APPLICATION IDEA FROM MOTOROLA

2.5% Resolution Analog Voltage Indicator

Digital voltmeters are accurate measuring devices but in some cases the display is not practical.
The Analog Voltage Indicator described here is ideal as an inexpensive display and is easy to build.

Description of the circuit

The quad comparator MC3302 is used as an A/D flash converter.
The quad operational amplifier MLM324 is used to make an input buffer amplifier, an internal current source and a 5 Hz oscillator. This oscillator continuously changes the input reference voltages (Δ50 mV) of all comparators. The variation of 50 mV is made between 3/4 and 1/4 of each voltage step (100 mV). If the output voltage is within this bracket, the active comparator will change continuously the status of the indicating LED. This flashing (at 5 Hz) shows that V_{IN} is half way between two voltage steps. Effectively this doubles the resolution of the Analog Voltage Indicator.

$$r = \frac{1}{n\,(LED) \times 2} = 2{,}5\%\ \text{for 20 LED}$$

Features

- Single Supply +5 V to +6 V
- Input Voltage up to + 20 Vdc
- Accuracy ± 0.3 V Reading
- Resolution 2.5% by flashing of the LED
- Input Impedance 1 MΩ
- Solid State Reliability

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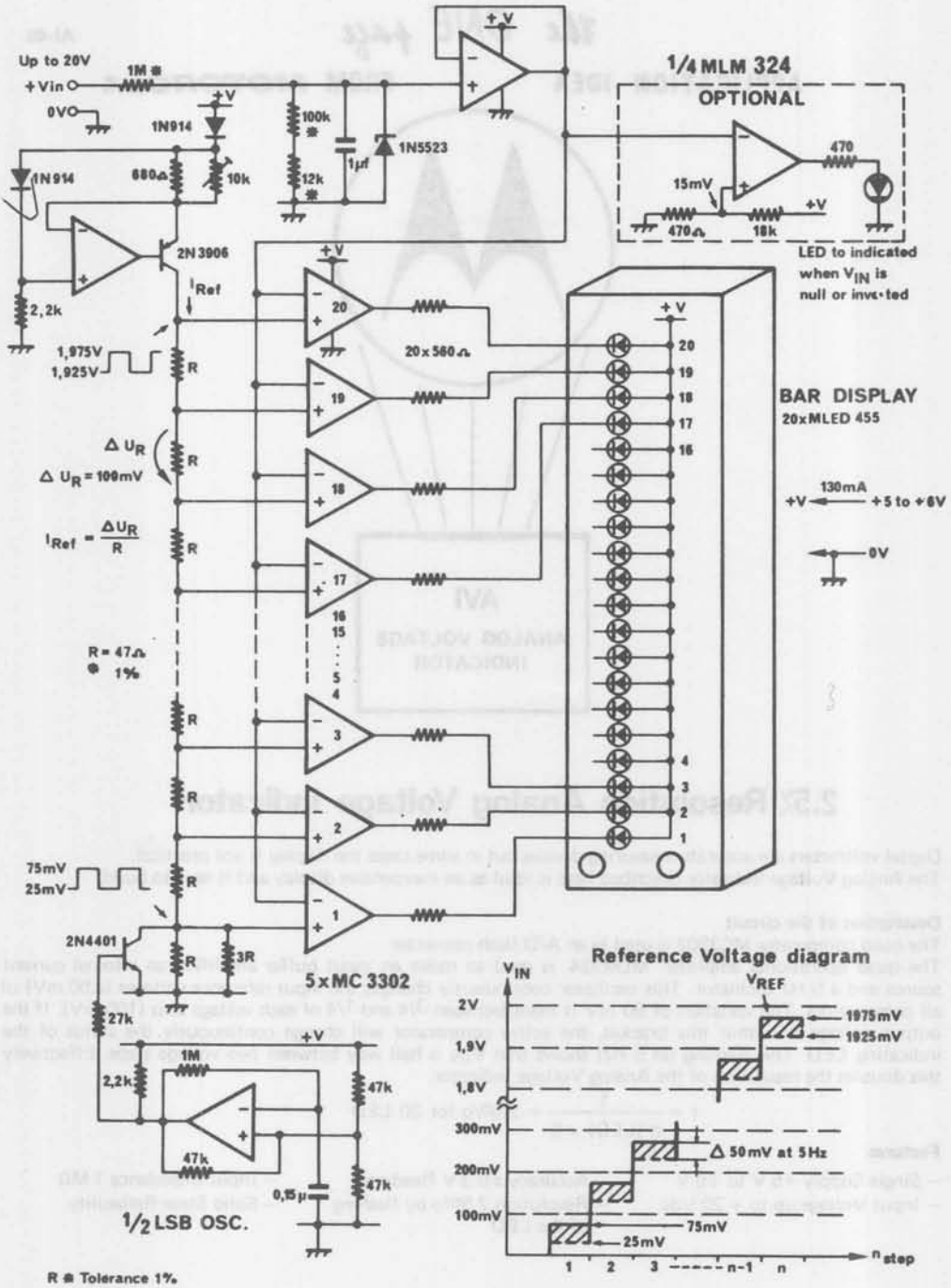

Analog Voltage Indicator