

Kome-1 WS Block Diagram

Project Code: 91.4LO01.001

PCB(Raw Card): 12291-1

2013 Sep. '12

PCB Layer Stackup

L1:TOP
L2:Signal 1
L3:GND
L4:Signal 2
L5:GND
L6:VCC
L7:Signal 3
L8:GND
L9:Signal4
L10:BOTTOM

Battery Charger

BQ24760RSBR PGL1 63

INPUTS OUTPUTS

DOCK_PWR20_F M-BAT-PWR

S-BAT-PWR

System DC/DC

TPS51220ARSNR 66

VINT20 VCC5M

VCC3M

CPU DC/DC

M: TPS51631RSMR 68

S: CSD97374Q4M 69

VINT20 VCCCPUCORE

GFXCORE_D

NCP81172MNTXG PC2.2 74

VINT20 VCCGFXCORE

VCCIR35VIDEO

VT384BFCX-ADJ-001 73

VCC5M VCCIR35VIDEO

VCCIR35A/DDR3_VREF

VCC0R675B 72

VT388BFCX-ADJ

VCC5M VCCIR35A

VCCIR5B

BD3551HFN-GTR 71

VCC5M VCCIR5B

VCCIR05AMT

VT384BFCX-ADJ-001 70

VCC5M VCCIR05AMT

VCCIR05VIDEO

VT382BFCX-ADJ-001 95

VCC5M VCCIR05VIDEO

VCCIR05VIDEO

VT382BFCX-ADJ-001 95

VCC5M VCCIR05VIDEO

VCCIR05VIDEO

VT382BFCX-ADJ-001 95

VCC5M VCCIR05VIDEO

VCCIR05VIDEO

VT382BFCX-ADJ-001 95

VCC5M VCCIR05VIDEO

VCCIR05VIDEO

VT382BFCX-ADJ-001 95

VCC5M VCCIR05VIDEO

<Variant Name>

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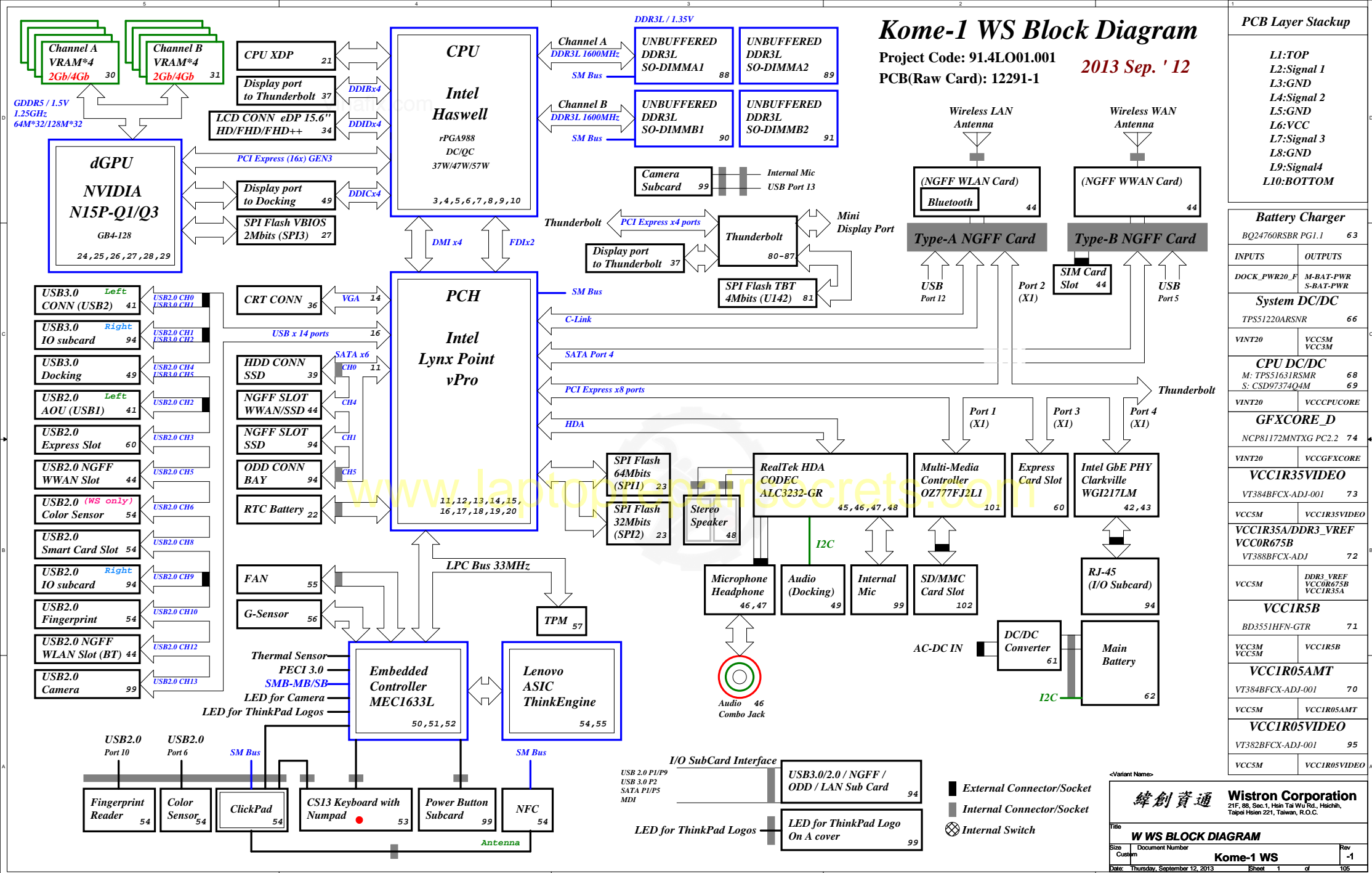
Wistron Corporation
21F, 88, Sec. 1, Hsin Tai Wu Rd., Heichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title
Size Custom Document Number
Date: Thursday, September 12, 2013 Sheet 1 of 105

W WS BLOCK DIAGRAM

Kome-1 WS

Rev -1



Symbol name	Value	Tolerance (J: 5%, F: 1%, D: 0.5%, B: 0.1 %)	Rating 0402=> 1/16W, 25V 0603 => 1/16W, 75V 0805 => 1/10W, 100V	Size 2=>0402, 3=>0603, 5=>0805, 6=>1206, 0=>1210
10KR3	10K Ohm	If no letter, it means J: 5%	1/16W, 75V	0603
33D3R5	33.3 Ohm	If no letter, it means J: 5%	1/10W, 100V	0805
1KR3F	1K Ohm	F: 1%	1/16W, 75V	0603

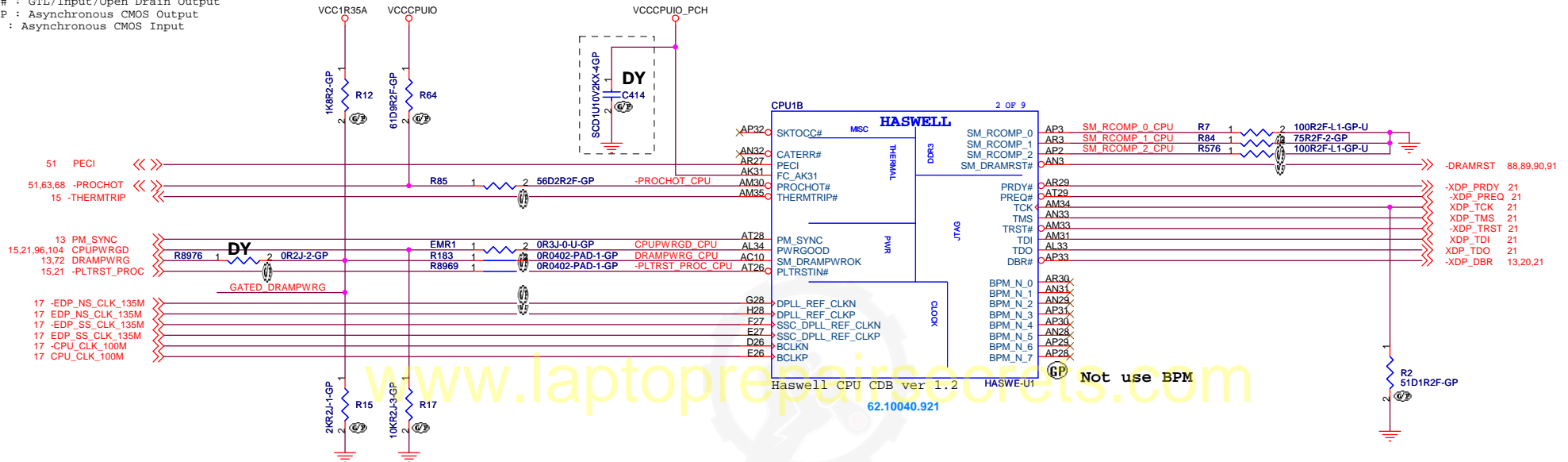
Symbol name	Value	Tolerance (B: +/-0.1p, C: +/-0.25p, D: +/-0.5p) (K: +/-10%, M: +/-20%, Z: +80/-20%)	Rating	Size 2=>0402, 3=>0603, 5=>0805, 6=>1206, 0=>1210
SCD1U10V2MX-1	0.1uF	M/X5R	10V	0402
SC10U6D3V5MX	10uF	M/X5R	6.3V	0805
SC2D2U16V5ZY	2.2uF	Z/Y5V	16V	0805

PCH GPIO _n	39	38	49	48	Planar ID Version	Planar PCB Version
PLANAR_ID _n	3	2	1	0		
	0	0	0	0	SDV on 1/18	SA
	0	0	1	0	ME-FVT on 3/14	SB
	0	0	1	1	FVT on 4/11	SC
	0	0	1	1	ME-SIT on 5/24	SC
	0	1	0	0	SIT on 6/10	SD
	0	1	0	1	SIT-R on 7/22	SE
	0	1	1	0	SVT on 8/12	-1

[illegible]

This Project does not have dual layout function to support next platform, So THERMTRIP# signal does not need to have external pullup as NO ASM.

PECI : Asynchronous Bidirectional
 PROCHOT# : GTL/Input/Open Drain Output
 THERMTRIP : Asynchronous CMOS Output
 PM_SYNC : Asynchronous CMOS Input



PECI has internal Pull Up to VCCIO_OUT with 15~45ohm.

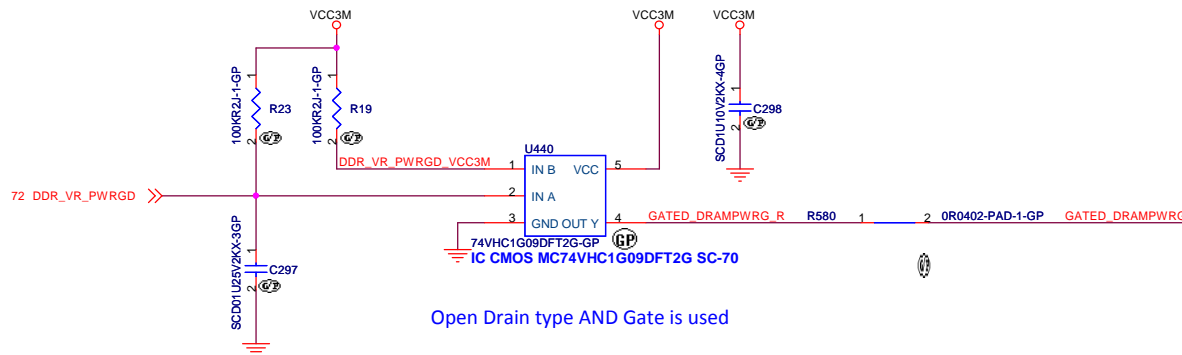
If Catastrophic Error (CATERR#) function is not required, This pin is left.

If Socket Occupied (SKTOCC#) function is not required, this pin is left.

TMS and TDI has internal Pull Up to VCCIO_TERM with 30~70ohm.

PREQ# has internal Pull Up to VCCIO_OUT with 40~60ohm.

BPM[7:0] has internal Pull UP to VCCIO_OUT with 40~60ohm.



<Variant Name>

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Title Haswell MISC/CLK/JTAG (2/8)		
Size A3	Document Number Kome-1 WS	Rev -1
Date: Thursday, September 12, 2013	Sheet 4	of 105

90,91 M_B_DQ[63:0] << >>

M_B_DQ0
M_B_DQ1
M_B_DQ2
M_B_DQ3
M_B_DQ4
M_B_DQ5
M_B_DQ6
M_B_DQ7
M_B_DQ8
M_B_DQ9
M_B_DQ10
M_B_DQ11
M_B_DQ12
M_B_DQ13
M_B_DQ14
M_B_DQ15
M_B_DQ16
M_B_DQ17
M_B_DQ18
M_B_DQ19
M_B_DQ20
M_B_DQ21
M_B_DQ22
M_B_DQ23
M_B_DQ24
M_B_DQ25
M_B_DQ26
M_B_DQ27
M_B_DQ28
M_B_DQ29
M_B_DQ30
M_B_DQ31
M_B_DQ32
M_B_DQ33
M_B_DQ34
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M_B_DQ47
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M_B_DQ50
M_B_DQ51
M_B_DQ52
M_B_DQ53
M_B_DQ54
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M_B_DQ56
M_B_DQ57
M_B_DQ58
M_B_DQ59
M_B_DQ60
M_B_DQ61
M_B_DQ62
M_B_DQ63

AR18
AT18
AM17
AM18
AR17
AT17
AN17
AN18
AT12
AR12
AN12
AM11
AT11
AR11
AM12
AN11
AR5
AR6
AM5
AM6
AT5
AT6
AN5
AN6
AJ4
AK4
AJ1
AJ2
AM1
AN1
AK2
AK1
L2
M2
L4
M4
L1
M1
L5
M5
G7
J8
G8
G9
J7
J8
G10
J10
A8
B8
A9
B9
D8
E8
D9
E9
F15
D15
A15
B15
E14
D14
A14
B14

HASWELL

SB_DQ_0
SB_DQ_1
SB_DQ_2
SB_DQ_3
SB_DQ_4
SB_DQ_5
SB_DQ_6
SB_DQ_7
SB_DQ_8
SB_DQ_9
SB_DQ_10
SB_DQ_11
SB_DQ_12
SB_DQ_13
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SB_DQ_58
SB_DQ_59
SB_DQ_60
SB_DQ_61
SB_DQ_62
SB_DQ_63

CPUID

RSVD#AG8
SB_CKN0
SB_CK0
SB_CKE_0
SB_CKN1
SB_CK1
SB_CKE_1
SB_CKN2
SB_CK2
SB_CKE_2
SB_CKN3
SB_CK3
SB_CKE_3
SB_CS_N_0
SB_CS_N_1
SB_CS_N_2
SB_CS_N_3
SB_ODT_0
SB_ODT_1
SB_ODT_2
SB_ODT_3
SB_BS_0
SB_BS_1
SB_BS_2
VSS
SB_RAS#
SB_WE#
SB_CAS#
SB_MA_0
SB_MA_1
SB_MA_2
SB_MA_3
SB_MA_4
SB_MA_5
SB_MA_6
SB_MA_7
SB_MA_8
SB_MA_9
SB_MA_10
SB_MA_11
SB_MA_12
SB_MA_13
SB_MA_14
SB_MA_15
SB_DQS_N_0
SB_DQS_N_1
SB_DQS_N_2
SB_DQS_N_3
SB_DQS_N_4
SB_DQS_N_5
SB_DQS_N_6
SB_DQS_N_7
SB_DQS_P_0
SB_DQS_P_1
SB_DQS_P_2
SB_DQS_P_3
SB_DQS_P_4
SB_DQS_P_5
SB_DQS_P_6
SB_DQS_P_7

AG8
Y4
AA4
AF10
Y3
AA3
AG10
Y2
AA2
AG9
Y1
AA1
AF9
P4
R2
P3
P1
R4
R3
R1
P2
R7
P6
AA9
R10
R6
P6
P7
R8
Y5
Y10
AA5
Y7
AA6
Y6
AA7
Y8
AA10
R9
Y9
AF7
P9
AA8
AG7
AP18
AP11
AP5
AJ3
L3
H9
C4
C14
AP17
AP12
AP6
AK3
M3
H8
C9
C15

M_B_A0
M_B_A1
M_B_A2
M_B_A3
M_B_A4
M_B_A5
M_B_A6
M_B_A7
M_B_A8
M_B_A9
M_B_A10
M_B_A11
M_B_A12
M_B_A13
M_B_A14
M_B_A15

-M_B_DDRCLK0_800M 90
M_B_DDRCLK0_800M 90
M_B_CKE0 90
-M_B_DDRCLK1_800M 90
M_B_DDRCLK1_800M 90
M_B_CKE1 90
-M_B_DDRCLK2_800M 91
M_B_DDRCLK2_800M 91
M_B_CKE2 91
-M_B_DDRCLK3_800M 91
M_B_DDRCLK3_800M 91
M_B_CKE3 91

-M_B_CS0 90
-M_B_CS1 90
-M_B_CS2 91
-M_B_CS3 91
M_B_ODT0 90
M_B_ODT1 90
M_B_ODT2 91
M_B_ODT3 91
M_B_BS0 90,91
M_B_BS1 90,91
M_B_BS2 90,91

-M_B_RAS 90,91
-M_B_WE 90,91
-M_B_CAS 90,91

<< >> M_B_A[15:0] 90,91

<< >> -M_B_DQS[7:0] 90,91

<< >> M_B_DQS[7:0] 90,91

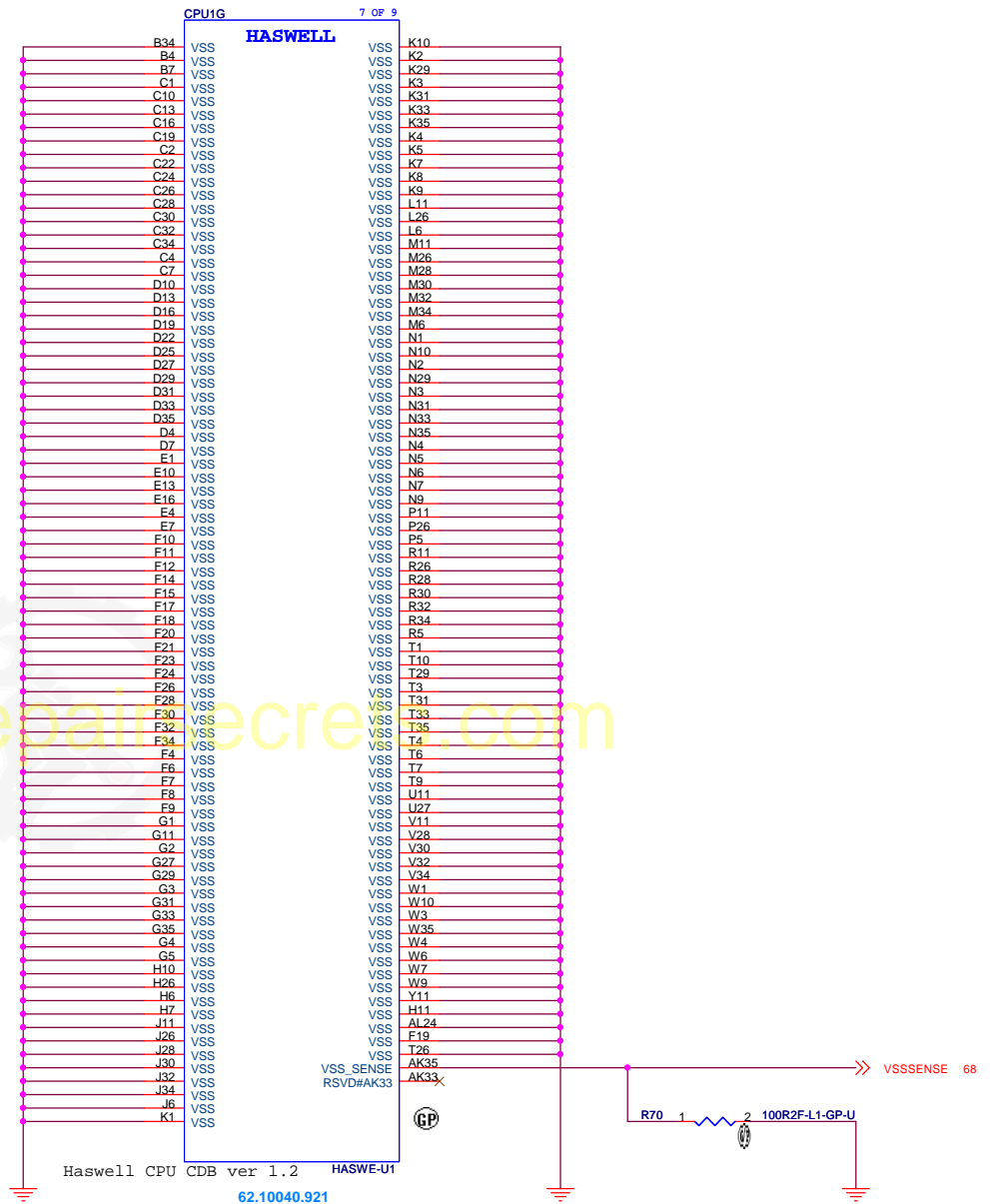
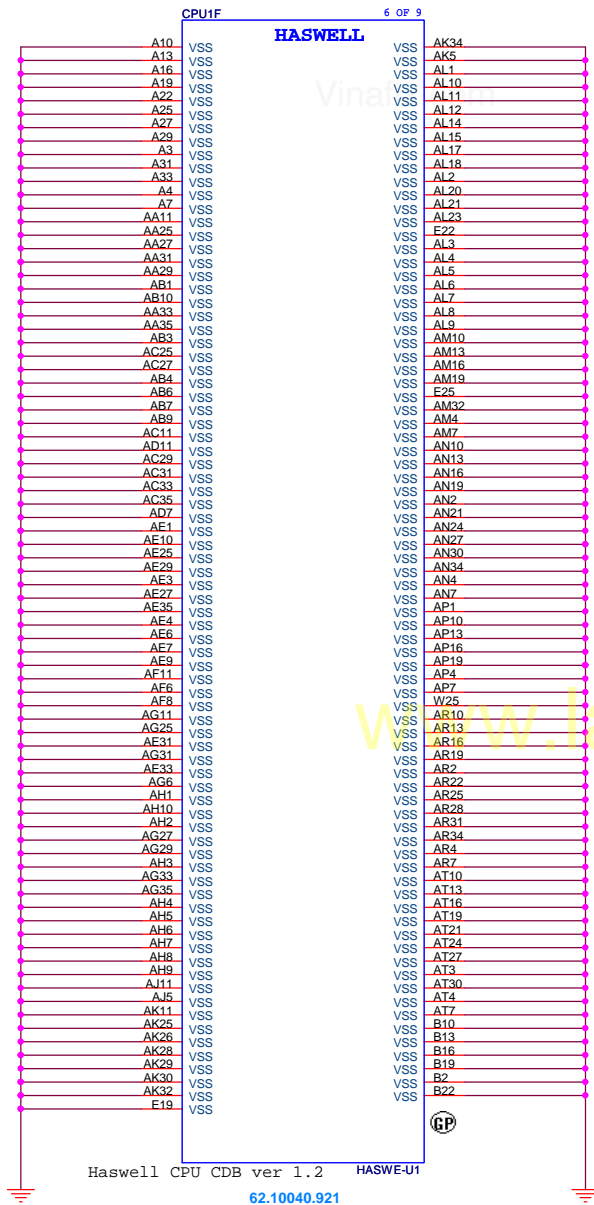
Haswell CPU CDB ver 1.2 HASWE-UT
62.10040.921

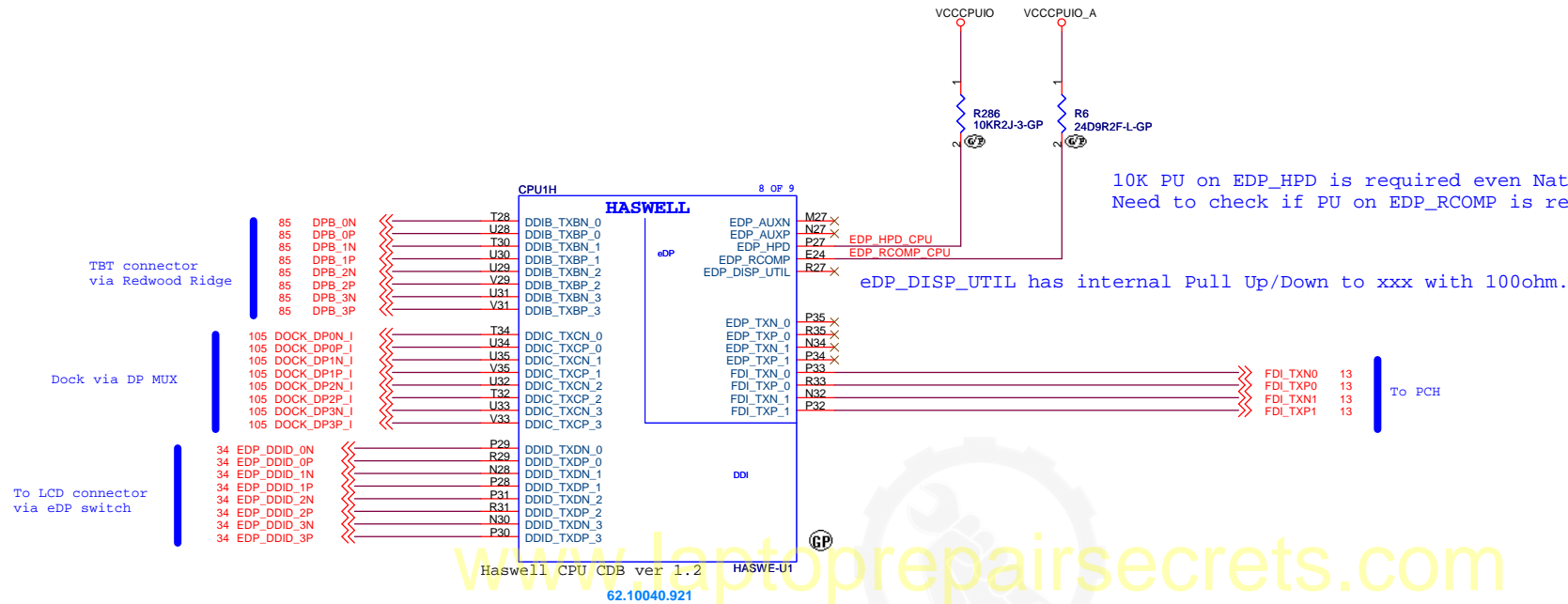
<Variant Name>

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Title Haswell DDR3L CH-B 2DIMM Per Channel (4/8)		
Size A3	Document Number Kome-1 WS	Rev -1
Date: Thursday, September 12, 2013 Sheet 6 of 105		





<Variant Name>

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Title

Haswell EDP/DDI (7/8)Size
A3

Document Number

Kome-1 WS

Rev

-1

Date: Thursday, September 12, 2013

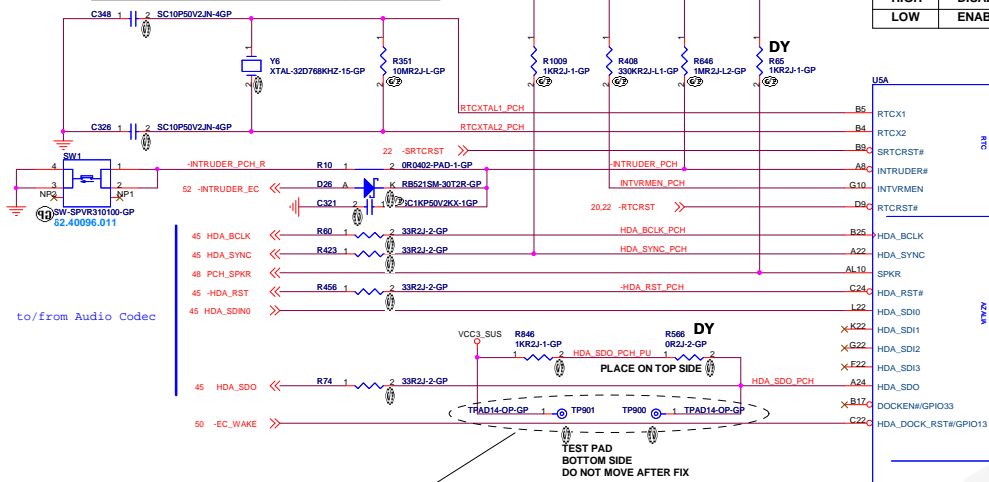
Sheet 9 of 105

Near SW CONN: SW1 (p.011)

For Clock Generator (XGEN1)

103 PCH_EC_32K_OSC_OUT >>> R142 1 DY 0R2J-2-GP RTCXATL1_PCH

Crystal 32.768KHz 9pF 20ppm			
KDS	DST3105	1TJF090DP1A100T	82.30001.C21
TXC	9H T10	9H03200033	82.30001.F31
EPSON	FC-135	FC-135-32.7680KA-9PF	82.30001.C01



to/from Audio Codec

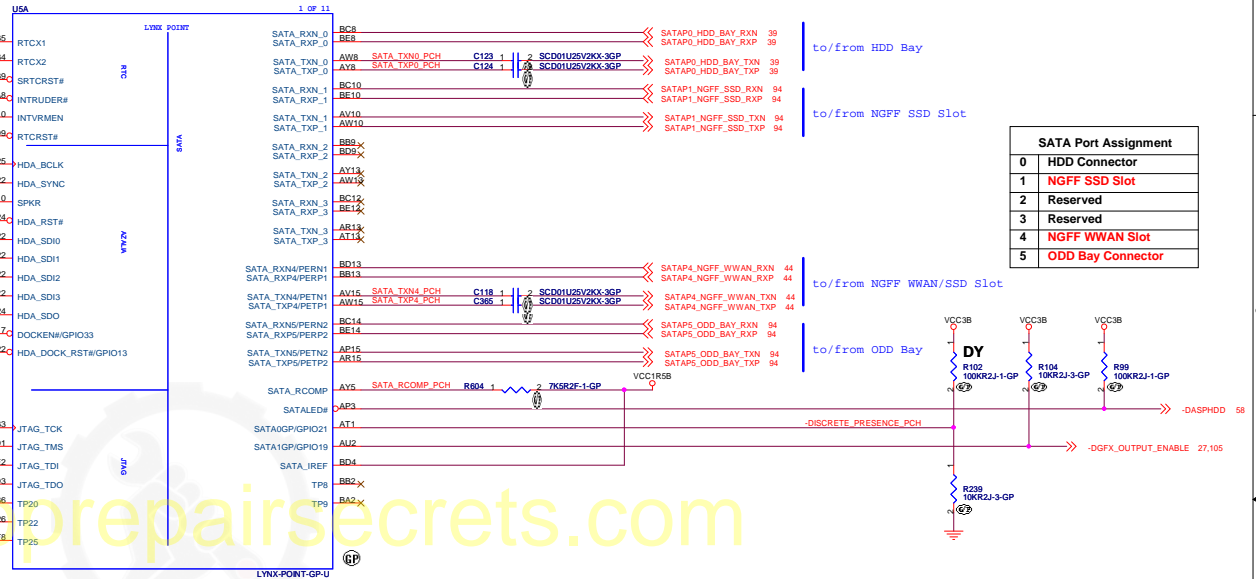
HDA_SDO has functional strap pin with weak pull down.
These Test pads should be placed near PCH pin A24 and be placed near-by.
The placement side is depend on Factory configuration.
The behavior by test pad short is described in PCH EDS.
Please see it.

TEST PAD
BOTTOM SIDE
DO NOT MOVE AFTER FIX

21 PCH_TCK >>> AB3
21 PCH_TMS >>> AD1
21 PCH_TDI >>> AE2
21 PCH_TDO <<< AD3
XAB6 TP20
XC26 TP22
XF8 TP25

TABLE

SPKR TCO TIMER SYSTEM REBOOT	
HIGH	DISABLED (NO REBOOT)
LOW	ENABLED

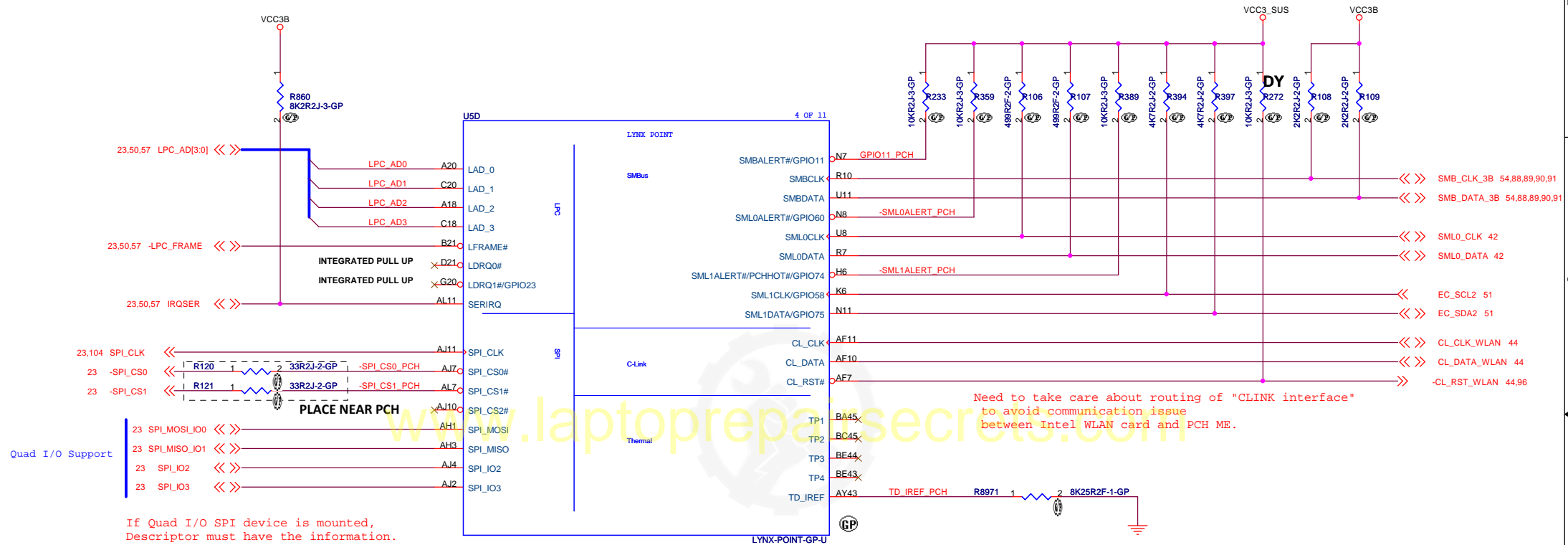


SATA Port Assignment	
0	HDD Connector
1	NGFF SSD Slot
2	Reserved
3	Reserved
4	NGFF WWAN Slot
5	ODD Bay Connector

<Variant Name>

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Title		LynxPoint RTC/HDA/SATA/JTAG (1/10)	
Size	Document Number	Kome-1 WS	
A2			Rev -1
Date	Thursday, September 12, 2013	Sheet 11	of 106



<Variant Name>

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Title

LynxPoint LPC/SPI/SMB (2/10)

