Team 13 - Griffin Rzonca & David Mengel

ECE 445

Unsure about: Capacitors, AD9850, Wall Warts, and power strips, power/extension cord

**Final list:**

**Gate driver:**

2-[mouser.com/ProductDetail/Skyworks-Solutions-Inc/SI82394CD4-IS?qs=7DnIVh14JBvCzUtYbocglg%3D%3D](https://www.mouser.com/ProductDetail/Skyworks-Solutions-Inc/SI82394CD4-IS?qs=7DnIVh14JBvCzUtYbocglg%3D%3D)

**Power Board:**  
Rectifier

2-<https://www.mouser.com/ProductDetail/Diotec-Semiconductor/DB35-10?qs=OlC7AqGiEDlsV5lyy2qneA%3D%3D>

Large Electrolytic capacitor:

In closet of 469 lab, or use <https://www.mouser.com/ProductDetail/KEMET/ALC70A102EL500?qs=sGAEpiMZZMvwFf0viD3Y3fHxNcSaiftwoBQQrEK36wsggCwtL00qGw%3D%3D>

Smaller thin film capacitors: (10 Needed)  
<https://www.mouser.com/ProductDetail/Cornell-Dubilier-CDE/106MMR250K?qs=3tP%252BN51vMXeUCf%2FkKoeJiw%3D%3D>

.05 uF capacitor

1-<https://www.ebay.com/itm/171746725055?chn=ps&mkevt=1&mkcid=28&srsltid=AfmBOoq1JZMFxAyOUYH84CLoge1HN7emKGh3b4DEITQiTP1iTCGpVUq_hhk>

Fuses:

10-<https://www.mouser.com/ProductDetail/Bel-Fuse/5SF-10-R?qs=sGAEpiMZZMsIz3CjQ1xega8hXO6fltfAeiYzrw%252BuPvFneRZxI6B8gg%3D%3D> (could go different amperage)

Fuse Clips

10-<https://www.mouser.com/ProductDetail/Littelfuse/52000001009?qs=sGAEpiMZZMuxTAA0eeO5G%252B04FDVUS6YDlhZ1hNcmgDw%3D>

Transistors

4-[https://www.digikey.com/en/products/detail/stmicro/STW65N65DM2AG/5724364?](https://www.digikey.com/en/products/detail/stmicro/STW65N65DM2AG/5724364?utm_adgroup=Battery%20Products&utm_source=google&utm_medium=cpc&utm_campaign=Dynamic%20Search_EN_Product&utm_term=&utm_content=Battery%20Products&utm_id=go_cmp-120565755_adg-9159613275_ad-398870538372_dsa-436222764897_dev-c_ext-_prd-_sig-CjwKCAjw69moBhBgEiwAUFCx2EMawSgFlmm-pxFuc3-Tvi_8EwTL04SUbX1QeURUIfuVTG6yKvTVQhoC6cIQAvD_BwE&gclid=CjwKCAjw69moBhBgEiwAUFCx2EMawSgFlmm-pxFuc3-Tvi_8EwTL04SUbX1QeURUIfuVTG6yKvTVQhoC6cIQAvD_BwE)

Circuit Breaker

2-<https://www.mouser.com/ProductDetail/Qualtek/QLB-103-11B3N-3BA?qs=vbU4ZYfMnUr53F0RHGXmWA%3D%3D> (Could go different amperage)

Diodes: In power lab

10-<https://www.mouser.com/ProductDetail/Diotec-Semiconductor/1N4007?qs=OlC7AqGiEDmK9mU1uTiCkg%3D%3D>

**Other parts**

Arduino Uno (provided)

Signal Generator <https://www.walmart.com/ip/IC-AD9850-DDS-Signal-Generator-Module-0-40MHz-2-Sine-Wave-And-2-Square-Wave-Output-DIY-Test-Equipment-TE439/2817940150?wmlspartner=wlpa&selectedSellerId=101204430>

[AD9850 DDS Signal Generator Module 0~40MHz 2 Sine Wave 2 Square Wave Output | eBay](https://www.ebay.com/itm/175879198580?mkevt=1&mkcid=1&mkrid=711-53200-19255-0&campid=5338904988&toolid=20006&customid=255_255_255&) ($13.50 but it’s Ebay)

5V Wall Wart (Need 2)

[TOL-15312 SparkFun | Mouser](https://www.mouser.com/ProductDetail/SparkFun/TOL-15312?qs=PzGy0jfpSMtC9mElNzevIw%3D%3D) (5V, 2A)

12V Wall Wart (Need 1)

[TOL-09442 SparkFun | Mouser](https://www.mouser.com/ProductDetail/SparkFun/TOL-09442?qs=WyAARYrbSnYUelhsIaixRA%3D%3D) (12V 600mA - Mouser)

DC Jack

5- <https://www.sparkfun.com/products/10811>

Coax Cable, 6 Feet (in power lab?)

