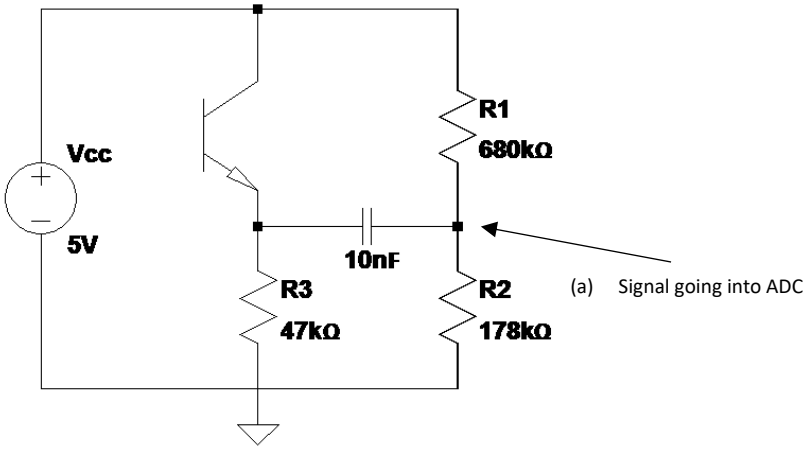
Line following robot datasheet:

PSoC Resources	
Digital Clocks	5/8
Interrupts	15/32
IO	38/48
Timers	3/4
Universal Digital Blocks	82.8%
Flash Memory	6.8%
SRAM	19.4%

PSoC Operating Voltage	**5V**
PCB Operating Voltage	5V
Max Motor Speed	249 RPM
Master Clock Speed	60MHz
Master Operating Voltage	7.2V
PSoC Operating Temperature	-40°C – 85/125°C

Motion Performance		**Sensor Performance**	
Minimum Speed	10cm/s	On Track	<1.2V
Maximum Speed	30cm/s	Off Track	>1.2V
Average Speed	20cm/s		
Turn Speed			

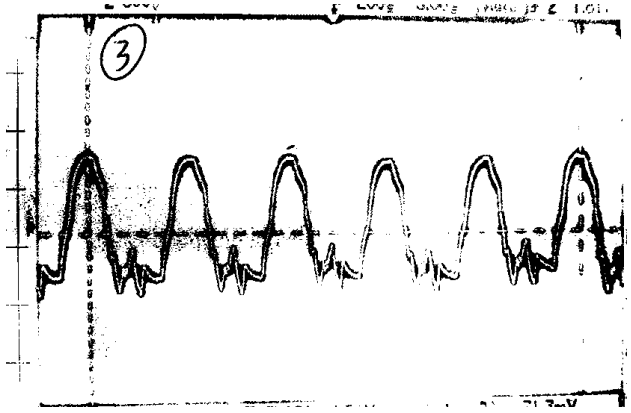
Sensor Waveforms



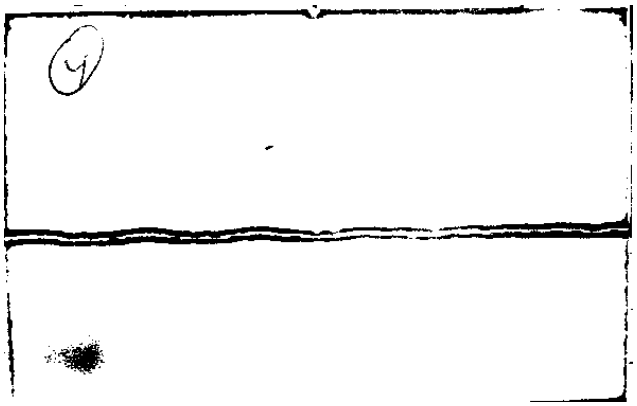
(a) Signal going into ADC

Sensor Circuit

Passive high pass filter
Cut-off frequency 90Hz
DC Shift of ~1V
Peak to peak < 2.048V



Output from (a), going into ADC in the light



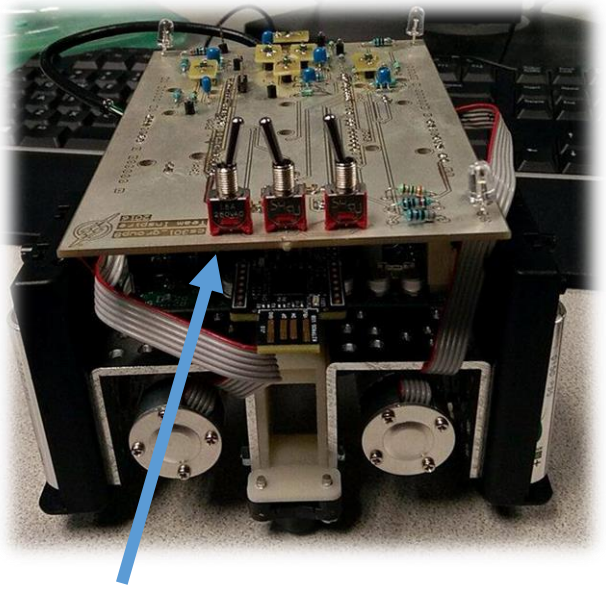
Output from (a), going into ADC in the dark

