Discrete Saturation

DIY KIT

Assembly Manual

Please note: picture above is provided for reference only. The PCB included in the KIT might be different than the PCB shown on the picture.

Disclaimer:

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Note: This is the Beta version of the Assembly Manual. If you have any suggestion how to improve this manual, please email me on barthrk@gmail.com.

Tools required:

This is the list of necessary tools: Soldering iron, solder, cutter, pliers.

Additional tools may be required: solder sucker, tweezers.

Assembly Order

It is very important to keep correct assembly order. Components should be assembled in order based on height, from the lowest (resistors) to the tallest.
Always refer to the KIT BOM which shows the list only of PCB components. Some part included in the KIT are not listed in the BOM.

This is list of the assembly order for specific components:

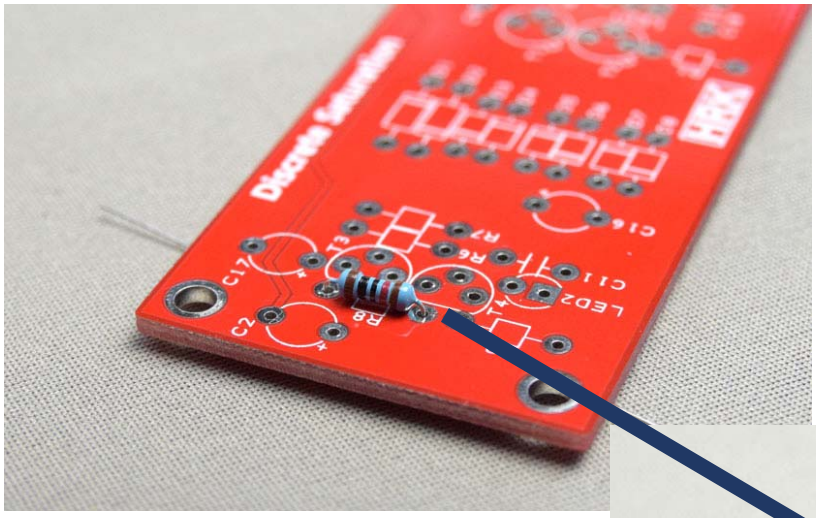
- Resistors and Diodes
- Ceramic capacitors
- LEDs
- Transistors
- Electrolytic capacitors
- 8 way header (bottom side of the PCB)

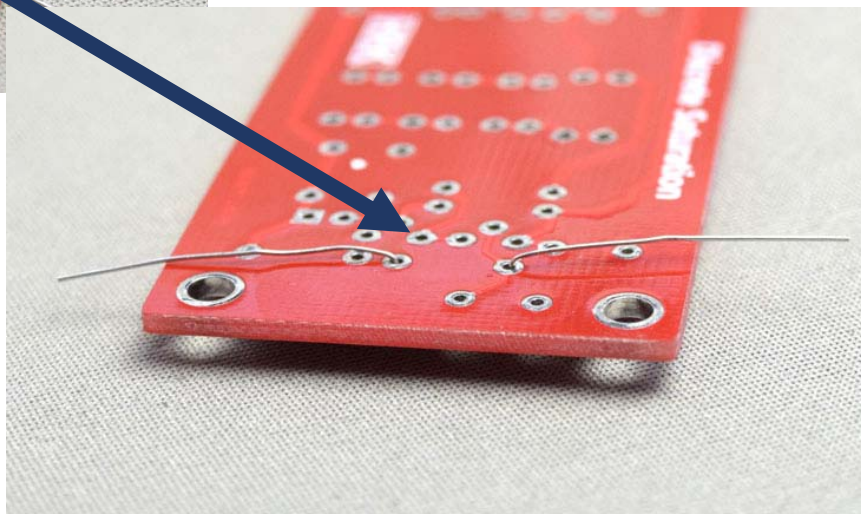
Assembly

Please refer to the BOM (Bill of Material) which contains the list of components. Locate the component designator on the PCB and insert the component. Double check the correct component positioning before soldering!