Coax Jack (in power lab?)

Heat Sink (in power lab?)

Wall Plug (In power lab?)

Variac (in power lab?)

Parts to consider:

Power Supply:

* Rectifier
  + Looking into 3 phase rectifier
  + 35
  + [Envistia Mall 1000V Metal 4-Pin Bridge Rectifier, White - KBPC5010 for sale online | eBay](https://www.ebay.com/p/25016784898?iid=192487028487) (1000V 50A, single phase, $6, oversized but looks good)
  + [4 Terminals Single-Phase Diode Bridge Rectifier MDQ 100A Amp High Power 1600V | eBay](https://www.ebay.com/itm/284811260927?hash=item425012f3ff:g:cIoAAOSwQ6FifJij) (1600V 100A, 8$, single phase, also oversized but looks good)
  + [MDS150A 3 THREE Phase Diode Bridge Rectifier 1600V Diode Module | eBay](https://www.ebay.com/itm/354962330833?hash=item52a56754d1:g:-nYAAOSwHdVkmfM5) (1600V $12, 3 phase, may only do half wave though)
  + [**https://www.mouser.com/ProductDetail/Diotec-Semiconductor/DB35-10?qs=OlC7AqGiEDlsV5lyy2qneA%3D%3D**](https://www.mouser.com/ProductDetail/Diotec-Semiconductor/DB35-10?qs=OlC7AqGiEDlsV5lyy2qneA%3D%3D)4 bucks, 3 phase, 35 A, 450 max surge rectifier.
* Variac
  + Possibly source from ECEB
* Fuse
  + [BUSSMANN, 25 A, 600V AC, Fuse - 4XF13|JKS-25 - Grainger](https://www.grainger.com/product/BUSSMANN-Fuse-25-A-4XF13?gucid=N:N:PS:Paid:GGL:CSM-2296:9JMEDM:20500731&gclid=CjwKCAjwjaWoBhAmEiwAXz8DBQ7Edj7qylYvMRnZj2HhmvSaCrbuzx4glL94X7Uo7Mpg2hfe5cf3URoCkjwQAvD_BwE&gclsrc=aw.ds) (25A, $60 tho 600V fuse)
  + [Bussmann General Purpose Fuse One-Time 25 Amp 250 V K5 Ferrule Ld - Amazon.com](https://www.amazon.com/Bussmann-General-Purpose-One-Time-Ferrule/dp/B01MXLB9BJ/ref=sr_1_1_sspa?keywords=25+amp+fuse&qid=1695136948&sr=8-1-spons&sp_csd=d2lkZ2V0TmFtZT1zcF9hdGY&psc=1) (25A 250V, $8 but uses Amazon)
  + [Cooper Bussmann 25 Amp Brass Cartridge Fuses (2-Pack) BP/NON-25 - The Home Depot](https://www.homedepot.com/p/Cooper-Bussmann-25-Amp-Brass-Cartridge-Fuses-2-Pack-BP-NON-25/100154449) (25A 250V, $5 Home Depot)

<https://www.mouser.com/c/circuit-protection/fuses/?current%20rating=10%20A~~1.4%20kA&voltage%20rating%20dc=700%20VDC~~-&instock=y&sort=pricing&rp=circuit-protection%2Ffuses%7C~Voltage%20Rating%20DC%7C~Current%20Rating> 1A

<https://www.mouser.com/ProductDetail/Littelfuse/0618001.MXP?qs=sGAEpiMZZMsIz3CjQ1xegZzFwEh%252BYqHh4bNkDchtAIgYSQLwxxIXcg%3D%3D> 1A

<https://www.mouser.com/ProductDetail/Bel-Fuse/5SF-10-R?qs=sGAEpiMZZMsIz3CjQ1xega8hXO6fltfAeiYzrw%252BuPvFneRZxI6B8gg%3D%3D> 10A

<https://www.mouser.com/ProductDetail/Schurter/0034.3130?qs=sGAEpiMZZMsIz3CjQ1xegWrlMY7vL59hJdJw1f90RVI%3D> 20A

[**https://www.mouser.com/ProductDetail/Schurter/8020.0607.G?qs=sGAEpiMZZMsIz3CjQ1xegdRKO5ZNZGpududAQvjt2Bo%3D**](https://www.mouser.com/ProductDetail/Schurter/8020.0607.G?qs=sGAEpiMZZMsIz3CjQ1xegdRKO5ZNZGpududAQvjt2Bo%3D) **30A**

<https://www.mouser.com/ProductDetail/Phoenix-Contact/3061334?qs=sGAEpiMZZMsIz3CjQ1xegUhw130lehIK7aZLsZCXQBk%3D> 10A, 1kV

<https://www.mouser.com/ProductDetail/Schurter/0090.0020?qs=sGAEpiMZZMsIz3CjQ1xegaQ9EAopi3ZOiE9COU5F1cU%3D> 20A, 1kV

<https://www.mouser.com/ProductDetail/Schurter/0090.1030?qs=sGAEpiMZZMsIz3CjQ1xegaQ9EAopi3ZO%2FDg%2Fx5b8LcA%3D> 30A, 1kV

All sorts of low-cost fuses, for input and output.

