***COIN BASED MOBILE CHARGER***

**ABSTRACT**

Theobjectiveofthis project is inserting the coin using charge for your mobile phone in public places. This project is very useful to people who are all using mobile phone without charging condition in pubic places. In this project, who are all using mobile phones in outside of home are office without charging condition. The coin based mobile phone charger is very useful to that person for using coin to charge for that mobile. The IR (infrared) transmitter is used to transmit IR signal in the transmitter side. The IR receiver is used to receive the IR signal in the receiver side. Between the IR transmitter and receiver, insert a coin to change the polarity of pulse in SCU input. The SCU is used to converting low pulse to high pulse and that pulse is inverted in inverter. The 555 IC is act as a timer to produces high pulse for particular time period. Again the SCU is used to converting low pulse to high pulse and this output is give to input of driver circuit. Driver circuit is used for provide the sufficient input voltage of relay. The relay will on to activate the 230v charger, we will use charger to charge for our mobile phone.

**i**

**TABLE OF CONTENTS**

**TABLE OF CONTENTS**

|  |  |  |
| --- | --- | --- |
| **CHAPTER NO.** | **TITLE** | **PAGE NO.** |
|  | ABSTRACT | i |
|  | LIST OF TABLES | iv |
|  | LIST OF FIGURES | v |
| 1.0 | INTRODUCTION | 1 |
| 2.0 | WORKING PRINCIPLE | 2 |
| 3.0 | POWER SUPPLY UNIT  3.1 INTRODUCTION  3.2 POWER SUPPLY COMPONENTS  3.3 WORKING PRINCIPLE  3.3.1 TRANSFORMER  3.3.2 TYPES OF TRANSFORMERS  3.3.3 BRIDGE RECTIFIER  3.3.4 VOLTAGE REGULATOR  3.3.5 IC VOLTAGE REGULATORS  3.3.6 THREE TERMINAL VOLTAGE  REGULATORS | 4  4  5  6  6  7  8  9  10  11 |

ii

|  |  |  |
| --- | --- | --- |
|  | 3.3.7 FIXED POSITIVE VOLTAGE  REGULATORS  3.3.8 GENERAL DESCRIPTION  3.3.9 FEATURES  3.3.10 FILTER CIRCUIT | 11  12  13  14 |
| 4.0 | IR TRANSMITTER AND RECIEVER | 16 |
| 5.0 | RELAY-SPST  6.1 RELAY  6.2 CIRCUIT DESCRIPTION | 20  21  22 |
| 6.0 | RELAY-DPDT  7.1 RELAY  7.1.1 DPDT  7.2 CIRCUIT DESCRIPTION | 24  25  26  26 |
| 7.0 | ADVANTAGES | 28 |
| 8.0 | APPLICATIONS | 29 |
| 9.0 | CONCLUSION | 30 |
| 10.0 | BIBLIOGRAPHY | 31 |

iii

**LIST OF TABLES**

**LIST OF TABLES**

|  |  |  |
| --- | --- | --- |
| **SL.NO** | **NAME OF THE TABLE** | **PAGE NO** |
| 1 | POSITIVE VOLTAGE REGULATORS IN 7800 SERIES | 12 |
| 2 | CIRCUIT DESCRIPTION OF BUZZER | 20 |
| 3 | CIRCUIT DESCRIPTION OF RELAY-SPST | 24 |
| 4 | CIRCUIT DESCRIPTION OF RELAY-DPDT | 28 |

iv

**LIST OF FIGURES**

**LIST OF FIGURES**

|  |  |  |
| --- | --- | --- |
| **FIGURE NO.** | **NAME OF THE FIGURES** | **PAGE NO.** |
| 1 | BLOCK DIAGRAM | 3 |
| 2 | POWER SUPPLY UNIT | 5 |
| 3 | FIXED POSITIVE VOLTAGE REGULATORS | 11 |
| 4 | VIBRATION SENSOR | 16 |
| 5 | PIEZO ELECTRIC EFFECT | 17 |
| 6 | ALARM | 19 |
| 7 | RELAY-SPST | 21 |
| 8 | RELAY-DPDT | 25 |

