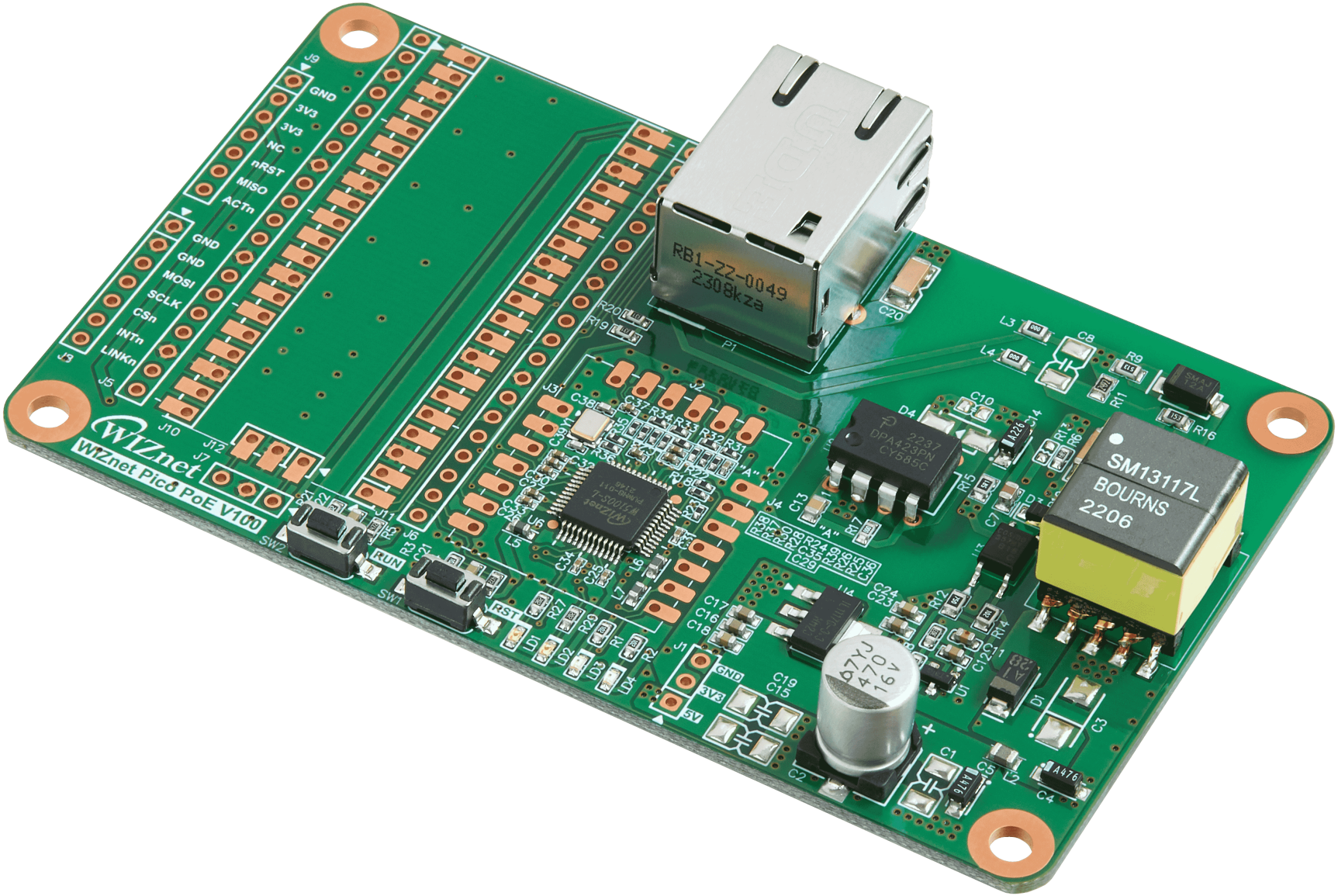
WIZnet Pico PoE

Overview

It combines with the W5500, W5100S, and W6100 Io Module to provide Ethernet as well as a separate power supply. It can supply up to 8W