Size

Document Number

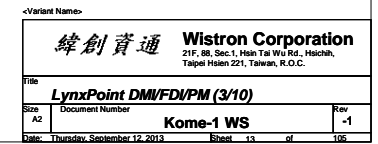
Kome-1 WS

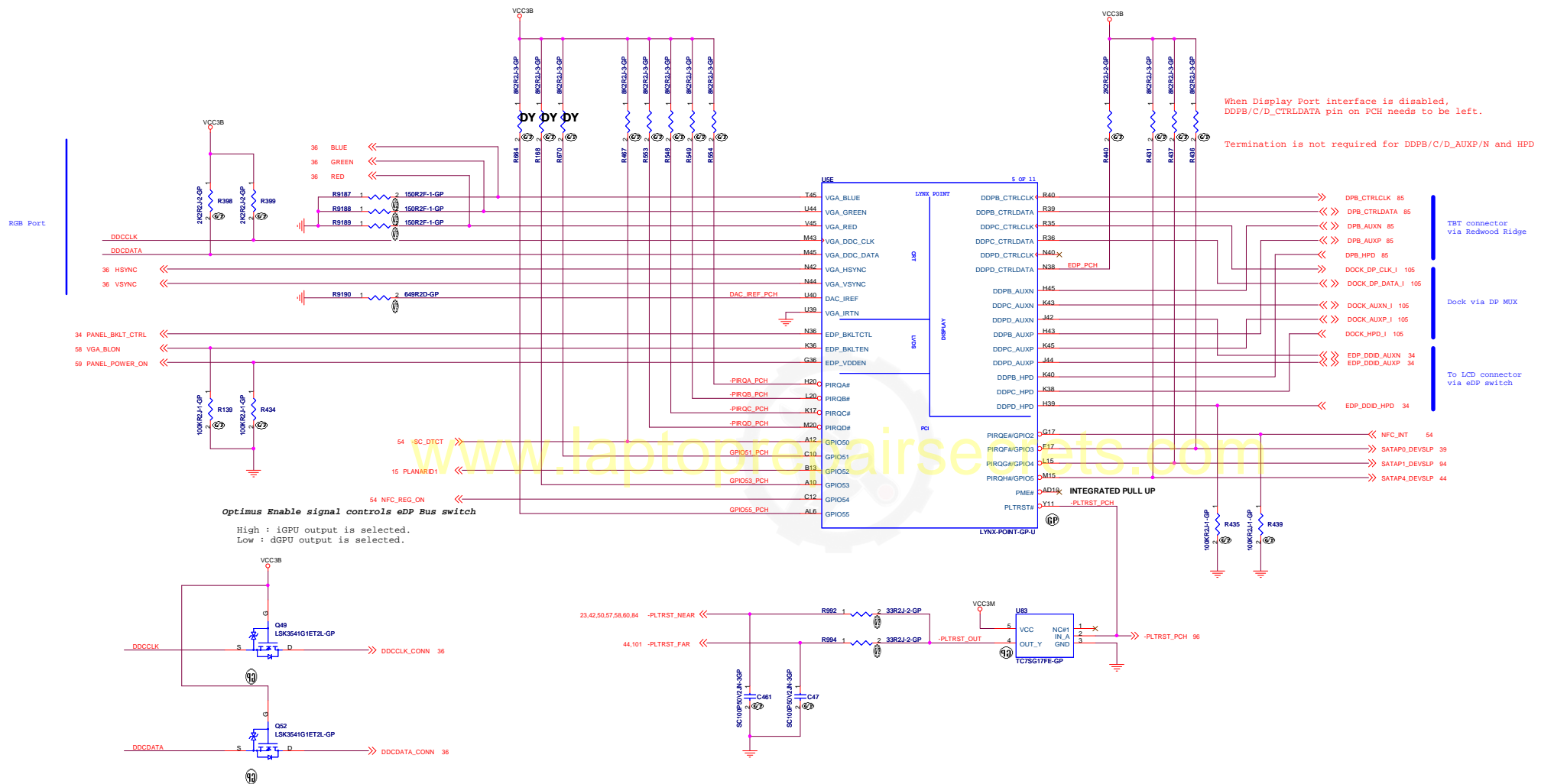
Rev

-1

Date: Thursday, September 12, 2013

Sheet 12 of 105

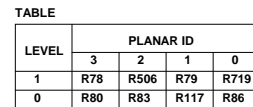




-Variant Name-

GPI08	INTEGRATED CLOCKING
HIGH	DISABLED(BTM)
LOW	ENABLED(FCIM)

GPIO37	ME CRYPTO STRAP
HIGH	WITH CONFIDENTIALITY
LOW	NO CONFIDENTIALITY



LEVEL	PLANARID[3..0]
SDV	0000B
ME-FVT	0010B
FVT	0011B
ME-SIT	0011B
SIT	0100B
SIT-R	0101B
SVT	0110B

Flexible I/O Configuration			
I/O	High Speed Signals	Configuration	Net Name
Port 1	USB3 1	USB3 1 (System Port)	USB3P1_SYSP0
Port 2	USB3 2	USB3 2 (System Port)	USB3P2_SYSP1
Port 3	USB3 5	USB3 5 (Docking Port)	USB3P5_DOCK
Port 4	USB3 6	USB3 6 (Reserved)	NC
Port 5	PCIE 1/USB3 3	PCIE 1 (Media Card)	PCIEP1_MEDIACARD
Port 6	PCIE 2/USB3 4	PCIE 2 (NGFF WLAN)	PCIEP2_NGFF_WLAN
Port 7	PCIE 3	PCIE 3 (Express slot)	PCIEP3_EXP_SLOT
Port 8	PCIE 4	PCIE 4 (GbE)	PCIEP4_GBE
Port 9	PCIE 5	PCIE 5 (Thunderbolt)	PCIEP5_THUNDER_L0
Port 10	PCIE 6	PCIE 6 (Thunderbolt)	PCIEP6_THUNDER_L1
Port 11	PCIE 7	PCIE 7 (Thunderbolt)	PCIEP7_THUNDER_L2
Port 12	PCIE 8	PCIE 8 (Thunderbolt)	PCIEP8_THUNDER_L3
Port 13	SATA 4/PCIE 1	SATA 4 (NGFF WWAN)	SATAP4_NGFF_WWAN
Port 14	SATA 5/PCIE 2	SATA 5 (ODD Bay)	SATAP5_ODD_BAY
Port 15	SATA 0	SATA 0 (HDD Bay)	SATAP0_HDD_BAY
Port 16	SATA 1	SATA 1 (NGFF SSD)	SATAP1_NGFF_SSD
Port 17	SATA 2	SATA 2 (Reserved)	NC
Port 18	SATA 3	SATA 3 (Reserved)	NC

PCIe Port Assignment	
1	Media Card Controller
2	NGFF WLAN Slot
3	Express Slot
4	GbE PHY
5	Thunderbolt Lane0
6	Thunderbolt Lane1
7	Thunderbolt Lane2
8	Thunderbolt Lane3

USB 3.0 Port Assignment	
1	USB 3.0 System Port 0
2	USB 3.0 System Port 1 (Debug)
3	Reserved
4	Reserved
5	USB 3.0 Docking IF
6	Reserved

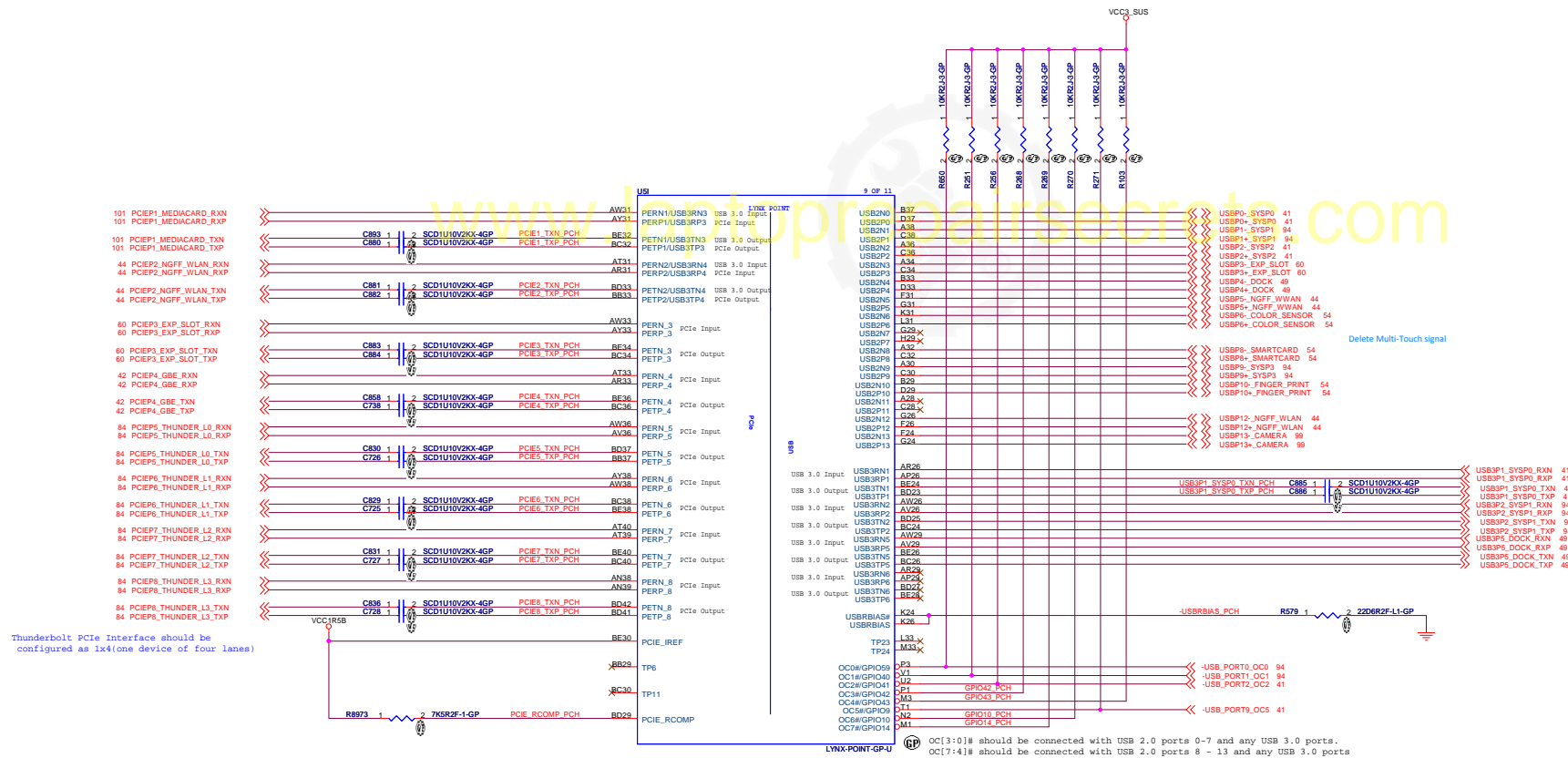
USB Port Assignment	
0	USB 2.0 System Port 0
1	USB 2.0 System Port 1 (Debug)
2	USB 2.0 System Port 2 (AOU)
3	Express Slot
4	USB 2.0 Docking
5	NGFF WWAN Slot
6	Color Sensor [WS Model only]
7	Reserved
8	Smart Card Slot
9	USB 2.0 System Port3
10	Fingerprint Reader
11	Reserved
12	NGFF WLAN Slot (Bluetooth)
13	USB Camera in LCD

SATA Port Assignment	
0	HDD Connector
1	NGFF SSD Slot
2	Reserved
3	Reserved
4	NGFF WWAN Slot
5	ODD Bay Connector

Soft Strap in Flash descriptor:

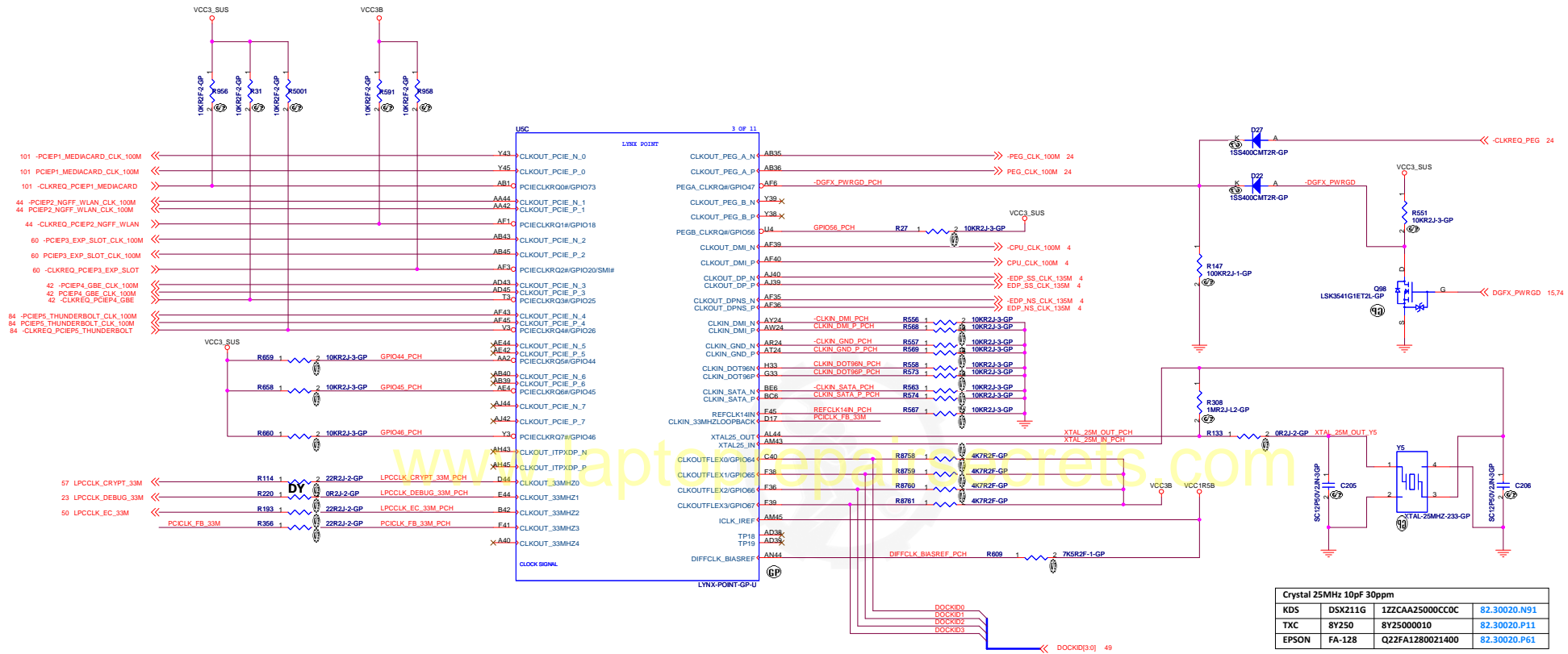
PCHSTRP4 bit 3,2 [SATA Port 5 PCIe Port 2 Mode]
00 = Assigned to SATA Port 5 [ODD Bay]

PCHSTRP9 bit 31,30 [SATA Port 4 PCIe Port 1 Mode]
00 = Assigned to SATA Port 4 [NGFF SSD]
PCHSTRP9 bit 21,20 [USB3 Port 3 PCIe Port 2 Mode]
00 = Assigned to PCIe Express [NGFF WLAN]
PCHSTRP9 bit 19,18 [USB3 Port 2 PCIe Port1 Mode]
00 = Assigned to PCIe Express [MediaCard Reader]
PCHSTRP9 bit 11 [Intel PHY Over PCI Express Enable]
1 = PCI Express port is used by Intel PHY.
PCHSTRP9 bit 10-8 [Intel PHY PCIe Port Select]
011 = Port 4
PCHSTRP9 bit 5 [PCIe Lane Reversal 2]
0 = PCIe Lanes 4-7 are not reversed. [Thunderbolt]
PCHSTRP9 bit 4 [PCIe Lane Reversal 1]
0 = PCIe Lanes 0-3 are not reversed.
PCHSTRP9 bit 3,2 [PCI Express Port Configuration Strap 2]
11 = 1x4 Port 5 (x4), Port 6-8 (Disabled)
PCHSTRP9 bit 1,0 [PCI Express Port Configuration strap 1]
00 = 4x1 Ports 1-4 (x1)



Port	GPIO	Power Well	TARGET DEVICE
PCIECLKRQ7#	GPIO46	SUS	
PCIECLKRQ6#	GPIO45	SUS	
PCIECLKRQ5#	GPIO44	SUS	
PCIECLKRQ4#	GPIO26	SUS	Thunderbolt
PCIECLKRQ3#	GPIO25	SUS	GigaBit Ethernet
PCIECLKRQ2#	GPIO20	CORE	EXP SLOT
PCIECLKRQ1#	GPIO18	CORE	NGFF WLAN
PCIECLKRQ0#	GPIO73	SUS	MEDIACARD READER (VCC3B)

All of Switches to prevent leak on CLKREQ# are placed on device side to find the error.

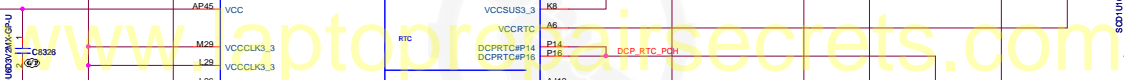


Crystal 25MHz 10pF 30ppm			
KDS	DSX211G	1ZZCAA25000CCOC	82.30020.N91
TXC	8Y250	8Y25000010	82.30020.P11
EPSON	FA-128	Q22FA1280021400	82.30020.P61

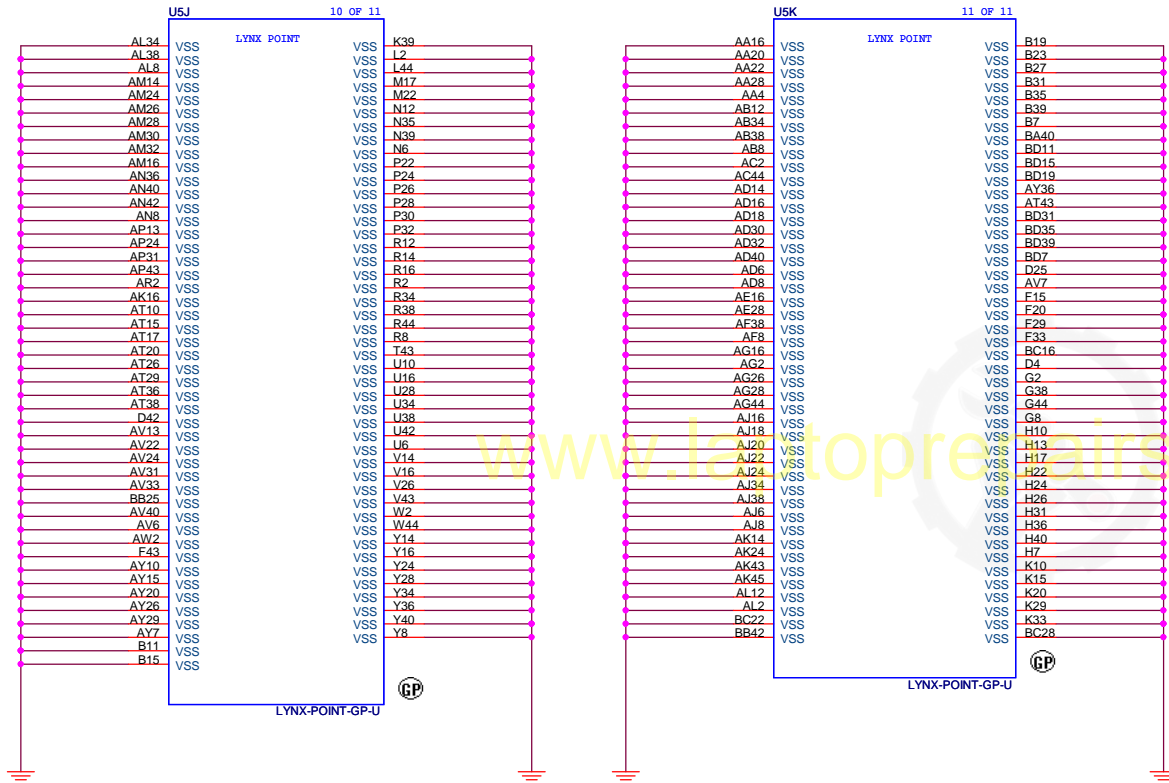
For Clock Generator (XGEN1)
 XTAL_25M_IN_PCH R134 1 2 22R2J-2-GP PCH_25M_OSC_OUT 103

<Variant Name>

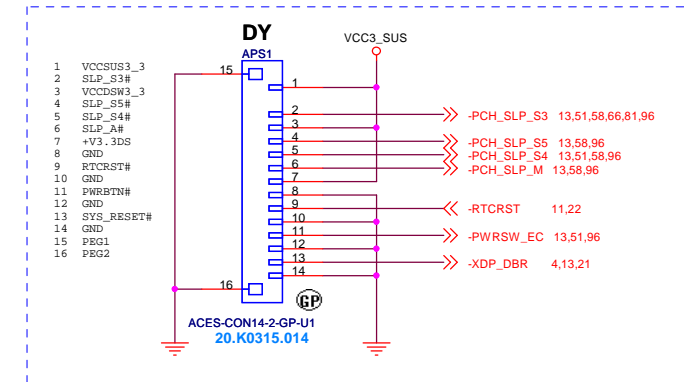
緯創資通 Wistron Corporation	
21F, 8B, Sec.1, Hsin Tai Wu Rd., Hsuehshui, Taipei Hsien 221, Taiwan, R.O.C.	
File LynxPoint CLOCK (7/10)	
Size A2	Document Number Kome-1 WS
Date: Thursday, September 12, 2013	Sheet 17 of 106



TEST PAD FOR METS/APS



APS interface for the Software ME validation



13,58 AC_PRESENT >> TPAD14-OP-GP 1 TP11

<Variant Name>

緯創資通

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Title

LynxPoint GND (10/10)Size
A3

Document Number

Kome-1 WSRev
-1

Date: Thursday, September 12, 2013

Sheet 20 of 105

TCK has external Pulldown(51ohm) on CPU page.
TMS and TDI has internal pull up in CPU Module.
TDO should have external pullup(51ohm) near Debug port.
TRST# should have external pulldown(51ohm) near debug port.
HOOK7(DBR) needs to connect to PCH_SYS_RESET# with xternal pullup.
HOOK6(RESET#) needs to connect to RESET# with 1K series.
HOOK3 needs to connect to PCH_SYS_PWROK.
HOOK2 needs to connect to PWR_DEBUG in CPU with external pullup(150ohm).
HOOK1 is optional
HOOK0(PWRGOOD) needs to connect system power good. with 1K series.
OBSDATA_A[3] must be connected to CPU CFG[3].

XDP-SFF-26pin Interface

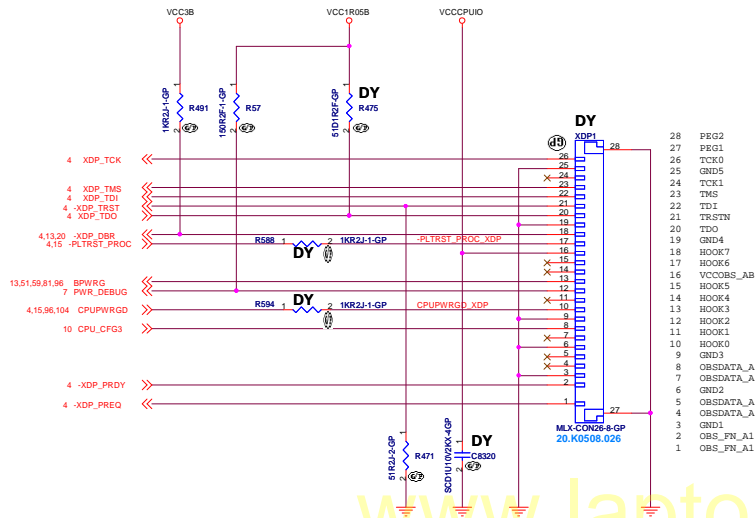


TABLE NOTE: XDP1 "ASM" FOR PDV/SDV ONLY.

SIGNAL	REF DES	ENABLE	DISABLE
TDO	R475	ASM	NO ASM
TRST#	R471	ASM	ASM
DBRST#	R491	ASM	ASM
RESET#	R588	ASM	NO ASM
PWRGD	R594	ASM	NO ASM
PWR_DEBUG	R57	ASM	ASM
XDP1.P16	C8320	ASM	NO ASM
	XDP1	ASM	NO ASM

↑
LOGIC

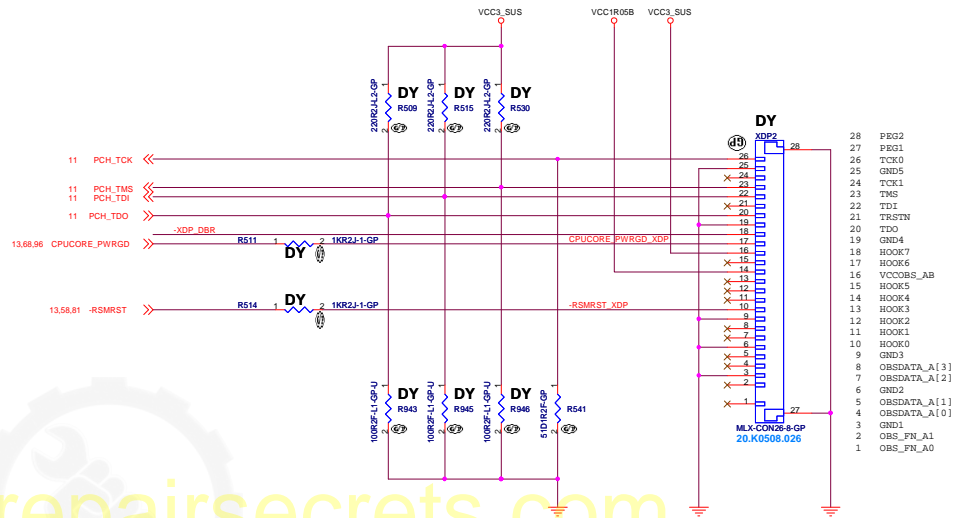


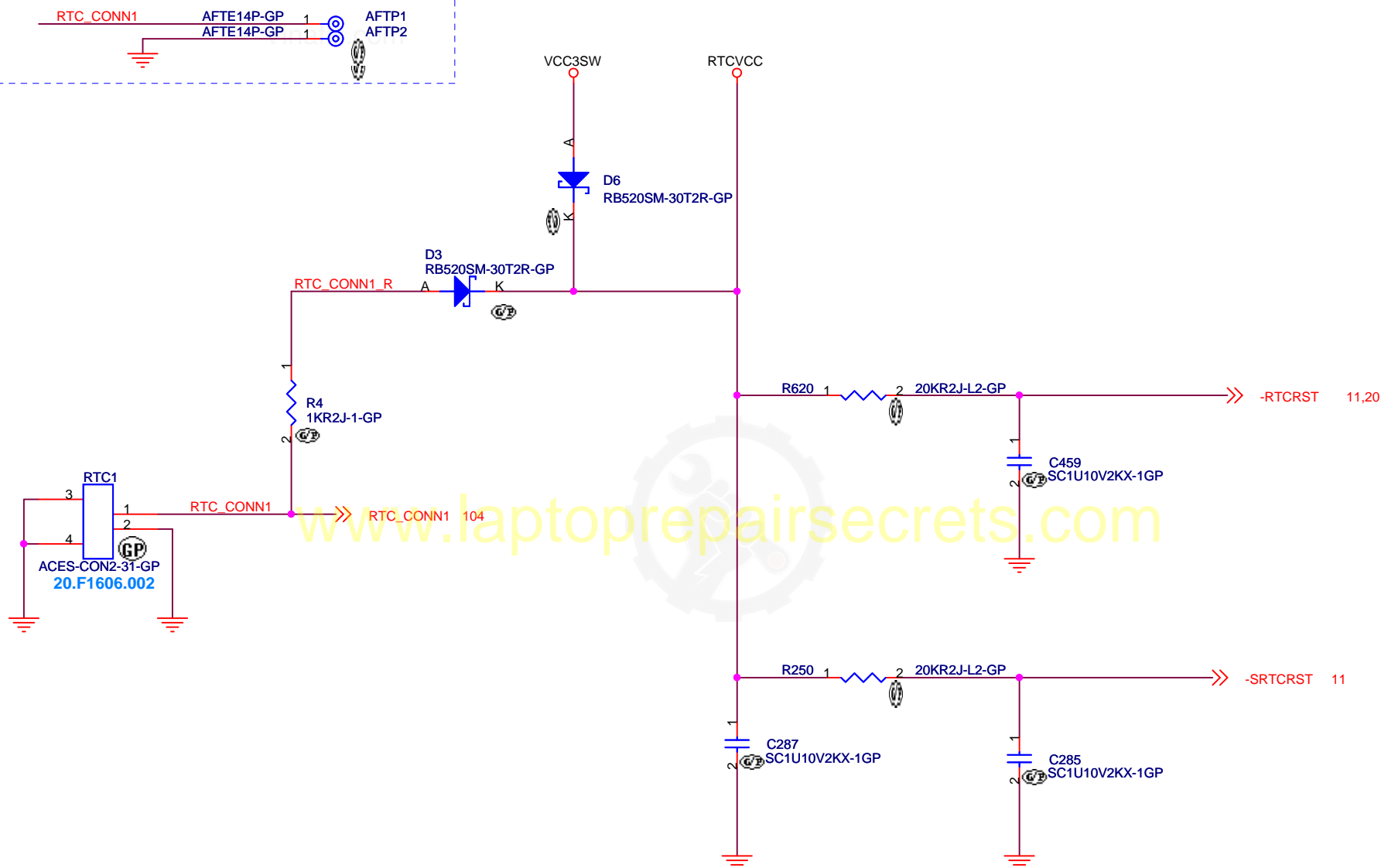
TABLE NOTE: XDP2 "ASM" FOR PDV/SDV ONLY.

SIGNAL	REF DES	ENABLE	DISABLE
TDO	R509	220	NO ASM
	R943	100	NO ASM
TMS	R530	220	NO ASM
	R946	100	NO ASM
TDI	R515	220	NO ASM
	R945	100	NO ASM
TCK	R541	51	51
CPUCORE_PWRGD	R511	ASM	NO ASM
-RSMRST	R514	ASM	NO ASM
	XDP2	ASM	NO ASM

↑
LOGIC

<Variant Name>

Near RTC BAT CONN: RTC1 (p.022)



<Variant Name>

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Taipei Hsien 221, Taiwan, R.O.C.

Title

RTC BATTERY

Size
A4

Document Number

Kome-1 WS

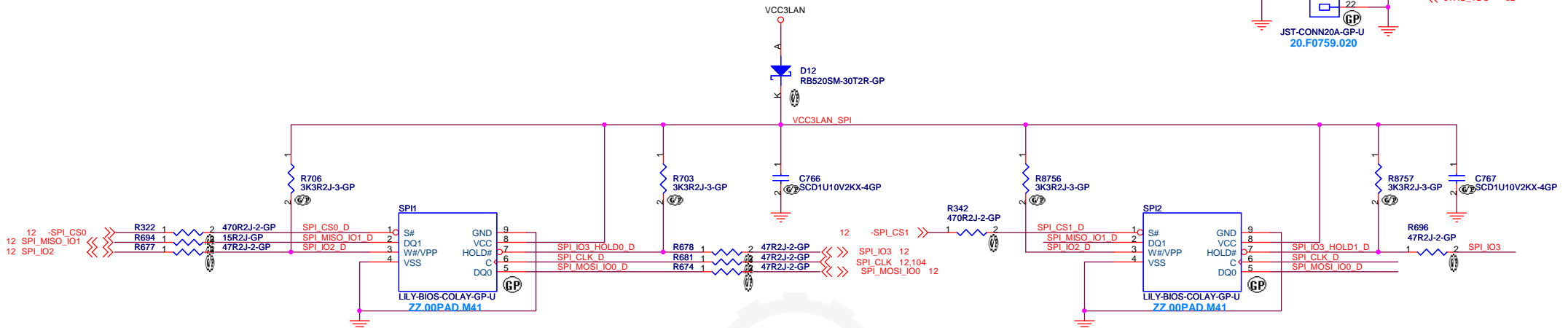
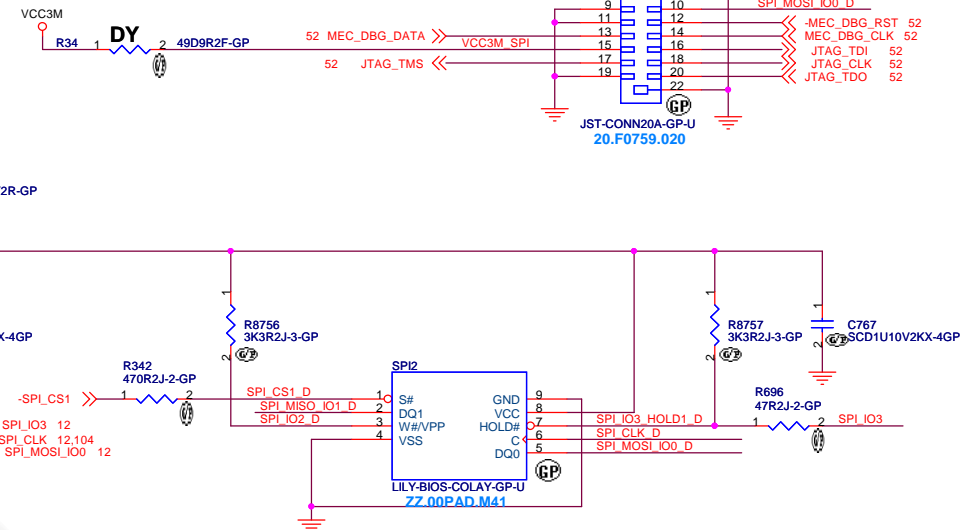
Rev
-1

Date: Thursday, September 12, 2013

Sheet 22 of 105

Trace FIFO debug port

	Enable	Disable
R34	ASM	NO ASM



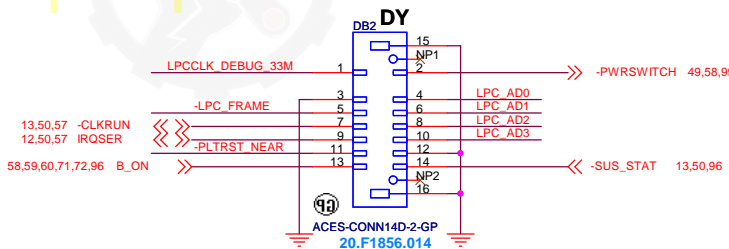
64Mbits SPI FLASH (SPI1) : 4 I/O Support SPI Flash should be applied.

Package	Supplier	Vendor P/N	Lenovo P/N	Wistron P/N
SO8	Macronix	MX25L6473EM2I-10G		72.25647.00A
	Winbond	W25Q64FVSSIQ		72.25Q64.K01
	Eon	EN25QH64-104HIP Rev.F		72.02564.001
	Micron	N25Q064A13ESEC0F		72.25Q64.G01

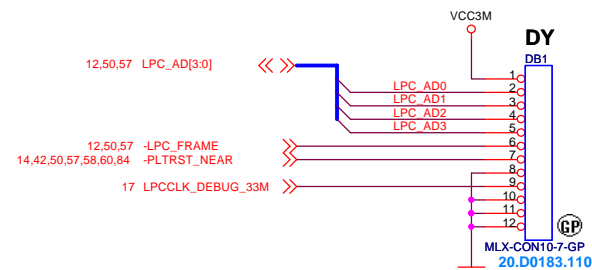
32Mbits SPI FLASH (SPI2) : 4 I/O Support SPI Flash should be applied.

