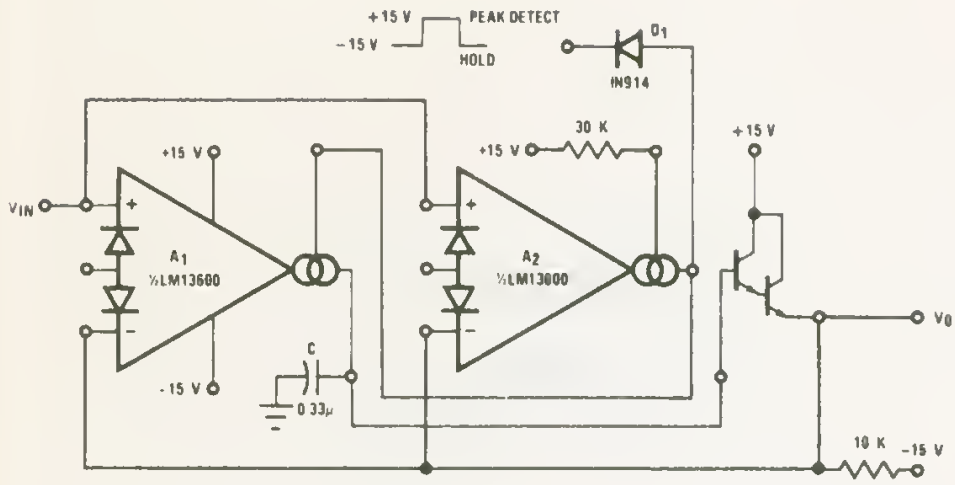


Fig. 20-1. Peak detector and hold circuit (NS).

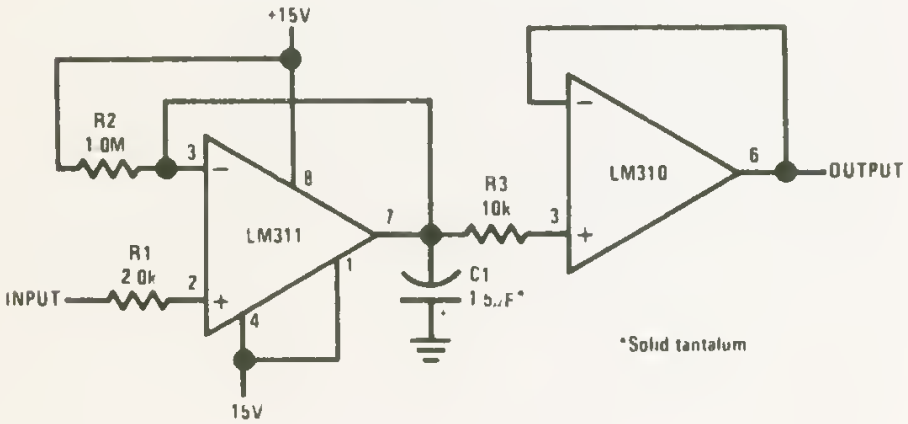


Fig. 20-2. Negative peak detector (NS).

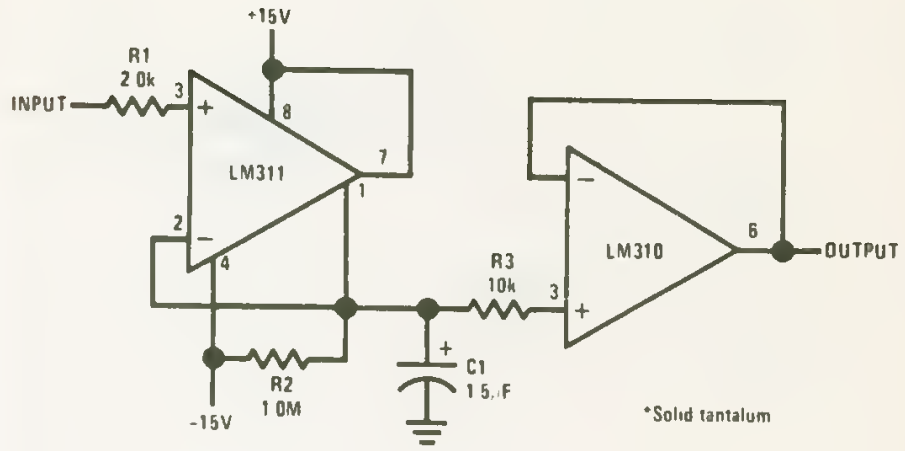


Fig. 20-3. Positive peak detector (NS).

