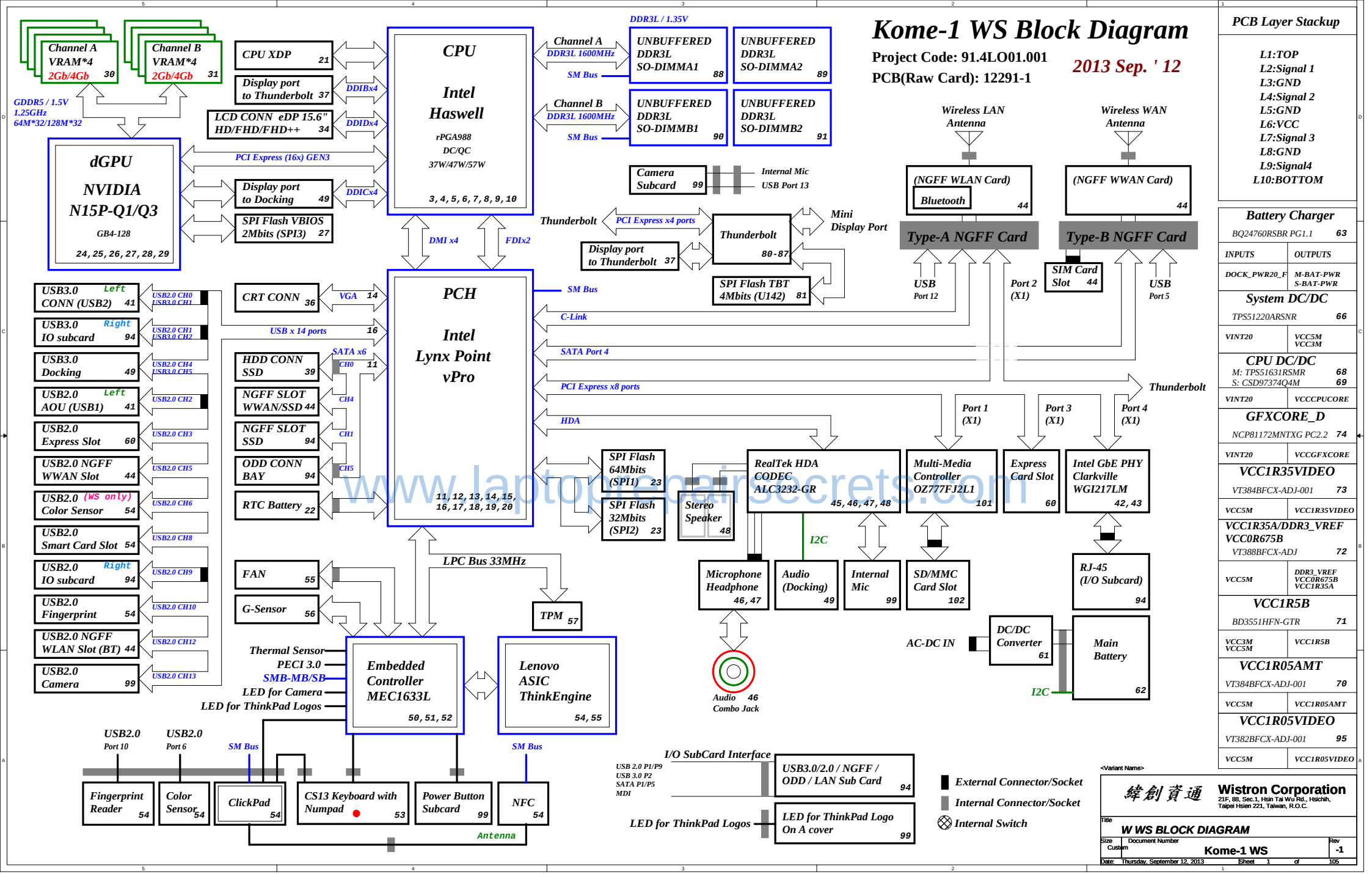
Kome-1 WS Block Diagram

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 PG1.1 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

VCC1R35VIDEO

VT384BFCX-ADJ-001 73

VCC5M	VCC1R35VIDEO

VCC1R35A/DDR3_VREF VCC0R675B

VT388BFCX-ADJ 72

VCC5M	DDR3_VREF VCC0R675B VCC1R35A

VCC1R5B

BD3551HFN-GTR 71

VCC3M VCC5M	VCC1R5B

VCC1R05AMT

VT384BFCX-ADJ-001 70

VCC5M	VCC1R05AMT

VCC1R05VIDEO

VT382BFCX-ADJ-001 95

VCC5M	VCC1R05VIDEO

<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: **W WS BLOCK DIAGRAM**

Size	Document Number	Rev
Custom	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 1 of 105

RESISTOR

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

The naming rule is value + R + size + tolerance
For the value, it can be read by the number before R. (R means resistor)
For the tolerance, it can be read from the last letter.
For the rating, we don't show on the symbol name.
For the size, R2=>0402, R3=>0603, R5=>0805,....

CAPACITOR

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

The naming rule is
Capacitor type + value + rating + size + tolerance + material
SCD1U10V2MX-1
SC=> SMT Ceremic, TC=> POS cap or SP cap
D1U => 0.1uF
10V => the voltage rating is 10V
2=> 0402, 3=>0603, 5=>0805
M=>tolerance M, K, Z
X=> X7R/X5R, Y=> Y5V
-1 => symbol version, nonsense to EE characteristic

PLANAR_ID[3..0]

PCH GPIOn	39	38	49	48	Planar ID Version	Planar PCB Version
PLANAR_IDn	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

EC HISTORY

Stage	Date	EC No.	Page	Note
SDV	0822	L001		Initial Release
				Move Powergood signal in Thunderbolt MISC to CIO/DP

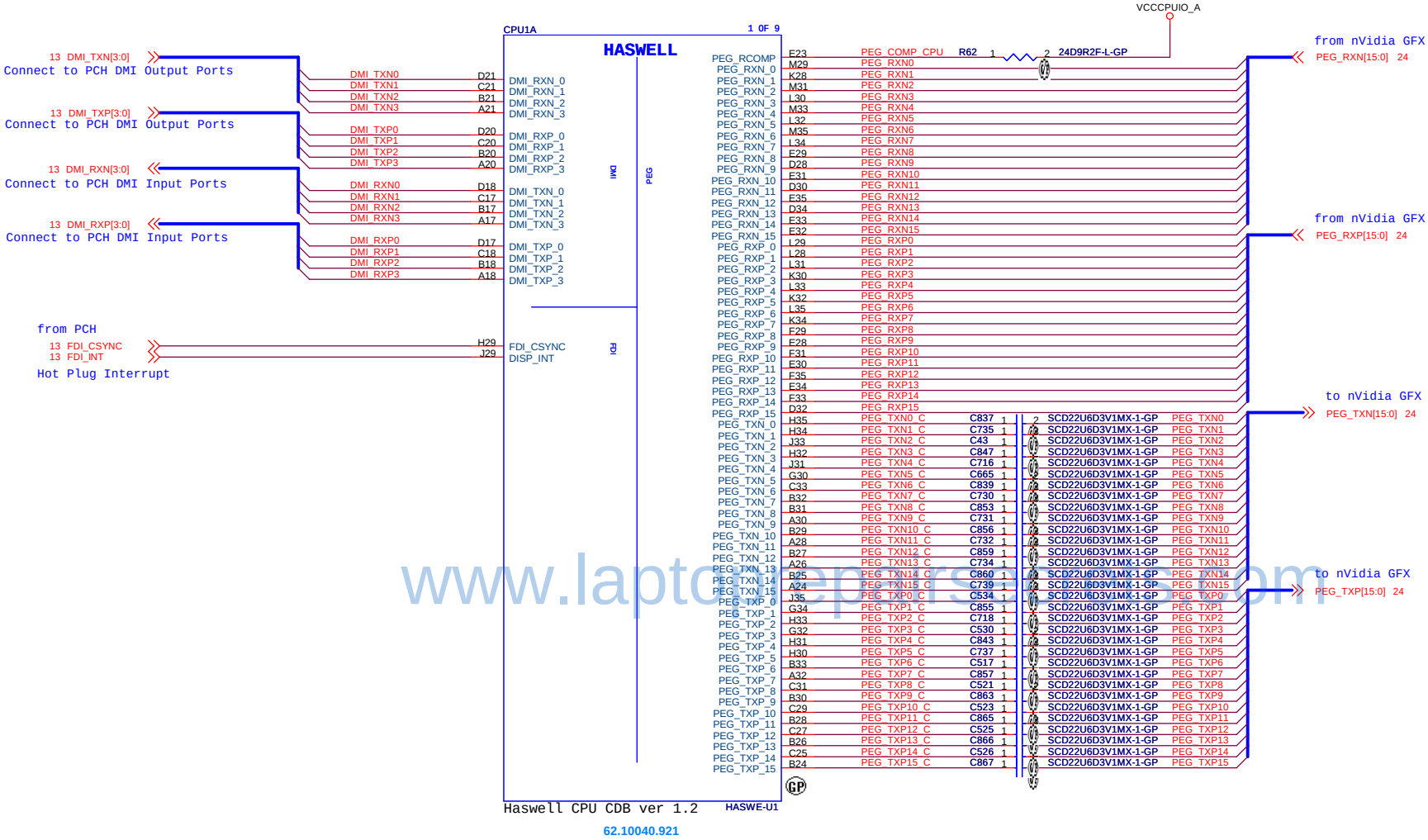
<Variant Name>

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

Title: EC HISTORY

Size: A3 | Document Number: Kome-1 WS | Rev: -1

Date: Wednesday, July 17, 2013 | Sheet 2 of 105



PEG Configuration
Port 15 - 0 (Function 0) : x16 GFX

<Variant Name>

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

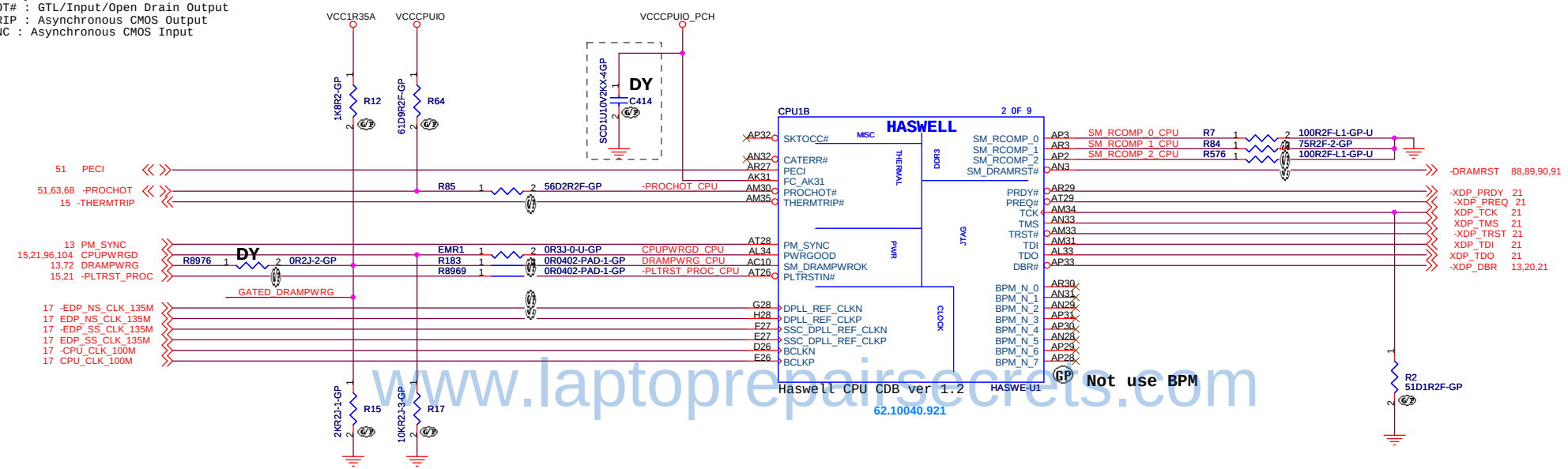
Title: Haswell DMI/PEG (1/8)

Size	Document Number	Rev
A3	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 3 of 105

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
THEMTRIP : Asynchronous CMOS Output
PM_SYNC : Asynchronous CMOS Input



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

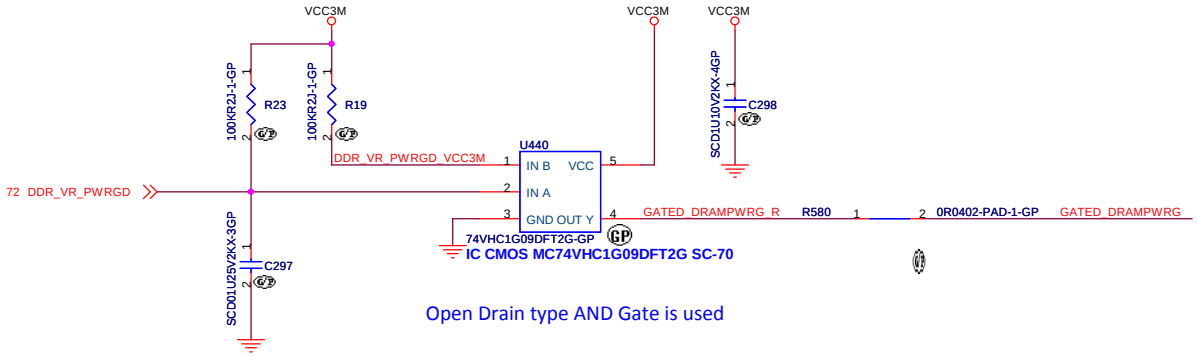
If Catastrophic Error (CATERR#) function is not required,
This pin is left.

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

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

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

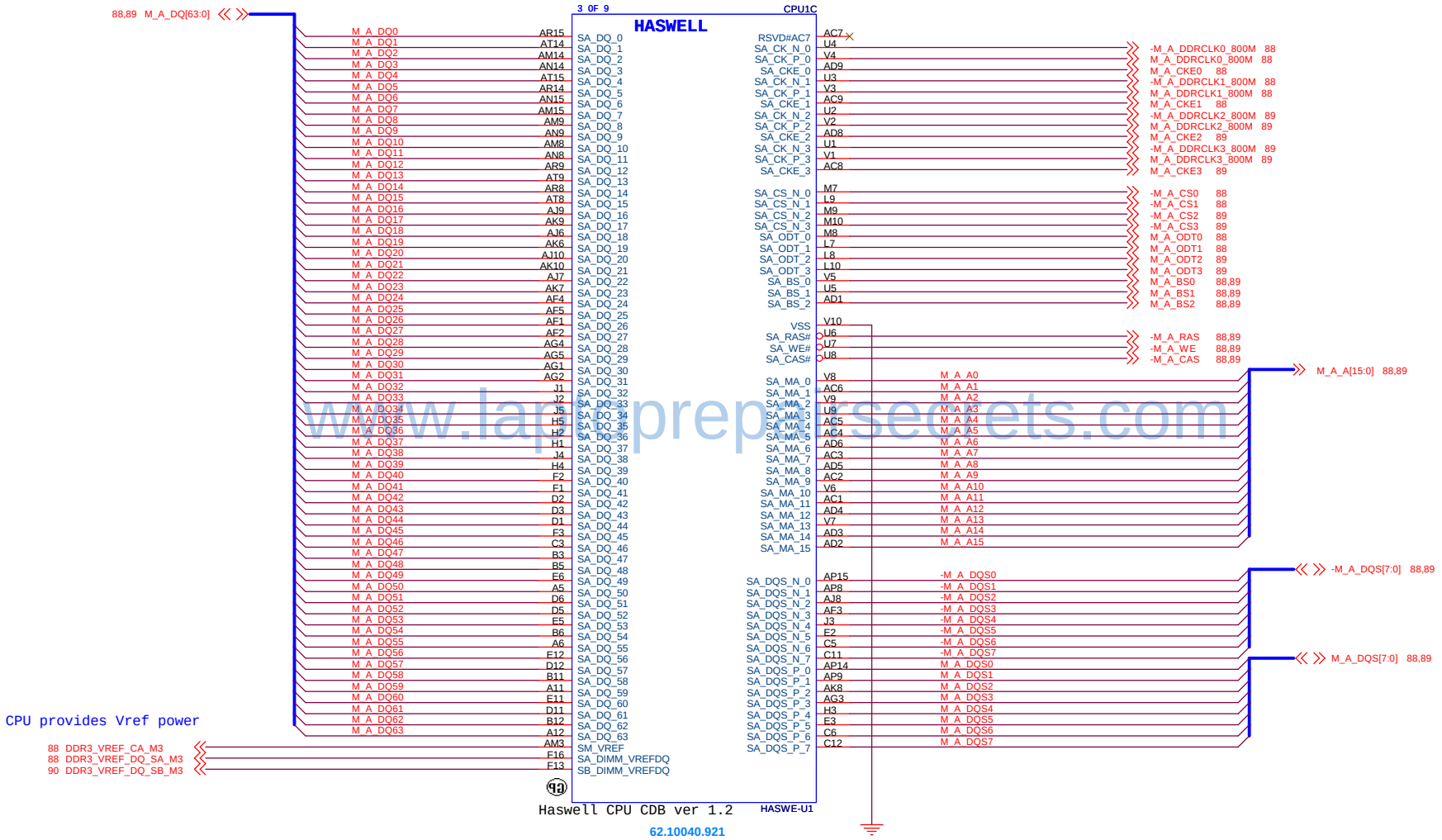
BPM[7:0] has internall Pull UP to VCCIO_OUT with 40~60ohm.



Open Drain type AND Gate is used

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



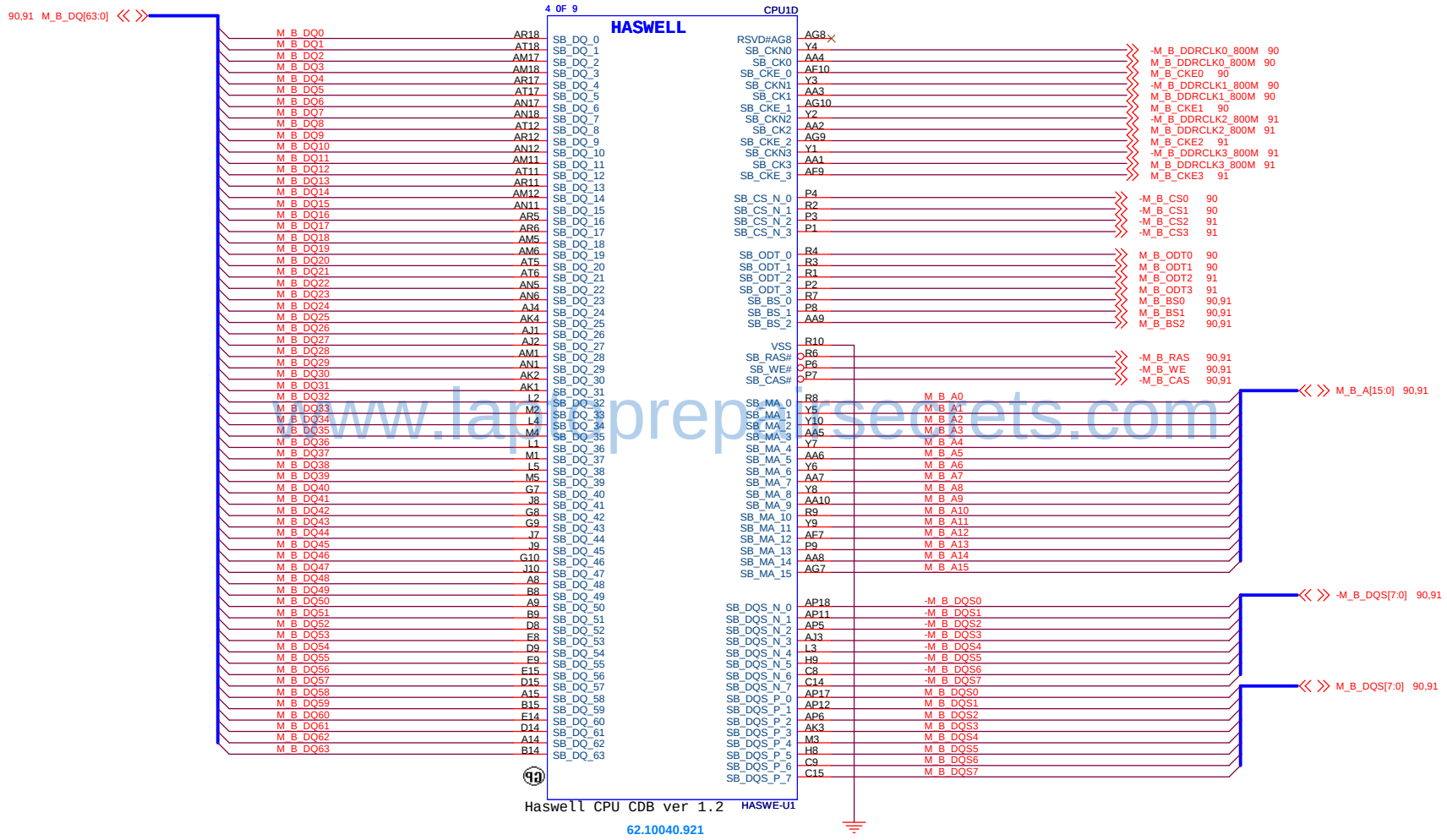
<Variant Name>

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

Title: Haswell DDR3L CH-A 2DIMM Per Channel (3/8)

Size	Document Number	Rev
A3	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 5 of 105



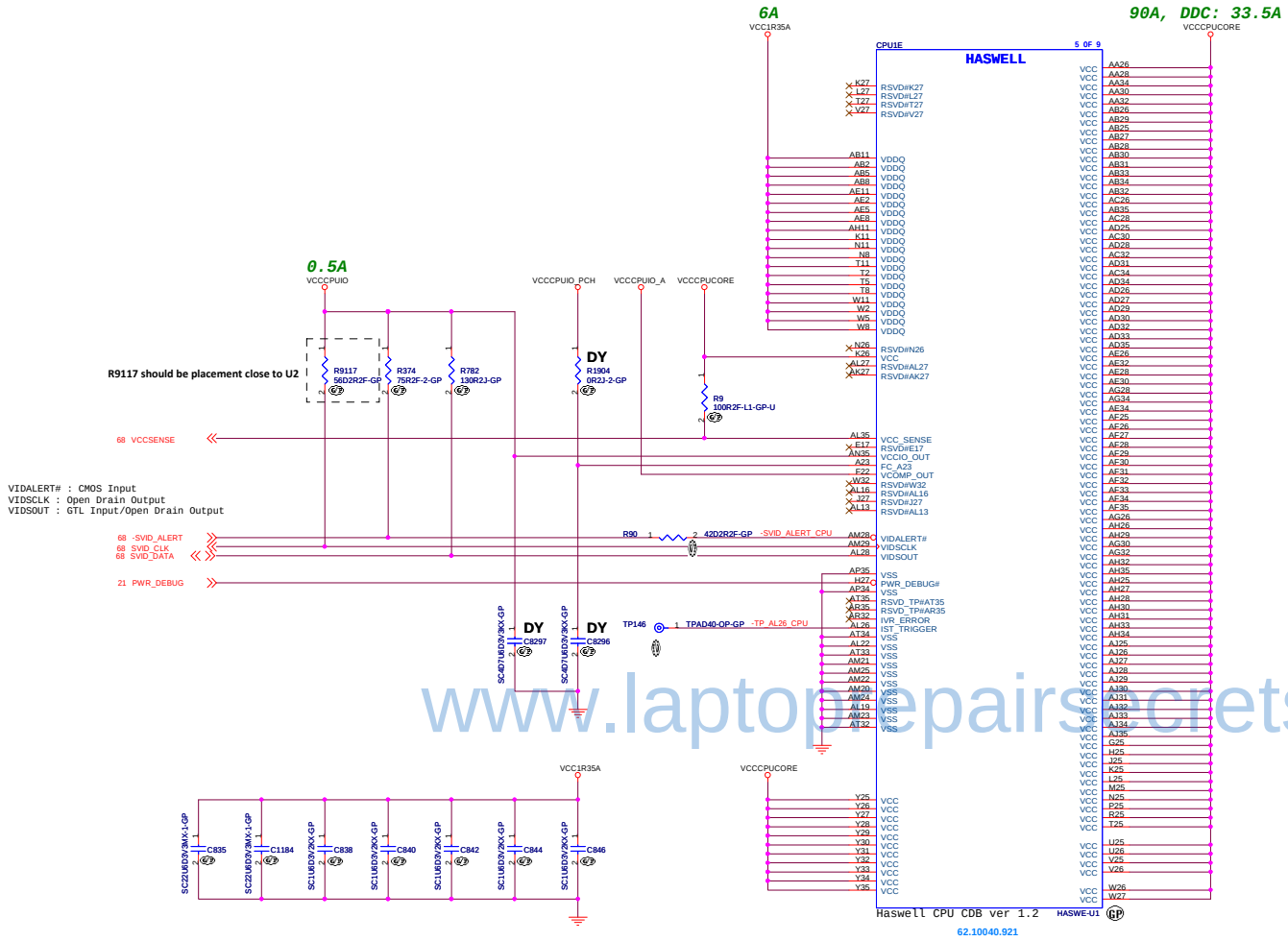
<Variant Name>

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

Title: Haswell DDR3L CH-B 2DIMM Per Channel (4/8)

Size	Document Number	Rev
A3	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 6 of 105



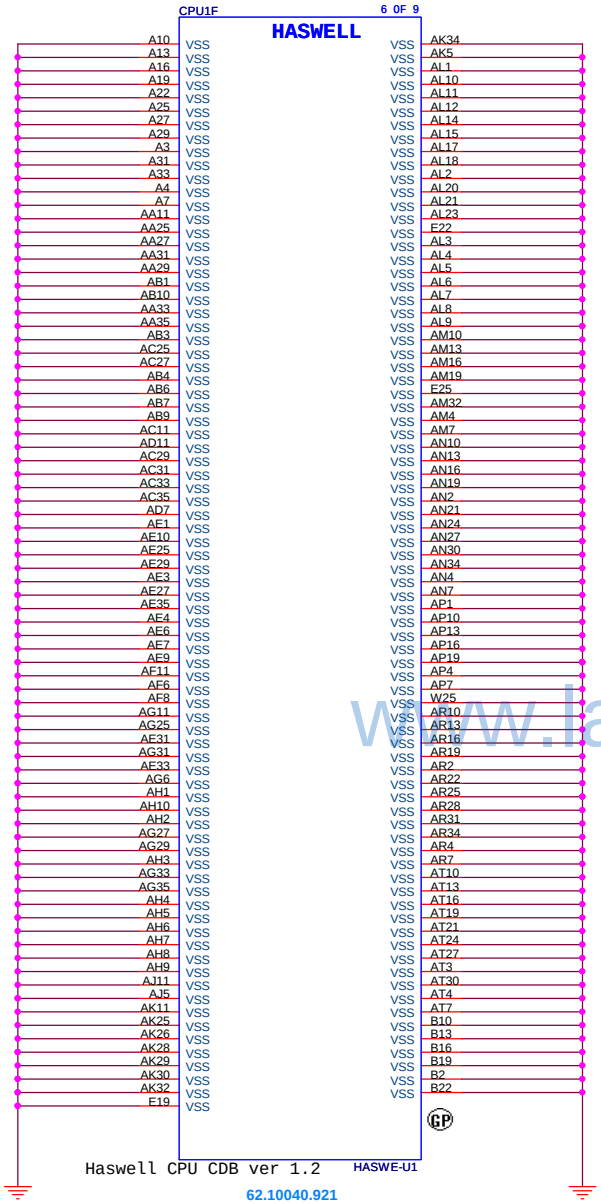
<Variant Name>

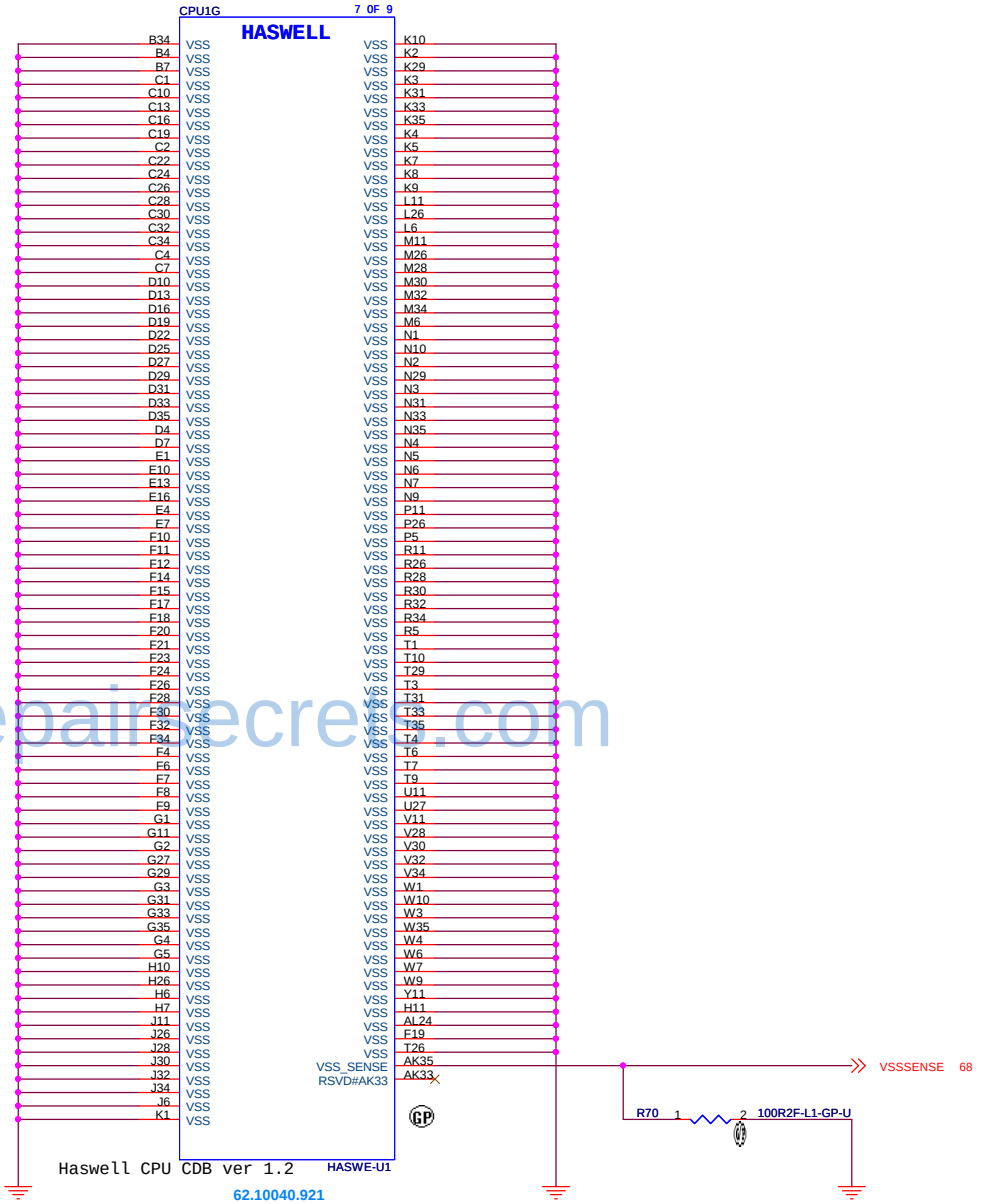
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: Haswell POWER (5/8)

Size	Document Number	Rev
A2	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 7 of 105





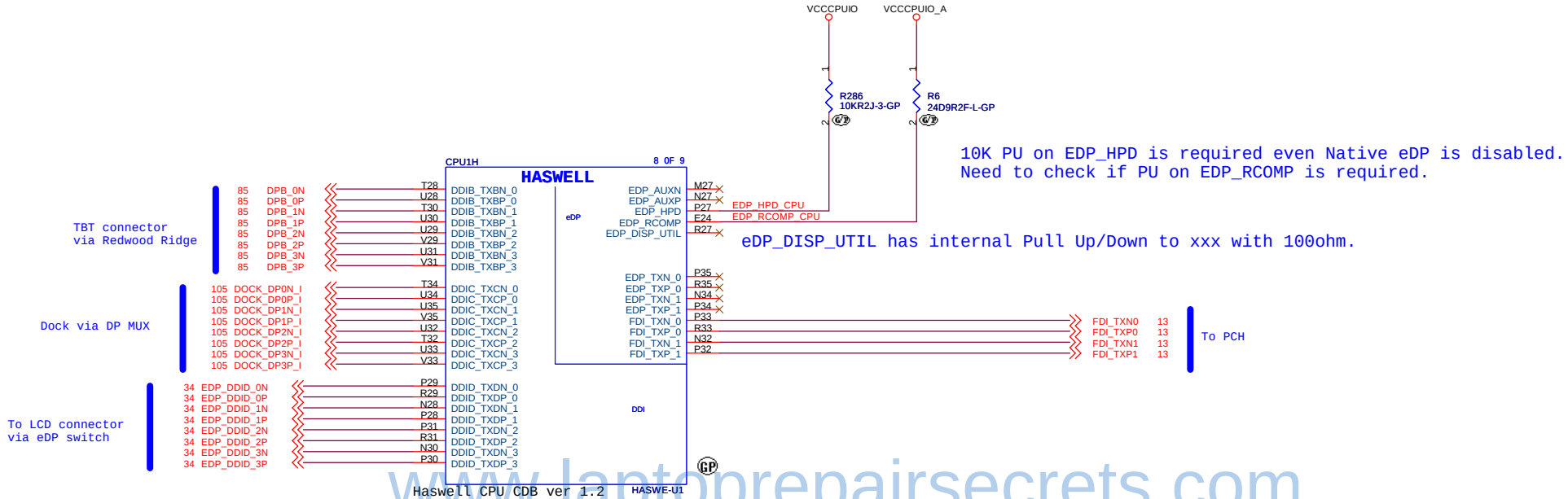
<Variant Name>

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

Title: Haswell GND (6/8)

Size	Document Number	Rev
A3	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 8 of 105



Termination is not required for DDIB/C/D_TXP/TXN.
When Display Port interface is disabled,
DDPB/C/D_CTRLDATA pin on PCH needs to be left.

<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: ***Haswell EDP/DDI (7/8)***

Size	Document Number	Rev
A3	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 9 of 105

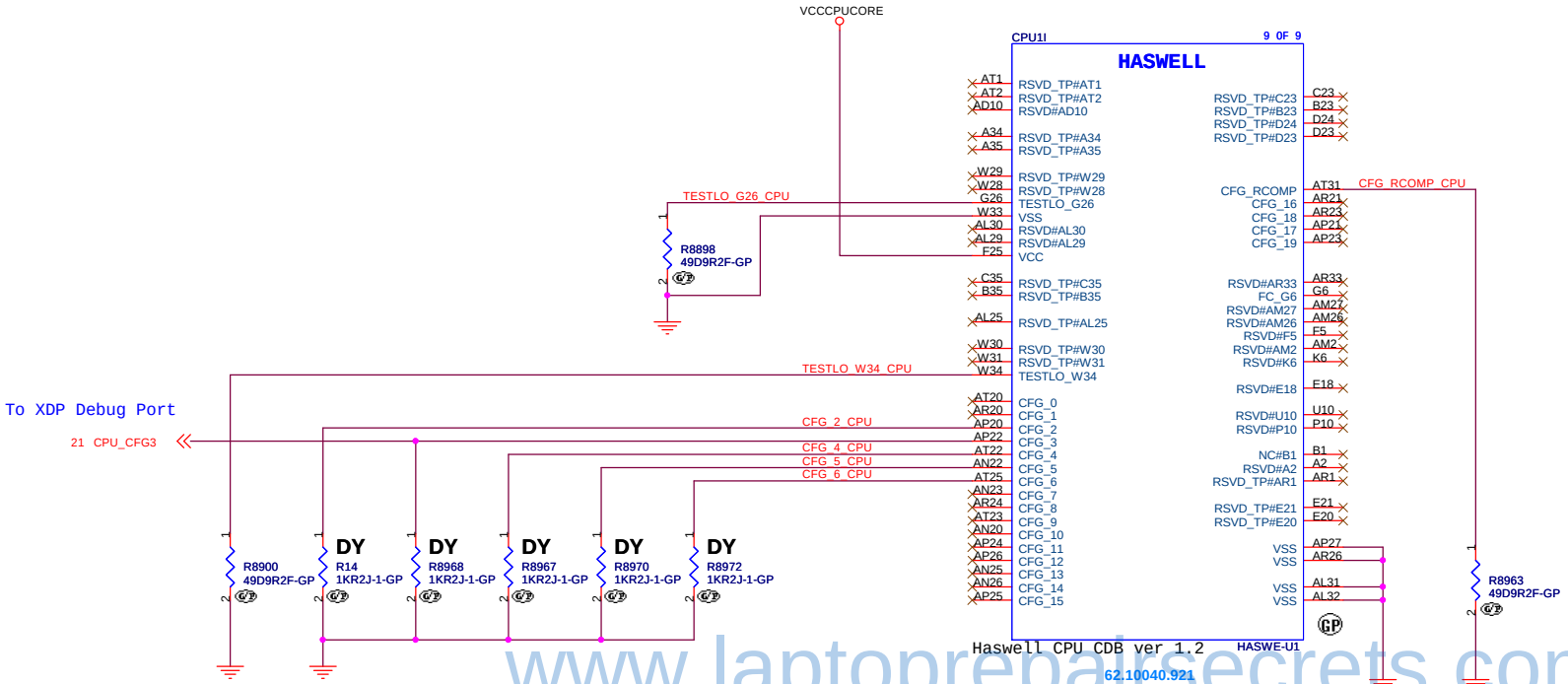


TABLE CFG[17:0] pin has inteernal Pull up to VCCIO_OUT with 40~60ohm.

CFG2 : PEG Static Lane Reversal Need to confirm for SWG and WS Model
- **1 : Normal Operation**
- **0 : Lane Reversal**

CFG3 : MSR Privacy Bit Feature
- **1 : Debug capability is determined by MSR(0xC80) bit0**
- **0 : MSR (0xC80) bit0 default setting overridden**

CFG4 : Display Port Presence
- **1 : Disabled**
- **0 : Enabled**

CFG[6:5] : PEG Bifurcation
- **11 : Func 1 Disabled, Func 2 Disabled (x16,---,---)** WS uses x16 without Thunderbolt
- **10 : Func 1 Enabled, Func 2 Disabled (x8,x8,---)** UMA, SWG uses x8 & x8
- **01 : Func 1 Disabled, Func 2 Enabled**
- **00 : Func 1 Enabled, Func 2 Enabled (x8,x4,x4)** WS uses x8, x4 with Thunderbolt

<Variant Name>

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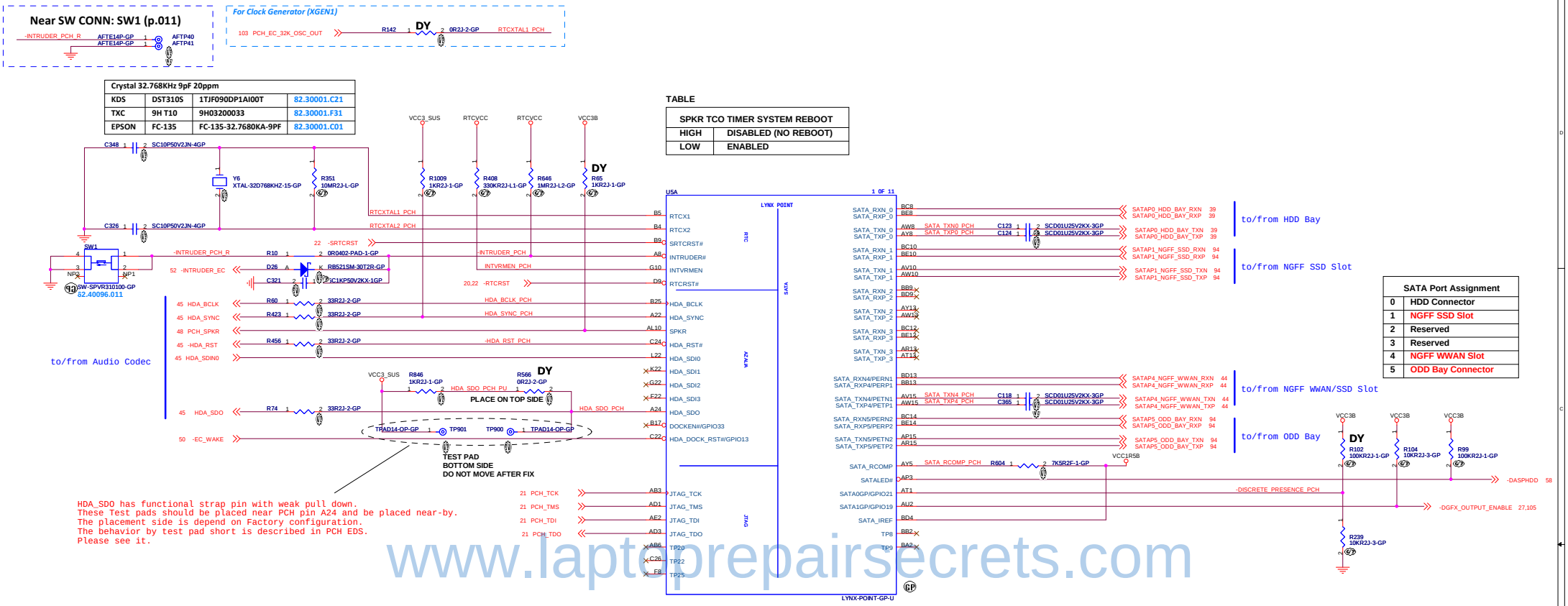
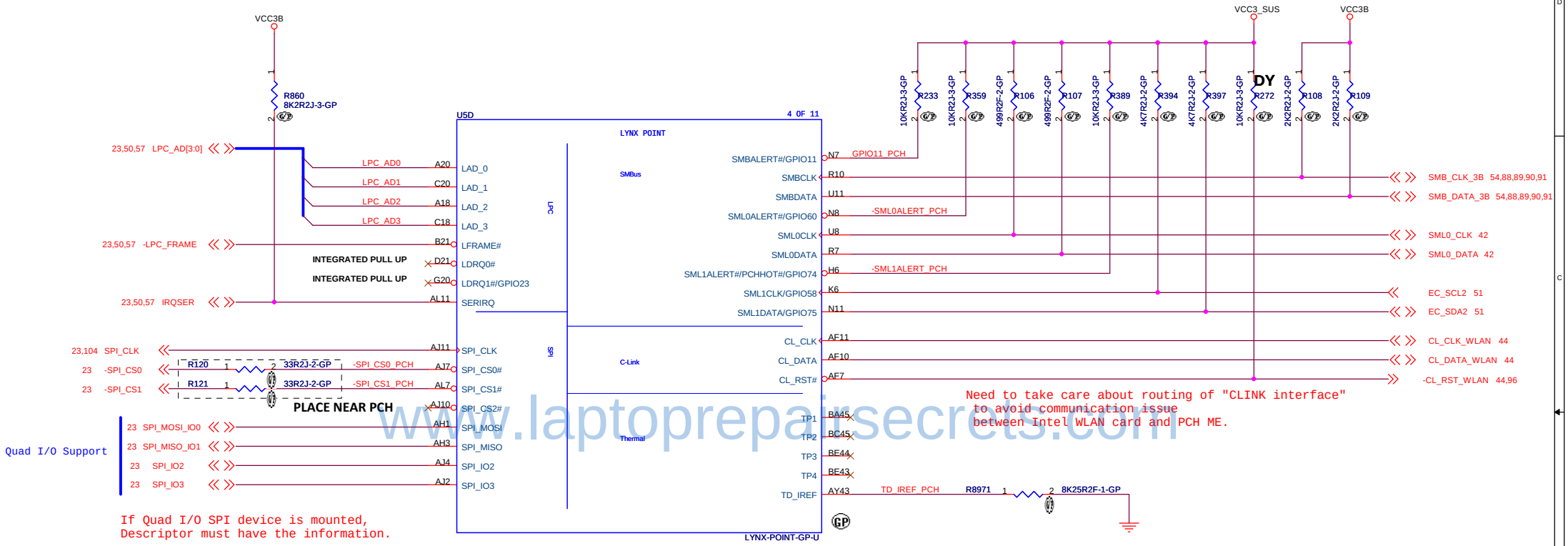
Taipei Hsien 221, Taiwan, R.O.C.

