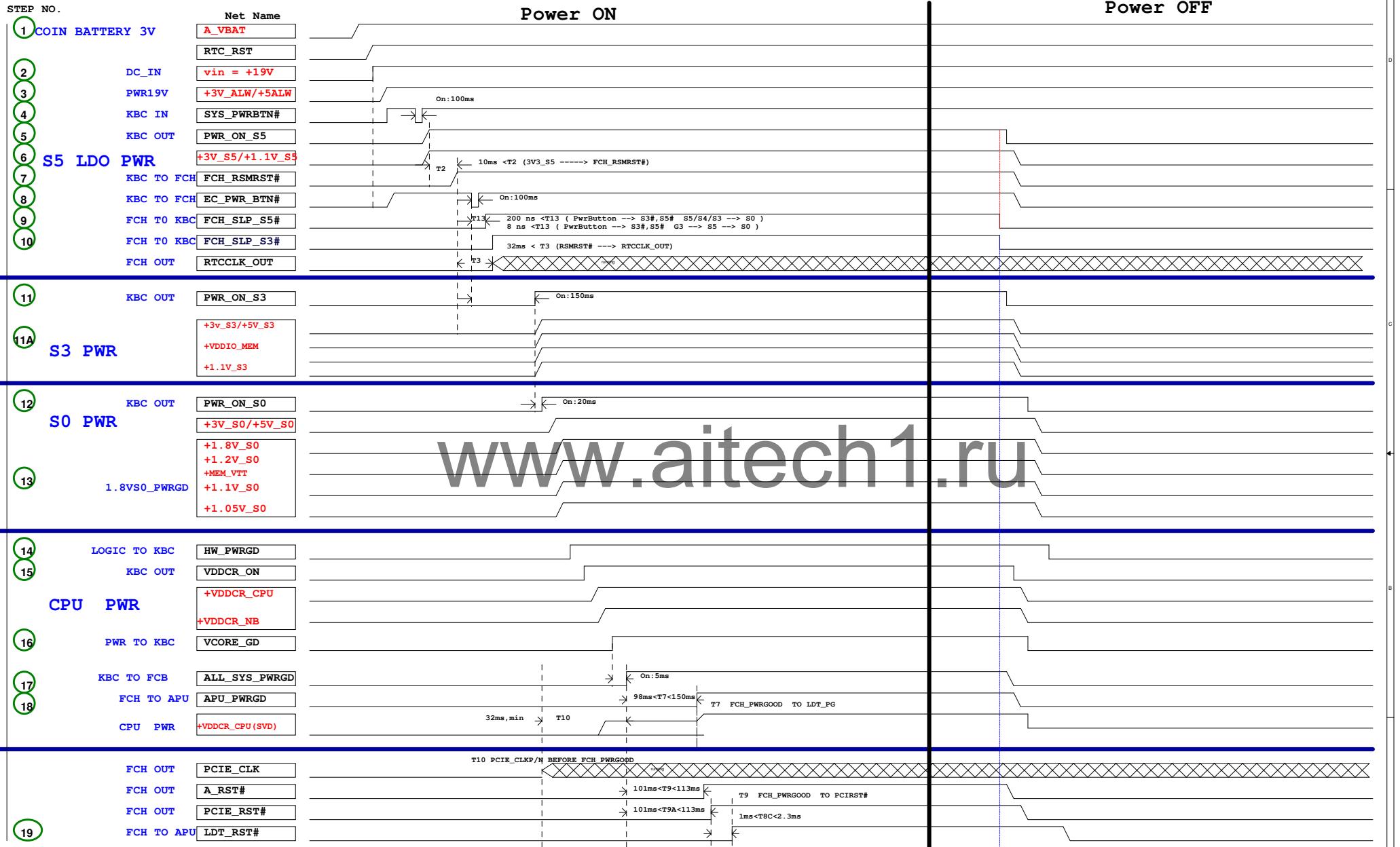


TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	HP_PURISIMA_Ellsworth	Size	C
線路圖編號 715G4788M0A	TPV MODEL	Ellsworth	Rev	M0E
Key Component	PCB NAME	715G4788M0A	備註 <備註>	
Date	Thursday, February 24, 2011	Sheet 24 of 27		



T P V (Top Victory Electronics Co., Ltd.)		OEM MODEL	HP_PURISIMA_Ellsworth	Size	C
線路圖編號		TPV MODEL	Ellsworth	Rev	MOE
Key Component	Power Sequence Diagram	PCB NAME	715G4788MOA	備註	<備註>
Date	Thursday, February 24, 2011	Sheet	25 of 27		

POWER SEQUENCE



TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	HP_PURISIMA_Ellsworth	Size	C
線路圖編號 715G4788M0A	TPV MODEL	Ellsworth	Rev	M0E
Key Component	POWER SEQUENCE	PCB NAME	715G4788M0A	備註 <備註>
Date	Thursday, February 24, 2011	Sheet	26 of 27	

Schematic Modify History

M0A --> M0B Modify date 2010/11/24~2010/11/25
(2010/11/26 gerber out for EVT)

- 1. Add R511~R519 , R522 for co-design RTL8105E and RTL8111E.
- 2. Modify SATA pin define because of HDD location reversefor ME concern.