- Raspberry Pi Pico Mountable
- Ethernet W5100S, W5500, W6100 IO Module Mountable


WIZnet
WIZnet Pico PoE V100
RB1-22-0049
2308kza
SM13117L
BOURNS
2206
GND
3V3
3V3
NC
nRST
MISO
ACTn
GND
GND
MOSI
SCLK
CSn
INTn
LINKn
RUN
RST
GND
3V3
5V

Features

PoE

- IEEE802.3af compliant
- Mode A(Endspan), Mode B(Midspan)
- Wide input voltage range 37Vdc ~ 57Vdc
- Circuit Protection (OV,OC)
- High DC/DC convertion efficiency
- Isolation level 2kVrms
- Enhanced surge protection
- Internal build in 2 channel bridge rectifiers

PoE Electrical Specifications

No	Value	Specification
1	Input Voltage	37 ~ 57V
2	Output Voltage	5V (1.6A)
		3.3V (1A LDO)
3	Power	8W

No	Value	Specification
4	Switching Frequency	400kHz fixed
5	Isolation	2kVrms
6	Operating Temperature	-20 ~ 85°C

WIZnet IO Module

- **W5100S-IO**
  - Supports Hardwired Internet Protocols: TCP, UDP, WOL over UDP, ICMP, IGMPv1/v2, IPv4, ARP, PPPoE
  - Supports 4 Independent Hardware SOCKETs simultaneously
  - Internal 16 Kbytes Memory for TX/ RX Buffers
  - SPI Interface
- **W5500-IO**
  - Supports Hardwired Internet Protocols: TCP, UDP, ICMP, IPv4, ARP, IGMP, PPPoE
  - Supports 8 Independent Hardware SOCKETs simultaneously
  - Internal 32 Kbytes Memory for TX/ RX Buffers
  - Supports High Speed Serial Peripheral Interface(SPI MODE 0, 3)
- **W6100-IO**
  - Supports Hardwired Internet Protocols: TCP, UDP, IPv6, IPv4, ICMPv6, ICMPv4, IGMP, MLDv1, ARP, PPPoE
  - Supports 8 independent SOCKETs simultaneously with 32KB memory
  - Internal 16 Kbytes Memory for TX/ RX Buffers