Title: ***Haswell CFG/RSV (8/8)***

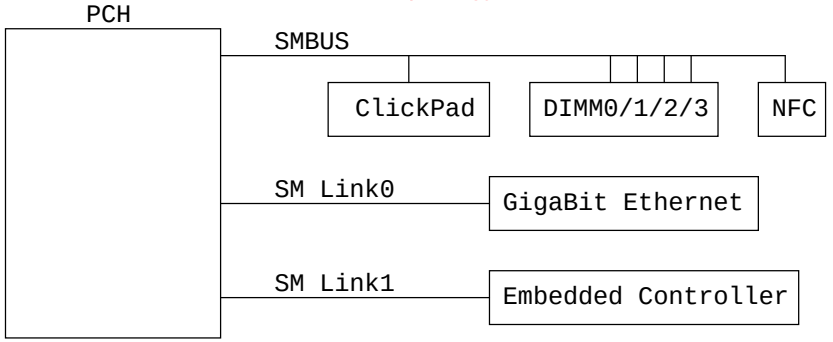
Size	Document Number	Rev
A3	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 10 of 105





SMBUS Topology



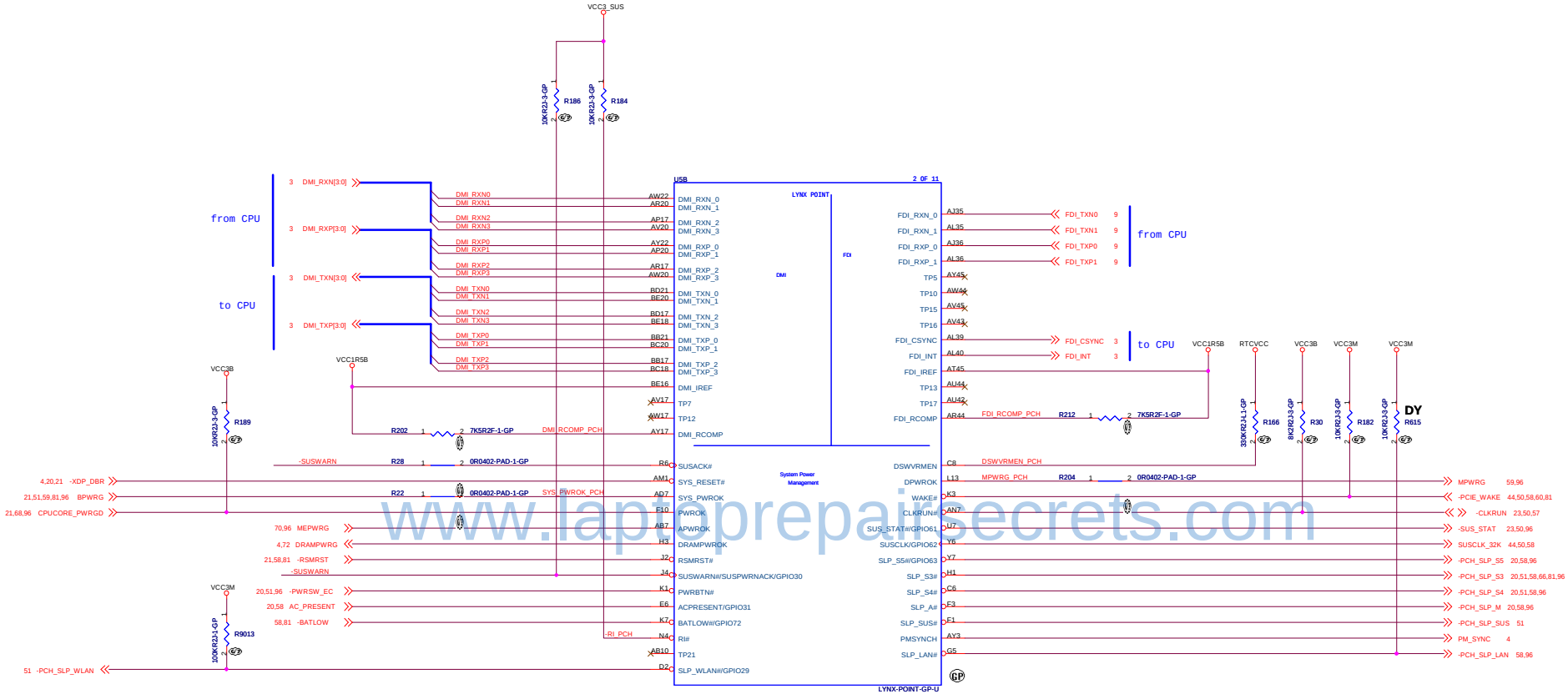
<variant_name>

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

Title: ***LynxPoint LPC/SPI/SMB (2/10)***

Size	Document Number	Rev
A3	Kome-1 WS	-1

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



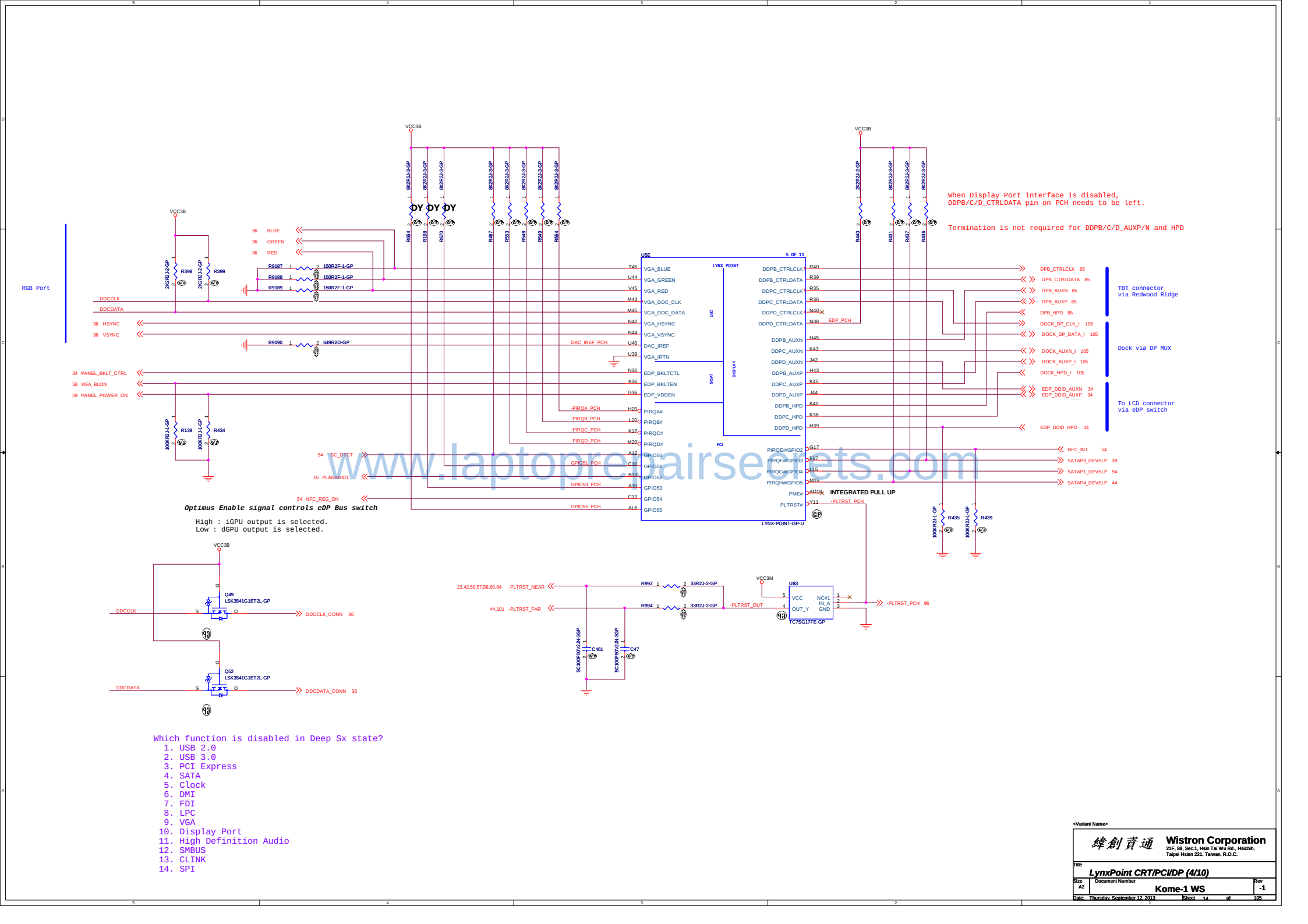
<Variant Name>

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

Title: LynxPoint DMI/FDI/PM (3/10)

Size	Document Number	Rev
A2	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 13 of 105

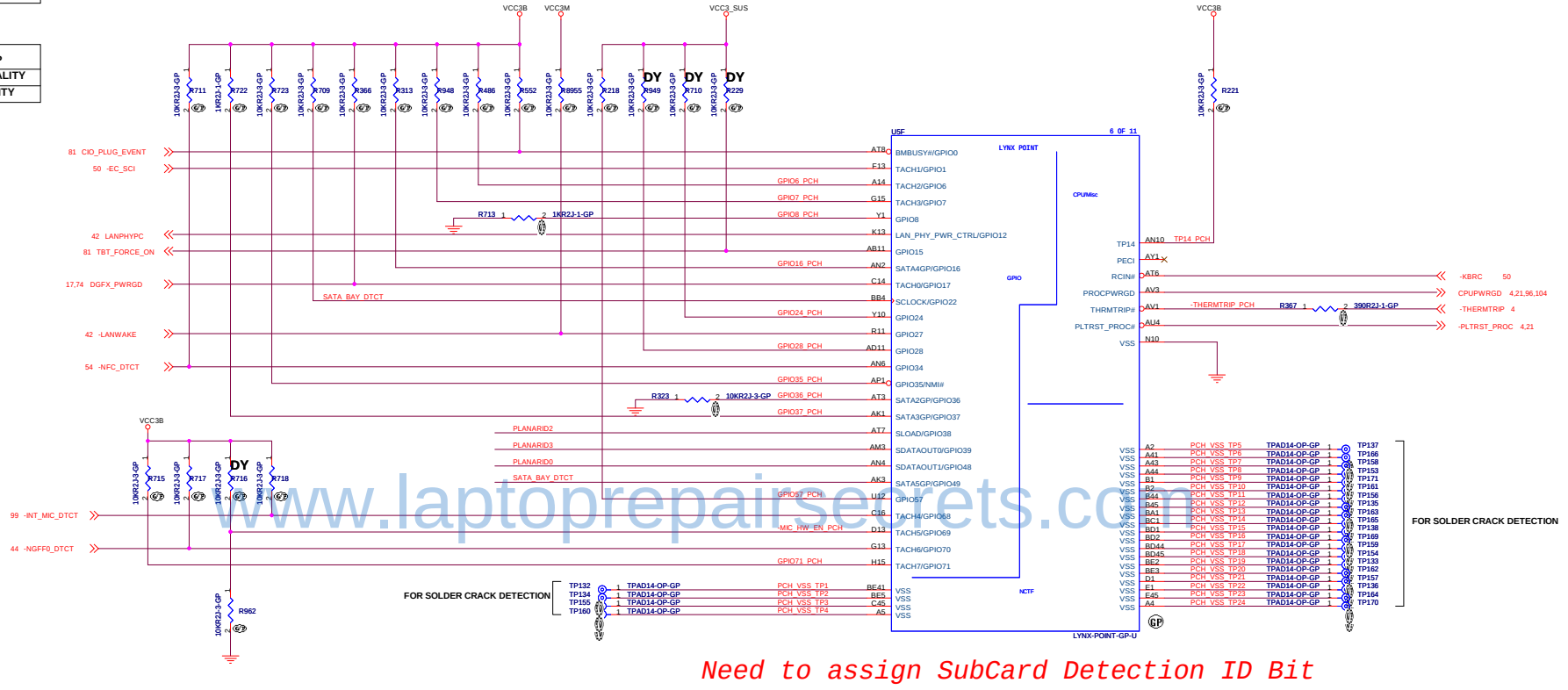


TABLE

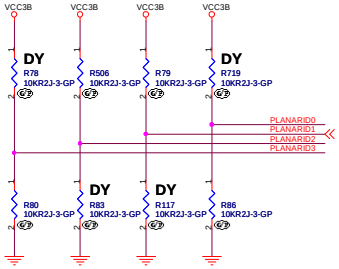
GPIO8	INTEGRATED CLOCKING
HIGH	DISABLED(BTM)
LOW	ENABLED(FCIM)

TABLE

GPIO37	ME CRYPTO STRAP
HIGH	WITH CONFIDENTIALITY
LOW	NO CONFIDENTIALITY



Need to assign SubCard Detection ID Bit



TABLE

LEVEL	PLANAR ID			
	3	2	1	0
1	R78	R506	R79	R719
0	R80	R83	R117	R86

TABLE

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

<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: LynxPoint GPIO (5/10)

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 15 of 105

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 (Docking Port)	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

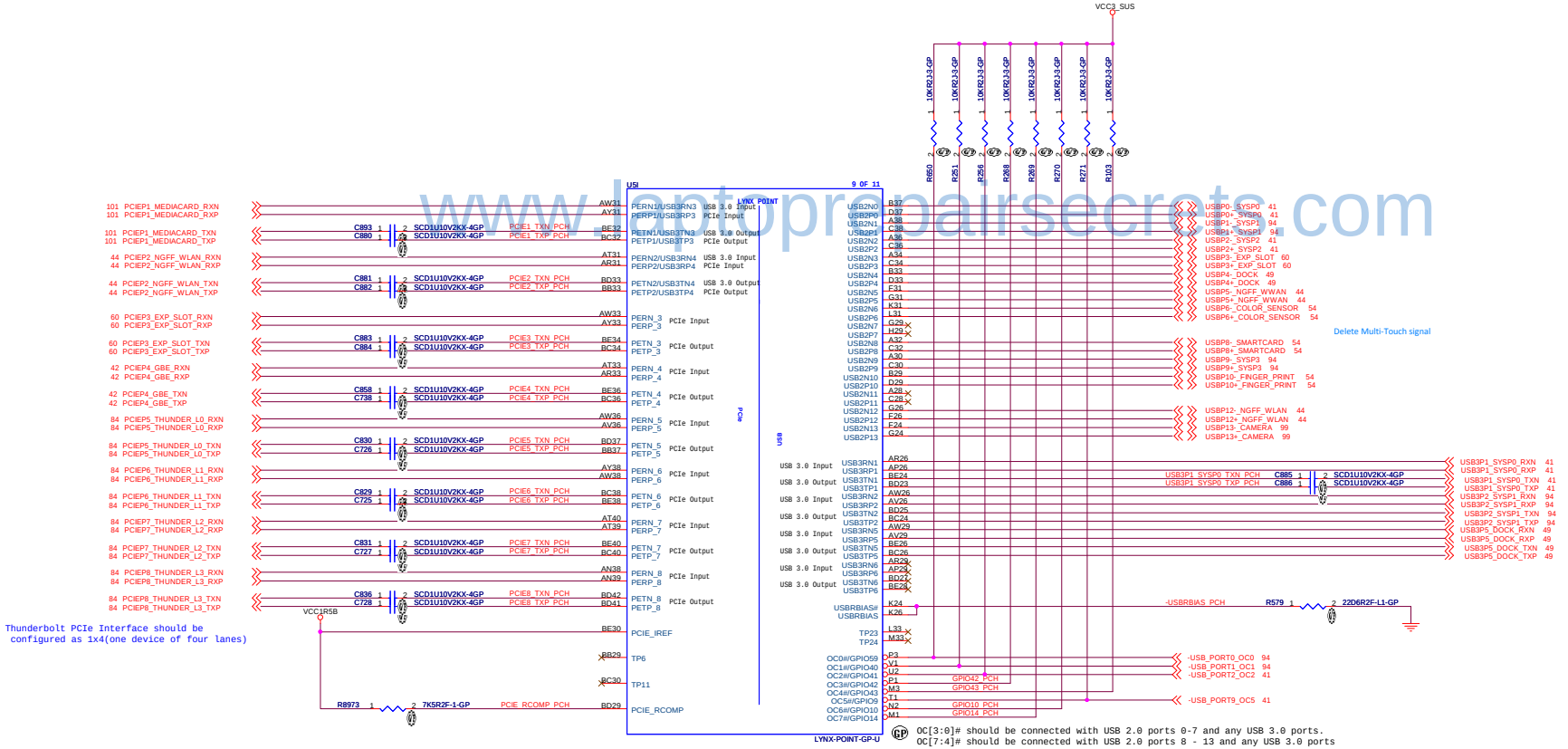
USB Port Assignment	
0	USB 2.0 System Port 0
1	USB 2.0 System Port 1(Debug)
2	USB 2.0 System Port 2 (AOU)
3	Express Slot
4	USB 2.0 Docking
5	NGFF WWAN Slot
6	Color Sensor [WS Model only]
7	Reserved
8	Smart Card Slot
9	USB 2.0 System Port3
10	Fingerprint Reader
11	Reserved
12	NGFF WLAN Slot (Bluetooth)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



<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: LynxPoint PCIE/USB (6/10)

Size	Document Number	Rev
A2	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 16 of 105

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

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

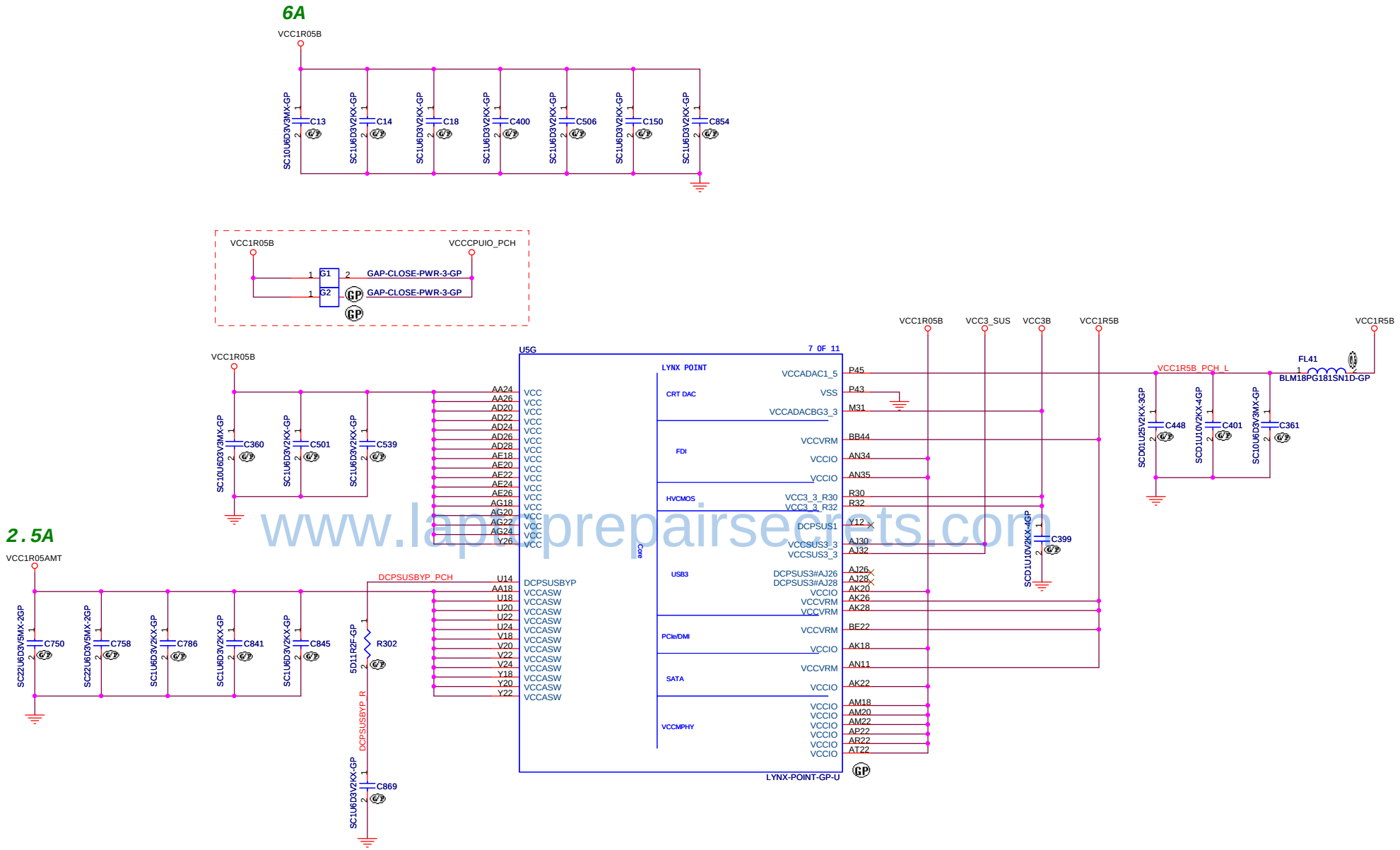
<Variant Name>

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

Title: LynxPoint CLOCK (7/10)

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 17 of 105



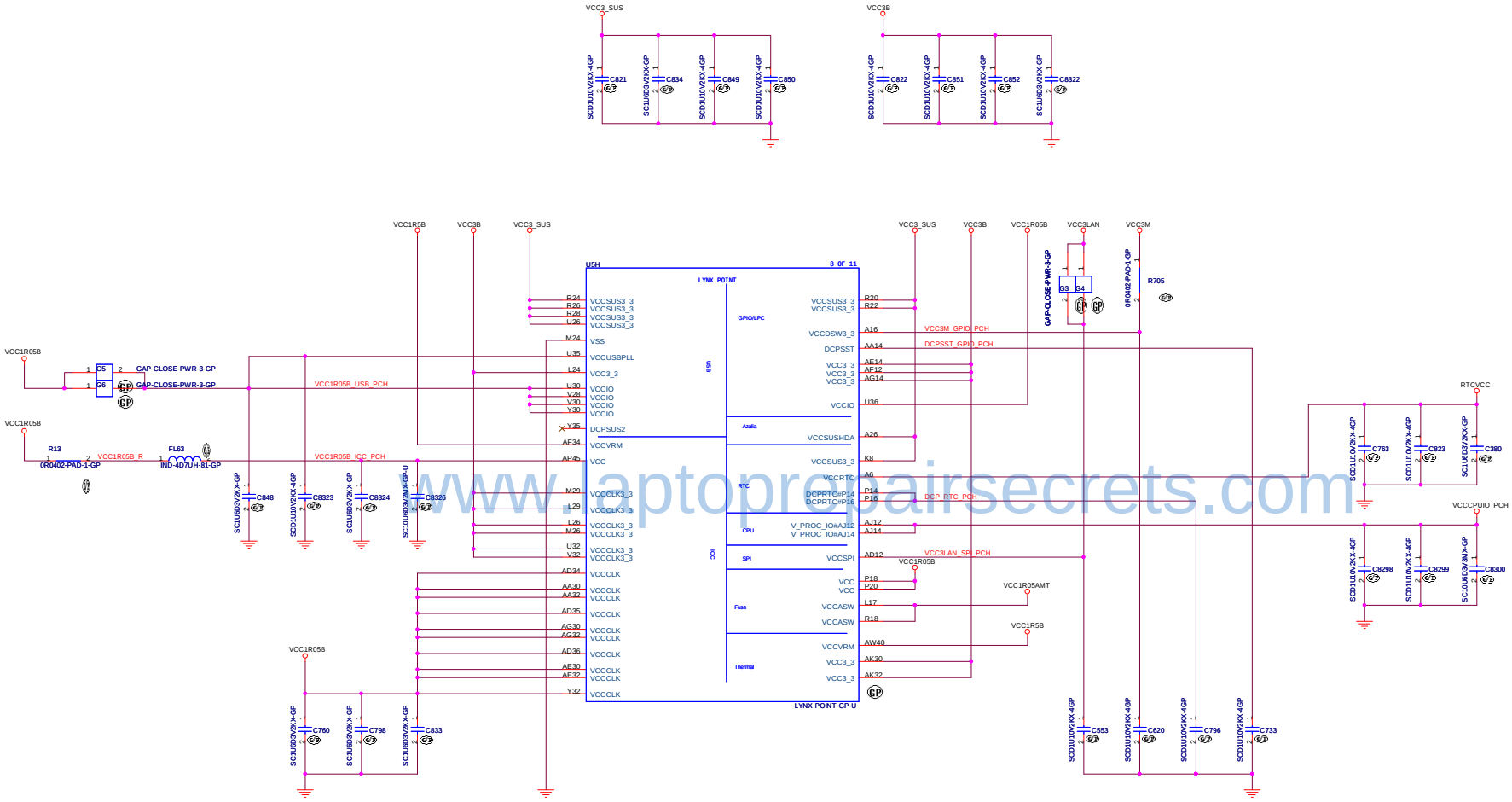
<Variant Name>

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

Title: LynxPoint POWER WS (8/10)

Size	Document Number	Rev
A3	Kome-1 WS	-1

Date: Wednesday, July 17, 2013 Sheet 18 of 105



<variant_name>

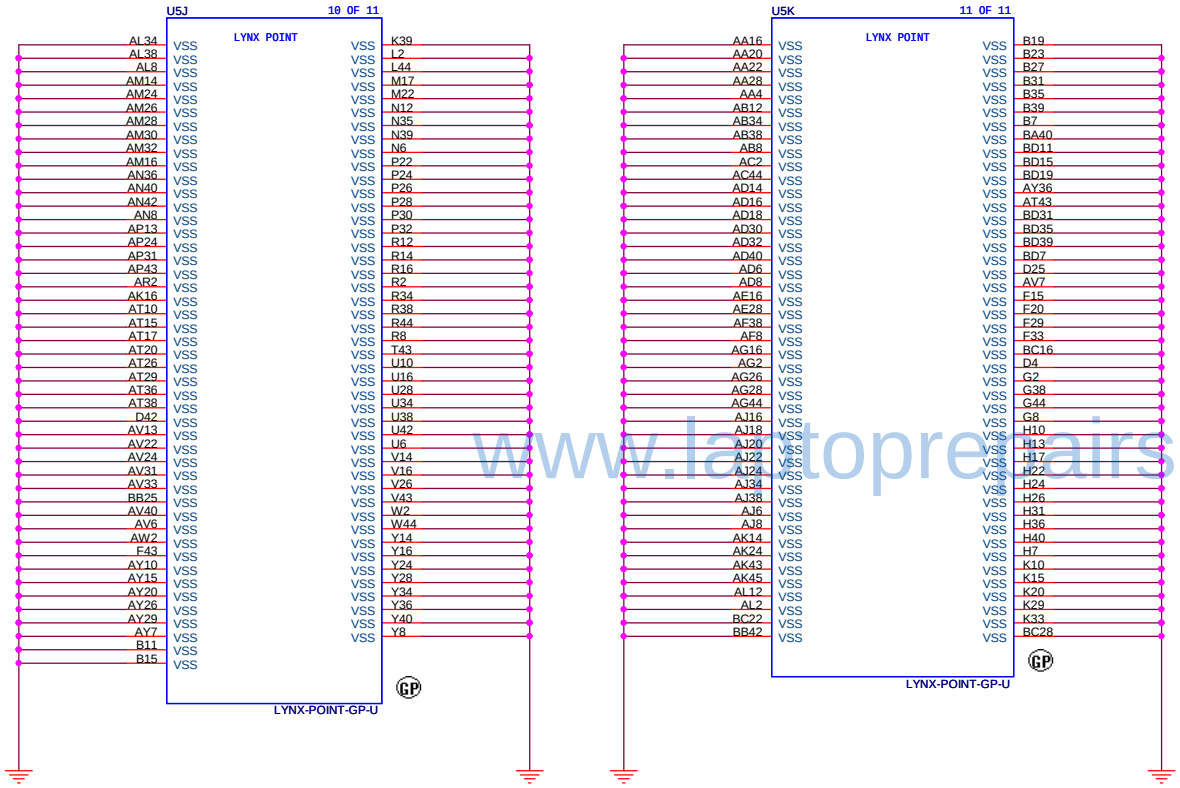
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: LynxPoint POWER (9/10)

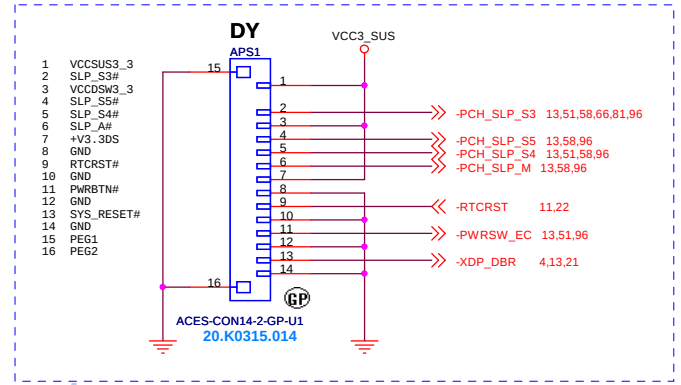
Size	Document Number	Rev
A2	Kome-1 WS	-1

Date: Thursday, July 25, 2013 Sheet 19 of 105

TEST PAD FOR METS/APS



APS interface for the Software ME validation



13,58 AC_PRESENT — TPAD14-OP-GP — TP11

<Variant Name>

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

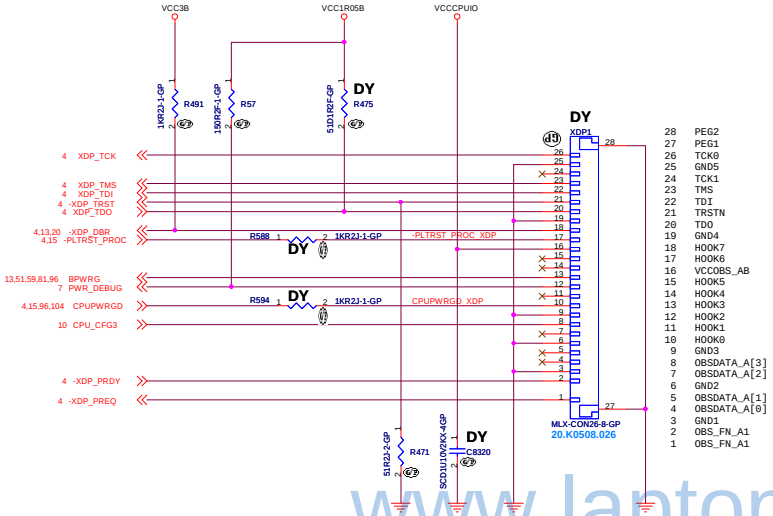
Title: LynxPoint GND (10/10)

Size	Document Number	Rev
A3	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 20 of 105

TCK has external Pulldown(51ohm) on CPU page.
TMS and TDI has internall 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 xeternal 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



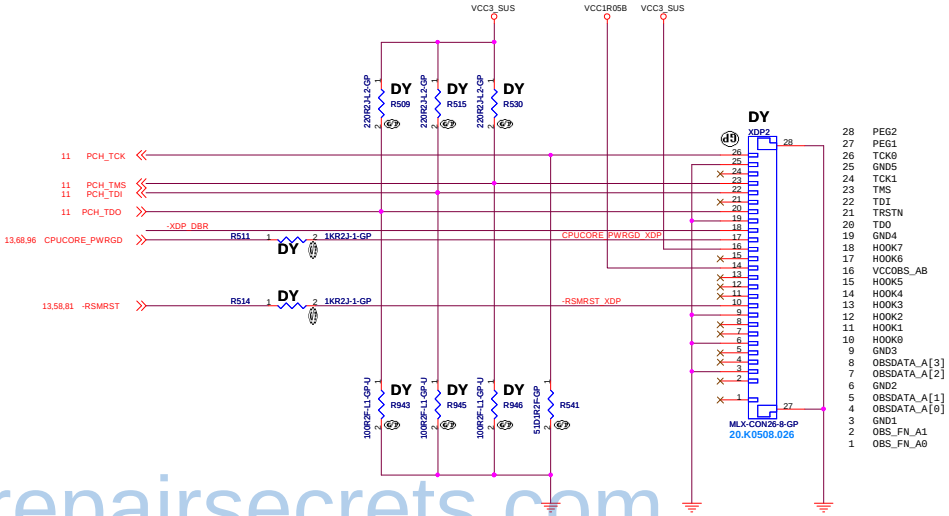


TABLE NOTE: XDP1 "ASM" FOR PDV/SDV ONLY.

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

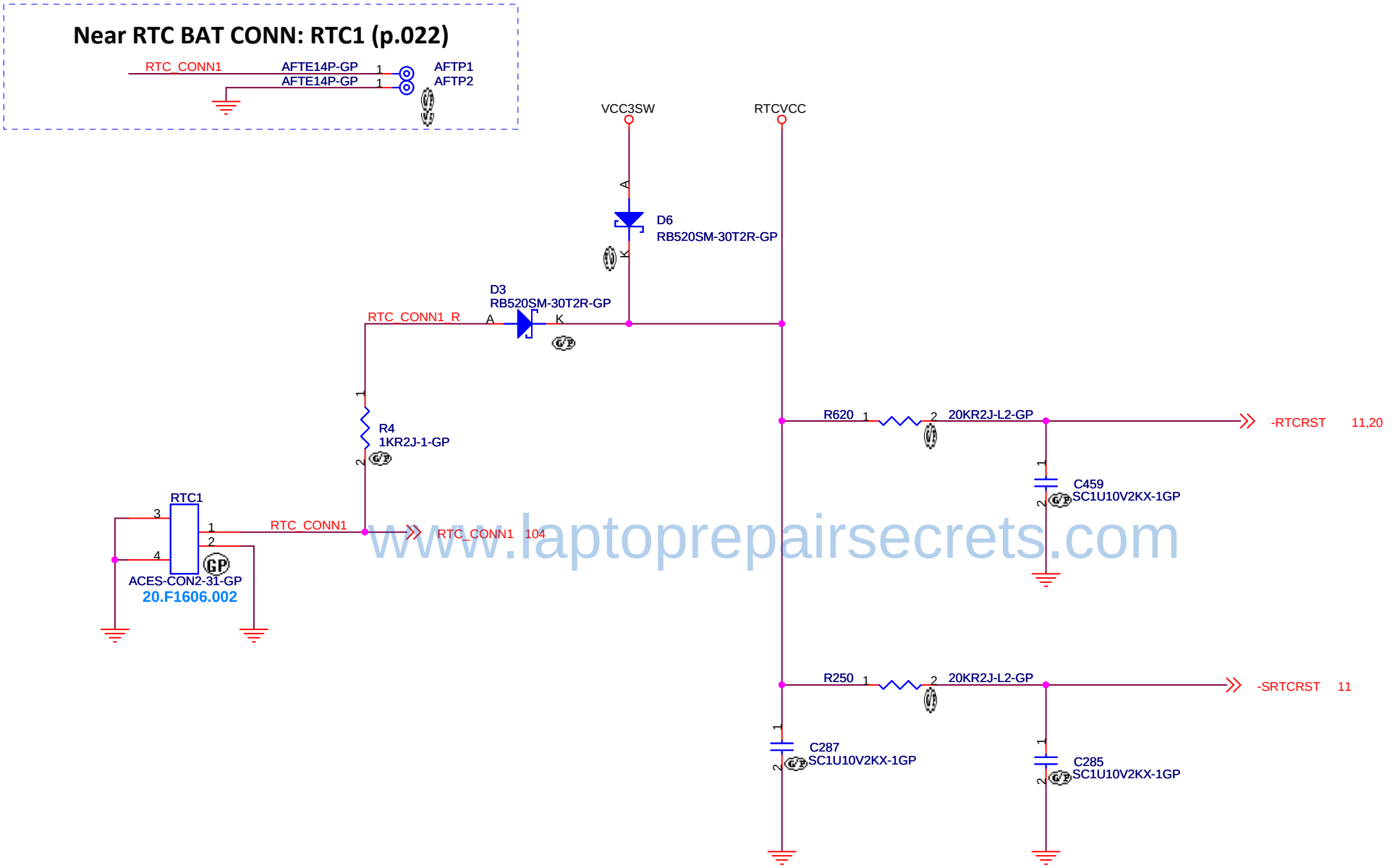
<Variant Name>

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

Title: XDP CONNECTOR and APS interface

Size	Document Number	Rev
A2	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 21 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.

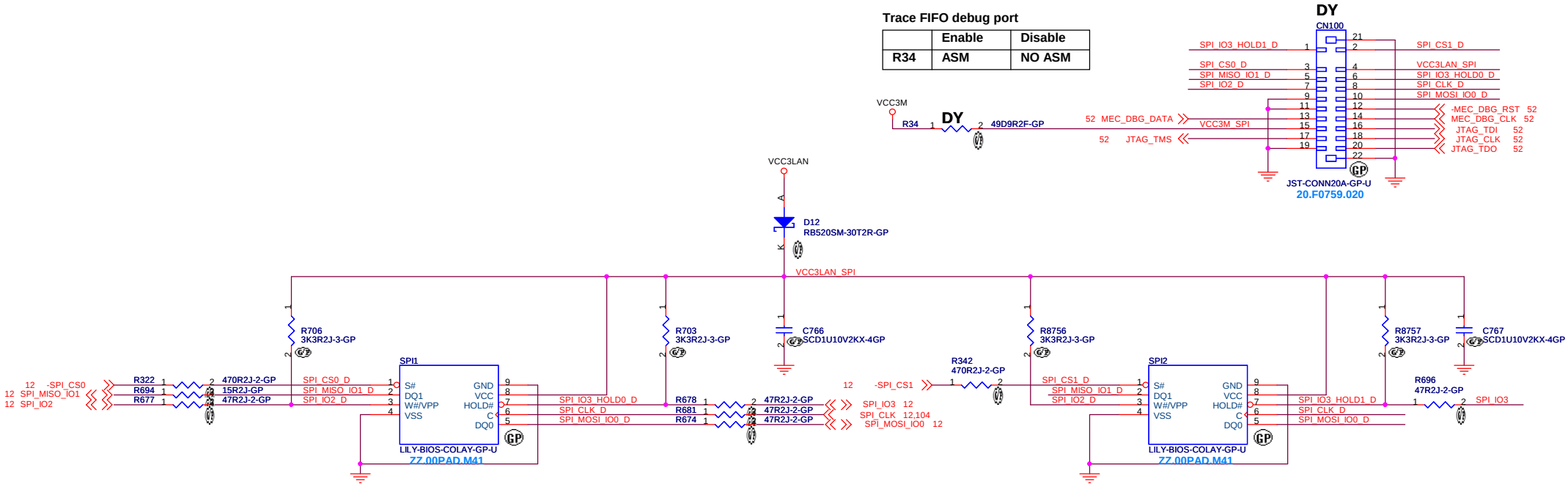
Title: ***RTC BATTERY***

Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Thursday, September 12, 2013 Sheet 22 of 105

Trace FIFO debug port

	Enable	Disable
R34	ASM	NO ASM



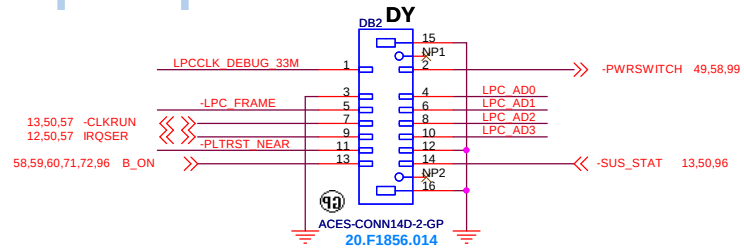
64Mbits SPI FLASH (SPI1) : 4 I/O Support SPI Flash should be applied.

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

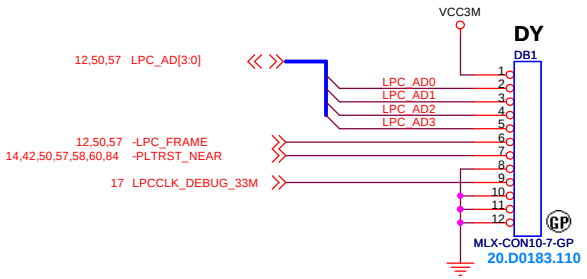
32Mbits SPI FLASH (SPI2) : 4 I/O Support SPI Flash should be applied.

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



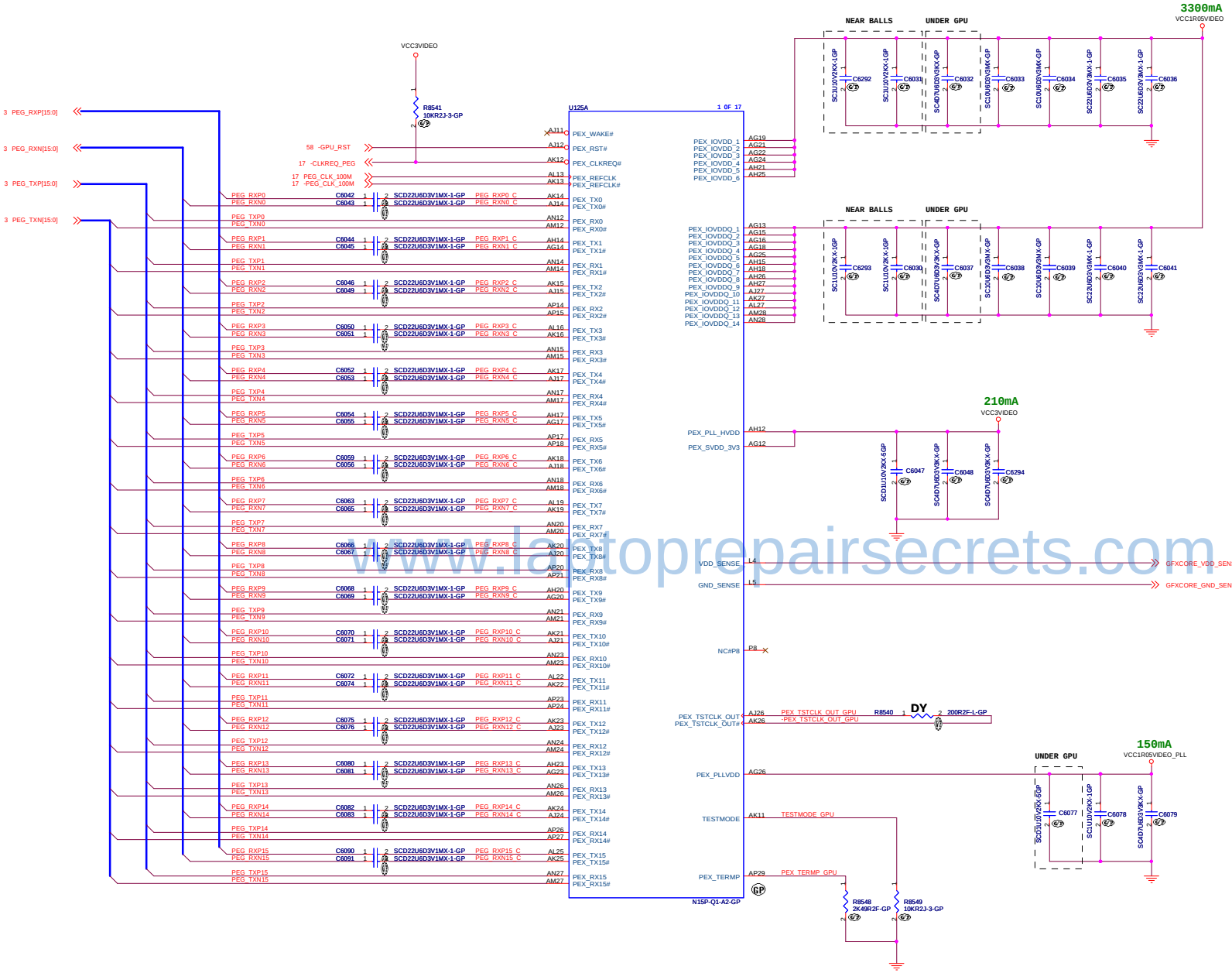
<Variant Name>

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

Title: **SPI Flash, DEBUG PORT**

Size	Document Number	Rev
A3	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 23 of 105



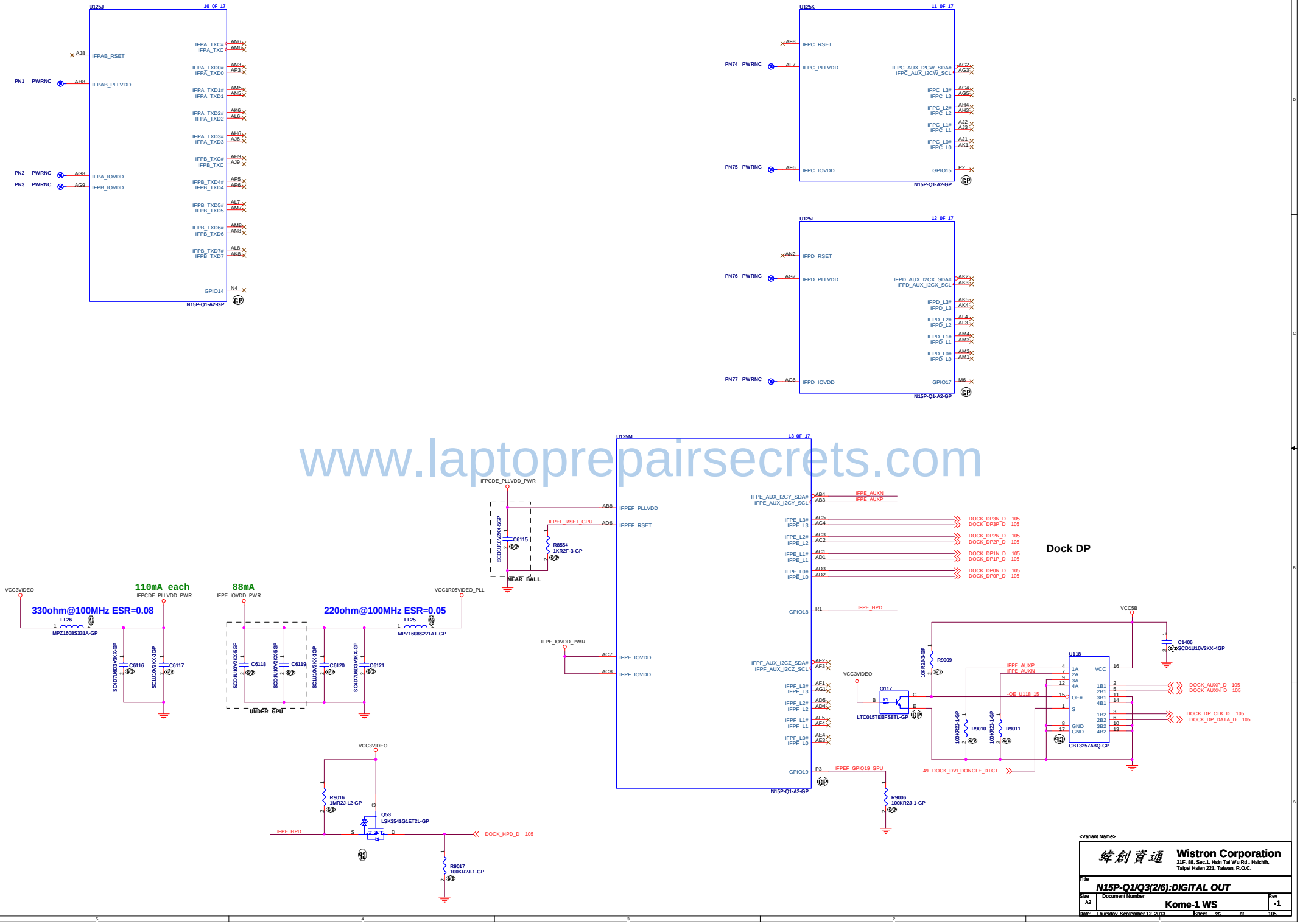
<Variant Name>

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

Title: N15P-Q1/Q3(1/6):PEG I/F

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 24 of 105



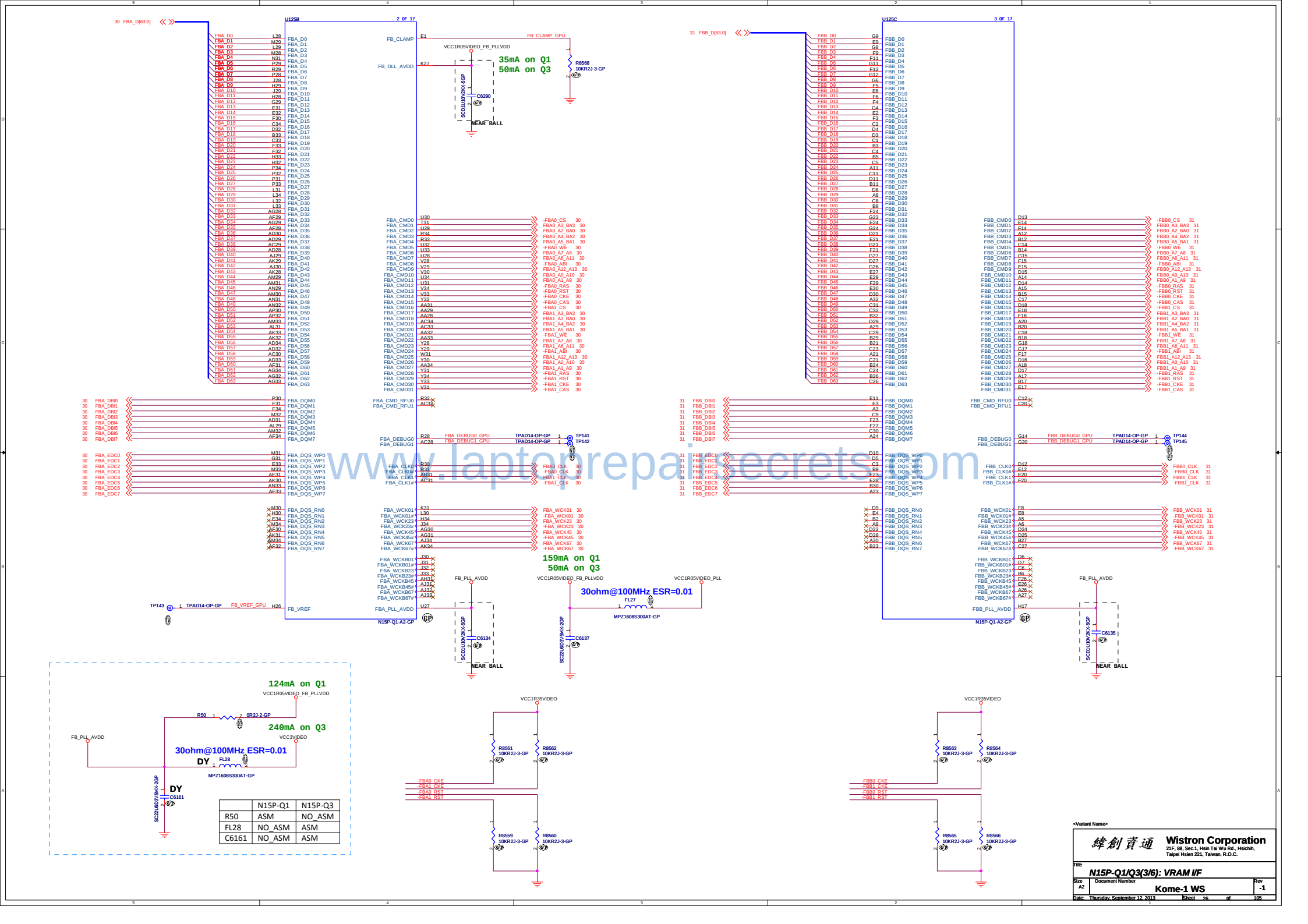
<Variant Name>

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

Title: N15P-Q1/Q3(2/6):DIGITAL OUT

Size	Document Number	Rev
A2	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 25 of 105



	N15P-Q1	N15P-Q3
R50	ASM	NO_ASM
FL28	NO_ASM	ASM
C6161	NO_ASM	ASM

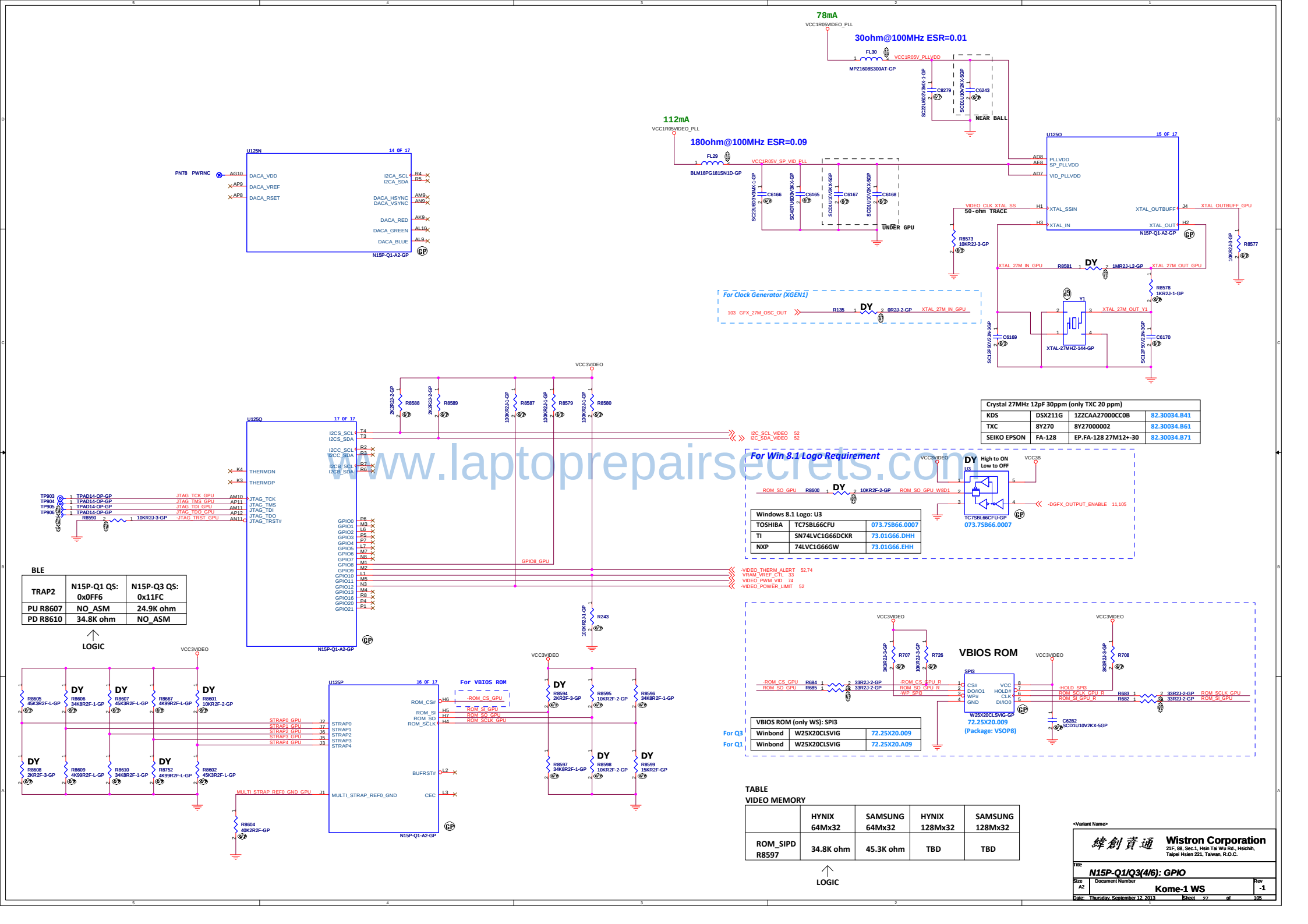
<Variant Name>

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

Title: N15P-Q1/Q3(3/6): VRAM I/F

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 26 of 105



Crystal 27MHz 12pF 30ppm (only TXC 20 ppm)			
KDS	DSX211G	1ZZCAA27000CC0B	82.30034.B41
TXC	8Y270	8Y27000002	82.30034.B61
SEIKO EPSON	FA-128	EP.FA-128 27M12+-30	82.30034.B71

