DM TMCC Buffer Kit

Description

This instruction sheet will lead you through the building of the buffer kit. With a little care and time, you'll have a completed TMCC Buffer ready for use on your layout.

Unpacking and Inventory

The first step will be to unpack and inventory the contents of the buffer kit. The following Bill of Materials contains the items you should have received. Note that the discrete resistors and capacitors have component markings that are enumerated in the right hand column for identification.

Qty	RefDes	Value	Component Marking
2	C1, C2	2200uf 25V	
1	C3	100uf 25V	
1	C4	30pf	300
1	C5	.22uf	224
3	C6,C7,C8	.01uf	103
2	C9,C10	.1uf	104
2	D1,D2	1N4148	Glass Diode With Band
1	D3	5mm Red/Green LED	3-Lead
1	J1	5.5/2.5	Power Jack
1	J3	1986717-6	Green 6-pin
1	L1	5mm Blue LED	2-Lead
2	R1,R2	1K 1/2W	Brn,Blk,Red,Gold
2	R3,R4	3.3K 1/8W	Orn,Orn,Red,Gold
1	R5	1K 1/8W	Brn,Blk,Blk,Brn,Brn
6	R6,R7,R8,R9,R11,R17	10K 1/8W	Brn,Blk,Blk,Red,Brn
2	R10,R14	2.2K 1/2W	Red,Red,Red,Gold
1	R12	100K 1/8W	Brn,Blk,Blk,Orn,Brn
1	R13	6.2K 1/8W	Blu,Red,Red,Gold
2	R15,R16	1M 1/8W	Brn,Blk,Blk,Yel,Brn
1	U1	AD744SQ	
1	U2	BUF634T	
1	U3	LM393N	
1	24V Brick	1A Power Supply	
1	Plastic Case		
1	Male 5.5/2.5 pigtail	Earth Ground Tether	
1	Female 5.5/2.5 jack	Earth Ground Tether	
1	18" Black #24 Wire	Earth Ground Tether	
1	Heatsink	HS382-ND	
1	HS-Screw	4-40 .5" Screw	
1	HS-Nut	4-40 Nut	
2	Screw	#2 x1/4	
1	Blank PCB		

If you have any discrepancies or missing parts, please let us know, we'll resolve it. These have been packed very carefully, and a packed kit was used to build the buffer shown in this document, so the chance of a missing or incorrect part should be fairly small.

Assembly of the PCB

Once you have verified you have received all the components required, it's time to start building. My suggested method is to first lay out all the small discrete components, these will be installed on the board first. Here are all the components laid out and inventoried, note that I have also bent the leads to prepare for assembly. Also take note that the board has all the component values silkscreened on the board.

