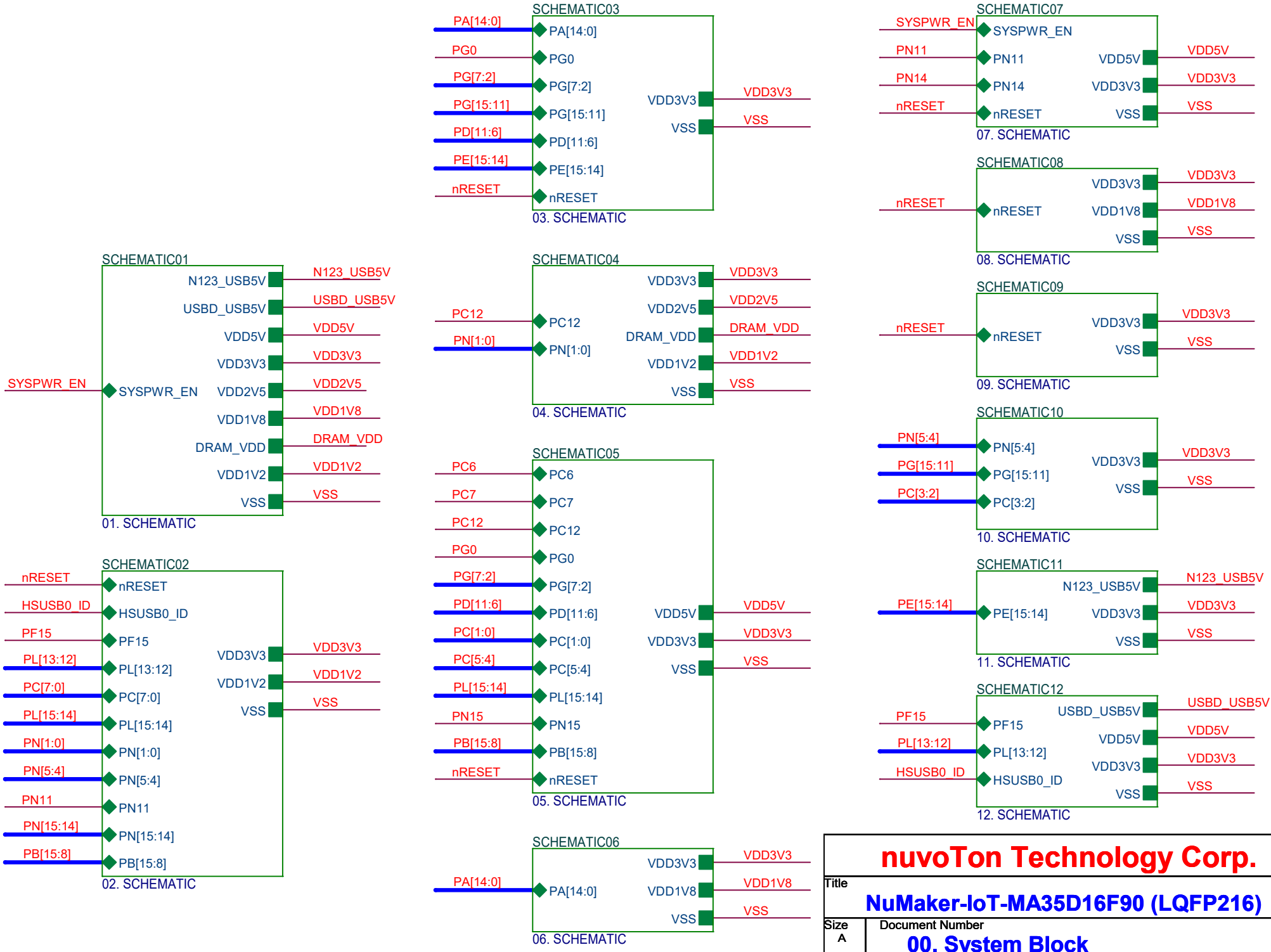
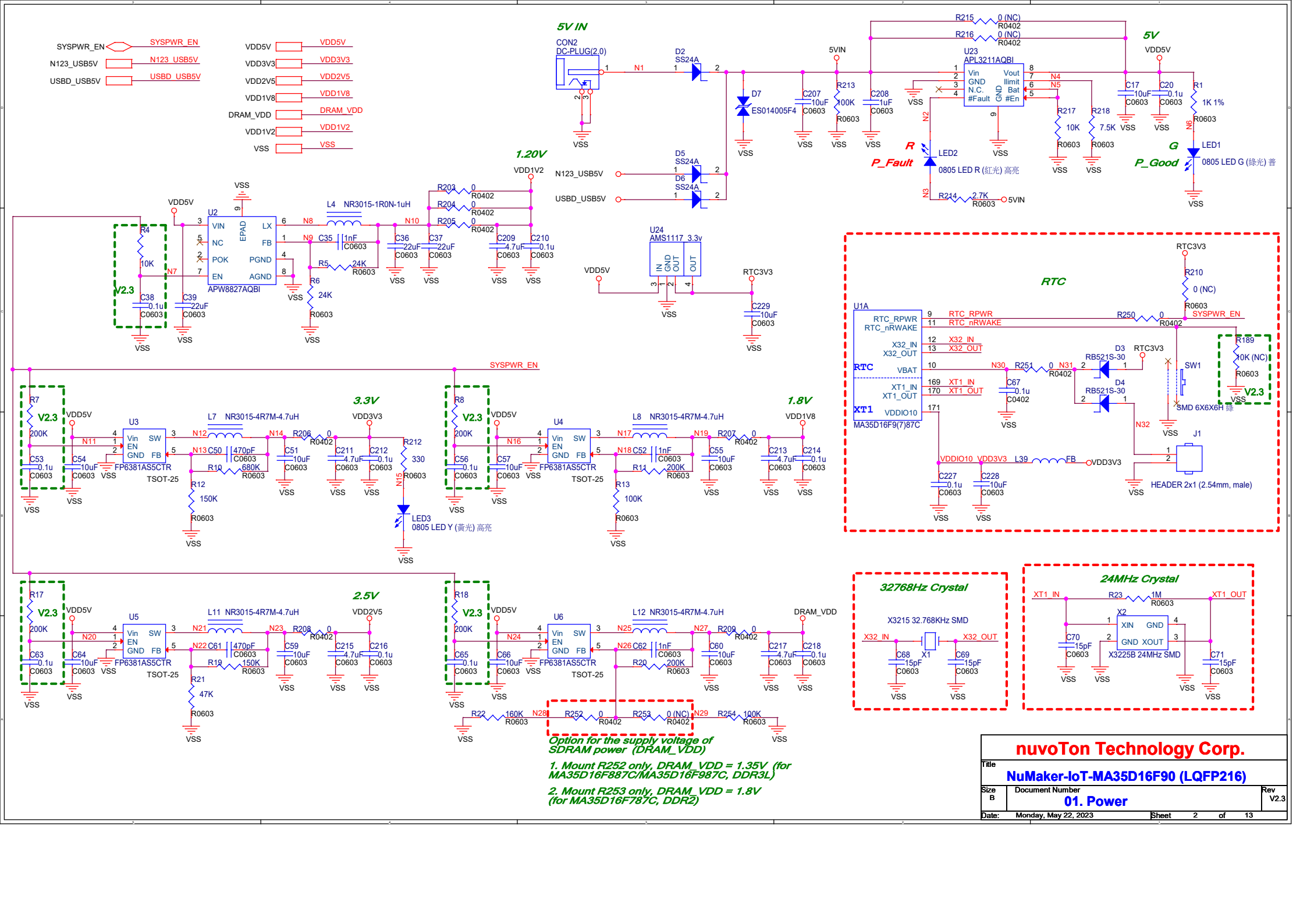

