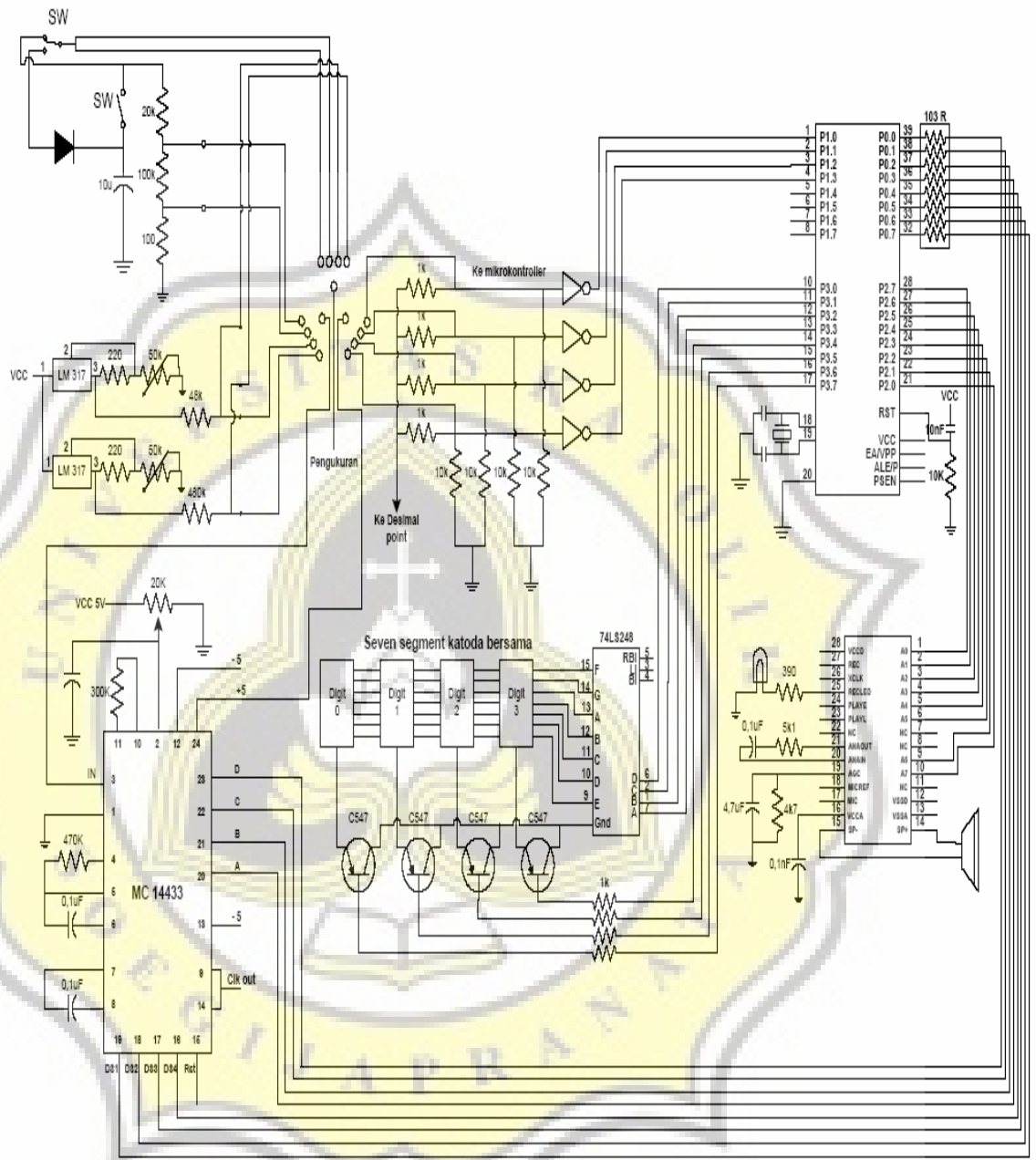




LAMPIRAN



Gambar Lengkap Multi Meter Dengan Tampilan Seven Segment Dan Isyarat Suara

Features

- Compatible with MCS[®]-51 Products
- 4K Bytes of In-System Programmable (ISP) Flash Memory
 - Endurance: 1000 Write/Erase Cycles
- 4.0V to 5.5V Operating Range
- Fully Static Operation: 0 Hz to 33 MHz
- Three-level Program Memory Lock
- 128 x 8-bit Internal RAM
- 32 Programmable I/O Lines
- Two 16-bit Timer/Counters
- Six Interrupt Sources
- Full Duplex UART Serial Channel
- Low-power Idle and Power-down Modes
- Interrupt Recovery from Power-down Mode
- Watchdog Timer
- Dual Data Pointer
- Power-off Flag
- Fast Programming Time
- Flexible ISP Programming (Byte and Page Mode)

Description

The AT89S51 is a low-power, high-performance CMOS 8-bit microcontroller with 4K 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 programmer. By combining a versatile 8-bit CPU with In-System Programmable Flash on a monolithic chip, the Atmel AT89S51 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications.

