



R-Car Starter Kit Premier Schematic

RTP0RC77951SKBX010SA00

S/N: 3001-3300

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General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Handling of Unused Pins

Handle unused pins in accordance with the directions given under Handling of Unused Pins in the manual.

- The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.

2. Processing at Power-on

The state of the product is undefined at the moment when power is supplied.

- The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied.
In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the moment when power is supplied until the reset process is completed.
In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.

3. Prohibition of Access to Reserved Addresses

Access to reserved addresses is prohibited.

- The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.

4. Clock Signals

After applying a reset, only release the reset line after the operating clock signal has become stable. When switching the clock signal during program execution, wait until the target clock signal has stabilized.

- When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.

5. Differences between Products

Before changing from one product to another, i.e. to a product with a different part number, confirm that the change will not lead to problems.

- The characteristics of Microprocessing unit or Microcontroller unit products in the same group but having a different part number may differ in terms of the internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

P01: TITLE
P02: R-CarH3_SD/QSPI
P03: R-CarH3_DU/LBSC
P04: R-CarH3_USB/HDMI
P05: R-CarH3_POW1
P06: R-CarH3_POW2
P07: R-CarH3_LPDDR_POW
P08: HDMI_OUT/USB2.0/SD
P09: MMC0
P10: EtherAVB (GbPHY)
P11: Audio
P12: DEBUG_SCIF/LED/TactSW
P13: R-CarH3_Mode_Setting
P14: R-CarH3_Module_I/F
P15: POWER PMIC

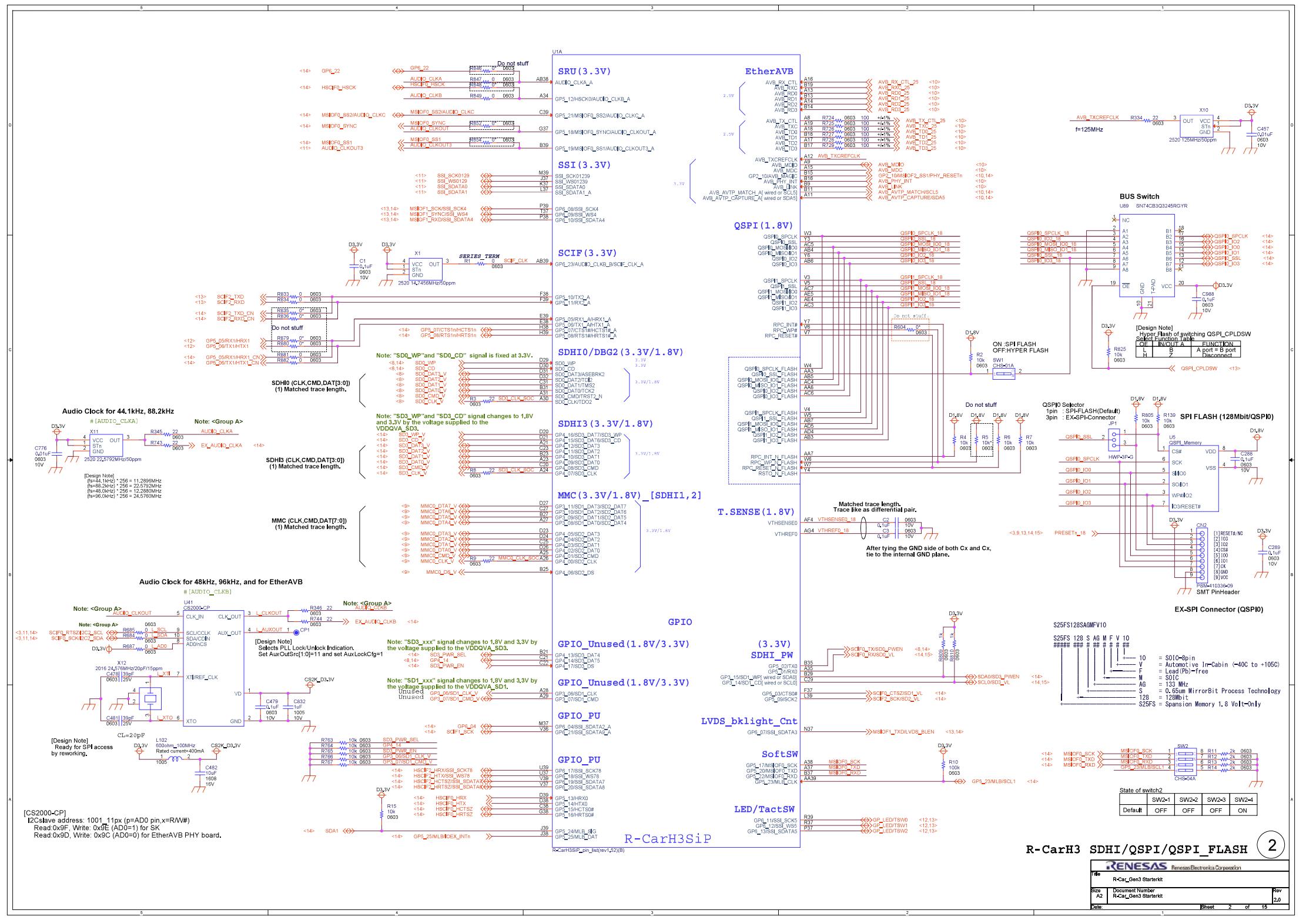
R-CarH3 System Board "H3 Starter Kit"

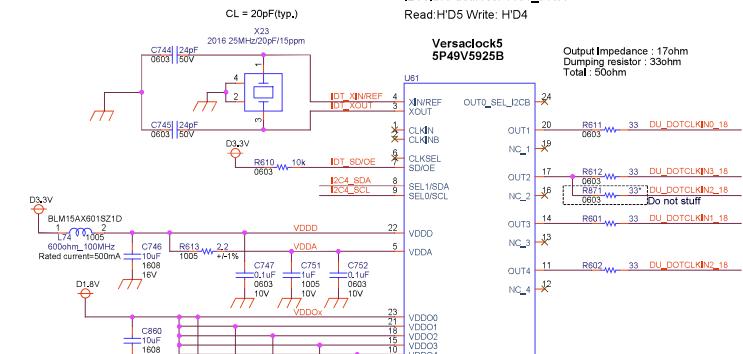
H3:RTP0RC77951SKBX010SA00

Rev.2.00 / PCB rev2.0

R-Car Starter Kit Premier

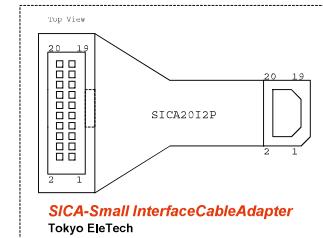
R-Car H3 v2.0 DDR4GB SK = SN 3001-3300





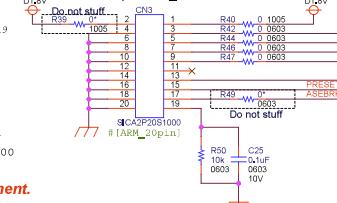
VersaClock5 have Internal Pull-down Resistor(100k~300k)
CLKIN
CLKINB
SEL1/SDA
SEL0/SCL
OUT1_SEL_I2CB → 0 = Use I2C (Default)
CLKSEL → 0 = XN/REF, XOUT (Default)
1 = CLKIN, CLKINB
SD/OE → = OE and active low
SD/OE → = OE and active low

[Design Note]
There is a possibility to mount
to change the parts of the 2016 size component.