Windows 8.1 Logo: U3		
TOSHIBA	TC7SBL66CFU	073.7SB66.0007
TI	SN74LVC1G66DCKR	73.01G66.DHH
NXP	74LVC1G66GW	73.01G66.EHH

BLE

TRAP2	N15P-Q1 QS: 0x0FF6	N15P-Q3 QS: 0x11FC
PU R8607	NO_ASM	24.9K ohm
PD R8610	34.8K ohm	NO_ASM

LOGIC

VBIOS ROM (only WS): SPI3		
Winbond	W25X20CLSVIG	72.25X20.009
Winbond	W25X20CLSVIG	72.25X20.A09

For Q3
For Q1

TABLE
VIDEO MEMORY

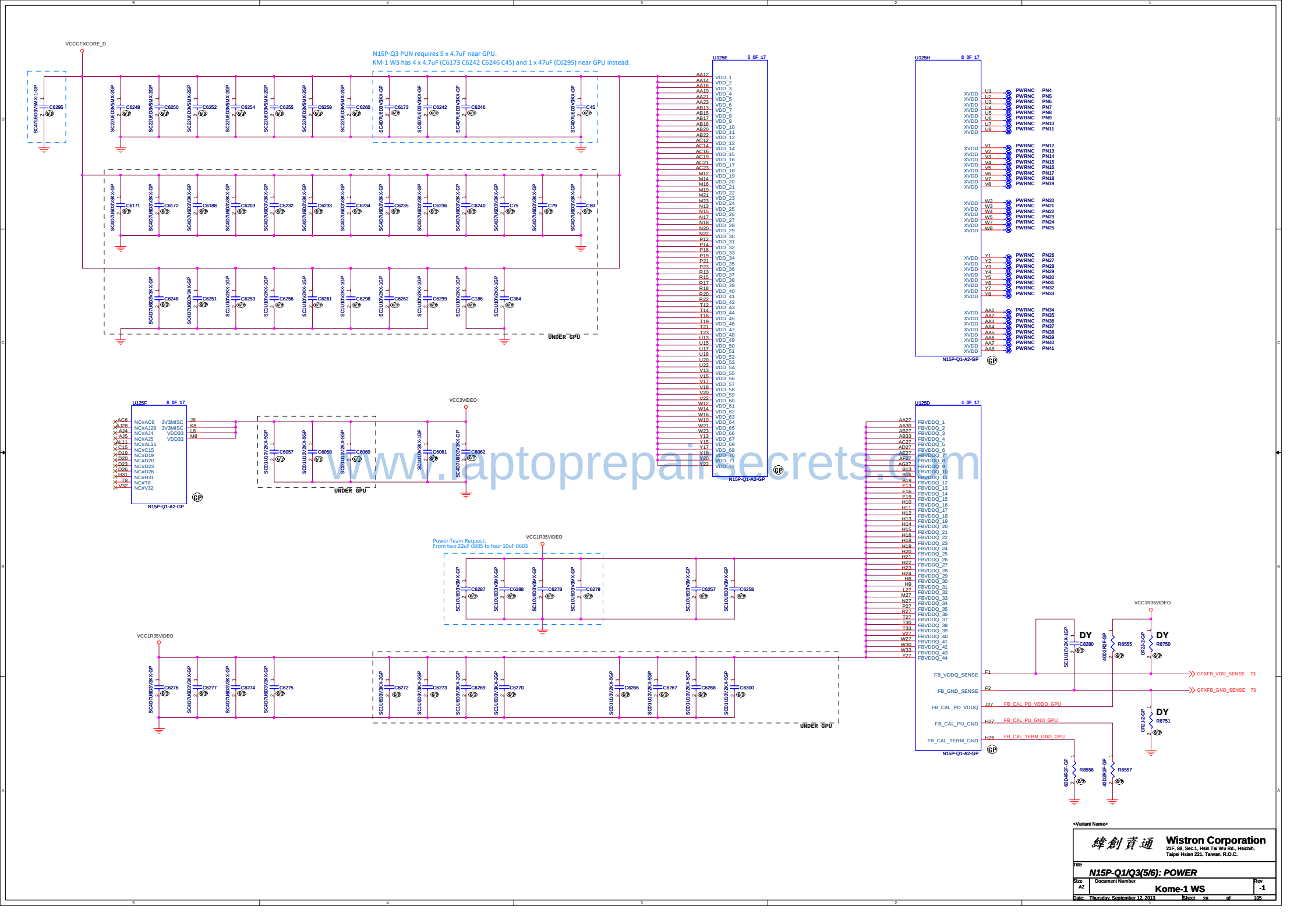
	HYNIX 64Mx32	SAMSUNG 64Mx32	HYNIX 128Mx32	SAMSUNG 128Mx32
ROM_SIPD R8597	34.8K ohm	45.3K ohm	TBD	TBD

LOGIC

<Variant Name>

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

Title: N15P-Q1/Q3(4/6): GPIO
Size: A2 | Document Number: Kome-1 WS | Rev: -1
Date: Thursday, September 12, 2013 | Sheet 27 of 105



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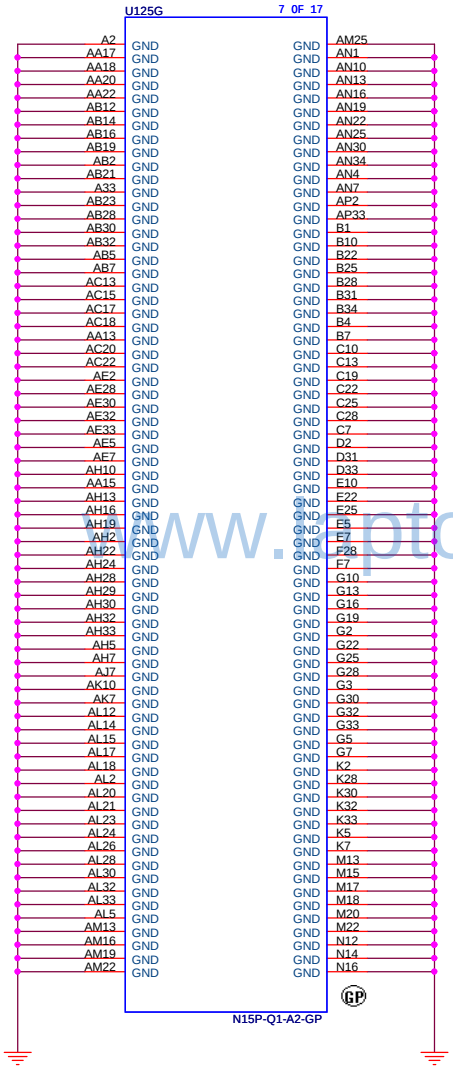
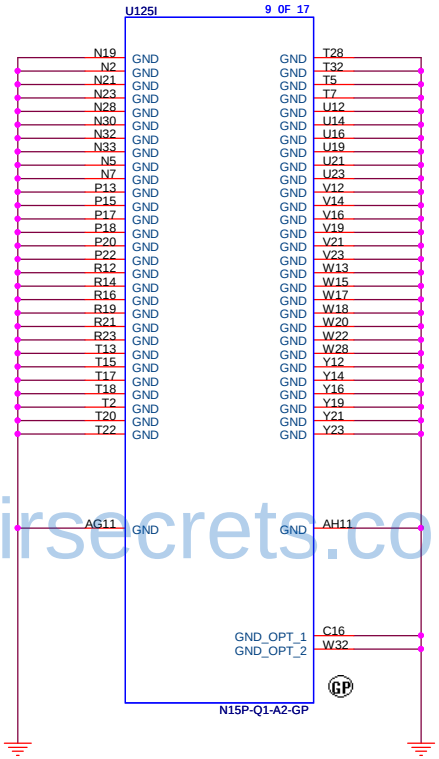
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: N15P-Q1/Q3(5/6): POWER

Size	Document Number	Rev
A2	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 28 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: N15P-Q1/Q3(6/6): GND

Size	Document Number	Rev
A3	Kome-1 WS	-1

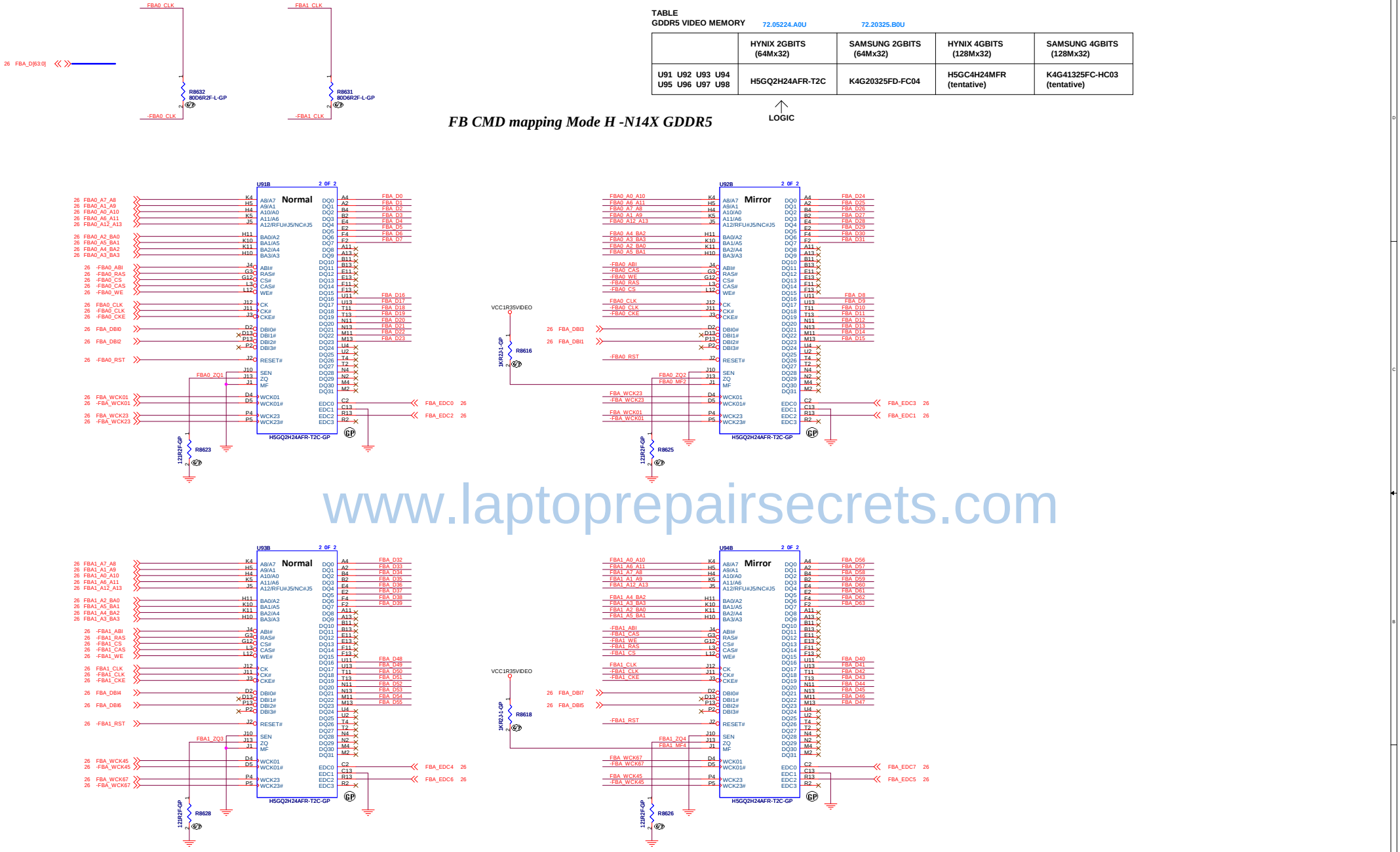
Date: Wednesday, July 17, 2013 Sheet 29 of 105

TABLE
GDDR5 VIDEO MEMORY 72.05224.A0U 72.20325.B0U

	HYNIX 2GBITS (64Mx32)	SAMSUNG 2GBITS (64Mx32)	HYNIX 4GBITS (128Mx32)	SAMSUNG 4GBITS (128Mx32)
U91 U92 U93 U94 U95 U96 U97 U98	H5GQ2H24AFR-T2C	K4G20325FD-FC04	H5GC4H24MFR (tentative)	K4G41325FC-HC03 (tentative)

LOGIC

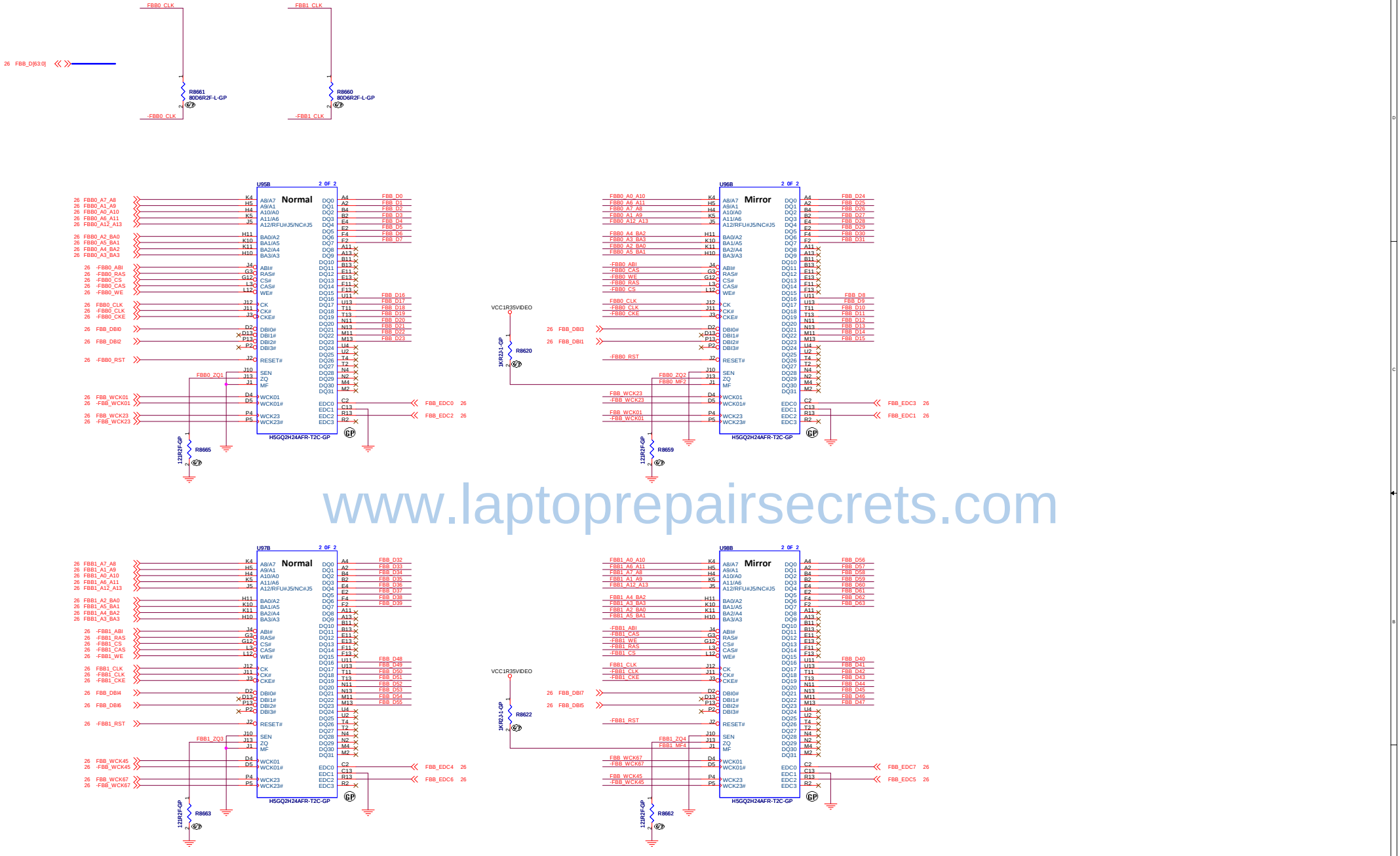
FB CMD mapping Mode H -N14X GDDR5



<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: VRAM CHANNEL-A
Size: A2 | Document Number: Kome-1 WS | Rev: -1
Date: Thursday, September 12, 2013 | Sheet 30 of 105



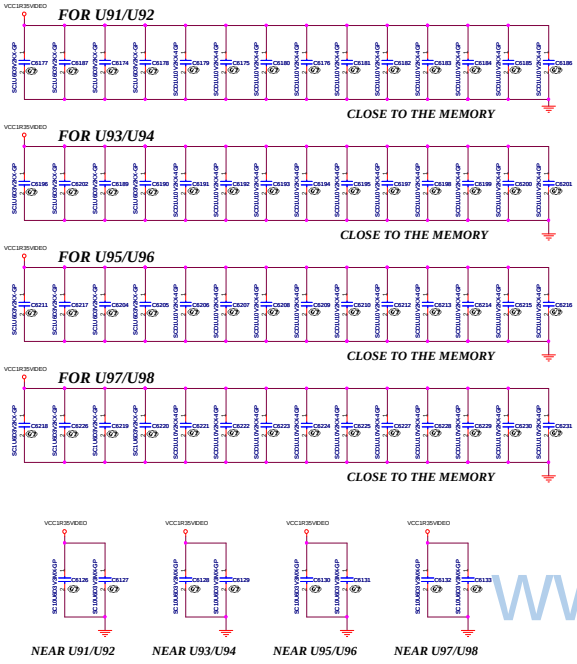
<Variant Name>

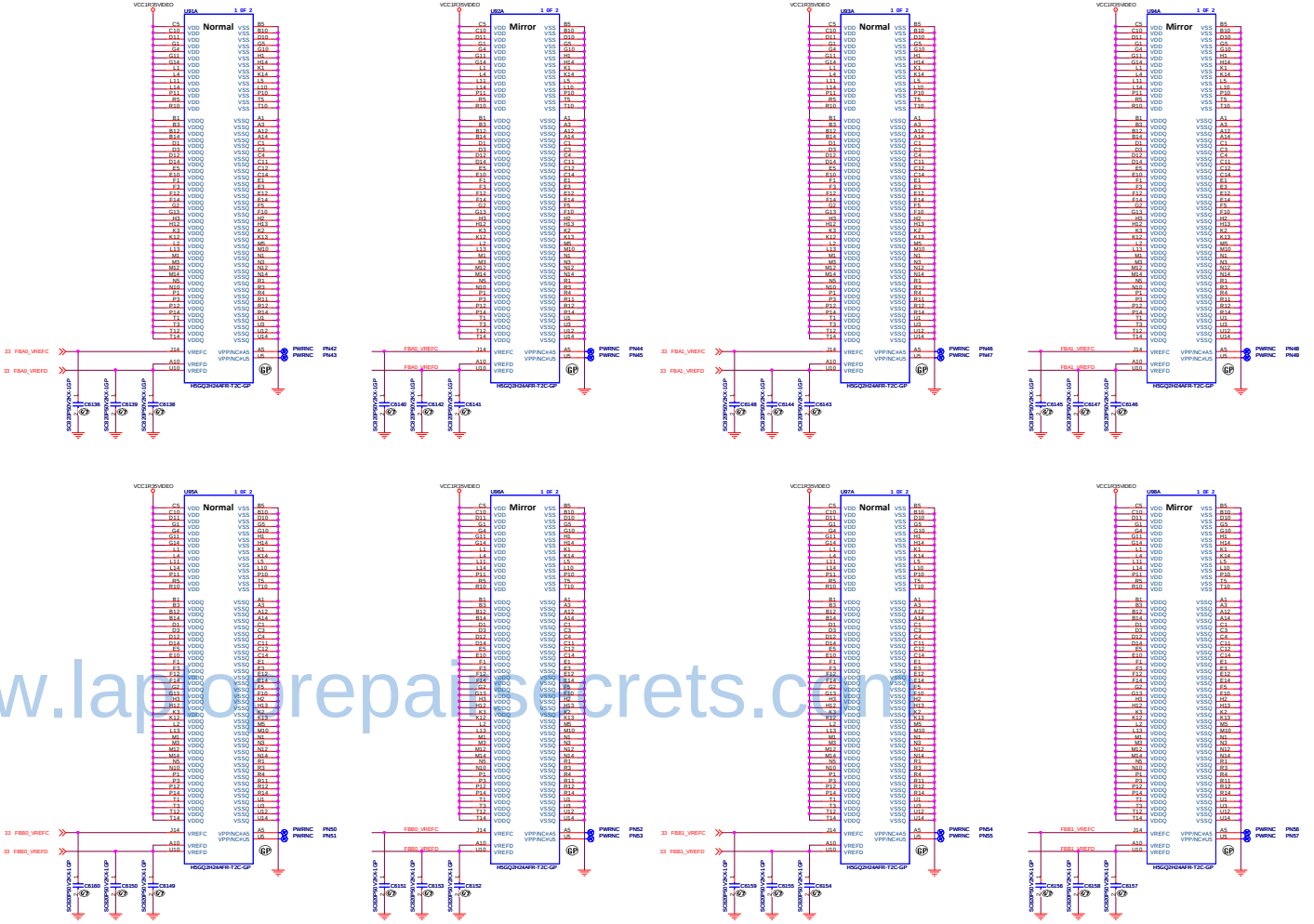
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: VRAM CHANNEL-B

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 31 of 105



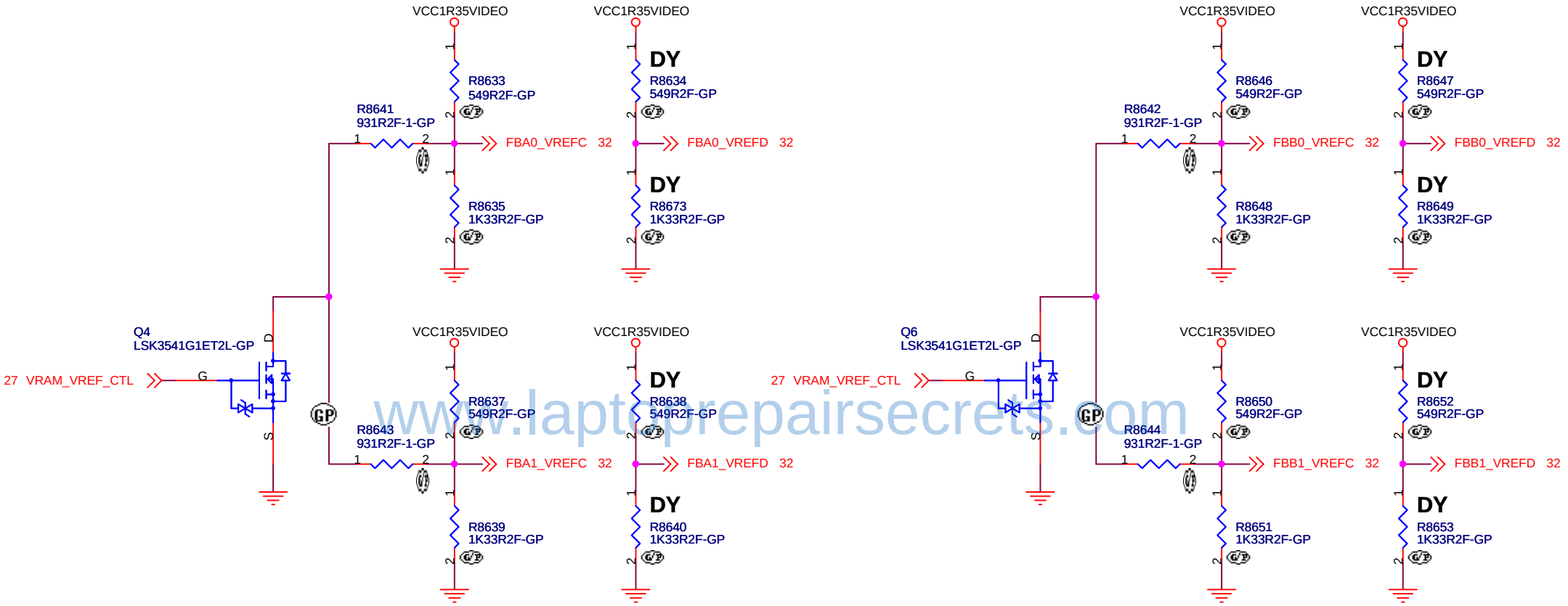


<Variant Name>
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: VRAM POWER

Size	Document Number	Rev
A1	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 32 of 105



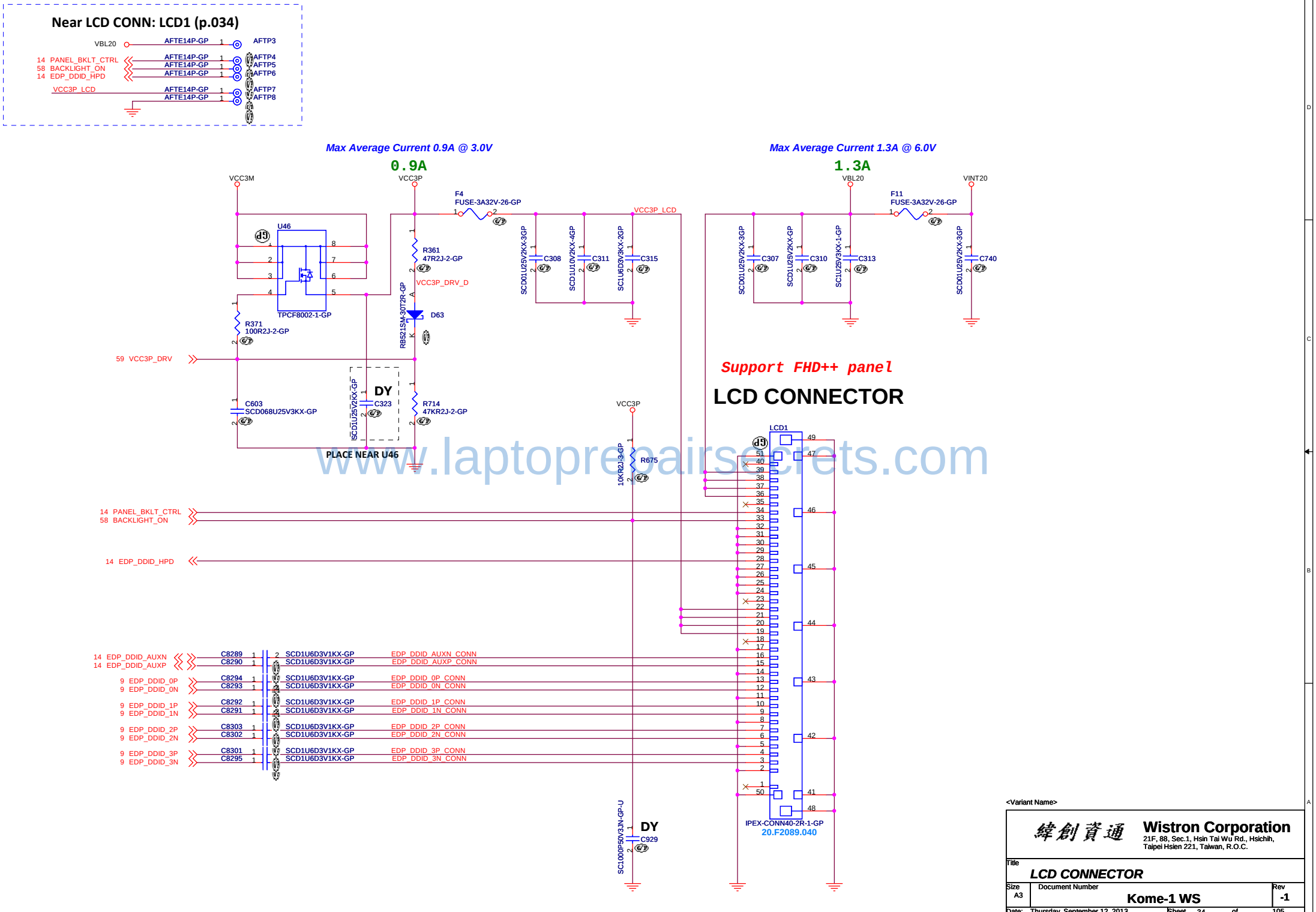
<Variant Name>

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

Title
MEMORY TERMINATION

Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Thursday, September 12, 2013 Sheet 33 of 105



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<Variant Name>

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

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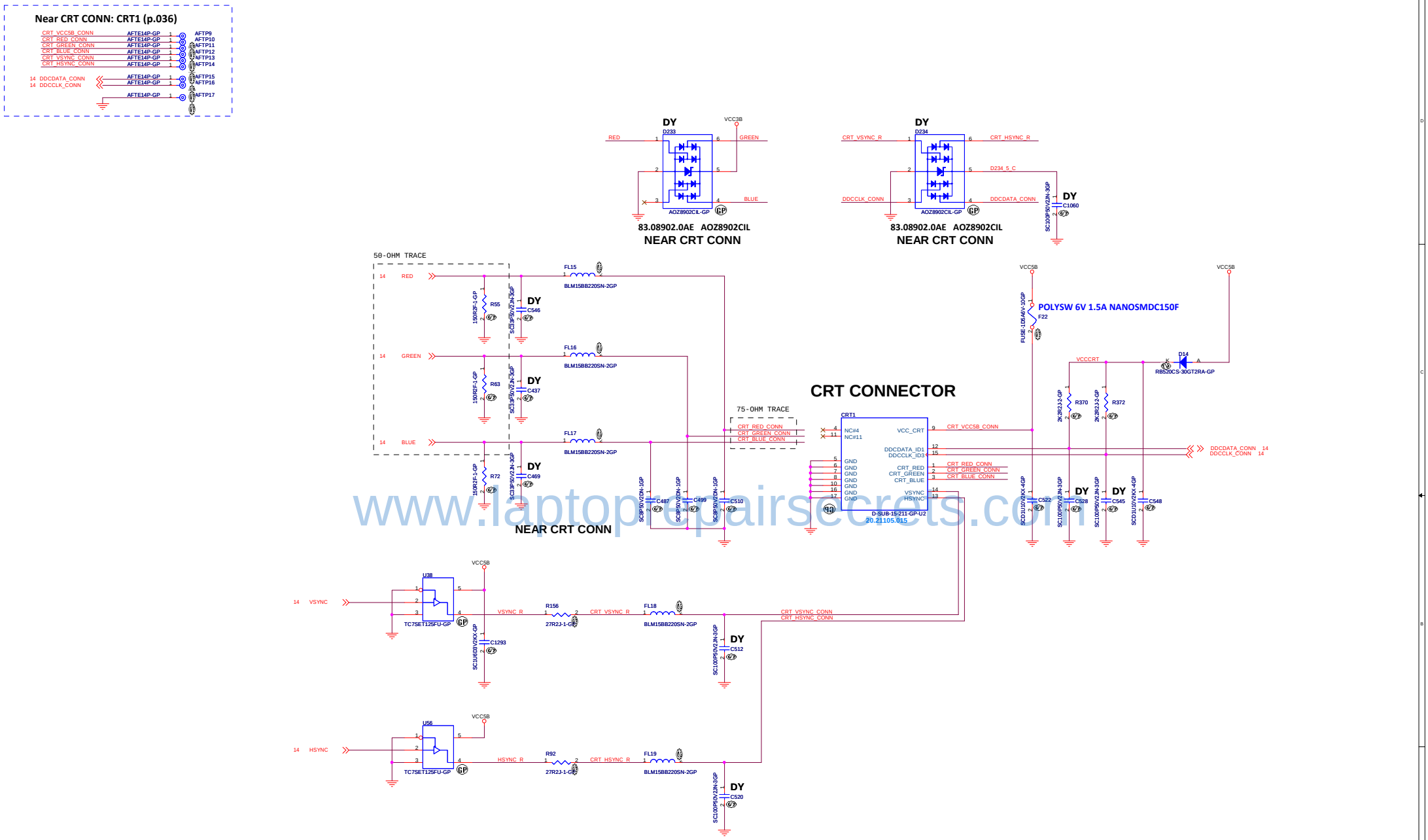
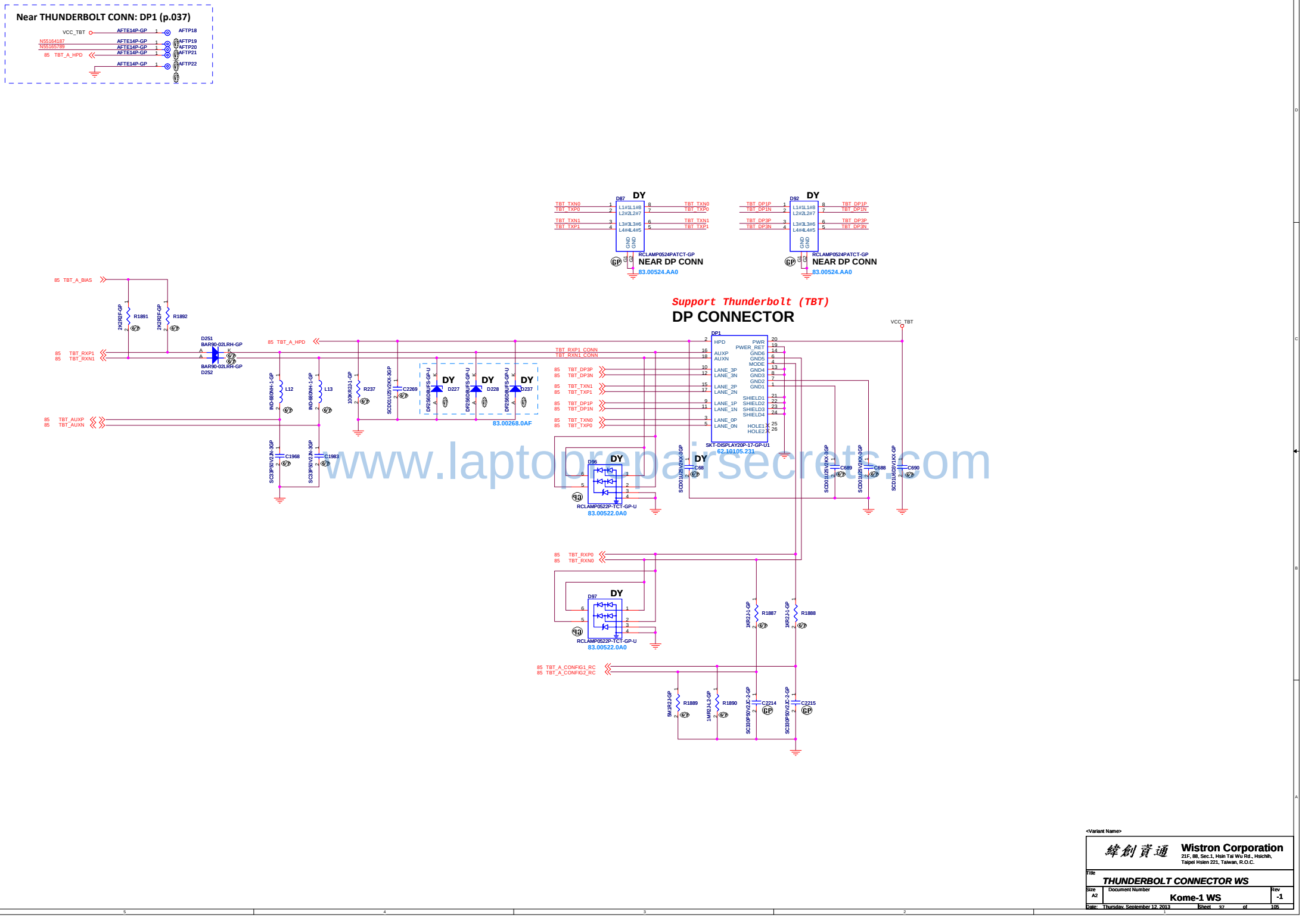
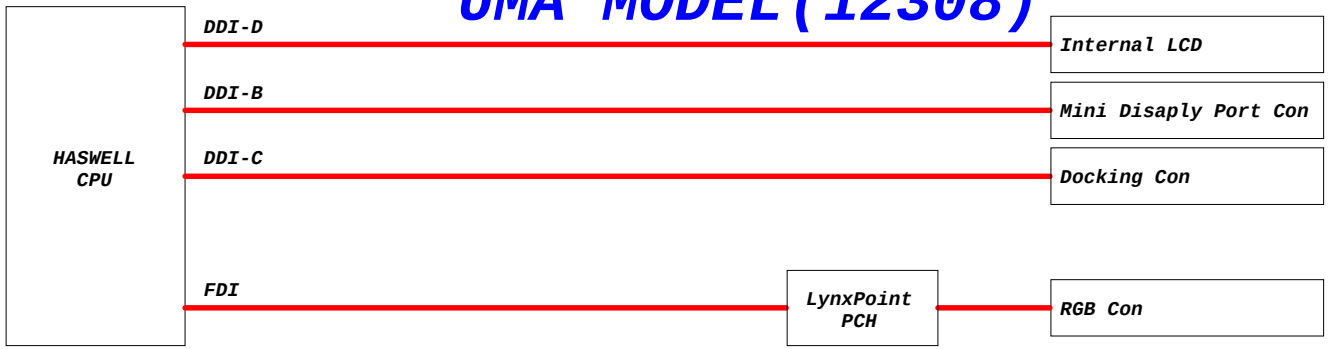
Size: A4	Document Number: **Kome-1 WS**	Rev: **-1**
Date: Wednesday, July 17, 2013	Sheet 35 of 105	

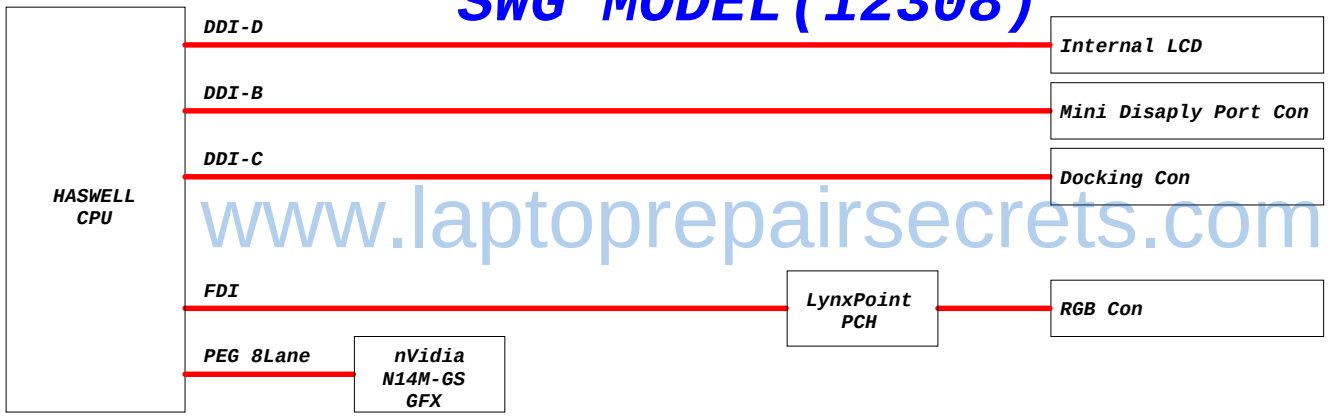




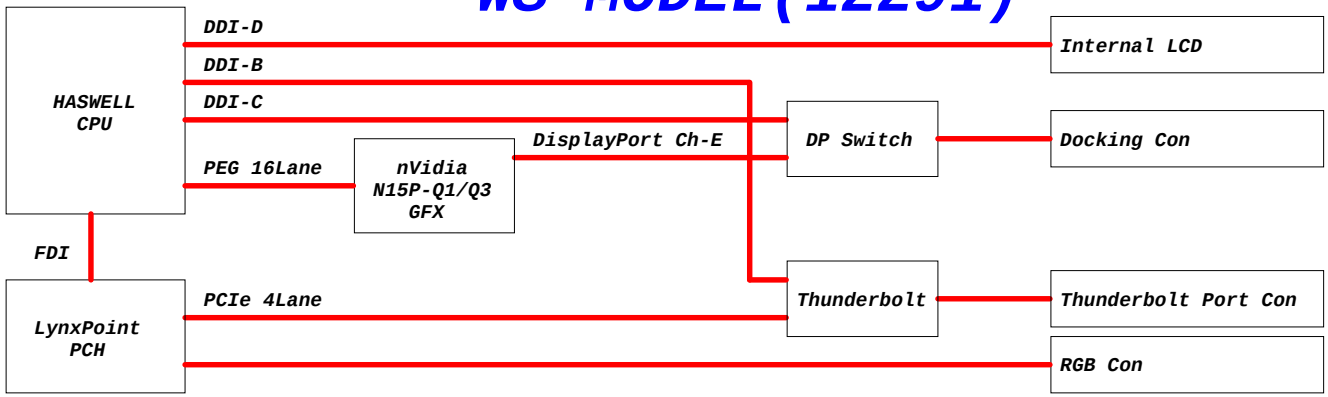
UMA MODEL(12308)



SWG MODEL(12308)



WS MODEL(12291)



<Variant Name>

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

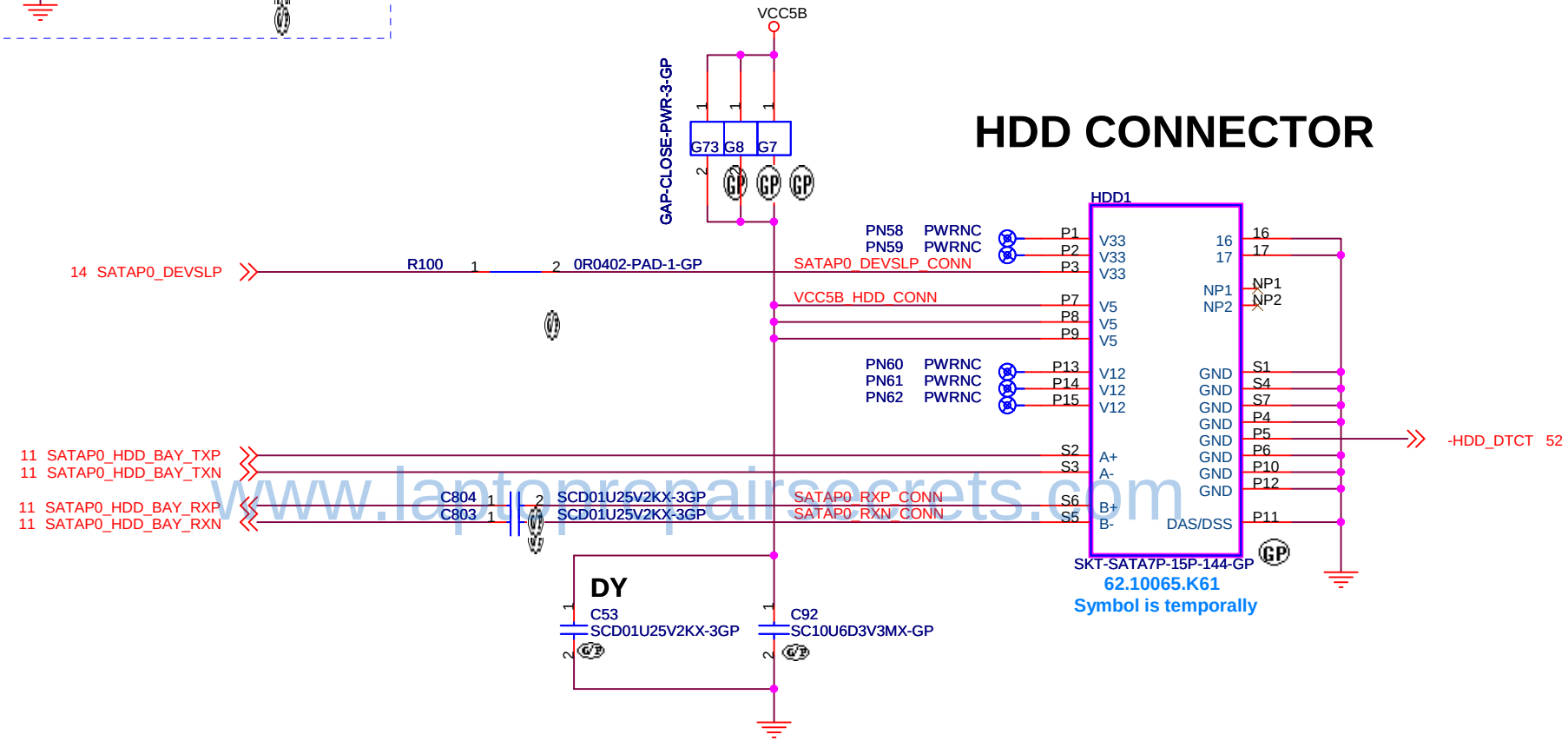
Title: GFX TOPOLOGY

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Wednesday, July 17, 2013 | Sheet 38 of 105

Near SATA HDD CONN: HDD1 (p.039)

HDD 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: ***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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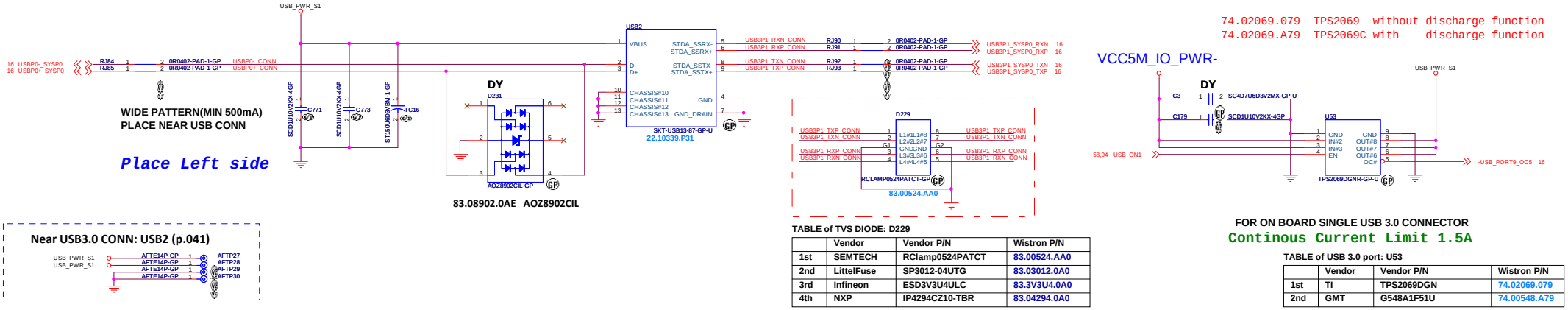
<Variant Name>

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

Title
Reserve for ODD IF Con

Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Wednesday, July 17, 2013 Sheet 40 of 105



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

TABLE of TVS DIODE: D229

	Vendor	Vendor P/N	Wistron P/N
1st	SEMTECH	RClamp0524PATCT	83.00524.AA0
2nd	LittelFuse	SP3012-04UTG	83.03012.0A0
3rd	Infineon	ESD3V3U4ULC	83.3V3U4.0A0
4th	NXP	IP4294CZ10-TBR	83.04294.0A0

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

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

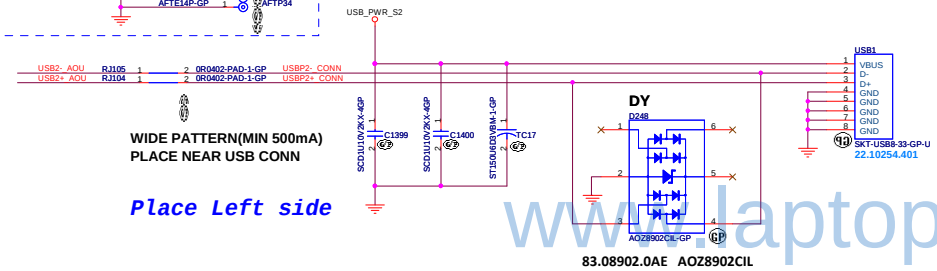
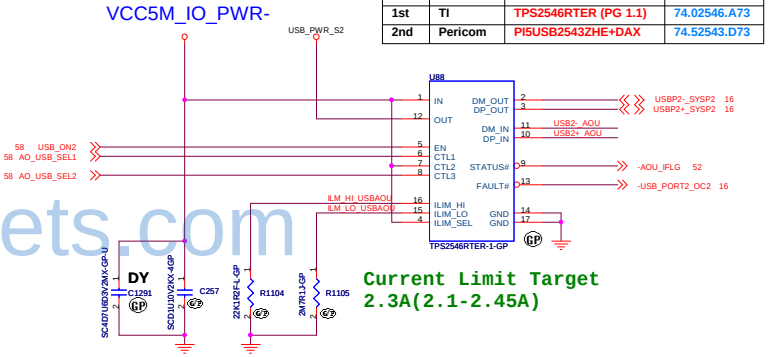


