Page 2

Reset, oscillators, JTAG
I2C-E2PROM, SPI-Flash

Page 3

Power supplies

Page 4

DDR RAM, NAND FLASH, buffers

Page 5

Peripheral interface

Page 6

Ethernet interface

Page 7

USB interface

Page 8

SODIMM edge connector interface

UL = UnLoaded = normally not mounted component.

Default jumper settings are indicated in the schematic.
However, always check jumper positions on actual boards
since there is no guarantee that all jumpers are in default place.

Rev 1.1
Changed control pins for LED3-5 to P2.10-12.
Added voltage test points.

Rev 1.0
Original revision

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TITLE: LPC32x0 OEM Board v1.1

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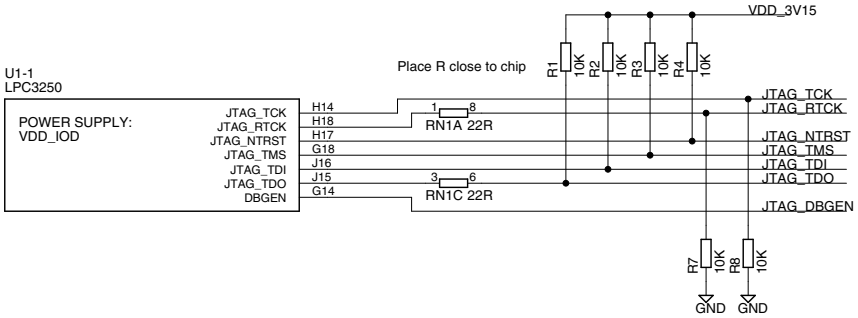
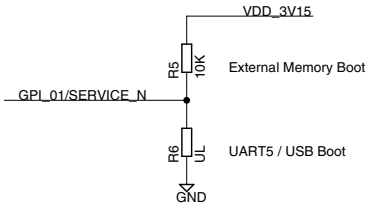
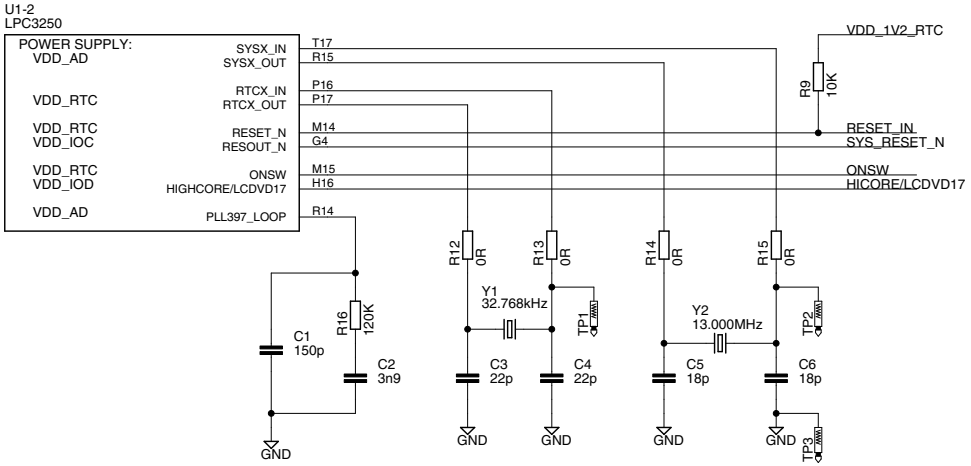
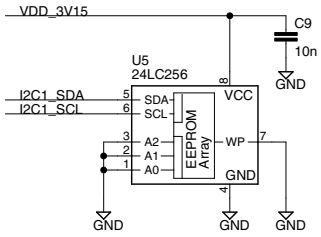


