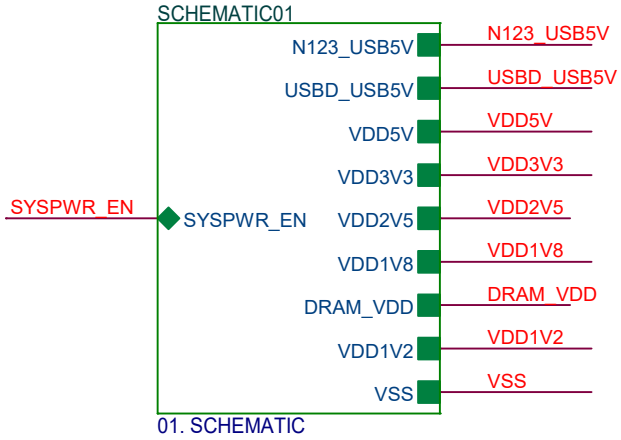

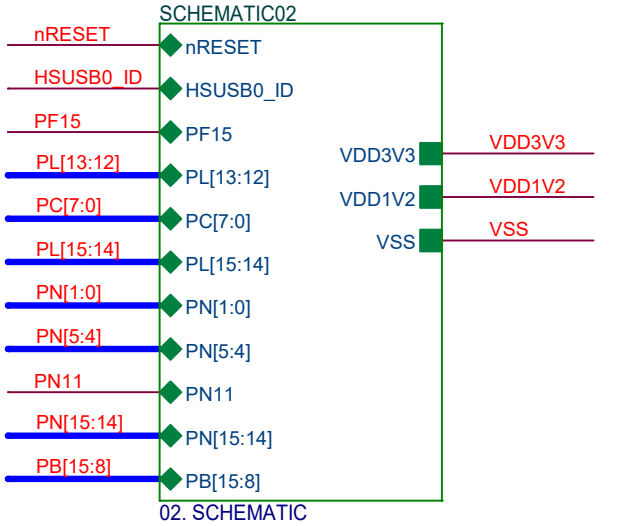

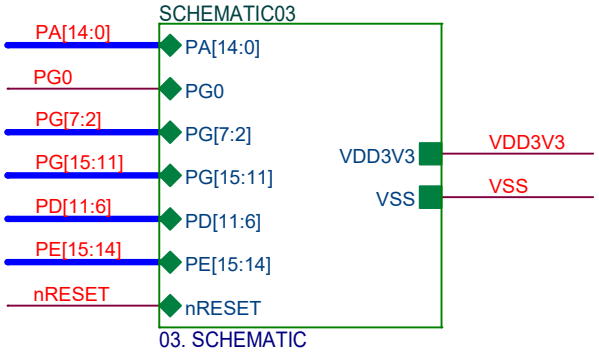

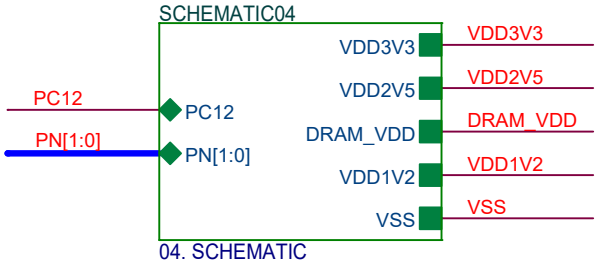

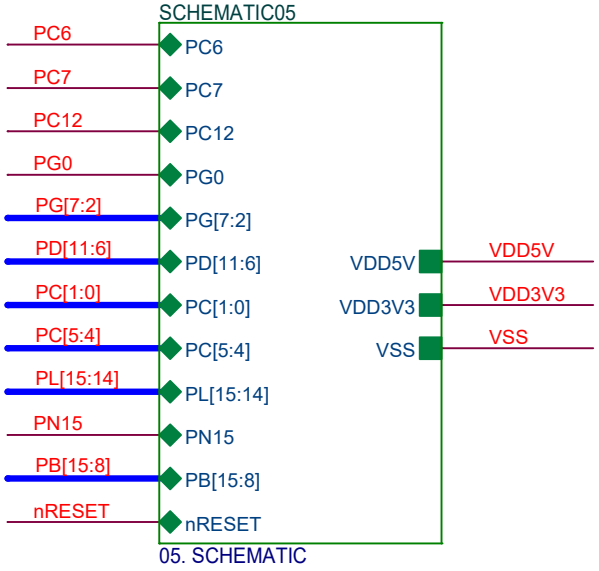

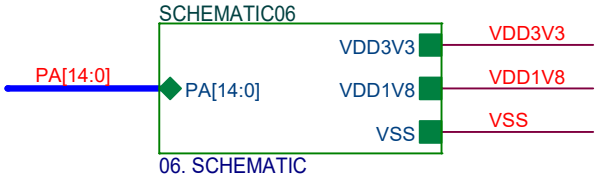

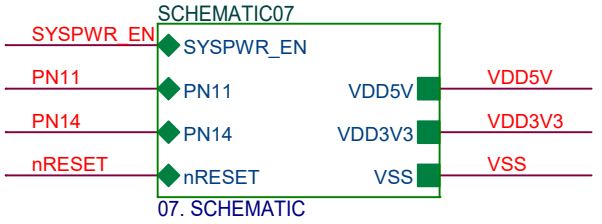

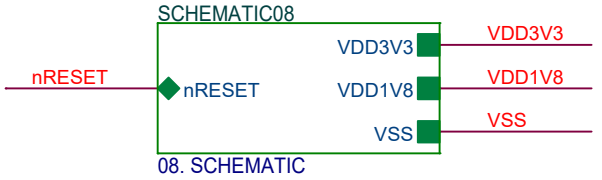

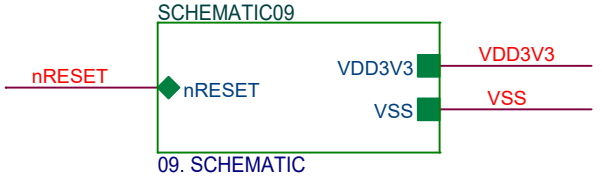

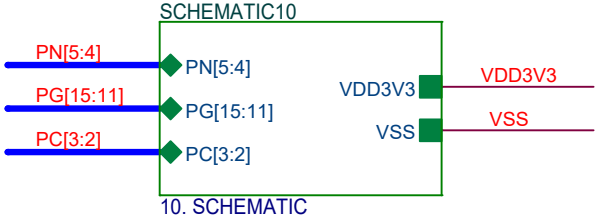

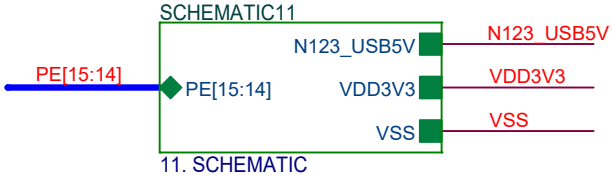

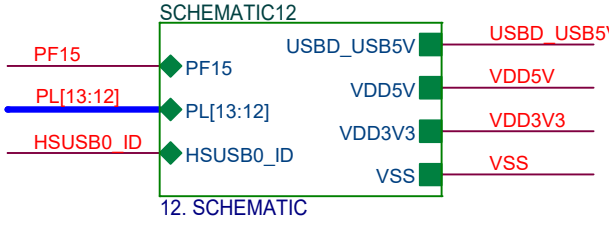

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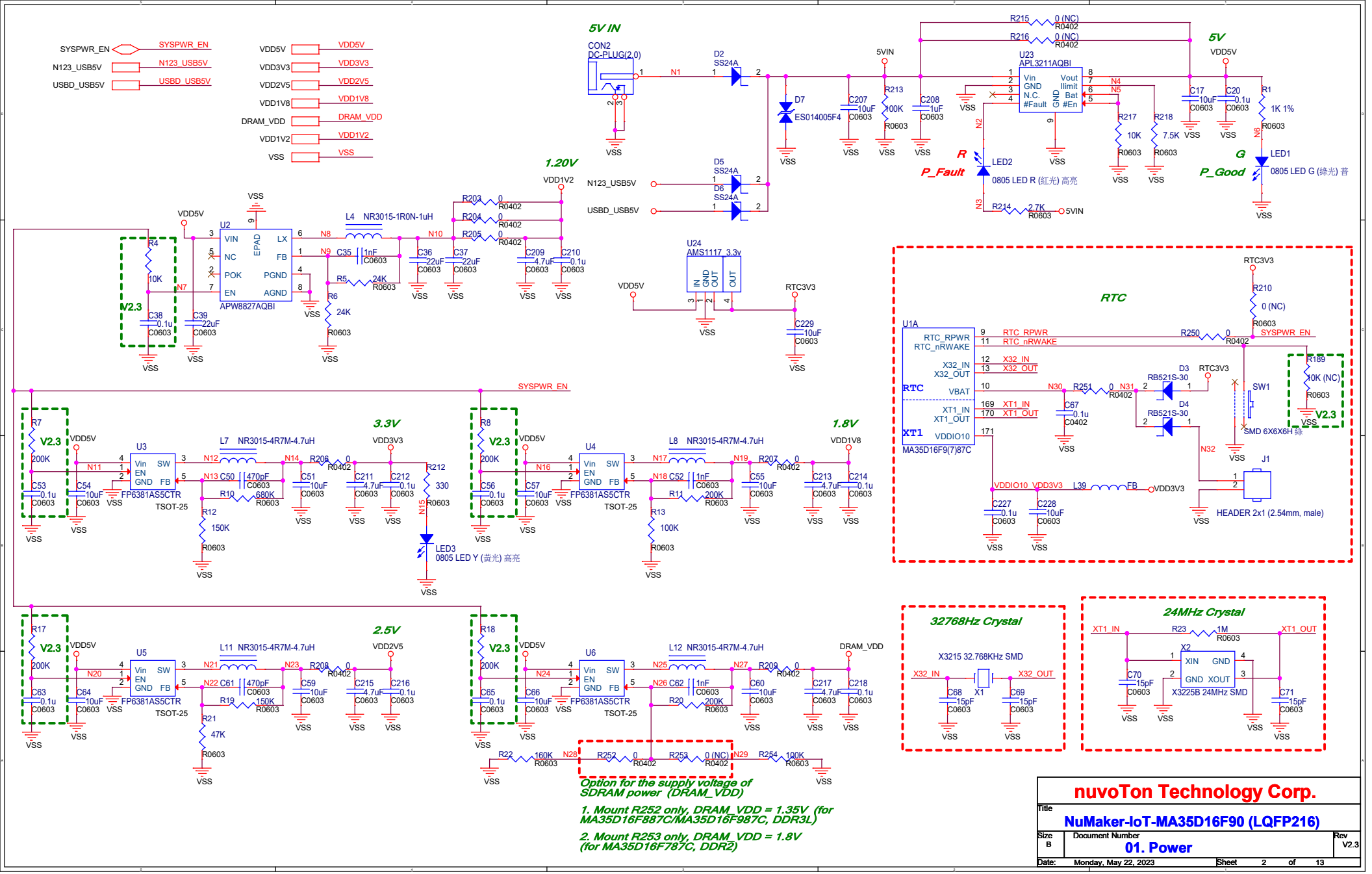
Title

NuMaker-IoT-MA35D16F90 (LQFP216)

Size	Document Number	Rev
A	**00. System Block**	V2.3
Date: Wednesday, September 07, 2022	Sheet 1 of 13	



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Title	NuMaker-IoT-MA35D16F90 (LQFP216)	
Size B	Document Number 01. Power	Rev V2.3
Date: Monday, May 22, 2023	Sheet 2 of 13	