Resistors – Reference Designator: R1, R2, R3…

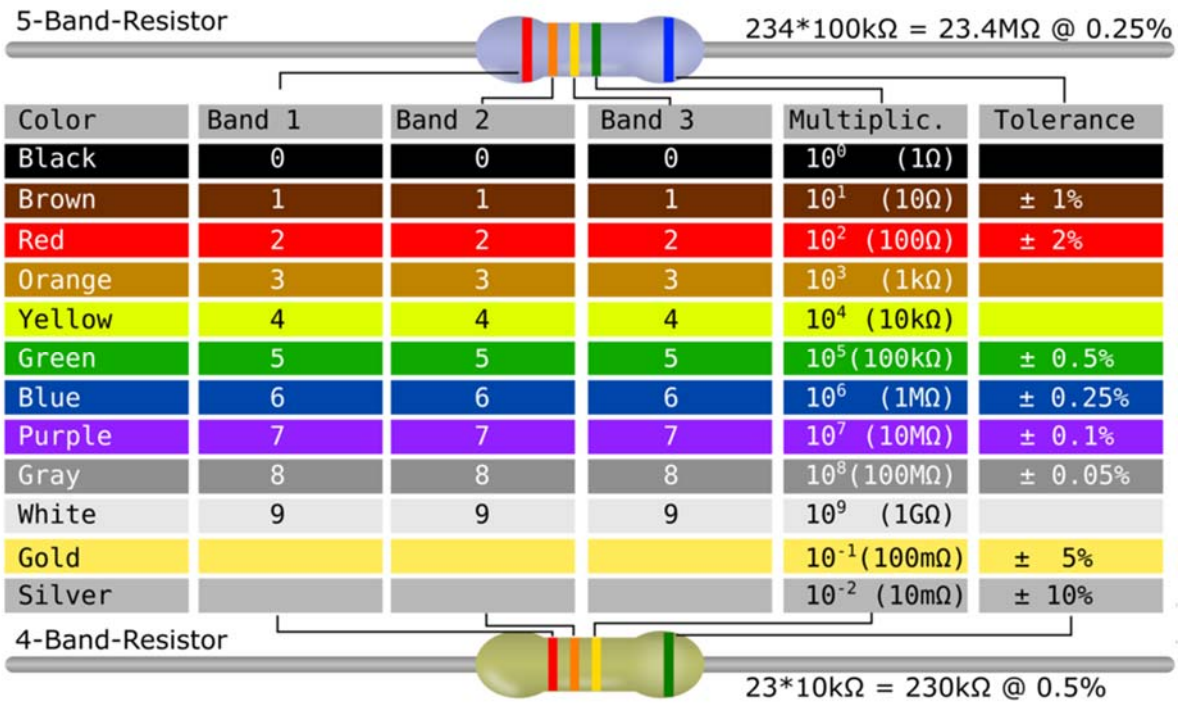
Select the resistor and find the resistor designator on the PCB. Bend resistor leads and insert the resistor making sure that the resistor lays flat on PCB. Flip the PCB and bend the leads of the resistors against the bottom of the PCB so that the resistors stay in place during soldering. Solder the resistors leads and cut-off any lead excess from above of the PCB. This should be repeated for all resistors and other trough-hole components.