SCHEMATIC01
N123_USB5V
USBD_USB5V
VDD5V
VDD3V3
VDD2V5
VDD1V8
DRAM_VDD
VDD1V2
VSS
SYSPWR_EN
01. SCHEMATIC
SCHEMATIC02
nRESET
HSUSB0_ID
PF15
PL[13:12]
PC[7:0]
PL[15:14]
PN[1:0]
PN[5:4]
PN11
PN[15:14]
PB[15:8]
02. SCHEMATIC
SCHEMATIC03
PA[14:0]
PG0
PG[7:2]
PG[15:11]
PD[11:6]
PE[15:14]
nRESET
VDD3V3
VSS
03. SCHEMATIC
SCHEMATIC04
PC12
PN[1:0]
VDD3V3
VDD2V5
DRAM_VDD
VDD1V2
VSS
04. SCHEMATIC
SCHEMATIC05
PC6
PC7
PC12
PG0
PG[7:2]
PD[11:6]
PC[1:0]
PC[5:4]
PL[15:14]
PN15
PB[15:8]
nRESET
VDD5V
VDD3V3
VSS
05. SCHEMATIC
SCHEMATIC06
PA[14:0]
VDD3V3
VDD1V8
VSS
06. SCHEMATIC
SCHEMATIC07
SYSPWR_EN
PN11
PN14
nRESET
VDD5V
VDD3V3
VSS
07. SCHEMATIC
SCHEMATIC08
nRESET
VDD3V3
VDD1V8
VSS
08. SCHEMATIC
SCHEMATIC09
nRESET
VDD3V3
VSS
09. SCHEMATIC
SCHEMATIC10
PN[5:4]
PG[15:11]
PC[3:2]
VDD3V3
VSS
10. SCHEMATIC
SCHEMATIC11
PE[15:14]
N123_USB5V
VDD3V3
VSS
11. SCHEMATIC
SCHEMATIC12
PF15
PL[13:12]
HSUSB0_ID
USBD_USB5V
VDD5V
VDD3V3
VSS
12. SCHEMATIC
nuvoTon Technology Corp.
Title
NuMaker-IoT-MA35D16F90 (LQFP216)
Size
A
Document Number
00. System Block
Rev
V2.3
Date:
Wednesday, September 07, 2022
Sheet
1
of
13


SYSPWR_EN
N123_USB5V
USBD_USB5V
VDD5V
VDD3V3
VDD2V5
VDD1V8
DRAM_VDD
VDD1V2
VSS
5V IN
CON2
DC-PLUG(2.0)
D2
SS24A
D5
SS24A
D6
SS24A
D7
ES014005F4
5VIN
U23
APL3211AQBI
R215 0 (NC) R0402
R216 0 (NC) R0402
5V
R
LED2
0805 LED R (紅光) 高亮
P_Fault
G
LED1
0805 LED G (綠光) 普
P_Good
1.20V
VDD1V2
U2
APW8827AQBI
L4 NR3015-1R0N-1uH
U24
AMS1117_3.3v
RTC3V3
RTC
U1A
MA35D16F9(7)87C
SW1
SMD 6X6X6H 綠
J1
HEADER 2x1 (2.54mm, male)
3.3V
VDD3V3
U3
FP6381AS5CTR
TSOT-25
L7 NR3015-4R7M-4.7uH
LED3
0805 LED Y (黃光) 高亮
1.8V
VDD1V8
U4
L8 NR3015-4R7M-4.7uH
2.5V
VDD2V5
U5
L11 NR3015-4R7M-4.7uH
U6
L12 NR3015-4R7M-4.7uH
DRAM_VDD
32768Hz Crystal
X3215 32.768KHz SMD
24MHz Crystal
X3225B 24MHz SMD
Option for the supply voltage of SDRAM power (DRAM_VDD)
1. Mount R252 only, DRAM_VDD = 1.35V (for MA35D16F887C/MA35D16F987C, DDR3L)
2. Mount R253 only, DRAM_VDD = 1.8V (for MA35D16F787C, DDR2)
nuvoTon Technology Corp.
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

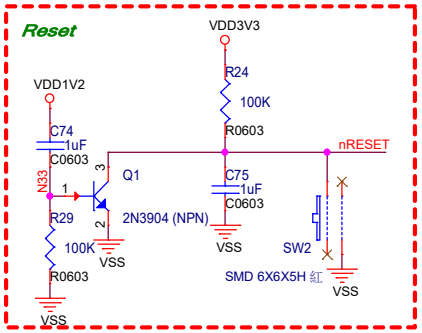
MA35D16F9(7)87C

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

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



U1I

eMMC_0

CAN_0,1/I2C_4,5/SD_0

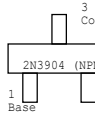
MA35D16F9(7)87C

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
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

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

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

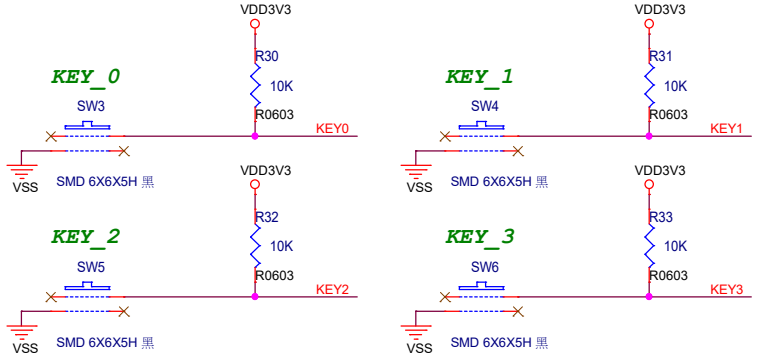
MA35D16F9(7)87C

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
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

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

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

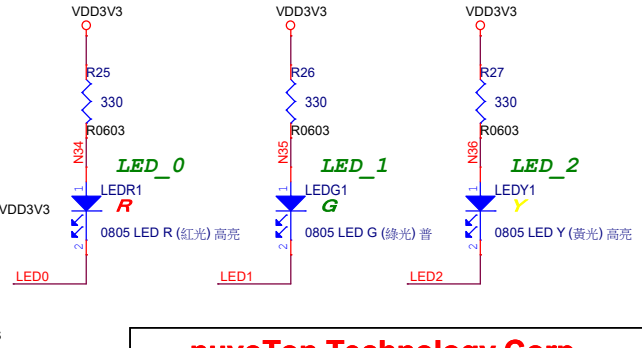
MA35D16F9(7)87C

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

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

203 208 209 AVDD_3V3 L16 FB VDD3V3
C80 0.1u C0603
C81 0.1u C0603
C82 10uF C0603
R35 0 R0603 VSS
AVSS

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
HSUSB0_ID
PF15
PL[13:12]
PL[15:14]
PC[7:0]
PN[1:0]
PN[5:4]
PN11
PN[15:14]
PB[15:8]
VDD3V3
VDD1V2
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
PA1/UART1_nRTS/UART16_TXD/NAND_DATA1/EBI_AD1/EBI_ADR1
PA2/UART1_RXD/NAND_DATA2/EBI_AD2/EBI_ADR2
PA3/UART1_TXD/NAND_DATA3/EBI_AD3/EBI_ADR3
PA4/UART3_nCTS/UART2_RXD/NAND_DATA4/EBI_AD4/EBI_ADR4
PA5/UART3_nRTS/UART2_TXD/NAND_DATA5/EBI_AD5/EBI_ADR5
PA6/UART3_RXD/NAND_DATA6/EBI_AD6/EBI_ADR6
PA7/UART3_TXD/NAND_DATA7/EBI_AD7/EBI_ADR7
PA8/UART5_nCTS/UART4_RXD/NAND_RDY0/EBI_AD8/EBI_ADR8
PA9/UART5_nRTS/UART4_TXD/NAND_nRE/EBI_AD9/EBI_ADR9
PA10/UART5_RXD/NAND_nWE/EBI_AD10/EBI_ADR10
PA11/UART5_TXD/NAND_CLE/EBI_AD11/EBI_ADR11
PA12/UART7_nCTS/UART8_RXD/NAND_ALE/EBI_AD12/EBI_ADR12
PA13/UART7_nRTS/UART8_TXD/NAND_nCS0/EBI_AD13/EBI_ADR13
PA14/UART7_RXD/CAN3_RXD/NAND_nWP/EBI_AD14/EBI_ADR14

24	PA0	NAND_DATA0
25	PA1	NAND_DATA1
26	PA2	NAND_DATA2
27	PA3	NAND_DATA3
28	PA4	NAND_DATA4
29	PA5	NAND_DATA5
30	PA6	NAND_DATA6
31	PA7	NAND_DATA7
32	PA8	NAND_RDY
33	PA9	NAND_nRE
34	PA10	NAND_nWE
35	PA11	NAND_CLE
36	PA12	NAND_ALE
37	PA13	NAND_nCS
39	PA14	NAND_nWP

