4-Bit Electronic Clock DIY Kit

1. Introduction

YSZ-4 four electronic clock, it takes AT89C2051 as its core, a total of 16 electronic components to come true the two channels of the alarm clock, (8:00-20:00) on time alarm ,accurate adjustment , and other functions.

2. Parameter

NO.	Parameter	Value
1	Operating voltage	DC 3V-6V
2	PCB board material	RF-4
3	Size	52mm*42mm

3. Principle

The whole system by MCU minimum system, key input circuit, display circuit, buzzer circuit and power supply parts.

1>. MCU minimum system: including the U1 (AT89C2051), C1, R1 for power on reset circuit .Clock circuit is composed of C2， C3 and Y1.

2>. The pressed key input circuit：composed of S1, S2, short press the button once a loud buzzer rang, long press the button once two loud buzzer rang.

3>. The display circuit：4bits common cathode and on PR1 Resisters Packs .

4>. Buzzer circuit：composed of Q1, R2 and LS1, short press the button once a loud buzzer rang, long press the button once two loud buzzer rang.

5>. J1 is 5v power supply input terminal, C4 filtering.

4. Operation instruction

It will display 12:59 when Power-on，while is normal interface("hours:minutes").

The both channels of alarm clock are opened.At the same time,the first alarm clock has been set at 13:01.the second alarm clock has been set at 13:02.

After power on ,short press S2.The display of digital tube will switch between "hours:minutes" and "minutes:seconds";Long press S1 to enter the system Settings menu. there are A, B, C, D, E, F, G, H, I submenu. Short press S1 sub-menu plus increase by degrees。finally back to the normal interface

A Sub menu : Correction for hours

Display data will add 1 after press S2.after adjusted the A Submenu,then short press S2 to save the adjusted results and quit A submenu,enter B sbumenu

B Sub menu : Correction for minutes

Display data will add 1 after press S2.after adjusted the B Submenu,then short press S2 to save the adjusted results and quit B submenu,enter C sbumenu

C Sub menu:on time alarm switch

The default state is ON (on-time-alarm is open from 8:00 to 20:00)

It will switch between ON and OFF(on-time-alarm is closed) when press S2. Short press S2 to save the adjusted results and quit C submenu,enterD sbumenu

D Sub menu:The first alarm-clock switch

The default state is ON (the first alarm-clock is opened)

It will switch between ON and OFF(first-alarm-clock is closed) when press S2。

If set to ON, short press S1 to save and quit,then enter E submenu;

If set to OFF, short press S1 to save and quit ,then enter G submenu;

E Sub menu:The first alarm clock set for hours

Display data will add 1 after press S2.after adjusted the E Submenu,then short press S2 to save the adjusted results and quit E submenu,enter F sbumenu

F Sub menu:The first alarm clock set for minutes

Display data will add 1 after press S2.after adjusted the F Submenu,then short press S2 to save the adjusted results and quit F submenu,enter G sbumenu

G Sub menu:The Second alarm-clock switch

The default state is ON (the second alarm-clock is opened)

It will switch between ON and OFF(second-alarm-clock is closed) when press S2。

If set to ON, short press S1 to save and quit ， then enter H submenu;

If set to OFF, short press S1 to save and quit ， then enter normal interface;

H Sub menu:The second alarm clock set for hours

Display data will add 1 after press S2.after adjusted the F Submenu,then short press S2 to save the adjusted results and quit H submenu,enter I sbumenu