Resistor Colour Code Chart

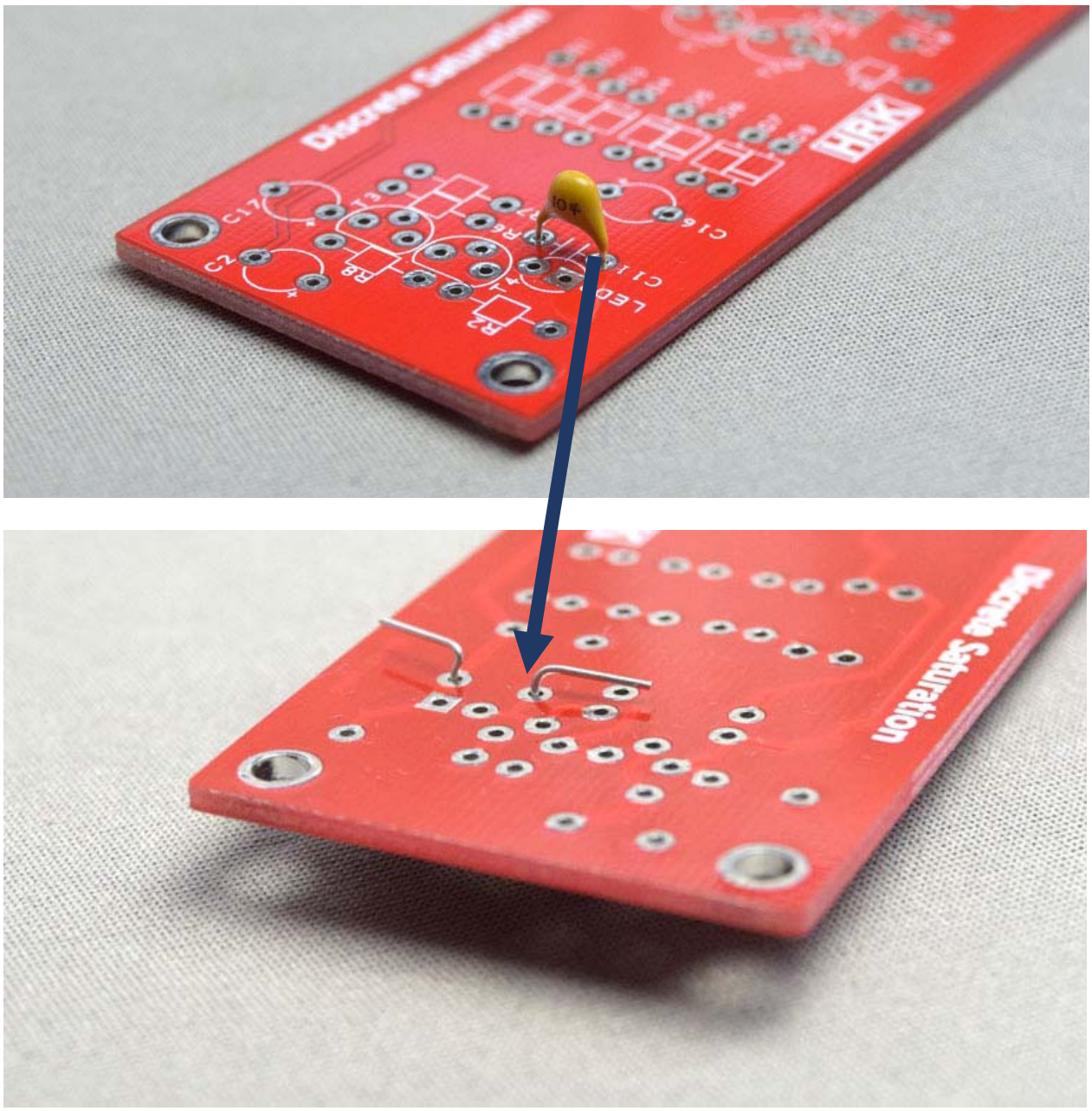
Use the chart below to identify resistors included in the KIT.



Color	Band 1	Band 2	Band 3	Multiplic.	Tolerance
Black	0	0	0	10^0 (1Ω)	
Brown	1	1	1	10^1 (10Ω)	± 1%
Red	2	2	2	10^2 (100Ω)	± 2%
Orange	3	3	3	10^3 (1kΩ)	
Yellow	4	4	4	10^4 (10kΩ)	
Green	5	5	5	10^5(100kΩ)	± 0.5%
Blue	6	6	6	10^6 (1MΩ)	± 0.25%
Purple	7	7	7	10^7 (10MΩ)	± 0.1%
Gray	8	8	8	10^8(100MΩ)	± 0.05%
White	9	9	9	10^9 (1GΩ)	
Gold				10^{-1}(100mΩ)	± 5%
Silver				10^{-2} (10mΩ)	± 10%

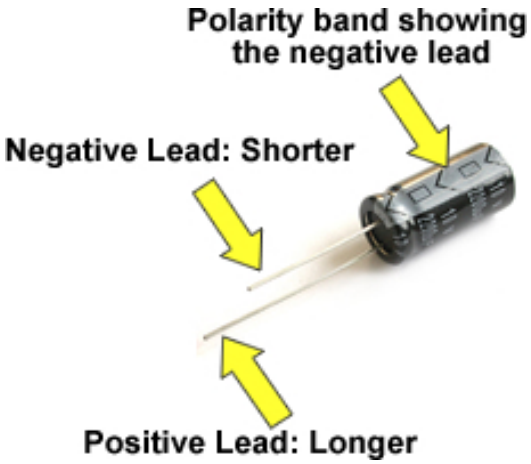
Ceramic Capacitors – Reference designator: C1, C2, C3…

Ceramic Capacitors should be treated like resistors. Insert the capacitor in to the correct footprint and bend leads flat against the bottom side of the PCB. Solder the leads and cut off the excess.



