

Kit Assembly Instructions

C4432 FASCINATION STAR KIT

PARTS LIST

| | |
|--------------|--------------------------------------|
| C1 _____ | .1 μ f Capacitor (104K) |
| IC1 _____ | 555 Timer IC |
| IC2 _____ | 4017 CMOS IC |
| L1-L25 _____ | Jumbo Red LED |
| Q1-Q4 _____ | 2N3904 Transistors |
| R1 _____ | 4.7K Resistor |
| R2 _____ | 750K Resistor |
| R3-R6 _____ | 680 Ohm Resistor |
| R7-R12 _____ | 180 Ohm Resistor |
| Misc _____ | 9V Snap, IC Sockets, and PC Board |

ASSEMBLY INSTRUCTIONS

1. Assemble per parts layout (Fig.1), parts list and schematic (Fig. 2) using 60/40 rosin core solder only.
2. Install all resistors per color code (Fig. 5). Install capacitor C1. Install battery snap observing polarity. Install IC sockets.
3. Observe locating marks on ICs, notched side on LEDs and flat side on transistors when installing.
4. Install jumper wires per layout (use left-over pieces of wire lead from resistors).
5. Connect a 9V alkaline battery to snap and unit will produce "exploding star" effect.
6. If kit does not operate after completion, re-check all parts for correct location and assembly.



Figure 3
IC Locating Marks

There are two different types of IC locating marks in common use. One is a dot in the lower left corner and the other is a small notch in the left center of the IC. Either mark is correct and some manufacturers even use both. Study the IC that is included with this kit to determine what mark is in use.

TRANSISTOR TYPES

NPN
B = BASE LEAD
E = EMITTER LEAD
C = COLLECTOR LEAD

PNP

TRANSISTOR CASES

TO92

TO5

Figure 4
Transistor Information

RESISTOR COLOR CODE

| BAND COLOR | 1st DIGIT | 2nd DIGIT | MULTIPLIER |
|------------|-----------|-----------|---------------|
| BLACK | 0 | 0 | 1 |
| BROWN | 1 | 1 | 10 |
| RED | 2 | 2 | 100 |
| ORANGE | 3 | 3 | 1,000 (K) |
| YELLOW | 4 | 4 | 10,000 |
| GREEN | 5 | 5 | 100,000 |
| BLUE | 6 | 6 | 1,000,000 (M) |
| VIOLET | 7 | 7 | 10,000,000 |
| GRAY | 8 | 8 | 100,000,000 |
| WHITE | 9 | 9 | 1,000,000,000 |

*TOLERANCE: NO COLOR 20%; SILVER 10%; GOLD 5%

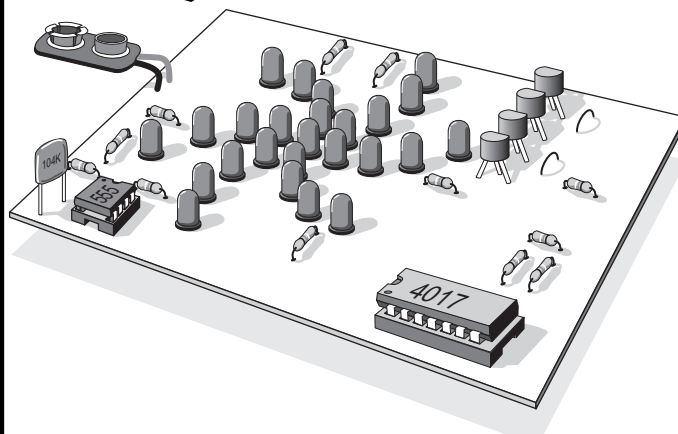
Figure 5
Resistor Color Code



ELECTRONIC PROJECT KIT

**STOCK# C4432
FASCINATION STAR KIT**

SKILL LEVEL 2



UNIQUE EXPLODING STAR DISPLAY - YOU SHOULD KNOW HOW TO SOLDER AND HAVE BUILT KITS BEFORE

Theory of Operation

C4432 FASCINATION STAR KIT

The C4432 Fascination Star Kit uses 2 ICs to provide an exploding star visual display. The first IC (IC1) is a 555 timer connected as an astable multivibrator (oscillator) to provide clock pulses. The frequency of these clock pulses is determined by C1, R1 and R2. The output of IC1 is connected to the clock input of IC2 (pin 14). Each time an input pulse is received, IC2 (4017 CMOS Johnson counter) shifts its output to one of its 10 output pins. We have tied 8 of the output pins together in groups of two to give a longer "on" time for each group of LEDs connected to the collector of the transistor. One of the output pins (pin 10) is connected to the center LED and it drives it directly.