    - SPI Interface

Raspberry Pi Pico

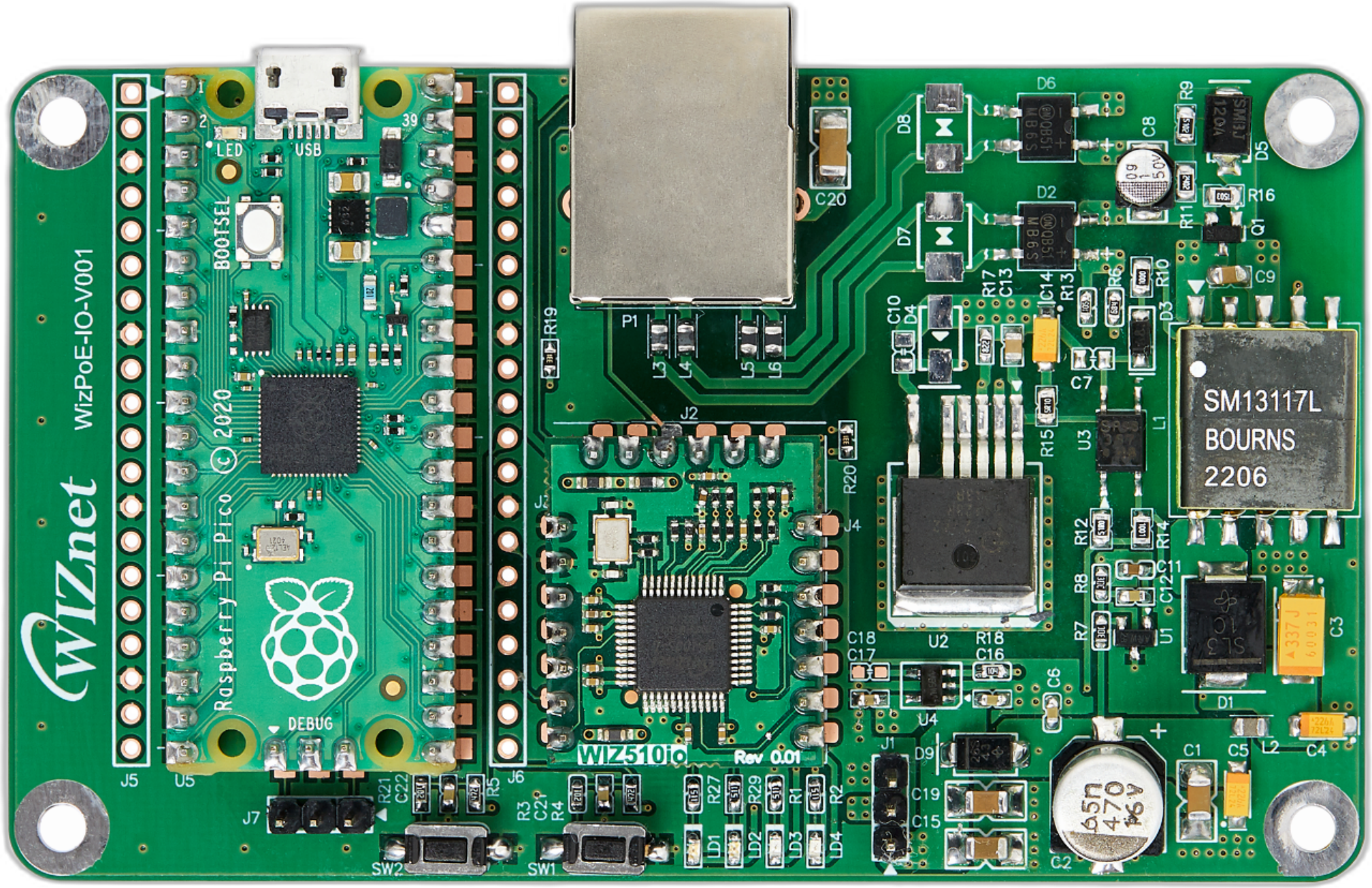
- **RP2040 microcontroller with 2MByte Flash**
    - Dual-core cortex M0+ at up to 133MHz
    - 264kByte multi-bank high performance SRAM
    - External Quad-SPI Flash with eXecute In Place (XIP)
    - High performance full-crossbar bus fabric
    - 30 multi-function General Purpose IO (4 can be used for ADC)
        - 1.8-3.3V IO Voltage (NOTE. Pico IO voltage is fixed at 3.3V)
    - 12-bit 500ksps Analogue to Digital Converter (ADC)
    - Various digital peripherals
        - 2 × UART, 2 × I2C, 2 × SPI, 16 × PWM channels
        - 1 × Timer with 4 alarms, 1 × Real Time Counter
    - 2 × Programmable IO (PIO) blocks, 8 state machines total
    - Flexible, user-programmable high-speed IO
    - Can emulate interfaces such as SD Card and VGA