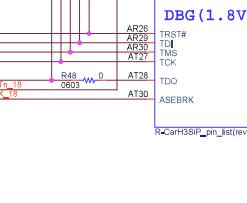


Be carefull !!
See Pin Assignment.

20pin ARM_EML



DBG (1.8V)

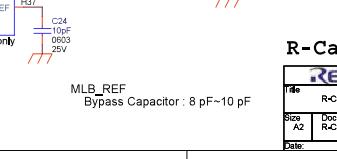
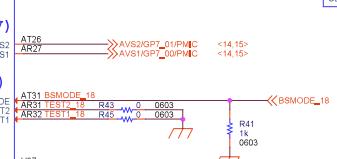
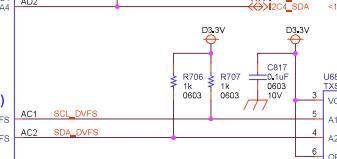
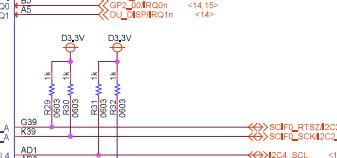
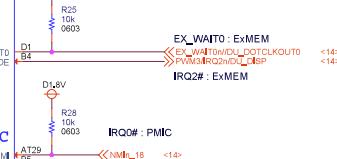
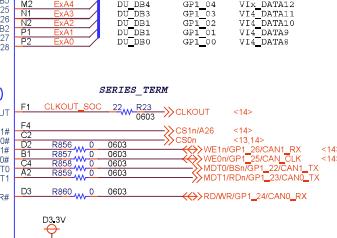
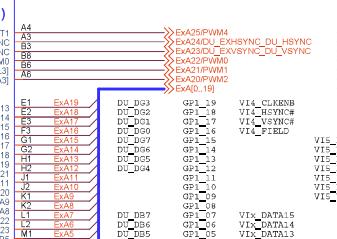
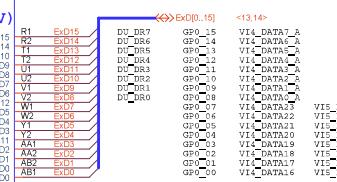


R-CarH3SiP

The pin "[H3]" is for H3 only

DU_CLK (1.8V)

LBSC_D (3.3V)



SYSTEM (1.8V)

The pin "[H3]" is for H3 only

MLB (3.3V)

