

The *Transistor Tester* assembly instructions

This article is a guide to help . when you have received the Transistor Tester Component package. and want to assembly them all together.

First show component list. I recommend that you have to use follow list to Compare before you pick up your soldering iron.

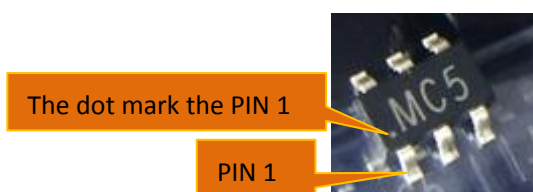
| designator | Component Name | Component parameters | Footprint | Number of Component |
|-------------------------|--------------------------------------|-------------------------------------|-----------|---------------------|
| R19 ,R20 | Metal film resistor | 1KΩ 1/4W 1% | Axial0.3 | 2 |
| R16 | Metal film resistor | 2.2KΩ 1/4W 1% | Axial0.3 | 1 |
| R12 ,R7 | Metal film resistor | 3.3KΩ 1/4W 1% | Axial0.3 | 1 |
| R22,R17,R18,R11,R21,R13 | Metal film resistor | 10KΩ 1/4W 1% | Axial0.3 | 6 |
| R24 | Metal film resistor | 20KΩ 1/4W 1% | Axial0.3 | 1 |
| R15,R8 | Metal film resistor | 27KΩ 1/4W 1% | Axial0.3 | 2 |
| R10 | Metal film resistor | 33KΩ 1/4W 1% | Axial0.3 | 1 |
| R9 | Metal film resistor | 100KΩ 1/4W 1% | Axial0.3 | 1 |
| R23 | Metal film resistor | 180KΩ 1/4W 1% | Axial0.3 | 1 |
| R14 | Metal film resistor | 220Ω 1/4W 1% | Axial0.3 | 1 |
| R4,R2,R6 | Metal film resistor | 470KΩ 1/4W 1% | Axial0.3 | 3 |
| R1,R3,R5 | Metal film resistor | 680Ω 1/4W 1% | Axial0.3 | 3 |
| *Y1 | Quartz crystal | 16Mhz | HC-49 | 1 |
| C7 ,C8 | ceramic capacitor | 22pF 20% silk(220) | RAD0.2 | 2 |
| C1 | ceramic capacitor | 1000pF 20% silk(102) | RAD0.2 | 1 |
| C2 | ceramic capacitor | 10nF 20% silk(103) | RAD0.2 | 1 |
| C3,C4,C5,C6,C11 | ceramic capacitor | 100nF 20% silk(104) | RAD0.2 | 5 |
| * CESD | ceramic capacitor | 100nF 20% no silk | 0805 | 1 |
| C9,C10 | Aluminum electrolytic capacitor | 10uF 20% | RB.2/4 | 2 |
| T3 | bipolar junction transistor | PNP silk(9012) | TO-92 | 1 |
| T1 , T2 | bipolar junction transistor | NPN silk(9014) | TO-92 | 2 |
| U1 | AVR MCU | ATMEGA328P-PU | DIP28 | 1 |
| U2 | Regulator | HT7550 | TO-92 | 1 |
| U3 | Precision References | TL431 | TO-92 | 1 |
| * ESD | Low Capacitance TVS Diode Array | SRV05-4 silk(MC5) | SOT-23 6L | 1 |
| * ZD | Transient Voltage Suppressors(TVS) | P6KE6V8 silk(6V8C) | 1812 | 1 |
| LED1 | Light Emitting Diode | Φ3MM | | 1 |
| J3 | Test bench | 14P | DIP14 | 1 |
| DC1 | DC jack | 5.5-2.1MM | DC-005 | 1 |
| TEST1 | rotary pulse encoder with switch | | | 1 |
| J4,J5,JP1 | connecting terminal | Lead space 5.08MM | | 3 |
| J2 | pin header and Female Header | 8P | | 1 each |
| | copper pillar | 3MM *11MM | | 6 |
| | bolt | 3MM | | 8 |
| | TFT LCD module | 160*120 pixel with 16bit full color | | 1 |
| | Main board PCB | 60 * 77 MM | | 1 |

* The 16MHz replace the 8MHz Quartz crystal since Ver1.13, the PCB may still print a 8MHz. That doesn't affect work .

* CESD ,ESD , ZD are three SMT Components. they are optional.

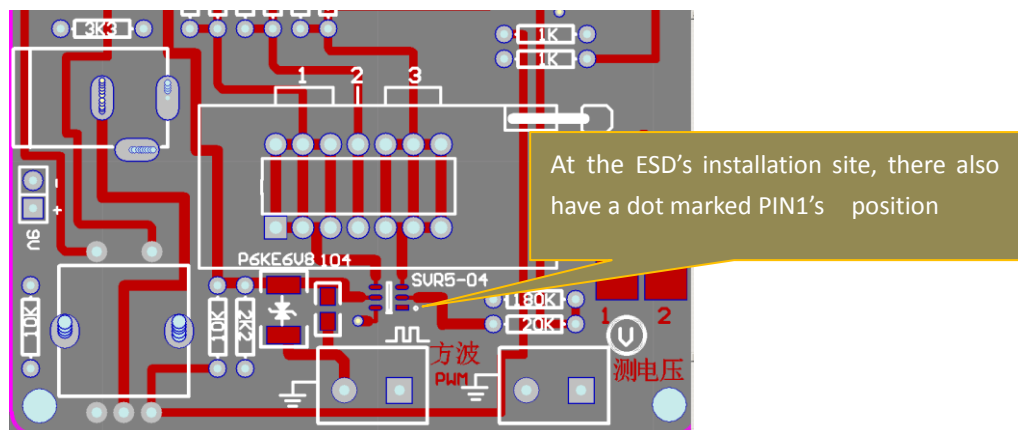
The *Transistor Tester* have three SMT Components: Their designator are ZD,CESD and ESD. The three Components should be soldering first,