v

**INTRODUCTIOn**

**CHAPTER 01**

**1.0 Introduction**

Theobjectiveofthis project is inserting the coin using charge for your mobile phone in public places. This project is very useful to people who are all using mobile phone without charging condition in public places. In this project, who are all using mobile phones in outside of home are office without charging condition. The coin based mobile phone charger is very useful to that person for using coin to charge for that mobile. The IR (infrared) transmitter is used to transmit IR signal in the transmitter side. The IR receiver is used to receive the IR signal in the receiver side. Between the IR transmitter and receiver, insert a coin to change the polarity of pulse in SCU input. The SCU is used to converting low pulse to high pulse and that pulse is inverted in inverter. The 555 IC is act as a timer to produces high pulse for particular time period. Again the SCU is used to converting low pulse to high pulse and this output is give to input of driver circuit. Driver circuit is used for provide the sufficient input voltage of relay. The relay will on to activate the 230v charger, we will use charger to charge for our mobile phone.

.

**1**

**WORKING PRINCIPLE**

**CHAPTER 02**

**2.0 WORKING PRINCIPLE**

In our vibration alarm system, we will be having

* Infra Red sensor,
* Amplifiers,
* Comparator and
* Relay

The Infra Red sensor is used in this circuit. If there is any interrupt between the IR LEDs, the sensor senses and sends the corresponding electrical output signal to amplifier circuit.

The amplifier circuit results in further amplification of signals. The amplified signal is given to comparator. The comparator compares the incoming signal with reference. If the incoming signal is more, it operates the relay.

**2**

**Block diagram**:



**FIG 2.0 BLOCK DIAGRAM**

**3**

**POWER SUPPLY UNIT**

**CHAPTER 03**

**3.0 POWER SUPPLY UNIT**

**3.1 Introduction**

Power supply is an integral parts a vital role in every electronic system and hence their design constitutes a major part in every application. In order to overcome mal-operation which results due to fluctuations in the load and discontinuity in the supply proper choice of power supply is indeed a great need in this hour.

The present chapter introduces the operation of power supply circuits built using filters, rectifiers, and then voltage regulators. Starting with an AC voltage, a steady DC voltage is obtained by rectifying the AC voltage, then filtering to a DC level, and finally, regulating to obtain a desired fixed DC voltage. The regulation is usually obtained from an IC voltage regulator unit, which takes a DC voltage and provides a somewhat lower DC voltage, which remains the same even if the input DC voltage varies, or the output load connected to the DC voltage changes.

A block diagram containing the parts of a typical power supply and the voltage at various points in the unit is shown in fig 19.1. The AC voltage, typically 120 V RMS, is connected to a transformer, which steps that AC voltage down to the level for the desired

DC output.

4

A diode rectifier then provides a full-wave rectified voltage that is initially filtered by a simple capacitor filter to produce a DC voltage. This resulting DC voltage usually has some ripple or AC voltage variation. A regulator circuit can use this DC input to provide a DC voltage that not only has much less ripple voltage but also remains the same DC value

even if the input DC voltage varies somewhat, or the load connected to the output

DC voltage.

**3.2 POWER SUPPLY COMPONENTS**

* TRANSFORMER
* FULLWAVE RECTIFIER
* VOLTAGE REGULATOR
* FILTER CIRCUIT

**Block diagram**

The AC voltage, typically 220V RMS, is connected to a transformer, which steps that AC voltage down to the level of the desired DC output. A diode rectifier then provides a full-wave rectified voltage that is initially filtered by a simple capacitor filter to produce a DC voltage. This resulting DC voltage usually has some ripple or AC voltage variation.

LOAD

IC REGULATOR

FILTER

RECTIFIER

TRANSFORMER

**FIG 3.2 POWER SUPPLY UNIT**

**5**

**3.3Working principle**

**3.3.1Transformer**

Transformer is a static device, which transfers electrical energy from one alternating current circuit to another without change in frequency. The working principle behind its operation is faraday laws of electromagnetic induction, which states that, "whenever current carrying conductor is moved in a magnetic field, flux linked with the conductor changes and EMF is induced in the conductor".

Transformer is used in step down mode of operation in the sense it provides an output, which is reduced in form compared to input. It depends upon number of turns in the winding i.e., turns ratio.

