D10
D_Schottky

12V

U6
MC78L05_SOT89

3 IN OUT 1 5V

GND 2

C4 .33u

C3 .1u

C2 10u

5V

MCU input has 20K pullup with Vil(max_ = 0.3xVDD
External pull down to less than 0.5V
Iil = (5 − 1.5)/20K = .175 ma
Protection resistor max is < 1V/.175 = 5.7K U8

KEY+

R9 2K2   R20 1K

C6 .1u

D5 MM3Z3V6

TLP185

1   6 KEY_M

3   4

KEY−

R5 510   D1

R1 1K5   U1 AQY212G2S

SEQ1

R6 510   D2

R2 1K5   U3 GAQY212G2S

SEQ2

R7 510   D3

R3 1K5   U4 GAQY212G2S

SEQ3

R8 510   D4

R4 1K5   U5 GAQY212G2S

SEQ4

12V   1
GND   2
KEY+   3
KEY−   4
       5
       6
       7
       8   J1
       9
       10
       11
       12

5V   U9
      ATtiny1616−M

C9 .1u

4 VCC

RESET/PA0   19 UPDI
PA1   20 RTS\
PA2   1 CTS\
PA3   2 LED
PA4   5 X1
PA5   6 X2
PA6   7 X3
PA7   8 X4

J4
Conn_01x08_Pin

1
2
X1 3
X2 4
X3 5
X4 6
X5 7
X6 8

LED

D9

R17 1K

SEQ3   15 PC0
SEQ2   16 PC1
SEQ1   17 PC2
KEY_M   18 PC3

PB0 14 SEQ4
PB1 13   TXD_M
PB2 12   TXD_M
PB3 11   RXD_M
PB4 10
PB5 9

GND 3

J3
USB−C 2.0 16P

VBUS A4

CC1   A5   5K1 R18   D6
CC2   B5   5K1 R19

D−   A7
D−   B7
D+   A6
D+   B6

SBU1 A8
SBU2 B8

D12 MM3Z3V6

D11 MM3Z3V6

SHIELD S1   GND A1

FB1
FerriteBead_Small

5V

C8 .1u

C1 47p   C5 47p   C7 .1u

27 R13   D−M 9
27 R14   D+M 8

U7
FT230XS

3V3 10 3V3OUT VCC 12   VCCIO 3

USBDM 9
USBDP 8
RESET 11

TXD 1 TXD_U
RXD 4 RXD_U
RTS\ 2 RTS\
CTS\ 6 CTS\

CBUS0 15 TXDEN
CBUS1 14 RXLED/
CBUS2 7 TXLED/
CBUS3 16 SLEEP\

GND 5   GND 13

R12 1K   RXD_M

R11 1K   UPDI

J2
Header 1x3

1 Program
2
3 Comms

TXD_M

5V

D7   D8

R15 1K

R16 1K

CBUS signals use defaults