PowerOnSetting/TSI_SWD

PG0/EPWM0_CH0/UART7_TXD/CAN3_TXD/SPI0_SS0/EADC0_ST/EBI_AD15/I2S1_MCLK/QEI0_INDEX/TM1/CLKO/INT0/EBI_ADR15/PowerOnSetting
PA15/EPWM0_CH2/UART9_nCTS/UART6_RXD/I2C4_SDA/CAN2_RXD/EBI_ALE/QEI0_A/TM1/RGMII0_PPS/RMII0_PPS/PowerOnSetting

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

PG1/EPWM0_CH3/UART9_nRTS/UART6_TXD/I2C4_SCL/CAN2_TXD/EBI_nCS0/QEI0_B/TM1_EXT/RGMII1_PPS/RMII1_PPS/PowerOnSetting

SC_1/PWM_0,1

PG2/EPWM0_CH4/UART9_RXD/CAN0_RXD/SPI0_SS1/TSI_SWD_DAT/EBI_ADR16/EBI_nCS2/QEI0_A/TM3/INT1/PowerOnSetting
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
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
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

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

PG6/EPWM1_CH2/UART5_RXD/CAN1_RXD/SPI3_MOSI/ECAP0_IC1/EBI_nRD/I2S1_BCLK/SC1_RST/TM7/INT3/PowerOnSetting
PG7/EPWM1_CH3/UART5_TXD/CAN1_TXD/SPI3_MISO/ECAP0_IC2/EBI_nWR/I2S1_LRCK/SC1_PWR/TM7_EXT/PowerOnSetting

40	PG0	GPIO8
41		
42	PG1	
43	PG2	AR_D2
44	PG3	AR_D3
45	PG4	GPIO21
46	PG5	GPIO20
47	PG6	GPIO18
48	PG7	GPIO19

JTAG/I2S_0

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

50	PG11	
51	PG12	
52	PG13	
53	PG14	
54	PG15	

QSPI_1/PWM_0/USRT_1,15,16

PD6/EPWM0_SYNC_IN/UART1_RXD/QSPI1_MOSI1/I2C0_SDA/I2S0_MCLK/EPWM0_CH0/EBI_AD5/SPI3_SS1/TRACE_CLK
PD7/EPWM0_SYNC_OUT/UART1_TXD/QSPI1_MISO1/I2C0_SCL/I2S1_MCLK/EPWM0_CH1/EBI_AD6/SC1_nCD/EADC0_ST

I2C_0/I2S_1/SC_1

PD8/EPWM0_BRAKE0/UART16_nCTS/UART15_RXD/QSPI1_SS0/I2S1_LRCK/EPWM0_CH2/EBI_AD7/SC1_CLK/TM0
PD9/EPWM0_BRAKE1/UART16_nRTS/UART15_TXD/QSPI1_CLK/I2S1_BCLK/EPWM0_CH3/EBI_AD8/SC1_DAT/TM0_EXT
PD10/EPWM1_BRAKE0/UART16_RXD/QSPI1_MOSI0/I2S1_DI/EPWM0_CH4/EBI_AD9/SC1_RST/TM2
PD11/EPWM1_BRAKE1/UART16_TXD/QSPI1_MISO0/I2S1_DO/EPWM0_CH5/EBI_AD10/SC1_PWR/TM2_EXT

58	PD6	AR_D4
59	PD7	AR_D5
60	PD8	AR_D6
61	PD9	AR_D7
62	PD10	AR_D8
63	PD11	AR_D9

UART_0

PE14/UART0_TXD
PE15/UART0_RXD

56	PE14	UART0_TXD
57	PE15	UART0_RXD

VDDIO1
VDDIO1

MA35D16F9(7)87C

38 VDDIO1 VDD3V3 L17 FB VDD3V3
64

C85 0.1u C0603 C86 0.1u C0603 C87 10uF C0603

VSS VSS VSS

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

Power-on Setting

PG0	Secure Boot
L	Secure Boot Enable
H	Secure Boot Disable

PG1	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 R40 R201 R39 R233 R38 R37 R36 10K R0603
SW7
PG0 PG1 PG2 PG3 PG4 PG5 PG6 PG7
N37 N38 N39 N40 N41 N42 N43 N44
SW DIP 8 (SMD)
Internal pull-down

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

VDD3V3
VSS RP1 10K-8P4R

SWJ Connector

VDD3V3
CON12
JTAG_nTRST
JTAG_TDI
JTAG_TMS SW_DIO
JTAG_TCK SW_CLK
JTAG_TDO
SWJ_nRESET
N45
C221 10uF C0603
SWJ (JTAG/SWD)簡易牛角

U39 TSOP-6 NSP4201MR6T1G
U40 TSOP-6 NSP4201MR6T1G
CH1 CH4 Vn Vp CH2 CH3
VSS 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

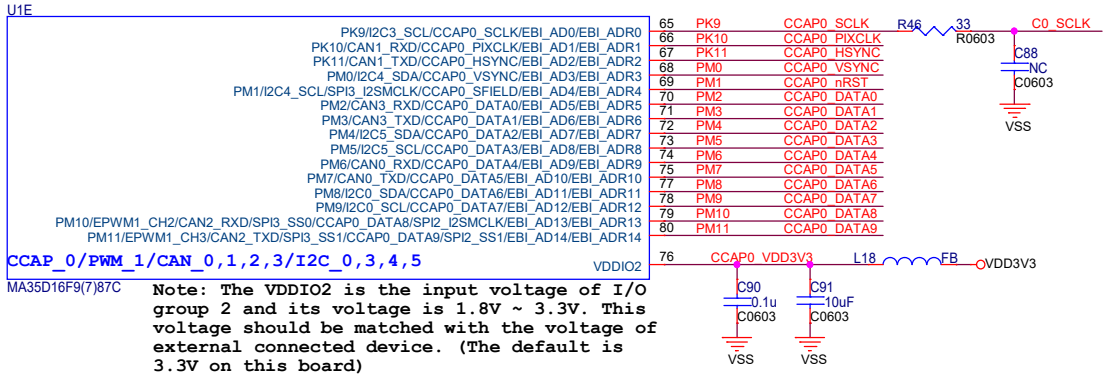
nuvoTon Technology Corp.

Title: NuMaker-IoT-MA35D16F90 (LQFP216)

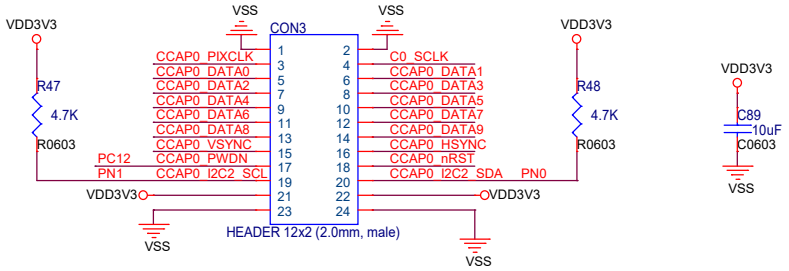
Size	Document Number	Rev
B	03. Power On Setting (VDDIO1)	V2.3

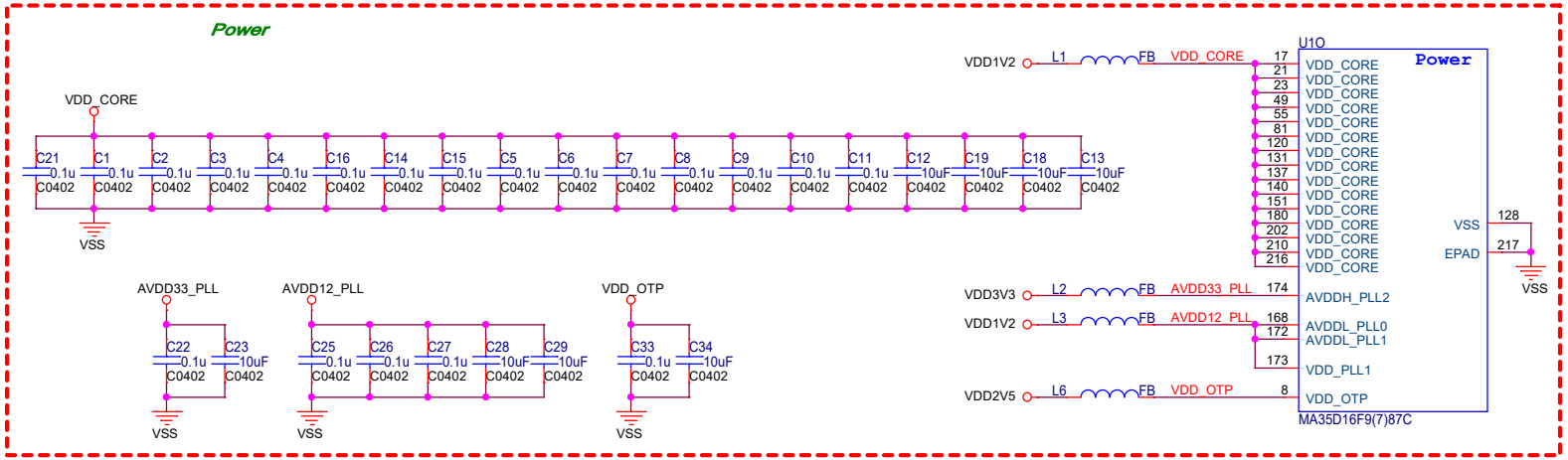
Date: Thursday, December 29, 2022 Sheet 4 of 13