MLB_REF

Bypass Capacitor : 8 pF~10 pF

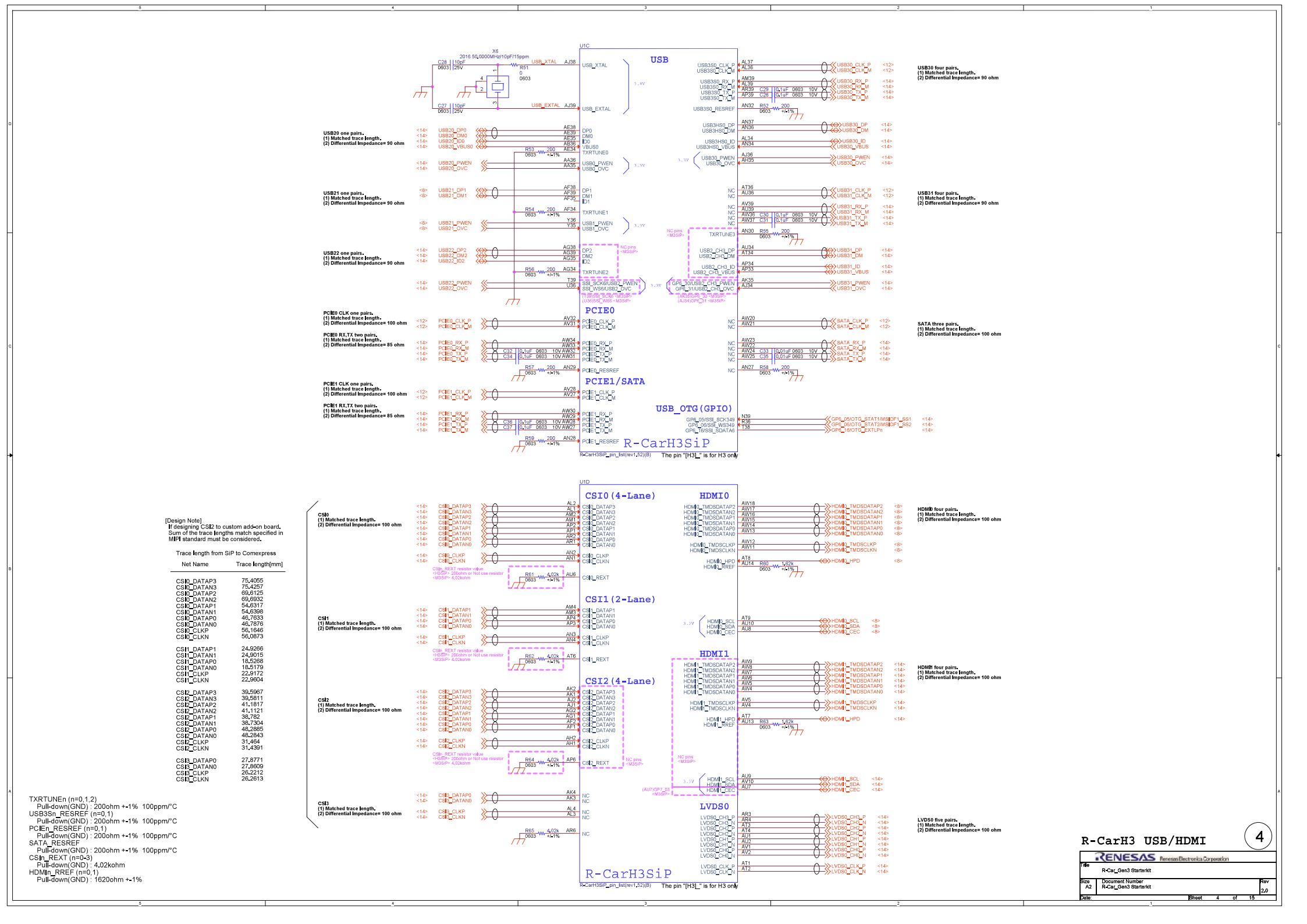
R-CarH3 DU/LBSC

RENESAS Renesas Electronics Corporation

Re: R-Car_Gen3 Starterkit

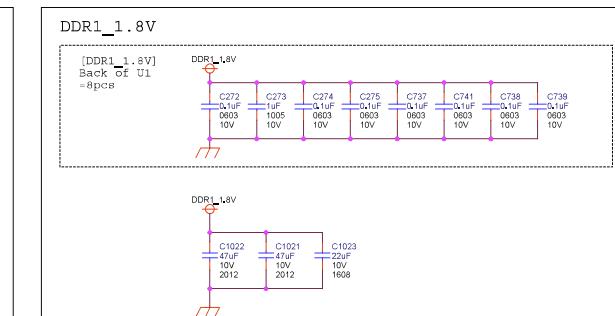
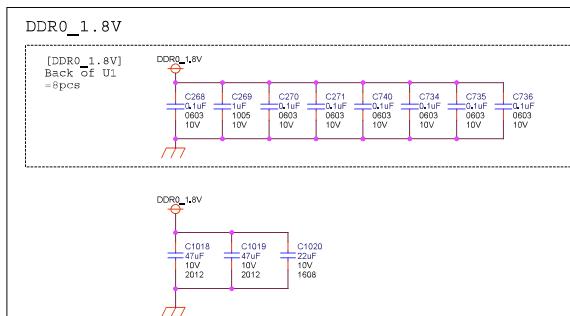
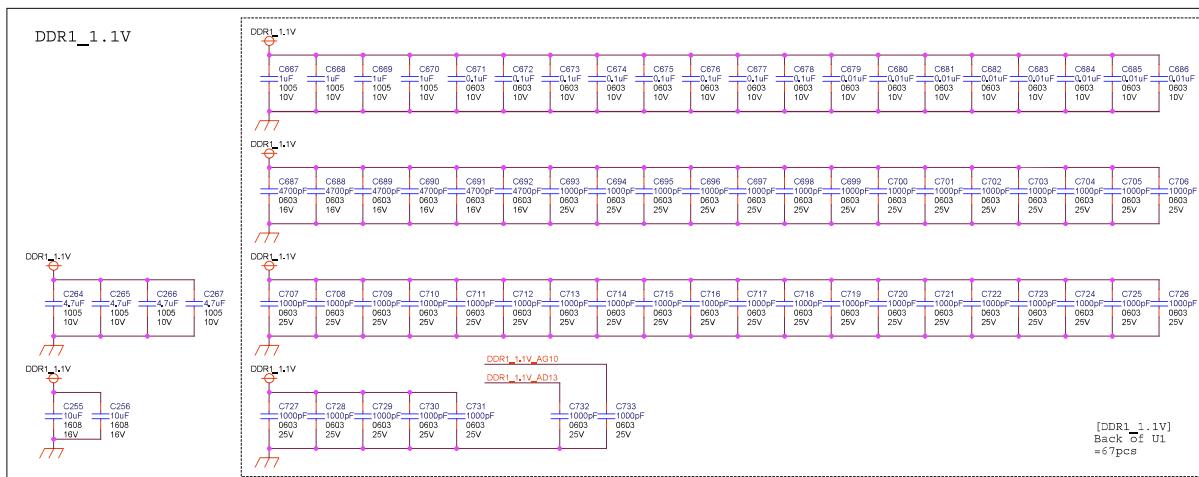
