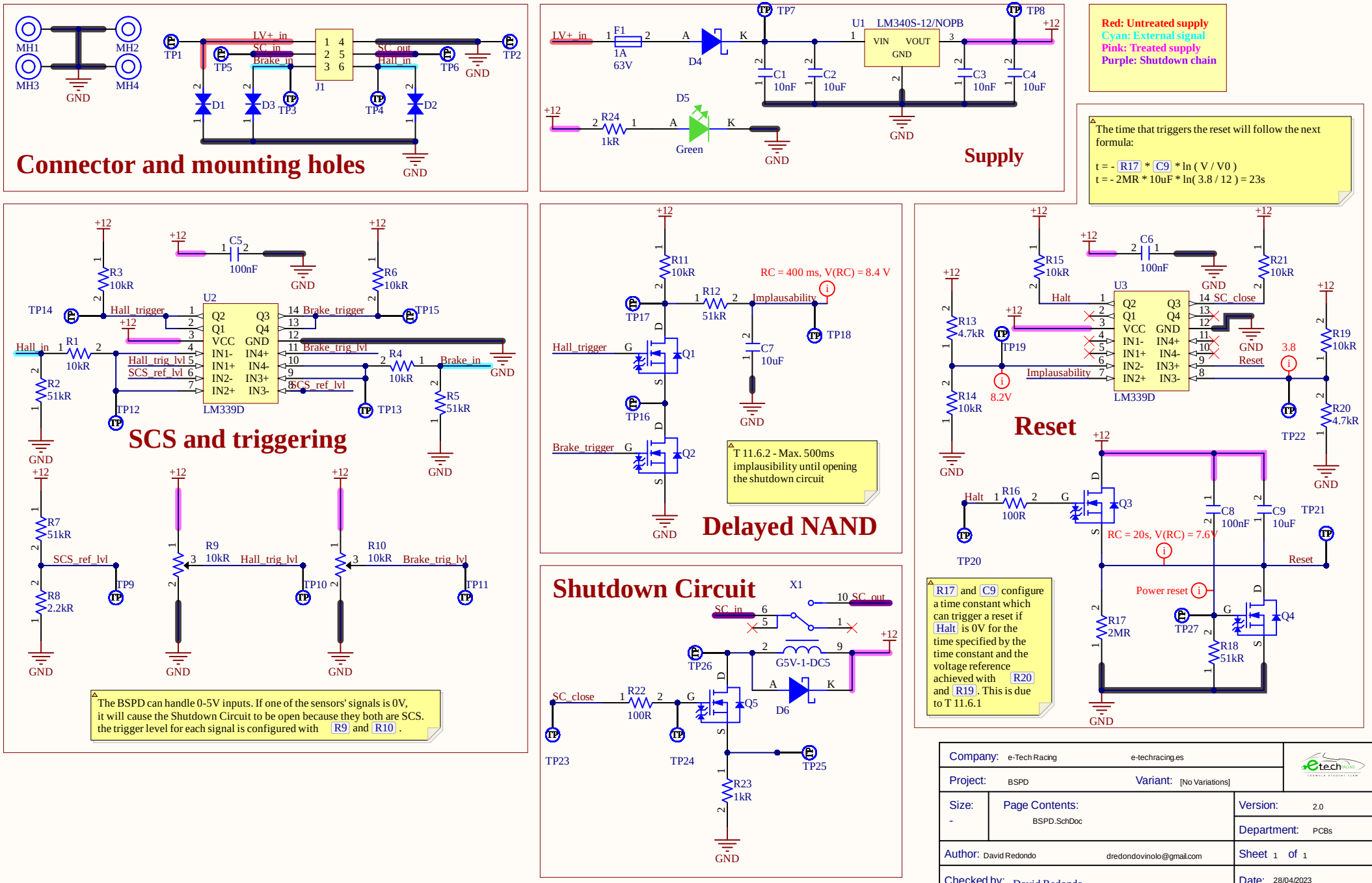
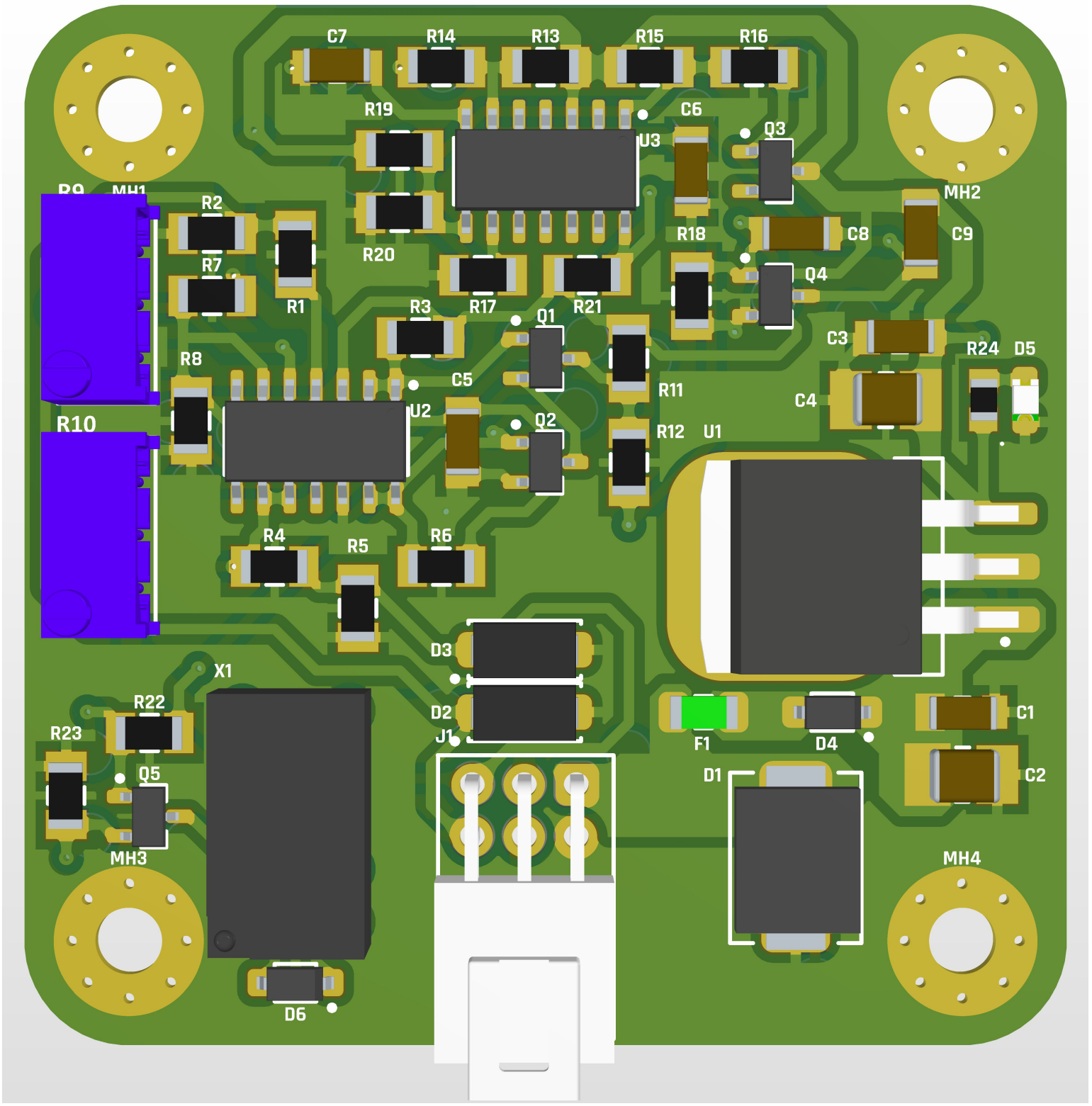
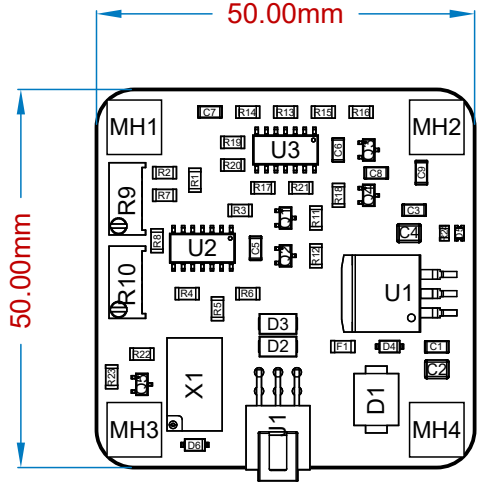
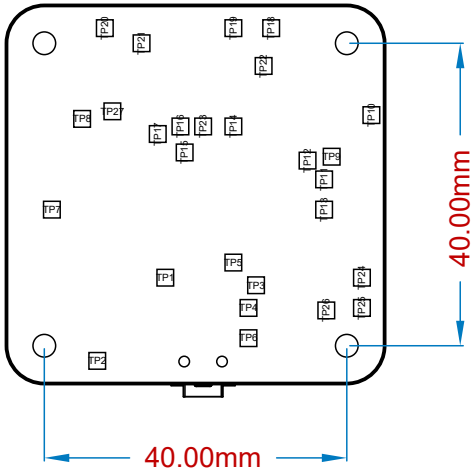
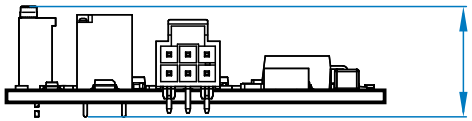

