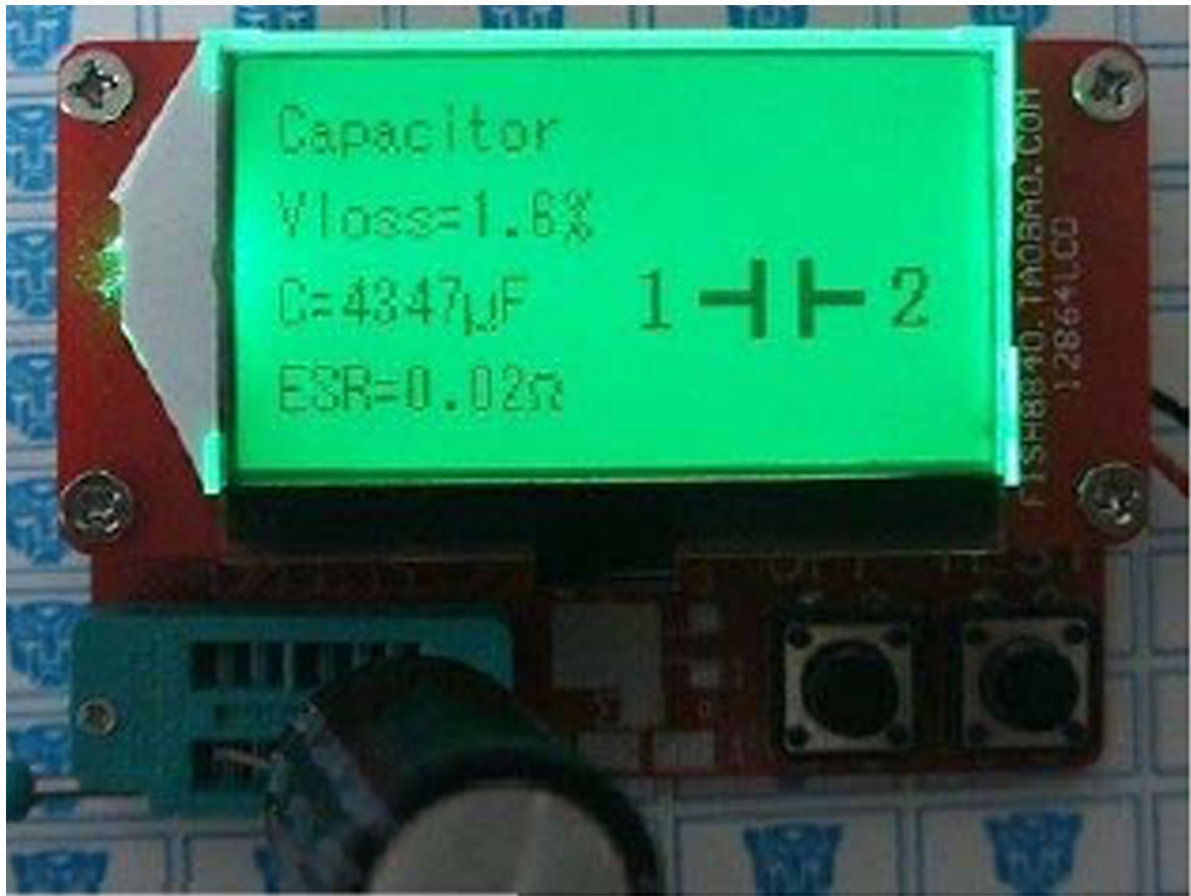


# Small 12864 LCD Transistor Tester Capacitance ESR Meter Diode Triode MOS LCR NPN



2014 latest M328 version of the software ,more functions.Chip: Atmega328

128\*64 big Backlight LCD display,only 2mA when stand by.

Using 9V battery (Not included)

## **NEW Function:**

- 1: Automatic detection of NPN and PNP transistors, n-channel and p-channel MOSFET, diode (including double diode), thyristor, transistor, resistor and capacitor components
- 2: Automatic test the pin of a component, and display on the LCD
- 3: Can detect the transistor, MOSFET protection diode amplification coefficient and the base to determine the emitter transistor forward biased voltage
- 4: Measure the gate and gate capacitance of the MOSFET threshold voltage
- 5:Use 12864 liquid crystal display with green backlight

## **Specifications:**

1. One -button operation, automatic shutdown .

# MINI-MANUAL

Only 20mA shutdown current.

