

REAST Inc

Optical Transceiver Project

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Design Principles Used:

- KISS - Keep It Simple Stupid
- Can be assembled in about an hour
- Made with commonly available components

Tools Required:

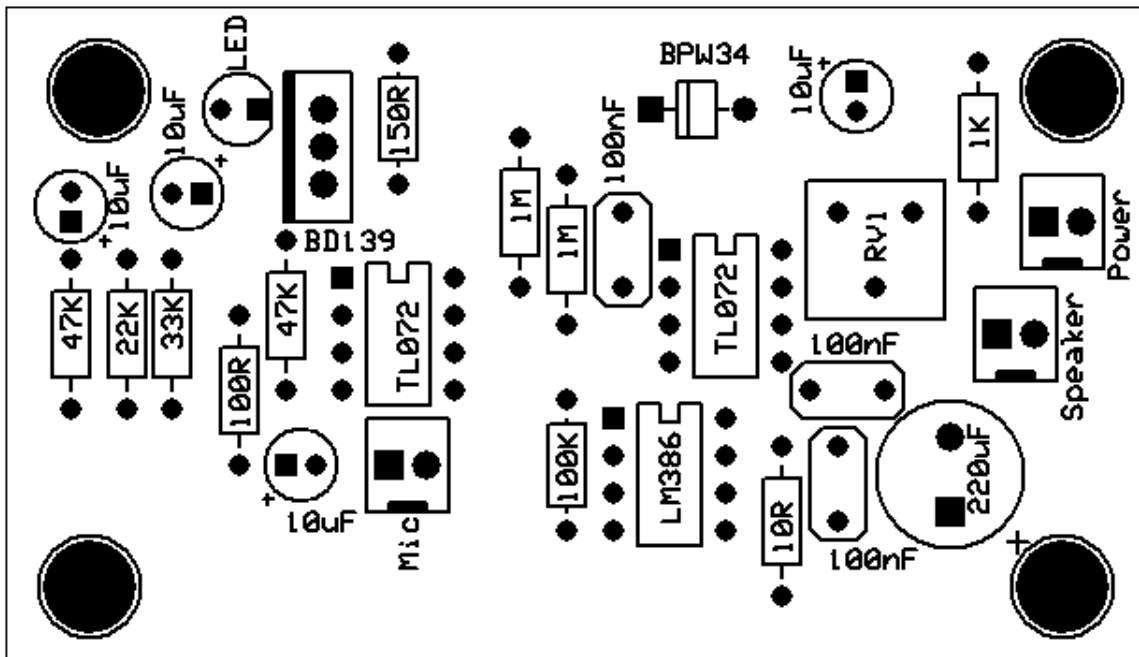
- Soldering Iron
- Solder
- Side cutters

Parts List:

Optical TxRx Part list

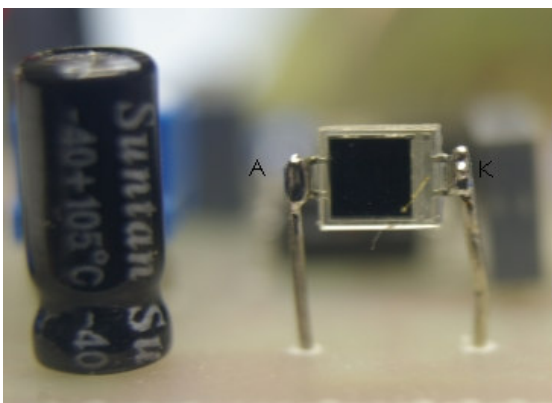
Part	Qty	Identifier	Notes
PCB – Optical TxRx V.2	1		
10uF 16V	4		
220uF 10V	1		
100nF	3	104	
LED RED Clear	1		15 degree beamwidth
Photodiode (BPW34)	1		Surface Mount
BD139	1		
10R	1	Blk-Brn-Blk-Blk-Brn	
100R	1	Brn-Blk-Blk-Blk-Brn	
150R	1	Brn-Grn-Blk-Blk-Brn	
1K	1	Brn-Blk-Blk-Brn-Brn	
22K	1	Red-Red-Blk-Red-Brn	
33K	1	Org-Org-Blk-Red-Brn	
47K	2	Yel-Viol-Blk-Red-Brn	
100K	1	Brn-Blk-Blk-Org-Brn	
1M	2	Brn-Blk-Blk-Yel-Brn	
20K Trimpot	1		
TL072 Opamp	2		
LM386 Amp	1		
9V Battery Clip	1		
9V Alkaline Battery	1		
2 pin SIL Header	3		
Solder Lugs	4		
Hook-up Wire	4		
Dynamic Inserts (mic & spk)	2		