Package	Supplier	Vendor P/N	Lenovo P/N	Wistron P/N
SO8	Macronix	MX25L3273EM2I-10G		72.25327.A01
	Winbond	W25Q32FVSSIQ		72.25Q32.H01
	Eon	EN25QH32-104HIP Rev.F		72.02532.B01
	Micron	N25Q032A13ESEC0F		72.25Q32.C01

Lenovo Debug Tool I/F



LPC for Debug Card Connector

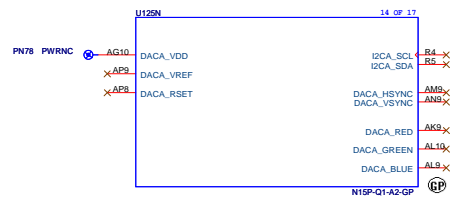


<Variant Name>

緯創資通 Wistron Corporation
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Title	SPI Flash, DEBUG PORT		
Size	Document Number	Kome-1 WS	Rev -1
A3	Date: Thursday, September 12, 2013	Sheet 23	of 105





1.12mA

180ohm@100MHz ESR=0.09

For Clock Generator (XGEN1)

103 GFX_27M_OSC_OUT

For Win 8.1 Logo Requirement

Windows 8.1 Logo: U3	
TOSHIBA	TC7SBL66CFU 073.75B66.0007
TI	SN74LVC1G66DCKR 73.01G66.DHH
NXP	74LVC1G66GW 73.01G66.EHH

-VIDEO_THERM_ALERT 52.74
VRAM_VREF_CTL 33
VIDEO_PWM_VID 74
-VIDEO_POWER_LIMIT 52

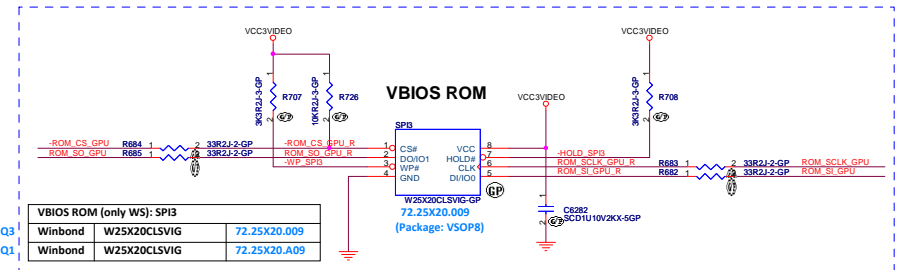


TABLE VIDEO MEMORY

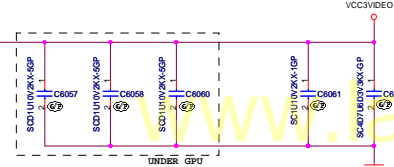
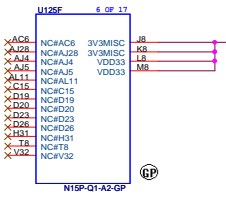
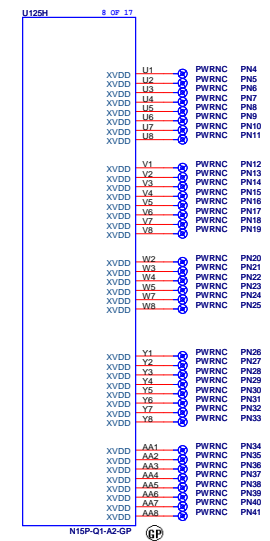
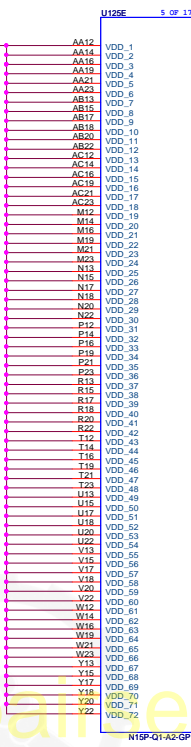
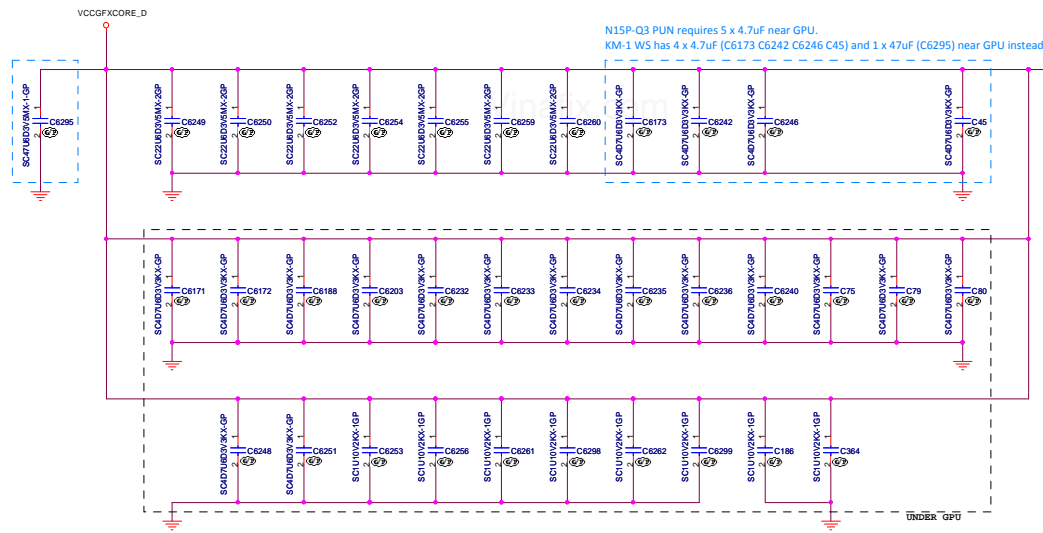
	HYNIX	SAMSUNG	HYNIX	SAMSUNG
ROM_SIPD	64Mx32	64Mx32	128Mx32	128Mx32
R8597	34.8K ohm	45.3K ohm	TBD	TBD

LOGIC

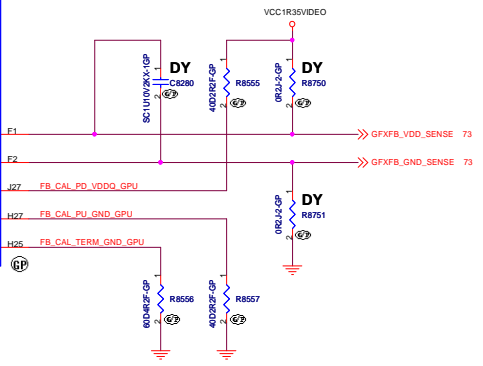
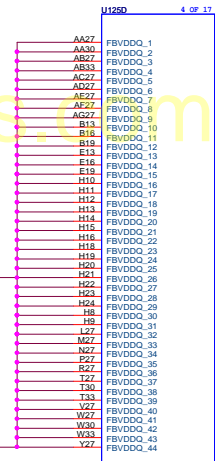
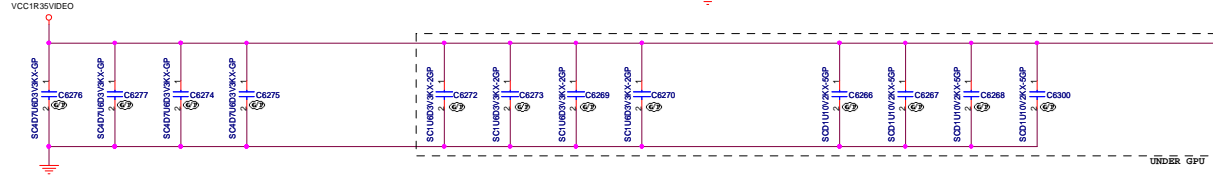
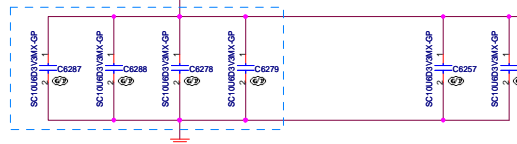
-Variant Name-

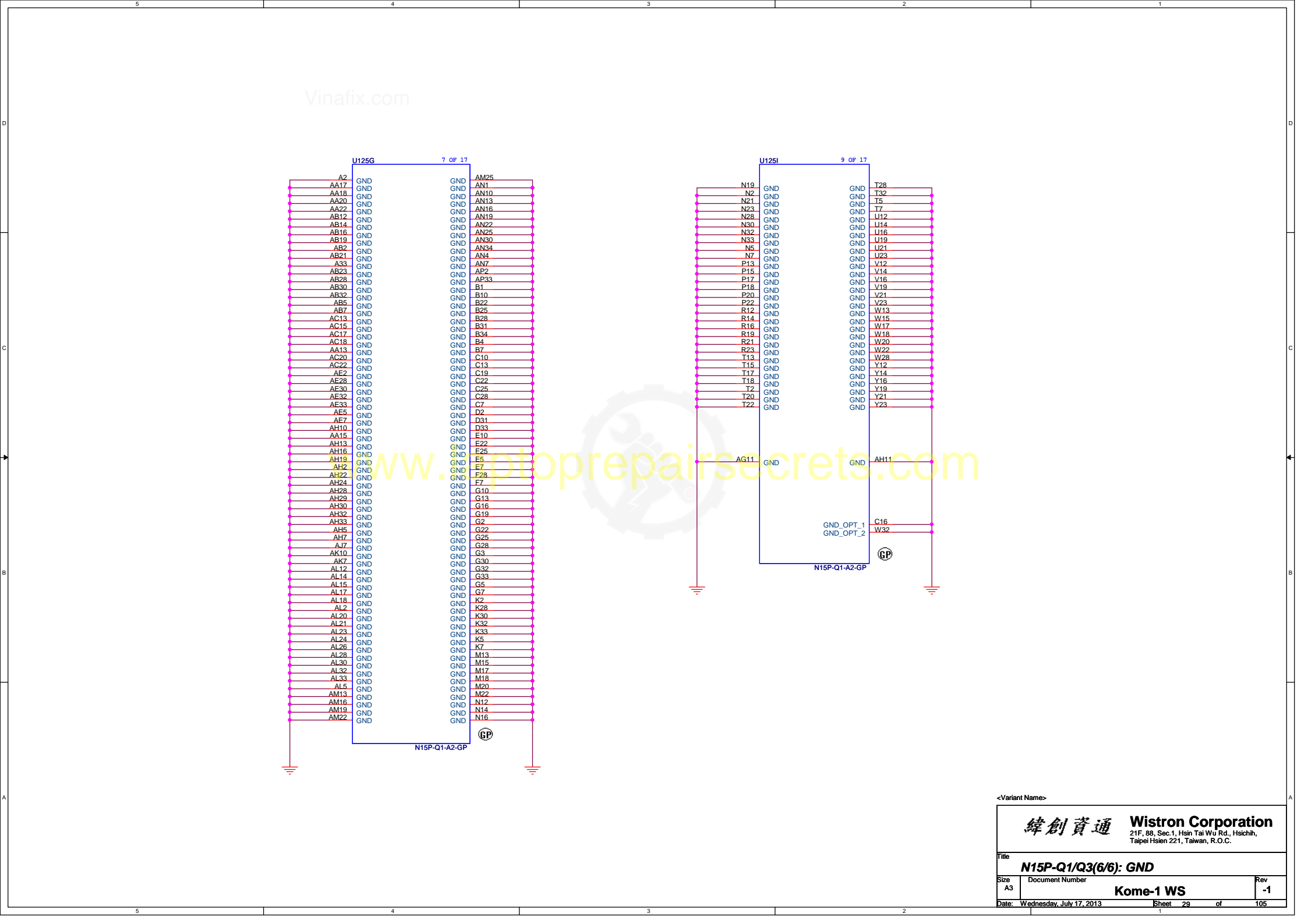
緯創資通 Wistron Corporation
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File		N15P-Q1/Q3(4/6): GPIO	
Size	Document Number	Kome-1 WS	
A2			
Date: Thursday, September 12, 2013		Sheet 27 of 106	

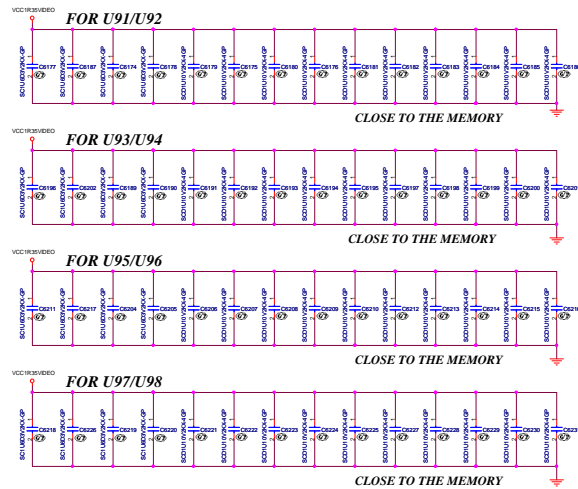


Power Team Request:
From two 22uF 0805 to four 10uF 0603

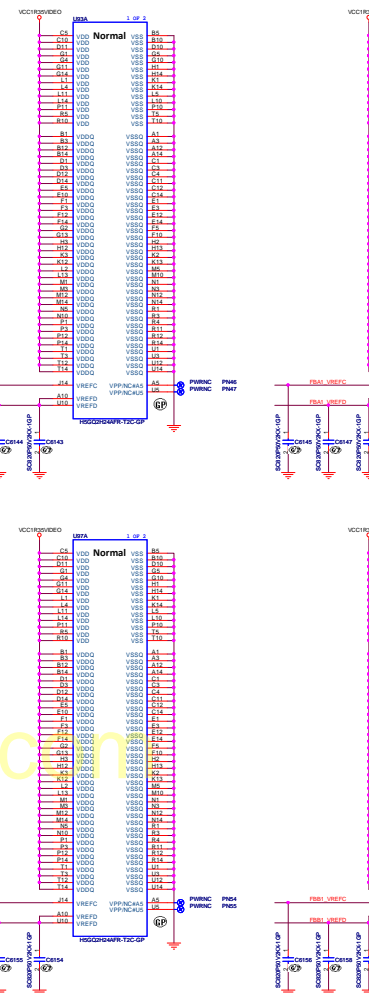
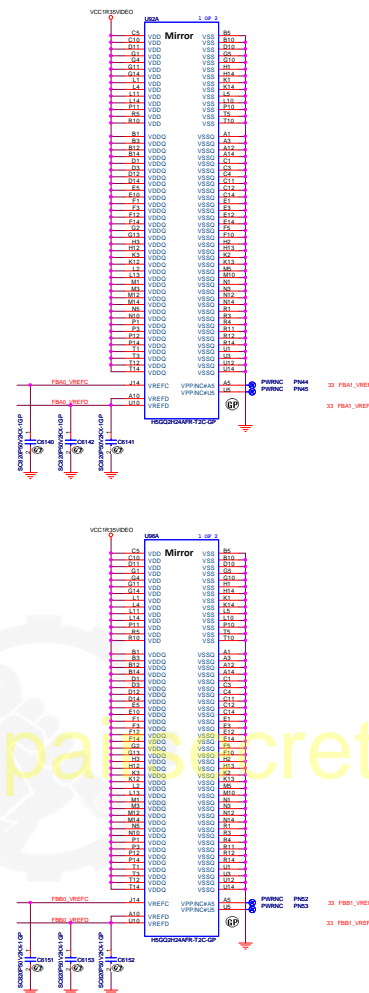
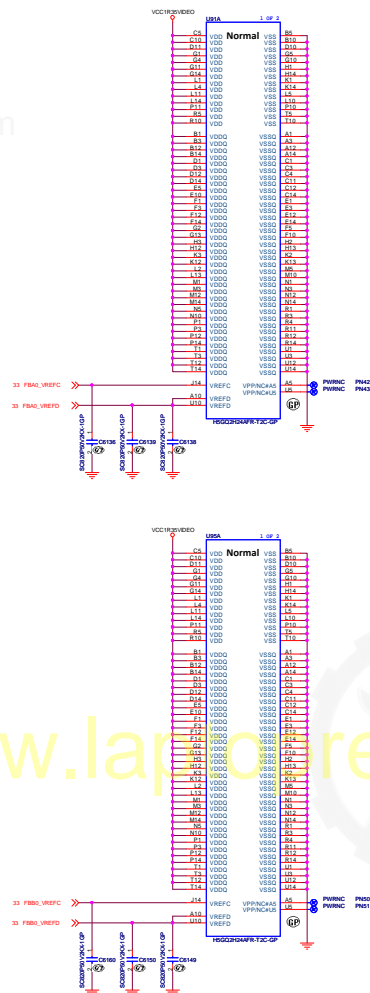


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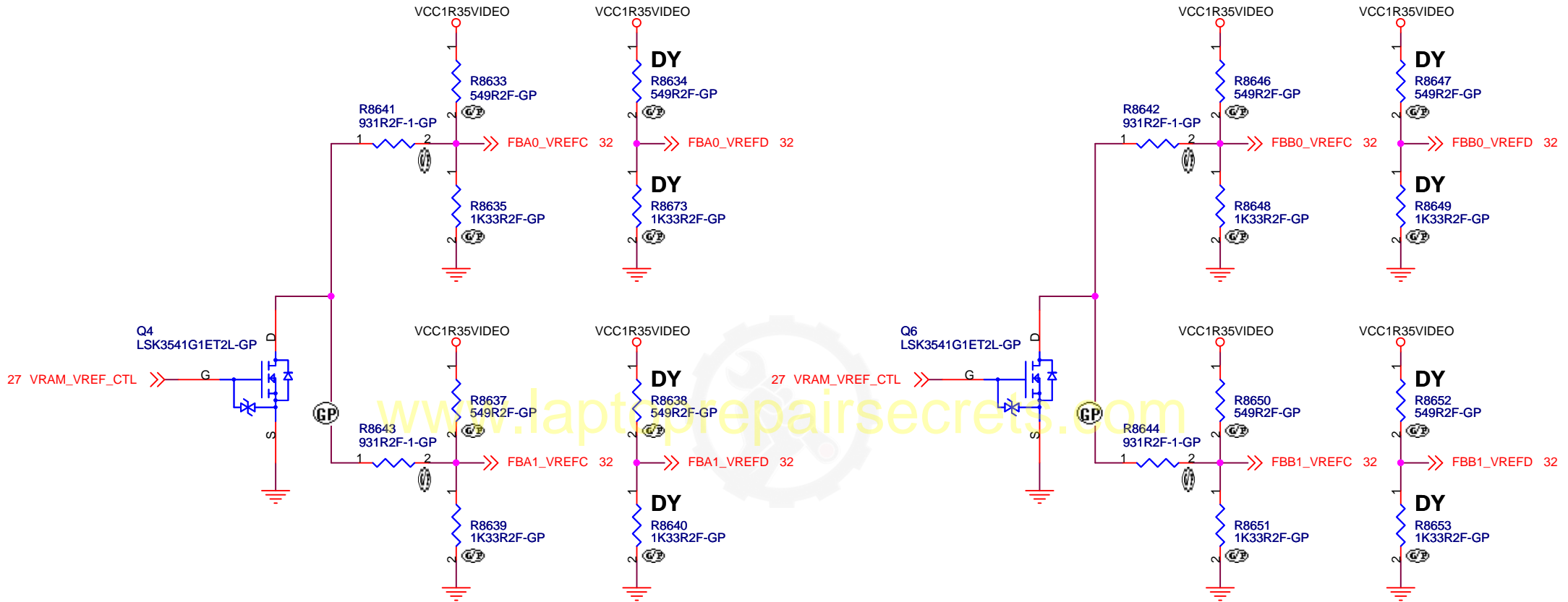




NEAR U91/U92 NEAR U93/U94 NEAR U95/U96 NEAR U97/U98



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Title

MEMORY TERMINATION

Size
A4

Document Number

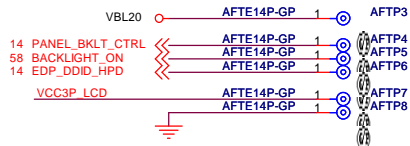
Kome-1 WS

Rev
-1

Date: Thursday, September 12, 2013

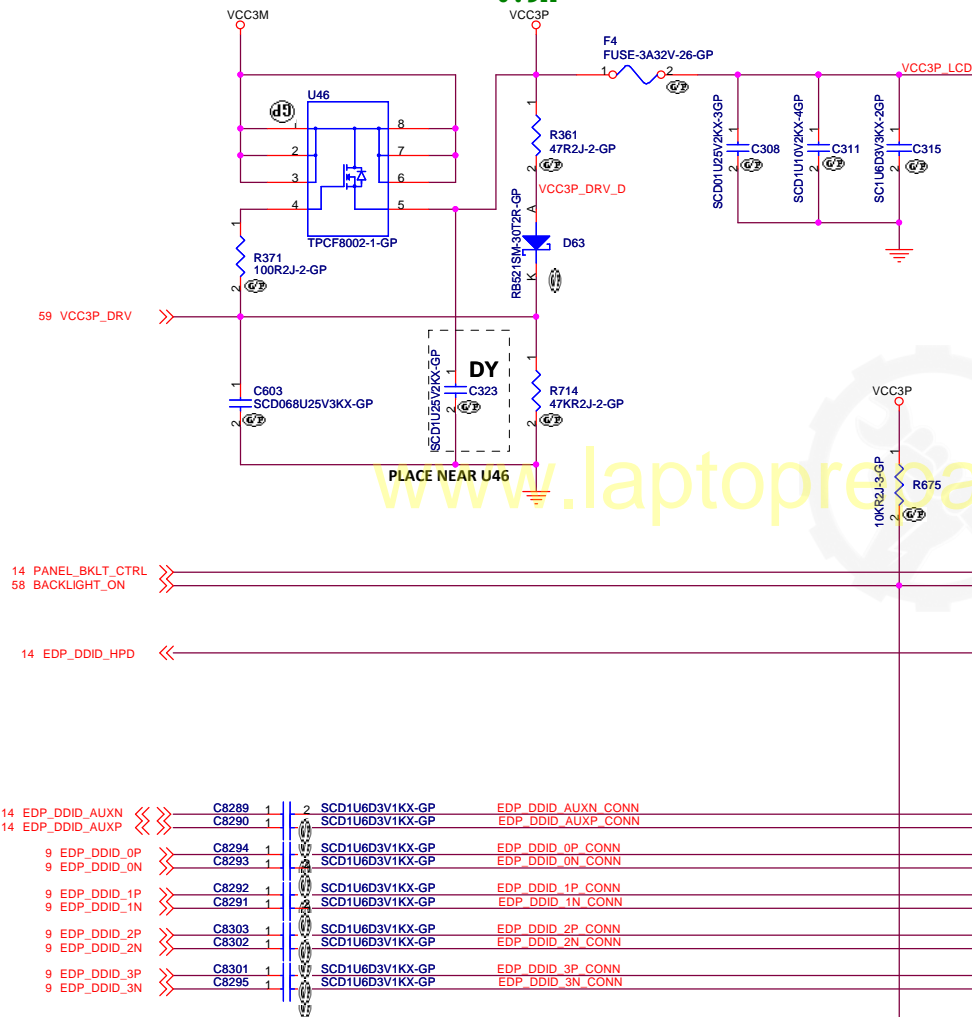
Sheet 33 of 105

Near LCD CONN: LCD1 (p.034)



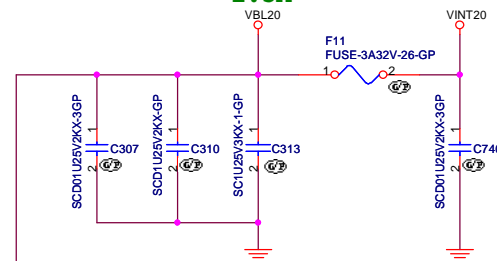
Max Average Current 0.9A @ 3.0V

0.9A

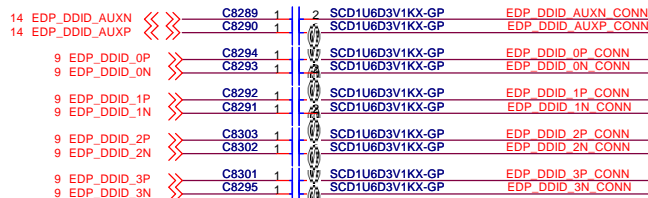
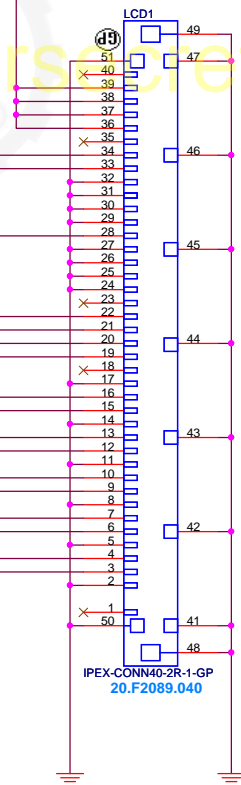


Max Average Current 1.3A @ 6.0V

1.3A



Support FHD++ panel
LCD CONNECTOR



<Variant Name>

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Title
LCD CONNECTOR

Size A3 Document Number Kome-1 WS Rev -1

Date: Thursday, September 12, 2013 Sheet 34 of 105

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<Variant Name>

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Title

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Size
A4

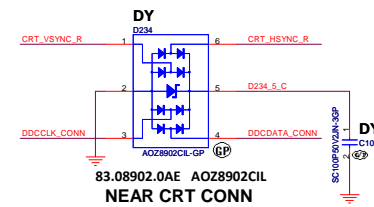
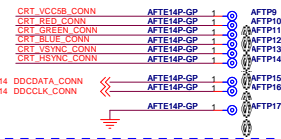
Document Number

Kome-1 WS

Rev
-1

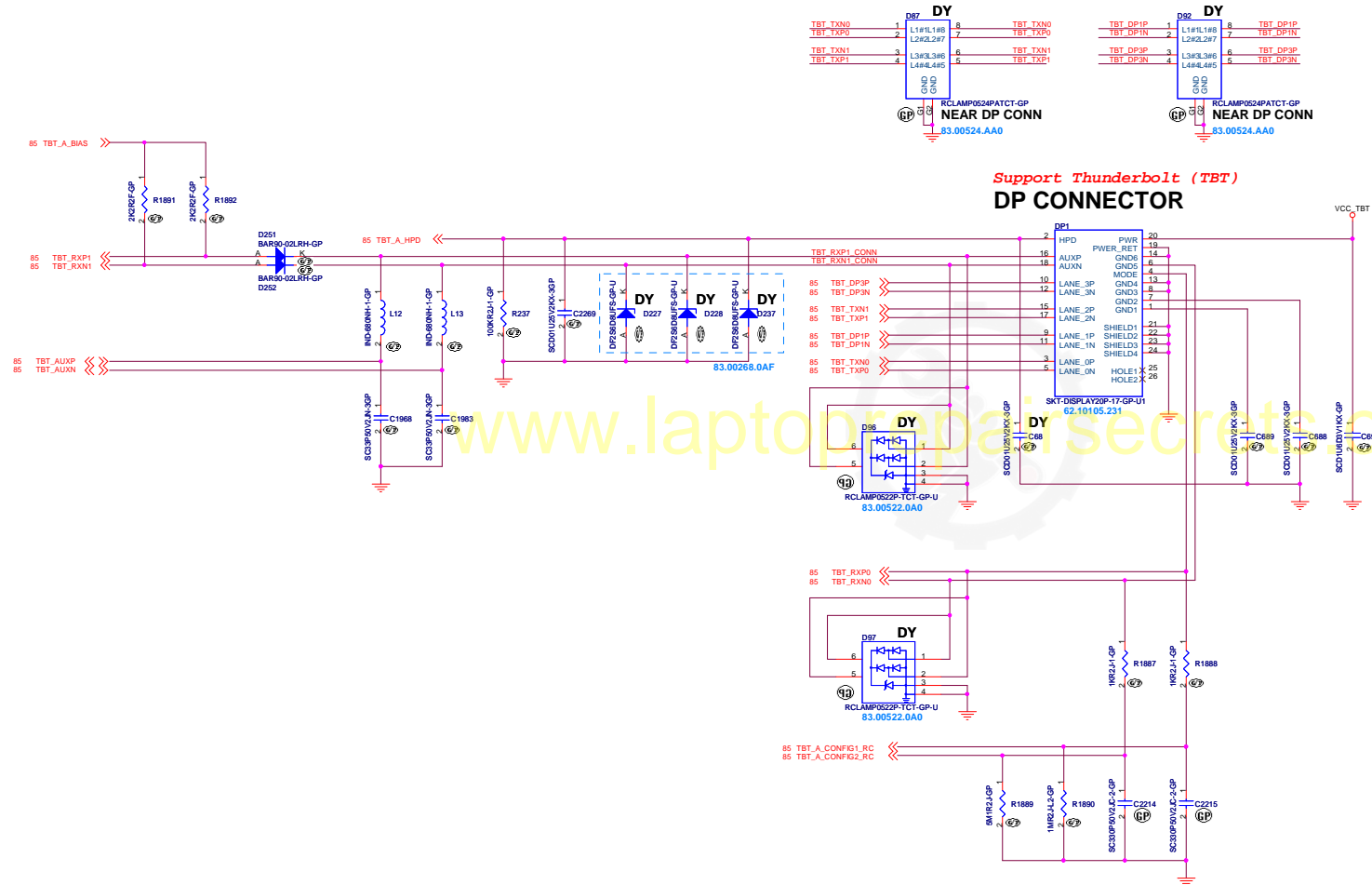
Date: Wednesday, July 17, 2013

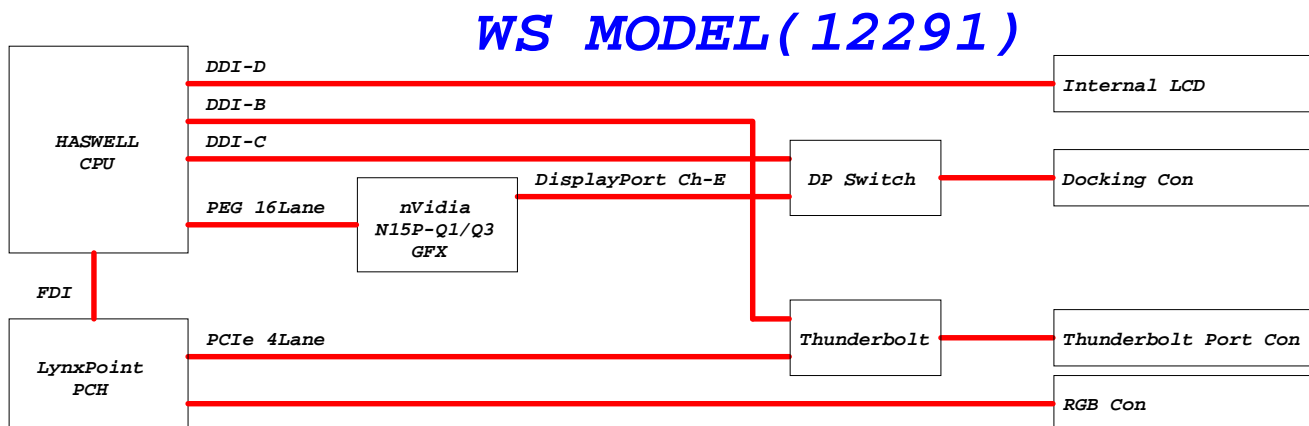
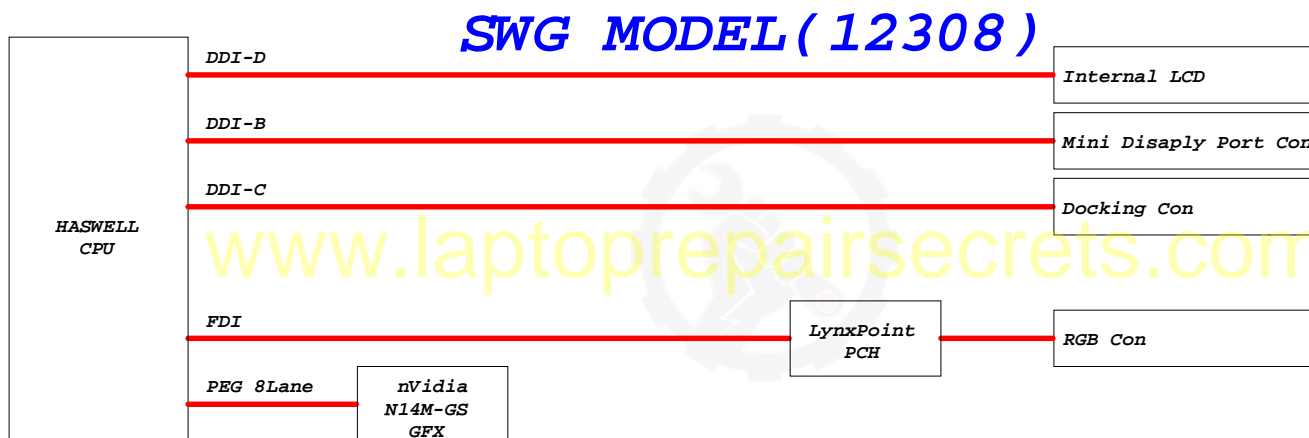
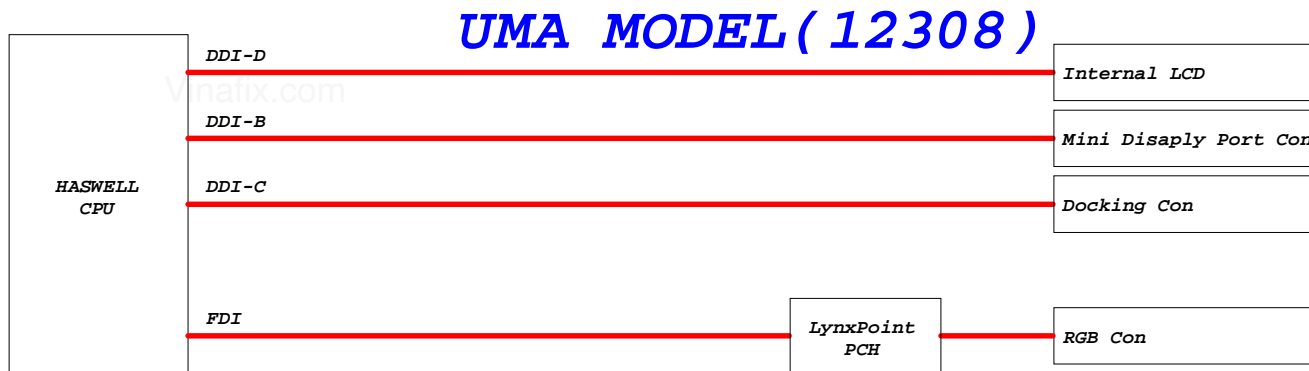
Sheet 35 of 105



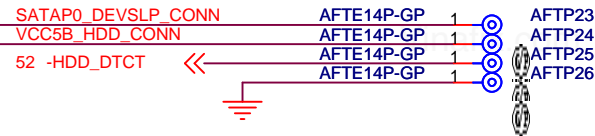
緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title			
EXT CRT INTERFACE			
Size	Document Number		Rev
A2		Kome-1 WS	-1
Date:	Thursday, September 12, 2013	Sheet 36 of	105

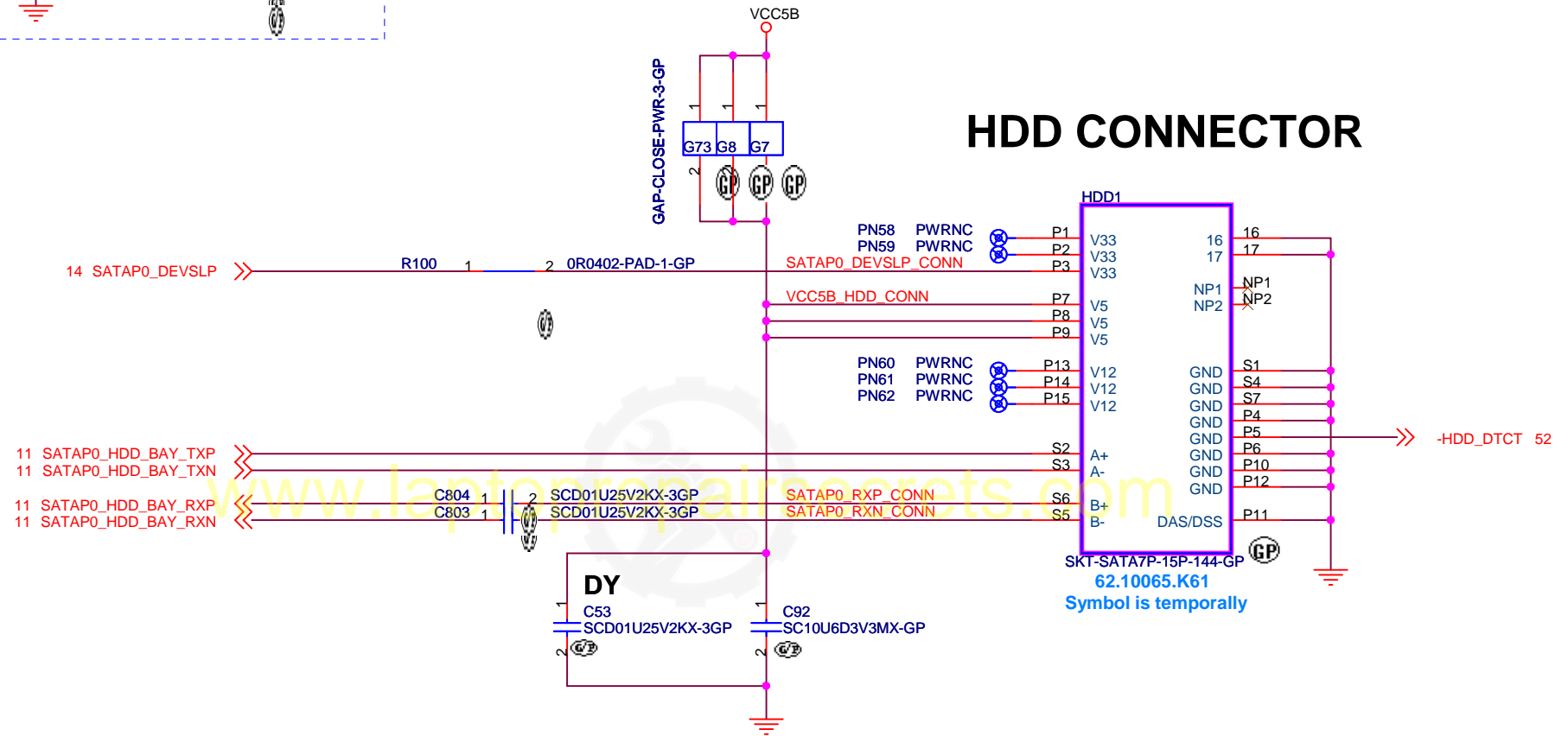
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Near SATA HDD CONN: HDD1 (p.039)



HDD CONNECTOR



<Variant Name>

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Title

SATA HDD I/F

Size
A4

Document Number

Kome-1 WS

Rev
-1

Date: Thursday, September 12, 2013

Sheet 39 of 105

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<Variant Name>

緯創資通

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Title

Reserve for ODD IF Con

Size
A4

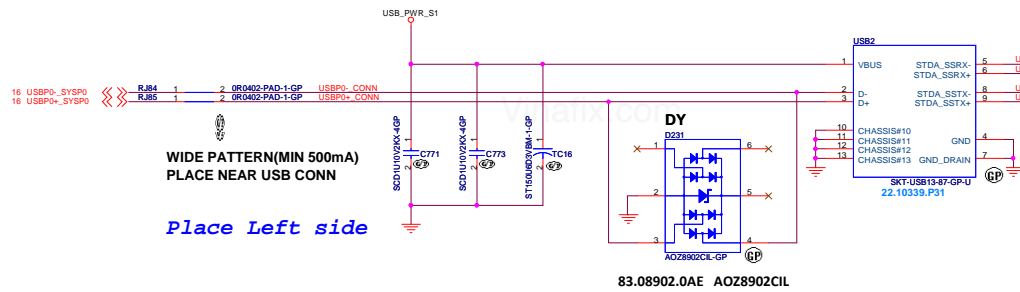
Document Number

Kome-1 WS

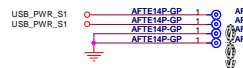
Rev
-1

Date: Wednesday, July 17, 2013

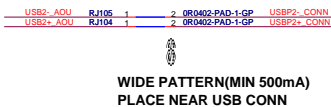
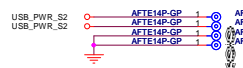
Sheet 40 of 105



Near USB3.0 CONN: USB2 (p.041)



Near USB2.0 CONN: USB1 (p.041)