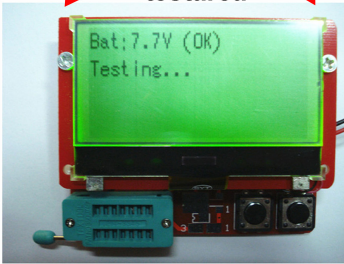


After Power On the module first displays a splashscreen with sopyright notice though the design and technical development was performed in Germany and later copied by chinese guys .....

the original developer was: kh\_kuebbeler@web.de at:

<http://www.mikrocontroller.net/topic/248078?page=6>

SMD testarea



After splashscreen the module displays current battery-voltage

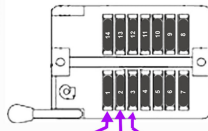
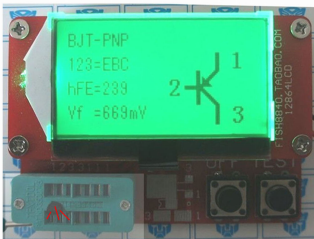


After display of the battery-voltage the module will start performing test - IF testobject is detected - otherwise errormessage will be displayed.

## Transistor Testing

Line 1 at display shows what kind of transistor has been detected.

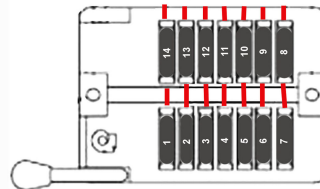
Automatically detect NPN, PNP bipolar transistors, N-channel and P-channel MOS FET, JFET, diodes, two diodes, thyristors small power unidirectional thyristor.



View from Top to Top of Case

Measurement points

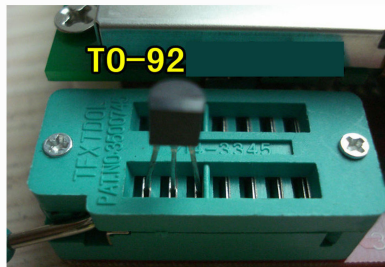
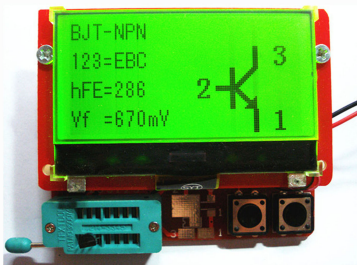
1 2 3 3 1 2 3



Attention ! There are various kinds of PCB's out there with different measure-points ! In general the points are indicated by numbering on the PCB !

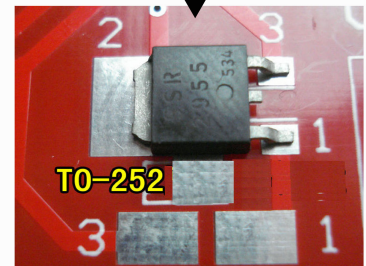
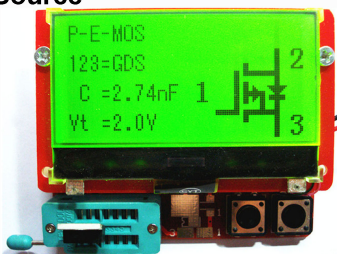
Automatic identification components pin arrangement.

Measuring bipolar transistor current amplification factor and base-emitter threshold voltage.



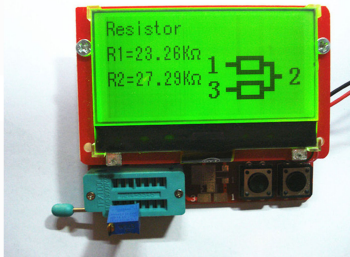
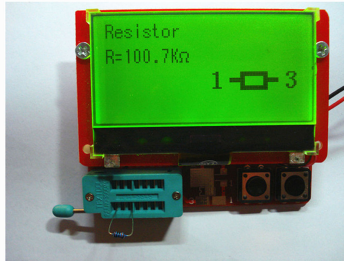
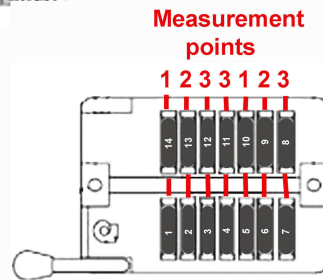
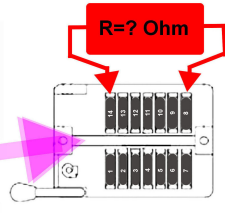
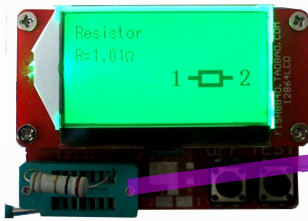
recognize that line 2 displays allocation of the transistorpins related to the testinpoints E=Emitter B=Base C=Collector G=Gate D=Drain S=Source