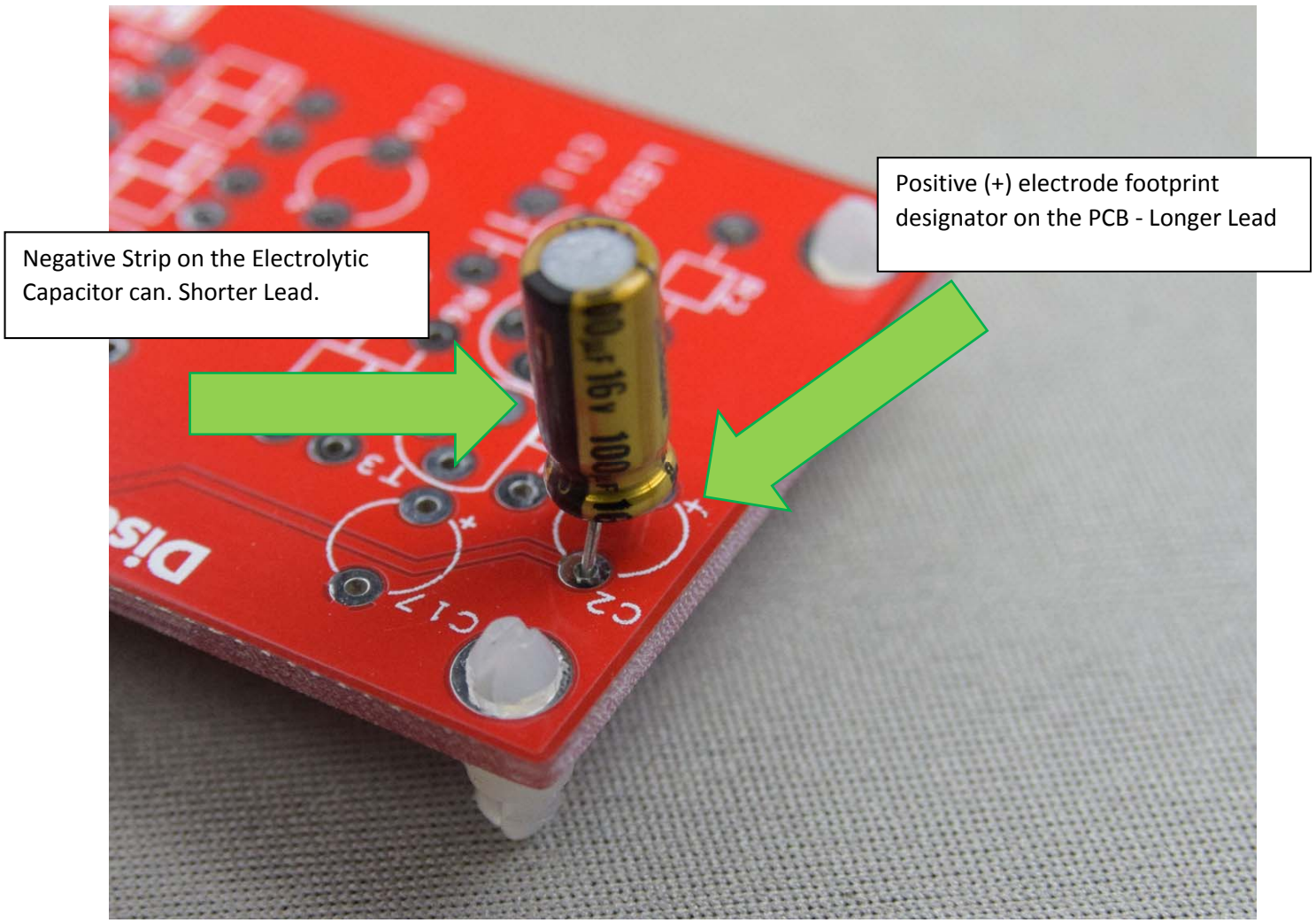
Electrolytic Capacitors – Reference designators: C1, C2, C3…

Electrolytic capacitors should be installed in the round capacitor footprints. Leads should be bended flat on the bottom side of the PCB, soldered and cut off. It is important to remember about polarity of electrolytic capacitor.



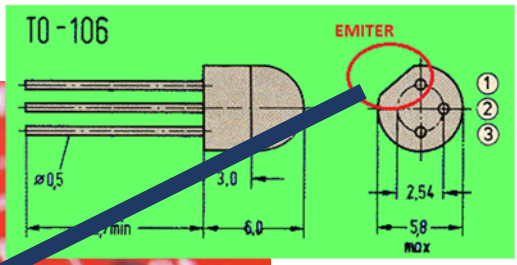
Please pay attention when inserting electrolytic capacitors. Remember to follow the polarity. If the polarity of the electrolytic capacitor is reversed, the capacitor may explode after the power is switched on!!! Always double check all electrolytic capacitors polarity before first power-up!