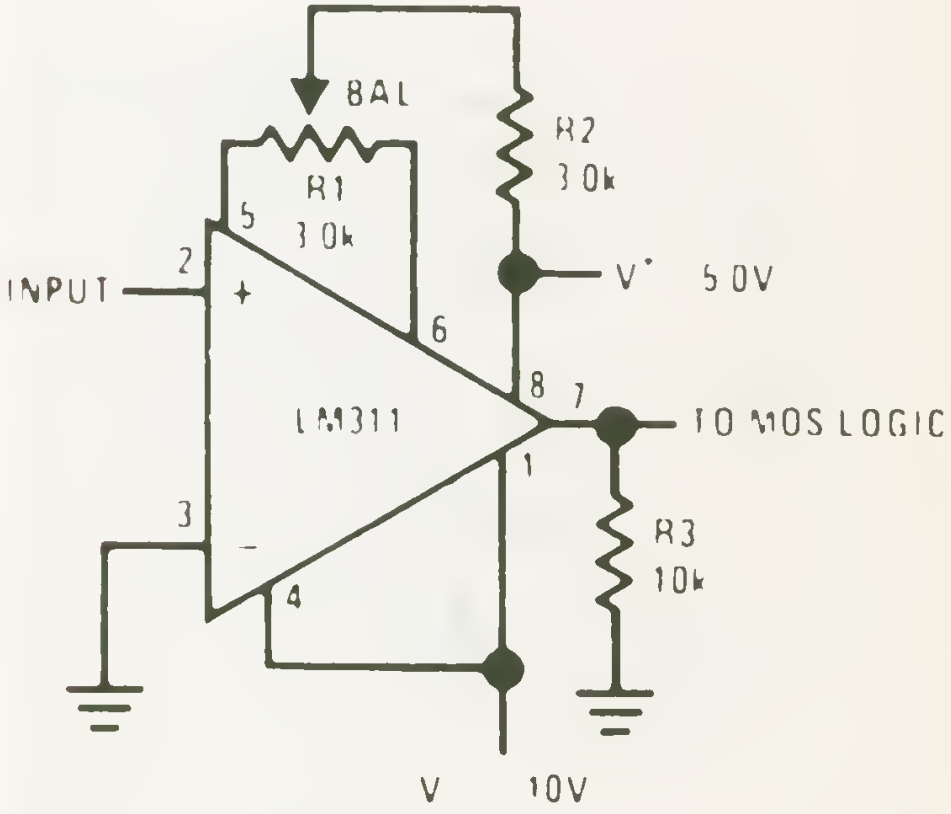


Fig. 20-4. Zero crossing detector driving MOS logic (NS).

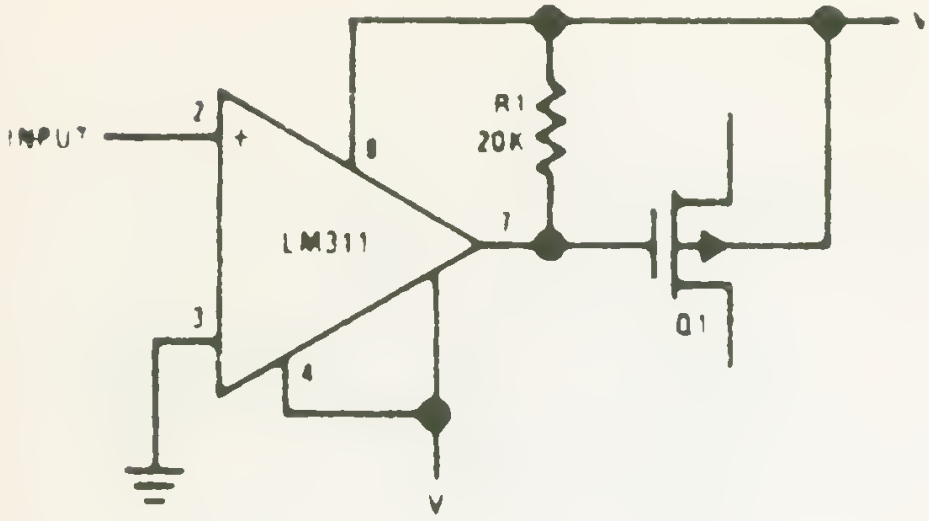


Fig. 20-5. Zero crossing detector driving a MOS switch (NS).