Primary winding is fed with a supply of 230V, 50Hz A.C., which appears as an voltage approximately 15V across secondary winding. This voltage is fed into the rectifier circuit for the purpose of rectification i.e., converting A.C. input to D.C. output.

The potential transformer will step down the power supply voltage (0-230V) to (0-6V) level. Then the secondary of the potential transformer will be connected to the precision rectifier, which is constructed with the help of OP-AMP. The advantages of using precision rectifier are it will give peak voltage output as DC, rest of the circuits will give only RMS output.

**6**

**3.3.2 Types of Transformers**

Mains transformers are used at AC mains frequency (50Hz Britain), their primary coil being connected to the 240V AC supply. Their secondary windings may be step up or step down or they may have on or more of each. They have laminated iron cores and are used in power supply units. Sometimes the secondary has a center tap sec units 20.2.

Step down tropical types are becoming popular. They have virtually no external magnetic field and a screen between primary and secondary windings gives safety and electrostatic screening. Their pin connections are brought out to a 0.1 inch grid, which makes them ideal for printed circuit board (PCB) mounting.

Isolating transformers have a one-to-one turns ratio (ins/np=1/1) and are safety devices for separating a piece of equipment from the mains supply. They do not change the voltage.

**AUDIO FREQUENCY**

Audio frequency transformers, as illustrated in also have laminated iron cores and are used as output matching transformers to ensure the maximum transfer of power from the audio frequency output stage to the loudspeaker in, for a radio set or amplifier.

**RADIO FREQUENCY**

Radio frequency transformers usually have adjustable iron-dust cores and form part of the tuning circuits in a radio. They are enclosed in a small aluminium screening can to stop them radiating energy to other parts of the circuit.

**7**

**3.3.3 Bridge rectifier**

When four diodes are connected as shown in figure, the circuit is called as bridge rectifier. The input to the circuit is applied to the diagonally opposite corners of the network, and the output is taken from the remaining two corners.

Let us assume that the transformer is working properly and there is a positive potential, at point A and a negative potential at point B. the positive potential at point A will forward bias D3 and reverse bias D4.

The negative potential at point B will forward bias D1 and reverse D2. At this time D3 and D1 are forward biased and will allow current flow to pass through them; D4 and D2 are reverse biased and will block current flow.

The path for current flow is from point B through D1, up through RL, through D3, through the secondary of the transformer back to point B. this path is indicated by the solid arrows. Waveforms (1) and (2) can be observed across D1 and D3.

One-half cycle later the polarity across the secondary of the transformer reverse, forward biasing D2 and D4 and reverse biasing D1 and D3. Current flow will now be from point A through D4, up through RL, through D2, through the secondary of T1, and back to point A. This path is indicated by the broken arrows. Waveforms (3) and (4) can be observed across D2 and D4. The current flow through RL is always in the same direction. In flowing through RL this current develops a voltage corresponding to that shown waveform.

8

One advantage of a bridge rectifier over a conventional full-wave rectifier is that with a given transformer the bridge rectifier produces a voltage output that is nearly twice that of the conventional full-wave circuit.

This may be shown by assigning values to some of the components shown in views A and B. assume that the same transformer is used in both circuits. The peak voltage developed between points X and Y is 1000 volts in both circuits. In the conventional full-wave circuit shown—in view A, the peak voltage from the center tap to either X or Y is 500 volts. Since only one diode can conduct at any instant, the maximum voltage that can be rectified at any instant is 500 volts.

The maximum voltage that appears across the load resistor is nearly-but never exceeds-500 volts, as result of the small voltage drop across the diode. In the bridge rectifier shown in view B, the maximum voltage that can be rectified is the full secondary voltage, which is 1000 volts. Therefore, the peak output voltage across the load resistor is nearly 1000 volts. With both circuits using the same transformer, the bridge rectifier circuit produces a higher output voltage than the conventional full-wave rectifier circuit.

**3.3.4 Voltage Regulator**

Voltage regulator is a device, which provides a stable and a constant D.C. voltage irrespective of the change in the load current. Stable and constant D.C, output voltage necessities the usage of voltage regulator in this power section.

