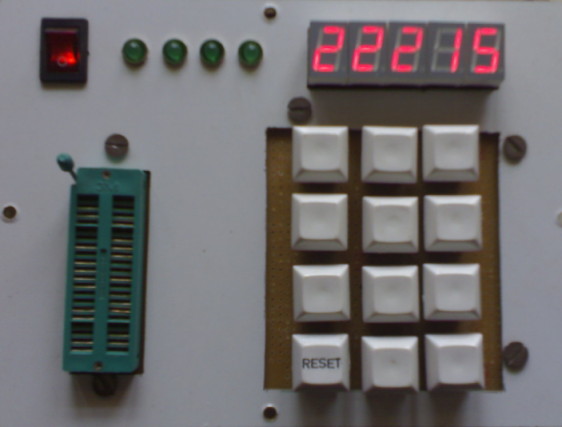
ELECTRONICS COMPONENTS TESTER



A BRIEF INTRODUCTION TO 8051 MICROCONTROLLER:

When we have to learn about a new computer we have to familiarize about the machine capability we are using, and we can do it by studying the internal hardware design (devices architecture), and also to know about the size, number and the size of the registers.

         A microcontroller is a single chip that contains the processor (the CPU), non-volatile memory for the program (ROM or flash), volatile memory for input and output (RAM), a clock and an I/O control unit. Also called a "computer on a chip," billions of microcontroller units (MCUs) are embedded each year in a myriad of products from toys to appliances to automobiles. For example, a single vehicle can use 70 or more microcontrollers. The following picture describes a general block diagram of microcontroller.

**AT89S52:** The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel’s high-density nonvolatile memory technology and is compatible with the industry-standard 80C51 instruction set and pinout. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory pro-grammer. By combining a versatile 8-bit CPU with in-system programmable Flash on a monolithic chip, the Atmel AT89S52 is a powerful microcontroller, which provides a highly flexible and cost-effective solution to many, embedded control applications. The AT89S52 provides the following standard features: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, three 16-bit timer/counters, a six-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry. In addition, the AT89S52 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning. The Power-down mode saves the RAM con-tents but freezes the oscillator, disabling all other chip functions until the next interrupt



The hardware is driven by a set of program instructions, or software. Once familiar with hardware and software, the user can then apply the microcontroller to the problems easily.

The pin diagram of the 8051 shows all of the input/output pins unique to microcontrollers:



The following are some of the capabilities of 8051 microcontroller.

* Internal ROM and RAM
* I/O ports with programmable pins
* Timers and counters
* Serial data communication

The 8051 architecture consists of these specific features:

* + - 16 bit PC &data pointer (DPTR)
    - 8 bit program status word (PSW)
    - 8 bit stack pointer (SP)
    - Internal ROM 4k
    - Internal RAM of 128 bytes.
    - 4 register banks, each containing 8 registers
    - 80 bits of general purpose data memory
    - 32 input/output pins arranged as four 8 bit ports: P0-P3
    - Two 16 bit timer/counters: T0-T1 Two external and three internal interrupt sources Oscillator and clock circuits.

PROCEDURE:-

* To be able to test electronic components accurately is essential to identifying faults for any electronic repairer. Top quality electronic testing equipment is therefore much sought after.
* If you are involved in electronic repairs, professionally or just as a hobby, you will know just how much time good equipment saves you. Normally, however, *this type of equipment to test electronic components* can be relatively expensive, especially for do it yourself enthusiasts and people thinking about starting a small or part-time business.
* What many people are unaware of is just how easy it is to make your own gear and multimeter to test electronic components to the standards of top of the range brands, but at a fraction of the cost. All you need is the necessary know-how.
* There are some guides available to show beginners how to test electronic components and how to repair electronic devices and appliances. You should be looking for the following things when evaluating such a guide.

