

Tachi-1 SVT Logic Schematics

LTS-1
Rev: 1.0
Apr/16/2017

- | | | |
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| 18. CPU(16/16) : CFG/RESERVED | 53. AUDIO CONNECTOR | 87. DC/DC VCC1R8_SUS (BU90104) |
| 19. XDP CONNECTOR | 54. AUDIO JACK SENSE | 88. DC/DC VCCPCHCORE (NB695GD-C) |
| 20. RTC BATTERY | 55. AUDIO EXT MIC INTERFACE | 89. BLANK |
| 21. SPI FLASH | 56. AUDIO SPEAKER | 90. DC/DC VCC1R05VIDEO (NB682GD-C) |
| 22. DDR4 BASE MEMORY CH-A (1/2) | 57. AUDIO BEEP | 91. DC/DC VCCGFXCORE_D (NCP81272) |
| 23. DDR4 BASE MEMORY CH-A (2/2) | 58. DOCKING CONNECTOR | 92. DC/DC 1R5VIDEO (SN1409027) |
| 24. DDR4 SO DIMM CHANNEL-B (1/2) | 59. MEC1653 (1/3) | 93. LOAD SW PCH SUS/TRACK POINT |
| 25. DDR4 SO DIMM CHANNEL-B (2/2) | 60. MEC1653 (2/3) | 94. LOAD SW LAN |
| 26. LCD/LID/MIC/CAMERA/PWR SW | 61. MEC1653 (3/3) | 95. LOAD SW VIDEO |
| 27. DDI DEMULTIPLEXER | 62. KEYBOARD/TRACK POINT | 96. LOAD SW B |
| 28. BLANK | 63. TOUCH PAD/NFC/FPR | 97. LOAD SW WLAN |
| 29. HDMI CONNECTOR | 64. FAN CONNECTOR | 98. PTH FOR SCREW HOLES |
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| 33. USB POWER/CONNECTOR | 68. THINK ENGINE-2 (1/2) | 102. THUNDERBOLT PORT (TPS65982) |
| 34. SUB BOARD CONNECTOR | 69. THINK ENGINE-2 (2/2) | 103. THUNDERBOLT CONNECTOR |
| 35. GBE JACKSONVILLE | | |

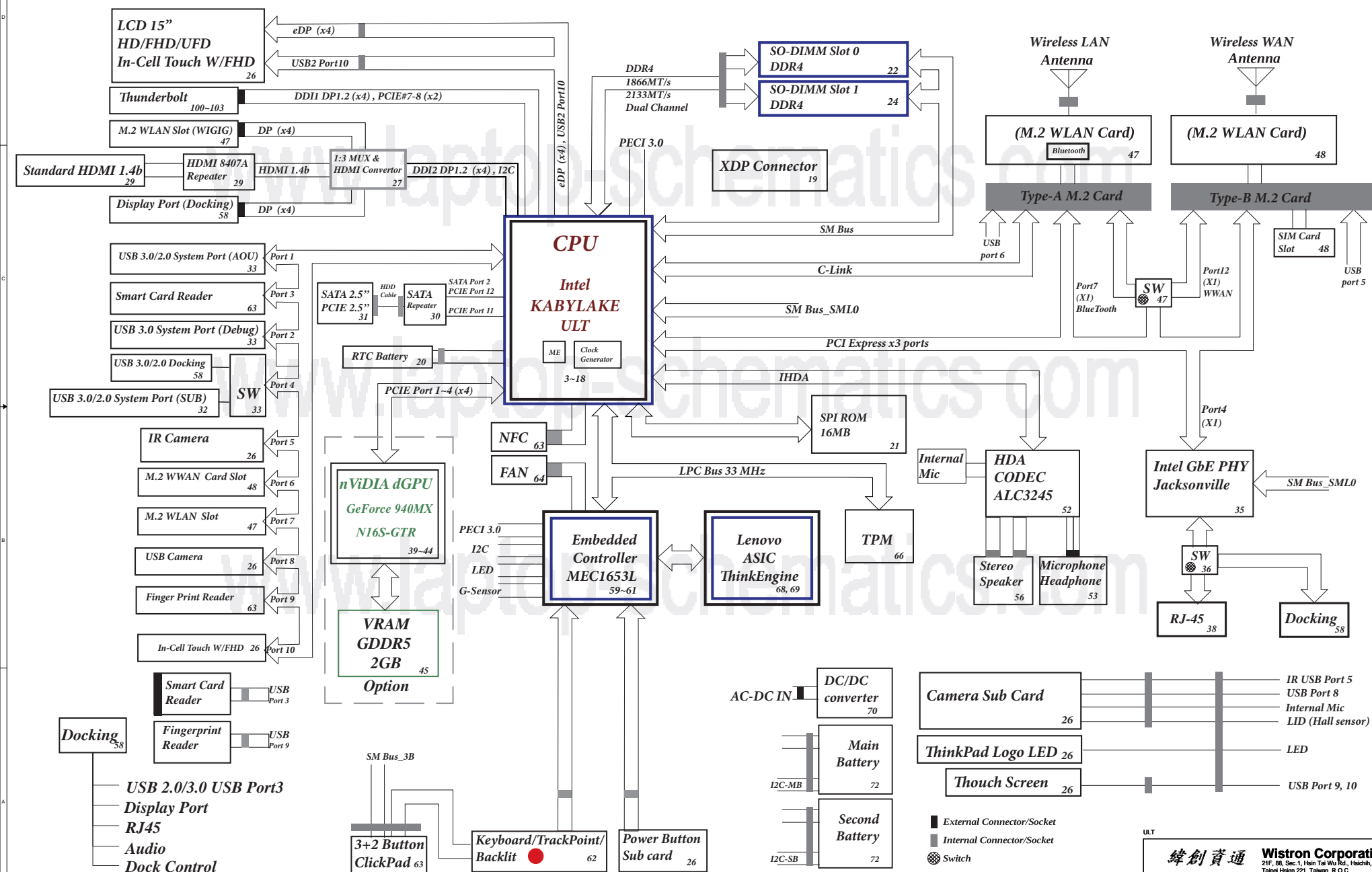
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Tachi-1 (KBL) Block Diagram

Project Code: 4PD0AB010001

PCB(Raw Card): 16820-1

Revision: -1



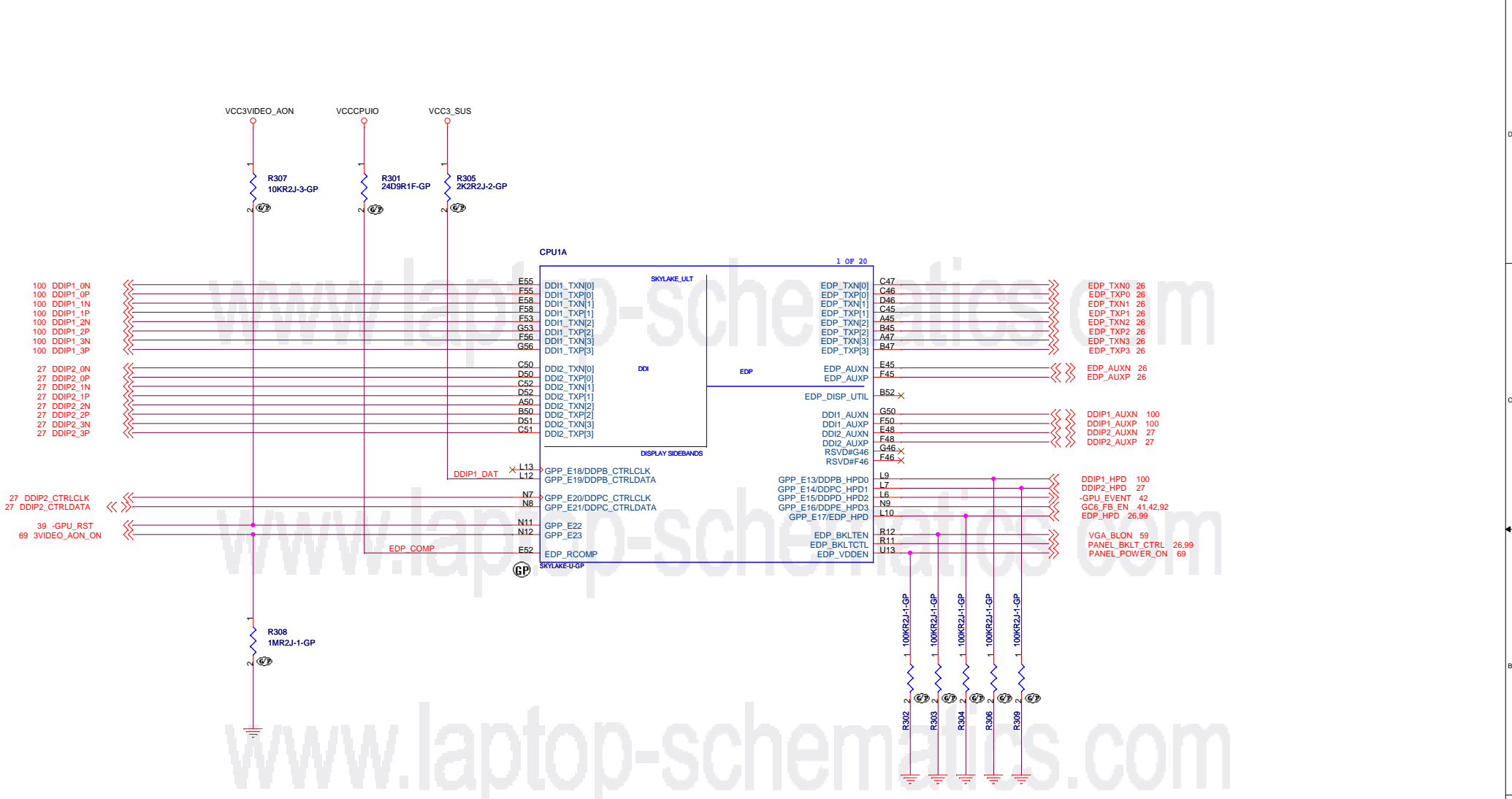
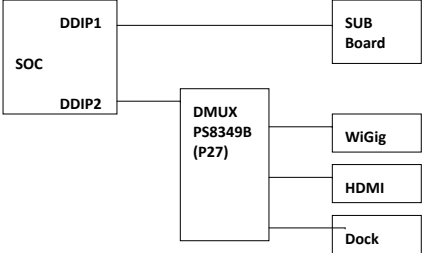


TABLE: Functional Strap

| | |
|---------------|-------------------------|
| DDPB_CTRLDATA | |
| HIGH | Port B is detected. |
| LOW | Port B is not detected. |
| DDPC_CTRLDATA | |
| HIGH | Port C is detected. |
| LOW | Port C is not detected. |



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Title

CPU(1/16) : DDI/EDP

Size

A3

Document Number

LTS-1

Rev

1

Date:

Tuesday, March 07, 2017

Sheet

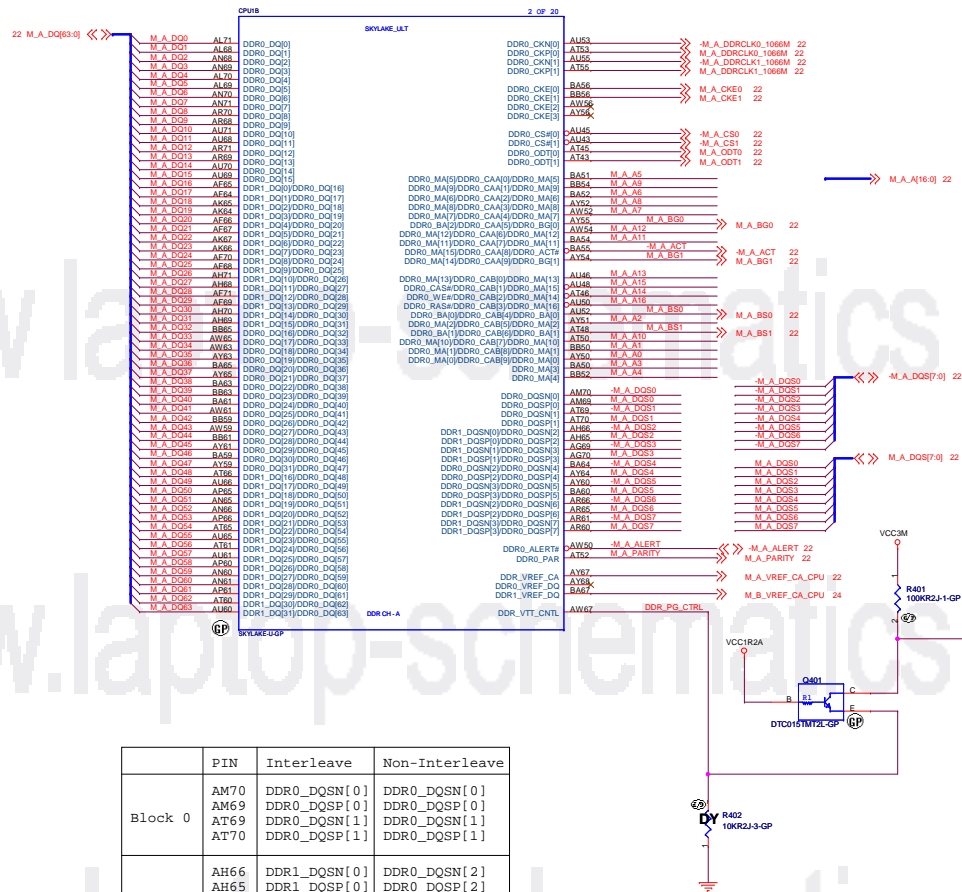
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| | PIN | Interleave | Non-Interleave |
|---------|------|-------------|----------------|
| Block 0 | AL71 | DDR0_DQ[0] | DDR0_DQ[0] |
| | AL68 | DDR0_DQ[1] | DDR0_DQ[1] |
| | AN68 | DDR0_DQ[2] | DDR0_DQ[2] |
| | AN69 | DDR0_DQ[3] | DDR0_DQ[3] |
| | AL70 | DDR0_DQ[4] | DDR0_DQ[4] |
| | AL69 | DDR0_DQ[5] | DDR0_DQ[5] |
| | AN70 | DDR0_DQ[6] | DDR0_DQ[6] |
| | AN71 | DDR0_DQ[7] | DDR0_DQ[7] |
| | AR70 | DDR0_DQ[8] | DDR0_DQ[8] |
| | AR68 | DDR0_DQ[9] | DDR0_DQ[9] |
| | AU71 | DDR0_DQ[10] | DDR0_DQ[10] |
| | AU68 | DDR0_DQ[11] | DDR0_DQ[11] |
| | AR71 | DDR0_DQ[12] | DDR0_DQ[12] |
| | AR69 | DDR0_DQ[13] | DDR0_DQ[13] |
| | AU70 | DDR0_DQ[14] | DDR0_DQ[14] |
| | AU69 | DDR0_DQ[15] | DDR0_DQ[15] |
| Block 1 | AF65 | DDR1_DQ[0] | DDR0_DQ[16] |
| | AF64 | DDR1_DQ[1] | DDR0_DQ[17] |
| | AK65 | DDR1_DQ[2] | DDR0_DQ[18] |
| | AK64 | DDR1_DQ[3] | DDR0_DQ[19] |
| | AF66 | DDR1_DQ[4] | DDR0_DQ[20] |
| | AF67 | DDR1_DQ[5] | DDR0_DQ[21] |
| | AK67 | DDR1_DQ[6] | DDR0_DQ[22] |
| | AK66 | DDR1_DQ[7] | DDR0_DQ[23] |
| | AF70 | DDR1_DQ[8] | DDR0_DQ[24] |
| | AF68 | DDR1_DQ[9] | DDR0_DQ[25] |
| | AH71 | DDR1_DQ[10] | DDR0_DQ[26] |
| | AH68 | DDR1_DQ[11] | DDR0_DQ[27] |
| | AF71 | DDR1_DQ[12] | DDR0_DQ[28] |
| | AF69 | DDR1_DQ[13] | DDR0_DQ[29] |
| | AH70 | DDR1_DQ[14] | DDR0_DQ[30] |
| | AH69 | DDR1_DQ[15] | DDR0_DQ[31] |
| Block 2 | BB65 | DDR0_DQ[16] | DDR0_DQ[32] |
| | AW65 | DDR0_DQ[17] | DDR0_DQ[33] |
| | AW63 | DDR0_DQ[18] | DDR0_DQ[34] |
| | AY63 | DDR0_DQ[19] | DDR0_DQ[35] |
| | BA65 | DDR0_DQ[20] | DDR0_DQ[36] |
| | AY65 | DDR0_DQ[21] | DDR0_DQ[37] |
| | BA63 | DDR0_DQ[22] | DDR0_DQ[38] |
| | BB63 | DDR0_DQ[23] | DDR0_DQ[39] |
| | BA61 | DDR0_DQ[24] | DDR0_DQ[40] |
| | AW61 | DDR0_DQ[25] | DDR0_DQ[41] |
| Block 3 | BB59 | DDR0_DQ[26] | DDR0_DQ[42] |
| | AW59 | DDR0_DQ[27] | DDR0_DQ[43] |
| | BB61 | DDR0_DQ[28] | DDR0_DQ[44] |
| | AY61 | DDR0_DQ[29] | DDR0_DQ[45] |
| | BA59 | DDR0_DQ[30] | DDR0_DQ[46] |
| | AY59 | DDR0_DQ[31] | DDR0_DQ[47] |
| | AT66 | DDR1_DQ[16] | DDR0_DQ[48] |
| | AU66 | DDR1_DQ[17] | DDR0_DQ[49] |
| | AP65 | DDR1_DQ[18] | DDR0_DQ[50] |
| | AN65 | DDR1_DQ[19] | DDR0_DQ[51] |
| Block 3 | AN66 | DDR1_DQ[20] | DDR0_DQ[52] |
| | AP66 | DDR1_DQ[21] | DDR0_DQ[53] |
| | AT65 | DDR1_DQ[22] | DDR0_DQ[54] |
| | AU65 | DDR1_DQ[23] | DDR0_DQ[55] |
| | AT61 | DDR1_DQ[24] | DDR0_DQ[56] |
| | AU61 | DDR1_DQ[25] | DDR0_DQ[57] |
| | AP60 | DDR1_DQ[26] | DDR0_DQ[58] |
| | AN60 | DDR1_DQ[27] | DDR0_DQ[59] |
| | AN61 | DDR1_DQ[28] | DDR0_DQ[60] |
| | AP61 | DDR1_DQ[29] | DDR0_DQ[61] |
| Block 3 | AT60 | DDR1_DQ[30] | DDR0_DQ[62] |
| | AU60 | DDR1_DQ[31] | DDR0_DQ[63] |

LOGIC



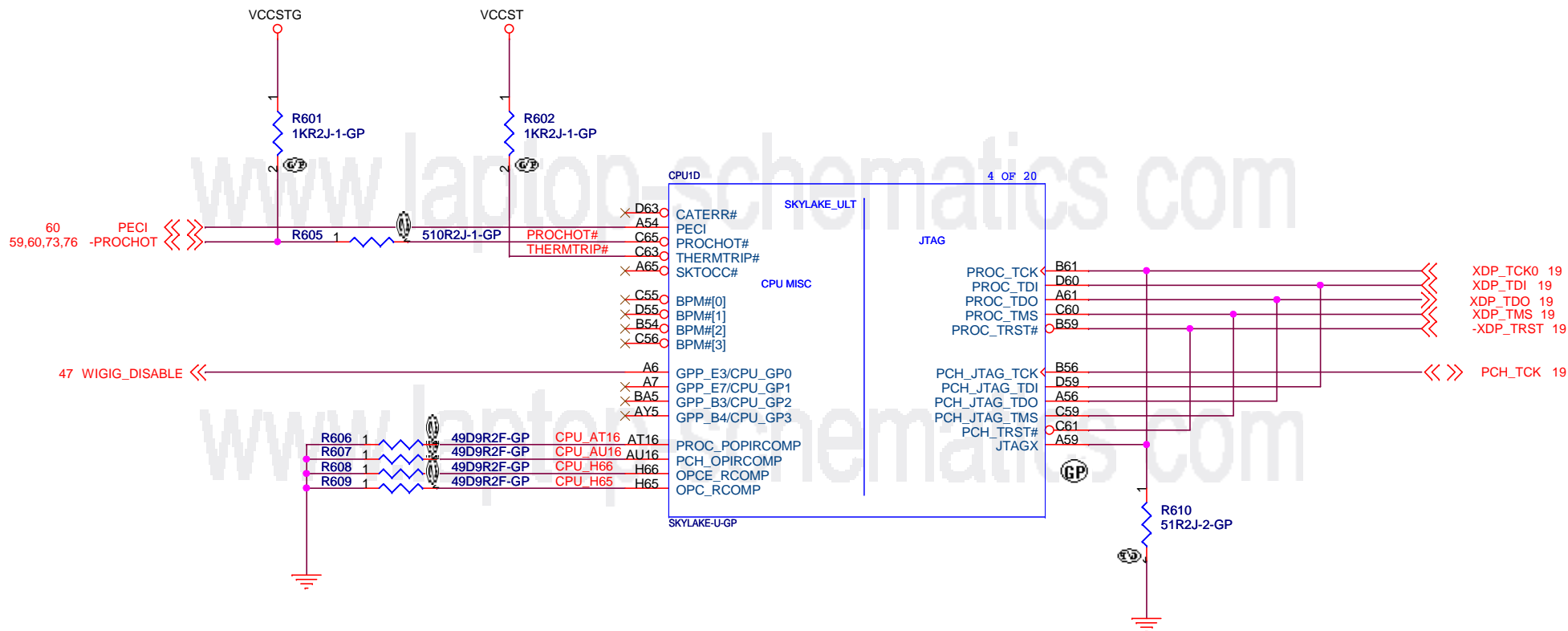
| | PIN | Interleave | Non-Interleave |
|---------|------|--------------|----------------|
| Block 0 | AM70 | DDR0_DQSN[0] | DDR0_DQSN[0] |
| | AM69 | DDR0_DQSP[0] | DDR0_DQSP[0] |
| | AT69 | DDR0_DQSN[1] | DDR0_DQSN[1] |
| | AT70 | DDR0_DQSP[1] | DDR0_DQSP[1] |
| Block 1 | AH66 | DDR1_DQSN[0] | DDR0_DQSP[2] |
| | AH65 | DDR1_DQSP[0] | DDR0_DQSP[2] |
| | AG69 | DDR1_DQSN[1] | DDR0_DQSN[3] |
| | AG70 | DDR1_DQSP[1] | DDR0_DQSP[3] |
| Block 2 | BA64 | DDR0_DQSN[2] | DDR0_DQSN[4] |
| | AY64 | DDR0_DQSP[2] | DDR0_DQSP[4] |
| | AY60 | DDR0_DQSN[3] | DDR0_DQSN[5] |
| | BA60 | DDR0_DQSP[3] | DDR0_DQSP[5] |
| Block 3 | AR66 | DDR1_DQSN[2] | DDR0_DQSN[6] |
| | AR65 | DDR1_DQSP[2] | DDR0_DQSP[6] |
| | AR61 | DDR1_DQSN[3] | DDR0_DQSN[7] |
| | AR60 | DDR1_DQSP[3] | DDR0_DQSP[7] |

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| PIN | DDR3L | LPDDR3 | DDR4 |
|------|-------------|-------------|-------------|
| BA51 | DDR0_MA[5] | DDR0_CAA[0] | DDR0_MA[5] |
| BB54 | DDR0_MA[9] | DDR0_CAA[1] | DDR0_MA[9] |
| BA52 | DDR0_MA[6] | DDR0_CAA[2] | DDR0_MA[6] |
| AY52 | DDR0_MA[8] | DDR0_CAA[3] | DDR0_MA[8] |
| AW52 | DDR0_MA[7] | DDR0_CAA[4] | DDR0_MA[7] |
| AY55 | DDR0_BA[2] | DDR0_CAA[5] | DDR0_BG[0] |
| AW54 | DDR0_MA[12] | DDR0_CAA[6] | DDR0_MA[12] |
| BA54 | DDR0_MA[11] | DDR0_CAA[7] | DDR0_MA[11] |
| BA55 | DDR0_MA[15] | DDR0_CAA[8] | DDR0_ACT# |
| AY54 | DDR0_MA[14] | DDR0_CAA[9] | DDR0_BG[1] |
| AU46 | DDR0_MA[13] | DDR0_CAB[0] | DDR0_MA[13] |
| AU48 | DDR0_CAS# | DDR0_CAB[1] | DDR0_MA[15] |
| AT46 | DDR0_WE# | DDR0_CAB[2] | DDR0_MA[14] |
| AU50 | DDR0_RAS# | DDR0_CAB[3] | DDR0_MA[16] |
| AU52 | DDR0_BA[0] | DDR0_CAB[4] | DDR0_BA[0] |
| AY51 | DDR0_MA[2] | DDR0_CAB[5] | DDR0_MA[2] |
| AT48 | DDR0_BA[1] | DDR0_CAB[6] | DDR0_BA[1] |
| AT50 | DDR0_MA[10] | DDR0_CAB[7] | DDR0_MA[10] |
| BB50 | DDR0_MA[1] | DDR0_CAB[8] | DDR0_MA[1] |
| AY50 | DDR0_MA[0] | DDR0_CAB[9] | DDR0_MA[0] |
| BA50 | DDR0_MA[3] | Not Used | DDR0_MA[3] |
| BB52 | DDR0_MA[4] | Not Used | DDR0_MA[4] |

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Title **CPU(4/16) : MISC/JTAG**

Size
A4

Document Number

LTS-1

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1

Date: Friday, February 24, 2017

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TABLE: Functional Strap

| GPP_C5/SML0ALERT# (LPC or eSPI) | |
|---------------------------------|---------------------------|
| HIGH | eSPI is selected |
| LOW | LPC is selected (Default) |

← LOGIC

TABLE: Functional Strap

| GPP_C2/SMBALERT# (TLS Confidentiality) | |
|----------------------------------------|-------------------------------------------|
| HIGH | Enable ME Crypto TLS with Confidentiality |
| LOW | Disable ME Crypto TLS (Default) |

← LOGIC

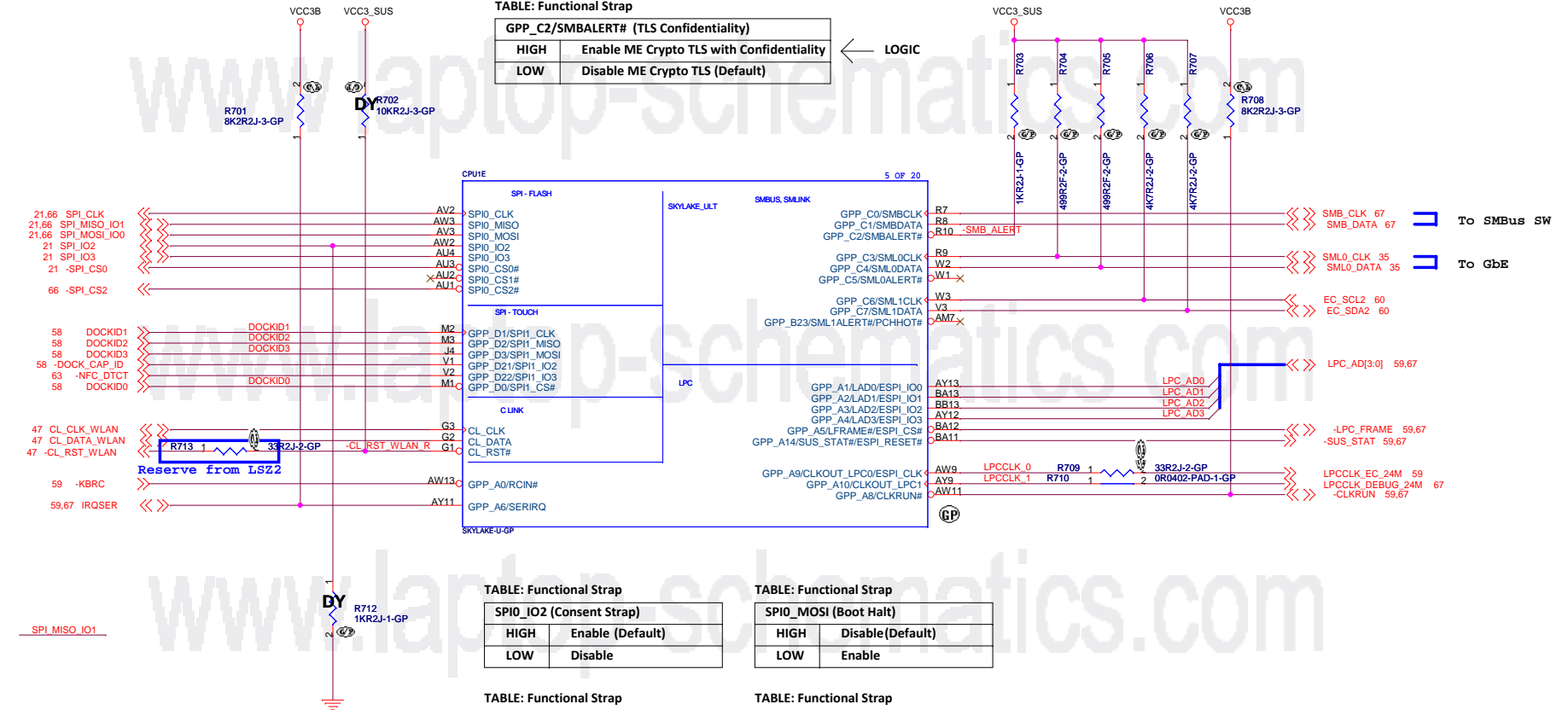


TABLE: Functional Strap

| SPI0_I02 (Consent Strap) | |
|--------------------------|------------------|
| HIGH | Enable (Default) |
| LOW | Disable |

TABLE: Functional Strap

| SPI0_MOSI (Boot Halt) | |
|-----------------------|------------------|
| HIGH | Disable(Default) |
| LOW | Enable |

TABLE: Functional Strap

| SPI0_I03 (A0 Personality Strap) | |
|---------------------------------|------------------|
| HIGH | Disable(Default) |
| LOW | Enable |

TABLE: Functional Strap

| SPI0_MISO (JTAG ODT Disable) | |
|------------------------------|------------------|
| HIGH | Enable (Default) |
| LOW | Disable |

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Title **CPU(5/16) : LPC/SPI/SMBUS/C-LINK**

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| GPP_B22/GSP11_MOSI (Boot BIOS Destination) | |
|--------------------------------------------|------------------------------|
| HIGH | Boot BIOS from LPC |
| LOW | Boot BIOS from SPI (Default) |

| GPP_B18/GSPI0_MOSI (No Reboot) | |
|--------------------------------|------------------------------------|
| HIGH | Enable "No Reboot" Mode |
| LOW | Disable "No Reboot" Mode (Default) |



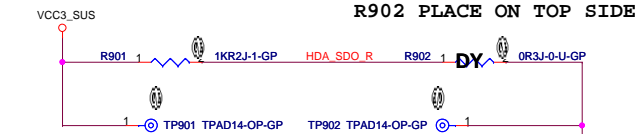


TABLE: Functional Strap

| HDA_SDO/I2S0_TXD | |
|------------------------------------|----------------------------------------------|
| Flash Descriptor Security Override | |
| HIGH | Disable Flash Descriptor Security (Override) |
| LOW | Enable Flash Descriptor Security (Default) |

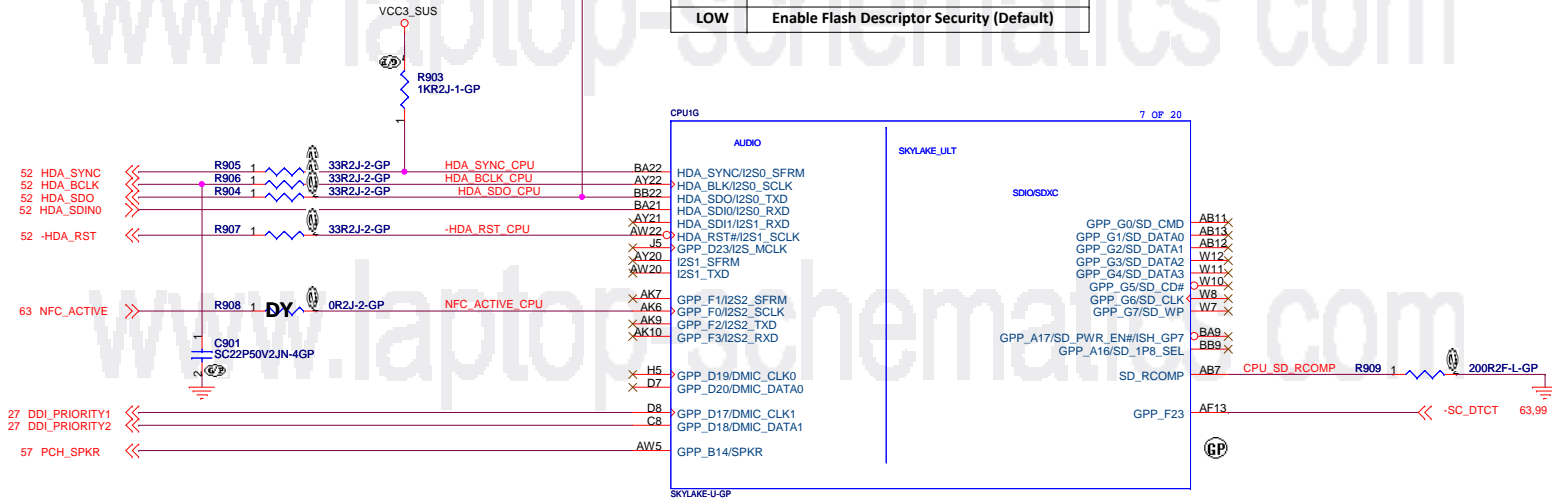


TABLE: Functional Strap

| GPP_B14/SPKR (Top Swap Override) | |
|----------------------------------|-----------------------------------|
| HIGH | Enable "Top Swap" Mode |
| LOW | Disable "Top Swap" Mode (Default) |