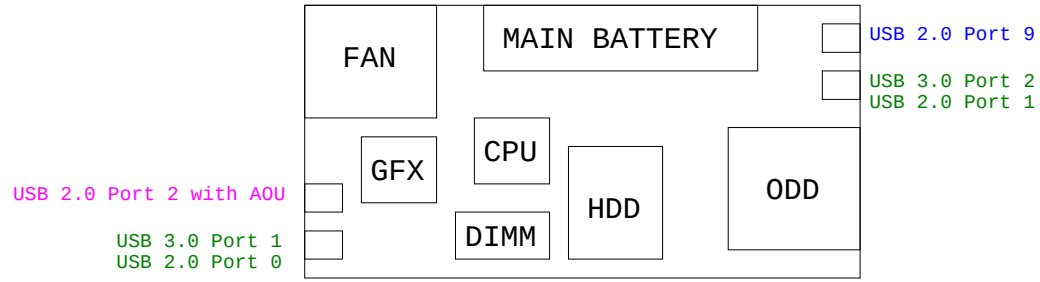
TABLE of AOU port: U88

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



USB System Port Assignment List

Location	System Port	USB 2.0 PCH Port	USB 2.0 Signal Name	USB 2.0 AOU Support	USB 3.0 PCH Port	USB 3.0 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		



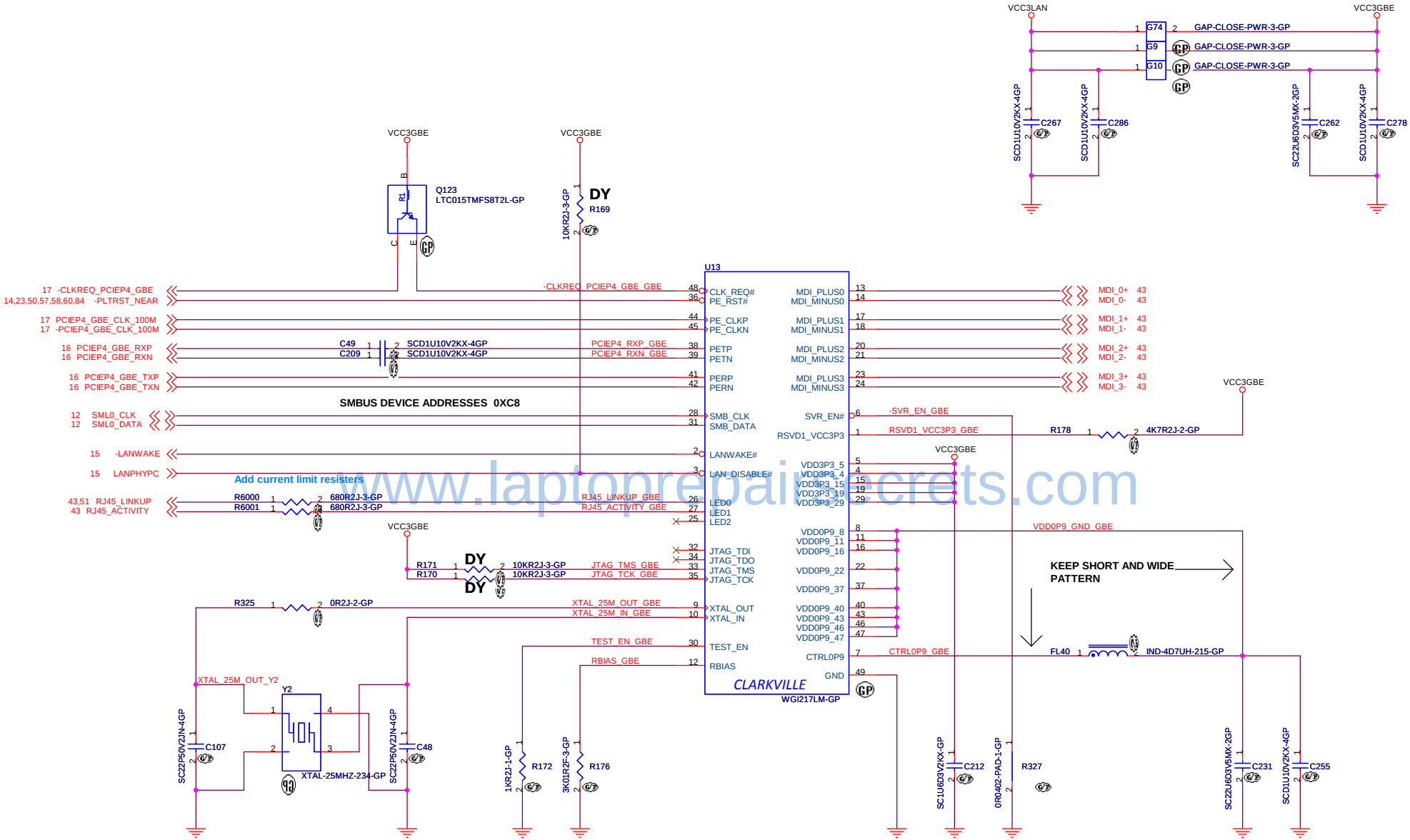
<Variant Name>

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

Title: USB Port (System)

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 41 of 105



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

<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: ClarkVille GBE
Size: A3
Document Number: Kome-1 WS
Rev: -1
Date: Thursday, September 12, 2013
Sheet 42 of 105

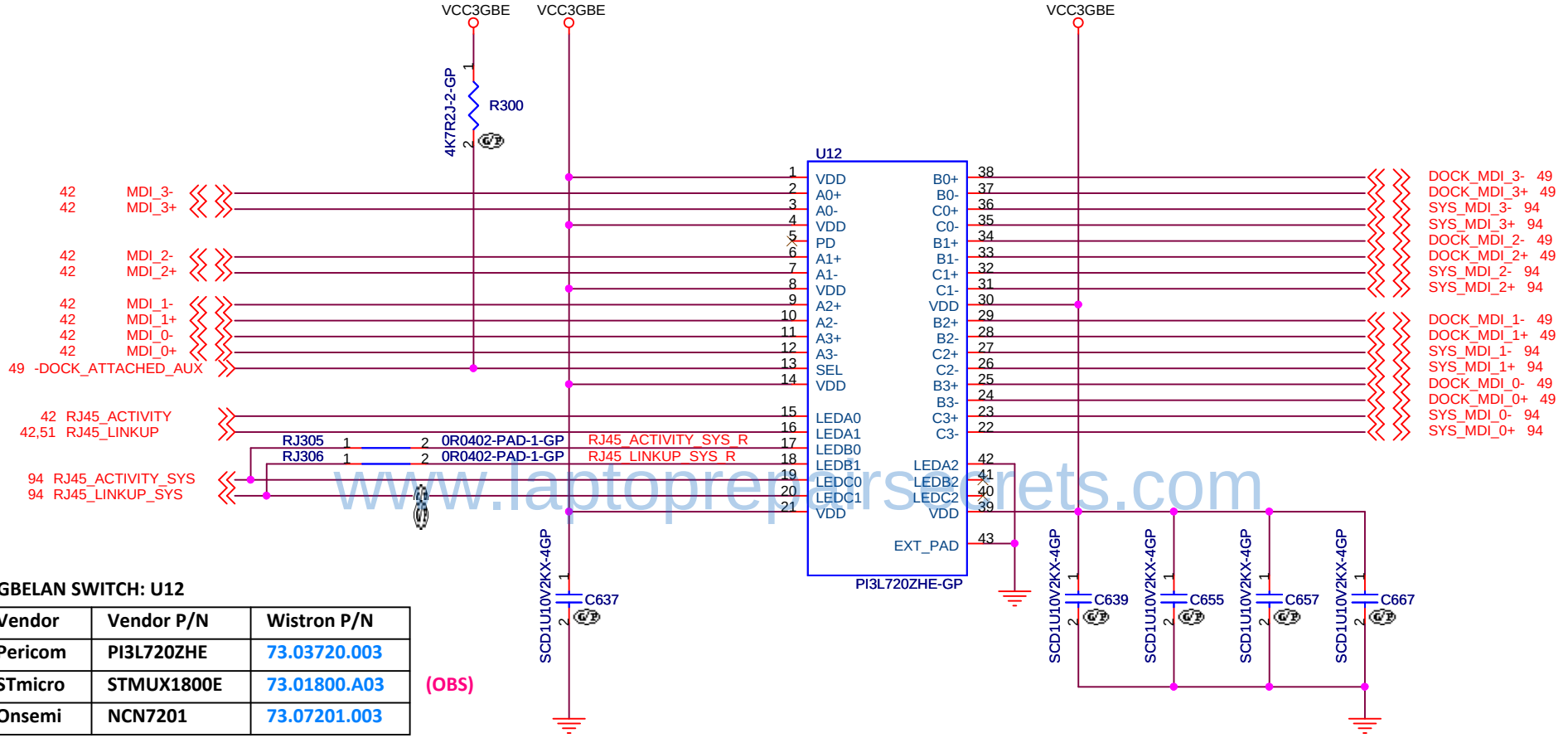


TABLE of GBELAN SWITCH: U12

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

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

Title: ***GBE LAN Switch***

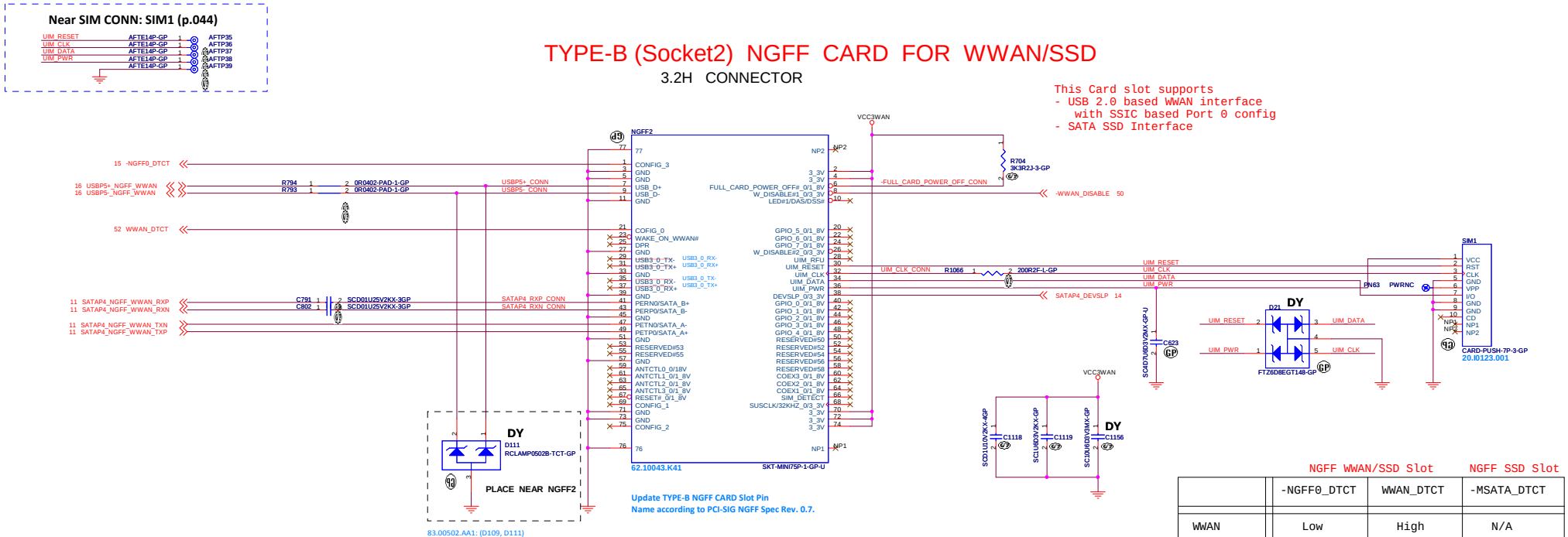
Size	Document Number	Rev
A4	**Kome-1 WS**	-1

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

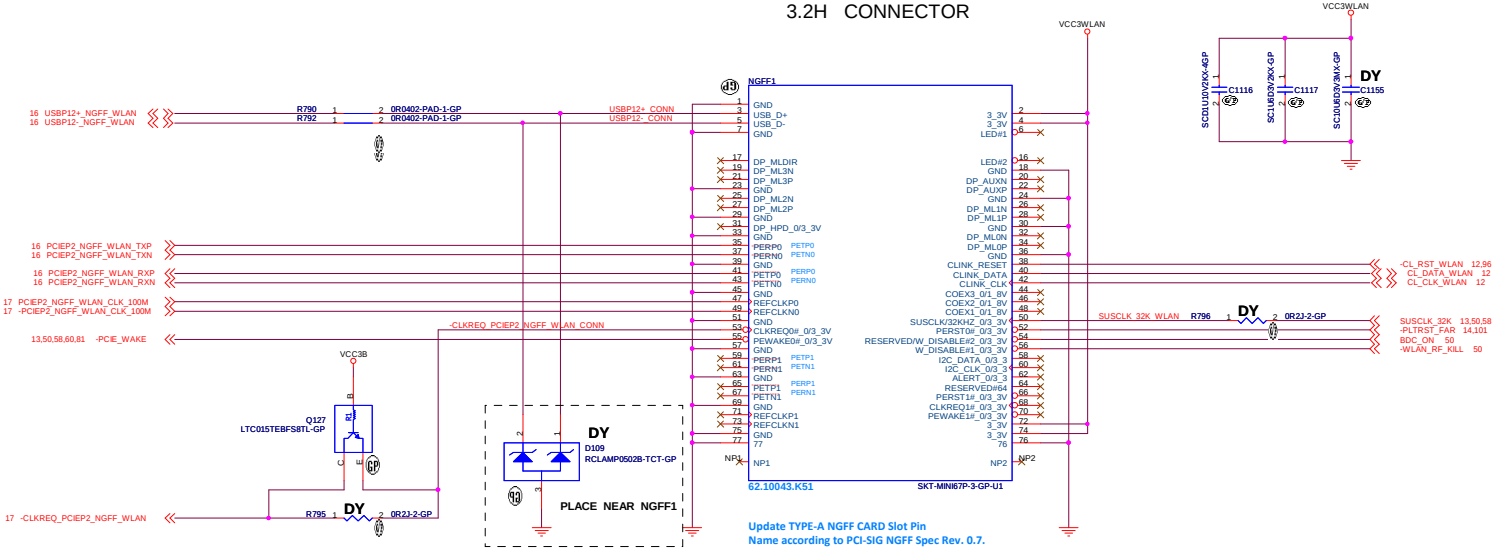


NGFF WWAN/SSD Slot | NGFF SSD Slot

	-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

TYPE-A NGFF CARD FOR WLAN

3.2H CONNECTOR



<Variant Name>

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

Title: NGFF Slot x 2

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 44 of 105

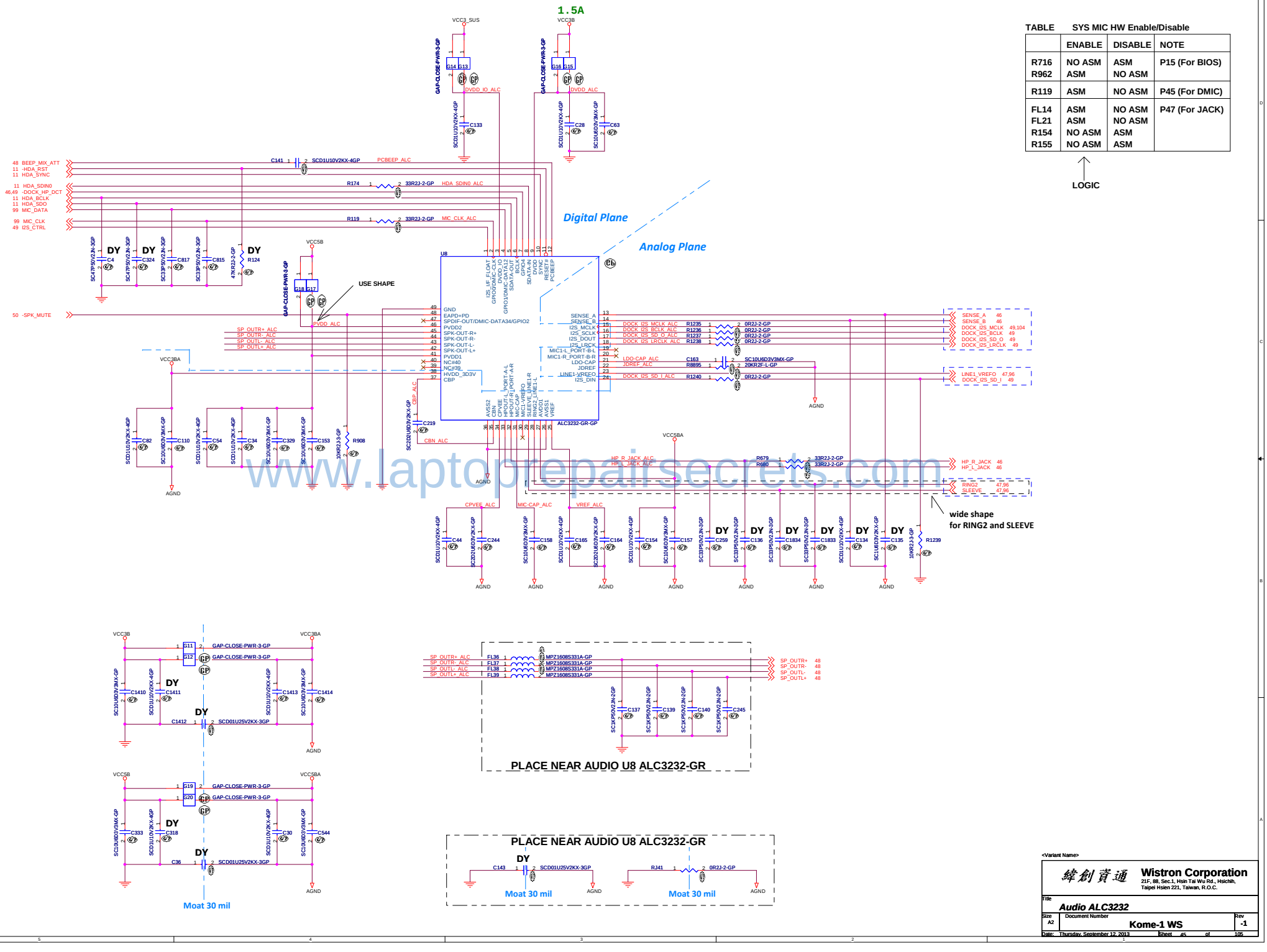


TABLE SYS MIC HW Enable/Disable

	ENABLE	DISABLE	NOTE
R716 R962	NO ASM ASM	ASM NO ASM	P15 (For BIOS)
R119	ASM	NO ASM	P45 (For DMIC)
FL14 FL21 R154 R155	ASM ASM NO ASM NO ASM	NO ASM NO ASM ASM ASM	P47 (For JACK)

LOGIC

<Variant Name>

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

Title: Audio ALC3232

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 45 of 105

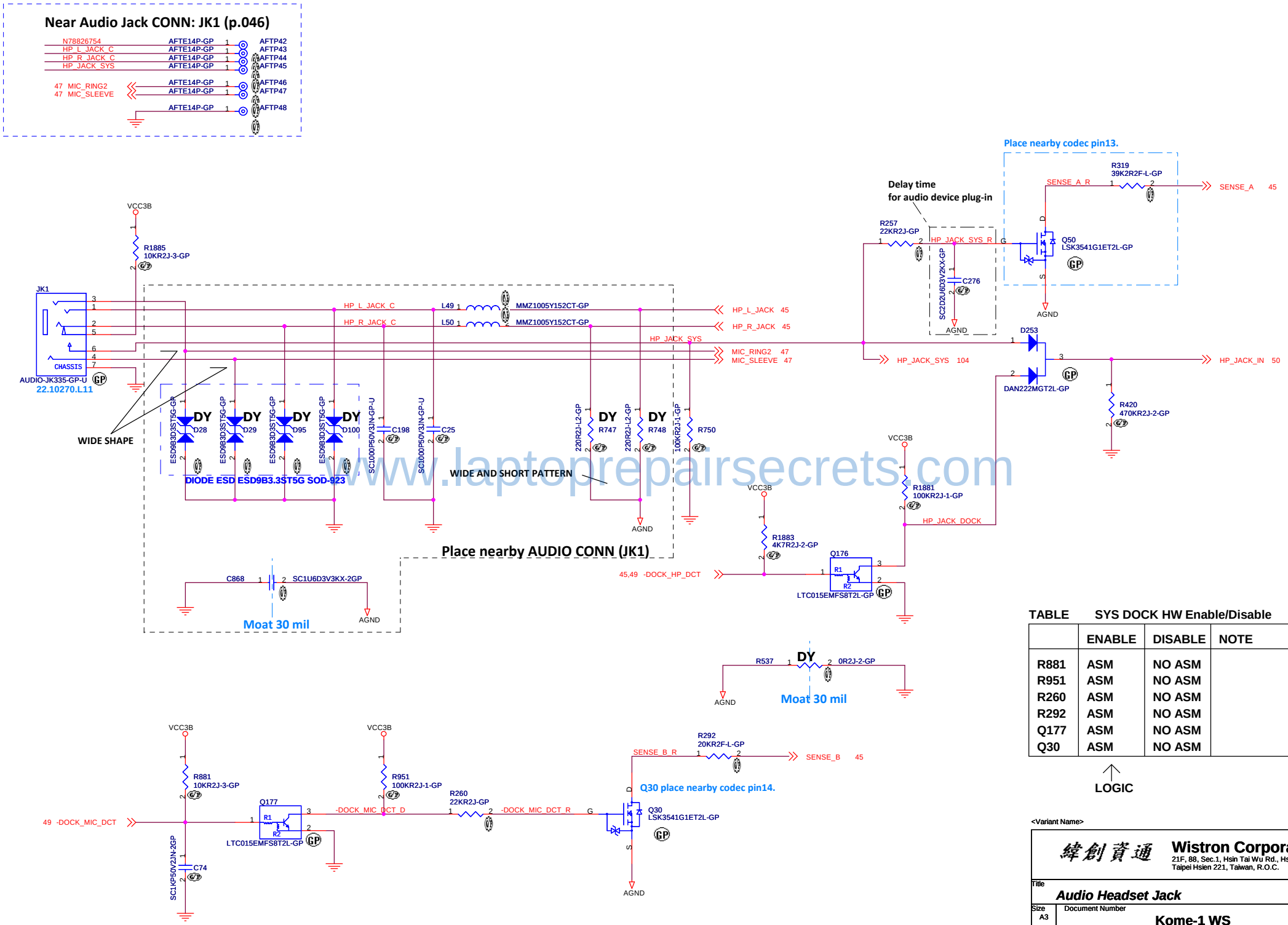


TABLE SYS DOCK HW Enable/Disable

	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

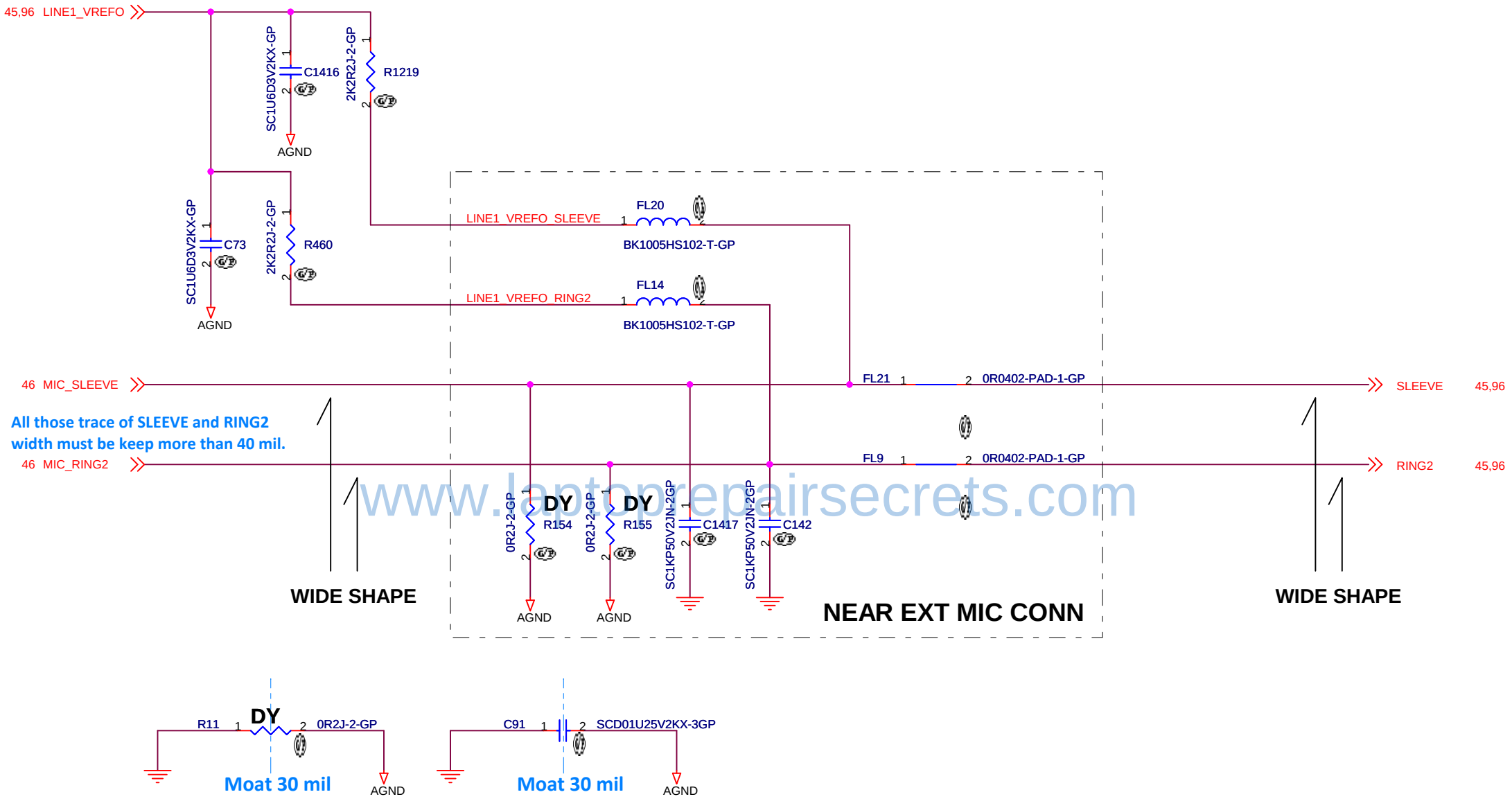
<Variant Name>

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

Title: Audio Headset Jack

Size: A3 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 46 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: ***Audio EXT MIC I/F***

Size	Document Number	Rev
A4	**Kome-1 WS**	-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+

AFTE14P-GP 1 AFTP53

Delete AFTP49, AFTP50, AFTP51, AFTP52 for layout placement

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

SPK1
ACES-CON4-29-GP
20.F1639.004

SC220P50V2KX-3GP C167
SC220P50V2KX-3GP C168
SC220P50V2KX-3GP C169
SC220P50V2KX-3GP C175

PLACE NEAR SPEAKER CONNECTOR

50 EC_SPKR
11 PCH_SPKR

RB521SM-30T2R-GP D51
RB521SM-30T2R-GP D68

EC_PCH_SPKR

33KR2J-3-GP R66
10KR2J-3-GP R67

BEEP_MIX_ATT 45

50 -BEEP_ENABLE

Q38
LSK3541G1ET2L-GP

<Variant Name>

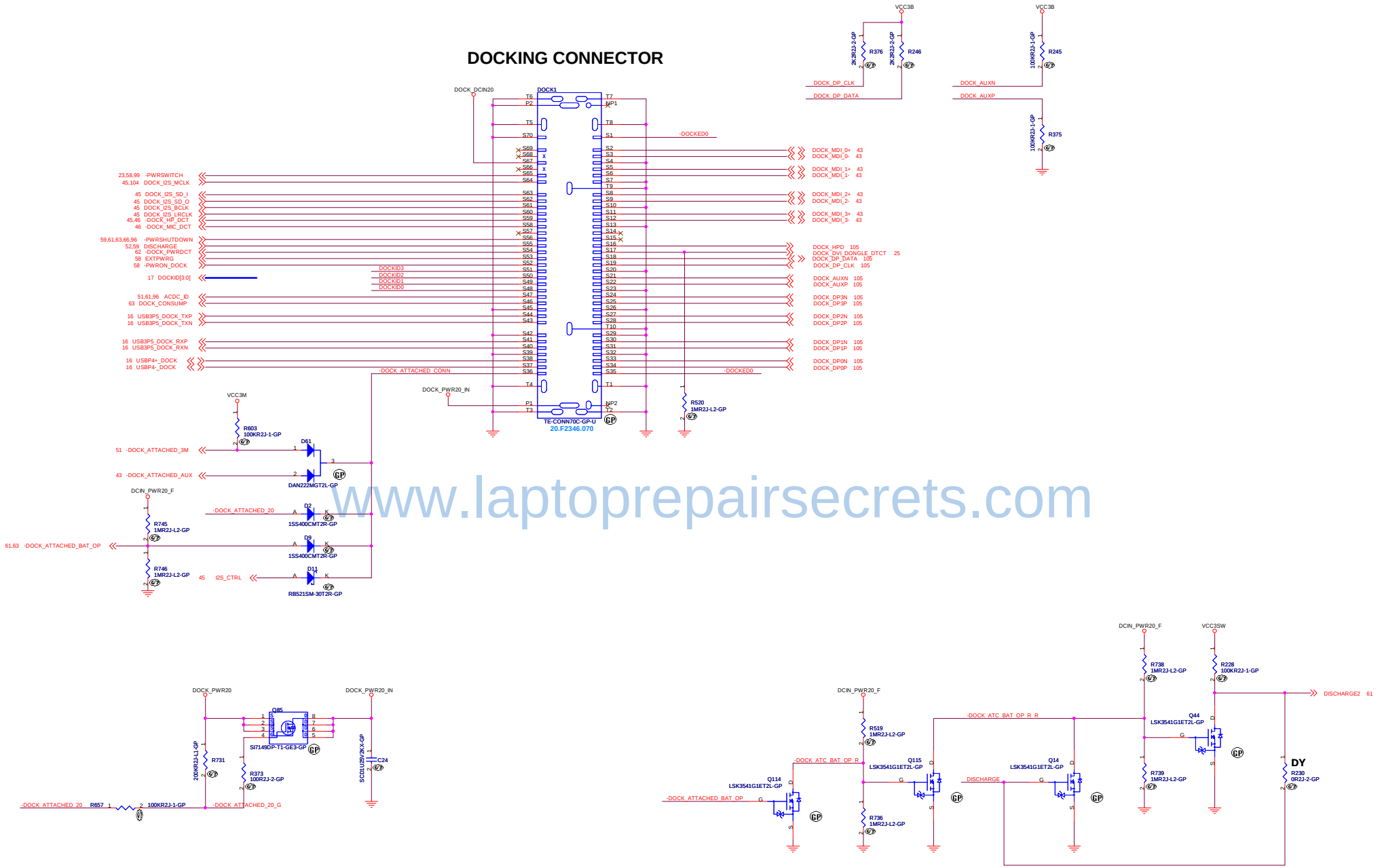
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

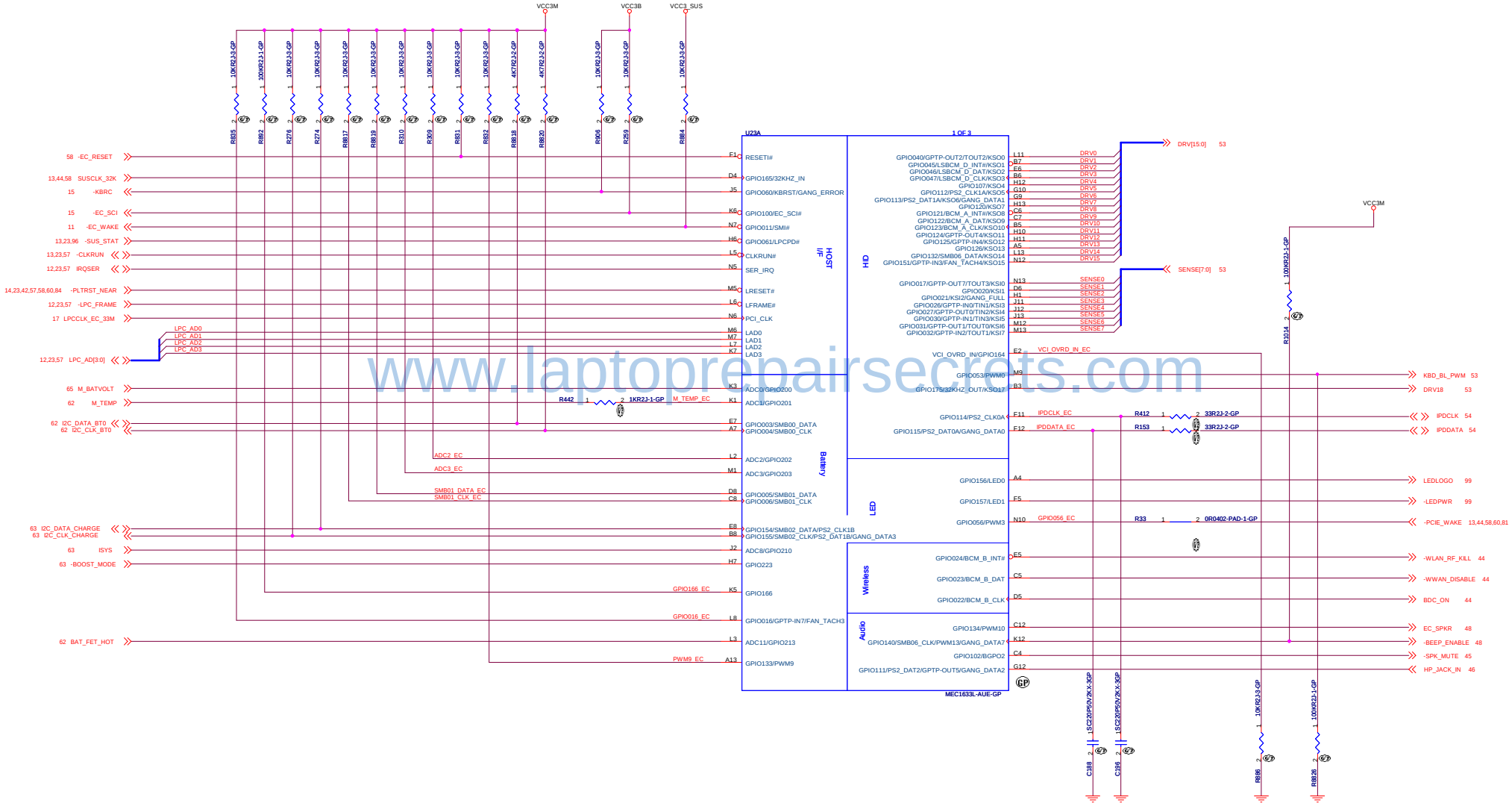
Title: AUDIO SPEAKER I/F , BEEP

Size	Document Number	Rev
A4	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 48 of 105

DOCKING CONNECTOR



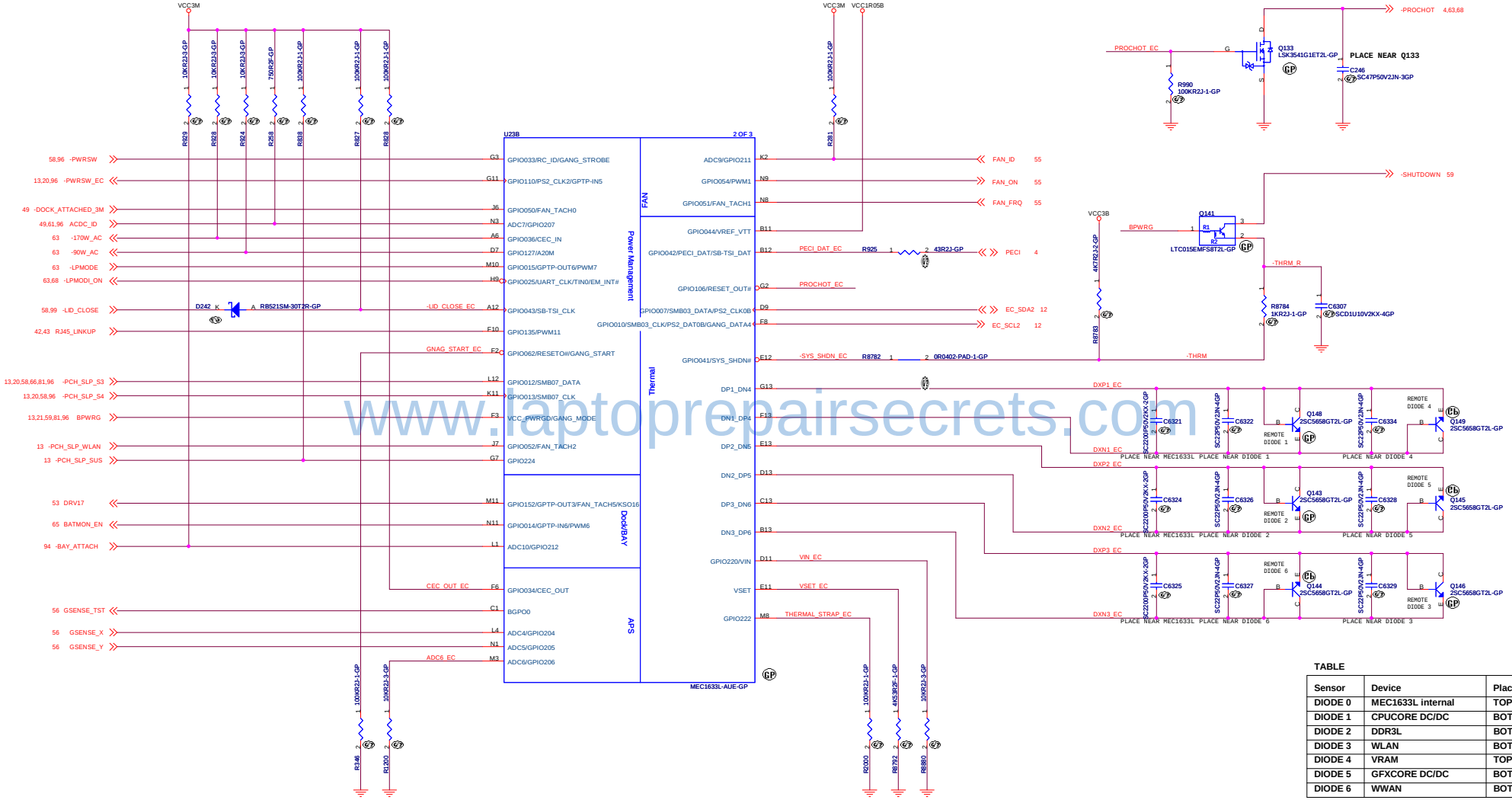


緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: EC MEC1633L (1/3)

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 50 of 105



TABLE

Sensor	Device	Placed on
DIODE 0	MEC1633L internal	TOP
DIODE 1	CPUCORE DC/DC	BOTTOM
DIODE 2	DDR3L	BOTTOM
DIODE 3	WLAN	BOTTOM
DIODE 4	VRAM	TOP
DIODE 5	GFXCORE DC/DC	BOTTOM
DIODE 6	WWAN	BOTTOM

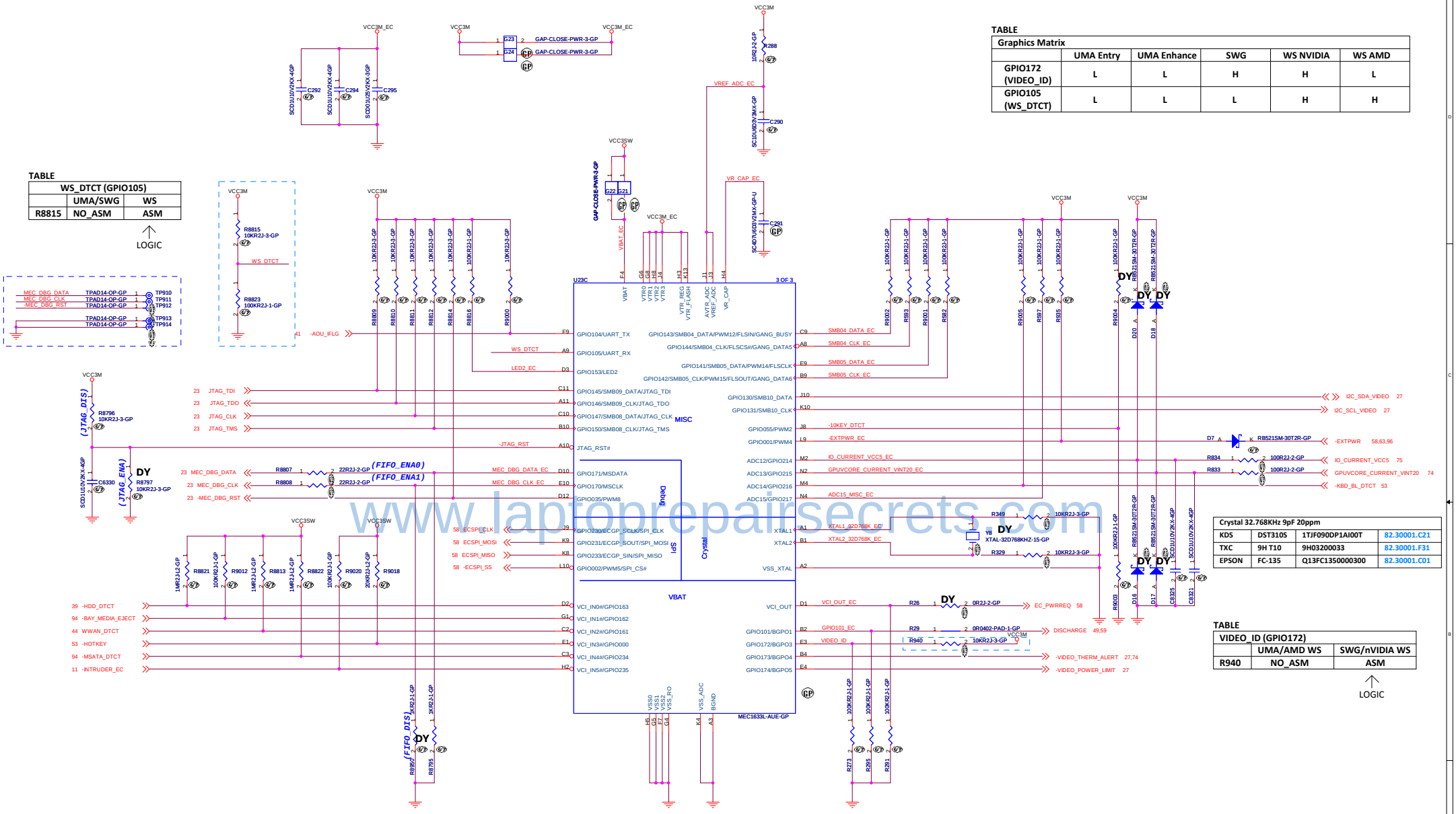
<Variant Name>

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

Title: **EC MEC1633L (2/3)**

Size: A2 | Document Number: **Kome-1 WS** | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 51 of 105



TABLE

Graphics Matrix					
	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

TABLE

WS_DTCT (GPIO105)		
	UMA/SWG	WS
R8815	NO_ASM	ASM

LOGIC

TABLE

Crystal 32.768KHz 9pF 20ppm			
KDS	DST310S	1TJF090DP1AI00T	82.30001.C21
TXC	9H T10	9H03200033	82.30001.F31
EPSON	FC-135	Q13FC1350000300	82.30001.C01

TABLE

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

LOGIC

TABLE

JTAG debug port		
	Enable	Disable
(JTAG_DIS) R8796	ASM	NO_ASM
(JTAG_ENA) R8797	NO_ASM	ASM

LOGIC

TABLE

Trace FIFO debug port		
	Enable	Disable
(FIFO_ENA0) R8807	ASM	NO_ASM
(FIFO_ENA1) R8808	ASM	NO_ASM
(FIFO_DIS) R8950	NO_ASM	ASM

LOGIC

<Variant Name>

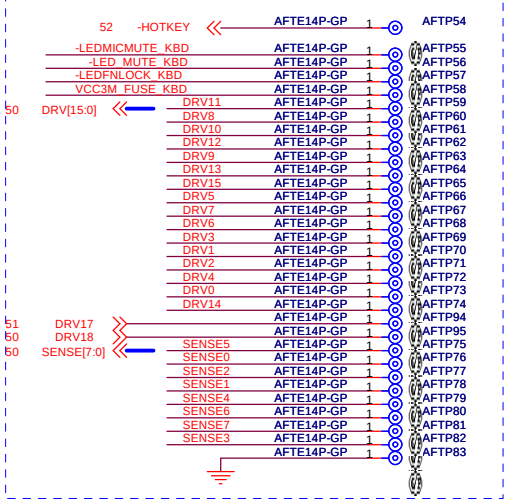
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: EC MEC1633L (3/3) WS

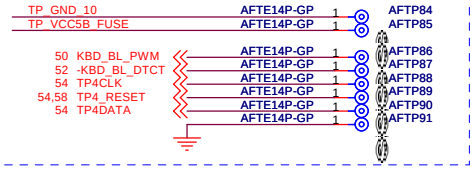
Size: A2 | Document Number: Kome-1 WS | Rev: -1

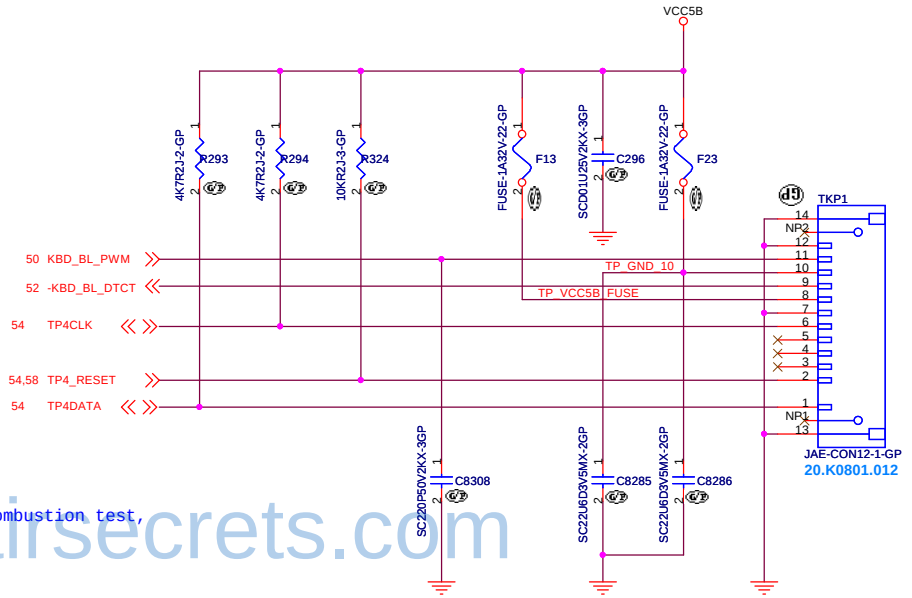
Date: Thursday, September 12, 2013 | Sheet 52 of 105

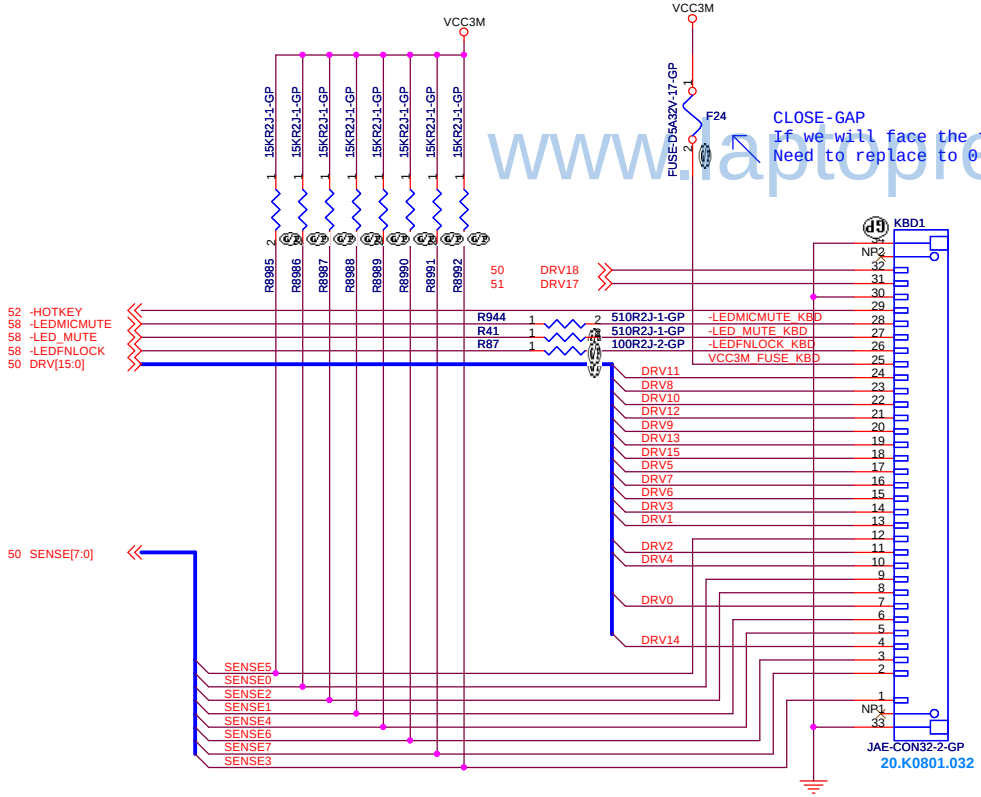
Near Keyboard CONN: KBD1 (p.053)



Near TrackPoint CONN: TKP1 (p.053)







<Variant Name>

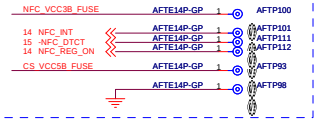
緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: **KEYBOARD I/F**

Size	Document Number	Rev
A3	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 53 of 105

Near NFC + Color Sensor CONN: NFC1 (p.054)



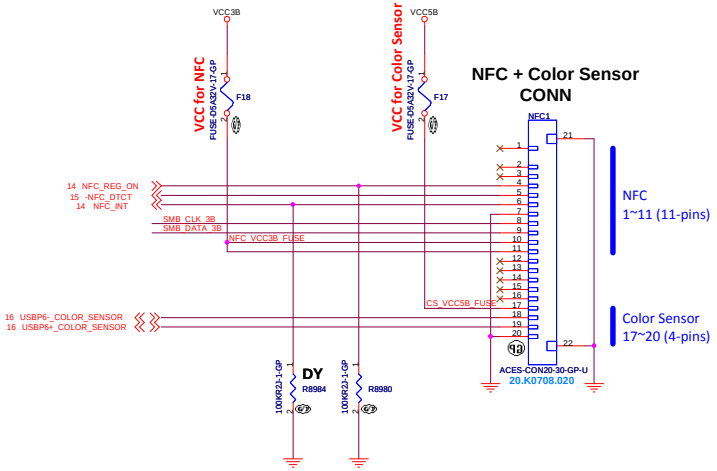
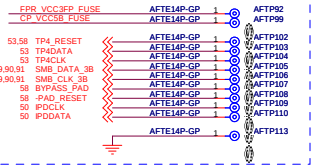
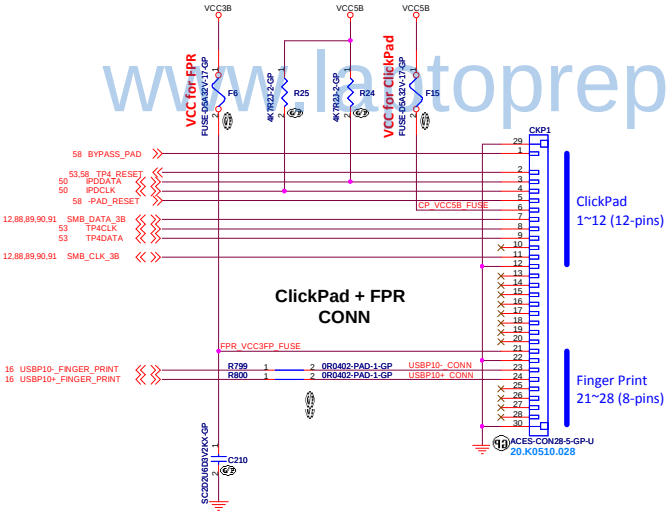


TABLE
Connector Change Note

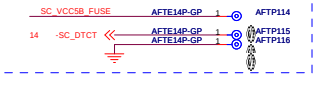
	UNIT NO.	Wistron P/N	PIN NO.	DESCRIPTION	CABLE TYPE
Before	FPR1	20.K0793.012	12	FPR+COLOR SENSOR	FPC
After	NFC1	20.K0708.020	20	COLOR SENSOR+NFC	FFC
Before	CKP1	20.K0767.026	26	CLICK PAD+NFC	FFC
After	CKP1	20.K0510.028	28	FPR+CLICK PAD	FFC

Near ClickPad + FPR CONN: CKP1 (p.054)

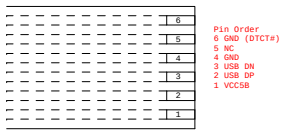


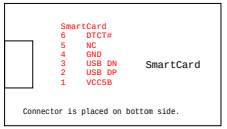


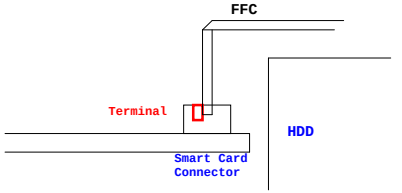
Near SmartCard CONN: SC1 (p.054)



Smart Card subCard has USB interface connector which is JST 06FLH-RSM1-TB.
This connector is reveresed type FPC/FFC connector with 0.5mm pitch and 6 terminals.
Terminals are placed on PCB side.