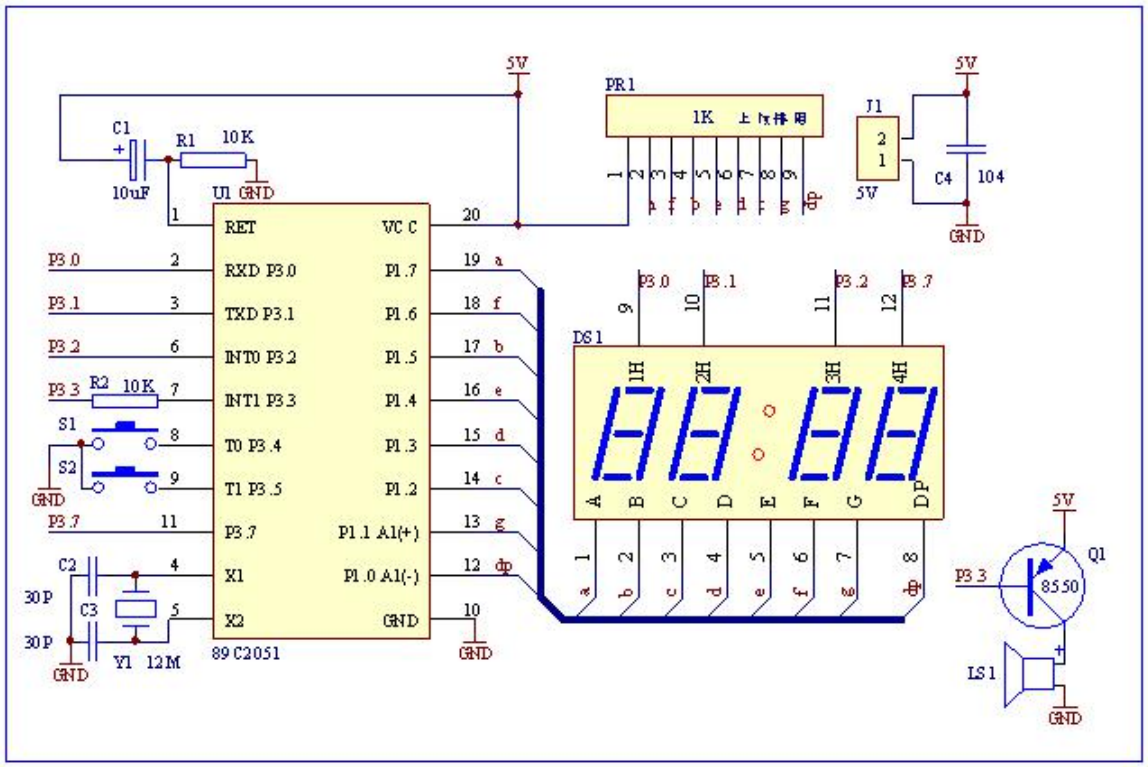
I Sub menu:The second alarm clock set for hours

Display data will add 1 after press S2.after adjusted the I Submenu,then short press S2 to save the adjusted results and quit H submenu, then enter normal interface.

Second correction:

Short press S2 in the normal interface,then enter "minutes : seconds" interface .Long press S2,make the second zero.Then short press S2 twice enter normal interface

5. Schematic



Note: there is direction for PR1 Resisters Packs , there is one side of the word in the direction of the MCU.Pay an attention!!!

