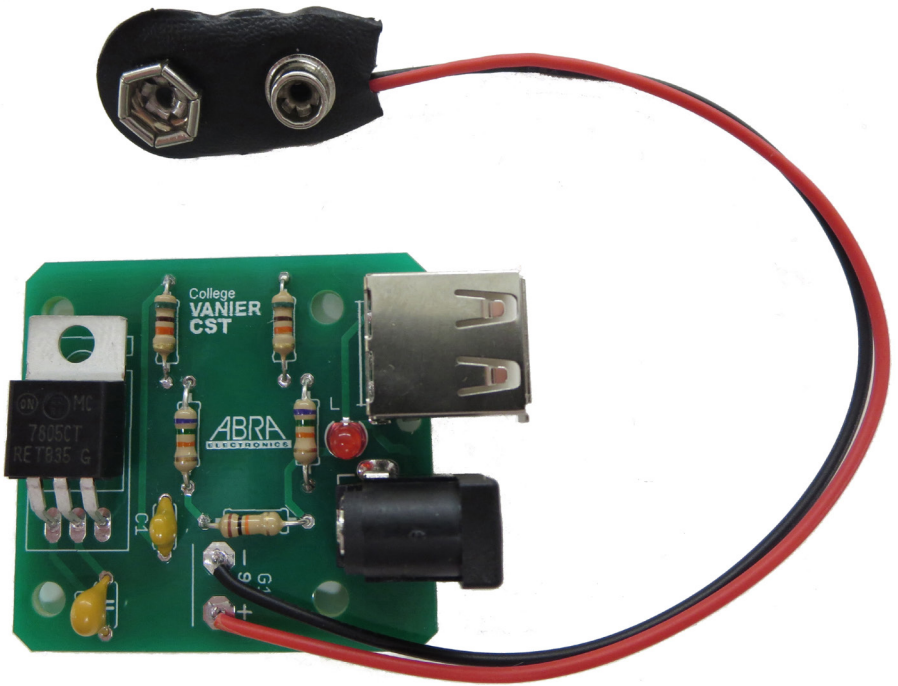


ABRA

Charger Kit For Cell Phone



Learn how to assemble
an electronic kit and then
charge your cell phone.

Charger Kit



ABRA

CELL PHONE CHARGER KIT
ABRA ELECTRONICS
Designed by Hieu Chau Nguyen/Vanier College

Overview

The Cell Phone Charger kit is a portable device used to temporarily recharge your cell phone anywhere using a nine volt battery.

An optional power adapter is available to use with an electrical outlet for a full charge.

The project is very simple, yet effective enough to charge your phone to function more than 3 hours for each nine volt battery used.

When using the power adapter your cell phone will regain its fully rated operating time.

The kit is suitable for beginners, even if you have never soldered before.

You can find excellent soldering instructions at:

http://mightyohm.com/files/soldercomic/FullSolderComic_EN.pdf

Compatibility

The USB charger with 9 volt battery will work on all generations of iPhone, most Android phones and even on Kindle.

Note that some phones may require you to connect 2 middle pins of the USB together.

Not intended to charge an iPad using the 9 volt battery. An iPad requires the use of the optional 9 volt adapter.

Parts List

QTY	PCB#	Item	Description	ABRA #
1	Charger	PRINTED CIRCUIT BOARD	CHARGER PCB	BRD-CHARGER
1	X1	CONNECTOR, DC	2.1mm DC POWER JACK	PRT-10811
1	J2	CONNECTOR, USB	USB TYPE A RIGHT ANGLE	UBS-A-PCRA
1	IC1	VOLTAGE REGULATOR	5 VOLT, 1 A	7805T
1	9V	CONNECTOR, BATTERY	9 VOLT BATTERY CLIP CONNECTOR	29-130
1	L	LED	5mm RED LED	LED-5R
1	C2	CAPACITOR	0.33 UF CERAMIC (334 CODE)	CM-334
1	C1	CAPACITOR	0.1 UF CERAMIC (104 CODE)	CM-104
1	R3	RESISTOR	¼ WATT 5mm RED LED RESISTOR 10K OHM (BROWN,BLACK,ORANGE)	R1/4-10K
2	R4, R5	RESISTOR	¼ WATT RESISTOR 51K OHM (GREEN,BROWN,ORANGE)	R1/4-51K
2	R1, R2	RESISTOR	¼ WATT RESISTOR 75K OHM (VIOLET,GREEN,ORANGE)	R1/4-75K