The AT89S51 provides the following standard features: 4K bytes of Flash, 128 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, two 16-bit timer/counters, a five-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry. In addition, the AT89S51 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 contents but freezes the oscillator, disabling all other chip functions until the next external interrupt or hardware reset.



**8-bit
Microcontroller
with 4K Bytes
In-System
Programmable
Flash**

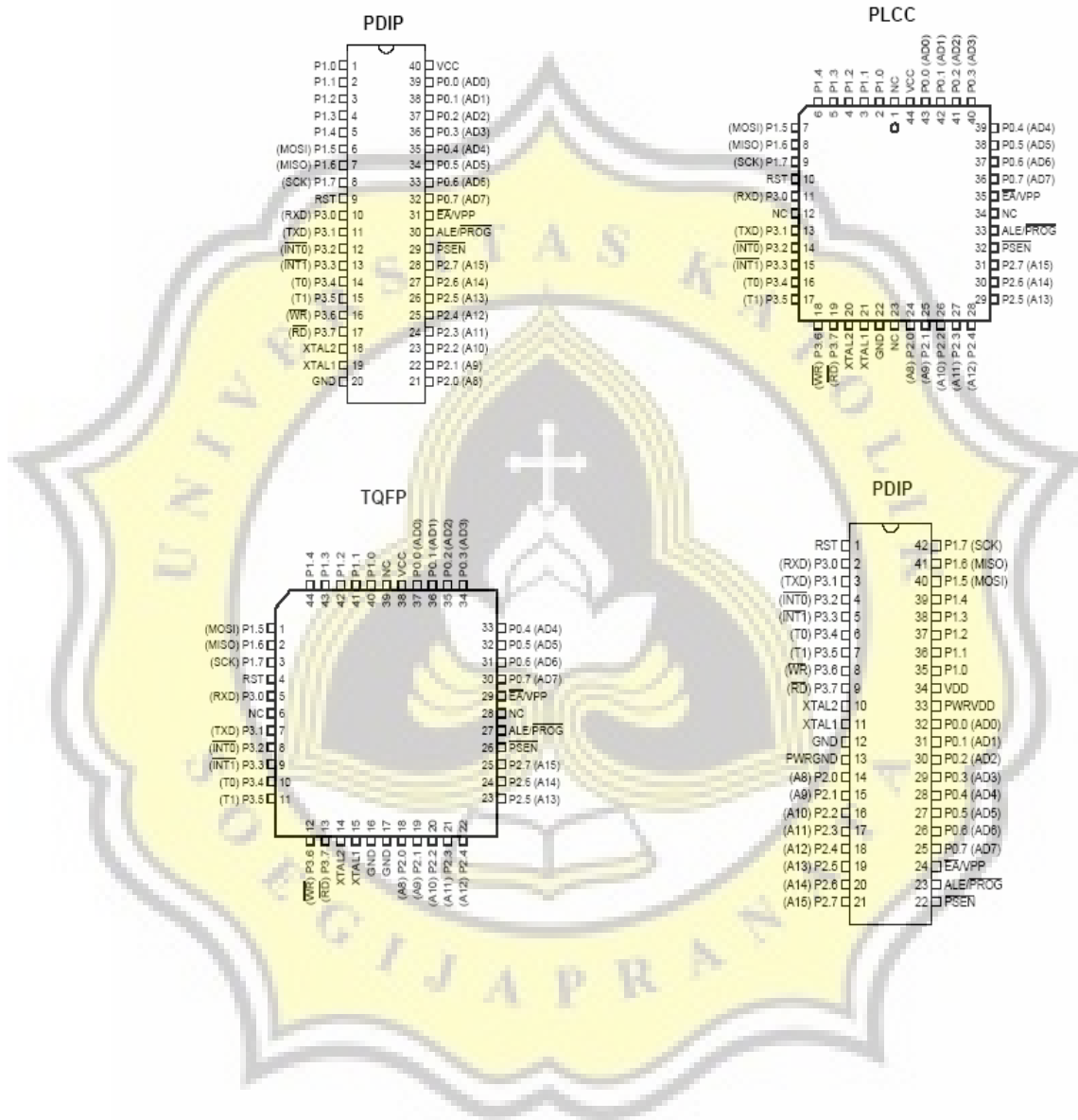
AT89S51

2487B-MICRO-12/03

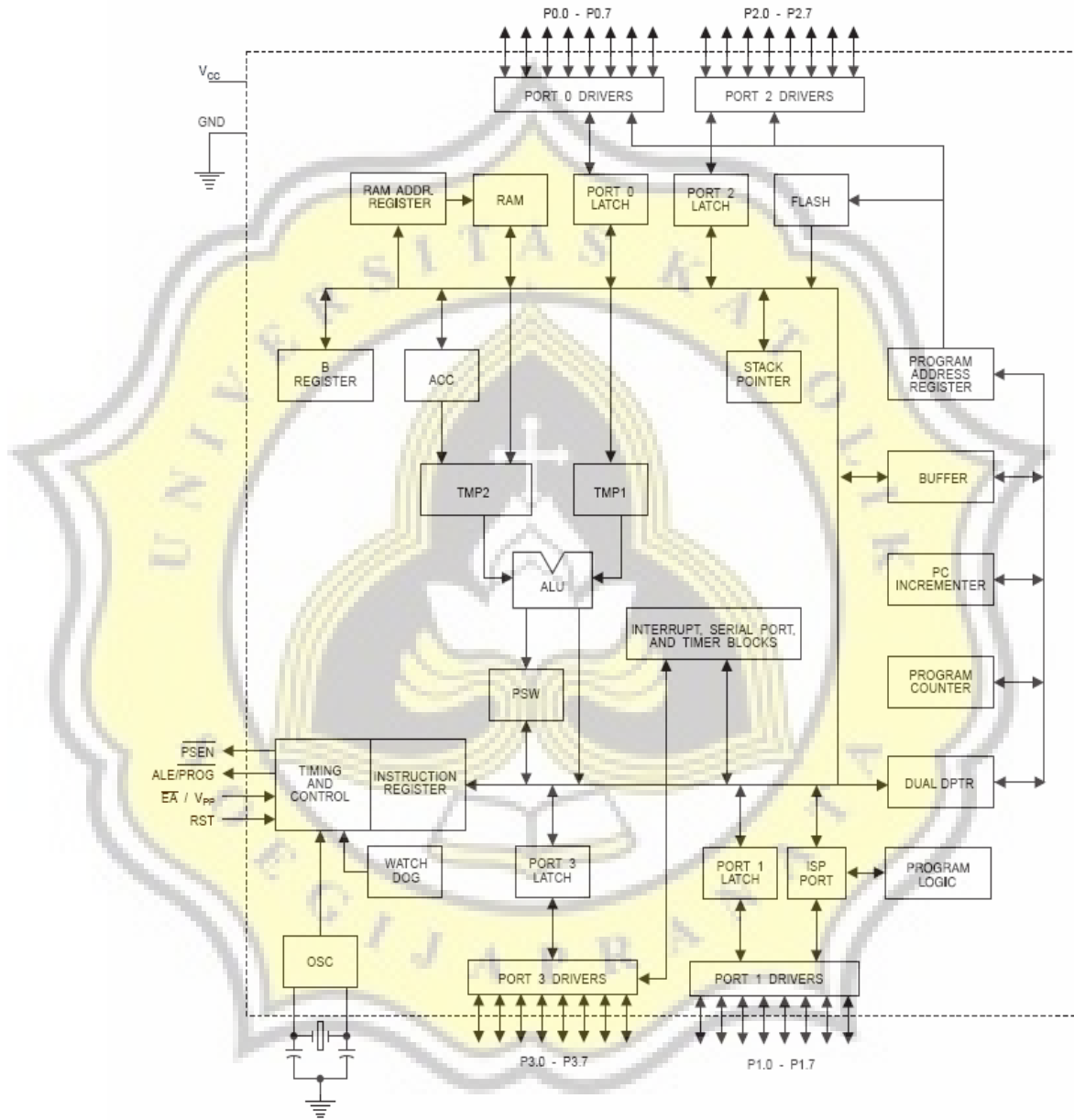




Pin Configurations



Block Diagram





ISD1400 Series

Single-Chip Voice Record/Playback Devices

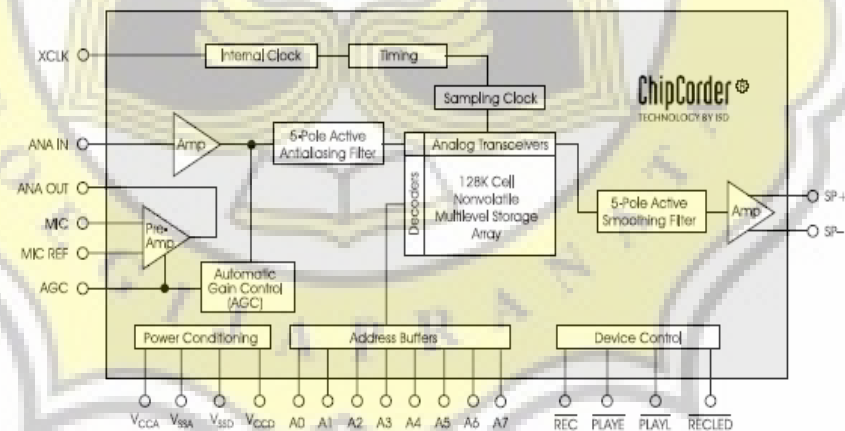
16- and 20-Second Durations

GENERAL DESCRIPTION

Information Storage Devices' ISD1400 ChipCorder® series provides high-quality, single-chip record/playback solutions to short-duration messaging applications. The CMOS devices include an on-chip oscillator, microphone preamplifier, automatic gain control, antialiasing filter, smoothing filter, and speaker amplifier. A minimum record/playback subsystem can be configured with a microphone, a speaker, several passives, two push-buttons, and a power source.

