MICROCONTROLLER

+5V
C8
1uF CL21B105KBFNNNE (C28323)
.1uF CL21B104KBFNNNE (C49678)

U2
VCC
PA0/RESET/UPDI/AIN0/LUT0-IN0   10   UPDI
PA1/AIN1/TXD(ALT)/MOSI/LUT0-IN1   11
PA2/EVOUT0/AIN2/RXD(ALT)/MISO/LUT0-IN2 12   POT-ADC
PA3/EXTCLK/AIN3/XCK(ALT)/SCK/WO3   13   ADC-BAT
PA4/AIN4/XDIR(ALT)/SS/WO4/LUT-OUT0 0   LED1
PA5/AIN5/OUT/WO5/WO   1   LED2
PA6/AIN6/AINNO0/MOSI(ALT)   4   LED3
PA7/AIN7/AINP0/MISO(ALT)/LUT1-OUT   5   LED4
PB3/RXD/WO0(ALT)   6   PG
PB2/EVOUT1/TXD/WO2   7   DEBUGTX
PB1/AIN10/XCK/SDA/WO1   8   BUZZER
PB0/AIN11/XDIR/SCL/WO0   9   FAN-PWM
GND   14

ATTINYX04SOIC14

ILM
POT-ADC
ADC-BAT
LED1
LED2
LED3
LED4
PG
B2
BUZZER
FAN-PWM

+5V
UPDI
1
2
3
GND
+5V
NP
UPDI PROGRAMMING
GND

5V DC LINEAR REGULATOR
ALTERNATE: AP7380-50W5-7

+12V   +5V
U1
VIN VOUT   5
1
PWRON   3   CE
C1   4   CB   C3
+ C4
2   GND

LP2985-50DBVR (C74511)
R11   10uF TAJA106K016RNJ (C7171)
1uF CL21B105KBFNNNE (C28323)
10K 0805W8F1002T5E (C17414)
1uF CL21B105KBFNNNE (C28323)
GND

maximum input voltage / maximum amperage
Resistor Divider - 14V   DC Jack - 5A
Buzzer - 15V   Fan Fet - 5.7A
Regulator - 16V
C4 - 16V
Fan Fet - 30V
C1 - 50V

E-FUSE
U9   TPS259472ARPWR

12V-IN   5   IN   OUT   6   +12V
R14 470K   C7
C9   1   EN/UVLO   PGTH   4   GND
R15 75K   TPS259472x   R18 360K
                  R & C values
GND   to be tested
R16 390K   OVCSEL   PG   3   R19 56K
                                              R20
ITIMER DVDT GND ILM   +5V
C6 2.7nF C5 3.6nF   10K 0805W8F1002T5E (C17414) PG
R17 1K
ILM
GND

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FAN POWER

+12V
DC TO FAN BOX
+12V   TE-BNC
SIGNAL
D1   SHIELD
P$1*2
H2
PINS
MBR2H100SFT3G C96515   FAN-GND
Q1
FAN-PWM   R8   BSS123
120 0805W8F1200T5E (C17437)
R9
10K 0805W8F1002T5E (C17414)
GND

BUZZER
DigiKey Buzzer Option
https://www.digikey.com/en/products/detail/cui-devices/CMI-1210-92T/13245502

+12V
SG1
YS-MBZ12095DYB12 C409840
+
BUZZER-GND
Q2
BUZZER   R13   BSS123
120 0805W8F1200T5E (C17437)
R12
10K 0805W8F1002T5E (C17414)
GND

ON/OFF AND FAN SPEED

+12V
GND
POT-ADC
NCD0805R1 (C84256)
POT1
P091S-FC20BR
+5V
LED5
PWRON
PWR LED
R10
1K2 0805W8F1201T5E (C17379)
GND

DC POWER INPUTS
BATT+
TE63952-1
1   PIN   PIN   2
12V-IN
BATT-
TE63952-1
12V-IN   1   PIN   PIN   2
H1   GND-SWITCH
GND
AUX POWER INPUT
BATTERY INPUT
GND

LED GRAPH
+5V
NCD0603G1 C84267
LED1   R4
120 0805W8F1200T5E (C17437)   LED1
LED2   R5
120 0805W8F1200T5E (C17437)   LED2
LED3   R6
120 0805W8F1200T5E (C17437)   LED3
LED4   R7
120 0805W8F1200T5E (C17437)   LED4
LP1
DIALIGHT_LIGHTPIPE

BATTERY VOLTAGE
+12V
R2   18K 0805W8F1802T5E (C17506)
ADC-BAT
R1   10K 0805W8F1002T5E (C17414)
GND

TITLE: Papra v0.6
Document Number: REV:
Date: 7/28/2021 9:57 AM   Sheet: 1/1

v.2 changelog
- ATTINY
  - Removed FAN-TACH
  - Added GND-SWITCH to detect battery or external power
  - Removed NC to Jumper
  - Added FAN-SENSE to detect presence of fan power cable
- Removed JP1 - 3 pin fan header
- Added R11 pulldown on PWRON
- Added C4 power input CAP
- Components changed for JLC
  - LEDs changed to RED
  - MOSFET Fixed
  - Diode package change
  - Resistor values changed
    - R1 & R2 Battery voltage divider changed values (was 10K & 5K6, is 18K & 10K)
    - R8 FET gate resistor reduced (was 75R, is 47R)
    - 12V LED (was 1K1, is 1K2)

v.3
- Added 1A Resettable Fuse to 12V
- Moved FAN-PWM to WO0 (was WO3)
- Flipped Potentiometer 5V & GND

v.4
- Added BNC for connection to fan
- Removed DC Jack to fan

v.5
- Removed GROUND-SWITCH & FAN-SENSE
- Added 2nd fuse for fan 12V power
- Added buzzer circuit, driven by PB1
- Moved LED4 to PA4
- Changed LEDs to bright Green
- Changed LED current limited resistors to 120R
- Changed FET gate resistor to 120R
- Changed UPDI Resistor to 1.02K, per recommendation
- Changed Schottky diode to SOD-123 2AMP package
- Added Schottky Diode for reverse polarity protection on DC input and battery input
- Schematic cleanup, mild

v0.6
- Replaced reverse polarity diode and fuses with E-FUSE circuit
- Connected PowerGood & ILM to ATtiny
- Added 0.1uF to ATtiny
- Removed expansion header
- Connected TXD to touchpad for debug
- Moved ADC-BAT to pin 13
- Renumbered LED1-4 on ATtiny for easy routing