Component Layout:



Construction Hints:

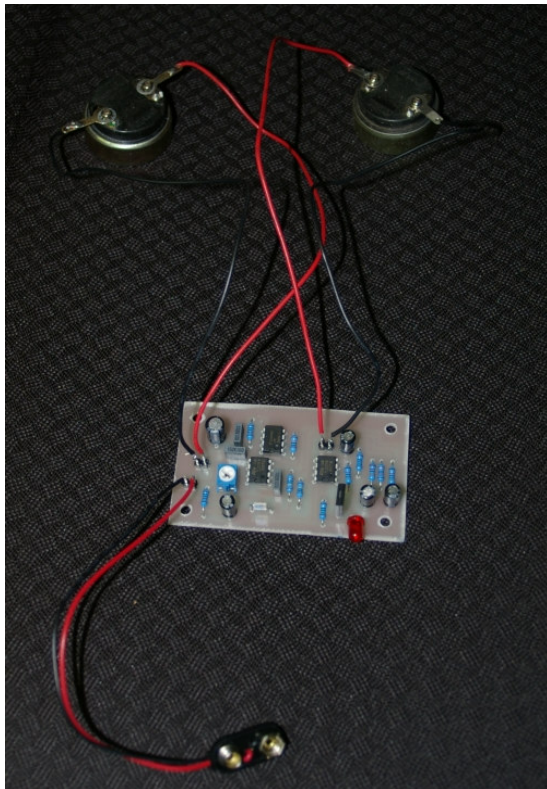
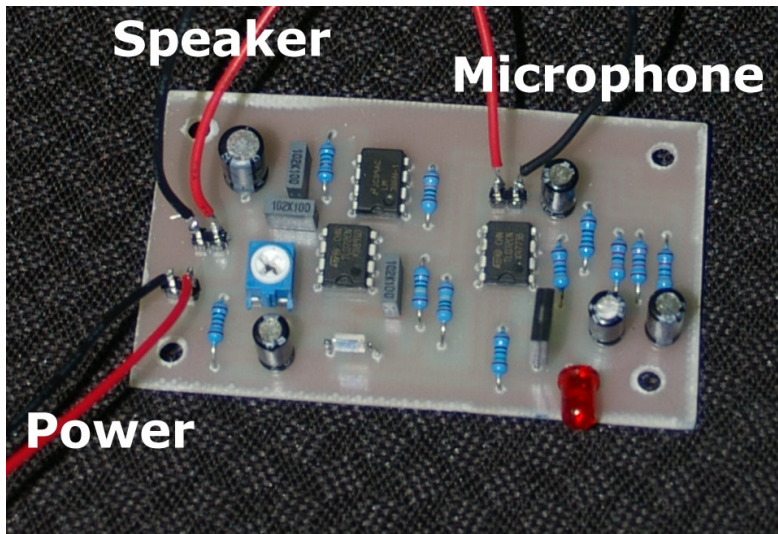
- Start with the resistors placing them into the PCB and bending the leads to hold, then solder and trim the excess lead length with side cutters.
- Next the ICs ensuring they are around the correct way and solder.
- Next the capacitors starting with the electrolytics (polarized ones) ensuring they are the correct way around, bending the leads to hold them in place, then solder and trim excess lead length with side cutters.
- Next the MKT capacitors (non-polarised) and solder.
- Next is the trimpot and solder.
- Next is the transistor ensuring it is the right way around and solder in place.



- Next solder two wires (from cutoff leads) into the holes for the photodiode and tin the wings on the photodiode and the wires, ensure it is right way around and hold the diode and just touch the soldering iron to the wing and wire to solder. *Do not over heat*

- Solder the LED ensuring it is the right way around and trim the excess lead length.
- Next the 2 pin headers and solder in place then tin the header pins with solder.

