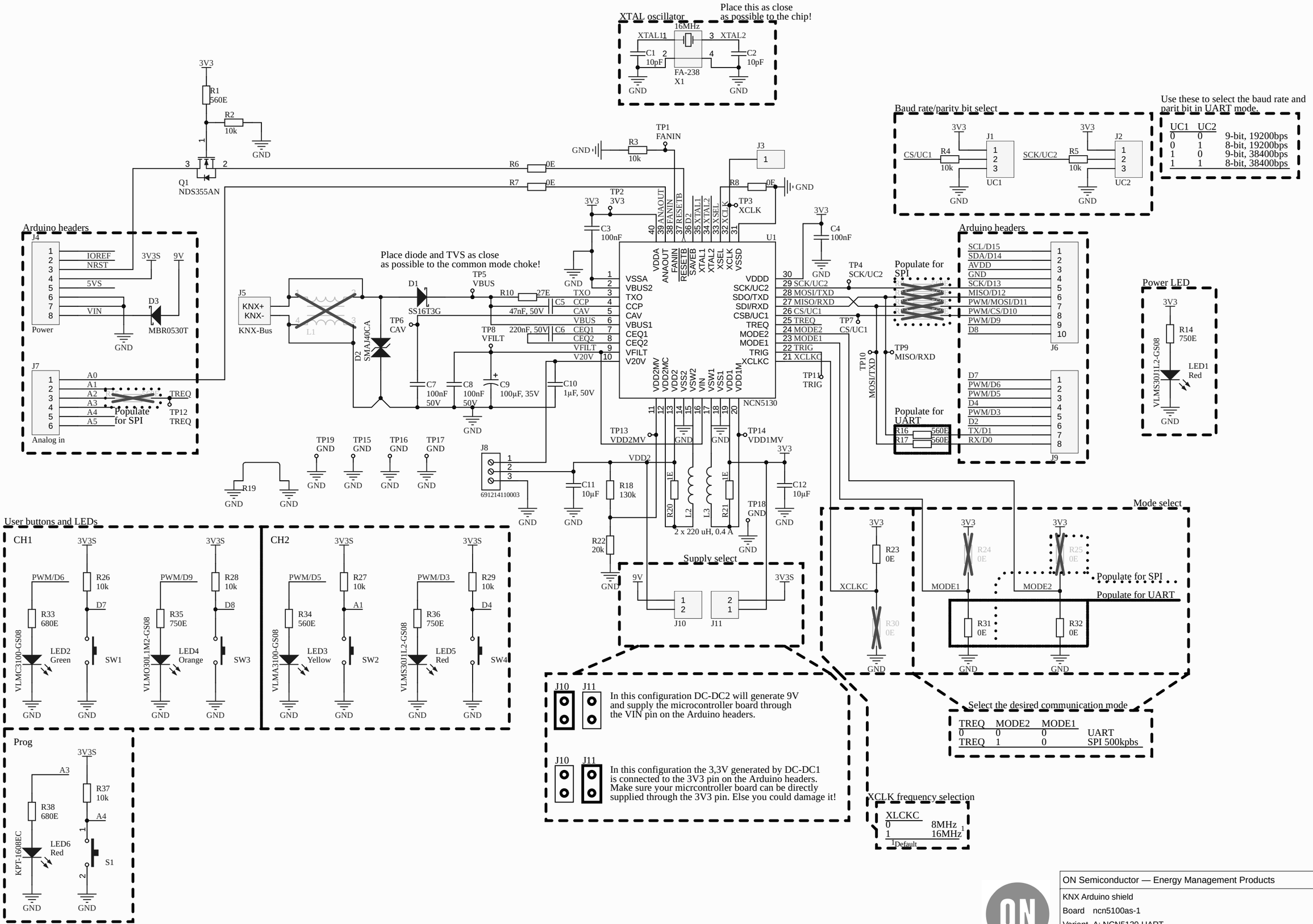
XTAL oscillator
Place this as close as possible to the chip!