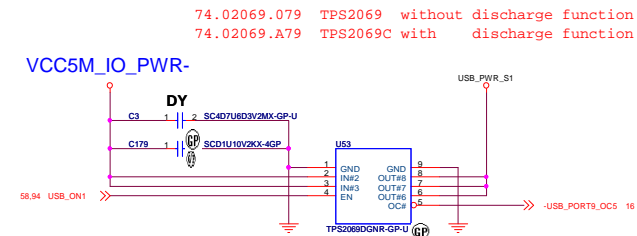


Place Left side

83.08902.0AE A0Z8902CIL

TABLE of TVS DIODE: D229

	Vendor	Vendor P/N	Wistron P/N
1st	SEMTECH	RCIamp0524PATCT	83.00524.AA0
2nd	Littelfuse	SP3012-04UTG	83.03012.0A0
3rd	Infineon	ESD3V3U4ULC	83.3V3U4.0A0
4th	NXP	IP4294CZ10-TBR	83.04294.0A0



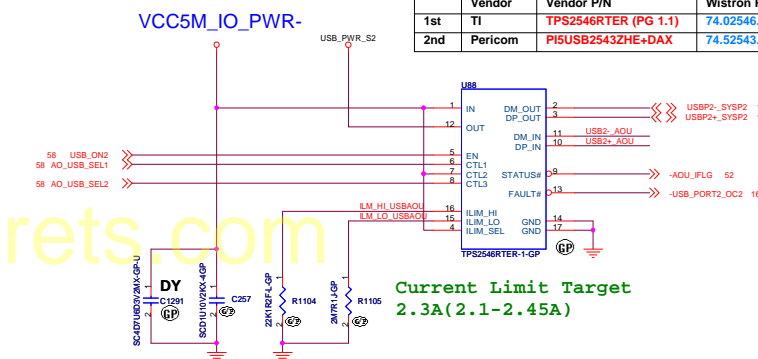
FOR ON BOARD SINGLE USB 3.0 CONNECTOR
Continuous Current Limit 1.5A

TABLE of USB 3.0 port: U53

	Vendor	Vendor P/N	Wistron P/N
1st	TI	TPS2069DGN	74.02069.079
2nd	GMT	G548A1F51U	74.00548.A79

TABLE of AOU port: U88

	Vendor	Vendor P/N	Wistron P/N
1st	TI	TPS2546RTER (PG 1.1)	74.02546.A73
2nd	Pericom	PI5USB2543ZHE+DAX	74.52543.D73



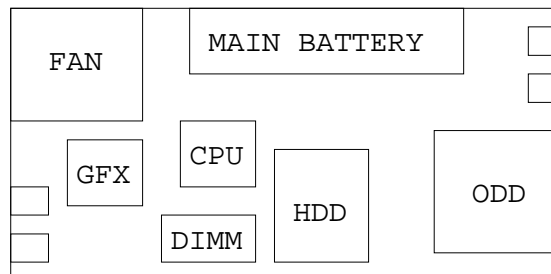
Current Limit Target
2.3A(2.1-2.45A)

USB System Port Assignment List

	USB 2.0				USB 3.0	
Location	System Port	PCH Port	Signal Name	AOU Support	PCH Port	Signal Name
Left	Port 0	Port 0	USBP0_SYSP0	No	Port 1	USB3P1_SYSP0
Right	Port 1	Port 1	USBP1_SYSP1	No	Port 2	USB3P2_SYSP1
Left	Port 2	Port 2	USBP2_SYSP2	Yes		
Right	Port 3	Port 9	USBP9_SYSP3	No		

USB 2.0 Port 2 with AOU

USB 3.0 Port 1
USB 2.0 Port 0



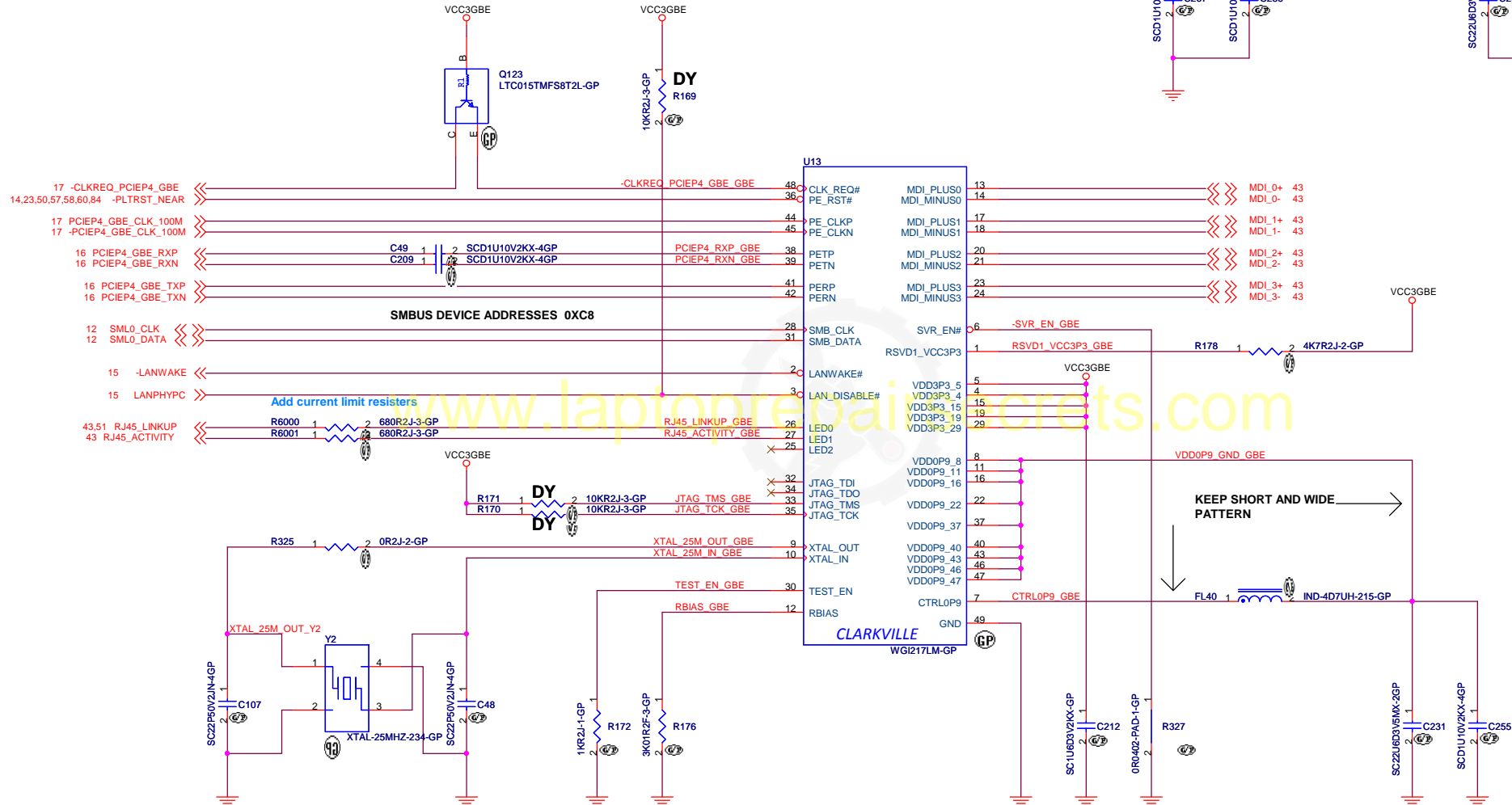
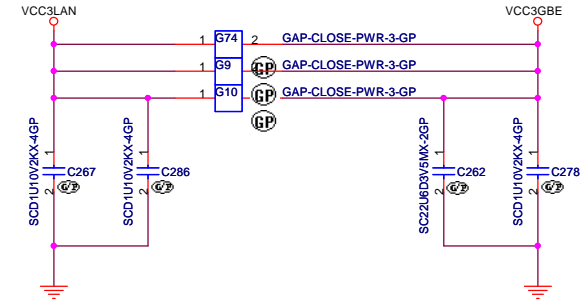
USB 2.0 Port 9

USB 3.0 Port 2
USB 2.0 Port 1

<Variant Name>

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USB Port (System)			
Size	Document Number	Rev	
A2	Kome-1 WS	-1	
Date:	Thursday, September 12, 2013	Sheet	41 of 106



Crystal 25MHz 18pF 30ppm			
KDS	DSX211G	1ZZCAA25000CC0B	82.30020.N81
TXC	8Y250	8Y25000004	82.20026.191
SEIKO EPSON	FA-128	EP.FA-128 25M18+30	82.30020.P21

103 GBE_25M_OSC_OUT >> R136 1 **DY** 2 0R2J-2-GP XTAL_25M_IN_GBE

<Variant Name>

緯創資通

Wistron Corporation
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Title

Clarkville GBE

Size
A3

e	Document Number
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Kome-1 WS

Date: Thursday, September 12, 2013

Sheet 42 of 105

Rev	
-1	

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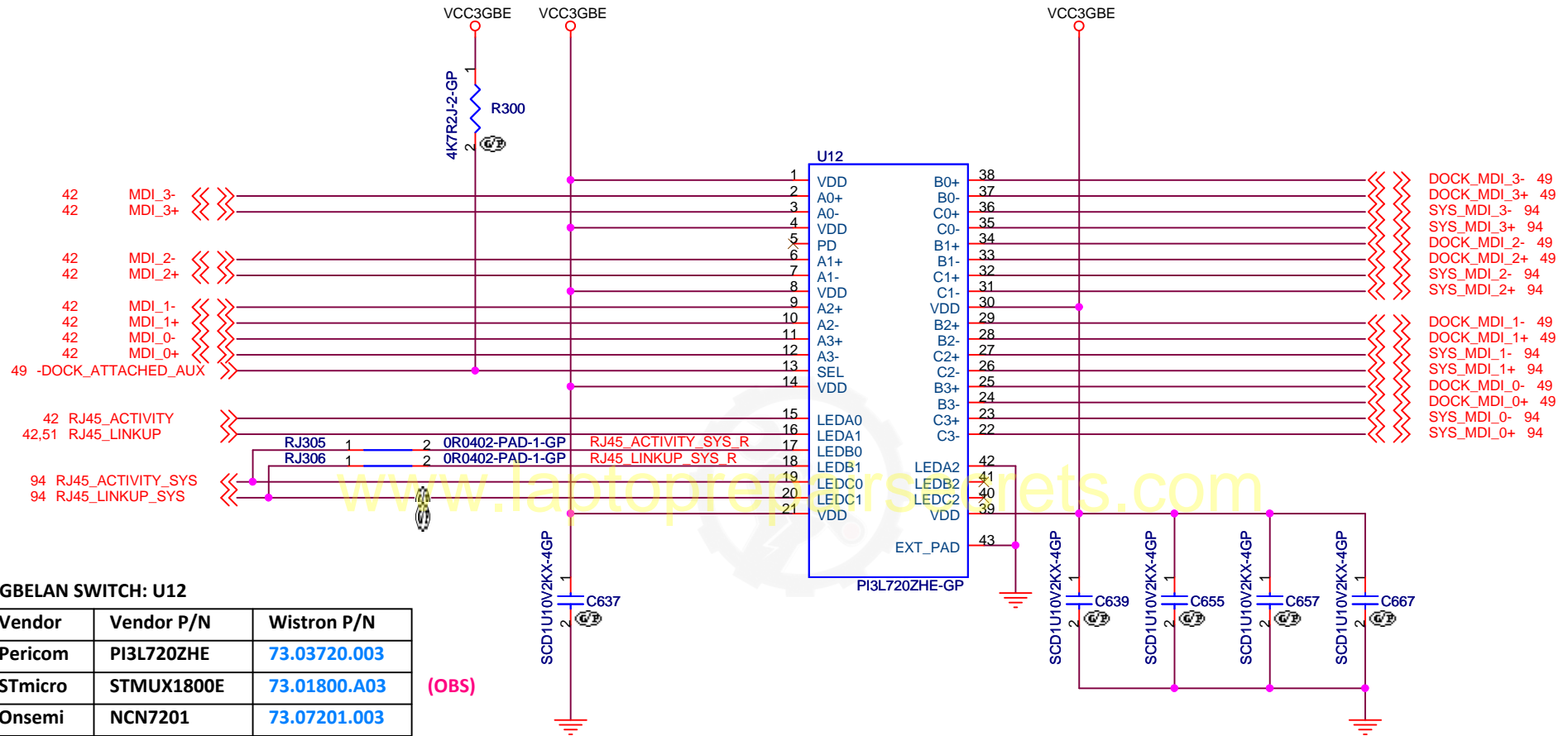


TABLE of GBELAN SWITCH: U12

	Vendor	Vendor P/N	Wistron P/N
1st	Pericom	PI3L720ZHE	73.03720.003
2nd	STmicro	STMUX1800E	73.01800.A03
3rd	Onsemi	NCN7201	73.07201.003

(OBS)

73.01800.A03 OBS REASON:

Due to Broadcom LAN test fail with quality issue (lock on 2012.06.15)

<Variant Name>

緯創資通

Wistron Corporation

21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
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Title

GBE LAN Switch

Size
A4

Document Number

Kome-1 WS

Rev
-1

Date: Thursday, September 12, 2013

Sheet 43 of 105

TYPE-B (Socket2) NGFF CARD FOR WWAN/SSD

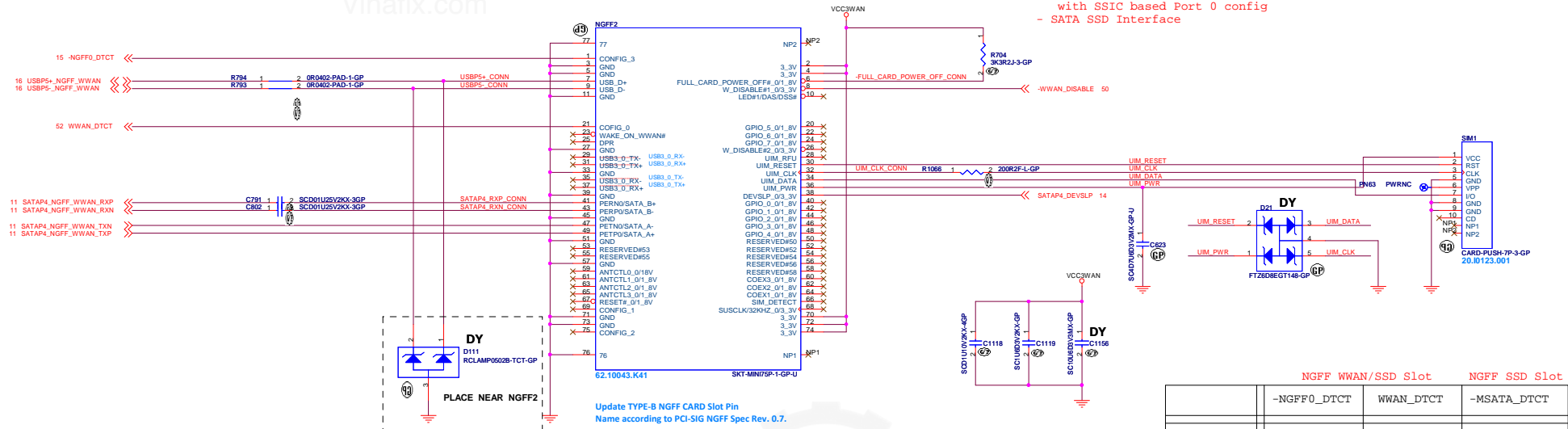
3.2H CONNECTOR

This Card slot supports
- USB 2.0 based WWAN interface
with SSIC based Port 0 config
- SATA SSD Interface

Near SIM CONN: SIM1 (p.044)

UIM RESET AFT14P-GP 1 AFTP36
UIM CLK AFT14P-GP 2 AFTP36
UIM DATA AFT14P-GP 3 AFTP36
UIM PWR AFT14P-GP 4 AFTP36

Vinafix.com

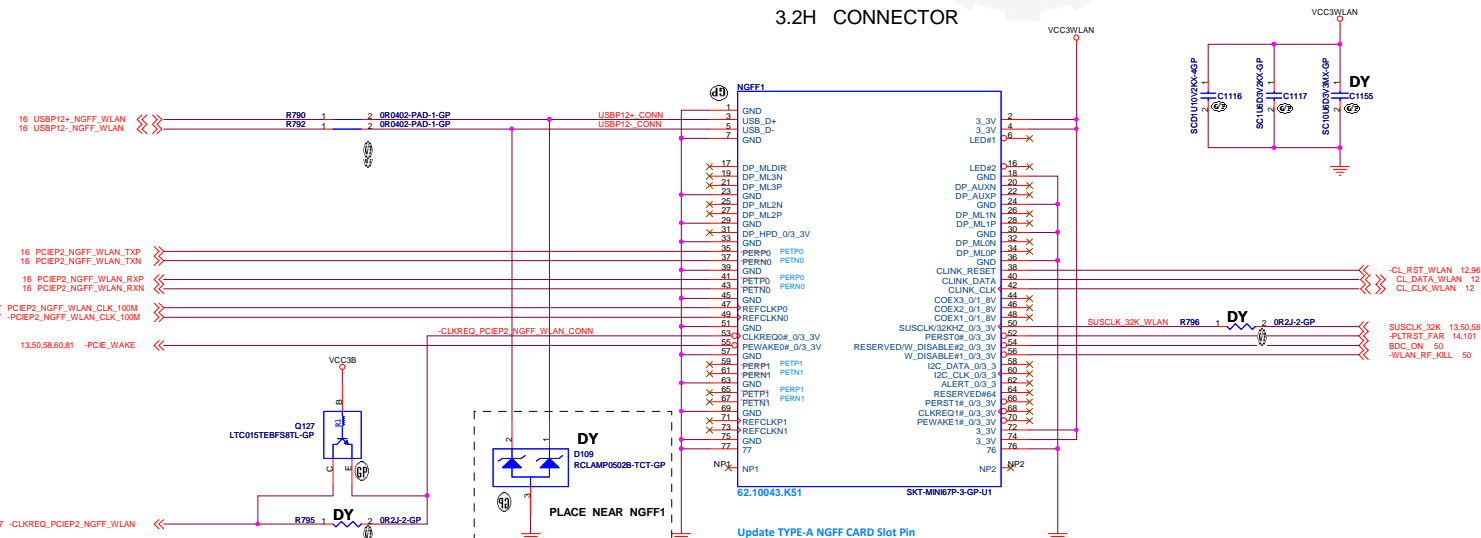


83.00502.AA1: (D109, D111)
OBS REASON: For contract issue,
replaced by 75.00502.07D

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TYPE-A NGFF CARD FOR WLAN

3.2H CONNECTOR



83.00502.AA1: (D109, D111)
OBS REASON: For contract issue,
replaced by 75.00502.07D

NGFF WWAN/SSD Slot		NGFF SSD Slot	
	-NGFF0_DTCT	WWAN_DTCT	-MSATA_DTCT
WWAN	Low	High	N/A
SSD	Low	Low	Low
No Card	High	High	High
Reserved	High	Low	High
Reserved			Low

<Variant Name>

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File NGFF Slot x 2
Size A2 Document Number Kome-1 WS
Date: Thursday, September 12, 2013 Sheet 44 of 106

Near Audio Jack CONN: JK1 (p.046)

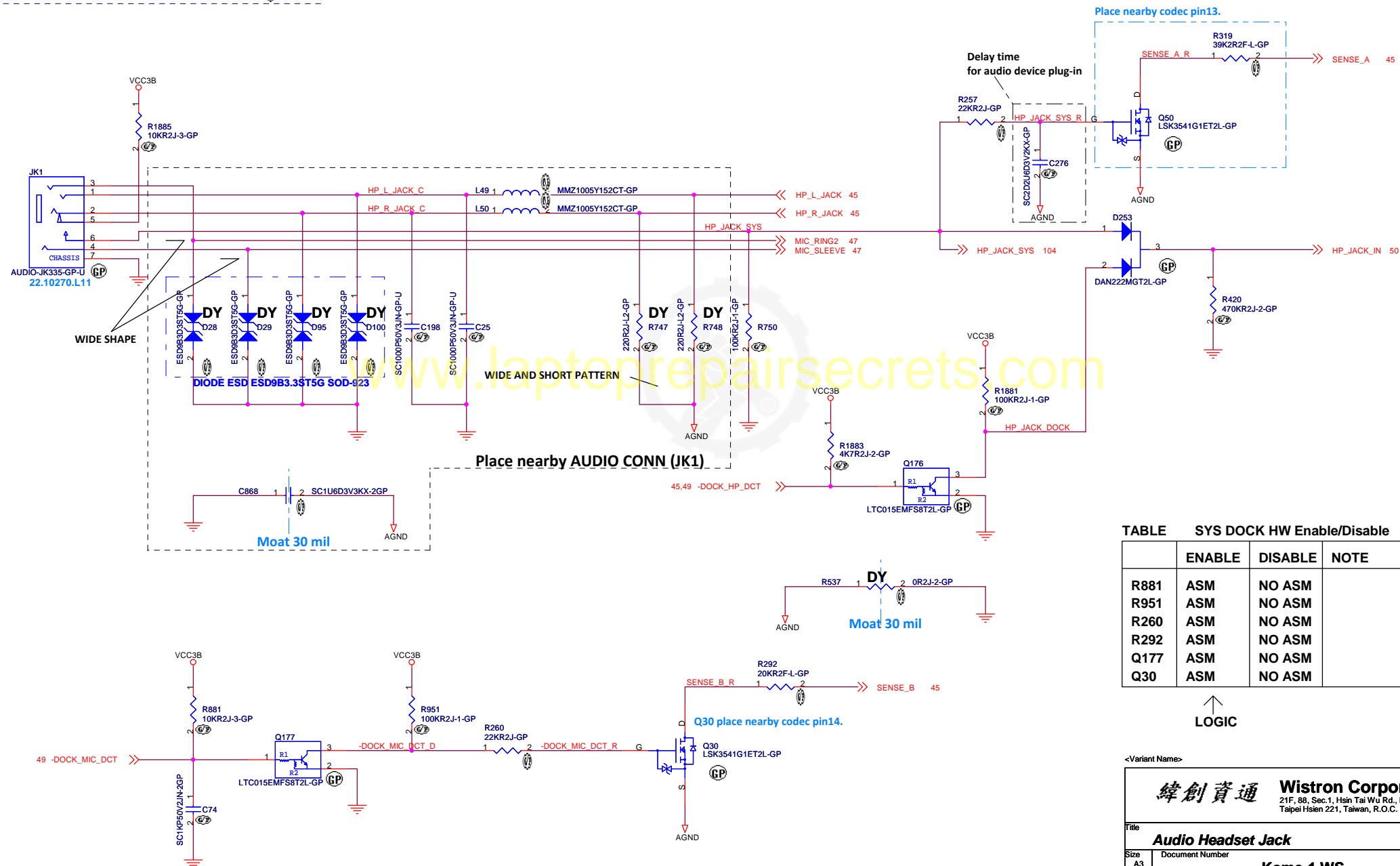
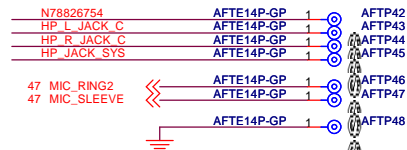
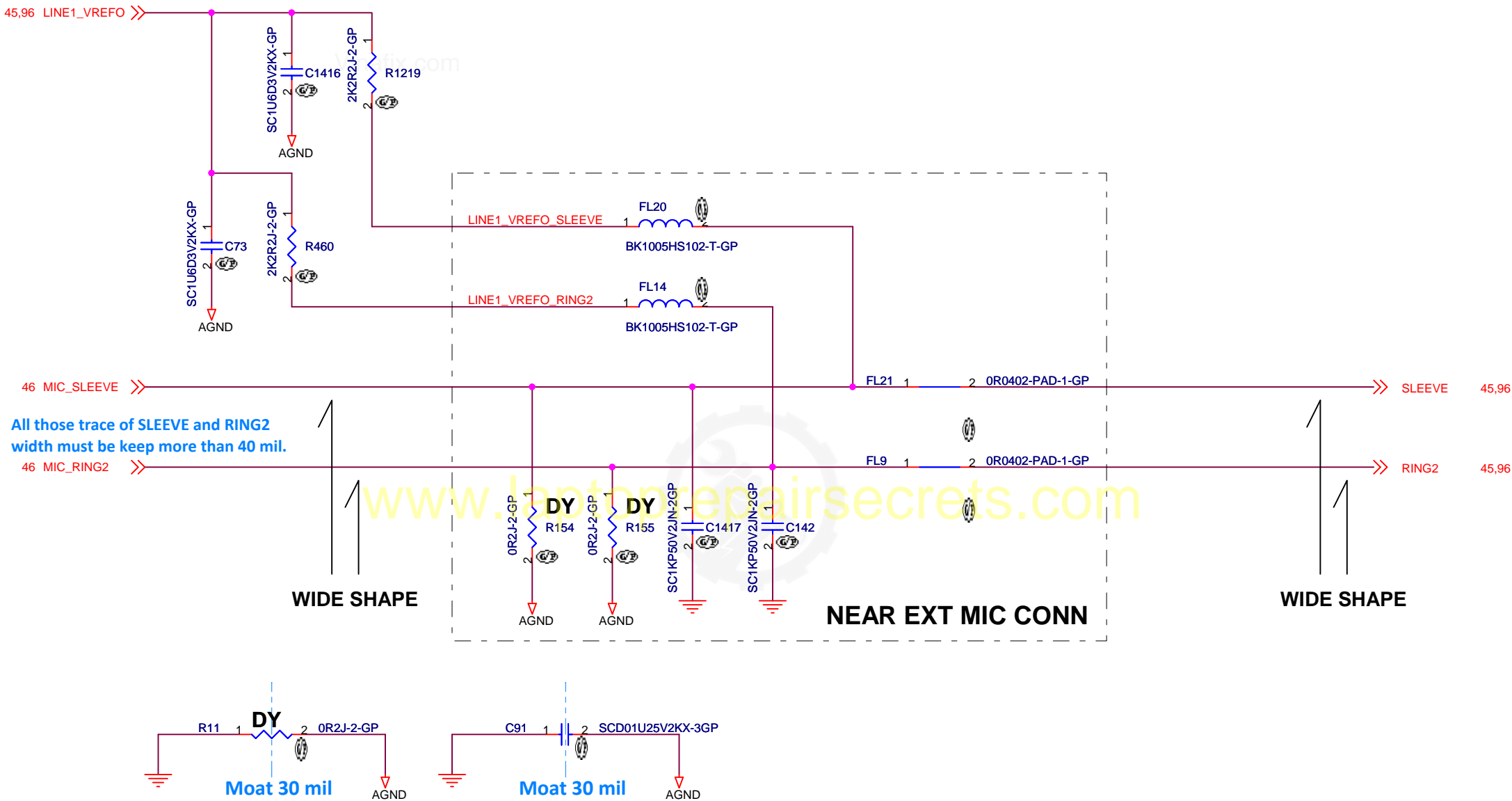


TABLE SYS DOCK HW Enable/Disable

	ENABLE	DISABLE	NOTE
R881	ASM	NO ASM	
R951	ASM	NO ASM	
R260	ASM	NO ASM	
R292	ASM	NO ASM	
Q177	ASM	NO ASM	
Q30	ASM	NO ASM	

LOGIC

<Variant Name>



<Variant Name>

緯創資通

Wistron Corporation
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Taipei Hsien 221, Taiwan, R.O.C.

Title

Audio EXT MIC I/F

Size
A4

Document Number

Kome-1 WS

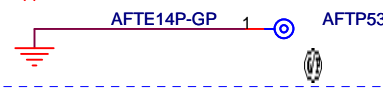
Rev
-1

Date: Thursday, September 12, 2013

Sheet 47 of 105

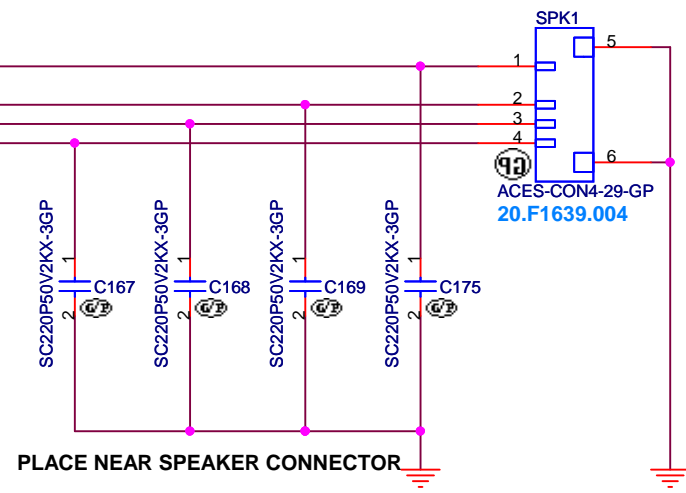
Near SPEAKER CONN: SPK1 (p.048)

45 SP_OUTR-
45 SP_OUTR+
45 SP_OUTL-
45 SP_OUTL+

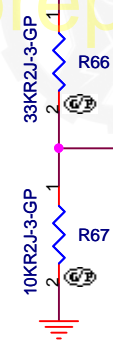
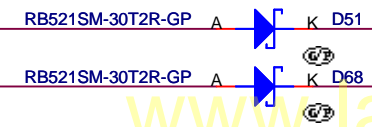


Delete AFTP49, AFTP50, AFTP51, AFTP52 for layout placement

45 SP_OUTL+
45 SP_OUTL-
45 SP_OUTR-
45 SP_OUTR+

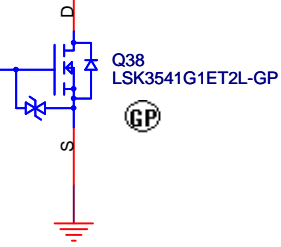


50 EC_SPKR
11 PCH_SPKR



BEEP_MIX_ATT 45

50 -BEEP_ENABLE

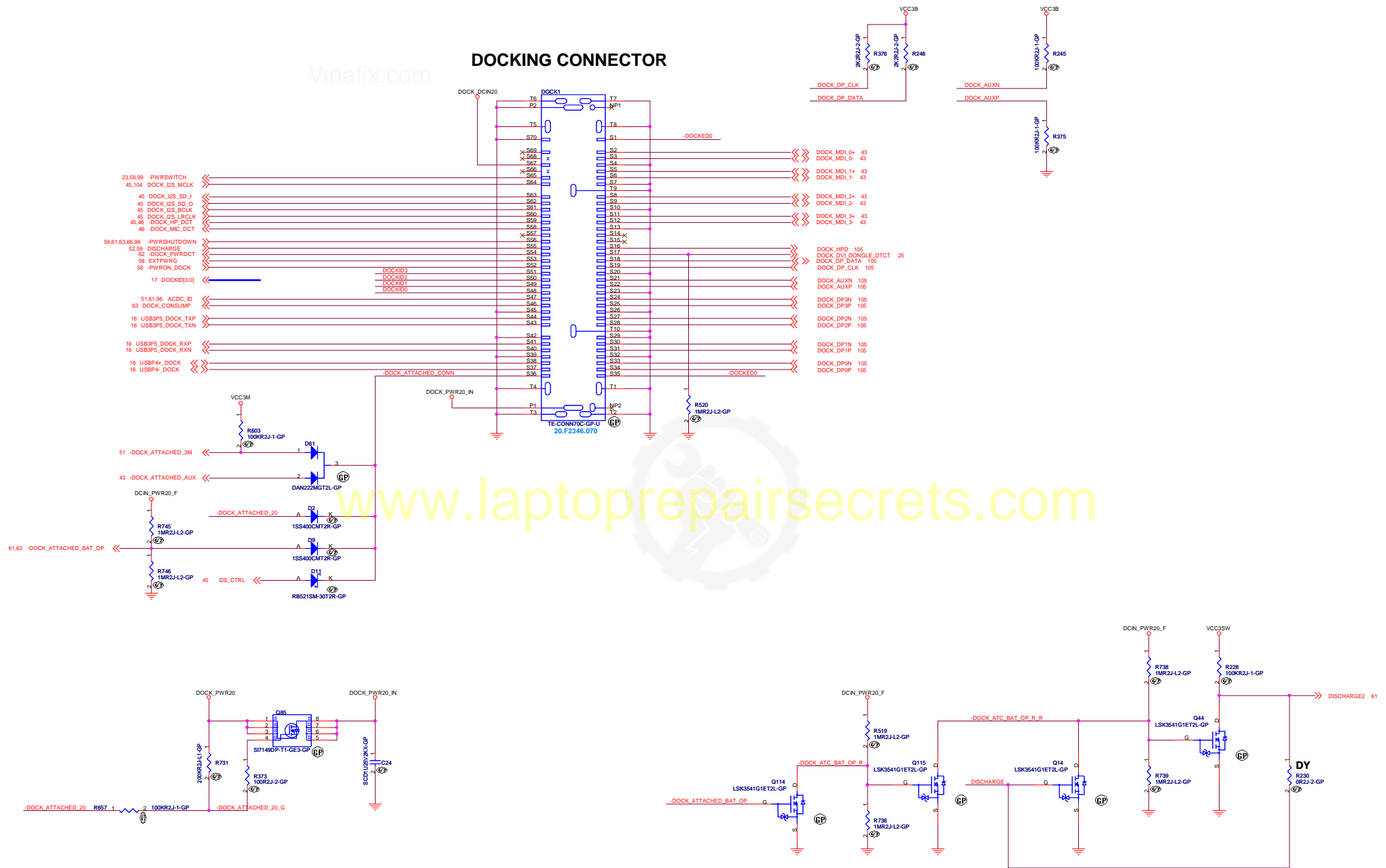


<Variant Name>

緯創資通 Wistron Corporation
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Taipei Hsien 221, Taiwan, R.O.C.

Title		
AUDIO SPEAKER I/F , BEEP		
Size	Document Number	Rev
A4	Kome-1 WS	-1
Date: Thursday, September 12, 2013		
Sheet 48 of 105		

DOCKING CONNECTOR



<Variant Name>

緯創資通

Wistron Corporation
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Taipei Hsien 221, Taiwan, R.O.C.

Title

DOCKING I/F

Size

Document Number

Kome-1 WS

Date

Thursday, September 12, 2013 Sheet 40 of 106

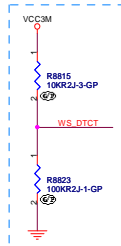
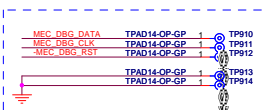
Rev

-1

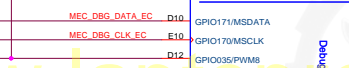
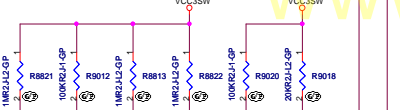
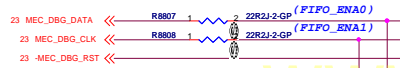
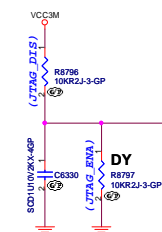


WS_DTCT (GPIO105)		
R8815	UMA/SWG	WS
	NO_ASM	ASM

LOGIC



Graphics Matrix					
GPIO172 (VIDEO_ID)	UMA Entry	UMA Enhance	SWG	WS NVIDIA	WS AMD
GPIO172 (VIDEO_ID)	L	L	H	H	L
GPIO105 (WS_DTCT)	L	L	L	H	H



JTAG debug port		
	Enable	Disable
R8796	ASM	NO_ASM
R8797	NO_ASM	ASM

(JTAG_DIS)
(JTAG_ENA)

LOGIC

(FIFO_ENA)
(FIFO_ENA1)
(FIFO_DIS)

Trace FIFO debug port		
	Enable	Disable
R8807	ASM	NO_ASM
R8808	ASM	NO_ASM
R8950	NO_ASM	ASM

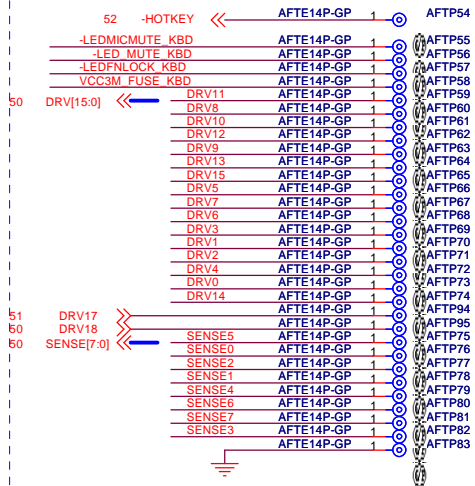
LOGIC

Crystal 32.768KHz 9pf 20ppm				
KDS	DST310S	1TJF090DP1A100T	82.30001.C21	
TXC	9H T10	9H03200033	82.30001.F31	
EPSON	FC-135	Q13FC1350000300	82.30001.C01	

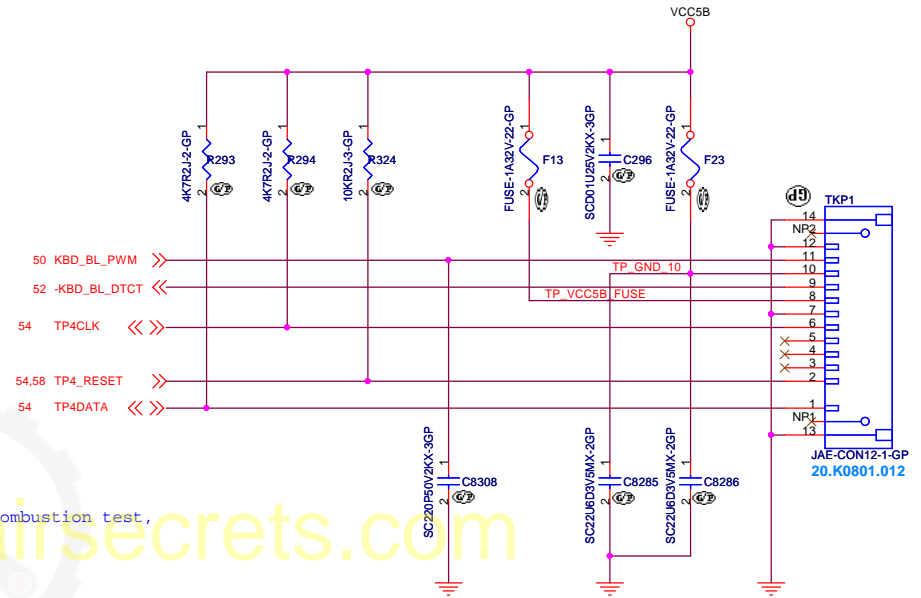
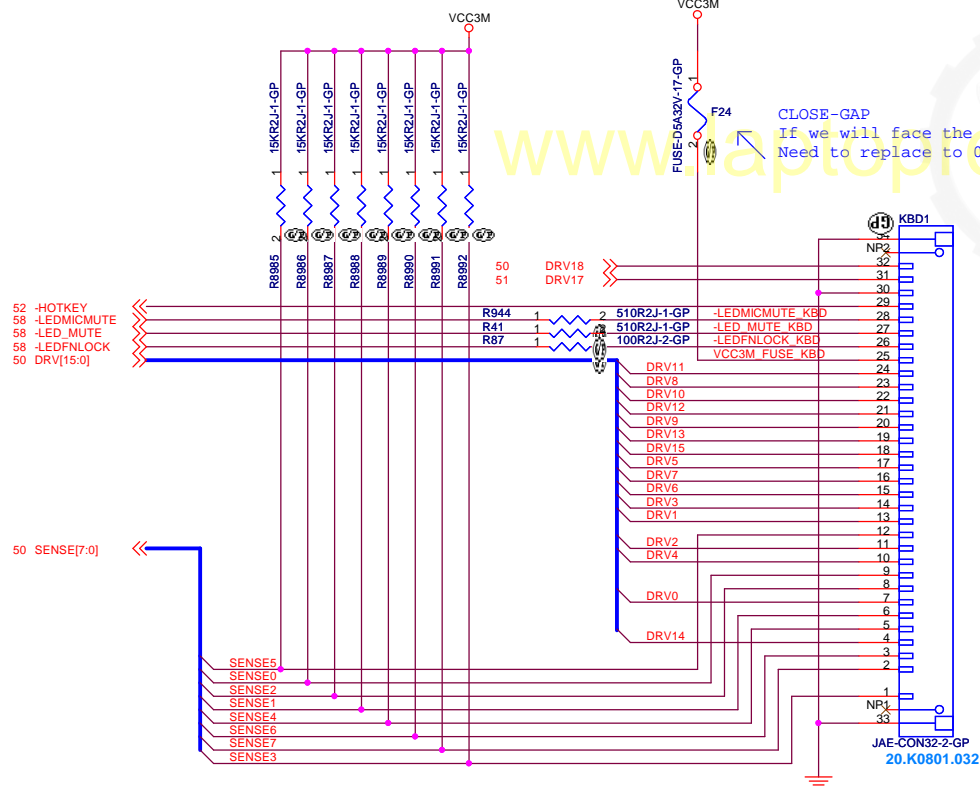
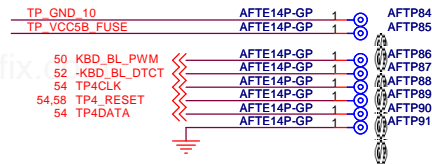
VIDEO ID (GPIO172)		
	UMA/AMD WS	SWG/nVIDIA WS
R940	NO_ASM	ASM

LOGIC

Near Keyboard CONN: KBD1 (p.053)



Near TrackPoint CONN: TKP1 (p.053)



CLOSE-GAP
If we will face the failure on combustion test,
Need to replace to 0.5A Fuse.