Off Track

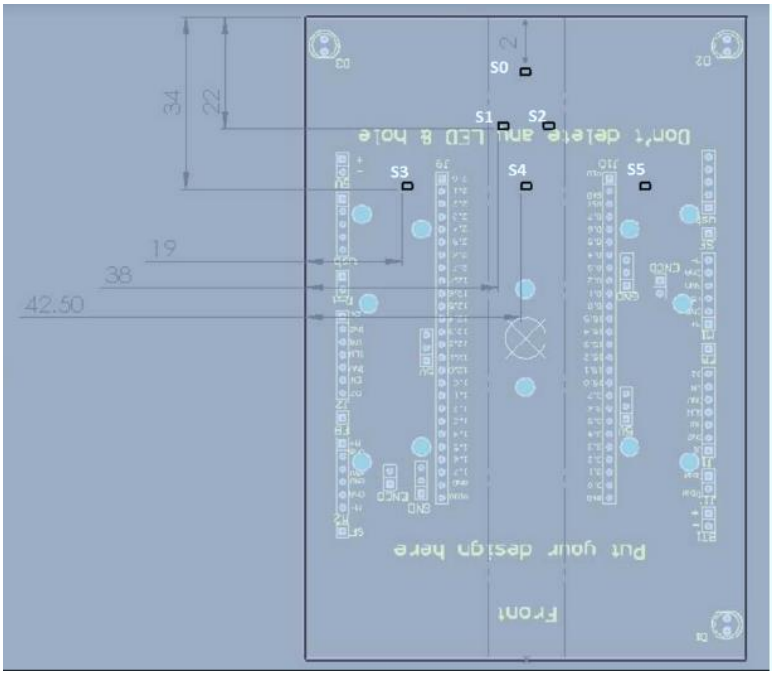
Peak to Peak: 1.5V
Frequency: 120Hz
Offset ≈ 1V

On Track

Peak to Peak ≈ 0v
Frequency: 120Hz
Offset ≈ 1V



Light Switch



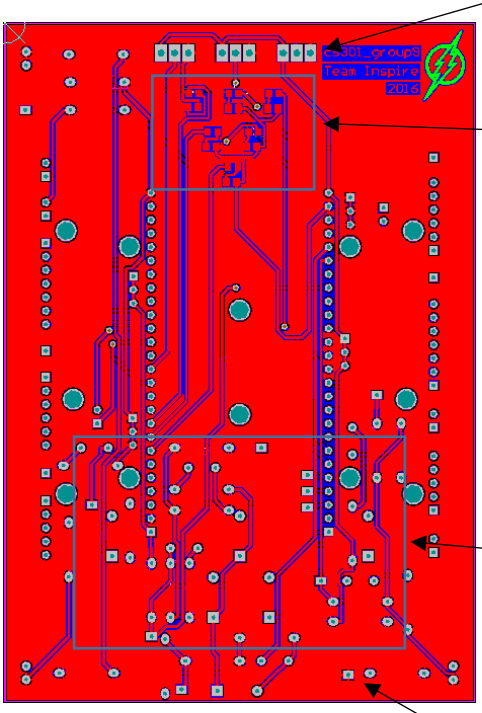
Specifications/Features

- Line following
- Right Turn
- Left Turn
- 180 Degree turn
- x6 Temt6200 ambient sensors
- x3 Toggle Switches
- x6 AA Rechargeable Batteries
- x2 Motors with Quadrature Encoding
- External TX pin to transmit data

Detection	**S1**	**S2**	**S3**	**S4**	**S5**
Straight Line	1	1	0	1	0
Shallow Left	1	0	0	1	0
Shallow Right	0	1	0	1	0
Sharp Left	0	0	1	1	0
Sharp Right	0	0	0	1	1

**Design capable of distinguishing between all possible changes in the track. S0 used to detect completion of left and right turns.*

PCB Design



PCB Top layer

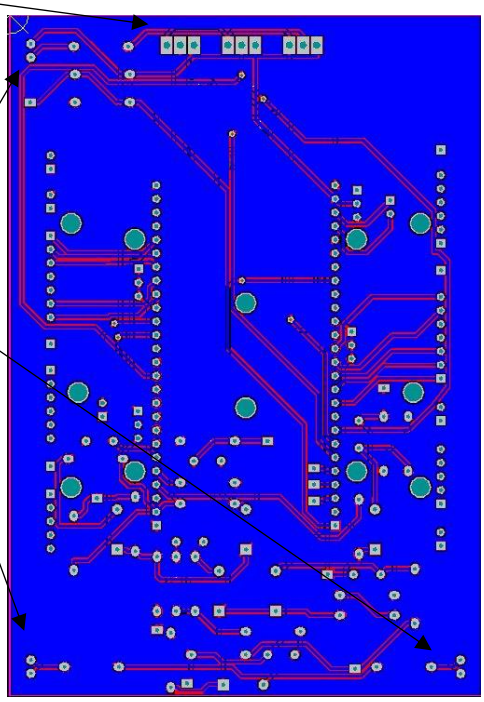
3 Toggle switches

6 Debug LED

3 RF tracking LEDs

6 Light sensor circuits + filter circuits

Ground test pin



PCB Bottom layer