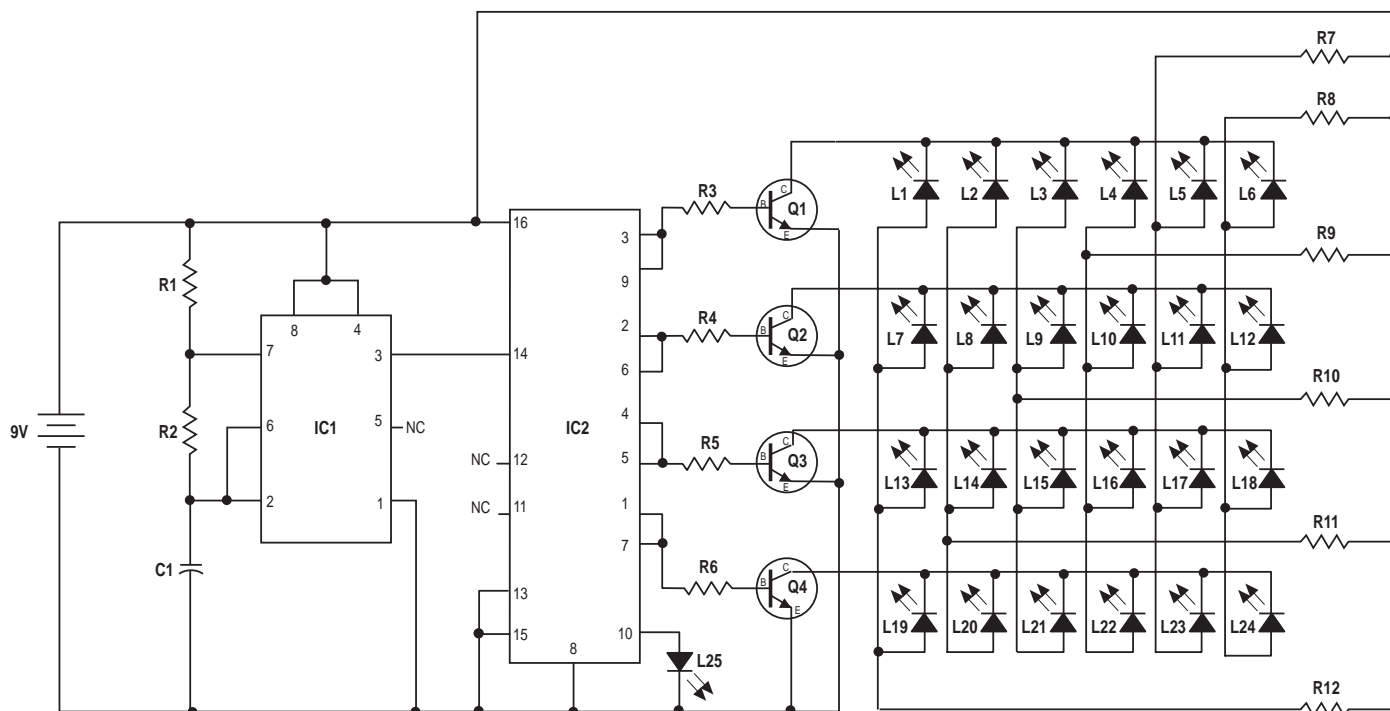


Figure 2
Schematic

TROUBLESHOOTING HINTS

1. First of all, make sure that the solder used to build the kit was rosin core. If acid core solder was used, the kit will be conducting voltage to various points where it should not and the kit will be **DESTROYED**.
NOTE: *we cannot repair any kit that was assembled using acid core solder!*
2. Re-check all resistor against color code and parts layout (fig. 1).
3. Look for solder bridges by comparing actual foil on PC board to foil pattern.
4. Check for cold solder joints and reheat, adding solder to any suspect connections.
5. Make sure that the battery snap has been installed with polarity as shown. Is your battery good?
6. Check to make sure that the ICs have been installed with the locating marks in the direction shown.
7. Re-check all LEDs to make sure that the notched sides are facing direction shown on parts layout (fig. 1).
8. Make sure that all transistors have flat sides facing direction shown.
9. If your kit still does not operate, re-check all assembly instructions. If everything is correct, return your kit per our repair policy.

C4432 FASCINATION STAR KIT

NOTE: The notched (cathode) side of the LEDs are indicated here by the black half moon.