6. Component listing

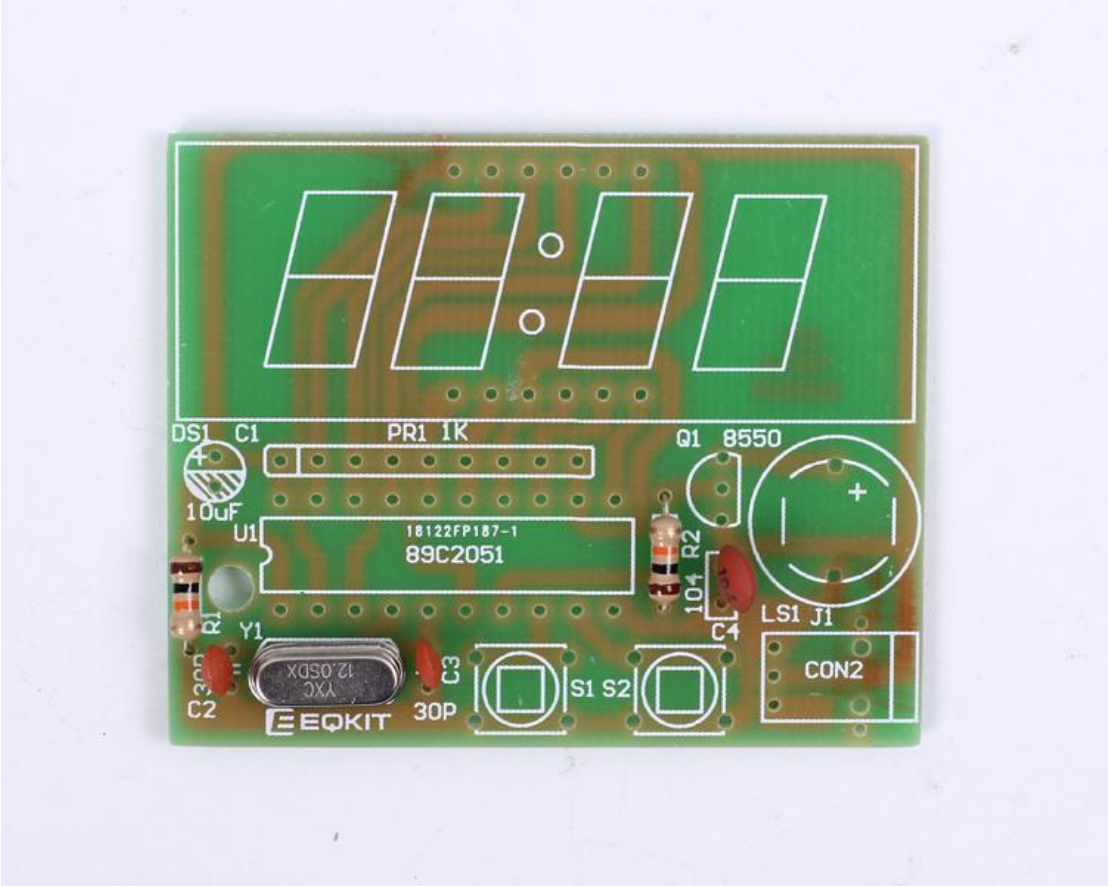
NO.	Component Name	PCB Marker	Parameter	QTY
1	Metal Film Resistor	R1,R2	10K	2
2	Ceramic Capacitor	C2,C3	30pf	2
3	Ceramic Capacitor	C4	0.1uf 104	1

4	Electrolytic Capacitor	C1	10uF/25V	1
5	Network Resistor	PR1	1K	1
6	Crystal Oscillator	Y1	12MHz	1
7	S8550	Q1	TO-92	1
8	Button	S1,S2	6*6*5mm	2
9	AT89C2051	U1	DIP-20	1
10	IC Socket	U1	DIP-20	1
11	Active Buzzer	LS1	5V	1
12	Digital Tube	DS1	4Bit Red	1
13	DC Socket	J1	3.5mm	1
14	Power Cable		USB to 3.5mm	1