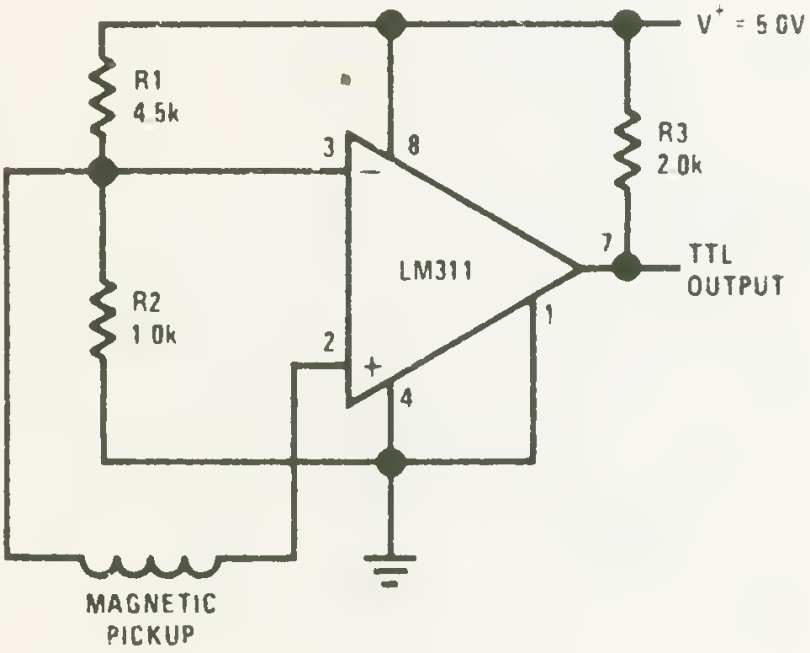


Fig. 20-6. Detector for a magnetic transducer (NS).

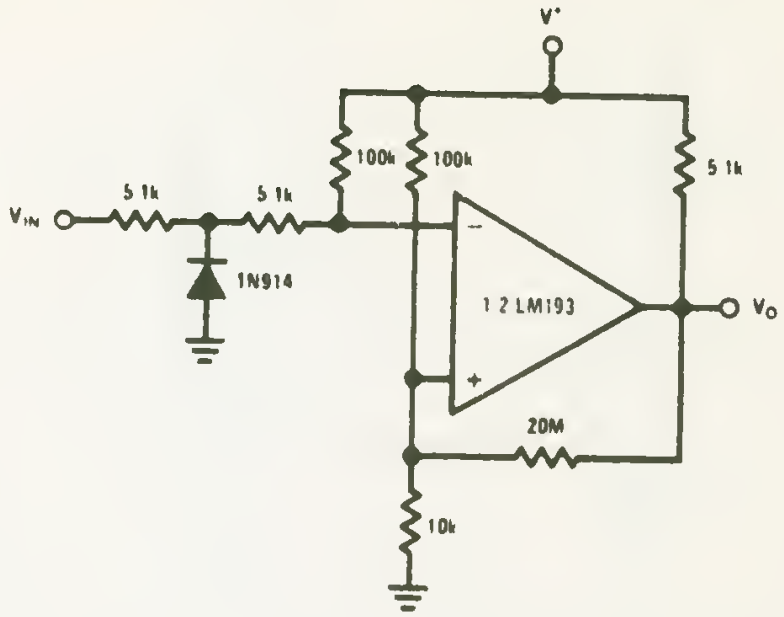


Fig. 20-7. Zero crossing detector with a single power supply (NS).

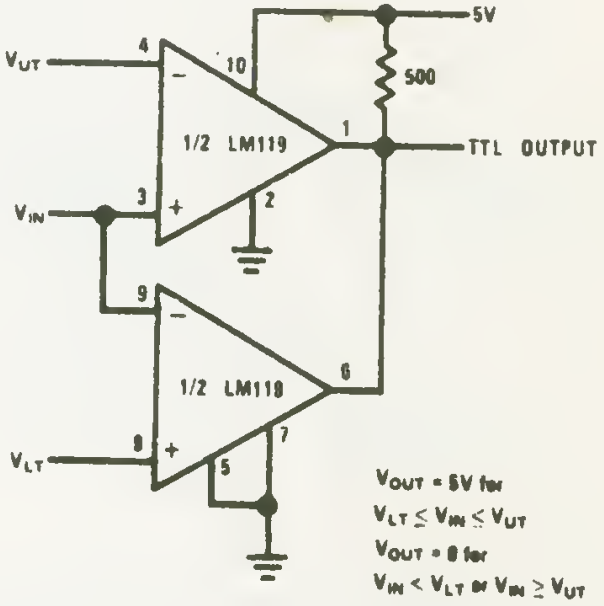


Fig. 20-8. Window detector (NS).