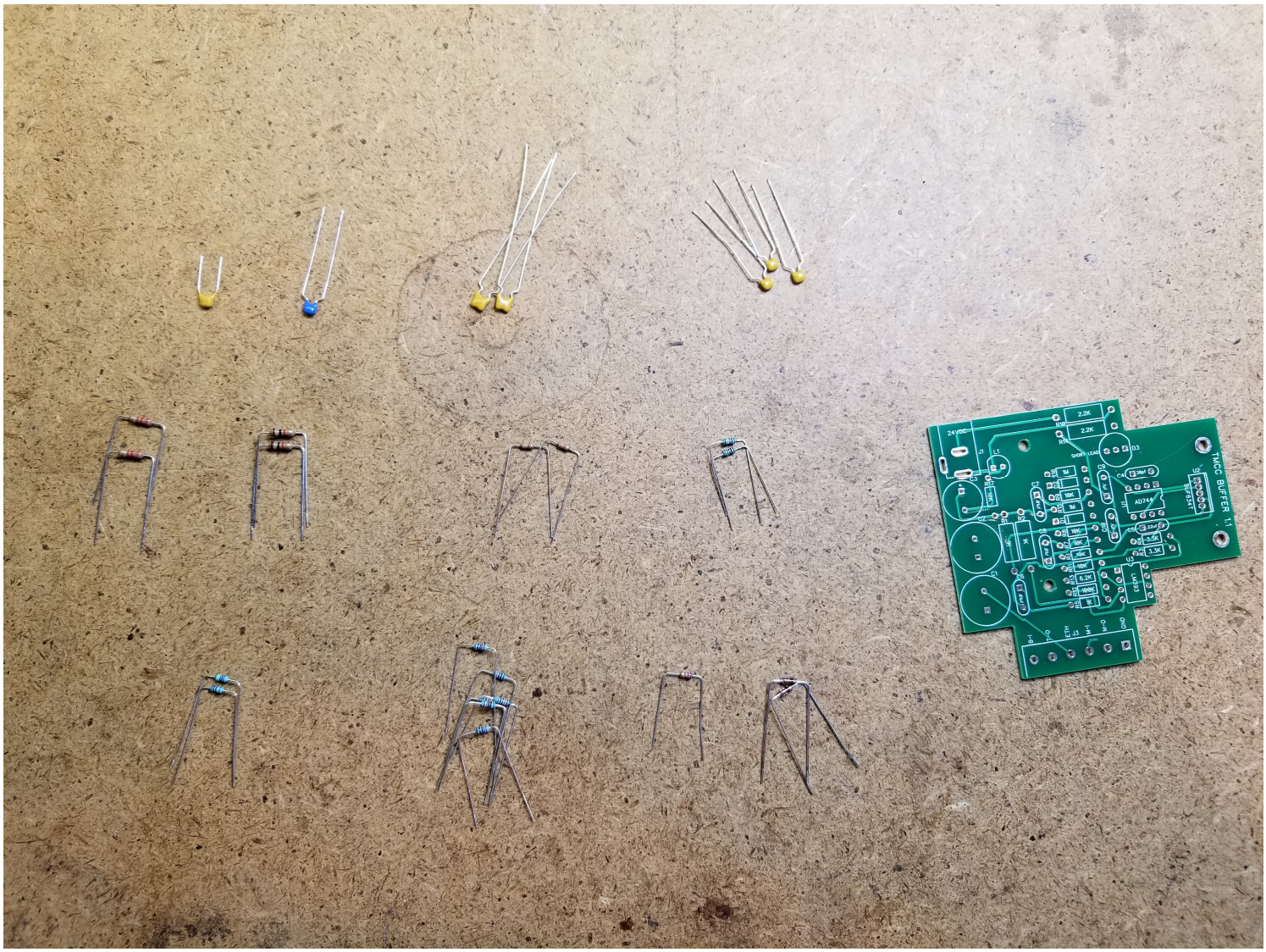


Figure 1 Discrete Component Inventory and Prep

After this prep, I install the components and solder them. My technique is to insert all the same height components and then using a flat sheet of Styrene, I hold it over the components on the board and flip it over on the bench. This keeps them all in place and orients the board for the soldering.

At this point I also solder the two 8 pin IC's on the board, make SURE you install them in the correct positions! At this point, you can check your component positions on the board by referring to the following graphic.