examples on testing SMDtransistors



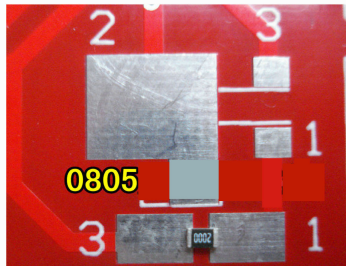


10. Resistance measurement resolution is 0.1 ohms , 50M ohms can be measured



Measurement of a Trimmer or Potentiometer results to display of 2 resistors ( depending to the location of the gripoff wiper ) and the values of both resistors together display the total value of the trimmer or potentiometer.

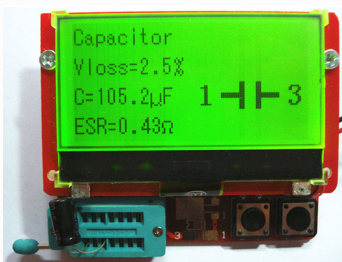
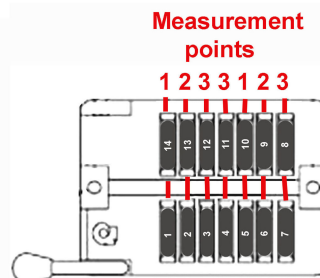
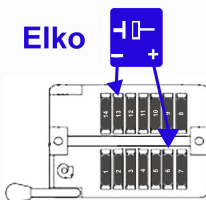
Can simultaneously measure two resistors and resistor symbol is displayed. Displayed on the right with a decimal value of 4 . Resistance symbol on both side number. So you can measure the potentiometer. If the potentiometer wiper is not transferred to an extreme position , we can distinguish the middle and both



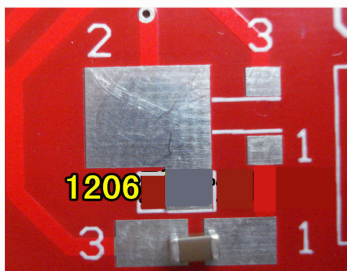
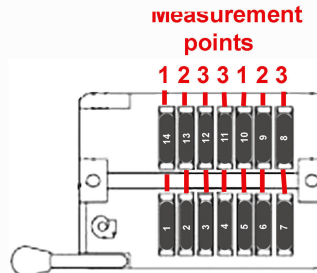
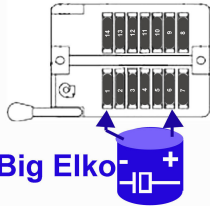
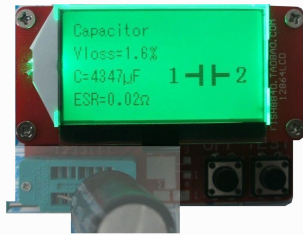
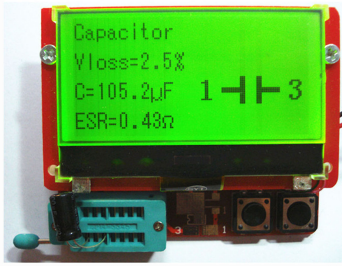
Measurement of SMD-Resistor at the SMD testing area ( see at page 2 ! )

## Measurement of Capacitors ( also electrolytic )

Can measure capacitance Can measure capacitance of 30pF-100mF , resolution 1pF.