**9**

**They are of many types namely:**

* Fixed voltage Regulator
* Adjustable voltage Regulator
* Switch Regulator

**3.3.5 IC VOLTAGE REGULATORS:**

Voltage regulators comprise a class of widely used ICs. Regulator IC units contain the circuitry for reference source, comparator amplifier, control device, and overload protection all in a single IC. Although the internal construction of the IC is somewhat different from that described for discrete voltage regulator circuits, the external operation is much the same. IC units provide regulation of either a fixed positive voltage, a fixed negative voltage, or an adjustably set voltage.

A power supply can be built using a transformer connected to the AC supply line to step the AC voltage to desired amplitude, then rectifying that AC voltage, filtering with a capacitor and RC filter, if desired, and finally regulating the DC voltage using an IC regulator. The regulators can be selected for operation with load currents from hundreds of milli amperes to tens of amperes, corresponding to power ratings from milli watts to tens of watts.

**3.3.6 THREE-TERMINAL VOLTAGE REGULATORS:**

Fig shows the basic connection of a three-terminal voltage regulator IC to a load. The fixed voltage regulator has an unregulated DC input voltage, Vi, applied to one input terminal, a regulated output DC voltage, Vo, from a second terminal, with the third terminal connected to ground.

10

For a selected regulator, IC device specifications list a voltage range over which the input voltage can vary to maintain a regulated output voltage over a range of load current. The specifications also list the amount of output voltage change resulting from a change in load current (load regulation) or in input voltage (line regulation).

**3.3.7 FIXED POSITIVE VOLTAGE REGULATORS:**

**IN OUT**

**7805**

**GND**

From Transformer secondary

|  |
| --- |
| GND |

**FIG 3.3.7 FIXED POSITIVE VOLTAGE REGULATORS**

The series 78 regulators provide fixed regulated voltages from 5 to 24 V. Figure shows how one such IC, a 7805, is connected to provide voltage regulation with output from this unit of +12V DC. An unregulated input voltage Vi is filtered by capacitor C1 and connected to the IC’s IN terminal. The IC’s OUT terminal provides a regulated + 12V which is filtered by capacitor C2 (mostly for any high-frequency noise).

**11**

These limitations are spelled out in the manufacturer’s specification sheets. A table of positive voltage regulated ICs is provided in table.

**TABLE POSITIVE VOLTAGE REGULATORS IN 7800 SERIES**

|  |  |  |
| --- | --- | --- |
| IC Part | **Output Voltage (V)** | **Minimum Vi (V)** |
| 7805 | +5 | 7.3 |
| 7806 | +6 | 8.3 |
| 7808 | +8 | 10.5 |
| 7810 | +10 | 12.5 |
| 7812 | +12 | 14.6 |
| 7815 | +15 | 17.7 |
| 7818 | +18 | 21.0 |
| 7824 | +24 | 27.1 |

**LM 78xx Series Voltage Regulators**

**3.3.8 General Description**

The LM 78xx series of three terminal regulators is available with several fixed output voltages making them useful in a wide range of applications. One of these is local on card regulation, eliminating the distribution problems associated with single point regulation.

The voltages available allow these regulators to be used in logic systems, instrumentations, HiFi, and other solid state electronic equipment.

**12**

Although designed primarily as fixed voltage regulators these devices can be used with external components to obtain adjustable voltages and currents.

The LM78xx series is available in an aluminium T0-3 package which will allow over 1.0A load current. Current limiting is included to limit the peak output current to a safe value. Safe area protection for the output transistor is provided to limit internal power dissipation.

If internal power dissipation becomes too high for the heat sinking provided, the thermal shutdown circuit takes over preventing the IC from overheating. Considerable effort was expanded to make the LM78xx series of regulators easy to used and minimize the number of external components. It is not necessary to bypass the output, although this does improve transient response. Input by passing is needed only if the regulator is located far from the filter capacitor of the power supply. For output voltage other than 5V, 12V, 15V, the LM117 series provides an output voltage range from 1.2V to 57V.

**3.3.9 Features**

* Output current in excess of 1A
* Internal thermal overload protection
* No external components required
* Output transistor safe area protection
* Internal short circuit current limits
* Available in the aluminium T0-3 package.