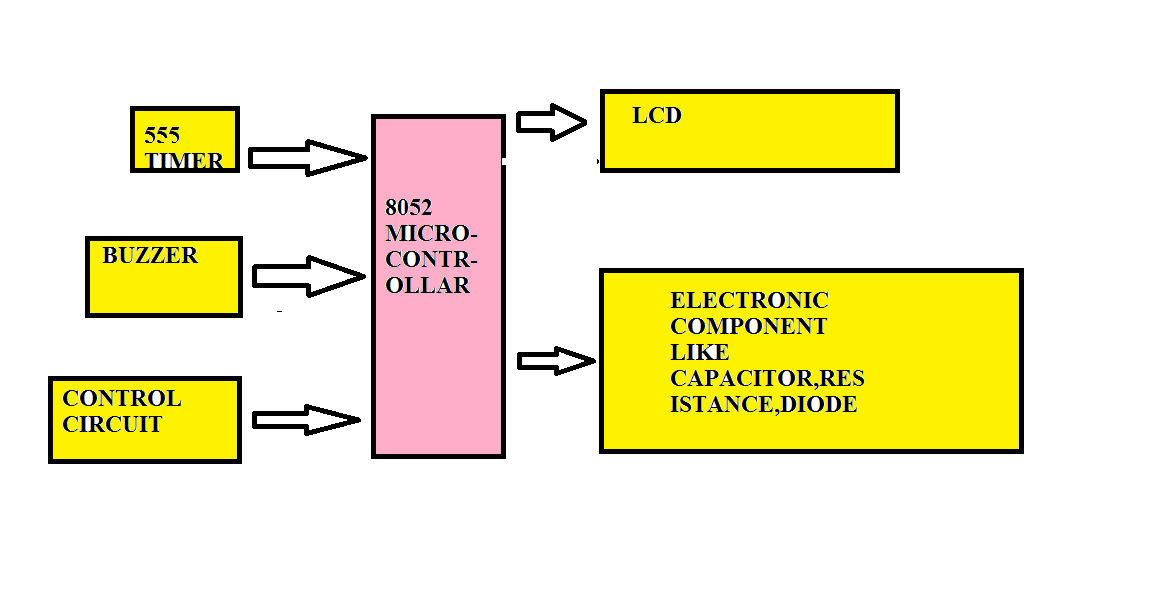
Good electronic testshould include the following:

First, check the author's credentials. Does he perform professional electronic repairs? Is he an electronics testing instructor? Do his instructions appear to be easy to follow and well laid out? Does he offer a guarantee if you are not fully satisfied with his manual? Does he identify being able to test electronic components with electronic repair? He should be aware that repairs are straightforward if you have the correct equipment to identify problems. And is his manual reasonably priced?

* Secondly, make sure any guide not only explains how to make your own testing equipment but also explains which equipment to use for particular jobs, how you actually employ that equipment, what to test for and in what sequence. It's all very well to have superior testing equipment to hand but if there is no methodology to follow in testing, you will just be wasting your time.
* Without doubt, working out [how to test electronic components](http://technohelpblog.blogspot.com/2008/03/test-electronic-components-accurately.html) can become quite complex. Much like wiring a house or office, without proper plans to work from, even the experts can become confused. If your systems of fault identification aren't clear and easy to follow, frustration and disaster lie ahead. So, make sure any guide includes easily comprehensible diagrams and descriptions.
* Ensure your guide does not just cover the basics. Part of the reason for making your own kit to test electronic components is to give yourself an advantage over other electronics testers. Most equipment that is declared unrepairable is, in fact, eminently repairable. Normally the tester simply has not been able to identify the problem; if he could identify the fault, it is not usually beyond repair.
* Ensure any manual also covers testing for faults and shorts using an analogue meter and how to make such a meter. It will prove to be invaluable in cases where a digital meter has its inherent shortcomings.
* So, to reiterate, superior testing equipment is essential, but no less important is having foolproof plans of testing to work through so the fault is not missed. The order of testing is important in the sense of saving time by testing for the most common faults first and so on. A good guide should also include a comprehensive troubleshooting section.

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BLOCK DIAGRAM -:



CONCLUSION-:

While many digital multimeters these days have a specific capability for testing diodes and sometimes transistors, not all do, especially the older analogue multimeters that are still in widespread use. However it is still quite easy to perform a simple go / no-go test using the simplest of equipment.

This form of testing is able to detect whether transistor or a diode is operational, and although it cannot provide details of the parameters, this is seldom a problem because these components will have been tested at manufacture and it is comparatively rare for the performance to fall to a point where they do not operate in a circuit. Most failures are catastrophic, rendering the component completely inoperable. These simple multimeter tests are able to detect these problems very quickly and easily.

***References-:***

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