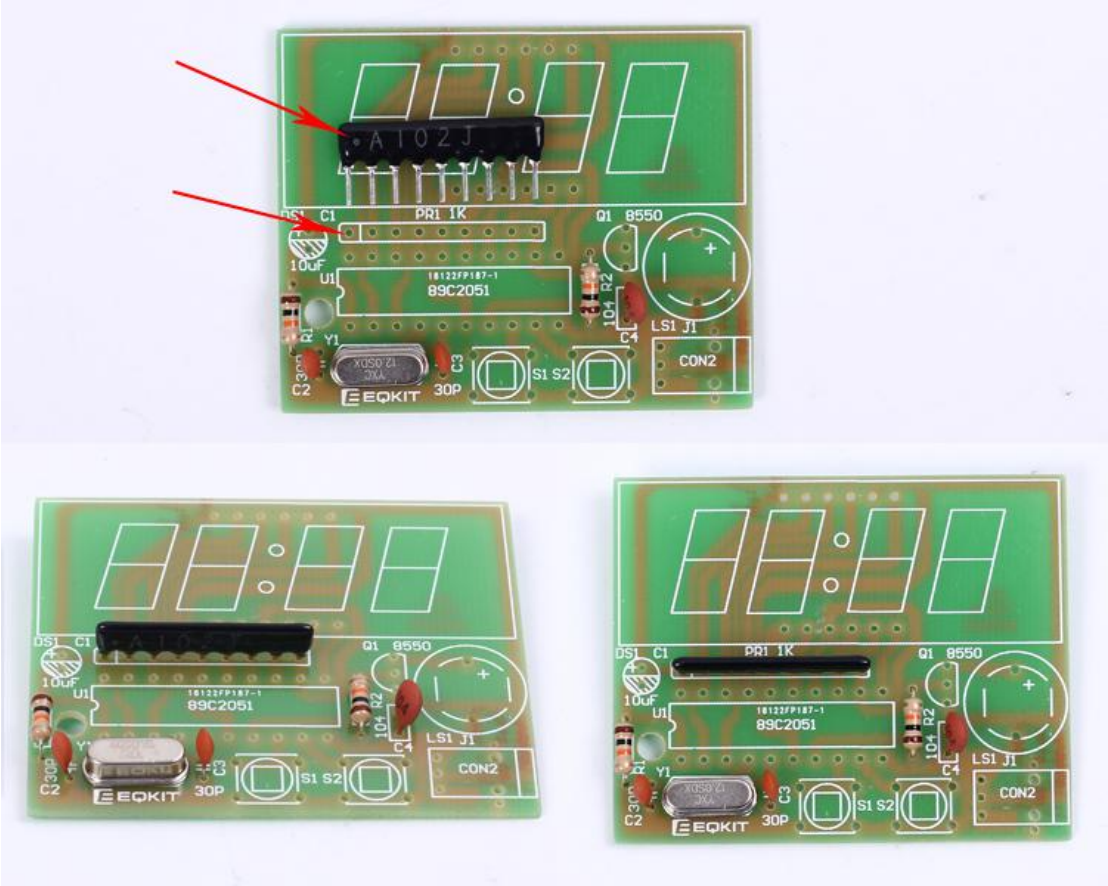
NOTE:Users can complete the installation by PCB silk screen and component listing

7. Installation Steps

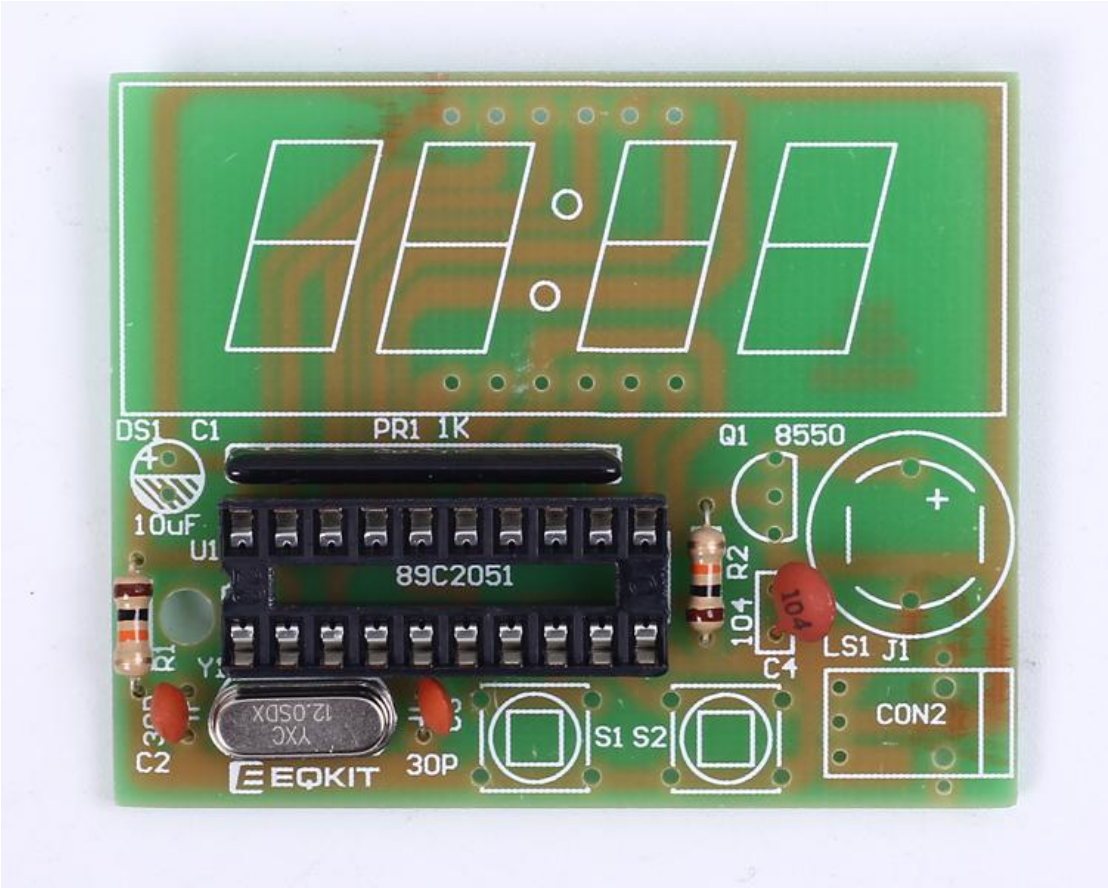
Step 1:Install 2pcs Resistor,3pcs ceramic capacitor,1pcs Crystal Oscillator



