An outline of this circuit is shown in Fig. 8. The relay-activating transistor (Qr) is controlled by the IC (PA3004).

Muting Operation When Power Supply Is turned Off and On

When the power supply is first turned on, the voltages on pins 1, 7 and 6 of PA3004 will exceed a prescribed level. If there is no input (DC) on pin no.4, S_2 will be off, and a charging current will commence to flow to the timing capacitor (Ct) connected to pin no.8. Once Ct has been charged up to a level where the voltage on pin no.8 exceeds a prescribed level, S_1 will turn on, thereby applying a bias current from pin no.3 to the relay driving transistor (Qr). Consequently Qr will turn on, and current will flow through the relay coil to activate the relay, and close the connection in the output circuit. The time required for this connection to close after the power supply is first turned on is several seconds. During this period, any unwanted transient noises will be therefore muted.

When the power supply is turned off, the input (AC) applied to pin no.7 ceases immediately, resulting in S_2 turning on, Ct discharging rapidly, and S_1 and Qr both turning off. The relay is thus opened, disconnecting the output circuit.

DC Voltage Detector

The output circuit is connected to pin no.4 via a low-pass filter (R_8 and C_2). Any DC voltages appearing in the output circuit will also be applied to pin no.4, turning S_2 on. Ct will thus discharge rapidly, turning S_1 and Qr off, thereby releasing the relay, and disconnecting the output circuit from the load.

Overload Detection

The overload detector circuit incorporates the load (RL) in one side of a Wheatstone bridge (see Fig. 8-1). The base and emitter of a sensing transistor (Q_1) are connected to the opposite corners of the bridge, so if RL decreases, Q_1 will become forward biased. If RL falls below a prescribed value, Q_1 will turn on, thereby passing a current through R_5, D_3 and R_6. Due to the voltage difference generated across R_6, Q_2 will become forward biased, and consequently turn on. A DC voltage will then be applied to pin no.4, turning S_2 on, and resulting in the rapid discharge of Ct, and S_1 and Qr both turning off. The relay will again be released to disconnect the output circuit.

6.8 POWER SUPPLY

The power amplifier and power stage plus and minus supply voltages (±50V) are obtained by means of a bridge full-wave rectification system. 18,000μF/63V × 2 electrolytic capacitors are used.

Plus and minus voltages are supplied to the small signal circuit of the AF section thru a constant voltage circuit by full-wave rectification from a winding separate from the power stage supply. Tuner section, lamp circuit and protection circuit power is supplied thru transistor(Q_5, Q_6) Darlington connected ripple filter, after full-wave rectification.

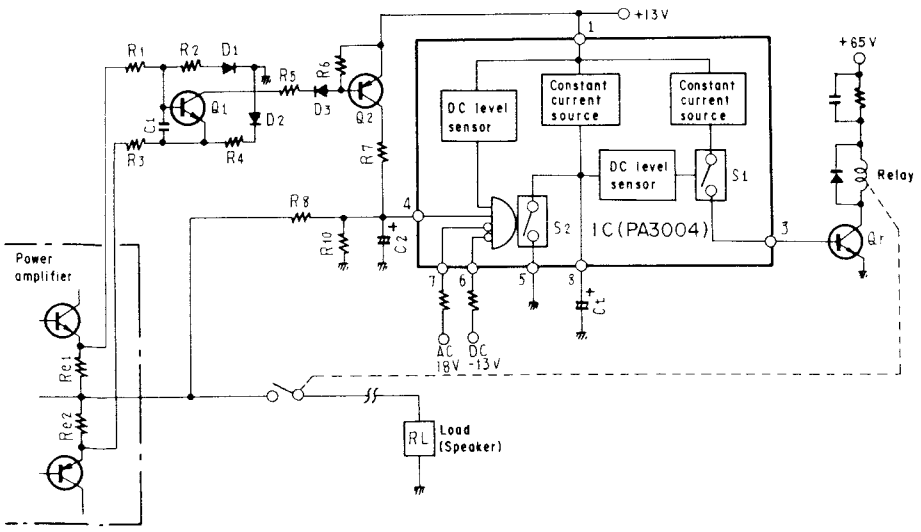
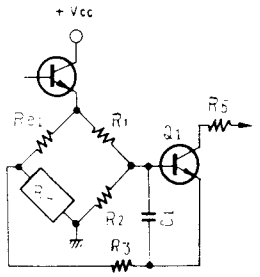


Fig. 8 Schematic diagram of protection

(a) Positive half-cycle bridge



(b) Negative half-cycle bridge

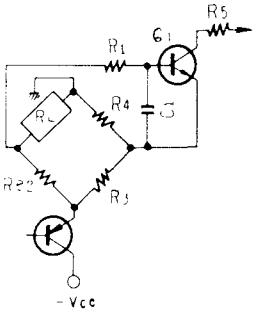


Fig. 8-1 Over load senso