Connector and mounting holes
MH1
MH2
MH3
MH4
GND
TP1
TP2
TP5
TP6
LV+_in
SC_in
Brake_in
SC_out
Hall_in
J1
D1
D3
D2
TP3
TP4
Supply
TP7
TP8
U1
LM340S-12/NOPB
VIN
VOUT
F1
1A
63V
D4
C1
10nF
C2
10uF
C3
10nF
C4
10uF
+12
D5
R24
1kR
Green
Red: Untreated supply
Cyan: External signal
Pink: Treated supply
Purple: Shutdown chain
The time that triggers the reset will follow the next formula:
t = - R17 * C9 * ln (V / V0)
t = - 2MR * 10uF * ln(3.8 / 12) = 23s
SCS and triggering
U2
LM339D
C5
100nF
R3
10kR
R6
10kR
R1
10kR
R2
51kR
R4
10kR
R5
51kR
Hall_trigger
Brake_trigger
Hall_trig_lvl
Brake_trig_lvl
SCS_ref_lvl
TP12
TP13
TP14
TP15
R7
51kR
R8
2.2kR
R9
10kR
R10
10kR
TP9
TP10
TP11
The BSPD can handle 0-5V inputs. If one of the sensors' signals is 0V, it will cause the Shutdown Circuit to be open because they both are SCS. the trigger level for each signal is configured with R9 and R10 .
Delayed NAND
R11
10kR
R12
51kR
C7
10uF
RC = 400 ms, V(RC) = 8.4 V
Implausability
TP17
TP18
TP16
Q1
Q2
T 11.6.2 - Max. 500ms implausibility until opening the shutdown circuit
Shutdown Circuit
X1
SC_in
SC_out
G5V-1-DC5
D6
R22
100R
R23
1kR
Q5
TP23
TP24
TP25
TP26
Reset
U3
LM339D
C6
100nF
R15
10kR
R21
10kR
R13
4.7kR
R14
10kR
R19
10kR
R20
4.7kR
Halt
SC_close
Reset
Implausability
TP19
TP22
8.2V
3.8
R16
100R
Q3
C8
100nF
C9
10uF
TP21
TP20
RC = 20s, V(RC) = 7.6V
Power reset
R17
2MR
R18
51kR
Q4
TP27
R17 and C9 configure a time constant which can trigger a reset if Halt is 0V for the time specified by the time constant and the voltage reference achieved with R20 and R19. This is due to T 11.6.1
Company: e-Tech Racing
e-techracing.es
Project: BSPD
Variant: [No Variations]
Size: -
Page Contents: BSPD.SchDoc
Version: 2.0
Department: PCBs
Author: David Redondo
dredondovinolo@gmail.com
Sheet 1 of 1
Checked by: David Redondo
Date: 28/04/2023