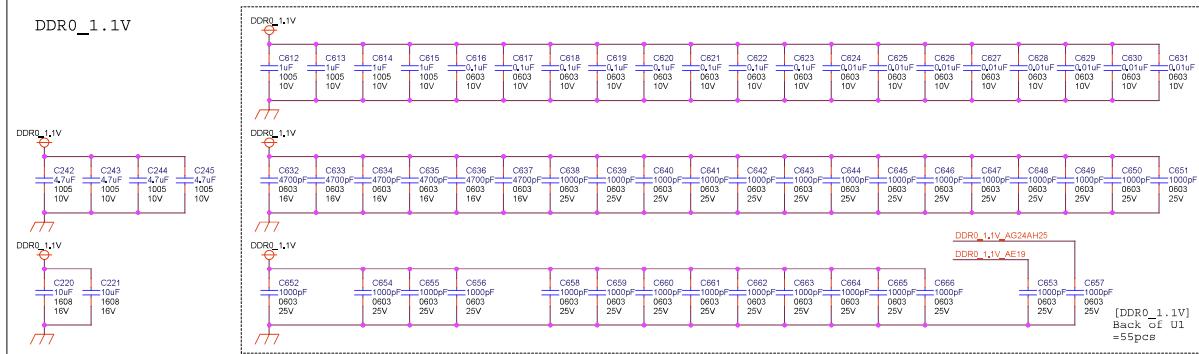
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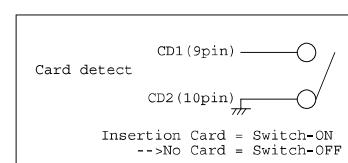
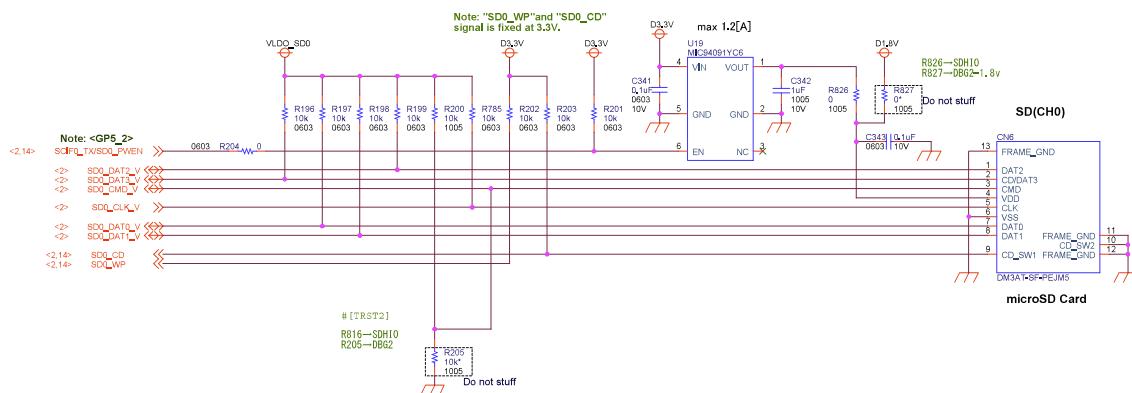
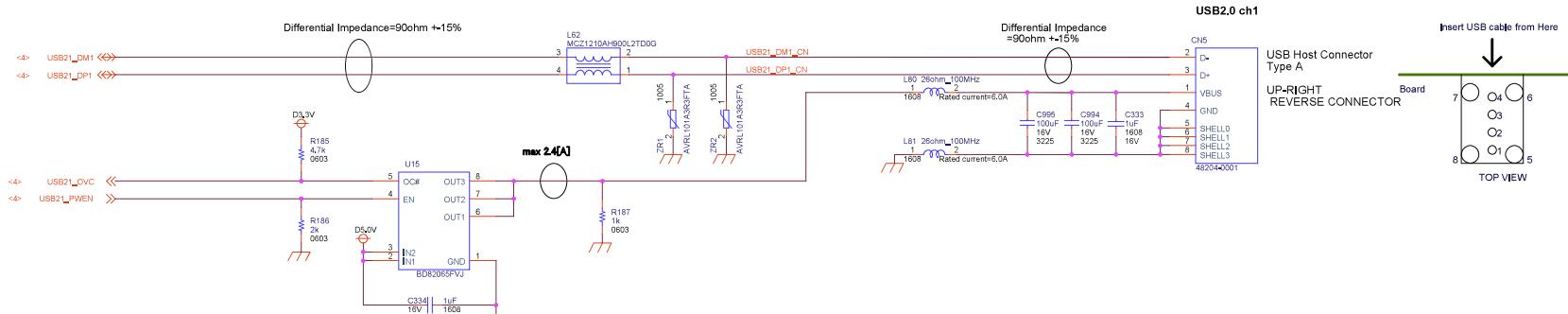
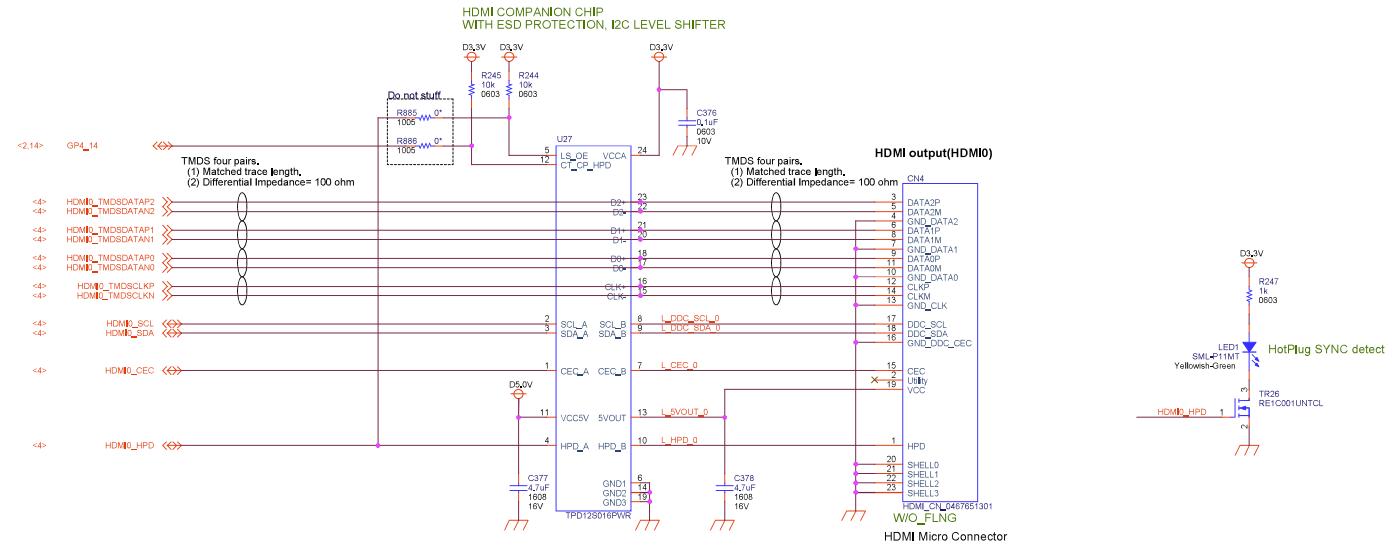
Date Rev 2.0