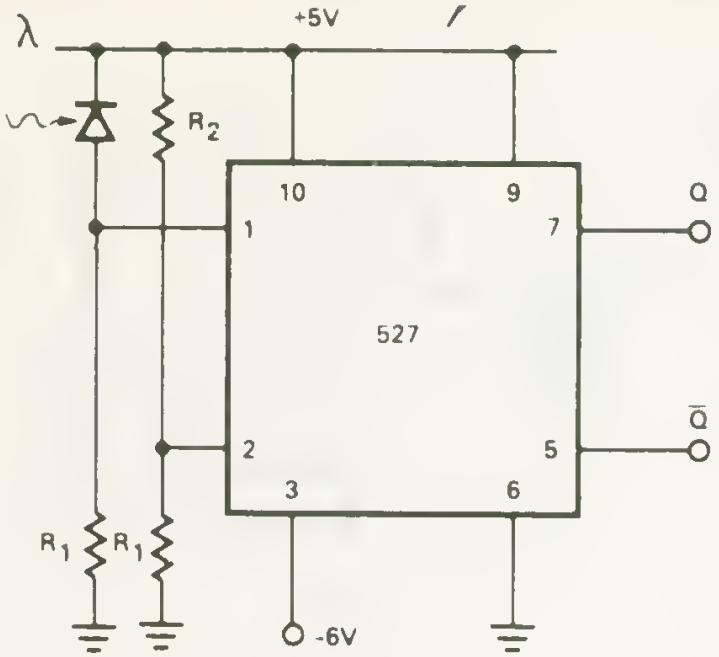


Fig. 20-9. Photodiode detector (S).

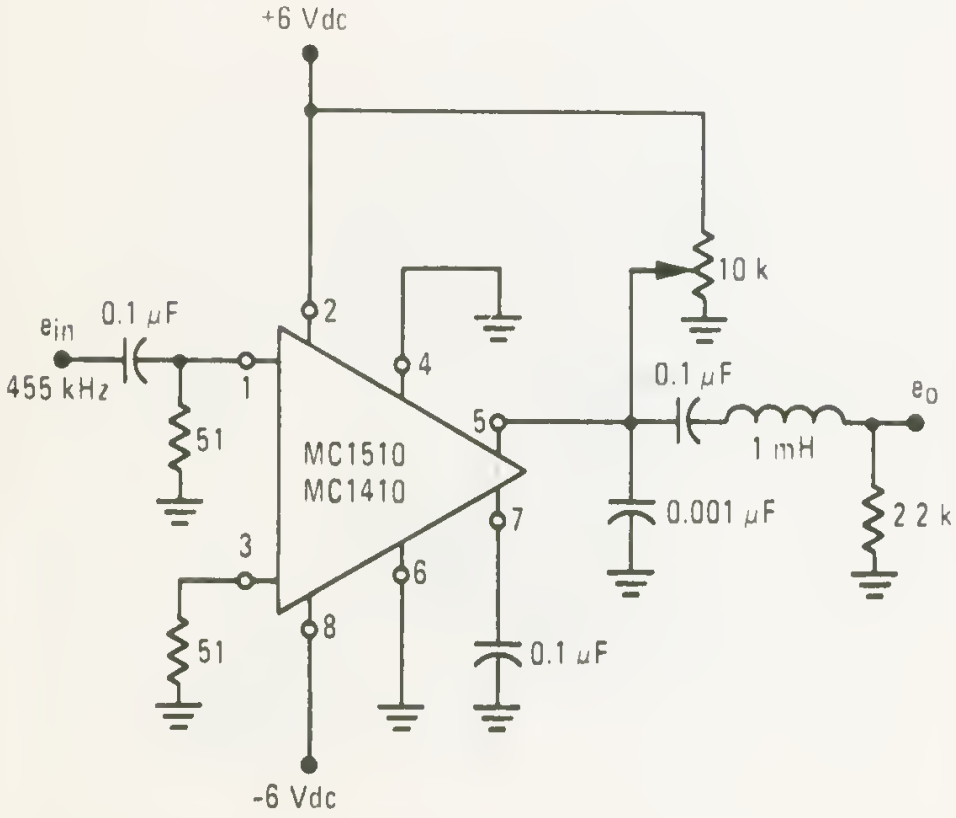


Fig. 20-10. Envelope detector (M).