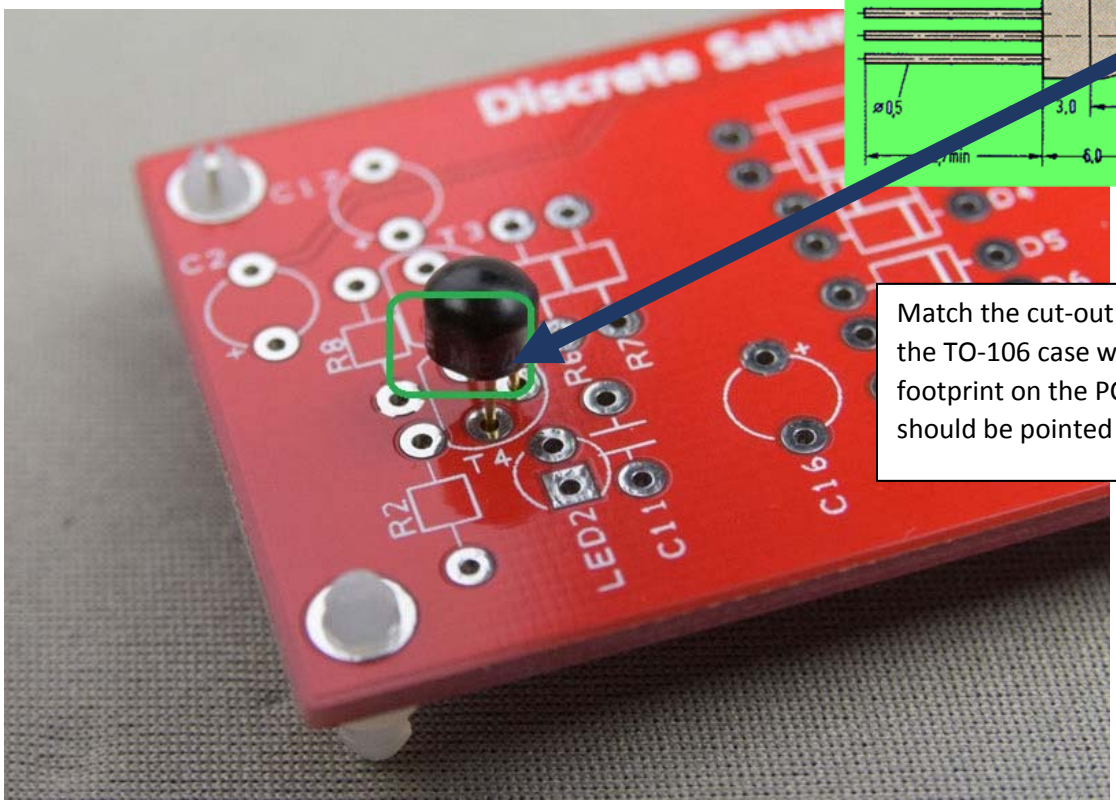
The DIY KIT includes 2 types of electrolytic caps. Gold Audio Grade capacitors and standard electrolytic capacitors. Pay attention to install all electrolytic capacitors in the correct way! Please see the example on the picture below.



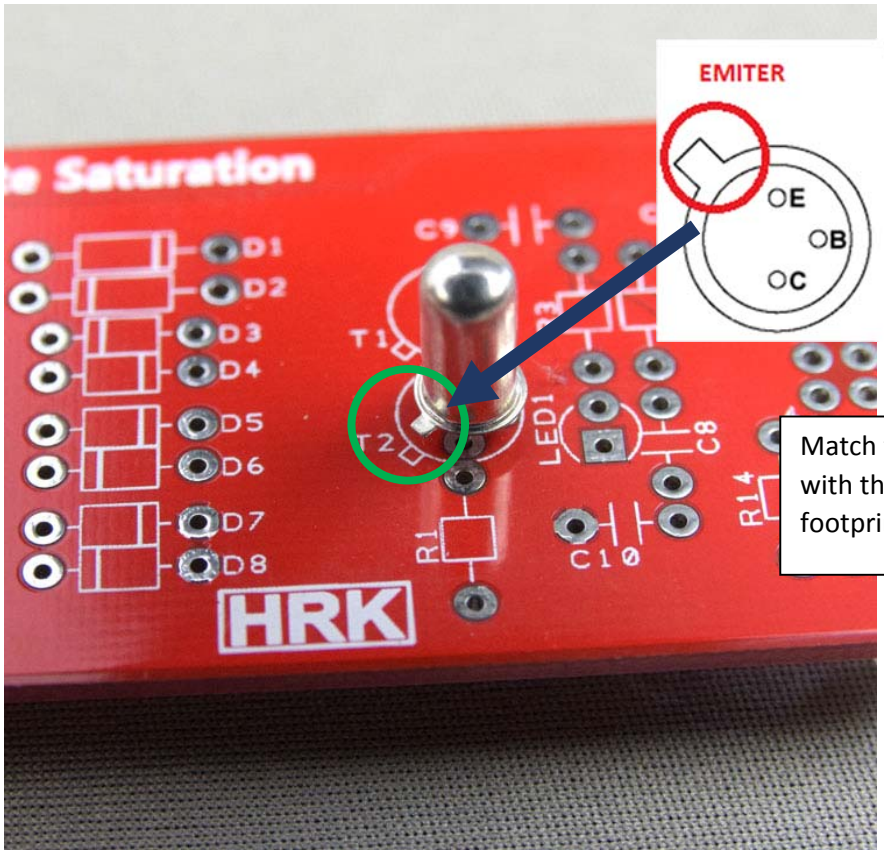
Transistors – Reference designator: T1, T2, T3…