<Variant Name>

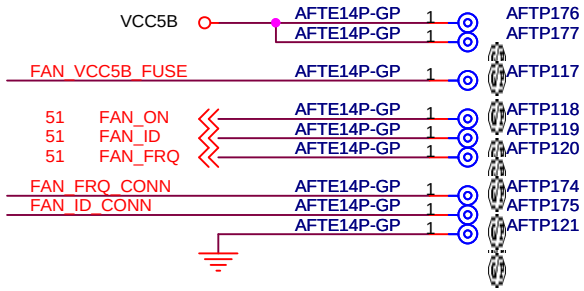
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: ClickPad, FPR, NFC, ColorSensor, SmartCard

Size	Document Number	Rev
A2	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 54 of 105

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

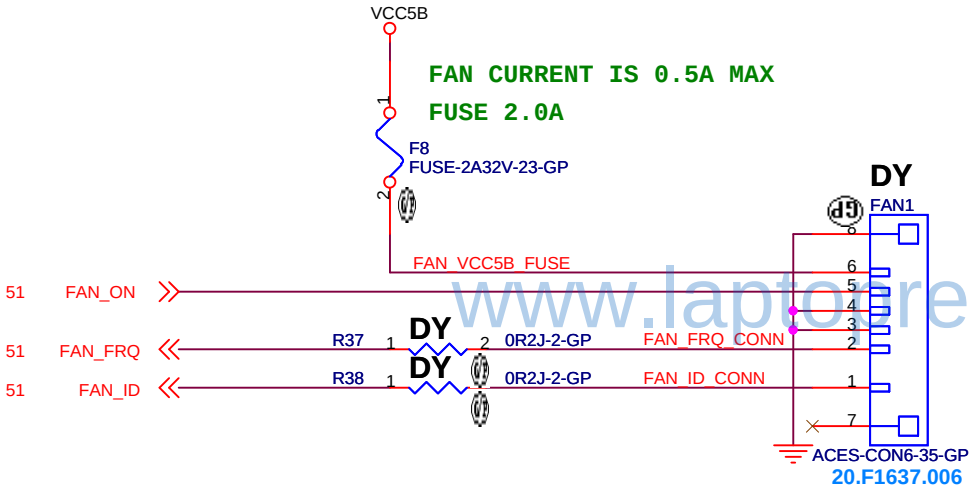


TOP Side
Bottom Side

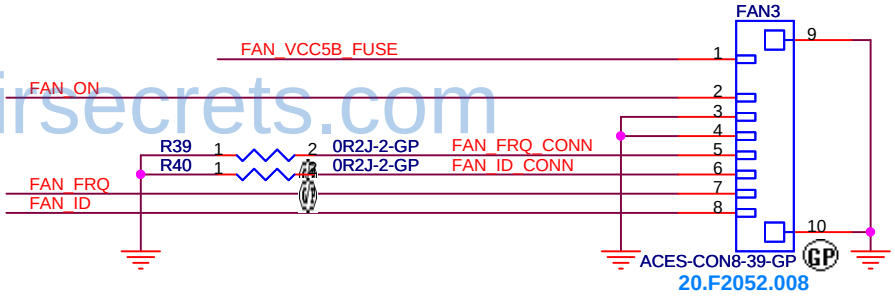
As Space from Metal heat Plate to top of GFX die is different on Q3 model and Q1 model, FAN module shold be different.

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

LOGIC



FAN1 co-lay with FAN3



FAN ID is defined with analog level.

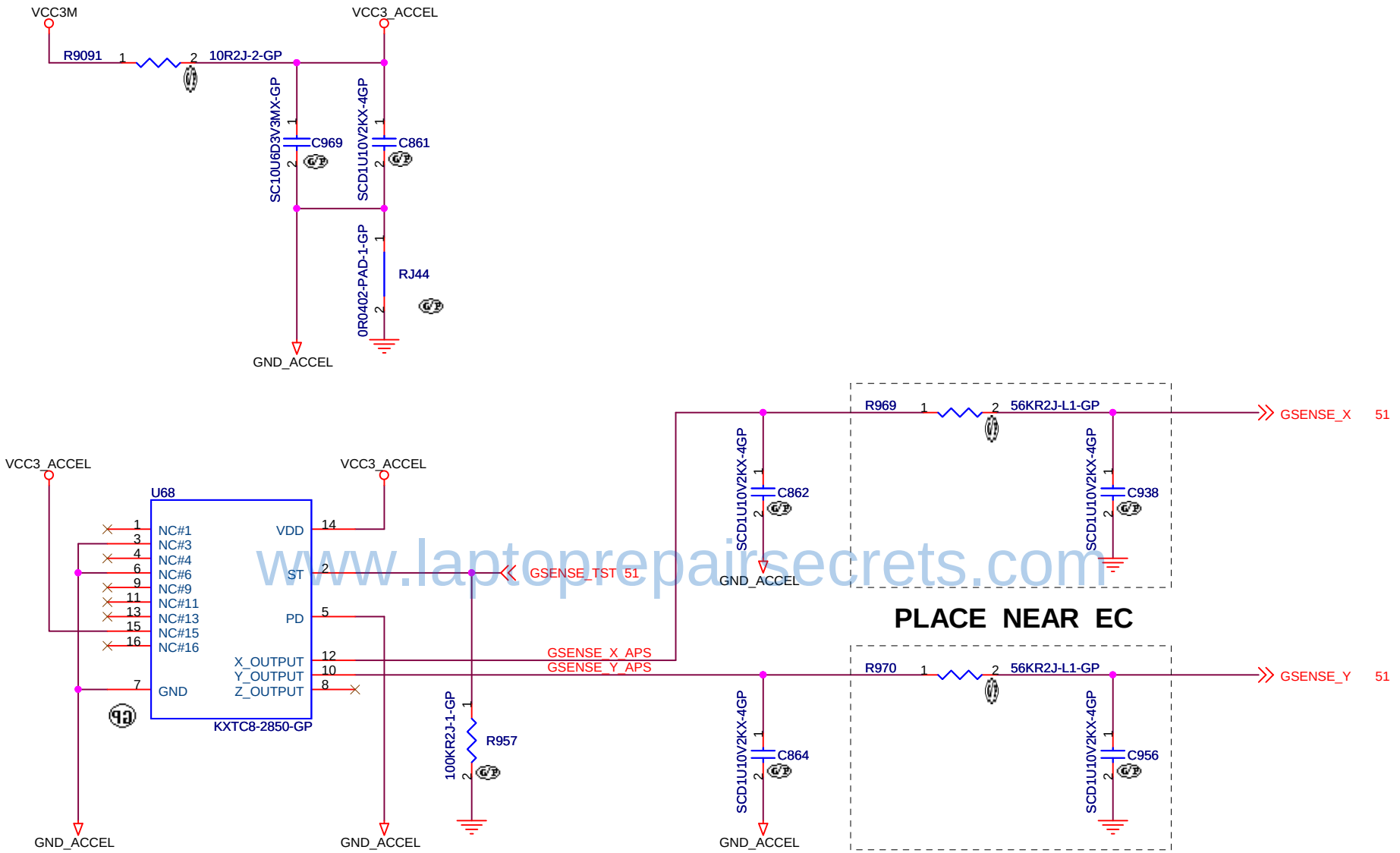
<Variant Name>

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

Title: ***FAN I/F***

Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Thursday, September 12, 2013 Sheet 55 of 105

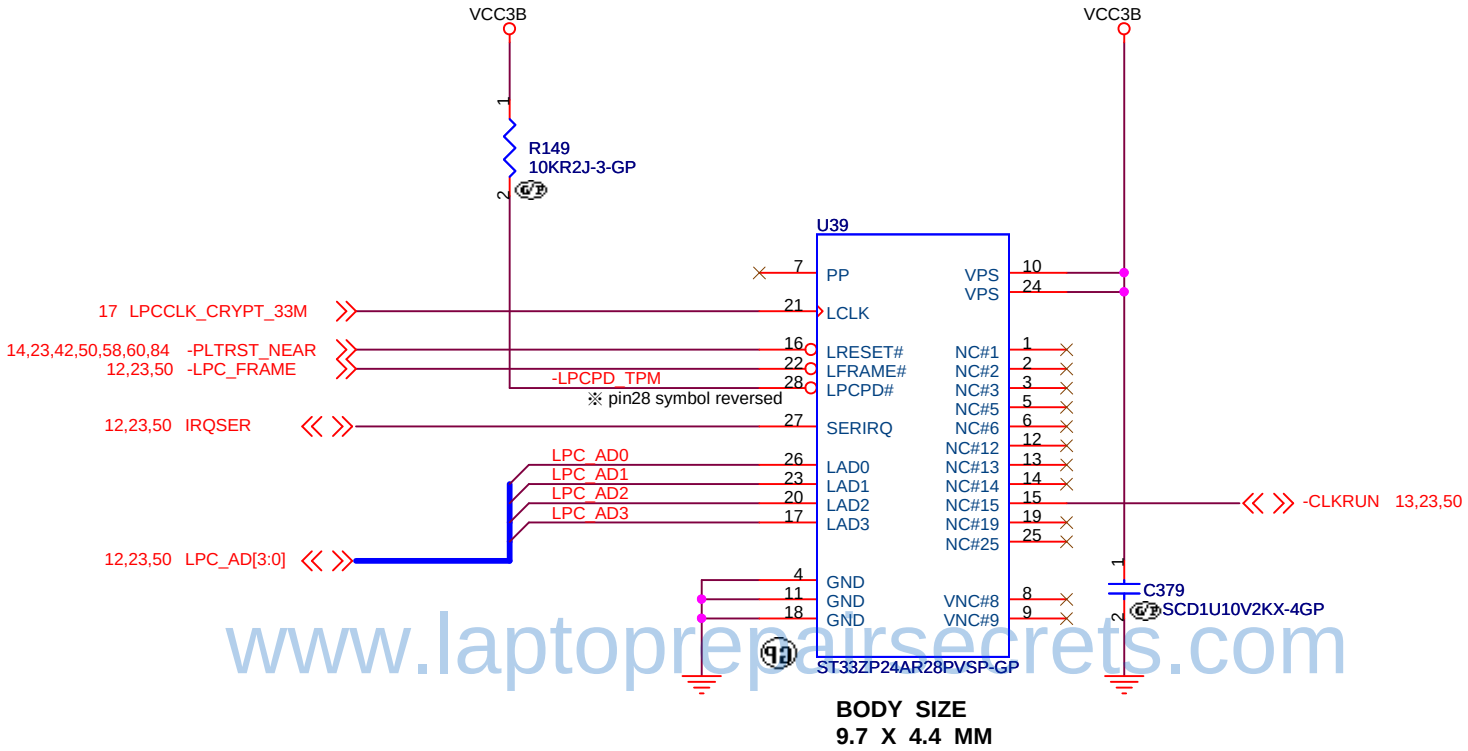


These components must be placed near HDD and same location for UMA/SWG/WS.

Do not use Z-axis monitor on APS

<Variant Name>

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title: *APS(G SENSOR)*		
Size: A4	Document Number: Kome-1 WS	Rev: -1
Date: Thursday, September 12, 2013	Sheet 56 of 105	



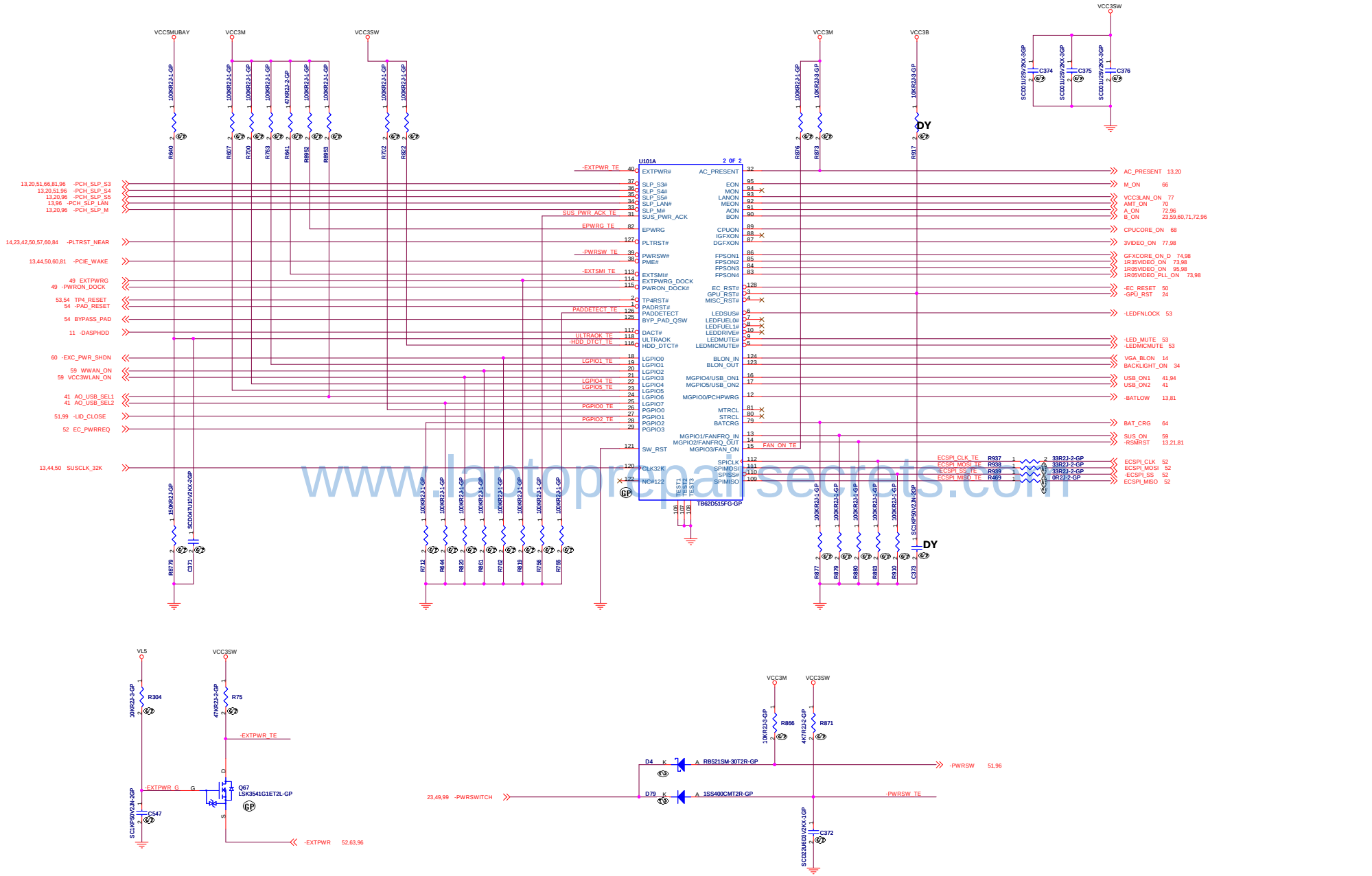
BODY SIZE
9.7 X 4.4 MM

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

<Variant Name>

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

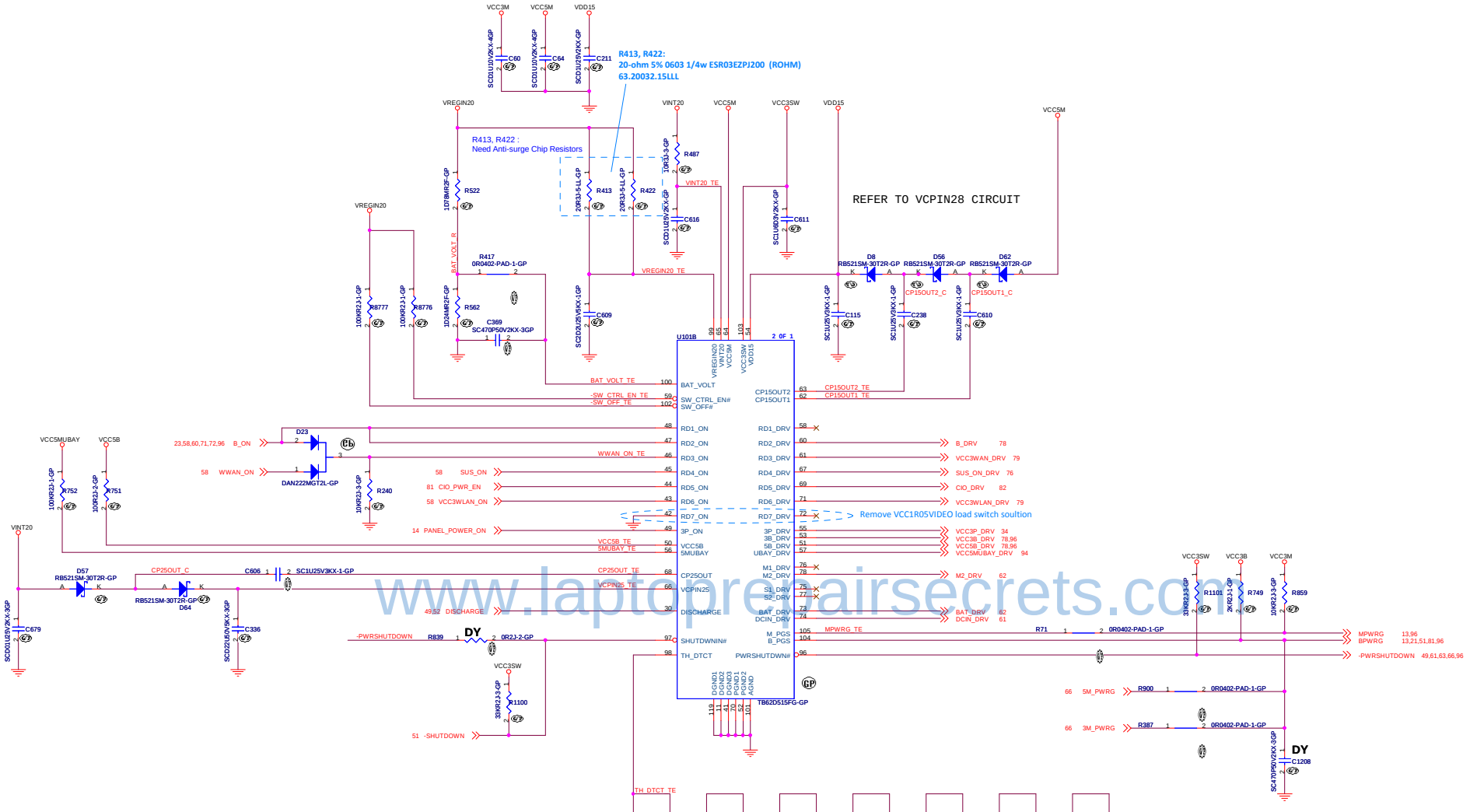
Title: ***TPM***		
Size: A4	Document Number: **Kome-1 WS**	Rev: **-1**
Date: Thursday, September 12, 2013	Sheet 57 of 105	



<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: THINK ENGINE (1/2)
Size: A2 | Document Number: Kome-1 WS | Rev: -1
Date: Thursday, September 12, 2013 | Sheet 58 of 105



TABLE

AOAC	YES	NO
D73	ASM	NO-ASM
R8931	ASM	ASM
	100K-ohm	0-ohm

LOGIC

TABLE

ID	Target	Location
RT1	VCC3LAN Load Switch FET	U100
RT2	M_BAT_PWR to BAT_PWR12 FET	Q34
RT3	CHARGER_OUT12 to BAT_PWR12 FET	Q35
RT4	DOCK_PWR20_IN to DOCK_PWR20 FET	Q85
RT5	VCC3M Switching FET	U434
RT6	VCC5M Switching FET	U406
RT7	DCIN_PWR20_F to CV20 FET	Q9
RT8	VCCCPUCORE Power Stage CSD97374 Phase 1	Q178
RT9	VCCCPUCORE Power Stage CSD97374 Phase 2	Q179
RT10	VCCCPUCORE Power Stage CSD97374 Phase 3	Q180
RT11	CPU Die	CPU1
RT12	VCC3VIDEO Load Switch FET	U99
RT13	VCCGFXCORE_D Switching FET Phase 1	U421
RT14	VCCGFXCORE_D Switching FET Phase 2	U425

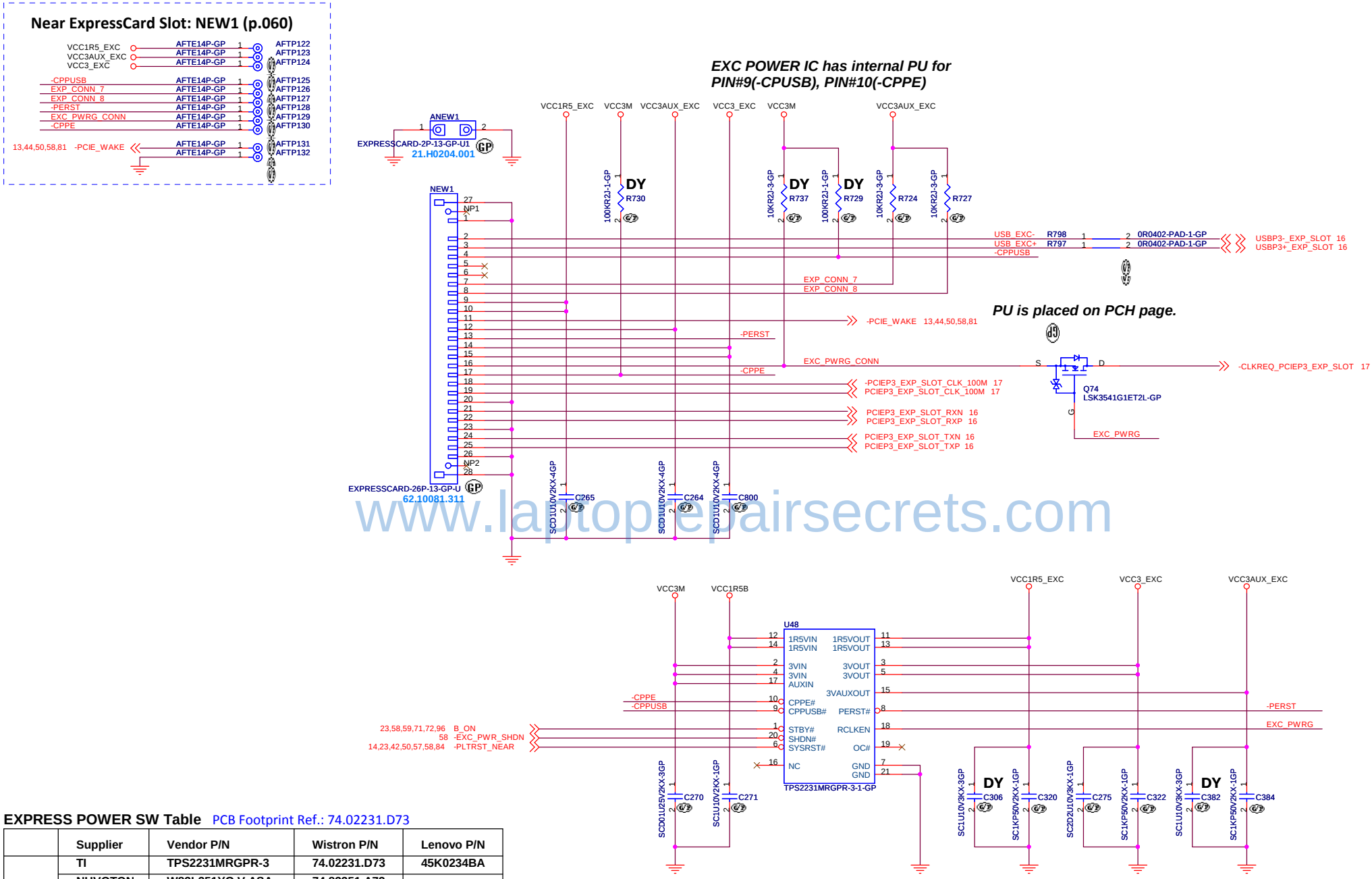
<Variant Name>

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

Title: THINK ENGINE (2/2)

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 59 of 105



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	

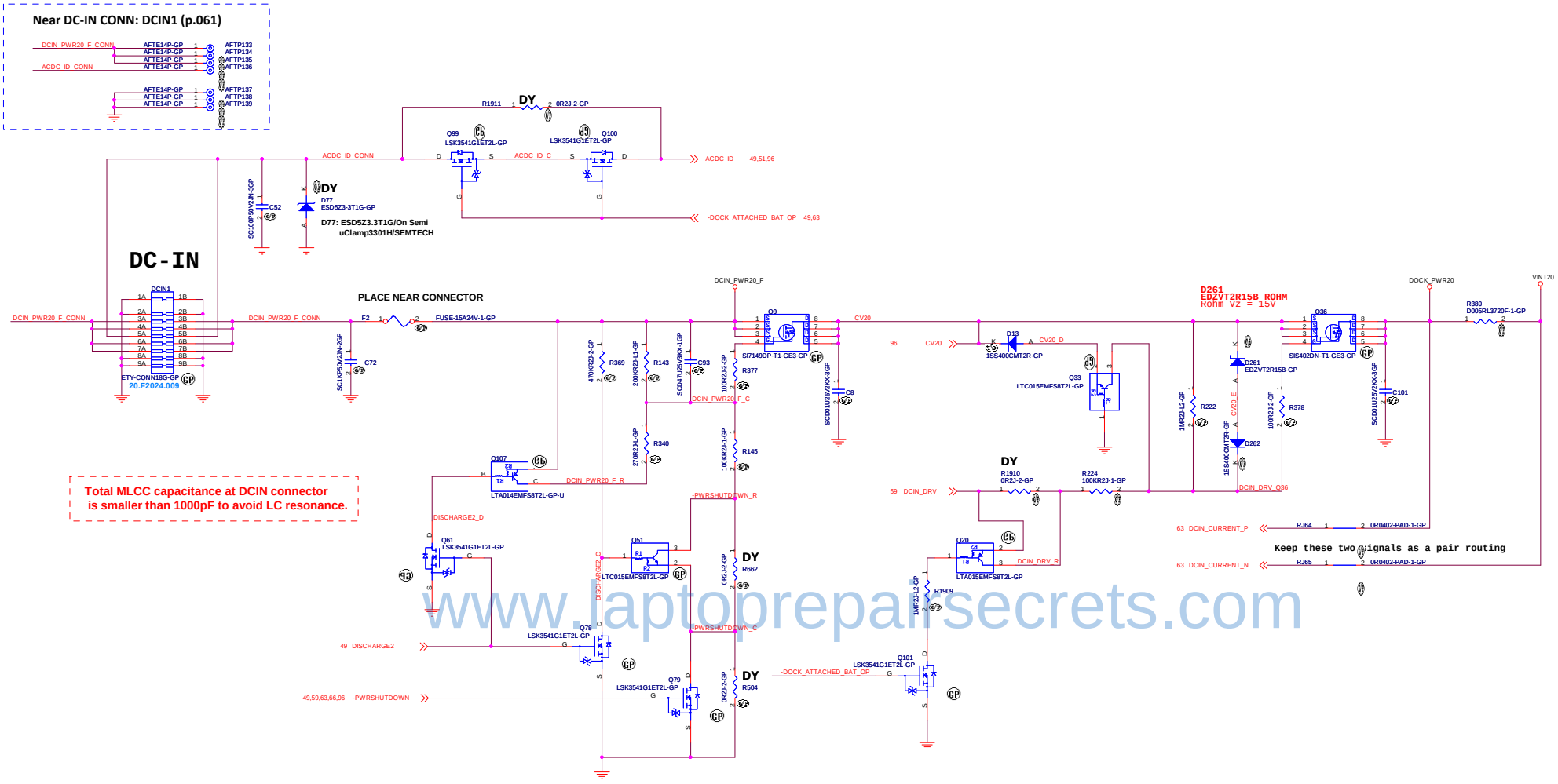
<Variant Name>

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

Title: EXPRESS SLOT AND POWER

Size: A3 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 60 of 105



TABLE

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

LOGIC

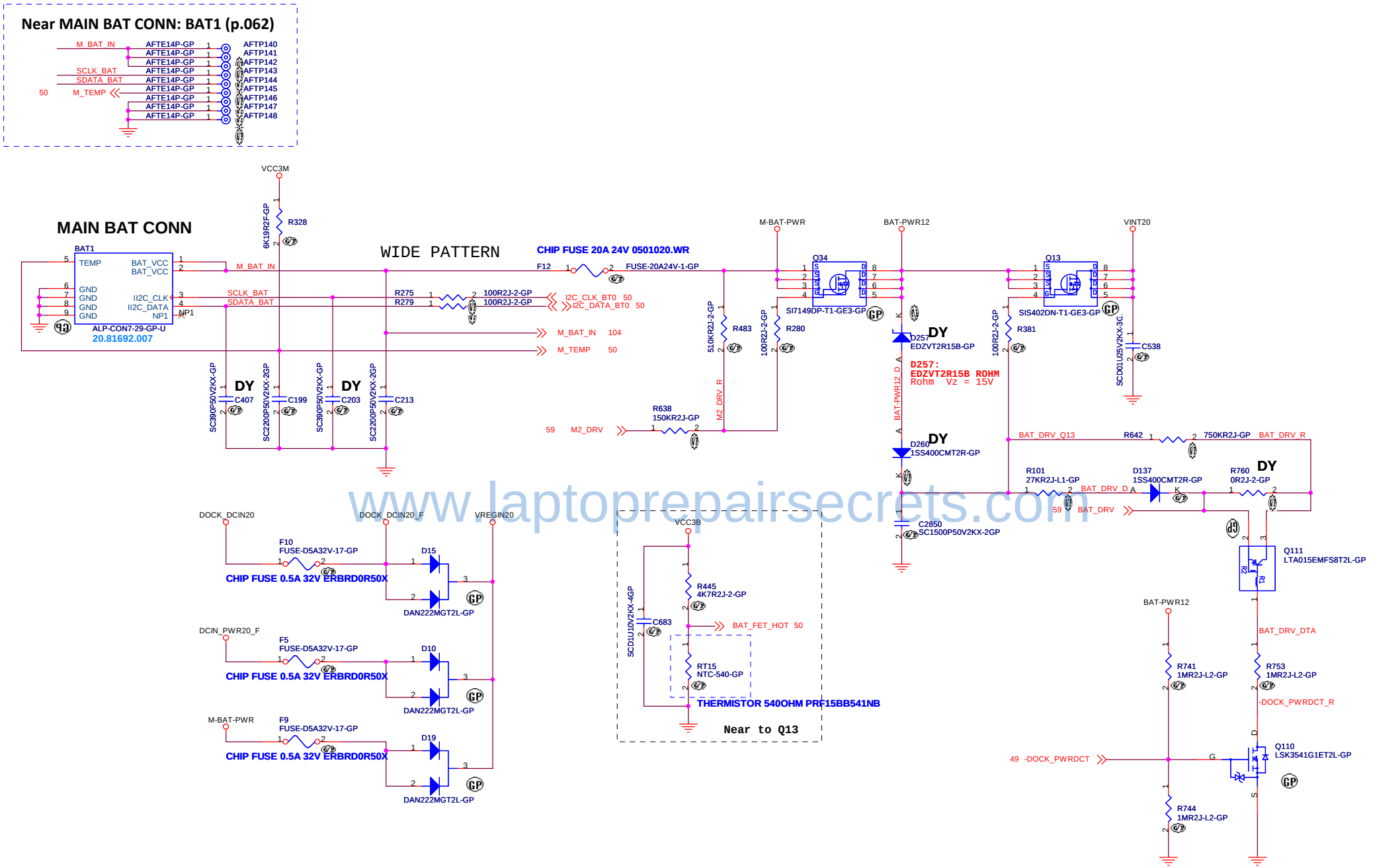
<Variant Name>

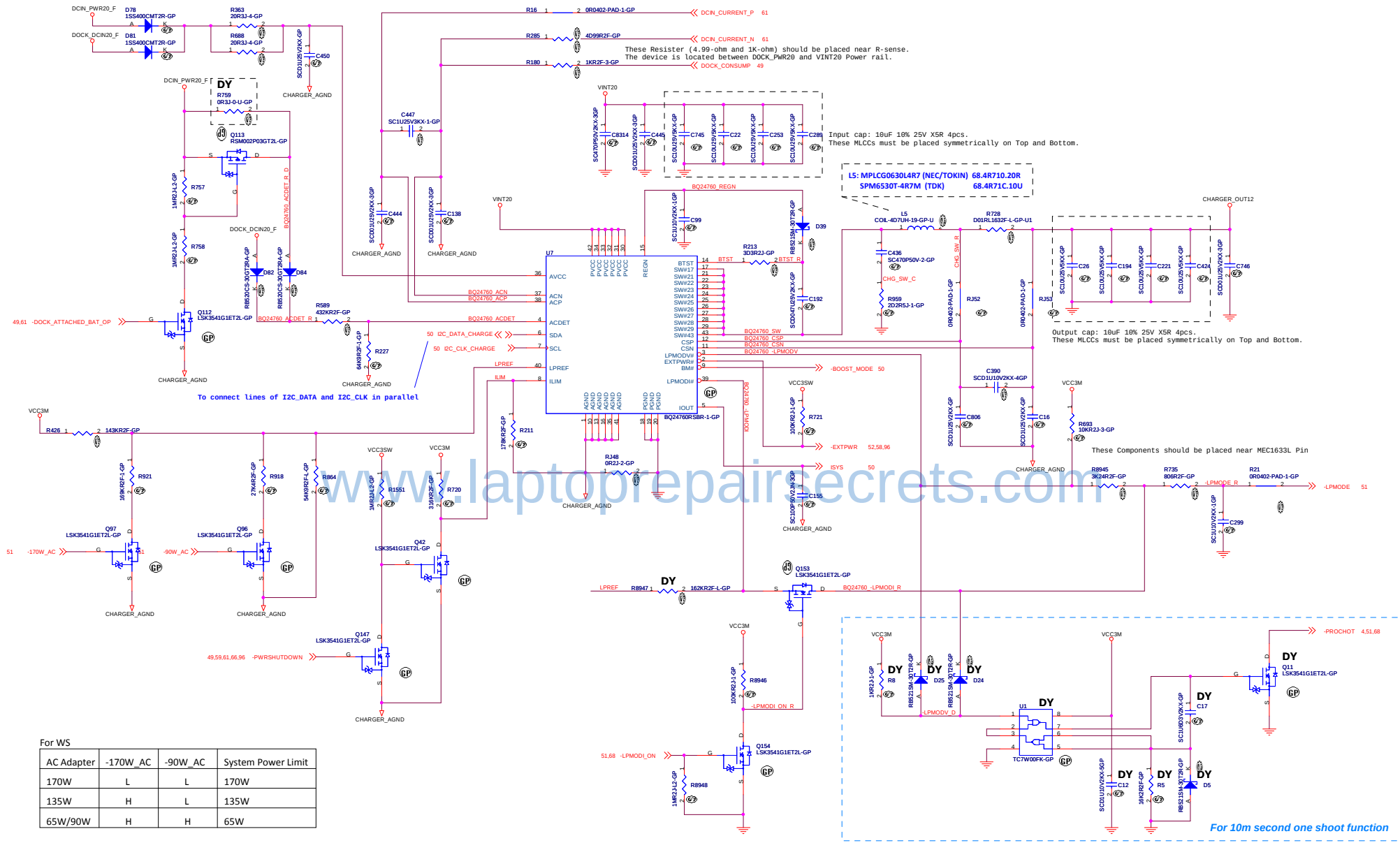
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.

Title: DC IN

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 61 of 105


Near MAIN BAT CONN: BAT1 (p.062)
M_BAT_IN
SCLK_BAT
SDATA_BAT
M_TEMP
AFTE14P-GP
AFTP140
AFTP141
AFTP142
AFTP143
AFTP144
AFTP145
AFTP146
AFTP147
AFTP148
MAIN BAT CONN
BAT1
TEMP
BAT_VCC
GND
II2C_CLK
II2C_DATA
NP1
ALP-CON7-29-GP-U
20.81692.007
VCC3M
R328
6K19R2F-GP
WIDE PATTERN
CHIP FUSE 20A 24V 0501020.WR
F12
FUSE-20A24V-1-GP
R275
R279
100R2J-2-GP
I2C_CLK_BT0 50
I2C_DATA_BT0 50
M_BAT_IN 104
M_TEMP 50
M2_DRV 59
R638
150KR2J-GP
M2_DRV_R
510KR2J-2-GP
R483
100R2J-2-GP
R280
M-BAT-PWR
Q34
SI7149DP-T1-GE3-GP
BAT-PWR12
D257
EDZVT2R15B-GP
D257:
EDZVT2R15B ROHM
Rohm Vz = 15V
BAT-PWR12_D
D260
1SS400CMT2R-GP
C2850
SC1500P50V2KX-2GP
Q13
SIS402DN-T1-GE3-GP
R381
VINT20
C538
SCD01U25V2KX-3G
BAT_DRV_Q13
R642
750KR2J-GP
BAT_DRV_R
R101
27KR2J-L1-GP
BAT_DRV_D
BAT_DRV
D137
1SS400CMT2R-GP
R760
0R2J-2-GP
Q111
LTA015EMFS8T2L-GP
BAT-PWR12
BAT_DRV_DTA
R741
1MR2J-L2-GP
R753
1MR2J-L2-GP
-DOCK_PWRDCT_R
49 -DOCK_PWRDCT
Q110
LSK3541G1ET2L-GP
R744
1MR2J-L2-GP
SC390P50V2KX-GP
C407
SC2200P50V2KX-3GP
C199
C203
SC2200P50V2KX-2GP
C213
DOCK_DCIN20
DOCK_DCIN20_F
VREGIN20
F10
FUSE-D5A32V-17-GP
CHIP FUSE 0.5A 32V ERBRD0R50X
D15
DAN222MGT2L-GP
DCIN_PWR20_F
F5
D10
M-BAT-PWR
F9
D19
VCC3B
C683
SCD1U10V2KX-4GP
R445
4K7R2J-2-GP
BAT_FET_HOT 50
RT15
NTC-540-GP
THERMISTOR 540OHM PRF15BB541NB
Near to Q13
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
BATTERY INPUT
Size A3
Document Number
Kome-1 WS
Rev -1
Date: Thursday, September 12, 2013
Sheet 62 of 105



For WS

AC Adapter	-170W_AC	-90W_AC	System Power Limit
170W	L	L	170W
135W	H	L	135W
65W/90W	H	H	65W

TABLE

	One Shoot Enable	One Shoot Disable
R693	DY	ASM
D24	ASM	DY
D25	ASM	DY
Q11	ASM	DY

LOGIC

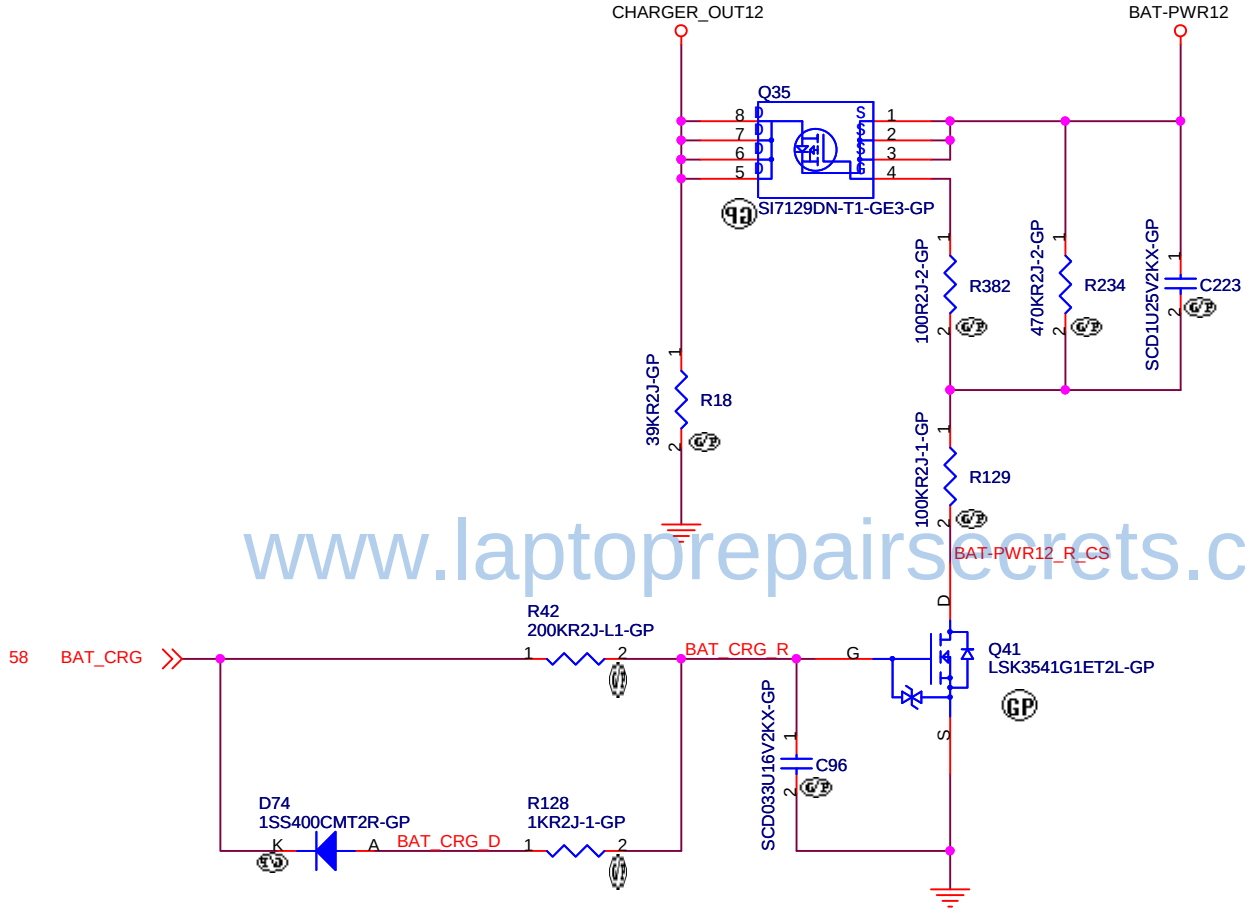
<Variant Name>

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

Title: BATTERY CHARGER

Size	Document Number	Rev
A2	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 63 of 105



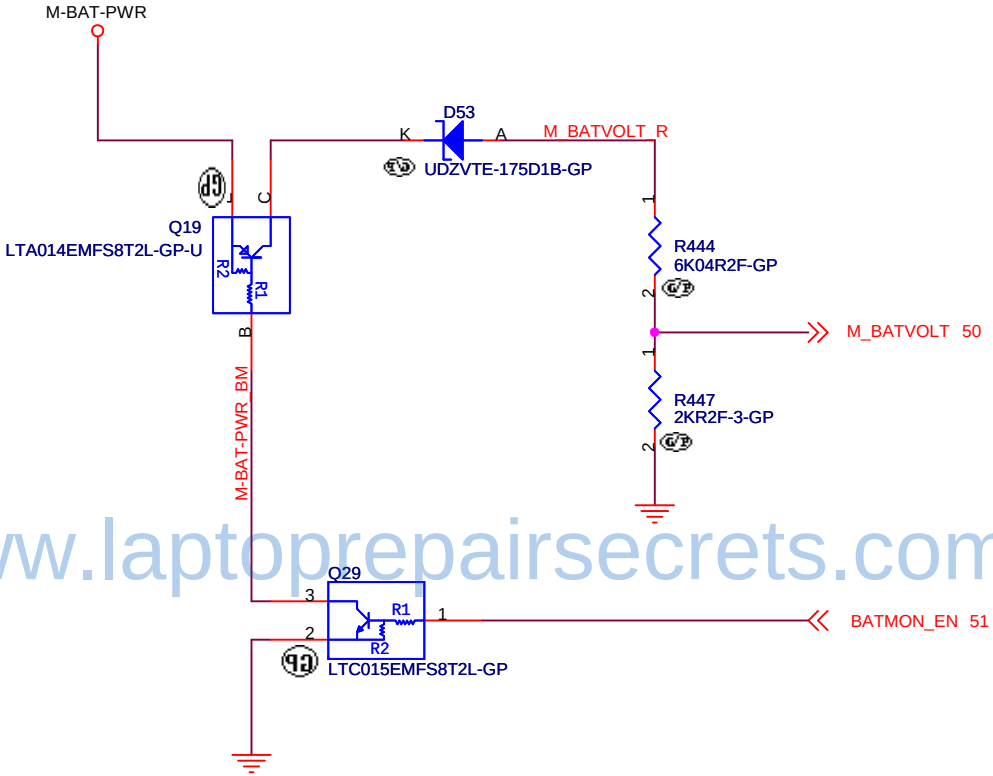
<Variant Name>

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

Title: ***CHARGER SELECT***

Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Thursday, September 12, 2013 Sheet 64 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: ***BATTERY MONITOR***

Size	Document Number	Rev
A4	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 65 of 105

Low Noise CAP (OBS): Specific p/n for Lily project
78.10622.L7L: CHIP CAP C 10U 25V X5R K1206 (MURATA)
Normal CAP
78.10622.52L: CHIP CAP C 10U 25V K1206 X5R(R

Default ->

Input cap : 10uF 10% 25V X5R 1206 6pcs
These MLCCs must be placed symmetrically on Top and bottom.