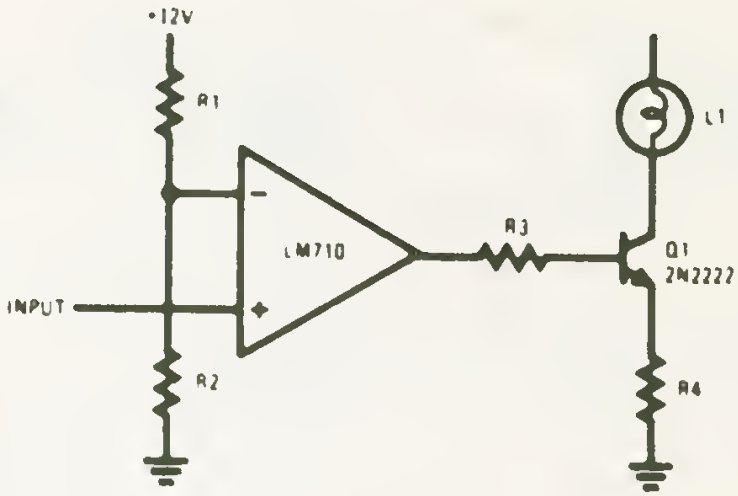


Fig. 20-11. Level detector with lamp driver (NS).

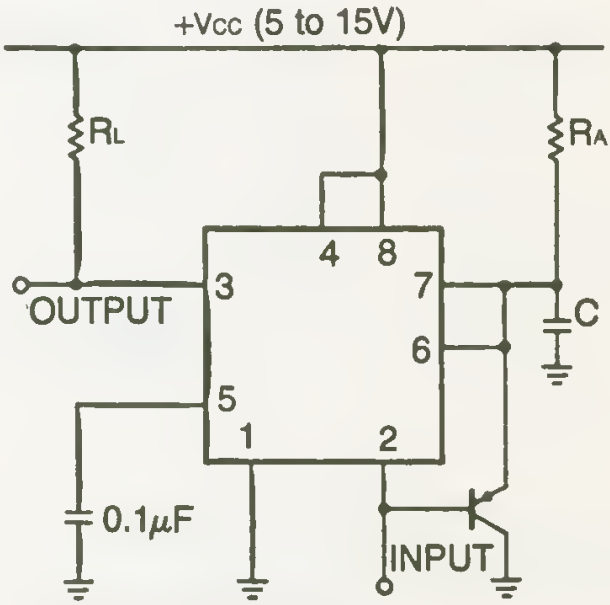


Fig. 20-12. Missing pulse detector using an ECG955M timer/oscillator chip. The timing cycle is continuously reset by the input pulse train. A change in frequency or missing pulse allows completion of the timing cycle, which causes a change in the output level. The time delay should be set a little longer than normal between pulse for this reason (GTE).

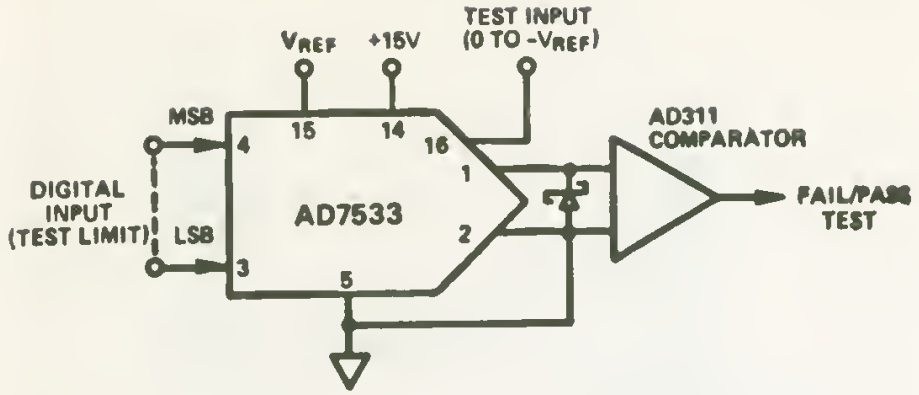


Fig. 20-13. Digitally programmable limit detector (AD).