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

Title CPU(7/16) : AUDIO/SDXC

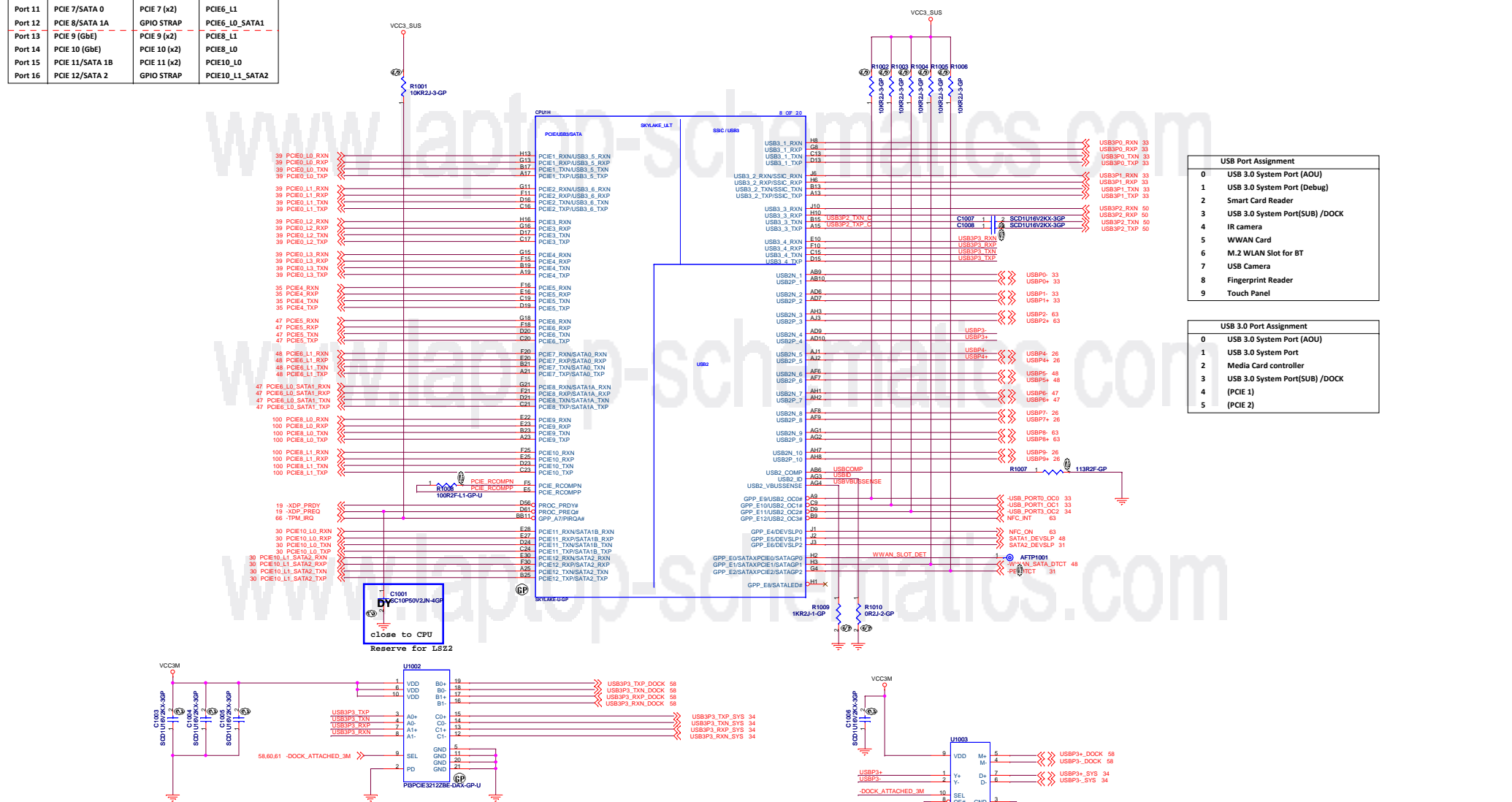
Size A3 Document Number LTS-1 Rev 1

Date: Friday, February 24, 2017 Sheet 9 of 103

| Flexible I/O Configuration | | | |
|----------------------------|--------------------|---------------|-----------------|
| I/O | High Speed Signals | Configuration | Net Name |
| Port 1 | USB3 1 | USB3 1 | USB3P0 |
| Port 2 | USB3 2/SSIC | USB3 2 | USB3P1 |
| Port 3 | USB3 3 | USB3 3 | USB3P2 |
| Port 4 | USB3 4 | USB3 4 | USB3P3 |
| Port 5 | USB3 5/PCIE 1 | PCIE 1 (x4) | PCIE0_L0 |
| Port 6 | USB3 6/PCIE 2 | PCIE 2 (x4) | PCIE0_L1 |
| Port 7 | PCIE 3 (GbE) | PCIE 3 (x4) | PCIE0_L2 |
| Port 8 | PCIE 4 (GbE) | PCIE 4 (x4) | PCIE0_L3 |
| Port 9 | PCIE 5 (GbE) | PCIE 5 (GbE) | PCIE4 |
| Port 10 | PCIE 6 | PCIE 6 | PCIE5 |
| Port 11 | PCIE 7/SATA 0 | PCIE 7 (x2) | PCIE6_L1 |
| Port 12 | PCIE 8/SATA 1A | GPIO STRAP | PCIE6_L0_SATA1 |
| Port 13 | PCIE 9 (GbE) | PCIE 9 (x2) | PCIE8_L1 |
| Port 14 | PCIE 10 (GbE) | PCIE 10 (x2) | PCIE8_L0 |
| Port 15 | PCIE 11/SATA 1B | PCIE 11 (x2) | PCIE10_L0 |
| Port 16 | PCIE 12/SATA 2 | GPIO STRAP | PCIE10_L1_SATA2 |

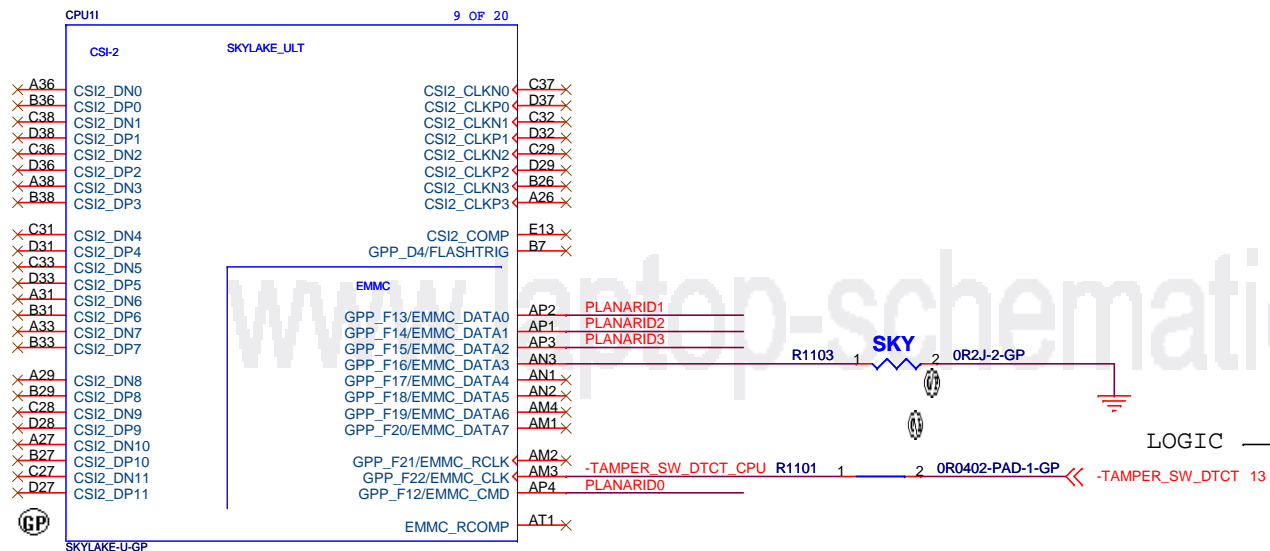
| PCIe Port Assignment | |
|----------------------|------------------------------------|
| 0 (x4) | dGPU |
| 4 | Gbe PHY |
| 5 | M.2 WLAN Slot Port0 |
| 6(x2) | Optane x2 or M.2 WLAN slot Port x1 |
| 8(x2) | Alpine Ridge-I/P |
| 10 (x2) | Main Storage x2 |

| SATA Port Assignment | |
|----------------------|------------------------|
| 0 | (PCIE 7) |
| 1A | SATA SSD on W/WAN slot |
| 1B | (PCIE11) |
| 2 | SATA SSD Main Storage |



Pericom PI3PCIE3212ZBE 071.33212.0003
 NXP CBTLO2043ABQ 071.02043.0003
 TOSHIBA TC7PCI3212MT 071.73212.0003

Pericom PI3USB102ZME 73.3US10.D03
 NXP NX3DV42GU 73.00342.003



TABLE

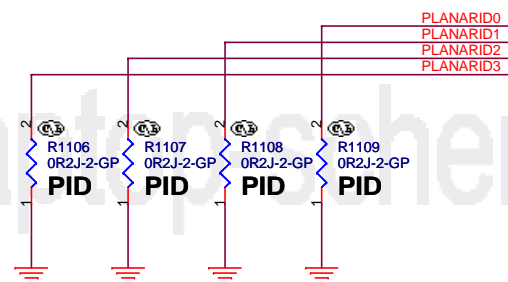
| LEVEL | PLANAR ID | | | |
|-------|-----------|-------|-------|-------|
| | 3 | 2 | 1 | 0 |
| | R1106 | R1107 | R1108 | R1109 |
| 1 | NA | NA | NA | NA |
| 0 | ASM | ASM | ASM | ASM |

TABLE

| LEVEL | PLANARID[3..0] | | |
|-----------|----------------|--------------------|-----------------|
| | UMA | GeForce (N16S-GTR) | Quadro(N17M-Q1) |
| SDV | 0000B | 0001B | 0010B |
| FVT1/FVT2 | 0011B | 0100B | 0101B |
| SIT/SIT2 | 0110B | 0111B | 1000B |
| SVT | 1001B | 1010B | 1011B |
| MP | 1100B | 1101B | 1110B |

TABLE

| | |
|----------|-------|
| | R1103 |
| Kabylake | DY |
| Skylake | ASM |

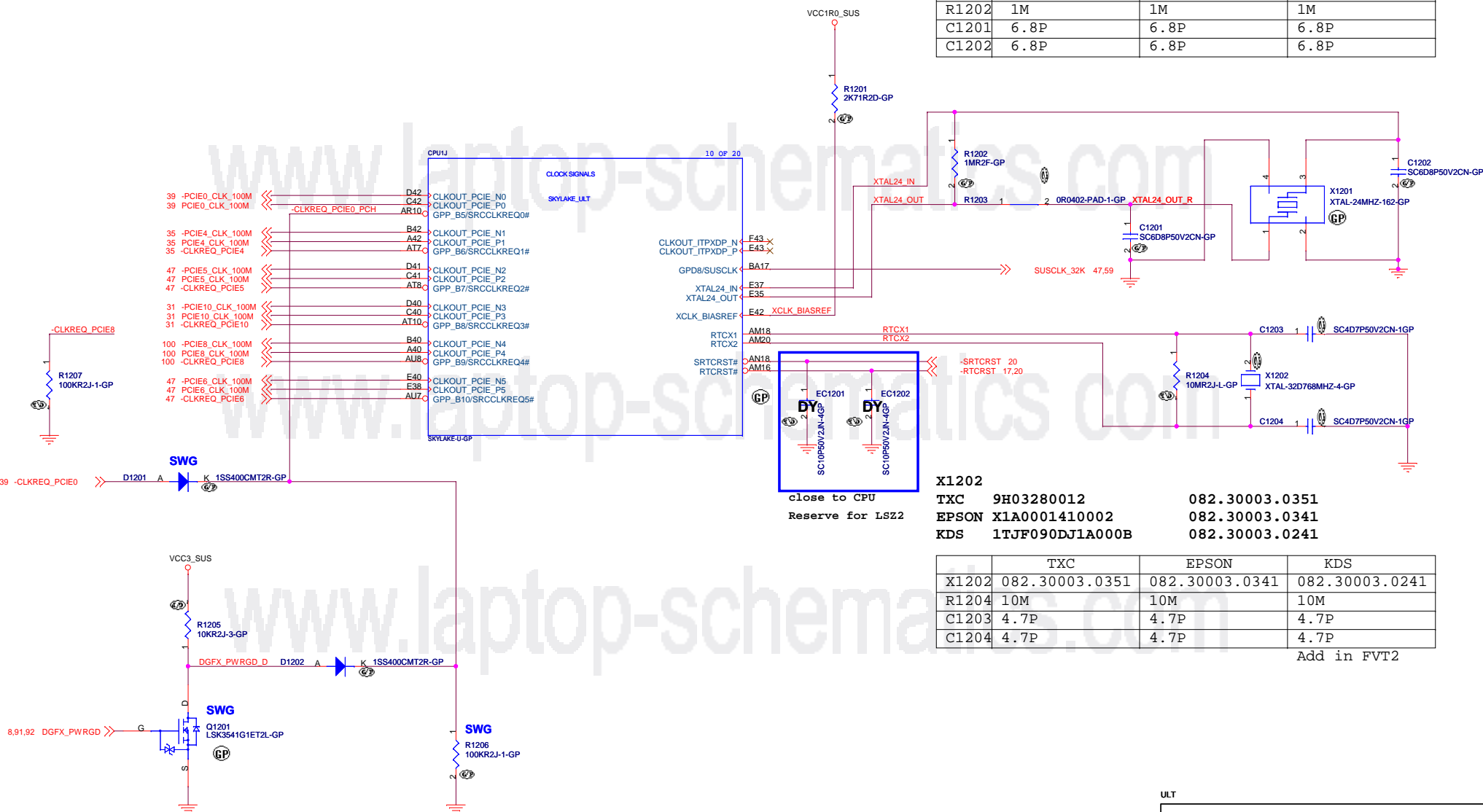


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| 緯創資通 | | Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C. | |
| Title CPU(9/16) : CSI-2/EMMC | | | |
| Size | Document Number | LTS-1 | Rev 1 |
| Custom | | | |
| Date: Friday, February 24, 2017 | | Sheet 11 of 103 | |

X1201
TXC 7R24080003
EPSON Q22FA1280055800
KDS 1ZZHAE24000CC0G

| | TXC | EPSON | KDS |
|-------|----------------|----------------|----------------|
| X1201 | 082.30006.0341 | 082.30006.0321 | 082.30006.0301 |
| R1202 | 1M | 1M | 1M |
| C1201 | 6.8P | 6.8P | 6.8P |
| C1202 | 6.8P | 6.8P | 6.8P |



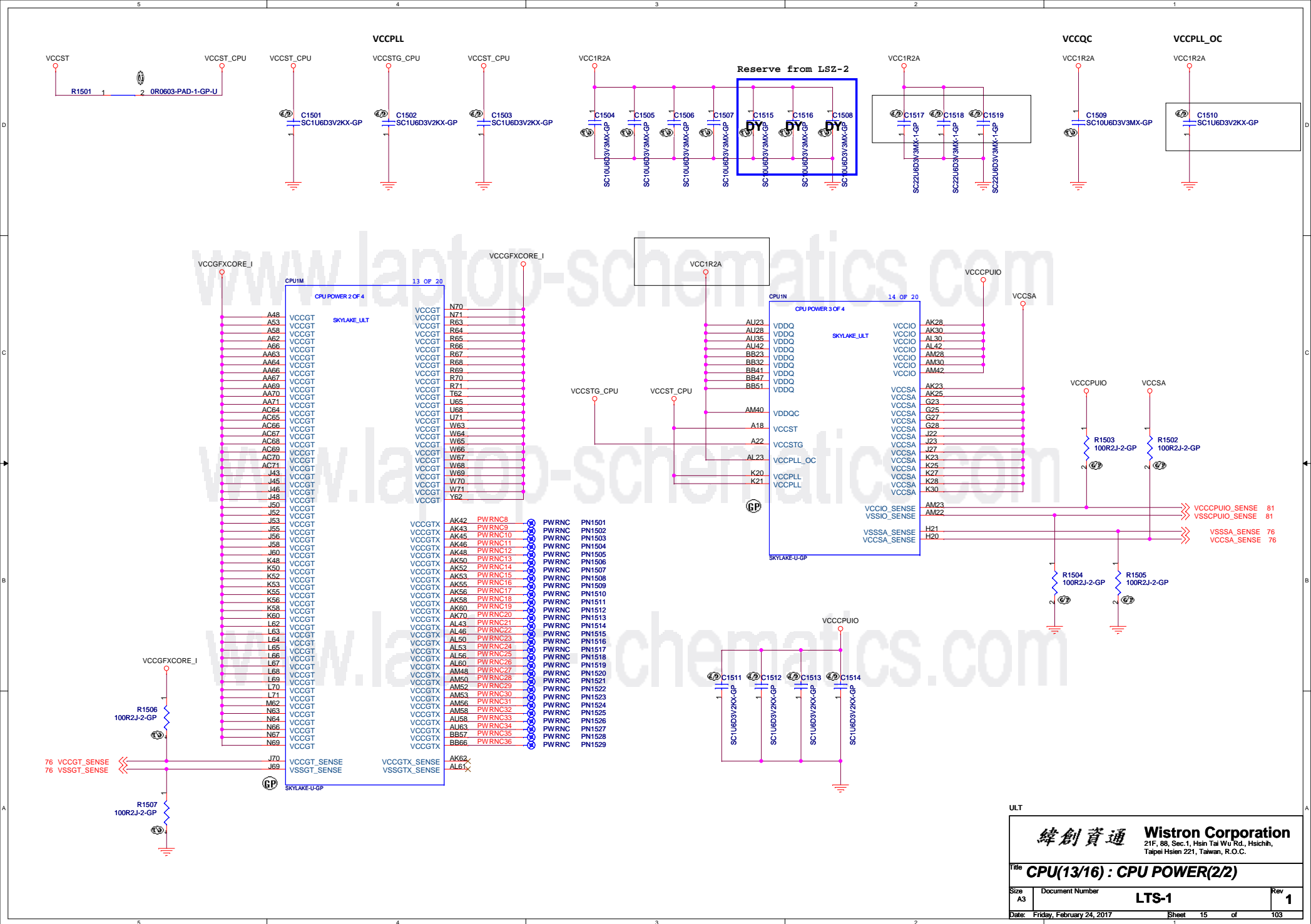
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TXC 9H03280012
EPSON X1A0001410002
KDS 1TJF090DJ1A000B

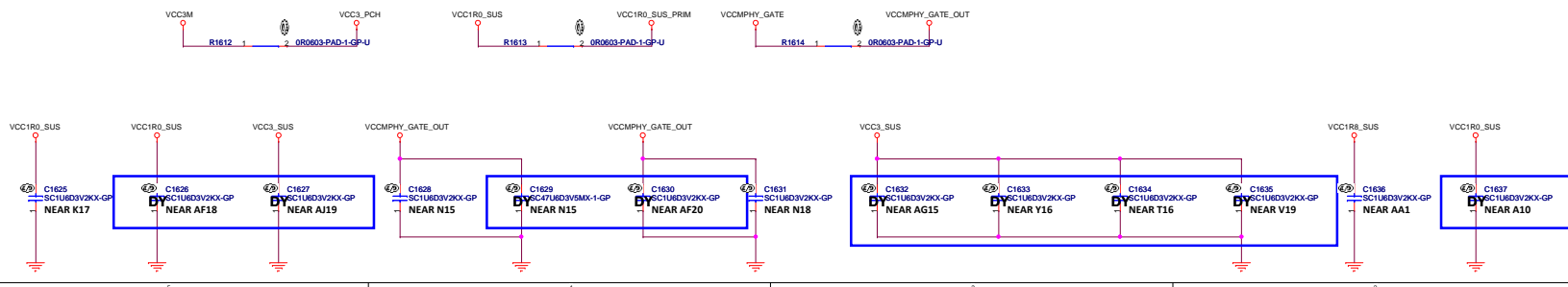
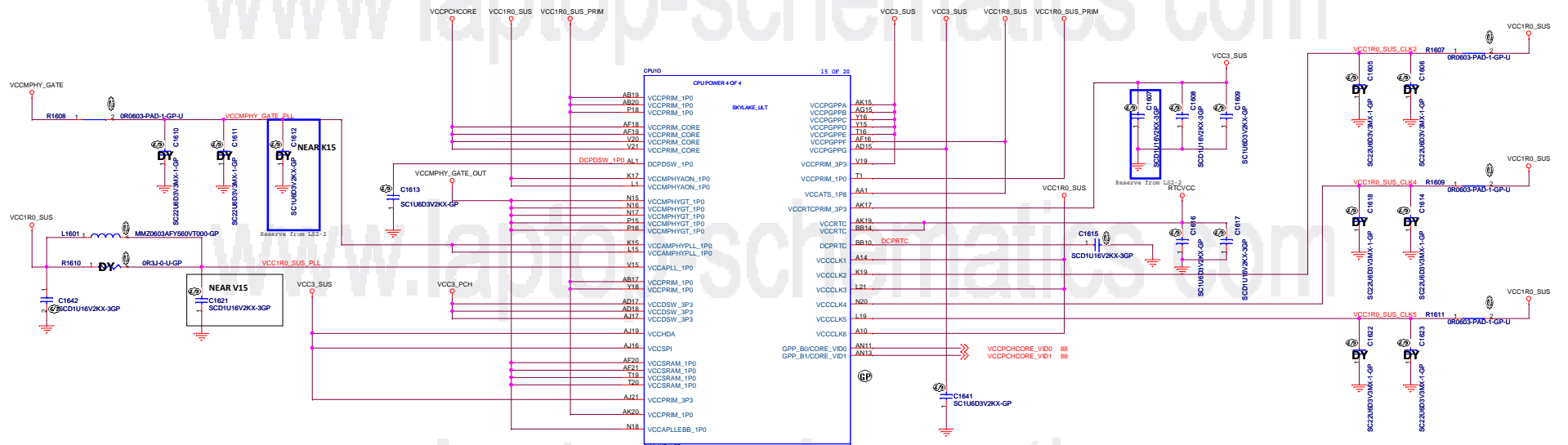
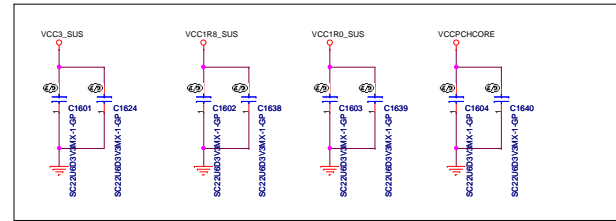
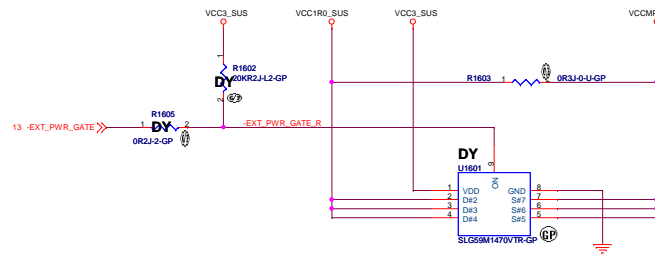
| | TXC | EPSON | KDS |
|-------|----------------|----------------|----------------|
| X1202 | 082.30003.0351 | 082.30003.0341 | 082.30003.0241 |
| R1204 | 10M | 10M | 10M |
| C1203 | 4.7P | 4.7P | 4.7P |
| C1204 | 4.7P | 4.7P | 4.7P |

Add in FVT2

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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 CPU(10/16) : CLOCK SIGNALS | |
| Size A3 Document Number LTS-1 Date: Friday, February 24, 2017 | Rev 1 Sheet 12 of 103 |

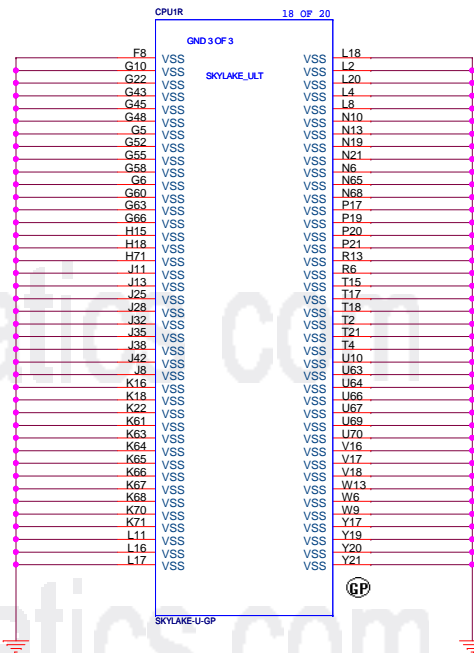
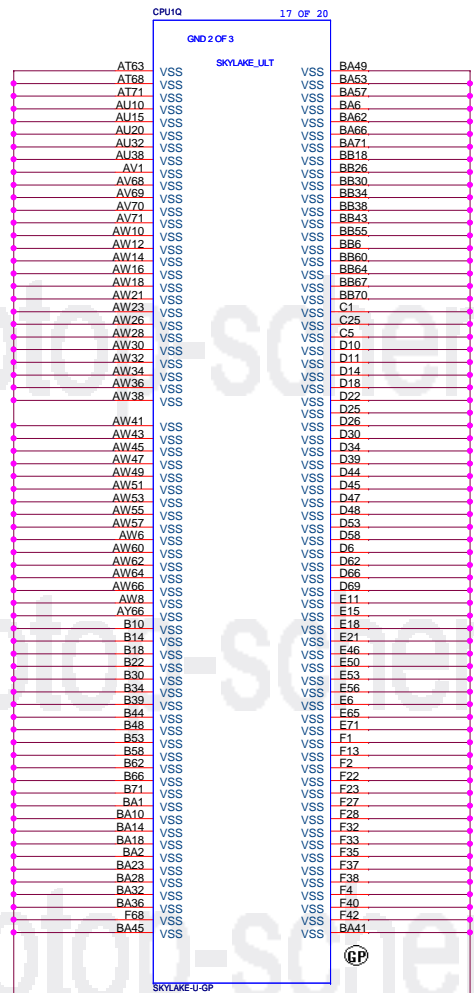
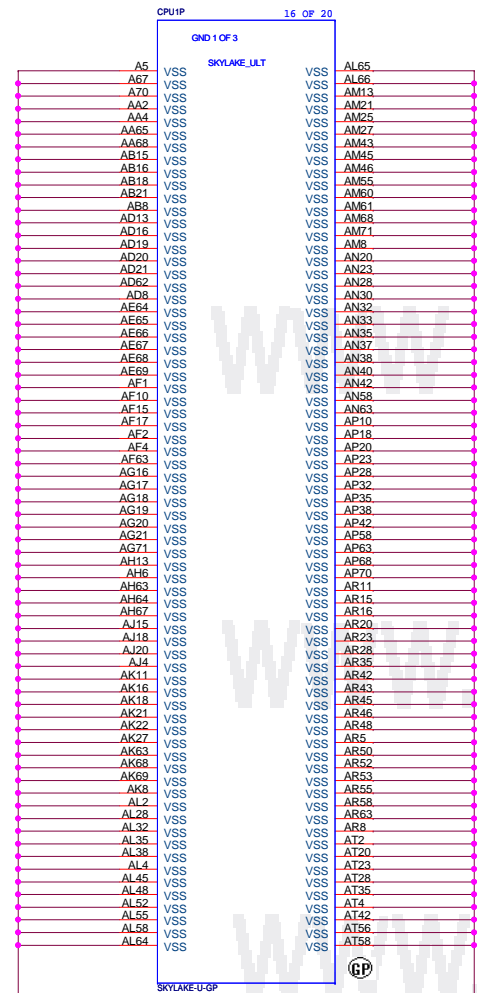




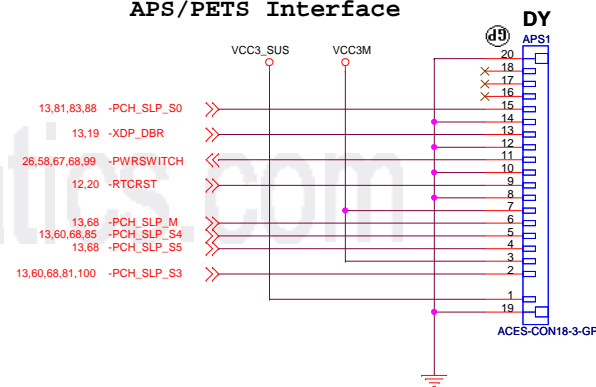
ULT

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21F, 88, Sec. 1, Hsin Tai Wu Rd., Hsinchu,
Taipei Hsin 301, Taiwan, R.O.C.

File: CPU(14/16) : PCH POWER
Size: A2 Document Number: L7S-1 Rev: 1
Date: Friday, February 24, 2017 Sheet: 16 of 103



APS/PETS Interface



ULT

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

Title CPU(15/16) : GND

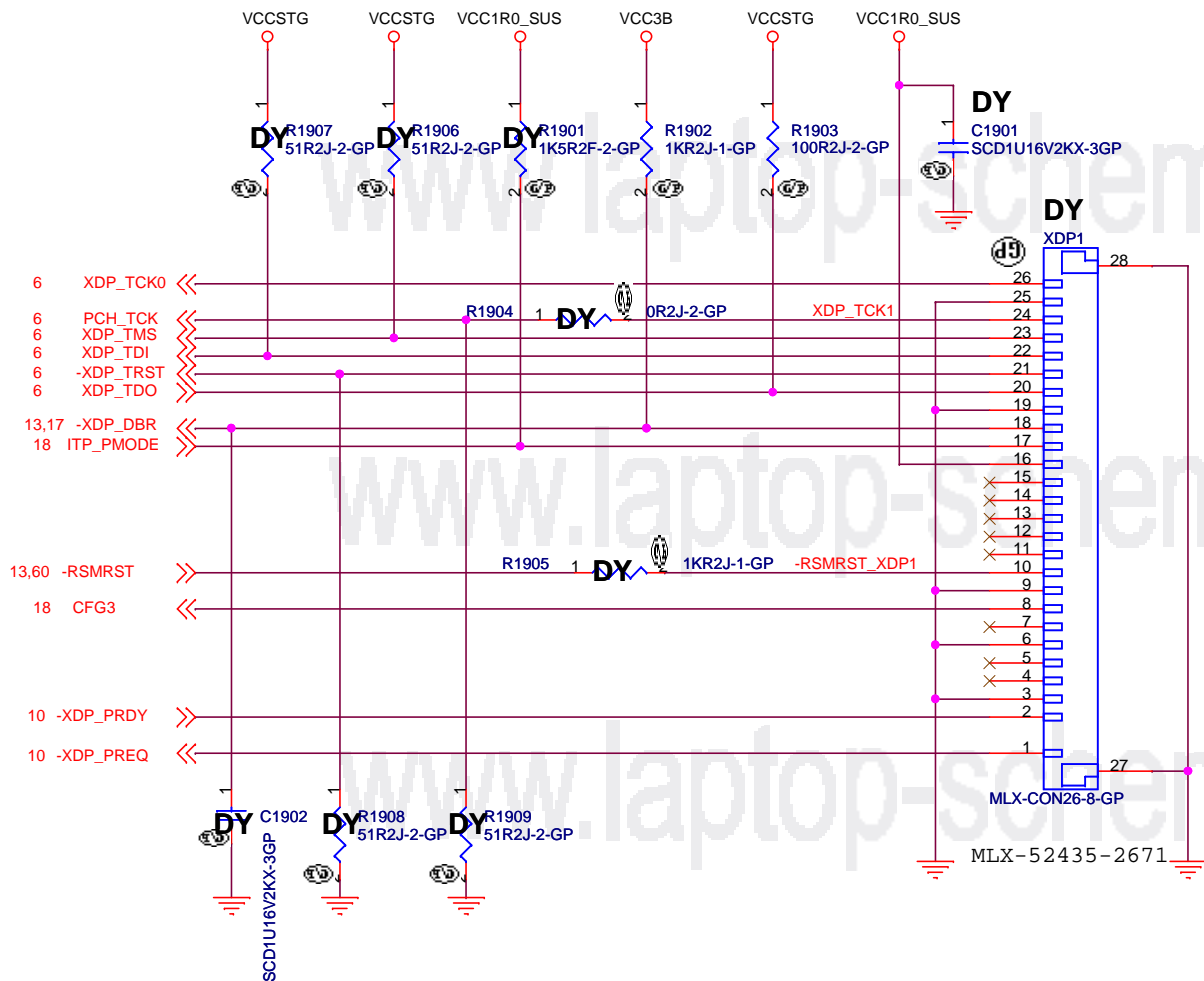
| | | |
|---------------------------------|-----------------------|-------|
| Size A3 | Document Number LTS-1 | Rev 1 |
| Date: Friday, February 24, 2017 | Sheet 17 of | 103 |

| |
|---------------------------------------------------------------------------------------------------------------------------------------|
| <p>CFG0 : Stall Reset Sequence after PCU PLL Lock until de-asserted</p> <p>1 : No Stall 0 : Stall</p> |
| <p>CFG3 : MSR Privacy Bit Feature</p> <p>1 : MSR (C80h) bit[0] setting 0 : MSR (C80h) bit[0] overridden</p> |
| <p>CFG4 : eDP Enable</p> <p>1 : Disabled 0 : Enabled</p> |
| <p>CFG9 : SVID Bus Communication</p> <p>1 : Enabled 0 : Disabled</p> |



| | |
|-------|----------------------------------|
| Title | CPU(16/16) : CFG/RESERVED |
|-------|----------------------------------|

Date: Friday, February 24, 2017 Sheet 18 of 103



| TABLE | | | |
|---------|---------|--------|---------|
| Logic | Ref Des | Merged | DCI 2.0 |
| Page 7 | R712 | ASM | NO_ASM |
| Page 18 | R1801 | ASM | NO_ASM |
| Page 19 | XDP1 | ASM | NO_ASM |
| | C1901 | ASM | NO_ASM |
| | R1901 | ASM | NO_ASM |
| | R1902 | ASM | ASM |
| | R1903 | ASM | ASM |
| | R1904 | ASM | NO_ASM |
| | R1905 | ASM | NO_ASM |

↑
LOGIC

ULT

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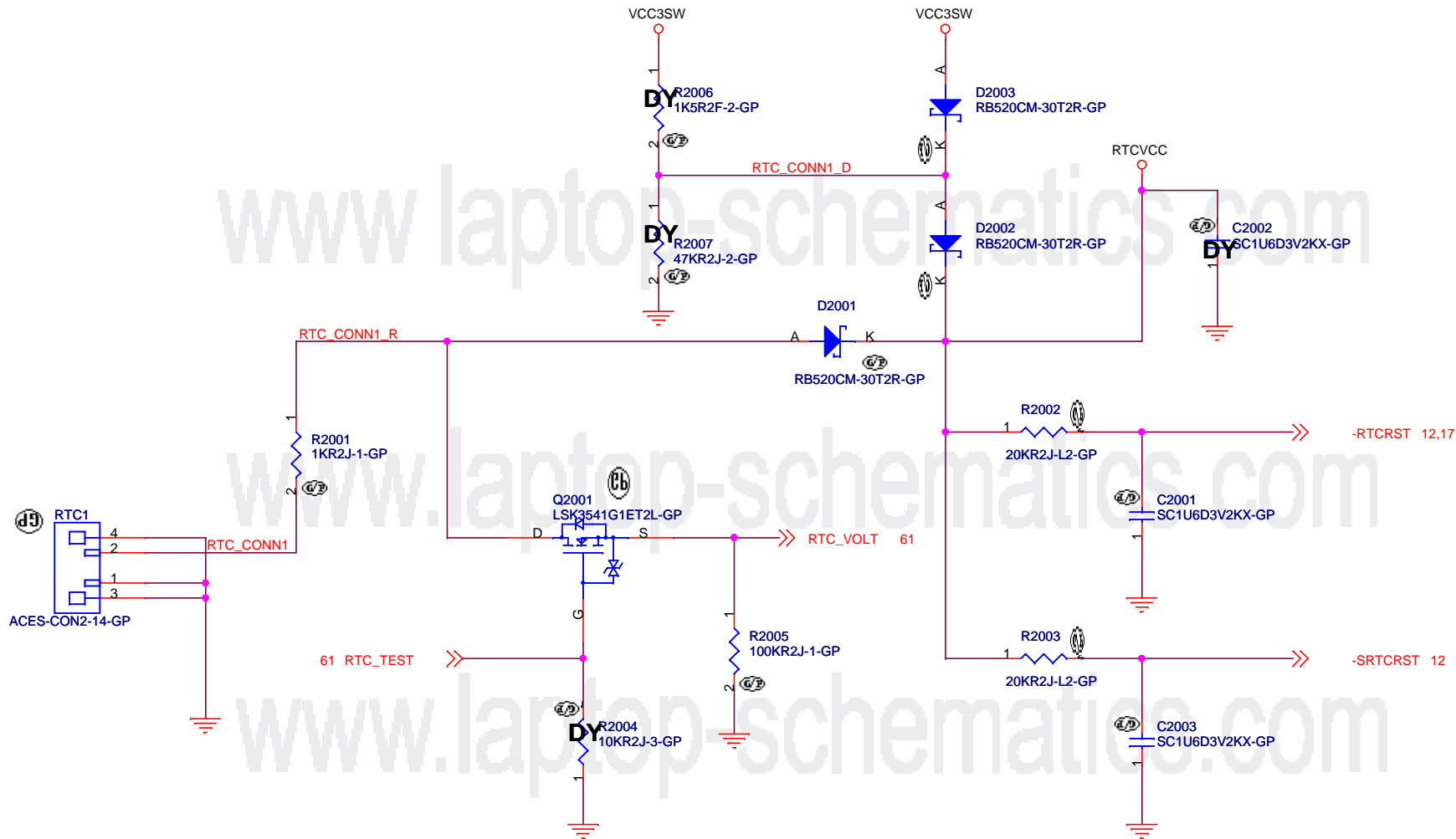
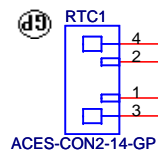
TitleXDP CONNECTOR