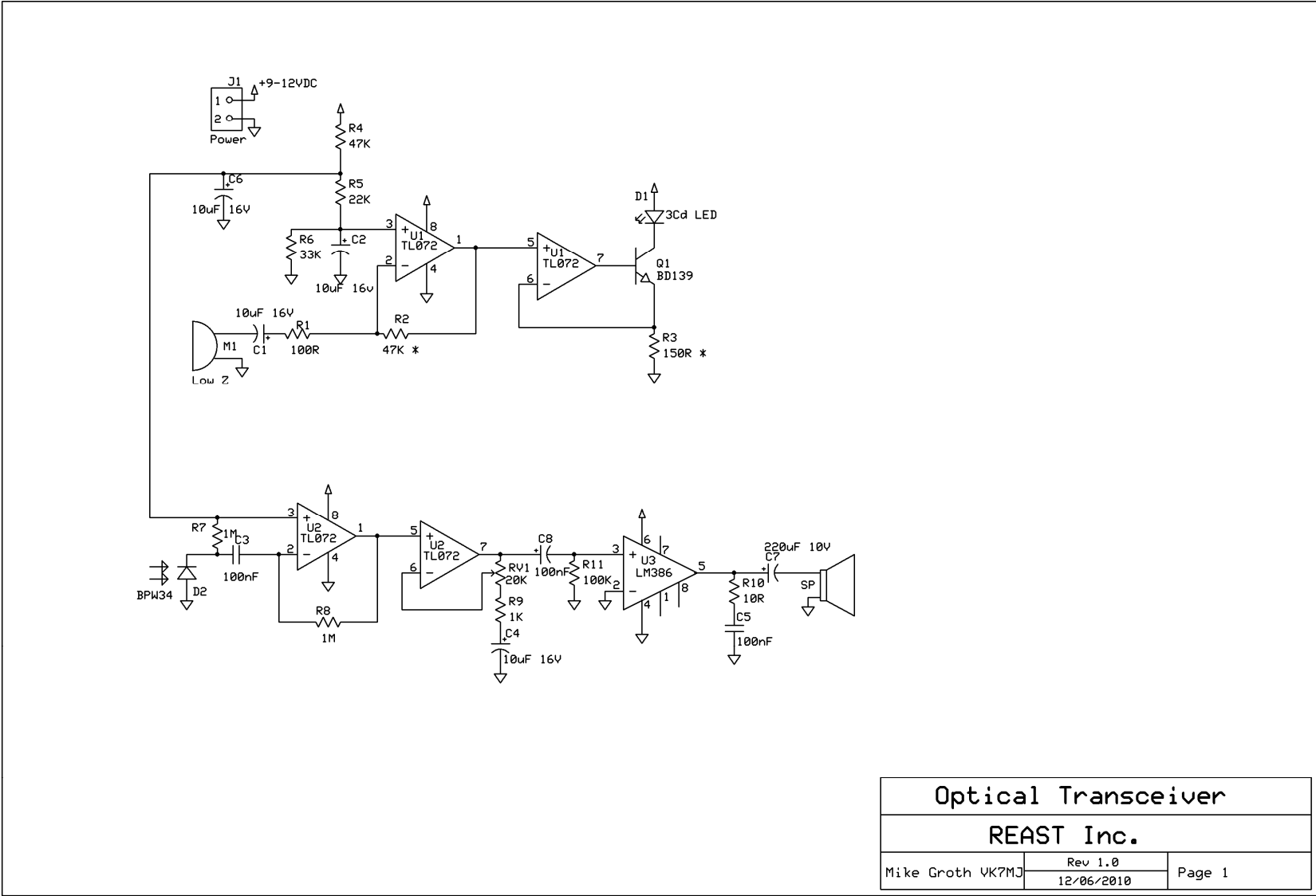
- Solder the leads of the 9Volt battery clip ensuring it is the right way round (Note: Square pad is positive).
- Strip back the ends of the microphone and speaker cables and tin with solder then solder to the header – polarity doesn't matter.
- Double check everything and connect to the battery and see if it works!



Where to from here:

- Lenses – glass/plastic/Fresnel/vinyl/etc
- Reflectors – secondary lenses
- Tubes or honeycomb to reduce the extraneous light getting into the photodiode for use during daylight.
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Schematic



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