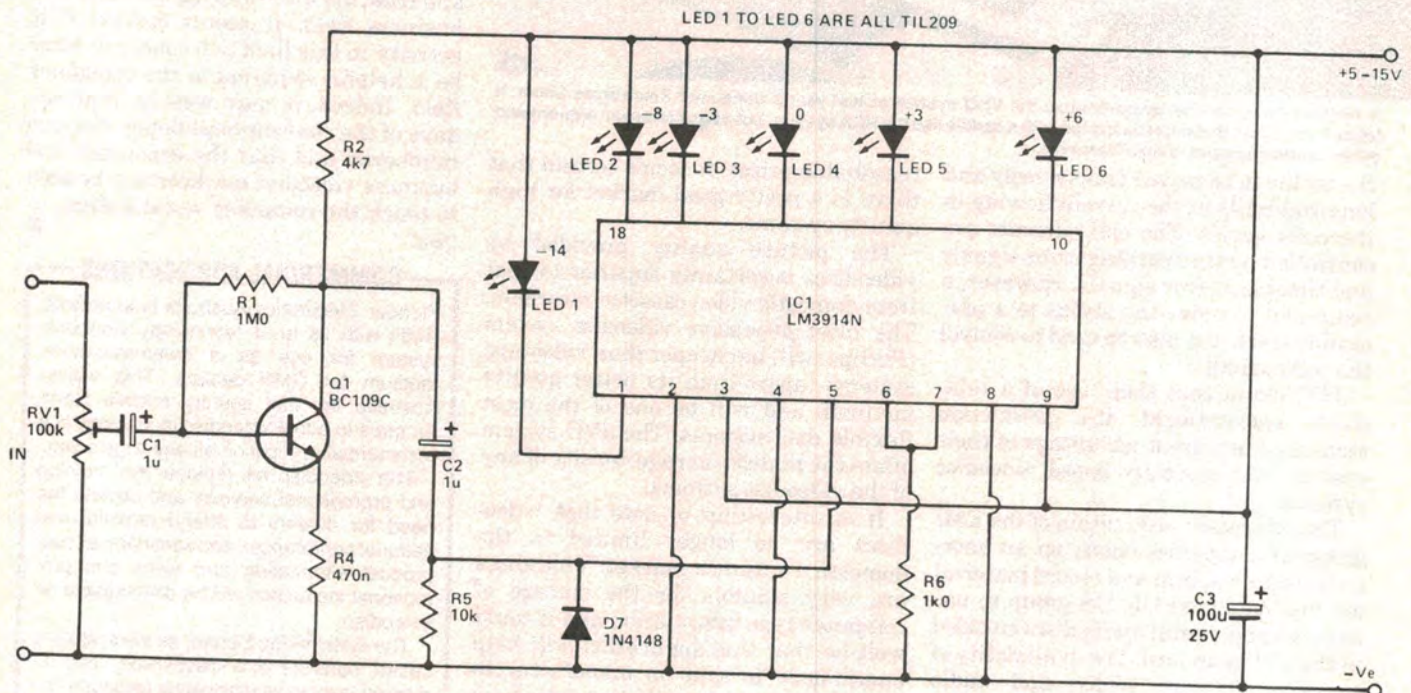


Simple LED VU meter covers 20 dB range in six steps



THIS VERY SIMPLE peak reading VU meter circuit uses six LEDs to indicate six signal levels. Indicators are provided at -14, -8, -3, 0, +3, and +6 dB or any other levels having the same spacing (e.g. -17, -11, -6, -3, 0, and +3 dB, if preferred). Only about 24 mV peak-to-peak is needed in order to activate the highest LED indicator, and so the circuit is sufficiently sensitive to be used with any normal item of audio equipment.

The circuit is based on an LM3914N bargraph display driver device (IC1), which can be used to drive up to ten LEDs. This is connected so that with 0.12 V at the input only the first output is activated (goes low). With the input raised to 0.24 V the second output is activated as well, 0.36 V activates three outputs and so on up to an input of 1.2 V or more whereupon all ten outputs are activated. In this circuit only LEDs 1, 2,

3, 5, 7, and 10 are included in the display, and these are LED1 to LED6 respectively.

The input signal is taken to a variable attenuator (R1), which enables the sensitivity of the circuit to be set at the correct level. The signal is then passed to a low gain common emitter amplifier based on Q1 which gives a tenfold boost in the sensitivity of the circuit, and ensures that it is adequate in this respect for all normal requirements. C2 couples the output from Q1 to the input of IC1. R5 is the input bias resistor for IC1, and D7 protects IC1 against an excess negative input voltage. Of course, IC1 only responds to the positive half cycles at its input, and this gives generally satisfactory results in practice. R6 sets the current fed to each LED at about 12 mA, but as the circuit only responds to positive input half cycles the LEDs can switch on for a

maximum of about 50% of the time. This gives an effective LED current of about 6 mA. The quiescent current consumption of the unit is about 8 mA, rising to an absolute maximum of about 44 mA with all six LEDs activated.

To calibrate the unit a 0 dB test signal should be fed into the monitored equipment, and R1 is then adjusted for the lowest sensitivity that does not cause the 0 dB LED to extinguish. The input impedance of the unit is about 80k and it will only lightly load the monitored equipment if the source impedance is 10k or lower.

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