16MHz
XTAL1
XTAL2
C1 10pF
C2 10pF
FA-238
X1
GND
3V3
R1 560E
R2 10k
Q1 NDS355AN
R3 10k
TP1 FANIN
R6 0E
R7 0E
R8 0E
J3
TP2 3V3
TP3 XCLK
C3 100nF
C4 100nF
U1
NCN5130
VSSA
VBUS2
TXO
CCP
CAV
VBUS1
CEQ1
CEQ2
VFILT
V20V
VDDA
ANAOUT
FANIN
RESETB
SAVEB
XTAL1
XTAL2
XSEL
XCLK
VSSD
VDDD
SCK/UC2
SDO/TXD
SDI/RXD
CSB/UC1
TREQ
MODE2
MODE1
TRIG
XCLKC
VDD2MV
VDD2MC
VDD2
VSS2
VSW2
VIN
VSW1
VSS1
VDD1
VDD1M
Arduino headers
J4
IOREF
NRST
5VS
VIN
3V3S
9V
Power
D3 MBR0530T
J7
A0
A1
A2
A3
A4
A5
TREQ
Analog in
Populate for SPI
TP12 TREQ
Place diode and TVS as close as possible to the common mode choke!
J5
KNX+
KNX-
KNX-Bus
L1
D1 SS16T3G
TP5 VBUS
R10 27E
C5 47nF, 50V
C6 220nF, 50V
TP6 CAV
TP8 VFILT
D2 SMAJ40CA
C7 100nF 50V
C8 100nF 50V
C9 100µF, 35V
C10 1µF, 50V
TP4 SCK/UC2
TP7 CS/UC1
TP9 MISO/RXD
TP10 MOSI/TXD
TP11 TRIG
Populate for SPI
Populate for UART
R16 560E
R17 560E
Baud rate/parity bit select
CS/UC1
SCK/UC2
R4 10k
R5 10k
J1
J2
UC1
UC2
Use these to select the baud rate and parit bit in UART mode.
UC1 UC2
0 0 9-bit, 19200bps
0 1 8-bit, 19200bps
1 0 9-bit, 38400bps
1 1 8-bit, 38400bps
Arduino headers
SCL/D15
SDA/D14
AVDD
GND
SCK/D13
MISO/D12
PWM/MOSI/D11
PWM/CS/D10
PWM/D9
D8
J6
D7
PWM/D6
PWM/D5
D4
PWM/D3
D2
TX/D1
RX/D0
J9
Power LED
R14 750E
LED1 Red
VLMS3011L2-GS08
TP13 VDD2MV
TP14 VDD1MV
TP18 GND
TP19 GND
TP15 GND
TP16 GND
TP17 GND
R19
J8
691214110003
C11 10µF
R18 130k
R22 20k
R20 1E
R21 1E
L2
L3
2 x 220 uH, 0.4 A
C12 10µF
Supply select
9V
3V3S
J10
J11
Mode select
R23 0E
R30 0E
XCLKC
R24 0E
R25 0E
MODE1
MODE2
Populate for SPI
Populate for UART
R31 0E
R32 0E
User buttons and LEDs
CH1
PWM/D6
R26 10k
D7
R33 680E
LED2 Green
VLMC3100-GS08
SW1
PWM/D9
R28 10k
D8
R35 750E
LED4 Orange
VLMO30L1M2-GS08
SW3
CH2
PWM/D5
R27 10k
A1
R34 560E
LED3 Yellow
VLMA3100-GS08
SW2
PWM/D3
R29 10k
D4
R36 750E
LED5 Red
VLMS30J1L2-GS08
SW4
Prog
A3
R37 10k
A4
R38 680E
LED6 Red
KPT-1608EC
S1
Programming button/LED
J10 J11
In this configuration DC-DC2 will generate 9V and supply the microcontroller board through the VIN pin on the Arduino headers.
In this configuration the 3,3V generated by DC-DC1 is connected to the 3V3 pin on the Arduino headers. Make sure your micrcontroller board can be directly supplied through the 3V3 pin. Else you could damage it!
Select the desired communication mode
TREQ MODE2 MODE1
0 0 0 UART
TREQ 1 0 SPI 500kpbs
XCLK frequency selection
XLCKC
0 8MHz
1 16MHz
Default
ON Semiconductor — Energy Management Products
KNX Arduino shield
Board ncn5100as-1
Variant A: NCN5130-UART
Design Tijl Schepens
Revision -
Date 17/10/2019
Size A3
Sheet 1 of 1