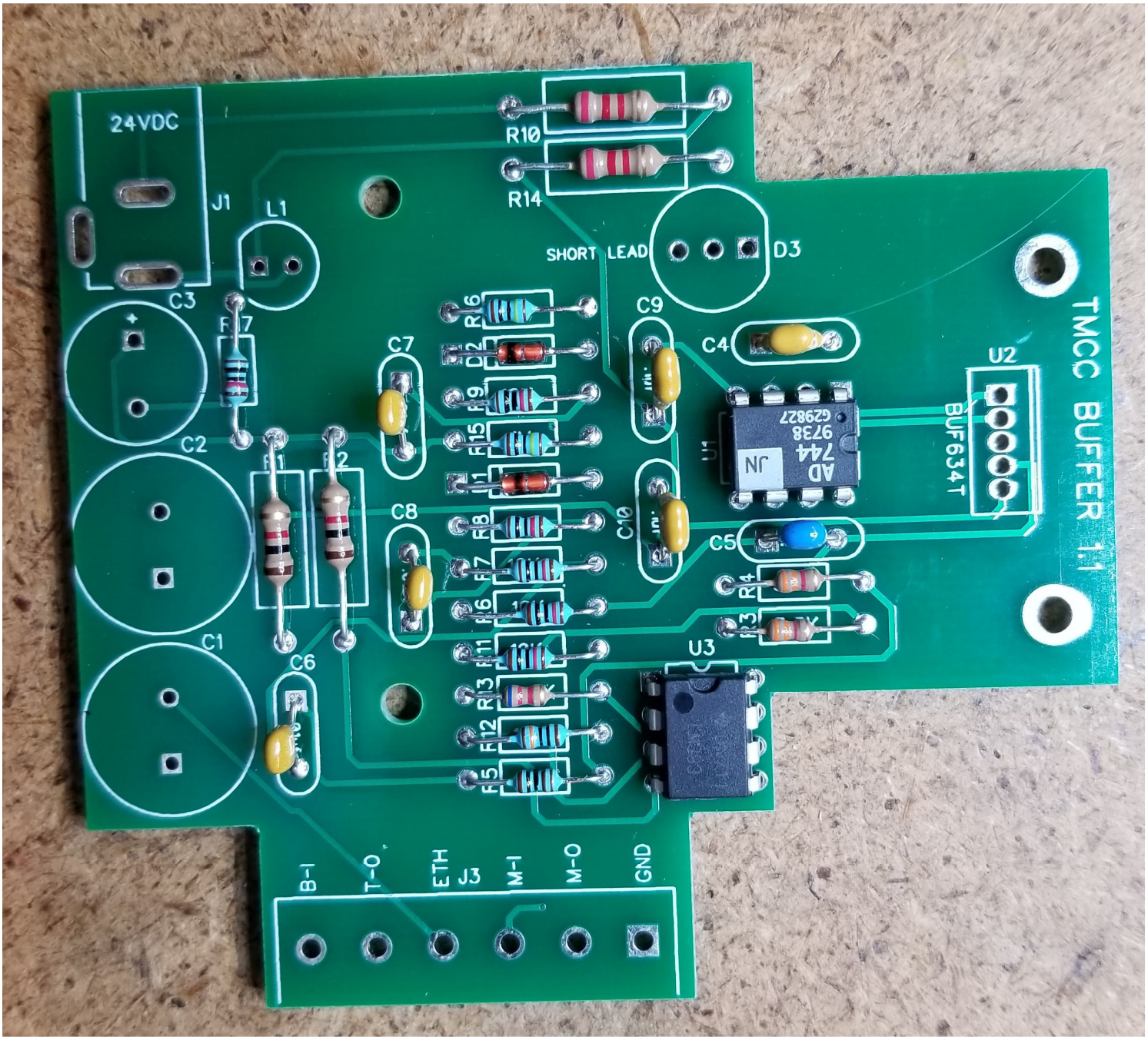


Figure 2 Discrete Components installed on PCB

Next secure the BUF634T package to the supplied heatsink using the #4 screw and nut provided.

