

is supplied from a frequency selector switch (multiple frequency models) and enables only the selected channel element. In vhf receivers, +7.5 V is applied to all receiver channel elements in the transmit mode, inhibiting the receiver channel elements during transmission. In uhf and 800 MHz radios, the selected receiver channel element output must be present in the transmit mode, since the multiplied output is used in the transmitter PLL circuit. Therefore, the +7.5 V inhibit input is not used in uhf radios, except when non-standard transmitter offset is used (with the KXN1067 receiver element only).

The primary power source to the channel element is the regulated +4.6 V supply. This voltage is present at all receiver channel elements during all modes of operation, but only the selected one having +4.6 V, or transmit only 4.6 V on 800 MHz radios, at channel select inputs will operate.

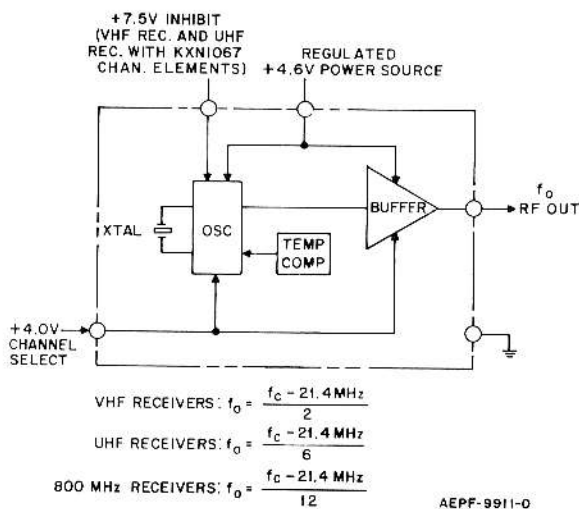


Figure 22. Receiver Channel Element

c. Vhf Transmitter Channel Elements KXN1099

The vhf transmitter channel element is similar to the receiver channel element, except it has two audio inputs that are applied to varactors in the oscillator. Also, the third overtone (fourth harmonic) mode of the crystal is employed in the oscillator.

A portion of the IDC circuit output developed across R102 is applied to the speech audio input. In "Private-Line" models, tones or digital information is applied to the "Private-Line" tone input. Both of these inputs frequency modulate the oscillator, resulting in an fm output.

A bias voltage, +4.6 V (F power) is applied to transmitter channel elements in all operating modes. Radios with more than one channel have a frequency selector switch that selects the desired channel element. The switch applies F power to the anode of a selected diode, which conducts and applies voltage to the channel select input enabling only the selected channel element. When the PTT switch is pressed (transmit mode), F power is applied through an inductor to the rf output. This supplies collector voltage to the stages in all transmitter channel elements, but only the selected channel element will operate.

The rf output is frequency modulated and is one third of the transmitter carrier frequency.

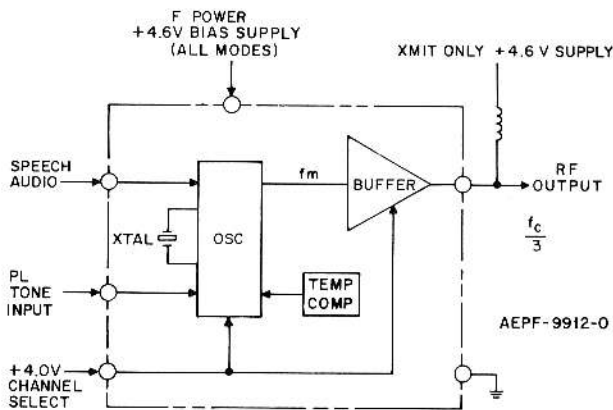


Figure 23. Vhf Transmitter Channel Element; CE101, CE102

d. Uhf Transmitter Offset Channel Elements NLE6972, NLE6973, NLE6975, NLE6976

The uhf transmitter offset channel elements operate somewhat differently than the vhf channel elements. Only two transmitter channel elements are normally used in uhf radios having up to eight channels. This is possible in the uhf band since the transmitter carrier frequency is either the same as the receiver frequency or 3 or 5 MHz above it (standard offset). Radios operating between 403 and 430 MHz use the 3 MHz offset, while those operating in the 440 to 470 MHz range use either the 0 or 5 MHz offset. For radios operating in the 470 to 512 MHz range, the offset will normally be either 0 or 3 MHz. Other (non-standard) offsets are available.

In application, the transmitter offset channel element output supplies the modulation and the offset information to the transmitter PLL circuit. Refer to the simplified diagram