Other Functions

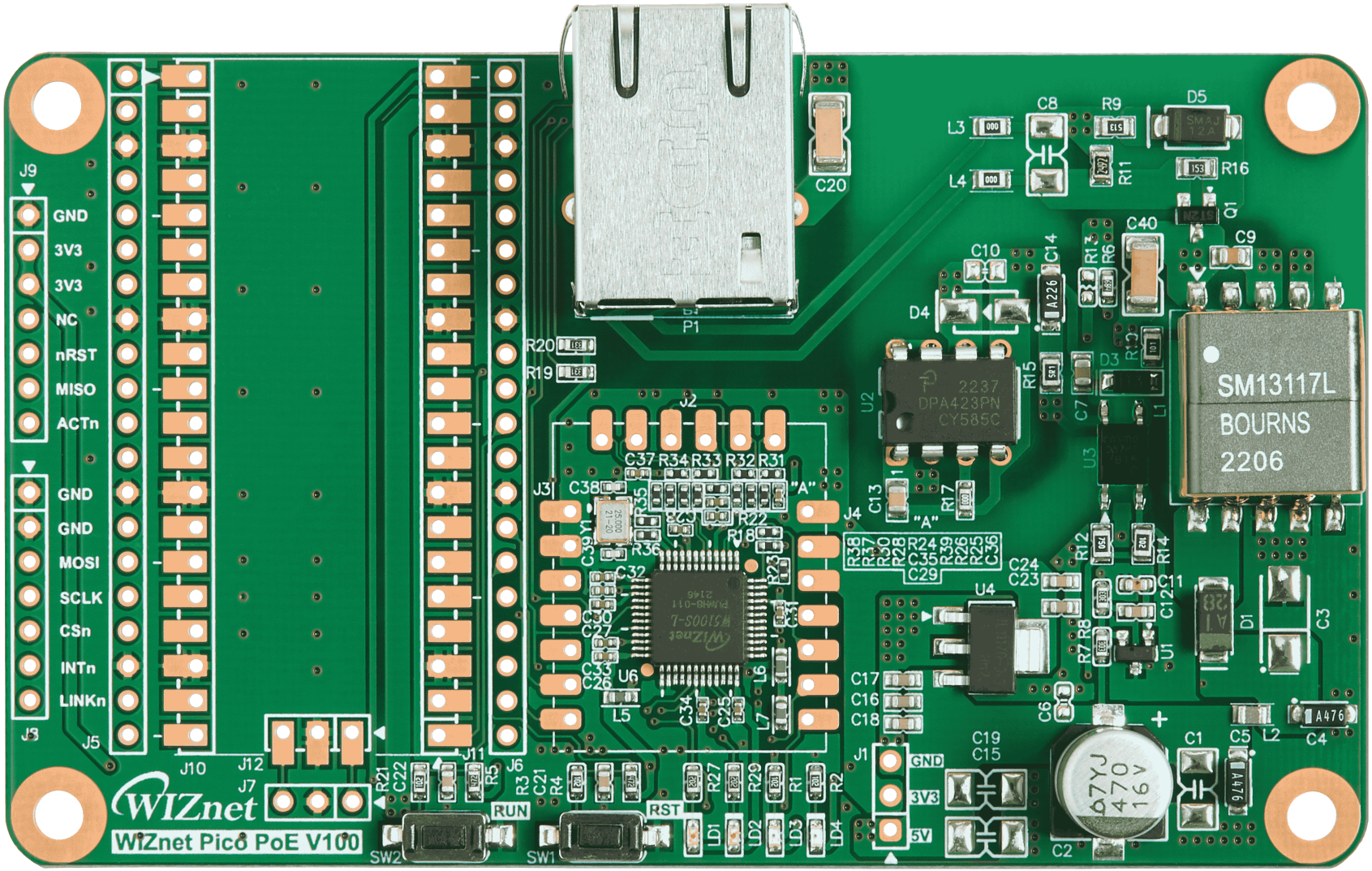
- 3-pin ARM Serial Wire Debug (SWD) port
- 10 / 100 Ethernet PHY embedded
- Supports Auto Negotiation
    - Full / Half Duplex

    - 10 / 100 Based
- Built-in RJ45(BR1-ZZ-0049)
- Built-in LDO (IL1117-3.3)