Boot Source Selection



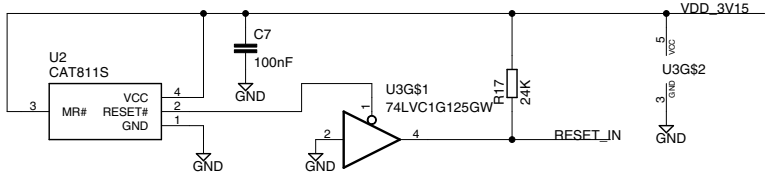


256kbit EEPROM

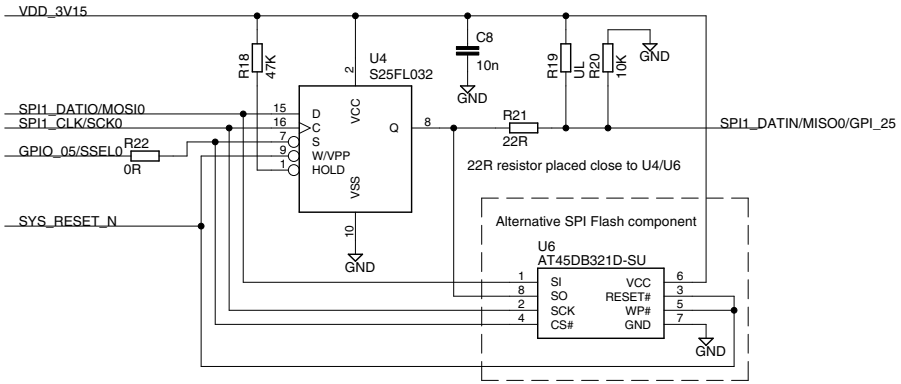


I2C address: 1.0.1.0.0.0.0.RW

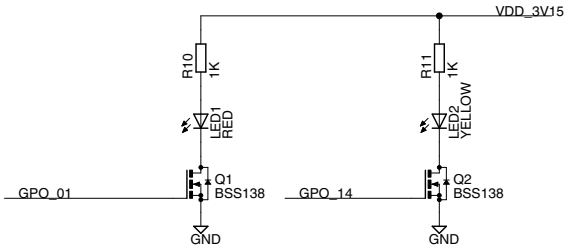
Reset generation



32Mbit SPI-NOR Flash



LEDs



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TITLE: LPC32x0 OEM Board v1.1	
Document Number:	REV:
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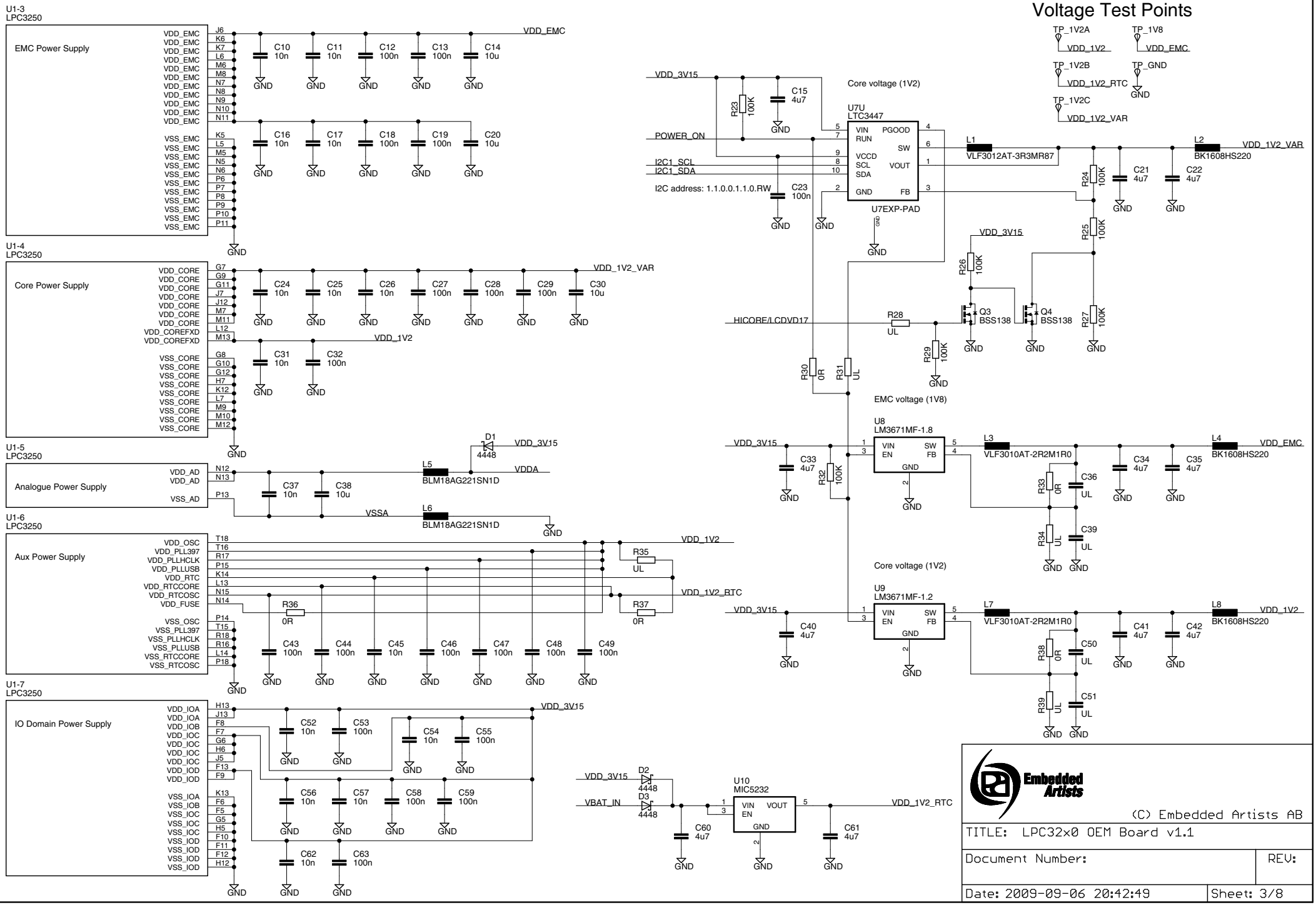
Voltage Test Points
TP_1V2A
VDD_1V2
TP_1V8
VDD_EMC
TP_1V2B
VDD_1V2_RTC
TP_GND
TP_1V2C
VDD_1V2_VAR
U1-3
LPC3250
EMC Power Supply
VDD_EMC
VSS_EMC
C10 10n
C11 10n
C12 100n
C13 100n
C14 10u
C16 10n
C17 10n
C18 100n
C19 100n
C20 10u
U1-4
LPC3250
Core Power Supply
VDD_CORE
VDD_COREFXD
VSS_CORE
VDD_1V2_VAR
VDD_1V2
C24 10n
C25 10n
C26 10n
C27 100n
C28 100n
C29 100n
C30 10u
C31 10n
C32 100n
U1-5
LPC3250
Analogue Power Supply
VDD_AD
VSS_AD
D1
4448
VDD_3V15
L5
BLM18AG221SN1D
VDDA
C37 10n
C38 10u
VSSA
L6
BLM18AG221SN1D
U1-6
LPC3250
Aux Power Supply
VDD_OSC
VDD_PLL397
VDD_PLLHCLK
VDD_PLLUSB
VDD_RTC
VDD_RTCCORE
VDD_RTCOSC
VDD_FUSE
VSS_OSC
VSS_PLL397
VSS_PLLHCLK
VSS_PLLUSB
VSS_RTCCORE
VSS_RTCOSC
VDD_1V2