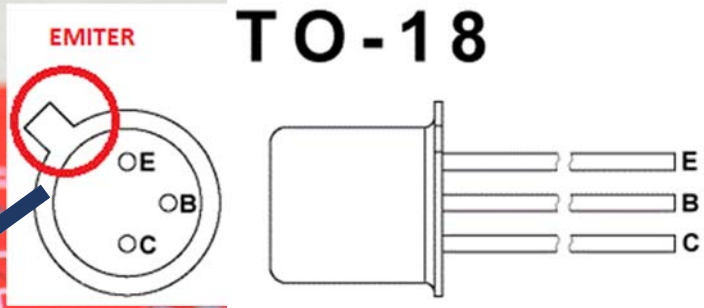
Pay attention to install transistors correctly. Pictures below show the examples how the NOS transistors should be installed. The Germanium and silicon transistors should be soldered very carefully, do not overheat the semiconductor devices.





Match the cut-out on the side of the TO-106 case with the TO-92 footprint on the PCB. The cut-out should be pointed downwards.

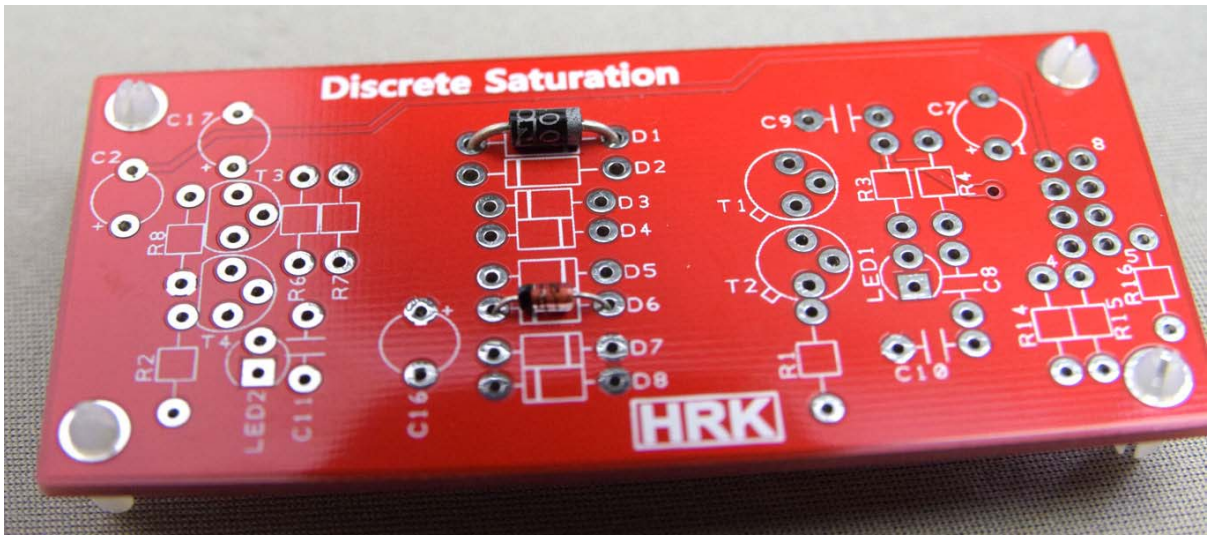




Match the Tab of the TO-18 case with the Tab marking on the PCB footprint.