Hardware Specification



Mounting Raspberry Pi Pico, WIZnet Ethernet IO Module


J9
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CSn
INTn
LINKn
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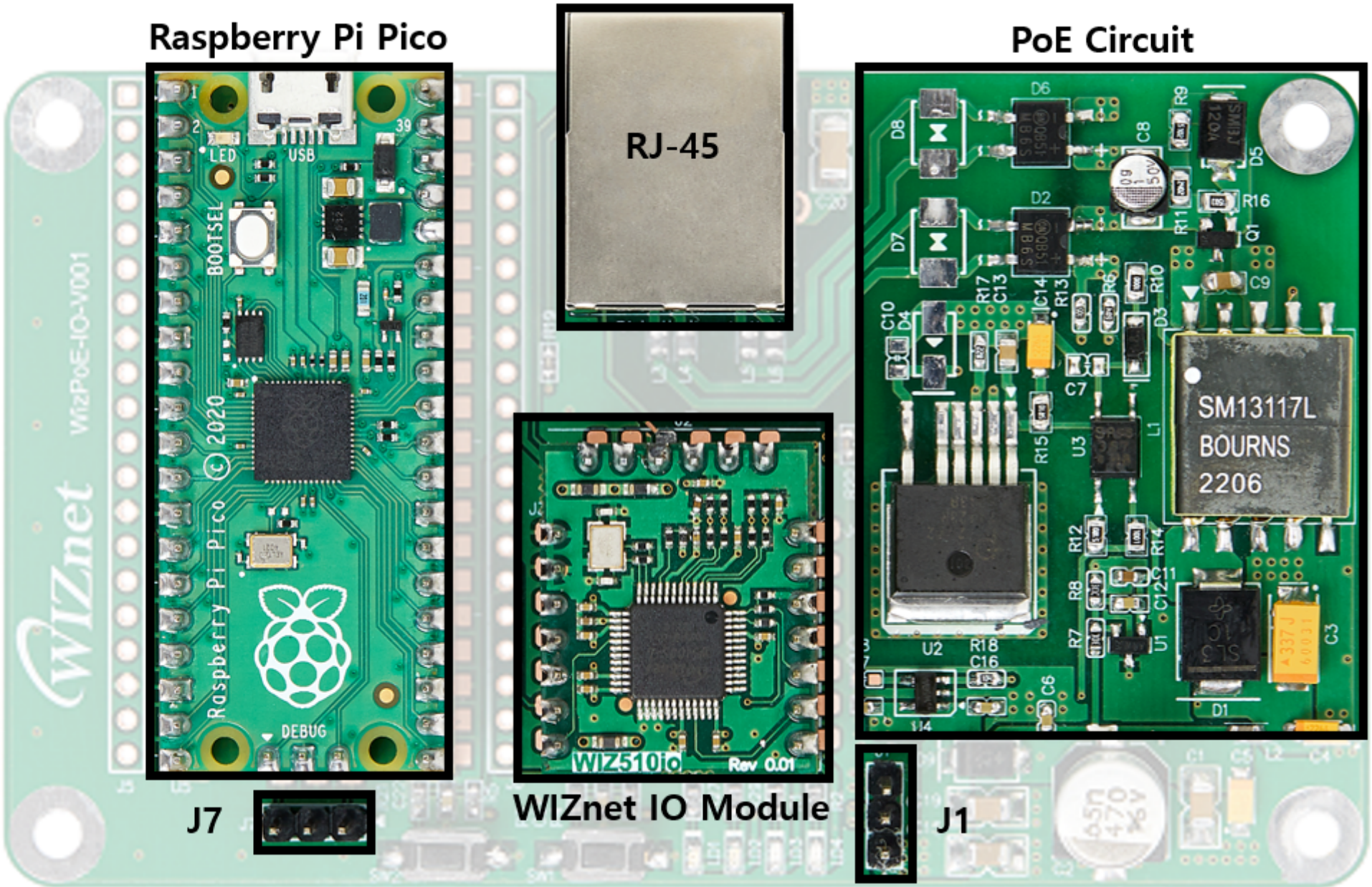
J5
J10
J12
J7
J11
J6
P1
C20
L3
L4
C8
R9
D5
R16
Q1
C40
C9
C10
C14
D4
D3
R15
U2
2237
DPA423PN
CY585C
SM13117L
BOURNS
2206
J2
J3
J4
C37
R34
R33
R32
R31
C38
R35
Y1
R22
R18
R36
C32
C27
C33
C26
U6
L5
C34
C25
L6
L7
C31
C13
R17
"A"
R38
R37
R30
R28
R24
R39
R26
R25
C36
C35
C29
C24
C23
U4
R12
R14
C12
C11
R7
R8
U1
D1
C3
C17
C16
C18
C6
C19
C15
J1
GND
3V3
5V
C1
C5
L2
C4
C2
R21
C22
R5
R3
C21
R4
R27
R29
R1
R2
RUN
RST
SW2
SW1
LD1
LD2
LD3
LD4
WIZnet
WIZnet Pico PoE V100