VDD_1V2_RTC
R35 UL
R36 0R
R37 0R
C43 100n
C44 100n
C45 10n
C46 100n
C47 100n
C48 100n
C49 100n
U1-7
LPC3250
IO Domain Power Supply
VDD_IOA
VDD_IOB
VDD_IOC
VDD_IOD
VSS_IOA
VSS_IOB
VSS_IOC
VSS_IOD
VDD_3V15
C52 10n
C53 100n
C54 10n
C55 100n
C56 10n
C57 10n
C58 100n
C59 100n
C62 10n
C63 100n
Core voltage (1V2)
U7U
LTC3447
VIN
RUN
VCCD
SCL
SDA
GND
PGOOD
SW
VOUT
FB
U7EXP-PAD
POWER_ON
I2C1_SCL
I2C1_SDA
I2C address: 1.1.0.0.1.1.0.RW
R23 100K
C15 4u7
C23 100n
L1
VLF3012AT-3R3MR87
L2
BK1608HS220
VDD_1V2_VAR
R24 100K
R25 100K
C21 4u7
C22 4u7
R26 100K
R27 100K
R28 UL
R29 100K
Q3 BSS138
Q4 BSS138
HICORE/LCDVD17
R30 0R
R31 UL
EMC voltage (1V8)
U8
LM3671MF-1.8
VIN
EN
SW
FB
L3
VLF3010AT-2R2M1R0
L4
BK1608HS220
VDD_EMC
C33 4u7
C34 4u7
C35 4u7
R32 100K
R33 0R
R34 UL
C36 UL
C39 UL
Core voltage (1V2)
U9
LM3671MF-1.2
L7
VLF3010AT-2R2M1R0
L8
BK1608HS220
C40 4u7
C41 4u7
C42 4u7
R38 0R
R39 UL
C50 UL
C51 UL
U10
MIC5232
VIN
EN
VOUT
D2
4448
D3
4448
VBAT_IN
C60 4u7
C61 4u7
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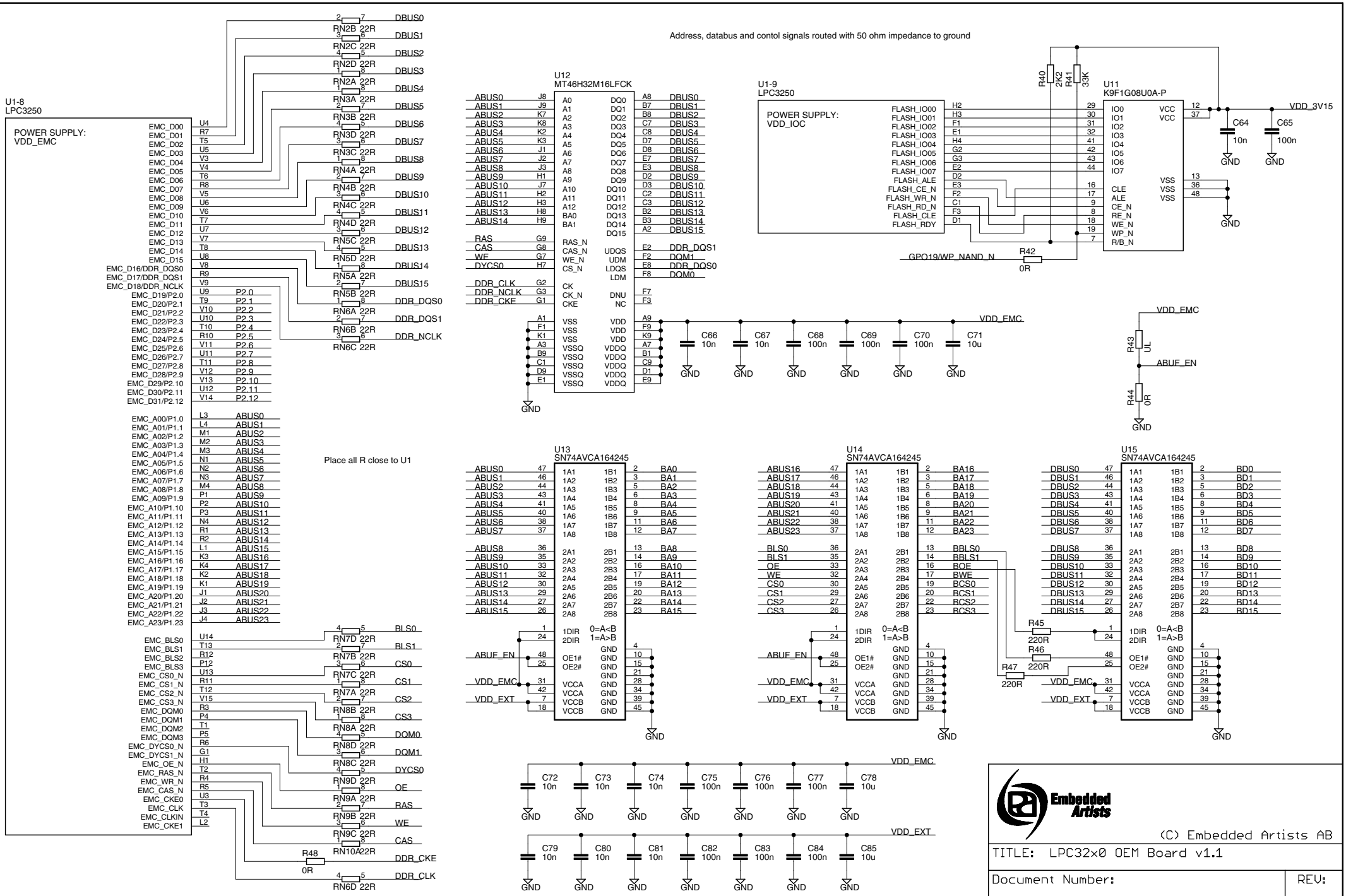
TITLE: LPC32x0 OEM Board v1.1
Document Number:
REV:
Date: 2009-09-06 20:42:49
Sheet: 3/8


