MICROCONTROLLER

+3V3

C5 100n C6 100n C7 100n C8 100n
GND

100n C4
NRST
R10 10k
C21 20pF 8MHz 12pF Y1
C20 20pF
GND
GND
BOARD_REV_DETECT
GND

JTDO
TOF_INT
I2C_SCL
I2C_SDA
TOF_SHUT

U4
STM32F103C8Tx
GND

NRST
BOOT0
PD0
PD1
PC13
PC14
PC15
PB0
PB1
PB2
PB3
PB4
PB5
PB6
PB7
PB8
PB9
PB10
PB11
PB12
PB13
PB14
PB15
VSS
VSSA

VBAT VDD VDD VDD VDDA
PA0
PA1
PA2
PA3
PA4
PA5
PA6
PA7
PA8
PA9
PA10
PA11
PA12
PA13
PA14
PA15

STATUS_LED
CAN_RX
CAN_TX
SWDIO/JTMS
SWCLK/JTCK
JTDI

PWR REGULATION

+12V
PWR_IN
Q1 Si2309CDS-T1-GE3
R9 4.7
FB1 BLM1BAG102SN1D
PWR_IN_FILT

P=I²R = 0.1*0.1*4.7 = 47mW

CRCW0603470J8EMP (C3909058) for pulse
ALT ERJ-UP3J4R7V (C491192)

D1 12V
+12V
R1 10k
ESD Protection Diode
D6 SMF15CA
GND

C12 10uF C16 10uF C17 10uF
GND

5-20V Buck

U9 TPS54202DDC
VIN BOOT
EN   SW
GND FB
GND
NT1

C18 100n BUCK_SW
L2 22uH
C13 33pF
R2 100k
R8 18.2k
GND GND

3V87

LDO 3.9V -> 3.3V
For Transient Rejection

U1 TPS7A2033PDBVR
IN OUT
EN
GND
C10 22uF C11 22uF
+3V3
C1 10uF C3 10uF
GND

Vref = 0.596V (datasheet)
R3 = R2*Vref/(Vout-Vref) = 100k*0.596/(3.9-0.596) -= 18.2k
Vout = 0.596*(100/18.2 + 1) = 3.87V
L = 22uH
$I_{L(Pk)}$ = Iout(max) + (Vout*(Vin(max)-Vout))/(1.6*Vin(max)*L*fsw)
    = 0.1 + (3.87*(20-3.87))/(1.6*20*22u*500k)
    = 277mA
Cout >= (2*dIout)/(fsw * dVout)
      >= (2*2*0.177)/(500k*0.07)
      >= 20uF
      = 22uF
R_{ESR} < Vout(ripple) / Iripple
      < 0.07 / (2*0.177)
      < 197mOhm

SENSOR

+3V3
RN1 YC164-JR-074K7L
+3V3
C14 100n C15 100n
GND

TOF_INT
I2C_SDA
I2C_SCL
TOF_SHUT

U2 VL53L1CXV0FY1
GPIO1
SDA
SCL
XSHUT
AVDD
AVDDVCSEL
AVSSVCSEL
GND
GND

EEPROM

U3 M24C64-RMN6TP
I2C_SCL
SCL
E0
E1
E2
WC
VCC
SDA
VSS
GND
C2 100n GND
+3V3
I2C_SDA
GND

CONNECTORS

J2 TC2050-IDC-NL
PWR_IN
SWDIO/JTMS
SWCLK/JTCK
GND
NRST
JTDI
JTDO

NOTE: Updated for Rev 5 to be TC Standard
for use with TC2050-ARM2010

+12V
NT2
TOP BOTTOM
J1 J3
J4 J5
J6 J7
J8 J9
GND
CANL
CANH
GNDPWR
D4 ESDCAN24-2BLY
GND

H1 MountingHole
H2 MountingHole

CAN BUS

+3V3
C19 10uF
GND
C9 100n
+3V3
U6 SN65HVD230
CAN_TX
CAN_RX
D
R
Vref
Rs
VCC
CANH
CANL
GND
CANH
CANL
GND

LEDS

+3V3
R6 220
D2 LED_ORANGE
STATUS_LED
R7 220
D3 LED GREEN
GND