Recordings are stored in on-chip nonvolatile memory cells, providing zero-power message storage. This unique, single-chip solution is made possible through ISD's patented multilevel storage technology. Voice and audio signals are stored directly into memory in their natural form, providing high-quality, solid-state voice reproduction.

Figure: ISD1400 Series Block Diagram



ISD1400 Series

FEATURES

- Easy-to-use single-chip voice record/playback solution
- High-quality, natural voice/audio reproduction
- Push-button interface
 - Playback can be edge- or level-activated
- Single-chip durations of 16 and 20 seconds
- Automatic power-down mode
 - Enters standby mode immediately following a record or playback cycle
 - Standby current 0.5 μ A (typical)
- Zero-power message storage
 - Eliminates battery backup circuits
- Fully addressable to handle multiple messages
- 100-year message retention (typical)
- 100,000 record cycles (typical)
- On-chip clock source
- No programmer or development system needed
- Single +5 volt power supply
- Available in die form, DIP, and SOIC packaging
- Industrial temperature (-40°C to $+85^{\circ}\text{C}$) versions available

Table: ISD1400 Series Summary

Part Number	Minimum Duration (Seconds)	Input Sample Rate (KHz)	Typical Filter Pass Band (KHz)
ISD1416	16	8.0	3.3
ISD1420	20	6.4	2.6

MC14433

CMOS LSI

(LOW-POWER COMPLEMENTARY MOS)

3 1/2 DIGIT A/D CONVERTER

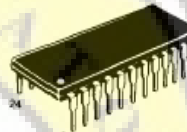
3 1/2 DIGIT A/D CONVERTER

The MC14433 is a high-performance, low-power, 3 1/2 digit A/D converter combining both linear CMOS and digital CMOS circuits on a single monolithic IC. The MC14433 is designed to minimize use of external components. With two external resistors and two external capacitors, the system forms a dual-slope A/D converter with automatic zero correction and automatic polarity.

The MC14433 is ratiometric and may be used over a full-scale range of 1.999 volts or 199.9 millivolts. Systems using the MC14433 may operate over a wide range of power supply voltages for ease of use with batteries, or with standard 5 volt supplies. The output drive conforms with standard B-Series CMOS specifications and can drive a low-power Schottky TTL load.

The high-impedance MOS inputs allow applications in current and resistance meters as well as voltmeters. In addition to DVM/DPM applications, the MC14433 finds use in digital thermometers, digital scales, remote A/D, A/D control systems, and in MPU systems.

