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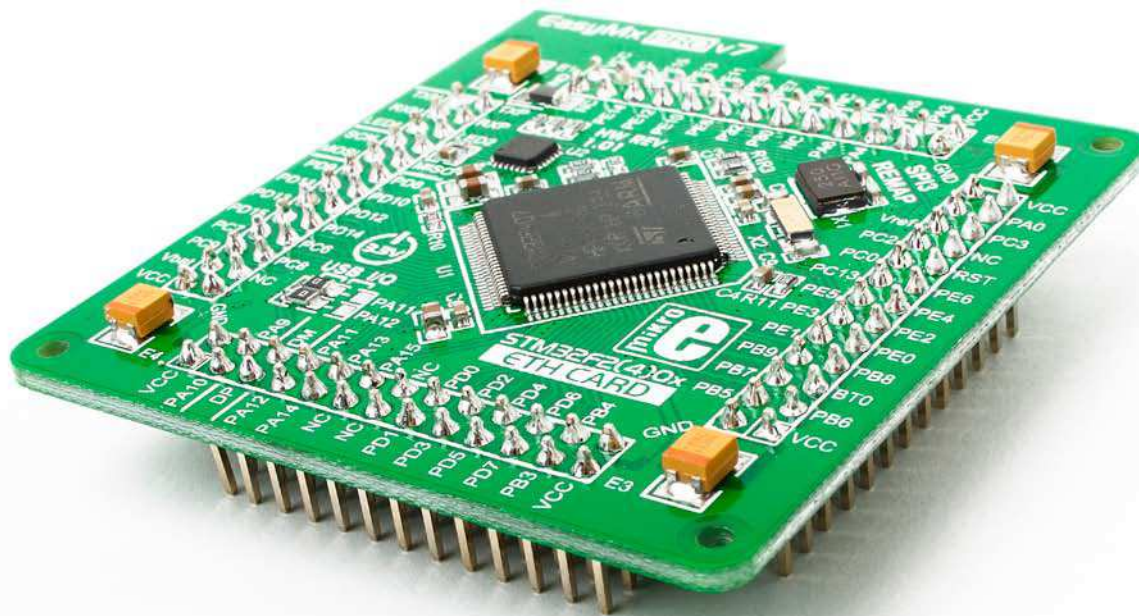
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HP Ethernet MCU card with
STM32F407VGT6 (100-pin TQFP)

EasyMx PRO^{v7}

Card information

The **HP ETH MCU card** is shown on **Figure 1**. It contains **STM32F407VGT6** microcontroller with on-chip peripherals and is a great choice for both beginners and professionals. After testing and building the final program, this card can also be taken out of the board socket and used in your final device.
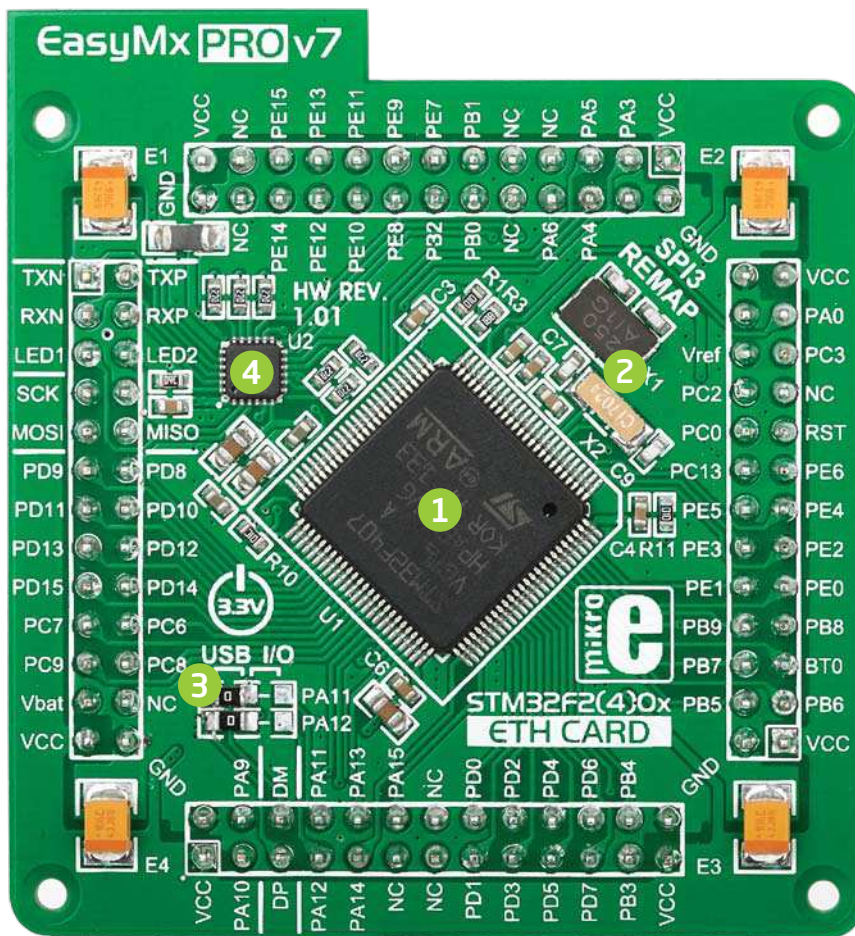