U1C

nRESET/HSUSB0_ID,VBUSVLD/HSUSBH_PWREN,OVC/PWM_0/UART_7,14/CAN_1/SPI_0/SC_1/I2C_2/INT_0,2

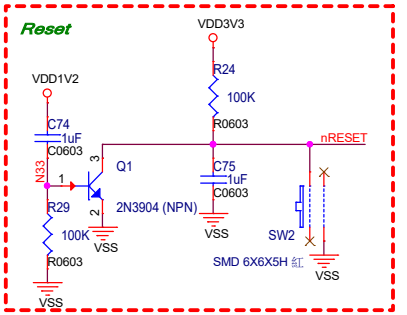
nRESET/WDT_nRST
HSUSB0_ID
PF15/HSUSB0_VBUSVLD
PL12/EPWM0_SYNC_IN/UART7_nCTS/ECAP1_IC0/UART14_RXD/SPI0_SS0/I2S1_LRCK/SC1_CLK/EBI_AD0/HSUSBH_PWREN/I2C2_SDA/TM0/EPWM0_CH2/EBI_AD11/RGMII0_PPS/RMII0_PPS
PL13/EPWM0_SYNC_OUT/UART7_nRTS/ECAP1_IC1/UART14_TXD/SPI0_CLK/I2S1_BCLK/SC1_DAT/EBI_AD1/HSUSBH_OVC/I2C2_SCL/TM0_EXT/EPWM0_CH3/EBI_AD12/RGMII1_PPS/RMII1_PPS
PL14/EPWM0_CH2/UART7_RXD/CAN1_RXD/SPI0_MOSI/I2S1_DI/SC1_RST/EBI_AD2/TM2/INT0/EBI_AD13
PL15/EPWM0_CH1/UART7_TXD/TRACE_CLK/CAN1_TXD/SPI0_MISO/I2S1_DO/SC1_RWR/EBI_AD3/TM2_EXT/INT2/EBI_AD14
VDDIO0

1 nRESET
2 HSUSB0_ID
3 PF15 HSUSB0_VBUSVLD
4 PL12 HSUSBH_PWREN
5 PL13 HSUSBH_OVC
6 PL14 SPI0_MOSI GPIO10
7 PL15 SPI0_MISO GPIO9
215 VDDIO0 VDD3V3 L13 FB VDD3V3

C72 0.1u C0603 VSS
C73 10uF C0603 VSS

MA35D16F9(7)87C

Note: The VDDIO0 is the input voltage of I/O group 0 and its voltage is 3.3V only.



U1I

PC0/I2C4_SDA/SD0_CMD/eMMC0_CMD
PC1/I2C4_SCL/SD0_CLK/eMMC0_CLK
PC2/CAN0_RXD/SD0_DAT0/eMMC0_DAT0
PC3/CAN0_TXD/SD0_DAT1/eMMC0_DAT1
PC4/I2C5_SDA/SD0_DAT2/eMMC0_DAT2
PC5/I2C5_SCL/SD0_DAT3/eMMC0_DAT3
PC6/CAN1_RXD/SD0_nCD
PC7/CAN1_TXD/SD0_WP

eMMC_0

CAN_0,1/I2C_4,5/SD_0

VDDIO6

142 PC0 I2C4_SDA GPIO0
143 PC1 I2C4_SCL GPIO1
144 PC2 AUDIO_JKEN#
145 PC3 AUDIO_JKDET
146 PC4 I2C5_SDA GPIO2
147 PC5 I2C5_SCL GPIO3
149 PC6 CAN1_RXD
150 PC7 CAN1_TXD
148 VDDIO6_VDD3V3 L14 FB VDD3V3

C76 0.1u C0603 VSS
C77 10uF C0603 VSS

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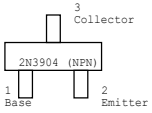
Note: The VDDIO6 is the input voltage of I/O group 6 and its voltage is 3.3V only.



U1J

I2C_1,2,4,5/SPI_1/SC_0

PN0/I2C2_SDA/CCAP1_DATA0
PN1/I2C2_SCL/CCAP1_DATA1
PN2/CAN0_RXD/CCAP1_DATA2
PN3/CAN0_TXD/CCAP1_DATA3
PN4/I2C1_SDA/CCAP1_DATA4
PN5/I2C1_SCL/CCAP1_DATA5
PN6/CAN1_RXD/CCAP1_DATA6
PN7/CAN1_TXD/CCAP1_DATA7
PN10/CAN2_RXD/CCAP1_SCLK
PN11/CAN2_TXD/CCAP1_PIXCLK
PN12/UART6_nCTS/UART12_RXD/I2C5_SDA/CCAP1_HSYNC
PN13/UART6_nRTS/UART12_TXD/I2C5_SCL/CCAP1_VSYNC
PN14/UART6_RXD/CAN3_RXD/SPI1_SS1/CCAP1_SFIELD/SPI1_I2SMCLK
PN15/EPWM2_CH4/UART6_TXD/CAN3_TXD/I2S0_MCLK/SPI1_SS1/SPI1_I2SMCLK/SC0_nCD/EADC0_ST/CLKO/TM6
PK12/EPWM2_CH0/UART1_nCTS/UART13_RXD/I2C4_SDA/I2S0_LRCK/SPI1_SS0/SC0_CLK/TM10/INT2

CCAP_1/PWM_2/UART_1,6,12,13/CAN_0,1,2,3/INT_2,3/CLKO

VDDIO7

152 PN0 CCAP0_I2C2_SDA
153 PN1 CCAP0_I2C2_SCL
154 PN2 KEY0
155 PN3 KEY1
156 PN4 I2C1_SDA
157 PN5 I2C1_SCL
159 PN6 LED0
160 PN7 LED1
161 PN10 LED2
162 PN11 SD_LP
163 PN12 KEY2
164 PN13 KEY3
165 PN14 SD_nRST
166 PN15 GPIO4
167
158 VDDIO7_VDD3V3 L15 FB VDD3V3

C78 0.1u C0603 VSS
C79 10uF C0603 VSS

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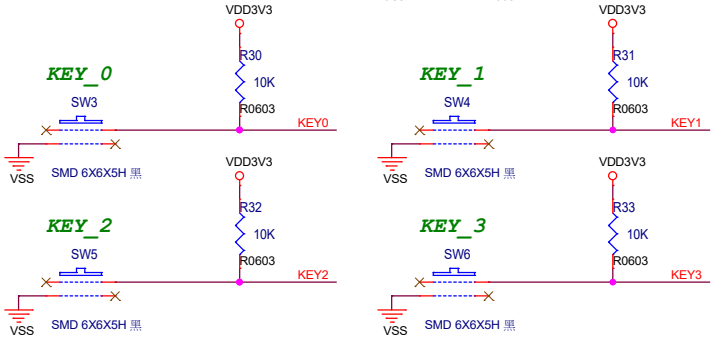
Note: The VDDIO7 is the input voltage of I/O group 7 and its voltage is 1.8V ~ 3.3V. This voltage should be matched with the voltage of external connected device. (The default is 3.3V on this board)



U1M

PB8/EPWM2_BRAKE0/UART2_nCTS/UART1_RXD/I2C2_SDA/SPI0_SS1/SPI0_I2SMCLK/ADC0_CH0(A0)/EBI_nCS0/TM4/QEI2_INDEX/KPI_ROW6
PB9/EPWM2_CH4/UART2_nRTS/UART1_TXD/I2C2_SCL/SPI0_CLK/I2S0_MCLK/CCAP1_HSYNC/ADC0_CH1(A1)/EBI_ALE/EBI_AD13/TM0_EXT/I2S1_MCLK/SC0_nCD/QEI2_A/KPI_ROW7
PB10/EPWM2_CH5/UART2_RXD/CAN0_RXD/SPI0_MOSI/EBI_MCLK/CCAP1_VSYNC/ADC0_CH2(A2)/EBI_ADR15/EBI_AD14/TM5/I2C1_SDA/INT1/QEI2_B
PB11/EPWM2_BRAKE1/UART2_TXD/CAN0_TXD/SPI0_MISO/I2S1_MCLK/CCAP1_SFIELD/ADC0_CH3(VSENSE)/EBI_nCS2/EBI_ALE/TM5_EXT/I2C1_SCL/INT2/QEI2_INDEX
PB12/EPWM2_CH0/UART4_nCTS/UART3_RXD/I2C3_SDA/CAN2_RXD/I2S1_LRCK/ADC0_CH4(YM)/EBI_ADR16/ECAP2_IC0
PB13/EPWM2_CH1/UART4_nRTS/UART3_TXD/I2C3_SCL/CAN2_TXD/I2S1_BCLK/ADC0_CH5(YP)/EBI_ADR17/ECAP2_IC1
PB14/EPWM2_CH2/UART4_RXD/CAN1_RXD/I2C4_SDA/I2S1_DI/ADC0_CH6(XM)/EBI_ADR18/ECAP2_IC2
PB15/EPWM2_CH3/UART4_TXD/CAN1_TXD/I2C4_SCL/I2S1_DO/ADC0_CH7(XP)/EBI_ADR19
AVDD_EADC0
AVDD_ADC0
AVSS

ADC/PWM_2/UART_1,2,3,4/CAN_0,1,2/I2C_2,3,4/SPI_0/I2S_1/INT_1,2

204 PB8 SPI0_SS1 GPIO7
205 PB9 SPI0_CLK GPIO11
206 PB10 ADC0_CH2 AR_A0
207 PB11 ADC0_CH3 AR_A1
211 PB12 ADC0_CH4 AR_A4
212 PB13 ADC0_CH5 AR_A5
213 PB14 ADC0_CH6 AR_A2
214 PB15 ADC0_CH7 AR_A3
203 AVDD_EADC0
208 AVDD_ADC0
209 AVSS

AVDD_3V3
L16 FB VDD3V3
C80 0.1u C0603
C81 0.1u C0603
C82 10uF C0603
R35 0 R0603 VSS
AVSS

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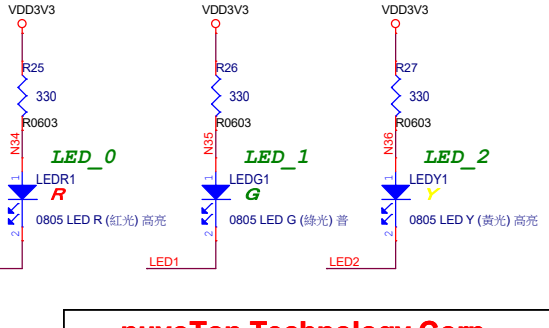
Note: The AVDD_EADC0 and AVDD_ADC0 are the input voltages of EADC0 and ADC0 (includes the I/O votlage of PB8~PB15), their input voltages are 3.3V only.



nRESET ↔ nRESET
HSUSB0_ID ↔ HSUSB0_ID
PF15 ↔ PF15
PL[13:12] ↔ PL[13:12]
PL[15:14] ↔ PL[15:14]
PC[7:0] ↔ PC[7:0]
PN[1:0] ↔ PN[1:0]
PN[5:4] ↔ PN[5:4]
PN11 ↔ PN11
PN[15:14] ↔ PN[15:14]
PB[15:8] ↔ PB[15:8]
VDD3V3 ↔ VDD3V3
VDD1V2 ↔ VDD1V2
VSS ↔ VSS

nuvoTon Technology Corp.

