

Where to get Parts
for a Solid-State Eye Tube
and
How to Import a BOM to
Digikey

V1

Parts for the Solid State 6E5/6U5 and 6T5

- All parts are easy to get. But, you can't get them all at the same place.
- Some parts need to be specified carefully for physical reasons.
- Many parts will be available at your favorite electronics shop and are not critical. Still, you will probably need to order others.
- This document talks about where to get the parts.
- It also specifies how to download a parts list to Digikey.

The Circuit Boards:

- Contact Gord at gord@rabjohn.ca
- Board pricing is at https://rabjohn.ca/data/documents/Board-Pricing-August-2022_1.pdf
- I sell boards in sets of 2 (that is, 2 LED boards, 2 driver boards)
- 2 sets, postage paid:
 - \$12 CAD to Canadian addresses,
 - \$11 US to American addresses,
 - €12 to European addresses,
 - \$16 CAD elsewhere.
- Specify 6E5, 6U5 or both
- See <https://rabjohn.ca/gord/ss6e5/> for details

The Main IC, the LM3914/5/6:

- The LM3914, LM3915, LM3916 (in an 18-pin DIP) is an old part and not available at “modern” vendors.
- The differences between these three are unimportant (but you may need to modify resistor values to suit).
- They are widely available. Try your local “Hobby” electronics shop. Or, check:
 - Amazon (from many vendors),
 - Ebay,
 - Jameco,
 - Maddison Electronics (Montreal), Sayal Electronics (S. Ontario) , Abra Electronics (Montreal), Universal Solder (part of a VU meter kit),
 - Tinkersphere (NY) , Anchor Electronics (CA).
 - Also look for VU meter kits with the LM391x, they can cost the same as the IC itself.

For the Final Assembly:

- For the base, you will need a glass vacuum tube with a 6-pin base. A dead 6E5/6G5/6U5 is ideal, but there are others with a 6-pin base.
- You will need the tubular glass from a tube. Again, a 6E5/6G5/6U5 is ideal, but tall octal tubes like 6AX4GT, 12AX4GT, 6W4GT, tall 6SN7GT will do.
- You will need some 1.25 or 1.5 inch heat shrink tubing.
- The diffuser will need your creativity and extra packaging material (clear plastic), glue, maybe a bolt.
- Of course, the enclosure and base is optional.

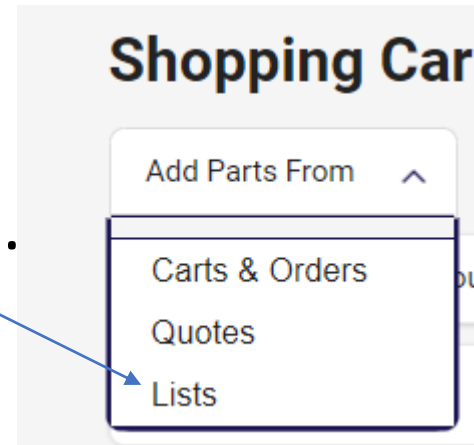
The rest of the parts:

- Many will be found in a well-stocked junk box. Others will need to be ordered.
- I have no particular connection with Digikey. I have also bought parts for this project from Mouser and Newark .
- The list on my web site can be imported directly to the Digikey web site.
- First, download the parts list (spread-sheet) from <https://rabjohn.ca/gord/ss6e5/> (You may need to adjust your security settings to get it to download).

Digikey Download

At Digikey's web site:

- Go to "Shopping Cart" and pull-down "Lists".
- Click "Upload a List" and find the file on your computer.
- Upload it.
- Set the column headings like this:



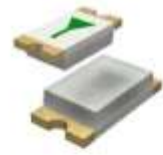
ROW	COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	COLUMN 6
1	Index	Quantity				
2	1	200				

Make sure this is set (first line with a part number)

Digikey Downoload

- Hit Continue (scroll down).
- Hit “Add To Cart”.
- Your cart will be filled. Adjust the quantities to suit.
- Some parts will not be needed, and you may already have some of the parts. Delete the ones not needed.
- You may find some parts are out-of-stock, usually there is a suitable substitute.

Read my notes!



846-SML-D12P8WT86CT-ND
SML-D12P8WT86
Rohm Semiconductor
LED GREEN DIFFUSED 1608 SMD

120 FOR 6E5, 174 FOR 6T5

200

Select your quantities!

Remember that you will drop a few and never find them. Order extra.



