

the ONE page

APPLICATION IDEA FROM **MOTOROLA**



**3 1/2 DIGIT
AUTO-RANGING
CMOS DVM**

The MC14433 is a CMOS monolithic 3¹/₂ digit A/D converter. This device may be used as the basis for an accurate DVM. Only 5 integrated circuits are needed, MC14433 (A/D converter), MC14511 (BCD to 7-segment decoder), MC75492 (LED digit driver), MC1403 (2.5 volt reference), MC14013 (D Flip-flop for sign and over-range). The application shown here is an autoranging DVM, using a few addition parts, and has the following features:

- Bipolar input
- Auto-Polarity
- Input Voltage Range Up to $\pm 19,99$ Vdc (first range)
 $\pm 20,0$ V to $\pm 199,9$ Vdc (second range)
- Accuracy $\pm 0,05$ % Full Scale ± 1 count
- Input Impedance 10 M Ω
- Auto-Zero
- Display Up-dating (HOLD)
- Input protected by substrate diodes
- Flashing display when input is Over-Range

Calibration Procedure:

- 1) A Voltage of $\pm 19,900$ Volts ± 2 mV is applied to the input terminal. Adjust the Reference Voltage (MC1403) potentiometer in order that the display shows "19,90". This occurs mid-way between the value "19,89" and "19,91".
- 2) A Voltage of $\pm 199,00$ Volts ± 20 mV is applied to the input terminal. Adjust the voltage divider potentiometer in order that the display shows "199,0".

3

