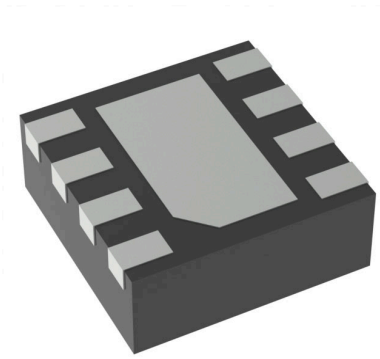
Wind Speed Sensor

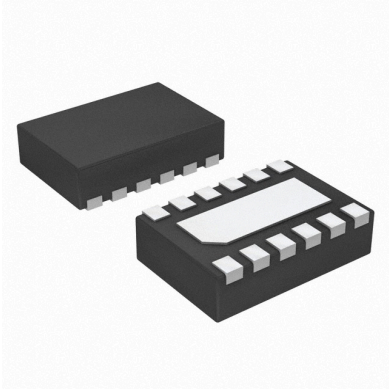
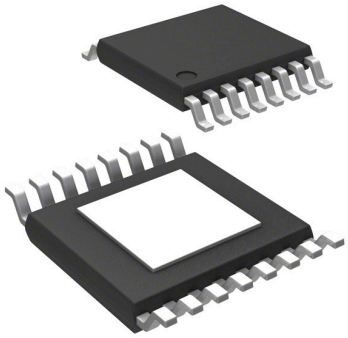
Item	Pros	Cons
 Datasheet	• Simple datasheet • Within budget(under $60) • Analog output with simple conversion • Ships faster • Smaller form factor	• Simple datasheet • Pricey($50) • Not a digital sensor
 Datasheet	• More in-depth datasheet • Within Budget(under $60) • Analog output with simple conversion • Mounting Holes	• Pricey($50) • Not a digital sensor • Larger • More Output wires
 Datasheet	• Reads a lot more than just wind speed • Reads a bunch of things not just wind speed	• Too expensive ($300) • Too many sensors confusing output

Choice: Option 1 is the one we are going with because it is in budget simple to use as well as being smaller.

Motor Driver

Item	Pros	Cons

 DRV8213DSGR	• Motor Driver can handle a max voltage of 11 V
	• Has possible back and forward programmability
	• Datasheet gives details on each pin and what it is supposed to do.
		• Has unknown pins that need to be researched:
		  ○ GAINSEL
		  ○ IPROPI
		• Some of the pin functions are a bit hard to follow.
		• Charts seem to have unnecessary data.

 DRV8836DSSR	• Clear pin layout with descriptions of what does what. • Has details on how much voltage each pin can handle. • The data sheet includes information on what applications are used with the controller.	• The charts on the data sheet contain charts that seem a bit unnecessary and lack some data. • The datasheet has a layout example that seems a bit unnecessary.
 DRV8876PWPR	• The driver has multiple pins that are labeled and have details about how each of them works. • Can hold a max voltage of 40 volts.	• Though each pin is labeled with what it is and how it works, the device has too many unnecessary pins. • The device may require a lot of voltage due to its high Vmax.

Choice: Option 1

Rational: Option 1 felt like the most reasonable decision to use. Texas Instruments is a very renowned company for its micro components, thanks to the given datasheet, it's easy to understand how the component is supposed to work.

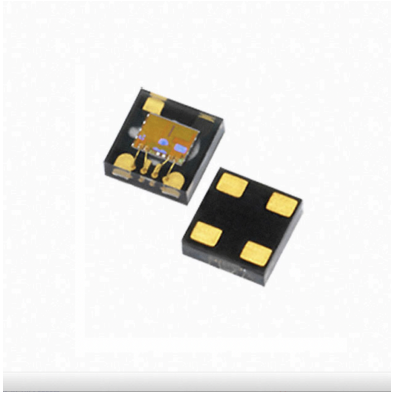
Motor

Item	Pros	Cons
 M1N10FB11G	• Small device to easily install into the product.	• The shaft of the motor is too small to work with and might cause issues. • The Datasheet lacks detailed information.
 VQ4TL2BQ380001	• The motor has a detailed datasheet about what the motor can do	• The mounting type for this motor may be a slight problem for what we are designing. • The shaft of this motor is small and may be hard to work with
 SE30R2NTCD	• The diameter of the shaft can allow mounting parts to it easily.	• The Datasheet lacks certain information to allow proper understanding of the device. • The Length of the shaft is a bit small for any practical use.

Choice: Option 2

Rationale: Option 2 seems to be the best choice for this project, though it may have a small diameter for the shaft, the device can easily spin what we need at high speed to allow the siren noise that we want.

Light Sensor

Item	Pros	Cons
 APDS-9306-065	• Small and compact • Power Efficient • Only $1.66	• Limited Resolution • Potential electromagnetic interference • The sensor's design may be susceptible to cross-talk
 LTR-329ALS-01	• Low Power Consumption • Only $1.02 • A broad range of light detection from 0.01 lux to 64k lux	• Might limit its use in extreme environments • limited lighting conditions • May have compatibility issues in environments with unconventional lighting systems
 PPS34-1-5G11	• Easy to solder and it has a larger surface area, which necessitates more accurate readings. • Fast Response Time	• It's larger than its contour parts. • Limited Resolution • Complex • Price ($39)

Choice: Option 2
Rationale: the LTR-329ALS-01 excels in providing accurate light sensing capabilities, energy efficiency, flexibility, and reliability, making it the preferred choice for a wide range of applications in mobile devices, consumer electronics, and automotive systems where precise ambient light control and compact design are paramount.