KSZ9131RNX Ref. Design

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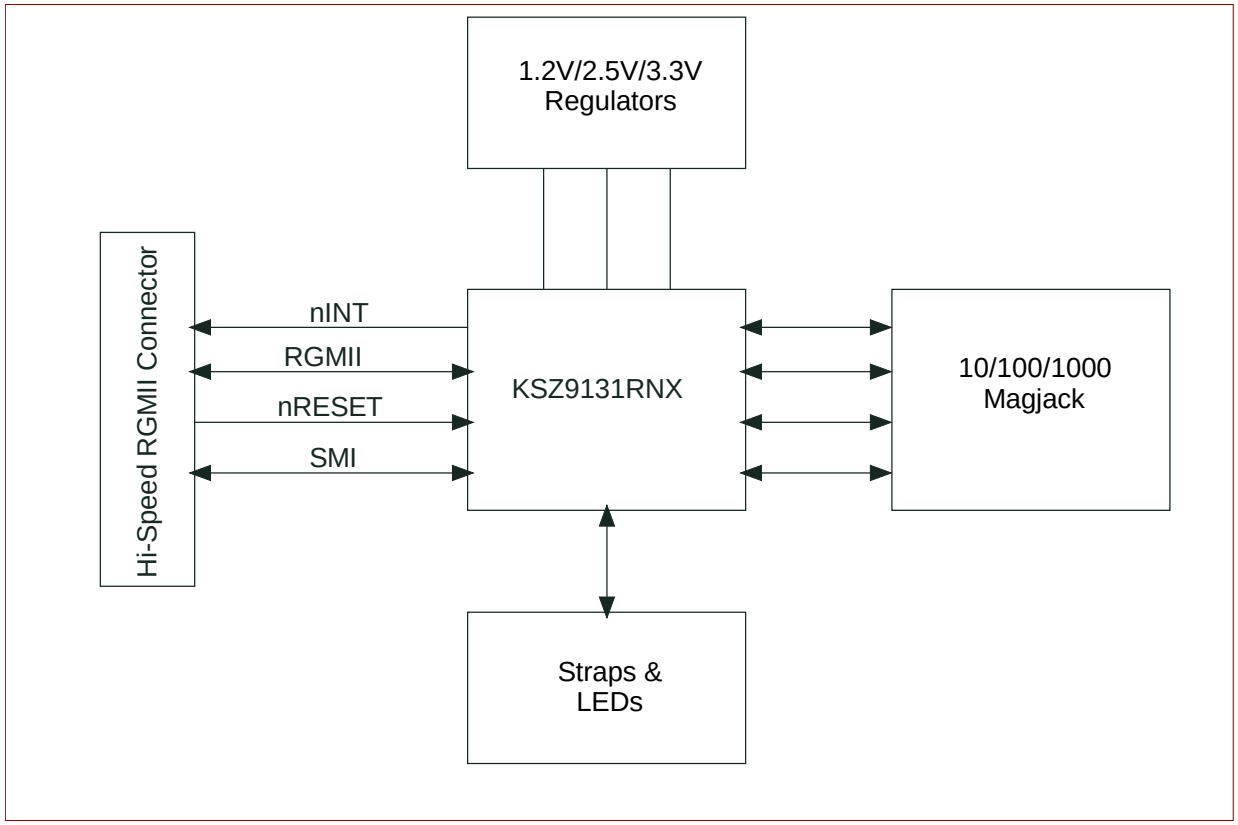
Revision History

Revision	Date	Revision Summary	Author
1	1/3/2020	Initial release of design	J. MacKay



Notes

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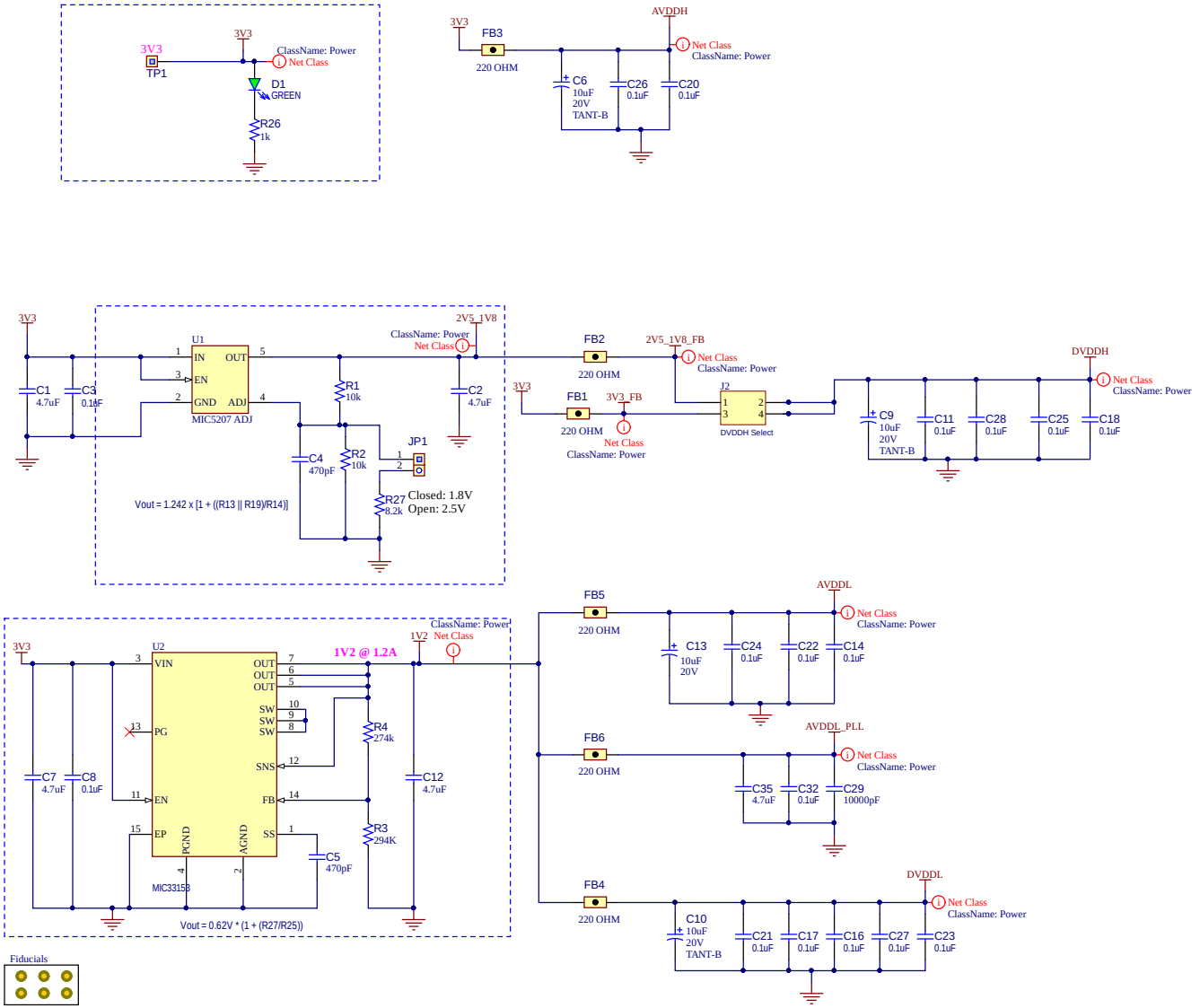

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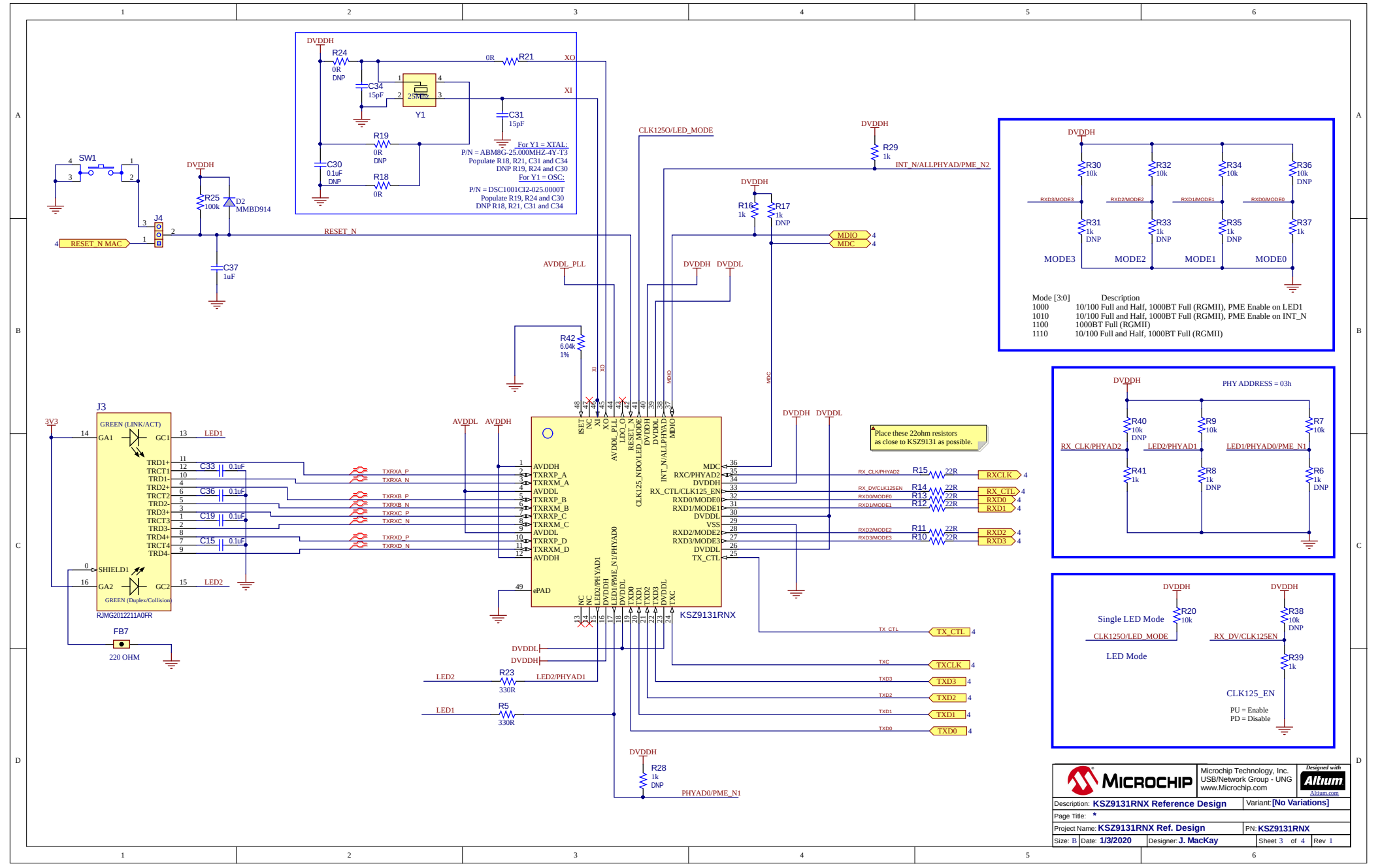
DVDDH
R24
0R
DNP
C34
15pF
25MHz
Y1
0R
R21
XO
XI
C31
15pF
R19
0R
DNP
C30
0.1uF
DNP
R18
0R
For Y1 = XTAL:
P/N = ABM8G-25.000MHZ-4Y-T3
Populate R18, R21, C31 and C34
DNP R19, R24 and C30
For Y1 = OSC:
P/N = DSC1001CI2-025.0000T
Populate R19, R24 and C30
DNP R18, R21, C31 and C34
SW1
J4
RESET_N MAC
RESET_N
R25
100k
D2
MMBD914
C37
1uF
CLK125O/LED_MODE
R29
1k
INT_N/ALLPHYAD/PME_N2
R16
1k
R17
1k
DNP
MDIO
MDC
AVDDL_PLL
DVDDH DVDDL
R42
6.04k
1%
J3
3V3
GREEN (LINK/ACT)
GA1
GC1
LED1
TRD1+
TRCT1
TRD1-
TRD2+
TRCT2
TRD2-
TRD3+
TRCT3
TRD3-
TRD4+
TRCT4
TRD4-
C33
C36
C19
C15
0.1uF
SHIELD1
GA2
GC2
LED2
GREEN (Duplex/Collision)
RJMG2012211A0FR
FB7
220 OHM
TXRXA_P
TXRXA_N
TXRXB_P
TXRXB_N
TXRXC_P
TXRXC_N
TXRXD_P
TXRXD_N
AVDDL AVDDH
ISET
NC
XI
XO
AVDDL_PLL
LED_0
RESET_N
CLK125_NDO/LED_MODE
DVDDH
DVDDL
INT_N/ALLPHYAD
MDIO
AVDDH
TXRXP_A
TXRXM_A
AVDDL
TXRXP_B
TXRXM_B
TXRXP_C
TXRXM_C
AVDDL
TXRXP_D
TXRXM_D
AVDDH
ePAD
MDC
RXC/PHYAD2
DVDDH
RX_CTL/CLK125_EN
RXD0/MODE0
RXD1/MODE1
DVDDL
VSS
RXD2/MODE2
RXD3/MODE3
DVDDL
TX_CTL
NC
NC
LED2/PHYAD1
DVDDH
DVDDL
LED1/PME_N1/PHYAD0
TXD0
TXD1
TXD2
TXD3
DVDDL
TXC
KSZ9131RNX
Place these 22ohm resistors
as close to KSZ9131 as possible.
RX_CLK/PHYAD2
RX_DV/CLK125EN
RXD0/MODE0
RXD1/MODE1
RXD2/MODE2
RXD3/MODE3
R15
R14
R13
R12
R11
R10
22R
RXCLK
RX_CTL
RXD0
RXD1
RXD2
RXD3
TX_CTL
TXCLK
TXD3
TXD2
TXD1
TXD0
LED2
LED2/PHYAD1
R23
330R
LED1
R5
330R
R28
1k
DNP
PHYAD0/PME_N1
R30
R32
R34
R36
10k
DNP
R31
R33
R35
R37
1k
DNP
MODE3
MODE2
MODE1
MODE0
Mode [3:0] Description
1000 10/100 Full and Half, 1000BT Full (RGMII), PME Enable on LED1
1010 10/100 Full and Half, 1000BT Full (RGMII), PME Enable on INT_N
1100 1000BT Full (RGMII)
1110 10/100 Full and Half, 1000BT Full (RGMII)
PHY ADDRESS = 03h
R40
R9
R7
R41
R8
R6
10k
1k
DNP
LED2/PHYAD1
LED1/PHYAD0/PME_N1
Single LED Mode
LED Mode
R20
R38
R39
CLK125_EN
PU = Enable
PD = Disable
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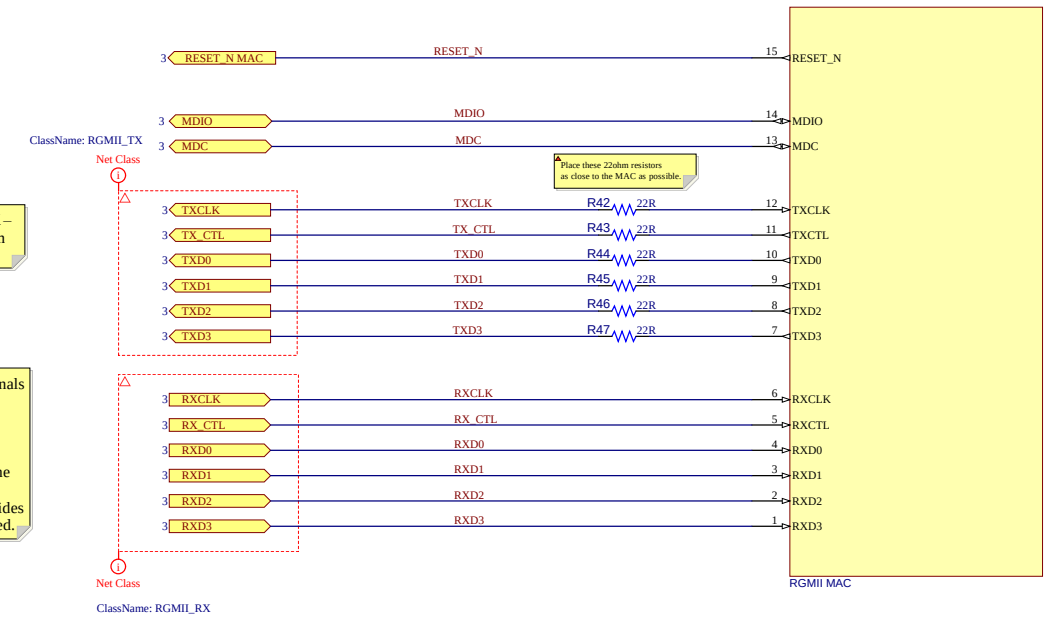
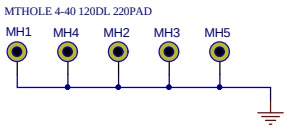
PCB Layout Constraint: The RGMII TXCLK – TX signals must be trace length matched from DUT to RGMII MAC to within 50 mils.

PCB Layout Constraint: The RGMII RX signals must be trace length matched from DUT to RGMII MAC to within 50 mils.

In addition to this, RXCLK must be either longer than the RX signals to add delay or the delay (1.2 ns-1.5 ns) must be added on the RGMII MAC. The KSZ9131RNX also provides pad skew values to adjust the delays if needed.





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