<Variant Name>

緯創資通 Wistron Corporation
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Title KEYBOARD I/F		
Size A3	Document Number Kome-1 WS	Rev -1
Date: Thursday, September 12, 2013	Sheet 53	of 105

Figure 10 shows the pin connections for the ATFT100 module. The connections are as follows:

Module Pin	Connection
1	NFC_VCC3B_FUSE
2	AFTE14P-GP
3	AFTE14P-GP
4	AFTE14P-GP
5	AFTE14P-GP
6	AFTE14P-GP
7	AFTE14P-GP
8	AFTE14P-GP
9	AFTE14P-GP
10	AFTE14P-GP
11	AFTE14P-GP
12	AFTE14P-GP
13	AFTE14P-GP
14	AFTE14P-GP
15	AFTE14P-GP
16	AFTE14P-GP

	UNIT NO.	Wistron P/N	PIN NO.	DESCRIPTION	CABLE TYPE
Before	FPR1	20.K0793.012	12	FPR+COLOR SENSOR	FPC
After	NFC1	20.K0708.020	20	COLOR SENSOR+NFC	FFC
Before	CKP1	20.K0767.026	26	CLICK PAD+NFC	FFC
After	CKP1	20.K0510.028	28	FPR+CLICK PAD	FFC

FPR_VCC5P_FUSE	AFTE14P_FUSE	AFPT92
CP_VCC5P_FUSE		AFPT99
53.58 TP4_RESET	AFTE14P_FUSE 1	AFPT102
53 TP4DATA	AFTE14P_FUSE 1	AFPT103
53 TP4CLK	AFTE14P_FUSE 1	AFPT104
12.88.89.90.91 SMB_DATA_3B	AFTE14P_FUSE 1	AFPT105
12.88.89.90.91 SMB_CLK_3B	AFTE14P_FUSE 1	AFPT106
58 BYPASS_PAD	AFTE14P_FUSE 1	AFPT107
58 PAD_RESET	AFTE14P_FUSE 1	AFPT108
50 P0CLK	AFTE14P_FUSE 1	AFPT109
50 P0DATA	AFTE14P_FUSE 1	AFPT110
	AFTE14P_FUSE 1	AFPT113

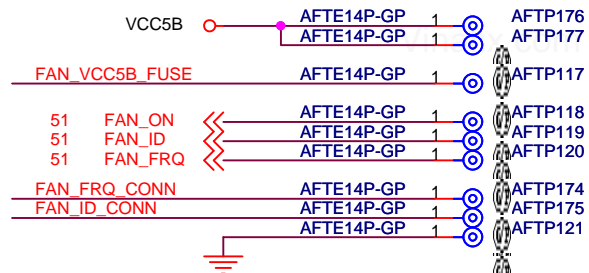
[illegible][illegible]

Pin Order

6	GND (DTCT#)
5	NC
4	GND
3	USB DN
2	USB DP
1	VCC5B

The diagram illustrates the Smart Card Connector's connections. A red box labeled "Terminal" is connected to the connector. A black line labeled "FFC" (Flexible Flat Cable) connects the connector to the "HDD" (Hard Disk Drive) unit.

Near FAN CONN: FAN1/FAN3 (p.055)

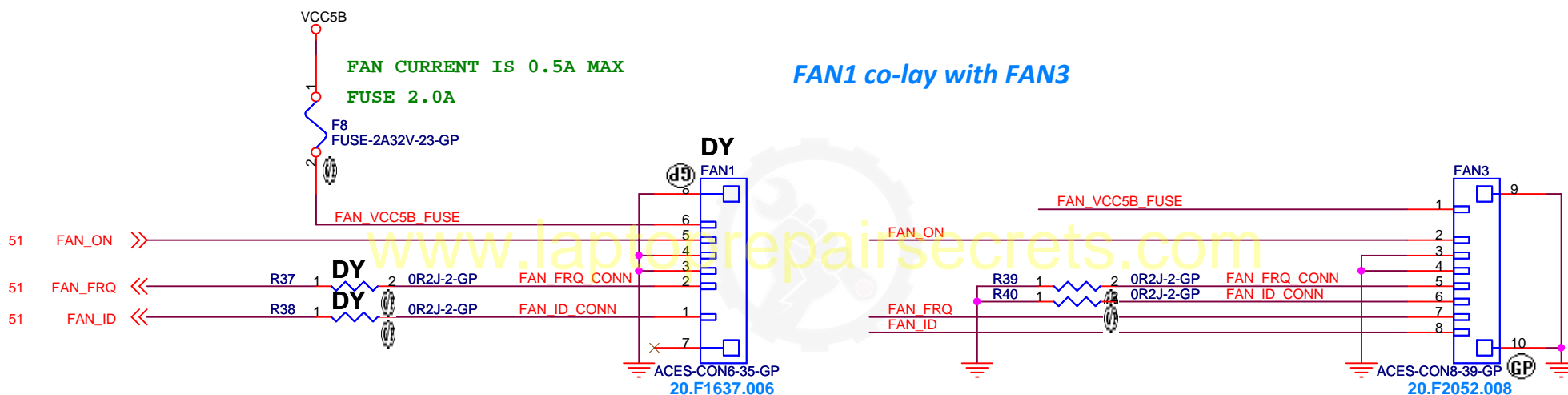


TOP Side
Bottom Side

As Space from Metal heat Plate to top of GFX die is different on Q3 model and Q1 model, FAN module should be different.

FAN Module	Pin No.	FAN3	FAN1
For Q1 GFX	8	ASM	NO_ASM
For Q3 GFX	6	NO_ASM	ASM

↑
LOGIC



FAN ID is defined with analog level.

<Variant Name>

緯創資通

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Title

FAN I/F

Size
A4

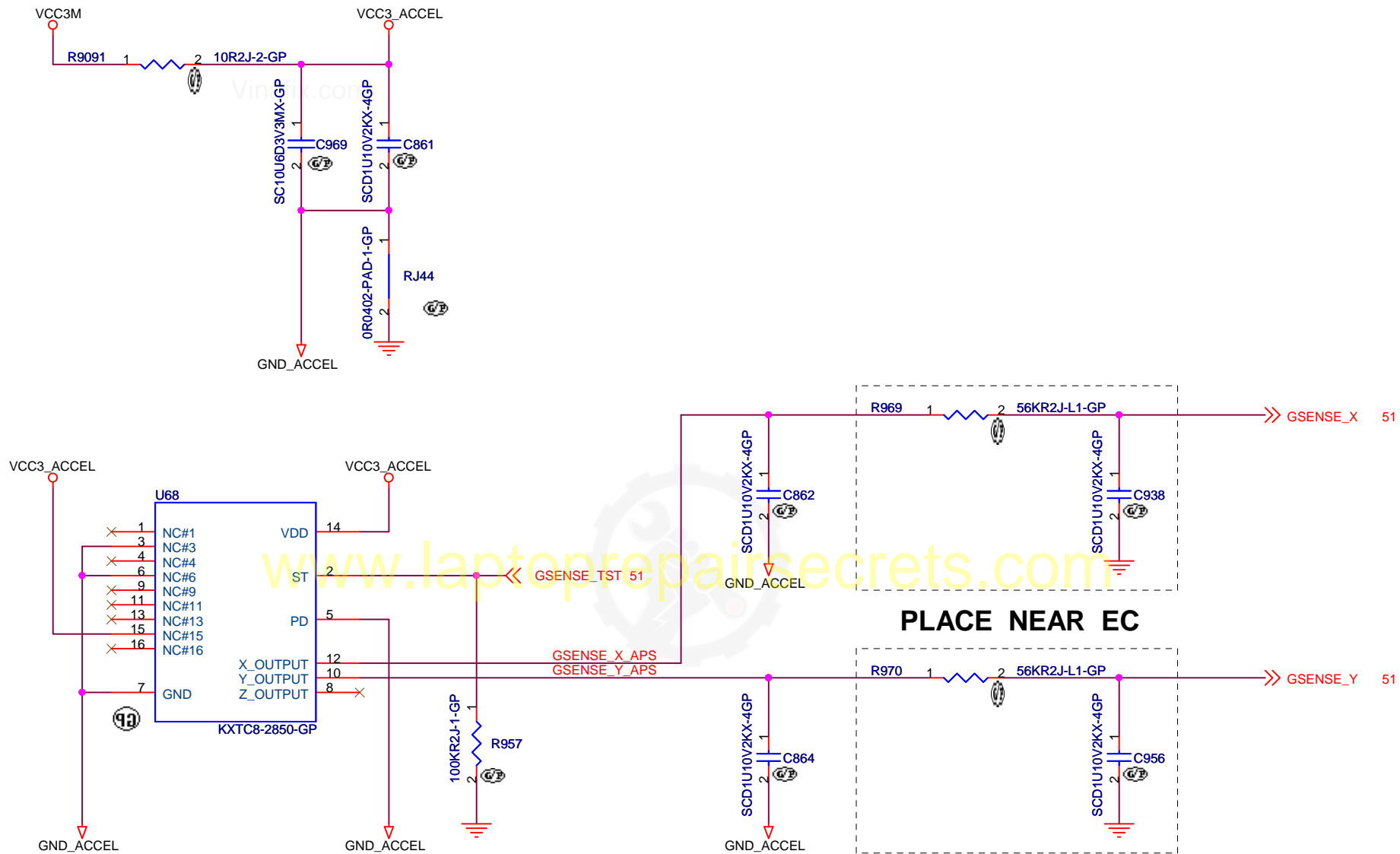
Document Number

Kome-1 WS

Rev
-1

Date: Thursday, September 12, 2013

Sheet 55 of 105



These components must be placed near HDD and same location for UMA/SWG/WS.

Do not use Z-axis monitor on APS

<Variant Name>

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Title

APS(G SENSOR)

Size
A4

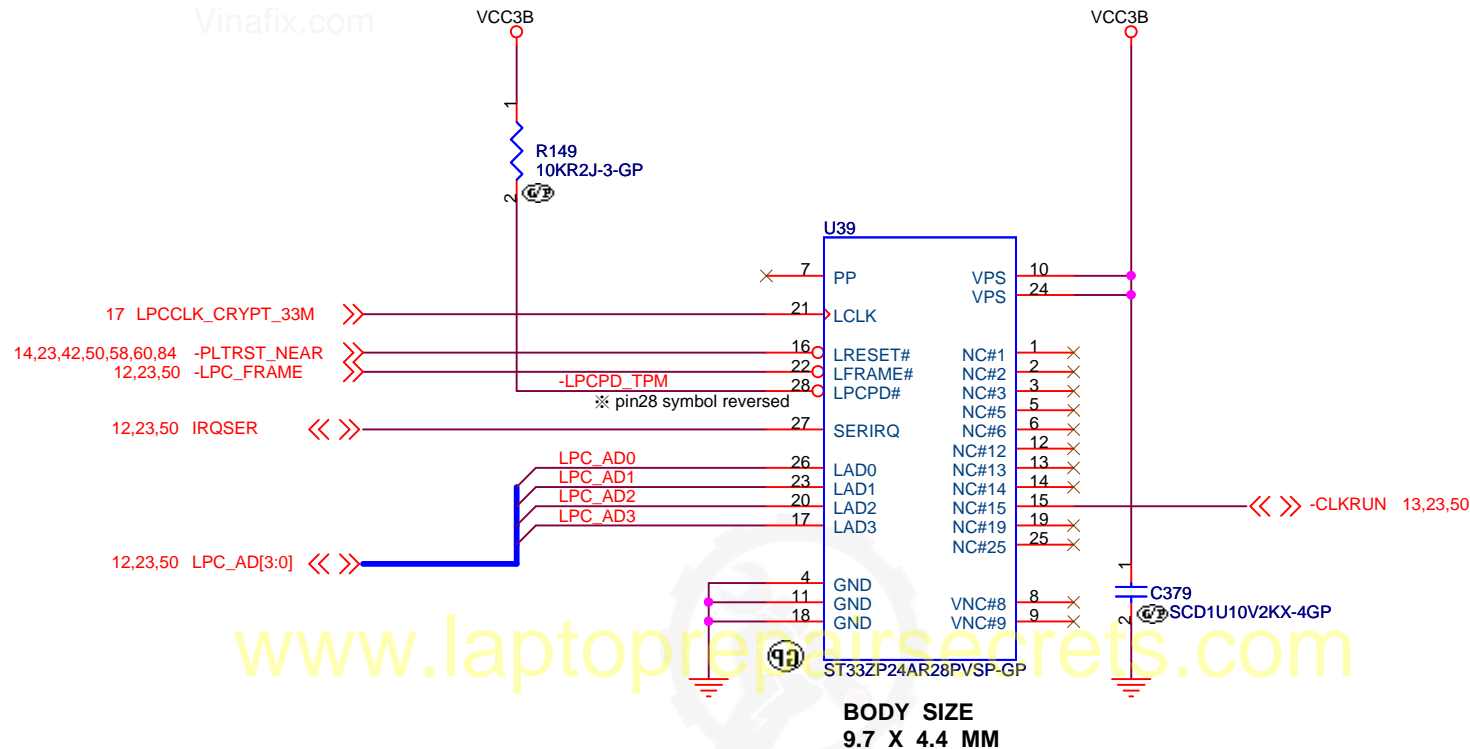
Document Number

Kome-1 WS

Rev
-1

Date: Thursday, September 12, 2013

Sheet 56 of 105



Need to update the firmware to improve system boot up time.

<Variant Name>

緯創資通

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Title

TPM

Size
A4

Document Number

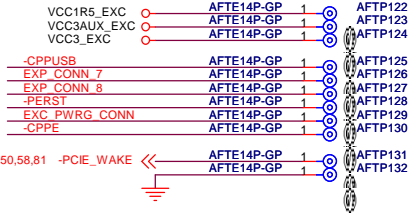
Kome-1 WS

Rev
-1

Date: Thursday, September 12, 2013

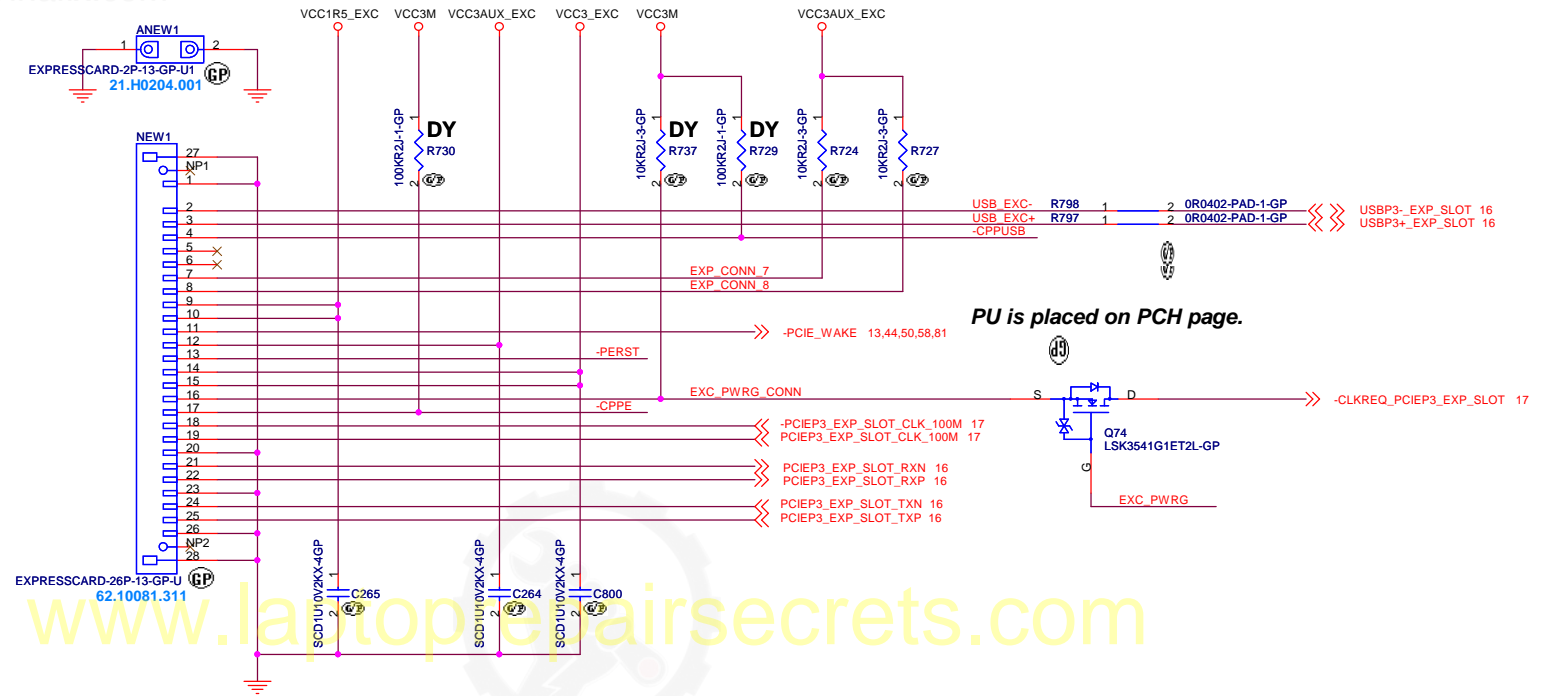
Sheet 57 of 105

Near ExpressCard Slot: NEW1 (p.060)



Vinafix.com

EXC POWER IC has internal PU for
PIN#9(-CPUSB), PIN#10(-CPPE)

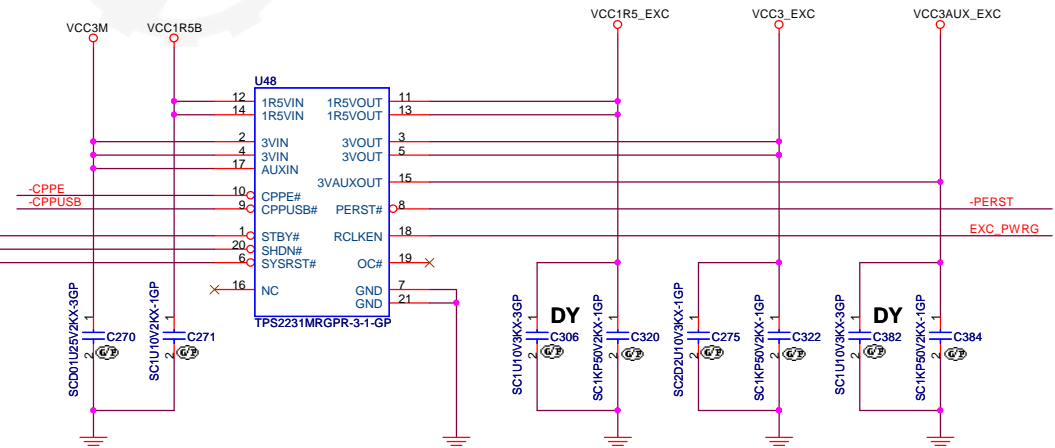


www.laptoprepairsecrets.com

23,58,59,71,72,96 B_ON
58 -EXC_PWR_SHDN
14,23,42,50,57,58,84 -PLTRST_NEAR

EXPRESS POWER SW Table PCB Footprint Ref.: 74.02231.D73

	Supplier	Vendor P/N	Wistron P/N	Lenovo P/N
U48	TI	TPS2231MRGPR-3	74.02231.D73	45K0234BA
	NUVOTON	W83L351YG V.ASA	74.83351.A73	
	ROHM	BD4157MUV-GE2	74.04157.A73	
	ROHM	BD4156MUV-SGE2	74.04156.A73	



<Variant Name>

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Title	EXPRESS SLOT AND POWER		
Size	Document Number	Kome-1 WS	Rev -1
Date	Thursday, September 12, 2013	Sheet 60	of 105

DCIN_PWR20_F_CONN

AFTE14P-GP 1

AFTE14P-GP 2

AFTE14P-GP 3

AFPT133

AFPT134

AFPT135

AFPT136

AFPT137

AFPT138

AFPT139

ACDC_ID_CONN

AFTE14P-GP 1

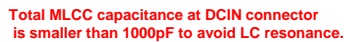
AFTE14P-GP 2

AFTE14P-GP 3

AFPT137

AFPT138

AFPT139

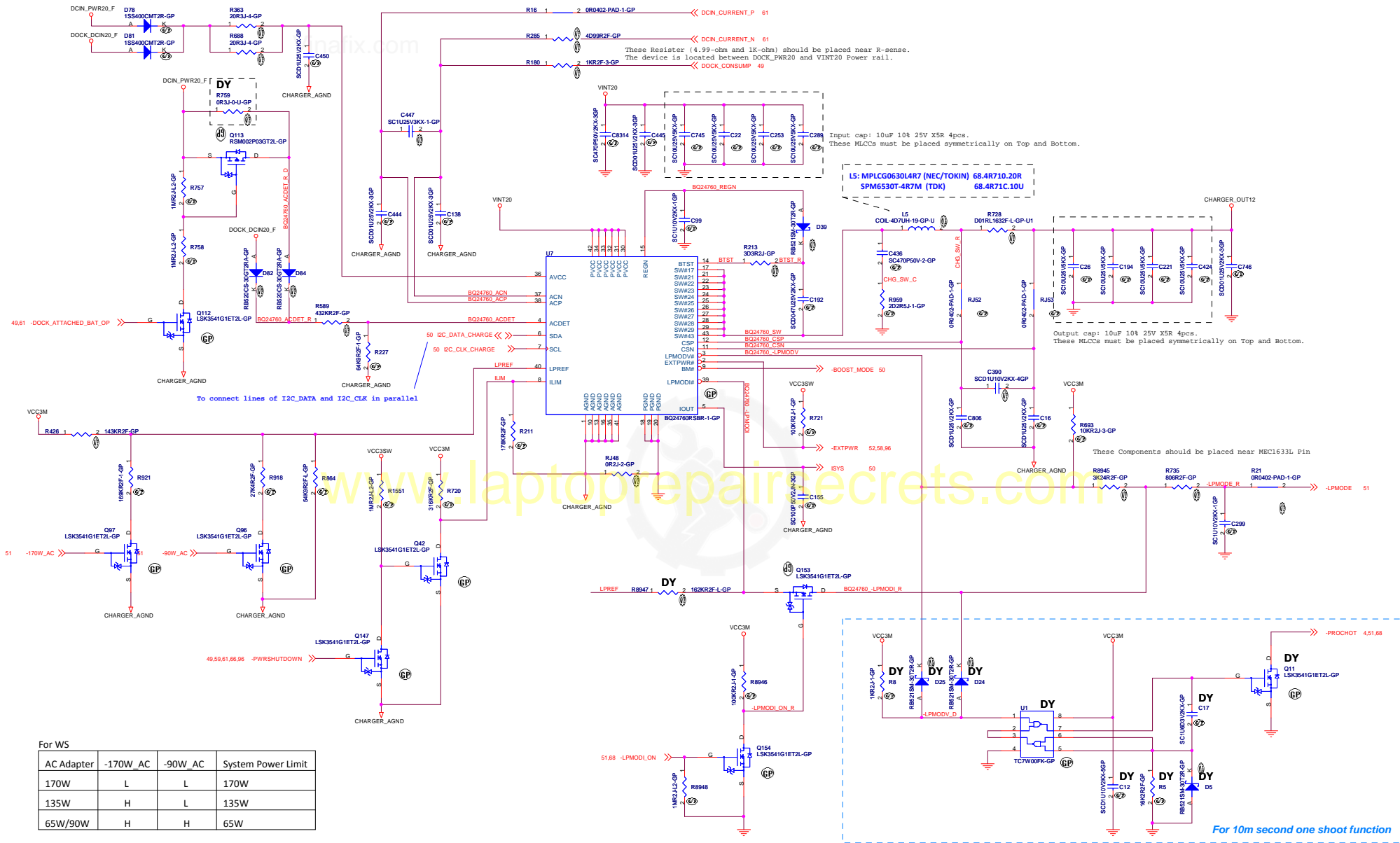


PEAK SHIFT	YES	NO
R662	NO-ASM	ASM
R369	ASM	NO-ASM
Q78	ASM	NO-ASM
Q51	ASM	NO-ASM

<Variant Name>

緯創資通 **Wistron Corporation**
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Taipei Hsien 221, Taiwan, R.O.C.

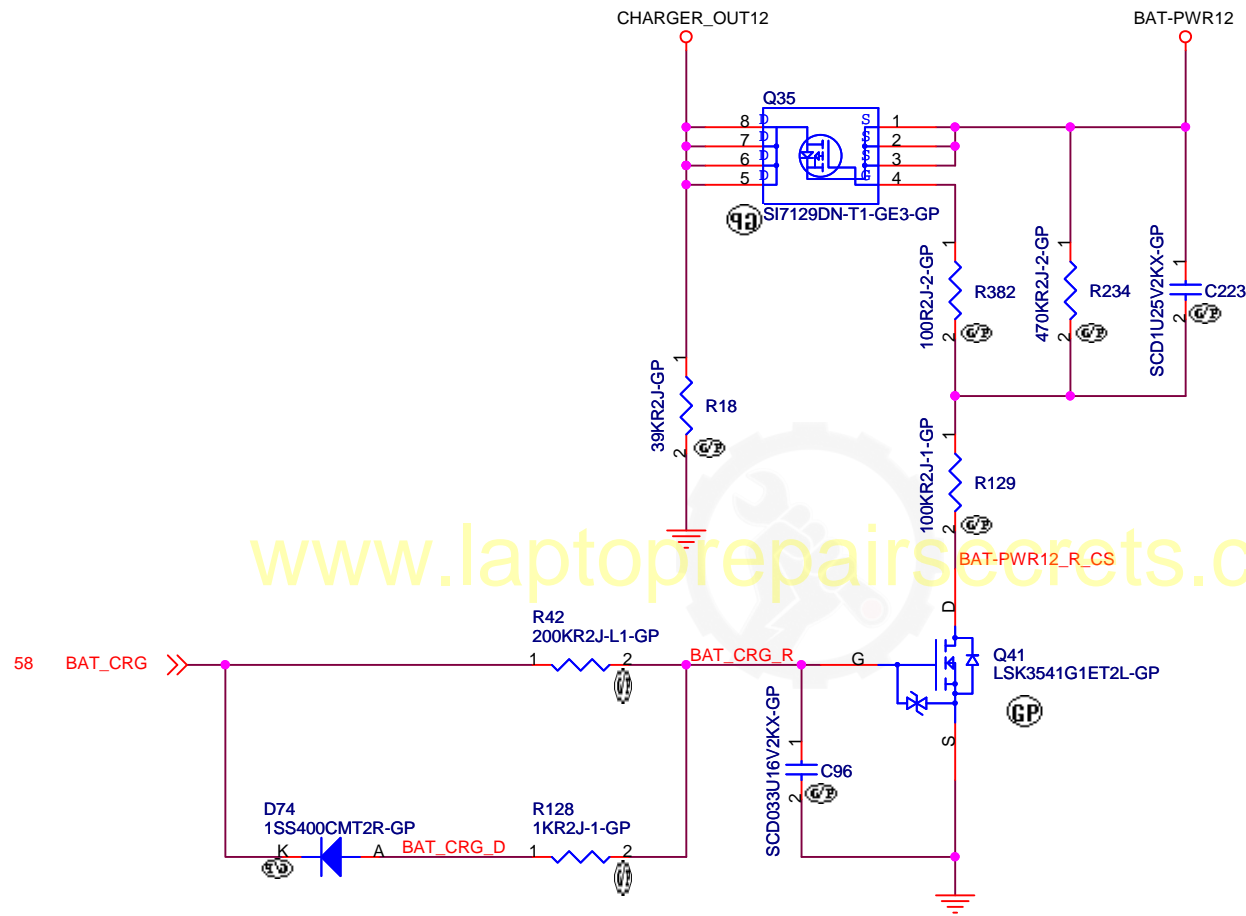
Title DC IN			
Size A2	Document Number Kome-1 WS	Rev -1	
Date: Thursday, September 12 2013		Sheet 61	of 105



Variant Name:

緯創資通 Wistron Corporation
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File BATTERY CHARGER
Size A2 Document Number Kome-1 WS
Date: Thursday, September 12, 2013 Sheet 21 of 106



<Variant Name>

緯創資通

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Title

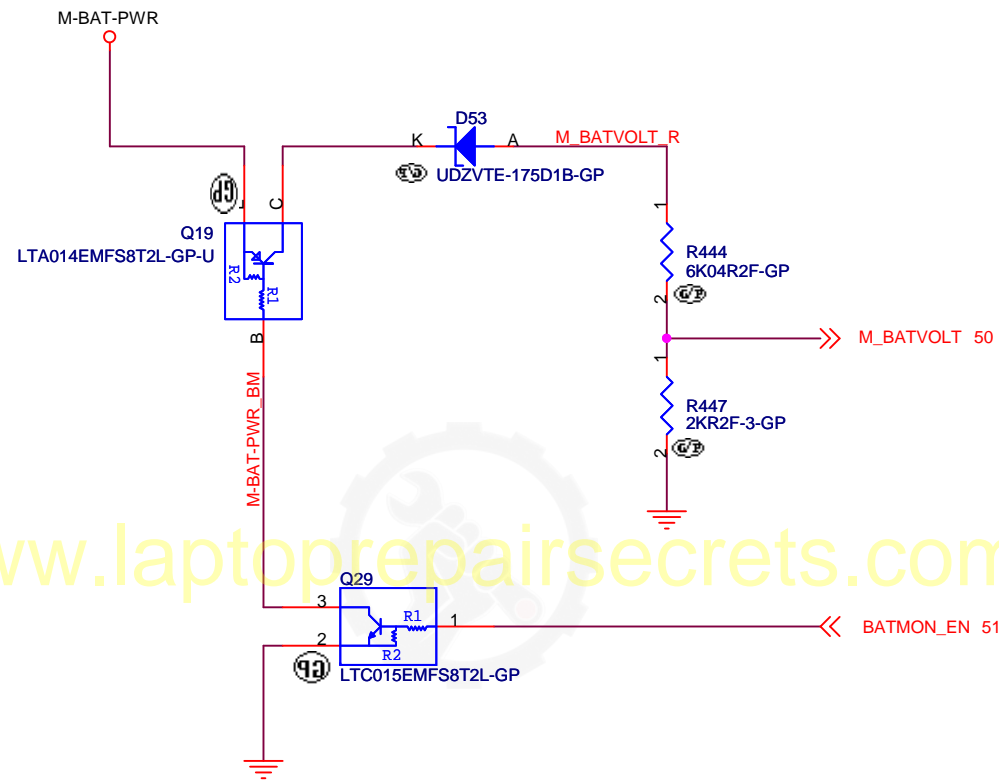
CHARGER SELECTSize
A4

Document Number

Kome-1 WSRev
-1

Date: Thursday, September 12, 2013

Sheet 64 of 105



<Variant Name>

緯創資通

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Title

BATTERY MONITOR

Size
A4

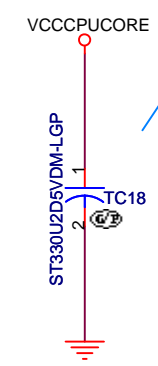
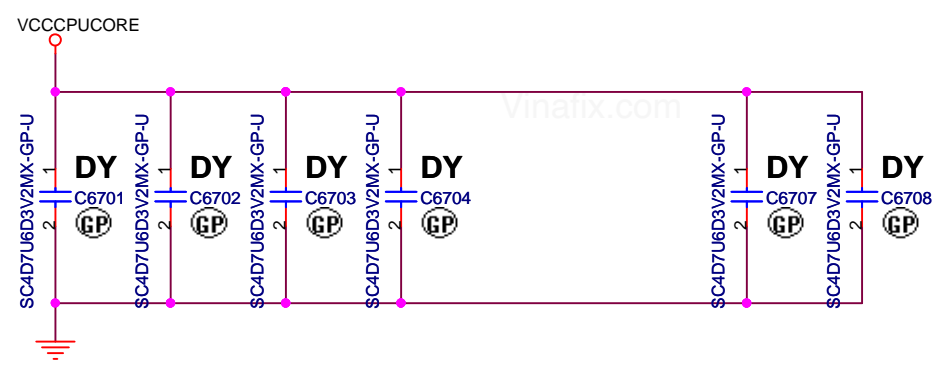
Document Number

Kome-1 WS

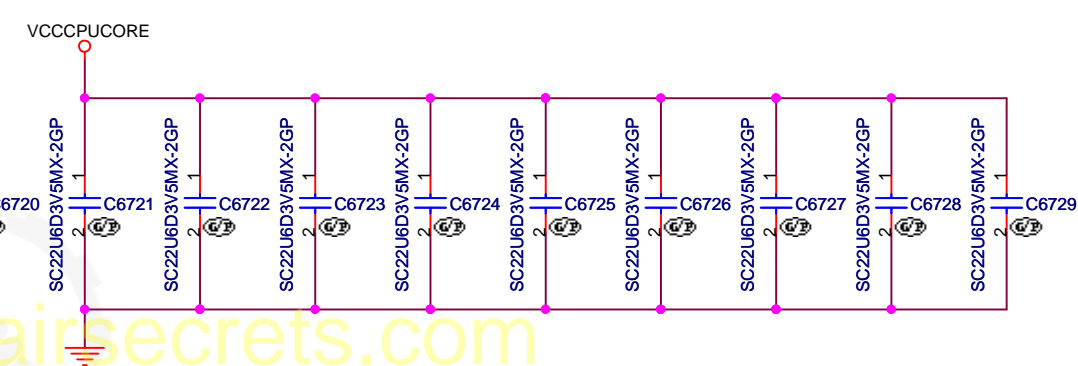
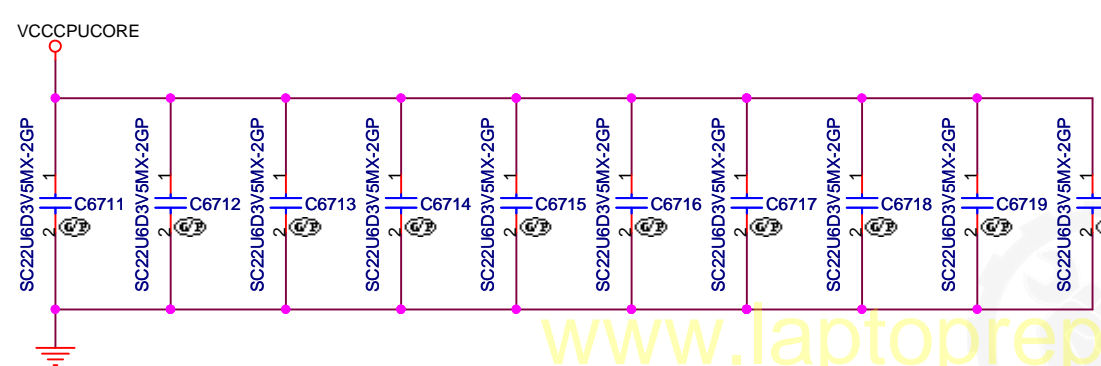
Rev	-1
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Date: Thursday, September 12, 2013