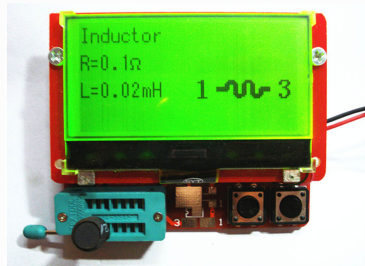
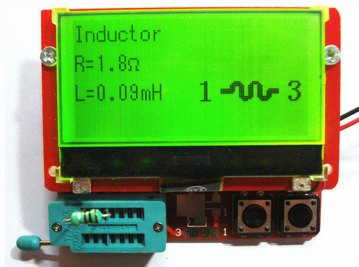
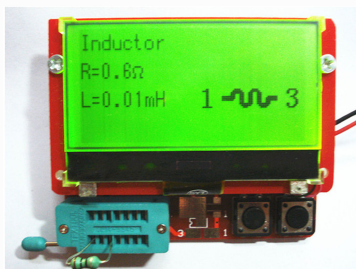
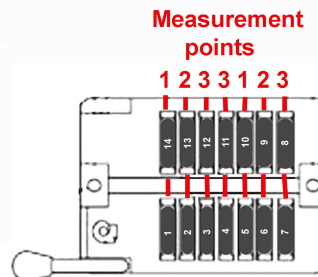
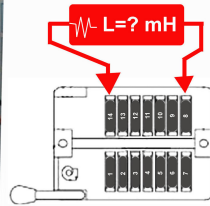
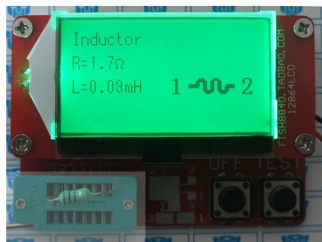


2uF more capacitors can simultaneously measure the equivalent series resistance ESR values. The two can be displayed with a decimal value , resolution 0



Measurement of SMD Capacitor at the SMD testing area ( see page 2 ! )

## Measurement of Inductors and coils

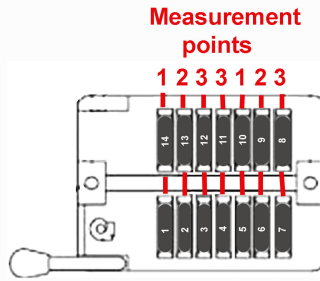
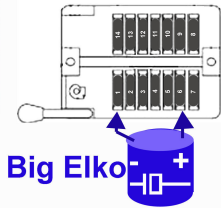
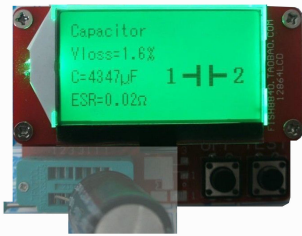


Notice: Before measuring capacitance , the capacitor must be discharged , otherwise very likely damage the meter .

**Package Include:**

1 x Small 12864 LCD Transistor Tester Capacitance ESR Meter Diode Triode MOS NPN LCR (not include the battery)

12. 2uF more capacitors can simultaneously measure the equivalent series resistance ESR values. The two can be displayed with a decimal value , resolution 0



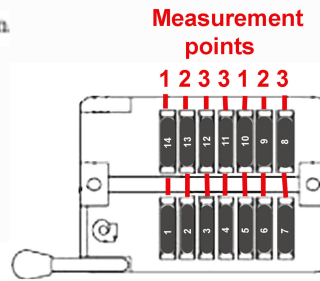
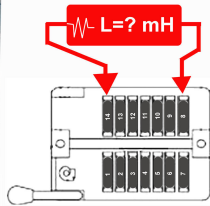
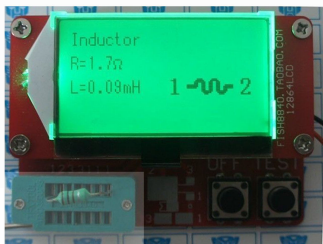
Can be in the correct order and the diode symbol display two diodes , and gives the diode forward voltage.

LED is detected as a diode forward voltage higher . Combo of the LED is identified as two diodes.

Eeverse breakdown voltage is less than 4.5V Zener diode can be identified.

Can measure a single diode reverse capacitance. If the bipolar transistor connected to the base and collector or emitter of a pin , it can measure the collect junction reverse capacitance .

can be obtained with a single measurement rectifier bridge connection.