SizeA4

Document NumberLTS-1

Rev1

Date: Friday, February 24, 2017Sheet 19 of 103



for test point, page 91

RTC_CONN1 >> RTC_CONN1 99

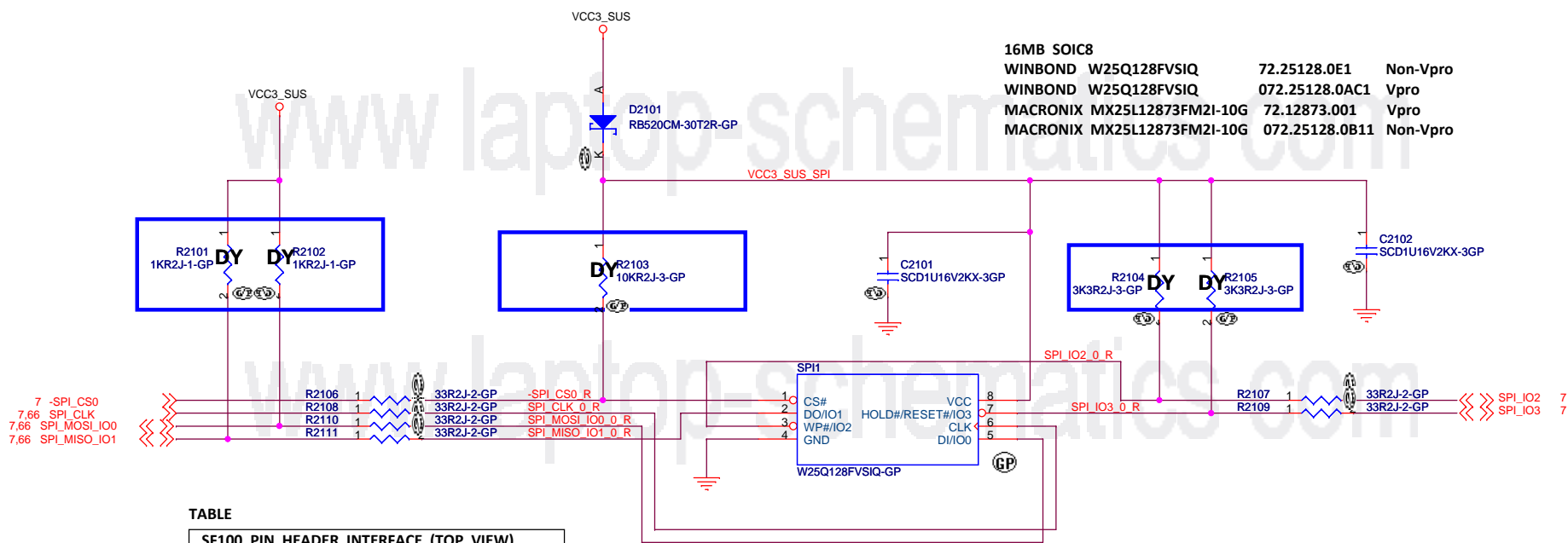
ULT

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 A4 Document Number **LTS-1** Rev **1**

Date: Friday, February 24, 2017 Sheet 20 of 103



| | | | |
|-----------------------------|----------------|----------|--|
| 16MB SOIC8 | | | |
| WINBOND W25Q128FVSIQ | 72.25128.0E1 | Non-Vpro | |
| WINBOND W25Q128FVSIQ | 072.25128.0AC1 | Vpro | |
| MACRONIX MX25L12873FM2I-10G | 72.12873.001 | Vpro | |
| MACRONIX MX25L12873FM2I-10G | 072.25128.0B11 | Non-Vpro | |

| TABLE | | | | | | | |
|---------------------------------------|-------|---------|---------|---------|---|--|--|
| SF100 PIN HEADER INTERFACE (TOP VIEW) | | | | | | | |
| 1 | VCC | D2101.K | GND | GND | 2 | | |
| 3 | CS# | R2104.2 | R2106.2 | CLK | 4 | | |
| 5 | MISO | R2109.2 | R2108.2 | MOSI | 6 | | |
| 7 | (KEY) | N/A | N/A | (RESET) | 8 | | |

ULT

緯創資通

Wistron Corporation

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

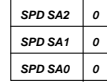
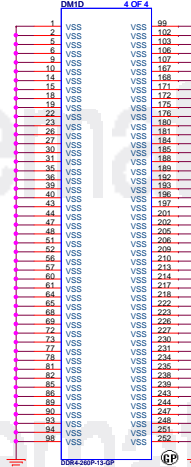
TitleSPI FLASH

SizeCustom

Document NumberLTS-1

Rev1

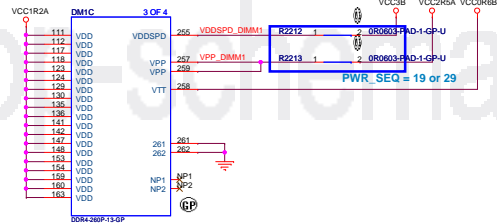
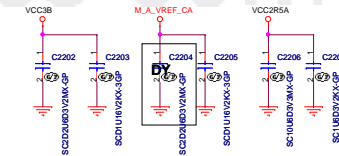
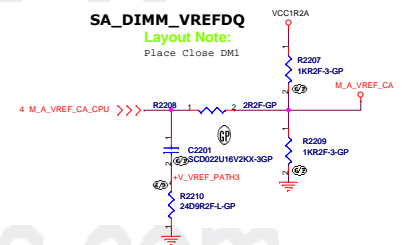
Date: Friday, February 24, 2017Sheet 21 of 103

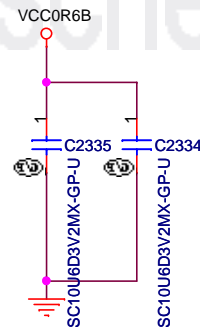
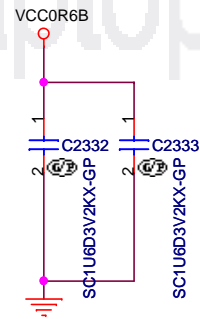
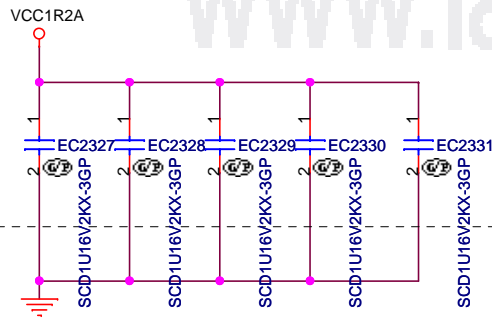
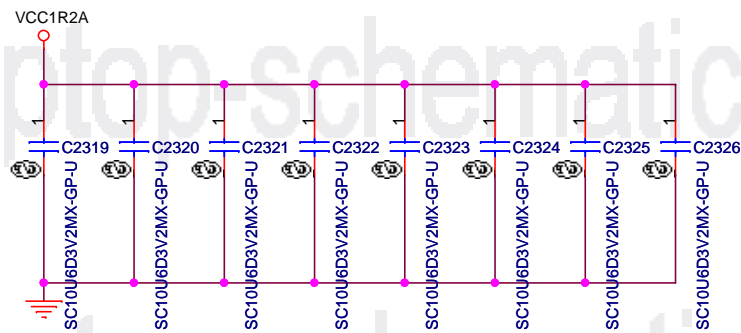
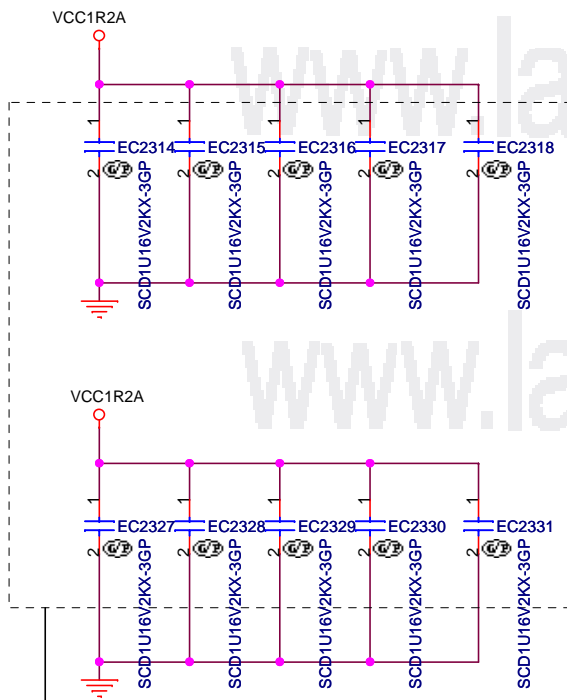
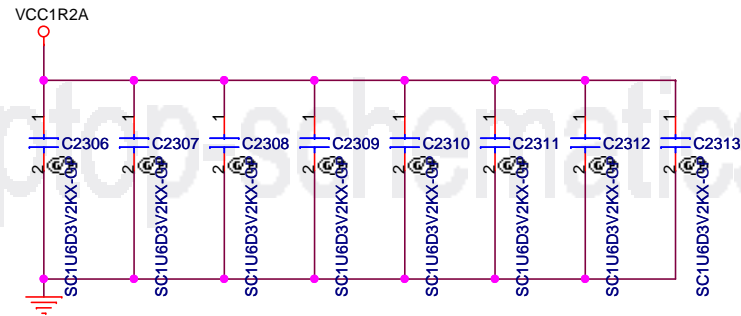
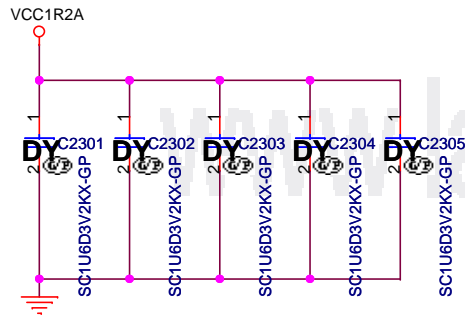


Note:
SA0 DIMM1 = 0, SA1_DIMM1 = 0
SA2 DIMM1 = 0
SO-DIMMA SPD Address is 0xA0

SA_DIMM_VREFD

Place Close DM

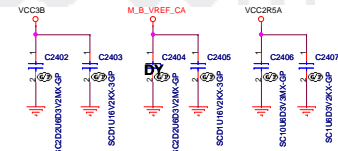
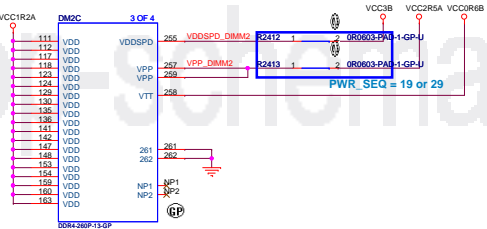




ASM from EMI request.

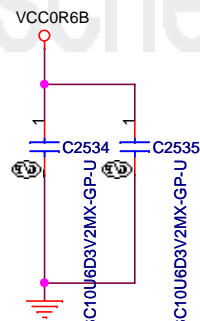
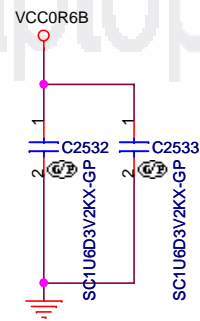
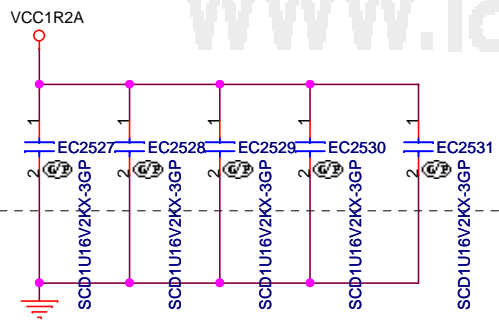
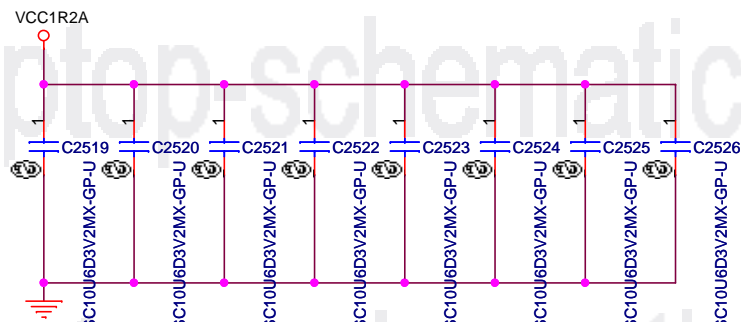
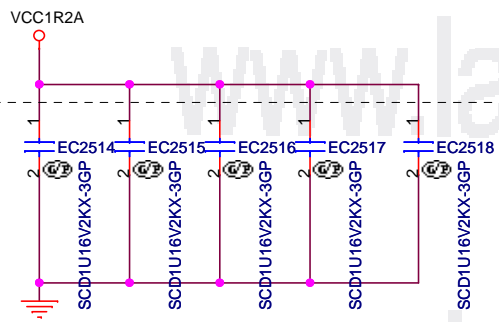
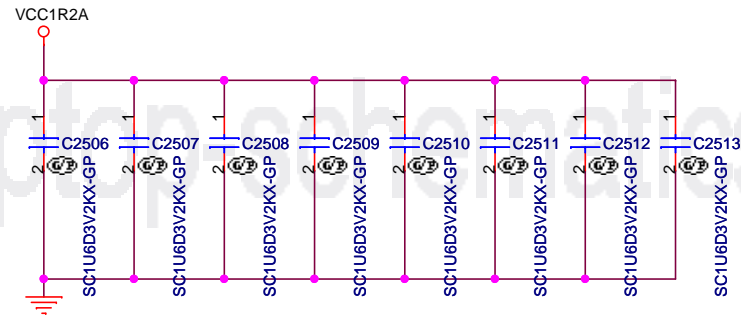
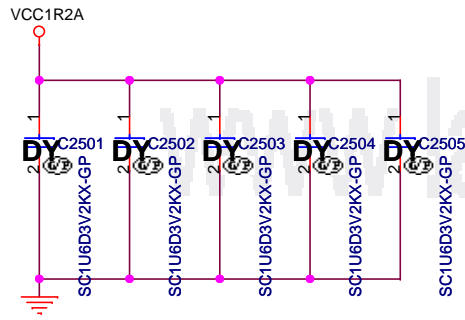
ULT

| | | | |
|---------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------|
| 緯創資通 | | Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C. | |
| Title DDR4 SO DIMM MEMORY CH-A (2/2) | | | |
| Size A4 | Document Number LTS-1 | | Rev 1 |
| Date: | Friday, February 24, 2017 | Sheet 23 of | 103 |



Note:
SA0 DIMM1 = 1, SA1_DIMM1 = 0
SA2 DIMM1 = 0
SO-DIMMA SPD Address is 0xA1

Note:
SA0 DIMM1 = 1, SA1_DIMM1 = 0
SA2 DIMM1 = 0
SO-DIMMA SPD Address is 0xA1



ASM from EMI request.

ULT

緯創資通

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Title **DDR4 SO DIMM MEMORY CH-B (2/2)**

Size A4 Document Number **LTS-1** Rev **1**

Date: Friday, February 24, 2017 Sheet 25 of 103

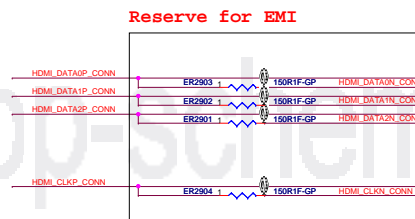
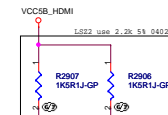
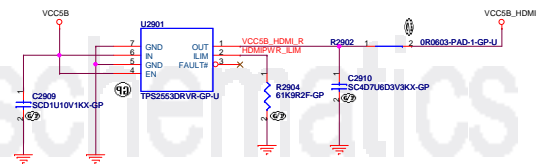
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|-----------|------------------------|----------------|
| Q2601 | | |
| Vendor | Venor PN | Wistron PN |
| Rohm | RF4E070GN (1st source) | 084.4E070.0037 |
| Fairchild | FDMA7672 (2nd source) | 084.07672.M001 |



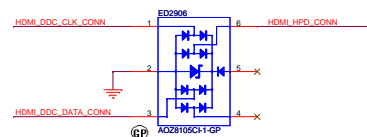
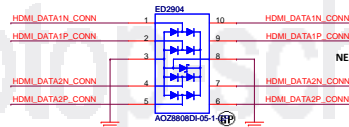
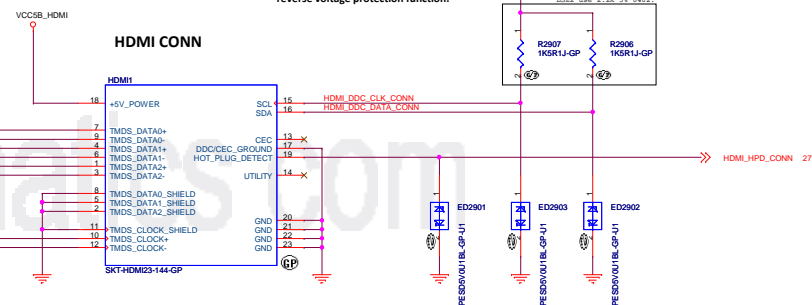
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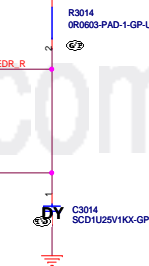
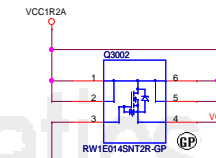
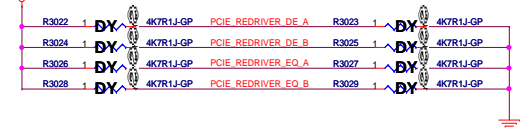
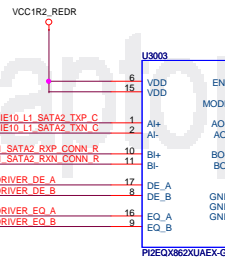
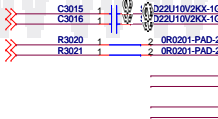
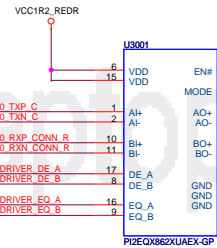
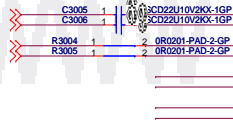
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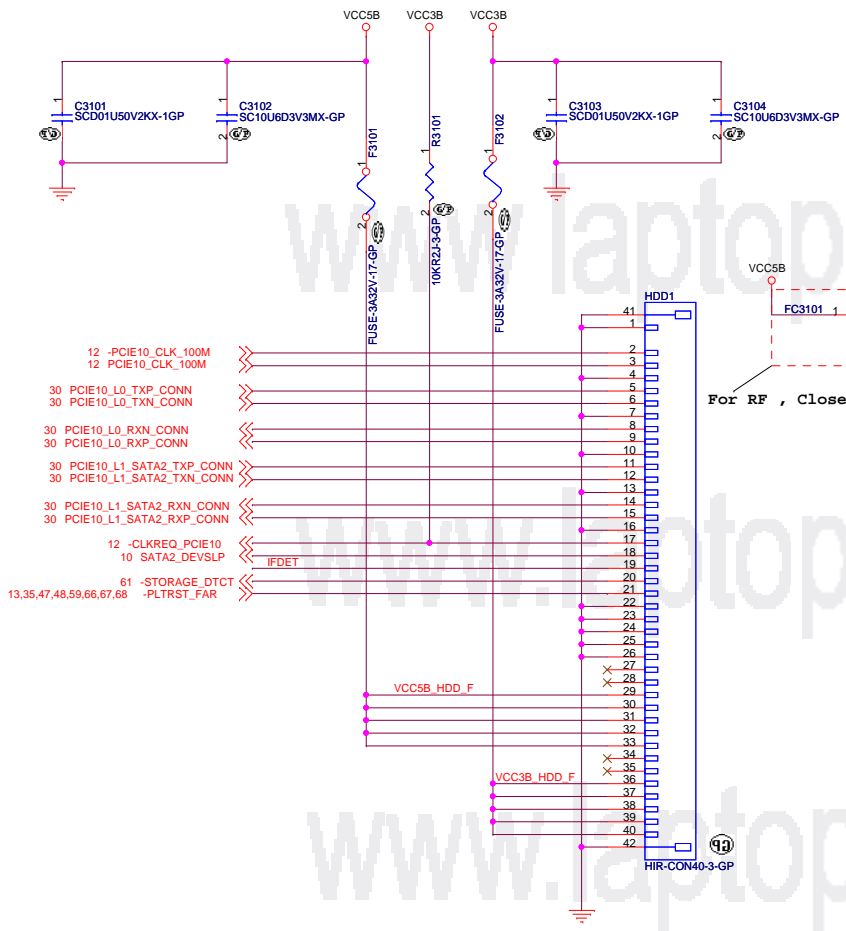
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| <div>緯創資通</div> | | <div>Wistron Corporation</div> | |
| | | <div>21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.</div> | |
| <div>Title</div> <div>BLANK</div> | | | |
| <div>Size</div> <div>A</div> | <div>Document Number</div> <div>LTS-1</div> | | <div>Rev</div> <div>1</div> |
| <div>Date:</div> <div>Friday, February 24, 2017</div> | <div>Sheet</div> <div>28</div> | <div>of</div> <div></div> | <div>103</div> |



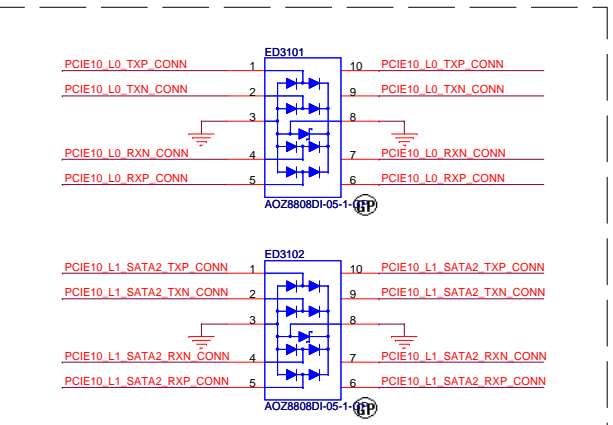
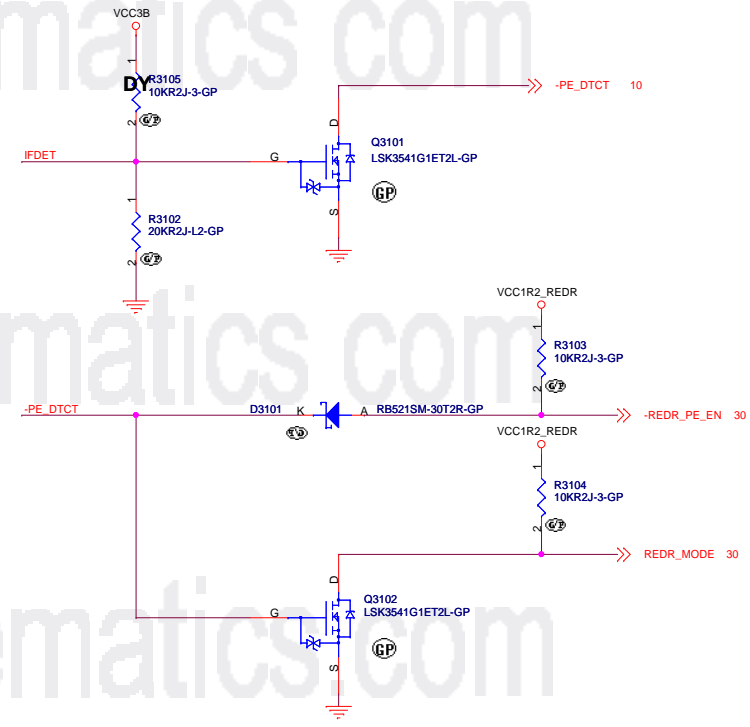
| | Vendor | Vendor P/N | Wistron P/N |
|-----|---------|-----------------|--------------|
| 1st | AOS | AOZ8808DI-05 | 75.08808.073 |
| 2nd | SEMTECH | RClamp0524PATCT | 75.00524.073 |
| 3rd | | | |







| | |
|------------------|------|
| IFDET | |
| 2.5 inch HDD/SSD | GND |
| M.2 SATA SSD | GND |
| M.2 PCIe SSD | 3.1V |



<Variant Name>

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Title

SATA/PCIe SSD I/F

Size A3 Document Number LTS-1 Rev 1

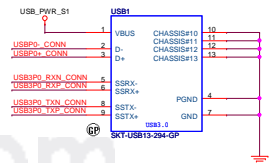
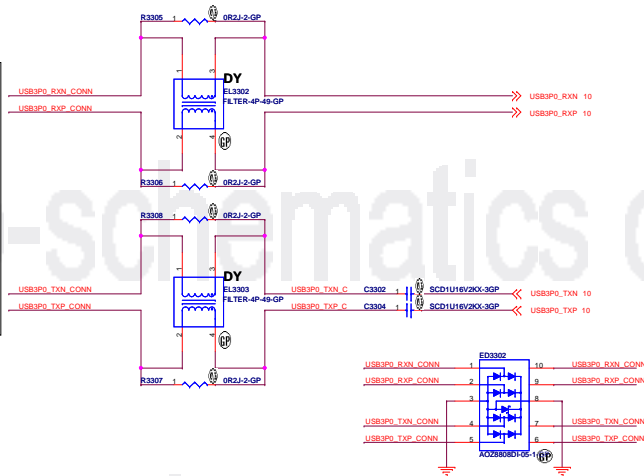
Date: Friday, February 24, 2017 Sheet 31 of 103

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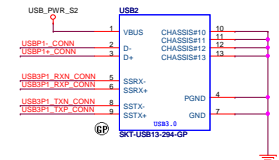
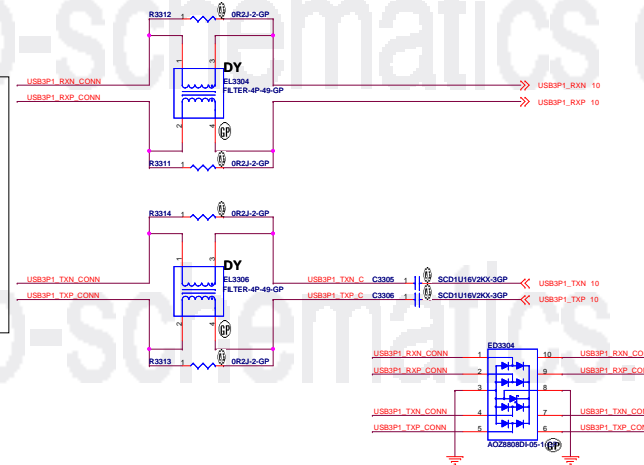
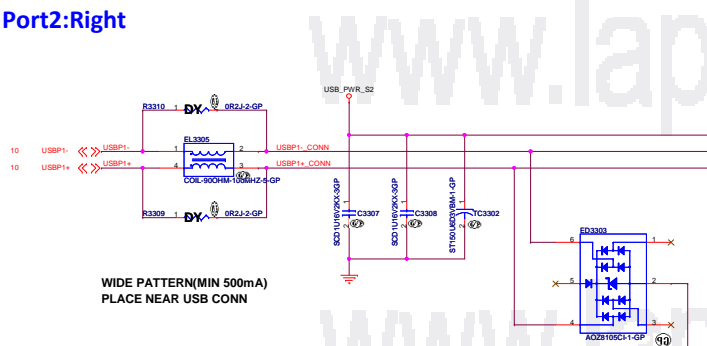
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| <div>緯創資通</div> <div>Wistron Corporation</div> <div>21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.</div> | |
| Title <div>BLANK</div> | |
| Size <div>A</div> | Document Number <div>LTS-1</div> |
| Date: Friday, February 24, 2017 | Rev <div>1</div> |
| Sheet 32 of 103 | |

Port2:Right

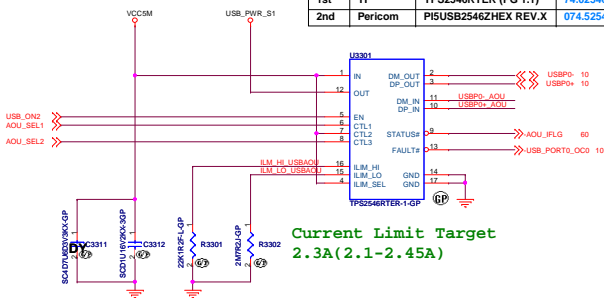


| | Vendor | Vendor P/N | Wistron P/N |
|-----|---------|-----------------|--------------|
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| 2nd | SEMTECH | RCIamp0524PATCT | 75.00524.073 |
| 3rd | | | |

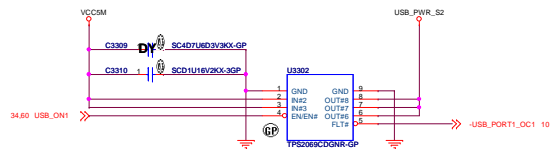


| | Vendor | Vendor P/N | Wistron P/N |
|-----|---------|-----------------|--------------|
| 1st | AOS | AOZ8808DI-05 | 75.08808.073 |
| 2nd | SEMTECH | RCIamp0524PATCT | 75.00524.073 |
| 3rd | | | |

| | Vendor | Vendor P/N | Wistron P/N |
|-----|---------|----------------------|--------------------------------|
| 1st | TI | TPS2546RTER (PG 1.1) | 74.02546.A73 |
| 2nd | Pericom | PI5USB2546ZHEX REV.X | 074.52546.0A73 |



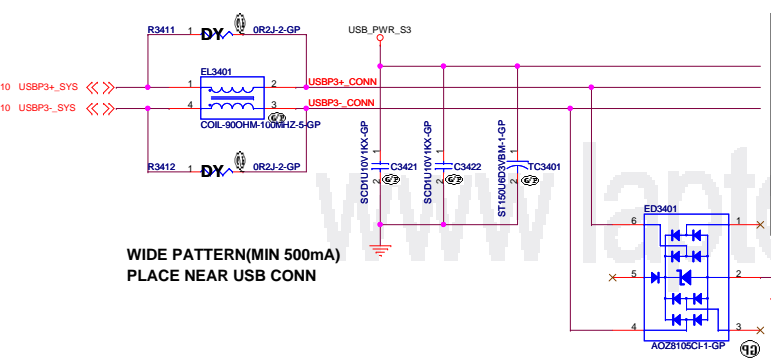
| Current | Limit | Target |
|---------|-------------|--------|
| 2.3A | (2.1-2.45A) | |



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

| | Vendor | Vendor P/N | Wistron P/N |
|-----|--------|----------------|--------------|
| 1st | TI | TPS2069CDGNR | 74.02069.A79 |
| 2nd | ROHM | BD82032FVJ-GE2 | 74.82032.07G |

Port3:Left (exclusive with DOCK)



WIDE PATTERN(MIN 500mA)
PLACE NEAR USB CONN

Standard CONN
USB3

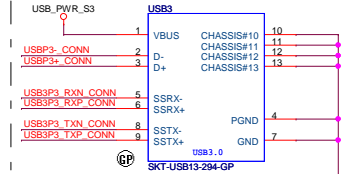
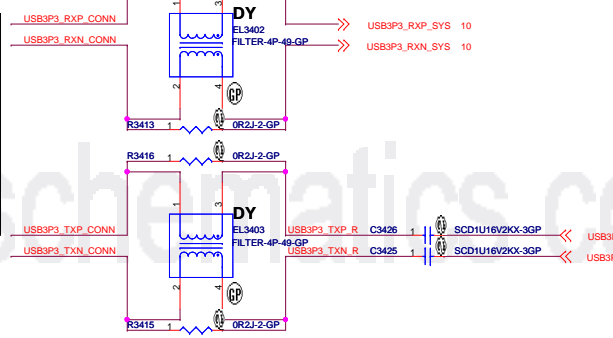
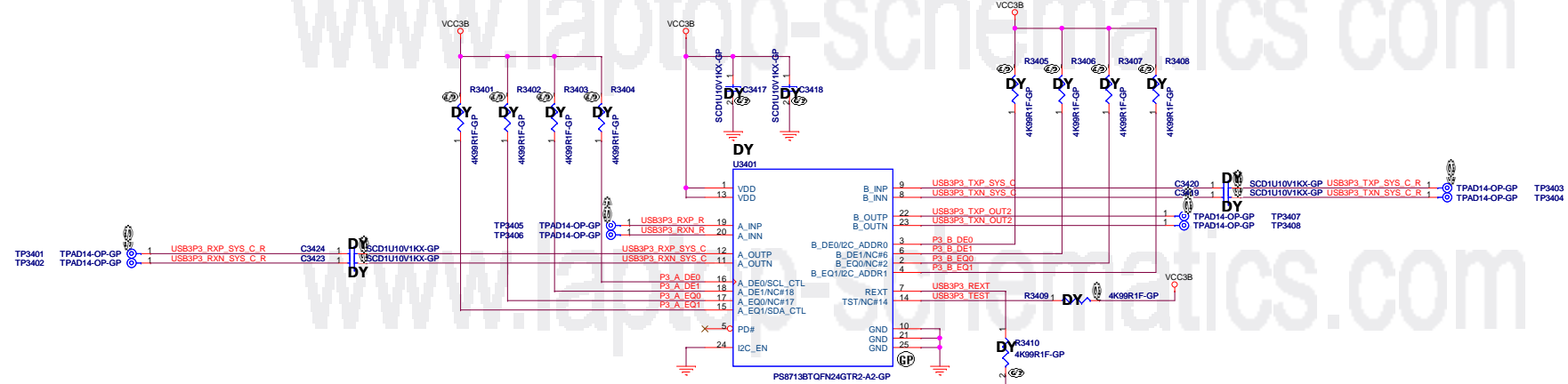


TABLE of TVS DIODE: ED3402

| | Vendor | Vendor P/N | Wistron P/N |
|-----|---------|-----------------|--------------|
| 1st | AOS | AOZ8808DI-05 | 75.08808.073 |
| 2nd | SEMTECH | RClamp0524PATCT | 75.00524.073 |
| 3rd | | | |



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

TABLE of USB 3.0 port: U3402

| | Vendor | Vendor P/N | Wistron P/N |
|-----|--------|----------------|--------------|
| 1st | TI | TPS2069CDGMR | 74.02069.A79 |
| 2nd | ROHM | BD82032FVJ-GE2 | 74.82032.07G |

ULT

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

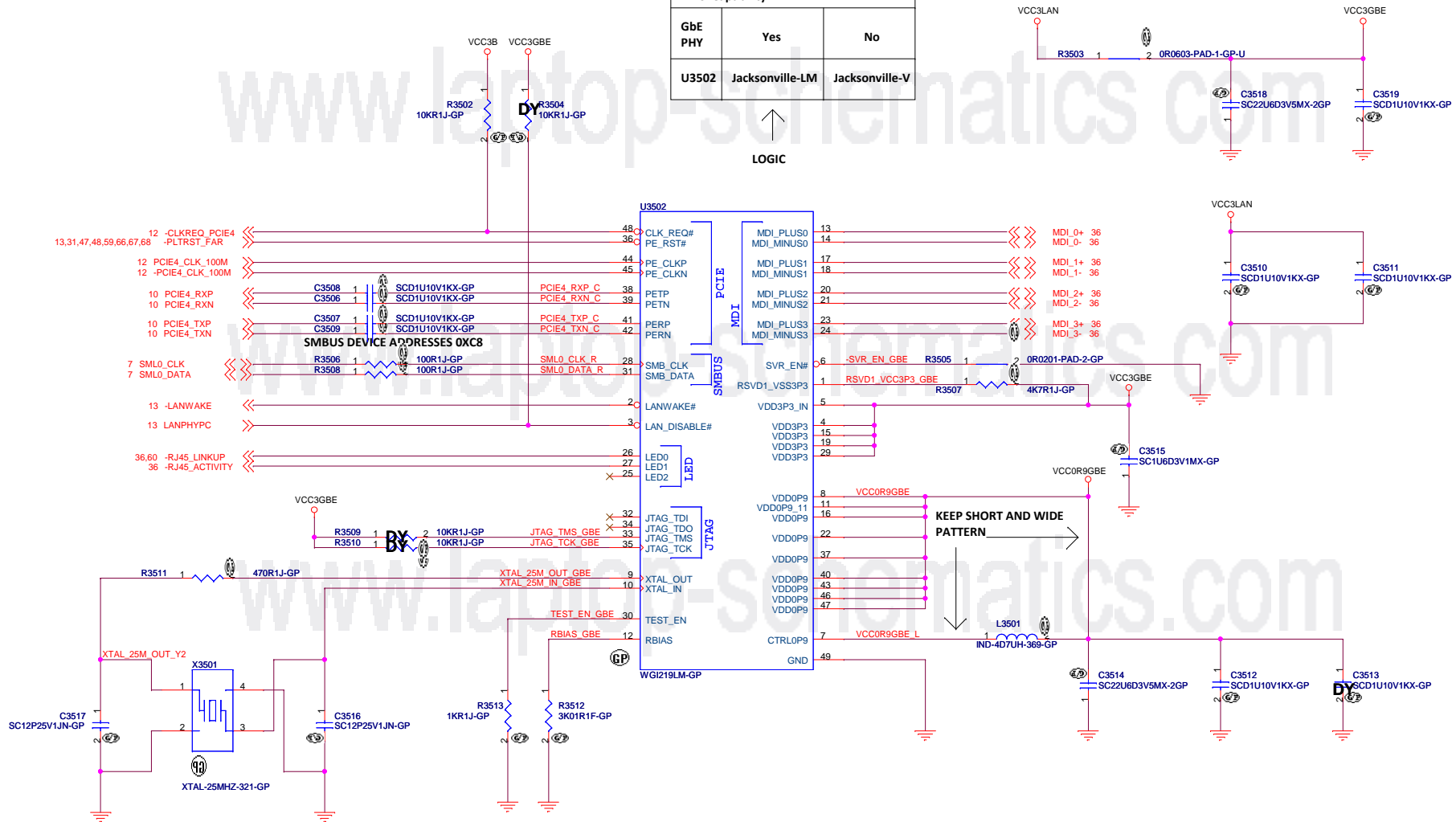
Title SUB BOARD CONNECTOR

| Size | Document Number | LTS-1 | Rev |
|--------|---------------------------|-------------|-----|
| Custom | | | 1 |
| Date: | Friday, February 24, 2017 | Sheet 34 of | 103 |