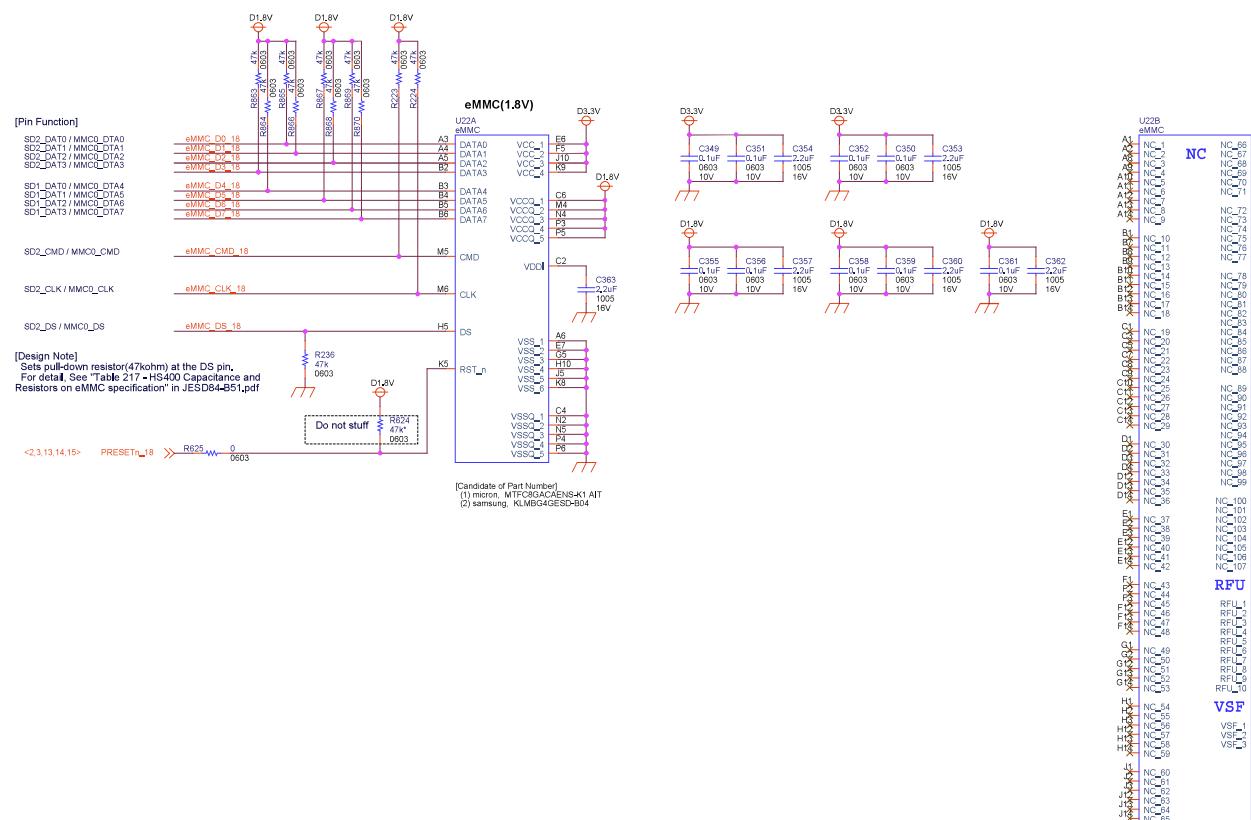
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| RENESAS Renesas Electronics Corporation | |
| Date | R-Car_Gen3 Starterkit |
| Size | Document Number |
| A2 | R-Car_Gen3 Starterkit |