Removed Raspberry Pi Pico, WIZnet Ethernet IO Module



Parts

Raspberry Pi Pico

WIZnet IO Module pinout is directly connected to the GPIO of Pico Board as shown in the picture above. GPIO16, GPIO17, GPIO18, GPIO19, GPIO20, GPIO21 are connected to WIZnet IO Module. These pins enable SPI communication with WIZnet Chip to use Ethernet function. If you are using the Ethernet function, these pins cannot be used for any other purpose

Raspberry Pi Pico to WIZnet IO Module Connecttion Pin

I/O	Pin Name	Description
I	GPIO16	Connected to MISO on W5100S
O	GPIO17	Connected to CSn on W5100S
O	GPIO18	Connected to SCLK on W5100S
O	GPIO19	Connected to MOSI on W5100S
O	GPIO20	Connected to RSTn on W5100S
I	GPIO21	Connected to INTn on W5100S
I	GPIO24	VBUS sense - high if VBUS is present, else low
O	GPIO25	Connected to user LED

I/O	Pin Name	Description
I	GPIO29	Used in ADC mode (ADC3) to measure VSYS/3

Power Pin of Raspberry Pi Pico

Pin No.	Pin Name	Description
PIN40	VBUS	Micro-USB input voltage, connected to micro-USB port pin 1. Nominally 5V.
PIN39	VSYS	Main system input voltage, which can vary in the allowed range 4.3V to 5.5V, and is used by the on-board LDO to generate the 3.3V .
PIN37	3V3_EN	Connects to the on-board LDO enable pin. To disable the 3.3V (which also de-powers the RP2040 and W5100S), short this pin low.
PIN36	3V3	Main 3.3V supply to RP2040 and W5100S, generated by the on-board LDO.
PIN35	ADC_VREF	ADC power supply (and reference) voltage, and is generated on W5100S-EVB-Pico by filtering the 3.3V supply.
PIN33	AGND	Ground reference for GPIO26-29.
PIN30	RUN	RP2040 enable pin, To reset RP2040, short this pin low.

J1 Power Output Header

Pin No.	Pin Name	Description
1	+5V	+5V Power I/O Pin
2	+3.3V	+3.3V Power I/O Pin
3	GND	Ground