Figure 1: MCU card with **STM32F407VGT6**

1 **STM32F407VGT6** chip has **168MHz** frequency, **1 Mbyte** of Flash memory, **192K + 4K bytes** of general-purpose SRAM, integrated Ethernet controller, **USB 2.0** (OTG, Host, Device), 83 General purpose **I/O pins**, 12x16-bit and 2x32-bit **timers,** 3x12-bit **A/D** (24 channels), 2x12-bit **D/A** , 4x**USARTs**, 2x**UARTs**, Real time clock (**RTC**), 2x**I2C,** 3x**SPI** and 2x**CAN** controllers.

2 **25MHz crystal oscillator.** We carefully chose the most convenient crystal value that provides clock frequency which can be used directly, or with the PLL multipliers to create higher MCU clock value. MCU card also contains 32.768 kHz crystal oscillator which provides external clock for RTCC module.

3 **USB communications lines.** These two jumpers, when in USB position, connect D+ and D- lines of the on-board USB connector with PA11 and PA12 microcontroller pins. Since **STM32F407VGT6** supports USB, jumpers are in USB position.

4 **Ethernet transceiver.** MCU card contains single-chip Ethernet physical (PHY) layer transceiver which provides additional Ethernet functionality to **STM32F407VGT6** controller
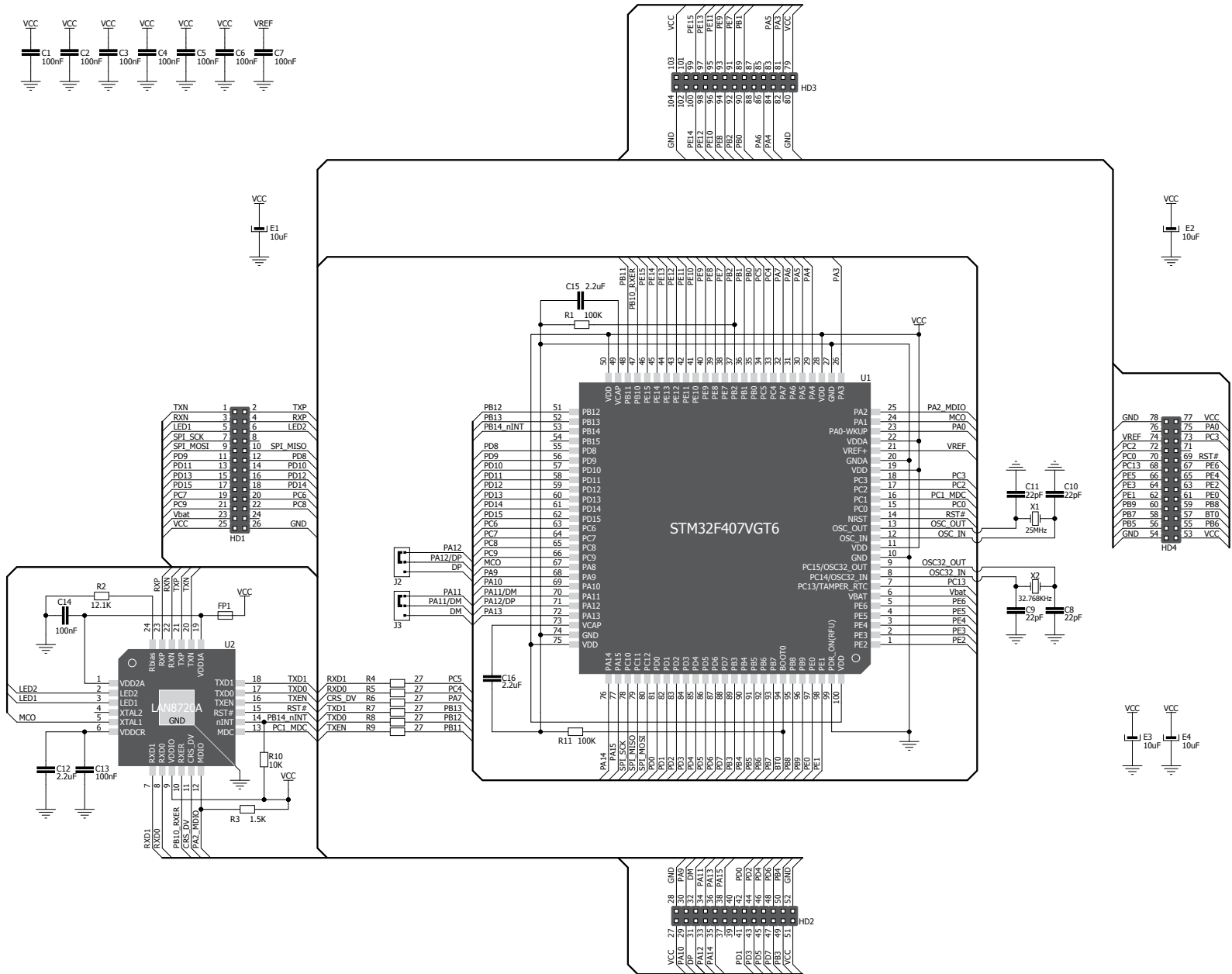
EasyMx PRO v7

VCC VCC VCC VCC VCC VCC VREF

| C1 | C2 | C3 | C4 | C5 | C6 | C7 |
| 100nF | 100nF | 100nF | 100nF | 100nF | 100nF | 100nF |

VCC
E1
10uF

VCC
E2
10uF

HD3

103 101 99 97 95 93 91 89 85 83 81 79
VCC PE15 PE13 PE11 PE9 PE7 PB1 PA5 VCC
104 102 100 98 96 94 92 90 88 86 84 82 80
GND PE14 PE12 PE10 PB8 PB2 PB0 PA6 PA4 GND

C15 2.2uF
R1 100K
VCC

STM32F407VGT6
U1

TXN 1 2 TXP
RXN 3 4 RXP
LED1 5 6 LED2
SPI_SCK 7 8
SPI_MOSI 9 10 SPI_MISO
PD9 11 12 PD8
PD11 13 14 PD10
PD13 15 16 PD12
PD15 17 18 PD14
PC7 19 20 PC6
PC9 21 22 PC8
Vbat 23 24
VCC 25 26 GND
HD1

PA12/DP J2
DP
PA11/DM J3
DM

R2 12.1K
C14 100nF
FP1 VCC

LAN8720A
U2

RXD1 R4 27 PC5
RXD0 R5 27 PC4
CRS_DV R6 27 PA7
TXD1 R7 27 PB13
TXD0 R8 27 PB12
TXEN R9 27 PB11

R11 100K

LED2
LED1
MCO

C12 2.2uF
C13 100nF

R10 10K
VCC

R3 1.5K

GND 78 77 VCC
76 75 PA0
VREF 74 73 PC3
PC2 72 71
PC0 70 69 RST#
PC13 68 67 PE6
PE5 66 65 PE4
PE3 64 63 PE2
PE1 62 61 PE0
PB9 60 59 PB8
PB7 58 57 BT0
PB5 56 55 PB6
GND 54 53 VCC
HD4