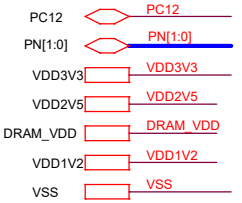
CCAP0 Connector

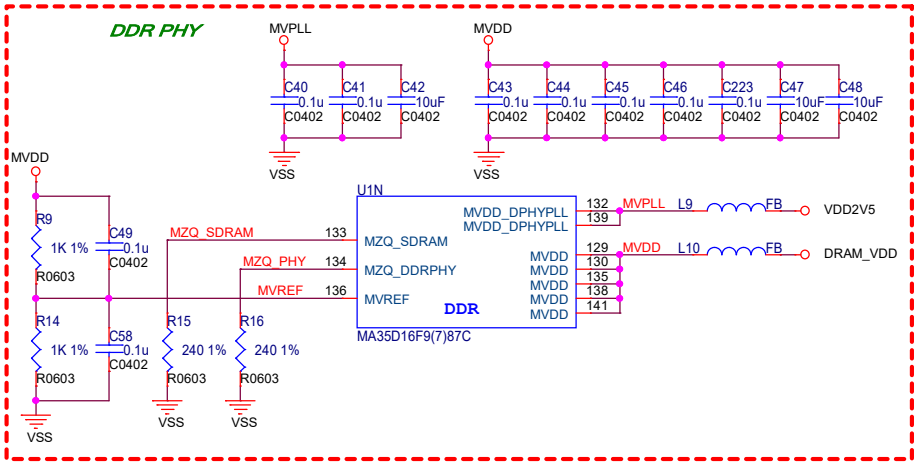


Note: The VDDIO2 is the input voltage of I/O group 2 and its voltage is 1.8V ~ 3.3V. This voltage should be matched with the voltage of external connected device. (The default is 3.3V on this board)

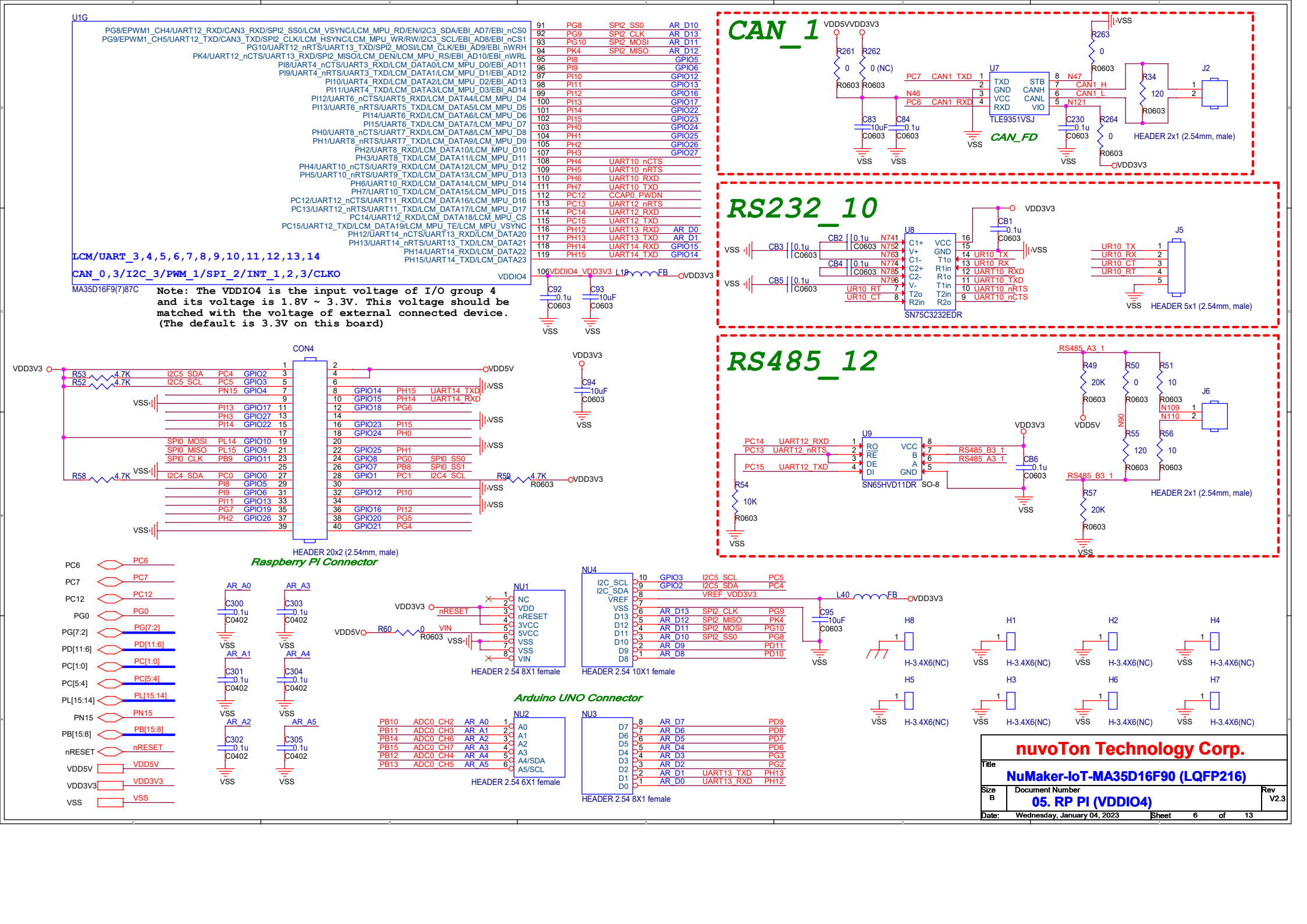




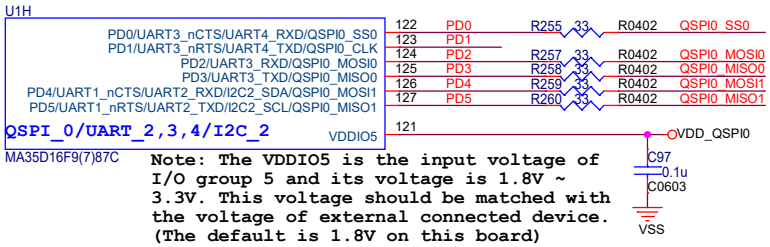




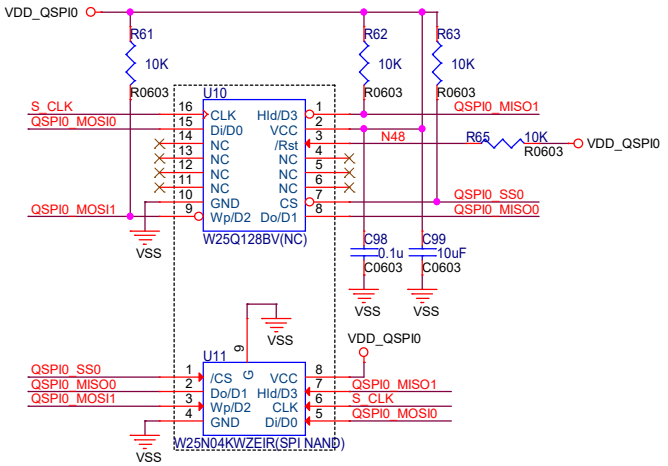
nuvoTon Technology Corp.		
Title: NuMaker-IoT-MA35D16F90 (LQFP216)		
Size: B	Document Number: 04. CCAP0 (VDDIO2)	Rev: V2.3
Date: Wednesday, January 04, 2023	Sheet 5 of 13	