TABLE

| vPro Capability | | |
|-----------------|-----------------|----------------|
| GbE PHY | Yes | No |
| U3502 | Jacksonville-LM | Jacksonville-V |

LOGIC



X3501

TXC 7R25080002

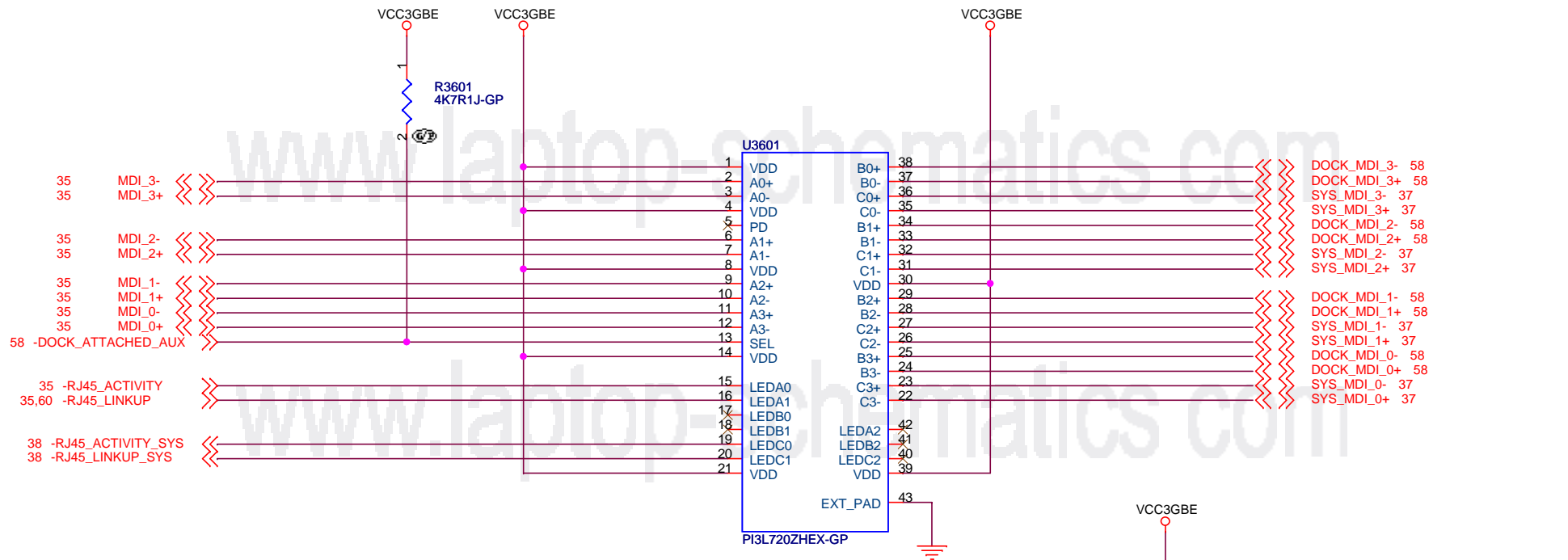
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KDS 1ZZNAE25000CC0B

| | TXC | EPSON | KDS |
|-------|----------------|----------------|----------------|
| X3501 | 082.30005.0791 | 082.30006.0331 | 082.30005.0771 |
| R3511 | 470 ohm | 470 ohm | 470 ohm |
| C3516 | 12P | 12P | 12P |
| C3517 | 12P | 12P | 12P |

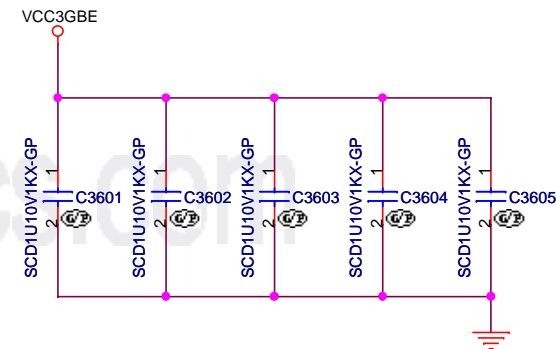
ULT

| | | | |
|-------------------------------|---------------------------|--------------------------------------------------------------------------------|-----------------|
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| | | 21F, 88, Sec. 1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C. | |
| Title GBE JACKSONVILLE | | | |
| Size A3 | Document Number | LTS-1 | Rev 1 |
| Date: | Friday, February 24, 2017 | Sheet 35 | of 103 |



U3601

| Vendor | P/N | Wistron P/N |
|---------|--------------|--------------|
| Pericom | PI3L720ZHEX | 73.03720.003 |
| TI | TS3L501ERUAR | 73.03501.003 |



<Variant Name>

緯創資通

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

Title

GBE LAN Switch

Size
A4

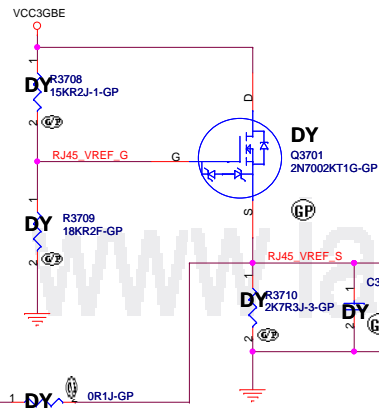
Document Number

LTS-1

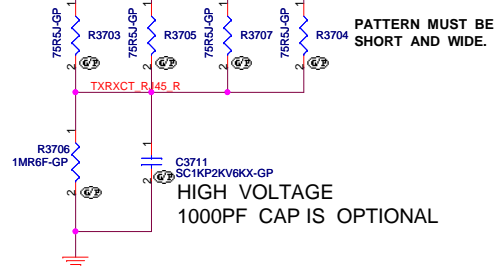
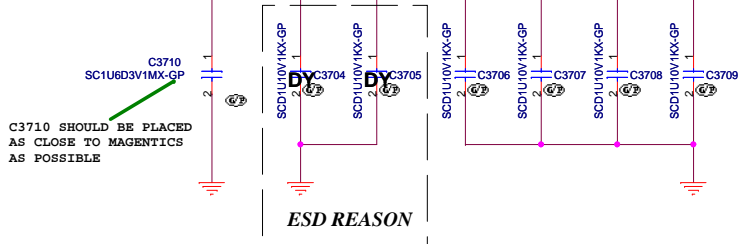
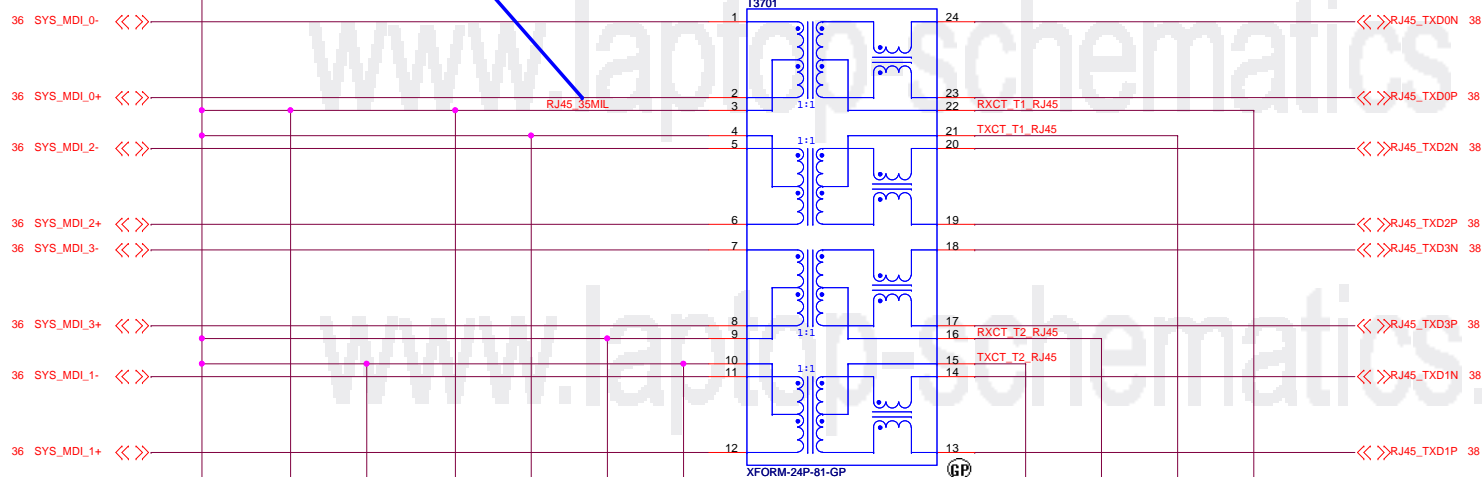
Rev
1

Date: Friday, February 24, 2017

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THE WIDTH OF THESE TRACE SHOULD BE WIDER THAN 35MIL TO PREVENT VOLTAGE DROP.



HIGH VOLTAGE
1000PF CAP IS OPTIONAL

| Vendor | P/N | |
|----------|----------|----------------|
| Bothhand | NA69LF | 068.0NA69.3001 |
| TAIMAG | IH-189-A | 68.IH189.30A |

<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 MAGNETICS

Size
A3

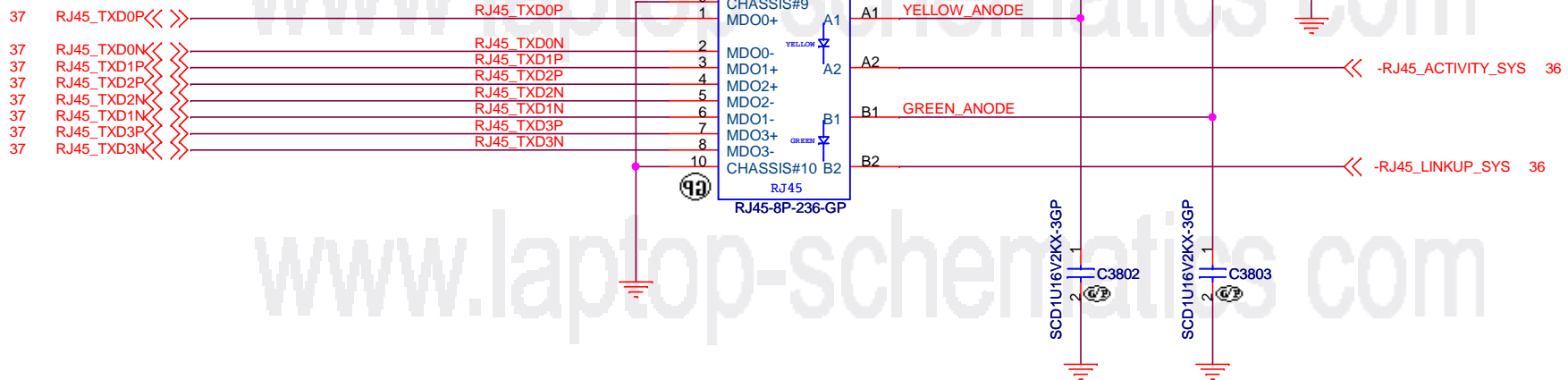
Document Number

LTS-1

Rev
1

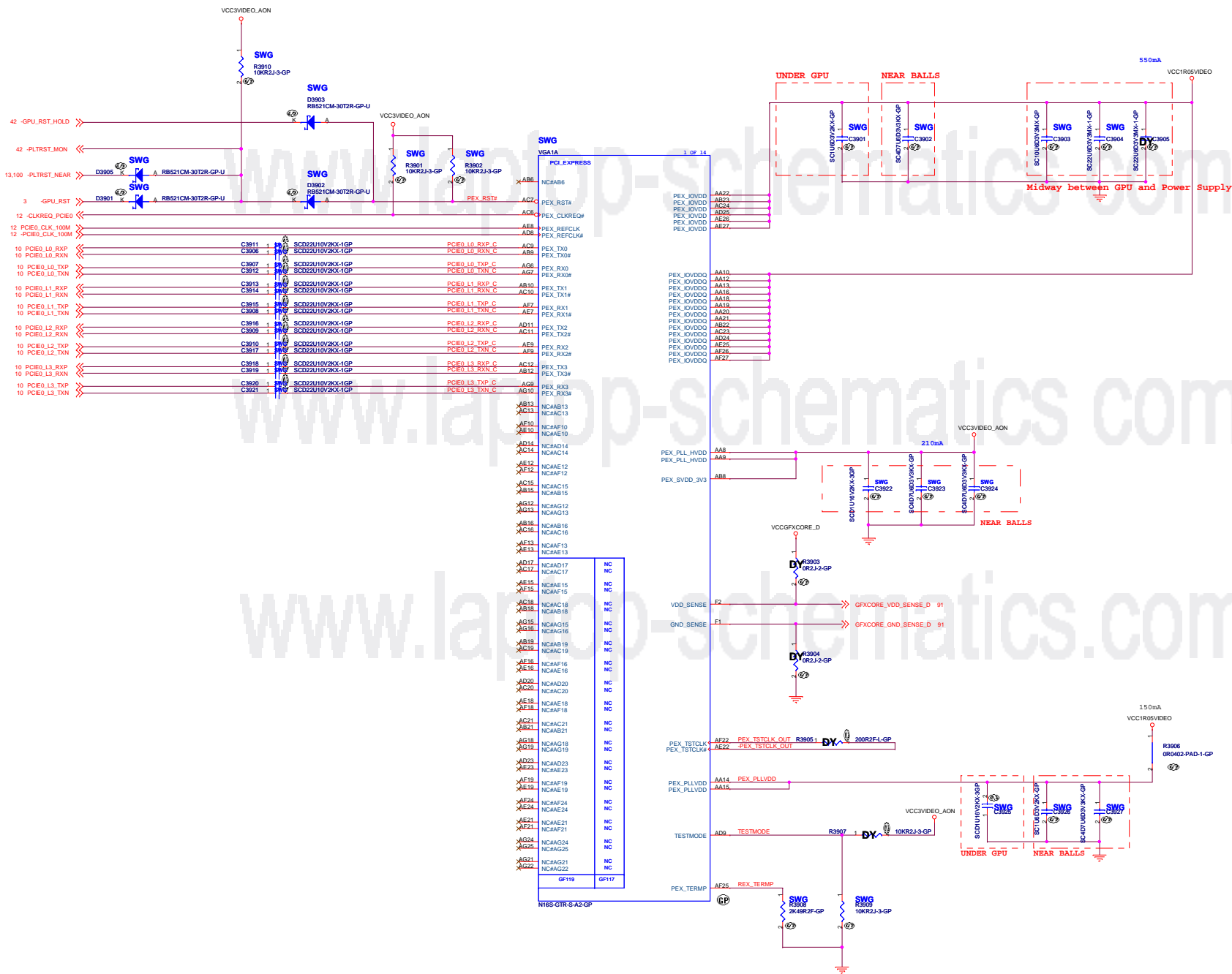
Date: Friday, February 24, 2017

Sheet 37 of 103

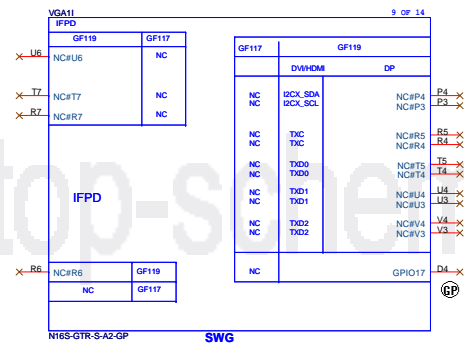
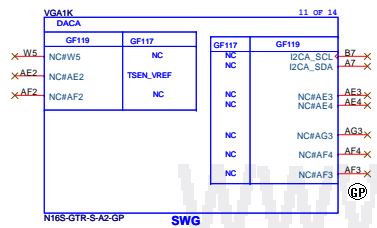


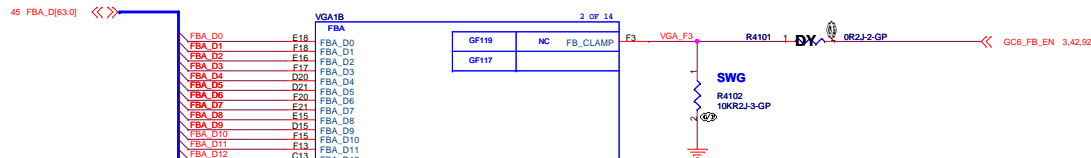
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|---------------------------------|-----------------|-------------------------------------------------------------------------------|----------|
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| Title | | | |
| RJ45 CONNECTOR | | | |
| Size Custom | Document Number | LTS-1 | Rev 1 |
| Date: Friday, February 24, 2017 | Sheet 38 | of 103 | |

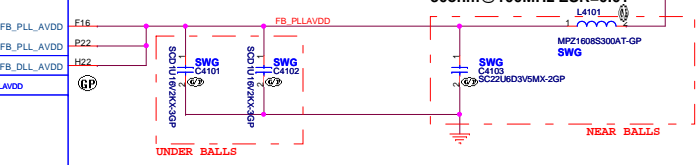
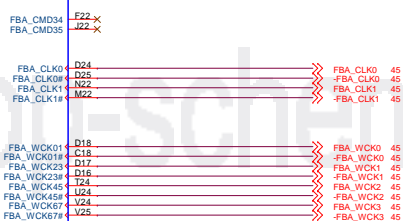
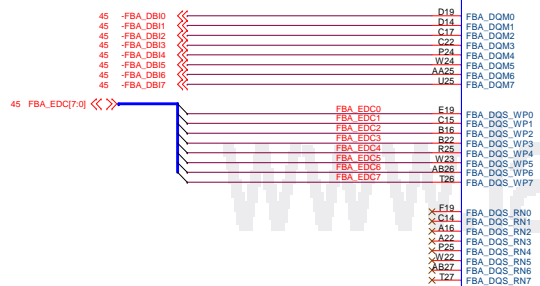
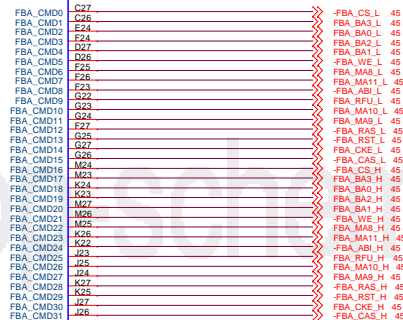


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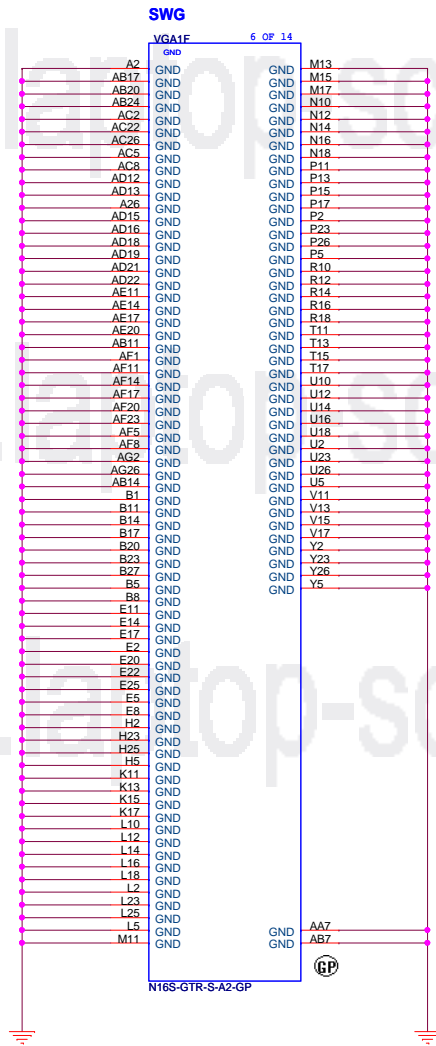




N16x GDDR5 Mode H Mapping

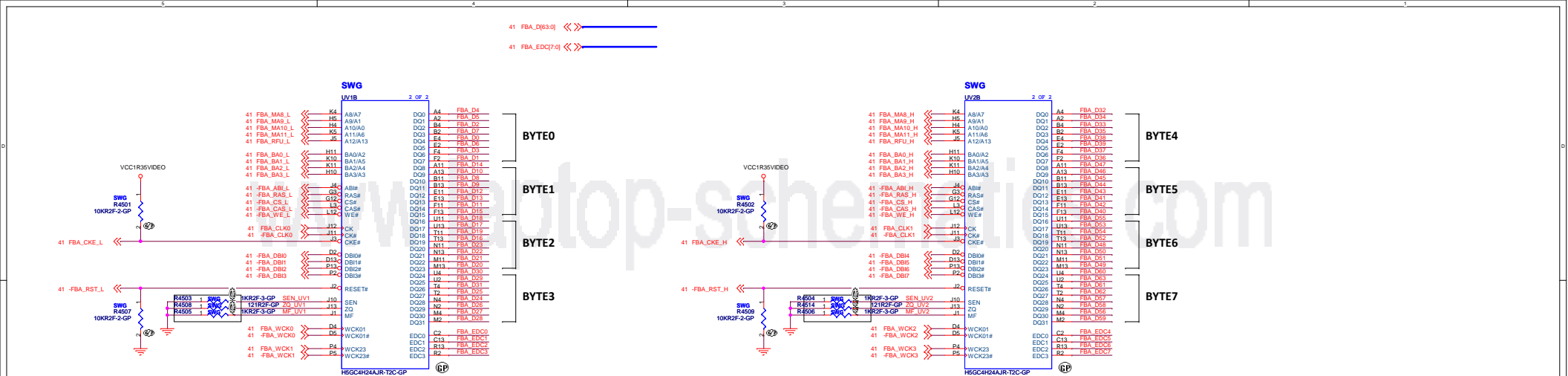
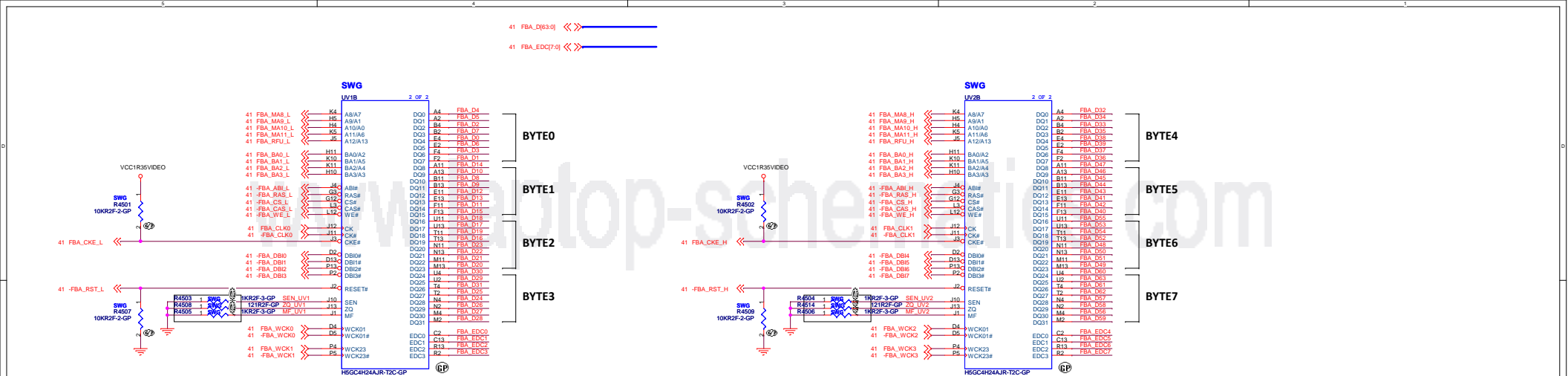






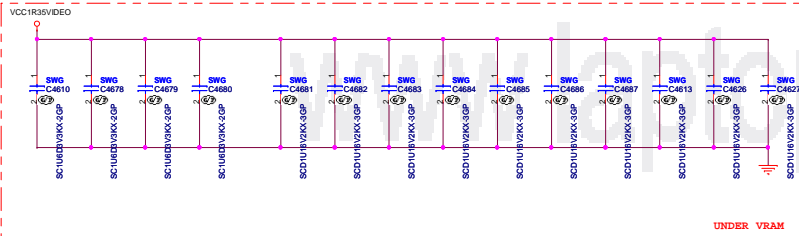
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| | | | |
|---------------------------|---------------------------|-------------------------------------------------------------------------------|-----|
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| Title | | | |
| N15S-GM(6/6) : GND | | | |
| Size | Document Number | | Rev |
| A3 | LTS-1 | | 1 |
| Date: | Friday, February 24, 2017 | Sheet 44 of | 103 |

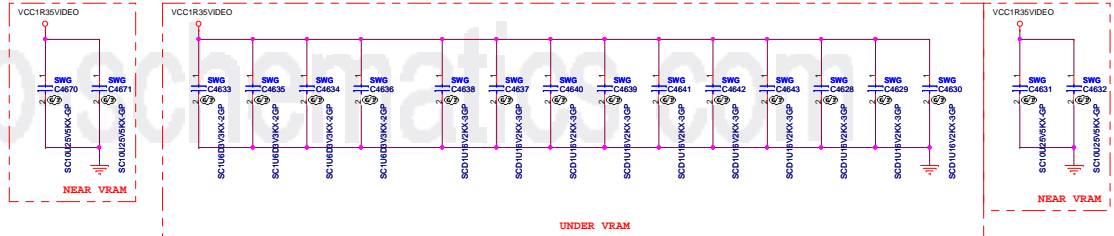


| | | |
|------------------|---------------------------------------------------|-------------------------------|
| TS-1 | For N16S-GTR (Geforce) For N17M-Q1-A2 (Quadro) | |
| VRAM | SAMSUNG, GDDR5, 256M x 32, 8Gb | MICRON, GDDR5, 256M x 32, 8Gb |
| UV1 UV2 | K4G80325FB-HC03 (B-die) | MT51J256M32HF-60:A (A-die) |
| BOM Structure | VS@ | VM@ |

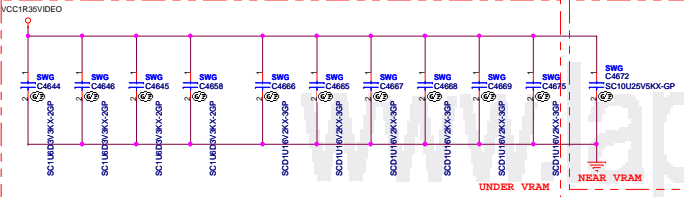
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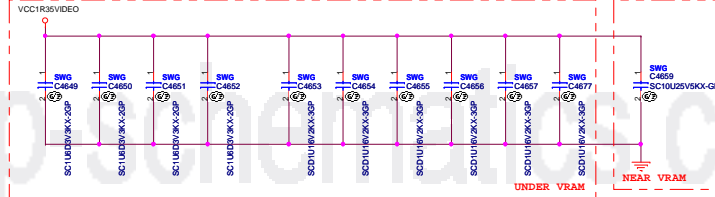
For UV2



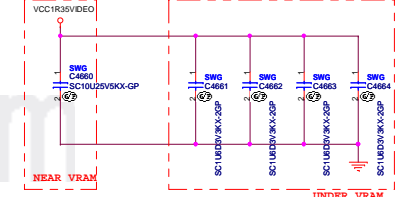
For FBVDDQ



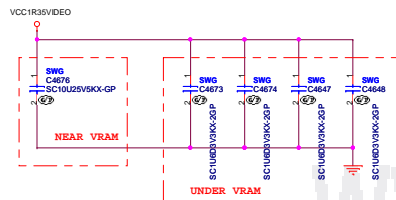
For FBVDDQ



For FBVDD



For FBVDD



| Capacitor Type | Footprint | Population ¹ | | | Location ² | |
|------------------|-----------|-------------------------|-------|----|-----------------------|---------------|
| | | FBVDDQ | FBVDD | | | |
| FBVDD/Q Combined | | | | | | |
| 0.1 µF | X7R | 0402 | 10 | 10 | Under DRAM | |
| 1.0 µF | X7R | 0603 | 4 | 4 | Under DRAM | |
| 10 µF | X5R | 0805 | 2 | 2 | Close to DRAM | |
| FBVDD/Q Separate | | | | | | |
| 0.1 µF | X7R | 0402 | 6 | 6 | 0 | Under DRAM |
| 1.0 µF | X7R | 0603 | 8 | 4 | 4 | Under DRAM |
| 10 µF | X5R | 0805 | 2 | 1 | 1 | Close to DRAM |

Note:

1. Per sub-partition, for example, per two pieces of ×16 DRAM or one piece of ×32 DRAM.
2. Location is close to DRAM for all decoupling with ×16 DRAM.

ULT

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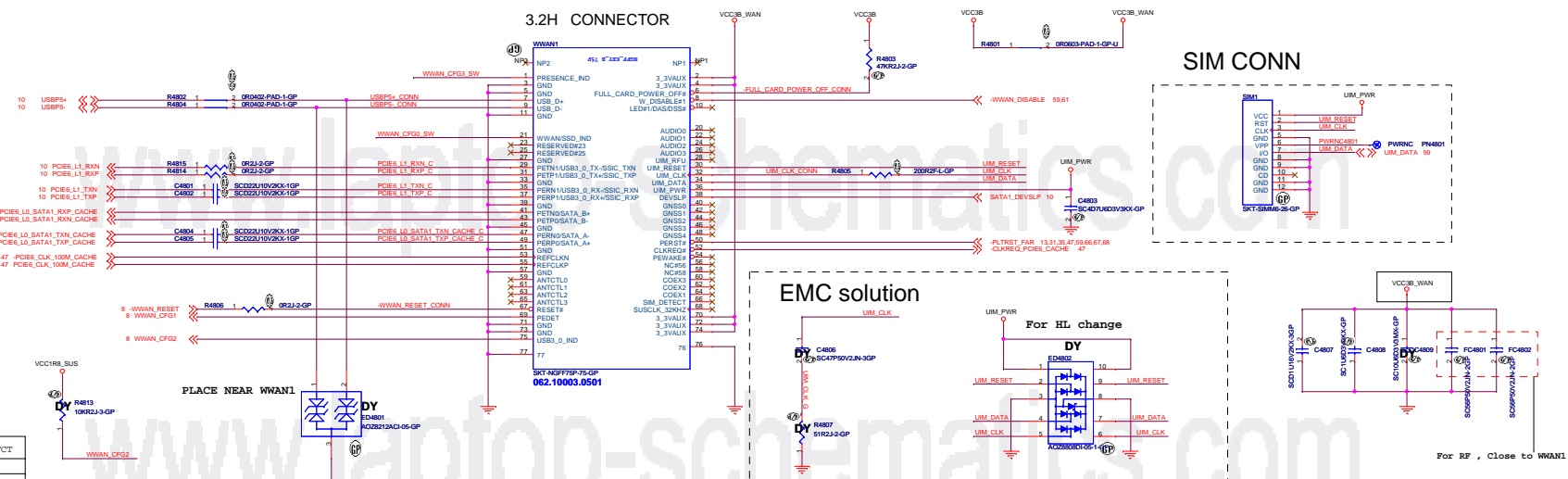
File **VRAM MEMORY DECOUPLING**

Size A2 Document Number **LTS-1** Rev **1**

Date: Friday, February 24, 2017 Sheet 48 of 103

| | | | | | | |
|----|-----|----|-----|-----|-------------------|-----|
| 7 | GND | NC | NC | NC | WWAN - USB 3.0 | 3 |
| 8 | NC | NC | GND | GND | WWAN - SSIC | 0 |
| 9 | NC | NC | GND | GND | WWAN - SSIC | 1 |
| 10 | NC | NC | GND | NC | WWAN - SSIC | 2 |
| 11 | NC | NC | GND | NC | WWAN - SSIC | 3 |
| 12 | NC | NC | GND | GND | WWAN - PCIe | 2 |
| 13 | NC | NC | GND | NC | WWAN - PCIe | 3 |
| 14 | NC | NC | NC | GND | RFU | N/A |
| 15 | NC | NC | NC | NC | No Module Present | N/A |

TYPE-B NGFF CARD FOR WWAN

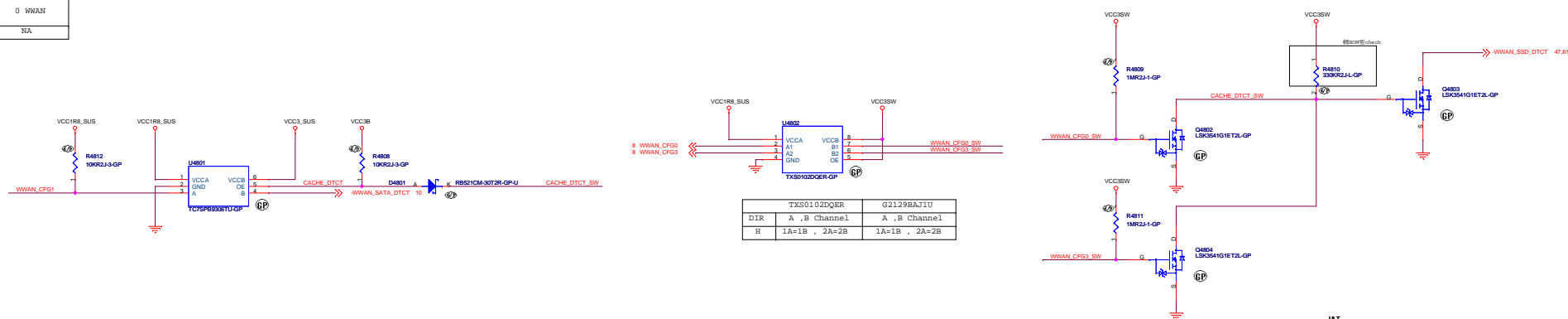


```
for test point, page 91
```

| | | |
|----|-----------|-----------|
| 99 | UIM_RESET | UIM_RESET |
| 99 | UIM_CLK | UIM_CLK |
| 99 | UIM_DATA | UIM_DATA |

| CACHE_DTCT | WWAN_CFG1 | -WWAN_SATA_DTCT |
|------------|-----------|-----------------|
| 1 | 1 | 1 (PCIE) |
| 1 | 0 | 0 (SATA) |
| 0 | X | 1 (PCIE) |

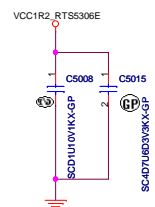
| CFG0 | CFG3 | CACHE_DTCT |
|------|------|------------|
| 0 | 0 | 1 SSD |
| 0 | 1 | 0 WWAN |
| 1 | 0 | |
| 1 | 1 | NA |



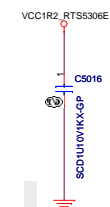
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ULT

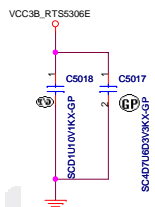
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| | | <div>21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.</div> | |
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| <div>Size</div> <div>A</div> | <div>Document Number</div> <div>LTS-1</div> | | <div>Rev</div> <div>1</div> |
| <div>Date:</div> <div>Friday, February 24, 2017</div> | <div>Sheet</div> <div>49</div> | <div>of</div> <div>103</div> | |