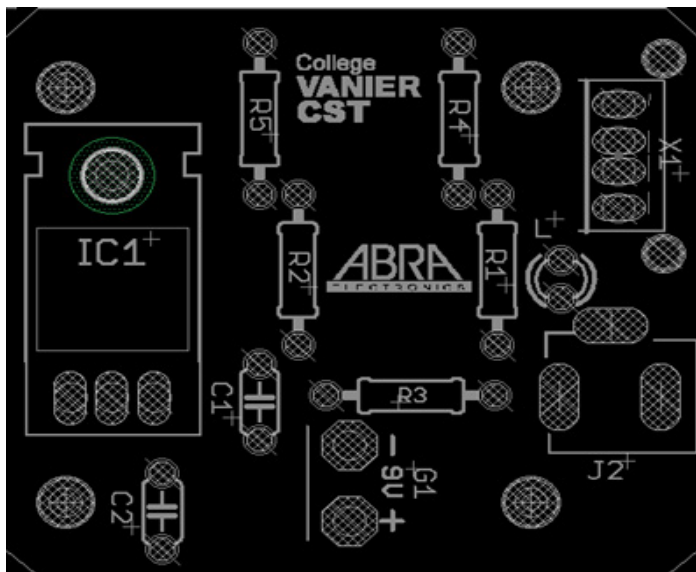
Optional Accessories

QTY	Item	Description	ABRA #
1	PLASTIC CASE	CASE with 9V BATTERY COMPARTMENT	1593PBK
1	POWER ADAPTER	9 VOLT 600 mA DC ADAPTER	DC-960
1	UNIVERSAL CHARGER CABLE	MICRO-USB /IPHONE, IPHONES, IPAD/LIGHTNING CABLE	1514-ADA

Tools Required

- Soldering iron
- Solder
- Diagonal Cutters

Circuit Board



Assembly Instructions

1. Install and solder R4 and R5 (51K) resistors as per fig. 1. Trim leads with diagonal cutter.

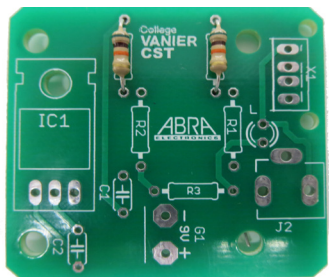


Fig. 1

2. Install and solder R1 and R2 (75K) resistors as per fig 2. Trim leads with diagonal cutter.

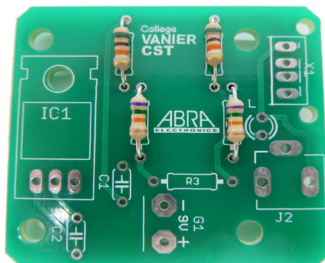


Fig. 2

3. Install and solder R3 (10K) resistor as per fig.3. Trim leads with diagonal cutter.

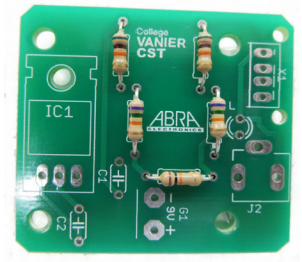


Fig. 3

4. Install C1 (0.33uf) with 334 code as per fig 4. Trim leads with diagonal cutter.

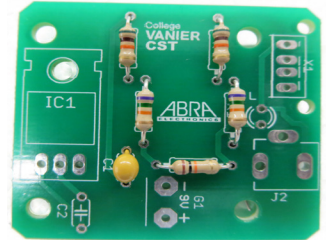


Fig. 4

5. Install C2 (0.1uf) with 104 code as per fig 5. Trim leads with diagonal cutter.

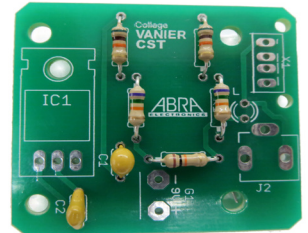


Fig. 5

6. Install and solder LED L with the short lead facing the L as per fig 6. Trim leads with diagonal cutter.

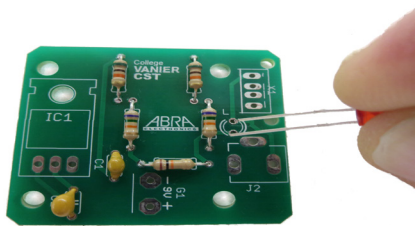


Fig. 6

7. Install and solder the IC1 regulator as per fig.7. Bend the IC1 to lie flat on the PCB. Trim leads with diagonal cutter.