Address, databus and contol signals routed with 50 ohm impedance to ground
U1-8
LPC3250
POWER SUPPLY:
VDD_EMC
EMC_D00
EMC_D01
EMC_D02
EMC_D03
EMC_D04
EMC_D05
EMC_D06
EMC_D07
EMC_D08
EMC_D09
EMC_D10
EMC_D11
EMC_D12
EMC_D13
EMC_D14
EMC_D15
EMC_D16/DDR_DQS0
EMC_D17/DDR_DQS1
EMC_D18/DDR_NCLK
EMC_D19/P2.0
EMC_D20/P2.1
EMC_D21/P2.2
EMC_D22/P2.3
EMC_D23/P2.4
EMC_D24/P2.5
EMC_D25/P2.6
EMC_D26/P2.7
EMC_D27/P2.8
EMC_D28/P2.9
EMC_D29/P2.10
EMC_D30/P2.11
EMC_D31/P2.12
EMC_A00/P1.0
EMC_A01/P1.1
EMC_A02/P1.2
EMC_A03/P1.3
EMC_A04/P1.4
EMC_A05/P1.5
EMC_A06/P1.6
EMC_A07/P1.7
EMC_A08/P1.8
EMC_A09/P1.9
EMC_A10/P1.10
EMC_A11/P1.11
EMC_A12/P1.12
EMC_A13/P1.13
EMC_A14/P1.14
EMC_A15/P1.15
EMC_A16/P1.16
EMC_A17/P1.17
EMC_A18/P1.18
EMC_A19/P1.19
EMC_A20/P1.20
EMC_A21/P1.21
EMC_A22/P1.22
EMC_A23/P1.23
EMC_BLS0
EMC_BLS1
EMC_BLS2
EMC_BLS3
EMC_CS0_N
EMC_CS1_N
EMC_CS2_N
EMC_CS3_N
EMC_DQM0
EMC_DQM1
EMC_DQM2
EMC_DQM3
EMC_DYCS0_N
EMC_DYCS1_N
EMC_OE_N
EMC_RAS_N
EMC_WR_N
EMC_CAS_N
EMC_CKE0
EMC_CLK
EMC_CLKIN
EMC_CKE1
RN2B 22R
RN2C 22R
RN2D 22R
RN2A 22R
RN3A 22R
RN3B 22R
RN3D 22R
RN3C 22R
RN4A 22R
RN4B 22R
RN4C 22R
RN4D 22R
RN5C 22R
RN5D 22R
RN5A 22R
RN5B 22R
RN6A 22R
RN6B 22R
RN6C 22R
DBUS0
DBUS1
DBUS2
DBUS3
DBUS4
DBUS5
DBUS6
DBUS7
DBUS8
DBUS9
DBUS10
DBUS11
DBUS12
DBUS13
DBUS14
DBUS15
DDR_DQS0
DDR_DQS1
DDR_NCLK
Place all R close to U1
RN7D 22R
RN7B 22R
RN7C 22R
RN7A 22R
RN8B 22R
RN8A 22R
RN8D 22R
RN8C 22R
RN9D 22R
RN9A 22R
RN9B 22R
RN9C 22R
RN10A22R
RN6D 22R
BLS0
BLS1
CS0
CS1
CS2
CS3
DQM0
DQM1
DYCS0
OE
RAS
WE
CAS
R48
0R
DDR_CKE
DDR_CLK
U12
MT46H32M16LFCK
ABUS0
ABUS1
ABUS2
ABUS3
ABUS4
ABUS5
ABUS6
ABUS7
ABUS8
ABUS9
ABUS10
ABUS11
ABUS12
ABUS13
ABUS14
RAS
CAS
WE
DYCS0
DDR_CLK
DDR_NCLK
DDR_CKE
DDR_DQS1
DQM1
DDR_DQS0
DQM0
VDD_EMC
C66 10n
C67 10n
C68 100n
C69 100n
C70 100n
C71 10u
GND
U1-9
LPC3250
POWER SUPPLY:
VDD_IOC
FLASH_IO00
FLASH_IO01
FLASH_IO02
FLASH_IO03
FLASH_IO04
FLASH_IO05
FLASH_IO06
FLASH_IO07
FLASH_ALE
FLASH_CE_N
FLASH_WR_N
FLASH_RD_N
FLASH_CLE
FLASH_RDY
GPO19/WP_NAND_N
R42
0R
R40
2K2
R41
33K
U11
K9F1G08U0A-P
IO0
IO1
IO2
IO3
IO4
IO5
IO6
IO7
CLE
ALE
CE_N
RE_N
WE_N
WP_N
R/B_N
VCC
VSS
VDD_3V15
C64 10n
C65 100n
GND
R43
1L
ABUF_EN
R44
0R
U13
SN74AVCA164245
U14
SN74AVCA164245
U15
SN74AVCA164245
1DIR