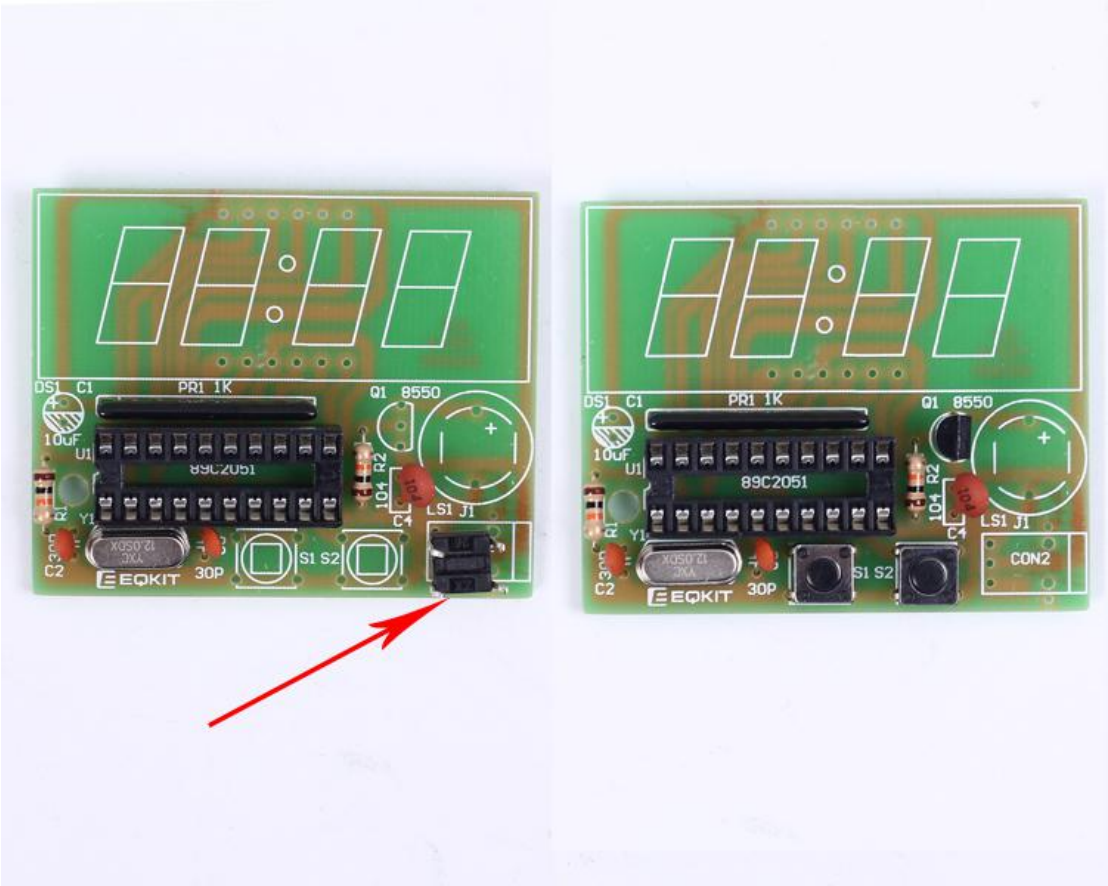
Step 2:Install 1pcs Network Resistor.Pay attention to the installation direction.