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
91 PG8 SPI2_SS0 AR_D10
92 PG9 SPI2_CLK AR_D13
93 PG10 SPI2_MOSI AR_D11
94 PK4 SPI2_MISO AR_D12
95 PI8 GPIO5
96 PI9 GPIO6
97 PI10 GPIO12
98 PI11 GPIO13
99 PI12 GPIO16
100 PI13 GPIO17
101 PI14 GPIO22
102 PI15 GPIO23
103 PH0 GPIO24
104 PH1 GPIO25
105 PH2 GPIO26
107 PH3 GPIO27
108 PH4 UART10_nCTS
109 PH5 UART10_nRTS
110 PH6 UART10_RXD
111 PH7 UART10_TXD
112 PC12 CCAP0_PWDN
113 PC13 UART12_nRTS
114 PC14 UART12_RXD
115 PC15 UART12_TXD
116 PH12 UART13_RXD AR_D0
117 PH13 UART13_TXD AR_D1
118 PH14 UART14_RXD GPIO15
119 PH15 UART14_TXD GPIO14
106VDDIO4 VDD3V3 L19 FB VDD3V3
C92 0.1u C0603
C93 10uF C0603
VSS
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
VDD5V VDD3V3
R261 0
R262 0 (NC)
R0603
PC7 CAN1_TXD
PC6 CAN1_RXD
N46
U7
TXD STB
GND CANH
VCC CANL
RXD VIO
TLE9351VSJ
CAN_FD
8 N47
7 CAN1_H
6 CAN1_L
5 N121
R263 0 R0603
R34 120 R0603
J2
HEADER 2x1 (2.54mm, male)
C83 10uF C0603
C84 0.1u C0603
C230 0.1u C0603
R264 0 R0603
VDD3V3
RS232_10
U8
C1+ VCC
V+ GND
C1- T1o
C2+ R1in
C2- R1o
V- T1in
T2o T2in
R2in R2o
SN75C3232EDR
CB1 CB2 CB3 CB4 CB5 0.1u C0603
N741 N752 N763 N774 N785 N796
UR10_TX UR10_RX UR10_RXD UR10_TXD UR10_nRTS UR10_nCTS
UR10_RT UR10_CT
J5
UR10_TX UR10_RX UR10_CT UR10_RT
HEADER 5x1 (2.54mm, male)
RS485_12
U9
RO VCC
RE B
DE A
DI GND
SN65HVD11DR SO-8
PC14 UART12_RXD
PC13 UART12_nRTS
PC15 UART12_TXD
RS485_B3_1
RS485_A3_1
CB6 0.1u C0603
R54 10K R0603
R49 20K R0603
R50 0 R0603
R51 10 R0603
N90
R55 120 R0603
R56 10 R0603
R57 20K R0603
J6
N109 N110
HEADER 2x1 (2.54mm, male)
CON4
R53 4.7K
R52 4.7K
R58 4.7K
R59 4.7K R0603
I2C5_SDA PC4 GPIO2
I2C5_SCL PC5 GPIO3
PN15 GPIO4
PI13 GPIO17
PH3 GPIO27
PI14 GPIO22
SPI0_MOSI PL14 GPIO10
SPI0_MISO PL15 GPIO9
SPI0_CLK PB9 GPIO11
I2C4_SDA PC0 GPIO0
PI8 GPIO5
PI9 GPIO6
PI11 GPIO13
PG7 GPIO19
PH2 GPIO26
GPIO14 PH15 UART14_TXD
GPIO15 PH14 UART14_RXD
GPIO18 PG6
GPIO23 PI15
GPIO24 PH0
GPIO25 PH1
GPIO8 PG0 SPI0_SS0
GPIO7 PB8 SPI0_SS1
GPIO1 PC1 I2C4_SCL
GPIO12 PI10
GPIO16 PI12
GPIO20 PG5
GPIO21 PG4
VDD5V
C94 10uF C0603
HEADER 20x2 (2.54mm, male)
Raspberry PI Connector
PC6 PC7 PC12 PG0 PG[7:2] PD[11:6] PC[1:0] PC[5:4] PL[15:14] PN15 PB[15:8] nRESET VDD5V VDD3V3 VSS
AR_A0 AR_A3 AR_A1 AR_A4 AR_A2 AR_A5
C300 C303 C301 C304 C302 C305 0.1u C0402
NU1
NC VDD nRESET 3VCC 5VCC VSS VSS VIN
R60 0 R0603
HEADER 2.54 8X1 female
NU4
I2C_SCL I2C_SDA VREF D13 D12 D11 D10 D9 D8
GPIO3 I2C5_SCL PC5
GPIO2 I2C5_SDA PC4
VREF_VDD3V3
AR_D13 SPI2_CLK PG9
AR_D12 SPI2_MISO PK4
AR_D11 SPI2_MOSI PG10
AR_D10 SPI2_SS0 PG8
AR_D9 PD11
AR_D8 PD10
HEADER 2.54 10X1 female
L40 FB VDD3V3
C95 10uF C0603
H8 H1 H2 H4 H5 H3 H6 H7
H-3.4X6(NC)
Arduino UNO Connector
NU2
A0 A1 A2 A3 A4/SDA A5/SCL
PB10 ADC0_CH2 AR_A0
PB11 ADC0_CH3 AR_A1
PB14 ADC0_CH6 AR_A2
PB15 ADC0_CH7 AR_A3
PB12 ADC0_CH4 AR_A4
PB13 ADC0_CH5 AR_A5
HEADER 2.54 6X1 female
NU3
D7 D6 D5 D4 D3 D2 D1 D0
AR_D7 PD9
AR_D6 PD8
AR_D5 PD7
AR_D4 PD6
AR_D3 PG3
AR_D2 PG2
AR_D1 UART13_TXD PH13
AR_D0 UART13_RXD PH12
HEADER 2.54 8X1 female
nuvoTon Technology Corp.
Title
NuMaker-IoT-MA35D16F90 (LQFP216)
Size B
Document Number
05. RP PI (VDDIO4)
Rev V2.3
Date: Wednesday, January 04, 2023
Sheet 6 of 13

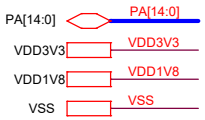
QSPI0_Flash

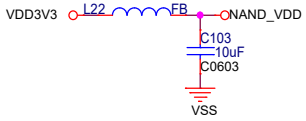


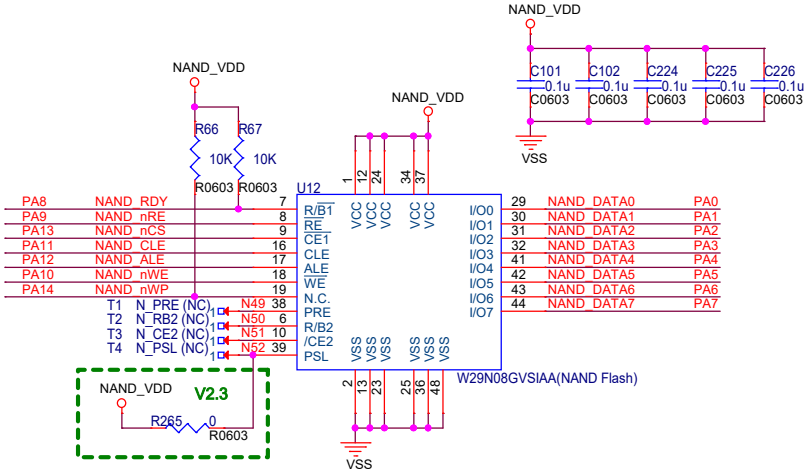
Note: The VDDIO5 is the input voltage of I/O group 5 and its voltage is 1.8V ~ 3.3V. This voltage should be matched with the voltage of external connected device. (The default is 1.8V on this board)