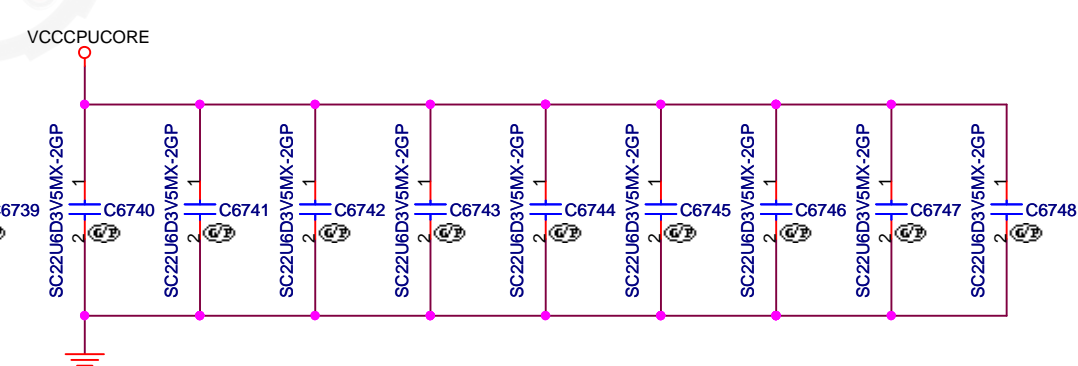
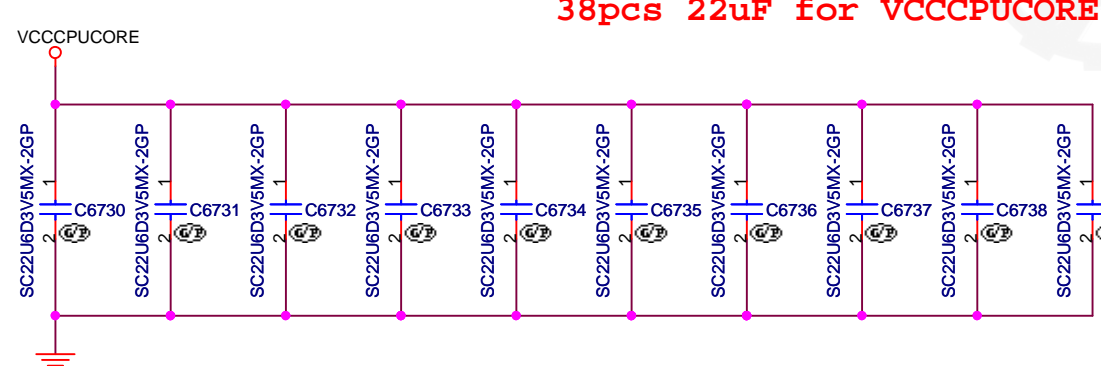
Sheet 65 of 105

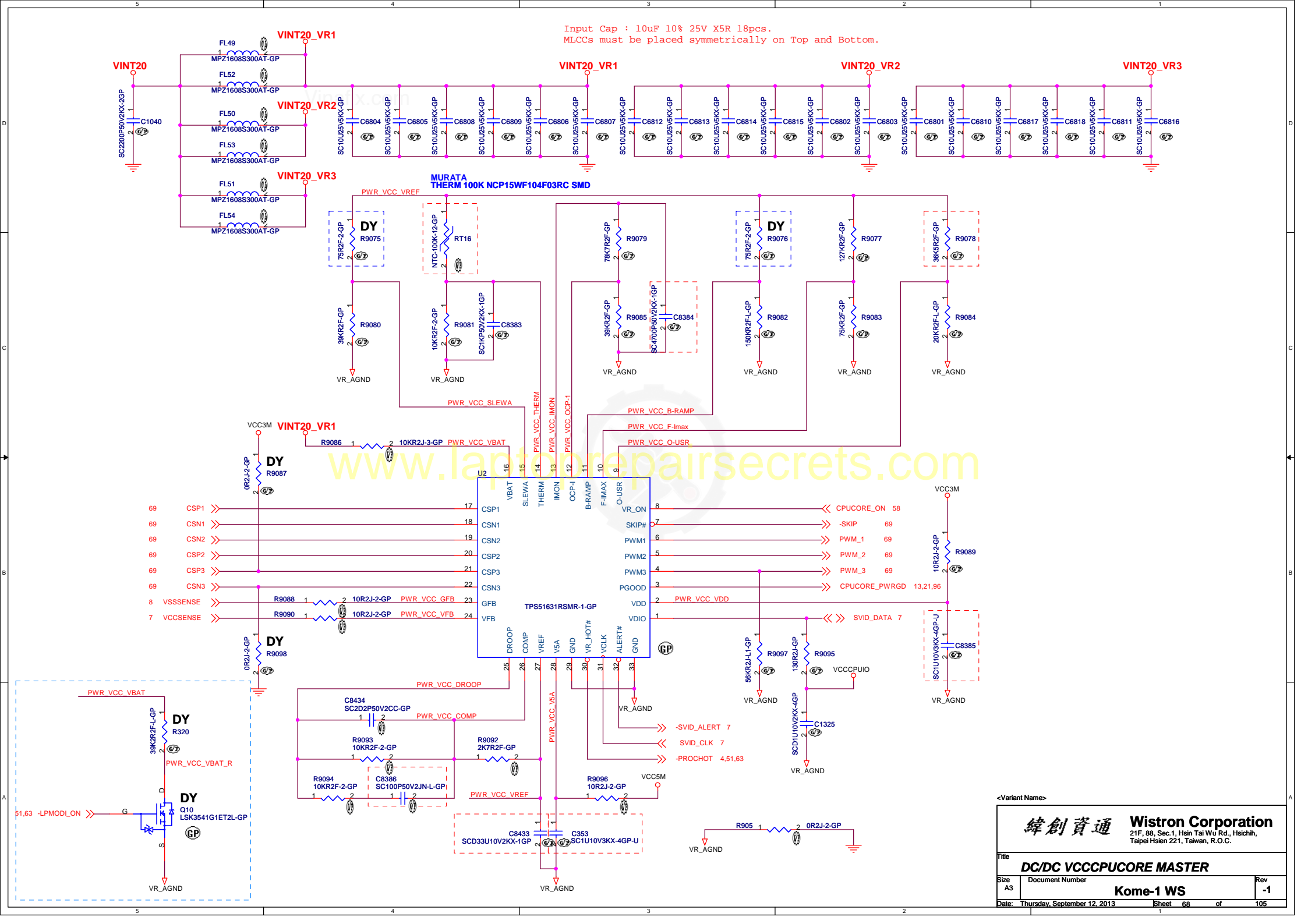


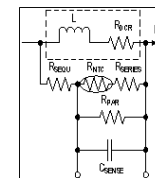
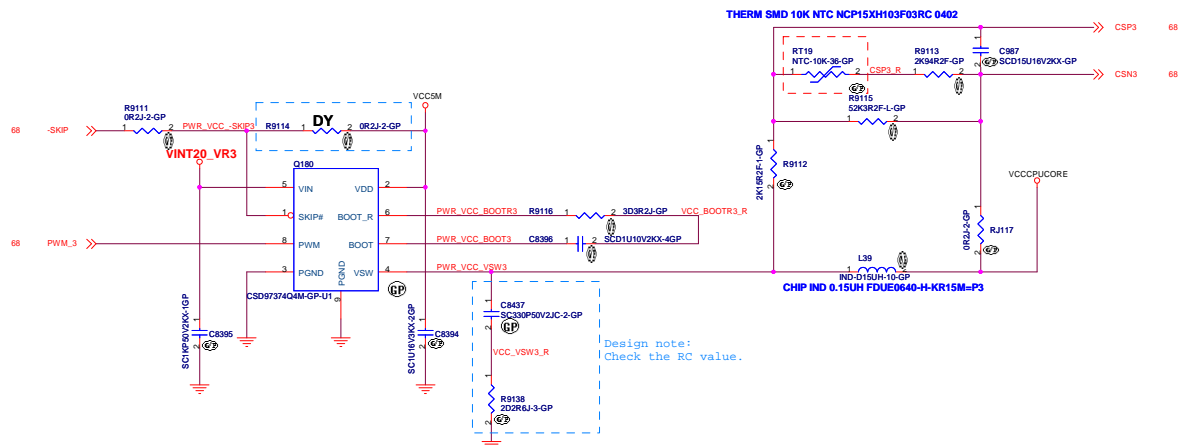
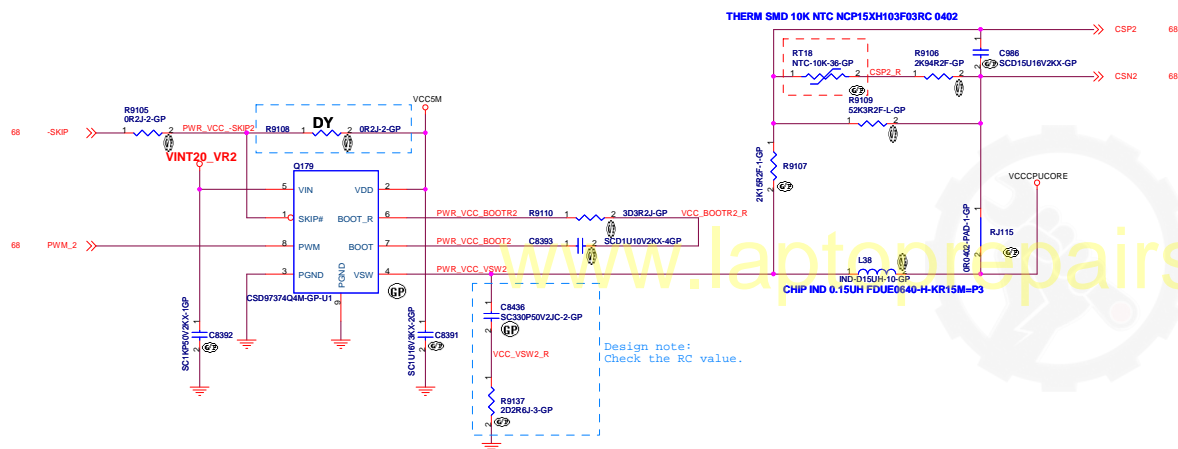
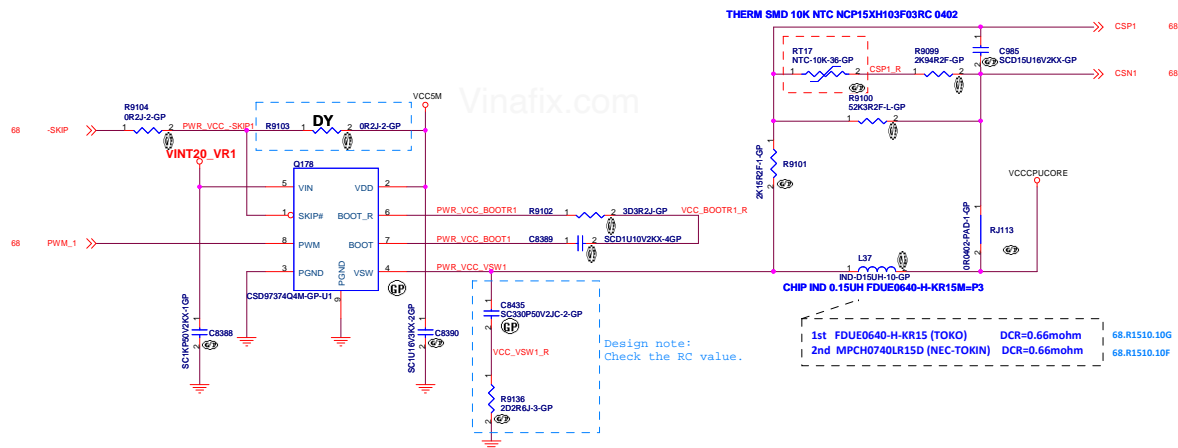
TC18:
For TPS51631 undershoot voltage issue
TC18: 330uF 2.5V 9mOhm 7343-size
1st Kemet T520V337M2R5ATE009 80.3371V.L01
2nd Panasonic EEFSX0E331ER 077.53371.0001



38pcs 22uF for VCCCPUCORE







Vin (Max) 20V
Inductor FDUE0640-H-KR15 (TOKO) DCR=0.66mOhm
Output Capacitor 22uF x 38pcs
Controller IC TP51631

Remove phase-3 power stage components and connect CSP3 to 3.3V and CSN3 to GND for 2-phase 37W Vcore.

Connection	Component Name	37W 2 Phase	47W 3 Phase	57W 3 Phase	Unit	
O-USR to GND	R9084	20	20	20	K-Ohm	
O-USR to VREF	R9078	64.9	36.5	36.5	K-Ohm	
F-IMAX to GND	R9083	150	75	75	K-Ohm	
F-IMAX to VREF	R9077	549	147	127	K-Ohm	
B-RAMP to GND	R9082	150	150	150	K-Ohm	
B-RAMP to VREF	R9076	Open	Open	Open	K-Ohm	
OCF-I to GND	R9085	39	39	39	K-Ohm	
IMON to OCF-I	R9079	162	88.7	78.7	K-Ohm	Different setting on NEC-TOKIN
THERM to GND	R9081	10	10	10	K-Ohm	
THERM to VREF	RT16	100	100	100	K-Ohm	NTC
SLEWA to GND	R9080	39	39	39	K-Ohm	
SLEWA to VREF	R9075	Open	Open	Open	K-Ohm	
DROOP to COMP	R9093	10	10	10	K-Ohm	
DROOP to COMP	C8434	2.2	2.2	2.2	pF	
DROOP to COMP	R9094 + C8386	10K + 330p	10K + 100p	10K + 100p		
COMP to VREF	R9092	2.61	2.7	2.7	K-Ohm	Different setting on NEC-TOKIN
VREF to GND	C8433	0.33	0.33	0.33	uF	
PWM3 to GND	R9097	56K	56K	56K	K-Ohm	Place 56K-Ohm to enable OSR
Rsequ	R9101, R9107, R9112	2.15	2.15	2.15	K-Ohm	R9112 = NO_ASM in 2-phase 37W
Rseries	R9099, R9106, R9113	2.94	2.94	2.94	K-Ohm	R9113 = NO_ASM in 2-phase 37W
Rpar	R9100, R9109, R9115	52.3	52.3	52.3	K-Ohm	R9115 = NO_ASM in 2-phase 37W
Csense	C985, C986, C987	150	150	150	nF	C987 = NO_ASM in 2-phase 37W
Rntc	RT17, RT18, RT19	10	10	10	K-Ohm	RT19 = NO_ASM in 2-phase 37W (NTC)
	R9087	NO_ASM	NO_ASM	NO_ASM		
	R9098	NO_ASM	NO_ASM	NO_ASM		
	Q180	NO_ASM	NO_ASM	NO_ASM		
	R9114	NO_ASM	NO_ASM	NO_ASM		
	C8395	NO_ASM	NO_ASM	NO_ASM		
	C8394	NO_ASM	NO_ASM	NO_ASM		
	R9116	NO_ASM	NO_ASM	NO_ASM		
	C8396	NO_ASM	NO_ASM	NO_ASM		
	R9138	NO_ASM	NO_ASM	NO_ASM		
	C8437	NO_ASM	NO_ASM	NO_ASM		
	RT19	NO_ASM	NO_ASM	NO_ASM		
	R9113	NO_ASM	NO_ASM	NO_ASM		
	R9115	NO_ASM	NO_ASM	NO_ASM		
	R9112	NO_ASM	NO_ASM	NO_ASM		
	C987	NO_ASM	NO_ASM	NO_ASM		
	L39	NO_ASM	NO_ASM	NO_ASM		
	RJ117	NO_ASM	NO_ASM	NO_ASM		
	TC18	NO_ASM	NO_ASM	NO_ASM		

NOTES:

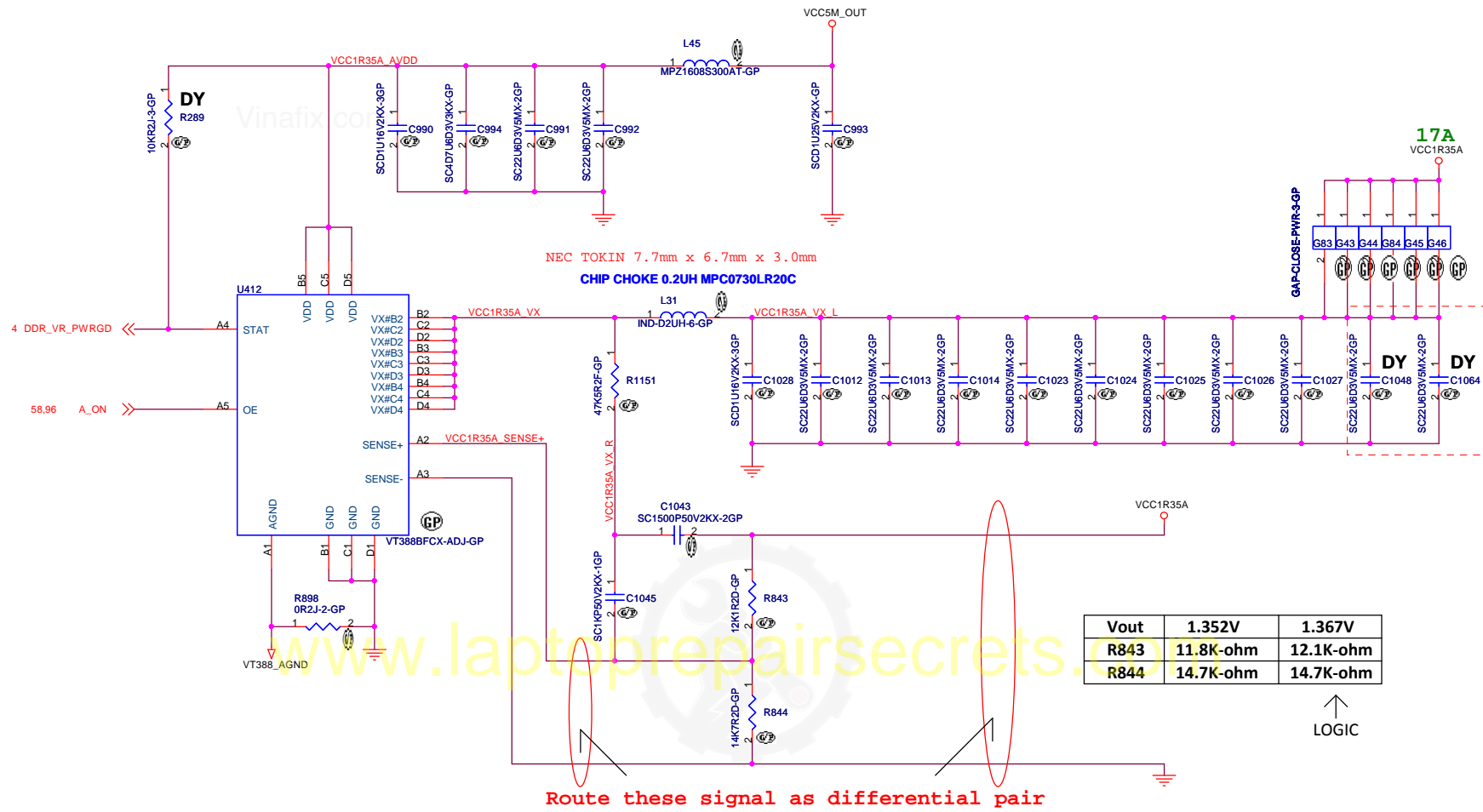
Min Over Current Limit is set to 70A for 37W and 110A for both 47W and 57W.
Switching Frequency is set to 1MHz for 37W and 800KHz for 47W and 57W.
Fine-tuning at motherboard evaluation level might still be needed to get the best performance.

Inductor MPCH0740LR15D (NEC-TOKIN) DCR=0.66mOhm

Connection	Component Name	37W 2 Phase	47W 3 Phase	57W 3 Phase	Unit	
IMON to OCF-I	R9079	180	97.6	86.6	K-Ohm	Different setting on TOKO
COMP to VREF	R9092	3	2.87	2.87	K-Ohm	Different setting on TOKO
DROOP to COMP	R9094 + C8386	10K + 330p	10K + 100p	10K + 100p		

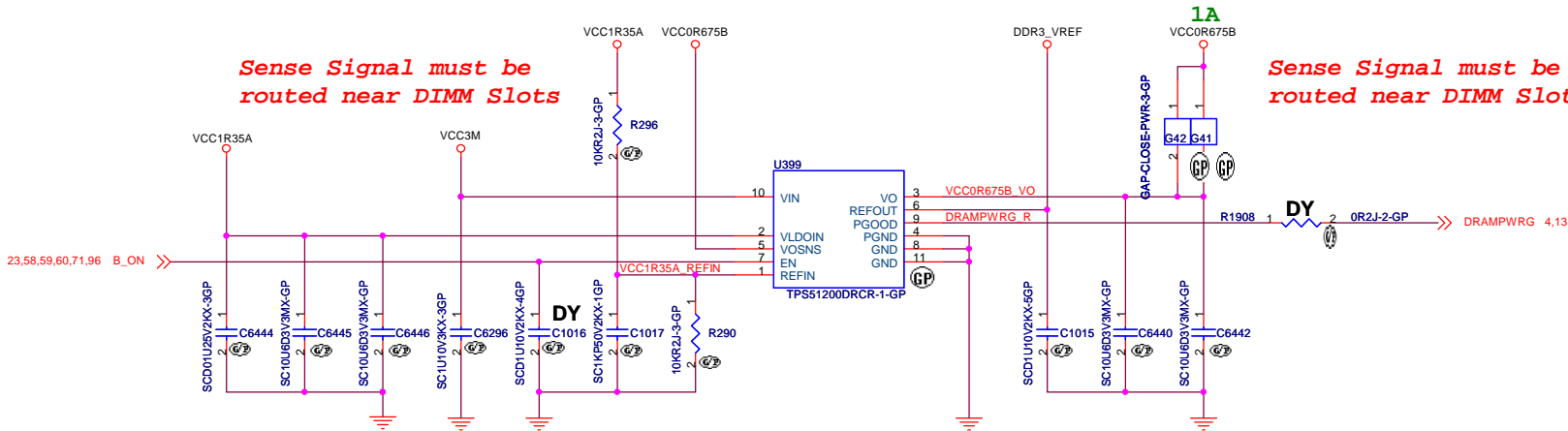
<Variant Name>

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsueh-shan, Taipei Hsien 221, Taiwan, R.O.C.	
Title VCCCPUCORE SLAVE	
Size A2	Document Number Kome-1 WS
Date: Thursday, September 12, 2013	Sheet 1 of 1



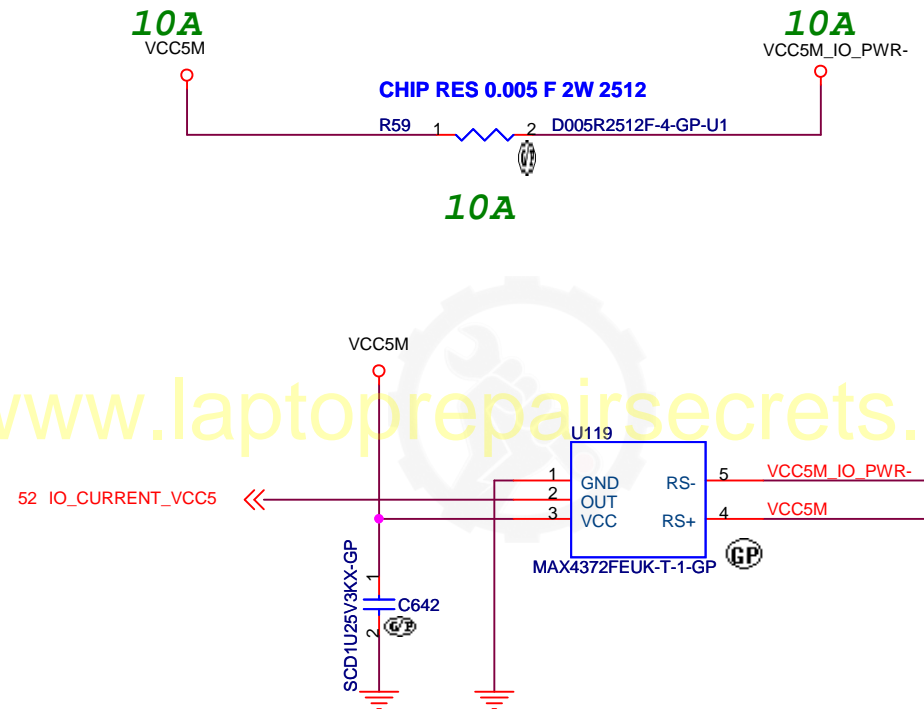
Sense Signal must be routed near DIMM Slots

Sense Signal must be routed near DIMM Slots



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*This circuits to monitor on the current of VCC5 power rail
relaed to System USB Ports, ODD, HDD and Thunderbolt.*



<Variant Name>

緯創資通

Wistron Corporation

21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title

CURRENT MONITOR I/O

Size
A4

Document Number

Kome-1 WS

Rev
-1

Date: Thursday, September 12, 2013

Sheet 75 of 105

- VCC3POC for Core and Integrated VR : 0.91A

<Variant Name>

緯創資通

Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title

LOAD SW PCH SUS

Size	A4
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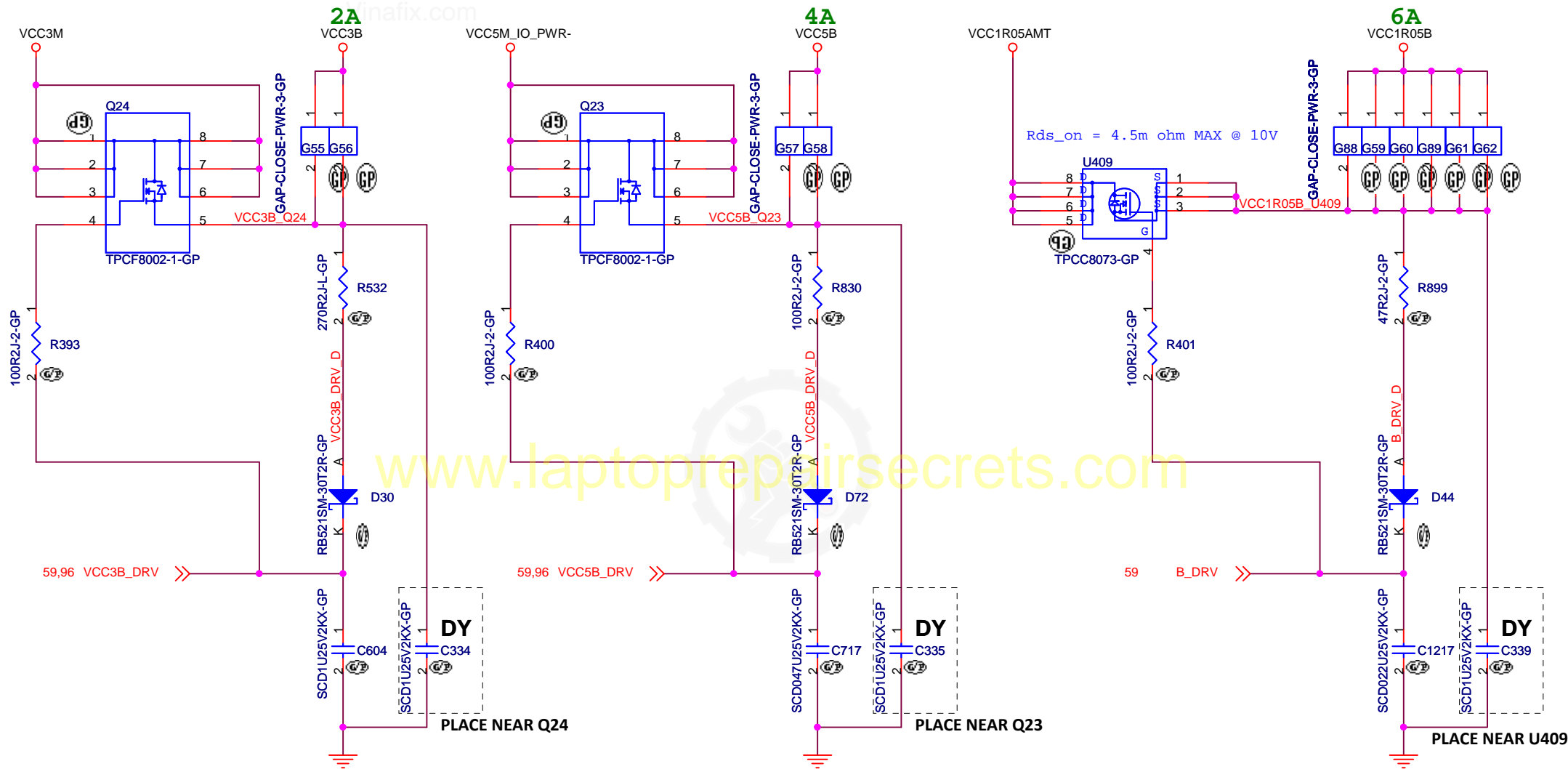
Document Number

Kome-1 WS

Rev	-1
-----	----

Date: Thursday, September 12, 2013

Sheet	76	of	105
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<Variant Name>

緯創資通

Wistron Corporation

21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title

LOAD SW VCCB

Size
A4

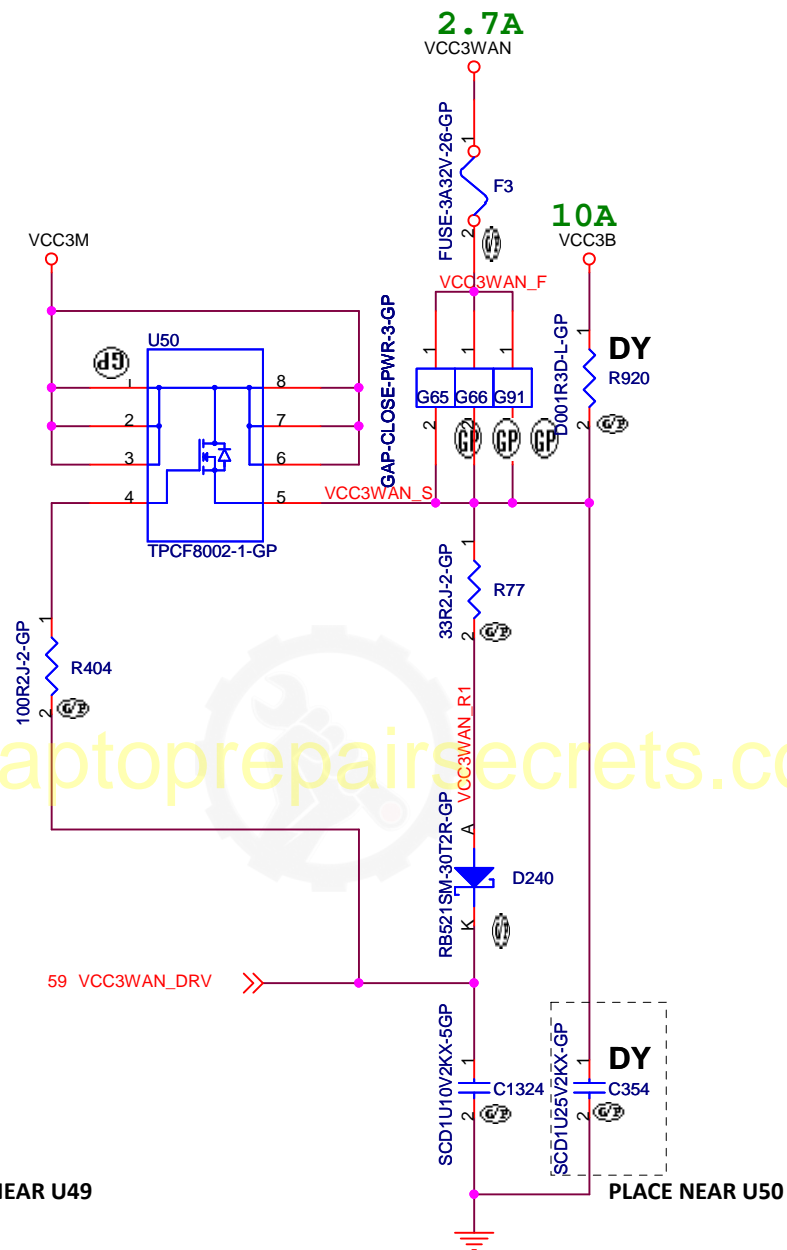
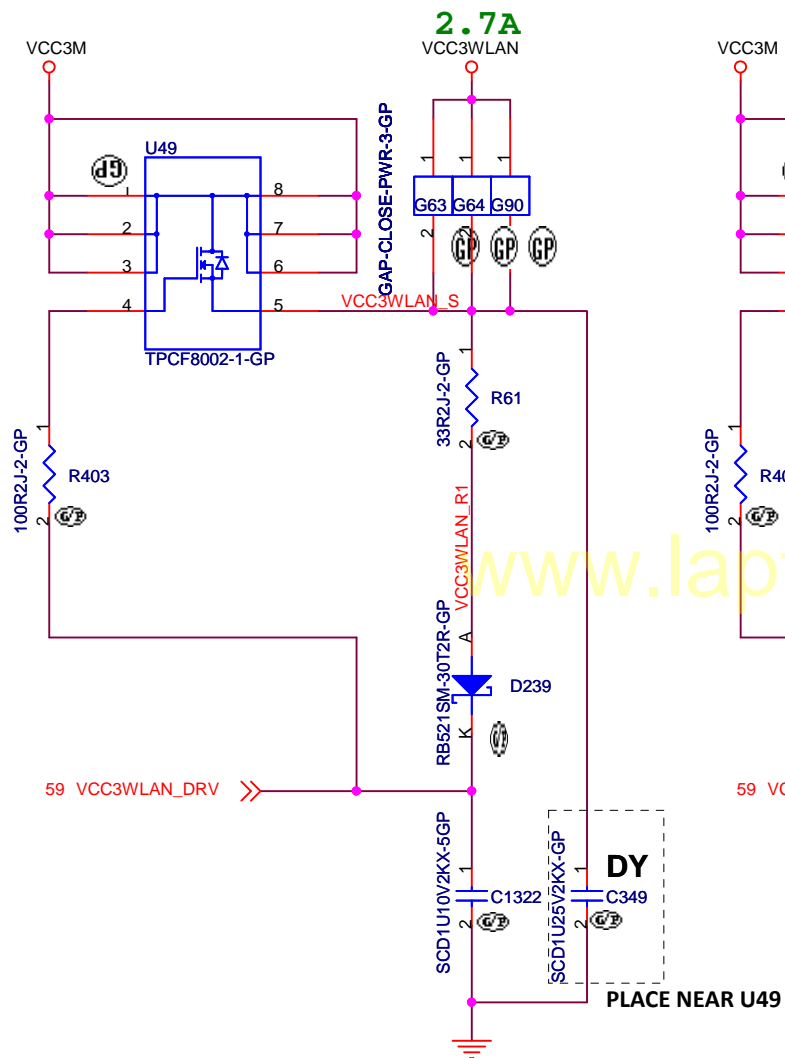
Document Number

Kome-1 WS

Rev
-1

Date: Thursday, September 12, 2013

Sheet 78 of 105



<Variant Name>

緯創資通

Wistron Corporation

21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title

LOAD SW WWAN WLAN ODD BAY

Size
A4

Document Number

Kome-1 WS

Rev
-1

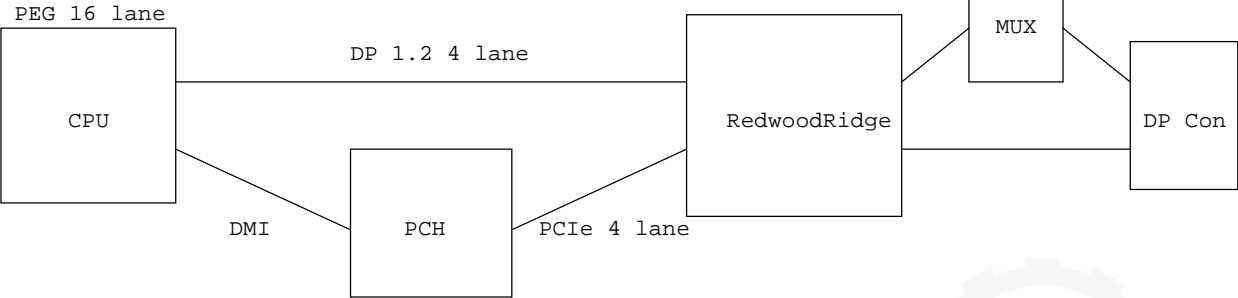
Date: Thursday, September 12, 2013

Sheet 79 of 105

Redwood Ridge device has three kind of SKU.