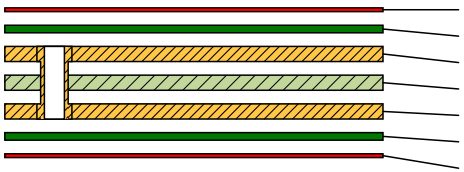

C7
R14
R13
R15
R16
R19
C6
U3
Q3
MH1
R9
R2
R7
R1
R20
R18
C8
MH2
C9
Q4
R3
R17
Q1
R21
C3
R24
D5
R8
C5
U2
R11
C4
R10
Q2
R12
U1
R4
R5
R6
D3
X1
R22
R23
D2
J1
F1
D4
C1
C2
Q5
D1
MH3
MH4
D6







Designator	Name	Quantity
C1, C3	885012008055	2
C2, C4	GRJ32ER71H106KE11L	2
C5, C6, C8	885012208058	3
C7	885012208018	1
C9	885012208036	1
D1	824551301	1
D2, D3	824501600	2
D4, D6	MBR0530	2
D5	150080VS75000	1
F1	0437001.WRA	1
J1	J_NanoFit_2x3	1
MH1, MH2, MH3, MH4	Mounting_Hole_M3	4
Q1, Q2, Q3, Q4, Q5	CPH3455-TL-H	5
R1, R3, R4, R6, R11, R14, R15, R19, R21	CRCW120610K0FKEA	9
R2, R5, R7, R12, R18	CRCW120610K0FKEA	5
R8	CR1206-FX-2201ELF	1
R9, R10	3296W-1-103LF	2
R13, R20	CRS1206-FX-4701ELF	2
R16, R22	CRG1206F100R	2
R17	HVC1206-2M0FT3	1
R23	ERJT08J102V	1
R24	CR0805-JW-102ELF	1
U1	LM340S-12/NOPB	1
U2, U3	LM339D	2
X1	G5V-1-DC5	1



Material	Layer	Thickness
	Top Overlay	
Surface Material	Top Solder	0.010mm
Copper	**Top Layer**	**0.035mm**
		1.500mm
Copper	**Bottom Layer**	**0.035mm**
Surface Material	Bottom Solder	0.010mm
	Bottom Overlay	

Total thickness: 1.590mm