13

Voltage Range

* LM 7805 C – 5V
* LM 7812 C – 12V
* LM 7815 C – 15 V

In many low current application, compensation capacitors are not required. However, it is recommended that the regulated input be byepassed with the capacitor if the regulator is connected to the power supply filter with long wire lengths are if the output load capacitance is large. An input bypass capacitor made of ceramic is chosen to provide good frequency characteristics to ensure stable operation under all load condition. The bypass capacitor mounted with the shortest possible leads directly across the regulators input terminals.

**3.3.10 Filter circuit**

The output of the voltage regulator is given to this filter unit. Filters are frequency selective electronic circuitry, which allows certain specified band of frequency and attenuate frequencies other than the specified frequencies. Here capacitor is used to short the ripple with frequency of 120 Hz to ground. It is also called bypassing capacitor or decoupling capacitor, which acts as surge arrestors.

14

Note 1: All the characteristics are measured with capacitor across the input of 0.22 μf. All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques (tw £ 10 ms, duty cycle £ 5%) output voltage changes due to changes in internal temperature must be taken into account separately.

Note 2: Absolute maximum ratings indicate limits beyond which damage to the device may occur. For quaranted specifications and the test conditions, see electrical characteristics.

**15**

**Vibration sensor**

**CHAPTER 04**

**4.0 IR TRANSMITTER AND RECIEVER**

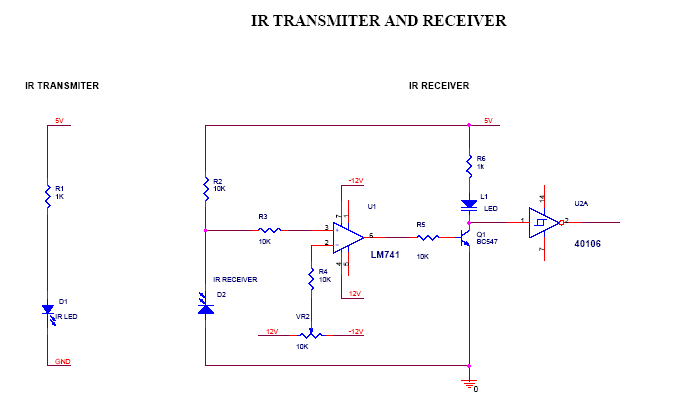


FIG 4.1 IR Transmitter and Receiver.

Infrared transmitter is one type of LED which emits infrared rays generally called as IR Transmitter. Similarly IR Receiver is used to receive the IR rays transmitted by the IR transmitter. One important point is both IR transmitter and receiver should be placed straight line to each other.

The transmitted signal is given to IR transmitter whenever the signal is high, the IR transmitter LED is conducting it passes the IR rays to the receiver. The IR receiver is connected with comparator. The comparator is constructed with LM 741 operational amplifier. In the comparator circuit the reference voltage is given to inverting input terminal. The non inverting input terminal is connected IR receiver. When interrupt the IR rays between the IR transmitter and receiver, the IR receiver is not conducting. So the comparator non inverting input terminal voltage is higher then inverting input. Now the comparator output is in the range of +12V. This voltage is given to base of the transistor Q1. Hence the transistor is conducting. Here the transistor is act as switch so the collector and emitter will be closed. The output is taken from collector terminal. Now the output is zero.

When IR transmitter passes the rays to receiver, the IR receiver is conducting due to that non inverting input voltage is lower than inverting input. Now the comparator output is -12V so the transistor is cutoff region. The 5v is given to 40106 IC which is the inverter with buffer. The inverter output is given to microcontroller or PC. This circuit is mainly used to for counting application, intruder detector etc.

Infrared transmitter is one type of LED which emits infrared rays generally called as IR Transmitter. Similarly IR Receiver is used to receive the IR rays transmitted by the IR transmitter. One important point is both IR transmitter and receiver should be placed straight line to each other.

The transmitted signal is given to IR transmitter whenever the signal is high, the IR transmitter LED is conducting it passes the IR rays to the receiver. The IR receiver is connected with comparator. The comparator is constructed with LM 741 operational amplifier. In the comparator circuit the reference voltage is given to inverting input terminal. The non inverting input terminal is connected IR receiver.