Code Name	Product Number	Display Port Configuration	PCIe	Package	TDP
Redwood Ridge 4C	DSL4510	1.1a, 2x sink, 1x source	x4 Gen2	12x12mm	3.1W
Redwood Ridge 2C (12x12)	DSL4410	1.1a, 2x sink, 0x source	x4 Gen2	12x12mm	2.3W
Redwood Ridge 2C (10x10)	DSL4310	1.1a, 2x sink, 0x source	x4 Gen2	10x10mm	2.3W

This Project will use redwood Ridge 2C, because TDP target value will be reduced to 2W.

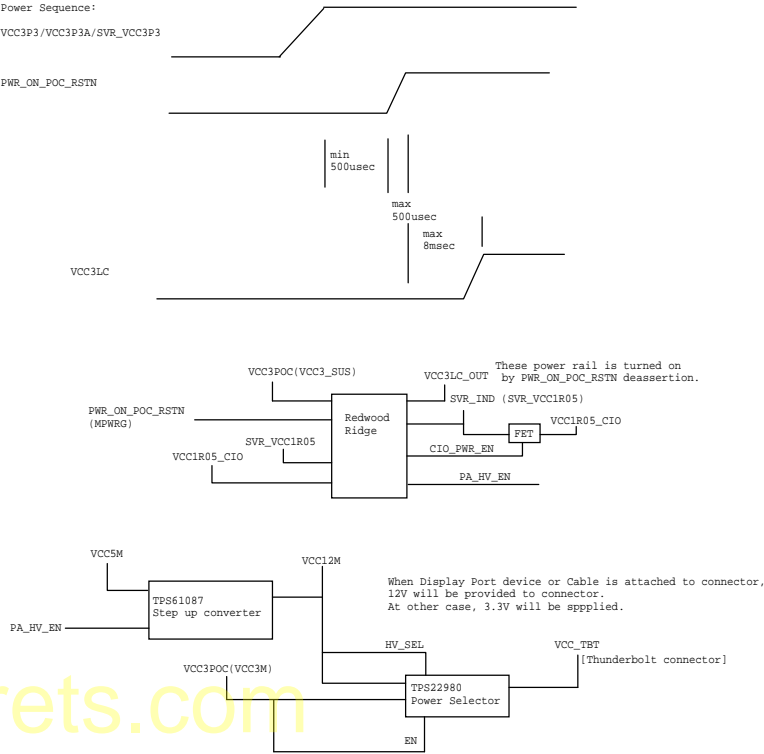


Display Port/Thunderbolt Connector

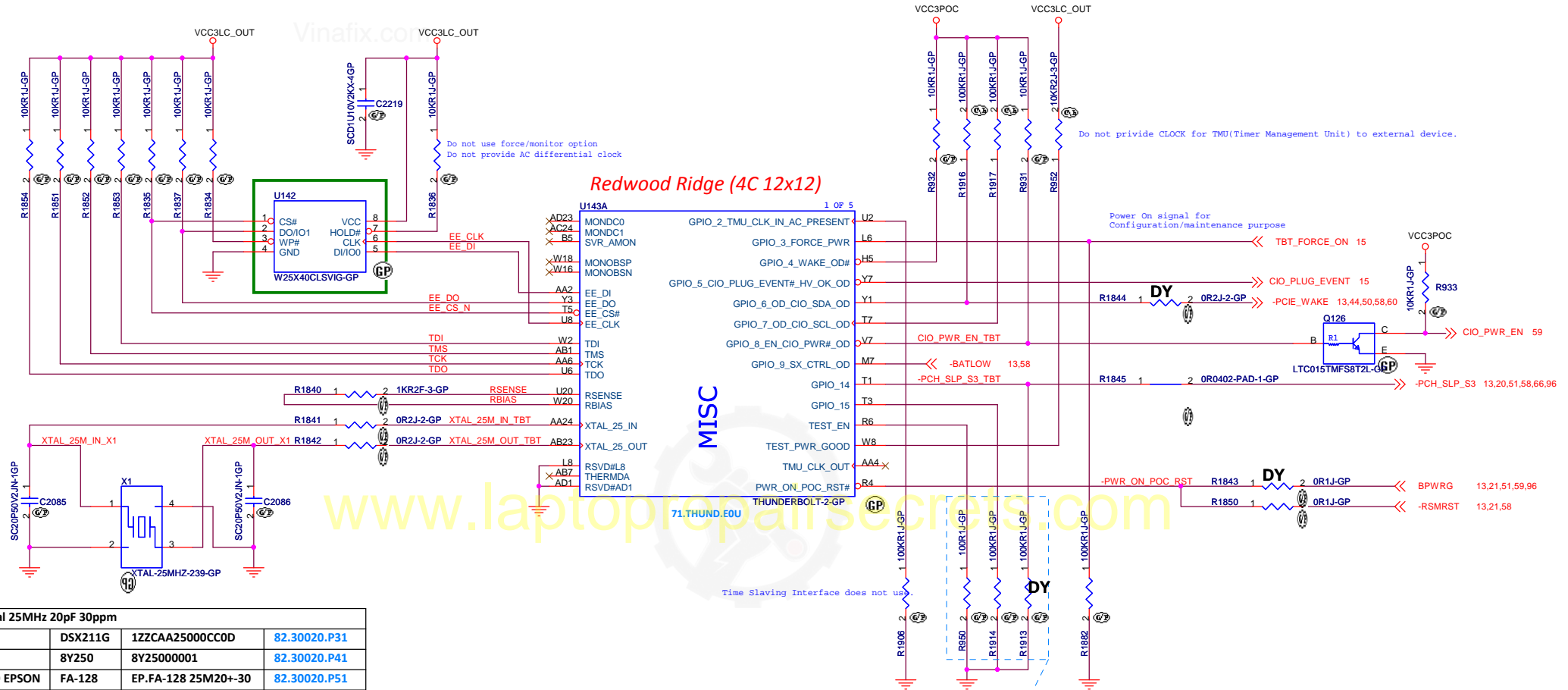
Legacy Display Port [mini DP]		Thunderbolt Port		Implementation	
Pin	Description	Pin	Description	Pin	
1	GND	1	PWR IN	1	Add Cap
2	HPD	2	HPD	2	HPD with Buffer?
3	LANE 0P	3	HD2CA OP [OUT]	3	CIO Port 0 Bus Switch in Redwood Ridge for ML0P/HD2CA0P
4	CONFIG 1	4	CA2HD OP [IN]	4	CIO Port 0 in Redwood Ridge for CA2HA0P and buffer for Config 1
5	LANE 0N	5	HD2CA ON [OUT]	5	CIO Port 0 Bus Switch in Redwood Ridge for ML0N/HD2CA0N
6	CONFIG 2	6	CA2HD ON [IN]	6	CIO Port 0 in Redwood Ridge for CA2HD0N and buffer for Config 2
7	GND	7	GND	7	GND
8	GND	8	GND	8	GND
9	LANE 1P	9	LSTX (Low Speed Control Output)	9	External Bus Switch for ML1P/LSTX
10	LANE 3P	10	RSV (Pulldown with 50ohm)	10	DP port in Redwood Ridge for ML3P
11	LANE 1N	11	LSRX (Low Speed Control Input)	11	External Bus Switch for ML1N/LSRX
12	LANE 3N	12	RSV (Pulldown with 50ohm)	12	DP port in Redwood Ridge for ML3N
13	GND	13	GND	13	GND
14	GND	14	GND	14	GND
15	LANE 2P	15	HD2CA 1P	15	CIO Port 1 Bus Switch in Redwood Ridge for ML2P/HD2CA1P
16	AUXP	16	CA2HD 1P	16	CIO Port 1 in Redwood Ridge for CA2HD1P
17	LANE 2N	17	HD2CA 1N	17	CIO Port 1 Bus Switch in Redwood Ridge for ML2N/HD2CA1N
18	AUXN	18	CA2HD 1N	18	CIO Port 1 in Redwood Ridge for CA2HD1N
19	PWR RET	19	PWR RTN	19	GND
20	PWR	20	PWR OUT [Supply to device]	20	Power from DCDC

The way to distinguish Legacy Display Port or Thunderbolt
- Thunderbolt controller must switch the function based on pulldown on HPD/Config1/Config2/LSTX/LSRX.

PCIe 1x4 Configuration is used for Redwood Ridge as outer mode.



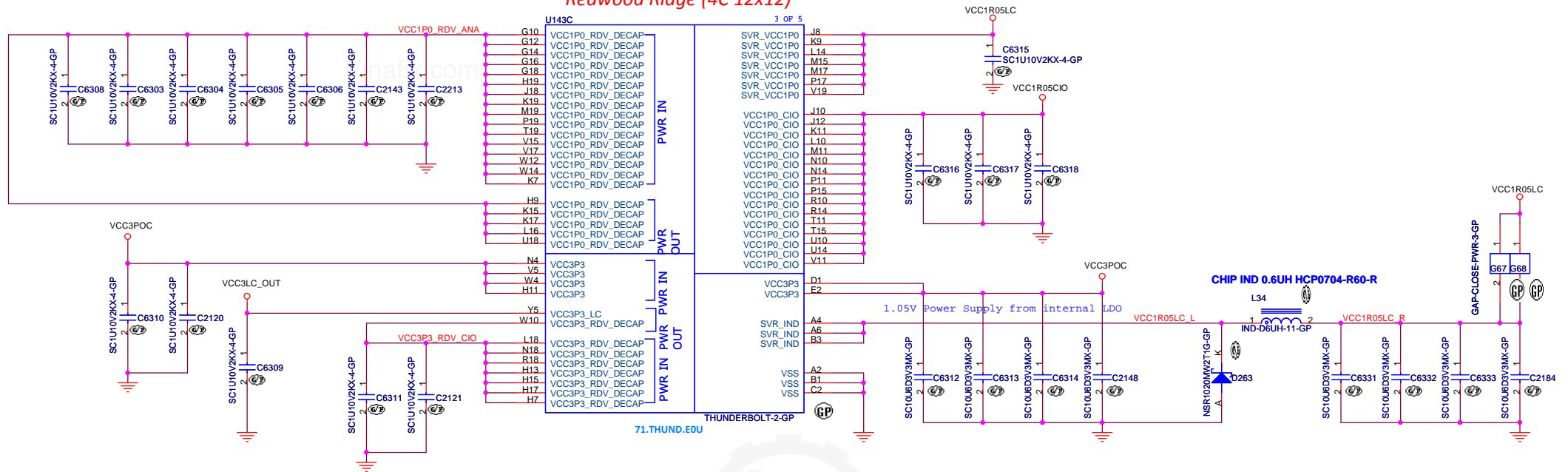
Thunderbolt EEPROM (only WS): U142		
Winbond	W25X40CLSVIG	72.25X40.009



Crystal 25MHz 20pF 30ppm			
KDS	DSX211G	1ZZCAA25000CC0D	82.30020.P31
TXC	8Y250	8Y25000001	82.30020.P41
SEIKO EPSON	FA-128	EP.FA-128 25M20+-30	82.30020.P51



Redwood Ridge (4C 12x12)



RedWood Ridge Power Delivery

This component has a single 3.3V power supply.
And it supplies power to the 4 power domains.

Main Power Source(3.3V)

VCC3P3
VCC3P3A
SVR_VCC3P3

Power supply to external use by internal switch
VCC3P3_LC (3.3V)

Power Supply to internal Receiver/driver by internal switch
VCC3P3_RDV_DECAP
Power Input from above power source
VCC3P3_RDV_CIO
VCC3P3_RDV_DP
VCC3P3_RDV_DPAUX

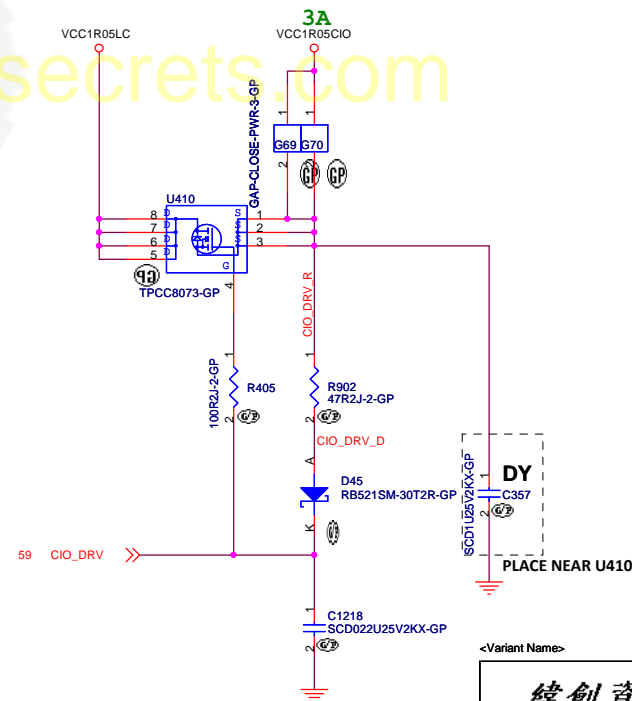
Power supply to 1.05V interface by internal Regulator

SVR_IND
Power Input from above power source
VCC1P0_SVR_ANA
SVR_VCC1P0

Power Input from above power source thru external power FET
This Power FET is controlled by GPIO_8_EN_CIO_PWR_N_OD
VCC1P0_CIO

Power supply to internal internal receiver/driver by internal switch

VCC1P0_RDV_DECAP
Power Input from above power source
VCC1P0_RDV_ANA
VCC1P0_RDV_DPAUX



<Variant Name>

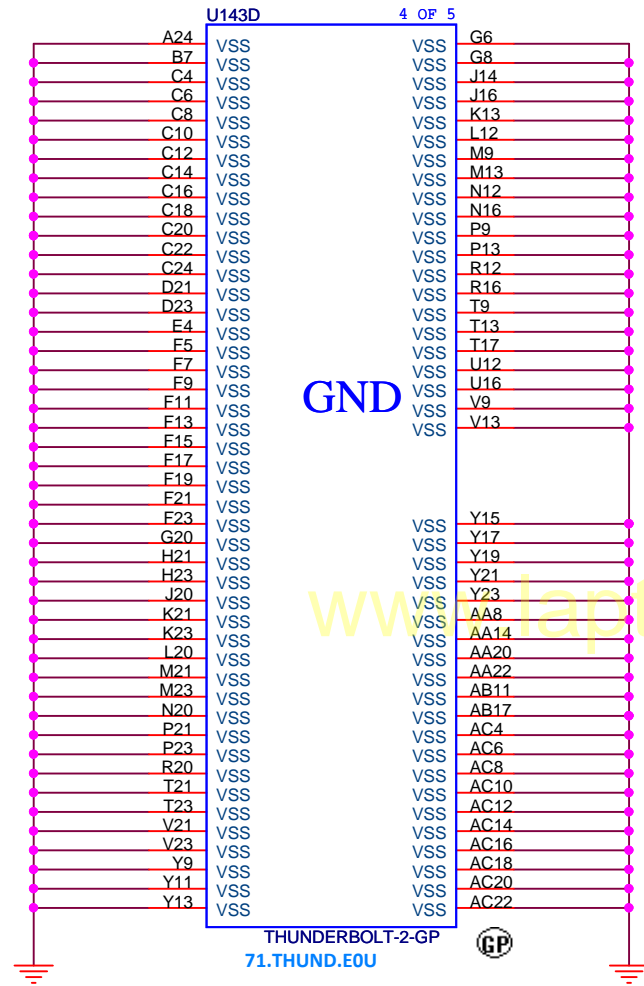
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title
Thunderbolt Redwood PWR (3/6)

Size A3 Document Number Kome-1 WS Rev -1

Date: Thursday, September 12, 2013 Sheet 82 of 105

Redwood Ridge (4C 12x12)



<Variant Name>

緯創資通

Wistron Corporation
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Taipei Hsien 221, Taiwan, R.O.C.

Title

Thunderbolt Redwood GND (4/6)

Size
A4

Document Number

Kome-1 WS

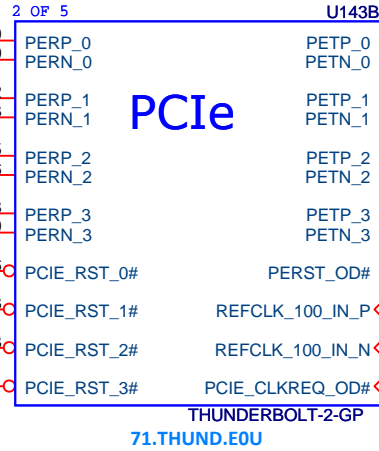
Rev
-1

Date: Wednesday, July 17, 2013

Sheet 83 of 105

Redwood Ridge (4C 12x12)

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16 PCIEP5_THUNDER_L0_TXP
16 PCIEP5_THUNDER_L0_TXN

16 PCIEP6_THUNDER_L1_TXP
16 PCIEP6_THUNDER_L1_TXN

16 PCIEP7_THUNDER_L2_TXP
16 PCIEP7_THUNDER_L2_TXN

16 PCIEP8_THUNDER_L3_TXP
16 PCIEP8_THUNDER_L3_TXN

From PCH

VCC3LC_OUT

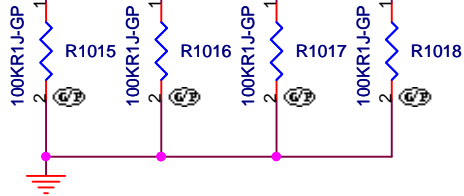
10KR1J-GP
DY
R283

-PCIE_RST_0

-PCIE_RST_1

-PCIE_RST_2

-PCIE_RST_3



PCie Lane0/1/2/3 Reset

AD5 PCIE_TBT_RXP0_C C2150 1
AD7 PCIE_TBT_RXN0_C C2151 1
AD9 PCIE_TBT_RXP1_C C2152 1
AD11 PCIE_TBT_RXN1_C C2153 1
AD13 PCIE_TBT_RXP2_C C2154 1
AD15 PCIE_TBT_RXN2_C C2155 1
AD17 PCIE_TBT_RXP3_C C2156 1
AD19 PCIE_TBT_RXN3_C C2157 1



PCIEP5_THUNDER_L0_RXP 16
PCIEP5_THUNDER_L0_RXN 16

PCIEP6_THUNDER_L1_RXP 16
PCIEP6_THUNDER_L1_RXN 16

PCIEP7_THUNDER_L2_RXP 16
PCIEP7_THUNDER_L2_RXN 16

PCIEP8_THUNDER_L3_RXP 16
PCIEP8_THUNDER_L3_RXN 16

To PCH

-PLTRST_NEAR 14,23,42,50,57,58,60

PCIEP5_THUNDERBOLT_CLK_100M 17

-PCIEP5_THUNDERBOLT_CLK_100M 17

-CLKREQ_PCIEP5_THUNDERBOLT 17

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<Variant Name>

緯創資通

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Title

Thunderbolt Redwood PCie-CPU (5/6)

Size
A4

Document Number

Kome-1 WS

Rev
-1

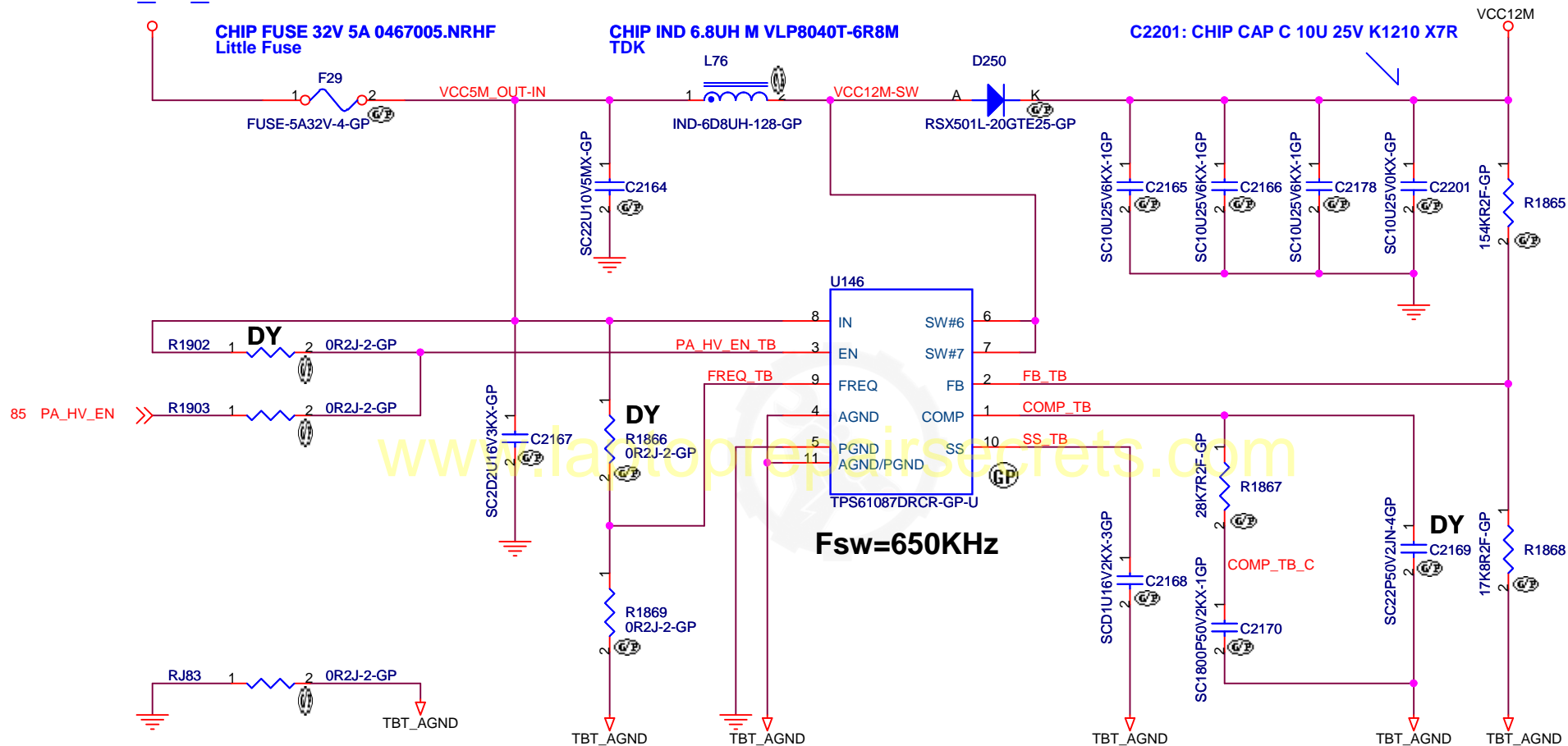
Date: Thursday, September 12, 2013

Sheet 84 of 105

U143E	5 OF
CIO	DD



VCC5M_IO_PWR-



<Variant Name>

緯創資通

Wistron Corporation

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Title

Thunderbolt VCC12M

Size

Document Number

A4

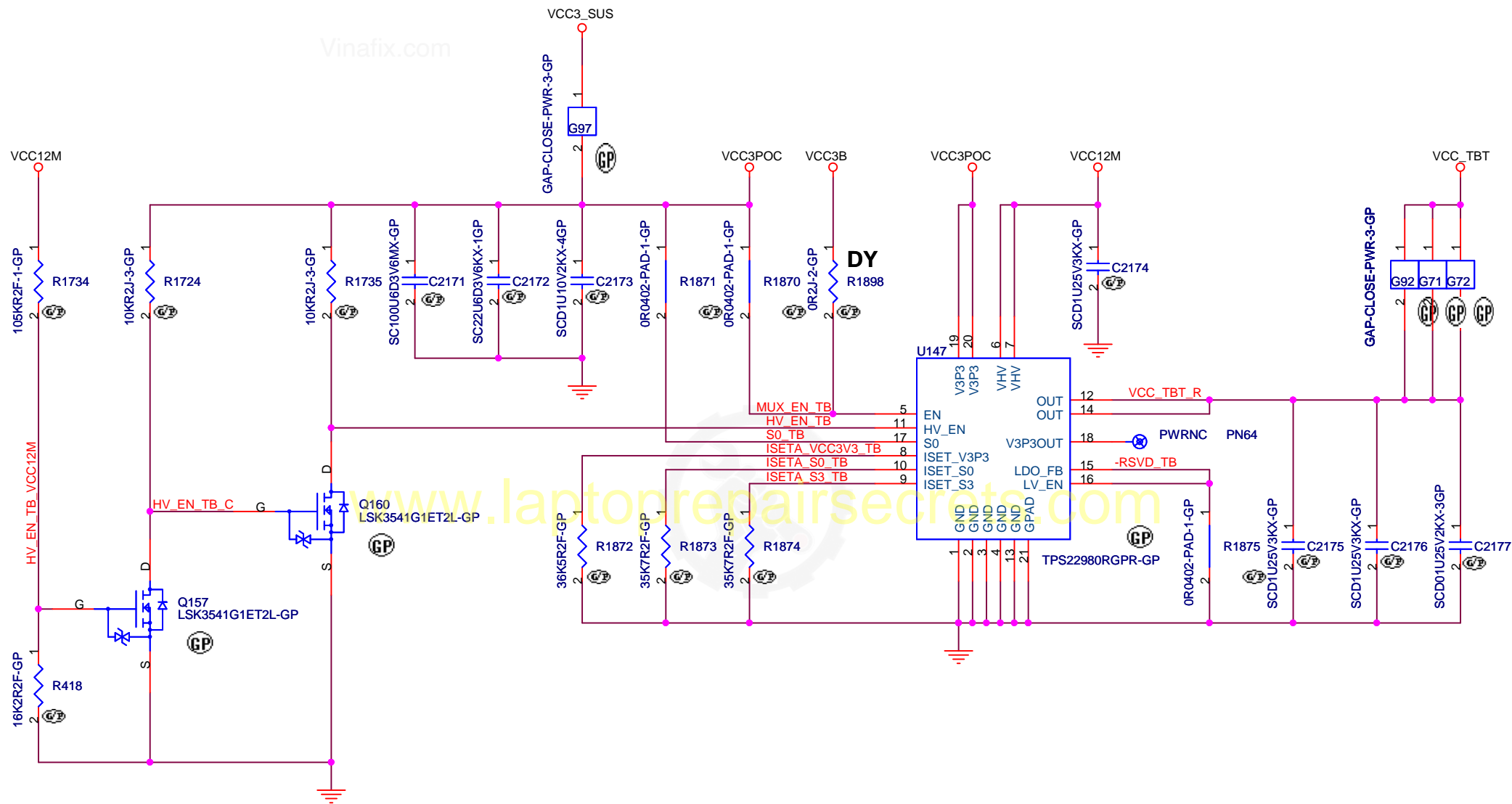
Kome-1 WS

Rev

-1

Date: Thursday, September 12, 2013

Sheet 86 of 105



<Variant Name>

緯創資通

Wistron Corporation

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Title

Thunderbolt Power Mux

Size
A4

Document Number

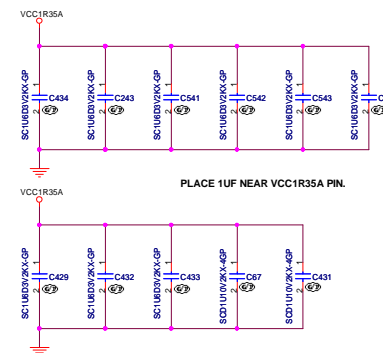
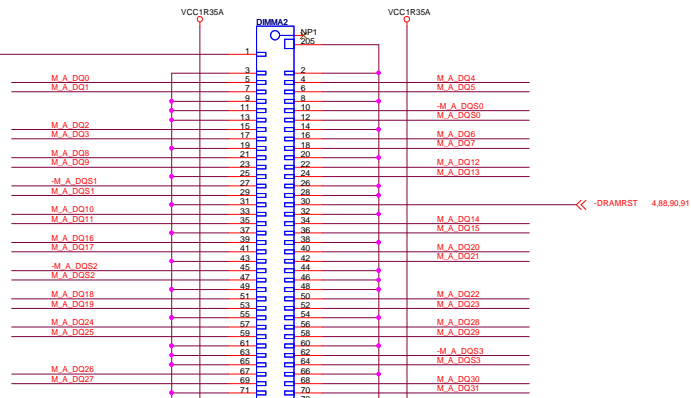
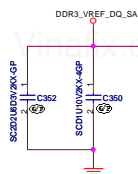
Kome-1 WS

Rev
-1

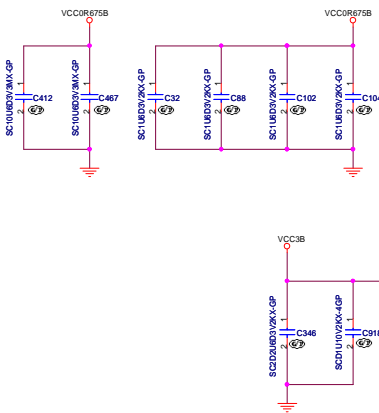
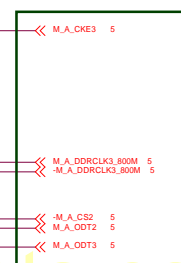
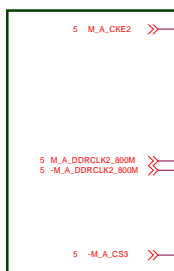
Date: Thursday, July 18, 2013

Sheet 87 of 105

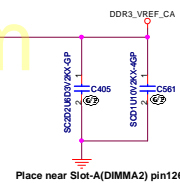
5.88 M_A_DQ[63:0] <<>
 5.88 -M_A_DQS[7:0] <<>
 5.88 M_A_DQS[7:0] <<>
 5.88 M_A_A[15:0] <<>



PLACE 1UF NEAR VCC1R35A PIN.



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Place near Slot-A(DIMMA2) pin126

SPD ADDRESS: 52H
 SA1 : High
 SA0 : Low

SMB_DATA_3B 12.54.88.90.91
 SMB_CLK_3B 12.54.88.90.91

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BLANK

<Variant Name>

緯創資通

Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
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Title

DIMM Topology

Size
A4

Document Number

Kome-1 WS

Rev
-1

Date: Wednesday, July 17, 2013

Sheet 92 of 105

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<Variant Name>

緯創資通

Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title

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Size
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Document Number

Kome-1 WS

Rev
-1

Date: Wednesday, July 17, 2013

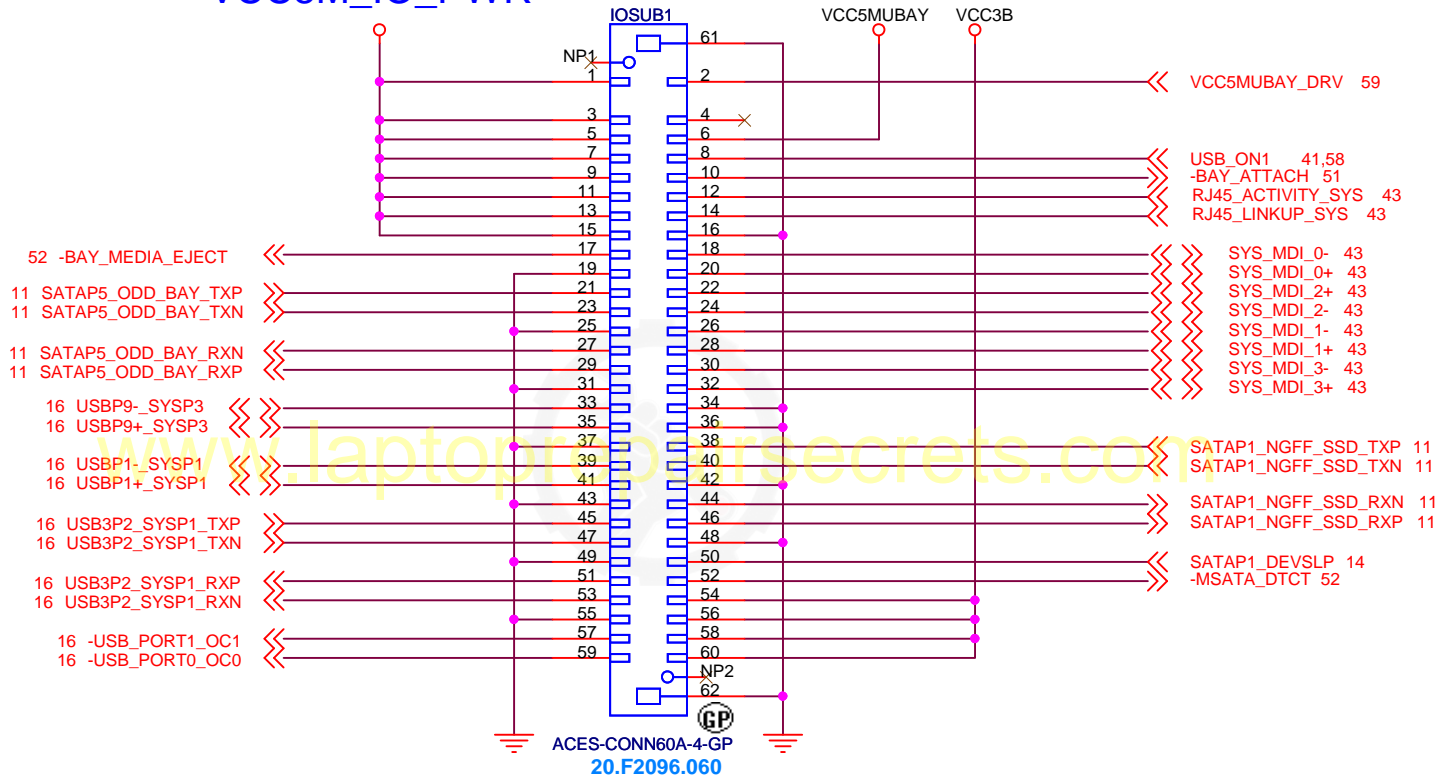
Sheet 93 of 105

Near IO SubCard CONN: IOSUB1 (p.094)



I/O SubCard Interface Connector

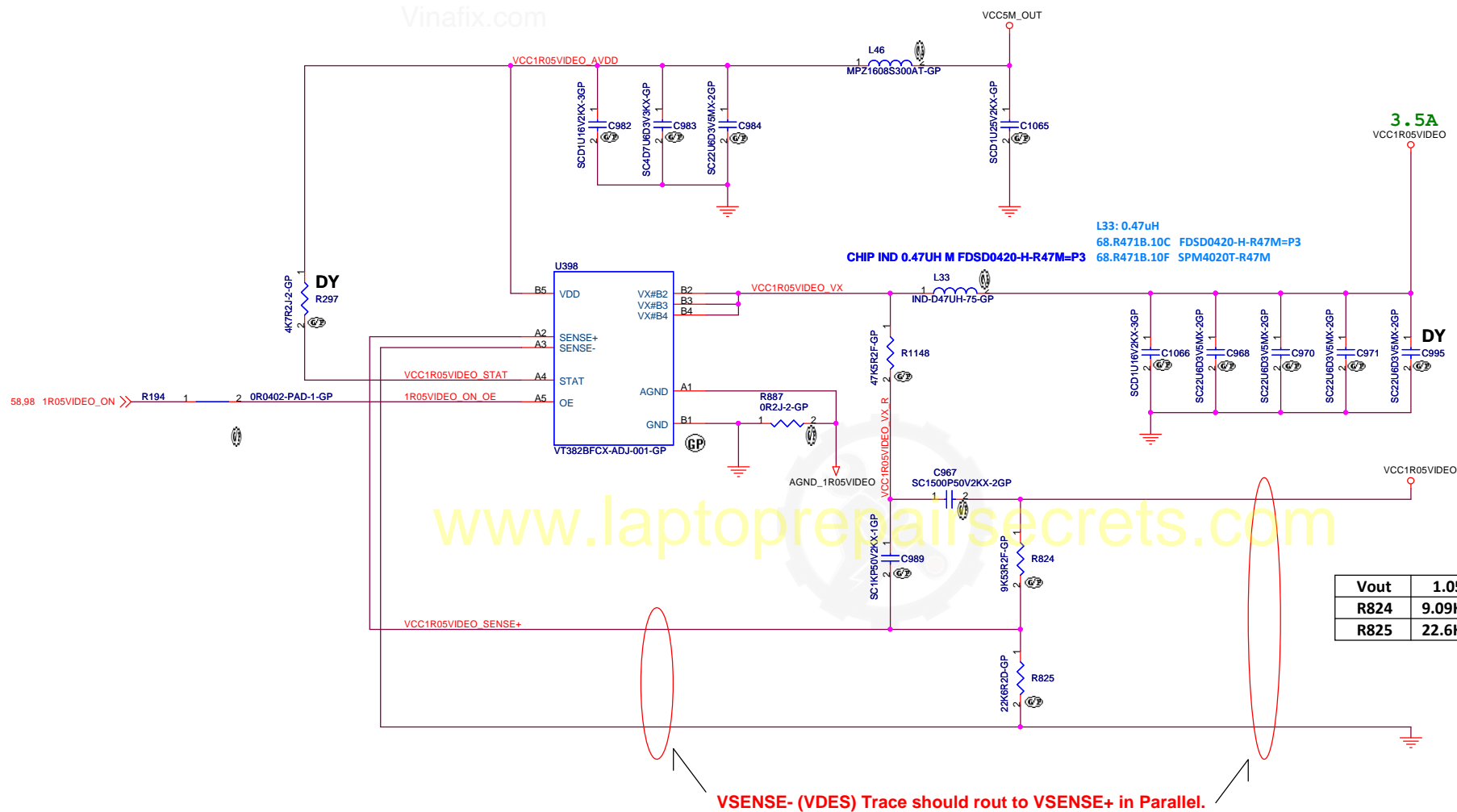
VCC5M_IO_PWR-



60-pins Board to Board Connector

<Variant Name>

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title I/O SubCard Interface		
Size A4	Document Number Kome-1 WS	Rev -1
Date: Thursday, September 12, 2013 Sheet 94 of 105		