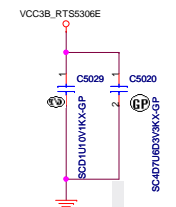
Near Pin5



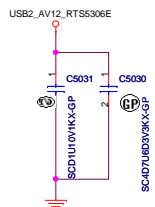
Near Pi32



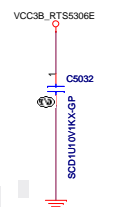
Near Pin7



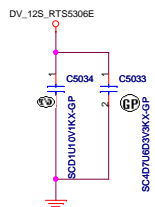
Near Pin8,14



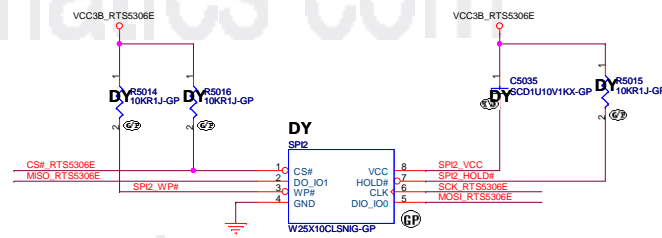
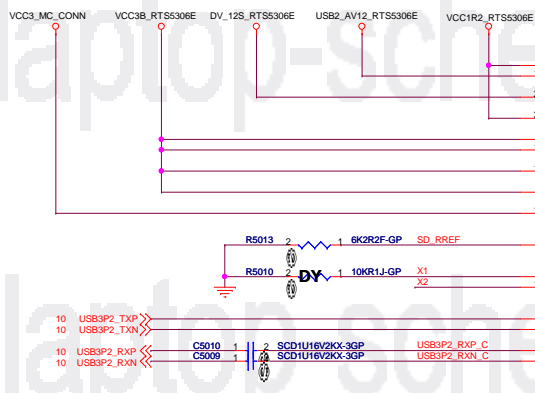
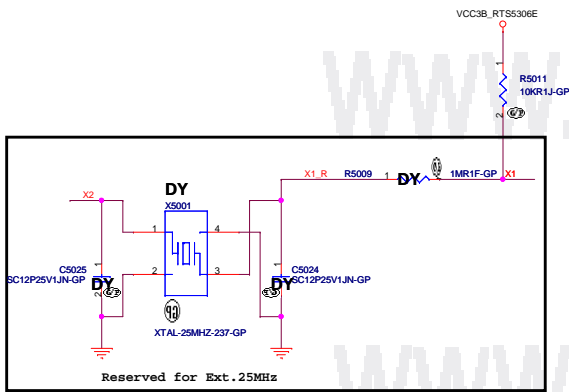
Near Pin11



Near Pin15



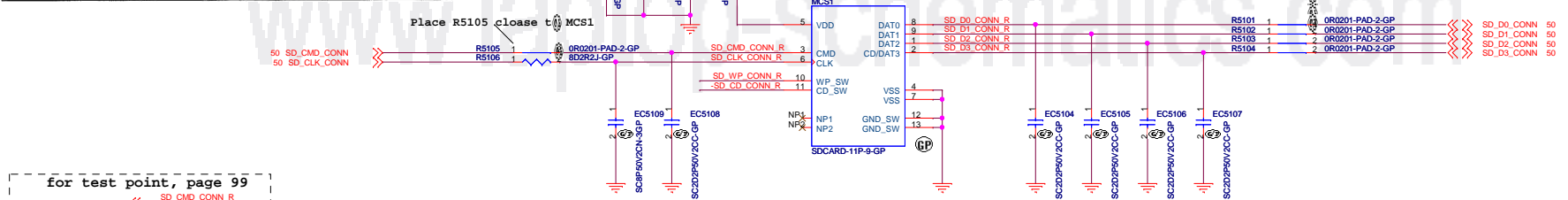
Near Pin25



Place R5017 and C5019 close to U5001

| | | | |
|----------------------|---------------------------|----------|--------|
| Media Card Interface | | | |
| File | Document Number | LTS-1 | Rev 1 |
| Size | Custom | | |
| Date | Friday, February 24, 2017 | Sheet 50 | of 103 |

| | PROTECT CONTACT | | DETECT CONTACT |
|---------------------|------------------------|-----------------------|----------------|
| | WRITE PROTECT POSITION | WRITE ENABLE POSITION | |
| CARD UNINSERTION | CLOSE | CLOSE | CLOSE |
| CARD HALF INSERTION | OPEN | OPEN | CLOSE |
| CARD INSERTION | CLOSE | OPEN | OPEN |

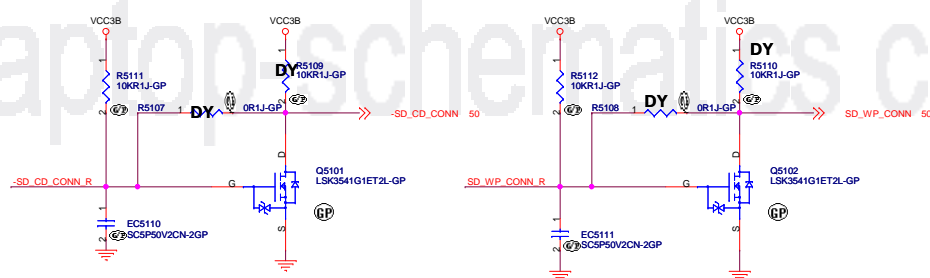


```

99 SD_CMD_CONN_R
99 SD_CLK_CONN_R
99 SD_D0_CONN_R
99 SD_D1_CONN_R
99 SD_D2_CONN_R
99 SD_D3_CONN_R
99 SD_CD_CONN_R
99 SD_WP_CONN_R
SD_CLK_CONN_R
SD_D0_CONN_R
SD_D1_CONN_R
SD_D2_CONN_R
SD_D3_CONN_R
SD_CD_CONN_R
SD_WP_CONN_R

```

| | Signal | CARD Un-Insertion | CARD Half Insertion | CARD Insertion |
|------------------------|---------------|--------------------|---------------------|--------------------|
| Write Protect Position | SD_WP_CONN_R | Low | High | Low |
| | SD_WP_CONN | Low (Internal PD) | Low | High (Internal PU) |
| Write Enable Position | SD_WP_CONN_R | Low | High | High |
| | SD_WP_CONN | Low (Internal PD) | Low | Low |
| Detect Contact | -SD_CD_CONN_R | Low | Low | High |
| | -SD_CD_CONN | High (Internal PU) | High (Internal PU) | Low |



<Variant Name>

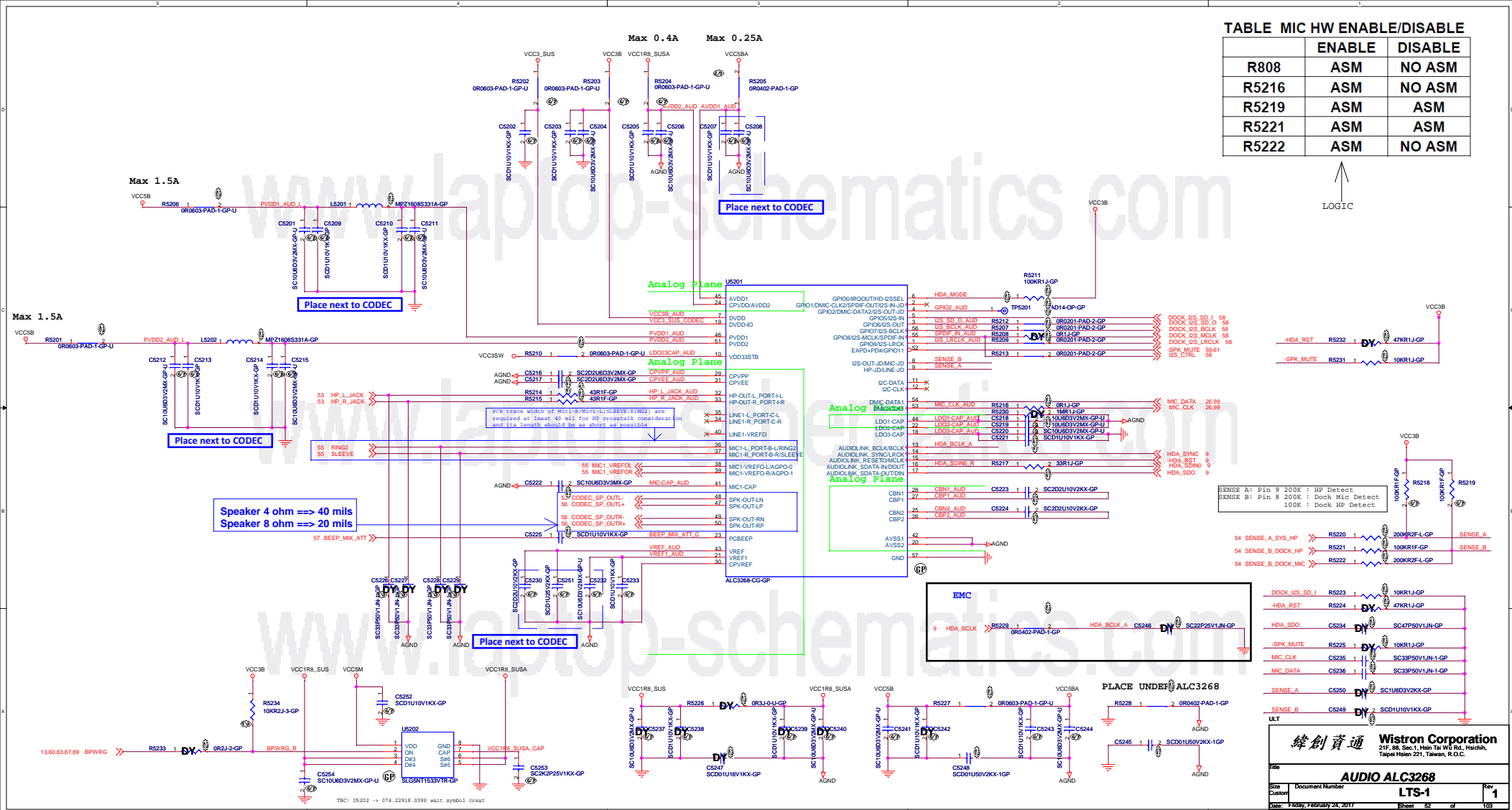
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Title: **MEDIA CARD CONNECTOR**

Doc Number: **LTS-1**

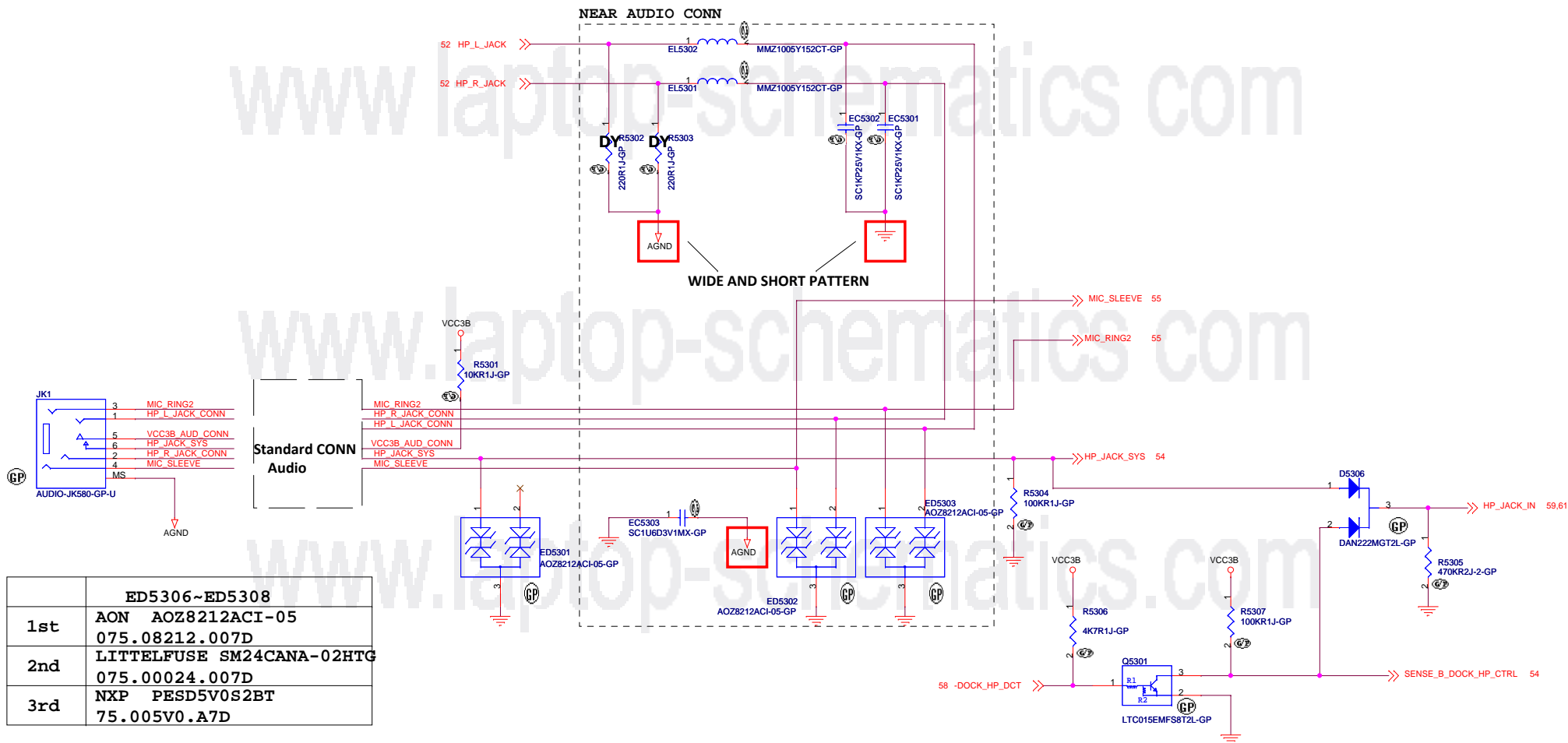
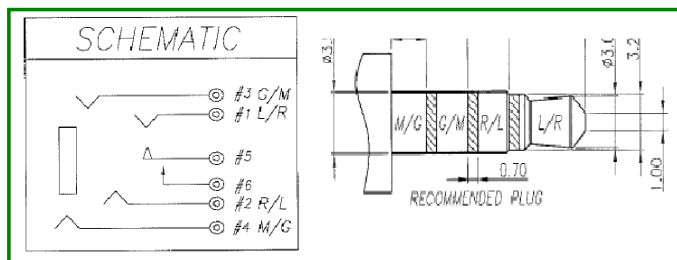
Date: Friday, February 24, 2017

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| | ED5306~ED5308 |
|-----|---------------------------------------------|
| 1st | AON AOZ8212ACI-05 075.08212.007D |
| 2nd | LITTELFUSE SM24CANA-02HTG 075.00024.007D |
| 3rd | NXP PESD5V0S2BT 75.005V0.A7D |

Audio Jack



ULT

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Title: **AUDIO CONNECTOR**

Size A3 Document Number: **LTS-1** Rev **1**

Date: Friday, February 24, 2017 Sheet 53 of 103

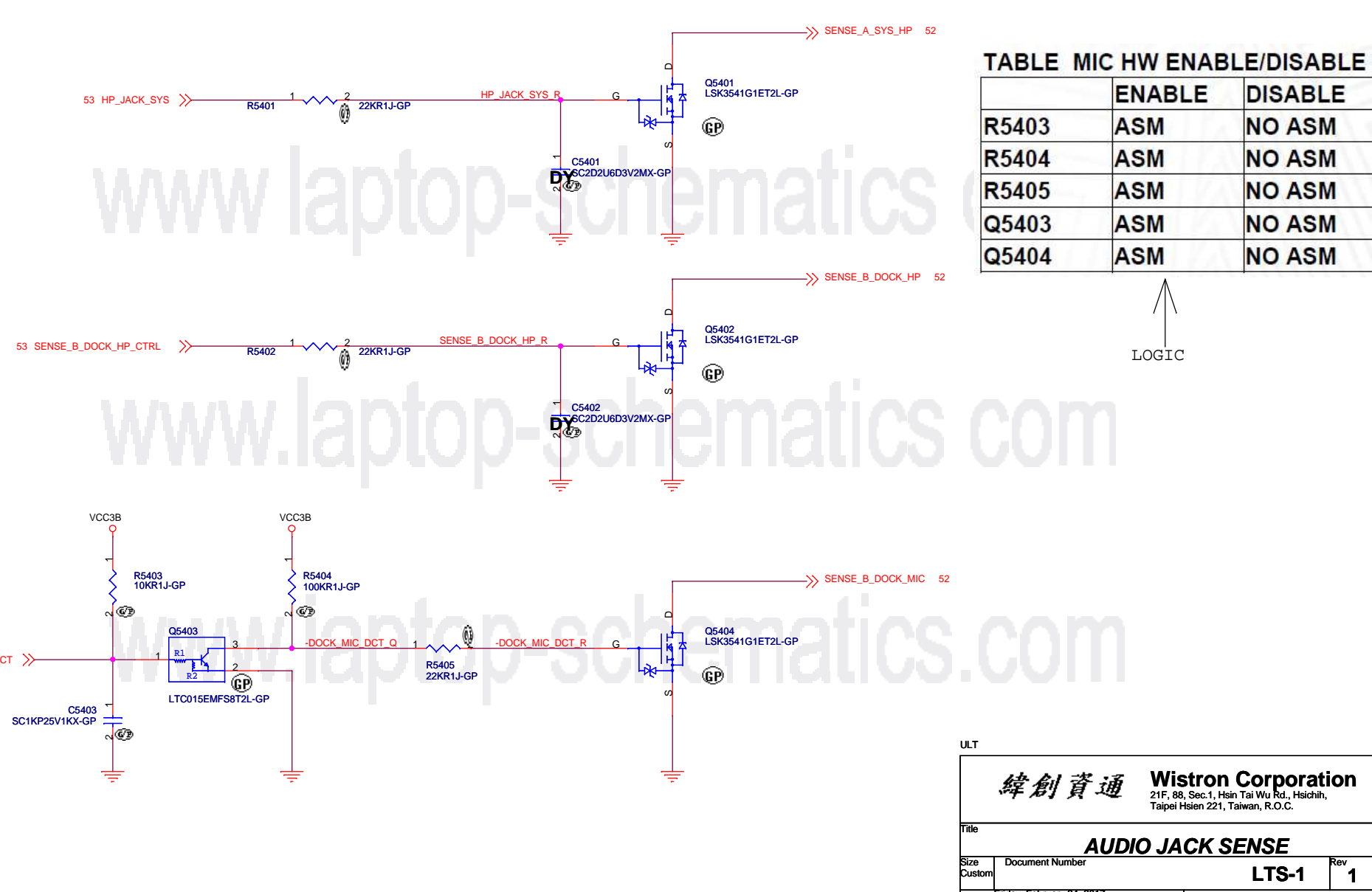


TABLE MIC HW ENABLE/DISABLE

| | ENABLE | DISABLE |
|-------|--------|---------|
| R5403 | ASM | NO ASM |
| R5404 | ASM | NO ASM |
| R5405 | ASM | NO ASM |
| Q5403 | ASM | NO ASM |
| Q5404 | ASM | NO ASM |

↑
LOGIC

ULT

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Title

AUDIO JACK SENSE

Size
Custom

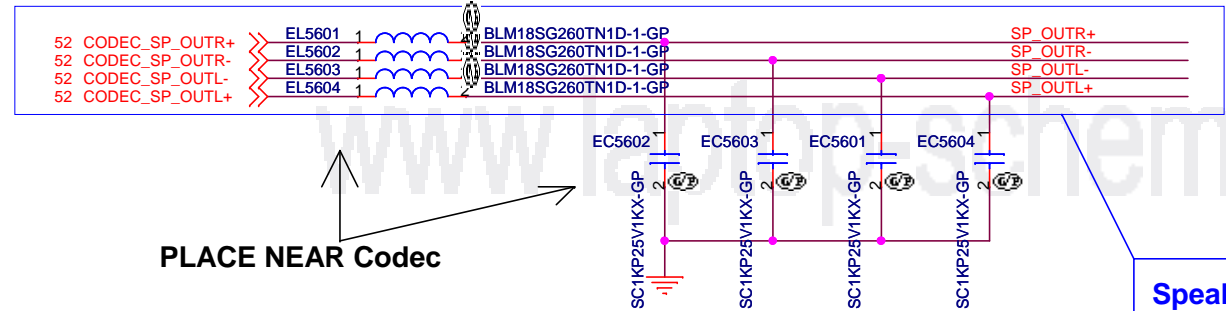
Document Number

LTS-1

Rev
1

Date: Friday, February 24, 2017

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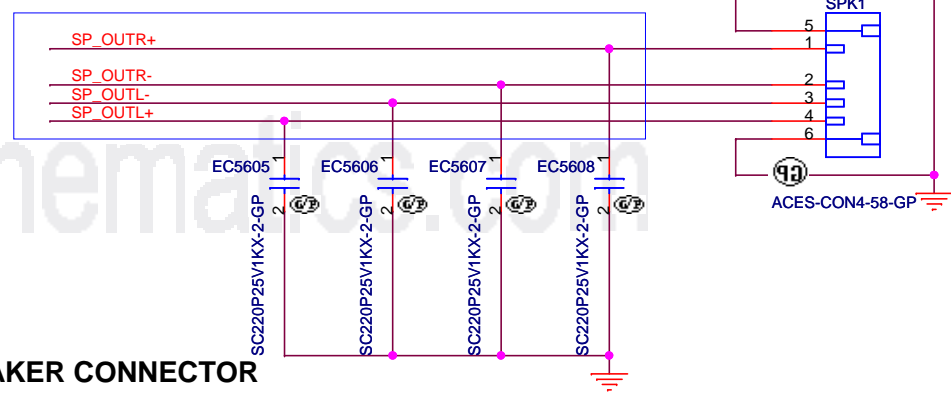


Speaker 4 ohm ==> 40 mils
Speaker 8 ohm ==> 20 mils

ALC3268 speaker output part

for test point, page 99

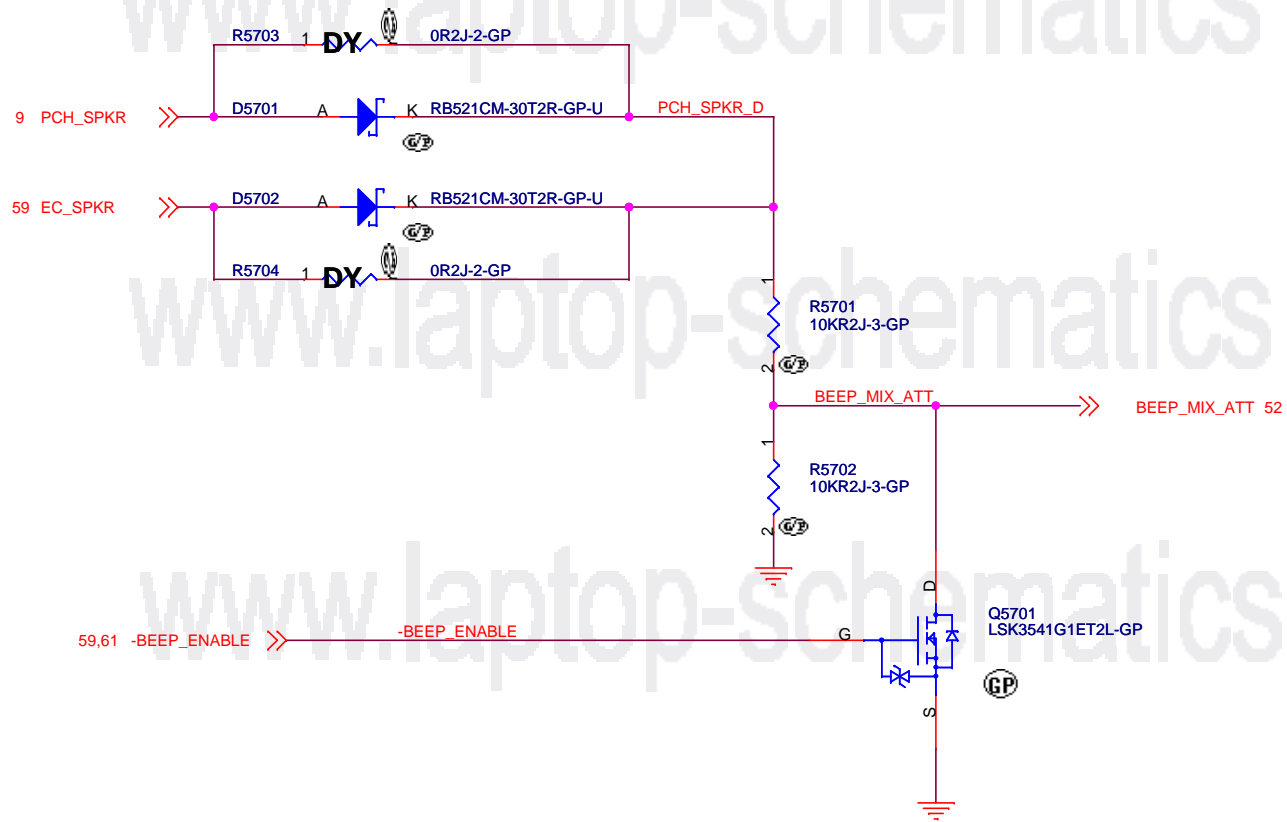
| | |
|-------------|----------|
| 99 SP_OUTR+ | << _____ |
| 99 SP_OUTR- | << _____ |
| 99 SP_OUTL- | << _____ |
| 99 SP_OUTL+ | << _____ |



PLACE, NEAR SPEAKER CONNECTOR

ULT

| | | | |
|---------------|---------------------------|----------------------------------------------------------------------------|--------|
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| Title | | | |
| AUDIO SPEAKER | | | |
| Size A4 | Document Number | | Rev |
| | LTS-1 | | 1 |
| Date: | Friday, February 24, 2017 | Sheet 56 | of 103 |



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Title

AUDIO BEEP

Size
A4

Document Number

LTS-1

Rev
1

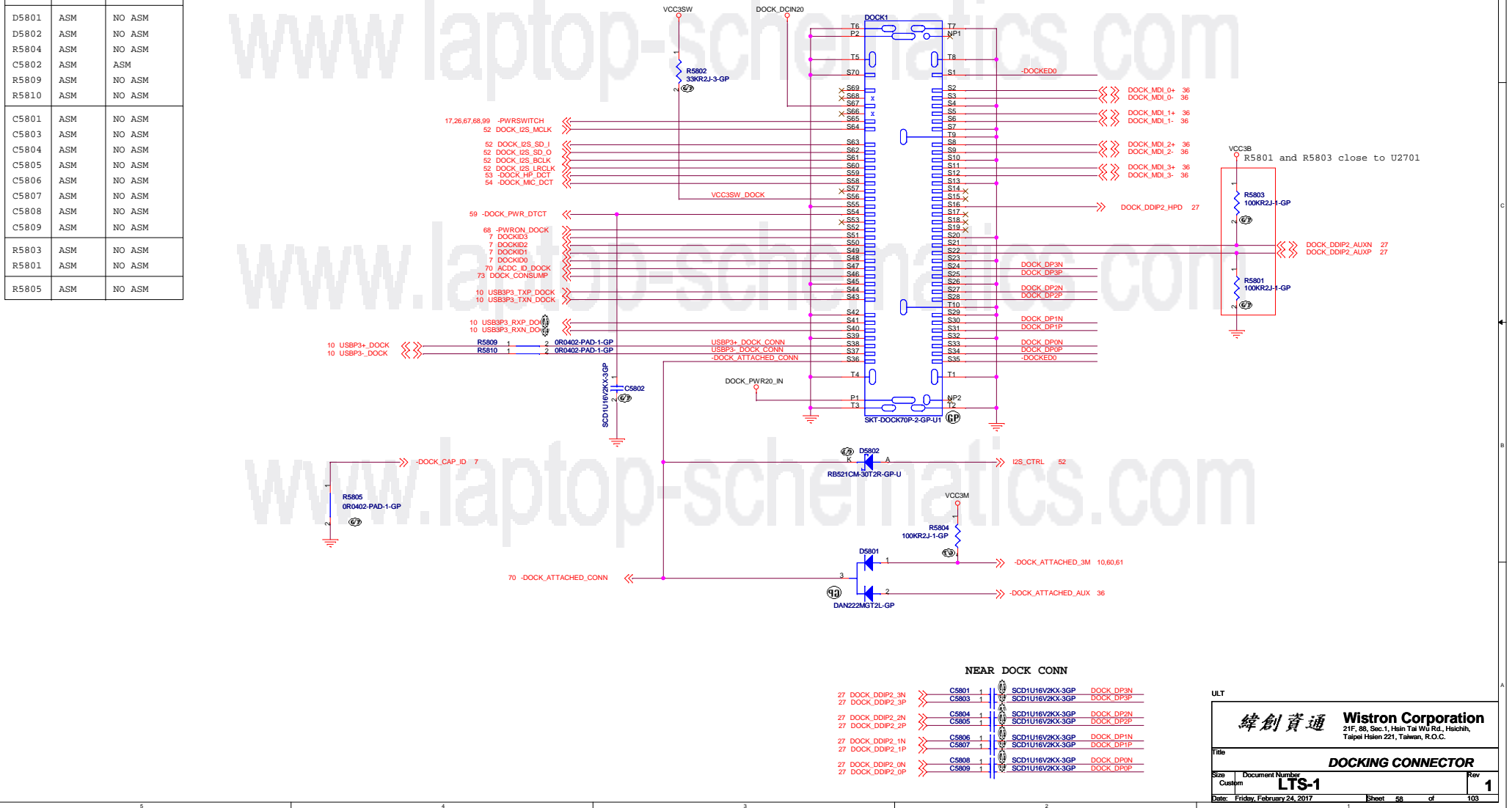
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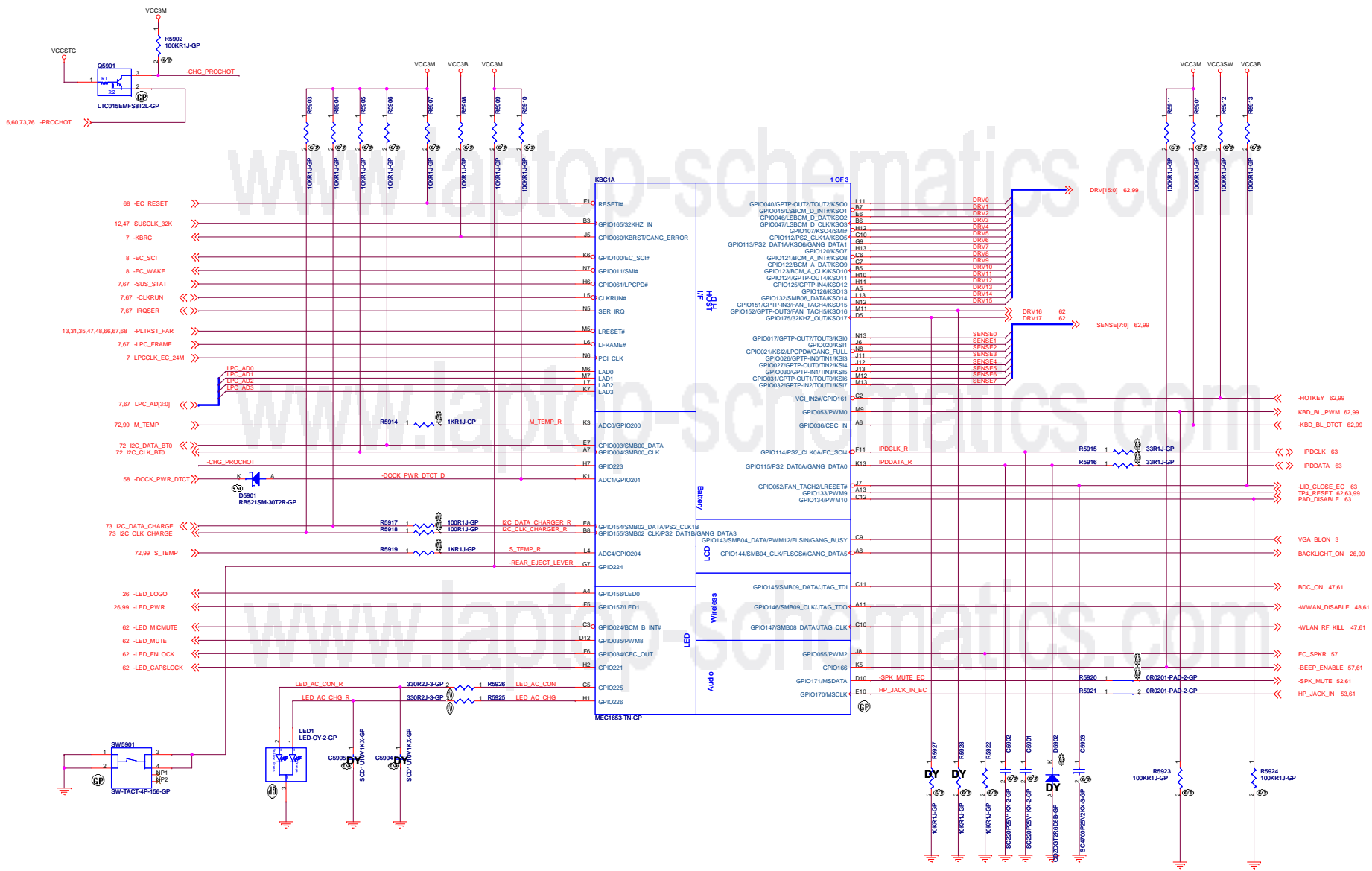
Sheet 57 of 103

LOGIC

TABLE

| ID | DOCKING SUPPORT | NON-SUPPORT |
|-------|-----------------|-------------|
| DOCK1 | ASM | NO ASM |
| R5802 | ASM | NO ASM |
| D5801 | ASM | NO ASM |
| D5802 | ASM | NO ASM |
| R5804 | ASM | NO ASM |
| C5802 | ASM | ASM |
| R5809 | ASM | NO ASM |
| R5810 | ASM | NO ASM |
| C5801 | ASM | NO ASM |
| C5803 | ASM | NO ASM |
| C5804 | ASM | NO ASM |
| C5805 | ASM | NO ASM |
| C5806 | ASM | NO ASM |
| C5807 | ASM | NO ASM |
| C5808 | ASM | NO ASM |
| C5809 | ASM | NO ASM |
| R5803 | ASM | NO ASM |
| R5801 | ASM | NO ASM |
| R5805 | ASM | NO ASM |



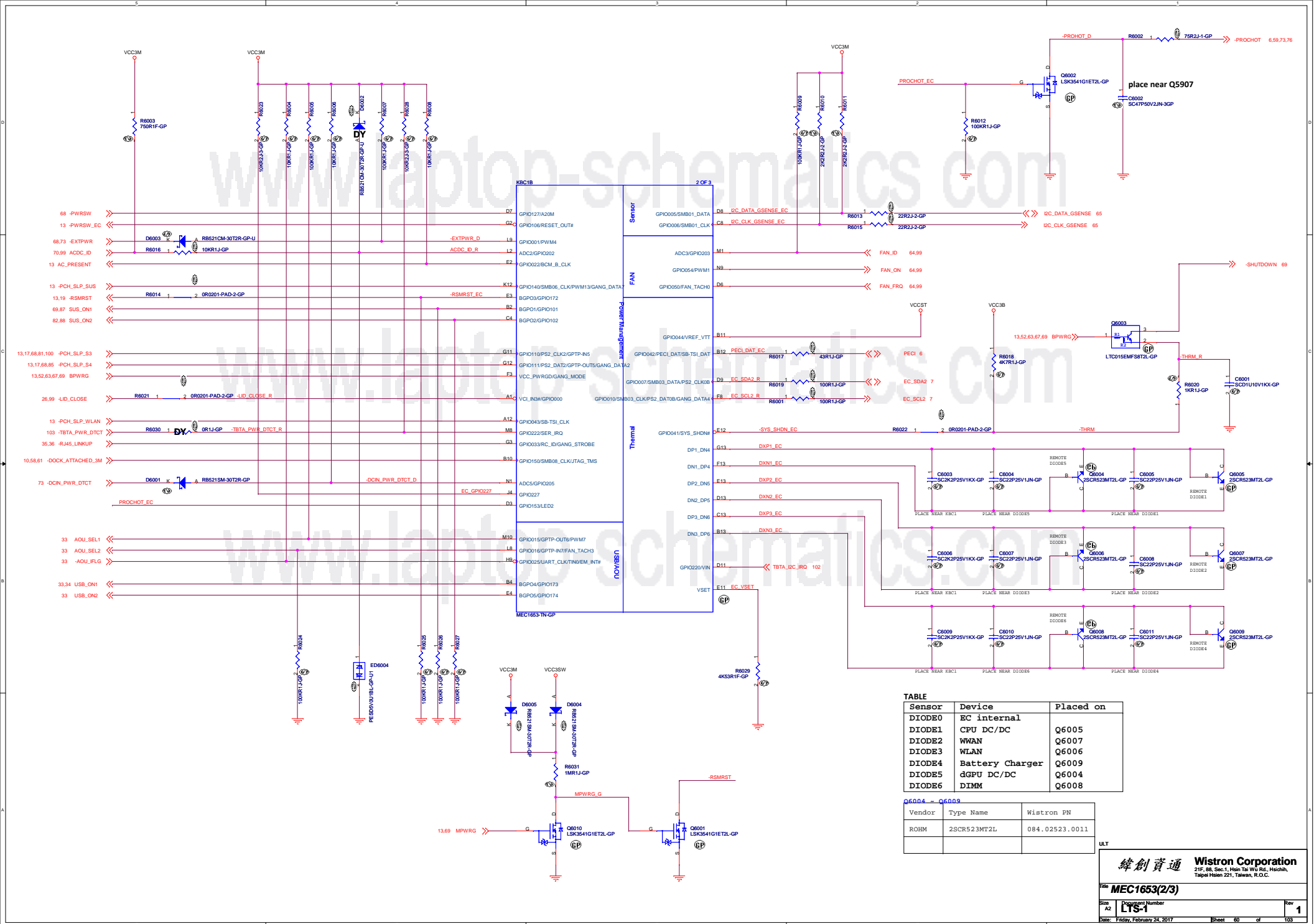


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21F, 88, Sec. 1, Hsin Tai Wu Rd., Hsinchu,
Taipei Hsin 321, Taiwan, R.O.C.