**16**

**RELAY-SPST**

**CHAPTER 05**

**5.0 RELAY-SPST**

|  |
| --- |
|  |

**FIG 5.0 RELAY-SPST**

**17**

**6.1 RELAY:**

A relay is an electrically operated switch. Current flowing through the coil of the relay creates a magnetic field which attracts a lever and changes the switch contacts. The coil current can be on or off so relays have two switch positions and they are doublethrow (changeover) switches. Relays allow one circuit to switch a second circuit which can be completely separate from the first. For example a low voltage battery circuit can use a relay to switch a 230V AC mains circuit. There is no electrical connection inside the relay between the two circuits; the link is magnetic and mechanical.

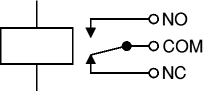
The coil of a relay passes a relatively large current, typically 30mA for a 12V relay, but it can be as much as 100mA for relays designed to operate from lower voltages. Most ICs (chips) cannot provide this current and a transistor is usually used to amplify the small IC current to the larger value required for the relay coil. The maximum output current for the popular 555 timer IC is 200mA so these devices can supply relay coils directly without amplification.



Relays are usually SPDT or DPDT but they can have many more sets of switch contacts, for example relays with 4 sets of changeover contacts are readily available. Most relays are designed for PCB mounting but you can solder wires directly to the pins providing you take care to avoid melting the plastic case of the relay.

**18**

The animated picture shows a working relay with its coil and switch contacts. You can see a lever on the left being attracted by magnetism when the coil is switched on. This lever moves the switch contacts. There is one set of contacts (SPDT) in the foreground and another behind them, making the relay DPDT.



The relay's switch connections are usually labeled COM, NC and NO:

* **COM** = Common, always connect to this, it is the moving part of the switch.
* **NC** = Normally Closed, COM is connected to this when the relay coil is **off**.
* **NO** = Normally Open, COM is connected to this when the relay coil is **on**.

**6.2 CIRCUIT DESCRIPTION:**

This circuit is designed to control the load. The load may be motor or any other load. The load is turned ON and OFF through relay. The relay ON and OFF is controlled by the pair of switching transistors (BC 547). The relay is connected in the Q2 transistor collector terminal. A Relay is nothing but electromagnetic switching device which consists of three pins. They are Common, Normally close (NC) and Normally open (NO).

**19**

The relay common pin is connected to supply voltage. The normally open (NO) pin connected to load. When high pulse signal is given to base of the Q1 transistors, the transistor is conducting and shorts the collector and emitter terminal and zero signals is given to base of the Q2 transistor. So the relay is turned OFF state.

When low pulse is given to base of transistor Q1 transistor, the transistor is turned OFF. Now 12v is given to base of Q2 transistor so the transistor is conducting and relay is turned ON. Hence the common terminal and NO terminal of relay are shorted. Now load gets the supply voltage through relay.

|  |  |  |  |
| --- | --- | --- | --- |
| **Voltage Signal from Microcontroller or PC** | **Transistor Q1** | **Transistor Q2** | **Relay** |
| 1 | On | Off | Off |
| 0 | Off | On | On |

**20**

**RELAY-DPDT**

**CHAPTER 07**

**7.0 RELAY-DPDT**

|  |
| --- |
|  |

**FIG 7.0 RELAY-DPDT**

**21**

**7.1 RELAY:**

A relay is an electrically operated switch. Current flowing through the coil of the relay creates a magnetic field which attracts a lever and changes the switch contacts.

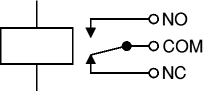
The coil current can be on or off so relays have two switch positions and they are doublethrow (changeover) switches. Relays allow one circuit to switch a second circuit which can be completely separate from the first. For example a low voltage battery circuit can use a relay to switch a 230V AC mains circuit. There is no electrical connection inside the relay between the two circuits; the link is magnetic and mechanical. The coil of a relay passes a relatively large current, typically 30mA for a 12V relay, but it can be as much as 100mA for relays designed to operate from lower voltages. Most ICs (chips) cannot provide this current and a transistor is usually used to amplify the small IC current to the larger value required for the relay coil. The maximum output current for the popular 555 timer IC is 200mA so these devices can supply relay coils directly without amplification.