Title: **NuMaker-IoT-MA35D16F90 (LQFP216)**

Size: B
Document Number: **02. VDDIO0/6/7/ADC**
Rev: V2.3
Date: Wednesday, January 04, 2023
Sheet 3 of 13

U1D

NAND/UART_1,2,3,4,5,8,16

PA0/UART1_nCTS/UART16_RXD/NAND_DATA0/EBI_AD0/EBI_ADR0	24 PA0	NAND_DATA0
PA1/UART1_nRTS/UART16_TXD/NAND_DATA1/EBI_AD1/EBI_ADR1	25 PA1	NAND_DATA1
PA2/UART1_RXD/NAND_DATA2/EBI_AD2/EBI_ADR2	26 PA2	NAND_DATA2
PA3/UART1_TXD/NAND_DATA3/EBI_AD3/EBI_ADR3	27 PA3	NAND_DATA3
PA4/UART3_nCTS/UART2_RXD/NAND_DATA4/EBI_AD4/EBI_ADR4	28 PA4	NAND_DATA4
PA5/UART3_nRTS/UART2_TXD/NAND_DATA5/EBI_AD5/EBI_ADR5	29 PA5	NAND_DATA5
PA6/UART3_RXD/NAND_DATA6/EBI_AD6/EBI_ADR6	30 PA6	NAND_DATA6
PA7/UART3_TXD/NAND_DATA7/EBI_AD7/EBI_ADR7	31 PA7	NAND_DATA7
PA8/UART5_nCTS/UART4_RXD/NAND_RDY0/EBI_AD8/EBI_ADR8	32 PA8	NAND_RDY
PA9/UART5_nRTS/UART4_TXD/NAND_nRE/EBI_AD9/EBI_ADR9	33 PA9	NAND_nRE
PA10/UART5_RXD/NAND_nWE/EBI_AD10/EBI_ADR10	34 PA10	NAND_nWE
PA11/UART5_TXD/NAND_CLE/EBI_AD11/EBI_ADR11	35 PA11	NAND_CLE
PA12/UART7_nCTS/UART8_RXD/NAND_ALE/EBI_AD12/EBI_ADR12	36 PA12	NAND_ALE
PA13/UART7_nRTS/UART8_TXD/NAND_nCS0/EBI_AD13/EBI_ADR13	37 PA13	NAND_nCS
PA14/UART7_RXD/CAN3_RXD/NAND_nWP/EBI_AD14/EBI_ADR14	39 PA14	NAND_nWP

PowerOnSetting/TSI_SWD

INT_0,1,2,3/UART_5,6,9

SC_1/PWM_0,1

SPI_3/I2S_1/CLKO/PWM_0/CAN_0,1,2

PG0/EPWM0_CH0/UART7_TXD/CAN3_TXD/SPI0_SS0/EADC0_ST/EBI_AD15/I2S1_MCLK/QEI0_INDEX/TM1/CLKO/INT0/EBI_ADR15/PowerOnSetting	40 PG0	GPIO8
PA15/EPWM0_CH2/UART9_nCTS/UART6_RXD/I2C4_SDA/CAN2_RXD/EBI_ALE/QEI0_A/TM1/RGMII0_PPS/RMII0_PPS	41	
PG1/EPWM0_CH3/UART9_nRTS/UART6_TXD/I2C4_SCL/CAN2_TXD/EBI_nCS0/QEI0_B/TM1_EXT/RGMII1_PPS/RMII1_PPS/PowerOnSetting	42 PG1	
PG2/EPWM0_CH4/UART9_RXD/CAN0_RXD/SPI0_SS1/TSI_SWD_DAT/EBI_ADR16/EBI_nCS2/QEI0_A/TM3/INT1/PowerOnSetting	43 PG2	AR_D2
PG3/EPWM0_CH5/UART9_TXD/CAN0_TXD/SPI0_I2SMCLK/TSI_SWD_CLK/EBI_ADR17/EBI_nCS1/EBI_MCLK/QEI0_B/TM3_EXT/I2S1_MCLK/PowerOnSetting	44 PG3	AR_D3
PG4/EPWM1_CH0/UART5_nCTS/UART6_RXD/SPI3_SS0/QEI1_INDEX/EBI_ADR18/EBI_nCS0/I2S1_DO/SC1_CLK/TM4/TSI_UART_RXD/INT2/ECAP1_IC2/PowerOnSetting	45 PG4	GPIO21
PG5/EPWM1_CH1/UART5_nRTS/UART6_TXD/SPI3_CLK/ECAP0_IC0/EBI_ADR19/EBI_ALE/I2S1_DI/SC1_DAT/TM4_EXT/TSI_UART_TXD/PowerOnSetting	46 PG5	GPIO20
PG6/EPWM1_CH2/UART5_RXD/CAN1_RXD/SPI3_MOSI/ECAP0_IC1/EBI_nRD/I2S1_BCLK/SC1_RST/TM7/INT3/PowerOnSetting	47 PG6	GPIO18
PG7/EPWM1_CH3/UART5_TXD/CAN1_TXD/SPI3_MISO/ECAP0_IC2/EBI_nWR/I2S1_LRCK/SC1_PWR/TM7_EXT/PowerOnSetting	48 PG7	GPIO19

JTAG/I2S_0

PG11/JTAG_TDO/I2S0_MCLK/NAND_RDY1/EBI_nWRH/EBI_nCS1/EBI_AD0	50 PG11	
PG12/JTAG_TCK/SW_CLK/I2S0_LRCK/EBI_nWRL/EBI_AD1	51 PG12	
PG13/JTAG_TMS/SW_DIO/I2S0_BCLK/EBI_MCLK/EBI_AD2	52 PG13	
PG14/JTAG_TDI/I2S0_DI/NAND_nCS1/EBI_ALE/EBI_AD3	53 PG14	
PG15/JTAG_nTRST/I2S0_DO/EBI_nCS0/EBI_AD4	54 PG15	

QSPI_1/PWM_0/USRT_1,15,16

I2C_0/I2S_1/SC_1

PD6/EPWM0_SYNC_IN/UART1_RXD/QSPI1_MOSI1/I2C0_SDA/I2S0_MCLK/EPWM0_CH0/EBI_AD5/SPI3_SS1/TRACE_CLK	58 PD6	AR_D4
PD7/EPWM0_SYNC_OUT/UART1_TXD/QSPI1_MISO1/I2C0_SCL/I2S1_MCLK/EPWM0_CH1/EBI_AD6/SC1_nCD/EADC0_ST	59 PD7	AR_D5
PD8/EPWM0_BRAKE0/UART16_nCTS/UART15_RXD/QSPI1_SS0/I2S1_LRCK/EPWM0_CH2/EBI_AD7/SC1_CLK/TM0	60 PD8	AR_D6
PD9/EPWM0_BRAKE1/UART16_nRTS/UART15_TXD/QSPI1_CLK/I2S1_BCLK/EPWM0_CH3/EBI_AD8/SC1_DAT/TM0_EXT	61 PD9	AR_D7
PD10/EPWM1_BRAKE0/UART16_RXD/QSPI1_MOSI0/I2S1_DI/EPWM0_CH4/EBI_AD9/SC1_RST/TM2	62 PD10	AR_D8
PD11/EPWM1_BRAKE1/UART16_TXD/QSPI1_MISO0/I2S1_DO/EPWM0_CH5/EBI_AD10/SC1_PWR/TM2_EXT	63 PD11	AR_D9

UART_0

PE14/UART0_TXD	56 PE14	UART0_TXD
PE15/UART0_RXD	57 PE15	UART0_RXD

VDDIO1 VDDIO1 — 38 VDDIO1 64 VDDIO1

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Note: The VDDIO1 is the input voltage of I/O group 1 and its voltage is 3.3V only.

Power-on Setting

PG0	
L	Secure Boot
H	Secure Boot Enable

PG1	
L	Secure Boot Disable
H	Boot Source QSPI0, SD/eMMC I/O Voltage
L	3.3V
H	1.8V

PG3	PG2	Boot Source
L	L	QSPI0 Flash
L	H	SD/eMMC
H	L	NAND Flash
H	H	USB

PG7	PG6	Booting from QSPI0
L	L	SPI-NAND, 1-bit
H	L	SPI-NOR, 1-bit

PG6	Booting from SD/eMMC
L	SD0/eMMC0 booting
H	SD1/eMMC1 booting

PG7	Booting from SD/eMMC
L	eMMC 4-bit booting
H	eMMC 8-bit booting

PG5	PG4	Booting from NAND
L	L	Ignore
L	H	NAND flash page 2KB
H	L	NAND flash page 4KB
H	H	NAND flash page 8KB

PG7	PG6	Booting from NAND
L	L	Ignore
L	H	BCH T12
H	L	BCH T24
H	H	NO ECC

PG4	Booting from USB
L	USBD booting
H	USBH booting

PG5	Booting from USBH
L	USBH port 0 booting
H	USBH port 1 booting

PG6	Booting from USBH
L	Over-current low-active detect
H	Over-current high-active detect

VDD3V3 — R188 0 R0603 — N122

R202 10K R0603, R40 10K R0603, R201 10K R0603, R39 10K R0603, R233 10K R0603, R38 10K R0603, R37 10K R0603, R36 10K R0603

SW7 SW DIP 8 (SMD)

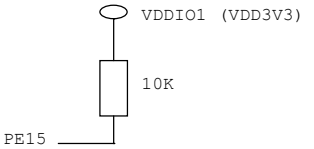
PG0	N37
PG1	N38
PG2	N39
PG3	N40
PG4	N41
PG5	N42
PG6	N43
PG7	N44

Internal pull-down

VDDIO1 VDD3V3 L17 FB VDD3V3

C85 0.1u C0603, C86 0.1u C0603, C87 10uF C0603 — VSS VSS VSS

Note: The GPIO PE15 (UART0_RXD) pin must be pulled to high level through an external resistor or an internal pull-up resistor in the external device (such as a transceiver or MCU).



J3 HEADER 2x1 (2.54mm, male) — nRESET — SWJ_nRESET

VDD3V3 — RP1 10K-8P4R — VSS

SWJ Connector

CON12 — JTAG_nTRST, JTAG_TDI, JTAG_TMS SW_DIO, JTAG_TCK SW_CLK, JTAG_TDO, SWJ_nRESET, N45 — C221 10uF C0603

SWJ (JTAG/SWD)简易牛角

U39 TSOP-6 NSP4201MR6T1G (CH1 CH4 Vp Vn CH2 CH3) — VSS

U40 TSOP-6 NSP4201MR6T1G (CH1 CH4 Vp Vn CH2 CH3) — VSS

L38 FB — VSS

PA[14:0] PA[14:0]
PG0 PG0
PG[7:2] PG[7:2]
PG[15:11] PG[15:11]
PD[11:6] PD[11:6]
PE[15:14] PE[15:14]
nRESET nRESET
VDD3V3 VDD3V3
VSS VSS

PG11~15 Connect to SWJ(I2S0)

PG11	R41	0 (NC) R0603	JTAG_TDO	
PG12	R42	0 (NC) R0603	JTAG_TCK	SW_CLK
PG13	R43	0 (NC) R0603	JTAG_TMS	SW_DIO
PG14	R44	0 (NC) R0603	JTAG_TDI	
PG15	R45	0 (NC) R0603	JTAG_nTRST	

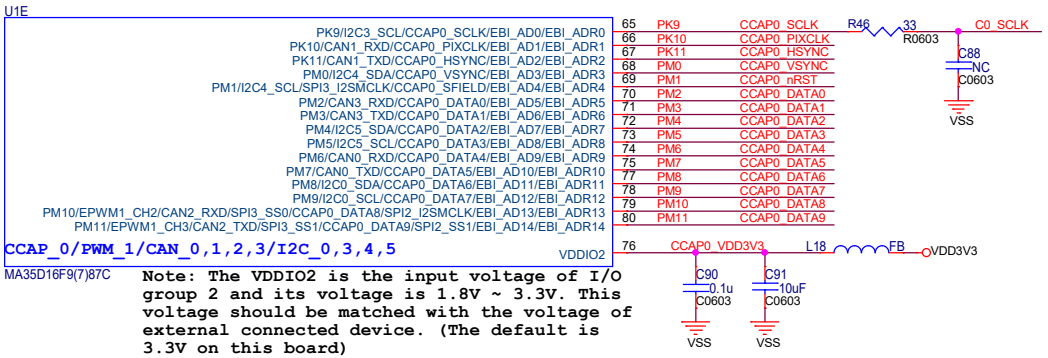
nuvoTon Technology Corp.