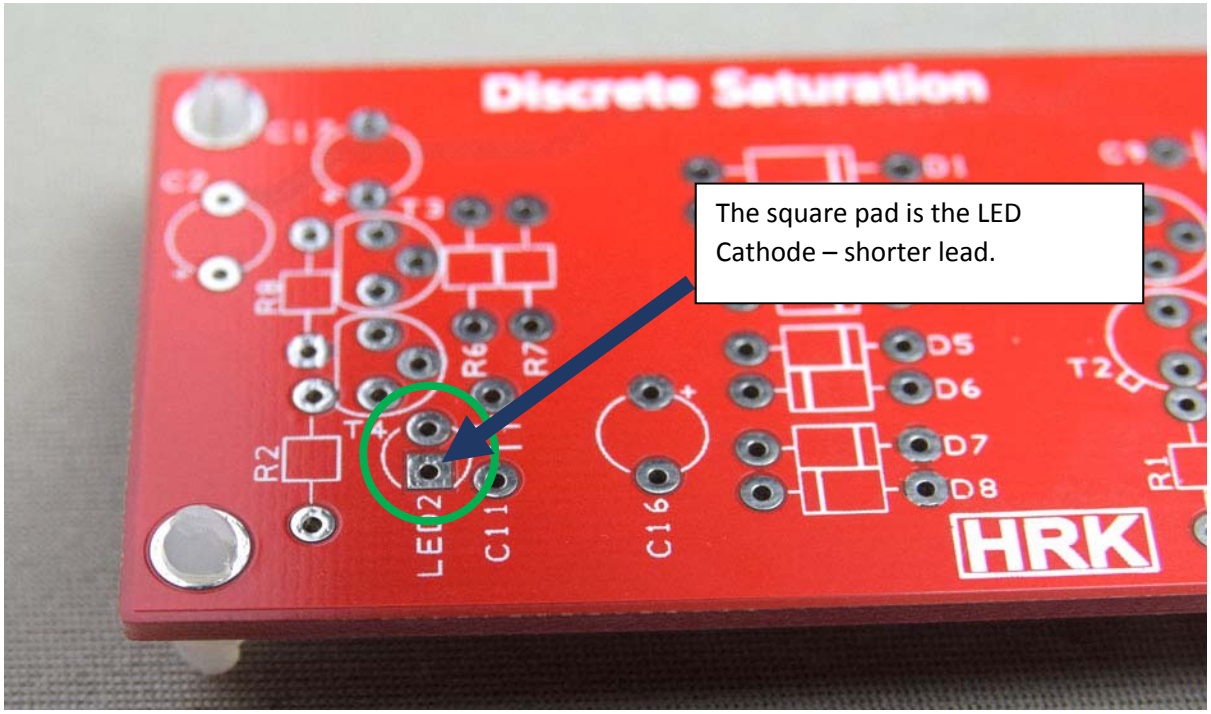
Silicon and Germanium Diodes.

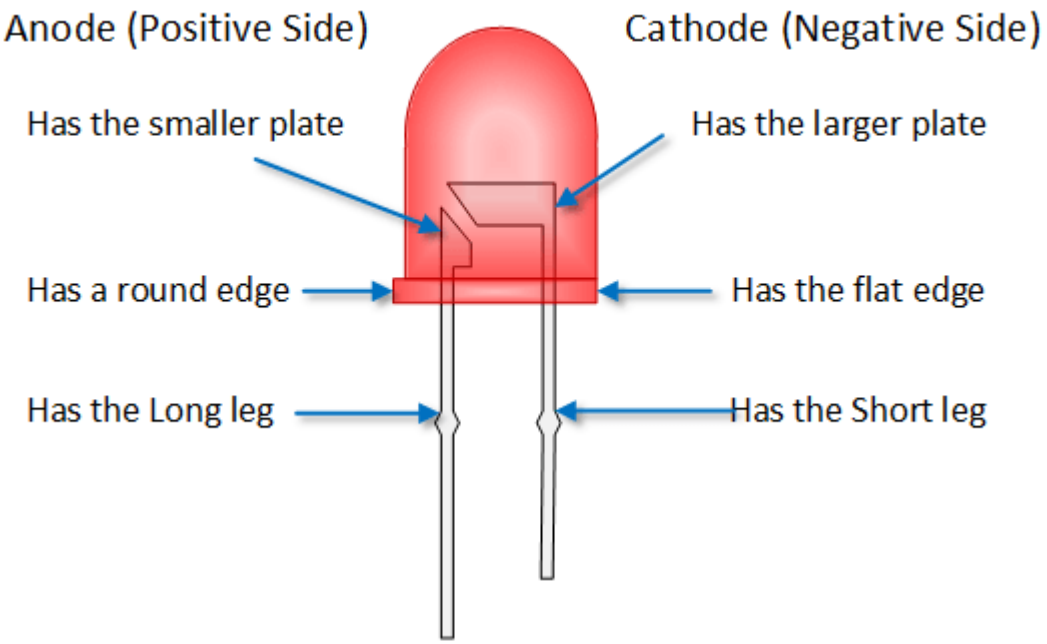
The DIY KIT also includes Germanium and Silicon diodes. Those components should be installed according to the PCB footprint. The strip on the diode case (the Cathode) should be aligned with the strip of the PCB footprint. Please see the example bellow.