Vout	1.052V	1.059V	1.066V
R824	9.09K-ohm	9.31K-ohm	9.53K-ohm
R825	22.6K-ohm	22.6K-ohm	22.6K-ohm

↑
LOGIC

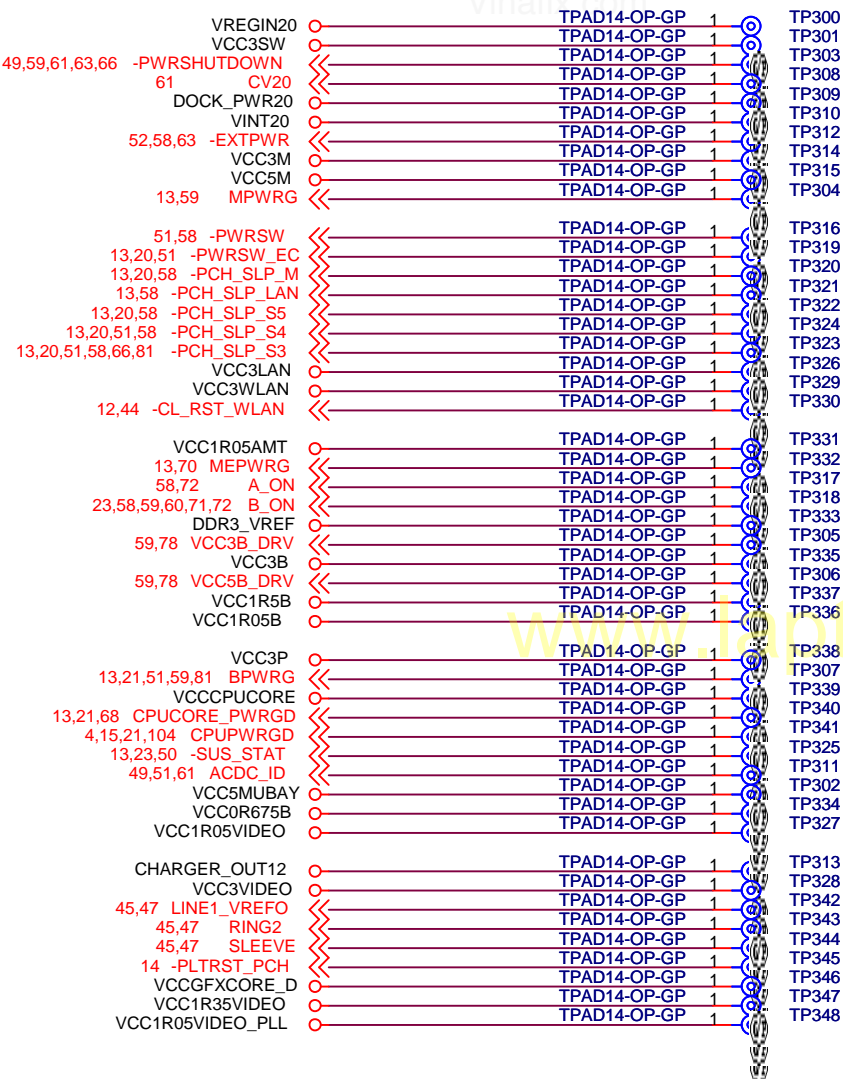
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緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title			
DC/DC VCC1R05VIDEO			
Size	Document Number	Rev	
A3	Kome-1 WS	-1	
Date:	Thursday, September 12, 2013	Sheet	95 of 105

TOP VIEW Test Pad 14Mils

ZZ.PAD14.001



<Variant Name>

緯創資通 Wistron Corporation		
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title Test Pad		
Size A4	Document Number Kome-1 WS	Rev -1
Date: Thursday, September 12, 2013 Sheet 96 of 105		

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<Variant Name>

緯創資通

Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title

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Size
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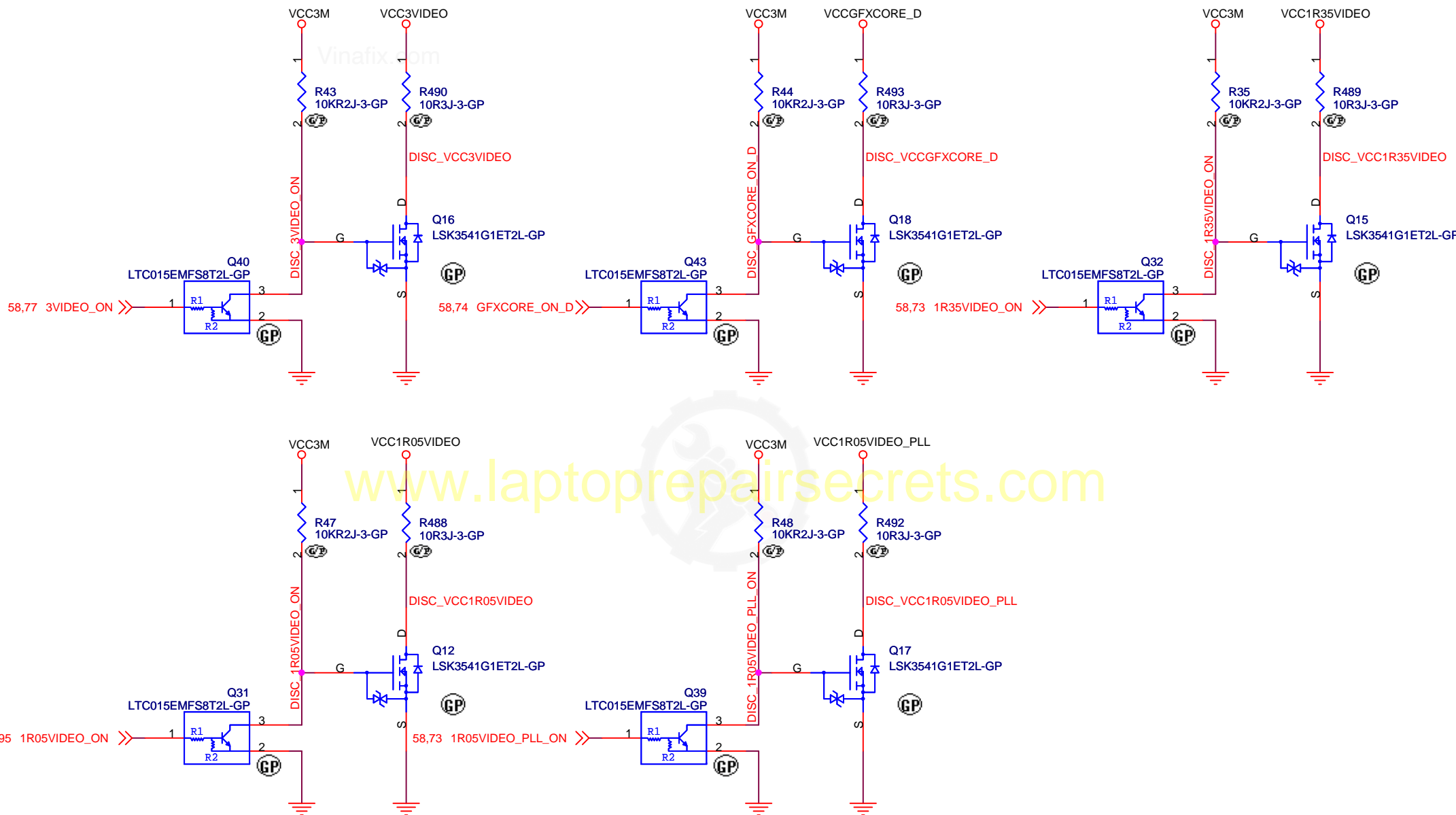
Document Number

Kome-1 WS

Rev
-1

Date: Wednesday, July 17, 2013

Sheet 97 of 105



<Variant Name>

緯創資通

Wistron Corporation

21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
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Title

Discharge Circuit

Size
A4

Document Number

Kome-1 WS

Rev
-1

Date: Thursday, September 12, 2013

Sheet 98 of 105

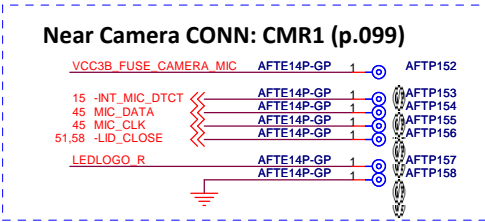
Near Power SW CONN: PBTN1 (p.099)

VCC3M_PBTN

23.49,58 -PWRSWITCH
50 -LEDPWR

AFTE14P-GP 1
AFTE14P-GP 1
AFTE14P-GP 1
AFTE14P-GP 1

AFTP149
AFTP150
AFTP160
AFTP151



Near Camera CONN: CMR1 (p.099)

VCC3B FUSE CAMERA MIC AFTE14P-GP 1 AFTP152

15 _INT_MIC_DTCT AFTE14P-GP 1 AFTP153

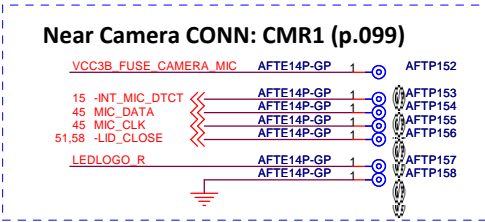
45 MIC_DATA AFTE14P-GP 1 AFTP154

45 MIC_CLK AFTE14P-GP 1 AFTP155

51,58 _UID_CLOSE AFTE14P-GP 1 AFTP156

LEDLOGO_R AFTE14P-GP 1 AFTP157

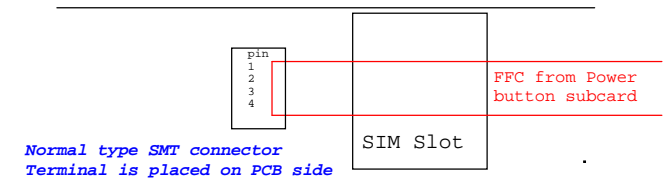
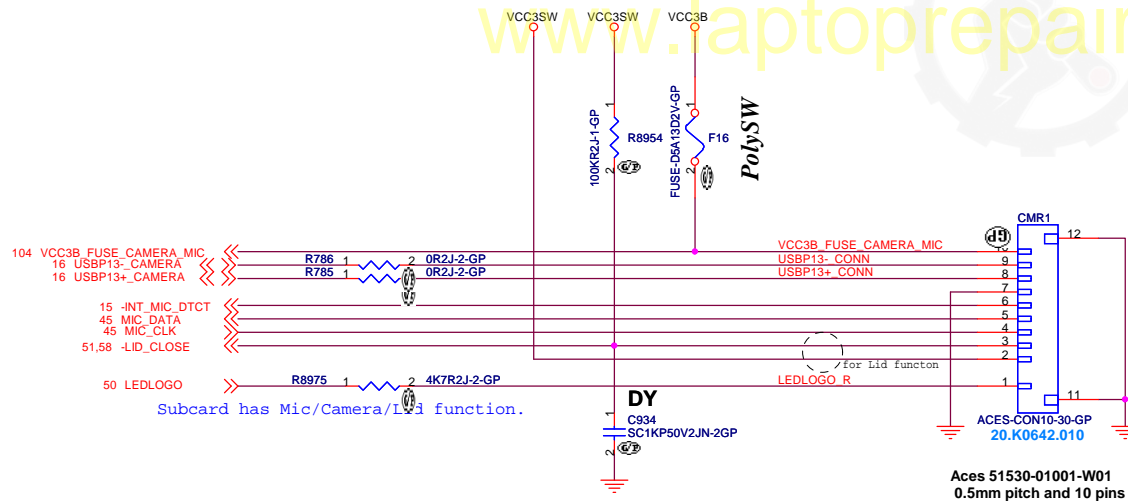
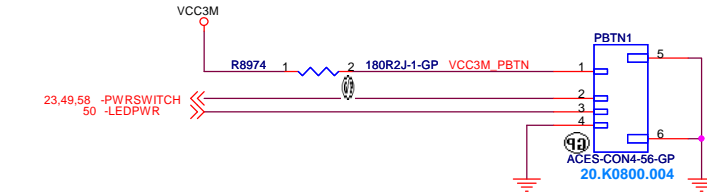
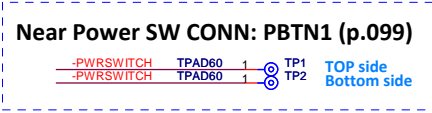
AFTE14P-GP 1 AFTP158



Near Power SW CONN: PBTN1 (p.099)

Diagram showing the connection for PBTN1 (p.099). The connector has two pins: TP1 (TOP side) and TP2 (Bottom side). The connections are as follows:

- TP1 is connected to -PWRSWITCH.
- TP2 is connected to TPAD60.



OR

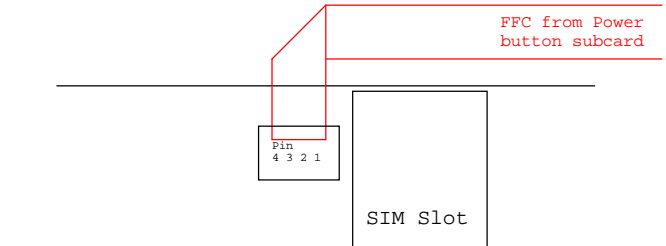
The diagram illustrates a reversed type connector for a SIM slot. A horizontal line represents the PCB. A red line, representing the FFC from the Power button subcard, connects to a small rectangular connector on the left. This connector is labeled 'Pin 4 3 2 1' from top to bottom. To the right of this connector is a larger rectangular area labeled 'SIM Slot'. The red line connects to the top of the connector, indicating the connection point for the FFC.

FFC from Power button subcard

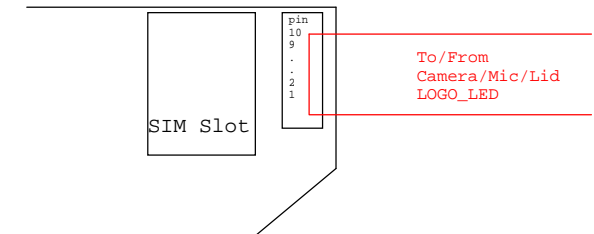
Pin
4 3 2 1

SIM Slot

Reversed Type connector
Terminal is placed on opposit side from PCB

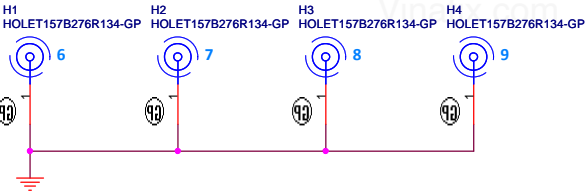


Reversed Type connector
Terminal is placed on opposit side from PCB

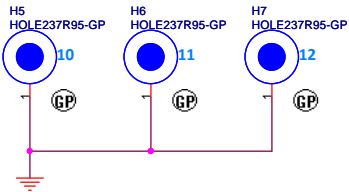


TOP VIEW

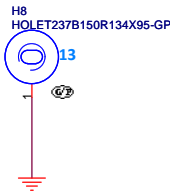
ZZ.SCREW.091



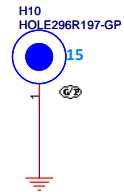
ZZ.00PAD.921



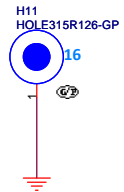
ZZ.SCREW.B31



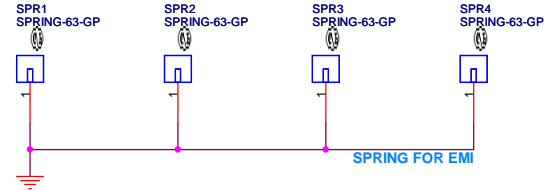
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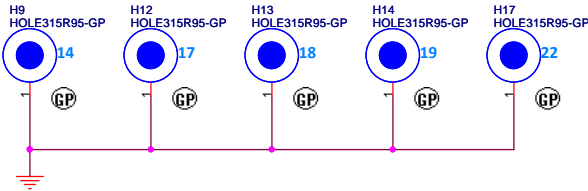
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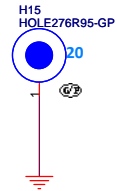
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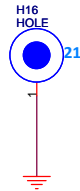
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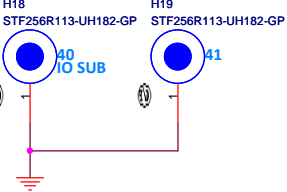


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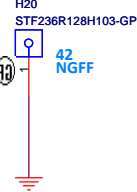


BOTTOM VIEW

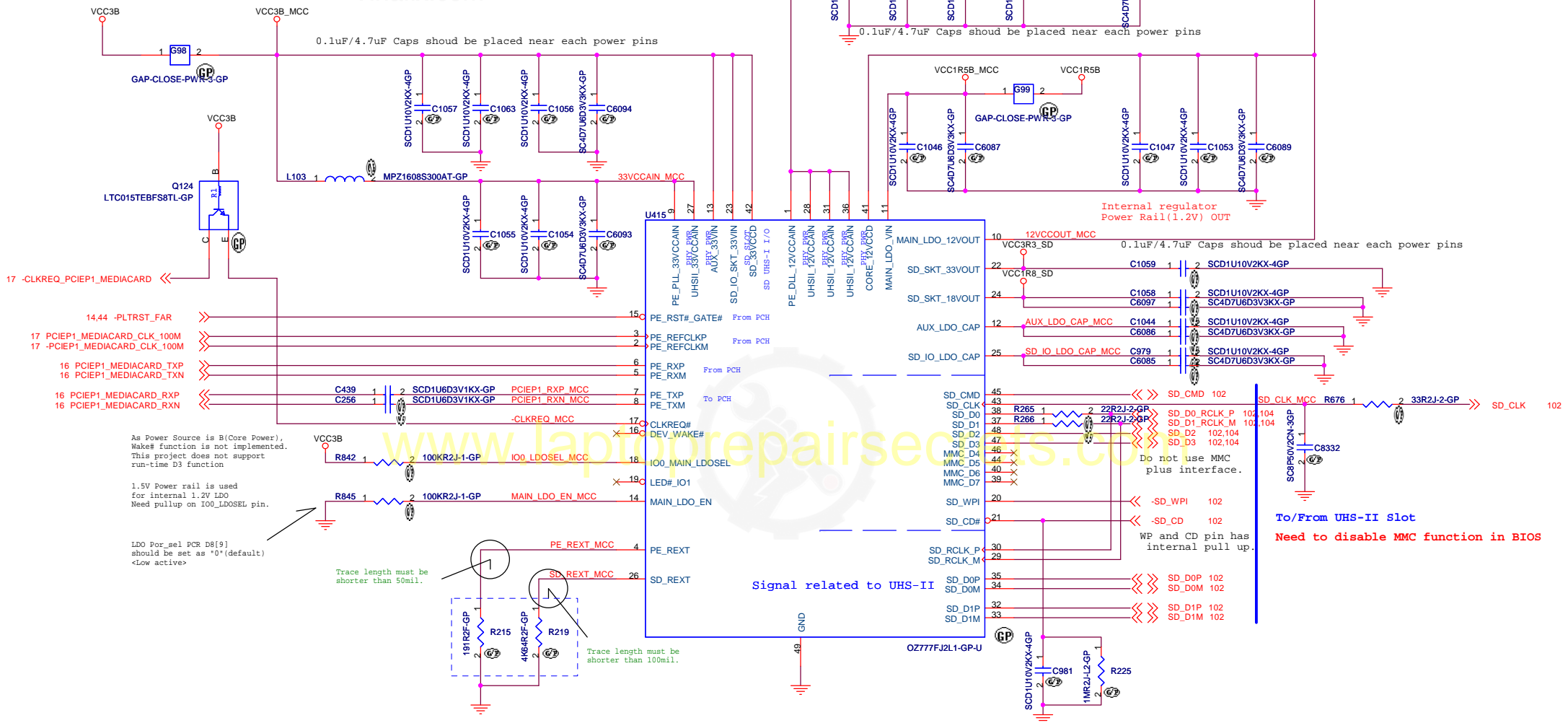
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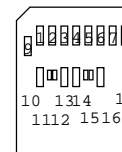
34.4Z003.201



The distance between Analog Power pin and Power filter must be set within 200mil



Bottom View



UHS II Interface

4 VDD1 3.3V

7 RCLKP

8 RCLKM

10 VSS3

11 D0P

12 D0M

13 VSS4

14 VDD2 1.8V

15 D1M

16 D1P

17 VSS5

UHS I Interface

1 CD/DAT3

2 CMD

3 VSS1

4 VDD 3.3V

5 CLK

6 VSS2

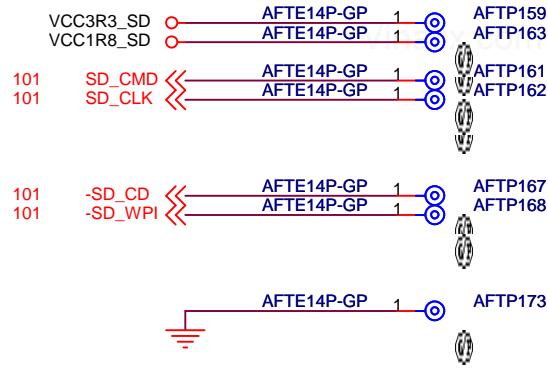
7 DAT0

8 DAT1

9 DAT2

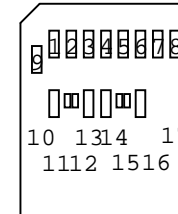
<Variant Name>

Near MediaCard Slot: MCS1 (p.102)

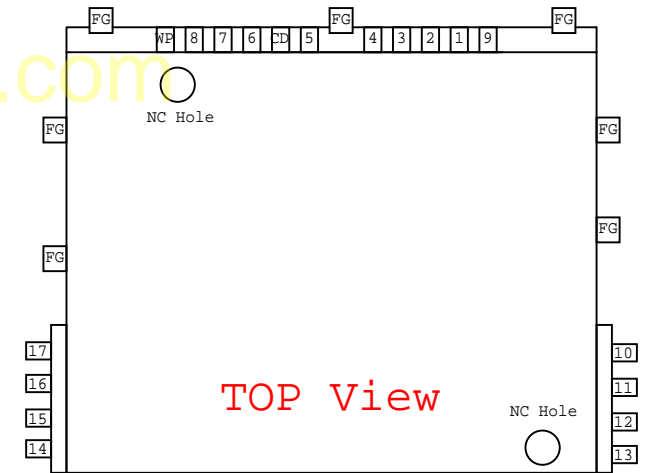
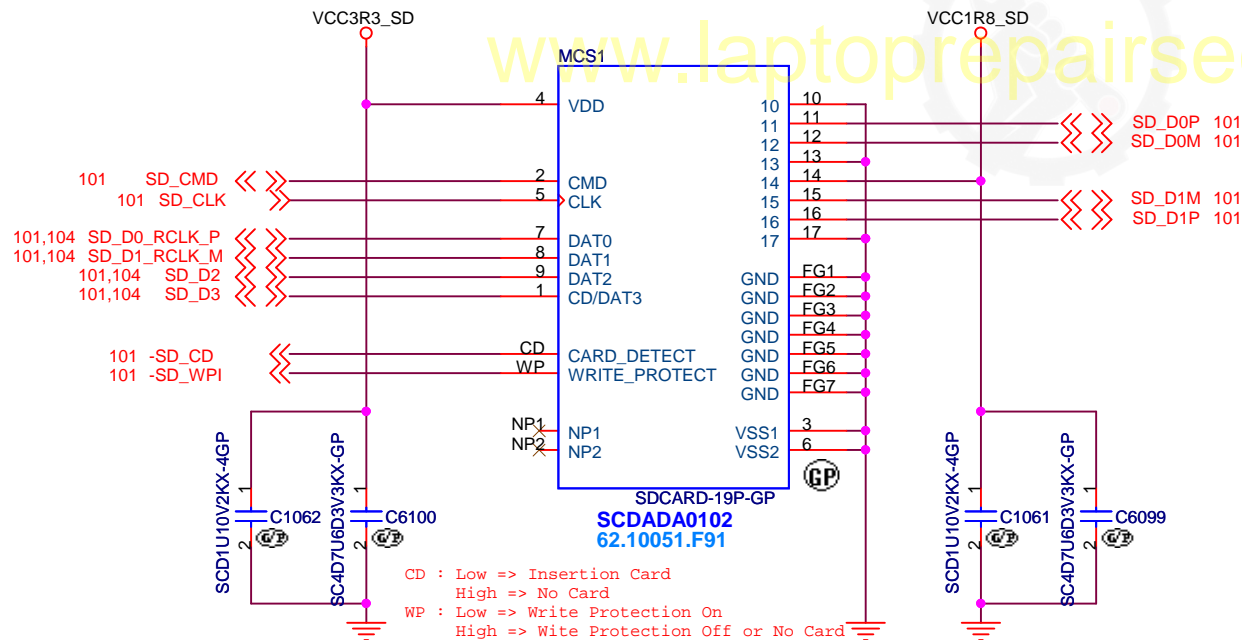


Pin No	SD Mode	UHS II Mode
1	CD/DAT3	
2	CMD	
3	VSS1	
4	VDD	VDD1
5	CLK	
6	VSS2	
7	DAT0	RCLKP
8	DAT1	RCLKM
9	DAT2	
10		VSS3
11		D0P
12		D0M
13		VSS4
14		VDD2
15		D1M
16		D1P
17		VSS5
CD	CARD DETECT	
WP	WRITE PROTECT	

Bottom View



UHS II Interface	UHS I Interface
4 VDD1 3.3V	1 CD/DAT3
7 RCLKP	2 CMD
8 RCLKM	3 VSS1
10 VSS3	4 VDD 3.3V
11 D0P	5 CLK
12 D0M	6 VSS2
13 VSS4	7 DAT0
14 VDD2 1.8V	8 DAT1
15 D1M	9 DAT2
16 D1P	
17 VSS5	



TOP View

UHS II slot

<Variant Name>

緯創資通

Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title

MEDIACARD SLOT

Size
A4

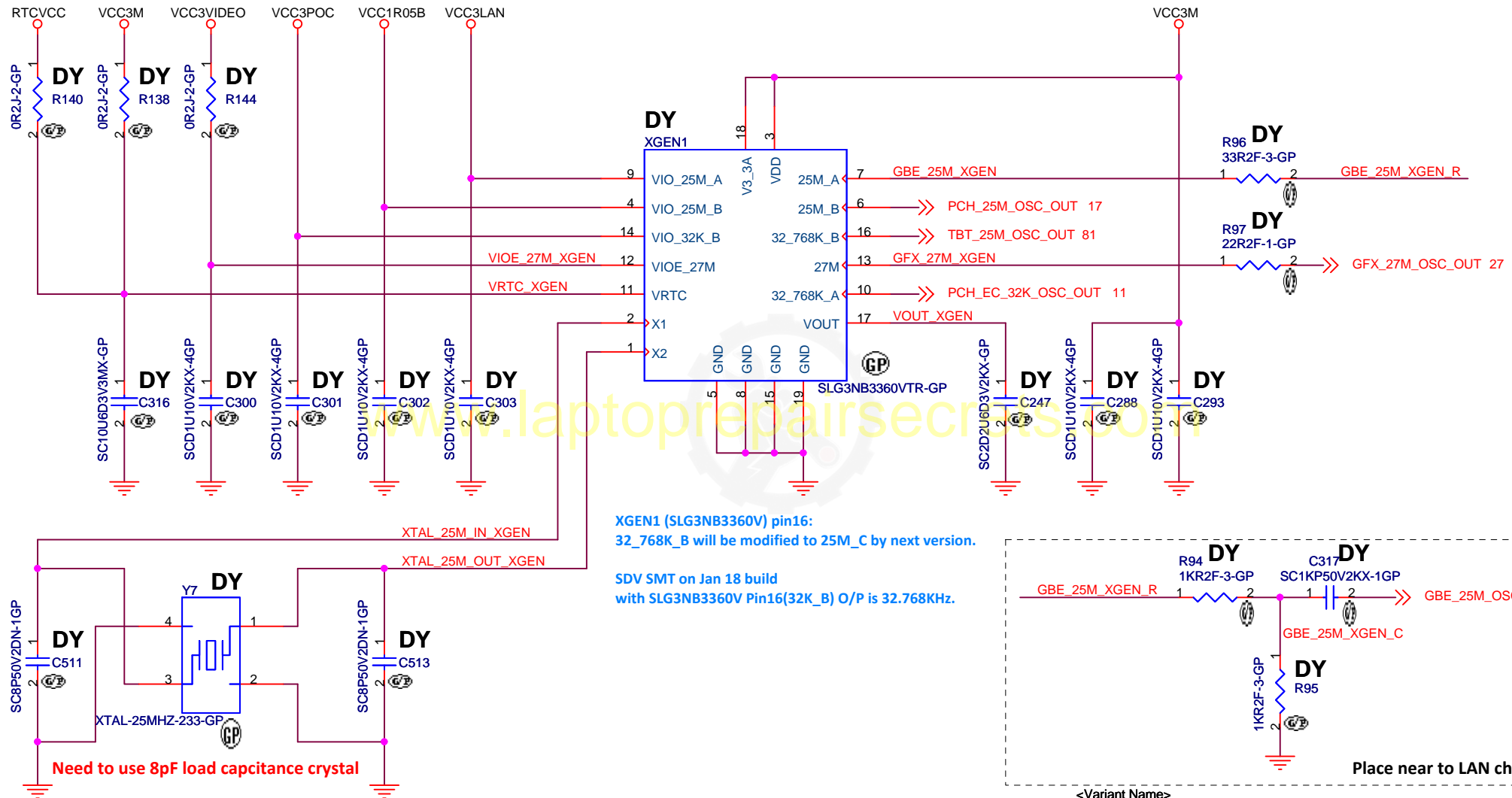
Document Number

Kome-1 WS

Rev
-1

Date: Thursday, September 12, 2013

Sheet 102 of 105



XGEN1 (SLG3NB3360V) pin16:
32_768K_B will be modified to 25M_C by next version.

SDV SMT on Jan 18 build
with SLG3NB3360V Pin16(32K_B) O/P is 32.768KHz.

Crystal 25MHz 10pF 30ppm

KDS	DSX211G	1ZZCAA25000CC0C	82.30020.N91
TXC	8Y250	8Y25000010	82.30020.P11
EPSON	FA-128	Q22FA1280021400	82.30020.P61

緯創資通

Wistron Corporation

21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title

CLOCKGEN

Size
A4

Document Number

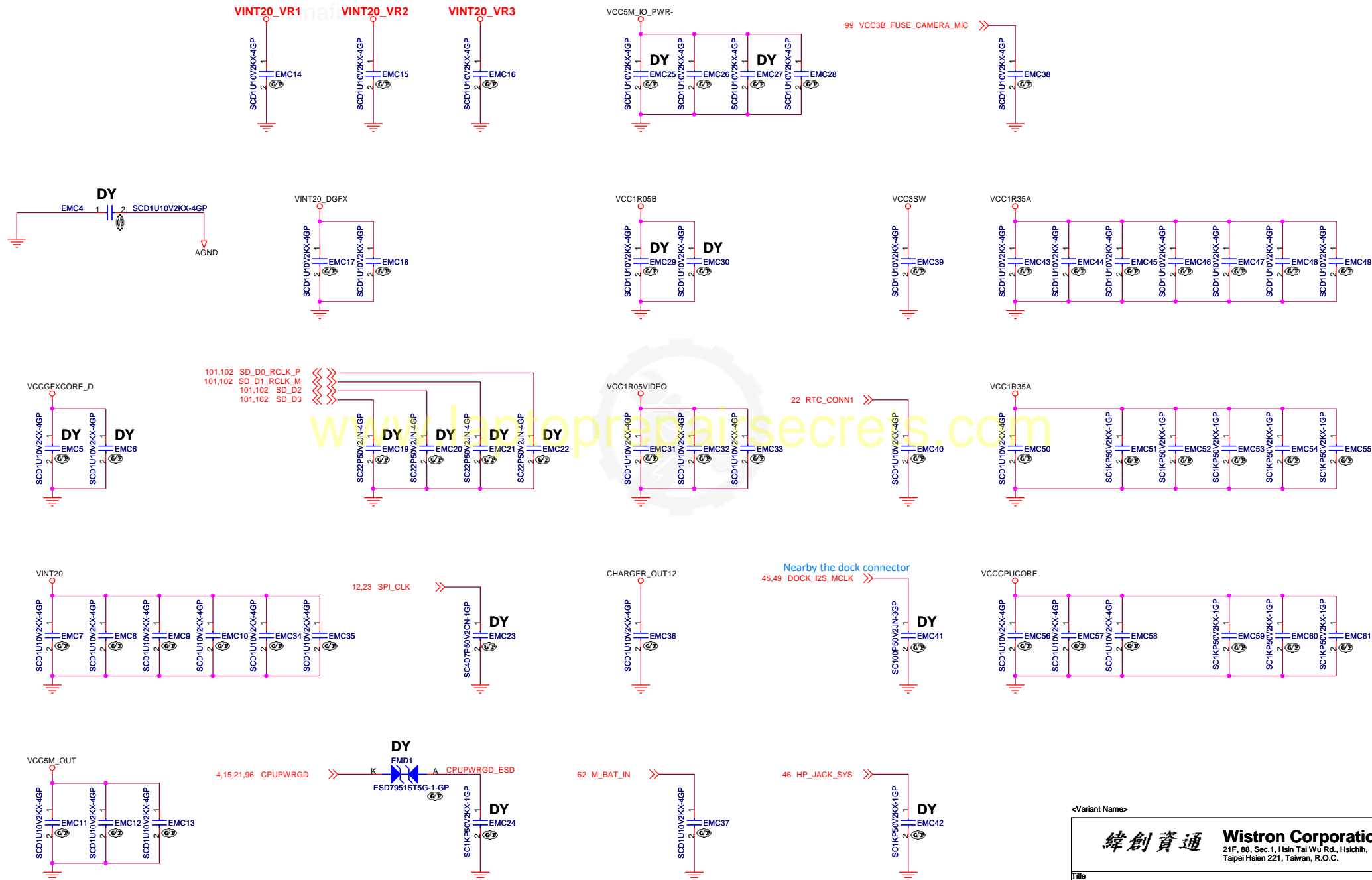
Kome-1 WS

Rev
-1

Date: Thursday, September 12, 2013

Sheet 103 of 105

Long power trace EMI decoupling caps

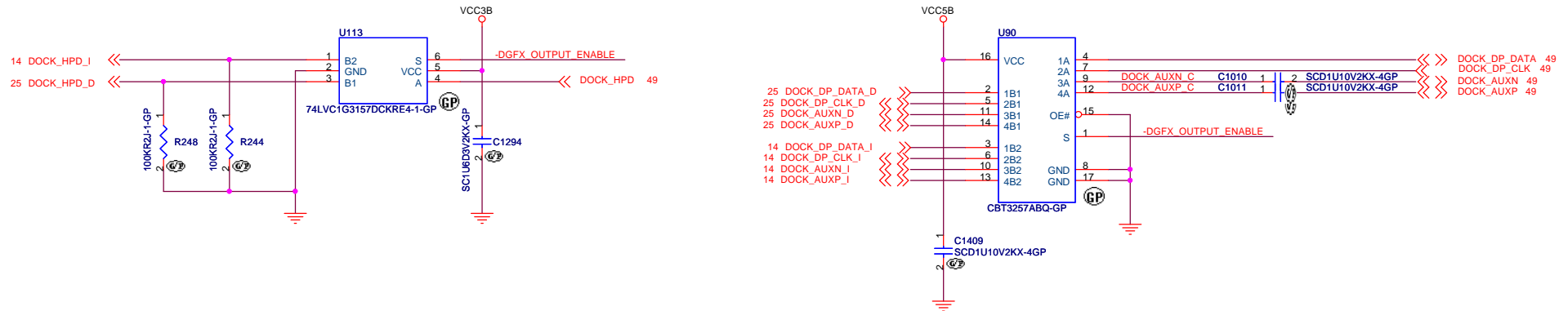


DOCK DP Switch

Vendor	Vendor PN	Wistron PN
NXP	CBTL04083ABS	71.04083.003
Pericom	PI3PCIE3412ZHE+DAX	71.33412.B03

Change to NXP CBTL04083ABS as primary
and drop TI because it uses Cu wire bonding.
We should use Au wire bonding.

www.laptoprepairsecrets.com



<Variant Name>

緯創資通

Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title

DOCK DP SWITCH

Size

Document Number

Kome-1 WS

Rev

-1

Date: Thursday, September 12, 2013

Sheet 105 of 105