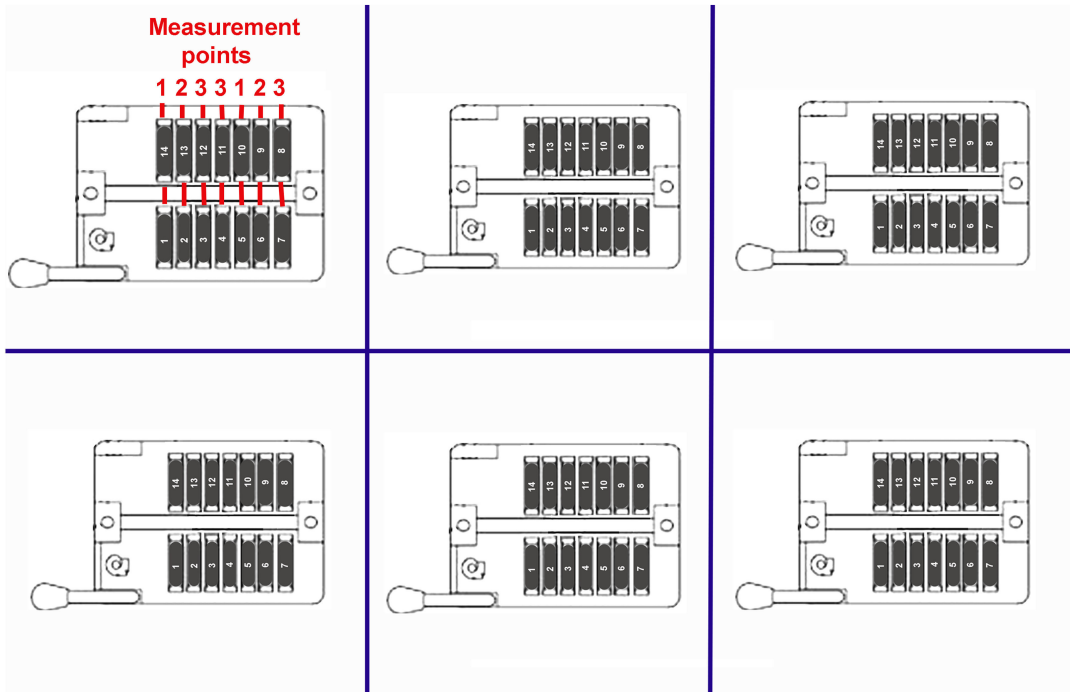


Notice: Before measuring capacitance , the capacitor must be discharged , otherwise very likely damage the meter .

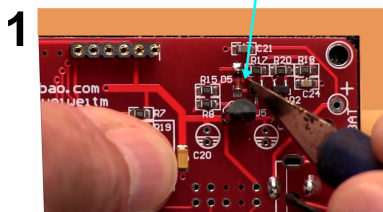
**Package Include:**

1 x [Small](#) 12864 LCD Transistor Tester Capacitance ESR Meter Diode Triode MOS NPN LCR (not include the battery)

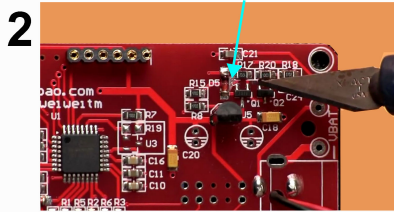
## Spare drawings for measurement notes



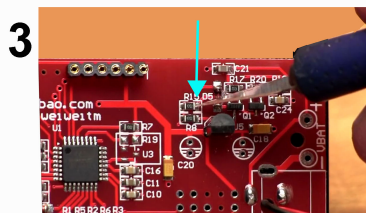
# Modifikation des Fish8840



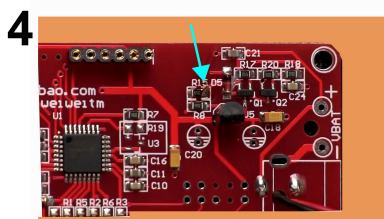
1 The problem is the high waste of current - even when the module is in "power off mode". The trace below the Diode D5 is the source of the waste.



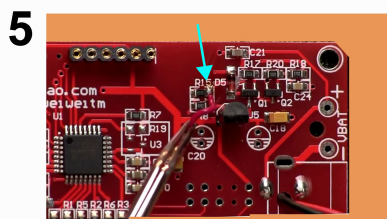
2 After the cut and removal of the part of that trace there still is the need to lead the power to the input of the powerregulator.



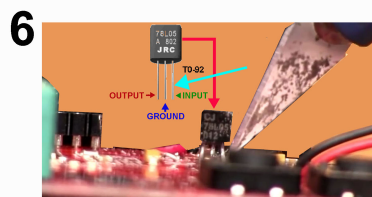
3 The resistor divider of R15 and R8 is needed for sensing correct the battery voltage and therefore there must be inputvoltage must be present at this point.



