

### FEATURES

- Sampling Rates from 0.001 to 20 MHz (MSPS)
- 1/4 LSB DNL from 0.001 to 10 MHz
- 1/2 LSB DNL to 14 MHz
- Interface to any Input Range between GND and  $V_{DD}$
- Pin Compatible Upgrade of MP7684
- Monotonic; No Missing Codes
- Single Power Supply (4 to 6 volt)

- Low Power CMOS (300 mW)
- ESD Protection: 2000 Volts Minimum
- Latch-Up Free

### BENEFITS

- Low Power for Lower System Noise
- Most Flexible Input Range of any A/D Available
- No Sample/Hold Needed

### GENERAL DESCRIPTION

The MP7684A is an 8-bit monolithic CMOS single step high speed Analog-to-Digital Converter designed for precision applications in video and data acquisition requiring conversion rates to 14 MHz with differential linearity error less than 1/2 LSB and low power consumption. A unique feature of this converter is its input architecture which eliminates the need for an input track and hold and allows full scale input ranges from 1.2 to 5 volts peak-to-peak, referred to ground or offset. The

user simply sets  $V_{REF(-)}$  and  $V_{REF(+)}$  to encompass the desired input range.

The MP7684A includes 256 clocked comparators, encoders, 3-state output buffers, a reference resistor ladder and associated timing circuitry. An overflow bit (or flag) has been provided to make it possible to achieve 9-bit resolution by connecting two devices in parallel. In normal operation this flag has no effect on the data bits.

### SIMPLIFIED BLOCK AND TIMING DIAGRAM