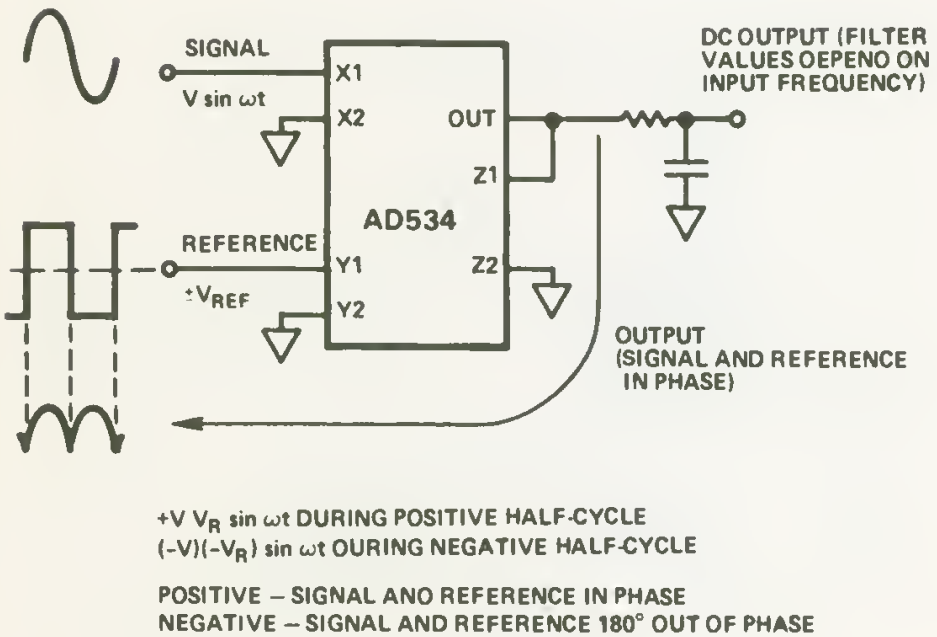


Fig. 20-14. Phase-sensitive detector with square-wave reference. If the input and reference are in phase the output is positive. If they are 180° out of phase the output is negative (AD).