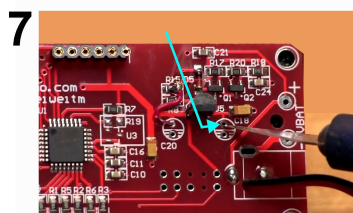
4 For soldering wire to this point some solder must be applied carefully.



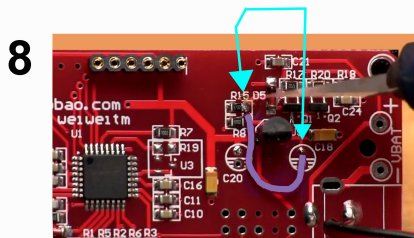
5 Then the bridging a isolated wire can be soldered to the joint at R15.



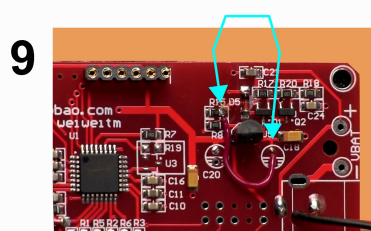
6 The other end must be fixed to the input leg of the power-regulator ( right leg ).



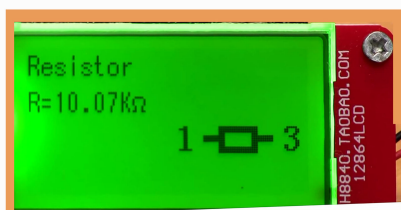
7 the best point to fix the second alternate end of wire is the hole of the unpopulated C18 at the positive upper hole.



8 The violet colored path displays the final path of the bridging wire.



9 In this picture the red coated isolated wire is in it's fianl location and the Mod is completed.



10 For Testing purpose checkout after perfomence of the Mod the correct function by testing a resistor. After Bootscreen the battery detection should display correct voltage of the battery and perform correct testing. After this Mod the "turn off mode" of the module should have been dumped from nearly 100mA down to average current of less than 5 mA.

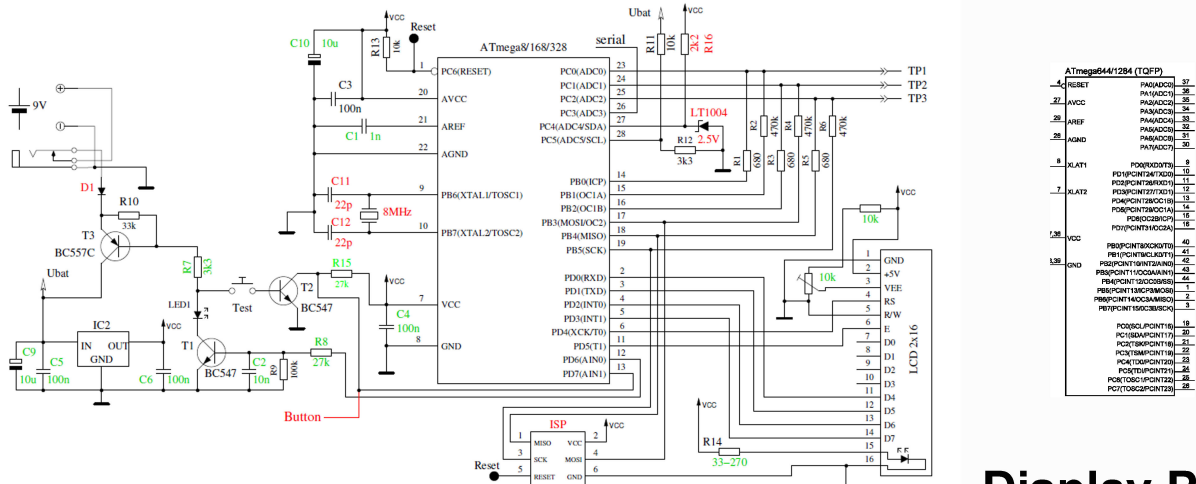
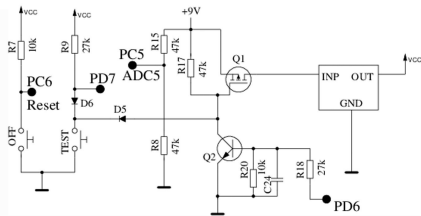