- Accuracy: $\pm 0.05\%$ of Reading ± 1 Count
- Two Voltage Ranges: 1.999 V and 199.9 mV
- Up to 25 Conversions per Second
- $Z_{in} > 1000$ M ohm
- Auto-Polarity and Auto-Zero
- Single Positive Voltage Reference
- Standard B-Series CMOS Outputs - Drives One Low Power Schottky Load
- Uses On-Chip System Clock, or External Clock
- Wide Supply Range: e.g., ± 4.5 V to ± 8.0 V
- Overrange and Underrange Signals Available
- Operates in Auto Ranging Circuits
- Operates with LED and LCD displays
- Low External Component Count
- Chip Complexity: 1326 FETs



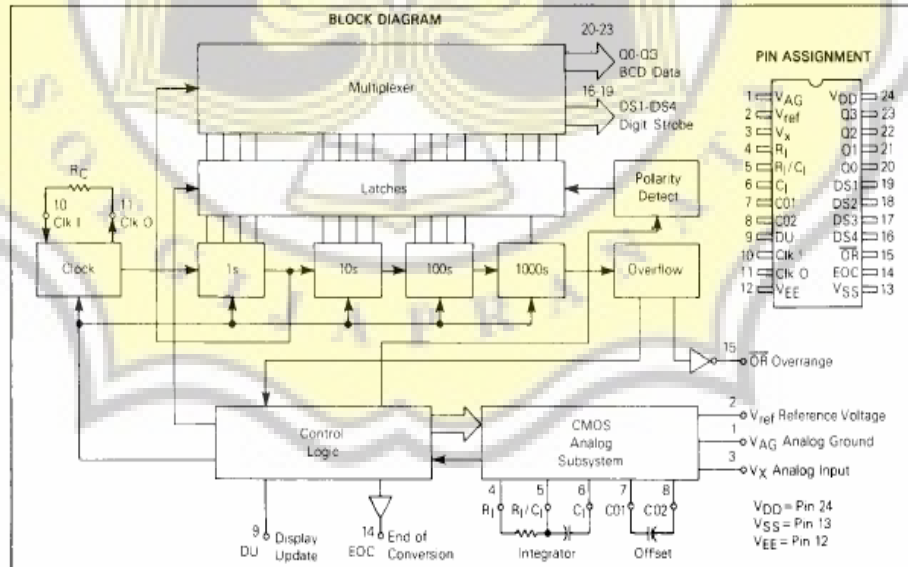
P SUFFIX
 PLASTIC DIP
 CASE 709



DW SUFFIX
 SOG
 CASE 751E

ORDERING INFORMATION

MC14433P Plastic DIP
 MC14433DW SOG Package





BCD-TO-SEVEN-SEGMENT DECODERS/DRIVERS

The SN54/74LS247 thru SN54/74LS249 are BCD-to-Seven-Segment Decoder/Drivers.

The LS247 and LS248 are functionally and electrically identical to the LS47 and LS48 with the same pinout configuration. The LS249 is a 16-pin version of the 14-pin LS49 and includes full functional capability for lamp test and ripple blanking which was not available in the LS49.

The composition of all characters, except the 6 and 9 are identical between the LS247, 248, 249 and the LS47, 48 and 49. The LS47 thru 49 compose the 0 and 9 without tails, the LS247 thru 249 compose the 0 and 9 with the tails. The LS247 has active-low outputs for direct drive of indicators. The LS248 and 249 have active-high outputs for driving lamp buffers.

All types feature a lamp test input and have full ripple-blanking input/output controls. On all types an automatic leading and/or trailing-edge zero-blanking control (RBI and RBO) is incorporated and an overriding blanking input (BI) is contained which may be used to control the lamp intensity by pulsing or to inhibit the output's lamp test may be performed at any time when the BI/RBO node is at high level. Segment identification and resultant displays are shown below. Display pattern for BCD input counts above 9 are unique symbols to authenticate input conditions.