C11 22pF C10 22pF
X1 25MHz

C9 22pF C8 22pF
X2 32.768KHz

VCC VCC
E3 E4
10uF 10uF

HD2

28 30 32 34 36 38 40 42 44 46 48 50 52
GND PA9 DM PA11 PA13 PA15 PD0 PD2 PD4 PD6 PB4 GND
27 29 31 33 35 37 39 41 43 45 47 49 51
VCC PA10 DP PA12 PA14 PD1 PD3 PD5 PD7 PB3 VCC

Figure 2: MCU card schematics

Card dimensions
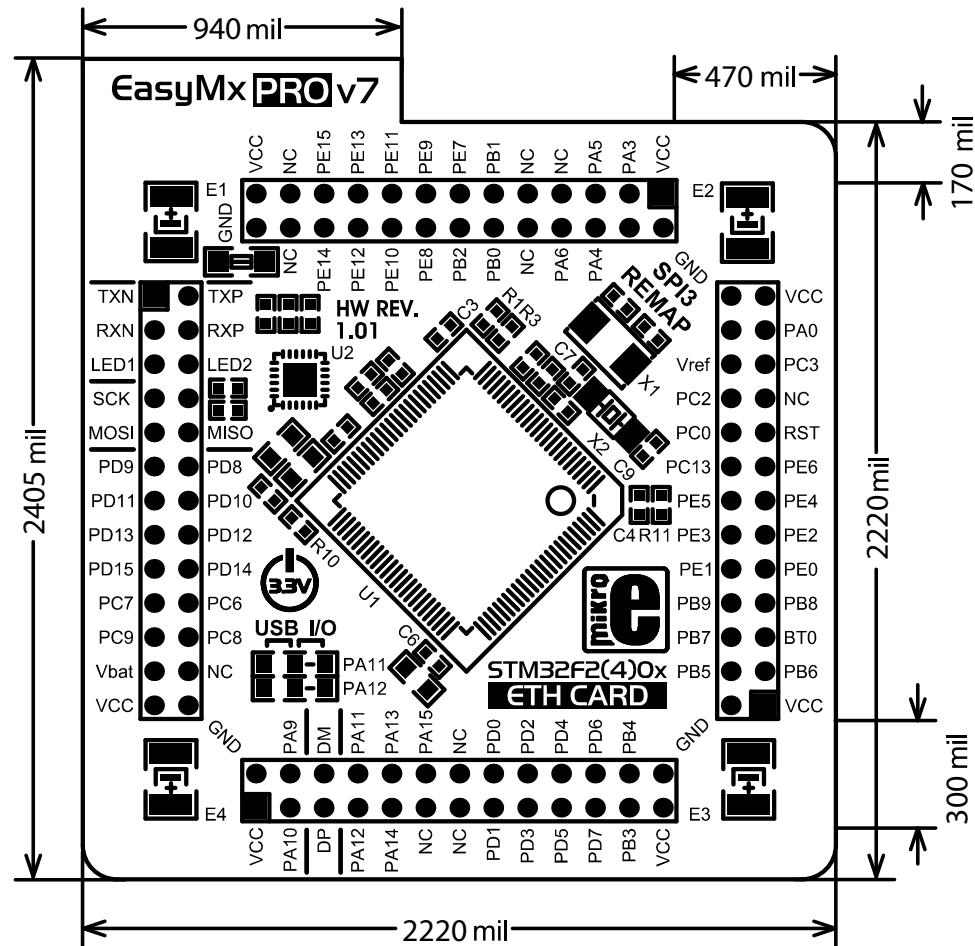
Figure 3: MCU card dimensions. Values are in mils.

connectivity

mikro ICD
IN-CIRCUIT
DEBUGGER

DUAL POWER SUPPLY
3.3V | 5V
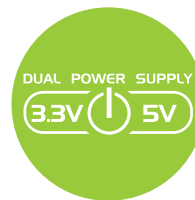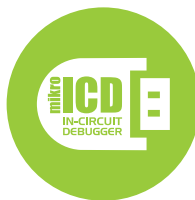
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