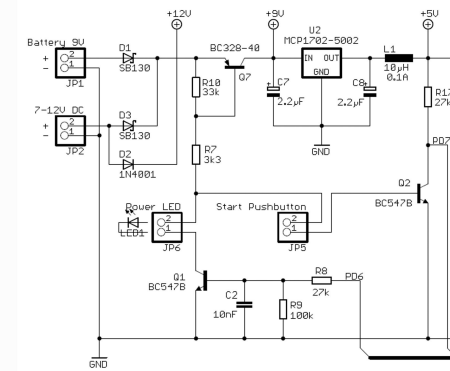
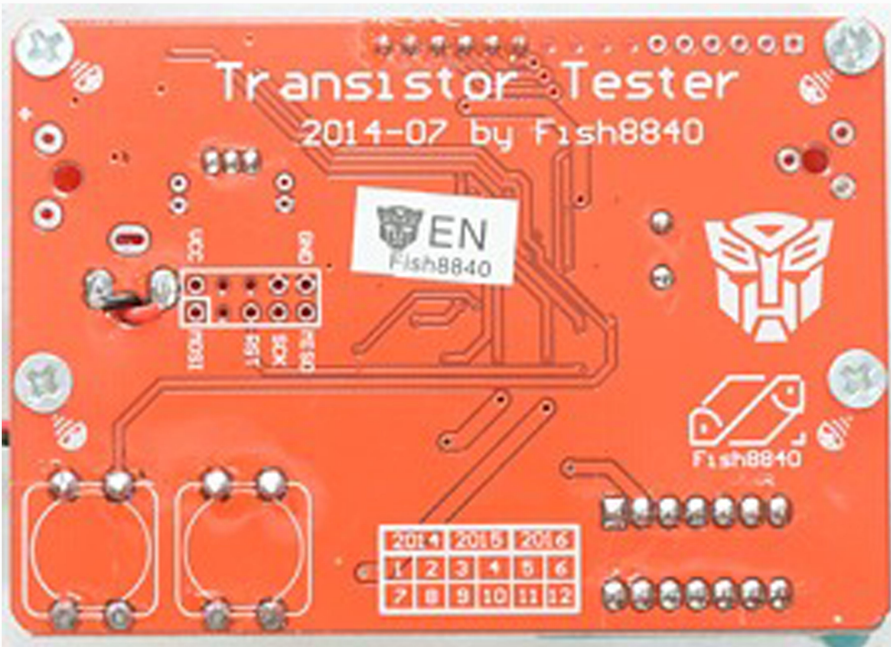
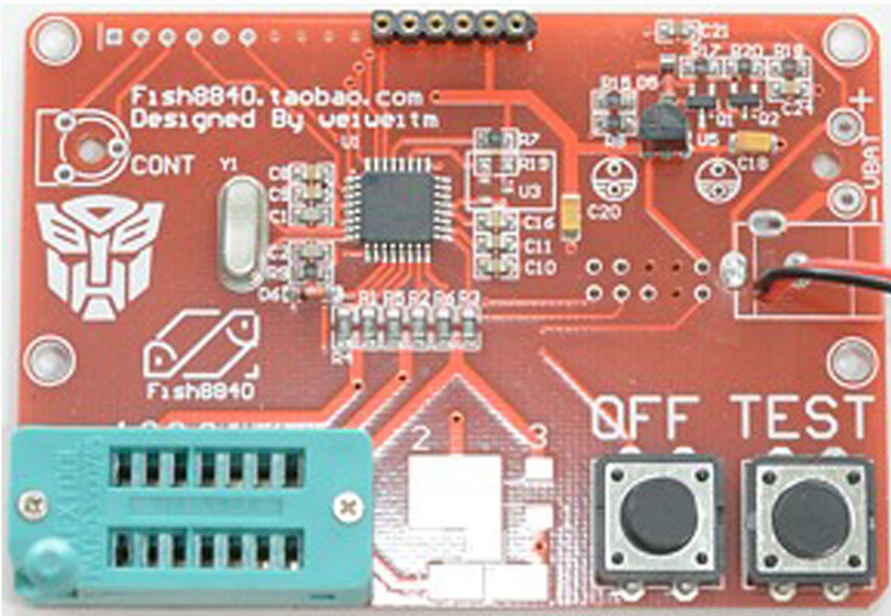
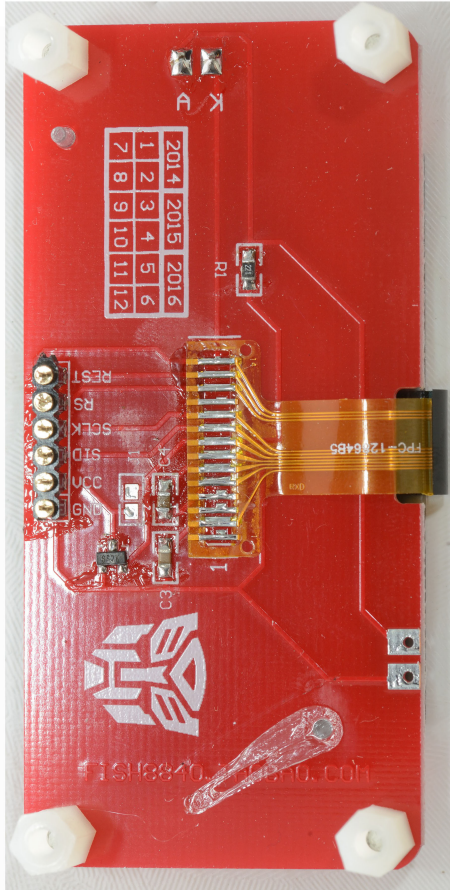
Abbildung 2.1: Neue TransistorTester-Schaltung