Title: NuMaker-IoT-MA35D16F90 (LQFP216)

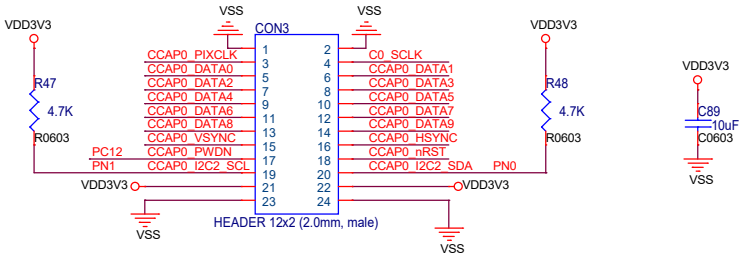
Size: B | Document Number: 03. Power On Setting (VDDIO1) | Rev: V2.3

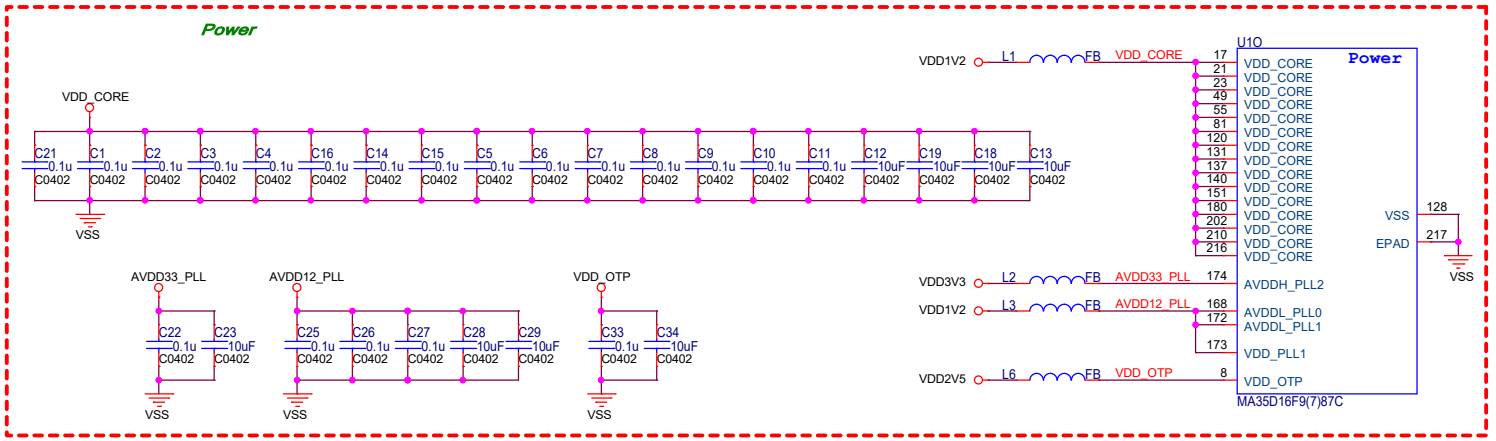
Date: Tuesday, May 21, 2024 | Sheet 4 of 13

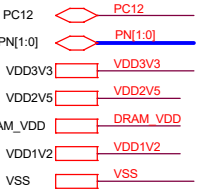
CCAP0 Connector

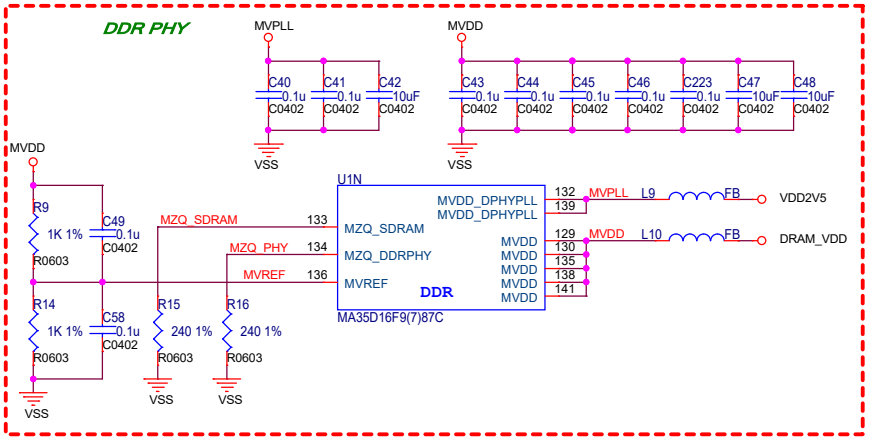


Note: The VDDIO2 is the input voltage of I/O group 2 and its voltage is 1.8V ~ 3.3V. This voltage should be matched with the voltage of external connected device. (The default is 3.3V on this board)

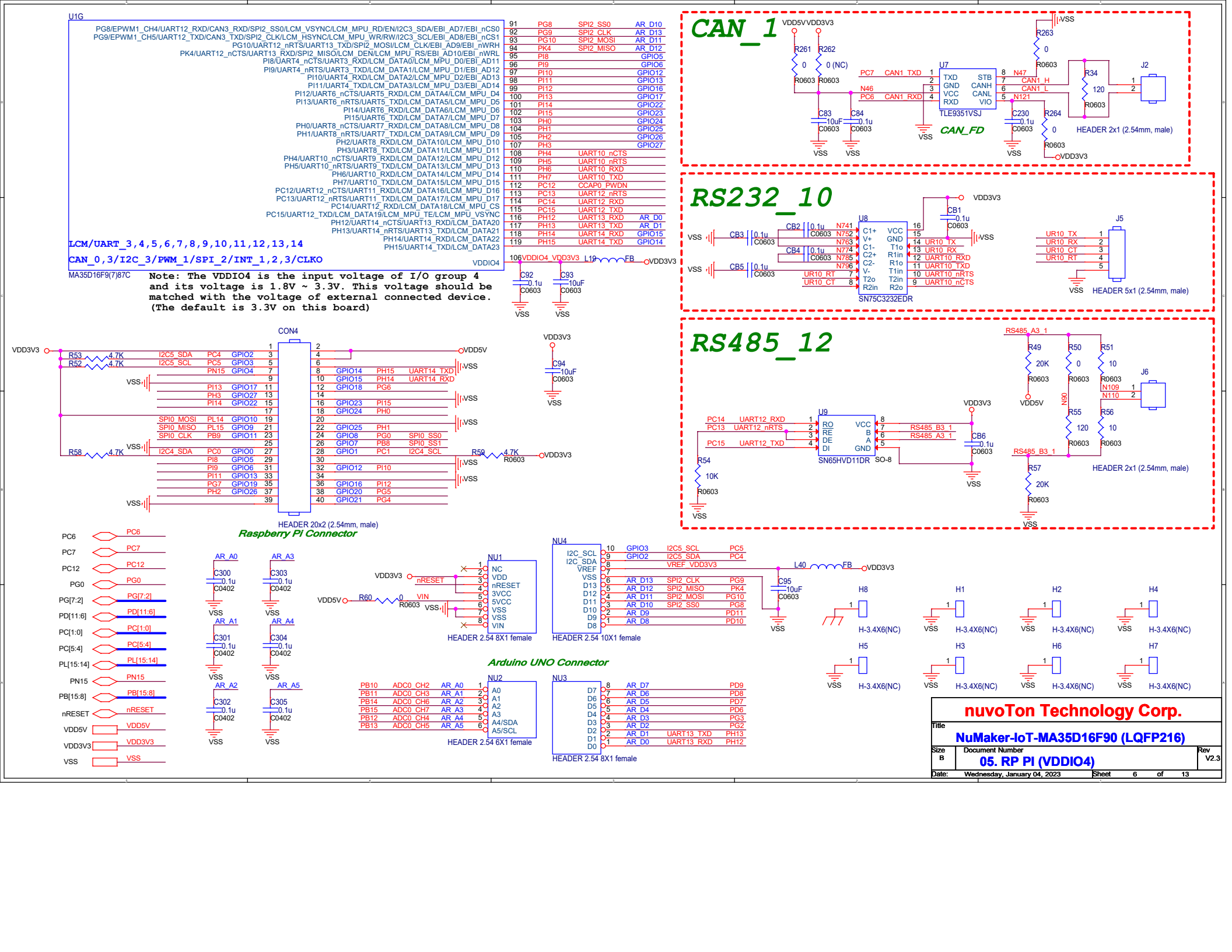




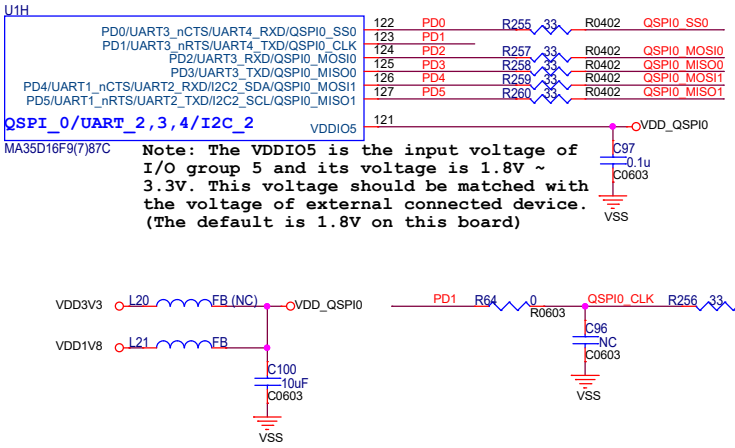


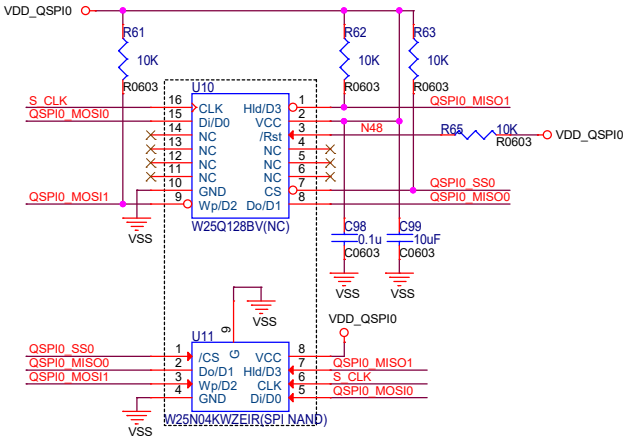


nuvoTon Technology Corp.		
Title: NuMaker-IoT-MA35D16F90 (LQFP216)		
Size: B	Document Number: 04. CCAP0 (VDDIO2)	Rev: V2.3
Date: Wednesday, January 04, 2023	Sheet 5 of 13	