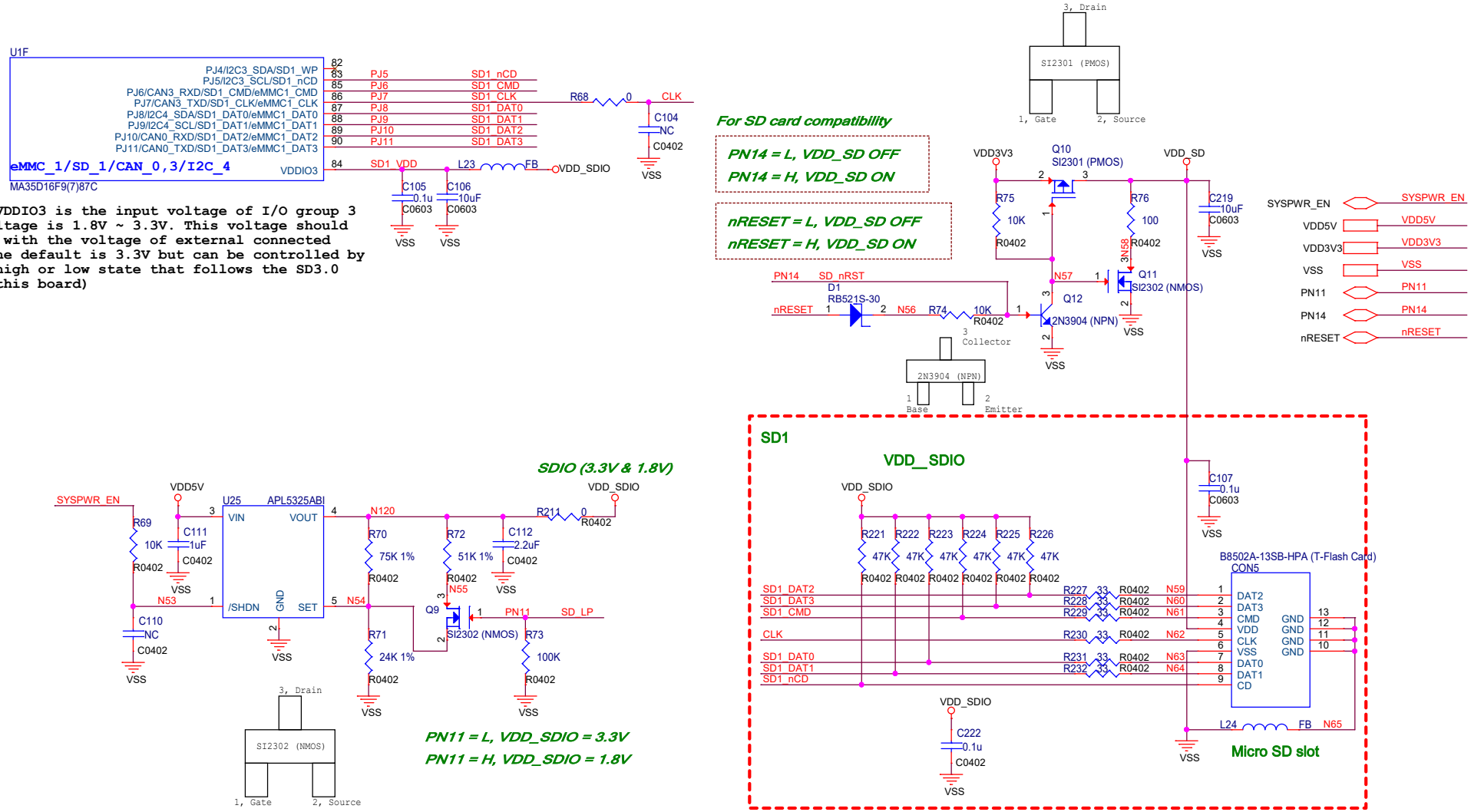
NAND_Flash



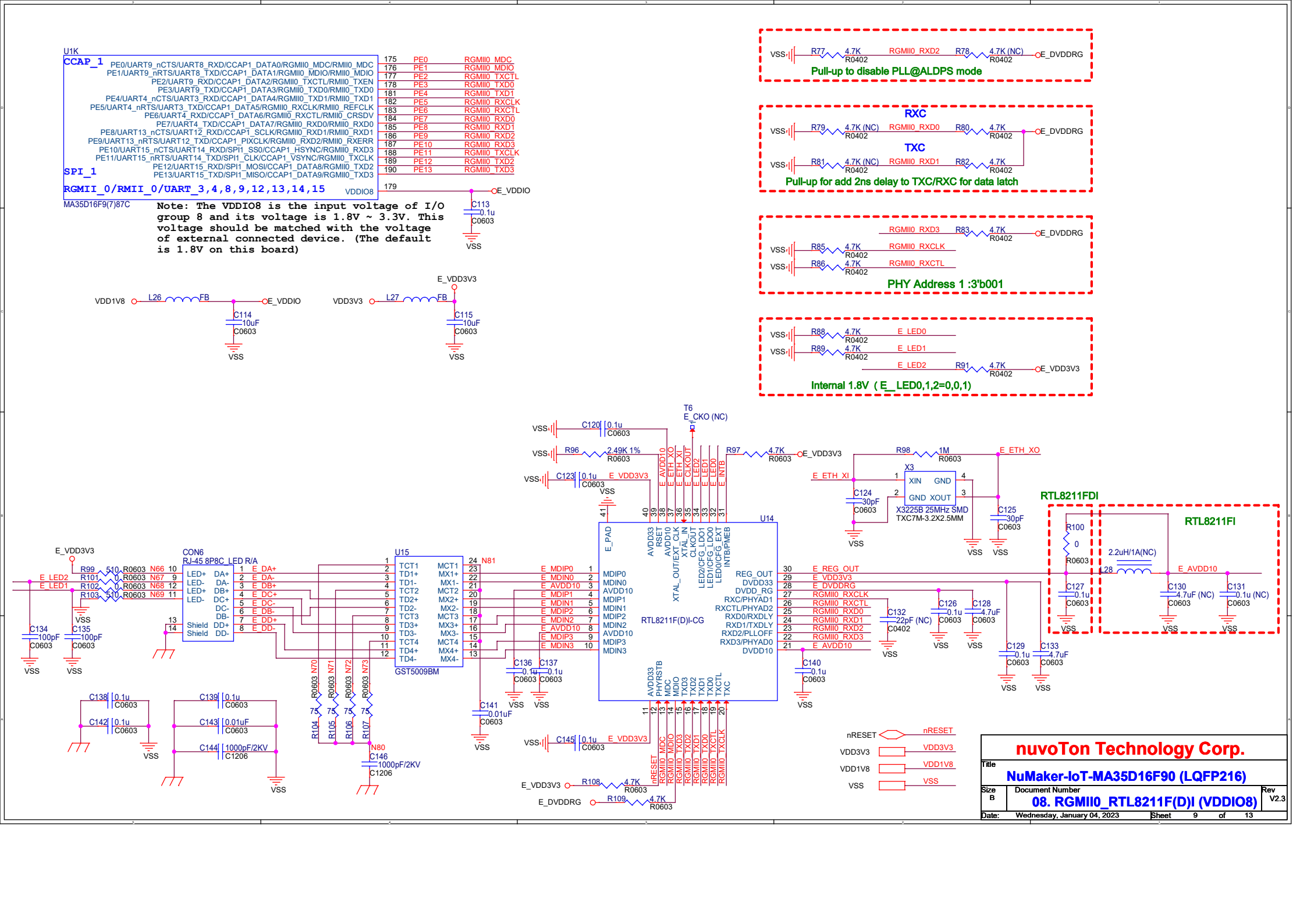


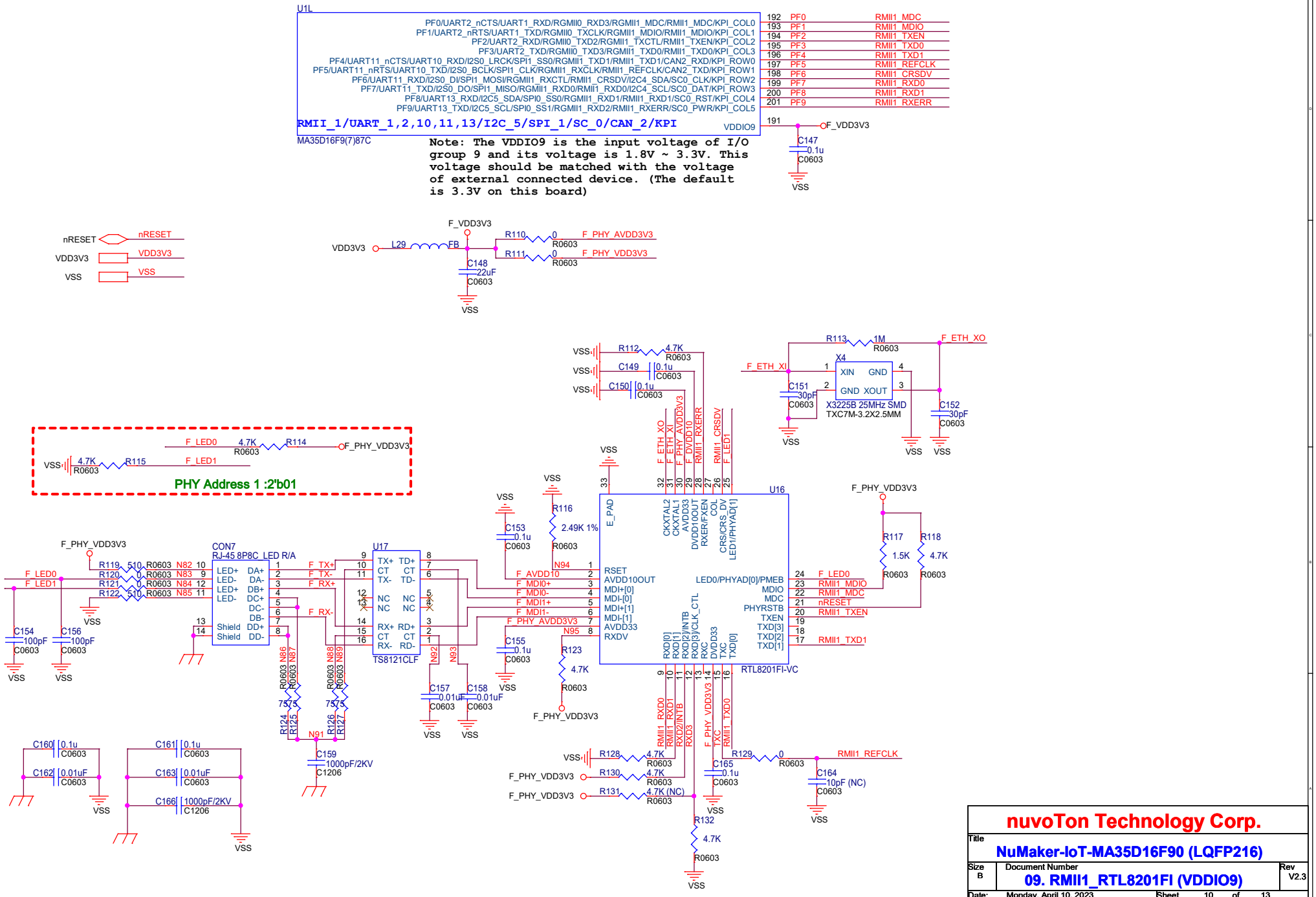


nuvoTon Technology Corp.		
Title: NuMaker-IoT-MA35D16F90 (LQFP216)		
Size: B	Document Number: 06. NAND/QSPI0 (VDDIO5)	Rev: V2.3
Date: Wednesday, January 04, 2023	Sheet 7 of 13	