LS247

- Open-Collector Outputs Drive Indicators Directly
- Lamp-Test Provision
- Leading/Trailing Zero Suppression

LS248

- Internal Pull-Ups Eliminate Need for External Resistors
- Lamp-Test Provision
- Leading/Trailing Zero Suppression

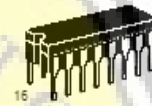
LS249

- Open-Collector Outputs
- Lamp-Test Provision
- Leading/Trailing Zero Suppression

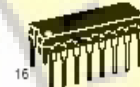
**SN54/74LS247
SN54/74LS248
SN54/74LS249**

**BCD-TO-SEVEN-SEGMENT
DECODERS/DRIVERS**

LOW POWER SCHOTTKY



**J SUFFIX
CERAMIC
CASE 820-09**



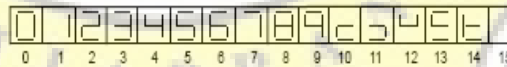
**N SUFFIX
PLASTIC
CASE 848-08**



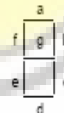
**D SUFFIX
SOIC
CASE 751B-03**

ORDERING INFORMATION

SN54LSXXXJ Ceramic
SN74LSXXXN Plastic
SN74LSXXXDW SOIC



NUMERICAL DESIGNATIONS AND RESULTANT DISPLAYS



SEGMENT
IDENTIFICATION

LM117/LM317A/LM317 3-Terminal Adjustable Regulator

General Description

The LM117 series of adjustable 3-terminal positive voltage regulators is capable of supplying in excess of 1.5A over a 1.2V to 37V output range. They are exceptionally easy to use and require only two external resistors to set the output voltage. Further, both line and load regulation are better than standard fixed regulators. Also, the LM117 is packaged in standard transistor packages which are easily mounted and handled.

In addition to higher performance than fixed regulators, the LM117 series offers full overload protection available only in IC's. Included on the chip are current limit, thermal overload protection and safe area protection. All overload protection circuitry remains fully functional even if the adjustment terminal is disconnected.

Normally, no capacitors are needed unless the device is situated more than 6 inches from the input filter capacitors in which case an input bypass is needed. An optional output capacitor can be added to improve transient response. The adjustment terminal can be bypassed to achieve very high ripple rejection ratios which are difficult to achieve with standard 3-terminal regulators.

Besides replacing fixed regulators, the LM117 is useful in a wide variety of other applications. Since the regulator is "floating" and sees only the input-to-output differential voltage, supplies of several hundred volts can be regulated as long as the maximum input to output differential is not exceeded, i.e., avoid short-circuiting the output.

Also, it makes an especially simple adjustable switching regulator, a programmable output regulator, or by connecting a fixed resistor between the adjustment pin and output, the LM117 can be used as a precision current regulator. Supplies with electronic shutdown can be achieved by clamping

the adjustment terminal to ground which programs the output to 1.2V where most loads draw little current.

For applications requiring greater output current, see LM150 series (3A) and LM138 series (5A) data sheets. For the negative complement, see LM137 series data sheet.

LM117 Series Packages and Power Capability

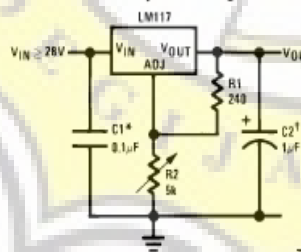
Part Number Suffix	Package	Rated Power Dissipation	Design Load Current
K	TO-3	20W	1.5A
H	TO-39	2W	0.5A
T	TO-220	20W	1.5A
E	LCC	2W	0.5A
S	TO-263	4W	1.5A

Features

- Guaranteed 1% output voltage tolerance (LM317A)
- Guaranteed max. 0.01%/V line regulation (LM317A)
- Guaranteed max. 0.3% load regulation (LM117)
- Guaranteed 1.5A output current
- Adjustable output down to 1.2V
- Current limit constant with temperature
- P+ Product Enhancement tested
- 80 dB ripple rejection
- Output is short-circuit protected

Typical Applications

1.2V-25V Adjustable Regulator



TL/H/0069-1

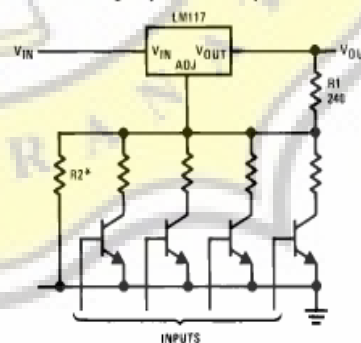
Full output current not available at high input-output voltages.

*Needed if device is more than 6 inches from filter capacitors.

†Optional—improves transient response. Output capacitors in the range of 1 μF to 1000 μF of aluminum or tantalum electrolytic are commonly used to provide improved output impedance and rejection of transients.

$$1V_{OUT} = 1.25V \left(1 + \frac{R2}{R1} \right) + (ADJ/R2)$$

Digitally Selected Outputs



TL/H/0069-2

*Sets minimum V_{OUT}