J7 SWD Header

3-pin ARM Serial Wire Debug (SWD) port

Pin No.	Pin Name
1	SWDIO
2	GND
3	SWCLK

Recommended operating conditions

Item	Description
Operation Temperature MAX	70°C
Input Volatge	48 ~ 57V

Technical Reference

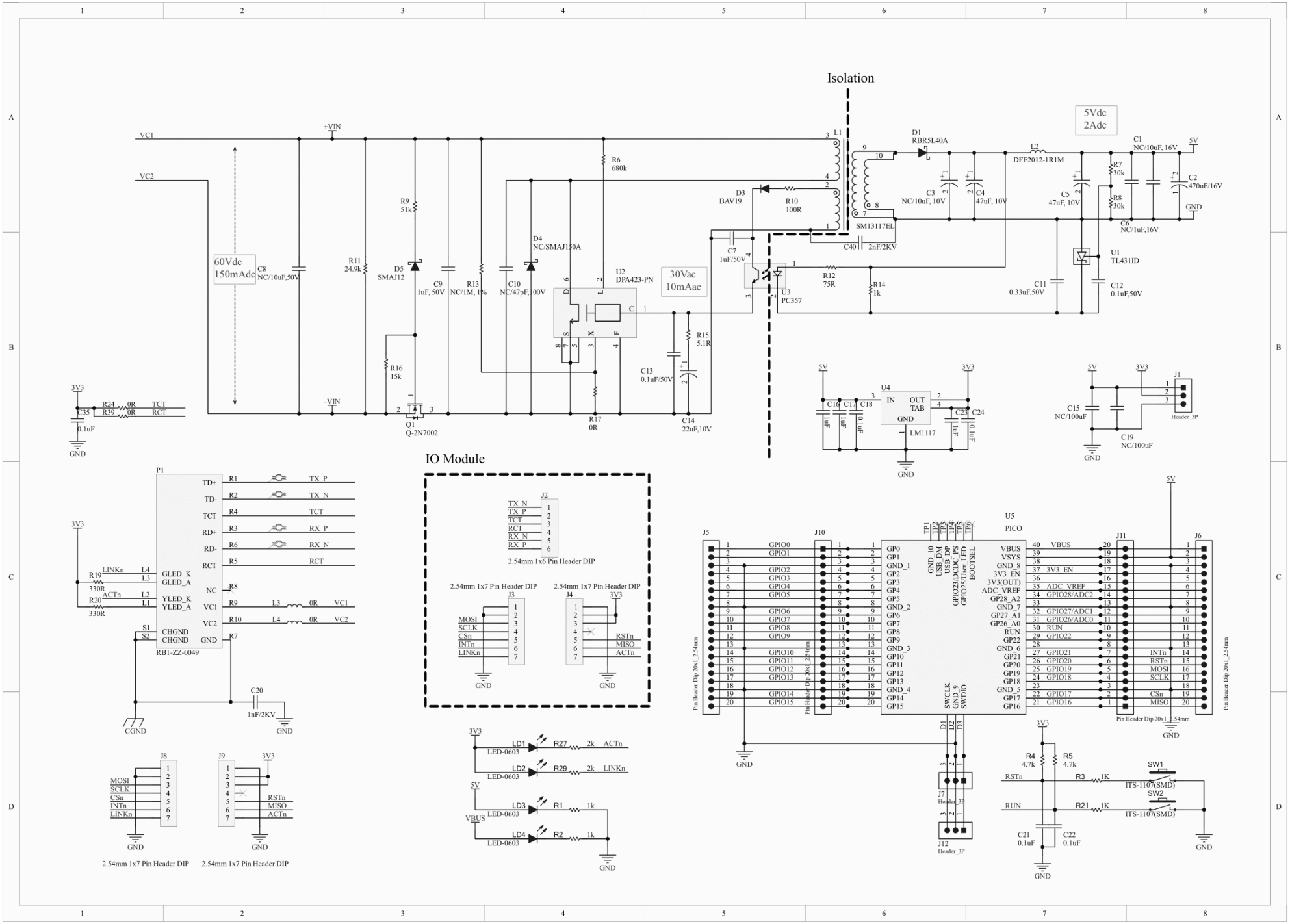
io-Module

- W5100S-io Data Reference
- W5500-io Data Reference
- W6100-io Data Reference

RP2040 Datasheet

- Download

Schematic V100

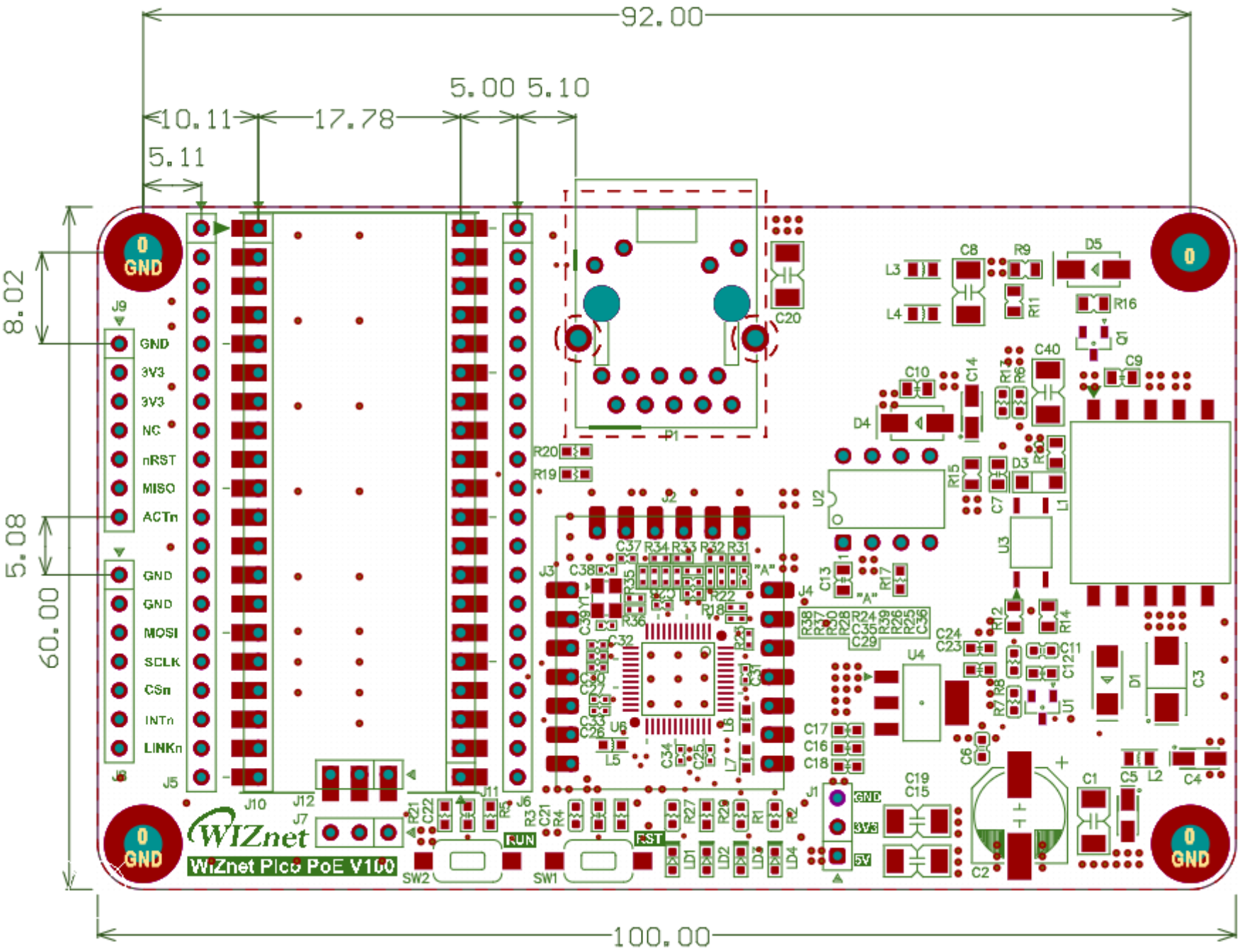

Isolation
5Vdc
2Adc
60Vdc
150mAdc
30Vac
10mAac
IO Module
+VIN
-VIN
VC1
VC2
SM13117EL
DFE2012-1R1M
RBR5L40A
BAV19
NC/SMAJ150A
SMAJ12
DPA423-PN
PC357
TL431ID
LM1117
Q-2N7002
RB1-ZZ-0049
PICO
2.54mm 1x7 Pin Header DIP
2.54mm 1x6 Pin Header DIP
Header_3P
ITS-1107(SMD)
LED-0603
GND
3V3
5V
VBUS

- Sch_WIZnet_Pico_PoE_FIN

Schematic & Partlist & Gerber File

- Go to Github

Dimension (Unit : mm)


92.00
5.00
5.10
10.11
17.78
5.11
8.02
5.08
60.00
100.00
GND
3V3
3V3
NC
nRST
MISO
ACTn
GND
GND
MOSI
SCLK
CSn
INTn
LINKn
WIZnet
WIZnet Pico PoE V100
RUN
RST
SW1
SW2
P1
U2
U3
U4
U6
J1
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
3V3
5V

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