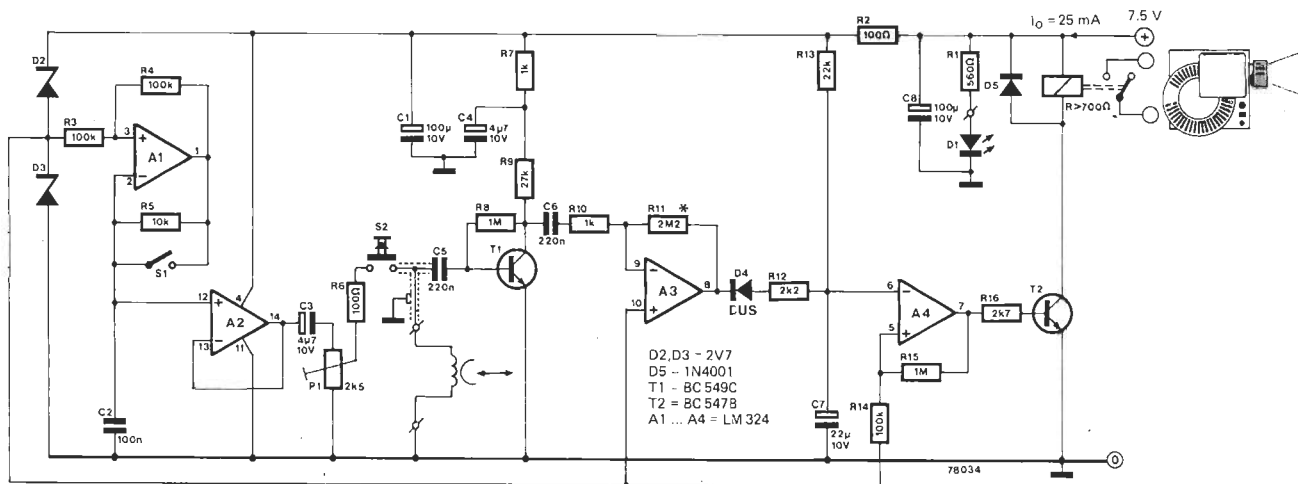
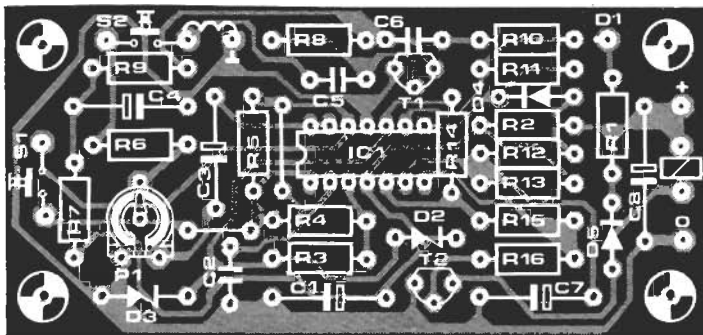
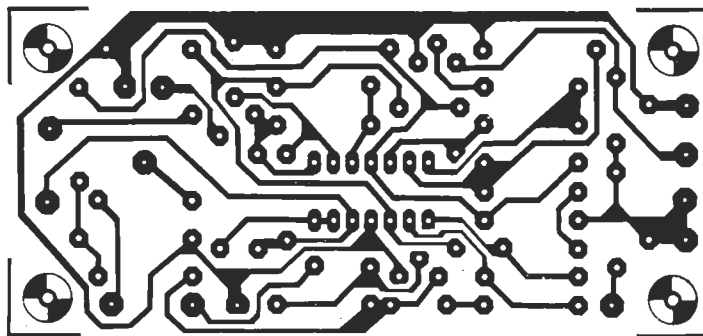


102 slide-tape synchroniser



This circuit can be used with tape recorders which have an audio-visual (AV) socket for synchronisation of a slide show with a recorded commentary. AV tape recorders are equipped with an extra head which is used to record a synchronisation signal on a separate track from the audio signal. On playback this sync signal is used to control the automatic slide projector. If the tape recorder is equipped with an AV socket but not with sync signal generator and detector circuits then a separate slide synchroniser is required.

A 1 kHz oscillator built around A1 provides the sync signal as long as S1 is open. When a slide change is required pushbutton S2 is pressed and the signal is fed out to be recorded on the tape. On playback the recorded signal is picked up by the record/playback head and amplified by T1 and A3. C7 is normally charged via R13, so the output of the Schmitt trigger built around A4 is low, T2 is turned off and the relay contacts are open. When a sync signal is present C7 discharges through D4 and R12 due to the output of A3 going alternately high and low. The output of A4 goes high, T2 turns on, the relay contacts close and the slide is changed. During playback S1 should be closed to prevent signals inadvertently being recorded on the tape should S2 accidentally be pressed. Since the control signal fed to the slide projector must be of the correct duration for reliable operation the projector should be hooked up to the sync unit whilst recording the commentary to check this. The projector will then be controlled by the signal which is being recorded. P1 is used to vary the level of the recorded signal. It may be found



Parts list

Resistors:	Capacitors:	D5 = 1N4001
R1 = 560 Ω	C1, C8 = 100 μ /10 V	T1 = BC 549C
R2, R6 = 100 Ω	C3 = 4 μ 7/10 V	T2 = BC 547B
R3, R4, R14 = 100 k	C4 = 4 μ 7/6 V	A1 ... A4 = LM 324
R5 = 10 k	C7 = 22 μ /10 V	Miscellaneous:
R7, R10 = 1 k	C2 = 100 n	S1 = on/off switch
R8, R15 = 1 M	C5, C6 = 220 n	Relay \approx 6 V, coil resistance greater than 700 Ω
R9 = 27 k	Semiconductors:	
R11 = 1 M ... 2M2 (see text)	D1 = LED	
R12 = 2k2	D2, D3 = 2V7	
R13 = 22 k	D4 = DUS	
R16 = 2k7		

that, due to the high gain of T1 and A3, the circuit is triggered by tape noise. In this case the value of R11 should be reduced to, say, 1 M and P1 should then be adjusted until an adequate signal level is recorded on the tape.

If the AV socket of the tape recorder

has a 7.5 V DC output, as some models have, then the circuit may be powered from this. Otherwise, a mains power supply must be used.