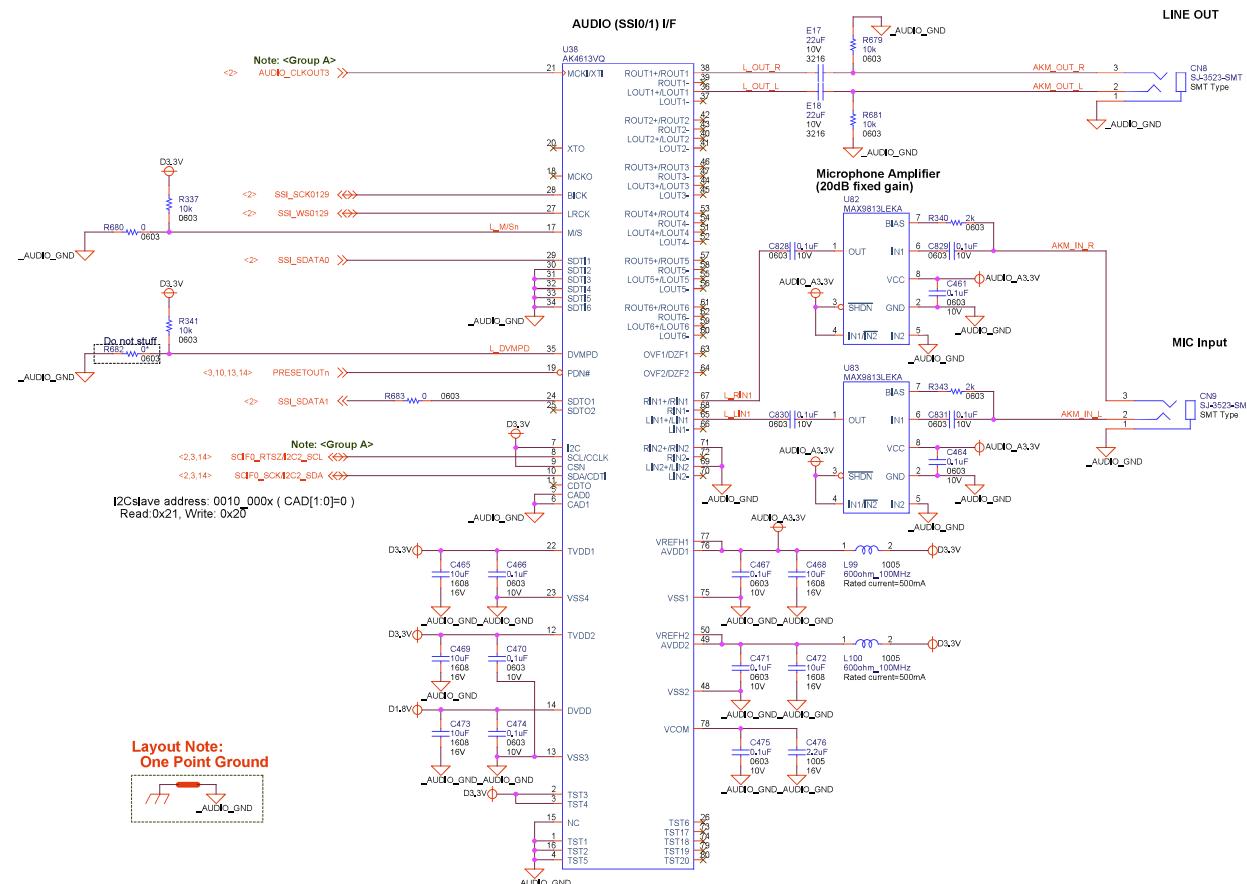
Rev 2.0
Date 1 Sheet 5 of 15

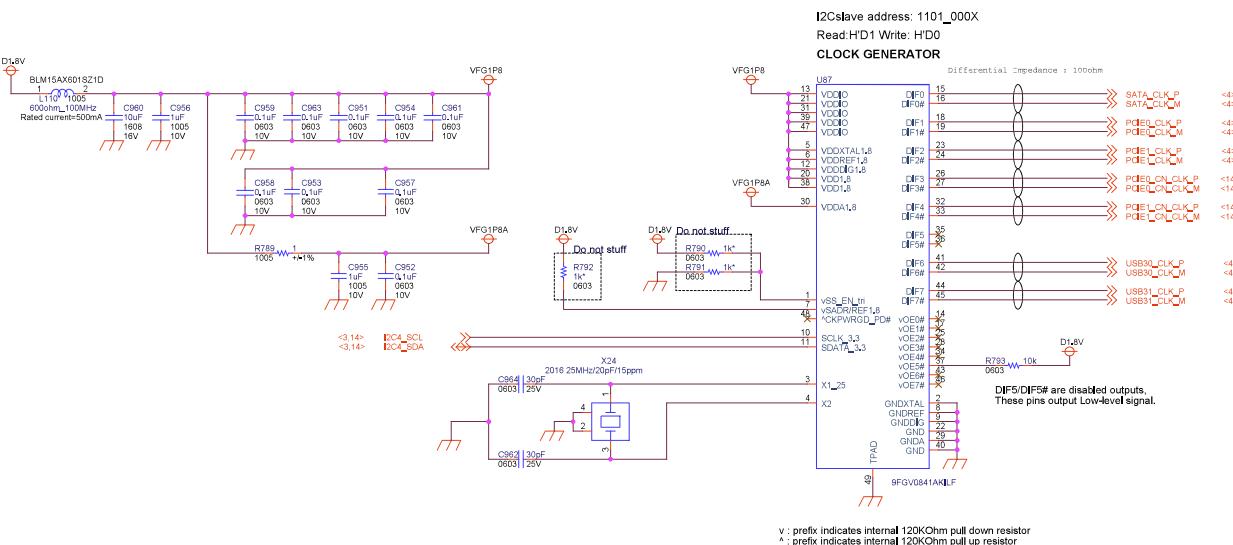
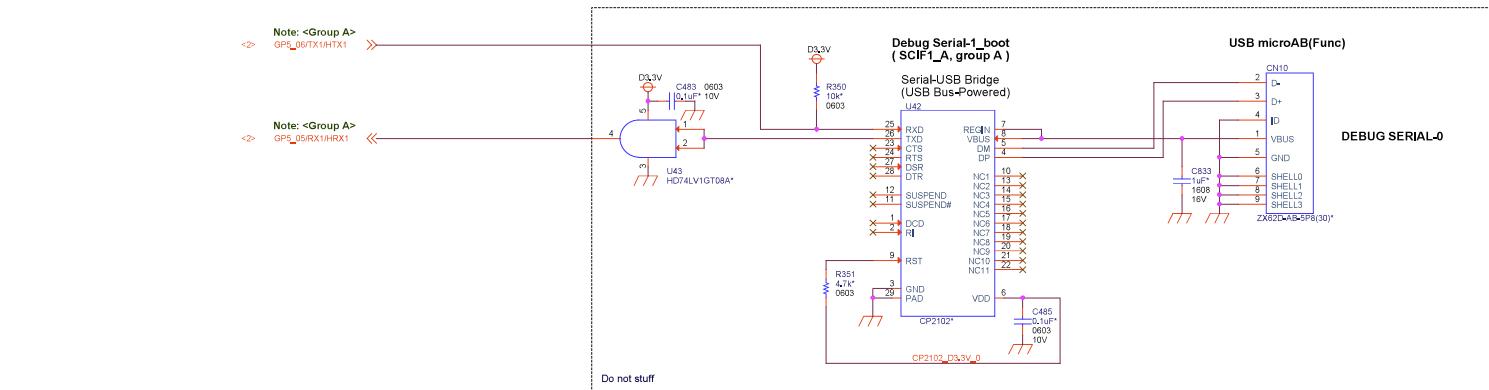




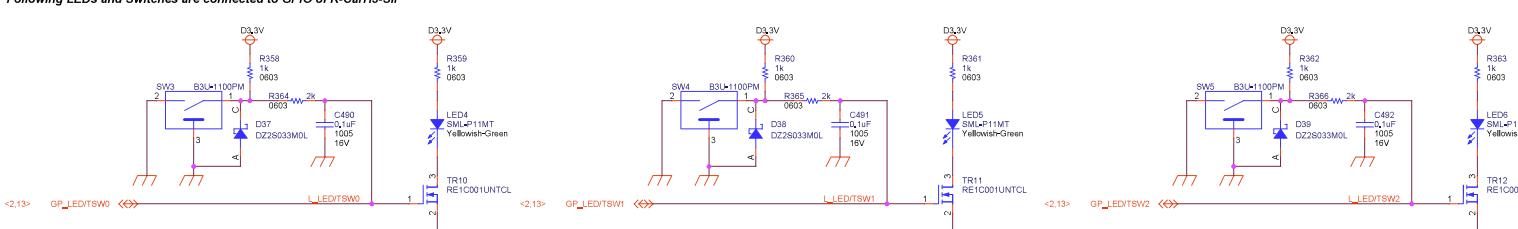
<2> MMC0_DTA0_V <=> R225_W 0 0603 eMMC_D0_18
 <2> MMC0_DTA1_V <=> R226_W 0 0603 eMMC_D1_18
 <2> MMC0_DTA2_V <=> R227_W 0 0603 eMMC_D2_18
 <2> MMC0_DTA3_V <=> R228_W 0 0603 eMMC_D3_18
 <2> MMC0_DTA4_V <=> R229_W 0 0603 eMMC_D4_18
 <2> MMC0_DTA5_V <=> R231_W 0 0603 eMMC_D5_18
 <2> MMC0_DTA6_V <=> R230_W 0 0603 eMMC_D6_18
 <2> MMC0_DTA7_V <=> R232_W 0 0603 eMMC_D7_18
 <2> MMC0_CMD_V <=> R233_W 0 0603 eMMC_CMD_18
 <2> MMC0_CLK_V <=> R234_W 0 0603 eMMC_CLK_18
 <2> MMC0_DS_V <=> R235_W 0 0603 eMMC_DS_18





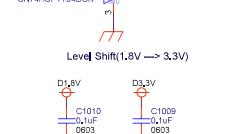
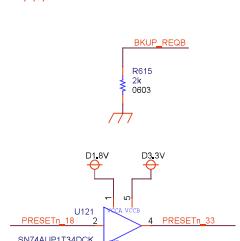
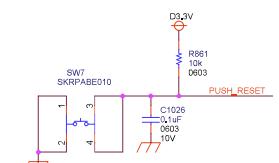


GPLD / Tact Switch
General Purpose LEDs or Tactile Switches
Following LEDs and Switches are connected to GPIO of R-CarH3-SiP