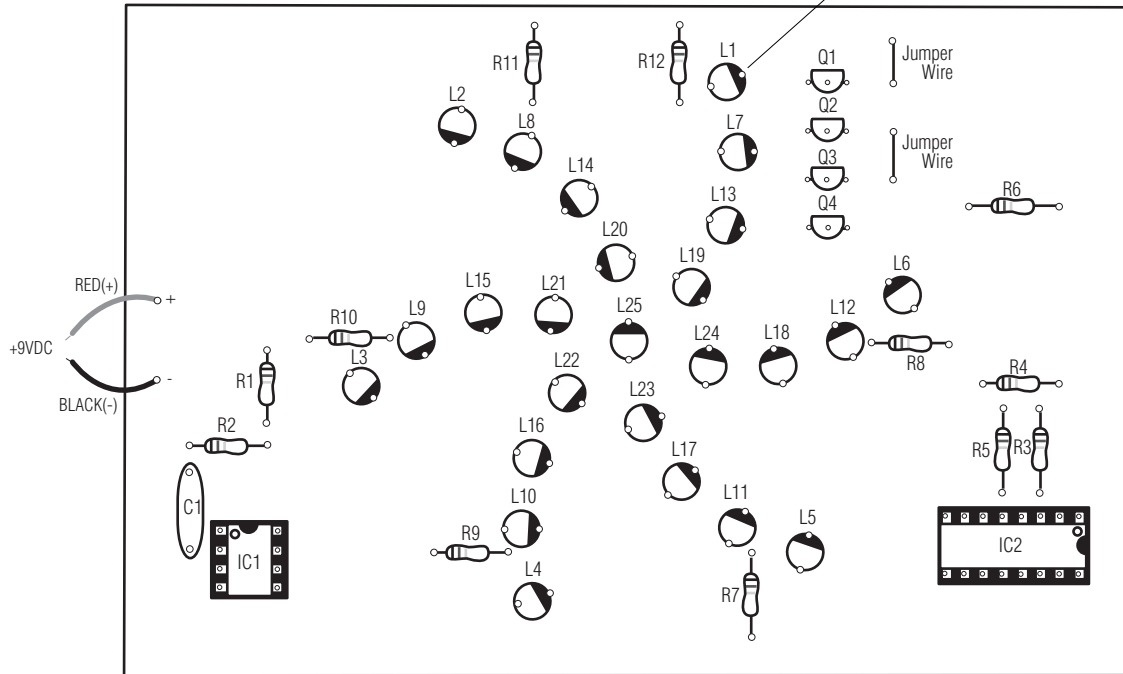


Figure 1
Parts Layout

FOIL PATTERN OF PC BOARD

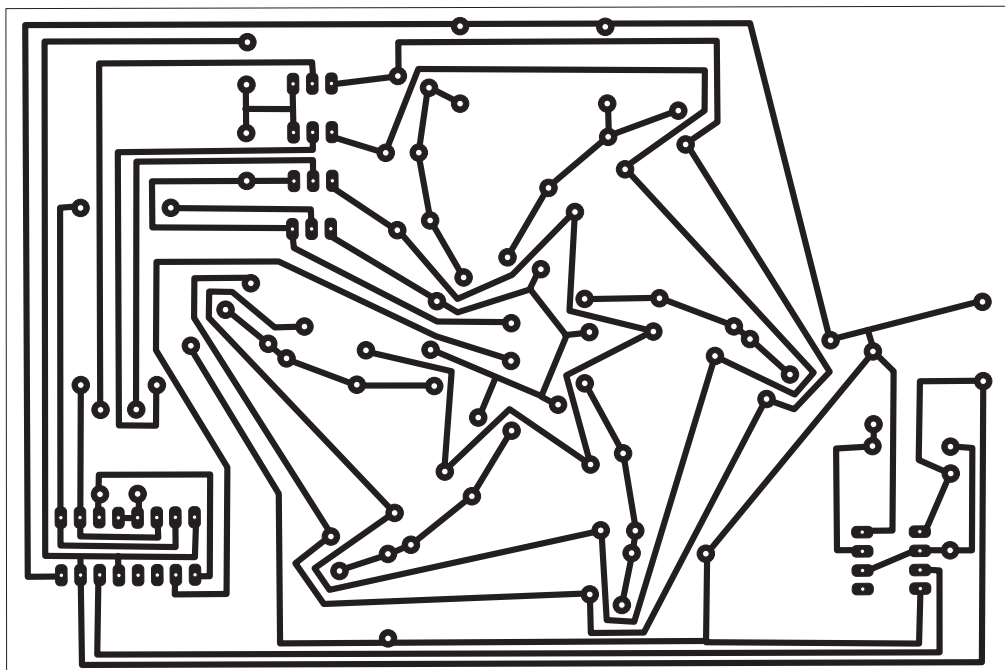


Figure 6
Foil Pattern of PC Board