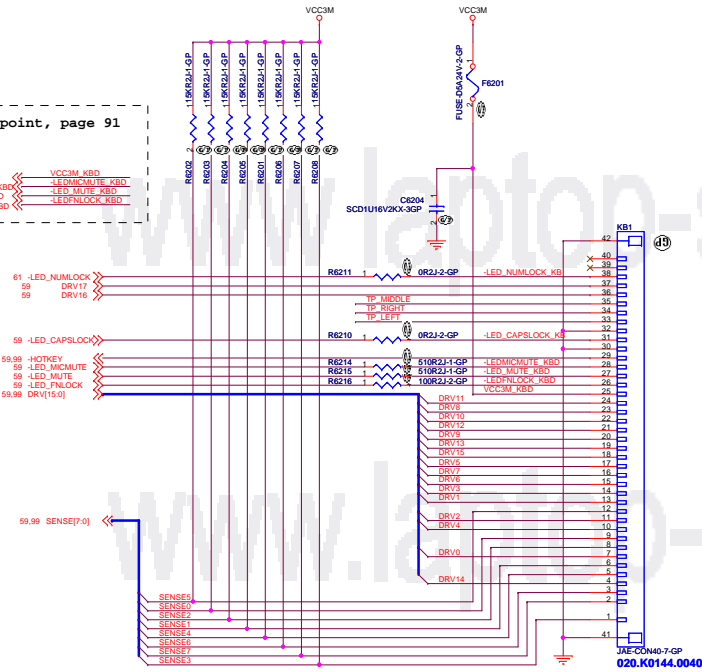
Rev: MEC1653(1/3)

Size: A2
Drawing Number: LYS-1
Date: Friday, February 24, 2017
Sheet: 59 of 103
Rev: 1



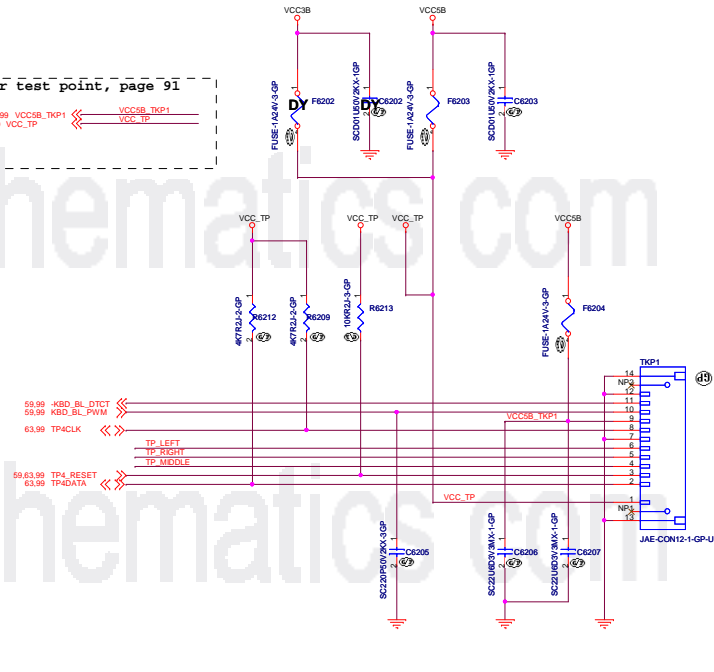
for test point, page 91

VCC3M_KBD
LEDMMUTE_KBD
LED_MUTE_KBD
LEDFNLOCK_KBD



for test point, page 91

VCC5B_TKP1
VCC_TP

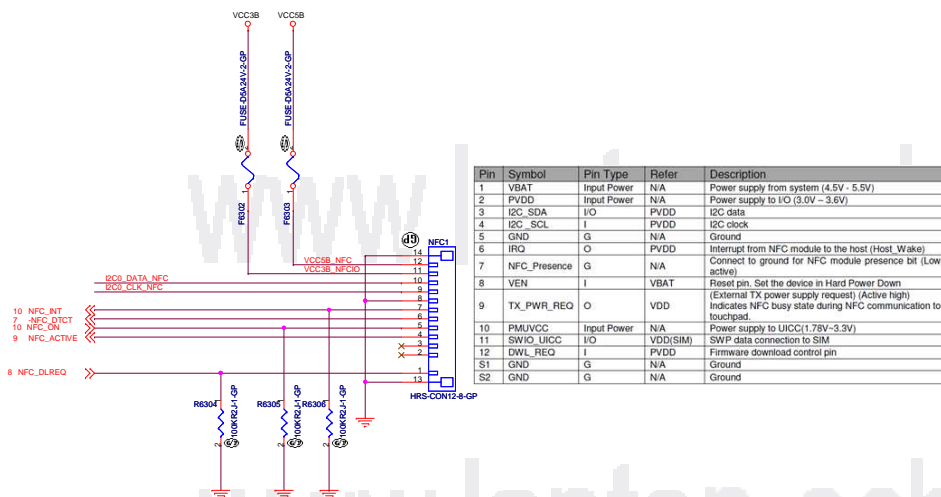


| | | | | | | | |
|----|-------------------|--------|-------|----|--------|--------------|--------|
| DY | AZ5A25-01FDR7G-GP | ED6206 | DRV8 | DY | ED6209 | LED_MICMUTE | DY |
| DY | AZ5A25-01FDR7G-GP | ED6210 | DRV1 | DY | ED6211 | LED_MUTE | DY |
| DY | AZ5A25-01FDR7G-GP | ED6212 | DRV2 | DY | ED6213 | LED_FNLOCK | DY |
| DY | AZ5A25-01FDR7G-GP | ED6214 | DRV3 | DY | ED6215 | LED_CAPSLOCK | DY |
| DY | AZ5A25-01FDR7G-GP | ED6216 | DRV4 | DY | ED6217 | LED_NUMLOCK | DY |
| DY | AZ5A25-01FDR7G-GP | ED6218 | DRV5 | DY | ED6219 | VCC3M_KBD | DY |
| DY | AZ5A25-01FDR7G-GP | ED6220 | DRV6 | DY | ED6221 | SENSE0 | DY |
| DY | AZ5A25-01FDR7G-GP | ED6201 | DRV7 | DY | ED6222 | SENSE1 | DY |
| DY | AZ5A25-01FDR7G-GP | ED6223 | DRV8 | DY | ED6224 | SENSE2 | DY |
| DY | AZ5A25-01FDR7G-GP | ED6225 | DRV9 | DY | ED6226 | SENSE3 | DY |
| DY | AZ5A25-01FDR7G-GP | ED6227 | DRV10 | DY | ED6228 | SENSE4 | DY |
| DY | AZ5A25-01FDR7G-GP | ED6229 | DRV11 | DY | ED6230 | SENSE5 | DY |
| DY | AZ5A25-01FDR7G-GP | ED6231 | DRV12 | DY | ED6232 | SENSE6 | DY |
| DY | AZ5A25-01FDR7G-GP | ED6233 | DRV13 | DY | ED6234 | SENSE7 | DY |
| DY | AZ5A25-01FDR7G-GP | ED6235 | DRV14 | DY | ED6236 | -HOTKEY | EMC_ON |
| DY | AZ5A25-01FDR7G-GP | ED6237 | DRV15 | | | | |
| DY | AZ5A25-01FDR7G-GP | ED6238 | DRV16 | | | | |
| DY | AZ5A25-01FDR7G-GP | ED6239 | DRV17 | | | | |

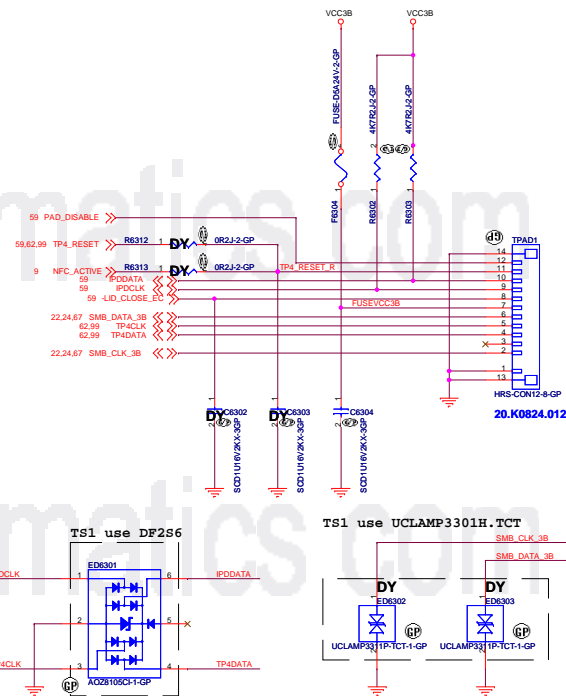
Change ED6236 to 0.1u cap for EMI Solution (Real SMT).
Keep location(ED6236) for layout name.

KB ESD
075.00525.0077 AZ5A25-01F.R7G

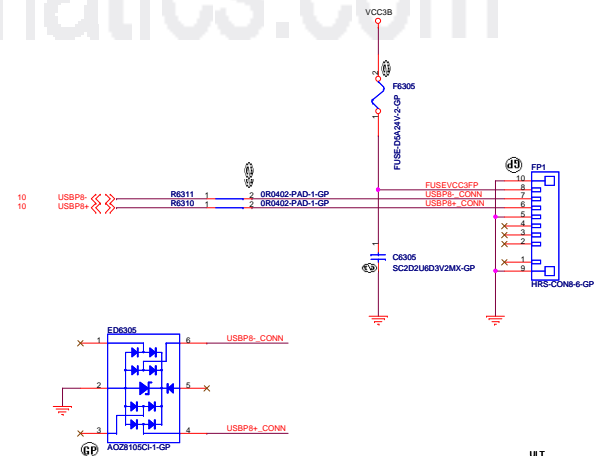
NFC



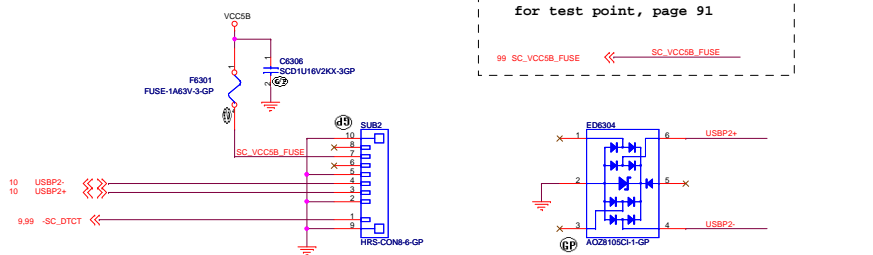
TOUCH PAD



FINGER PRINT READER



SMART CARD READER

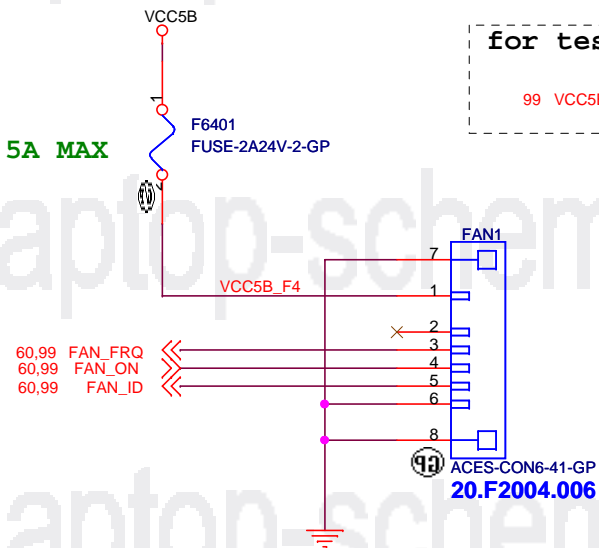


ULT

www.laptop-schematics.com

FAN

FAN CURRENT IS 0.5A MAX
FUSE 2.0A



for test point, page 91

99 VCC5B_F4 << VCC5B_F4

<Variant Name>

緯創資通

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

Title

FAN CONNECTOR

Size
A4

Document Number

LTS-1

Rev
1

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TABLE

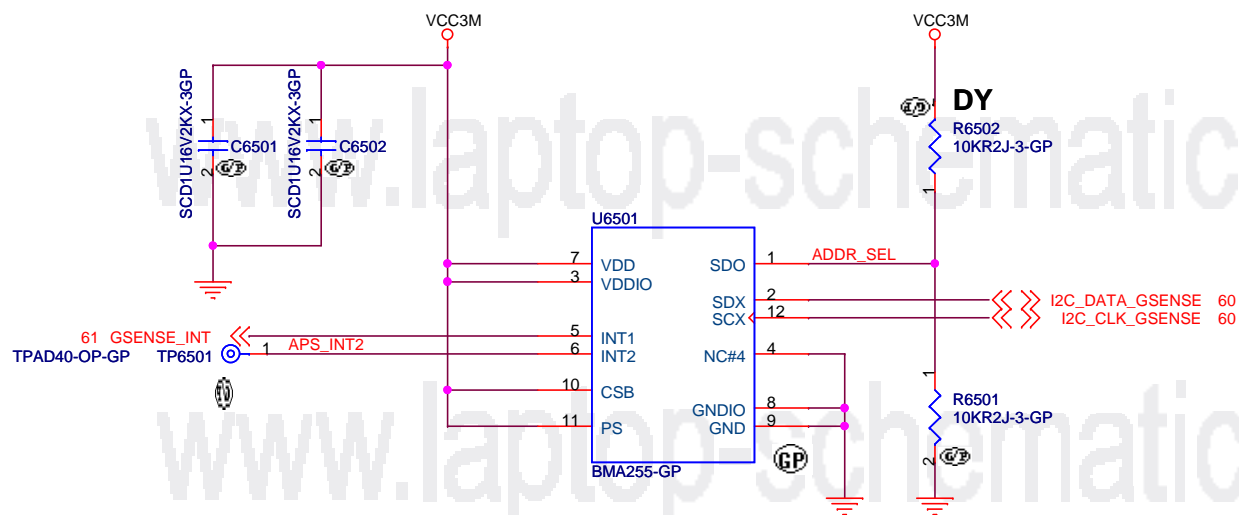
| CSB | Mode Selection |
|-----|----------------|
| H | I2C Mode |
| L | SPI Mode |

Logic

TABLE

| P/N | ADDR_SEL | Address |
|------------|----------|-------------------|
| BMA255 | H | 32h (W) & 33h (R) |
| | L | 30h (W) & 31h (R) |
| KX022-1020 | H | 3Eh (W) & 3Fh (R) |
| | L | 3Ch (W) & 3Dh (R) |

LOGIC



<Variant Name>

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Wistron Corporation

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Title

APS G-SENSOR

Size
A4

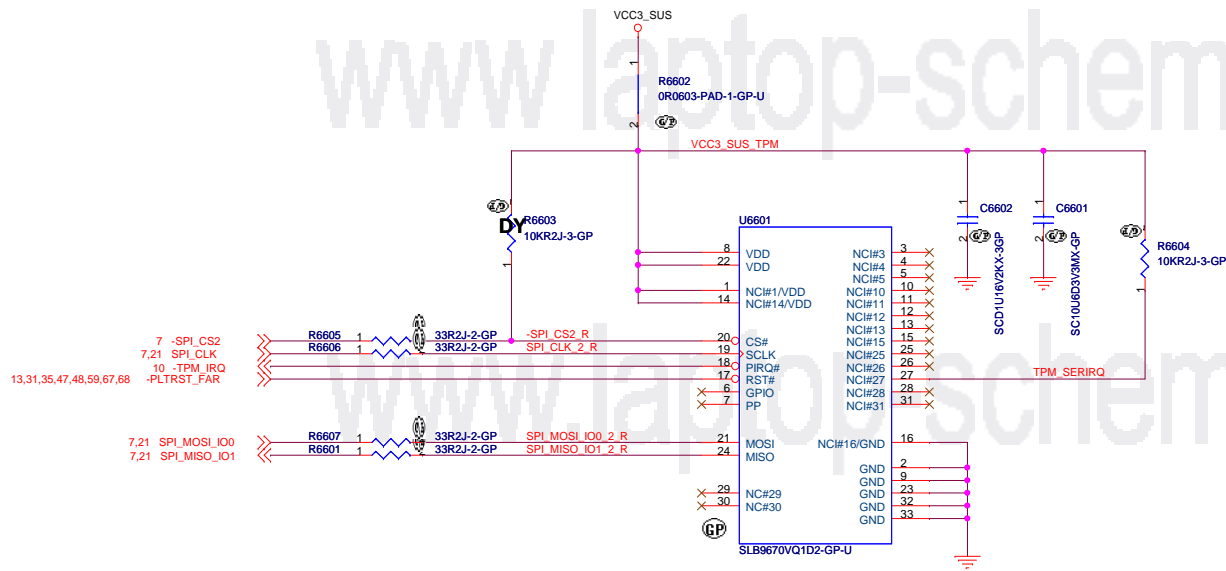
Document Number

LTS-1

Rev
1

Date: Friday, February 24, 2017

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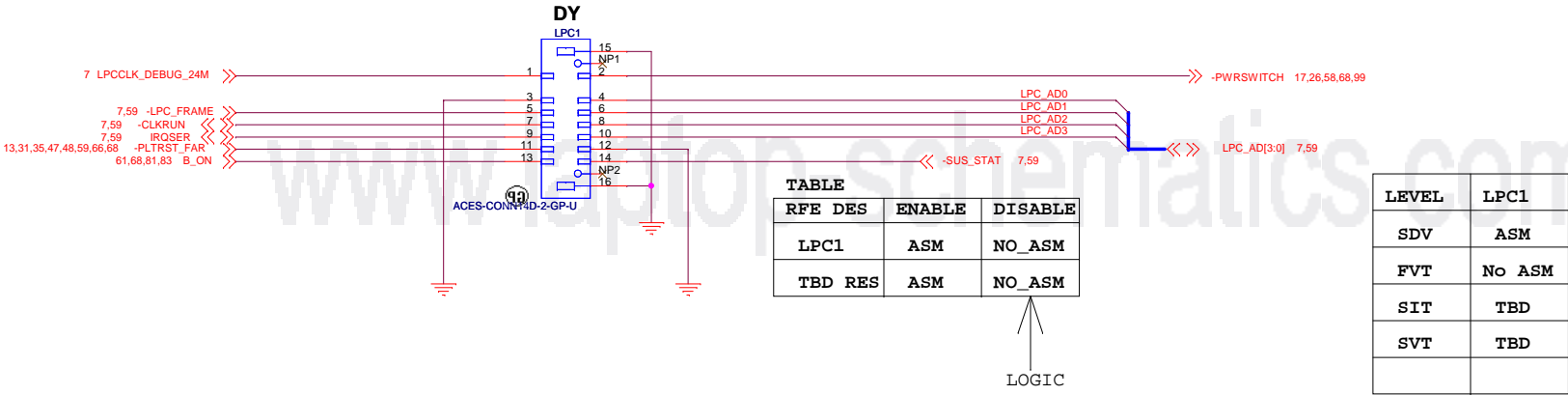
TABLE

| Pin No | TCG PTP Spec (v38) | Infineon SLB9670VQ2.0 FW7.61 | ST Micro ST33HTPH2E32AHA6 | Nuvoton NPCT650LB0YX |
|--------|--------------------|------------------------------|---------------------------|----------------------|
| 1 | VDD | VDD | NC | VSB |
| 2 | GND | GND | NC | NC |
| 3 | GPIO | NC | NC | GPX/GPIO2 |
| 4 | GPIO | NC | PP | PP |
| 5 | NC | NC | NC | TEST |
| 6 | VNC/GPIO | GPIO | NC | GPIO3 |
| 7 | GPIO/VDD | PP | GPIO | NC |
| 8 | VDD | VDD | NC | VDD |
| 9 | GND | GND | NC | GND |
| 10 | VNC | NC | NC | NC |
| 11 | NC | NC | NC | NC |
| 12 | NC | NC | NC | Reserved |
| 13 | VNC/GPIO | NC | NC | GPIO4 |
| 14 | VDD | NC | NC | VDD |
| 15 | NC | NC | NC | DNC |
| 16 | GND | NC | NC | GND |
| 17 | SPI_RST# | RST# | SPI_RST# | SPI_RST# |
| 18 | SPI_PIRQ# | PIRQ# | SPI_IRQ# | SPI_IRQ# |
| 19 | SPI_CLK | SCLK | SPI_CLK | SCLK |
| 20 | SPI_CS# | CS# | SPI_CS# | CS# |
| 21 | MOSI | MOSI | MOSI | MOSI |
| 22 | VDD | VDD | VPS | VDD |
| 23 | GND | GND | NC | GND |
| 24 | MISO | MISO | MISO | MISO |
| 25 | NC | NC | NC | NC |
| 26 | NC | NC | NC | NC |
| 27 | NC | NC | NC | (SERIRQ) |
| 28 | NC | NC | NC | DNC |
| 29 | VNC/GPIO | NC | NC | GPIO0 |
| 30 | VNC/GPIO | NC | NC | GPIO1 |
| 31 | VNC | NC | NC | NC |
| 32 | GND | GND | NC | GND |

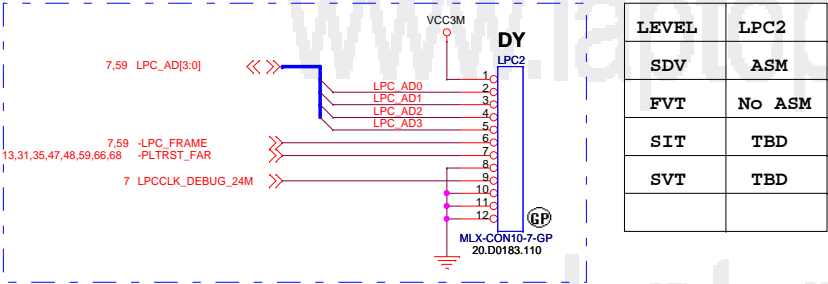
ULT

| | | |
|----------------------------------------------------------------------------|-----------------------|--------|
| 緯創資通 Wistron Corporation | | |
| 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C. | | |
| Title DISCRETE TPM 1.2 | | |
| Size A3 | Document Number LTS-1 | Rev 1 |
| Date: Friday, February 24, 2017 | Sheet 66 | of 103 |

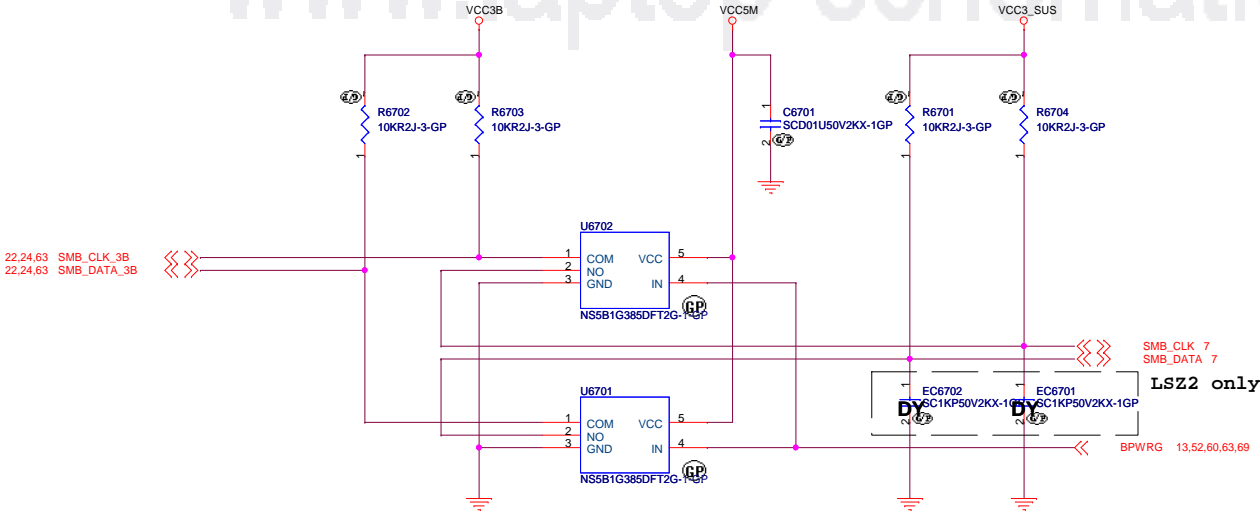
Lenovo Debug Tool I/F

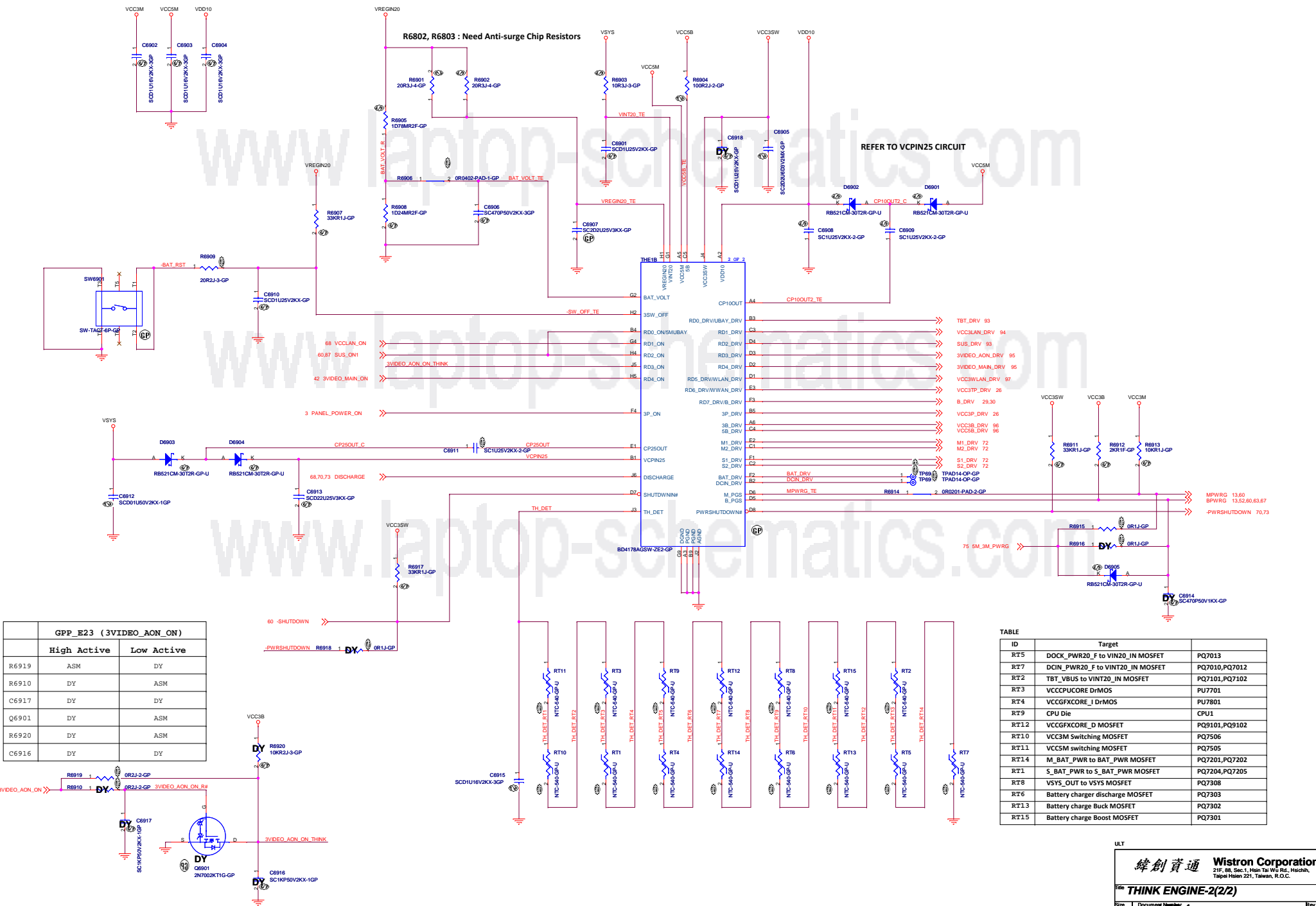


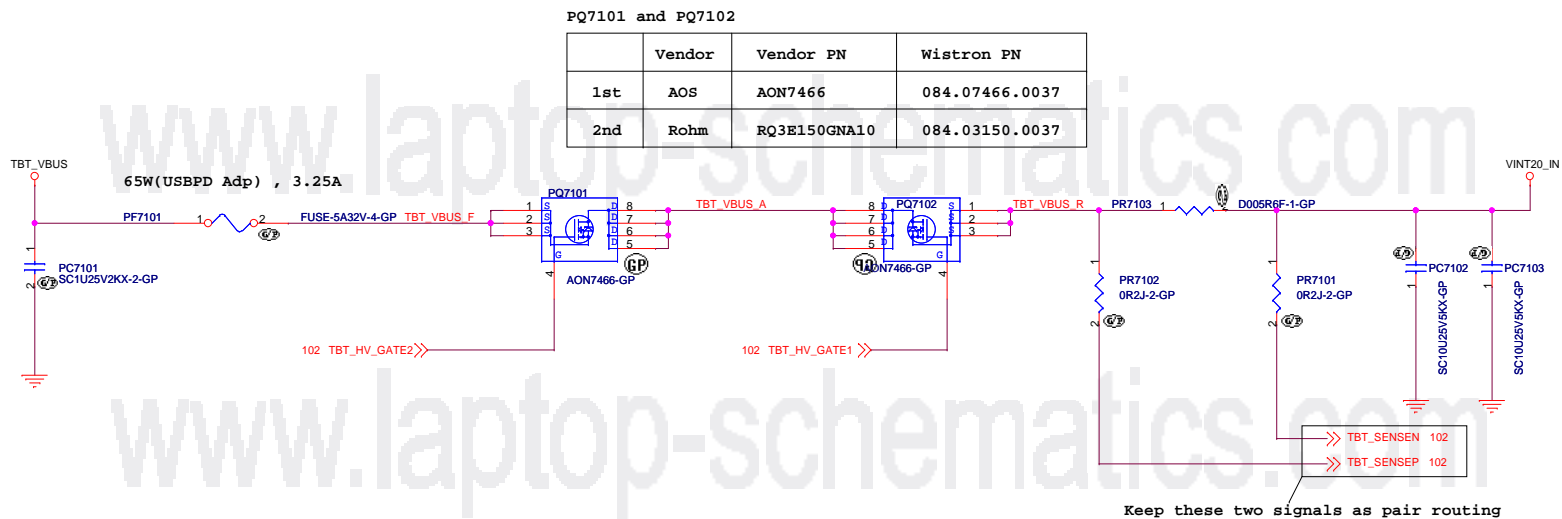
Wistron LPC for Debug Card Connector



SMBUS SWITCH







ULT

| | |
|------------------------------------------------------------------------------------------------------------------|------------------------------|
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| Title DC-IN(2/2) | |
| Size A3 | Document Number LTS-1 |
| Date: Friday, February 24, 2017 | Sheet 71 of 103 |
| Rev 1 | |

For BP, Close to (3291.00 4646.00)

| | PD7301 | PD7302 |
|-----|--------------------------|---------------------------|
| 1st | HP6K2276 84.00822.037 | 88C533ND4 75.00923.073 |
| 2nd | | |

Keep these two signals as pair routing

keep more than 2.0mm height for if acoustic noise suppression MLC use
MLCC must be placed symmetrically on Top and Bottom.
Max Current = 7.5 (A)

Just for RF rework (don't care cap U/VOL)

| PD7301 | Vendor | Vendor PN | Wistron PN |
|--------|--------|-----------|----------------|
| 1st | BORN | TP2V24B | 083.TS24B.009F |

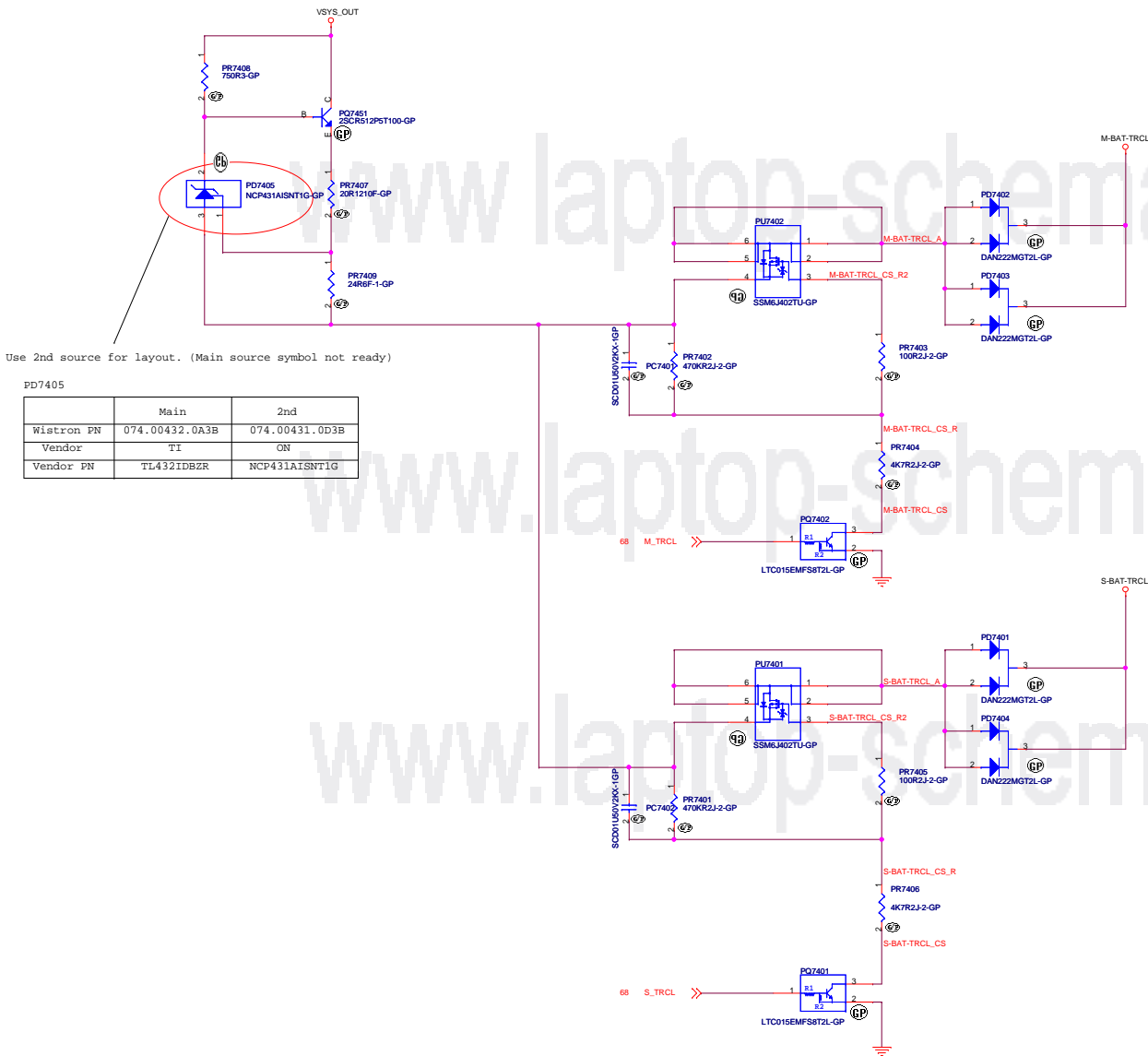
| Inductor | R (ADP) | Few at POR |
|----------|----------|------------|
| 1.5uH | 74K ohm | 1200Kis |
| 1.5uH | 82K ohm | 1200Kis |
| 2.2uH | 100K ohm | 800Kis |

| LOGIC | 1000uH | 1.2V | 0.01K |
|-------|--------|------|-------|
| 1.5A | 1.4V | 132K | |
| 1.5A | 1.4V | 240K | |
| 2.5A | 1.8V | 237K | |
| 1.5A | 2.2V | 171K | |
| 1.5A | 2.2V | 142K | |

| LOGIC | 287127 | 287143 |
|---------|---------|---------|
| Siemens | 37 | 100Kohm |
| Siemens | 300Kohm | 5K |