M0B --> M0D Modify date 2010/12/29~2011/01/27
(2011/01/28 gerber out for DVT)

- 1. Remove EL1, webcam power connect to +5V_S0 and NC +3V_S0, only change BOM.
- 2. Add EL13, for LAN RJ45 LED behavior
- 3. Remove R437, For cardreader LED can't bright when insert card.
- 4. Remove EC7 EC8, For MS card no function, EMI cap is too large.
- 5. Remove C178 C173 X6, Add R367, foe reduce components X'tal of 32.768kHz to utilize EC internal clock.
- 6. Modify MINI PCI-e circuit, for meet PCI-e 1.0/1.1/2.0 and WLAN module request
- 7. Change R218 R219 R220 R231 R465 R482 R483 R485 USB OC pins pull high plane from +3V_S3 to +3V_S5.
- 8. USB OC pin of U23 change control signal to USB_OC2#.
- 9. ADD R158 R214, Add SM bus pull high resistors for SPD rom of DDR3.
- 10. Add EL13, For fix LAN LED status Matrix.
- 11.Change C381 from 10uf to 2.2uf, for internal speaker pop sound.
- 12. Change EC27 EC28 EC32 EC36 EC58 from 0.1uF to 0ohm, for HP pop sound
- 13. Remove R233, for avoid leak to +3V_S0
- 14. FAN_FG appear repeatedly, Close to the IC side changed its name to FAN_FG_EC
- 15. FAN_FG pull high for read the fan speed information
- 16. Modify CPU thermal SMBus(SID,SIC) path, From FCH side change to EC side
- 17. Add PQ40 PR184 for +5V_S3 discharge
- 18. Add R137 R539 Q43, Prevent Hudson leak to Zacate
- 19. Add PF1, for safety request
- 20. Add R321 R322 R325 R326 R327 R331 R334 R541 Q26 Q27 Q45 Q46 for ensure the stability of the panel when the power is turn on
- 21. Add R523~R528 for EDID ROM SMBus address
- 22. Add Q23 R351 R540, for EC to Hudson voltage two step issue
- 23. Remove R247, for APU_PCIE_RST# two step issue
- 24. Remove R164, Prevent Hudson leak to +3V_S0 power plane
- 25. Add R349, reserve Hudson SYS_RESET# external pull up.
- 26. Add R320 R323 R333 R368 R496 R501 R502 Q20 Q21 Q23 Q24 Q25, for reduce speaker pop sound
- 27. Change C105 from 10pF to 12pF, Change C107 from 10pF to 15pF, for LAN IC clock accuracy
- 28. Change C125 from 12pF to 10pF, change C123 from 12pF ro 8.2pF, for RTC accuracy
- 29. Remove R113 R114, Add R117 R118, Prevent Hudson leak to Zacate
- 30. Add R531, for co-design RTL8171 LAN controller
- 31. Modify RTL8175 wake up event circuit
- 32. Change D15, for HP power status LED color request
- 33. Add F1, for safety request
- 34. Add C407~C409, for USB power ramp issue
- 35. Add Q44 R285 and EC_LAN_WAKE_UP# signal, reserve wake on LAN path for EC request
- 36. NC EL11,Add EL14 and modify WEBCAM module pin define, for fix WEBCAM module request

PVT & MP de-pop circuit

page 16 for EC debug connector
JECDB1

page 17 for HP debug
JLPCDB1,R310,JHPDB5,C147,U31,Q22,D9~D14,R312~R317

page 17 for AMD debug
U5,R53,R56,R77,R80

page 17 for Tnl HW debug (CRT output function)
C3,C4,C7,C14,C15,C16,C21,C22,D22,D23,JCRTDB1
L1,L2,L3,Q1,Q2,R1,R2,R3,R4,R5,R6,R10,R11,R14
R15,R25,R26,R28,R29,R30,R32,R36,R37,U1,U2

www.aitech1.ru



TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL	HP_PURISIMA_Ellsworth	Size	C
線路圖編號 715G4788M0A		TPV MODEL	Ellsworth	Rev	M0E
Key Component	HISTORY	PCB NAME	715G4788M0A	備註 <備註>	
Date	Thursday, February 24, 2011	Sheet	27 of 27		