2DIR
0=A<B
1=A>B
OE1#
OE2#
VCCA
VCCB
ABUF_EN
VDD_EMC
VDD_EXT
BA0
BA1
BA2
BA3
BA4
BA5
BA6
BA7
BA8
BA9
BA10
BA11
BA12
BA13
BA14
BA15
BA16
BA17
BA18
BA19
BA20
BA21
BA22
BA23
BBLS0
BBLS1
BOE
BWE
BCS0
BCS1
BCS2
BCS3
BD0
BD1
BD2
BD3
BD4
BD5
BD6
BD7
BD8
BD9
BD10
BD11
BD12
BD13
BD14
BD15
R45
220R
R46
220R
R47
220R
C72 10n
C73 10n
C74 10n
C75 100n
C76 100n
C77 100n
C78 10u
C79 10n
C80 10n
C81 10n
C82 100n
C83 100n
C84 100n
C85 10u
Embedded Artists
(C) Embedded Artists AB
TITLE: LPC32x0 OEM Board v1.1
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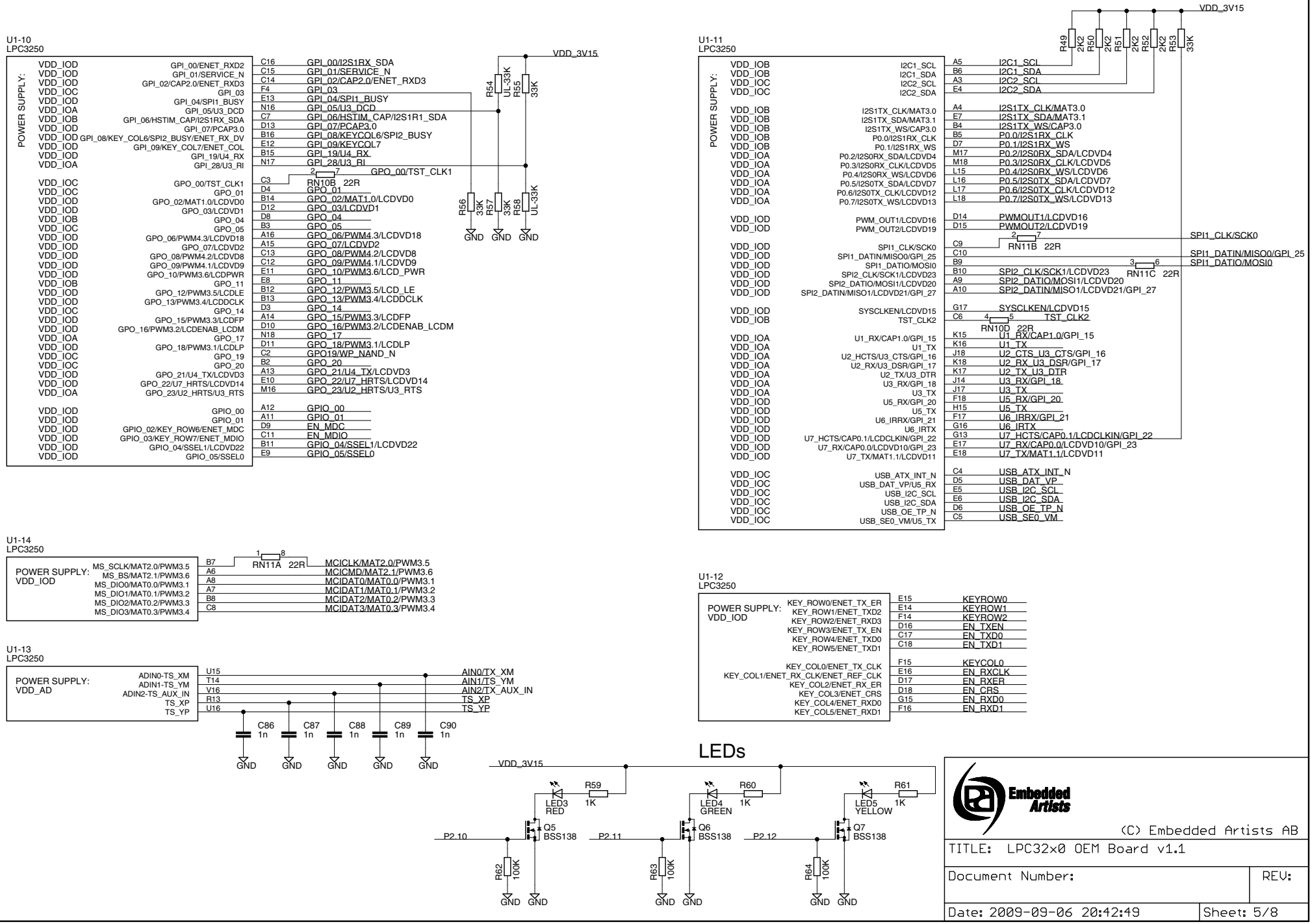
U1-10
LPC3250
POWER SUPPLY:
VDD_IOD
VDD_IOC
VDD_IOB
VDD_IOA
GPI_00/ENET_RXD2
GPI_01/SERVICE_N
GPI_02/CAP2.0/ENET_RXD3
GPI_03
GPI_04/SPI1_BUSY
GPI_05/U3_DCD
GPI_06/HSTIM_CAP/I2S1RX_SDA
GPI_07/PCAP3.0
GPI_08/KEY_COL6/SPI2_BUSY/ENET_RX_DV
GPI_09/KEY_COL7/ENET_COL
GPI_19/U4_RX
GPI_28/U3_RI
GPO_00/TST_CLK1
GPO_01
GPO_02/MAT1.0/LCDVD0
GPO_03/LCDVD1
GPO_04
GPO_05
GPO_06/PWM4.3/LCDVD18
GPO_07/LCDVD2
GPO_08/PWM4.2/LCDVD8
GPO_09/PWM4.1/LCDVD9
GPO_10/PWM3.6/LCDPWR
GPO_11
GPO_12/PWM3.5/LCDLE
GPO_13/PWM3.4/LCDDCLK
GPO_14
GPO_15/PWM3.3/LCDFP
GPO_16/PWM3.2/LCDENAB_LCDM
GPO_17
GPO_18/PWM3.1/LCDLP
GPO_19
GPO_20
GPO_21/U4_TX/LCDVD3
GPO_22/U7_HRTS/LCDVD14
GPO_23/U2_HRTS/U3_RTS
GPIO_00
GPIO_01
GPIO_02/KEY_ROW6/ENET_MDC
GPIO_03/KEY_ROW7/ENET_MDIO
GPIO_04/SSEL1/LCDVD22
GPIO_05/SSEL0
C16 GPI_00/I2S1RX_SDA
C15 GPI_01/SERVICE_N
C14 GPI_02/CAP2.0/ENET_RXD3
F4 GPI_03
E13 GPI_04/SPI1_BUSY
N16 GPI_05/U3_DCD
C7 GPI_06/HSTIM_CAP/I2S1R1_SDA
D13 GPI_07/PCAP3.0
B16 GPI_08/KEYCOL6/SPI2_BUSY/ENET_RX_DV
E12 GPI_09/KEYCOL7
B15 GPI_19/U4_RX
N17 GPI_28/U3_RI
C3 GPO_00/TST_CLK1
D4 GPO_01
B14 GPO_02/MAT1.0/LCDVD0
D12 GPO_03/LCDVD1
D8 GPO_04
B3 GPO_05
A16 GPO_06/PWM4.3/LCDVD18
A15 GPO_07/LCDVD2
C13 GPO_08/PWM4.2/LCDVD8
C12 GPO_09/PWM4.1/LCDVD9
E11 GPO_10/PWM3.6/LCD_PWR
E8 GPO_11
B12 GPO_12/PWM3.5/LCD_LE
B13 GPO_13/PWM3.4/LCDDCLK
D3 GPO_14
A14 GPO_15/PWM3.3/LCDFP
D10 GPO_16/PWM3.2/LCDENAB_LCDM
N18 GPO_17
D11 GPO_18/PWM3.1/LCDLP
C2 GPO19/WP_NAND_N
B2 GPO_20
A13 GPO_21/U4_TX/LCDVD3
E10 GPO_22/U7_HRTS/LCDVD14
M16 GPO_23/U2_HRTS/U3_RTS
A12 GPIO_00
A11 GPIO_01
D9 EN_MDC
C11 EN_MDIO
B11 GPIO_04/SSEL1/LCDVD22
E9 GPIO_05/SSEL0
RN10B 22R