Relays are usually SPDT or DPDT but they can have many more sets of switch contacts, for example relays with 4 sets of changeover contacts are readily available. Most relays are designed for PCB mounting but you can solder wires directly to the pins providing you take care to avoid melting the plastic case of the relay.

**22**

The animated picture shows a working relay with its coil and switch contacts. You can see a lever on the left being attracted by magnetism when the coil is switched on. This lever moves the switch contacts. There is one set of contacts (SPDT) in the foreground and another behind them, making the relay DPDT.



The relay's switch connections are usually labeled COM, NC and NO:

* **COM** = Common, always connect to this, it is the moving part of the switch.
* **NC** = Normally Closed, COM is connected to this when the relay coil is **off**.
* **NO** = Normally Open, COM is connected to this when the relay coil is **on**.

**7.1.1 DPDT:**

A DPDT (double-pole double-throw) relay has two pairs of contacts or "throws" and two magnetically activated switch contacts or "poles".  A current applied to the relay coil causes both poles to switch.

**7.2 CIRCUIT DESCRIPTION:**

This circuit is designed to control the load. The load may be motor or any other load. The load is turned ON and OFF through relay.

**23**

The relay ON and OFF is controlled by the pair of switching transistors (BC 547). The DPDT relay is connected in the Q2 transistor collector terminal. A Relay is nothing but electromagnetic switching device which consists of six pins. They are two set of Common, Normally close (NC) and Normally open (NO) pins.

The relay common pin is connected to supply voltage. The normally open (NO) pin connected to load. When high pulse signal is given to base of the Q1 transistors, the transistor is conducting and shorts the collector and emitter terminal and zero signals is given to base of the Q2 transistor. So the relay is turned OFF state.

When low pulse is given to base of transistor Q1 transistor, the transistor is turned OFF.Now 12V is given to base of T2 transistor so the transistor is conducting and relay is energized. Hence the common terminal and NO terminal of relay are shorted. Now load gets

the supply voltage through relay.

|  |  |  |  |
| --- | --- | --- | --- |
| **Voltage Signal from Microcontroller or PC** | **Transistor Q1** | **Transistor Q2** | **Relay** |
| 1 | On | Off | Off |
| 0 | Off | On | On |

**24**

**ADVANTAGES**

**CHAPTER 08**

**8.0 ADVANTAGES**

* Low cost to design the circuit
* Easy to implement the circuit
* Low power consumption.
* High reliability
* Good performance.

**25**

**APPLICATIONS**

**CHAPTER 09**

1. **APPLICATIONS**

The applications of this project are follws,

* This project used to find the vibration in any electric appliances to avoid the damage.
* This sensor system is mainly useful for any industrial appliances.

* We can use these sensors in detecting faults.
* We can use these sensors to protect the electric appliance from any kind of damage.

**26**

**CONCLUSION**

**CHAPTER 10**

**10.0 CONCLUSION**

* This project “**COIN BASED MOBILE CHARGER**” is designed with the hope that it is very much economical and helpful to many industries which use large electric appliances.
* This project helped us to know the periodic steps in completing a project work. Thus we have completed the project successfully.

**27**

**BIBLIOGRAPHY**

**BIBLIOGRAPHY**

1. Mill Man J and Hawkies C.C. “INTEGRATED ELECTRONICS” McGraw Hill, 1972.
2. Roy Choudhury , Shail Jain, “LINEAR INTRGRATED CIRCUIT”, New Age International Publishers, New Delhi, 2000.
3. M D Singh and K B Khanchandani, “POWER ELECTRONICS” Tata McGraw Hill, 2003.
4. P.Ramesh Babu, “DIGITAL SIGNAL PROCESSING”, Scitech Publications(India)pvt.ltd.
5. ELECTRO FOCUS- Magazine Up Dated Every Minute.
6. Raj Kamal, “EMBEDDED SYSTEMS”, Tata McGraw Hill, 2009.
7. <http://www.atmel.com/>
8. <http://www.microchip.com/>
9. http://www.beyond logic.org
10. <http://ctv.es/pckits/home.html>
11. <http://aimglobal.org/>

28

**PHOTOGRAPHY**