## Display PCB

ATmega844/1284 (TQFP)			
4	RESET	PA4(ADC4)	37
5	RESET	PA5(ADC5)	38
27	AVCC	PA6(ADC6)	39
28	AREF	PA7(ADC7)	40
22	AGND	PA8(ADC8)	41
23	AGND	PA9(ADC9)	42
9	XLAT1	PA10(ADC10)	43
7	XLAT2	PA11(ADC11)	44
12	VCC	PA12(ADC12)	45
13	GND	PA13(ADC13)	46
14	GND	PA14(ADC14)	47
15	GND	PA15(ADC15)	48
16	GND	PA16(ADC16)	49
17	GND	PA17(ADC17)	50
18	GND	PA18(ADC18)	51
19	GND	PA19(ADC19)	52
20	GND	PA20(ADC20)	53
21	GND	PA21(ADC21)	54
24	GND	PA22(ADC22)	55
25	GND	PA23(ADC23)	56
26	GND	PA24(ADC24)	57
29	GND	PA25(ADC25)	58
30	GND	PA26(ADC26)	59
31	GND	PA27(ADC27)	60
32	GND	PA28(ADC28)	61
33	GND	PA29(ADC29)	62
34	GND	PA30(ADC30)	63
35	GND	PA31(ADC31)	64
36	GND	PA32(ADC32)	65
38	GND	PA33(ADC33)	66
39	GND	PA34(ADC34)	67
40	GND	PA35(ADC35)	68
41	GND	PA36(ADC36)	69
42	GND	PA37(ADC37)	70
43	GND	PA38(ADC38)	71
44	GND	PA39(ADC39)	72
45	GND	PA40(ADC40)	73
46	GND	PA41(ADC41)	74
47	GND	PA42(ADC42)	75
48	GND	PA43(ADC43)	76
49	GND	PA44(ADC44)	77
50	GND	PA45(ADC45)	78
51	GND	PA46(ADC46)	79
52	GND	PA47(ADC47)	80
53	GND	PA48(ADC48)	81
54	GND	PA49(ADC49)	82
55	GND	PA50(ADC50)	83
56	GND	PA51(ADC51)	84
57	GND	PA52(ADC52)	85
58	GND	PA53(ADC53)	86
59	GND	PA54(ADC54)	87
60	GND	PA55(ADC55)	88
61	GND	PA56(ADC56)	89
62	GND	PA57(ADC57)	90
63	GND	PA58(ADC58)	91
64	GND	PA59(ADC59)	92
65	GND	PA60(ADC60)	93
66	GND	PA61(ADC61)	94
67	GND	PA62(ADC62)	95
68	GND	PA63(ADC63)	96
69	GND	PA64(ADC64)	97
70	GND	PA65(ADC65)	98
71	GND	PA66(ADC66)	99
72	GND	PA67(ADC67)	100



## Main PCB



## Main PCB solderside