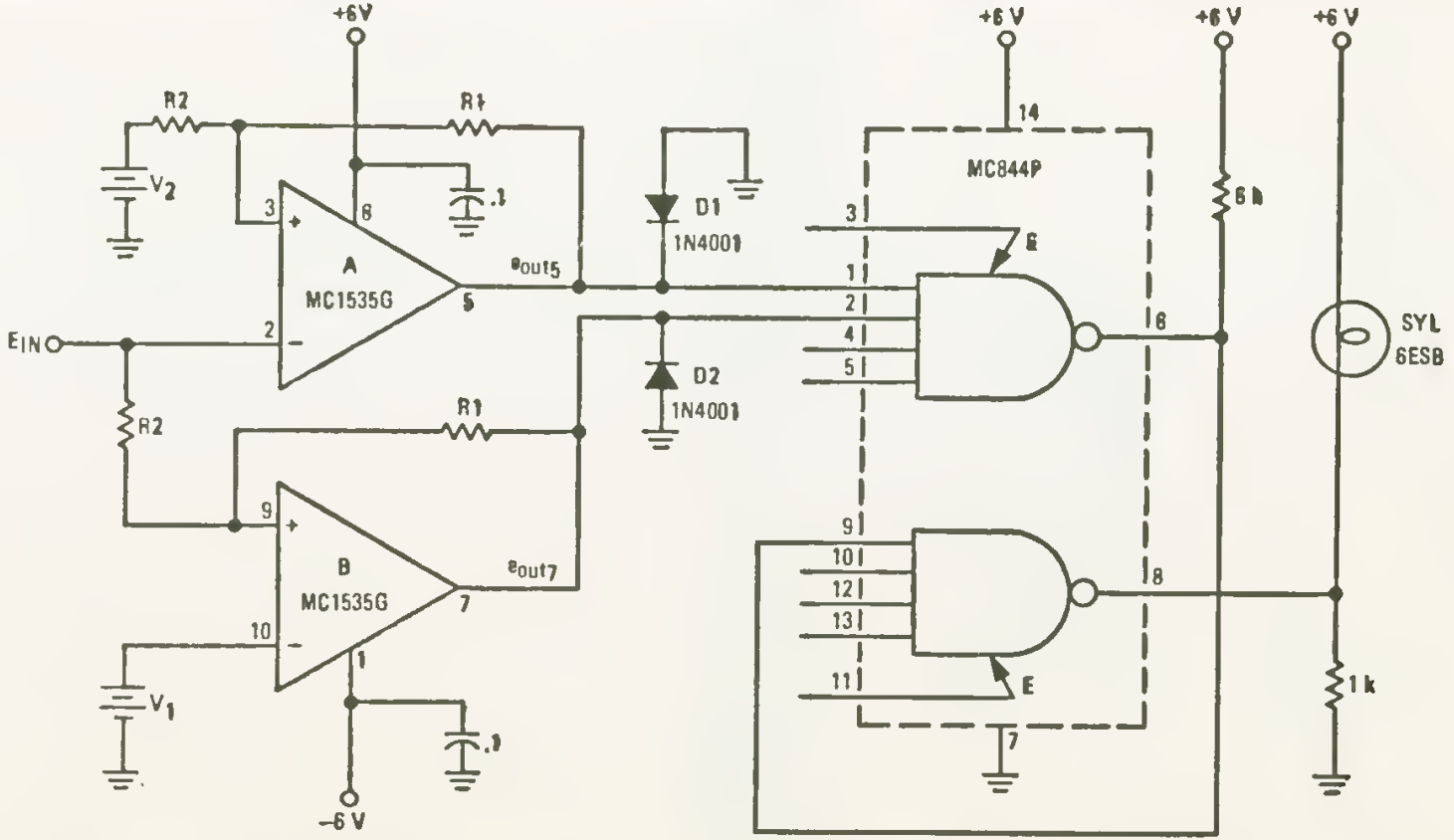
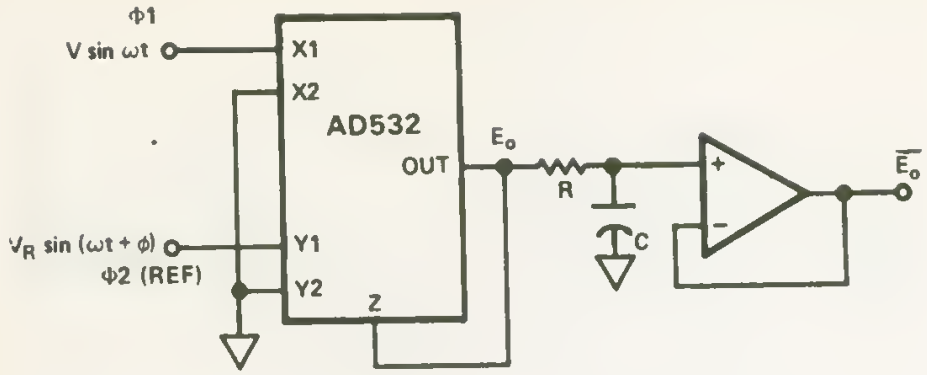


Fig. 20-15. Signal-level envelope detector. The MC1535G is a dual op amp and the MC844P a dual power gate. This circuit indicates by way of the lamp when the input signal is out of range (M).



$$E_o = \frac{V V_R}{10} \sin \omega t (\sin \omega t \cos \phi + \cos \omega t \sin \phi)$$

$$E_o = \frac{V V_R}{10} (\sin^2 \omega t \cos \phi + \sin \omega t \cos \omega t \sin \phi)$$

$$E_o = \frac{V V_R}{20} ([1 - \cos 2\omega t]\cos \phi + \sin 2\omega t \sin \phi)$$

$$\overline{E_o} = \frac{V V_R}{20} \cos \phi = \frac{V V_R}{20} \text{ (IN PHASE)}$$

$$- \frac{V V_R}{20} \text{ (180° OUT OF PHASE)}$$

Fig. 20-16. Phase-sensitive detector for sinusoidal signals This circuit measures the magnitude of in-phase or 180°-out-of-phase inputs with the proper polarity, depending on the relationship to the reference with less than 1 percent. The op amp shown is a AD741J (AD).