J1
+12V
GND
GND
+5V
1
2
3
4
4 Pin Molex

+12V

C1 4.7µF
C2 0.1µF
C16 0.1µF
C17 0.1µF

GND
GND

D1

R1 1.9kO

U1
R-78E5.0-0.5
Vin   Vout
GND
1   3
2

+5V

C3 4.7µF
C4 0.1µF

GND

D2

C5 0.1µF
C6 0.1µF
C7 0.1µF
C8 0.1µF
C9 0.1µF
C10 0.1µF
C11 0.1µF
C12 0.1µF
C13 0.1µF
C14 10µF

GND

R2 560O

GND

U2
STMicro PM8834MTR
VCC   6
PWM_1
ENABLE_1
OUT_1   7
PWM_2
ENABLE_2
OUT_2   5
GND
2
1
4
8
3

AVR_RED
LED_ENABLE
AVR_GREEN

+12V

POWER_GREEN
DRIVE_RED

Q1
Vishay SI4686DY-T1-E3
Drain
Gate
Source

POWER_RED
DRIVE_GREEN

Q2
Vishay SI4686DY-T1-E3
Drain
Gate
Source

U3
STMicro PM8834MTR
VCC   6
PWM_1
ENABLE_1
OUT_1   7
PWM_2
ENABLE_2
OUT_2   5
GND
2
1
4
8
3

AVR_BLUE

POWER_BLUE
DRIVE_BLUE

Q3
Vishay SI4686DY-T1-E3
Drain
Gate
Source

GND
GND

H1 H2 H3 H4
Hole Hole Hole Hole

+5V

J2
6-Pin ISP Header
VCC   SCK
MOSI   MOSI
MISO   MISO
GND   RESET
SCK   3
4
1
5
2
6

GND

P1
PWM Breakout
LED_ENABLE
AVR_RED
AVR_GREEN
AVR_BLUE
1
2
3
4
5

GND

P2
LED Output
+12V
POWER_GREEN
POWER_RED
POWER_BLUE
1
2
3
4

D3
R3 560O
GND

VBUS

+5V

U4
ATmega32U4-AU
AREF   PF0 (ADC0)   41   VFD_BUSY
UVcc   PF1 (ADC1)   40   VFD_RST
           PF4 (ADC4/TCK)   39
VCC   PF5 (ADC5/TMS)   38
VCC   PF6 (ADC6/TDO)   37
AVCC   PF7 (ADC7/TDI)   36
AVCC   PE6 (INT.6/AIN0) 1   LED_ENABLE
           PE2 (HWB)   33   HWB
           PC7 (ICP3/CLK0/OC4A) 32
           PC6 (OC3A/OC4A) 31
42
2
14
34
24
44

F1

J3
67503-1020
MH4 VBUS
MH3 D-
     D+
MH2 ID
MH1 GND
1
2
3
4
5

USB_BEFORE_FUSE
USB_N   R5 22O   AVR_N
USB_P   R7 22O   AVR_P

D-   3
D+   4

C18 0.1µF
C19 0.1µF

GND

R4 10kO

+12V
D4
R6 560O

GND

C15 1µF
GND
UCap
UCap   6
VBus   7
+5V

PD7 (T0/OC4D/ADC10)   27
PD6 (T1/OC4D/ADC9)   26
PD5 (XCK1/CTS)   25
PD4 (ICP1/ADC8)   24
PD3 (TXD1/INT3)   21   VFD_SIN
PD2 (RXD1/INT2)   20
PD1 (SDA/INT1)   19
PD0 (OC0B/SCL/INT0)   18

R8 10kO   RESET
RESET   13

Y1
Abracon AWSCR-16.00CV-T
GND   XIN
      XOUT
XIN   1
XOUT   3
2

XTAL2   16
XTAL1   17

PB7 (PCINT7/OC0A/OC1C/RTS) 12   AVR_BLUE
PB6 (PCINT6/OC1B/OC4B/ADC13) 30   AVR_GREEN
PB5 (PCINT5/OC1A/OC4B/ADC12) 29   AVR_RED
PB4 (PCINT4/ADC11)   28
PB3 (PDO/PCINT3/MISO)   11   MISO
PB2 (PDI/PCINT2/MOSI)   10   MOSI
PB1 (PCINT1/SCLK)   9   SCK
PB0 (SS/PCINT0)   8

UGnd   5
GND   15
GND   23
GND   35
GND   43

GND

P4
VFD Breakout
1
2
3
4

VFD_SIN
VFD_BUSY
VFD_RST

+5V

P3
VFD Conn
1
2
3
4
5
6

GND   GND

Bill of Materials

Source Data From:	**Free Documents**
Project:	**Free Documents**
Variant:	**None**

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Approved	Notes	