PD7301 MAX:100W at 8800m30(11.9)001b

| LOGIC | 1.5A | 1.2V | 0.01K |
|-------|------|------|-------|
| 1.5A | 1.4V | 132K | |
| 1.5A | 1.4V | 240K | |
| 2.5A | 1.8V | 237K | |
| 1.5A | 2.2V | 171K | |
| 1.5A | 2.2V | 142K | |



<Variant Name>

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Title
CHARGER MONITOR

Size Document Number
Custom **LTS-1** Rev **1**

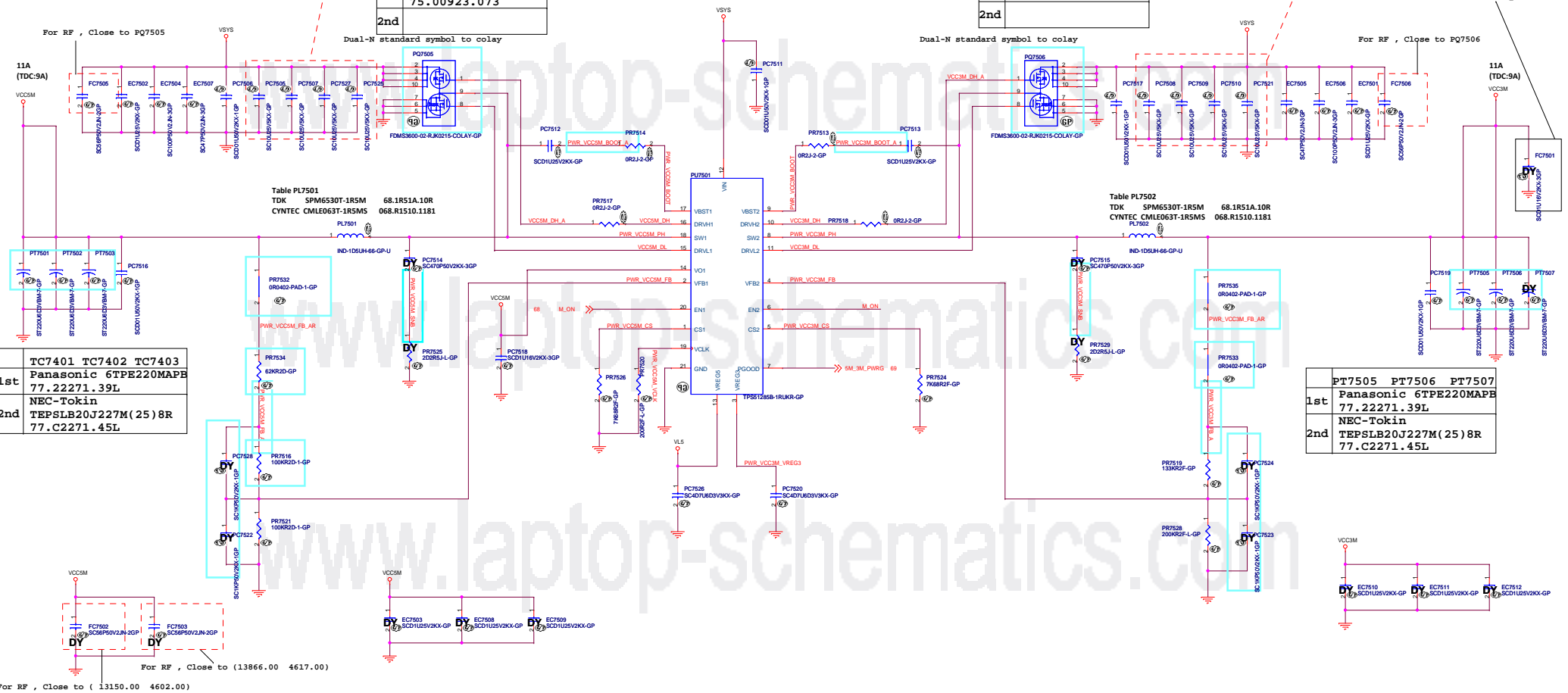
Date: Friday, February 24, 2017 Sheet 74 of 103

keep more than 2.0mm height for
if acoustic noise suppression MLCC use

| | |
|-----|------------------------------------|
| | PQ7506 |
| 1st | Infineon BSC0923ND 75.00923.073 |
| 2nd | |

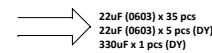
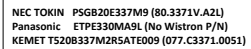
For RF , Close to PQ7505

Dual-N standard symbol to colay



ULT

keep more than 2.0mm height for
if acoustic noise suppression MLCC use



| | | |
|---------------------------------|---------------------------------|-----------------|
| Size A2 | Document Number LTS-1 | Rev 1 |
| Date: Friday, February 24, 2017 | Sheet 77 of | 103 |

MLCCs must be placed
symmetrically on Top and Bottom.

keep more than 2.0mm height for
if acoustic noise suppression MLCC use

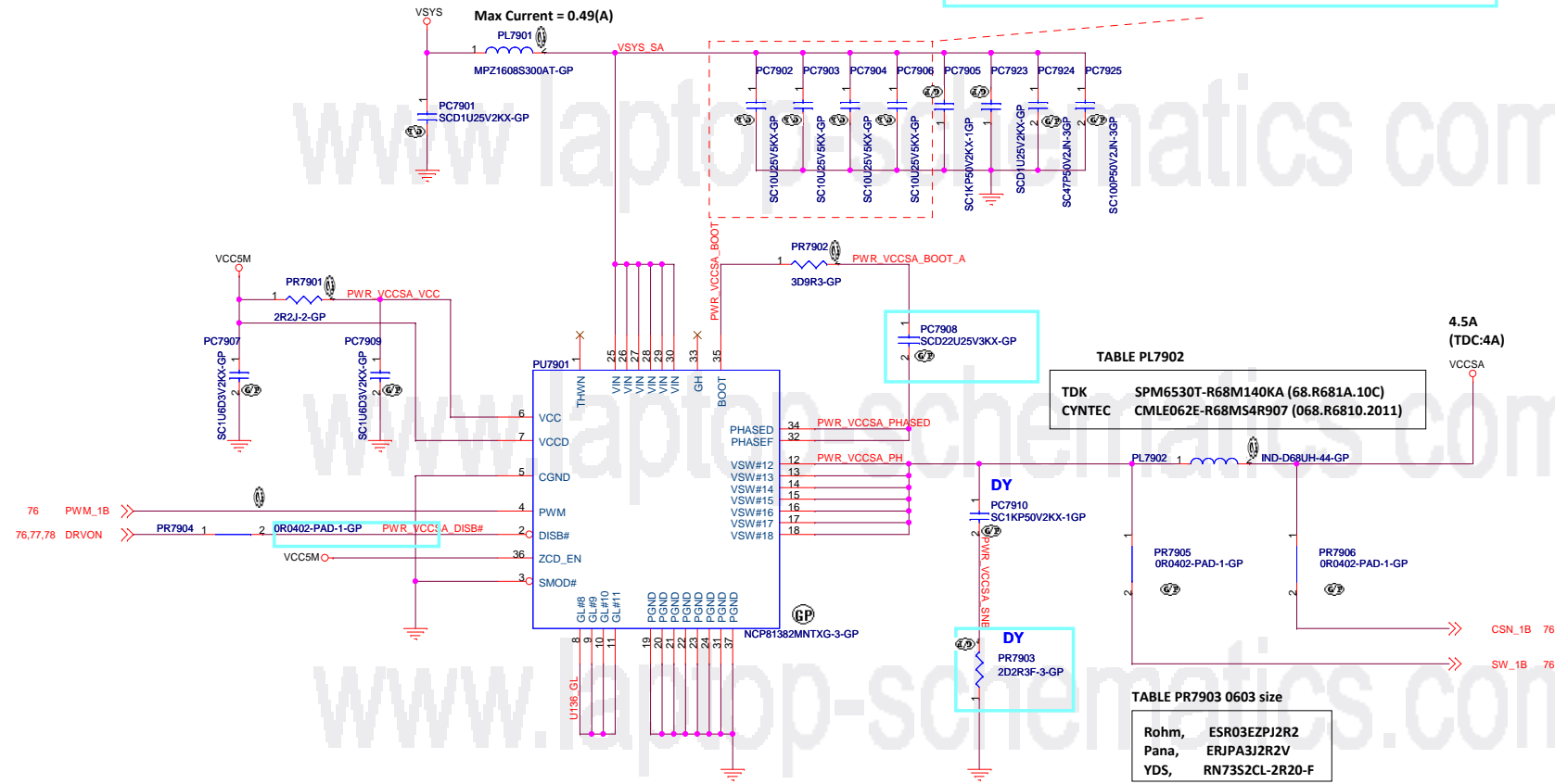


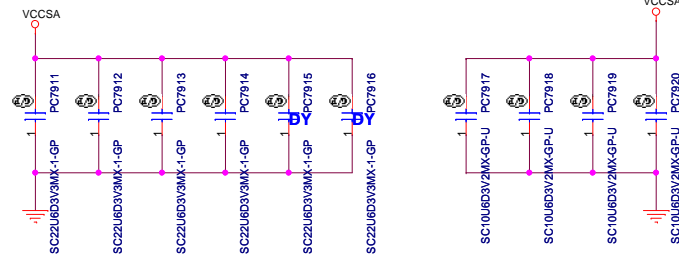
TABLE PL7902

| | |
|--------|--------------------------------------|
| TDK | SPM6530T-R68M140KA (68.R681A.10C) |
| CYNTEC | CMLE062E-R68MS4R907 (068.R6810.2011) |

TABLE PR7903 0603 size

| | |
|-------|-----------------|
| Rohm, | ESR03EZPJ2R2 |
| Pana, | ERJPA3J2R2V |
| YDS, | RN73S2CL-2R20-F |

22uF x 4, 22uF x 2 (DY), 10uF x 4 for VCCSA



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Title DC/DC VCCSA(NCP81380)

Size A3 Document Number LTS-1 Rev 1

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| <div><div>緯創資通</div><div>Wistron Corporation</div><div>21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.</div></div> | | |
| Title N/A | | |
| Size A4 | Document Number LTS-1 | Rev 1 |
| Date: Friday, February 24, 2017 | Sheet 80 | of 103 |

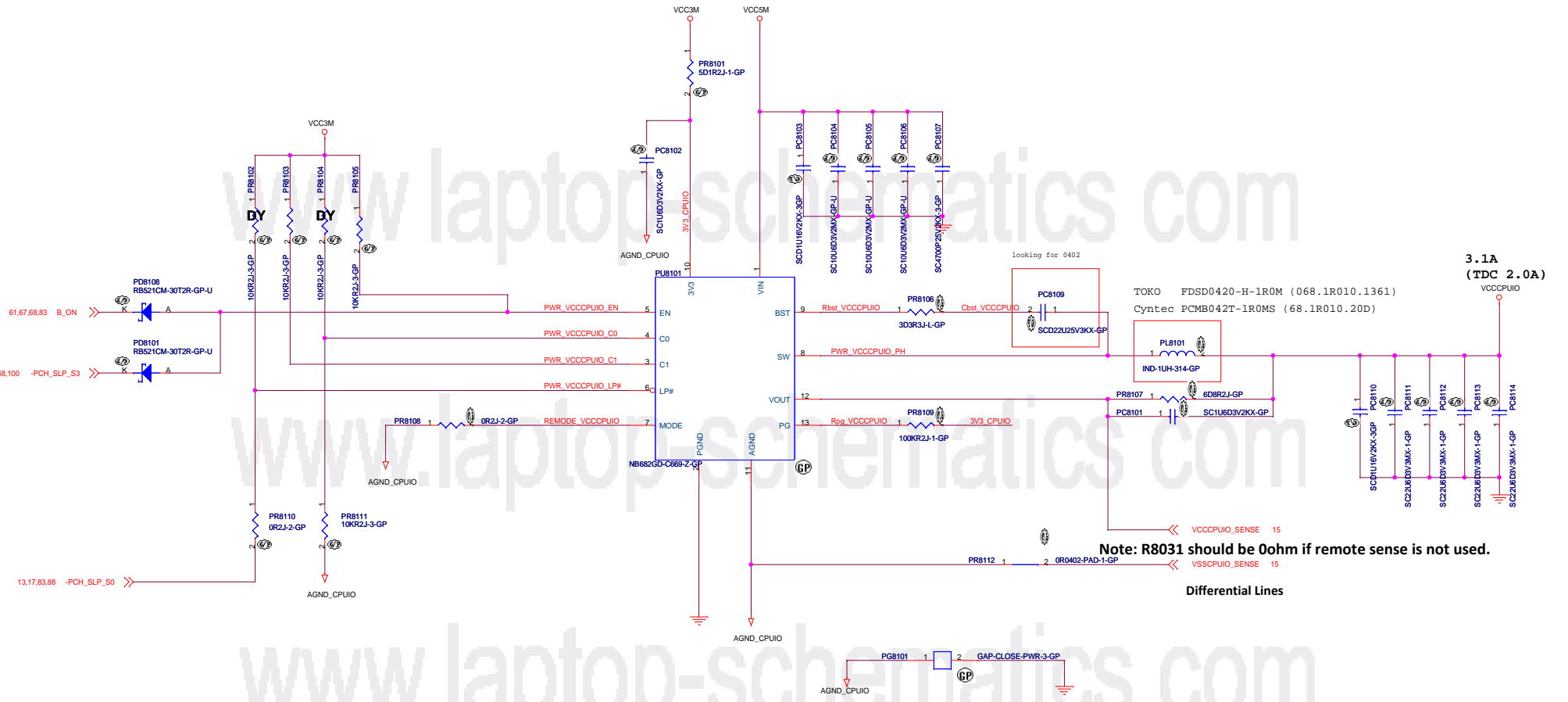
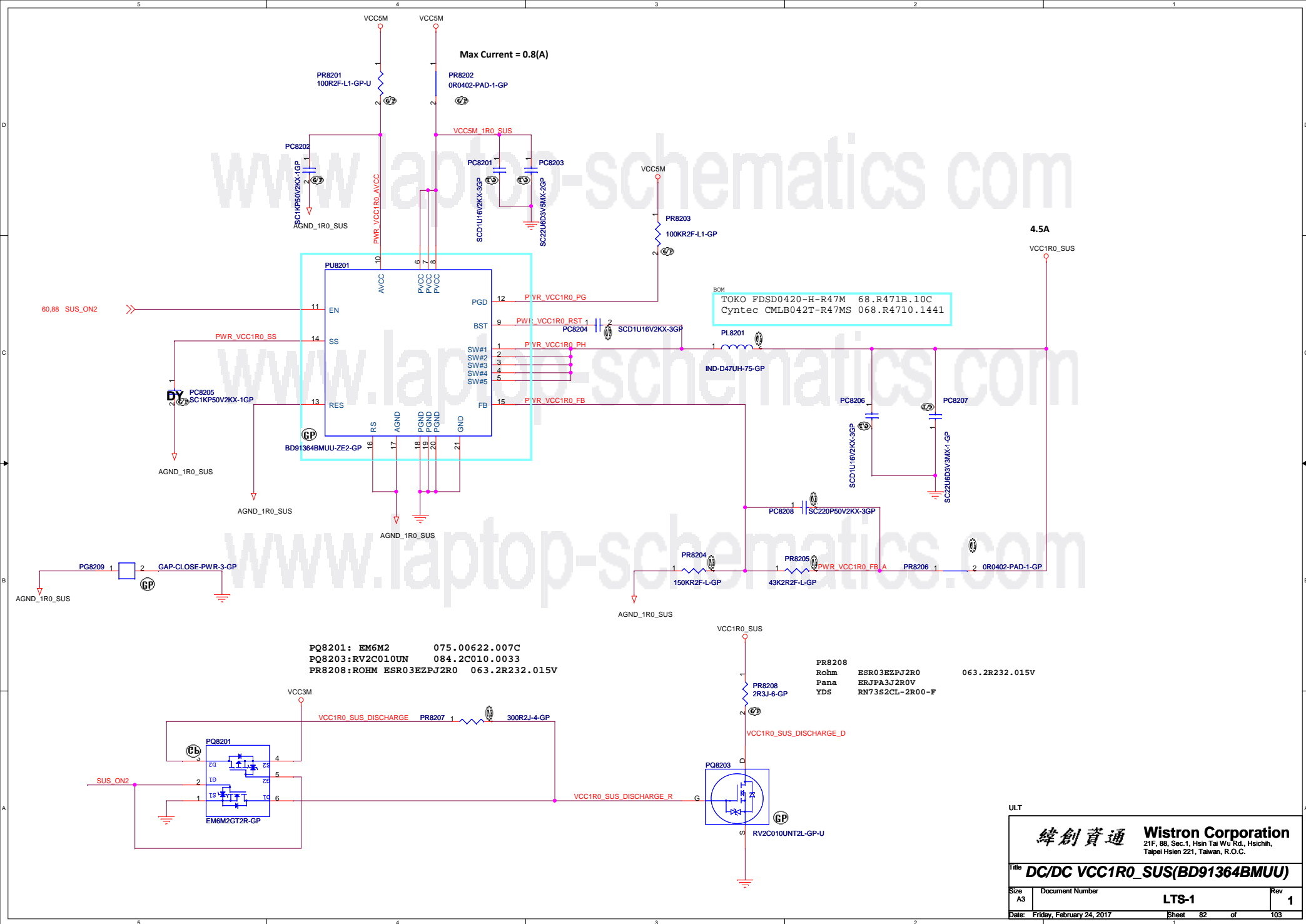


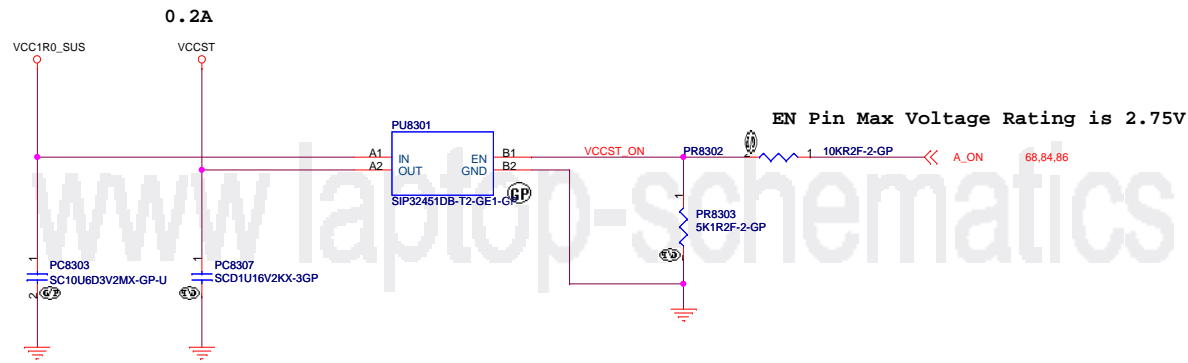
TABLE : NB682 MODE M1 (0 to GND)

| LP# | C1 | C0 | VOUT |
|-----|----|----|--------|
| 0 | X | X | 0.000V |
| 1 | 0 | 0 | 0.850V |
| 1 | 0 | 1 | 0.875V |
| 1 | 1 | 0 | 0.950V |
| 1 | 1 | 1 | 0.975V |

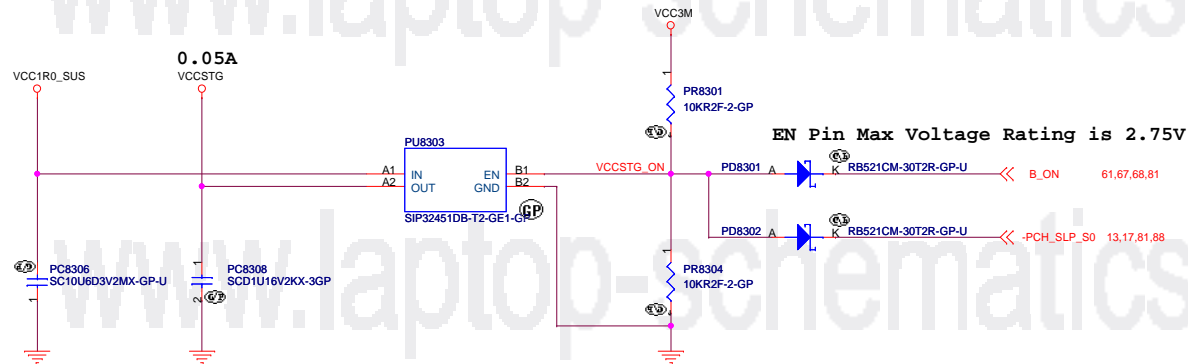
← SLP_S0#

← LOGIC





T_ON <65us



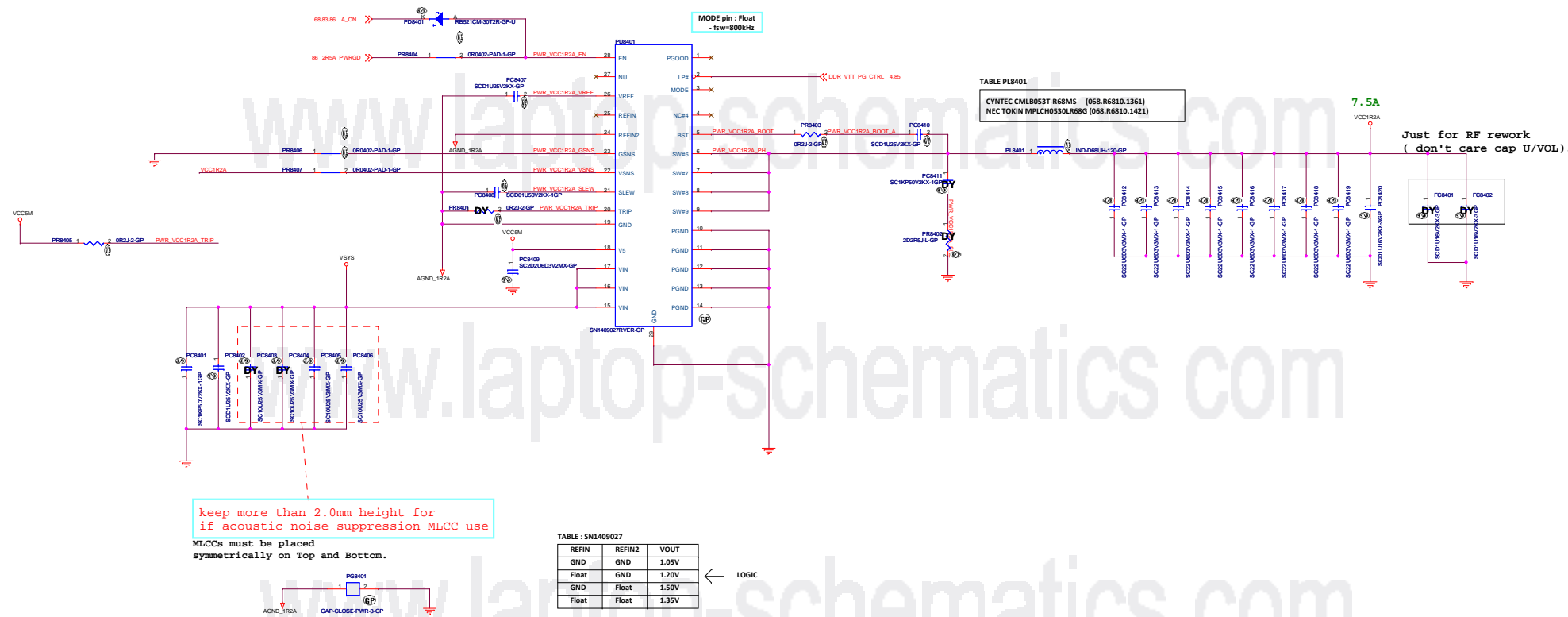
ULT

緯創資通 Wistron Corporation
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Title **LOAD SW VCCST & VCCSTG**

Size A3 Document Number **LTS-1** Rev **1**

Date: Friday, February 24, 2017 Sheet 83 of 103



keep more than 2.0mm height for
if acoustic noise suppression MLCC use
MLCCs must be placed
symmetrically on Top and Bottom.

| TABLE : SN1409027 | | |
|-------------------|--------|-------|
| REFIN | REFIN2 | VOUT |
| GND | GND | 1.05V |
| Float | GND | 1.20V |
| GND | Float | 1.50V |
| Float | Float | 1.35V |

← LOGIC

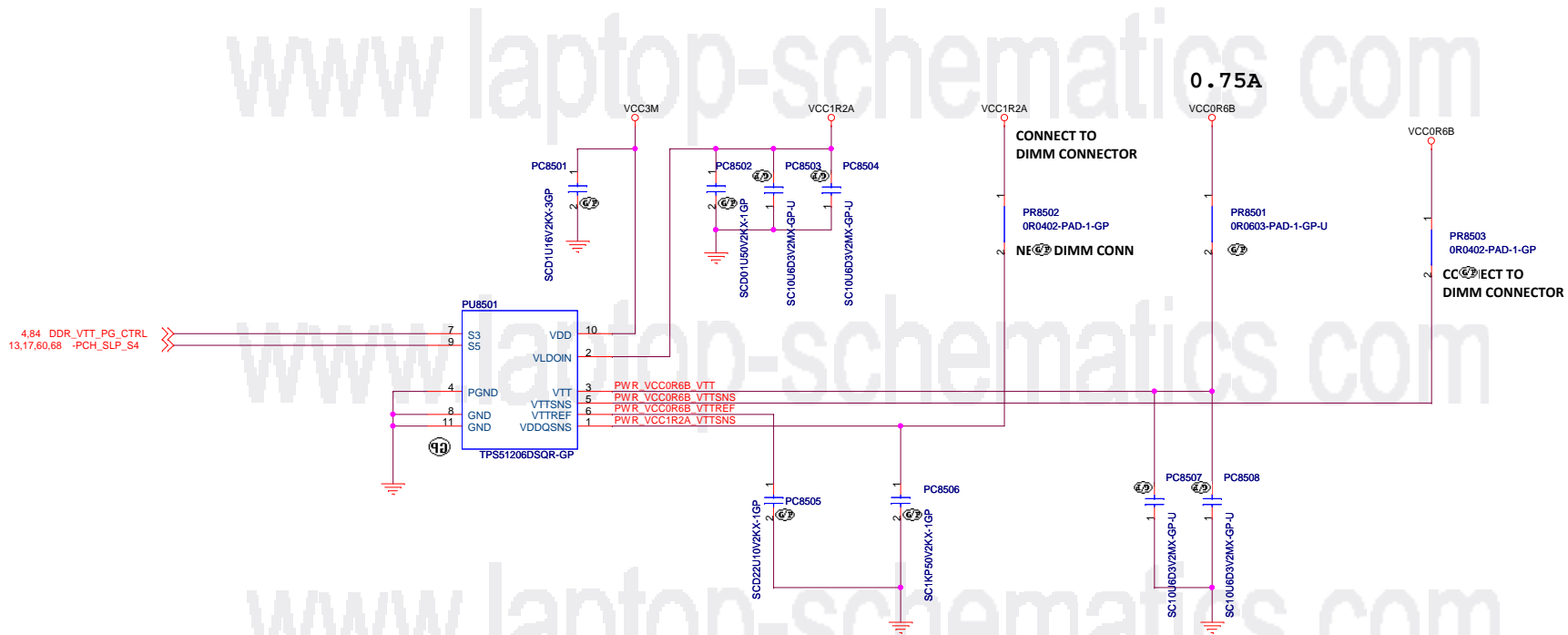
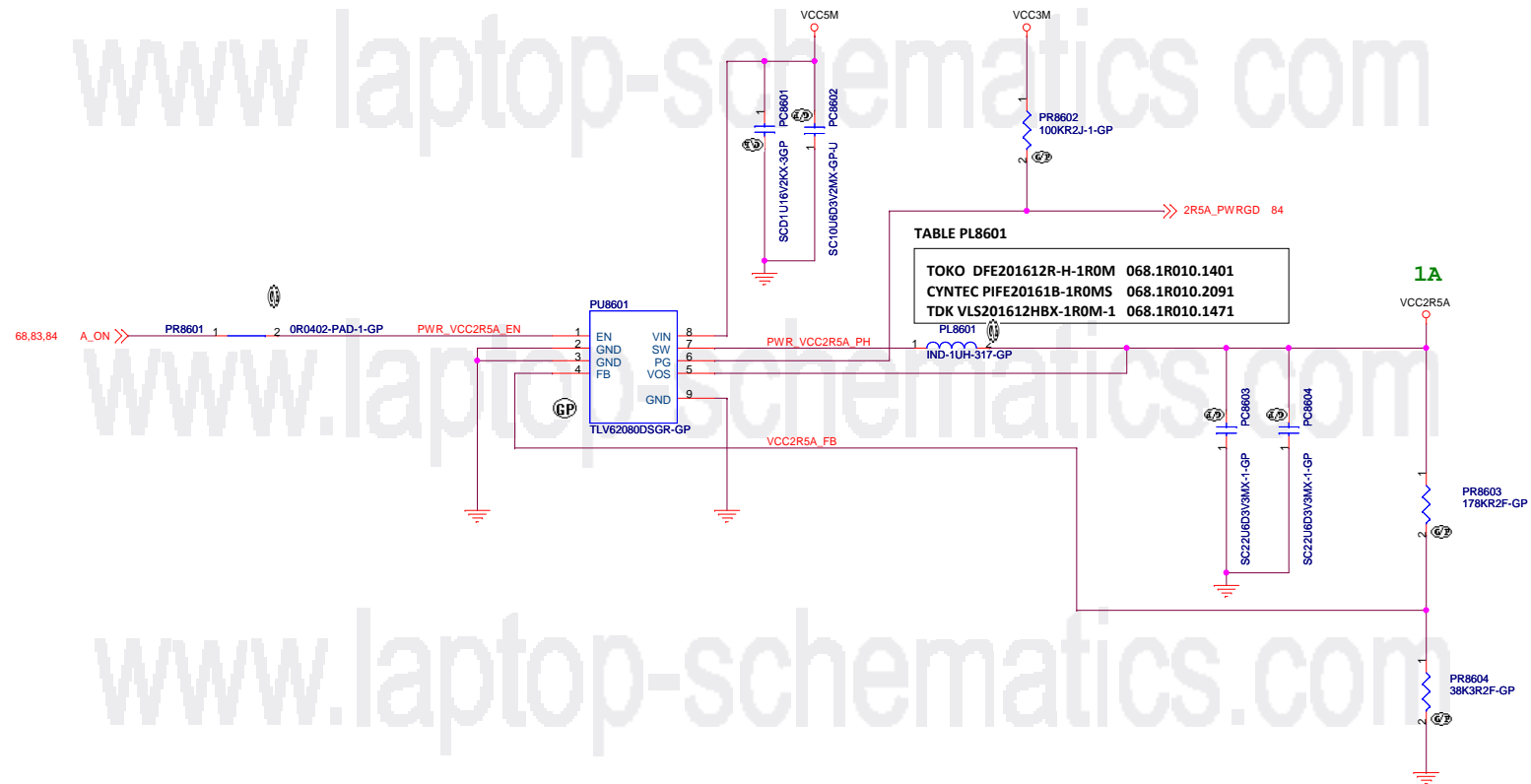


TABLE: TP551206

| S3 | S5 | VTT | VTTREF |
|------|------|----------------|----------------|
| High | High | ON | ON |
| Low | High | OFF(High-Z) | ON |
| Low | Low | OFF(Discharge) | OFF(Discharge) |

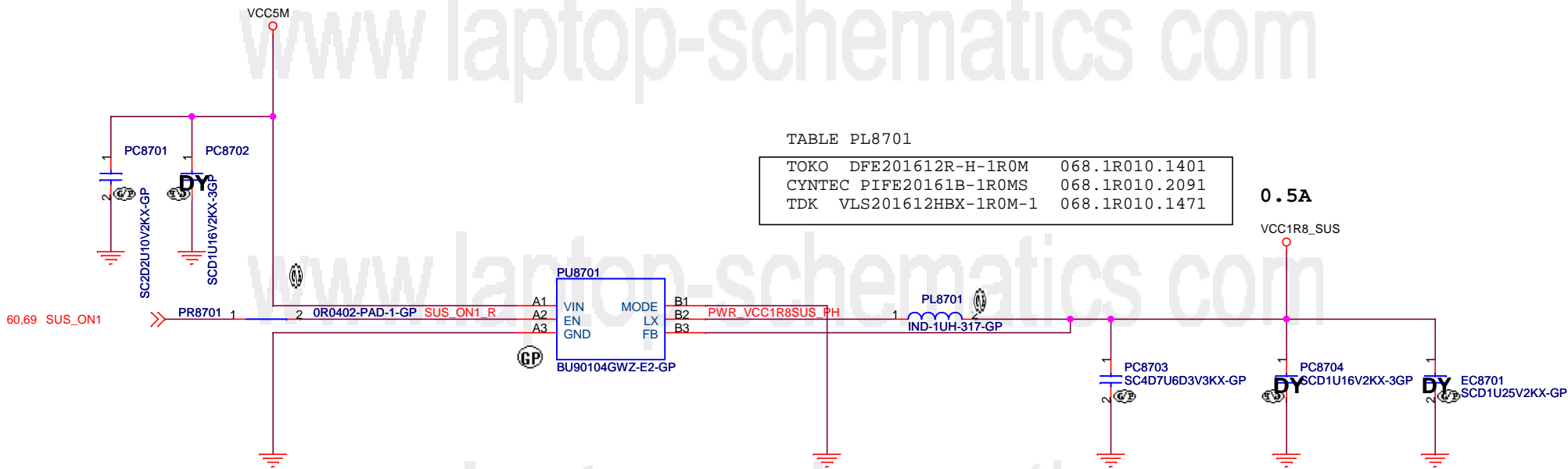
ULT

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|------------------------------------------------------------------------------------------------------------------|------------------------------|
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| Title DC/DC VCC0R6B | |
| Size A3 | Document Number LTS-1 |
| Date: Friday, February 24, 2017 | Sheet 85 of 103 |
| Rev 1 | 1 |



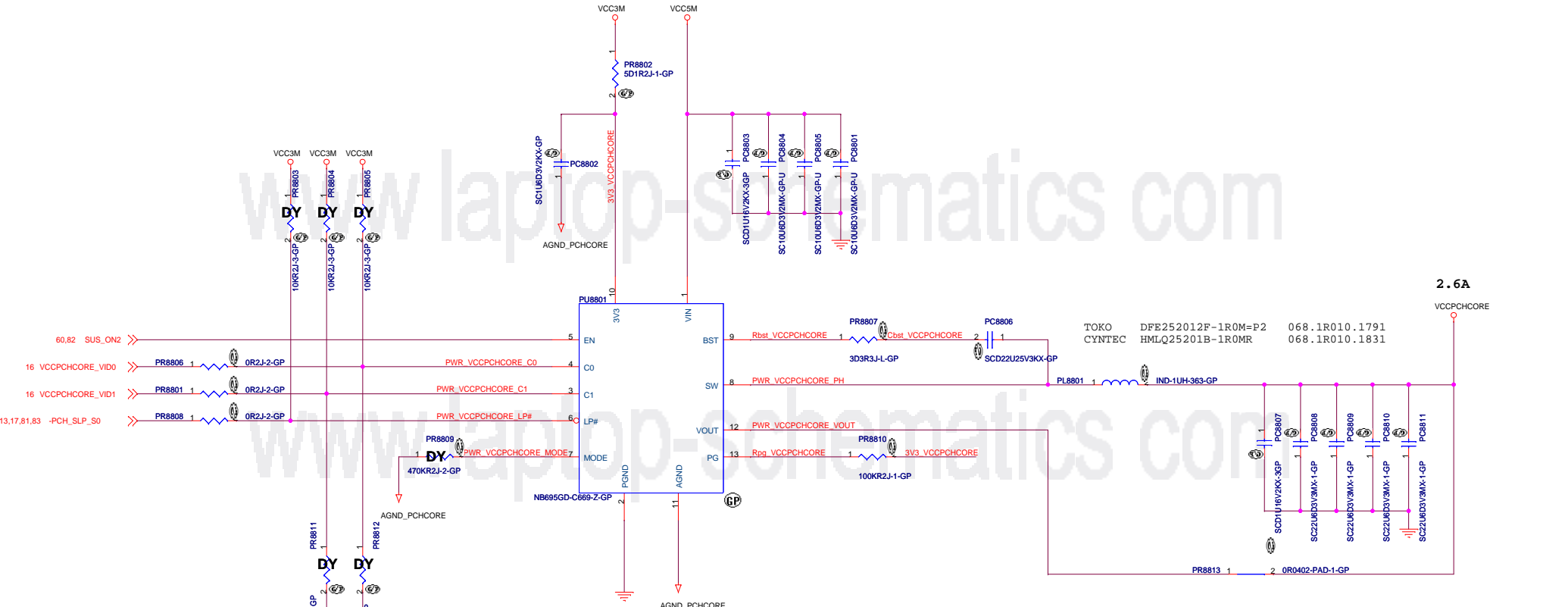
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| 緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichin, Taipei Hsien 221, Taiwan, R.O.C. | |
| Title DC/DC VCC2R5A | |
| Size A3 | Document Number LTS-1 |
| Date: Friday, February 24, 2017 | Sheet 86 of 103 |
| Rev 1 | |



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|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
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| <p>Title DC/DC VCC1R8_SUS</p> | |
| <p>Size Custom</p> | <p>Document Number LTS-1</p> |
| <p>Date: Friday, February 24, 2017</p> | <p>Rev 1</p> |
| <p>Sheet 87 of 103</p> | <p>1</p> |



Note: R8612 should be 0ohm if remote sense is not used.