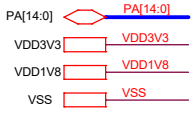

U1G
PG8/EPWM1_CH4/UART12_RXD/CAN3_RXD/SPI2_SS0/LCM_VSYNC/LCM_MPU_RD/EN/I2C3_SDA/EBI_AD7/EBI_nCS0
PG9/EPWM1_CH5/UART12_TXD/CAN3_TXD/SPI2_CLK/LCM_HSYNC/LCM_MPU_WR/RW//I2C3_SCL/EBI_AD8/EBI_nCS1
PG10/UART12_nRTS/UART13_TXD/SPI2_MOSI/LCM_CLK/EBI_AD9/EBI_nWRH
PK4/UART12_nCTS/UART13_RXD/SPI2_MISO/LCM_DEN/LCM_MPU_RS/EBI_AD10/EBI_nWRL
PI8/UART4_nCTS/UART3_RXD/LCM_DATA0/LCM_MPU_D0/EBI_AD11
PI9/UART4_nRTS/UART3_TXD/LCM_DATA1/LCM_MPU_D1/EBI_AD12
PI10/UART4_RXD/LCM_DATA2/LCM_MPU_D2/EBI_AD13
PI11/UART4_TXD/LCM_DATA3/LCM_MPU_D3/EBI_AD14
PI12/UART6_nCTS/UART5_RXD/LCM_DATA4/LCM_MPU_D4
PI13/UART6_nRTS/UART5_TXD/LCM_DATA5/LCM_MPU_D5
PI14/UART6_RXD/LCM_DATA6/LCM_MPU_D6
PI15/UART6_TXD/LCM_DATA7/LCM_MPU_D7
PH0/UART8_nCTS/UART7_RXD/LCM_DATA8/LCM_MPU_D8
PH1/UART8_nRTS/UART7_TXD/LCM_DATA9/LCM_MPU_D9
PH2/UART8_RXD/LCM_DATA10/LCM_MPU_D10
PH3/UART8_TXD/LCM_DATA11/LCM_MPU_D11
PH4/UART10_nCTS/UART9_RXD/LCM_DATA12/LCM_MPU_D12
PH5/UART10_nRTS/UART9_TXD/LCM_DATA13/LCM_MPU_D13
PH6/UART10_RXD/LCM_DATA14/LCM_MPU_D14
PH7/UART10_TXD/LCM_DATA15/LCM_MPU_D15
PC12/UART12_nCTS/UART11_RXD/LCM_DATA16/LCM_MPU_D16
PC13/UART12_nRTS/UART11_TXD/LCM_DATA17/LCM_MPU_D17
PC14/UART12_RXD/LCM_DATA18/LCM_MPU_CS
PC15/UART12_TXD/LCM_DATA19/LCM_MPU_TE/LCM_MPU_VSYNC
PH12/UART14_nCTS/UART13_RXD/LCM_DATA20
PH13/UART14_nRTS/UART13_TXD/LCM_DATA21
PH14/UART14_RXD/LCM_DATA22
PH15/UART14_TXD/LCM_DATA23
LCM/UART_3,4,5,6,7,8,9,10,11,12,13,14
CAN_0,3/I2C_3/PWM_1/SPI_2/INT_1,2,3/CLKO
VDDIO4
MA35D16F9(7)87C
Note: The VDDIO4 is the input voltage of I/O group 4 and its voltage is 1.8V ~ 3.3V. This voltage should be matched with the voltage of external connected device. (The default is 3.3V on this board)
CAN_1
CAN_FD
TLE9351VSJ
HEADER 2x1 (2.54mm, male)
RS232_10
SN75C3232EDR
HEADER 5x1 (2.54mm, male)
RS485_12
SN65HVD11DR
HEADER 2x1 (2.54mm, male)
CON4
HEADER 20x2 (2.54mm, male)
Raspberry PI Connector
Arduino UNO Connector
HEADER 2.54 8X1 female
HEADER 2.54 10X1 female
HEADER 2.54 6X1 female
HEADER 2.54 8X1 female
H-3.4X6(NC)
nuvoTon Technology Corp.
NuMaker-IoT-MA35D16F90 (LQFP216)
05. RP PI (VDDIO4)
Wednesday, January 04, 2023

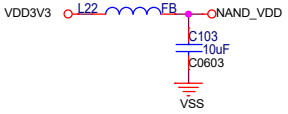
QSPI0_Flash

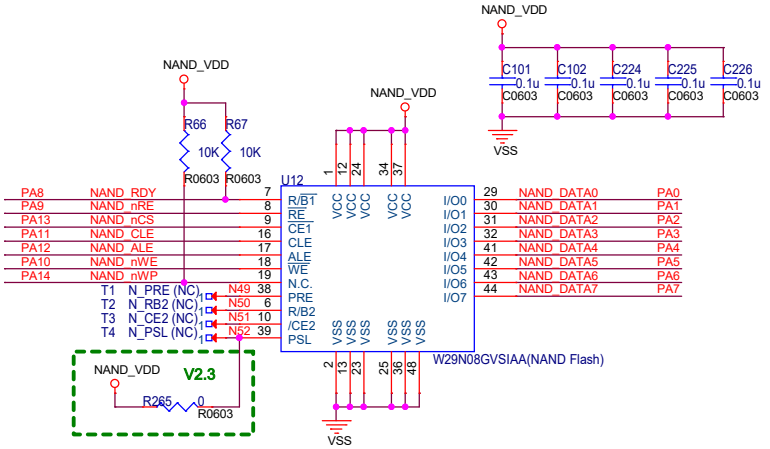




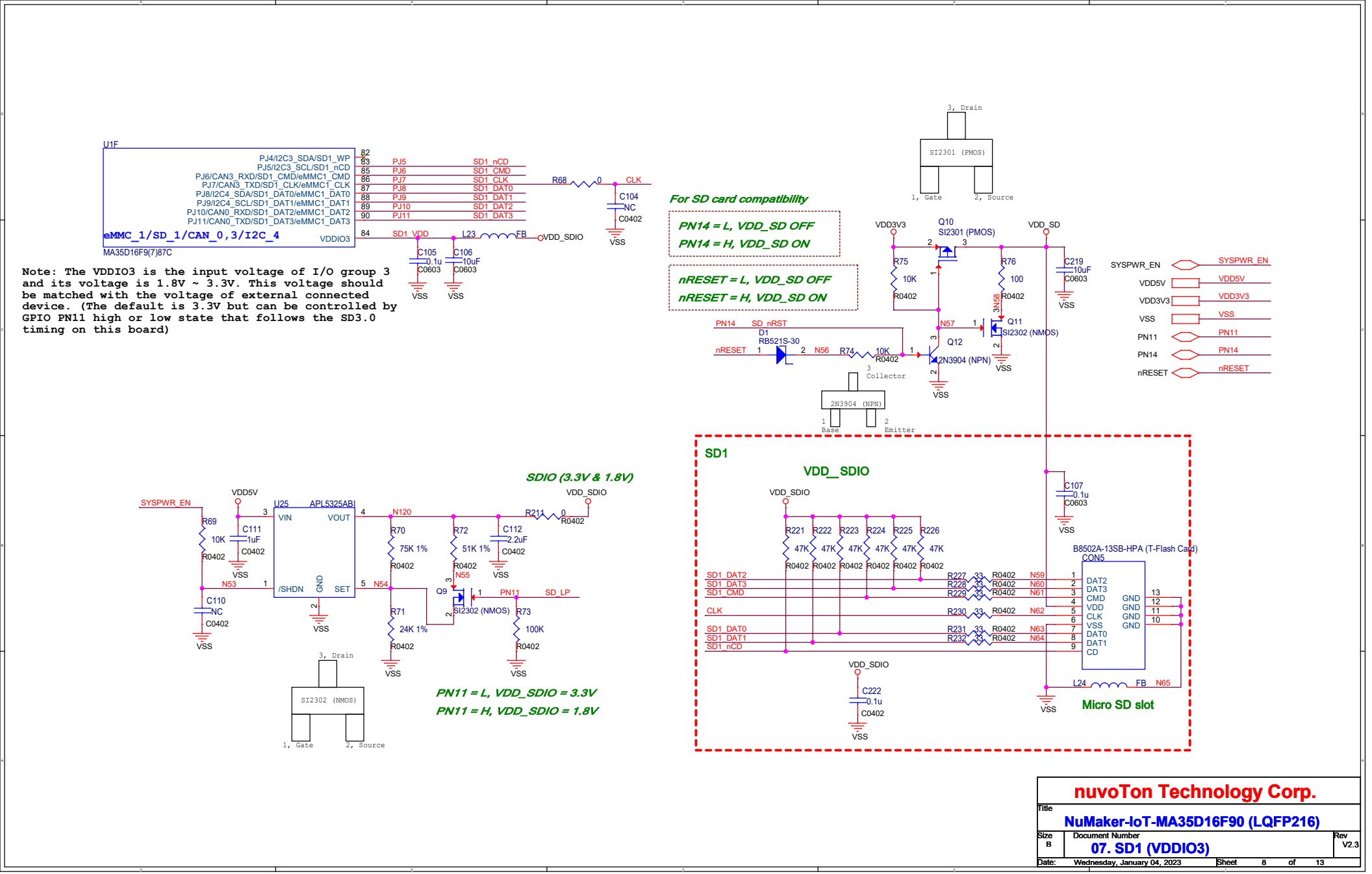
NAND_Flash







nuvoTon Technology Corp.		
Title: NuMaker-IoT-MA35D16F90 (LQFP216)		
Size: B	Document Number: 06. NAND/QSPI0 (VDDIO5)	Rev: V2.3
Date: Wednesday, January 04, 2023	Sheet 7 of 13	


