Team 305 - Component Selection
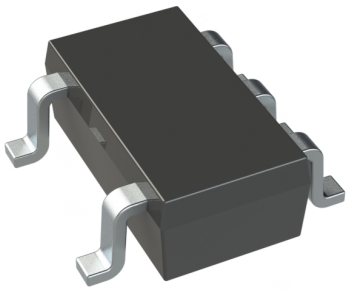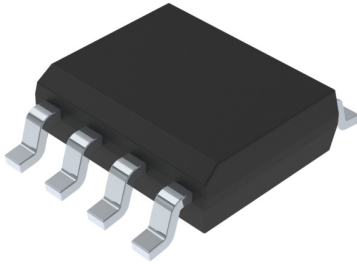
Component: Temperature Sensor

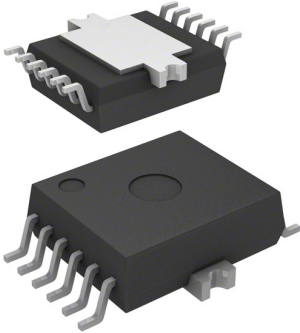**Choices:**

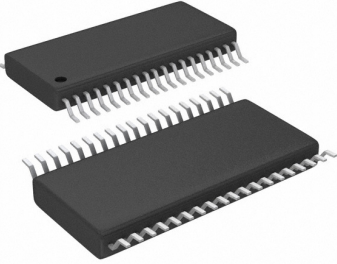| Name: TC74A4-3.3VCTTR	Pros:	Cons:
 Price: $1.15 **Link: Digikey**	● Surface Mount ● Cheap ● Reliable seller ● Datasheet included ● Fast shipping ● Included in class	● Small part
Name: STLM75M2F **Price:** $1.24 **Link: Digikey**	● Surface Mount ● Cheap ● Reliable seller ● Datasheet included	● Long shipping time ● Very small part
Name: STS21 **Price: $3.36** **Link: Digikey**	● Surface Mount ● Reliable seller ● Datasheet included	● Long shipping time ● Impossibly small part - Unable to work with ● Expensive

Choice: TC74A4-3.3VCTTR

Reason: Since it was the part given in class for an ICC, it will be easier to utilize than other components online. Given that it's used by the students and professor, there will be an abundance of help available with this part should we face any hardship with it. Also, given it's cheap and ships fairly quickly, we will have more than enough of them for our project.

Component: Motor Controller

Choices:

Name: IFX9201SGAUMA1 **Price:** $3.79 **Link:** Digikey	Pros: ● Very good ● Reliable seller ● Used in class ● Fast shipping	Cons: ● Expensive
Name: TMC2160A-TA-T **Price:** $6.21 **Link:** Digikey	Pros: ● Will not be over loaded with its 20A max current draw ● Will not be shorted out with its 50V max supply voltage	Cons: ● More expensive ● Long shipping time
Name: IMC101TT038XUMA1	Pros: ● Cheap	Cons: ● Way too many pins

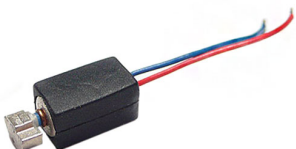|		
  Price: $3.35 **Link: Digikey**	● Very diverse use	● Pins extremely small ● Long shipping time

Choice: IFX9201SGAUMA1

Reason: Since it is the device we used in class, there is great support for this device. It also functions for what we desire.

Component: Motor

Choices:

Name:12V DC Reversible Gearhead Motor **Price: $2.25 Each** **Link: Jameco**	**Pros:** ● Small Gear Case ● Inexpensive	**Cons:** ● Lower RPM ● Short motor shaft
Name:DCM-1023	**Pros:** ● Low RPM ● High Torque ● Fast shipping ● Durable	**Cons:** ● Large and bulky ● Expensive

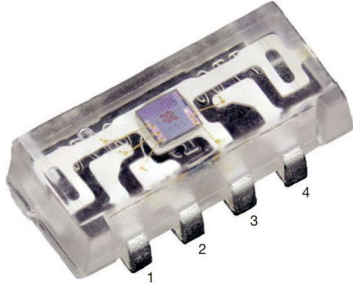|		
 Price: $85.00 **Link: Digikey**		
Name: 1081000006 **Price: $2.50** **Link: Digikey**	**Pros:** ● Super cheap ● Very small	**Cons:** ● Very high RPM ● Long ship time

Choice: 12V DC Reversible Gearhead Motor

Reason: It is small, compact, and cheap. Perfect for our project where we need a small motor.

Component: Light Sensor

Choices:

Name:VEML7700-TT	Pros:	Cons:

 Price: $1.88 **Link:** Digikey	● Very fast shipping ● Cheap ● I2C compatible	● Small part ● Needs subsequent system for easier readings
Name: VEML7700-TR **Price:** $1.88 **Link:** Digikey	**Pros:** ● Very fast shipping ● Cheap ● I2C compatible	**Cons:** ● Small part ● Needs subsequent system for easier readings
Name: RPR-0521RS **Price:** $1.95 **Link:** Digikey	**Pros:** ● I2C Compatible ● Cheap	**Cons:** ● Long shipping time ● Pins are barely accessible.

Choice: VEML7700-TT/TR depending on tolerances for our project. Both have the same electrical works but the shape of the packaging and pin orientation differ a bit. Both are readily available and in stock at a low price. They do everything we need but can be made better with an additional subcircuit.

Reason: We need to communicate with the professor about the potential use of a daughter board for this part. Choice 1 is the primary option though.

Component: Pic Microcontroller

Choice: Chosen in Microcontroller Selection Assignment.

Component: ESP32

Choice: Given