846-SML-E12V8WT86CT-ND
SML-E12V8WT86
Rohm Semiconductor
LED RED DIFFUSED 1608 SMD

6T5 PICK RED OR ORANGE

10

I like the orange ones for the filament on the 6T5, but you might prefer red. Not needed for 6E5



846-SML-D12D8WT86CT-ND
SML-D12D8WT86
Rohm Semiconductor
LED ORANGE DIFFUSED 1608 SMD

6T5 PICK RED OR ORANGE

10

Either for the 6T5. Not for 6E5

I like the orange ones for the filament on the 6T5, but you might prefer red. Not needed for 6E5



952-3263-ND
M20-8771042
Harwin Inc.
CONN HEADER SMD 10POS 2.54MM

6T5 ONLY

10

Order the 10 pin, You only need 8 pins, but you will be sorry if you order the 8 pin version. 6T5 only

0603 size LEDs
If you use other LEDs, make sure you get ones with ~2V turn-on voltage. ~3V (GaN based) LEDs won't work unless you increase the supply voltage.

5**S5483-ND**

PPPC081LGBN-RC
Sullins Connector Solutions
CONN HDR 8POS 0.1 GOLD PCB R/A

6T5 ONLY

Select your quantities!

 6**S5560-ND**

PPPC072LJBN-RC
Sullins Connector Solutions
CONN HDR 14POS 0.1 GOLD PCB R/A

6E5 ONLY

 7**609-95157-114LF-ND**

95157-114LF
Amphenol CS (FCI)
CONN HEADER SMD 14POS 2.54MM

6E5 ONLY

 8

Photo Not Available

1993-1123-ND

PT10LV10-503A2020-S
Amphenol Piher Sensing Systems
TRIMMER 50K OHM 0.15W PC PIN TOP

RV1

Only critical for fit on PCB. Value is not too important.

9**P5141-ND**

ECA-1CM471

Panasonic Electronic Components
CAP ALUM 470UF 20% 16V RADIAL

C1

Select your quantities!

Value not critical, but make sure it is small (diameter) enough to fit in the tube. Over 10V.

 10**399-4264-ND**

C320C104K5R5TA

KEMET
CAP CER 0.1UF 50V X7R RADIAL

C2

Value not critical. Anything over 10V is fine.

 11**16MH747MEFC6.3X7-ND**

16MH747MEFC6.3X7

Rubycon
CAP ALUM 47UF 20% 16V RADIAL

C3

Value not critical, but make sure it is short enough. Over 10V

 12**10MGACT-ND**

HHV-25FR-52-10M

YAGEO
RES 10M OHM 1% 1/4W AXIAL

R1, R11

1% resistors: Value not critical, but the 2 resistors need to be closely matched.



13-MFR-25FTE52-1M5CT-ND
MFR-25FTE52-1M5
YAGEO
RES 1.5M OHM 1% 1/4W AXIAL

R3, R13

Select your quantities!

10

1% resistors: Value not critical, but the 2 resistors need to be closely matched.



13-CFR-25JR-52-1KCT-ND
CFR-25JR-52-1K
YAGEO
RES 1K OHM 5% 1/4W AXIAL

R4, SEE TEXT

10

5% or 10% resistors:
Check text before
ordering. These are all
very common, not
critical.



13-CFR-25JR-52-4K7CT-ND
CFR-25JR-52-4K7
YAGEO
RES 4.7K OHM 5% 1/4W AXIAL

R4, R6, R19 SEE TEXT

10



13-CFR-25JR-52-100RCT-ND
CFR-25JR-52-100R
YAGEO
RES 100 OHM 5% 1/4W AXIAL

R5 (6T5 ONLY)

10



13-CFR-25JR-52-470RCT-ND

CFR-25JR-52-470R
YAGEO
RES 470 OHM 5% 1/4W AXIAL

R6 (6T5 ONLY)

Select your quantities!

Check Lead Time

It turns out that this one is out-of-stock. Try another brand or lead formation, or next value up or down.



13-CFR-25JR-52-10KCT-ND

CFR-25JR-52-10K
YAGEO
RES 10K OHM 5% 1/4W AXIAL

R7



311-470GRCT-ND

RC0603JR-07470RL
YAGEO
RES 470 OHM 5% 1/10W 0603

15 (6E5 ONLY) R2-R24



311-100GRCT-ND

RC0603JR-07100RL
YAGEO
RES 100 OHM 5% 1/10W 0603

1 (6E5 ONLY) R30

All SMT resistors and LEDs are 0603 size, available from multiple vendors. Note that Qty=100 resistors cost not much more than 10 resistors.



2N3904FS-ND

2N3904BU
onsemi
TRANS NPN 40V 0.2A T092-3

Q1

Select your quantities!

10

Any NPN transistor should work, as long as it fits and you get the E, B and C right.



296-1395-5-ND

LM358P
Texas Instruments
IC OPAMP GP 2 CIRCUIT 8DIP

U2

10

This is a very common IC. Make sure you get the 8-pin DIP package



1N4003GOS-ND

1N4003G
onsemi
DIODE GEN PURP 200V 1A AXIAL

D1, D2

10

IN4148 or 1N400x (where x is anything) should work. Just any small rectifier.



1N5817-TPCT-ND

1N5817-TP
Micro Commercial Co
DIODE SCHOTTKY 20V 1A D041

D3 (6T5 ONLY)

10

Low drop just to make sure there is lots of voltage for the LEDs.