U1F
eMMC_1/SD_1/CAN_0,3/I2C_4
MA35D16F9(7)87C
PJ4/I2C3_SDA/SD1_WP
PJ5/I2C3_SCL/SD1_nCD
PJ6/CAN3_RXD/SD1_CMD/eMMC1_CMD
PJ7/CAN3_TXD/SD1_CLK/eMMC1_CLK
PJ8/I2C4_SDA/SD1_DAT0/eMMC1_DAT0
PJ9/I2C4_SCL/SD1_DAT1/eMMC1_DAT1
PJ10/CAN0_RXD/SD1_DAT2/eMMC1_DAT2
PJ11/CAN0_TXD/SD1_DAT3/eMMC1_DAT3
VDDIO3
SD1_VDD
L23
FB
VDD_SDIO
R68
0
CLK
C104
NC
C0402
C105
0.1u
C0603
C106
10uF
C0603
VSS
Note: The VDDIO3 is the input voltage of I/O group 3 and its voltage is 1.8V ~ 3.3V. This voltage should be matched with the voltage of external connected device. (The default is 3.3V but can be controlled by GPIO PN11 high or low state that follows the SD3.0 timing on this board)
SDIO (3.3V & 1.8V)
SYSPWR_EN
VDD5V
U25
APL5325ABI
VIN
VOUT
/SHDN
GND
SET
R69
10K
R0402
C111
1uF
C0402
C110
NC
C0402
N120
R70
75K 1%
R0402
R72
51K 1%
R0402
C112
2.2uF
C0402
R211
0
R0402
VDD_SDIO
N53
N54
N55
Q9
SI2302 (NMOS)
PN11
SD_LP
R71
24K 1%
R0402
R73
100K
R0402
3, Drain
SI2302 (NMOS)
1, Gate
2, Source
PN11 = L, VDD_SDIO = 3.3V
PN11 = H, VDD_SDIO = 1.8V
3, Drain
SI2301 (PMOS)
1, Gate
2, Source
For SD card compatibility
PN14 = L, VDD_SD OFF
PN14 = H, VDD_SD ON
nRESET = L, VDD_SD OFF
nRESET = H, VDD_SD ON
VDD3V3
Q10
SI2301 (PMOS)
VDD_SD
R75
10K
R0402
R76
100
R0402
C219
10uF
C0603
3N68
PN14
SD_nRST
D1
RB521S-30
nRESET
N56
R74
10K
R0402
N57
Q11
SI2302 (NMOS)
Q12
2N3904 (NPN)
3
Collector
2N3904 (NPN)
1
Base
2
Emitter
SYSPWR_EN
VDD5V
VDD3V3
VSS
PN11
PN14
nRESET
SD1
VDD_SDIO
R221
R222
R223
R224
R225
R226
47K
R0402
SD1_DAT2
SD1_DAT3
SD1_CMD
CLK
SD1_DAT0
SD1_DAT1
SD1_nCD
R227
R228
R229
R230
R231
R232
33
N59
N60
N61
N62
N63
N64
B8502A-13SB-HPA (T-Flash Card)
CON5
DAT2
DAT3
CMD
VDD
CLK
VSS
DAT0
DAT1
CD
GND
C107
0.1u
C0603
C222
0.1u
C0402
L24
FB
N65
Micro SD slot
nuvoTon Technology Corp.
Title
NuMaker-IoT-MA35D16F90 (LQFP216)
Size
B
Document Number
07. SD1 (VDDIO3)
Rev
V2.3
Date:
Wednesday, January 04, 2023
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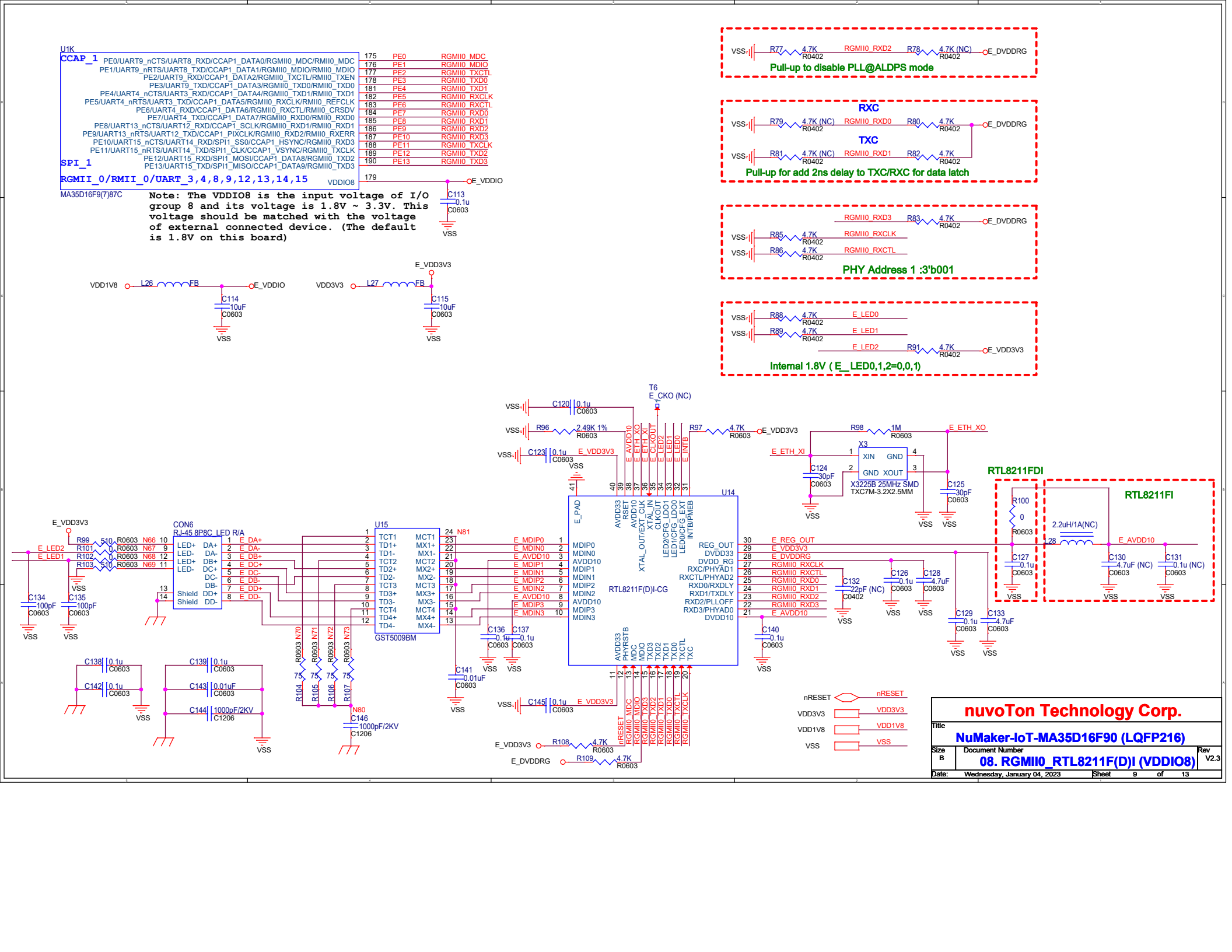
8
of
13