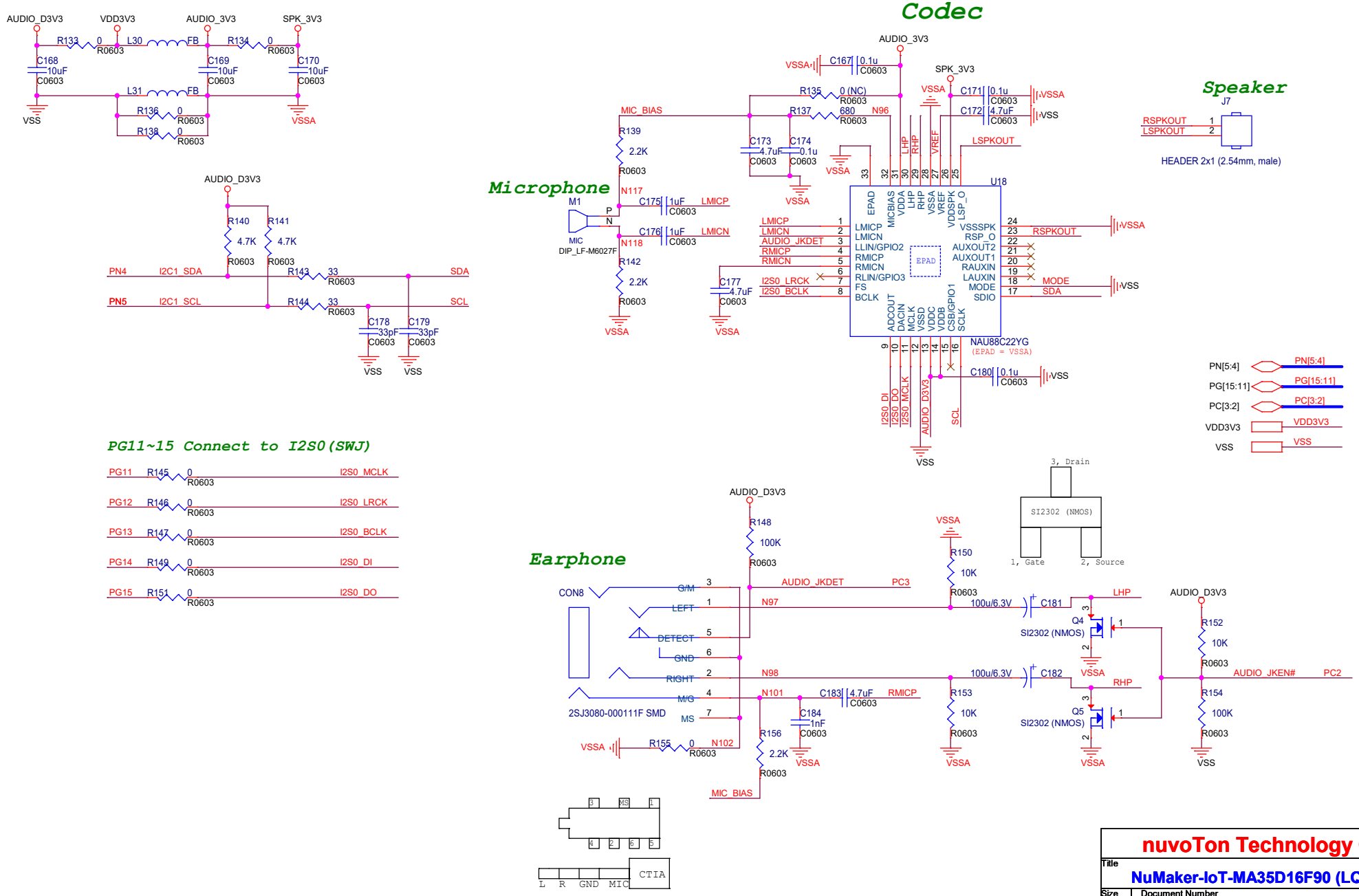


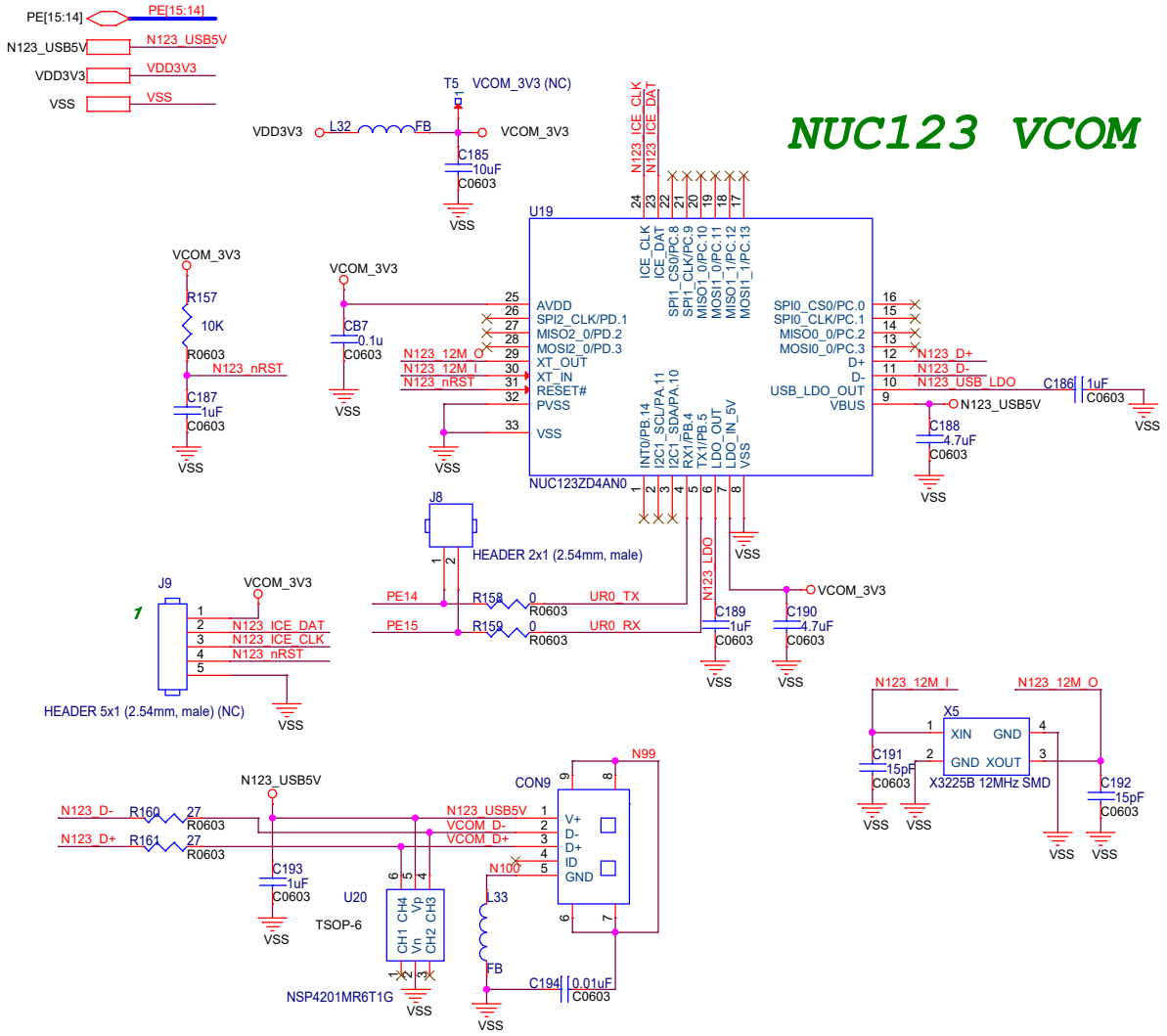
nuvoTon Technology Corp.		
Title: NuMaker-IoT-MA35D16F90 (LQFP216)		
Size: B	Document Number: 07. SD1 (VDDIO3)	Rev: V2.3
Date: Wednesday, January 04, 2023	Sheet 8 of 13	


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
VDDIO8
MA35D16F9(7)87C
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)
Pull-up to disable PLL@ALDPS mode
RXC
TXC
Pull-up for add 2ns delay to TXC/RXC for data latch
PHY Address 1 :3'b001
Internal 1.8V (E__LED0,1,2=0,0,1)
RTL8211FDI
RTL8211FI
RTL8211F(D)I-CG
GST5009BM
CON6
RJ-45 8P8C_LED R/A
X3225B 25MHz SMD
TXC7M-3.2X2.5MM
nuvoTon Technology Corp.
NuMaker-IoT-MA35D16F90 (LQFP216)
08. RGMII0_RTL8211F(D)I (VDDIO8)