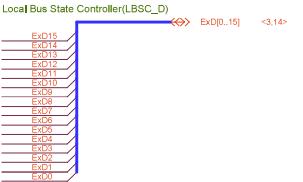
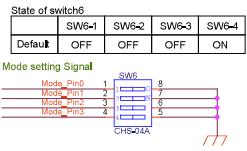
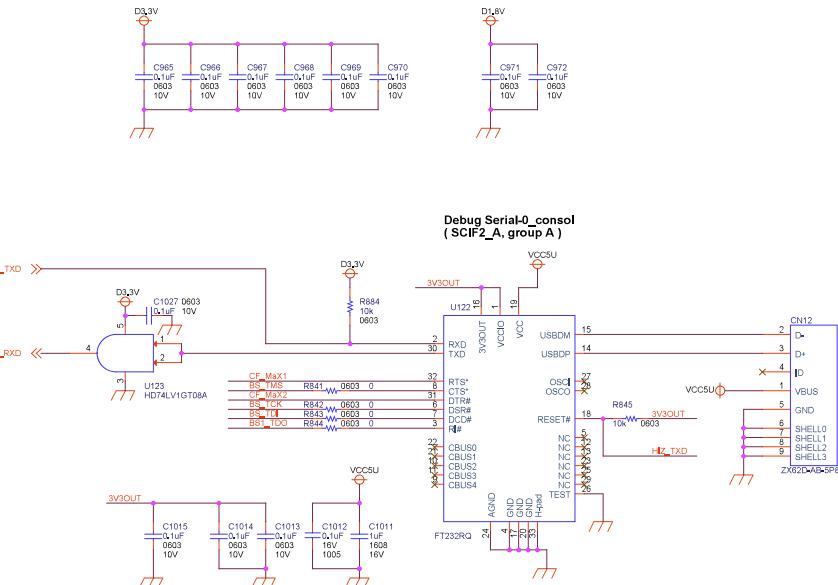
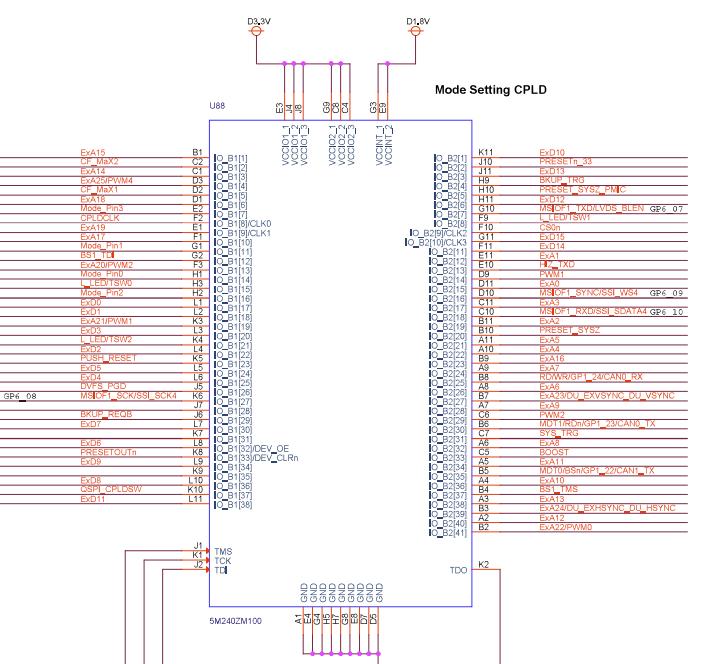


List of CPLD Functions

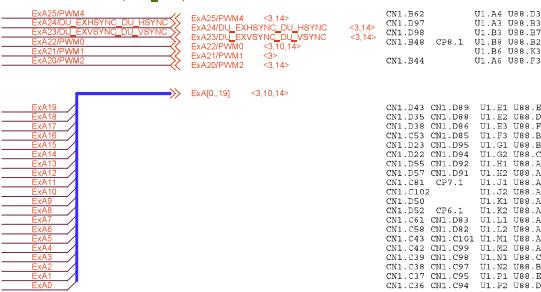
Local Bus State Controller(LBSC_D)
 >>> EX00
 Local Bus State Controller(LBSC_A/DU)
 >>> ExA0
 Local Bus State Controller(LBSC_DU)
 GP6_08 : General Serial Interface(MSOF)
 QSPI Select SW Signal
 >>> QSPI_CPLDSW
 Reset Signal [From LUCY]
 >>> PRESETn_33
 PMIC Manual Reset Signal
 >>> DVS_PGD
 Reset Signal [From LUCY]
 >>> PRESETOUTn
 >>> Mode_Pin0-3
 BKUP_RESET
 >>> DVS Boost Signal
 DVFS_PGD
 >>> Power Good Signal
 CPLD Reset Signal
 >>> PRESETOUTn
 CPLD Reference Clock
 >>> CPLDCLK
 LED/Tact Switch
 >>> LED/TSW0...
 PWM



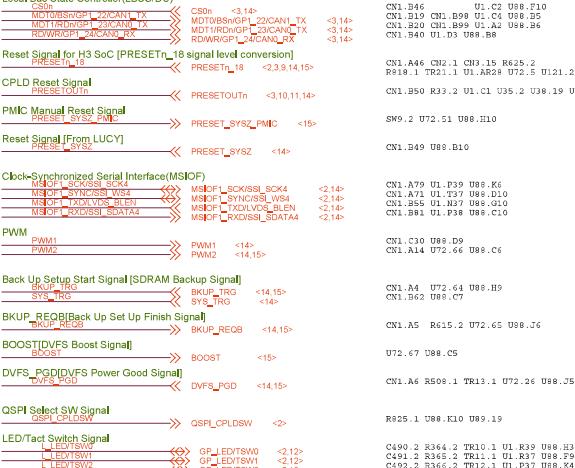
[Design Note]
 Signal connected only to CPLD
 PRESET_SYSZ_PMIC , CPLDCLK , Mode_Pin0-3 , QSPI_CPLDSW , BOOST



Local Bus State Controller(LBSC_A/DU)