U406, U407 and U434:
RJK03T4DPA-00-J5A (RENESAS) 84.003T4.037

Input cap : 10uF 10% 25V X5R 1206 4pcs
These MLCCs must be placed symmetrically on Top and Bottom.

Change L3 to
FDU1050D-H-1R5M (TOKO) 68.1R51B.10K
MPCH1055L1R3 (NEC-TOKIN) 68.1R310.20A

16A

ESR18mOHM

CHIP IND 1.5UH FDU1050D-H-1R5M

Use 2 pcs of 6TPE330MIL

CHIP IND 2.2UH M MPLCH0740L2R2

ESR10mOHM

Use 1 pcs of 4TPF470ML

9A

TPS51220ARSNR-GP-U1

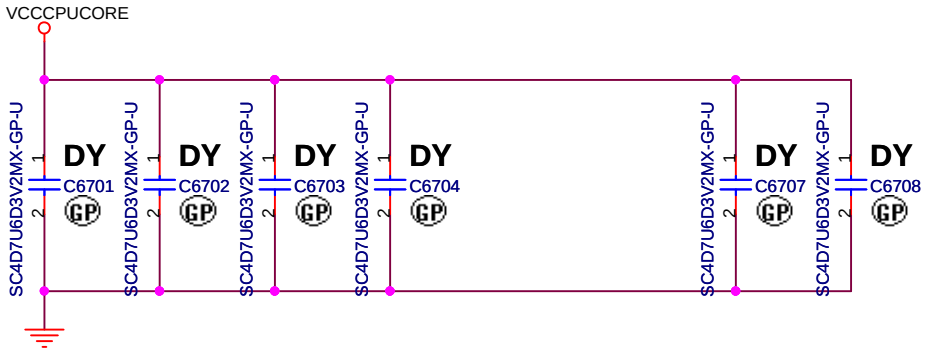
<Variant Name>

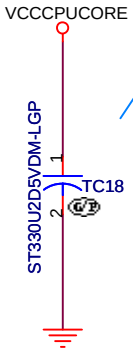
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: VCC3M/5M

Size: A2 | Document Number: Kome-1 WS | Rev: -1

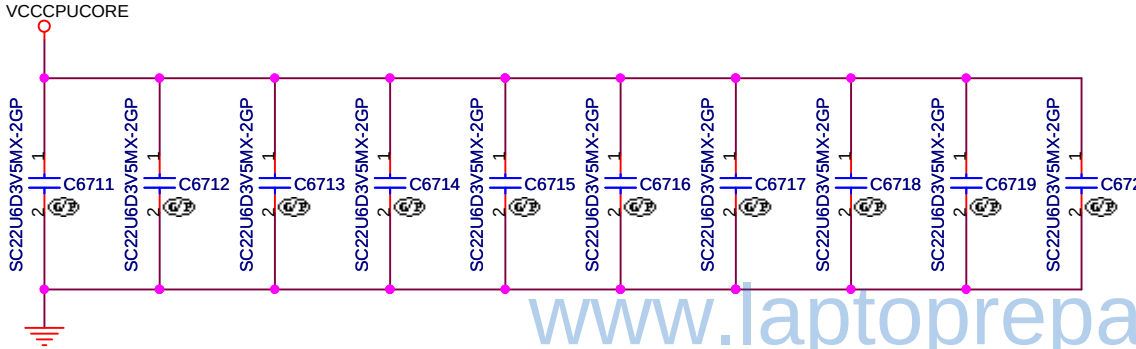
Date: Thursday, September 12, 2013 | Sheet 66 of 105

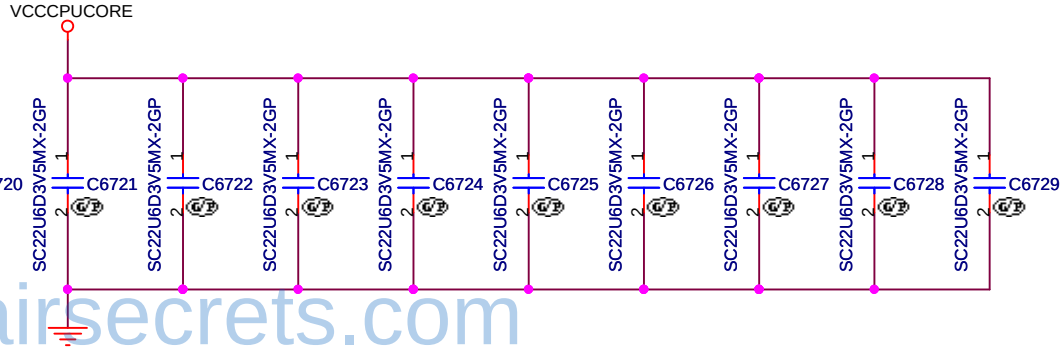




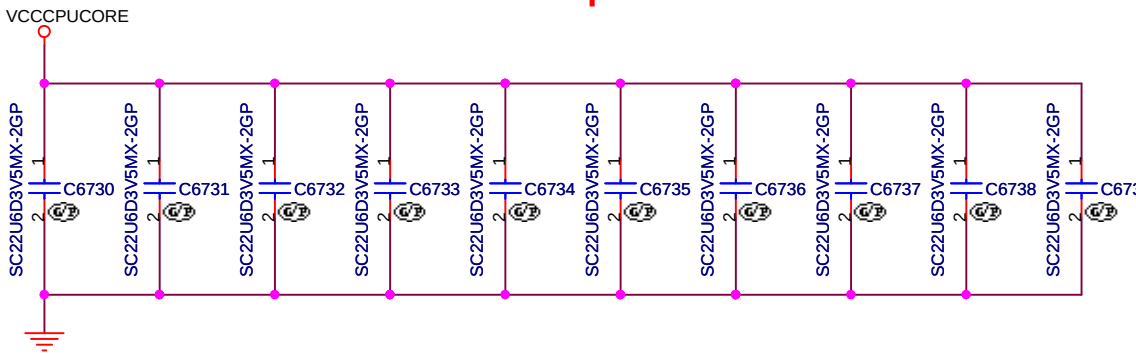
TC18:
For TPS51631 undershoot voltage issue

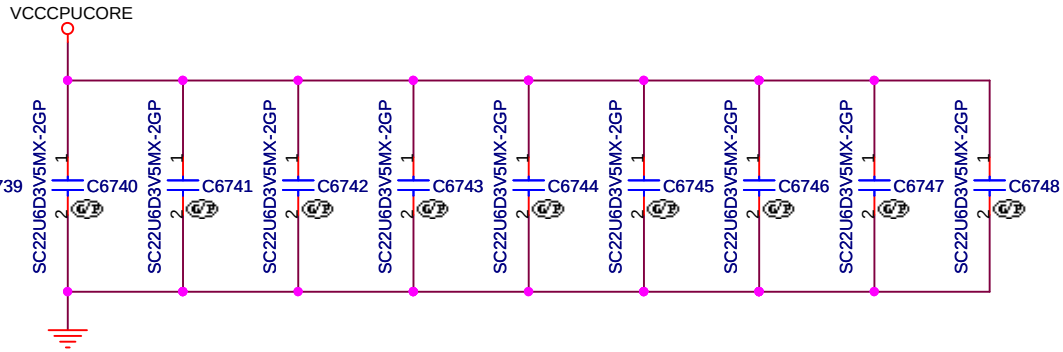
TC18: 330uF 2.5V 9mOhm 7343-size
1st Kemet T520V337M2R5ATE009 80.3371V.L01
2nd Panasonic EEFSX0E331ER 077.53371.0001





38pcs 22uF for VCCCPUCORE





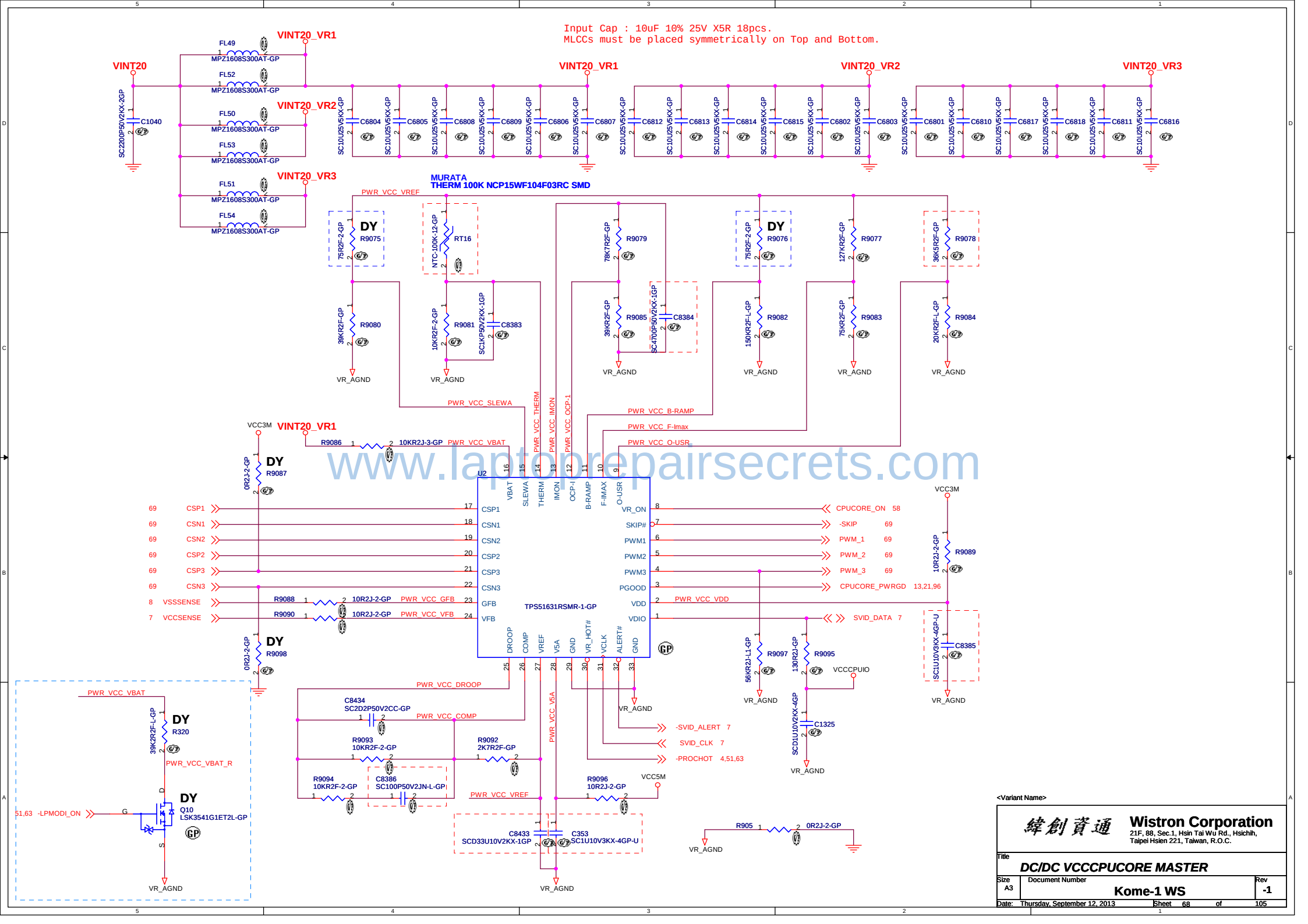
<Variant Name>

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

Title: ***DC/DC VCCCPUCORE DECOUPLING***

Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Monday, July 22, 2013 Sheet 67 of 105



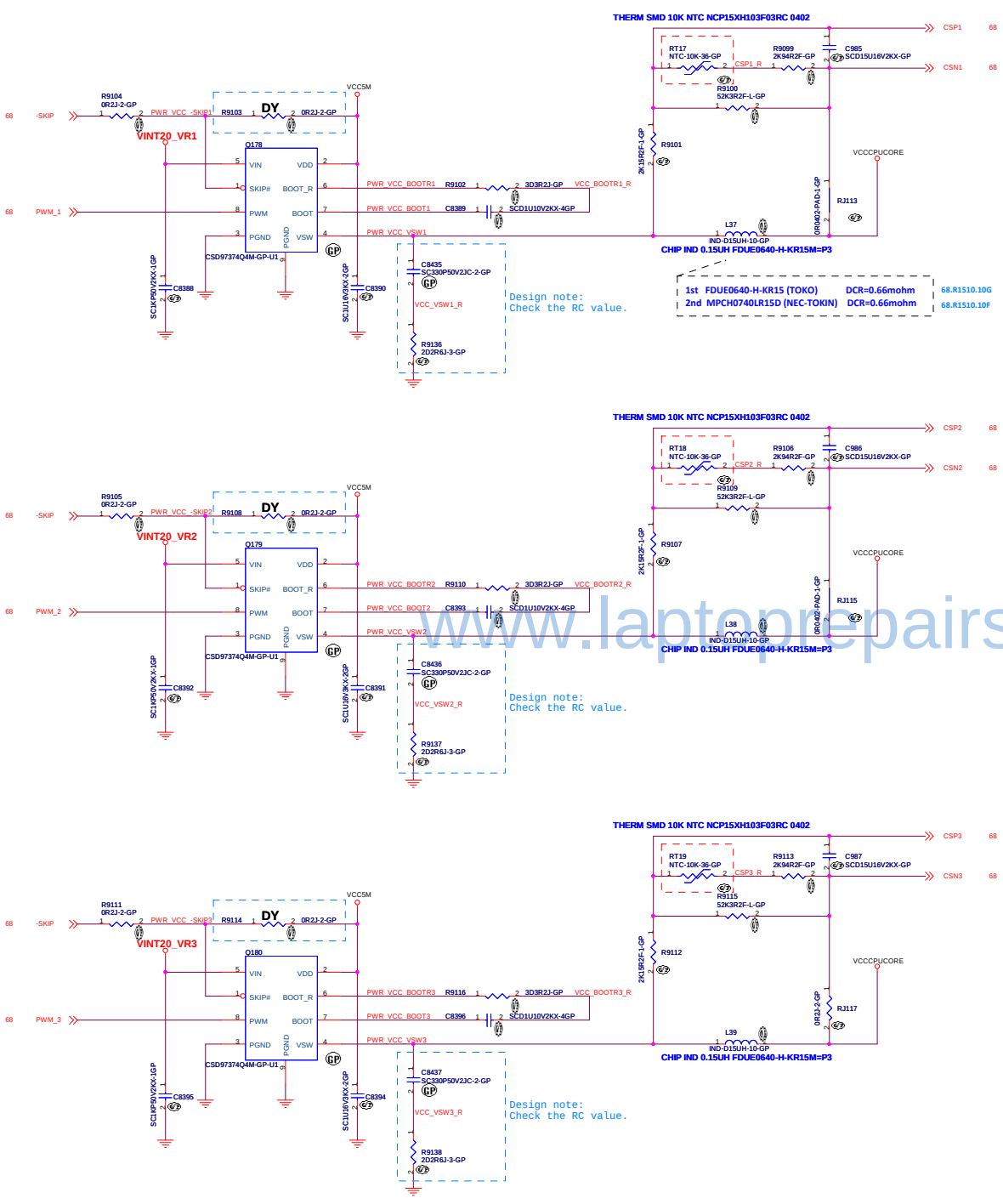
<Variant Name>

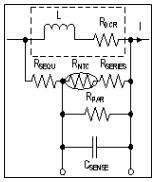
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: DC/DC VCCCPUCORE MASTER

Size	Document Number	Rev
A3	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 68 of 105





Vin (Max) 20V
Inductor FDUE0640-H-KR15 (TOKO) DCR=0.66mOhm
Output Capacitor 22uF x 38pcs
Controller IC TPS51631
※Remove phase-3 power stage components and connect CSP3 to 3.3V and CSN3 to GND for 2-phase 37W Vcore.

TABLE

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	
OCP-I to GND	R9085	39	39	39	K-Ohm	
IMON to OCP-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	ASM	NO_ASM	NO_ASM		
	R9098	ASM	NO_ASM	NO_ASM		
	Q180	NO_ASM	ASM	ASM		
	R9114	NO_ASM	NO_ASM	NO_ASM		
	C8395	NO_ASM	ASM	ASM		
	C8394	NO_ASM	ASM	ASM		
	R9116	NO_ASM	ASM	ASM		
	C8396	NO_ASM	ASM	ASM		
	R9138	NO_ASM	ASM	ASM		
	C8437	NO_ASM	ASM	ASM		
	RT19	NO_ASM	ASM	ASM		
	R9113	NO_ASM	ASM	ASM		
	R9115	NO_ASM	ASM	ASM		
	R9112	NO_ASM	ASM	ASM		
	C987	NO_ASM	ASM	ASM		
	L39	NO_ASM	ASM	ASM		
	RJ117	NO_ASM	ASM	ASM		
	TC18	NO_ASM	ASM	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 perfomance.

Inductor MPCH0740LR15D (NEC-TOKIN) DCR=0.66mOhm

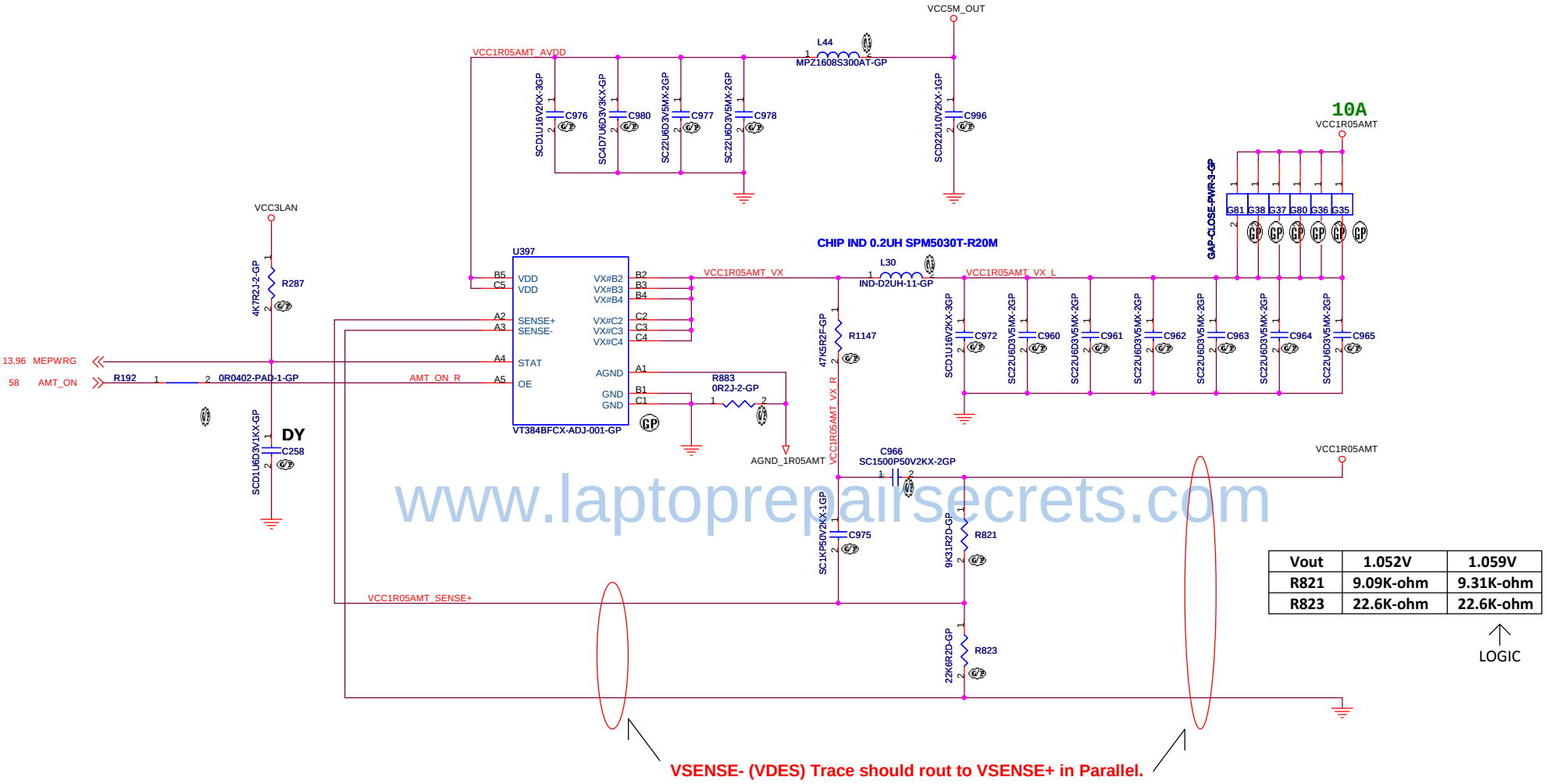
TABLE

Connection	Component Name	37W 2 Phase	47W 3 Phase	57W 3 Phase	Unit	
IMON to OCP-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>

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

Title: VCCCPUCORE SLAVE
Size: A2 | Document Number: Kome-1 WS | Rev: -1
Date: Thursday, September 12, 2013 | Sheet 69 of 105



Vout	1.052V	1.059V
R821	9.09K-ohm	9.31K-ohm
R823	22.6K-ohm	22.6K-ohm

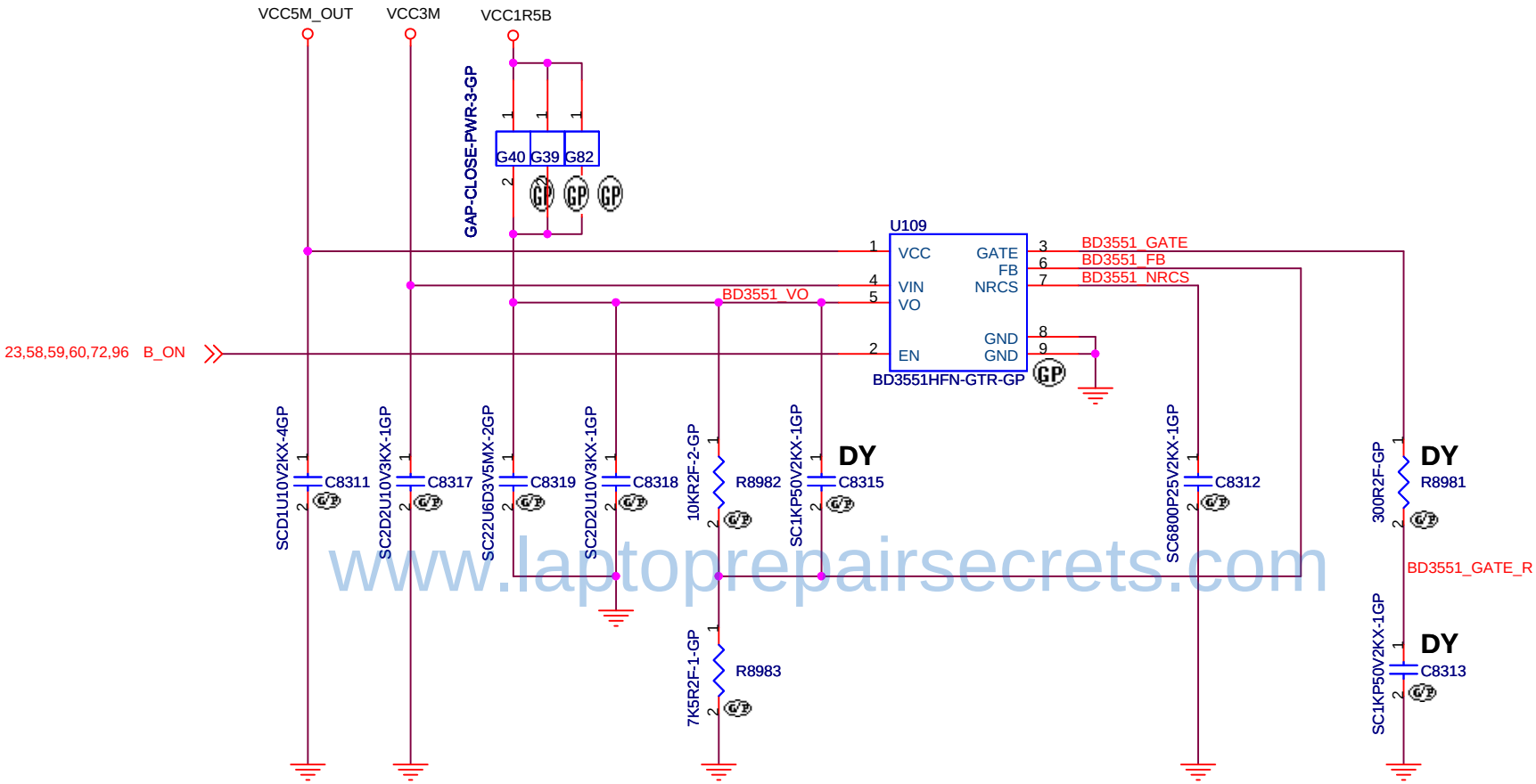
<Variant Name>

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

Title: DC/DC VCC1R05AMT

Size: A3 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 70 of 105



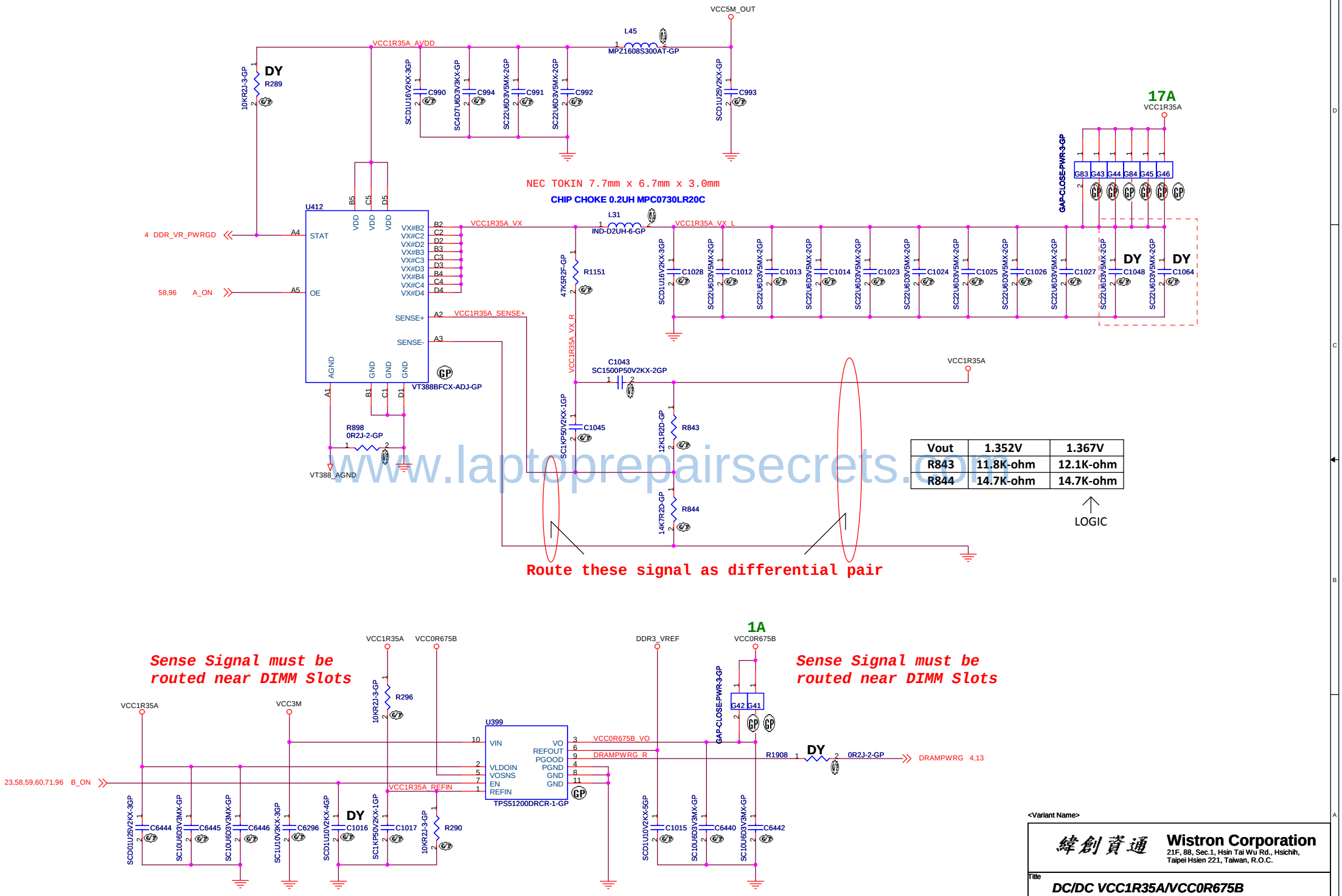
<Variant Name>

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

Title: ***DC/DC VCC1R5B***

Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Thursday, September 12, 2013 Sheet 71 of 105



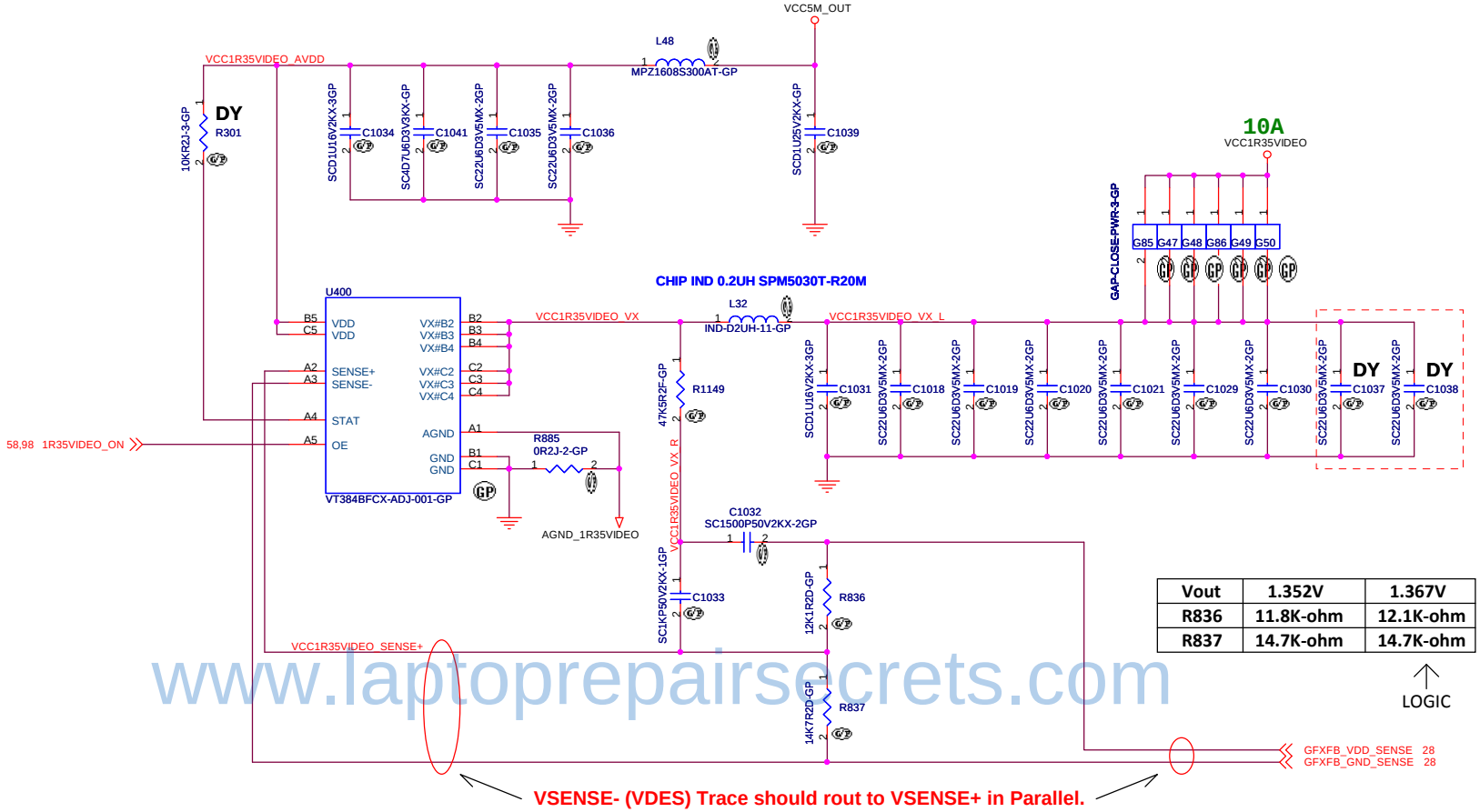
<Variant Name>

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

Title: DC/DC VCC1R35A/VCC0R675B

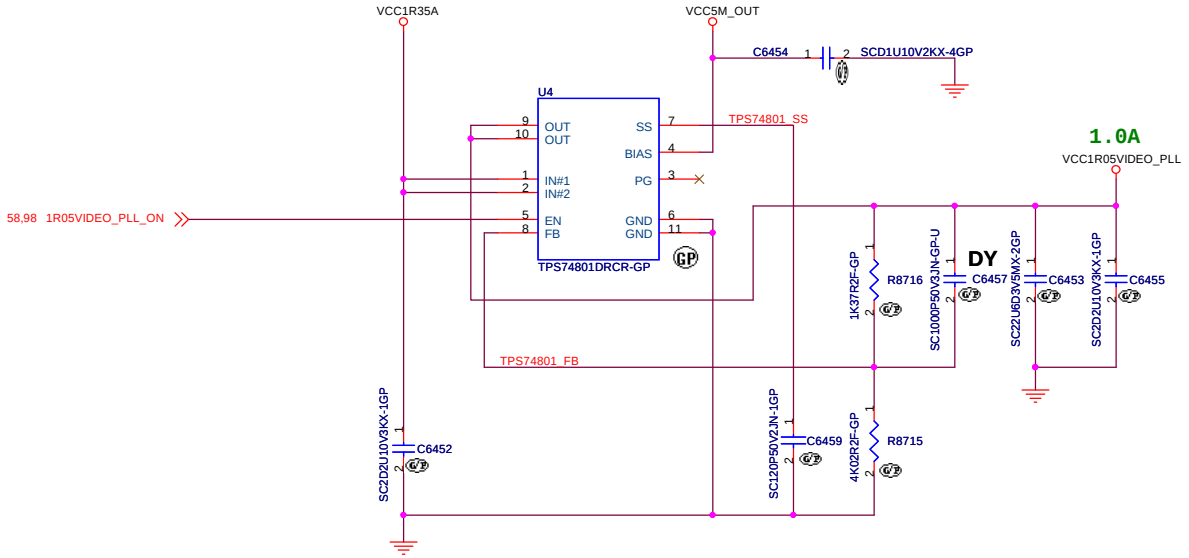
Size: A3 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 72 of 105



Vout	1.352V	1.367V
R836	11.8K-ohm	12.1K-ohm
R837	14.7K-ohm	14.7K-ohm

LOGIC



Vout	1.066V	1.073V	1.071V
R8716	1.37K-ohm	1.37K-ohm	1.43K-ohm
R8715	4.12K-ohm	4.02K-ohm	4.22K-ohm

LOGIC

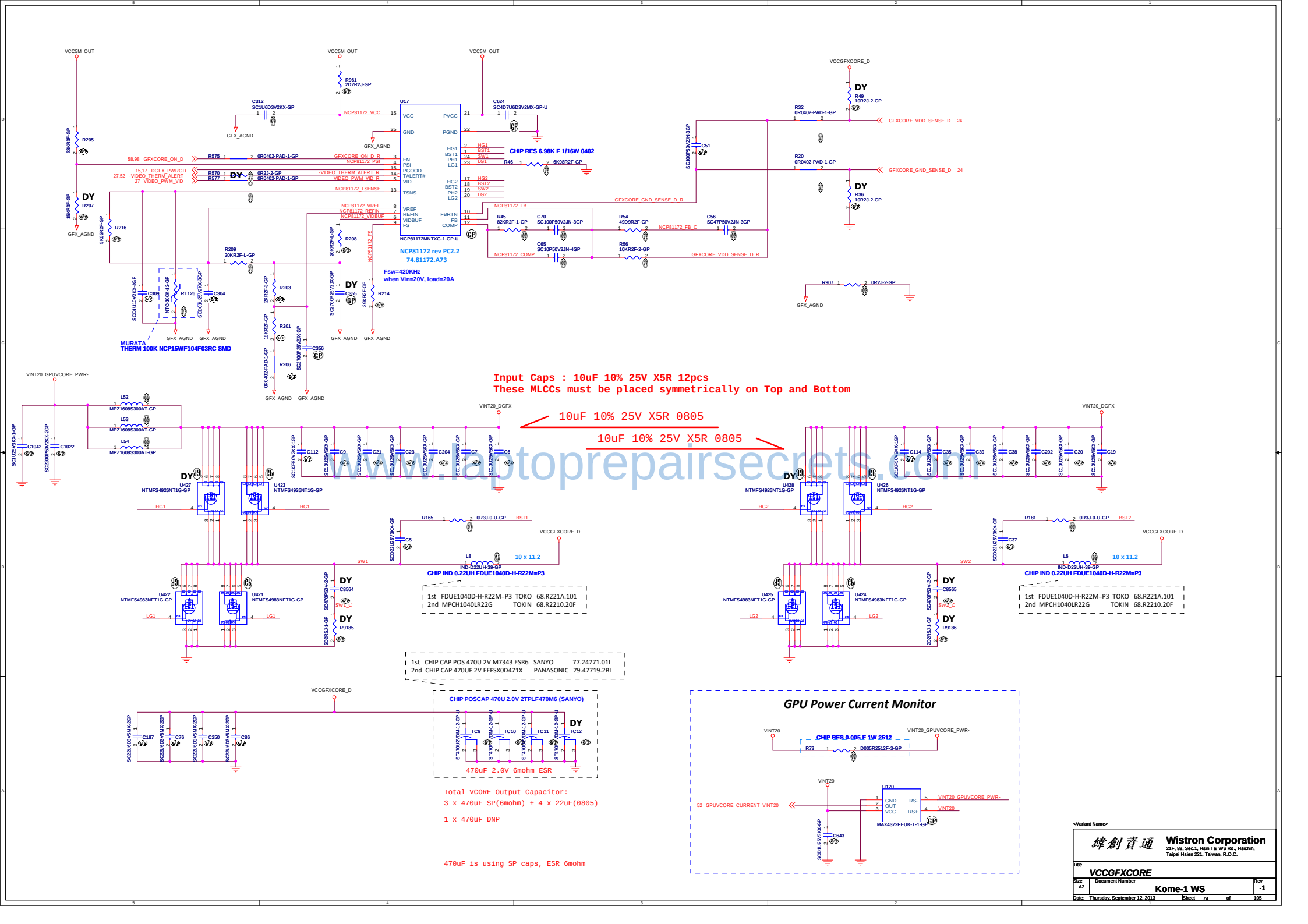
<Variant Name>

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

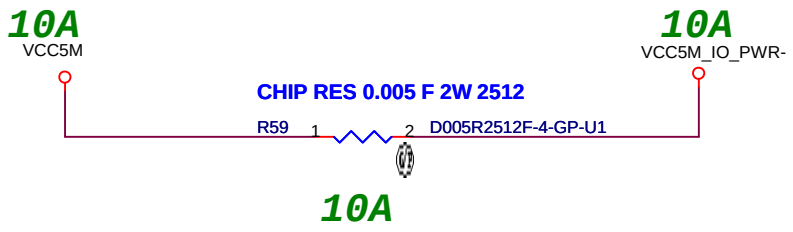
Title: DC/DC VCC1R35VIDEO, 1R05VIDEO_PLL

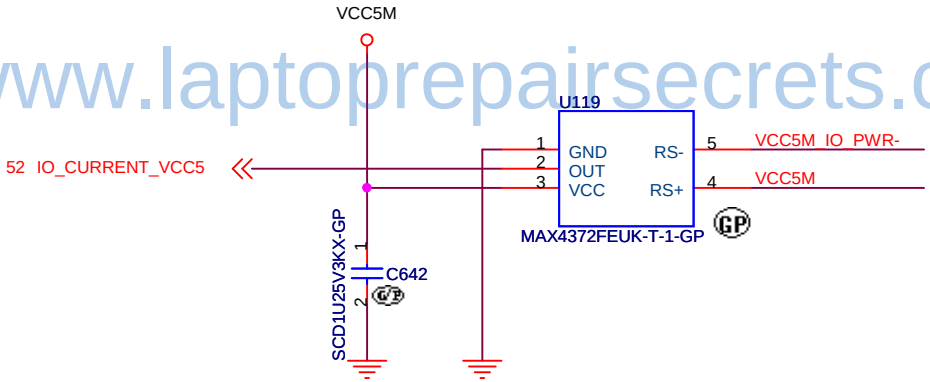
Size: A3 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 73 of 105



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***

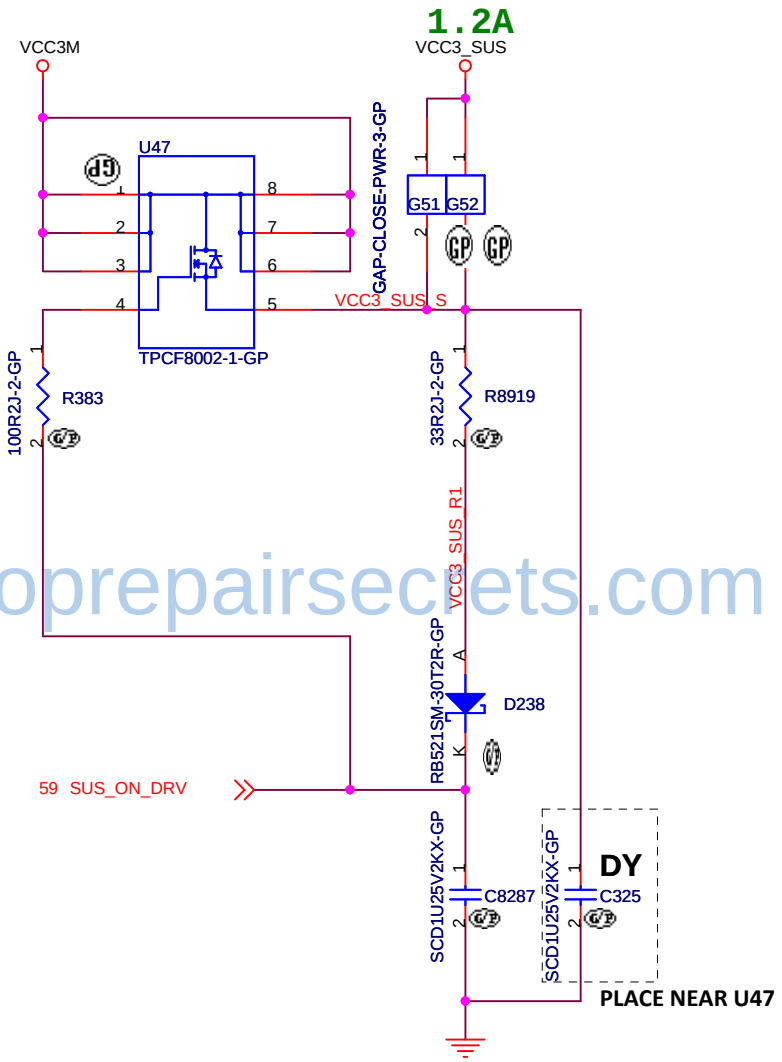
Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Thursday, September 12, 2013 Sheet 75 of 105

VCC3_SUS is provided to PCH and Thunderbolt.

PCH requires following power.
- VCCSUSHDA for Audio codec : 0.010A
- VCCSUS3_3 for Internal VR : 0.261A

Redwood Ridge requires following power
- VCC3POC for Core and Integrated VR : 0.91A



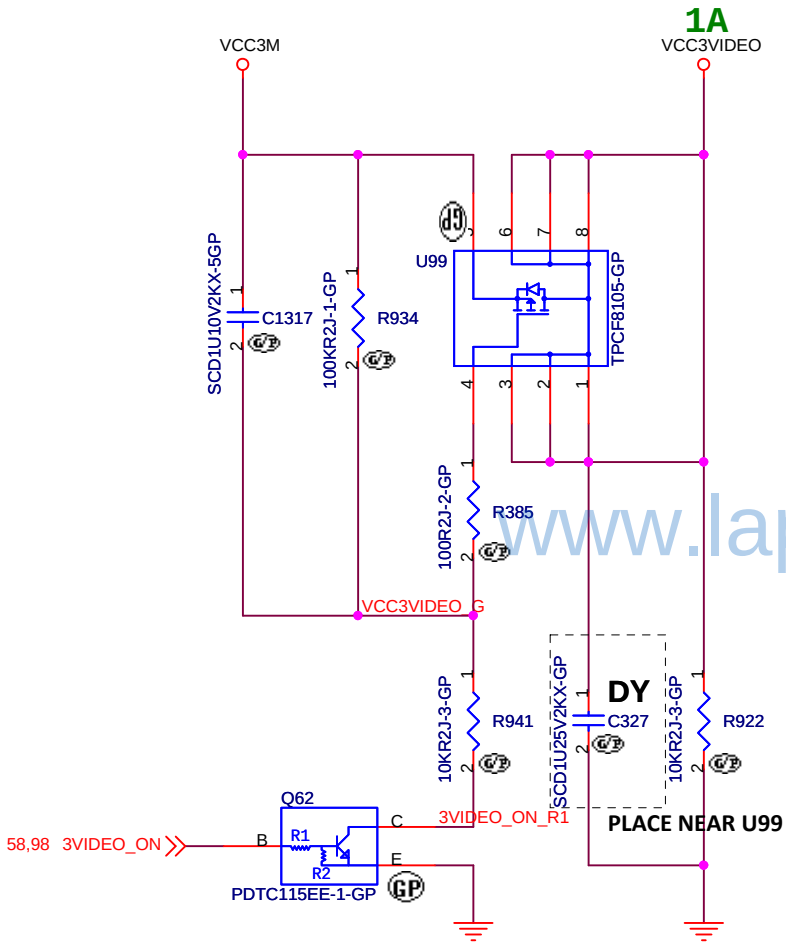
<Variant Name>

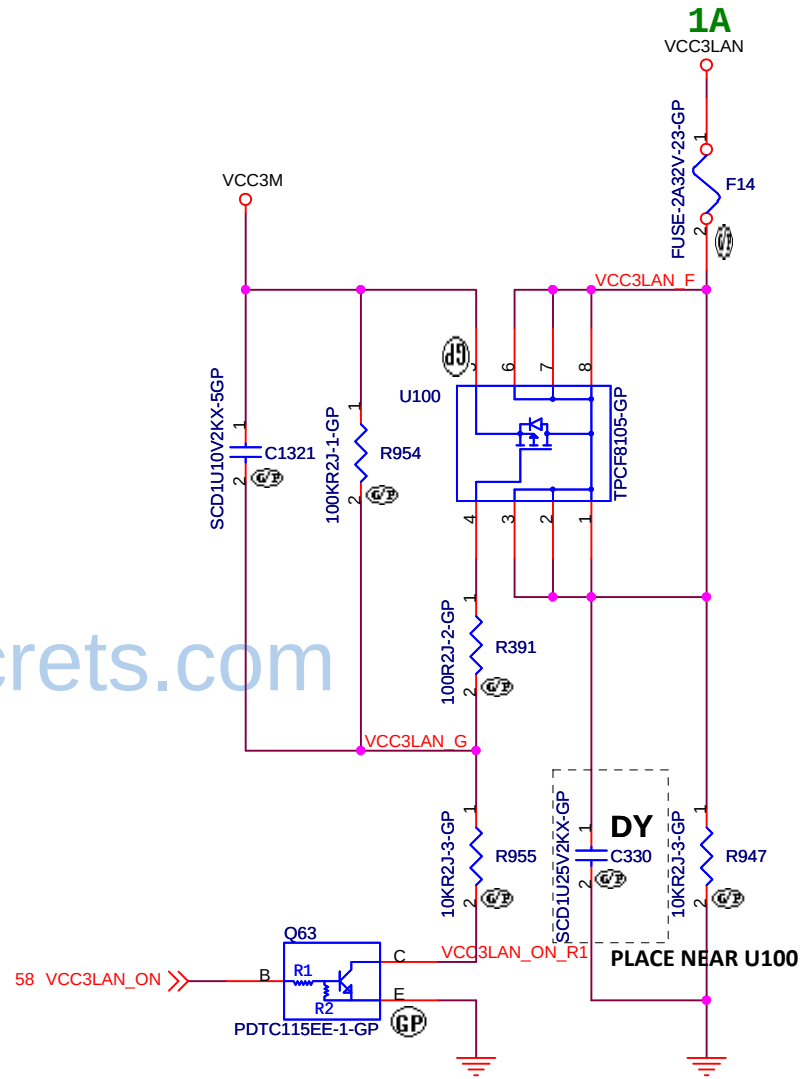
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: LOAD SW PCH SUS

Size	Document Number	Rev
A4	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 76 of 105



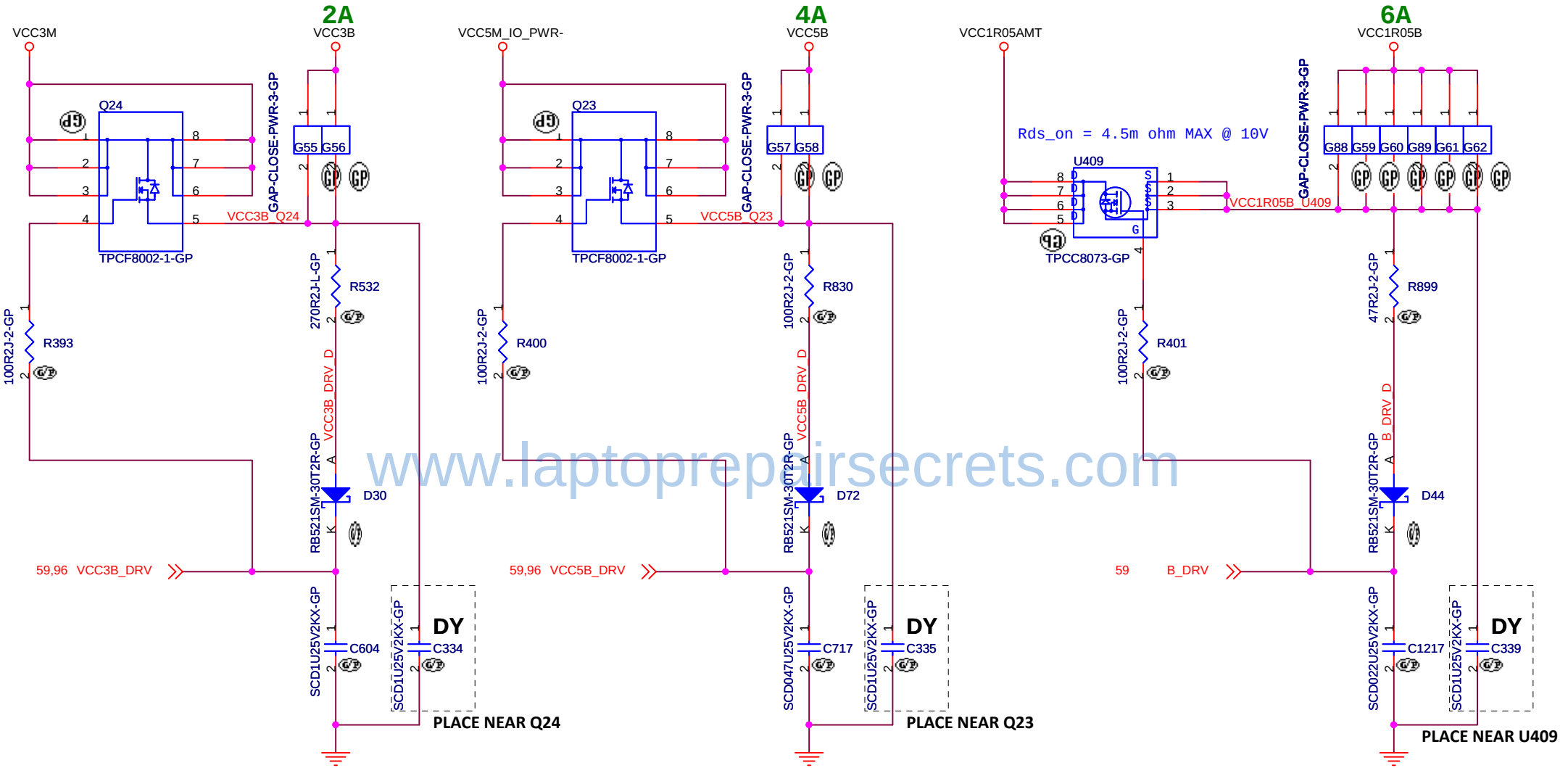


VCC3LAN provides to PCH, GBE and SPI deivce.