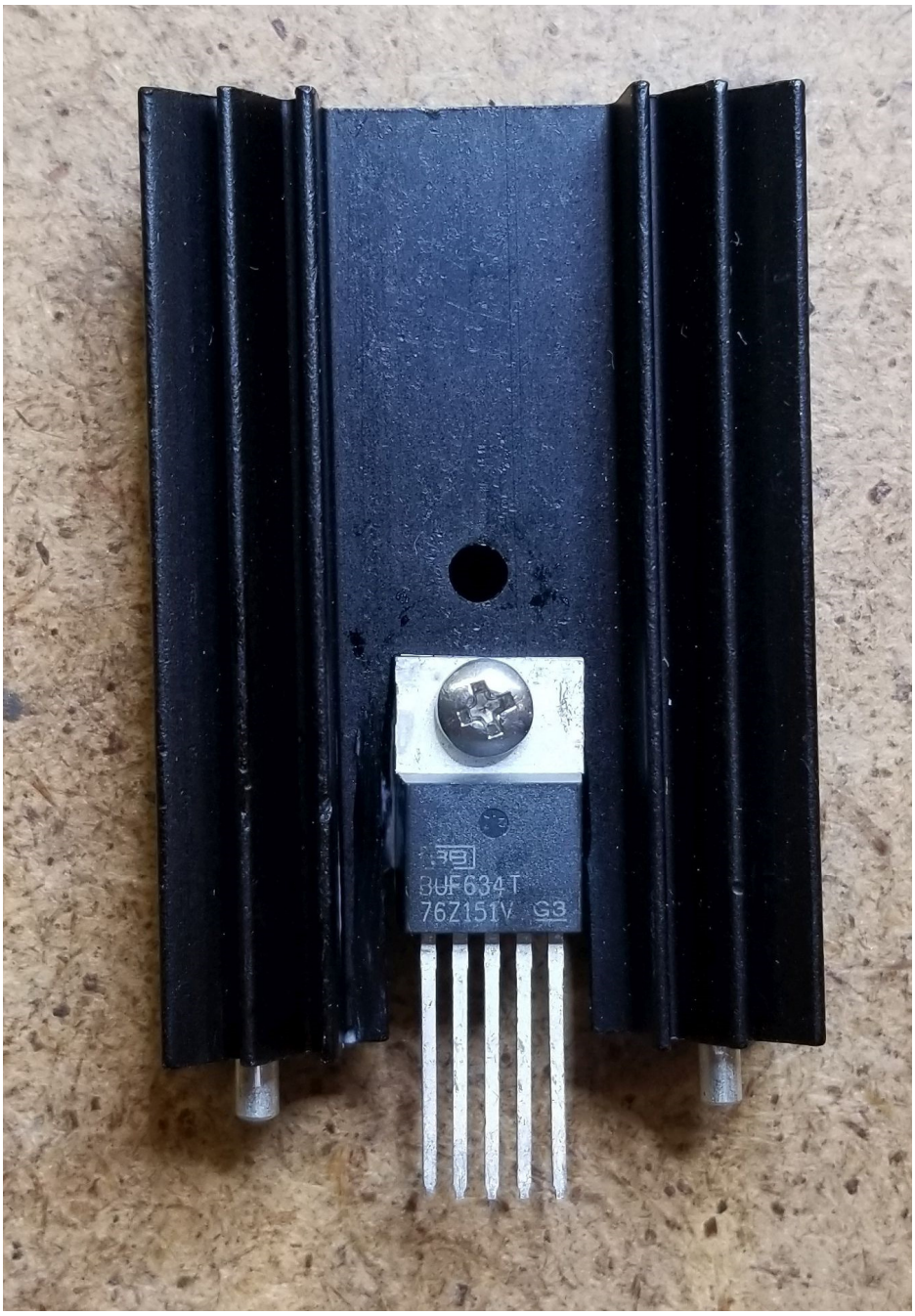


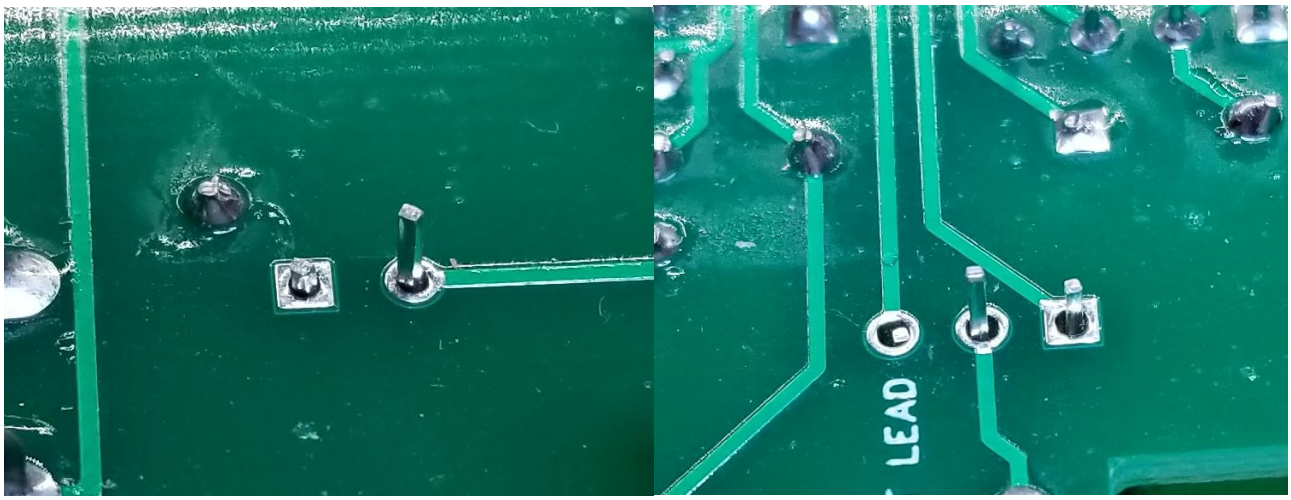
Figure 3 Heatsink Detail

Insert the heatsink and IC assembly into the PCB and solder the legs of the heatsink to the PCB. It will be necessary to perhaps turn up the heat on the soldering iron for this step, I normally use 500F for PCB work, but I use 600F for this step. After securing the heatsink to the board, you can solder the BUF634T pins to the board. Take care not to develop a solder bridge between these pins, the spacing is very close.

After installing the heatsink and BUF634T, you can install the large capacitors, the power jack, and the external connection terminal strip.

Figure 4 Heatsink and Large Components Installed

The final components to go on the PCB are the two LED's, the height of these is fairly critical as they have to project through the top of the case. Note that the entire length of the LED lead is used in order to achieve the necessary height. The following figure shows the bottom of the board before soldering the LED's in place, note that the shortest lead is level with the PCB surface. Additionally, note the short lead on the three-lead LED is labeled on the PCB. The silk screen on the top of the board shows the orientation of the 2-lead LED, orient the flat to match the silkscreen. After soldering the LED's in, the PCB assembly is complete.



The graphic below shows the earth ground tether detail. The red wire goes to the inner barrel connection, and the black wire and earth ground connection wire both go to the outside barrel connection. Insure there are no shorts between these two connections as it will blow the fuse in the Legacy Base power brick if shorted.

Figure 5 Earth Ground Tether Construction Detail

The buffer case has been prepared with all the necessary slots and holes, so it's only necessary to mount the board and install the case top to complete the buffer assembly

Mount the board on the case base with the two #2 ¼" screws provided, and then place the top of the case over the board and insuring the LED's are aligned with the holes, seat the top and install the four case screws. The final step is to apply the terminal strip label as shown in the following graphic.

Figure 6 Completed TMCC Buffer

Unpacking and Inventory

See the separate ***User's Manual*** for instructions how to connect an use the DM TMCC Buffer.