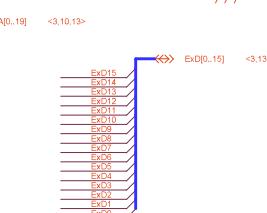
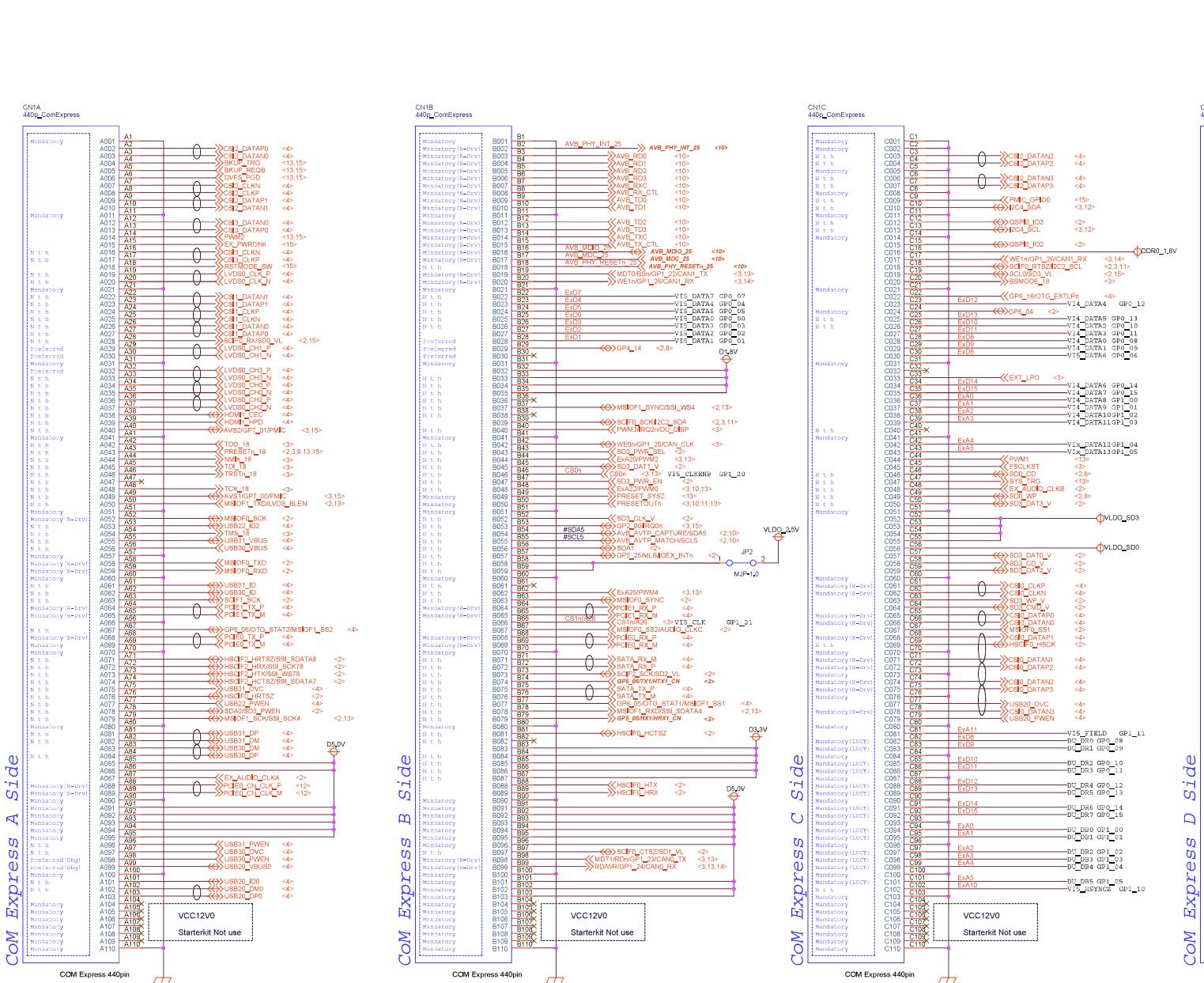


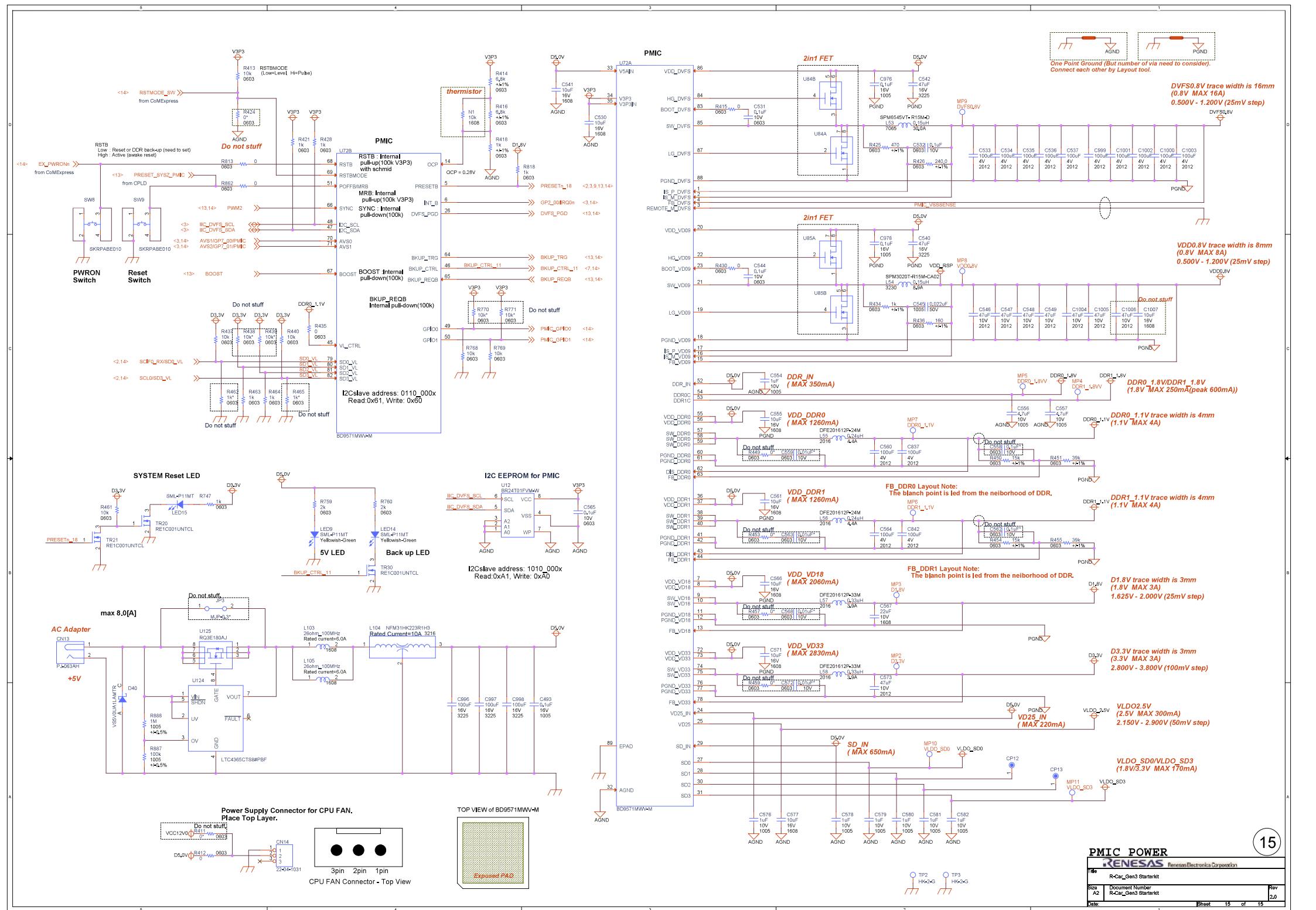
Local Bus State Controller(LBSC_D/U)



CN1 : COM Express Connector
 U1 : R-Car SiP
 U72 : PMIC BD9571MWV-M
 U88 : CPLD 5M240ZM100
 U89 : BUS SWITCH SN74CB3Q3245RGYR

Matched trace length and Differential Impedance





RTP0RC77951SKBX010SA00
S/N: 3001-3300Schematic

