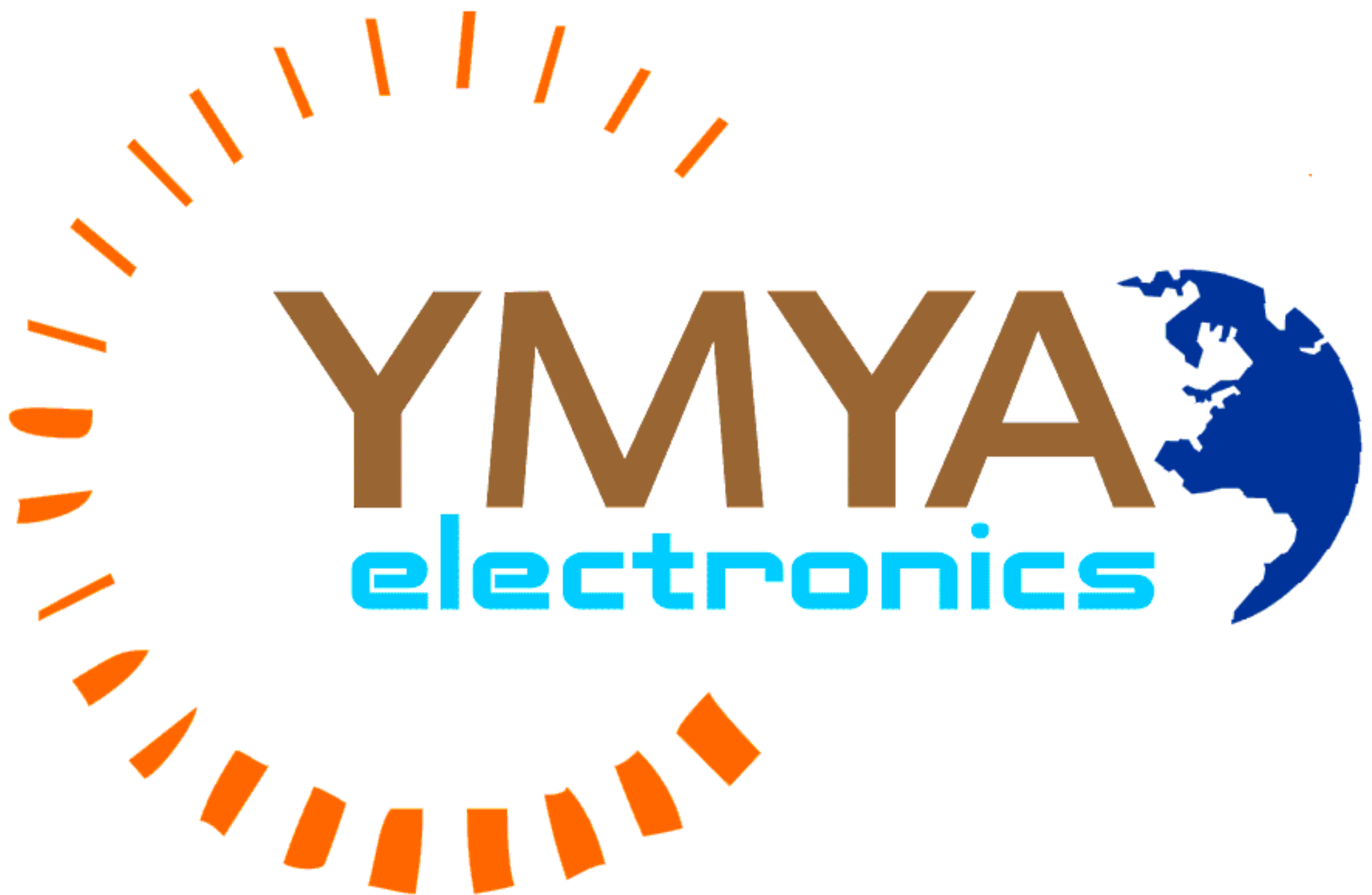


...: Lithium-Ion CHARGER ...