Fuse Clips  
<https://www.mouser.com/ProductDetail/Littelfuse/52000001009?qs=sGAEpiMZZMuxTAA0eeO5G%252B04FDVUS6YDlhZ1hNcmgDw%3D> 5mm

<https://www.mouser.com/ProductDetail/Littelfuse/01240040H?qs=81r%252BiQLm7BQFxO8GsbEGhg%3D%3D> 10mm

Audio Processing:

Gate Drivers:

[MP1923GR-Z Monolithic Power Systems Inc. | Integrated Circuits (ICs) | DigiKey](https://www.digikey.com/en/products/detail/monolithic-power-systems-inc/MP1923GR-Z/18089800)

Can stand 100V, 8A, 7.2ns rise and 5.5ns fall

But, says 4.5V under-voltage lockout, may be a problem

$2.81

[**ZXGD3005E6TA Diodes Incorporated | Integrated Circuits (ICs) | DigiKey**](https://www.digikey.com/en/products/detail/diodes-incorporated/ZXGD3005E6TA/2638862)

**25V, 10A, can do up to and over 1MHz on load under 100nF, transistor we have Css is 5.5nF**

**$0.58**

[UCC27210DDAR Texas Instruments | Integrated Circuits (ICs) | DigiKey Marketplace](https://www.digikey.com/en/products/detail/texas-instruments/UCC27210DDAR/3137280)

7.2ns rise, 5.5ns fall, 20V 4A rating

$2.38

Switching:

# **SIS176LDN-T1-GE3**

[SIS176LDN-T1-GE3 Vishay / Siliconix | Mouser](https://www.mouser.com/ProductDetail/Vishay-Siliconix/SIS176LDN-T1-GE3?qs=DRkmTr78QATBq6W8%252BCuvPg%3D%3D) (70V

[**BSC050N10NS5ATMA1 Infineon Technologies | Mouser**](https://www.mouser.com/ProductDetail/Infineon-Technologies/BSC050N10NS5ATMA1?qs=%252BEew9%252B0nqrCEwVyBJ9yAOA%3D%3D) **(100V 100A, 9ns rise time 7ns fall time)**

Coil Assembly:

Capacitor .05uF

<https://www.ebay.com/itm/171746725055?chn=ps&mkevt=1&mkcid=28&srsltid=AfmBOoq1JZMFxAyOUYH84CLoge1HN7emKGh3b4DEITQiTP1iTCGpVUq_hhk>

Capacitor 4.7uF

<https://www.ebay.com/itm/144922056521?hash=item21be071749:g:pBwAAOSwdG5j1tX~&amdata=enc%3AAQAIAAAA8F7pOdIIQwgKMzMIX0%2BfM7DJZGKiZ7BQtq%2BUAPrki8%2Fy3S4GWrXOgMCGoMefkG27uhf6k9NcET3lpKbcRw%2B4299dP2U0n247pAbymIFo4XsMaUEv1IzLn8T%2Fqp4ji%2BIt1IkV8XCKpjcakz5rV3UM55B9HAknNAMcc3tLnb9AE6TswfLGoanMMDU8HqV6zznOVZzSxAzMuyQjStmPRWFbfGQuaFZiNsVWpPyrmSlaRSg5gF%2FVDSeszHUlZbkGpIrV1PtlFe28v6iu5rAty5uu%2BVZb1KsTzUXgjYHgAJd4UgFY%2FecFZSAZ8zDgcNc2Z3xfPQ%3D%3D%7Ctkp%3ABFBM0IDVxdxi>

Capacitor 3.3uF

<https://www.ebay.com/itm/270870942012?hash=item3f112a913c:g:pL0AAMXQ97RRGjE5&amdata=enc%3AAQAIAAAA0CfpyaldeFz%2BfUQbMRtA7m64m%2BUDXUkQ6uTASfcCbuW9FX%2B2mvTqq%2FRag53HUhoJeLVRRkifVGoVxgAkLfKo0VS7eateIXs%2BdcCww3Ehn05gI5qU%2BTrIMeEwABI0lG3%2Bp9D9JuehEMmIzwS8r6kMgqofz%2BD8maXK9Uau2gseeujrW2jq4NaDDUZcXOiH%2Bf%2FRPVtvIqBLbn5iH6nAJ0Tc9F0Vcce0ypbyOIqGht68OXBfvn98uszkxVieLJTIvxynjbRexAqo8w0KMyYrYSCfFaM%3D%7Ctkp%3ABk9SR-DE-sXcYg>

**Things we may be able to borrow from power lab:**

Heat Sinks

Wall Warts

Resistors