VDD_3V15
R54 UL-33K
R55 33K
R56 33K
R57 33K
R58 UL-33K
GND
U1-11
LPC3250
POWER SUPPLY:
VDD_IOB
VDD_IOC
VDD_IOA
VDD_IOD
I2C1_SCL
I2C1_SDA
I2C2_SCL
I2C2_SDA
I2S1TX_CLK/MAT3.0
I2S1TX_SDA/MAT3.1
I2S1TX_WS/CAP3.0
P0.0/I2S1RX_CLK
P0.1/I2S1RX_WS
P0.2/I2S0RX_SDA/LCDVD4
P0.3/I2S0RX_CLK/LCDVD5
P0.4/I2S0RX_WS/LCDVD6
P0.5/I2S0TX_SDA/LCDVD7
P0.6/I2S0TX_CLK/LCDVD12
P0.7/I2S0TX_WS/LCDVD13
PWM_OUT1/LCDVD16
PWM_OUT2/LCDVD19
SPI1_CLK/SCK0
SPI1_DATIN/MISO0/GPI_25
SPI1_DATIO/MOSI0
SPI2_CLK/SCK1/LCDVD23
SPI2_DATIO/MOSI1/LCDVD20
SPI2_DATIN/MISO1/LCDVD21/GPI_27
SYSCLKEN/LCDVD15
TST_CLK2
U1_RX/CAP1.0/GPI_15
U1_TX
U2_HCTS/U3_CTS/GPI_16
U2_RX/U3_DSR/GPI_17
U2_TX/U3_DTR
U3_RX/GPI_18
U3_TX
U5_RX/GPI_20
U5_TX
U6_IRRX/GPI_21
U6_IRTX
U7_HCTS/CAP0.1/LCDCLKIN/GPI_22
U7_RX/CAP0.0/LCDVD10/GPI_23
U7_TX/MAT1.1/LCDVD11
USB_ATX_INT_N
USB_DAT_VP/U5_RX
USB_I2C_SCL
USB_I2C_SDA
USB_OE_TP_N
USB_SE0_VM/U5_TX
A5 I2C1_SCL
B6 I2C1_SDA
A3 I2C2_SCL
E4 I2C2_SDA
A4 I2S1TX_CLK/MAT3.0
E7 I2S1TX_SDA/MAT3.1
B4 I2S1TX_WS/CAP3.0
B5 P0.0/I2S1RX_CLK
D7 P0.1/I2S1RX_WS
M17 P0.2/I2S0RX_SDA/LCDVD4
M18 P0.3/I2S0RX_CLK/LCDVD5
L15 P0.4/I2S0RX_WS/LCDVD6
L16 P0.5/I2S0TX_SDA/LCDVD7
L17 P0.6/I2S0TX_CLK/LCDVD12
L18 P0.7/I2S0TX_WS/LCDVD13
D14 PWMOUT1/LCDVD16
D15 PWMOUT2/LCDVD19
C9 SPI1_CLK/SCK0
C10 SPI1_DATIN/MISO0/GPI_25
B9 SPI1_DATIO/MOSI0
B10 SPI2_CLK/SCK1/LCDVD23
A9 SPI2_DATIO/MOSI1/LCDVD20
A10 SPI2_DATIN/MISO1/LCDVD21/GPI_27
G17 SYSCLKEN/LCDVD15
C6 TST_CLK2
K15 U1_RX/CAP1.0/GPI_15
K16 U1_TX
J18 U2_CTS_U3_CTS/GPI_16
K18 U2_RX_U3_DSR/GPI_17
K17 U2_TX_U3_DTR
J14 U3_RX/GPI_18
J17 U3_TX
F18 U5_RX/GPI_20
H15 U5_TX
F17 U6_IRRX/GPI_21
G16 U6_IRTX
G13 U7_HCTS/CAP0.1/LCDCLKIN/GPI_22
E17 U7_RX/CAP0.0/LCDVD10/GPI_23
E18 U7_TX/MAT1.1/LCDVD11
C4 USB_ATX_INT_N
D5 USB_DAT_VP
E5 USB_I2C_SCL
E6 USB_I2C_SDA
D6 USB_OE_TP_N
C5 USB_SE0_VM
R49 2K2
R50 2K2
R51 2K2
R52 2K2
R53 33K
VDD_3V15
SPI1_CLK/SCK0
RN11B 22R
SPI1_DATIN/MISO0/GPI_25
SPI1_DATIO/MOSI0
RN11C 22R
RN10D 22R
U1-14
LPC3250
POWER SUPPLY:
VDD_IOD
MS_SCLK/MAT2.0/PWM3.5
MS_BS/MAT2.1/PWM3.6
MS_DIO0/MAT0.0/PWM3.1
MS_DIO1/MAT0.1/PWM3.2
MS_DIO2/MAT0.2/PWM3.3
MS_DIO3/MAT0.3/PWM3.4
B7 MCICLK/MAT2.0/PWM3.5
A6 MCICMD/MAT2.1/PWM3.6
A8 MCIDAT0/MAT0.0/PWM3.1
A7 MCIDAT1/MAT0.1/PWM3.2
B8 MCIDAT2/MAT0.2/PWM3.3
C8 MCIDAT3/MAT0.3/PWM3.4
RN11A 22R
U1-13
LPC3250
POWER SUPPLY:
VDD_AD
ADIN0-TS_XM
ADIN1-TS_YM
ADIN2-TS_AUX_IN
TS_XP
TS_YP
U15 AIN0/TX_XM
T14 AIN1/TS_YM
V16 AIN2/TX_AUX_IN
R13 TS_XP
U16 TS_YP
C86 1n
C87 1n
C88 1n
C89 1n
C90 1n
GND
U1-12
LPC3250
POWER SUPPLY:
VDD_IOD
KEY_ROW0/ENET_TX_ER
KEY_ROW1/ENET_TXD2
KEY_ROW2/ENET_RXD3
KEY_ROW3/ENET_TX_EN
KEY_ROW4/ENET_TXD0
KEY_ROW5/ENET_TXD1
KEY_COL0/ENET_TX_CLK
KEY_COL1/ENET_RX_CLK/ENET_REF_CLK
KEY_COL2/ENET_RX_ER
KEY_COL3/ENET_CRS
KEY_COL4/ENET_RXD0
KEY_COL5/ENET_RXD1
E15 KEYROW0
E14 KEYROW1
F14 KEYROW2
D16 EN_TXEN
C17 EN_TXD0
C18 EN_TXD1
F15 KEYCOL0
E16 EN_RXCLK
D17 EN_RXER
D18 EN_CRS
G15 EN_RXD0
F16 EN_RXD1
LEDs
VDD_3V15
R59 1K
R60 1K
R61 1K
LED3 RED
LED4 GREEN
LED5 YELLOW
Q5 BSS138
Q6 BSS138
Q7 BSS138
P2.10
P2.11
P2.12
R62 100K
R63 100K
R64 100K
GND
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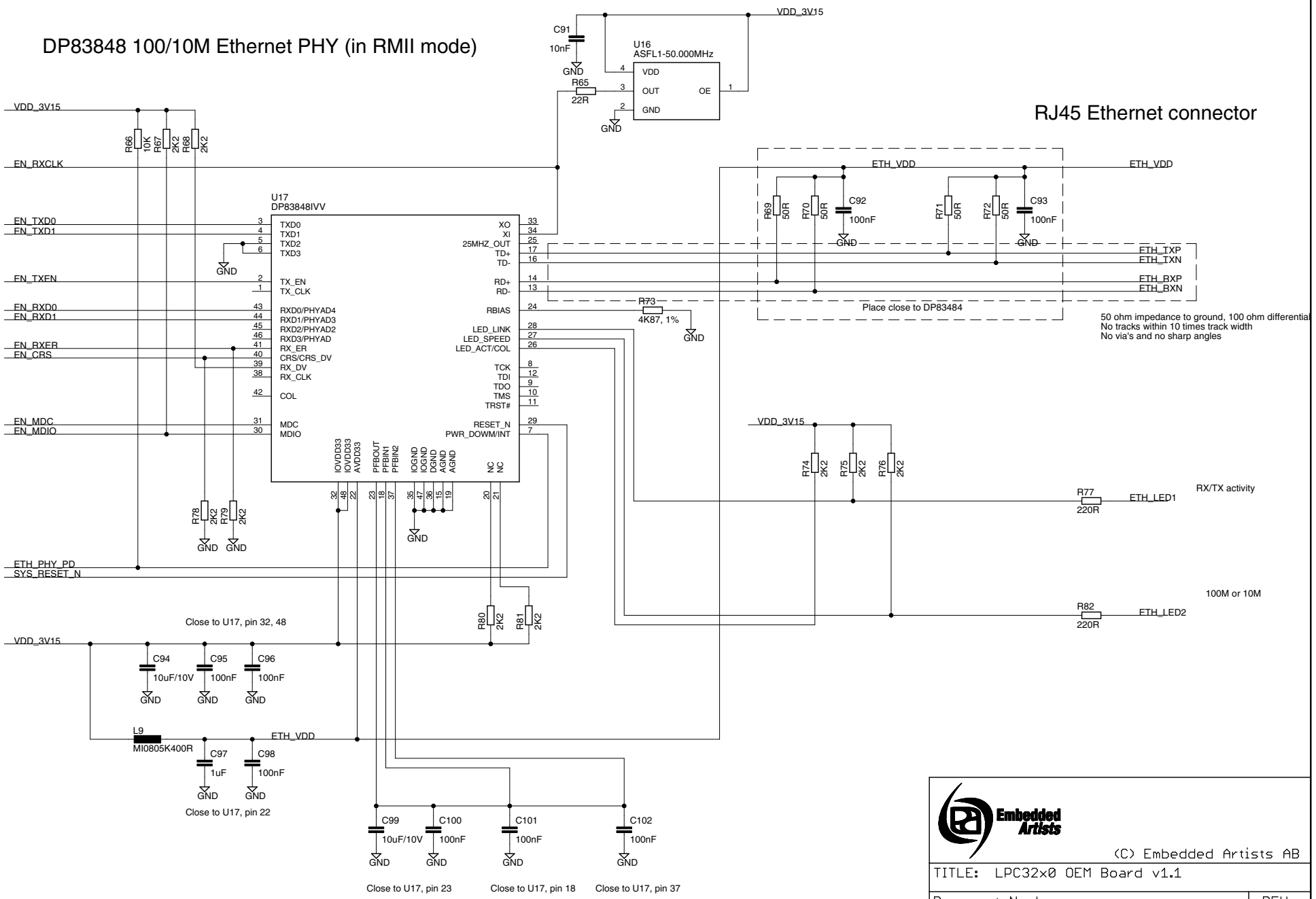
50MHz oscillator
DP83848 100/10M Ethernet PHY (in RMII mode)
RJ45 Ethernet connector
VDD_3V15
C91
10nF
GND
U16
ASFL1-50.000MHz
VDD
OUT
OE
GND
R65
22R
R66
10K
R67
2K2
R68
2K2
EN_RXCLK
U17
DP83848IVV
EN_TXD0
EN_TXD1
TXD0
TXD1
TXD2
TXD3
EN_TXEN
TX_EN
TX_CLK
EN_RXD0
EN_RXD1
RXD0/PHYAD4
RXD1/PHYAD3
RXD2/PHYAD2
RXD3/PHYAD
EN_RXER
EN_CRS
RX_ER
CRS/CRS_DV
RX_DV
RX_CLK
COL
EN_MDC
EN_MDIO
MDC
MDIO
XO
XI
25MHZ_OUT
TD+
TD-
RD+
RD-
RBIAS
LED_LINK
LED_SPEED
LED_ACT/COL
TCK
TDI
TDO
TMS
TRST#
RESET_N
PWR_DOWM/INT
IOVDD33
IOVDD33
AVDD33
PFBOUT
PFBIN1
PFBIN2
IOGND
IOGND
DGND
AGND
AGND
NC
NC
R73
4K87, 1%
ETH_VDD
R69
50R
R70
50R
C92
100nF
R71
50R
R72
50R
C93
100nF
ETH_TXP
ETH_TXN
ETH_RXP
ETH_RXN
Place close to DP83484
50 ohm impedance to ground, 100 ohm differential
No tracks within 10 times track width
No via's and no sharp angles
R74
2K2
R75
2K2
R76
2K2
R77
220R
ETH_LED1
RX/TX activity
R82
220R
ETH_LED2
100M or 10M
R78
2K2
R79
2K2
ETH_PHY_PD
SYS_RESET_N
R80
2K2
R81
2K2
Close to U17, pin 32, 48
C94
10uF/10V
C95
100nF
C96
100nF
L9
MI0805K400R
C97
1uF
C98
100nF
Close to U17, pin 22
C99
10uF/10V
C100
100nF
C101
100nF
C102
100nF
Close to U17, pin 23
Close to U17, pin 18
Close to U17, pin 37
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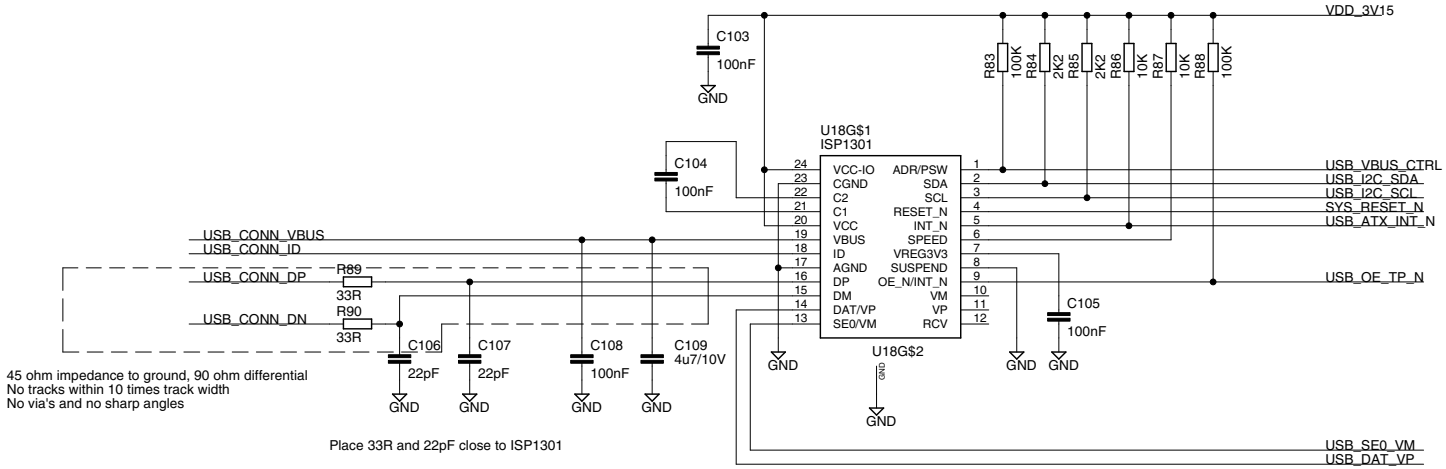
OTG USB Channel



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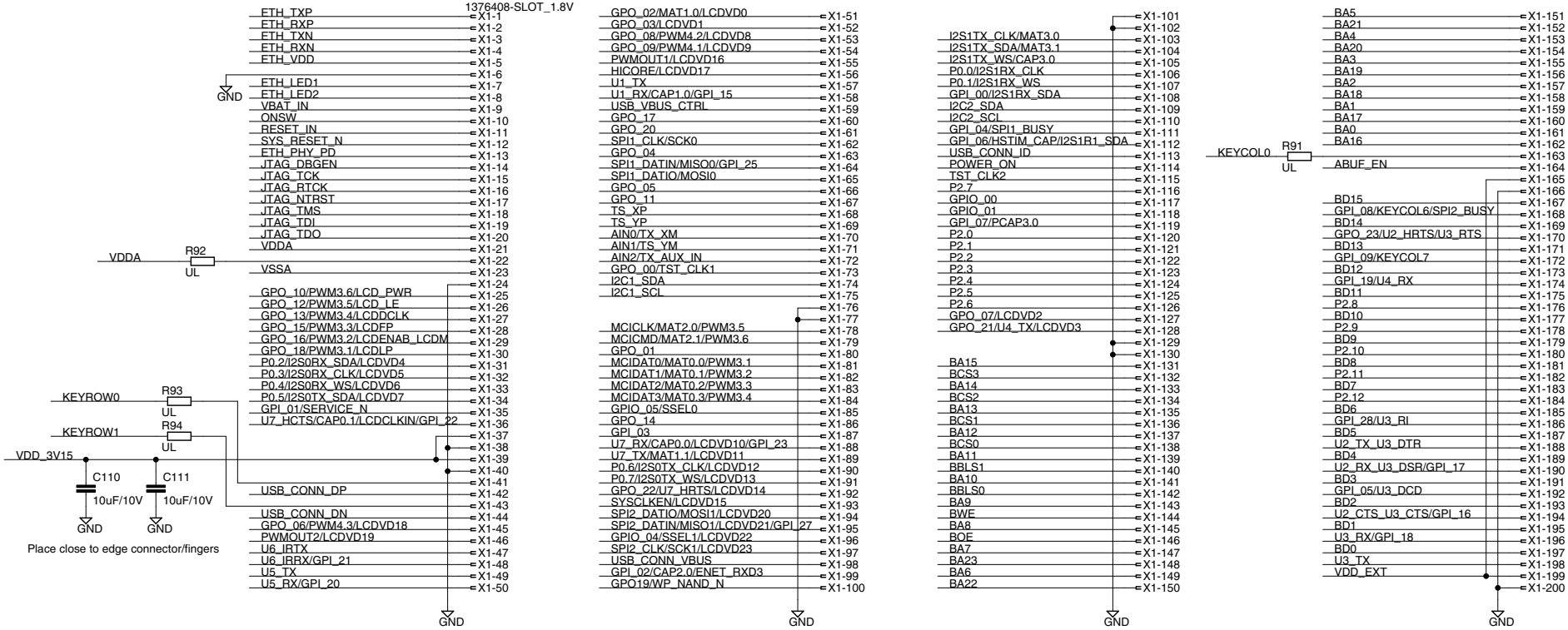
SODIMM-200 Edge Connector



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