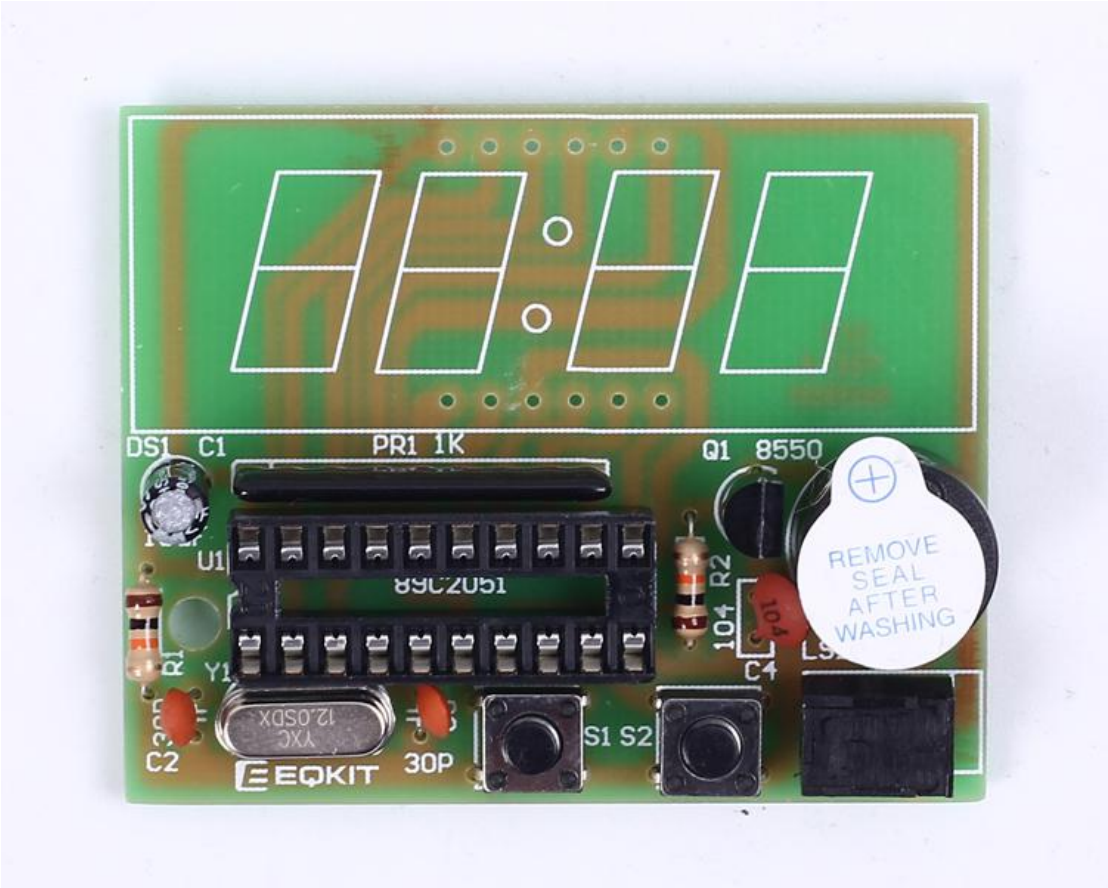
Step 3:Install IC Socket.But pay attention to the installation direction.



Step 4: Install 2pcs button.But pay attention to the installation direction.Install 1pcs S8850.



Step 5: Install 1pcs Power socket;1pcs Electrolytic Capacitor;1pcs Buzzer.



Step 6: Install 4Bit Digital Tube and IC.And then test!

8.Effect demonstration(Only for appreciation)


DS1
C1
PR1 1K
Q1 8550
100uF
U
ATMEL 1608
AT89C2051-24PU
R2
104
R1
Y1
C4
LS1
J1
REMOVE SEAL AFTER WASHING
12.0SDX
C2
EQKIT
30P
S1 S2


02:27


27:44
REMOVE SEAL AFTER WASHING
EDKIT


0228
REMOVE SEAL AFTER WASHING
EDKIT