Wednesday, January 04, 2023

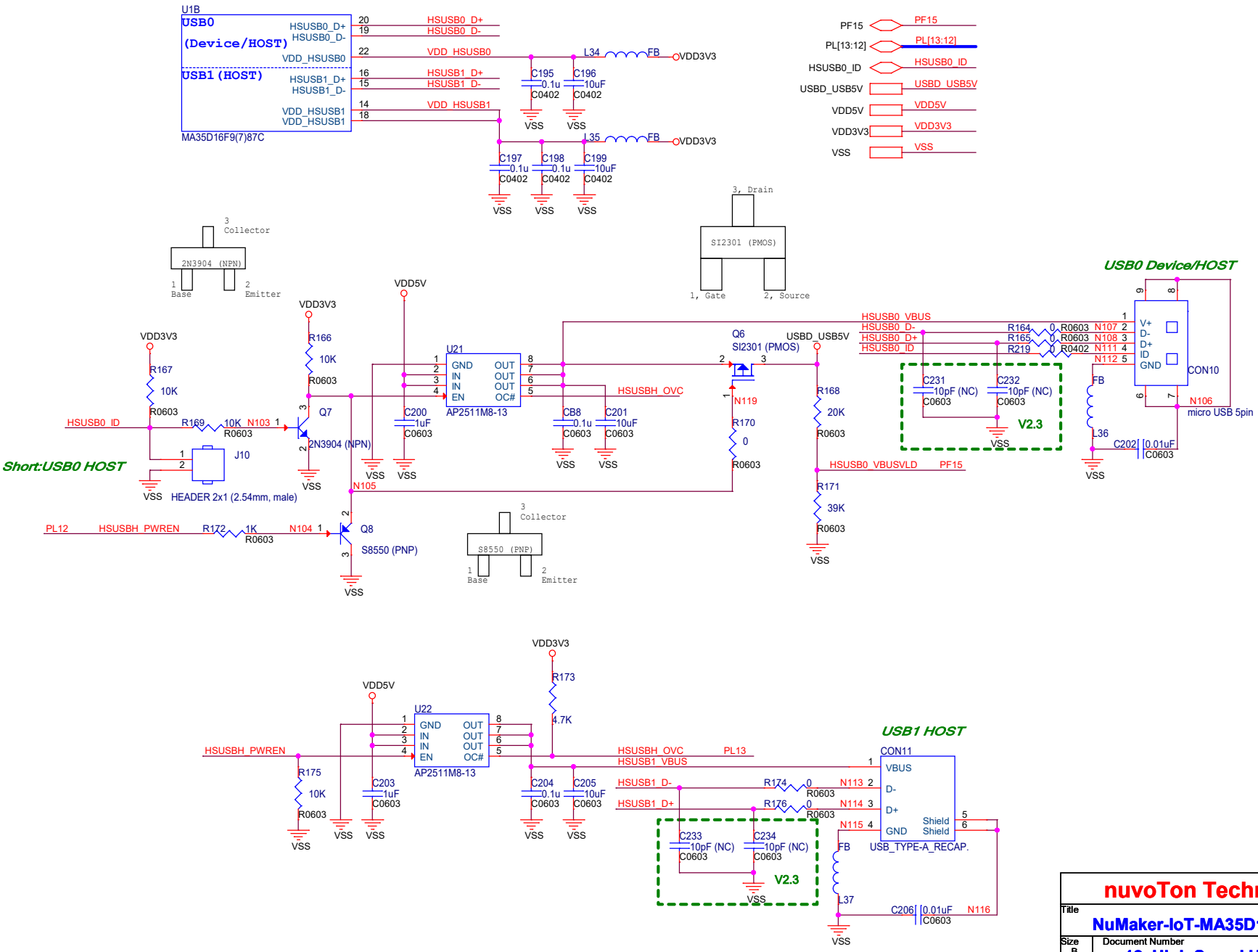


nuvoTon Technology Corp.			
Title	**NuMaker-IoT-MA35D16F90 (LQFP216)**		
Size B	Document Number **09. RMII1_RTL8201FI (VDDIO9)**		Rev V2.3
Date: Monday, April 10, 2023	Sheet 10 of 13		


Codec
Speaker
Microphone
Earphone
PG11~15 Connect to I2S0(SWJ)
NAU88C22YG
(EPAD = VSSA)
HEADER 2x1 (2.54mm, male)
2SJ3080-000111F SMD
SI2302 (NMOS)
nuvoTon Technology Corp.
NuMaker-IoT-MA35D16F90 (LQFP216)
10. NAU88C22
Monday, October 24, 2022



nuvoTon Technology Corp.		
Title: **NuMaker-IoT-MA35D16F90 (LQFP216)**		
Size: B	Document Number: **11. NUC123 VCOM**	Rev: V2.3
Date: Tuesday, September 13, 2022	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	