TABLE : NB682 MODE M2 (Float) - ES

| LP# | C1 | C0 | VOUT | |
|-----|----|----|--------|-----------|
| 0 | X | X | 0.700V | ← SLP_S0# |
| 1 | 0 | 0 | 0.850V | |
| 1 | 0 | 1 | 0.900V | |
| 1 | 1 | 0 | 0.950V | |
| 1 | 1 | 1 | 1.000V | ← DEFAULT |

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ULT

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|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| <div>緯創資通</div> <div>Wistron Corporation</div> <div>21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.</div> | |
| Title <div>BLANK</div> | |
| Size <div>A</div> | Document Number <div>LTS-1</div> |
| Date: Friday, February 24, 2017 | Rev <div>1</div> |
| Sheet 89 of 103 | |

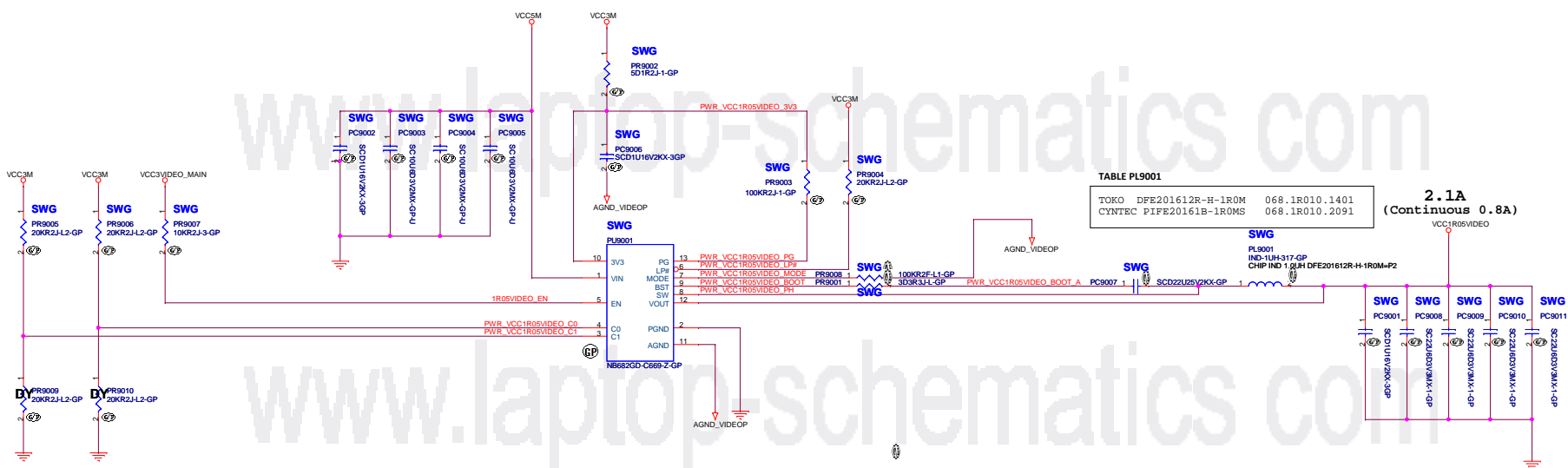


TABLE : NB682 MODE CONNECT 100Kohm

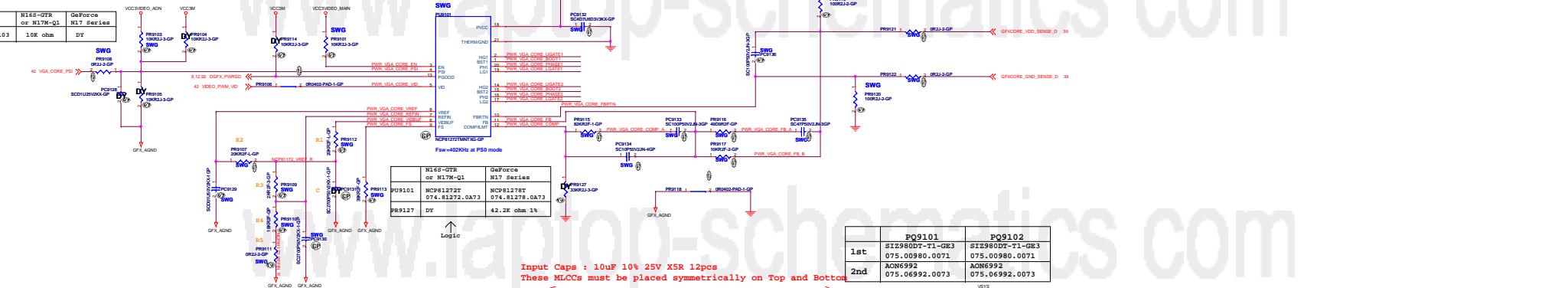
| LP# | C1 | C0 | VOUT |
|-----|----|----|--------|
| 0 | X | X | 0V |
| 1 | 0 | 0 | 0.800V |
| 1 | 0 | 1 | 0.950V |
| 1 | 1 | 0 | 1.000V |
| 1 | 1 | 1 | 1.050V |

← DEFAULT

TABLE PL9001

| | | |
|--------|-------------------|----------------|
| TOKO | DPE201612R-H-1R0M | 068.1R010.1401 |
| CYNTEC | PIPE20161B-1R0MS | 068.1R010.2091 |

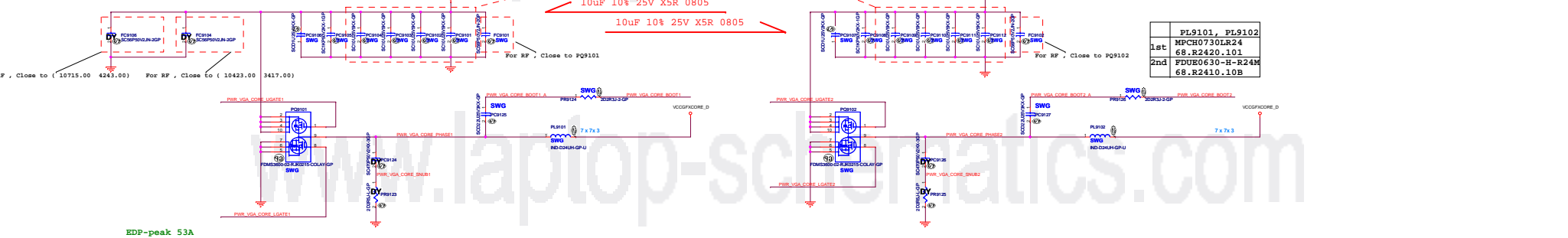
| | | |
|--------|---------------------|--------------------|
| PR9103 | W166-QTR or W176-Q1 | GeForce N17 Series |
| | 10K ohm | DY |



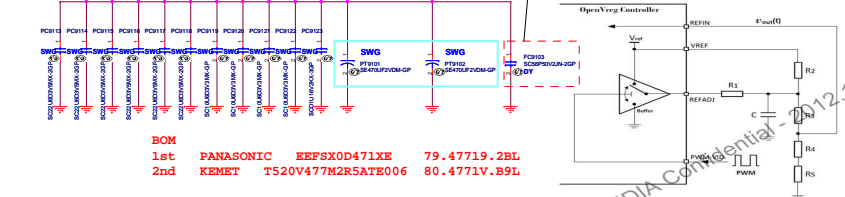
Input Caps : 10uF 10% 25V X5R 12pcs
These MLCCs must be placed symmetrically on Top and Bottom

| | PQ9101 | PQ9102 |
|-----|-----------------------------------|-----------------------------------|
| 1st | ST2960D1-T1-GE3 075.00980.0071 | ST2960D1-T1-GE3 075.00980.0071 |
| 2nd | AON6992 075.06992.0073 | AON6992 075.06992.0073 |

| | PL9101, PL9102 |
|-----|---------------------------------|
| 1st | MPCH0730LR24 68.R2420.101 |
| 2nd | FDUE0630-H-R24M 68.R2410.10B |



EDP-peak 53A
EDP-Cont. 28A



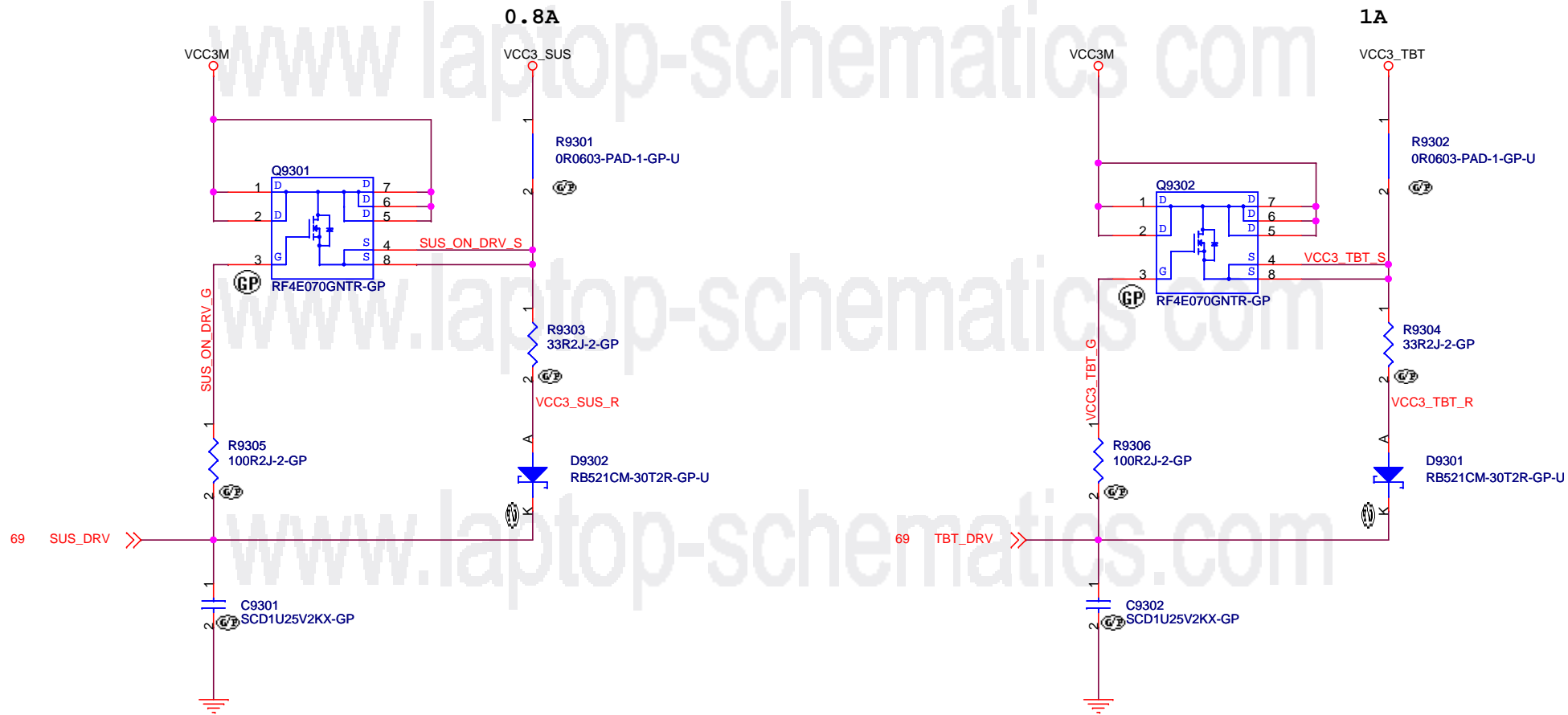
| | | | |
|-----|-----------|--------------------|--------------|
| BOM | PANASONIC | EEFSX0D471XE | 79.47719.2BL |
| 1st | KEMET | T520V477M2R5ATE006 | 80.4771V.B9L |

Use B table. Add Config D table(No use).

Table 1. PWM-VID Spec and Component Values

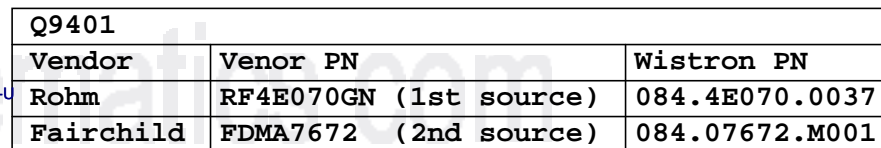
| PWM-VID Specification | Config A | Config B | Config C | Config D |
|------------------------------------------|----------|----------|----------|----------|
| Vmin | 0.6 | 0.6 | 0.6 | 0.9 |
| Vmax | 1.2 | 1.2 | 1.2 | 1.15 |
| Vboot | 0.875 | 0.9 | 0.9 | 1.028 |
| Voltage Step Vstep | mV | 6.25 | 6.25 | 12.5 |
| Number of Voltage Levels H | level | 16 | 16 | 20 |
| PWM Frequency F _{min} | 100 | 1.125 | 0.676 | 0.676 |
| PWM Minimum Pulse Width T _{min} | ns | 9.26 | 74 | 74 |
| VID Transient Time T | -100 | -100 | -100 | -100 |
| Component Value | | | | |
| R1 (1k) | K0 | 30 | 30 | 17 |
| R2 (1k) | K0 | 30 | 30 | 7.5 |
| R3 (1k) | K0 | 1.5 | 2 | 3 |
| R4 (1k) | K0 | 30 | 18 | 6.2 |
| R5 (1k) | K0 | 1.5 | 0 | 1.74 |
| C | 4F | 1.5 | 2.7 | 1.8 |

| Q9301 Q9302 | | |
|-------------|------------------------|----------------|
| Vendor | Venor PN | Wistron PN |
| Rohm | RF4E070GN (1st source) | 084.4E070.0037 |
| Fairchild | FDMA7672 (2nd source) | 084.07672.M001 |



ULT

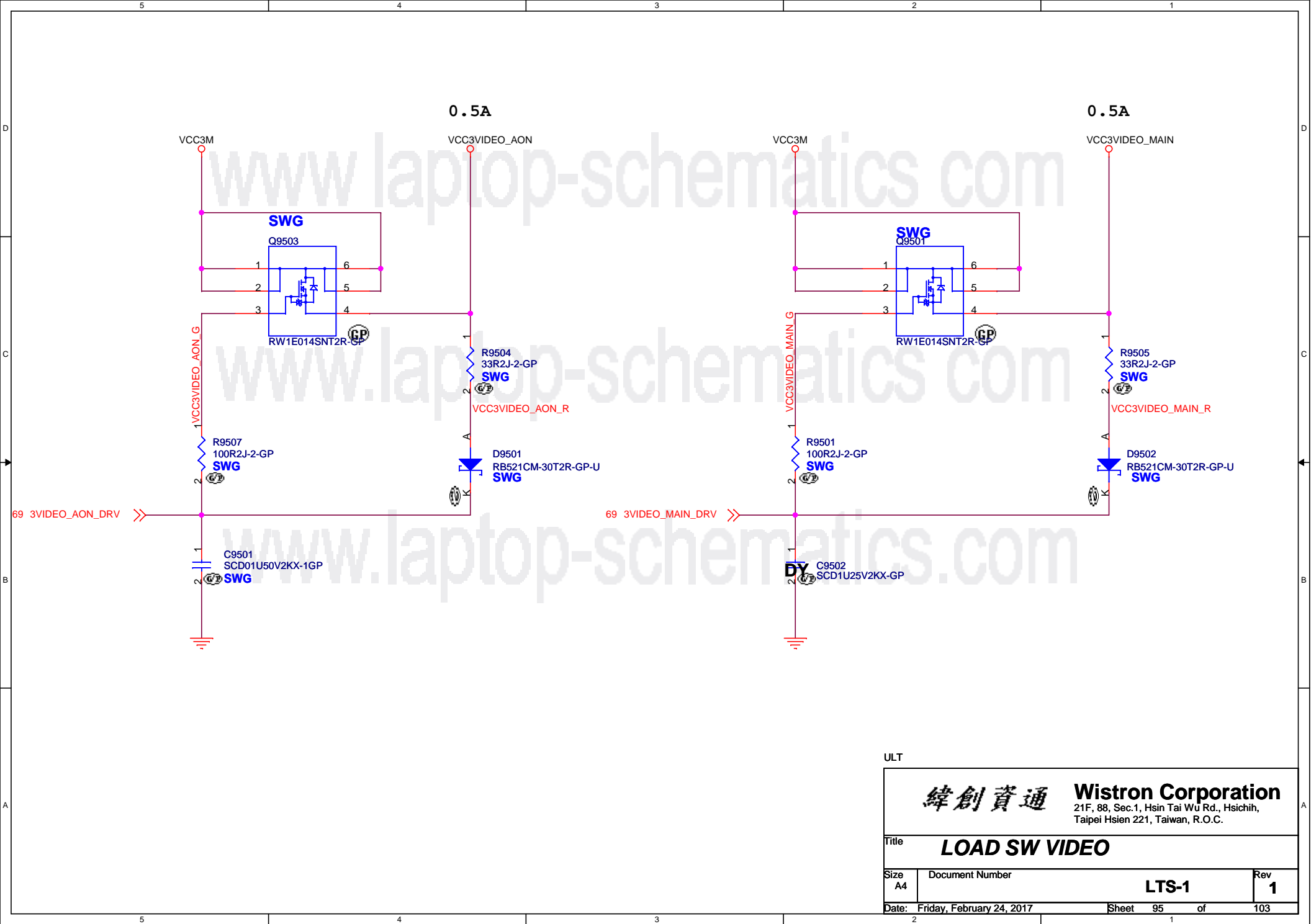
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|------------------------------------------|------------------------------|----------------------------------------------------------------------------|--------------|
| 緯創資通 | | Wistron Corporation | |
| | | 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C. | |
| Title LOAD SW PCH SUS/TRACK POINT | | | |
| Size A4 | Document Number LTS-1 | | Rev 1 |
| Date: Friday, February 24, 2017 | | Sheet 93 | of 103 |



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

| | |
|---------------------------------|-----------------|
| Date: Friday, February 24, 2017 | Sheet 94 of 103 |
|---------------------------------|-----------------|

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

Title **LOAD SW VIDEO**

Size
A4

Document Number

LTS-1

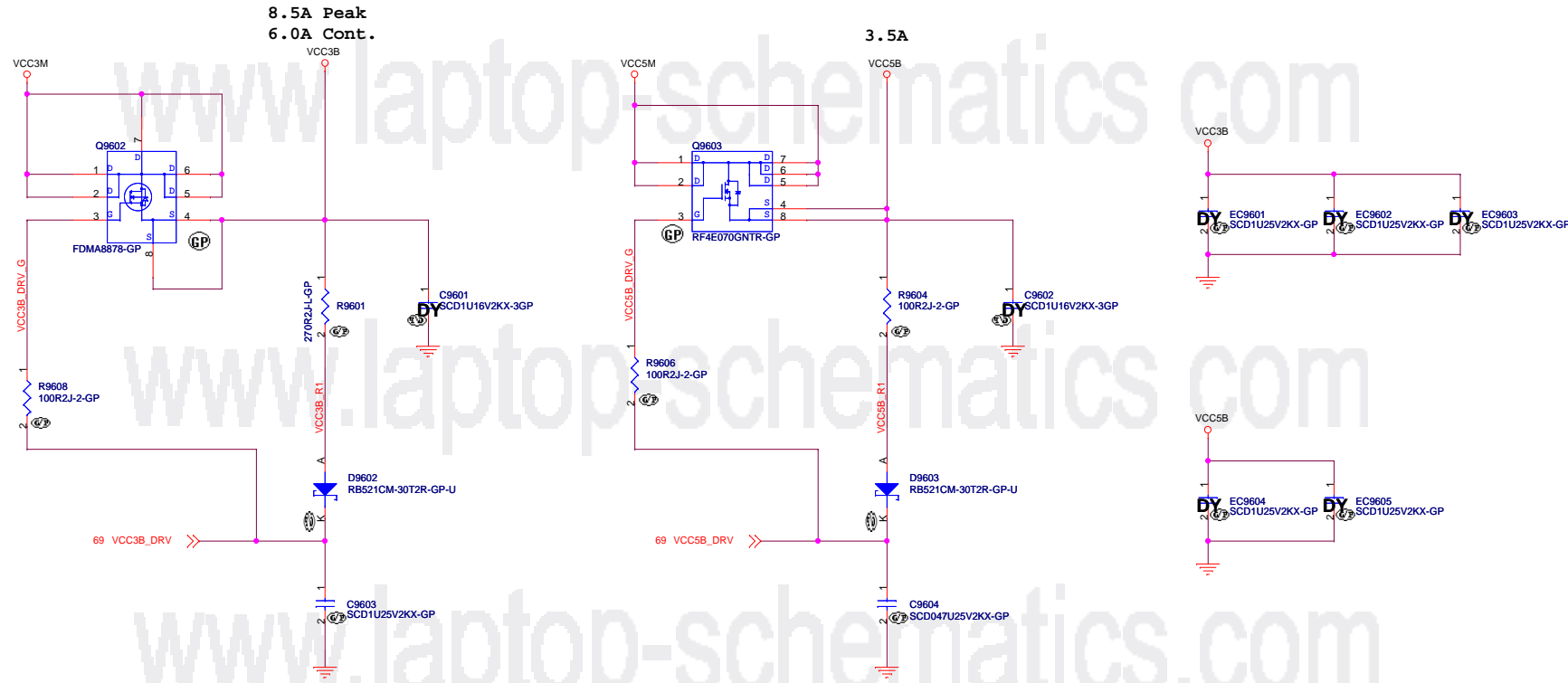
Rev
1

Date: Friday, February 24, 2017

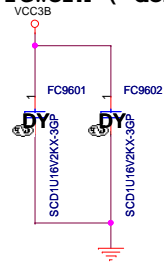
Sheet 95 of 103

Q9602
FDMA8878 Fairchild 84.08878.030
SiA462DJ Vishay 084.00462.003D

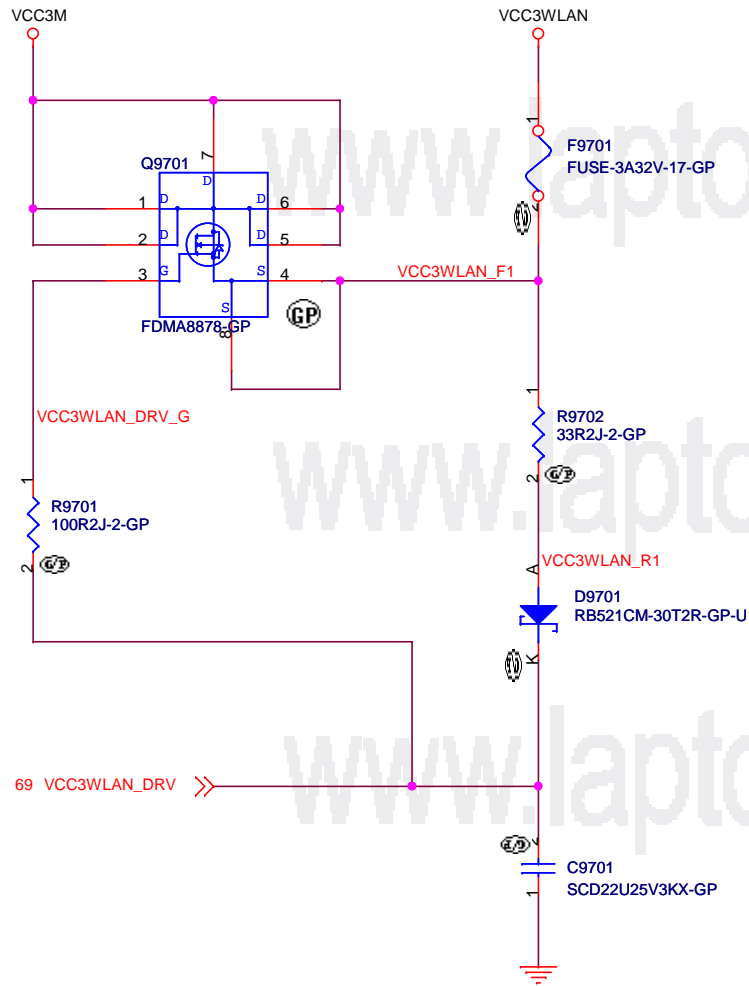
| Q9603 | | |
|-----------|------------------------|----------------|
| Vendor | Venor PN | Wistron PN |
| Rohm | RF4E070GN (1st source) | 084.4E070.0037 |
| Fairchild | FDMA7672 (2nd source) | 084.07672.M001 |



Just for RF rework (don't care cap U/VOL).



2.5A peak
1.1A Cont



Q9701
1st : Fairchild FDMA8878 84.08878.030
2nd : Vishay SiA462DJ 084.00462.003D

ULT

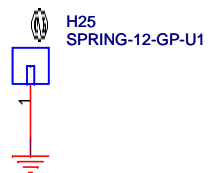
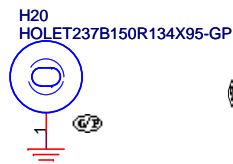
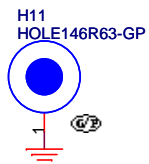
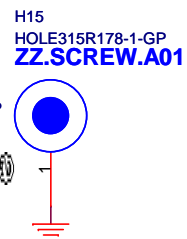
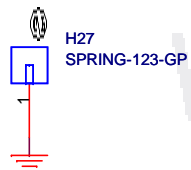
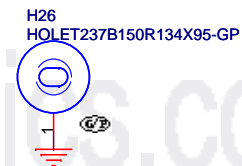
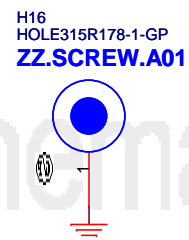
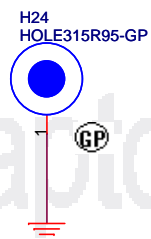
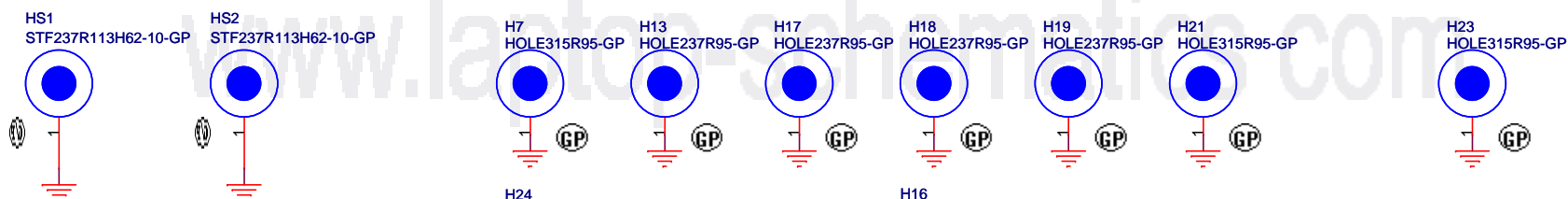
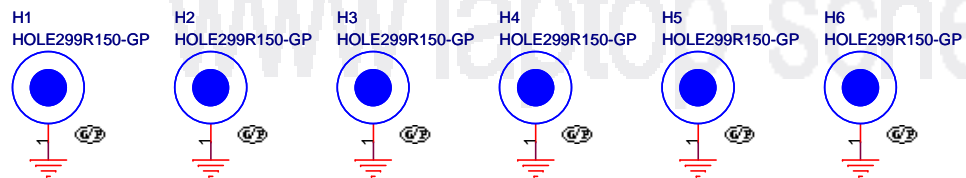
緯創資通

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Title **LOAD SW WLAN**

| | | |
|------------|---------------------------------|-----------------|
| Size A4 | Document Number LTS-1 | Rev 1 |
|------------|---------------------------------|-----------------|

| | |
|---------------------------------|-----------------|
| Date: Friday, February 24, 2017 | Sheet 97 of 103 |
|---------------------------------|-----------------|



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Title **PTH FOR SCREW HOLES**

Size A4 Document Number **LTS-1** Rev **1**

Date: Friday, February 24, 2017 Sheet 98 of 103

Near KB1(Keyboard connector)



Near TKP1(Track point connector)



Near DC1(Adapter in)



Near USB3(USB 3.0 conn)



Near BAT1(Battery in)



Near USB2(USB 3.0 conn)



Near FAN1(FAN Connector)



Near BAT2(Battery in)



Near USB1(USB 3.0 conn)



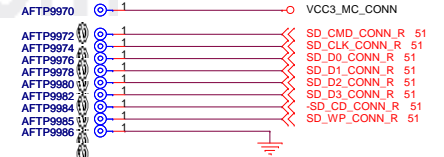
Near RTC1(RTC Battery)



Near LCD1(eDP connector)



Near MCS1 (MediaCard Slot)



Near SUB1(Mic/CCD/Lid/Touch Screen)

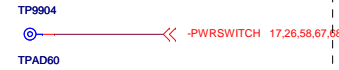


For Power Switch

Top side



Bottom side



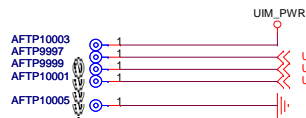
Near PW1(Power Button)



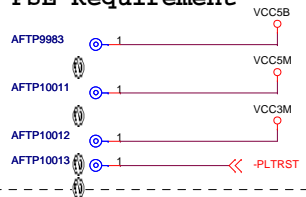
Near SPK1 (Speaker)



Near SIM1(SIM Card)



PSE Requirement



Near SUB2(SMART CARD)



Near HDMI1



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Title **Test Pad(AFTP)**

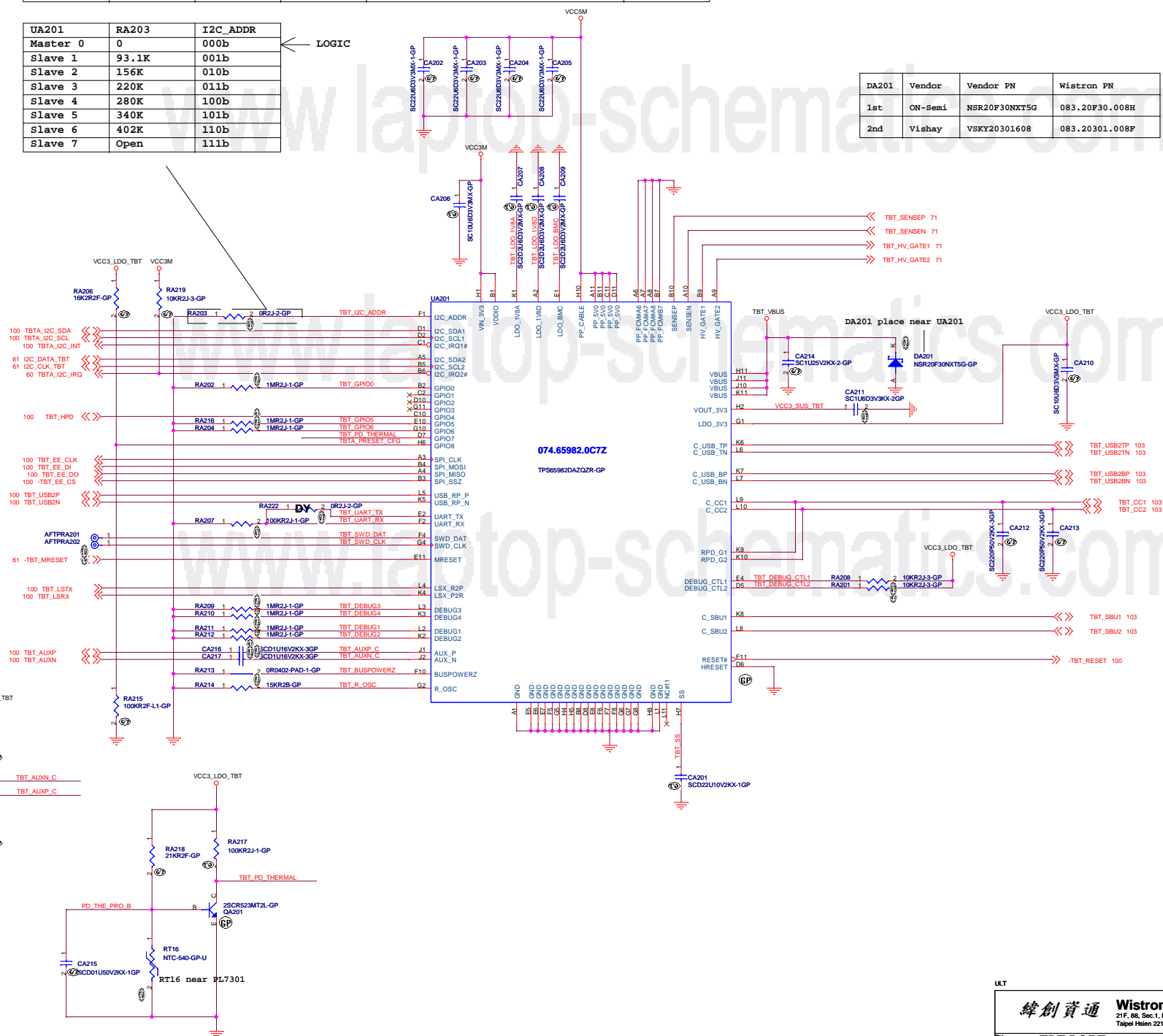
Size Custom Document Number **LTS-1** Rev **1**
Date: Friday, February 24, 2017 Sheet 99 of 103

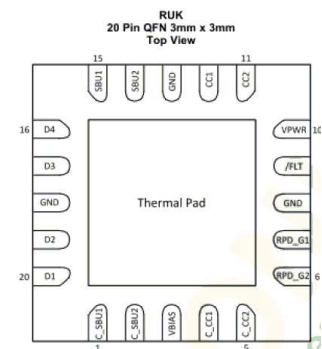
| Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|-------|-------|------------|------------|----------|-------|-------|-------|
| 0 | 1 | DEBUG_CTL2 | DEBUG_CTL1 | I2C_ADDR | | | R/W |

| UA201 | RA203 | I2C_ADDR |
|----------|-------|----------|
| Master 0 | 0 | 000b |
| Slave 1 | 93.1K | 001b |
| Slave 2 | 156K | 010b |
| Slave 3 | 220K | 011b |
| Slave 4 | 280K | 100b |
| Slave 5 | 340K | 101b |
| Slave 6 | 402K | 110b |
| Slave 7 | Open | 111b |

LOGIC

| | | | |
|-------|---------|---------------|----------------|
| DA201 | Vendor | Vendor PN | Wistron PN |
| 1st | ON-Semi | NSR20F30NXT5G | 083.20F30.008H |
| 2nd | Vishay | VSKY20301608 | 083.20301.008F |





| | |
|-----|---------------|
| | UA303 |
| SVT | PTPD8S300RUKT |
| MP | TPD8S300RUKR |

| | |
|-----|-----------------------------------------------|
| | EDA301-EDA303 ,EDA306-EDA311 EDA314-EDA316 |
| 1st | NXP PESD5V0H1BSF 083.5V0H1.00AF |
| 2nd | N/A |
| 3rd | N/A |

| | |
|-----|--------------------------------|
| | EDA304, EDA305, EDA312, EDA313 |
| 1st | RClamp2451ZA 083.02451.00A0 |
| 2nd | N/A |
| 3rd | N/A |