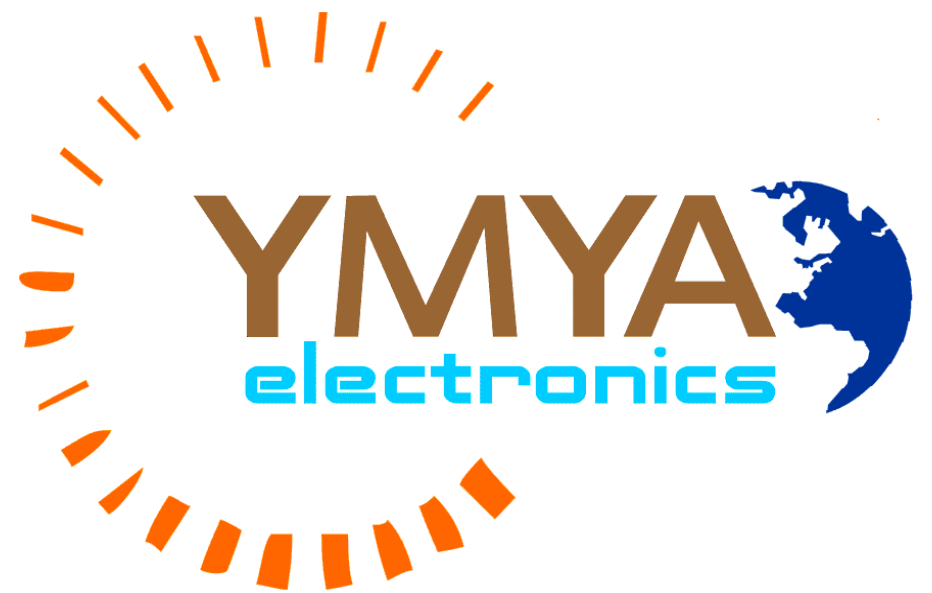
Author : **IZHAR FAREED**



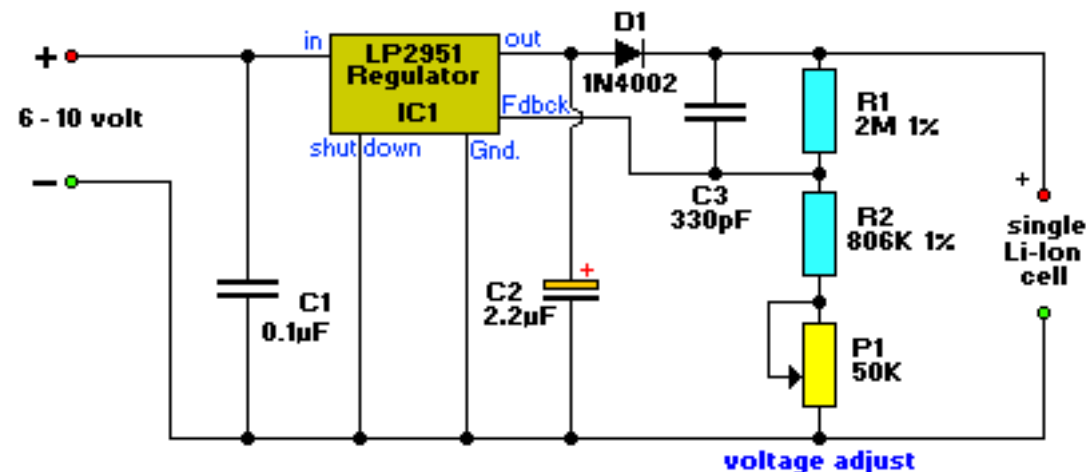
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## ...: Lithium-Ion CHARGER ...:

Author : *IZHAR FAREED*



## ...: CIRCUIT DIAGRAM ...:



## ...: PARTS LIST and DESCRIPTION ...:

### Parts List:

IC1 = LP2951, voltage regulator  
D1 = 1N4002, General purpose diode  
R1 = 2M, 1%, metal-film  
R2 = 806K, 1%, metal-film  
P1 = 50K, potentiometer  
C1 = 0.1µF, polyester  
C2 = 2.2µF/16V, electrolytic  
C3 = 330pF, ceramic

The LP2951 regulator is manufactured by National Semiconductors. The choice of values is from an application note "Battery Charging", written by Chester Simpson.

Diode D1 can be any diode from the 1N00x series, whichever is conveniently available. It functions as a blocking diode, to prevent a back flow of current from the battery into the LP2951 when the input voltage is disconnected.

Charging current is about 100+mA, which is the internally-limited maximum current of the LP2951. For those wondering, this is compatible with just about any single-cell li-ion battery since li-ion can generally accept a charging current of up to about 1c (i.e. charging current in mA equivalent to their capacity in mAh, so a 1100mAh li-ion cell can be charged at up to 1100mA and so on). A lower charging current just brings about a correspondingly longer charge time. IMHO 100mA is quite low, low enough that the circuit can be used for an overnight charger for many typical single-cell li-ion batteries.

The resistors are deliberately kept at large orders of magnitude (tens/hundred Kohm and Mohm range) to keep the off-state current as low as possible, at about 2µA. Resistor tolerances should be kept at 1% for output voltage accuracy. The 50k pot allows for an output voltage range between 4.08V to 4.26V - thus allowing calibration as well as a choice between a charging voltage of 4.1V or 4.2V depending on the cell to be charged. The capacitors are for stability, especially C2 which prevents the output from ringing/oscillating.