Their role is to protect the MCU against Transient high voltage. In fact . *the Transistor Tester* can normally work without the three part . The ZD and CESD have no polarity, so you can soldering this two with no matter. The ESD have six pins . need first to find she's PIN 1, follow photo will help you



(note: on the top, the silk maybe "MC5" or "VC5" or "LC5", they mean same)

In the *Transistor Tester* main board PCB,

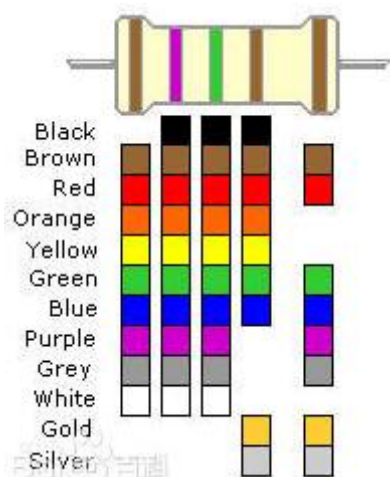


the ESD is the most difficult part to soldering. if not sure, you can leave this empty . it's not a mistake. The tester can work well without them.

When you have done the three , use some organic solvent like (absolute ethyl alcohol or Thinner or other Plate washer water) to clean before next.

Next:

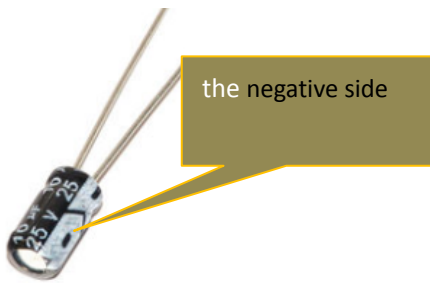
The Metal film resistor can now soldering, on the *Transistor Tester* main board PCB, all of the resistor's installation site is printed with the expect value. So you can easy to find out the right one for each , if don't sure about the Color ring, meter once before soldering . this photo can help you recognition .



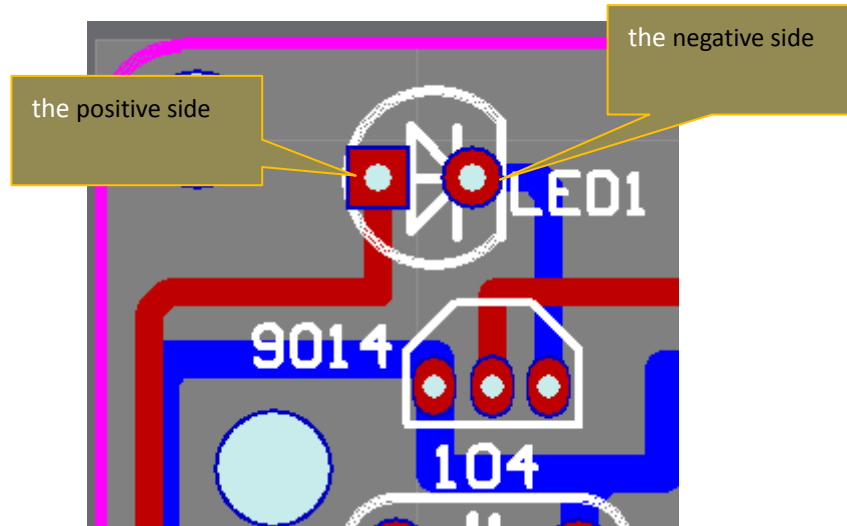
The example resistor value = 1750Ω 1%

Next, the ceramic capacitor can be soldering, ceramic capacitor do not have polarity . The *Transistor Tester* main board PCB is printed the capacitor's value for each. And the ceramic capacitor body also silk it value ,so this is clear enough for you . the exception is the 22pF , the PCB is printed "22", but the ceramic capacitor is silk 220, they are same thing.

The Aluminum electrolytic capacitor have polarity, the positive have the longer lead than it negative. it installation site is printed it value, and the positive is carry with a "+". On the shell of the Aluminum electrolytic capacitor, a wide band with white color is point it negative side .



The light-emitting diode have polarity, like the Aluminum electrolytic capacitor, the positive have the longer lead than it negative. On the PCB



The Quartz crystal have no polarity.

When you soldering the Test bench,  please keep hand shank in unlock state.

For the rest of the Component package , is simple enough. I will attached some photo at the last of the article.

Very important note:

When you have complete the soldering, maybe you will use some "Plate washer water" to clean the soldering side, when doing so . please keep Care about the "rotary pulse encoder with switch", this Component's body cannot contact any "Plate washer water" except it Pins. The "Plate washer water" can destroy the internal of the "rotary pulse encoder with switch".

The same rule is apply the "TFT LCD module" too, the "TFT LCD module" cannot meet "Plate washer water" anywhere.