U1K
CCAP_1
PE0/UART9_nCTS/UART8_RXD/CCAP1_DATA0/RGMII0_MDC/RMII0_MDC
PE1/UART9_nRTS/UART8_TXD/CCAP1_DATA1/RGMII0_MDIO/RMII0_MDIO
PE2/UART9_RXD/CCAP1_DATA2/RGMII0_TXCTL/RMII0_TXEN
PE3/UART9_TXD/CCAP1_DATA3/RGMII0_TXD0/RMII0_TXD0
PE4/UART4_nCTS/UART3_RXD/CCAP1_DATA4/RGMII0_TXD1/RMII0_TXD1
PE5/UART4_nRTS/UART3_TXD/CCAP1_DATA5/RGMII0_RXCLK/RMII0_REFCLK
PE6/UART4_RXD/CCAP1_DATA6/RGMII0_RXCTL/RMII0_CRSDV
PE7/UART4_TXD/CCAP1_DATA7/RGMII0_RXD0/RMII0_RXD0
PE8/UART13_nCTS/UART12_RXD/CCAP1_SCLK/RGMII0_RXD1/RMII0_RXD1
PE9/UART13_nRTS/UART12_TXD/CCAP1_PIXCLK/RGMII0_RXD2/RMII0_RXERR
PE10/UART15_nCTS/UART14_RXD/SPI1_SS0/CCAP1_HSYNC/RGMII0_RXD3
PE11/UART15_nRTS/UART14_TXD/SPI1_CLK/CCAP1_VSYNC/RGMII0_TXCLK
PE12/UART15_RXD/SPI1_MOSI/CCAP1_DATA8/RGMII0_TXD2
PE13/UART15_TXD/SPI1_MISO/CCAP1_DATA9/RGMII0_TXD3
SPI_1
RGMII_0/RMII_0/UART_3,4,8,9,12,13,14,15
MA35D16F9(7)87C
175 PE0 RGMII0_MDC
176 PE1 RGMII0_MDIO
177 PE2 RGMII0_TXCTL
178 PE3 RGMII0_TXD0
181 PE4 RGMII0_TXD1
182 PE5 RGMII0_RXCLK
183 PE6 RGMII0_RXCTL
184 PE7 RGMII0_RXD0
185 PE8 RGMII0_RXD1
186 PE9 RGMII0_RXD2
187 PE10 RGMII0_RXD3
188 PE11 RGMII0_TXCLK
189 PE12 RGMII0_TXD2
190 PE13 RGMII0_TXD3
179 VDDIO8
E_VDDIO
C113 0.1u C0603
VSS
Note: The VDDIO8 is the input voltage of I/O group 8 and its voltage is 1.8V ~ 3.3V. This voltage should be matched with the voltage of external connected device. (The default is 1.8V on this board)
VDD1V8 L26 FB E_VDDIO
C114 10uF C0603
VDD3V3 L27 FB E_VDD3V3
C115 10uF C0603
VSS
VSS R77 4.7K R0402 RGMII0_RXD2 R78 4.7K (NC) R0402 E_DVDDRG
Pull-up to disable PLL@ALDPS mode
RXC
VSS R79 4.7K (NC) R0402 RGMII0_RXD0 R80 4.7K R0402 E_DVDDRG
TXC
VSS R81 4.7K (NC) R0402 RGMII0_RXD1 R82 4.7K R0402
Pull-up for add 2ns delay to TXC/RXC for data latch
RGMII0_RXD3 R83 4.7K R0402 E_DVDDRG
VSS R85 4.7K R0402 RGMII0_RXCLK
VSS R86 4.7K R0402 RGMII0_RXCTL
PHY Address 1 :3'b001
VSS R88 4.7K R0402 E_LED0
VSS R89 4.7K R0402 E_LED1
E_LED2 R91 4.7K R0402 E_VDD3V3
Internal 1.8V (E__LED0,1,2=0,0,1)
T6
E_CKO (NC)
VSS C120 0.1u C0603
VSS R96 2.49K 1% R0603
VSS C123 0.1u C0603 E_VDD3V3
R97 4.7K R0603 E_VDD3V3
R98 1M R0603 E_ETH_XO
E_ETH_XI
X3
XIN GND
GND XOUT
X3225B 25MHz SMD
TXC7M-3.2X2.5MM
C124 30pF C0603
C125 30pF C0603
RTL8211FDI
RTL8211FI
R100 0 R0603
2.2uH/1A(NC)
C127 0.1u C0603
C130 4.7uF (NC) C0603
C131 0.1u (NC) C0603
E_VDD3V3
R99 510 R0603 N66
R101 0 R0603 N67
R102 0 R0603 N68
R103 510 R0603 N69
E_LED2
E_LED1
CON6
RJ-45 8P8C_LED R/A
LED+ DA+ E_DA+
LED- DA- E_DA-
LED+ DB+ E_DB+
LED- DC+ E_DC+
DC- E_DC-
DB- E_DB-
Shield DD+ E_DD+
Shield DD- E_DD-
C134 100pF C0603
C135 100pF C0603
U15
TCT1 TD1+ TD1- TCT2 TD2+ TD2- TCT3 TD3+ TD3- TCT4 TD4+ TD4-
MCT1 MX1+ MX1- MCT2 MX2+ MX2- MCT3 MX3+ MX3- MCT4 MX4+ MX4-
GST5009BM
N81
C136 0.1u C0603
C137 0.1u C0603
C141 0.01uF C0603
R0603 N70 R0603 N71 R0603 N72 R0603 N73
R104 75 R105 75 R106 75 R107 75
N80
C146 1000pF/2KV C1206
C138 0.1u C0603
C142 0.1u C0603
C139 0.1u C0603
C143 0.01uF C0603
C144 1000pF/2KV C1206
U14
E_PAD
RTL8211F(D)I-CG
E_MDIP0 E_MDIN0 E_AVDD10 E_MDIP1 E_MDIN1 E_MDIP2 E_MDIN2 E_AVDD10 E_MDIP3 E_MDIN3
MDIP0 MDIN0 AVDD10 MDIP1 MDIN1 MDIP2 MDIN2 AVDD10 MDIP3 MDIN3
AVDD33 RSET AVDD10 XTAL_OUT/EXT_CLK XTAL_IN CLKOUT LED2/CFG_LDO1 LED1/CFG_LDO0 LED0/CFG_EXT INTB/PMEB
REG_OUT DVDD33 DVDD_RG RXC/PHYAD1 RXCTL/PHYAD2 RXD0/RXDLY RXD1/TXDLY RXD2/PLLOFF RXD3/PHYAD0 DVDD10
E_REG_OUT E_VDD3V3 E_DVDDRG RGMII0_RXCLK RGMII0_RXCTL RGMII0_RXD0 RGMII0_RXD1 RGMII0_RXD2 RGMII0_RXD3 E_AVDD10
C132 22pF (NC) C0402
C126 0.1u C0603
C128 4.7uF C0603
C129 0.1u C0603
C133 4.7uF C0603
C140 0.1u C0603
AVDD33 PHYRSTB MDC MDIO TXD3 TXD2 TXD1 TXD0 TXCTL TXC
C145 0.1u C0603 E_VDD3V3
R108 4.7K R0603 E_VDD3V3
R109 4.7K R0603 E_DVDDRG
nRESET
VDD3V3
VDD1V8
VSS
nRESET MDC MDIO TXD3 TXD2 TXD1 TXD0 TXCTL TXCLK
nRESET
VDD3V3
VDD1V8
VSS
nuvoTon Technology Corp.
Title
NuMaker-IoT-MA35D16F90 (LQFP216)
Size B
Document Number
08. RGMII0_RTL8211F(D)I (VDDIO8)
Rev V2.3
Date: Wednesday, January 04, 2023
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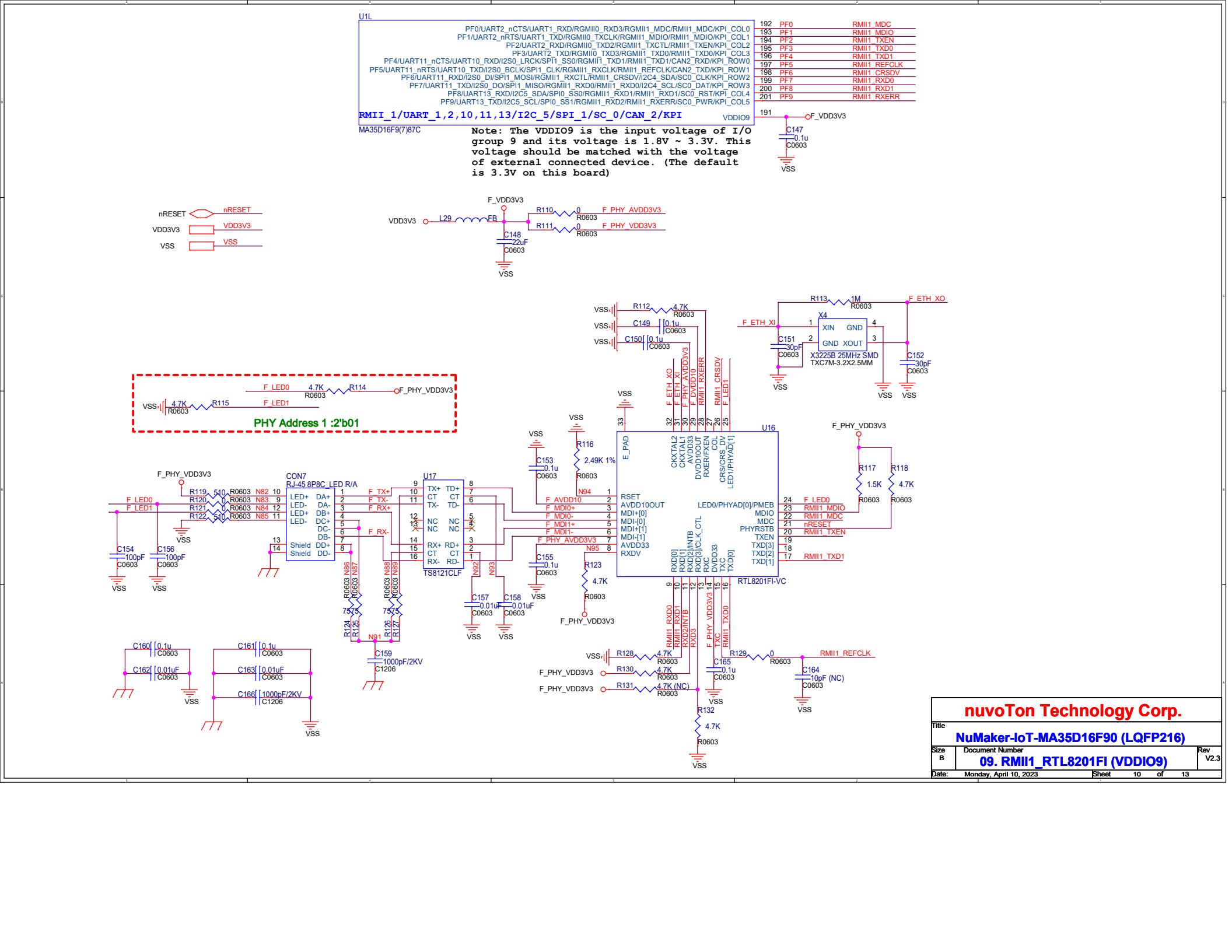
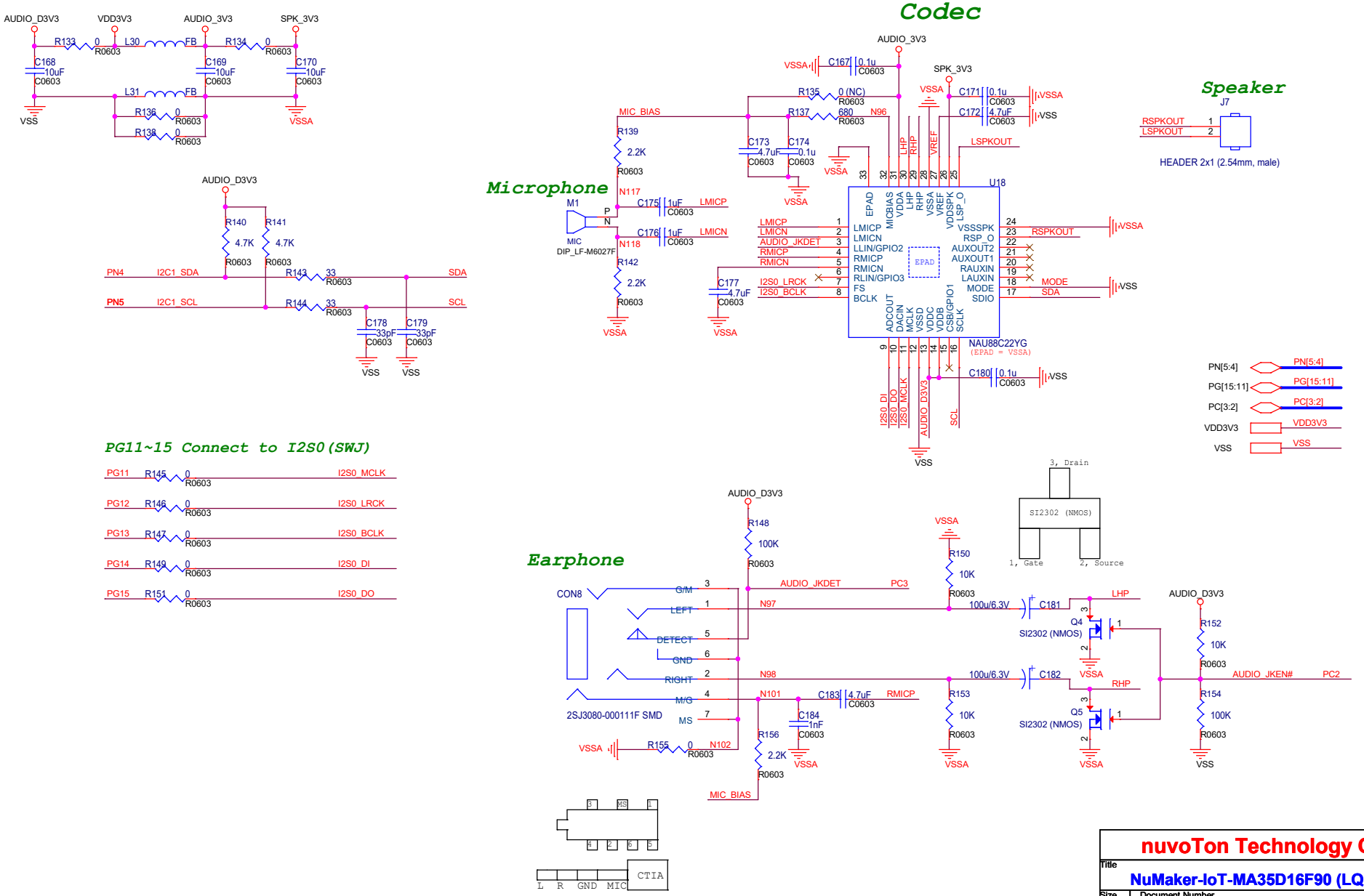
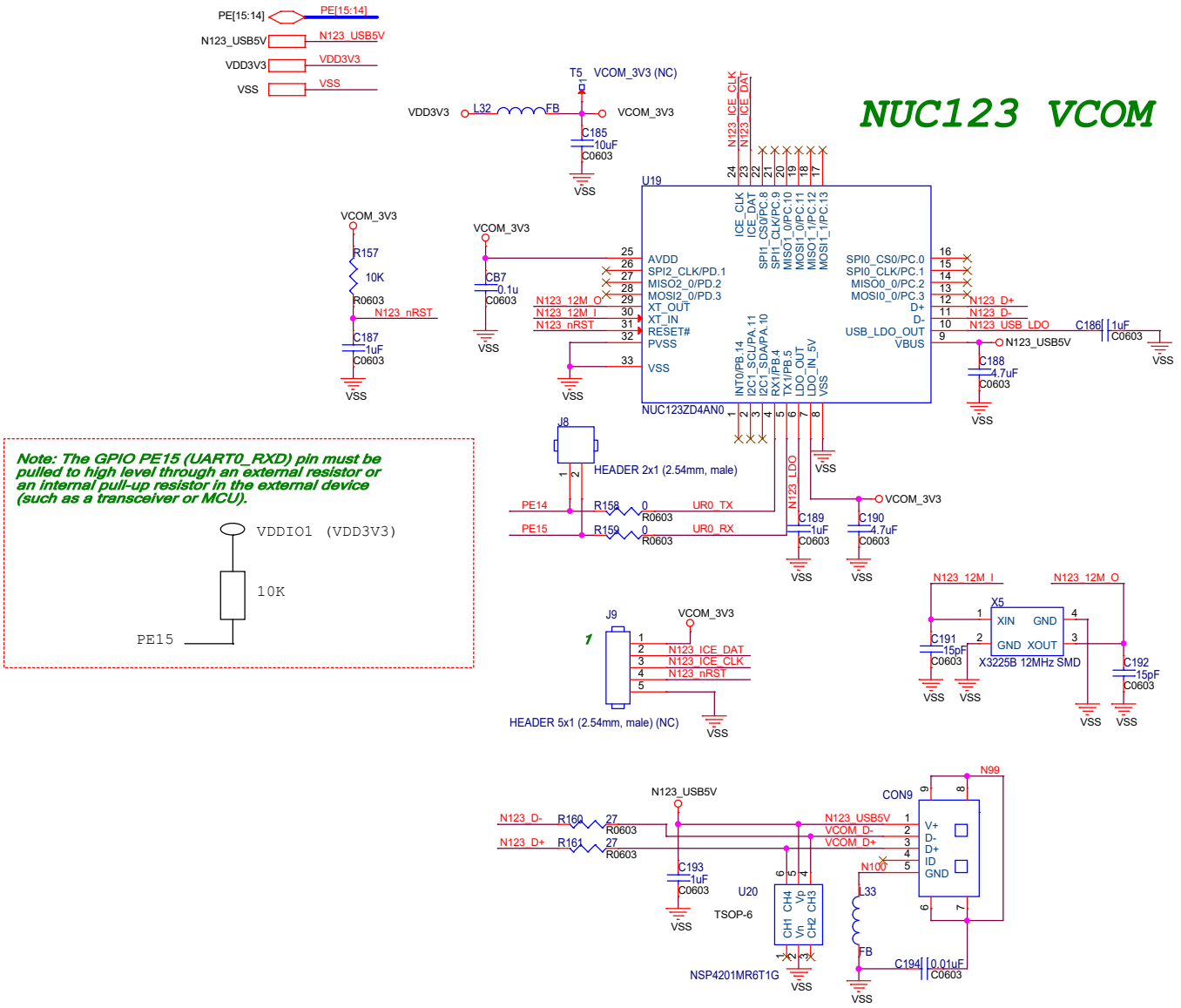
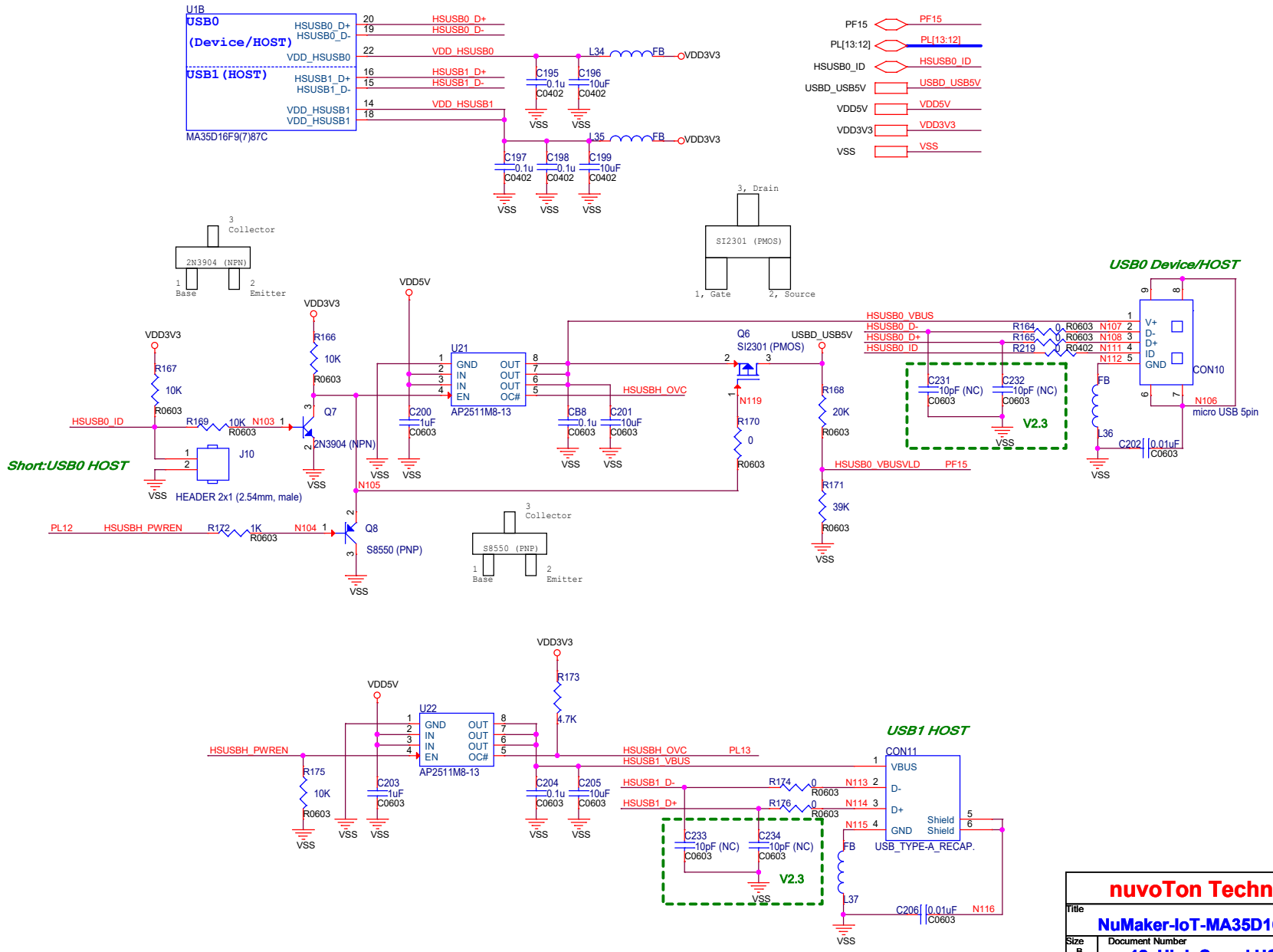

U1L
PF0/UART2_nCTS/UART1_RXD/RGMII0_RXD3/RGMII1_MDC/RMII1_MDC/KPI_COL0
PF1/UART2_nRTS/UART1_TXD/RGMII0_TXCLK/RGMII1_MDIO/RMII1_MDIO/KPI_COL1
PF2/UART2_RXD/RGMII0_TXD2/RGMII1_TXCTL/RMII1_TXEN/KPI_COL2
PF3/UART2_TXD/RGMII0_TXD3/RGMII1_TXD0/RMII1_TXD0/KPI_COL3
PF4/UART11_nCTS/UART10_RXD/I2S0_LRCK/SPI1_SS0/RGMII1_TXD1/RMII1_TXD1/CAN2_RXD/KPI_ROW0
PF5/UART11_nRTS/UART10_TXD/I2S0_BCLK/SPI1_CLK/RGMII1_RXCLK/RMII1_REFCLK/CAN2_TXD/KPI_ROW1
PF6/UART11_RXD/I2S0_DI/SPI1_MOSI/RGMII1_RXCTL/RMII1_CRSDV/I2C4_SDA/SC0_CLK/KPI_ROW2
PF7/UART11_TXD/I2S0_DO/SPI1_MISO/RGMII1_RXD0/RMII1_RXD0/I2C4_SCL/SC0_DAT/KPI_ROW3
PF8/UART13_RXD/I2C5_SDA/SPI0_SS0/RGMII1_RXD1/RMII1_RXD1/SC0_RST/KPI_COL4
PF9/UART13_TXD/I2C5_SCL/SPI0_SS1/RGMII1_RXD2/RMII1_RXERR/SC0_PWR/KPI_COL5
RMII_1/UART_1,2,10,11,13/I2C_5/SPI_1/SC_0/CAN_2/KPI
MA35D16F9(7)87C
192 PF0 RMII1_MDC
193 PF1 RMII1_MDIO
194 PF2 RMII1_TXEN
195 PF3 RMII1_TXD0
196 PF4 RMII1_TXD1
197 PF5 RMII1_REFCLK
198 PF6 RMII1_CRSDV
199 PF7 RMII1_RXD0
200 PF8 RMII1_RXD1
201 PF9 RMII1_RXERR
VDDIO9
191
F_VDD3V3
C147 0.1u C0603
VSS
Note: The VDDIO9 is the input voltage of I/O group 9 and its voltage is 1.8V ~ 3.3V. This voltage should be matched with the voltage of external connected device. (The default is 3.3V on this board)
nRESET
VDD3V3
VSS
L29 FB
R110 0 R0603 F_PHY_AVDD3V3
R111 0 R0603 F_PHY_VDD3V3
C148 22uF C0603
R112 4.7K R0603
C149 0.1u C0603
C150 0.1u C0603
R113 1M R0603
F_ETH_XO
F_ETH_XI
X4
XIN GND
GND XOUT
X3225B 25MHz SMD
TXC7M-3.2X2.5MM
C151 30pF C0603
C152 30pF C0603
F_LED0
F_LED1
R114 4.7K R0603
R115 4.7K R0603
PHY Address 1 :2'b01
U16
E_PAD
RSET
AVDD10OUT
MDI+[0]
MDI-[0]
MDI+[1]
MDI-[1]
AVDD33
RXDV
CKXTAL2
CKXTAL1
AVDD33
DVDD10OUT
RXER/FXEN
COL
CRS/CRS_DV
LED1/PHYAD[1]
LED0/PHYAD[0]/PMEB
MDIO
MDC
PHYRSTB
TXEN
TXD[3]
TXD[2]
TXD[1]
RXD[0]
RXD[1]
RXD2/INTB
RXD3/CLK_CTL
RXC
DVDD33
TXC
TXD[0]
RTL8201FI-VC
R116 2.49K 1%
R117 1.5K R0603
R118 4.7K R0603
F_PHY_VDD3V3
F_AVDD10
F_MDI0+
F_MDI0-
F_MDI1+
F_MDI1-
F_PHY_AVDD3V3
N94
N95
R123 4.7K R0603
C153 0.1u C0603
C155 0.1u C0603
CON7
RJ-45 8P8C_LED R/A
LED+ DA+
LED- DA-
LED+ DB+
LED- DC+
DC-
DB-
Shield DD+
Shield DD-
F_TX+
F_TX-
F_RX+
F_RX-
R119 510 R0603 N82
R120 0 R0603 N83
R121 0 R0603 N84
R122 510 R0603 N85
C154 100pF C0603
C156 100pF C0603
U17
TX+ TD+
CT CT
TX- TD-
NC NC
NC NC
RX+ RD+
CT CT
RX- RD-
TS8121CLF
R124 75/5
R125 75/5
R126 75/5
R127 75/5
N86 N87 N88 N89 N91 N92 N93
C157 0.01uF C0603
C158 0.01uF C0603
C159 1000pF/2KV C1206
C160 0.1u C0603
C161 0.1u C0603
C162 0.01uF C0603
C163 0.01uF C0603
C166 1000pF/2KV C1206
R128 4.7K R0603
R129 0 R0603
RMII1_REFCLK
R130 4.7K R0603
R131 4.7K (NC) R0603
C165 0.1u C0603
C164 10pF (NC) C0603
R132 4.7K R0603
nuvoTon Technology Corp.
Title
NuMaker-IoT-MA35D16F90 (LQFP216)
Size B
Document Number
09. RMII1_RTL8201FI (VDDIO9)
Rev V2.3
Date: Monday, April 10, 2023
Sheet 10 of 13


Codec
Speaker
J7
RSPKOUT
LSPKOUT
HEADER 2x1 (2.54mm, male)
Microphone
M1
MIC
DIP_LF-M6027F
U18
NAU88C22YG
(EPAD = VSSA)
PG11~15 Connect to I2S0(SWJ)
PG11 R145 0 R0603 I2S0_MCLK
PG12 R146 0 R0603 I2S0_LRCK
PG13 R147 0 R0603 I2S0_BCLK
PG14 R149 0 R0603 I2S0_DI
PG15 R151 0 R0603 I2S0_DO
Earphone
CON8
2SJ3080-000111F SMD
SI2302 (NMOS)
Q4
Q5
CTIA
L R GND MIC
nuvoTon Technology Corp.
Title
NuMaker-IoT-MA35D16F90 (LQFP216)
Size B
Document Number
10. NAU88C22
Rev V2.3
Date: Monday, October 24, 2022
Sheet 11 of 13



nuvoTon Technology Corp.		
Title: NuMaker-IoT-MA35D16F90 (LQFP216)		
Size: B	Document Number: 11. NUC123 VCOM	Rev: V2.3
Date: Tuesday, May 21, 2024	Sheet 12 of 13	



nuvoTon Technology Corp.		
Title: NuMaker-IoT-MA35D16F90 (LQFP216)		
Size: B	Document Number: 12. High Speed USB	Rev: V2.3
Date: Friday, November 18, 2022	Sheet 13 of 13	