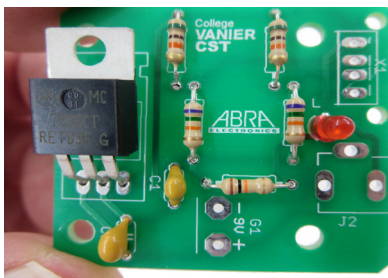


Fig. 7

Assembly Instructions

8. Install and solder the X1 USB connector as per fig. 8. Bend the two tabs to lay flat on the PCB.

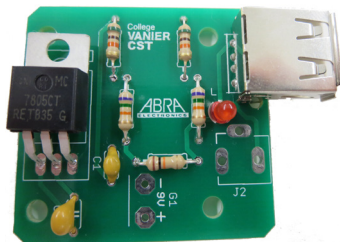


Fig. 8

9. Install and solder the J2 DC Power Jack as shown in fig.9.

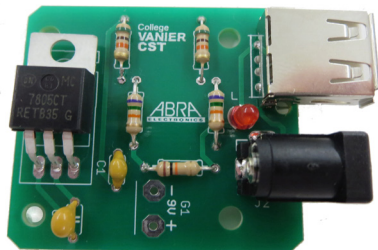


Fig. 9

10. Solder the 9 volt battery clip Red wire into the 9V + terminal as per fig.10.

Solder the 9 volt battery clip Black wire into the 9V – terminal as per fig. 10.

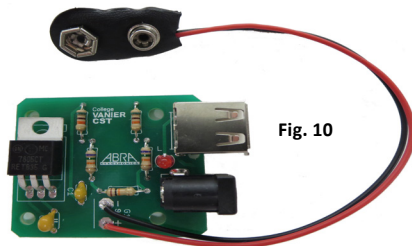


Fig. 10

11. Install a 9 volt battery and check that the LED lights up as per fig.11.

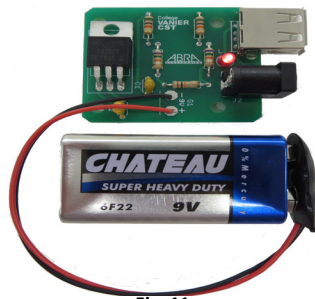


Fig. 11

12. Disconnect the 9 volt battery until ready to charge a device.

1) What type of batteries can I use?

- This charger will work with Alkaline or re-chargeable 9-volt batteries. In fact, any DC power source 7.5 volts to 12 volts will work as the regulator will produce the required 5 volts DC output. For larger current capacity, you can connect the battery clip to another type of power source, such as a battery holder with 6 x AA batteries (equal to 6x1.5v or 9 volts).

2) The charger is not working!

- Make sure that the parts on the board are correctly soldered.
- If the LED is not on, it is because either the LED is soldered reversed or the battery is too weak to turn the light on. Remember to disconnect the battery when not charging.
- Note also, the charger is not compatible with every phone, especially older ones.

3) The LED is on, but my device is not recharging!

- If the LED is very dim, the battery may be too weak to supply sufficient voltage to charge your phone. Change batteries.
- Some devices like the iPad require a lot more power than this charger can provide when using the 9 volt battery. Use the optional 9 volt power adapter or equivalent to have sufficient current.

4) The regulator is getting hot, is this all right?

- This is completely normal: the voltage regulator heats up because it is dissipating the voltage drop from 9v to 5V. The 7805T regulator has a built in thermal shutdown with automatic recovery when it cools down.

5) How the data lines D+ and D- is used?

- D+ and D- are the two middle pins of the USB connector.
- Every Apple product has a charge rate is based on the voltage on D+ and D-.
- Some Android phones require both D+ and D- to be connected.
- If both pins are 2 V, the charge rate will be 0.5 A.
- If D- is 2.8V and D+ is 2.0V, the charge rate will be 1 A.