PCH requires 0.022A.
GBE requires 0.5A max.
SPI requires 0.04A(2pcs)

<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 VIDEO / LAN*		
Size: A4	Document Number: Kome-1 WS	Rev: -1
Date: Thursday, September 12, 2013	Sheet 77 of 105	



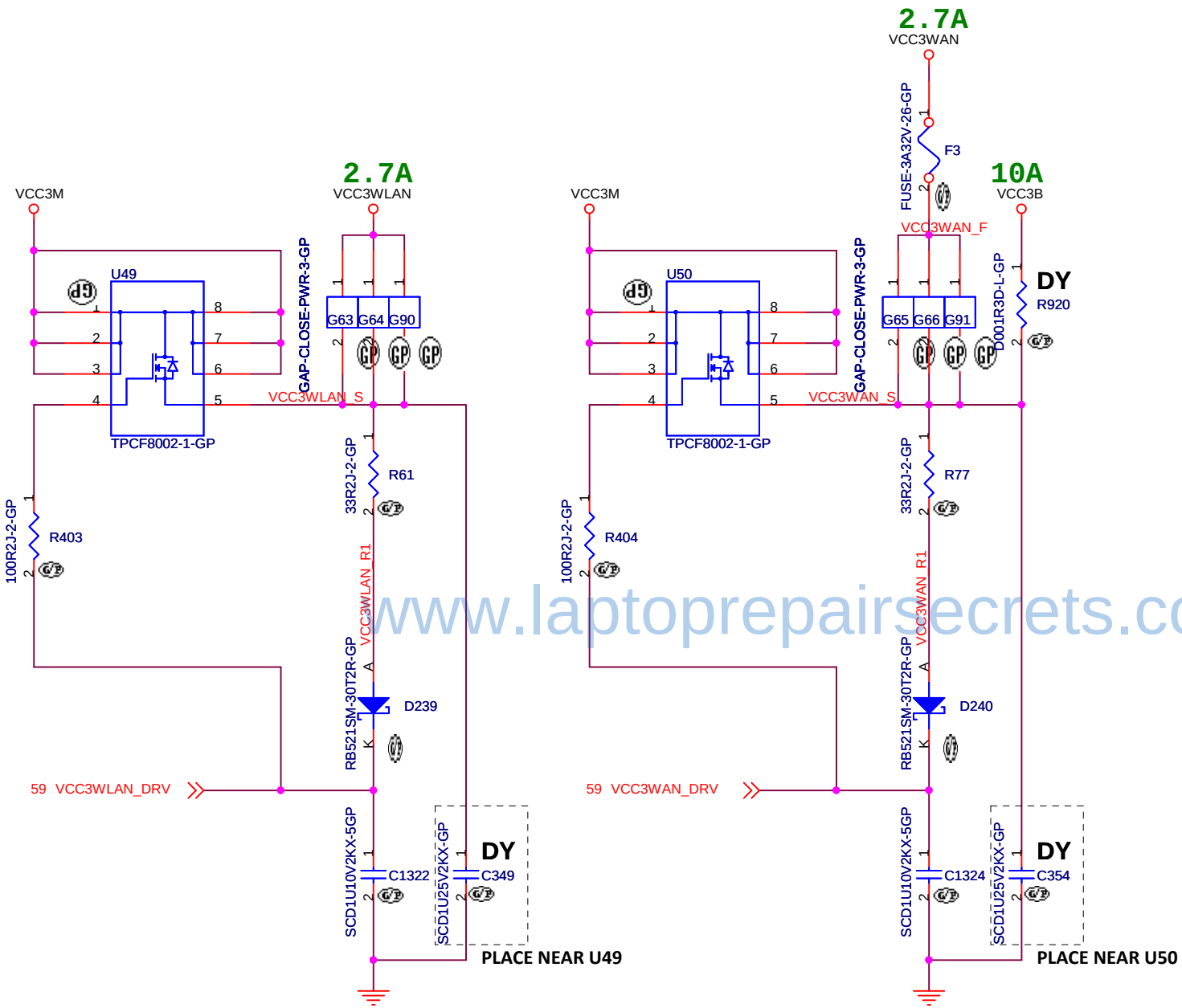
<Variant Name>

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 VCCB***

Size	Document Number	Rev
A4	**Kome-1 WS**	-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

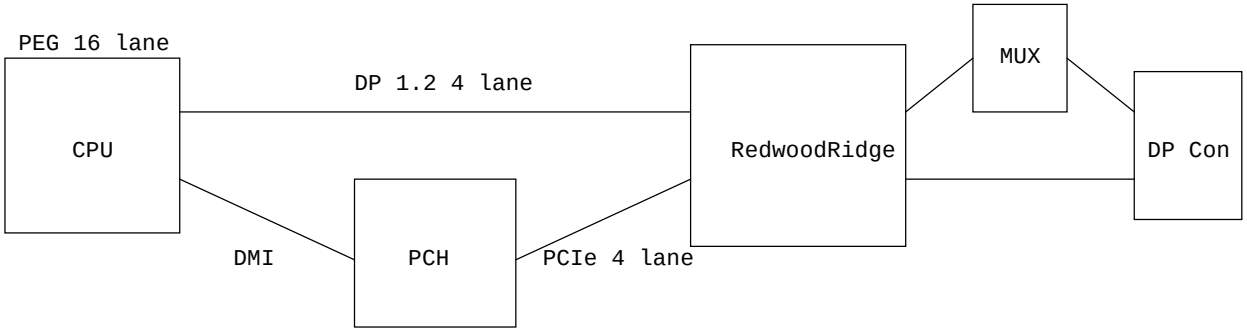
Size	Document Number	Rev
A4	**Kome-1 WS**	-1

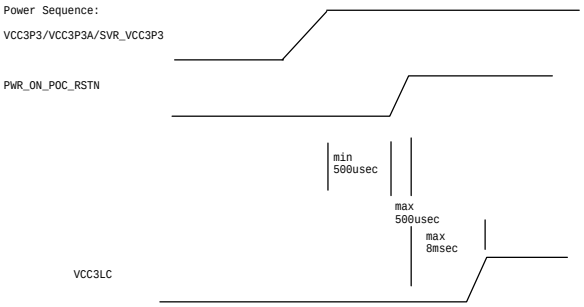
Date: Thursday, September 12, 2013 Sheet 79 of 105

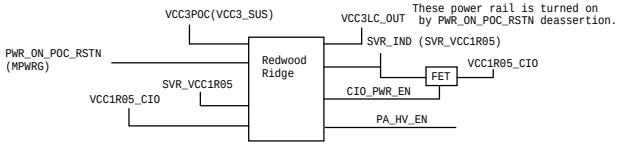
Redwood Ridge device has three kind of SKU.

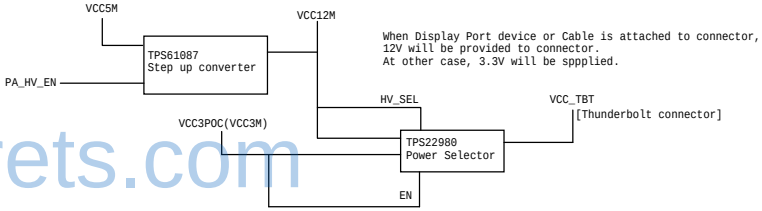
Code Name	Product Number	Display Port Configration	PCIe	Pakage	TDP
Redwood Ridge 4C	DSL4510	1.1a, 2x sink, 1x source	x4 Gen2	12x12mm	3.1W
Redwood Ridge 2C (12x12)	DSL4410	1.1a, 2x sink, 0x source	x4 Gen2	12x12mm	2.3W
Redwood Ridge 2C (10x10)	DSL4310	1.1a, 2x sink, 0x source	x4 Gen2	10x10mm	2.3W

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









Display Port/Thunderbolt Connctor

Legacy Display Port [mini DP] Pin	Description	Thunderbolt Port Pin	Description	Implementatioon Pin	
1	GND	1	PWR IN	1	Add Cap
2	HPD	2	HPD	2	HPD with Buffer?
3	LANE 0P	3	HD2CA 0P [OUT]	3	CIO Port 0 Bus Switch in Redwood Ridge for ML0P/HD2CA0P
4	CONFIG 1	4	CA2HD 0P [IN]	4	CIO Port 0 in Redwood Ridge for CA2HA0P and buffer for Config 1
5	LANE 0N	5	HD2CA 0N [OUT]	5	CIO Port 0 Bus Switch in Redwood Ridge for ML0N/HD2CA0N
6	CONFIG 2	6	CA2HD 0N [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.

<Variant Name>

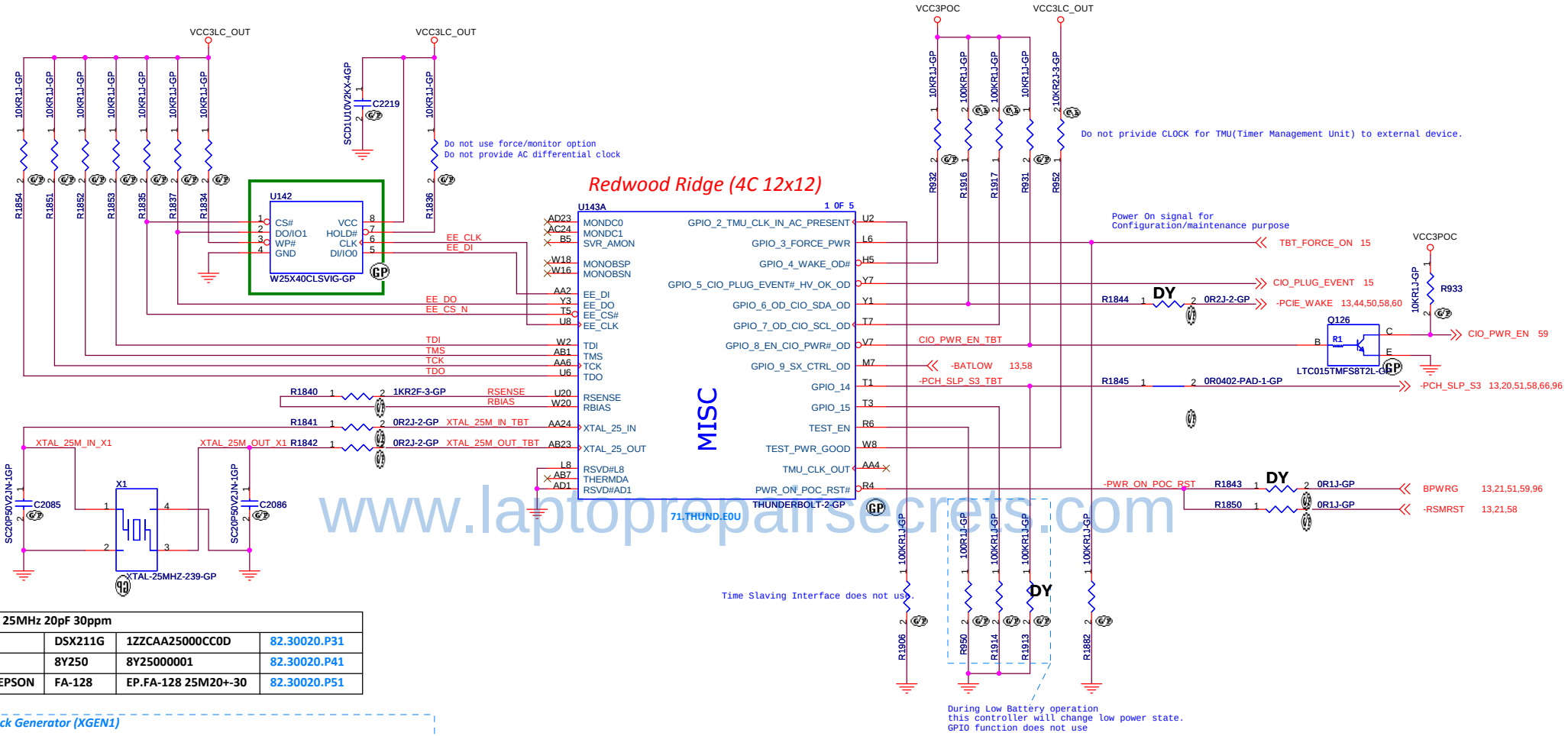
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: *Thunderbolt Redwood Info/Setting(1/6)*

Size: A3 | Document Number: Kome-1 WS | Rev: -1

Date: Wednesday, July 17, 2013 | Sheet 80 of 105

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

For Clock Generator (XGEN1)

103 TBT_25M_OSC_OUT — R141 DY 0R2J-2-GP — XTAL_25M_IN_TBT

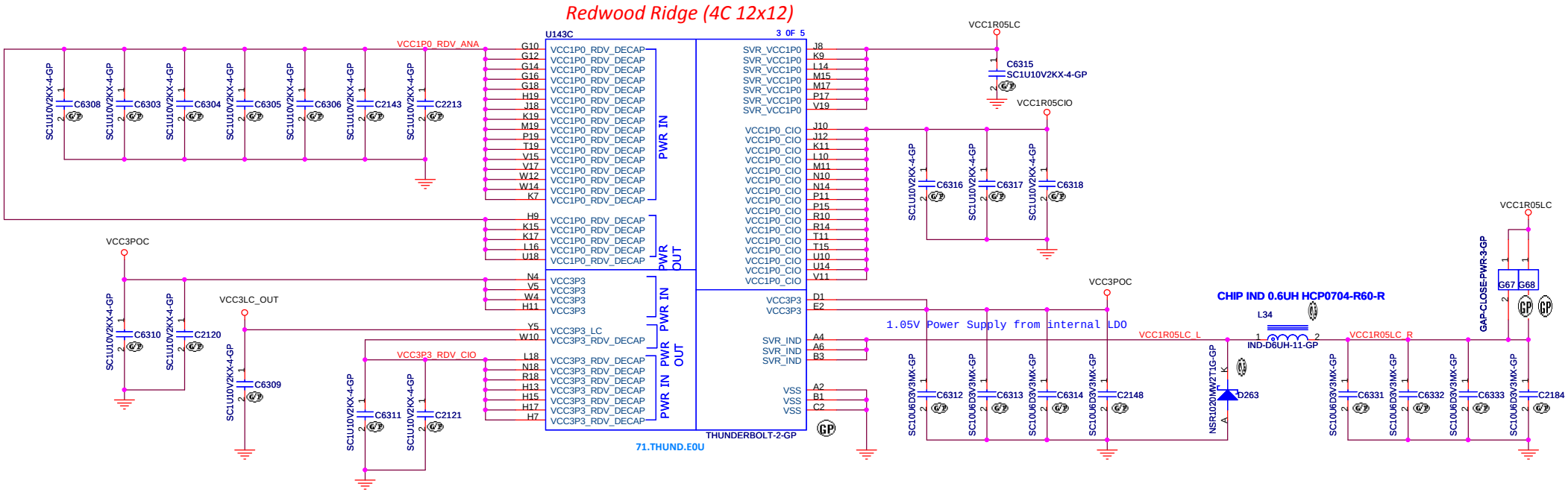
<Variant Name>

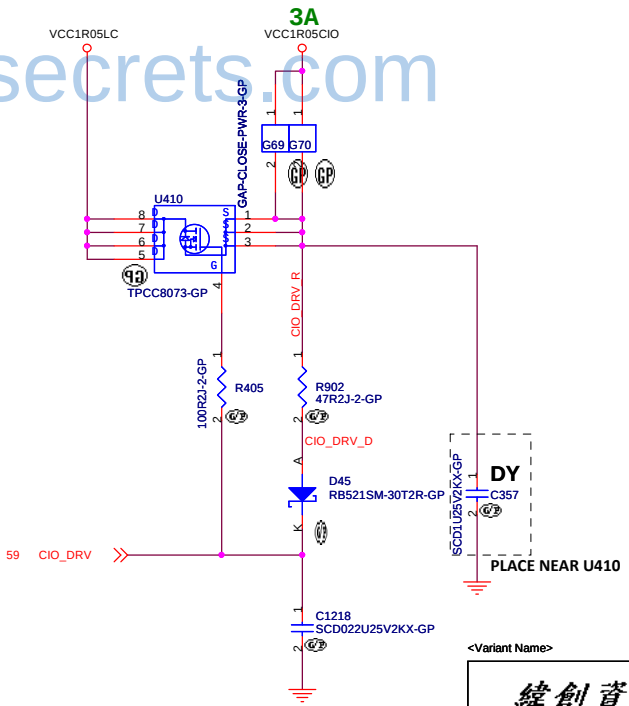
緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: ***Thunderbolt Redwood MISC (2/6)***

Size	Document Number	Rev
A3	Kome-1 WS	-1

Date: Thursday, September 12, 2013 Sheet 81 of 105





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

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

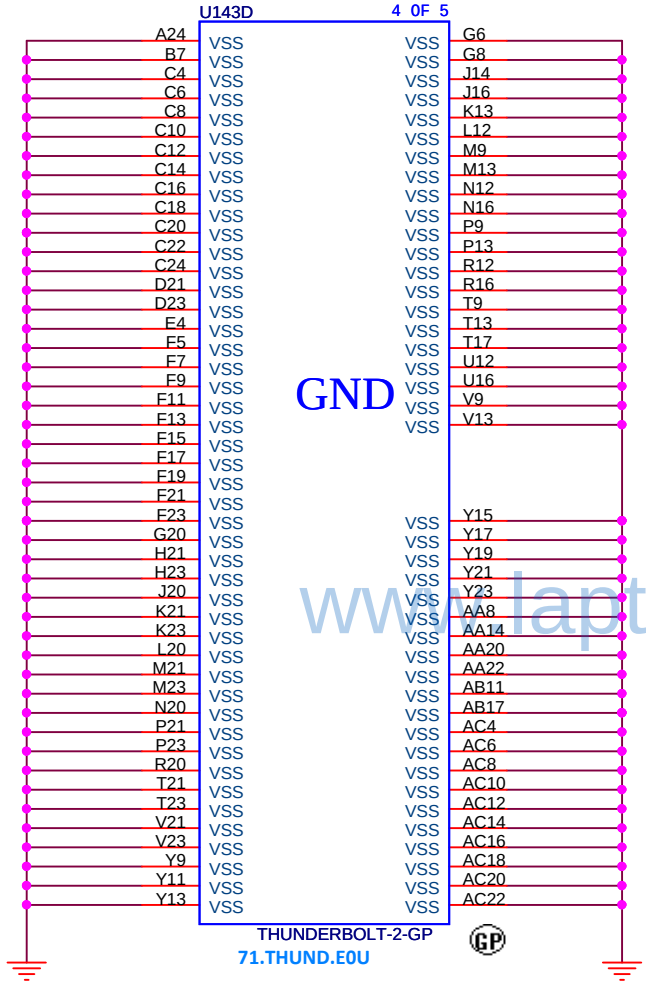
<Variant Name>

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>

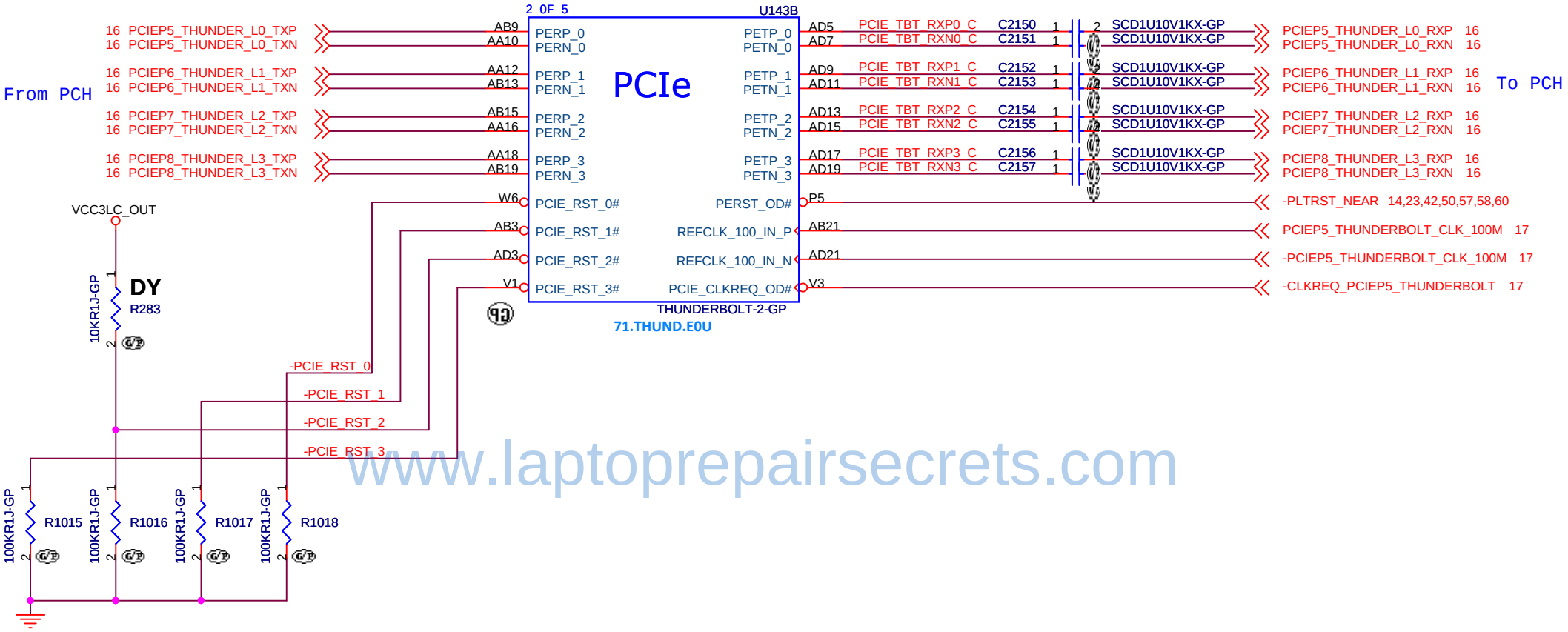
緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: ***Thunderbolt Redwood GND (4/6)***

Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Wednesday, July 17, 2013 Sheet 83 of 105

Redwood Ridge (4C 12x12)



PCIe Lane0/1/2/3 Reset

<Variant Name>

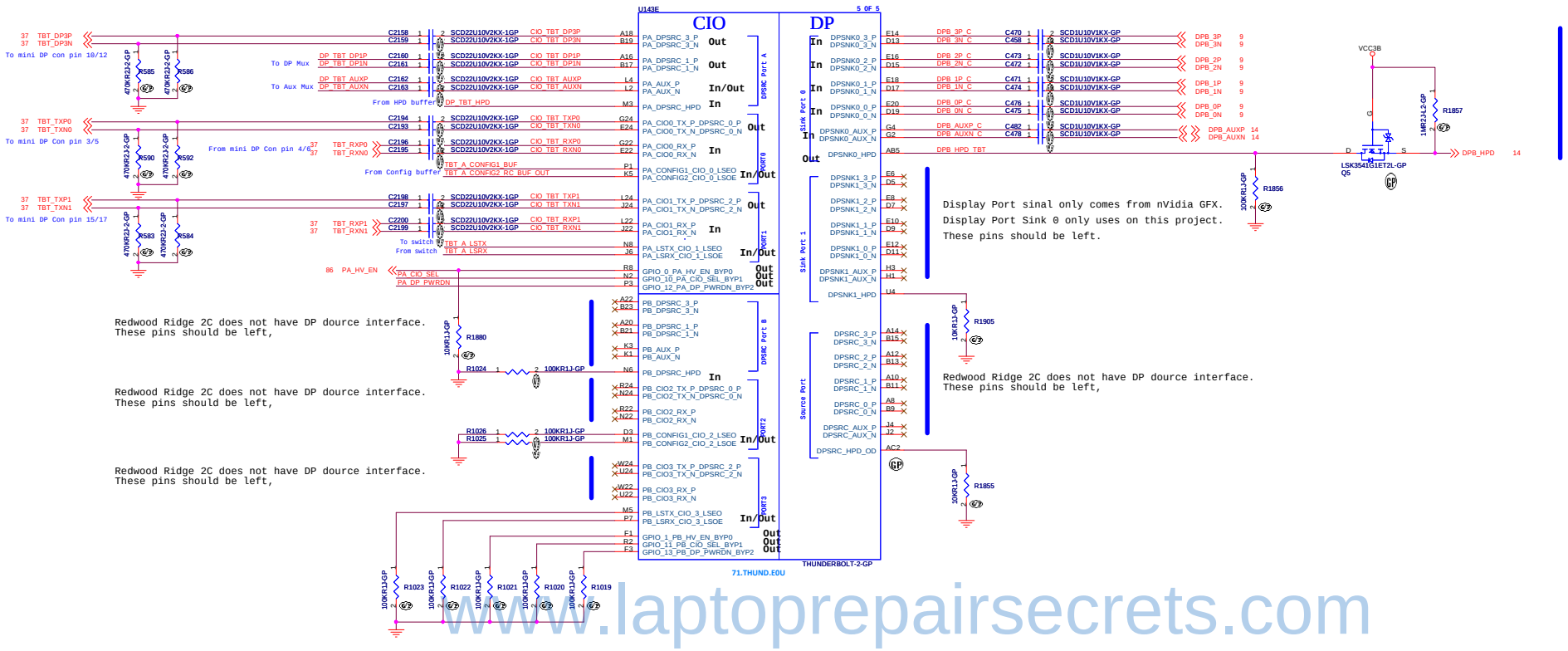
緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: ***Thunderbolt Redwood PCIE-CPU (5/6)***

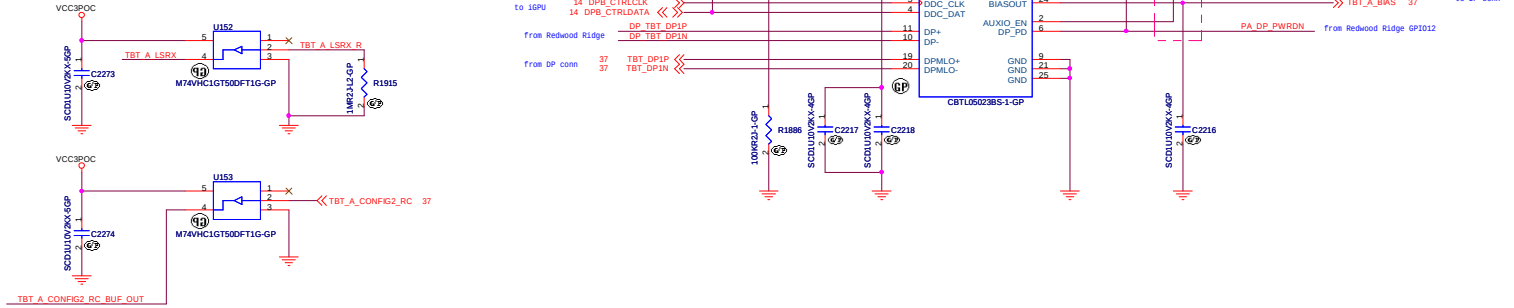
Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Thursday, September 12, 2013 Sheet 84 of 105

Redwood Ridge (4C 12x12)



Need to confirm



<Variant Name>

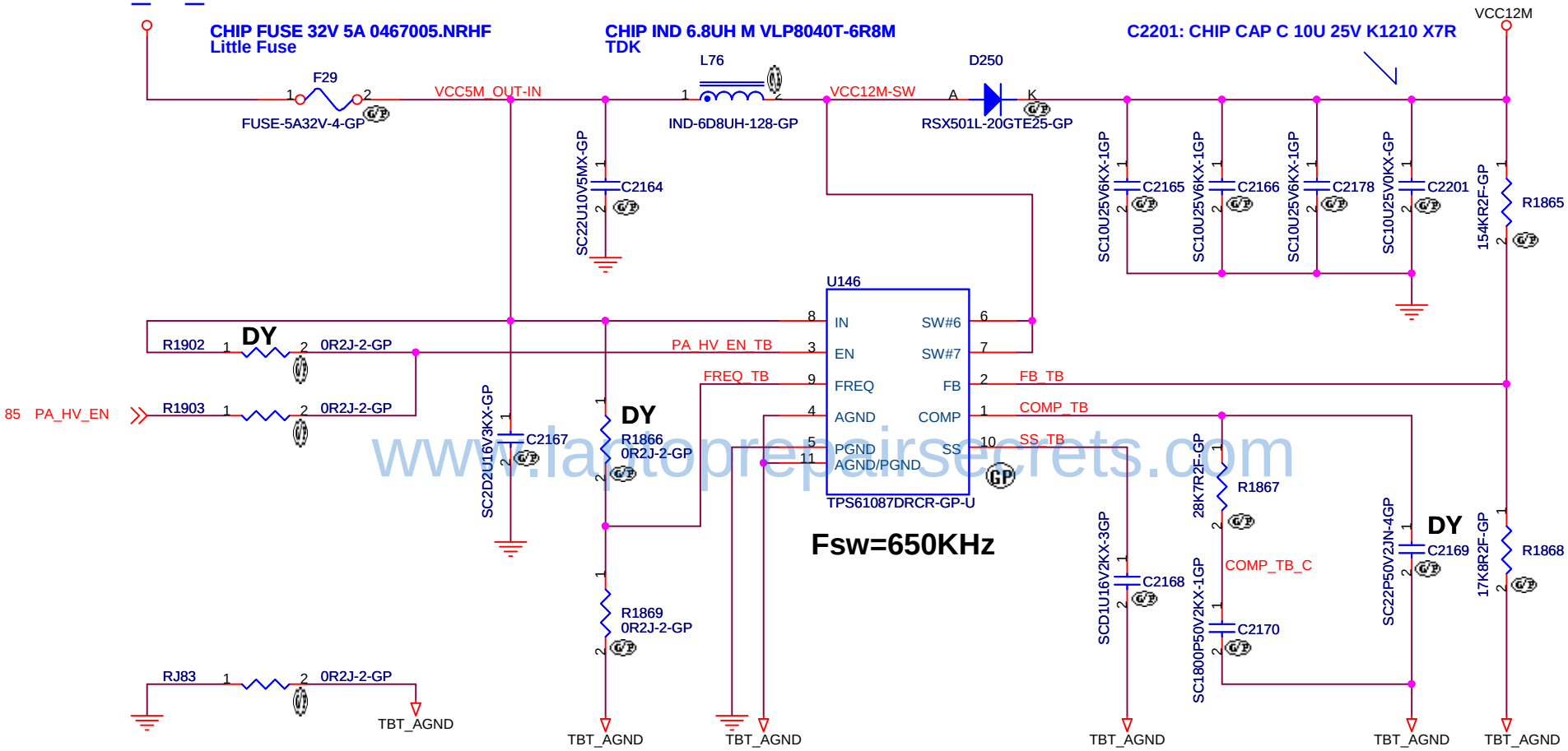
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: **Thunderbolt Redwood CIO/DP (6/6)**

Size	Document Number	Rev
A2	Kome-1 WS	-1

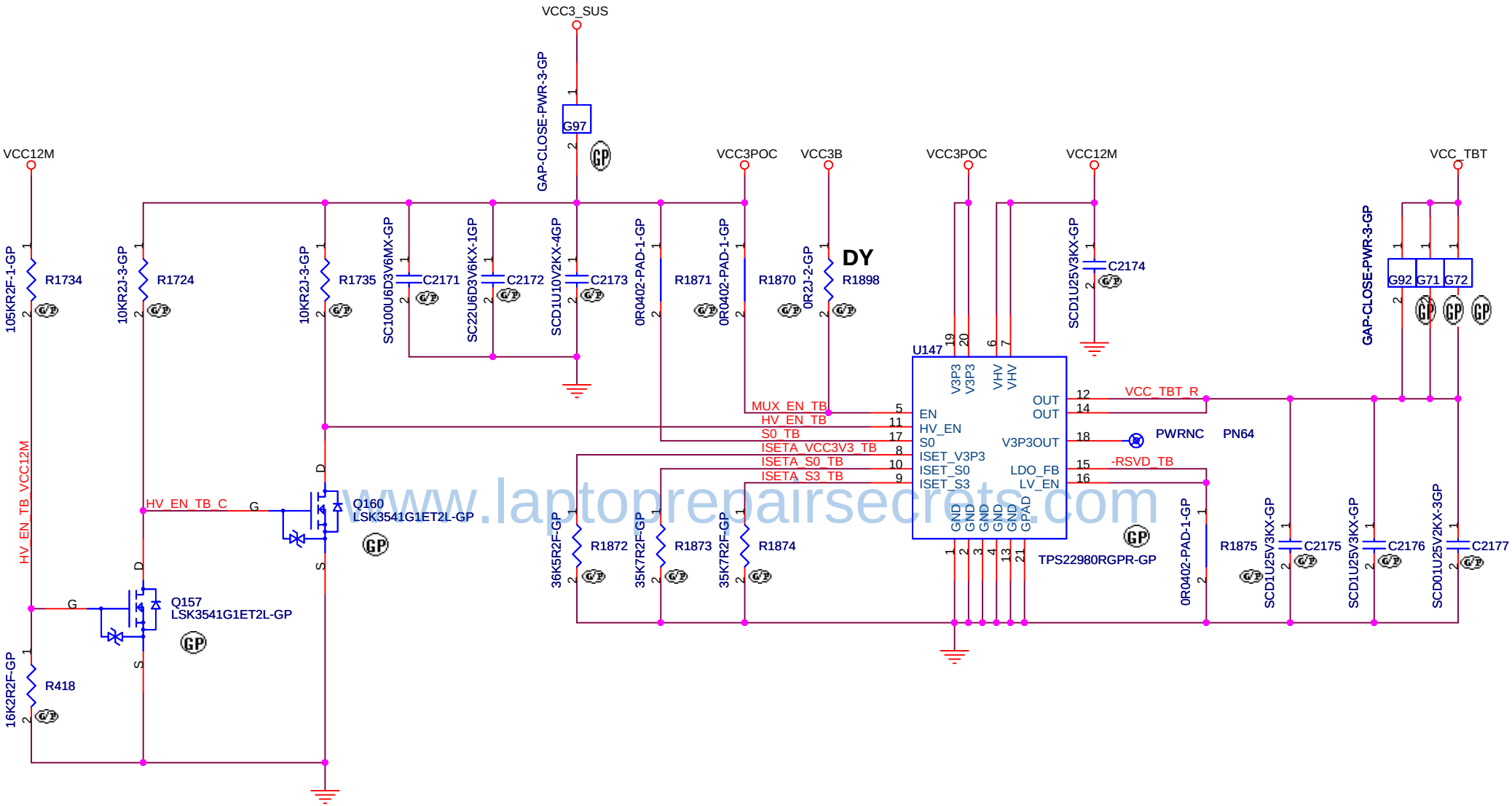
Date: Thursday, September 12, 2013 Sheet 85 of 105

VCC5M_IO_PWR-



<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 VCC12M***	
Size A4	Document Number **Kome-1 WS**	Rev -1
Date: Thursday, September 12, 2013	Sheet 86 of 105	



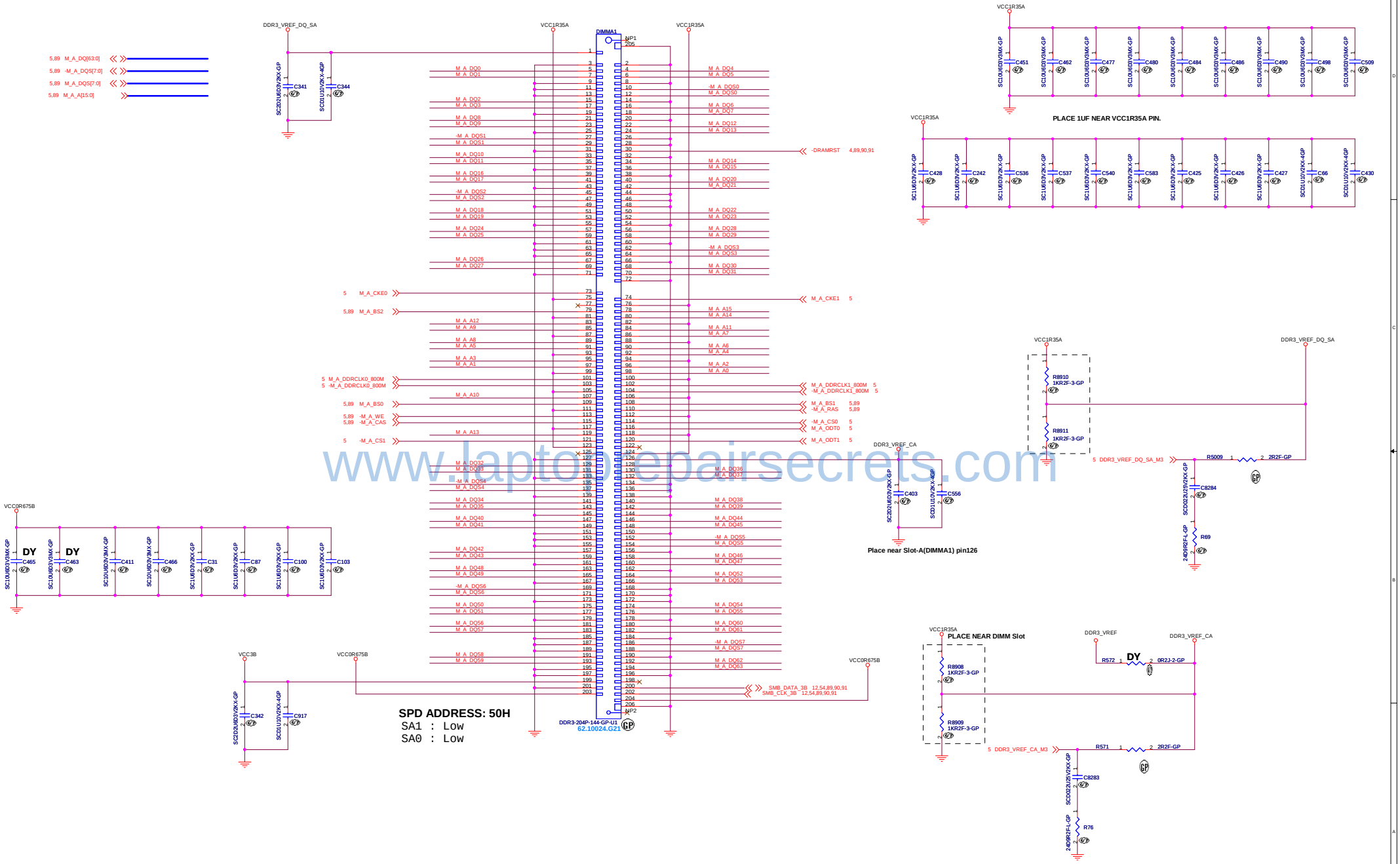
<Variant Name>

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

Title: ***Thunderbolt Power Mux***

Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Thursday, July 18, 2013 Sheet 87 of 105



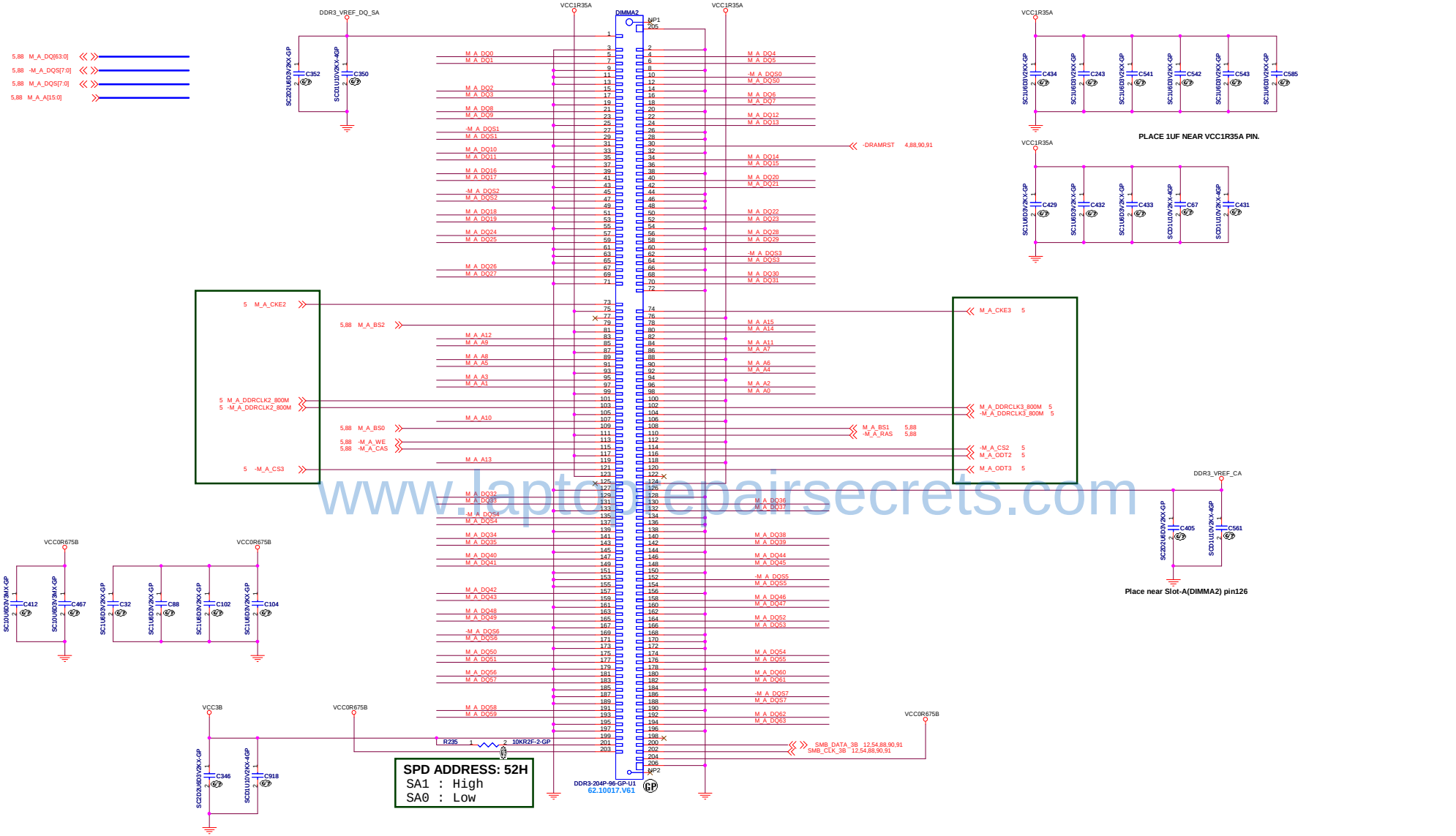
<Variant Name>

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

Title: DDR3L SO-DIMM Channel A Primary

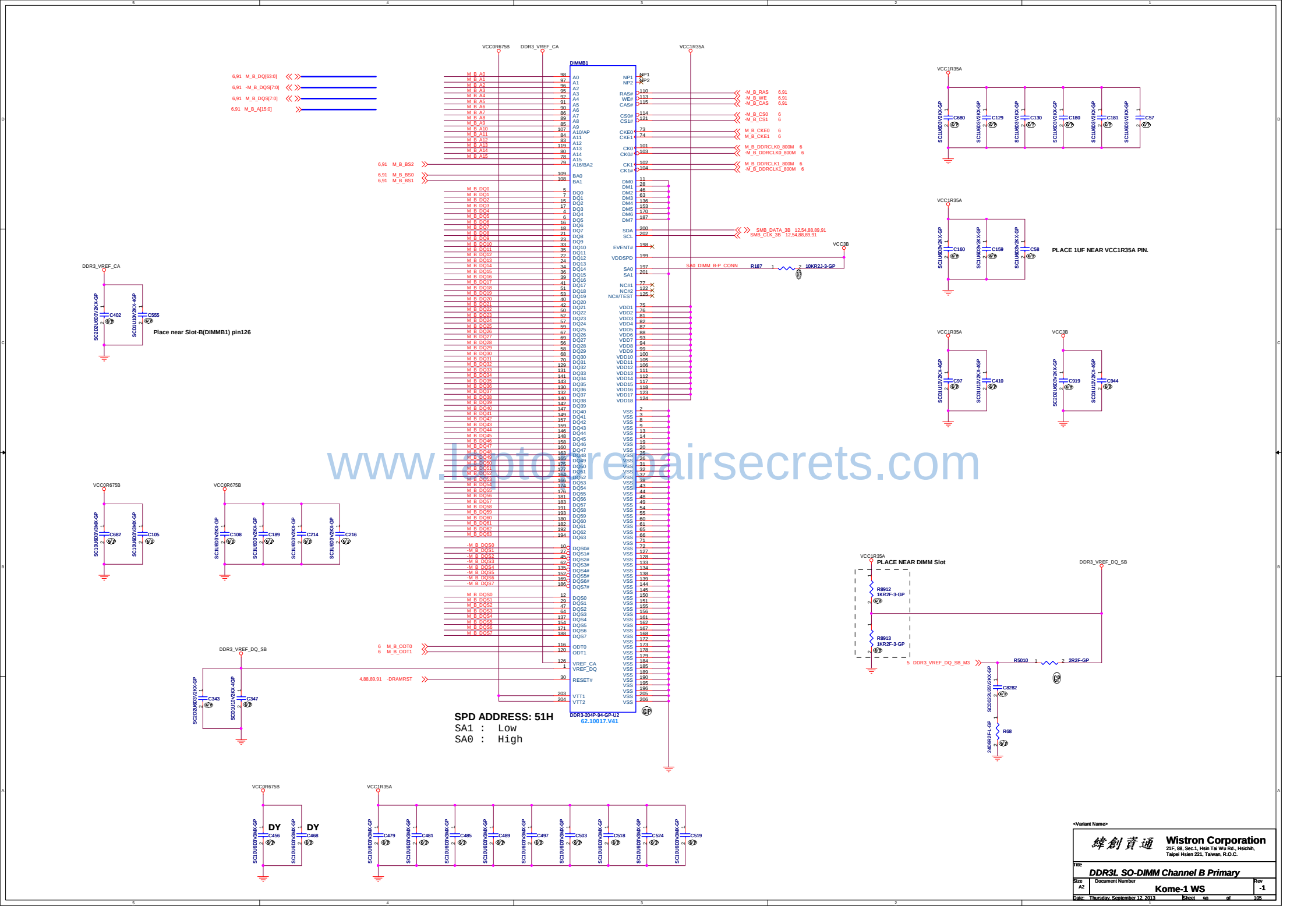
Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet aa of 105