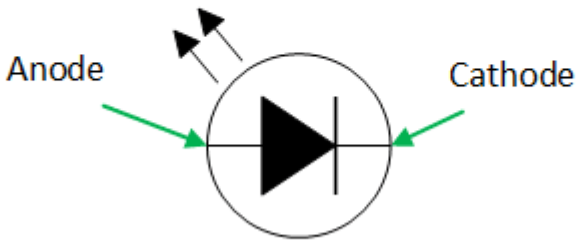


LEDs – Light Emitting Diodes.

Two Green LEDs are included in the KIT. The LED has longer lead which is the Anode and shorter lead which is the Cathode. Picture below explains how to install the LED.



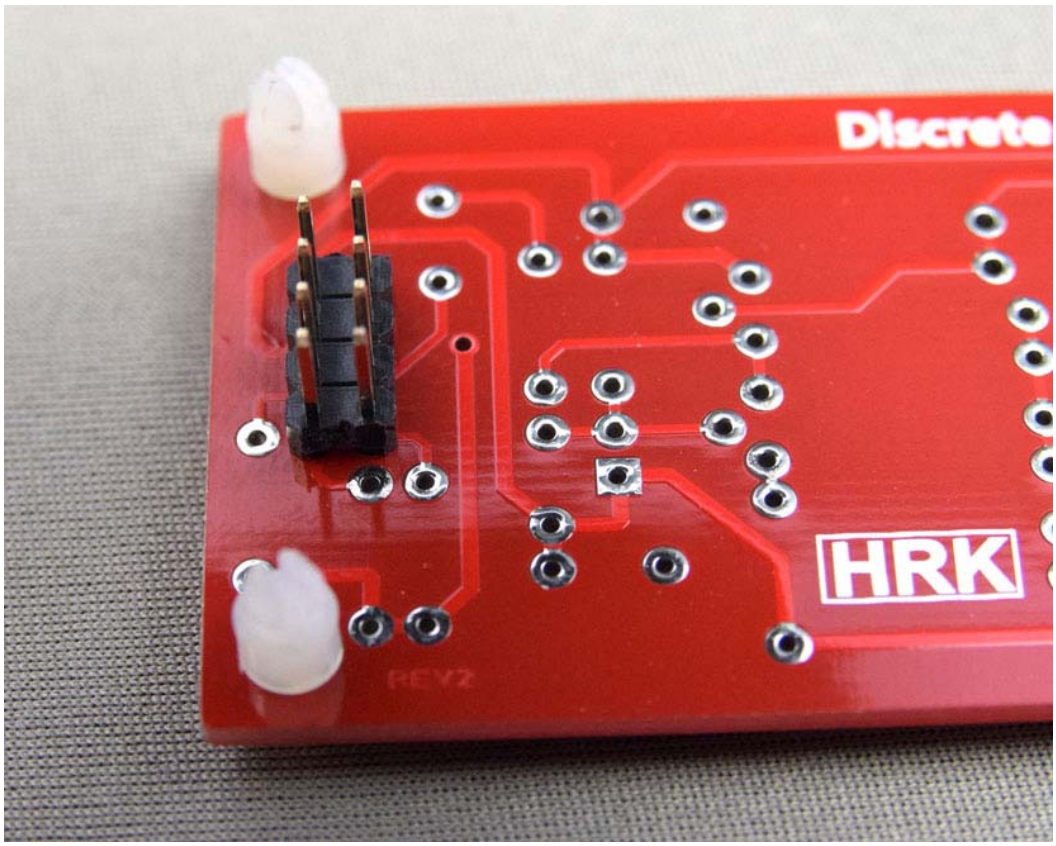




Schematic Symbol

Colour 8 Way Header – Bottom PCB

Colour Modules 8 Way Header should be installed on the bottom side of the PCB and soldered on the top side of the PCB. Insert 8 way header and carefully solder as shown on the pictures below. Let the solder to sink in to the plated holes. Do not apply too much heat. Plastic header body can be melted if overheated.



User Notes: