


LCFC Confidential

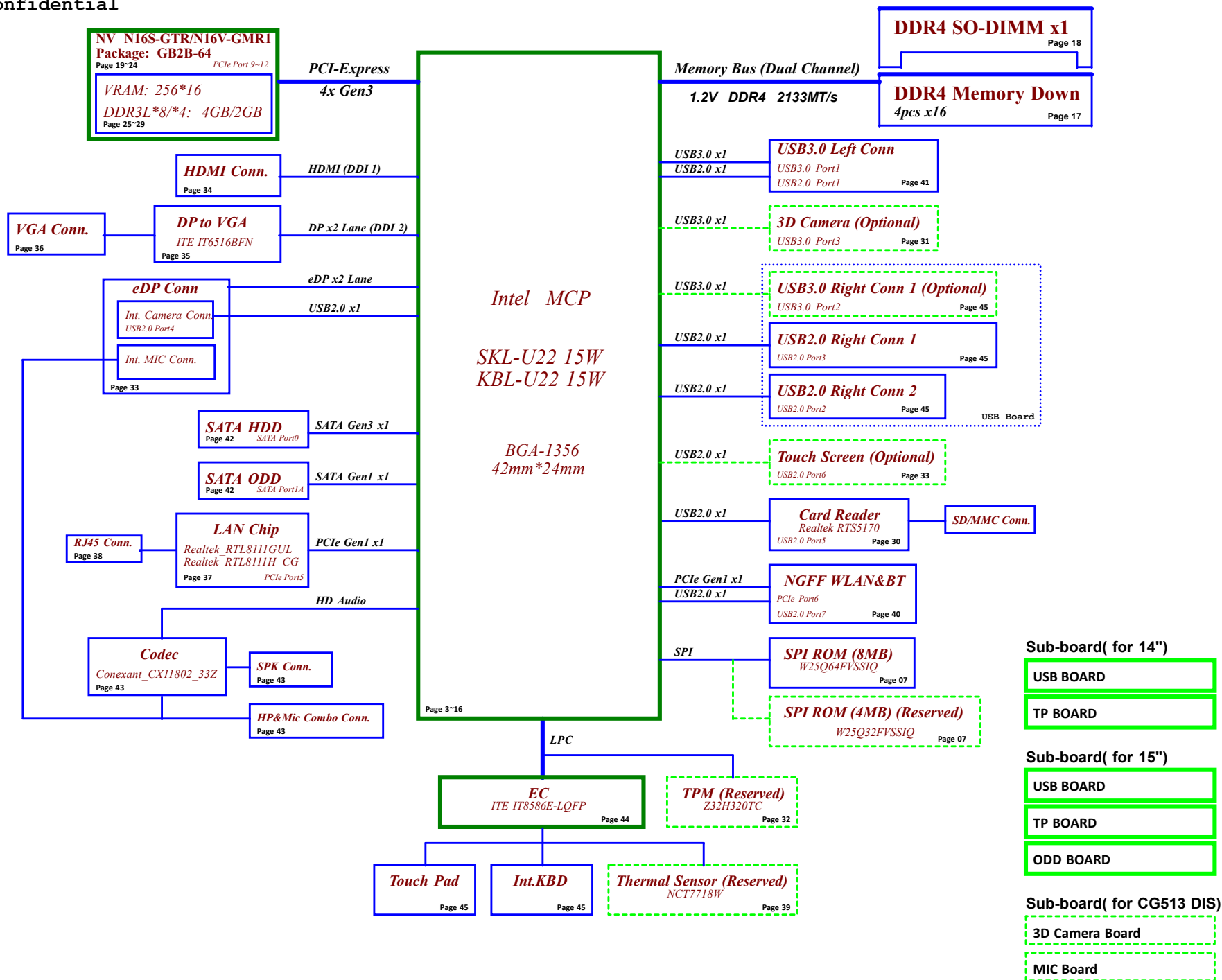
CG413/CG513 MB Schematics Document

Intel Skylake-U22/Kabylake-U22 with DDR4 + Nvidia N16S-GTR/N16V-GMR1 GPU

2016-06-12

REV:1.0

| | | | | | | | | | |
|--|------------------------------|-----------------|------------|----------------|---------------------------------|---|------------|----|----|
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| | | | | Date: | Thursday, July 14, 2016 | Sheet | 1 | of | 60 |



Voltage Rails (O --> Means ON , X --> Means OFF)

| Power Plane / State | V20B+ | +3VALW +5VALW +3VALW_PCH +1.8VALW +1.0VALW | +1.2V +2.5V_DDR +VCCST | +5VS +3VS +VCCIO +VCCSTG +VCCSA +VCC_GT +CPU_CORE +0.6VS |
|--------------------------------|-------|--|------------------------------|---|
| S0 | O | O | O | O |
| S3 | O | O | O | X |
| S3 Battery only | O | O | O | X |
| S5 S4 AC Only | O | O | X | X |
| S5 S4 Battery only | O | X | X | X |
| S5 S4 AC & Battery don't exist | X | X | X | X |

| STATE \ SIGNAL | SLP_S3# | SLP_S4# | SLP_S5# | +VALW | +V | +VS | Clock |
|----------------------|---------|---------|---------|-------|-----|-----|-------|
| Full ON | HIGH | HIGH | HIGH | ON | ON | ON | ON |
| S3 (Suspend to RAM) | LOW | HIGH | HIGH | ON | ON | OFF | OFF |
| S4 (Suspend to Disk) | LOW | LOW | LOW | ON | OFF | OFF | OFF |
| S5 (Soft OFF) | LOW | LOW | LOW | ON | OFF | OFF | OFF |
| | | | | | | | |

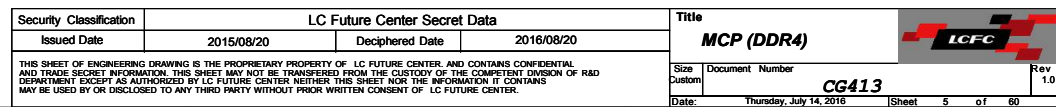
| HSIO PORT | Function | BOM Structure | BTO Item |
|-----------|-------------------------------|---------------|---------------------------|
| USB3.0 | 1 USB3.0 Conn Left | @ | Not stuff |
| | 2 USB3.0 Conn Right(optional) | 14@ | For 14" part |
| | 3 3D Camera(optional) | 15@ | For 15" part |
| | 4 NC | 14or15@ | For 14" or 15" part |
| | 5 NC | 14or17@ | For 14" or 17" part |
| | 6 NC | | |
| USB2.0 | 1 USB3.0 Conn Left | | |
| | 2 USB2.0 Conn1 Right | Cannonlake@ | For Cannonlake part |
| | 3 USB2.0 Conn2 Right | CD@ | For C cost down |
| | 4 Camera | DUALMIC@ | For Dual MIC part |
| | 5 Cardreader | EMC@ | For EMC part |
| | 6 Touch Panel | EMC_15@ | For EMC 15" part |
| | 7 Bluetooth | EMC_NS@ | For EMC nu-stuff part |
| | 8 NC | EMC_PX@ | For EMC PX part |
| | 9 NC | EMC_PXNS@ | For EMC PX nu-stuff part |
| | 10 NC | ES@ | For ES CPU |
| PCIE | 1 NC | EXO@ | For EXO GPU |
| | 2 NC | | |
| | 3 NC | ME@ | For ME part |
| | 4 NC | NTS@ | For nu-touch part |
| | 5 LAN | | |
| | 6 WLAN | | |
| | 7 used as SATA | | |
| | 8 used as SATA | | |
| SATA | 9-12 x4 PCIE | PX@ | For PX part |
| | | RANKA@ | For VRAM rank A part |
| | | RANKB@ | For VRAM rank B part |
| | | Realtek SD@ | For Realtek SD part |
| | | SINGLEMIC@ | For single MIC part |
| | 0 HDD | SINGLERANK@ | For single VRAM rank part |
| | 1A ODD | DUALRANK@ | For dual VRAM rank part |
| | 1B used as PCIE | TS@ | For touch screen part |
| | 2 used as PCIE | TPM@ | For TPM part |
| | | UMA@ | For UMA part |

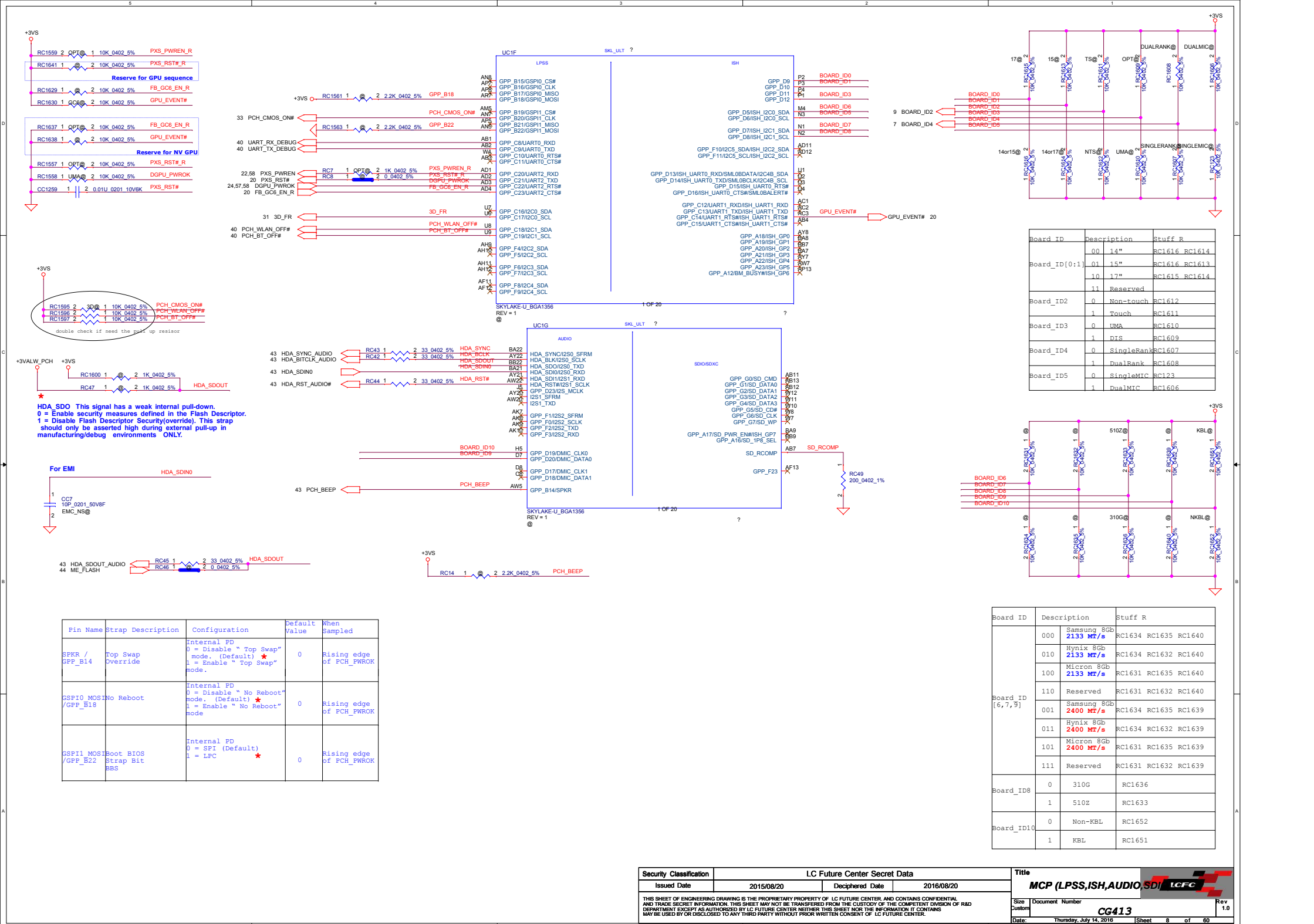
SMBUS Control Table

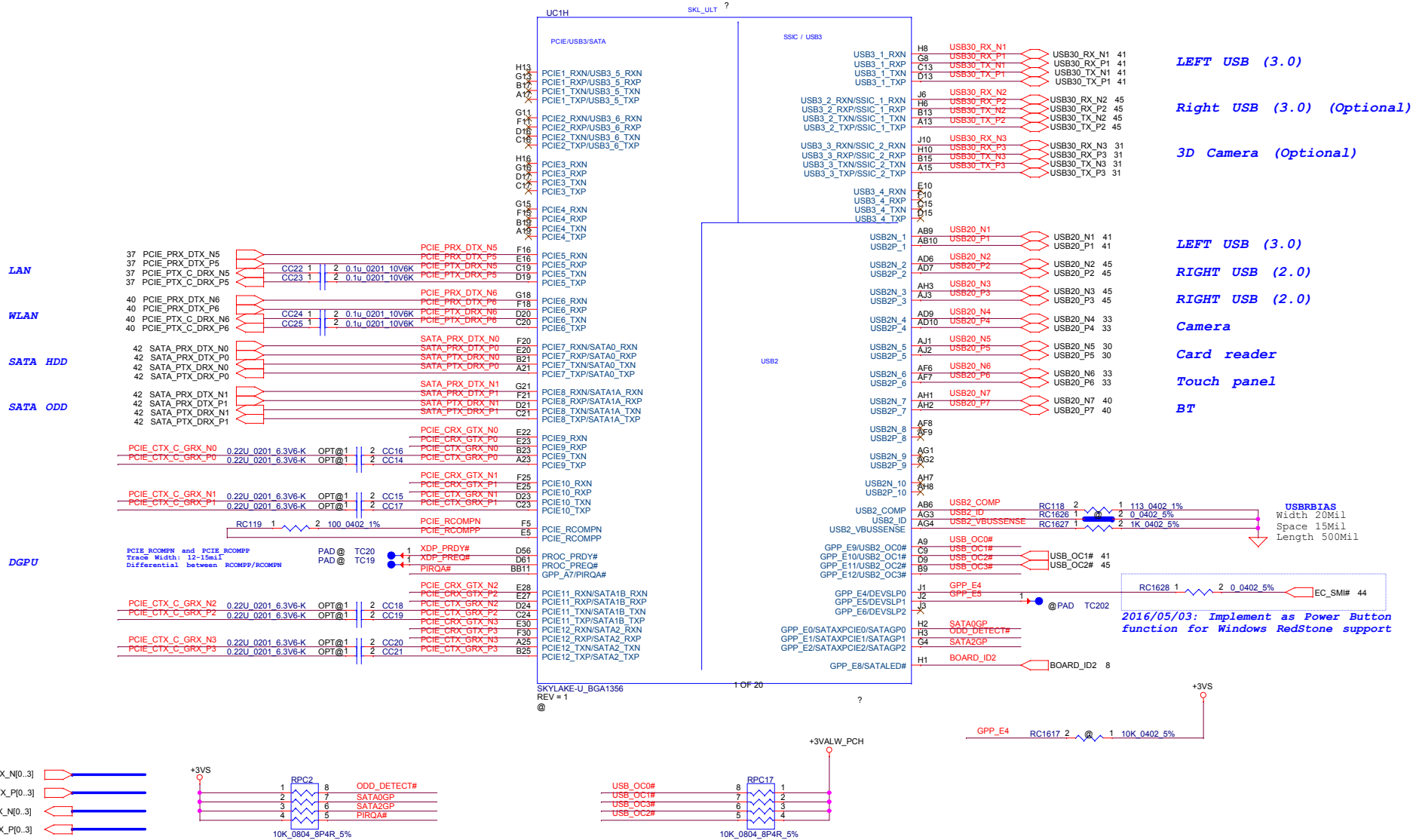
| | SOURCE | BATT | Charger | DGPU | IT8586E | Memory Down | PCH | PMIC | SODIMM | Thermal Sensor | WLAN WiMAX |
|-----------------------------|--------------------|------|---------|---------------|--------------|-------------|-----------------|------|-----------|----------------|------------|
| EC_SMB_CK1 EC_SMB_DA1 | IT8586E +3VL_EC | V | V | X | V +3VL_EC | X | X | X | X | X | X |
| EC_SMB_CK2 EC_SMB_DA2 | IT8586E +3VS | X | X | V +3VG_AON | V +3VS | X | V +3VALW_PCH | X | X | V | X |
| EC_SMB_CK3 EC_SMB_DA3 | IT8586E +3VL_EC | X | X | X | V +3VL_EC | X | X | V | X | X | X |
| PCH_SMB_CLK PCH_SMB_DATA | PCH +3VALW_PCH | X | X | X | X | X | V +3VALW_PCH | X | V +3VS | X | V +3VS |

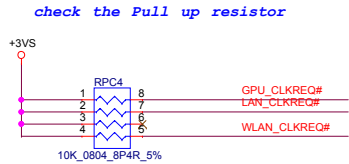
EC SMBus1 address EC SMBus2 address EC SMBus3 address PCH SM Bus address

| Device | Address | Device | Address | Device | Address | Device | Address |
|---------------|----------------|--------------------------|----------------|-------------|----------------|--------|----------|
| Smart Battery | need to update | Thermal Sensor(NCT7718W) | 1001_100xb | DDR4 SODIMM | need to update | Wlan | Reserved |
| Charger | 0001 0010 b | PCH | need to update | | | | |
| | | DGPU | need to update | | | | |









PCIE CLK0 DGPU

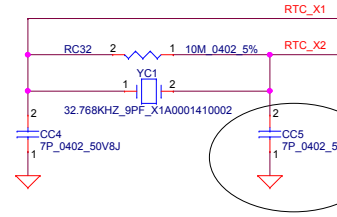
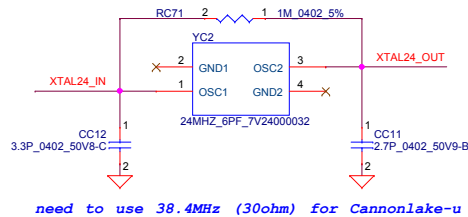
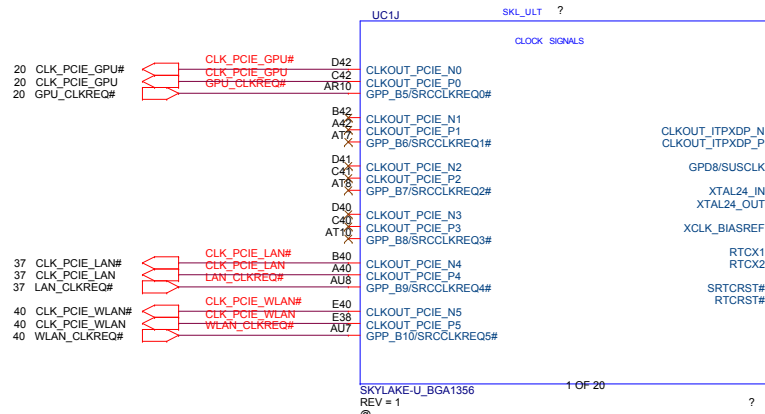
PCIE CLK4 LAN

PCIE CLK5 WLAN

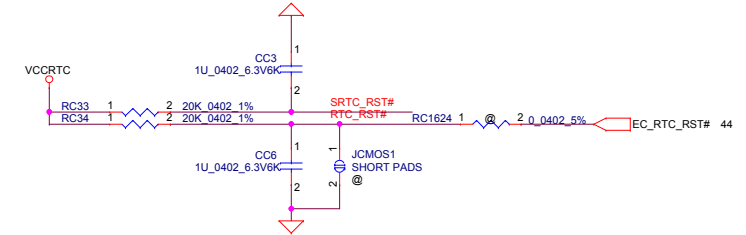
20 CLK_PCIE_GPU#
20 CLK_PCIE_GPU#
20 GPU_CLKREQ#

37 CLK_PCIE_LAN#
37 CLK_PCIE_LAN#
37 LAN_CLKREQ#

40 CLK_PCIE_WLAN#
40 CLK_PCIE_WLAN#
40 WLAN_CLKREQ#

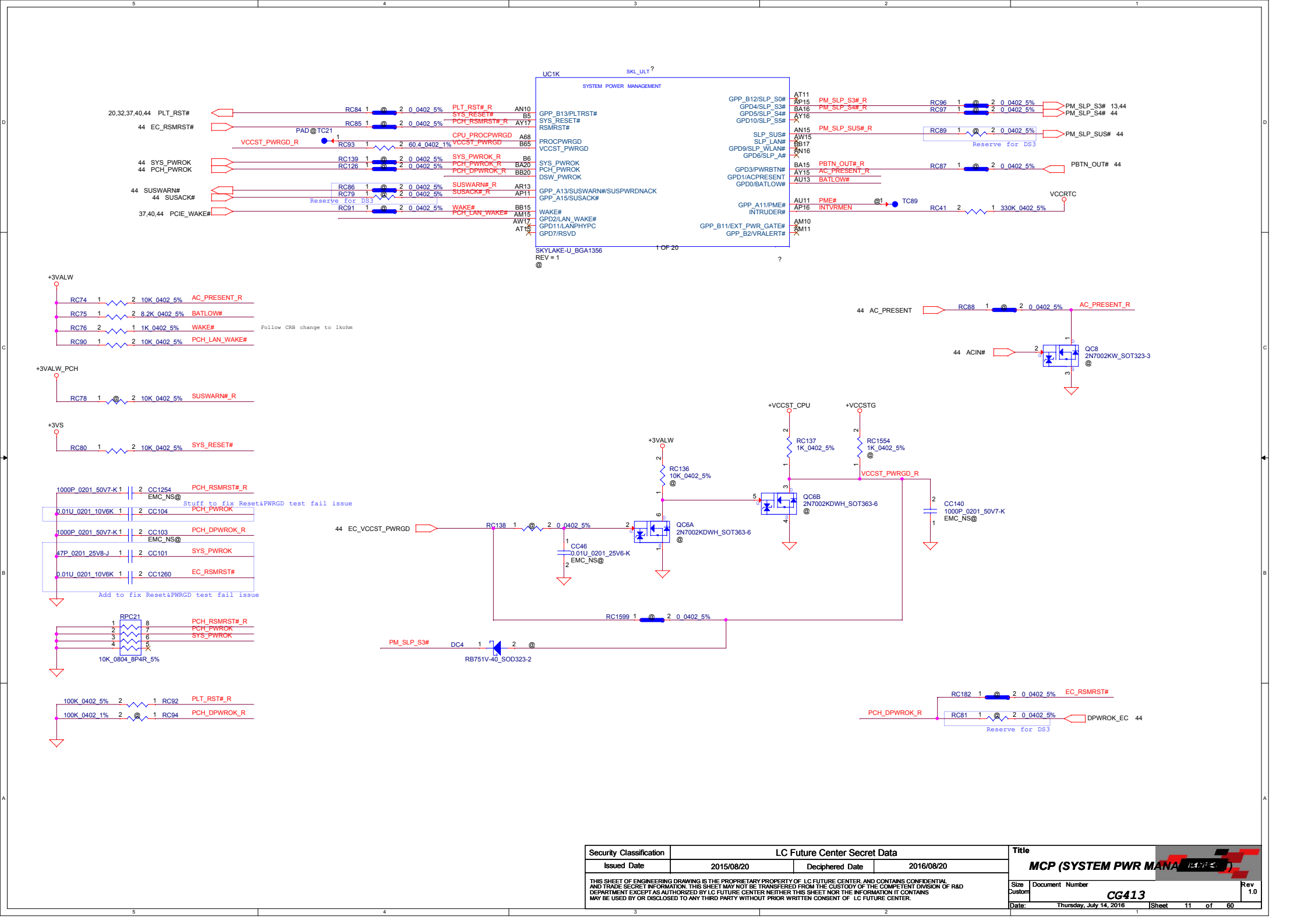


when single end external clock generator used, this pin should be grounded



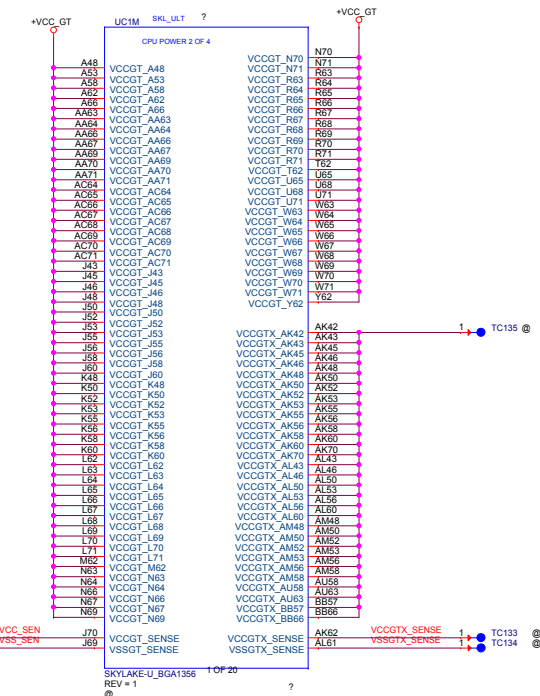
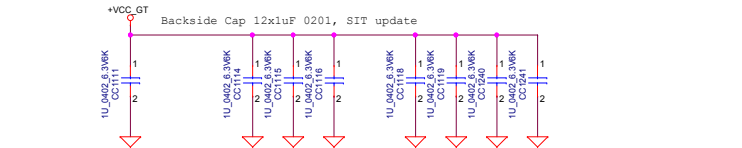
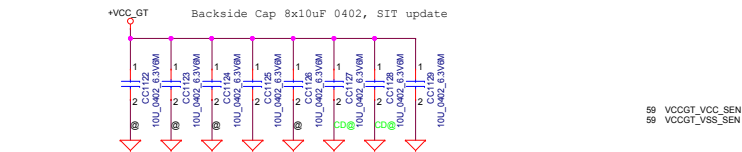
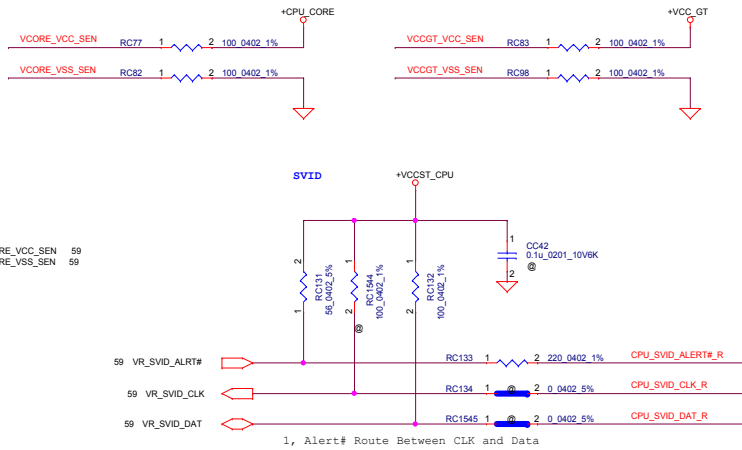
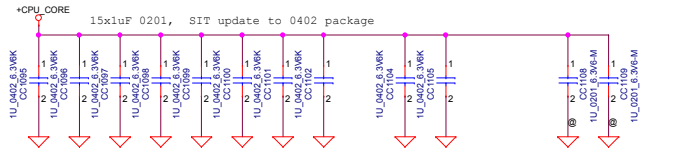
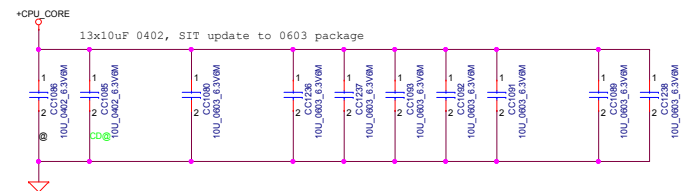
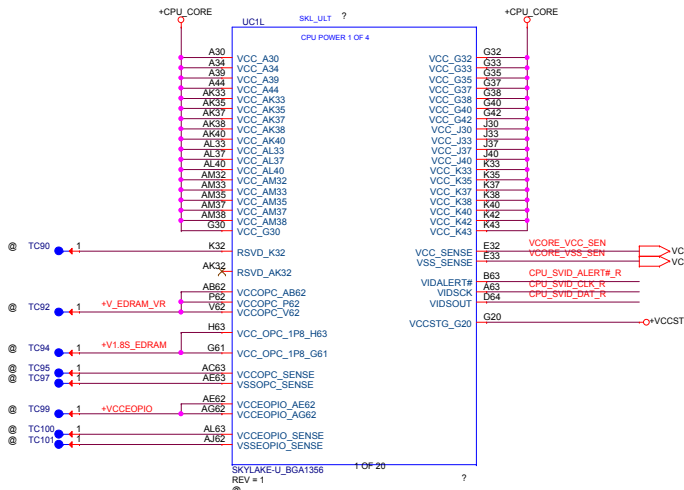
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| MCP (CSI2,EMMC,CLOCK) | | | | Rev | |
|-----------------------|--|--|--|-----|--|
| | | | | 1.0 | |

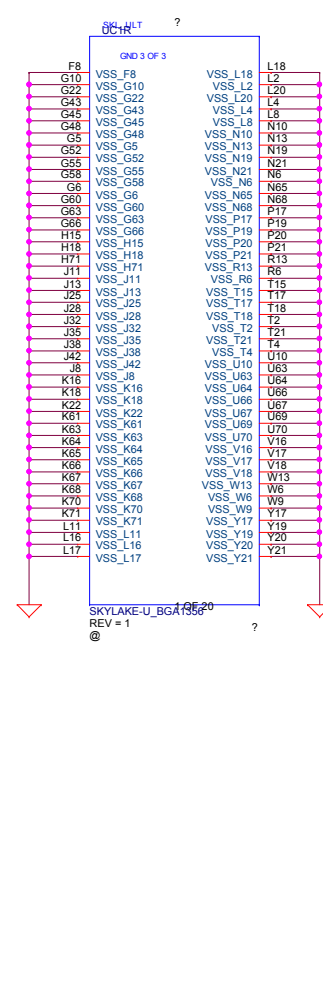
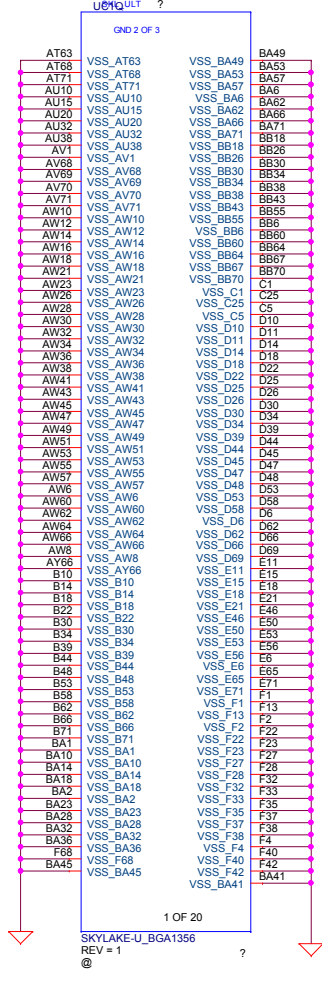
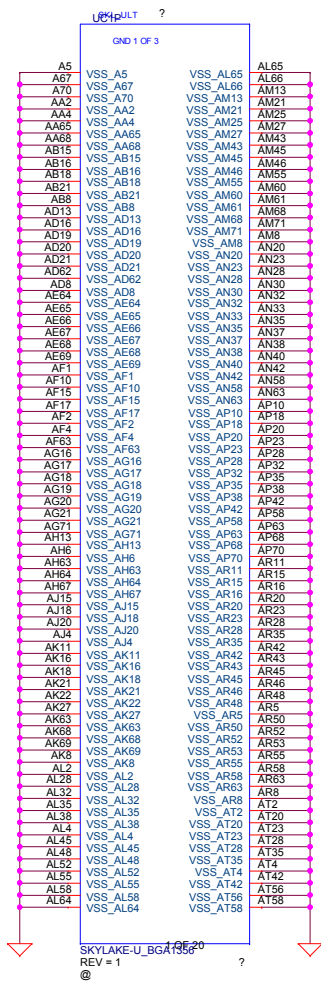


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|-------------------------------|--|----------|----------|
| MCP (SYSTEM PWR MANA) | | Document | Number |
| CG413 | | Custom | 1.0 |
| Date: Thursday, July 14, 2016 | | Sheet | 11 of 60 |

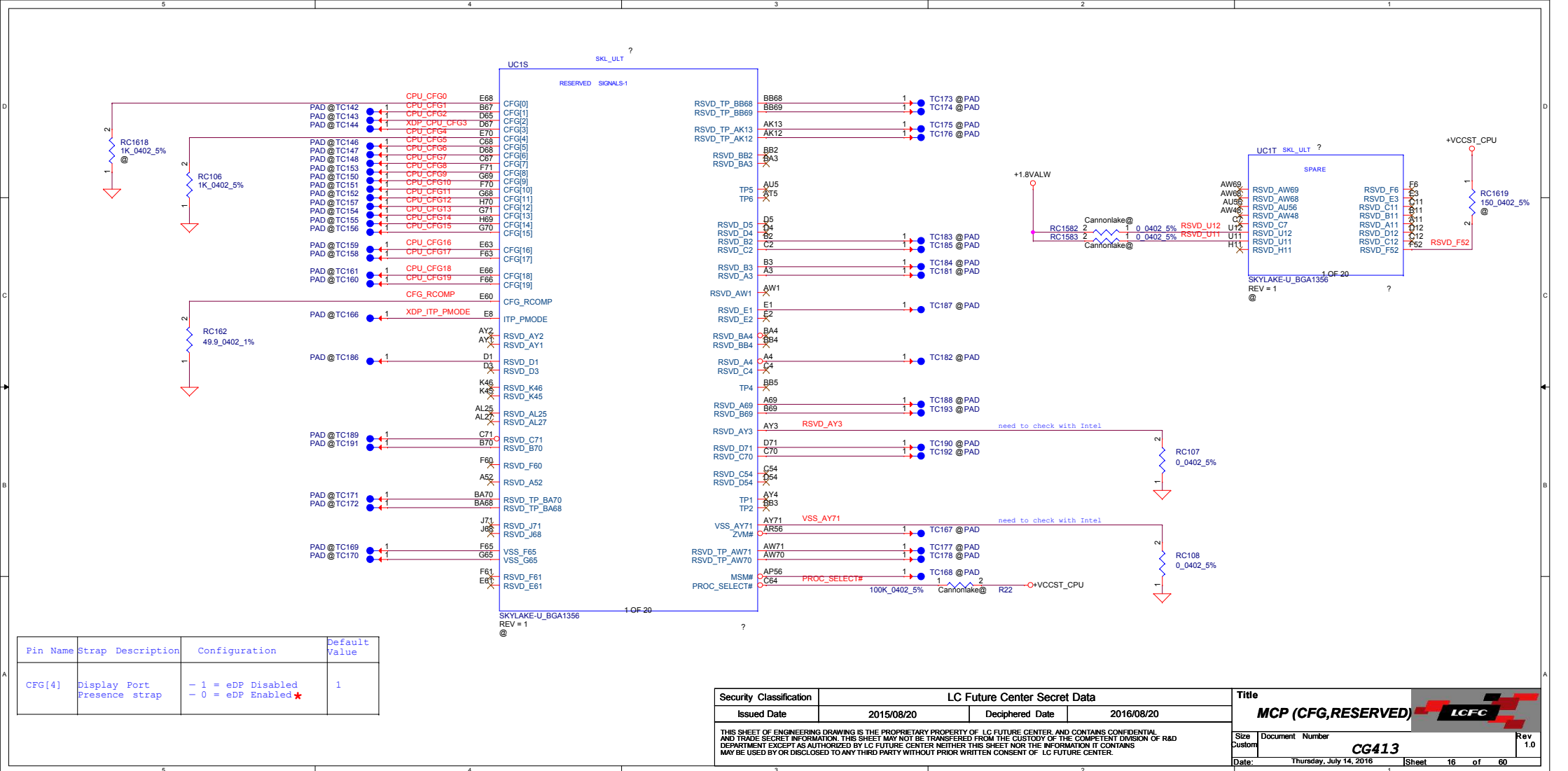


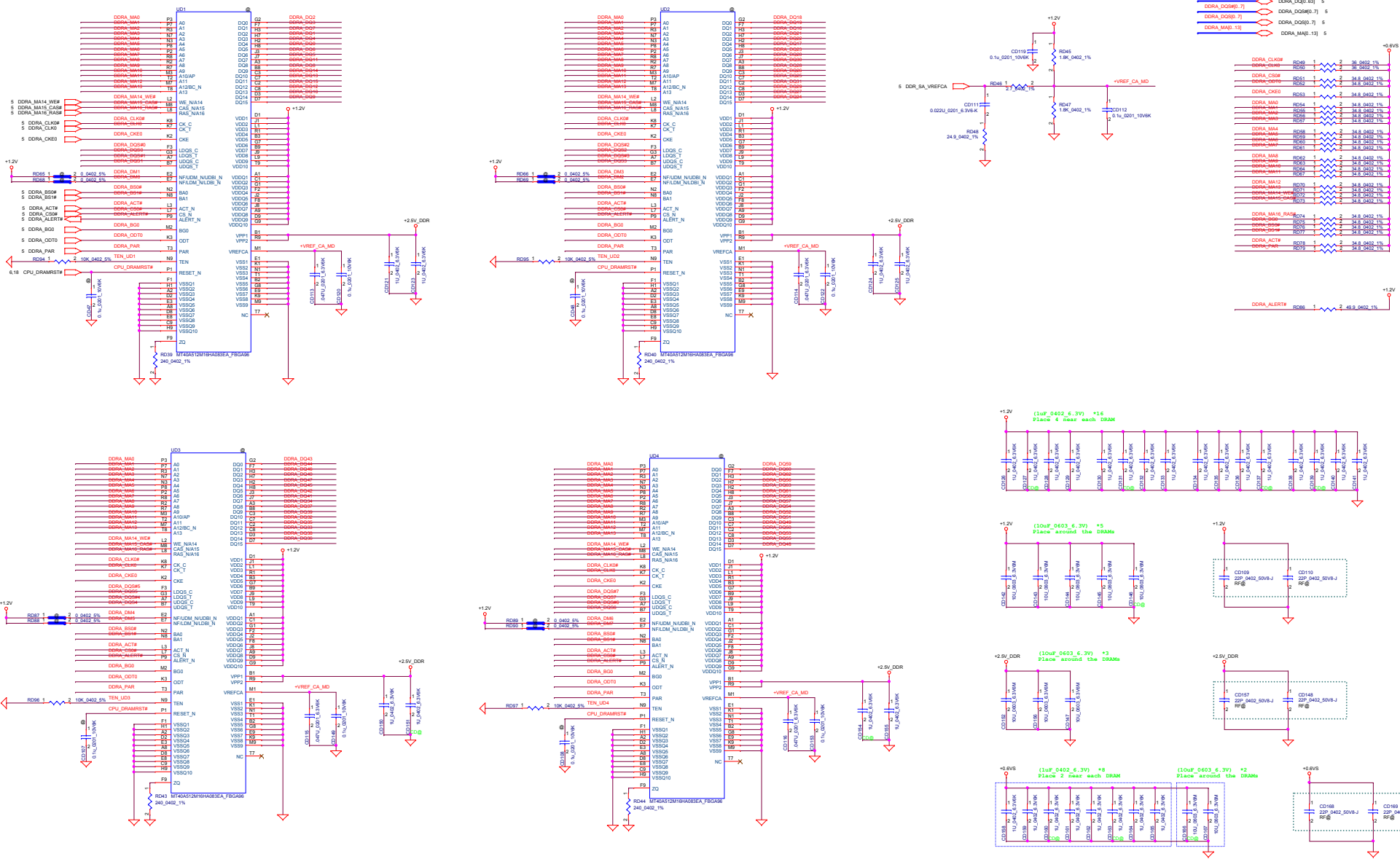
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|---|------------|------------------------------|------------|----------------|-------------------------|---|--|---------|
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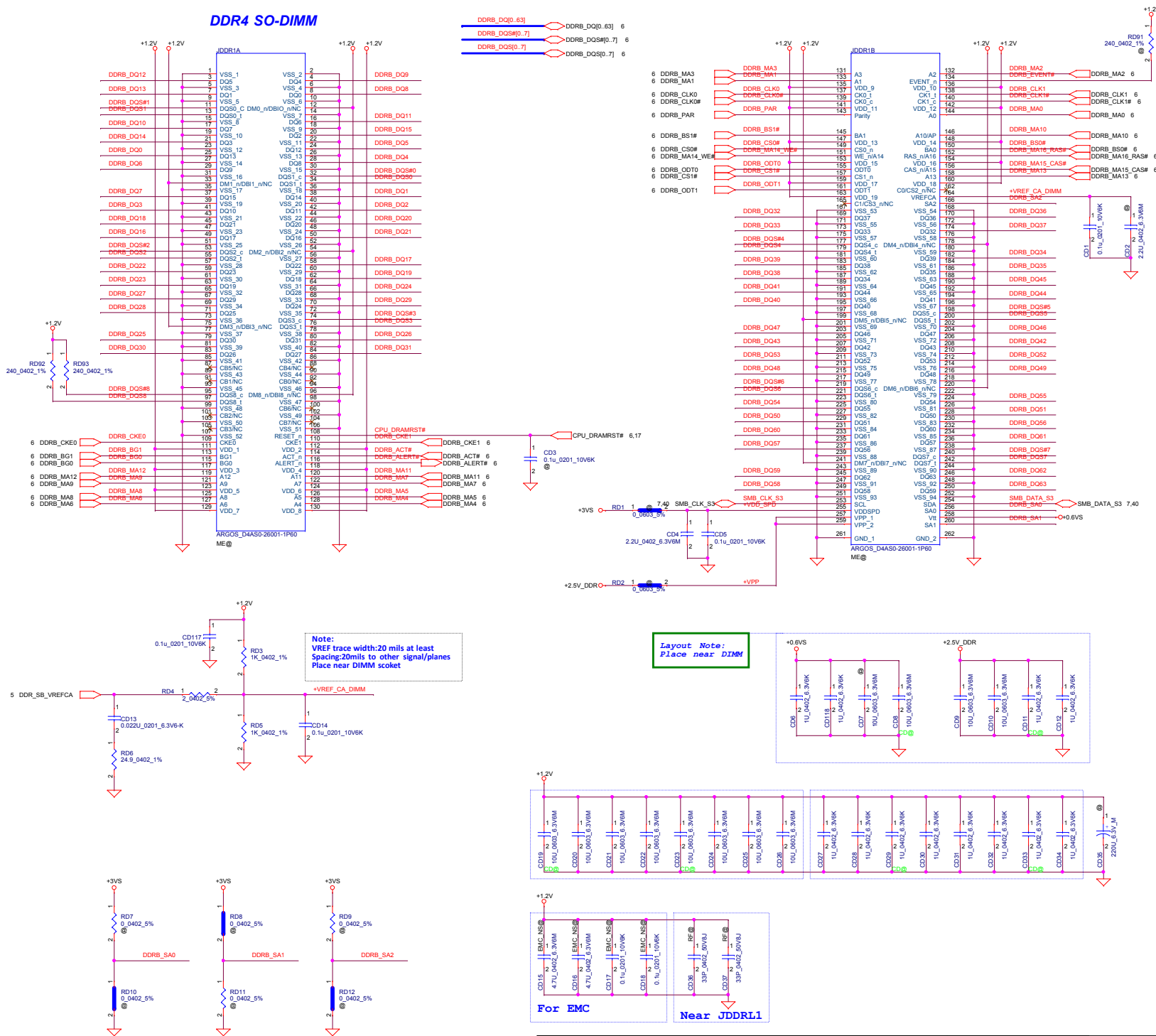
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| | | | |
|----------------|--|---------|--|
| Sheet 15 of 60 | | Rev 1.0 | |
|----------------|--|---------|--|





DDR4 SO-DIMM



SPD Address = 2H

| | | | | | |
|---|------------|------------------------------|------------|-------------------------|---------------------------------|
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N15x GPIO

| GPIO | I/O | ACTIVE | Function Description |
|--------|-----|--------|--|
| GPIO0 | OUT | - | FB Enable for GC6 2.0 |
| GPIO1 | OUT | N/A | |
| GPIO2 | OUT | N/A | |
| GPIO3 | OUT | N/A | |
| GPIO4 | OUT | N/A | |
| GPIO5 | OUT | N/A | GPU power sequencing---3V3_MAIN_EN |
| GPIO6 | IN | - | GPU wake signal for GC6 2.0 |
| GPIO7 | OUT | N/A | |
| GPIO8 | I/O | - | System side PCIe reset Monitor |
| GPIO9 | I/O | N/A | 2.2K Pull-up |
| GPIO10 | OUT | N/A | |
| GPIO11 | OUT | - | GPU Core VDD PWM control signal |
| GPIO12 | IN | | AC Power Detect Input (10K pull High) |
| GPIO13 | OUT | - | Phase Shedding |
| GPIO14 | IN | N/A | |
| GPIO15 | IN | N/A | |
| GPIO16 | | N/A | |
| GPIO17 | IN | N/A | |
| GPIO18 | IN | N/A | |
| GPIO19 | IN | N/A | |
| GPIO20 | | N/A | |
| GPIO21 | OUT | | GPU PCIe self-reset control |
| OVERT | OUT | | Active Low Thermal Catastrophic Over Temperature |

Performance Mode P0 TDP at Tj = 102 C* (DDR3)

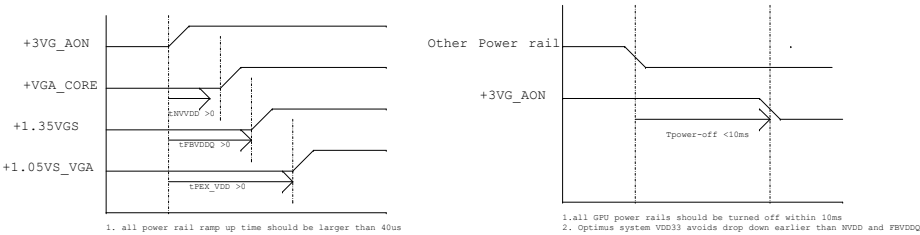
| Products | GPU (4) | Mem (1,5) | NVCLK /MCLK | NVVDD | | | FBVDD (1.35V) | | FBVDDQ (GPU+Mem) (1.35V) | | PCI Express (1.05V) (6) | | I/O and PLLVDD (1.05V) | | Other (3.3V) | |
|----------------------|---------|-----------|-------------|-------|-----|-----|---------------|-----|--------------------------|-----|-------------------------|-----|------------------------|-----|--------------|-----|
| | (W) | (W) | (MHz) | (V) | (A) | (W) | (A) | (W) | (A) | (W) | (mA) | (W) | (mA) | (W) | (mA) | (W) |
| N14X 128bit 2GB DDR3 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |

N15x Multi-level Straps

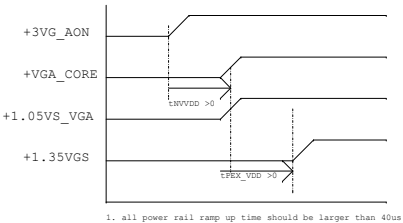
| Physical Strapping pin | Power Rail | Logical Strapping Bit3 | Logical Strapping Bit2 | Logical Strapping Bit1 | Logical Strapping Bit0 |
|------------------------|------------|---|------------------------|------------------------|------------------------|
| ROM_SCLK | +3VGS | SOR3_EXPOSED | SOR2_EXPOSED | SOR1_EXPOSED | SOR0_EXPOSED |
| ROM_SI | +3VGS | RAM_CFG[3] | RAM_CFG[2] | RAM_CFG[1] | RAM_CFG[0] |
| ROM_SO | +3VGS | DEVID_SEL | PCIE_CFG | SMB_ALT_ADDR | VGA_DEVICE |
| STRAP0 | +3VGS | Reserved(keep pull-up and pull-down footprint and stuff 50Kohm pull-up) | | | |
| STRAP1 | +3VGS | Reserved(keep pull-up and pull-down footprint and not stuff by default) | | | |
| STRAP2 | +3VGS | | | | |
| STRAP3 | +3VGS | | | | |
| STRAP4 | +3VGS | | | | |

| SMBUS_ALT_ADDR | |
|----------------|------------------------|
| 0 | 0x9E (Default) |
| 1 | 0x9C (Multi-GPU usage) |

N15V-GM Power Sequence

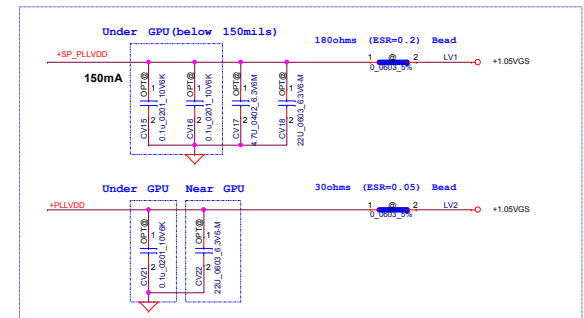
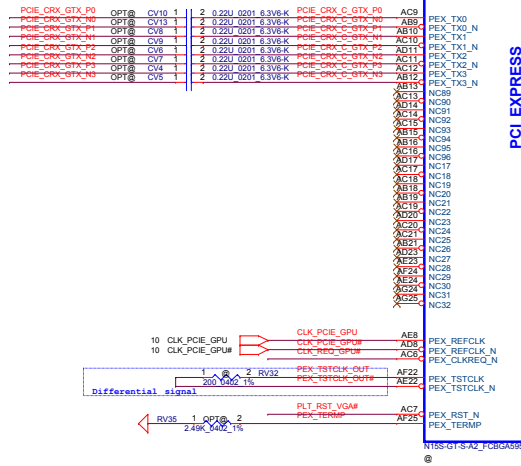
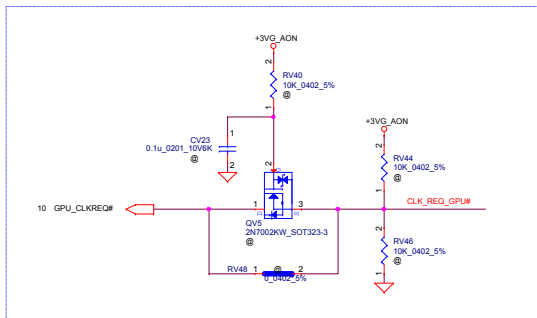



N15S-GT Power Sequence

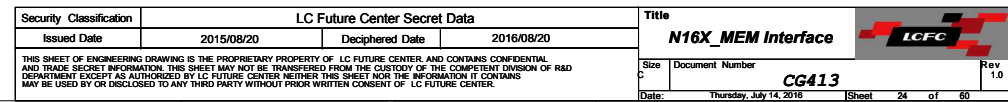


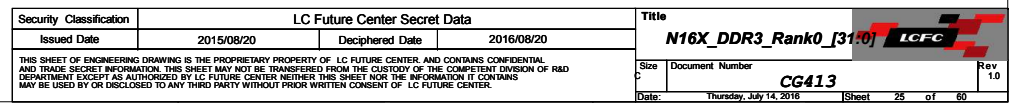
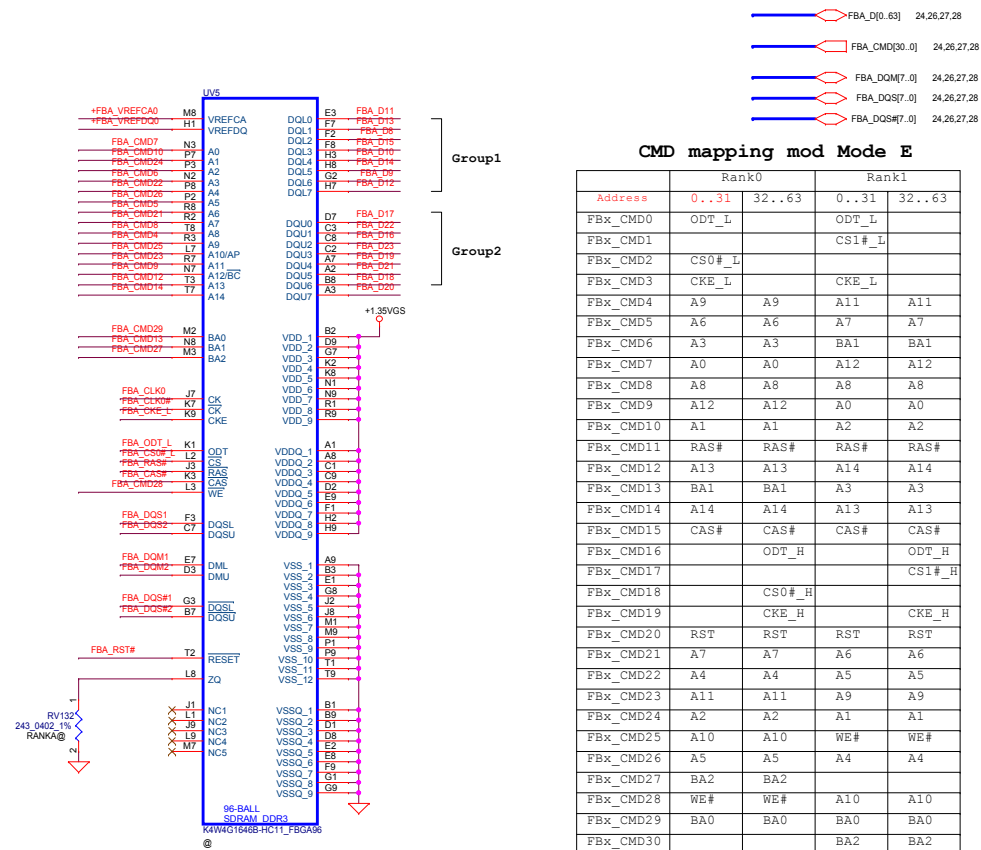
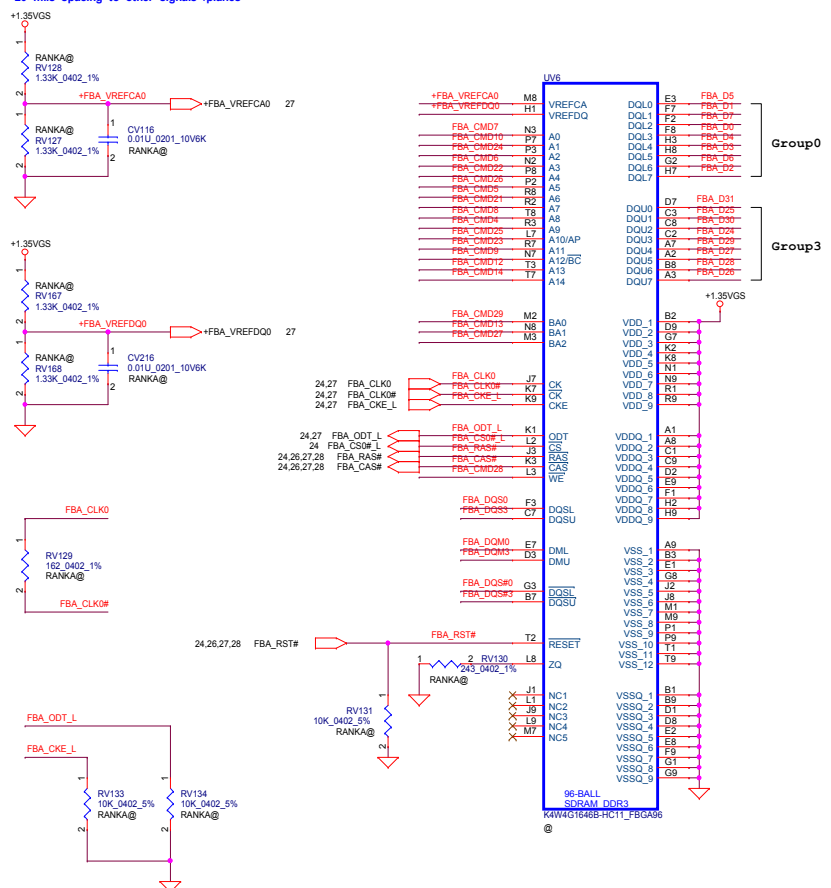
N15x Binary Straps

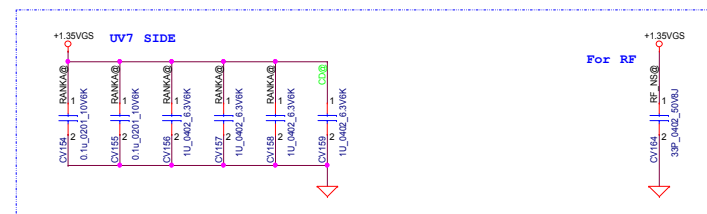
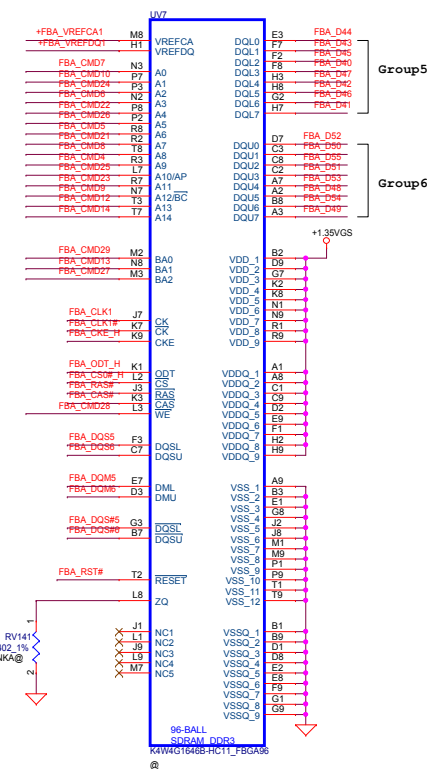
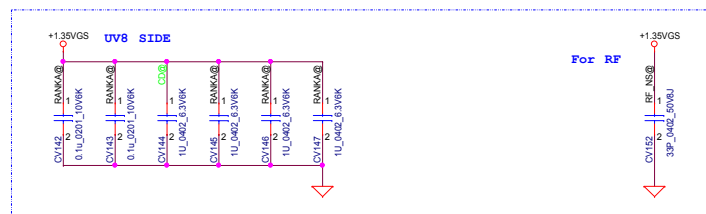
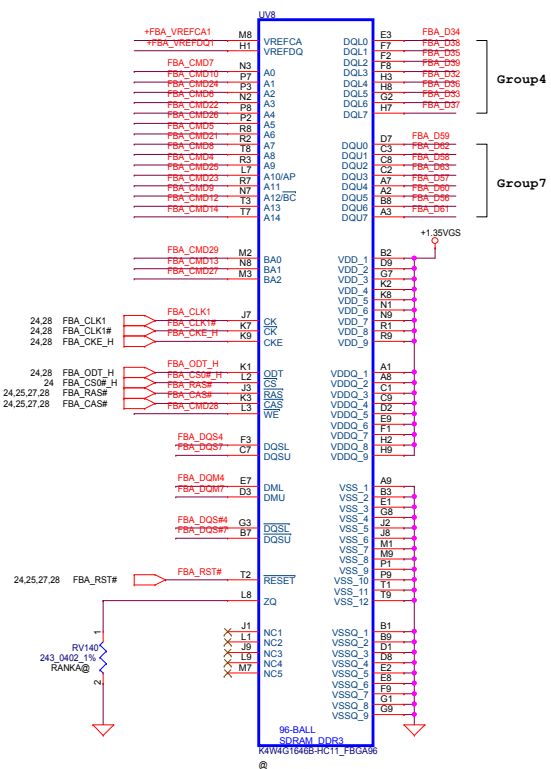
| Physical Strapping pin | Power Rail | Strap Mapping |
|------------------------|------------|----------------|
| ROM_SCLK | +3VGS | SMB_ALT_ADDR |
| ROM_SI | +3VGS | SUB_VENDOR |
| ROM_SO | +3VGS | VGA_DEVICE |
| STRAP0 | +3VGS | RAM_CFG[0] |
| STRAP1 | +3VGS | RAM_CFG[1] |
| STRAP2 | +3VGS | RAM_CFG[2] |
| STRAP3 | +3VGS | RAM_CFG[3] |
| STRAP4 | +3VGS | PCIE_MAX_SPEED |



| | | | | | |
|--|------------|------------------------------|------------|---|---|
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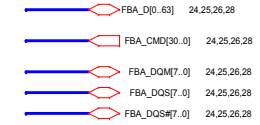
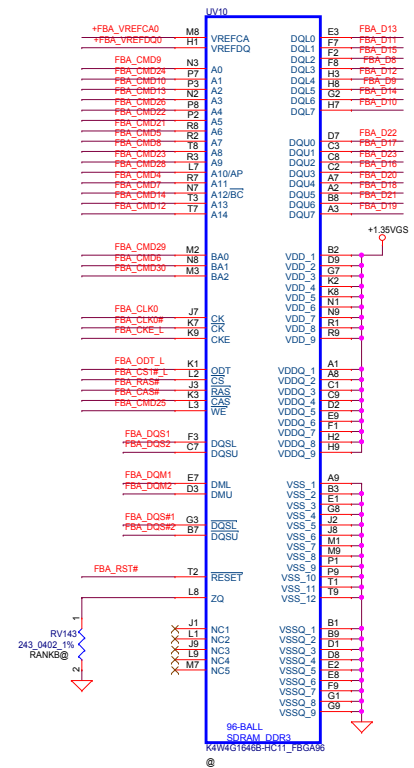
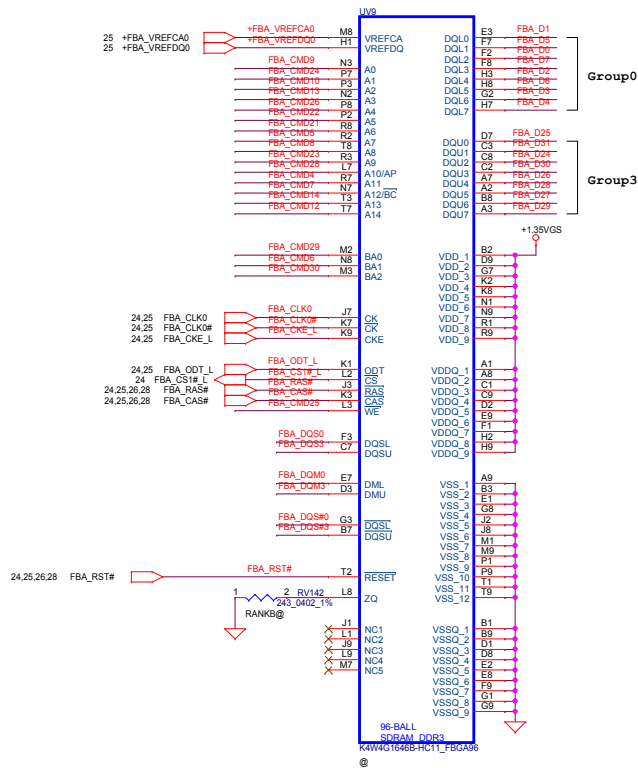




CMD mapping mod Mode E

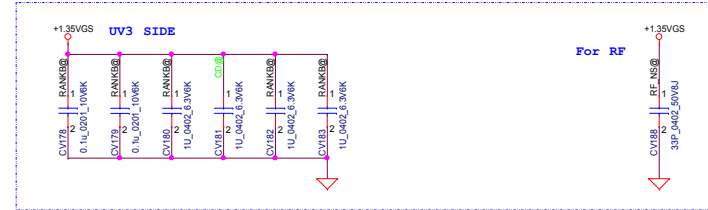
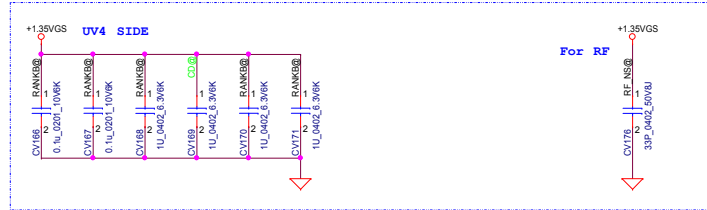
| | Rank0 | | Rank1 | |
|-----------|--------|--------|--------|--------|
| Address | 0..31 | 32..63 | 0..31 | 32..63 |
| FBx_CMD0 | ODT_L | | ODT_L | |
| FBx_CMD1 | | | CS1#_L | |
| FBx_CMD2 | CS0#_L | | | |
| FBx_CMD3 | CKE_L | | CKE_L | |
| FBx_CMD4 | A9 | A9 | A11 | A11 |
| FBx_CMD5 | A6 | A6 | A7 | A7 |
| FBx_CMD6 | A3 | A3 | BA1 | BA1 |
| FBx_CMD7 | A0 | A0 | A12 | A12 |
| FBx_CMD8 | A8 | A8 | A8 | A8 |
| FBx_CMD9 | A12 | A12 | A0 | A0 |
| FBx_CMD10 | A1 | A1 | A2 | A2 |
| FBx_CMD11 | RAS# | RAS# | RAS# | RAS# |
| FBx_CMD12 | A13 | A13 | A14 | A14 |
| FBx_CMD13 | BA1 | BA1 | A3 | A3 |
| FBx_CMD14 | A14 | A14 | A13 | A13 |
| FBx_CMD15 | CAS# | CAS# | CAS# | CAS# |
| FBx_CMD16 | | ODT_H | | ODT_H |
| FBx_CMD17 | | | | CS1# |
| FBx_CMD18 | | CS0#_H | | |
| FBx_CMD19 | | CKE_H | | CKE_H |
| FBx_CMD20 | RST | RST | RST | RST |
| FBx_CMD21 | A7 | A7 | A6 | A6 |
| FBx_CMD22 | A4 | A4 | A5 | A5 |
| FBx_CMD23 | A11 | A11 | A9 | A9 |
| FBx_CMD24 | A2 | A2 | A1 | A1 |
| FBx_CMD25 | A10 | A10 | WE# | WE# |
| FBx_CMD26 | A5 | A5 | A4 | A4 |
| FBx_CMD27 | BA2 | BA2 | | |
| FBx_CMD28 | WE# | WE# | A10 | A10 |
| FBx_CMD29 | BA0 | BA0 | BA0 | BA0 |
| FBx_CMD30 | | | BA2 | BA2 |

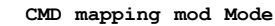
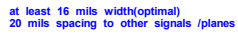
at least 16 mils width(optimal)
20 mils spacing to other signals /planes



CMD mapping mod Mode E

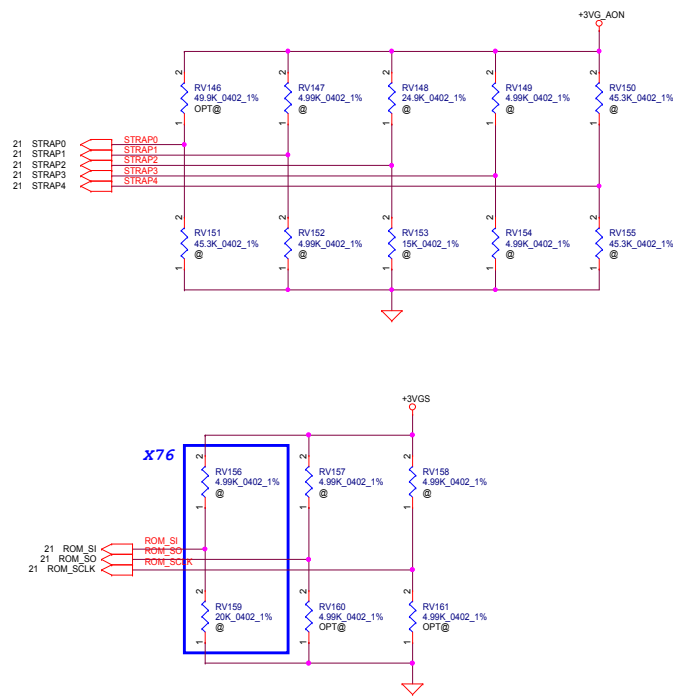
| | Rank0 | Rank1 |
|----------------|--------|--------|
| Address | 0..31 | 32..63 |
| FbX_CMD0 | ODT_L | ODT_L |
| FbX_CMD1 | | CS1#_L |
| FbX_CMD2 | CS0#_L | |
| FbX_CMD3 | CKE_L | CKE_L |
| FbX_CMD4 | A9 | A9 |
| FbX_CMD5 | A6 | A7 |
| FbX_CMD6 | A3 | BA1 |
| FbX_CMD7 | A0 | A12 |
| FbX_CMD8 | A8 | A8 |
| FbX_CMD9 | A12 | A0 |
| FbX_CMD10 | A1 | A2 |
| FbX_CMD11 | RAS# | RAS# |
| FbX_CMD12 | A13 | A14 |
| FbX_CMD13 | BA1 | A3 |
| FbX_CMD14 | A14 | A13 |
| FbX_CMD15 | CAS# | CAS# |
| FbX_CMD16 | ODT_H | ODT_H |
| FbX_CMD17 | | CS1#_H |
| FbX_CMD18 | CS0#_H | |
| FbX_CMD19 | CKE_H | CKE_H |
| FbX_CMD20 | RST | RST |
| FbX_CMD21 | A7 | A6 |
| FbX_CMD22 | A4 | A5 |
| FbX_CMD23 | A11 | A9 |
| FbX_CMD24 | A2 | A1 |
| FbX_CMD25 | A10 | WE# |
| FbX_CMD26 | A5 | A4 |
| FbX_CMD27 | BA2 | BA2 |
| FbX_CMD28 | WE# | A10 |
| FbX_CMD29 | BA0 | BA0 |
| FbX_CMD30 | | BA2 |





For RF





| Physical Strapping pin | Power Rail | Logical Strapping Bit3 | Logical Strapping Bit2 | Logical Strapping Bit1 | Logical Strapping Bit0 |
|------------------------|------------|---|------------------------|------------------------|------------------------|
| ROM_SCLK | +3VGS | SOR3_EXPOSED | SOR2_EXPOSED | SOR1_EXPOSED | SOR0_EXPOSED |
| ROM_SI | +3VGS | RAM_CFG[3] | RAM_CFG[2] | RAM_CFG[1] | RAM_CFG[0] |
| ROM_SO | +3VGS | DEVID_SEL | PCIE_CFG | SMB_ALT_ADDR | VGA_DEVICE |
| STRAP0 | +3VGS | Reserved(keep pull-up and pull-down footprint and stuff 50Kohm pull-up) | | | |
| STRAP1 | +3VGS | Reserved(keep pull-up and pull-down footprint and not stuff by default) | | | |
| STRAP2 | +3VGS | | | | |
| STRAP3 | +3VGS | | | | |
| STRAP4 | +3VGS | | | | |

| Resistor Values | Pull-up to +3VGS | Pull-down to Gnd |
|-----------------|------------------|------------------|
| 4.99K | 1000 | 0000 |
| 10K | 1001 | 0001 |
| 15K | 1010 | 0010 |
| 20K | 1011 | 0011 |
| 24.9K | 1100 | 0100 |
| 30.1K | 1101 | 0101 |
| 34.8K | 1110 | 0110 |
| 45.3K | 1111 | 0111 |

| DEVID_SEL | |
|-----------|-----------|
| 0 | (Default) |
| 1 | |

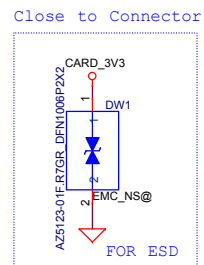
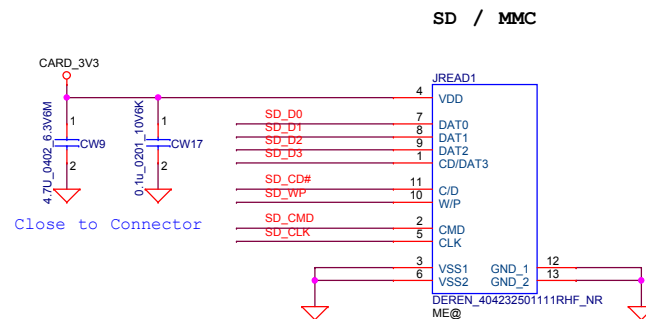
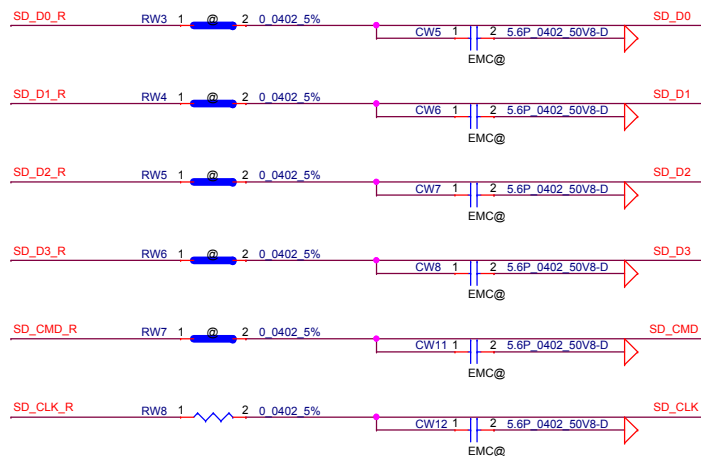
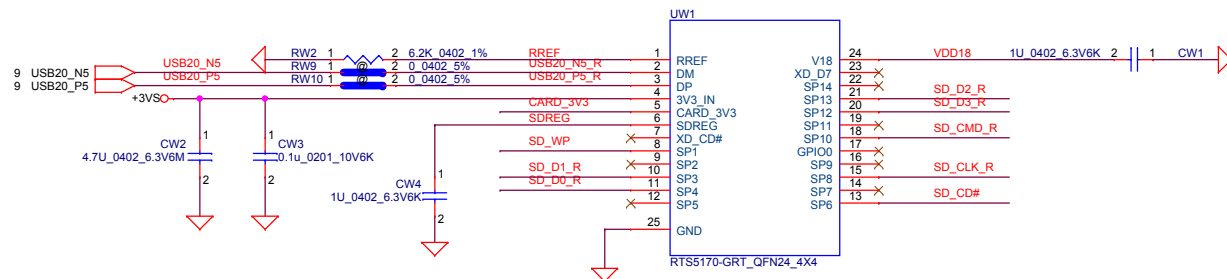
| PCIE_CFG | |
|----------|-----------|
| 0 | (Default) |
| 1 | |


| SMBUS_ALT_ADDR | |
|----------------|------------------------|
| 0 | 0x9E (Default) |
| 1 | 0x9C (Multi-GPU usage) |

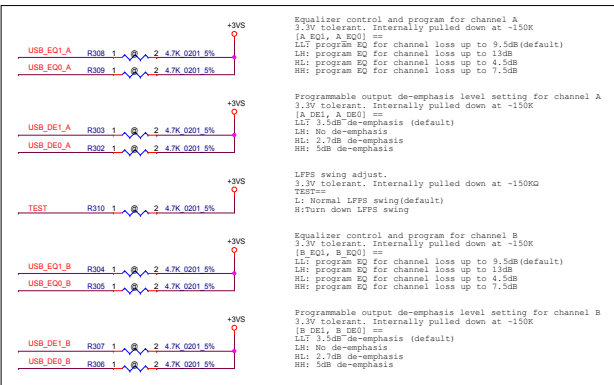
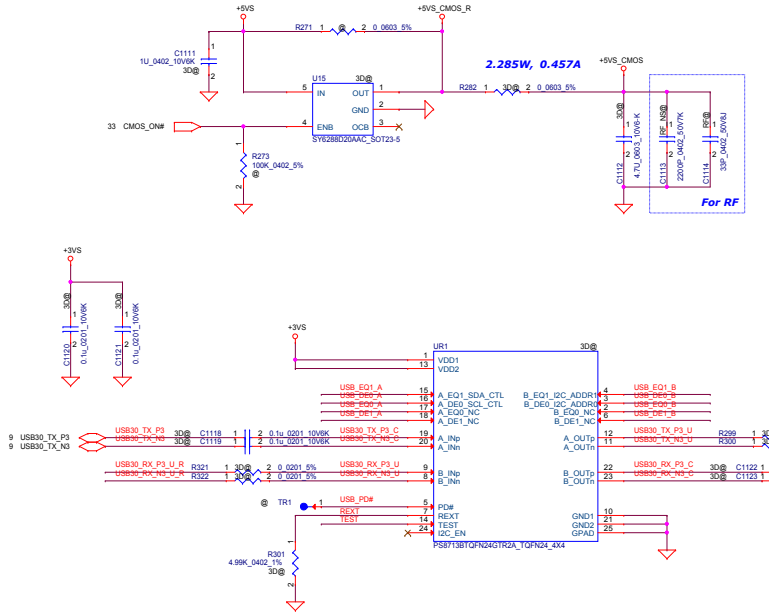
| VGA_DEVICE | |
|------------|-----------------------------|
| 0 | 3D Device (Class Code 302h) |
| 1 | VGA Device (Default) |

| GPU | Configuration | FB Memory (DDR3L) | | ROM_SI | ROM_SO | ROM_SCLK | STRAP0 | STRAP1 | STRAP2 | STRAP3 | STRAP4 |
|-----------------------|---------------|-------------------|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| N16S-GTR N16V-GMR1 | Single-Rank | Samsung 900MHz | K4W4G1646E-BC1A | 0x1 | PD 4.99K | PD 4.99K | PU 49.9K | Un-stuff | Un-stuff | Un-stuff | Un-stuff |
| | | | 256M x 16 | PD 10K | | | | | | | |
| | | Hynix 900MHz | H5TC4G63CFR-N0C | 0x2 | | | | | | | |
| | | | 256M x 16 | PD 15K | | | | | | | |
| | | Micron 900MHz | MT41J256M16LY-091G:N | 0x6 | | | | | | | |
| | | | 256M x 16 | PD 34.8K | | | | | | | |
| | Dual-Rank | Samsung 900MHz | K4W4G1646E-BC1A | 0xF | | | | | | | |
| | | | 256M x 16 | PU 45.3K | | | | | | | |
| | | Hynix 900MHz | H5TC4G63CFR-N0C | 0xE | | | | | | | |
| | | | 256M x 16 | PU 34.8K | | | | | | | |
| | | Micron 900MHz | MT41J256M16LY-091G:N | 0xA | | | | | | | |
| | | | 256M x 16 | PU 15K | | | | | | | |

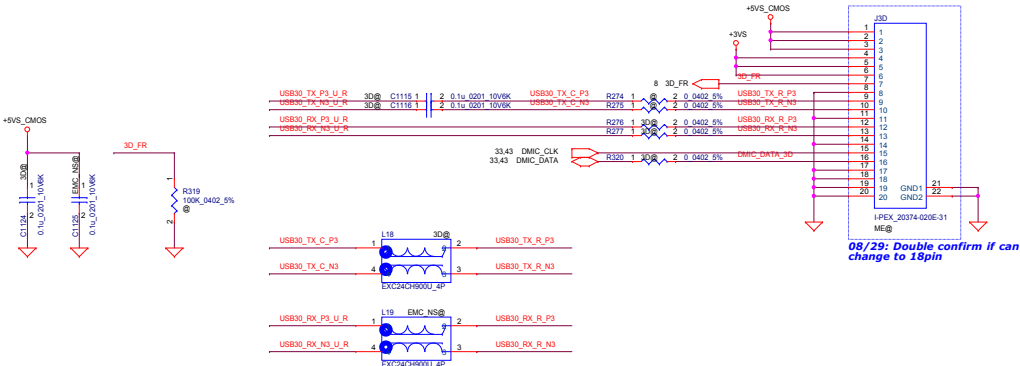
| VRAM | X76 P/N | VRAM Q'ty | VRAM P/N |
|---------|-------------|-----------|-------------|
| Samsung | X7610212201 | 4 | SA000063F20 |
| | X7610212001 | 8 | |
| Hynix | X7610212202 | 4 | SA00007DU10 |
| | X7610212101 | 8 | |
| Micron | X7610212203 | 4 | SA00007QJ00 |
| | N/A | 8 | |

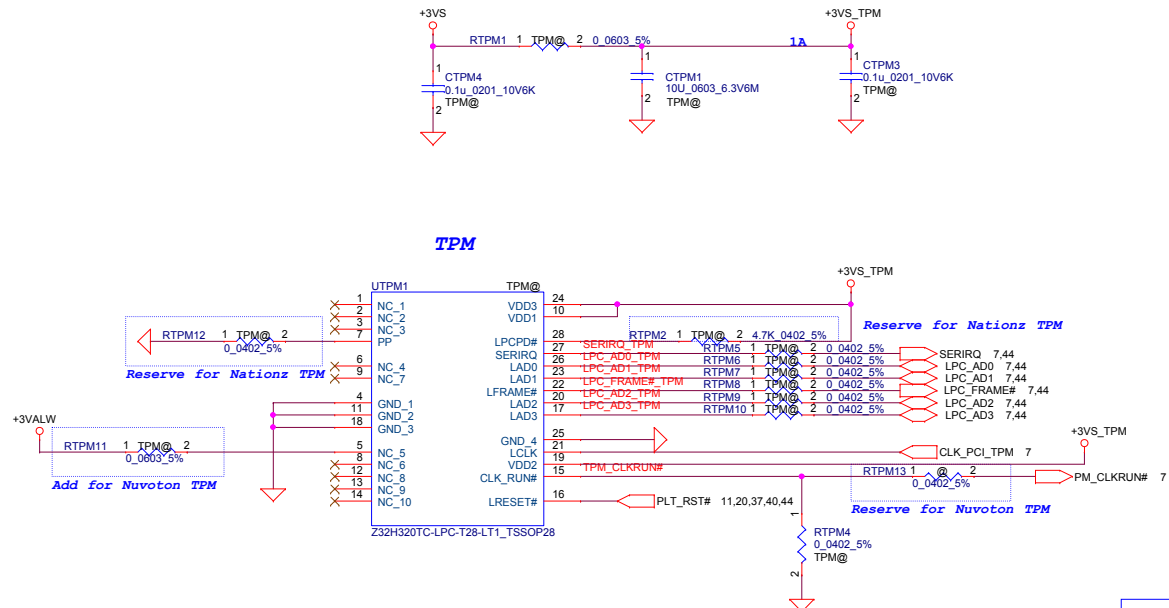


| | | | | | | | | | | | | | | | | | |
|--|--|------------------------------|--|-----------------|--|------------|--|---|--|-------------|--|-----------------|--|-------|--|---------|--|
| Security Classification | | LC Future Center Secret Data | | | | Title | |  | | | | | | | | | |
| Issued Date | | 2015/08/20 | | Deciphered Date | | 2016/08/20 | | | | Cardreader | | | | | | | |
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| Date: | | Thursday, July 14, 2016 | | | | Sheet | | 30 | | of | | 60 | | | | | |



3D Camera Connector





| | Nationz TPM | Nuvoton TPM |
|--------|-------------|-------------|
| RTPM2 | Stuff | NC |
| RTPM12 | Stuff | NC |
| RTPM11 | NC | Stuff |

| | | | |
|--|------------|------------------------------|------------|
| Security Classification | | LC Future Center Secret Data | |
| Issued Date | 2015/08/20 | Deciphered Date | 2016/08/20 |
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| Title | | | | LCFC | |
|--------|-------------------------|--------|-------|------|-------|
| TPM | | | | | |
| Size | Document | Number | | Rev | |
| Custom | | CG413 | | 1.0 | |
| Date: | Thursday, July 14, 2016 | | Sheet | 32 | of 60 |

This figure is a detailed engineering drawing of the LCD POWER CIRCUIT, CMOS Camera, and Touch Screen sections of a device. It includes various components, their values, and connections, along with a security classification table and a title block.

LCD POWER CIRCUIT

U5 EN PIN VIH MIN 1.5V

Need short

W=40 mils

W=60mils

For RF

For EMI Close to R5

EMI request

2A 80 mil

EMI Request

CMOS Camera

Need short

W=40 mils

EMI request

Touch Screen

For EMI

For EMI

For EMI

| Security Classification | | | |
|------------------------------|------------|-----------------|------------|
| LC Future Center Secret Data | | | |
| Issued Date | 2015/08/20 | Deciphered Date | 2016/08/20 |

| Title | |
|-----------------------|-------------------------|
| eDP/CMOS/Touch screen | |
| Size | Document Number |
| Custom | CG413 |
| Date: | Thursday, July 14, 2016 |
| Sheet | 33 of 60 |

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LCD POWER CIRCUIT

U5 EN PIN VIH MIN 1.5V

CMOS Camera

Need short

W=40 mils

W=60mils

For EMI Close to R5

EMI request

DMIC_CLK

DISPOFF#

INVT_PWM

Touch Screen

For EMI

For EMI

Security Classification

LC Future Center Secret Data

Title

eDP/CMOS/Touch screen

Size

Document Number

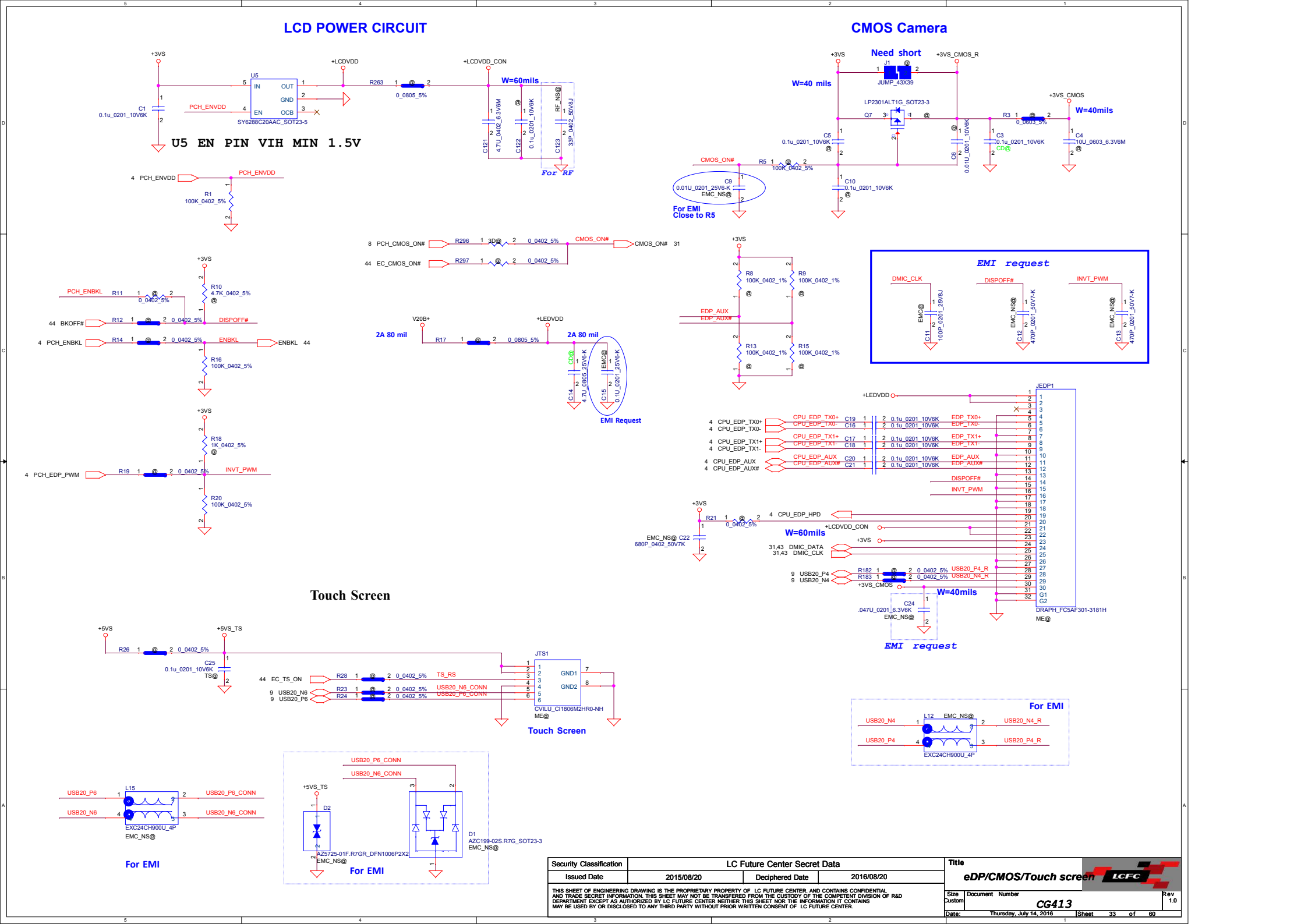
CG413

Date

Thursday, July 14, 2016

Sheet

33 of 60



LCD POWER CIRCUIT

U5 EN PIN VIH MIN 1.5V

CMOS Camera

Need short

W=40 mils

W=60mils

For EMI Close to R5

EMI request

DMIC_CLK

DISPOFF#

INVT_PWM

Touch Screen

For EMI

For EMI

Security Classification

LC Future Center Secret Data

Title

eDP/CMOS/Touch screen

Size

Document Number

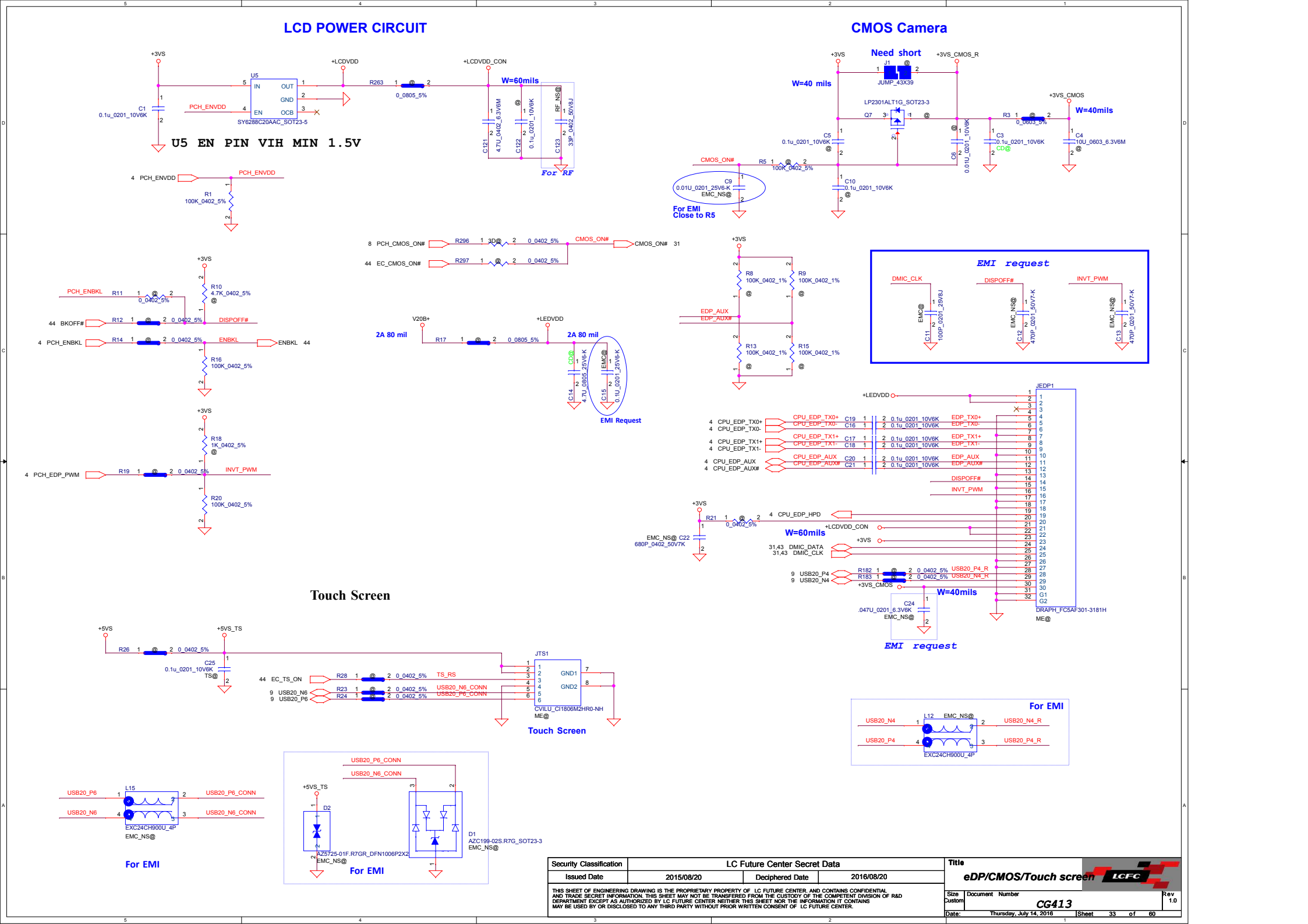
CG413

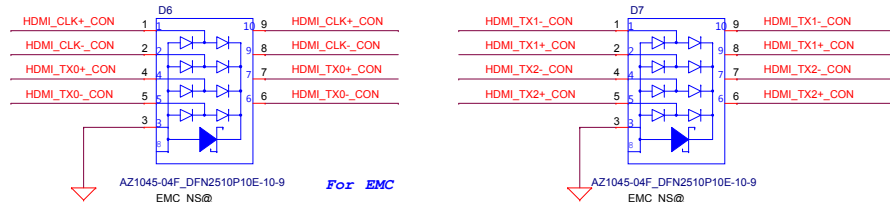
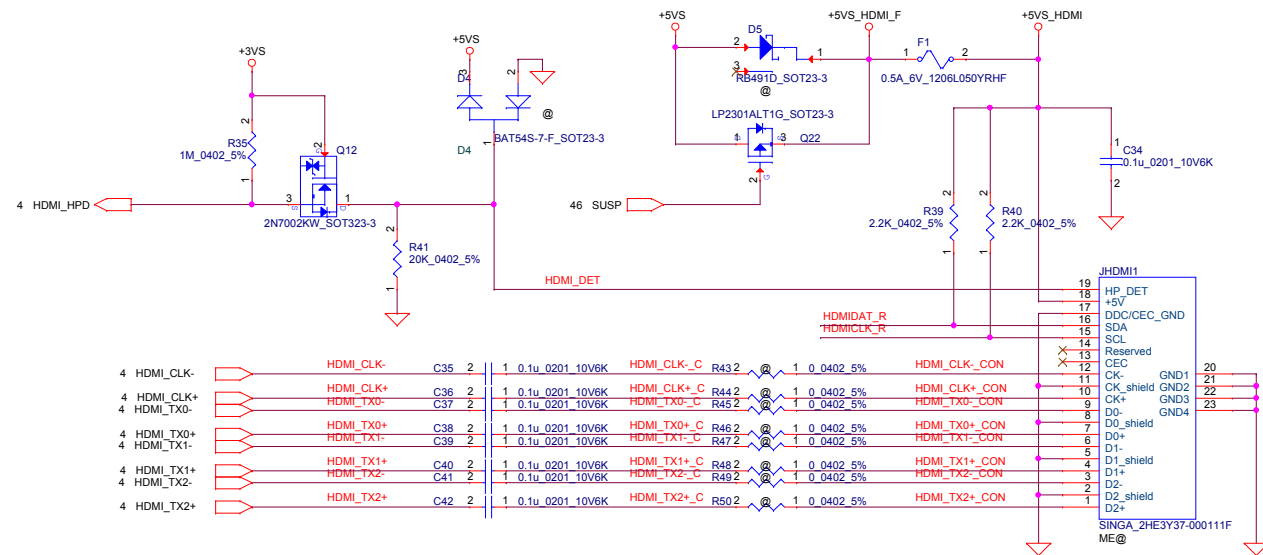
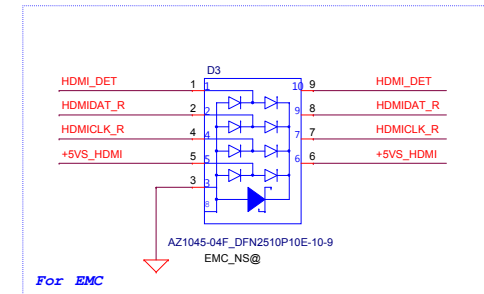
Date


Thursday, July 14, 2016

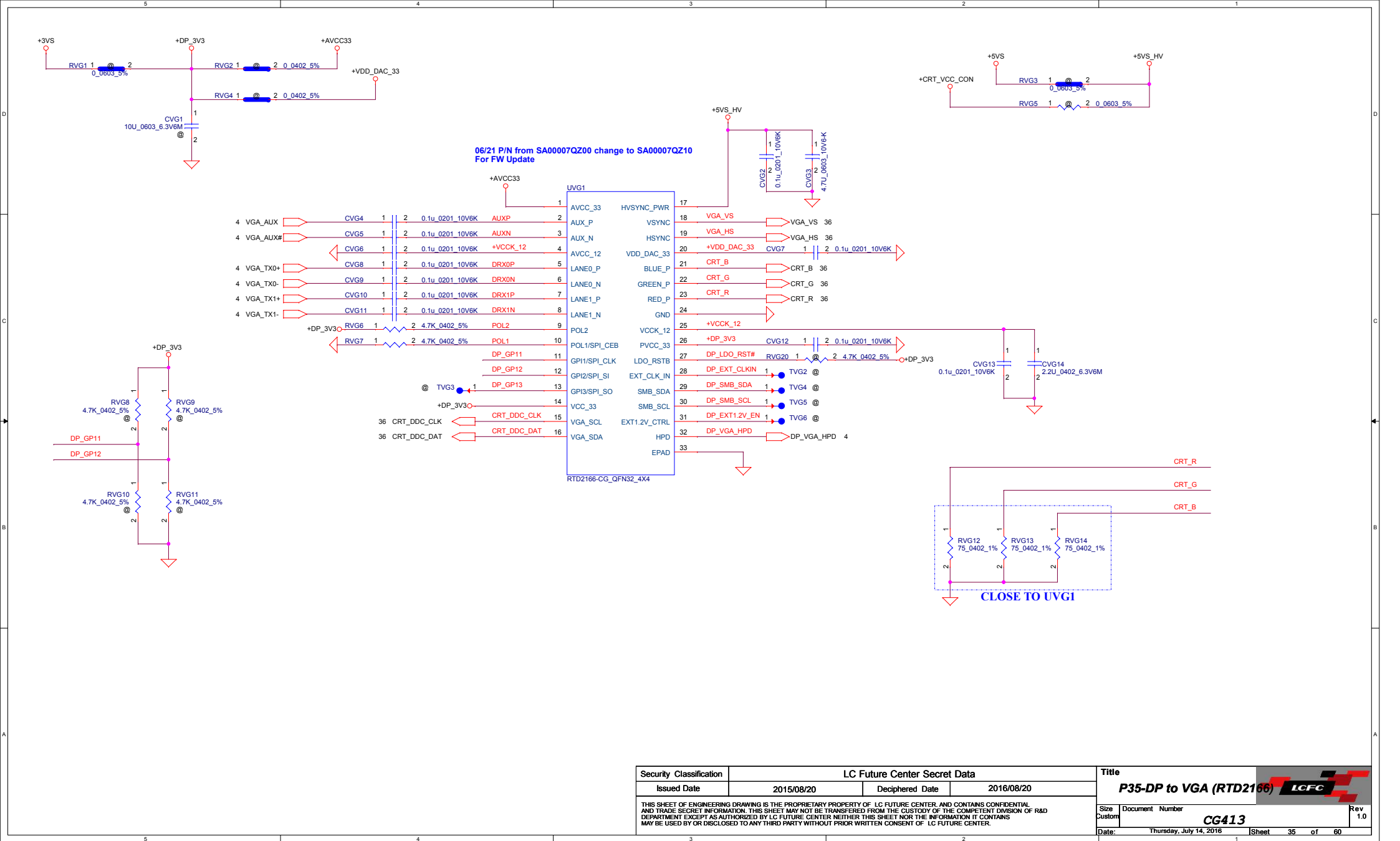
Sheet


33 of 60

[illegible][illegible]

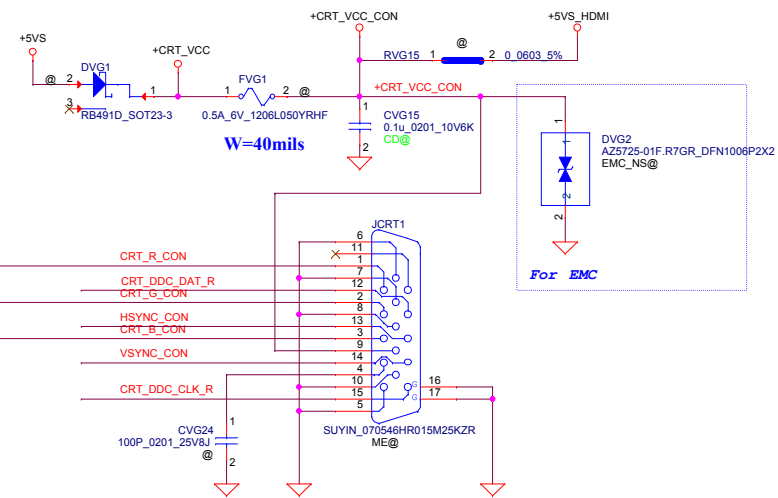
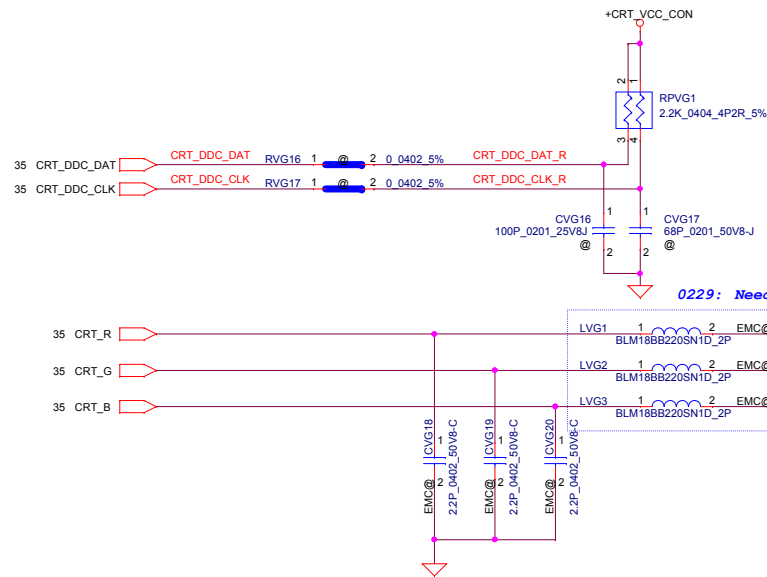


| | | | | | | |
|---|------------|------------------------------|------------|-------------|--------------------------|---|
| Security Classification | | LC Future Center Secret Data | | Title | |  |
| Issued Date | 2015/08/20 | Deciphered Date | 2016/08/20 | HDMI_CONN | | |
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| | | | | Date: | Thursday, July 14, 2016 | Sheet 34 of 60 |

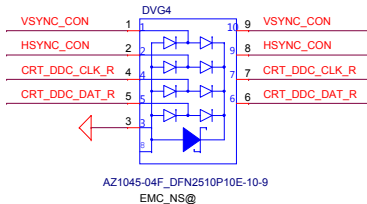
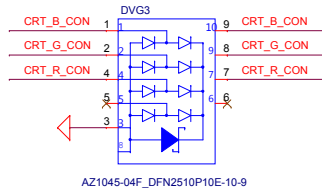
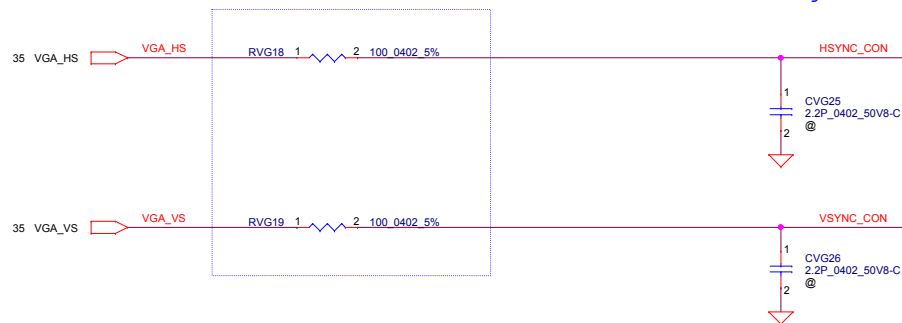




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| Security Classification | | LC Future Center Secret Data | | Title | |
| Issued Date | 2015/08/20 | Deciphered Date | 2016/08/20 | P35-DP to VGA (RTD2166)  | |
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| | | | | Date: Thursday, July 14, 2016 | Rev 1.0 |
| | | | | Sheet 35 | of 60 |

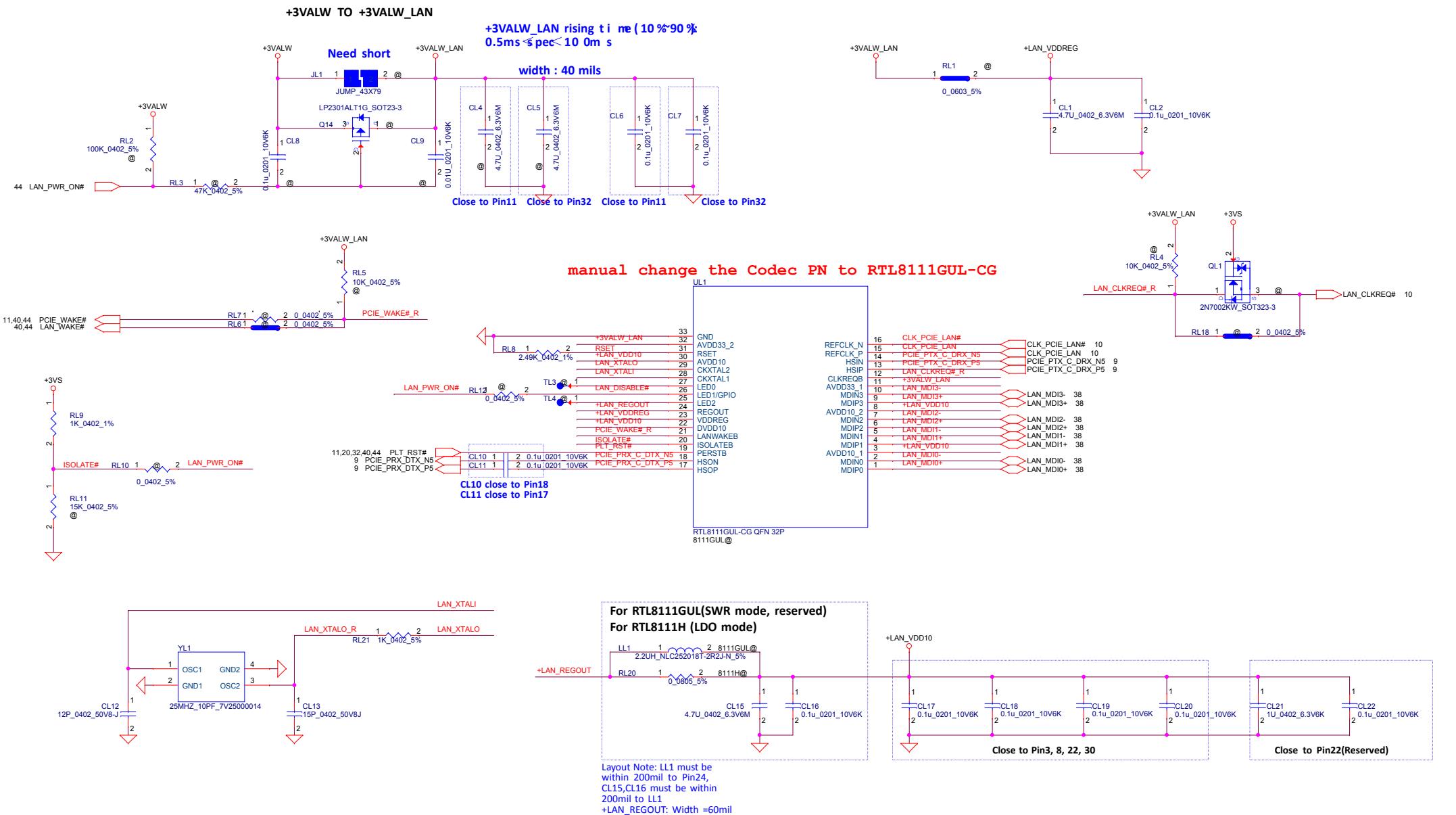
CRT Connector



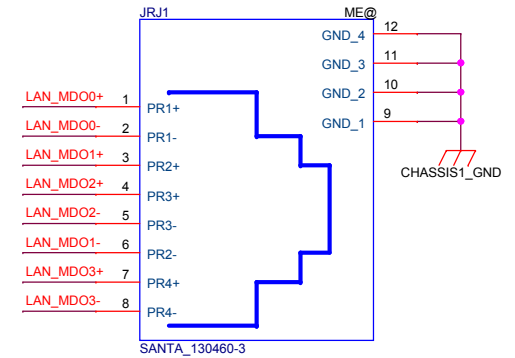
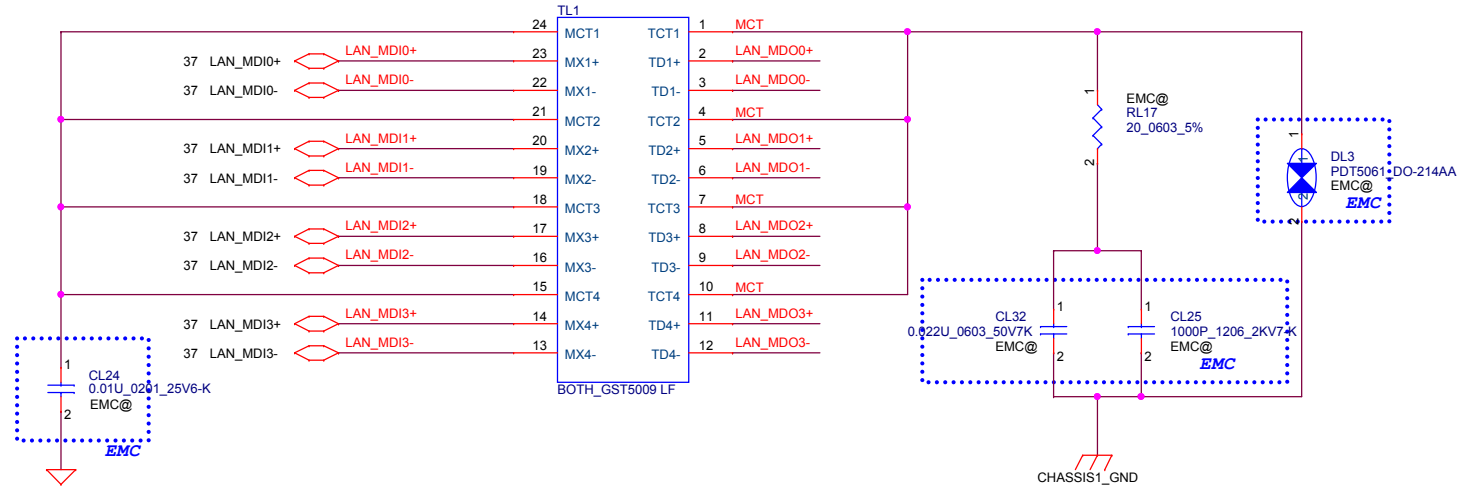
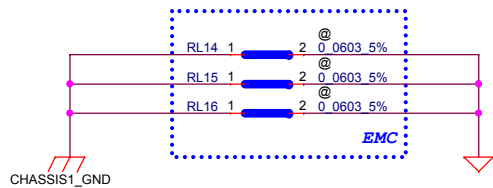
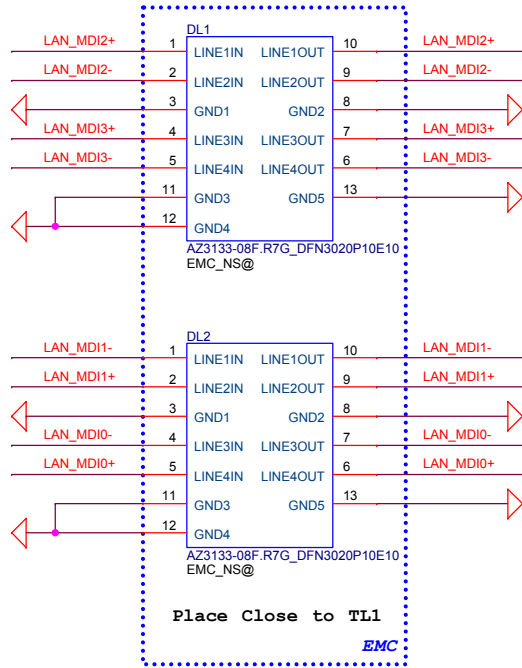
0714: SVT For VGA 20m cable test issue change to 100ohm



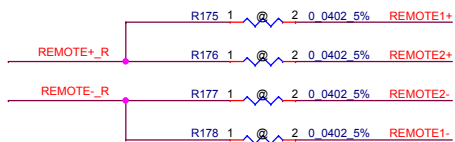
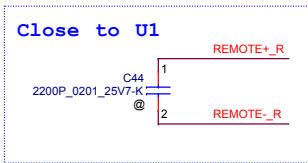
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|---|-------------------------|------------------------------|------------|----------|---------|---|
| Security Classification | | LC Future Center Secret Data | | Title | |  |
| Issued Date | 2015/08/20 | Deciphered Date | 2016/08/20 | CRT_CONN | | |
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| Size Custom | Document Number | | CG413 | | Rev 1.0 | |
| Date: | Thursday, July 14, 2016 | | Sheet | 36 of 60 | | |



DL1/DL2 1'S PN:SC300003M00

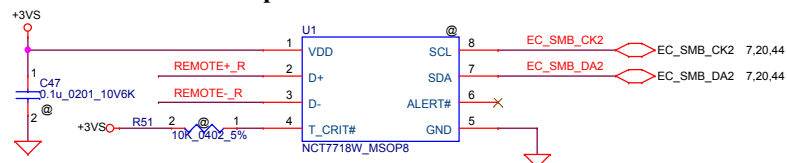


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|---|------------|------------------------------|------------|-------------------------|----------------|
| Security Classification | | LC Future Center Secret Data | | Title | |
| Issued Date | 2015/08/20 | Deciphered Date | 2016/08/20 | LAN_Transformer | |
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| | | | | Document Number | 1.0 |
| | | | | Date: | CG413 |
| | | | | Thursday, July 14, 2016 | Sheet 38 of 60 |

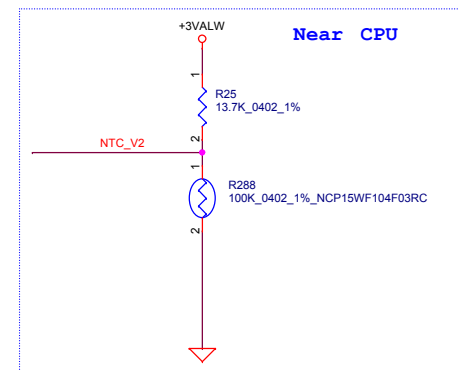
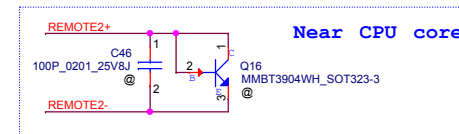
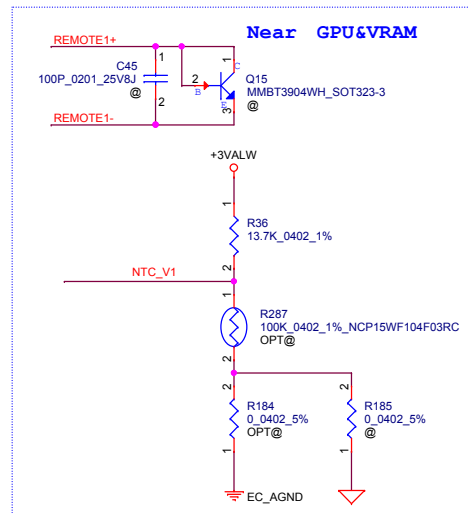


REMOTE+/-_R, REMOTE1+/-, REMOTE2+/-:
Trace width/space:10/10 mil
Trace length:<8"

SMSC thermal sensor placed near DIMM

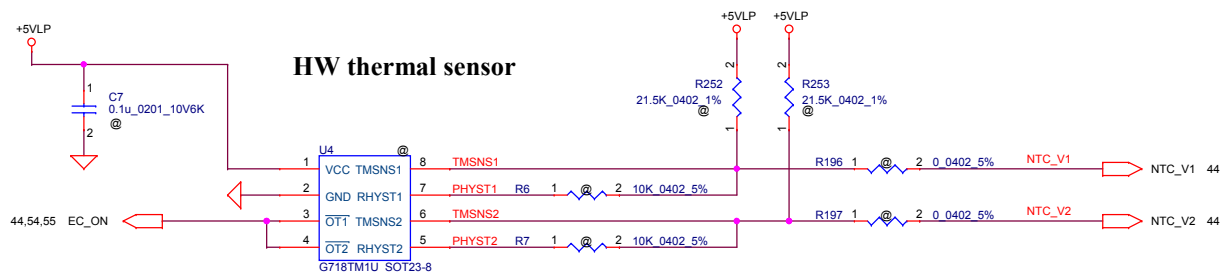


Address 1001_101xb

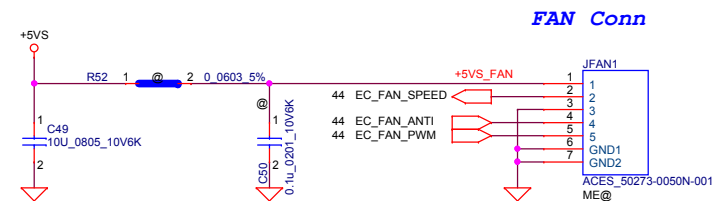


for layout optimized, change the EC_AGND to GND

HW thermal sensor

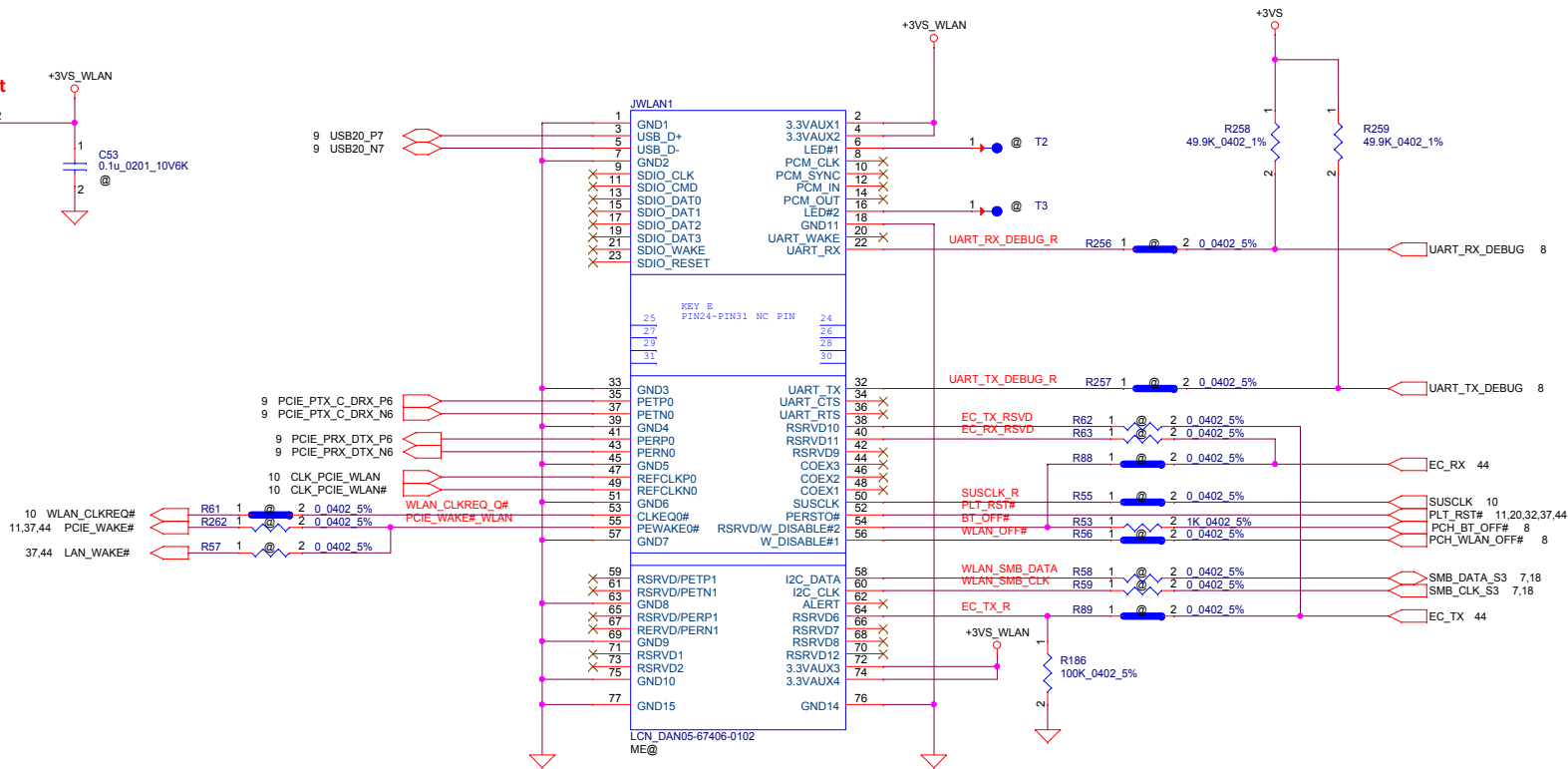


over temperature threshold:
 $RSET=3*RTMH$
 $92+/-30C$
Hysteresis temperature threshold.
 $RHYST=(RSET*RTML)/(3*RTML-RSET)$
 $56+/-30C$



| | | | | | |
|--|------------------------------|-----------------|------------|-------------------------------|-----------------|
| Security Classification | LC Future Center Secret Data | | | Title | |
| Issued Date | 2015/08/20 | Deciphered Date | 2016/08/20 | Thermal sensor/FAN CONN | |
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| | | | | CG413 | |
| | | | | Date: Thursday, July 14, 2016 | Sheet 39 of 60 |

Mini-Express Card(WLAN/WiMAX)



| Security Classification | | LC Future Center Secret Data | |
|---|------------|------------------------------|------------|
| Issued Date | 2015/08/20 | Deciphered Date | 2016/08/20 |
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| Title | | NGFF WLAN | |
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| Size | Custom | Document Number | CG413 |
| Date: | Thursday, July 14, 2016 | Sheet | 40 of 60 |



5V_{VALW}

1 2

C128
1U_0402_6.3V6K

44.45 USB_ON#

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GND
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ENB

SY628BD20AAC_SOT23-5

Low Active 2A

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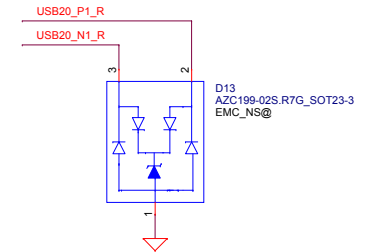
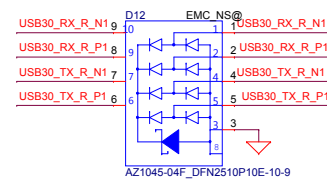
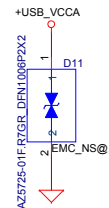
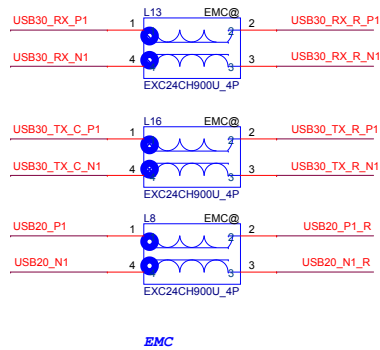
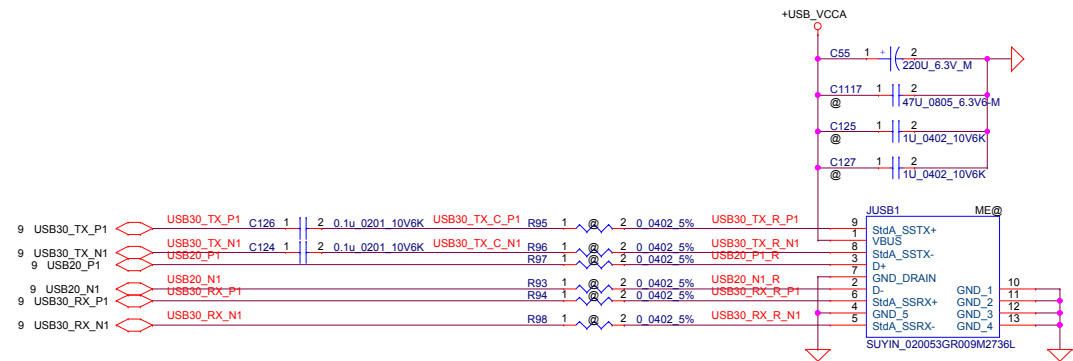
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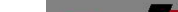
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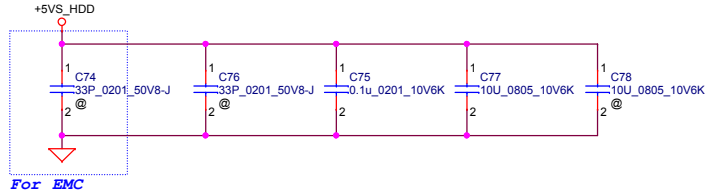
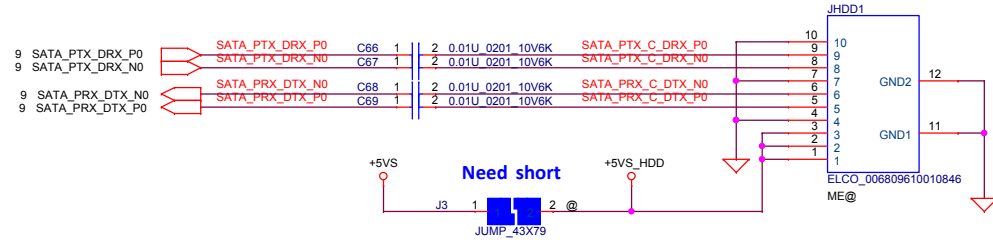
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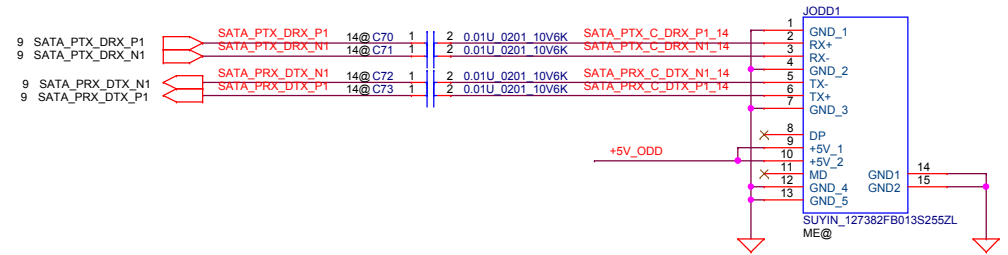
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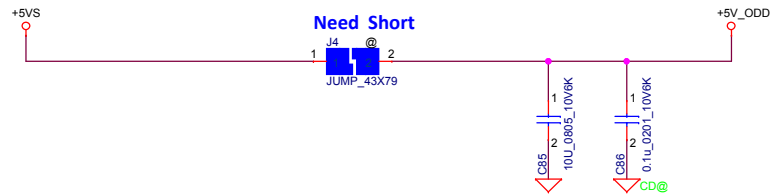
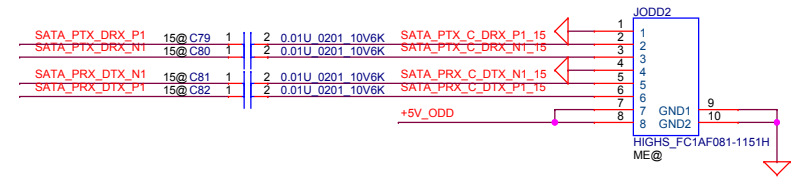
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| Issued Date | 2015/08/20 | Deciphered Date | 2016/08/20 | USB3.0 PORT (LEFT) | | |
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| | | | | Date: | Thursday, July 14, 2016 | Sheet 41 of 60 Rev 1.0 |


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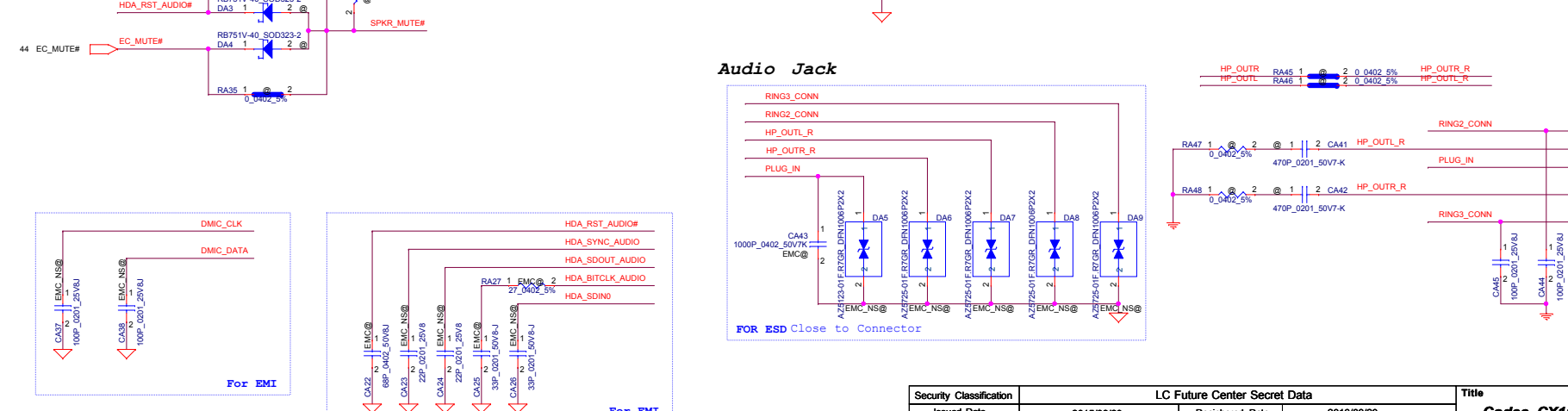
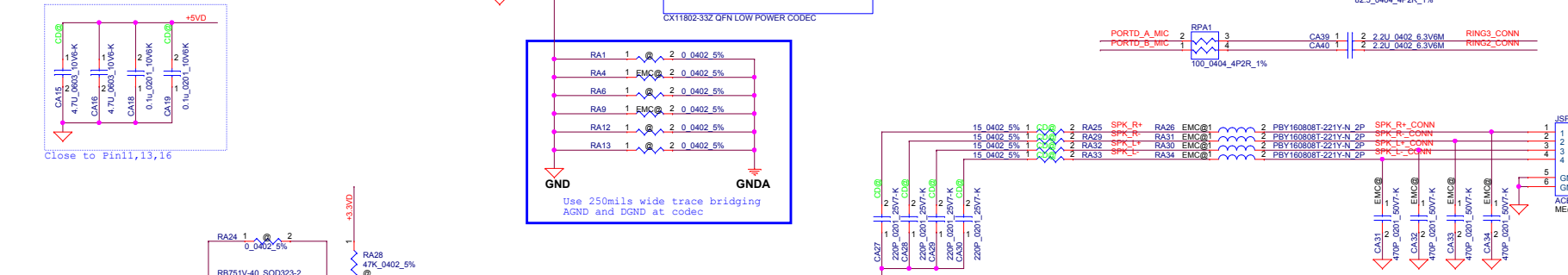
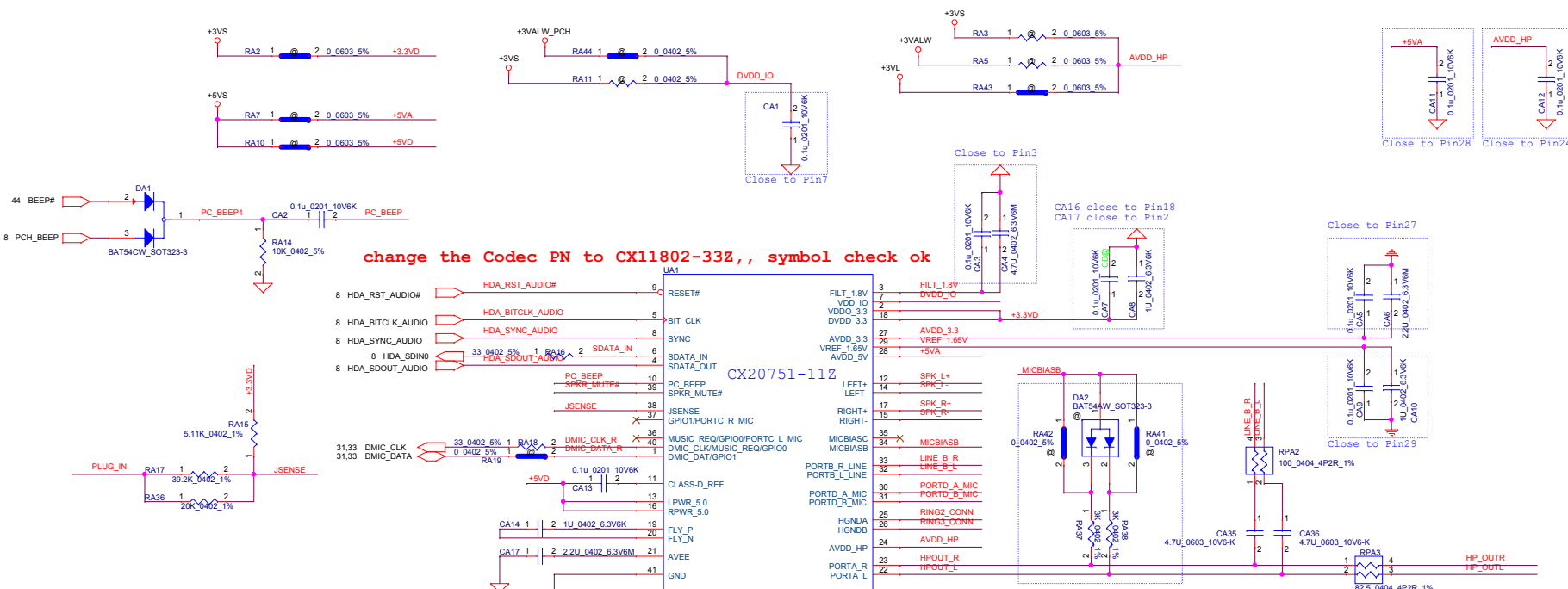
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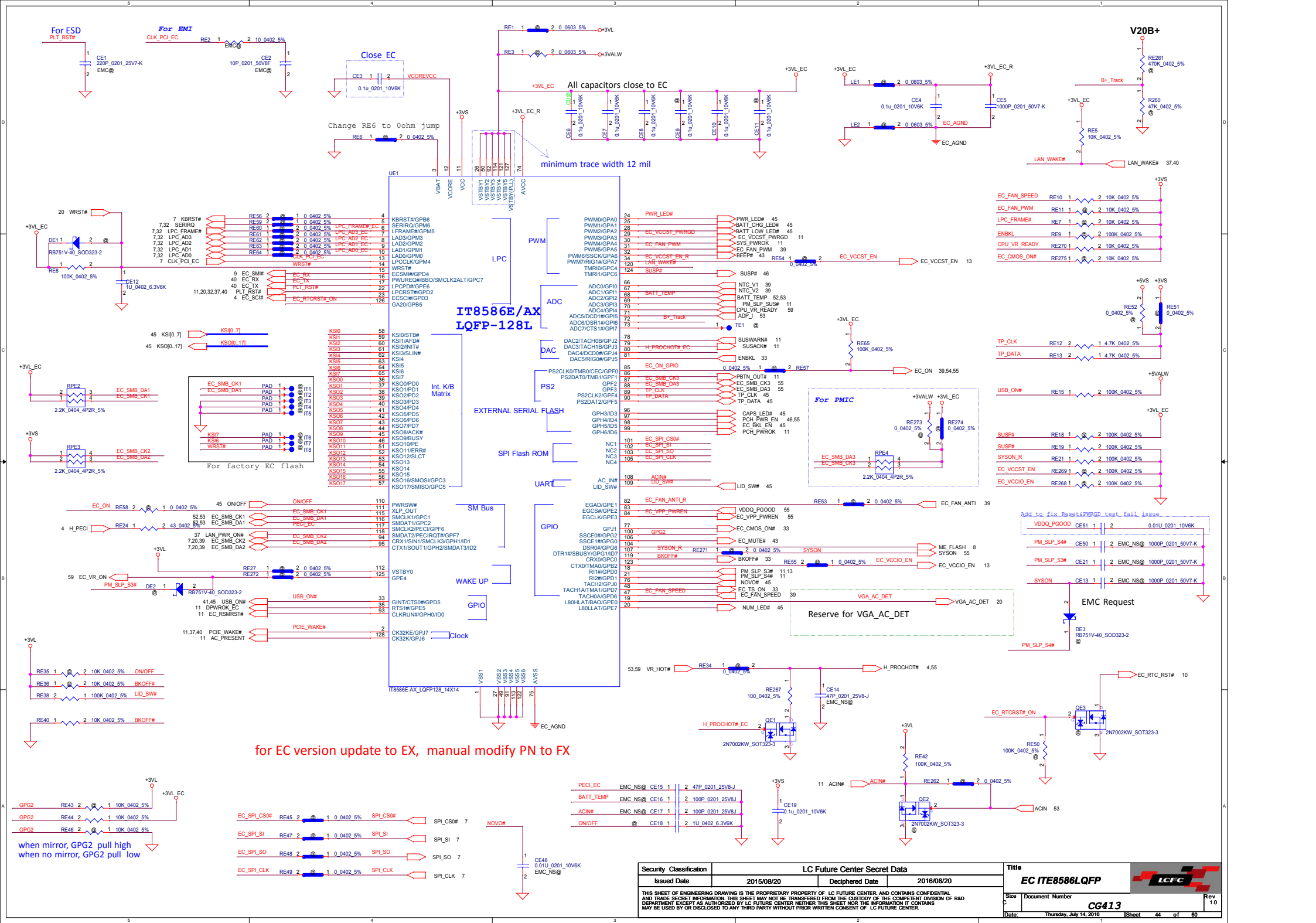


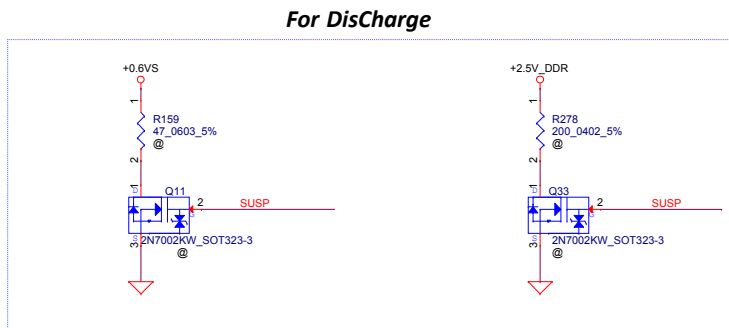
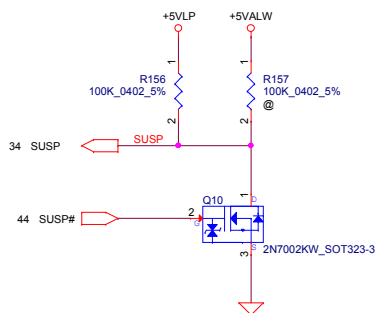
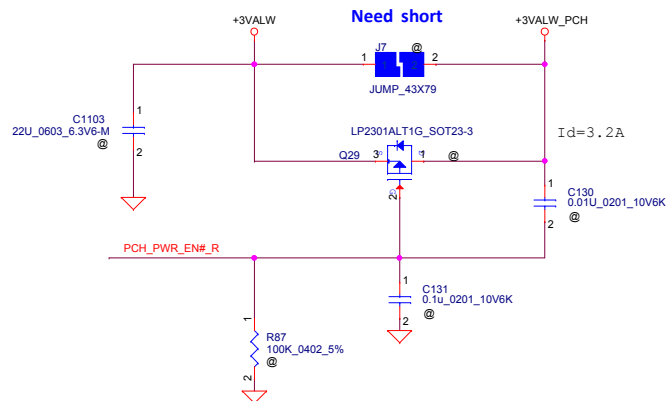
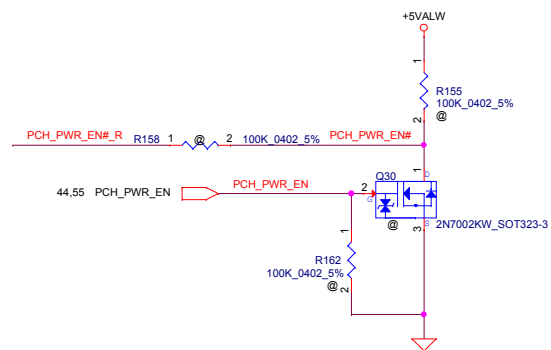
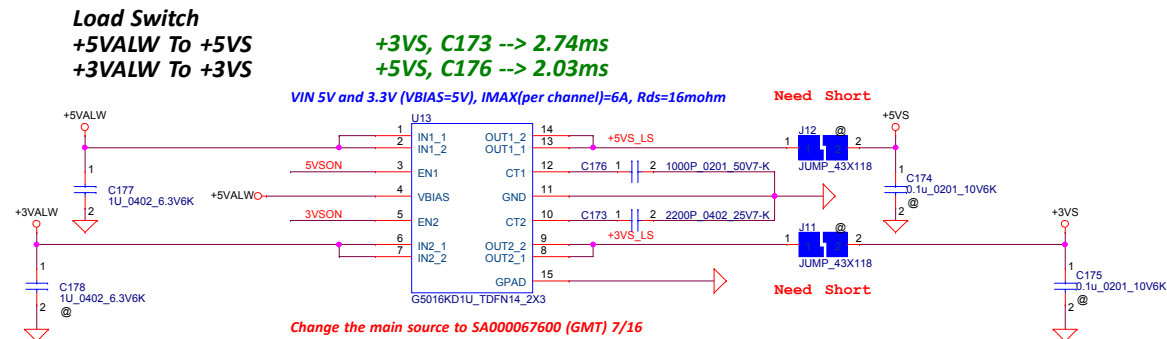
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SATA ODD FFC Conn



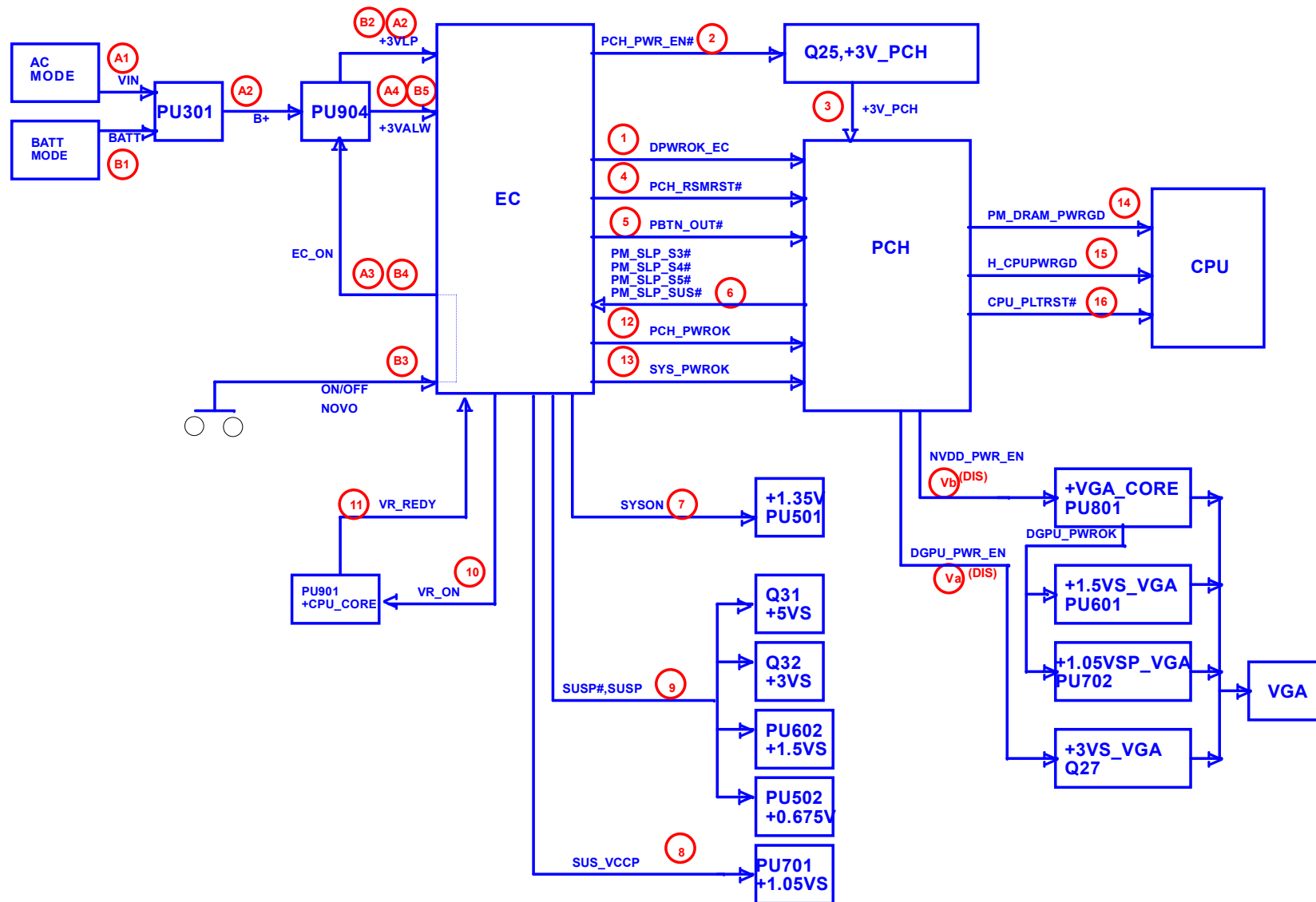
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| Security Classification | | LC Future Center Secret Data | | | | Title | |  | | | | | | | |
| Issued Date | | 2015/08/20 | | Deciphered Date | | 2016/08/20 | | | | | | HDD/ODD CONN | | | |
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| Date: | | | | | | Thursday, July 14, 2016 | | | | Sheet 42 of 60 | | | | | |

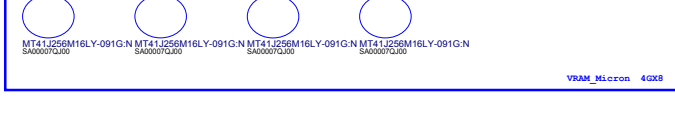
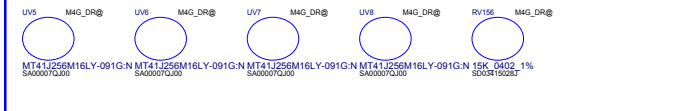
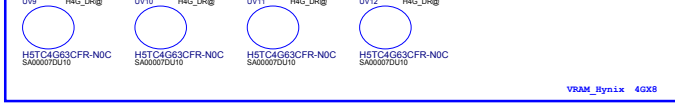
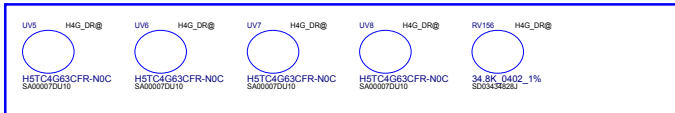
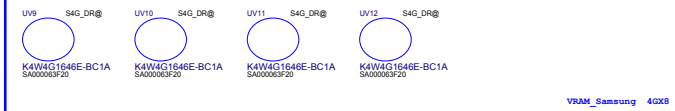
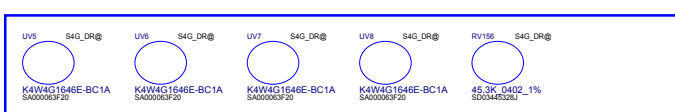
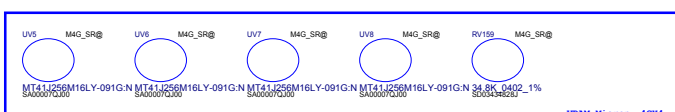
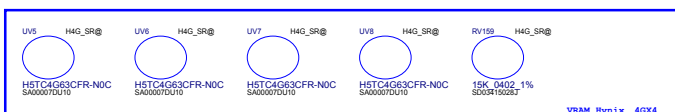
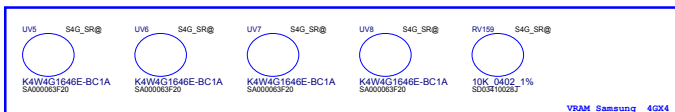
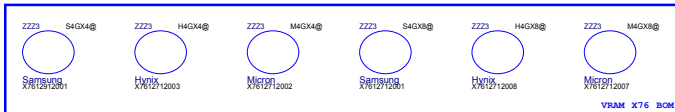
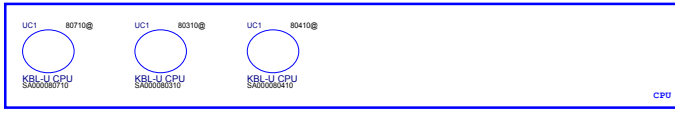
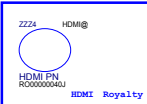
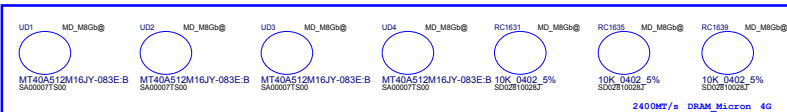
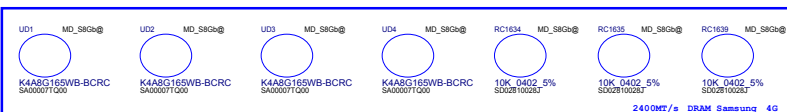
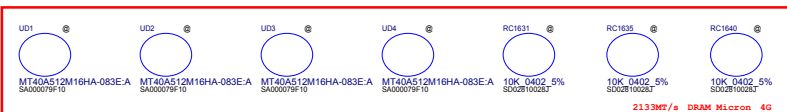
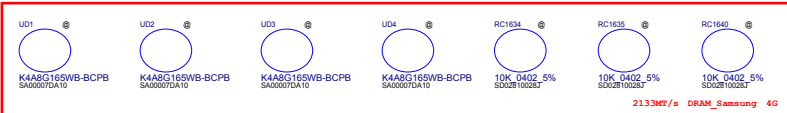
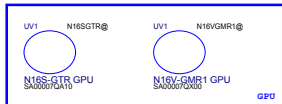
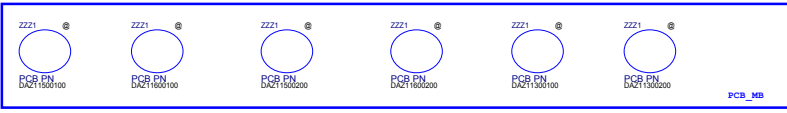


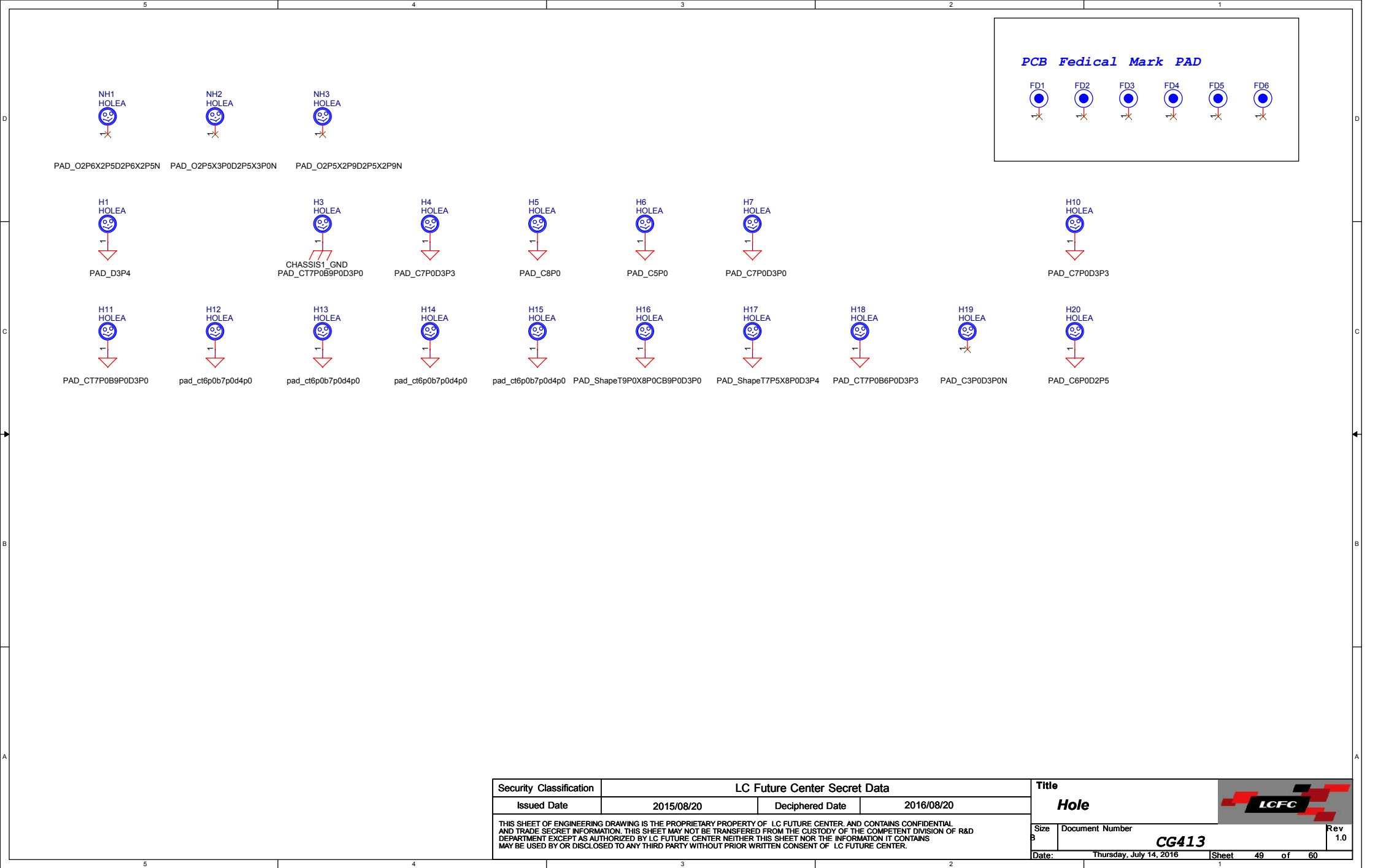


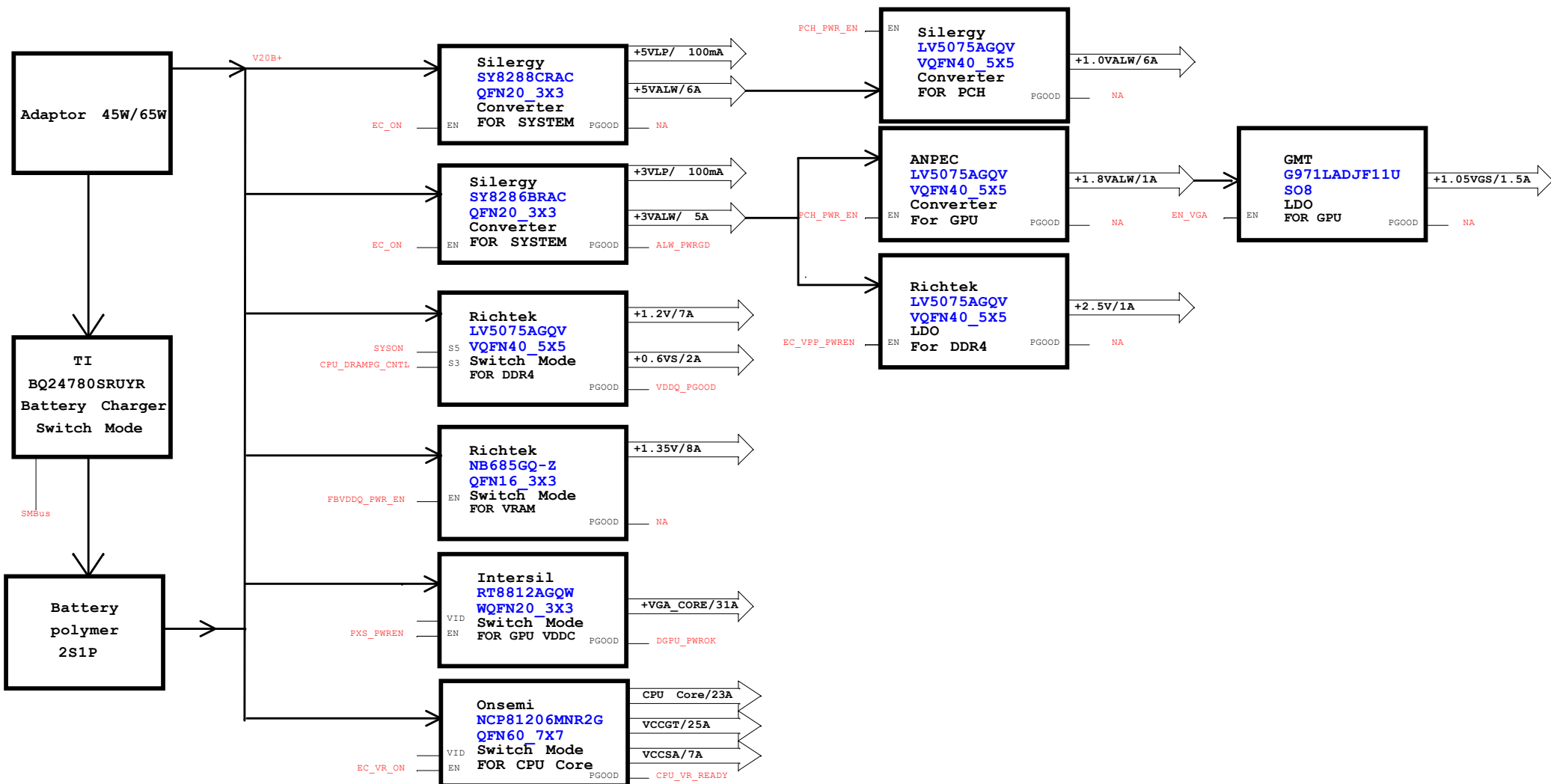


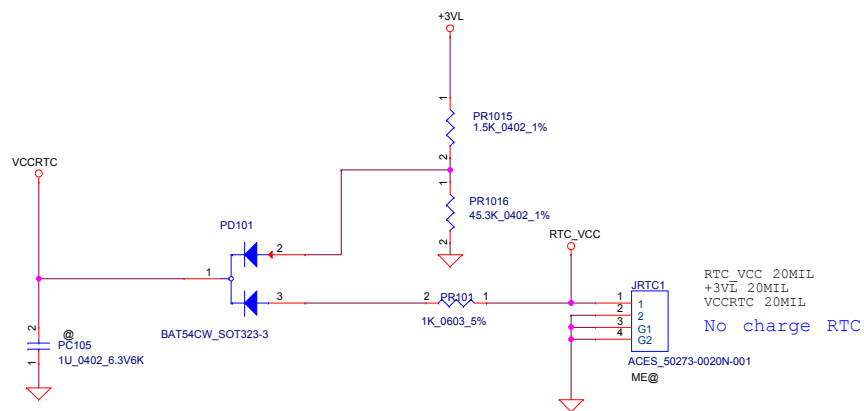
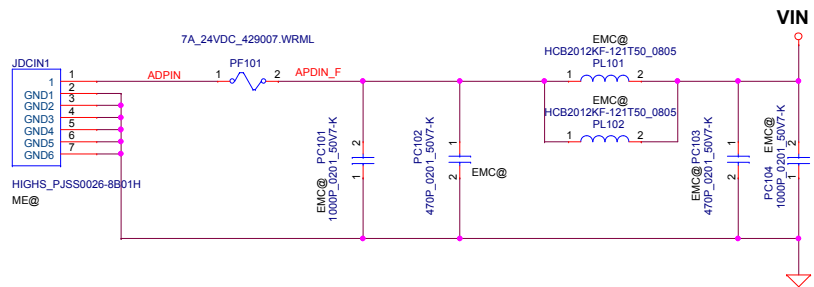
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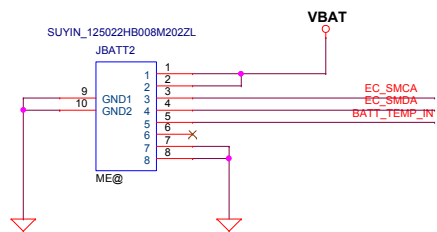
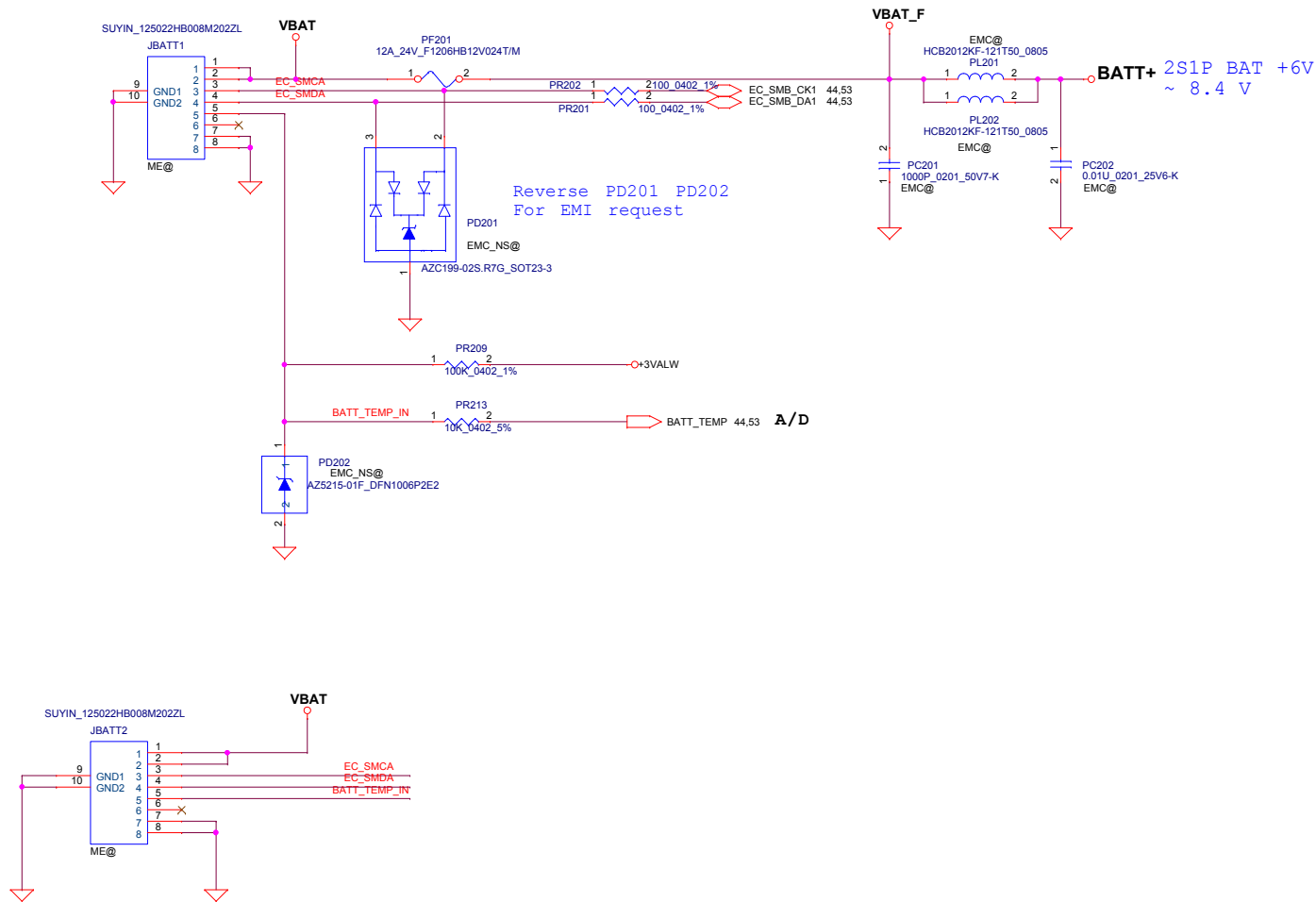





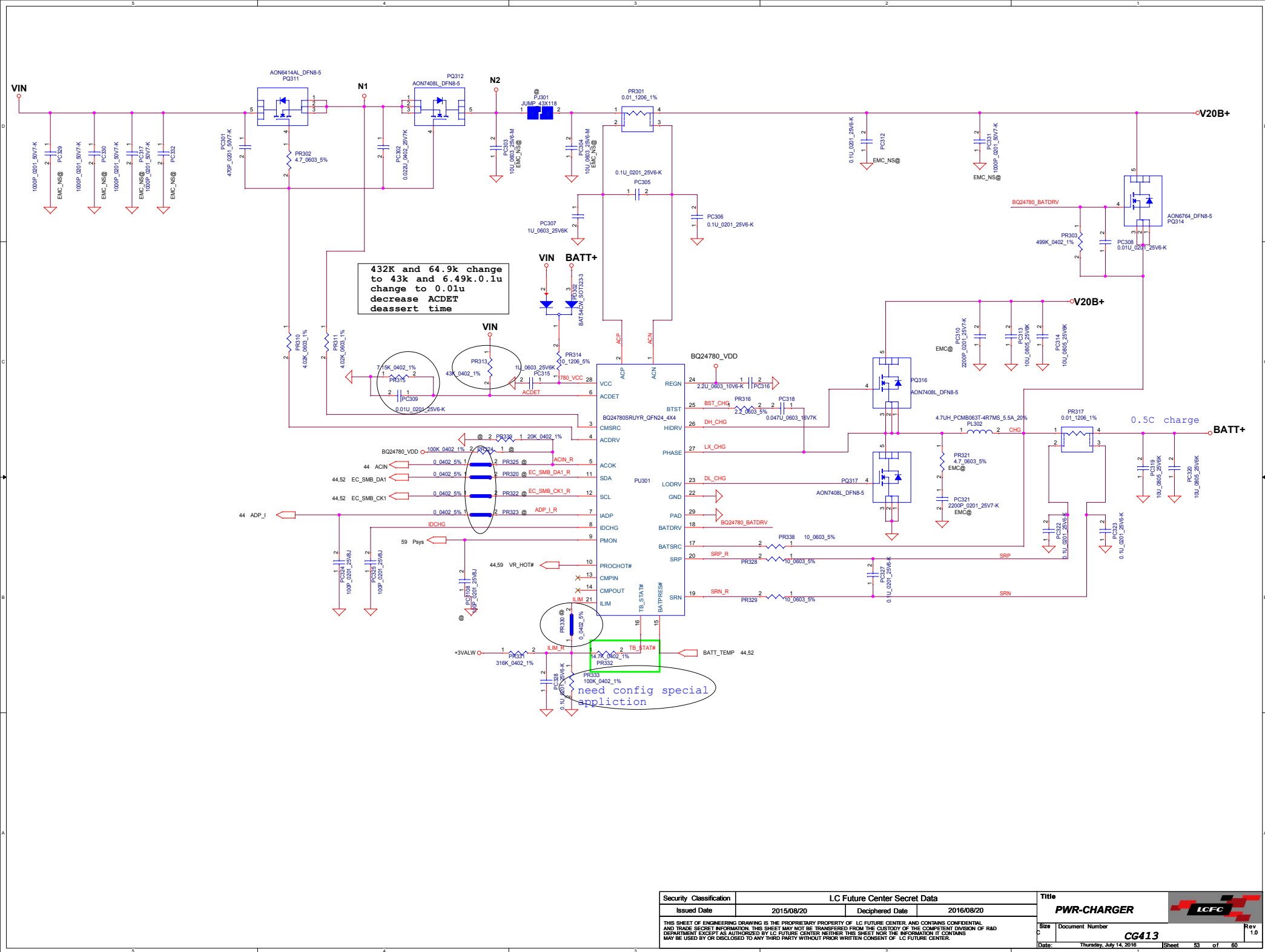


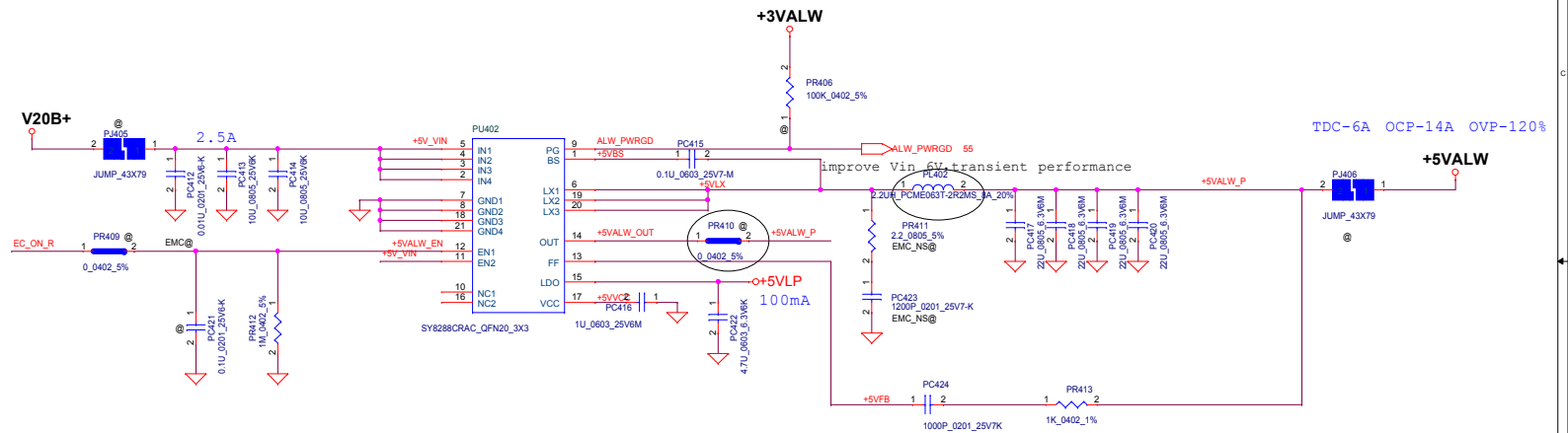
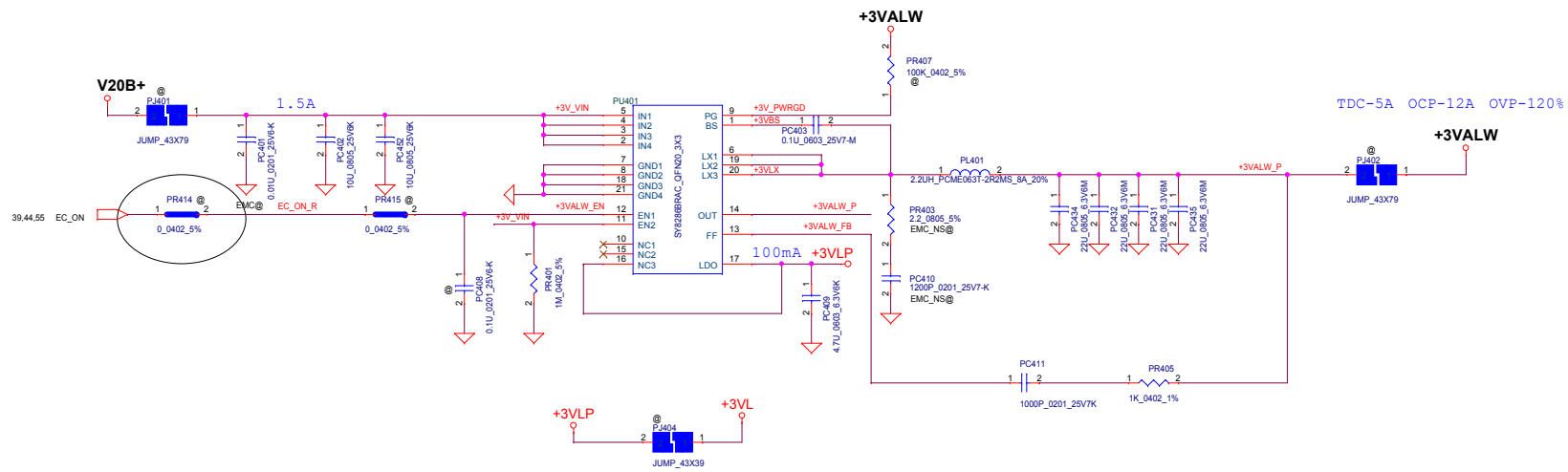






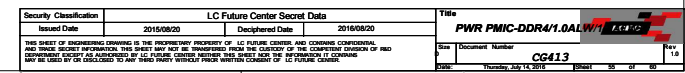
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| Issued Date | | 2015/08/20 | | Deciphered Date | | 2016/08/20 | | PWR-BATTERY CONNECTOR | |
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| | | | | | | Custom | CG413 | 1.0 | |
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| Date: | | | | | | Thursday, July 14, 2016 | | Sheet 52 of 60 | |





6800pf soft start 2ms
47nf soft start 7ms

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| Security Classification | LC Future Center Secret Data | | Title | PWR_3VALW/5VALW | |
| Issued Date | 2015/08/20 | Deciphered Date | 2016/08/20 | Size | Document Number |
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| | | | | Date: Thursday, July 14, 2016 | Sheet 54 of 60 |



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|--|------------------------------|---|------------|--|--|--|---|--|-------------------------|------------------------------|--|--|-------------|------------|-----------------|------------|--|--|--|--|---|--|-------|--|---|-----|--|------|-----------------|--------|-------|---------|-------------------------------|--|----------------|
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| D | | | | | | | | | | D | | | | | | | | | | | | | | | | | | | | | | | | | |
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| C | | | | | | | | | | C | | | | | | | | | | | | | | | | | | | | | | | | | |
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| B | | | | | | | | | | B | | | | | | | | | | | | | | | | | | | | | | | | | |
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| A | | | | | | | | | | A | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Security Classification | LC Future Center Secret Data | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Issued Date | 2015/08/20 | Deciphered Date | 2016/08/20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Title | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PWR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Size | Document Number | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Custom | CG413 | Rev 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: Thursday, July 14, 2016 | | Sheet 56 of 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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