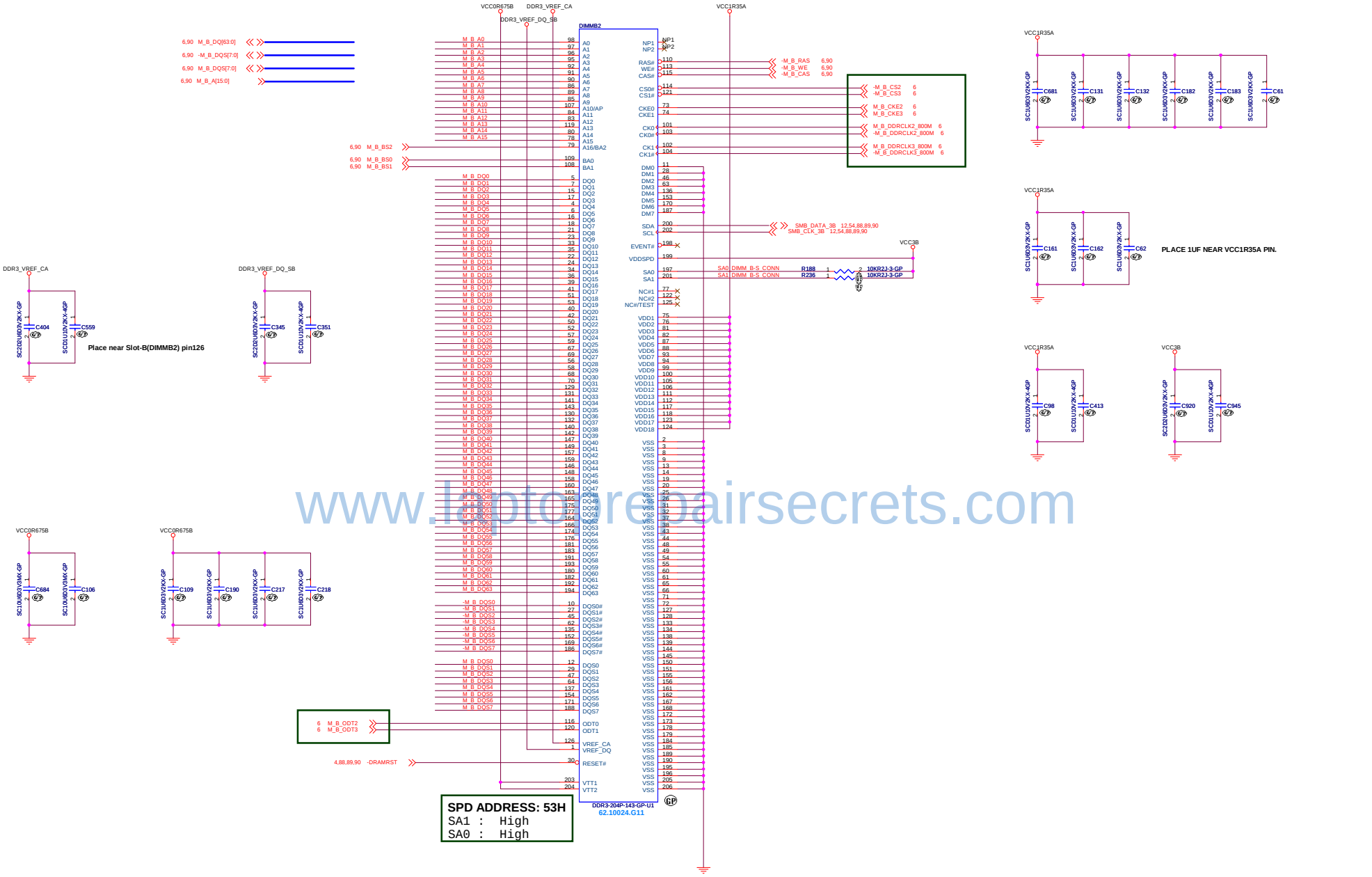


<Variant Name>

緯創資通 Wistron Corporation	21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.
Title	DDR3L SO-DIMM Channel A Secondary
Size: A2	Document Number: Kome-1 WS
Rev: -1	
Date: Thursday, September 12, 2013	Sheet 89 of 105



Variant Name	
Wistron Corporation	21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.
Title	DDR3L SO-DIMM Channel B Primary
Size	A2
Document Number	Kome-1 WS
Rev	-1
Date	Thursday, September 12, 2013
Sheet	90 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: DDR3L SO-DIMM Channel B Secondary

Size: A2 | Document Number: Kome-1 WS | Rev: -1

Date: Thursday, September 12, 2013 | Sheet 51 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: ***DIMM Topology***

Size	Document Number	Rev
A4	**Kome-1 WS**	-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: ***BLANK***

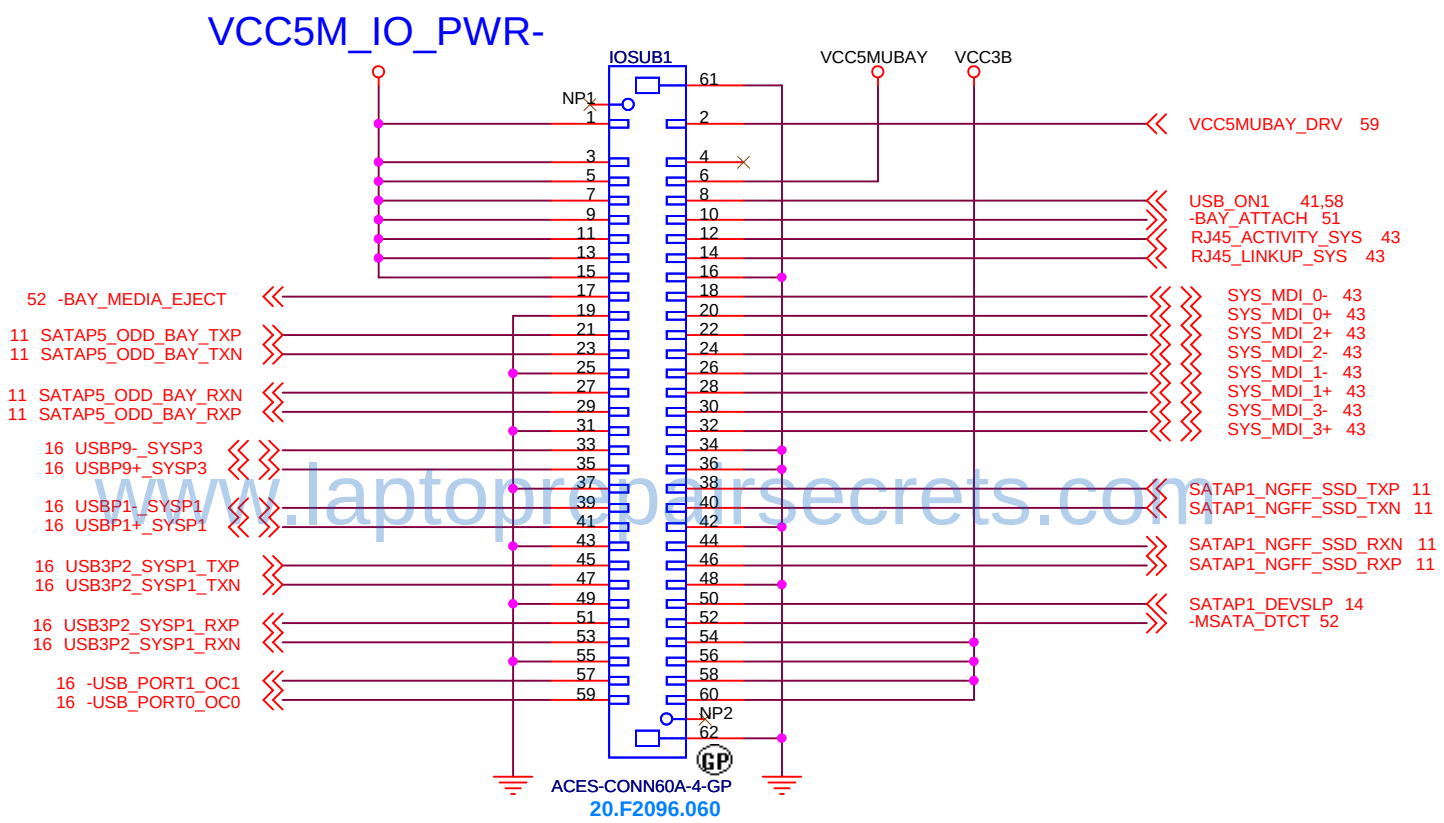
Size	Document Number	Rev
A4	Kome-1 WS	-1

Date: Wednesday, July 17, 2013 Sheet 93 of 105

Near IO SubCard CONN: IOSUB1 (p.094)

VCC5M_IO_PWR- — TPAD60 1 — TP28
VCC5MUBAY — TPAD60 1 — TP29

I/O SubCard Interface Connector

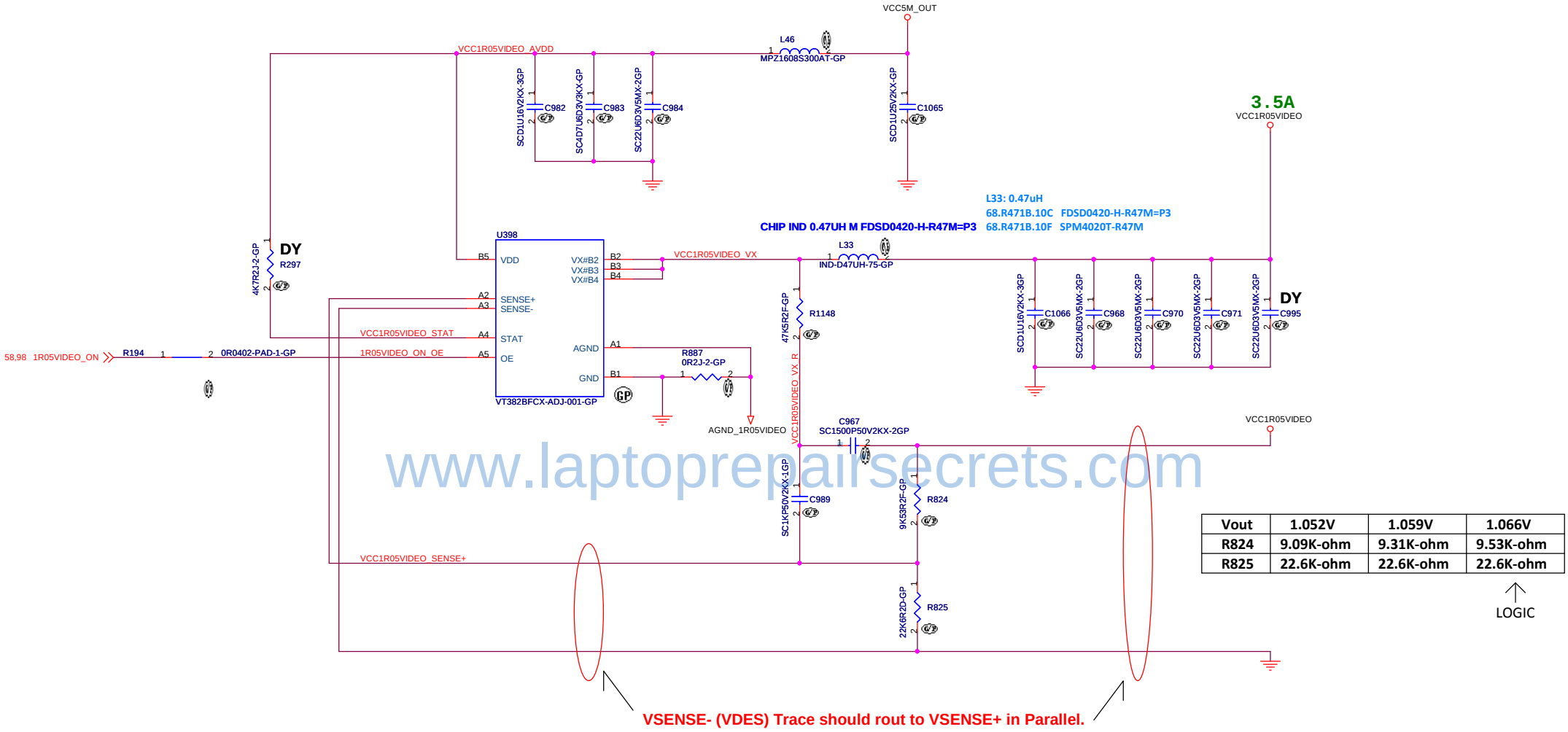


60-pins Board to Board Connector

<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

<Variant Name>

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

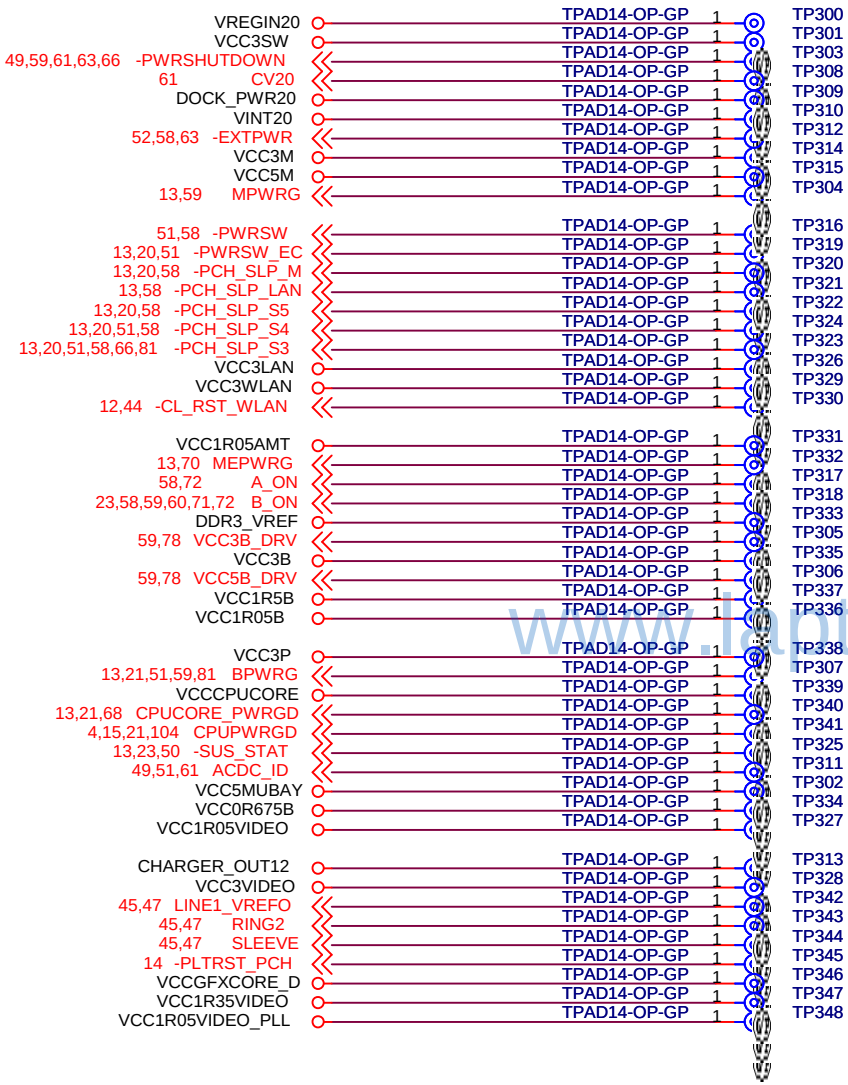
Title: DC/DC VCC1R05VIDEO

Size: A3 | Document Number: Kome-1 WS | Rev: -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	Document Number	Rev
A4	**Kome-1 WS**	-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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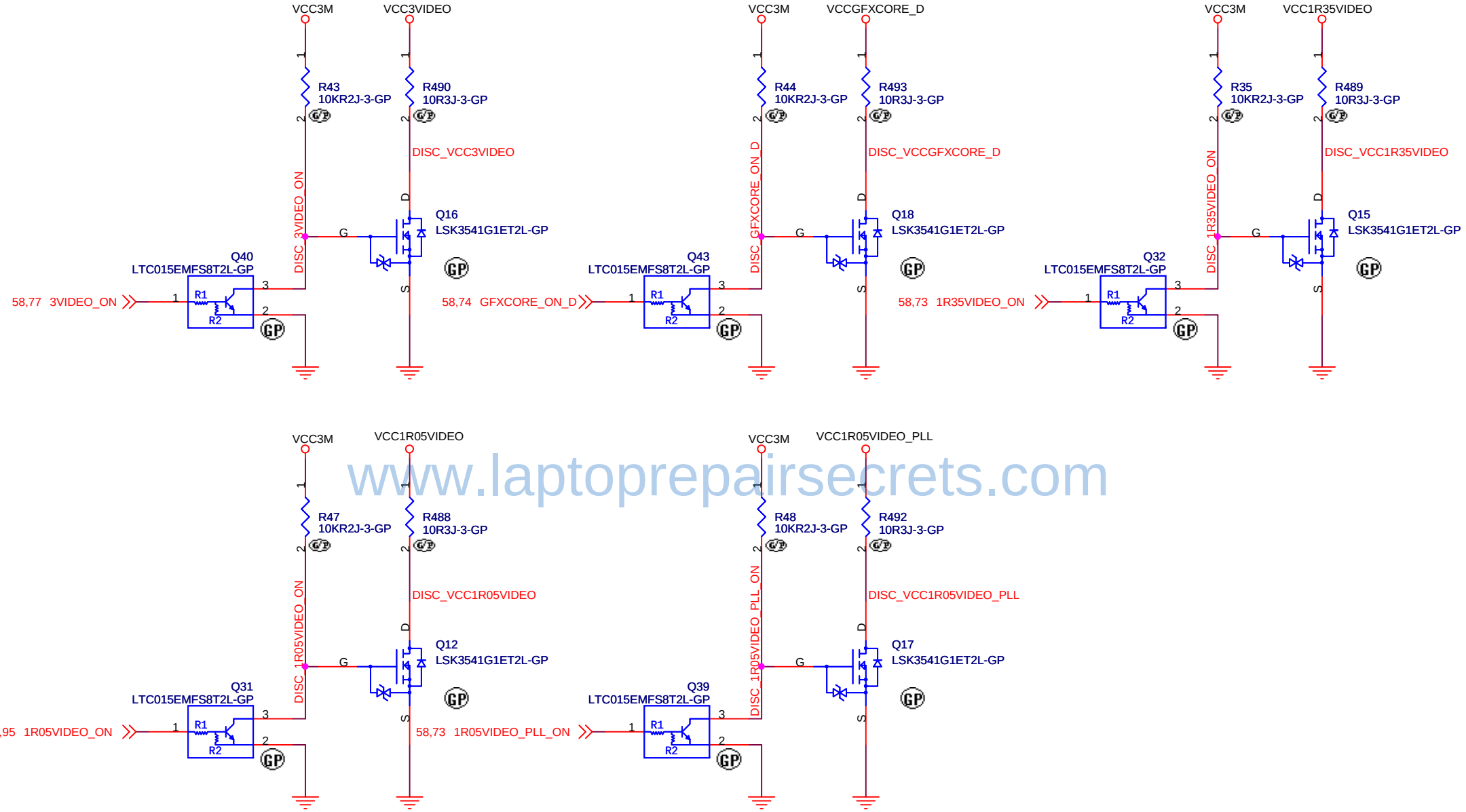
Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Wednesday, July 17, 2013 Sheet 97 of 105



<Variant Name>

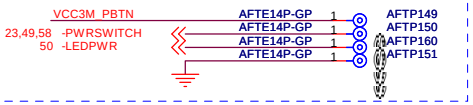
緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: ***Discharge Circuit***

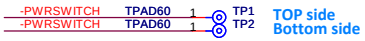
Size	Document Number	Rev
A4	**Kome-1 WS**	-1

Date: Thursday, September 12, 2013 Sheet 98 of 105

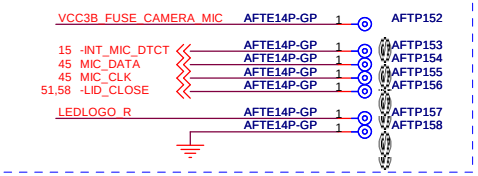
Near Power SW CONN: PBTN1 (p.099)

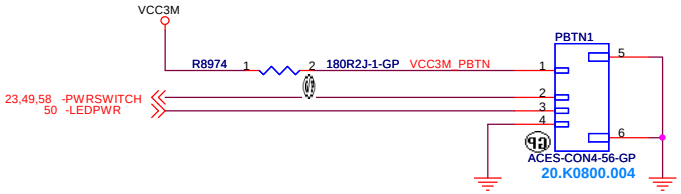


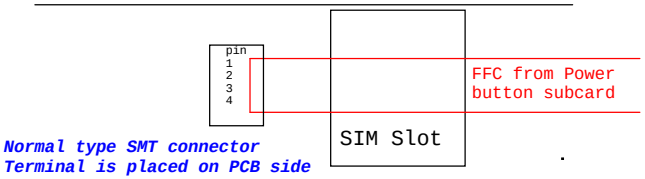
Near Power SW CONN: PBTN1 (p.099)



Near Camera CONN: CMR1 (p.099)

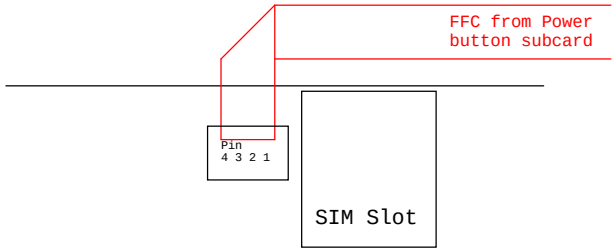




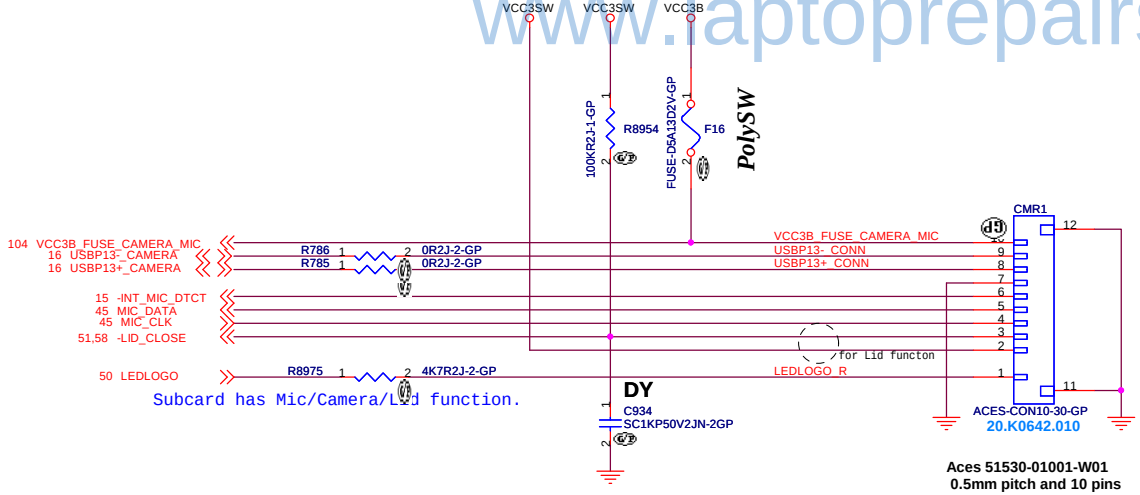


Normal type SMT connector
Terminal is placed on PCB side

OR

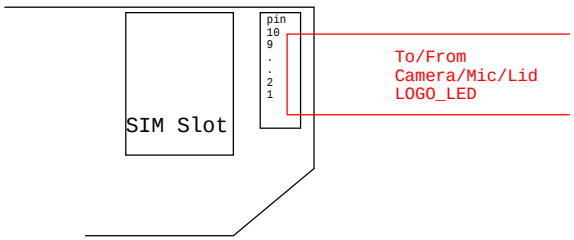


Reversed Type connector
Terminal is placed on opposit side from PCB



Subcard has Mic/Camera/Lid function.

Aces 51530-01001-W01
0.5mm pitch and 10 pins



<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: ***SubCard Power SW, Camera/Mic/Lid Interface***

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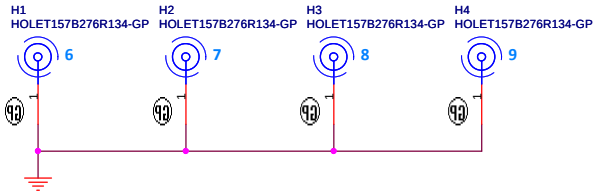
TOP VIEW

ZZ.SCREW.091



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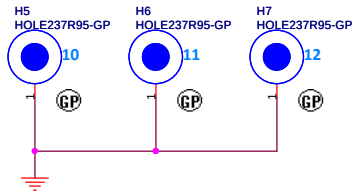
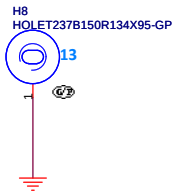


ZZ.SCREW.B31



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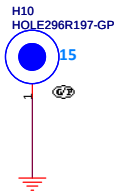

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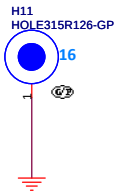
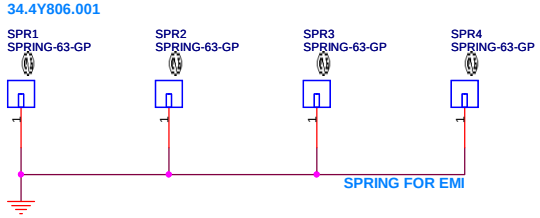


34.4Y806.001



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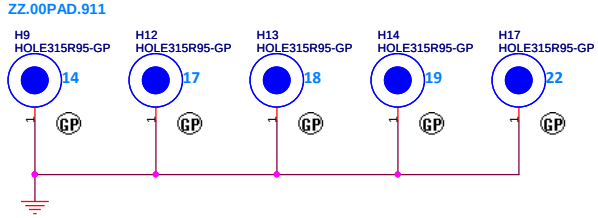

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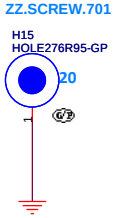

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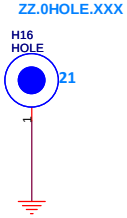
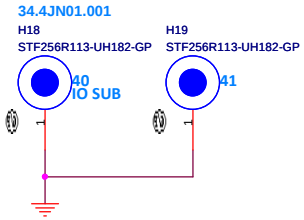
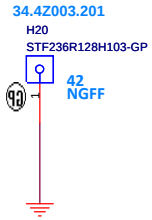


BOTTOM VIEW

34.4JN01.001



34.4Z003.201



<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: PTH FOR SCREW HOLES

Size	Document Number	Rev
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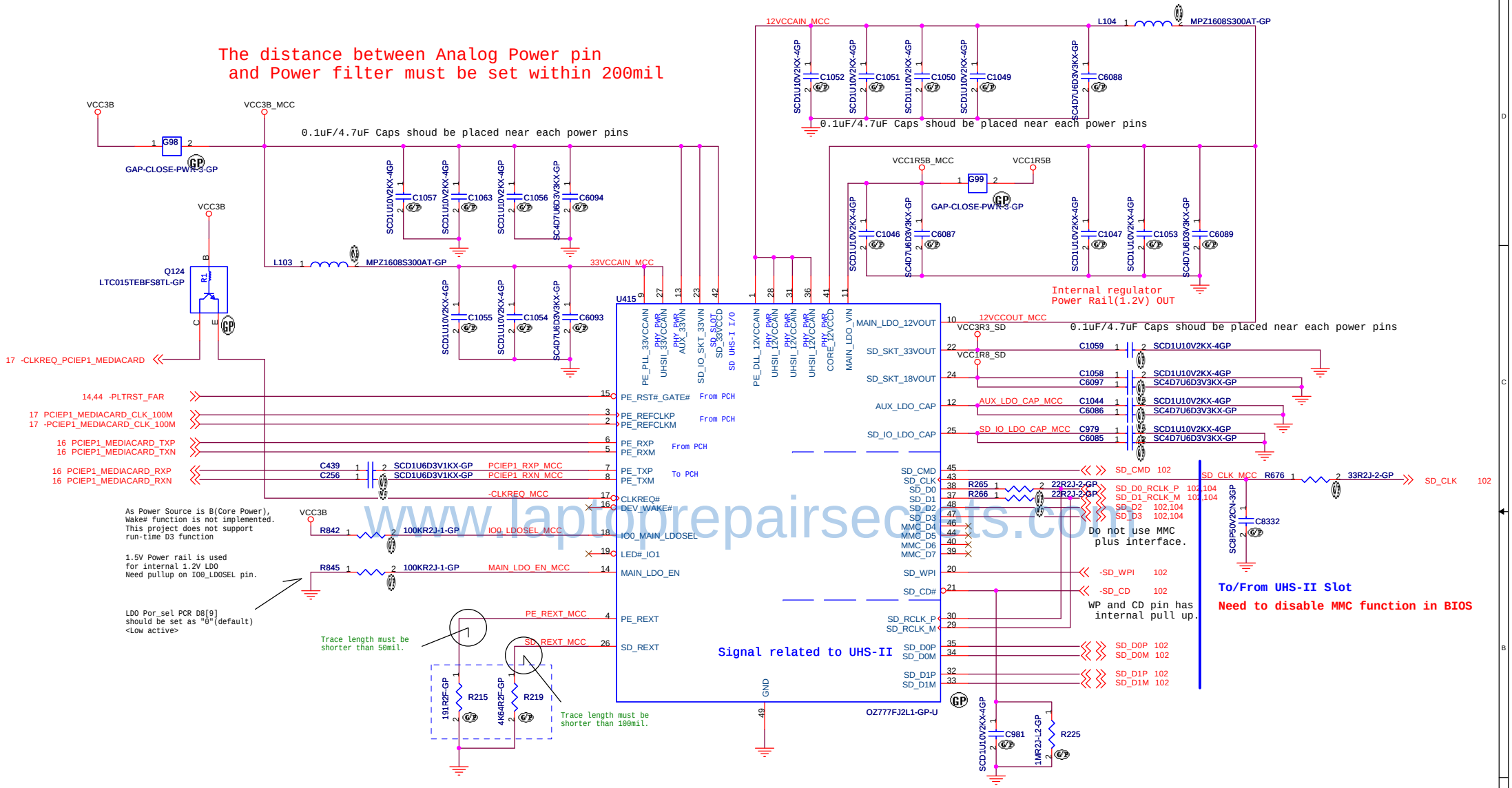
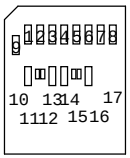


Bottom View



UHS II Interface	UHS I Inteface
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	

<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: ***Media Card Controller***

Size	Document Number	Rev
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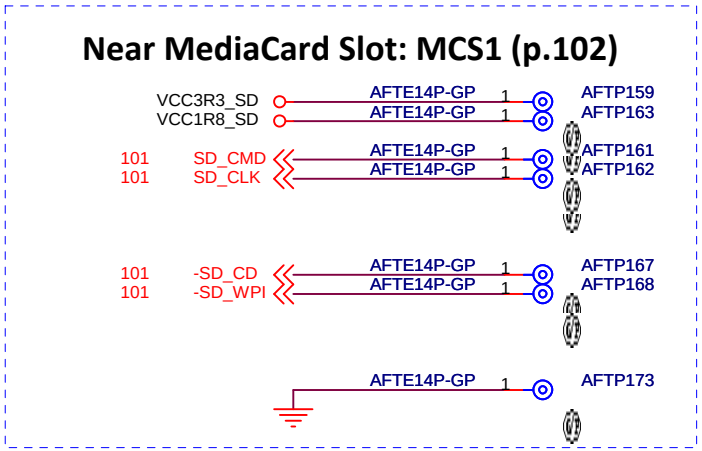
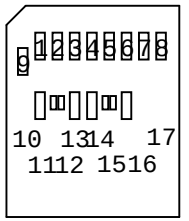
Near MediaCard Slot: MCS1 (p.102)

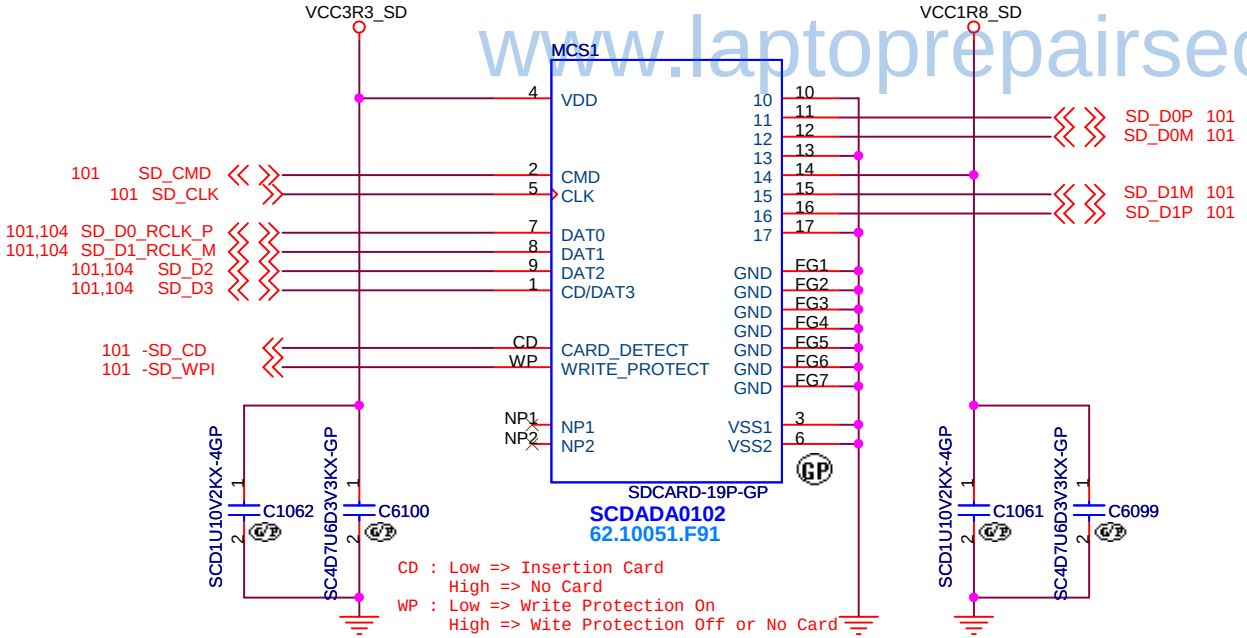


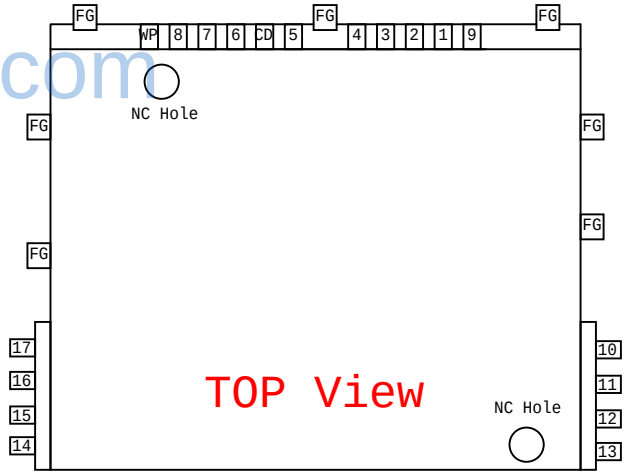
Normal type Pin No	UHS-II SD Slot SD Mode	UHS II Mode
1	CD/DAT3	
2	CMD	
3	VSS1	
4	VDD	VDD1
5	CLK	
6	VSS2	
7	DAT0	RCLKP
8	DAT1	RCLKM
9	DAT2	
10		VSS3
11		D0P
12		D0M
13		VSS4
14		VDD2
15		D1M
16		D1P
17		VSS5
CD	CARD DETECT	
WP	WRITE PROTECT	

Bottom View



UHS II Interface	UHS I Inteface
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	





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
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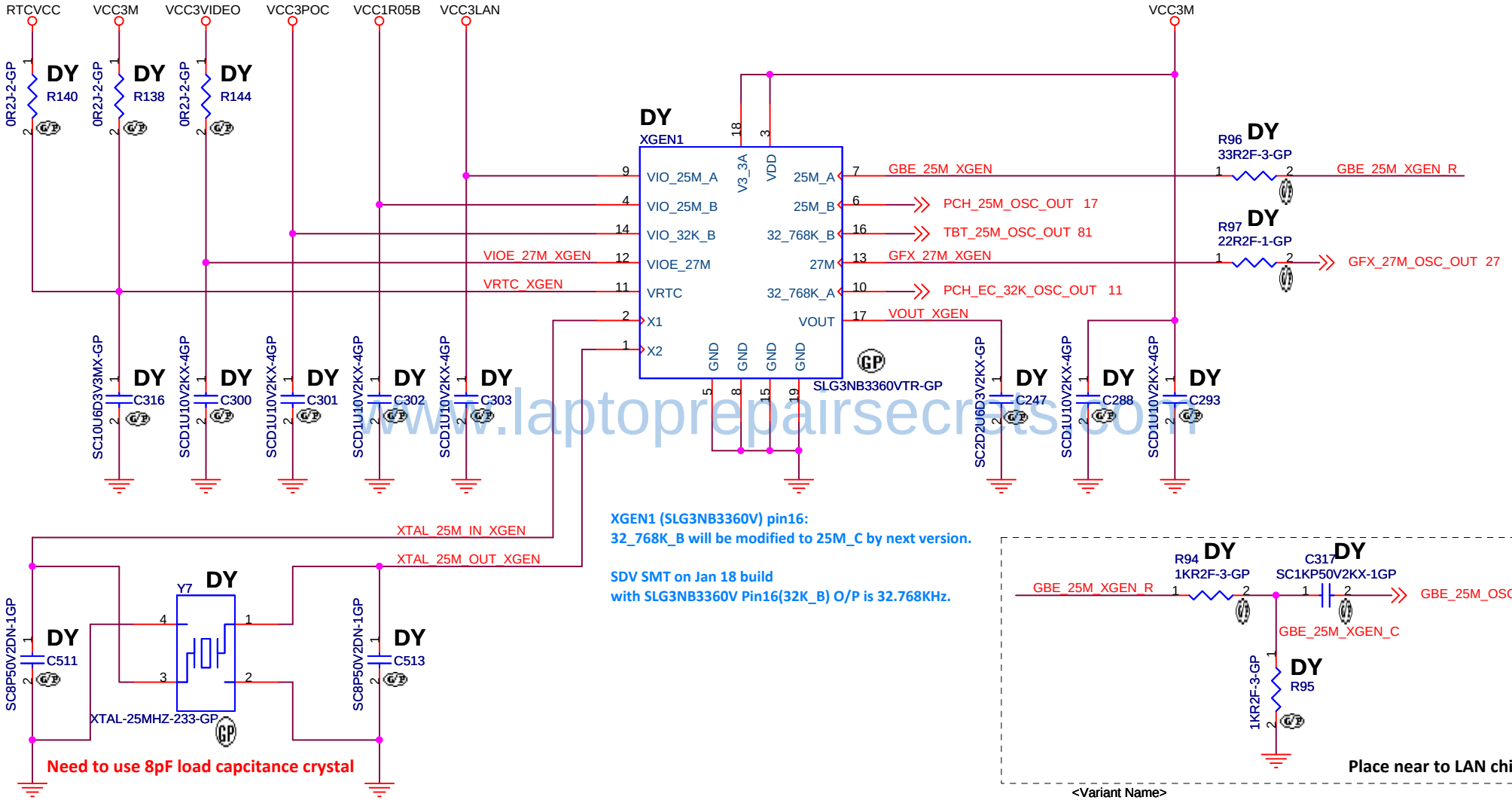

<Variant Name>

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

Title: **CLOCKGEN**

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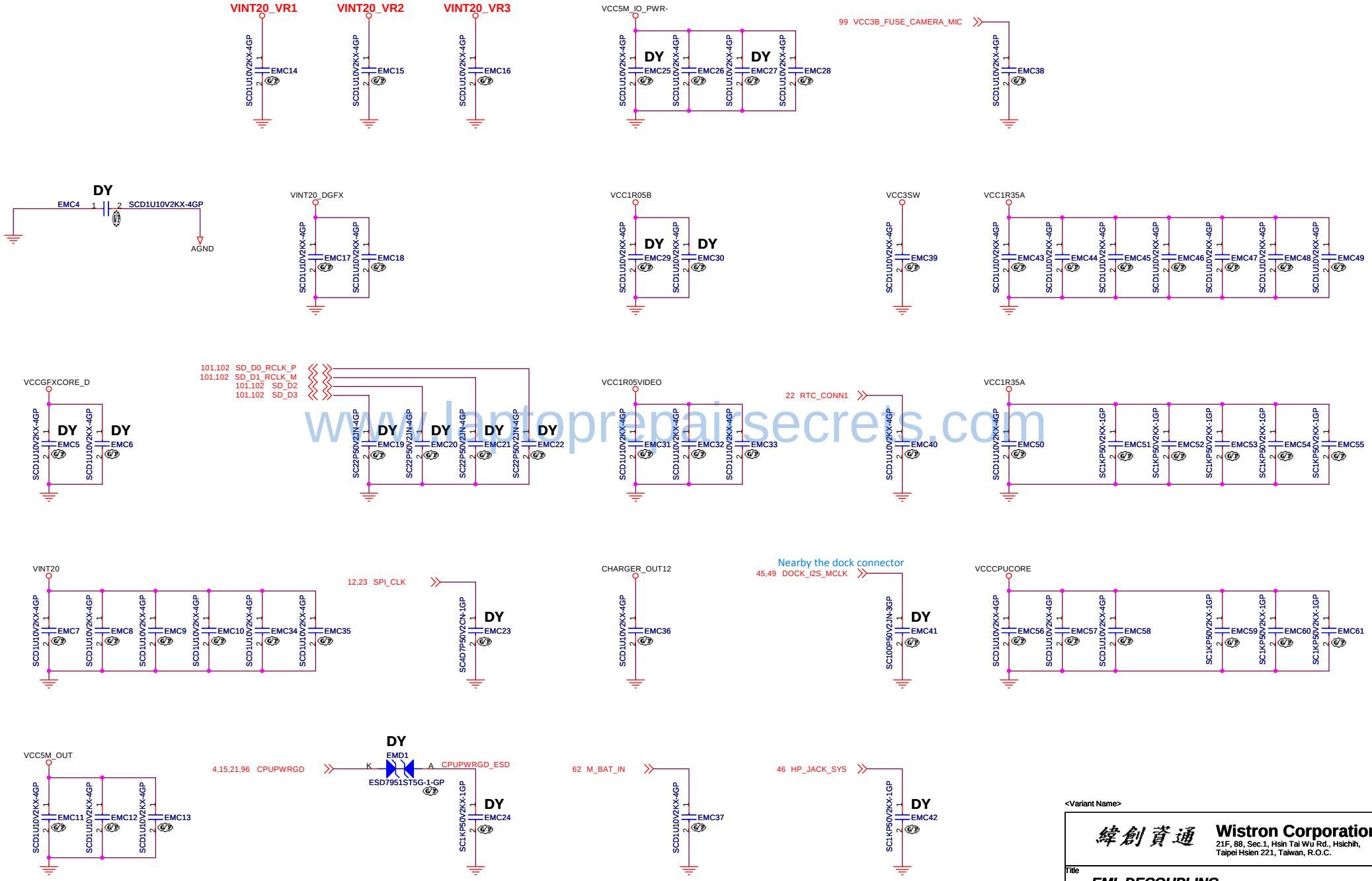
Long power trace EMI decoupling caps



<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: EMI DECOUPLING

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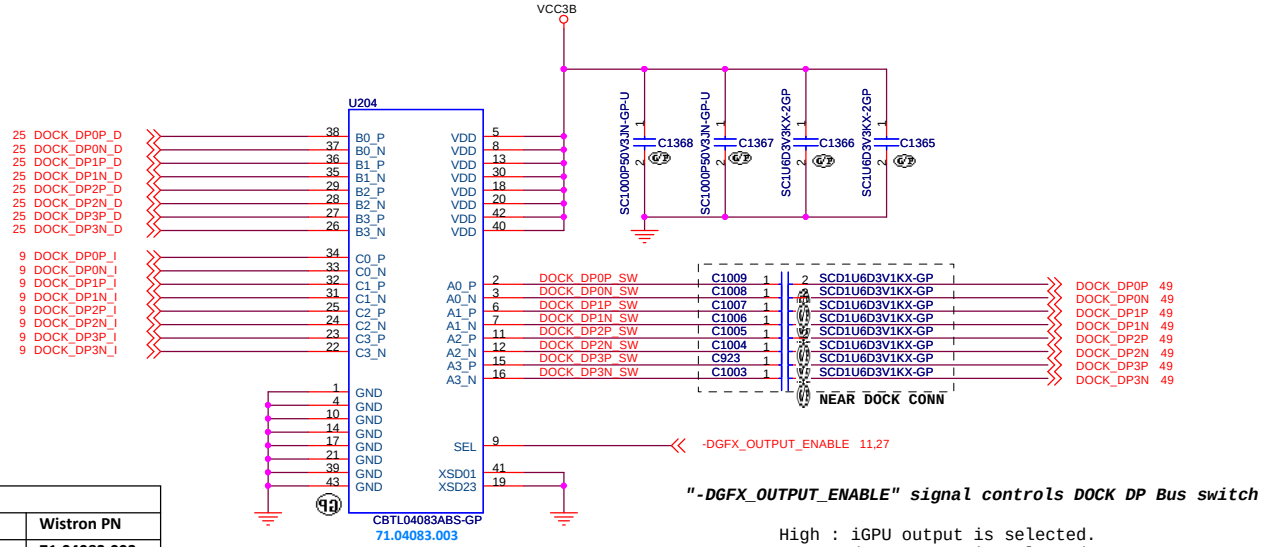
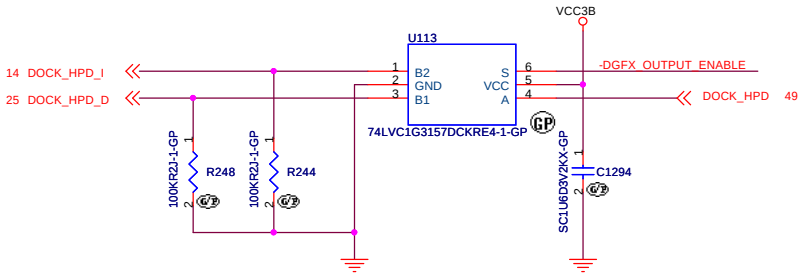


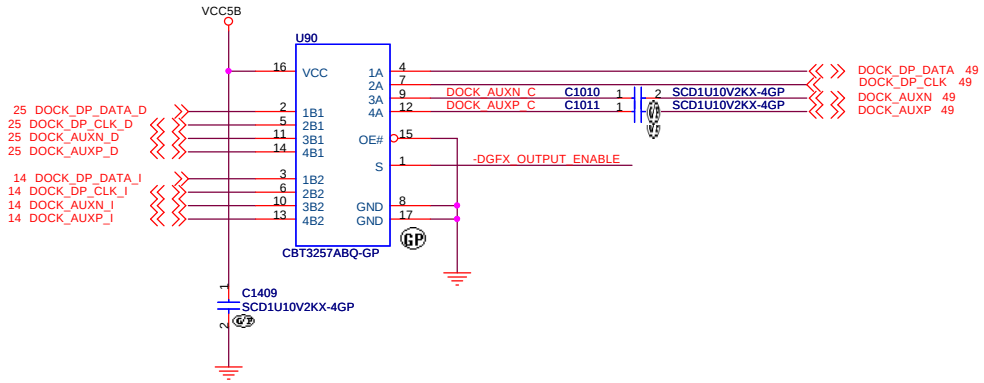
DOCK DP Switch		
Vendor	Vendor PN	Wistron PN
NXP	CBTL04083ABS	71.04083.003
Pericom	PI3PCIE3412ZHE+DAX	71.33412.B03

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

"-DGFX_OUTPUT_ENABLE" signal controls DOCK DP Bus switch

High : iGPU output is selected.
Low : dGPU output is selected.





<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**

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