

R7H-BKLINK-S (Transmitter) Circuit Description

The power supply of the transmitter takes the output of a 9V AC adapter and regulates it to 4V for the audio side of the circuit (triangle wave generator, input stage, filter, and comparator). The operating voltage of the T5750 transmitter IC is attained from taking the output of the AC adapter and regulating it with a 2.4V zener diode connected the anode of a p-n junction diode. The voltage is taken off the cathode giving the T5750 an operating voltage of 1.8V. The input audio signal is taken to an input stage, which removes any DC voltage and provides any necessary gain. The output of this stage is then taken to a 3rd order low pass butterworth filter. The output of the filter is taken to the non-inverting input of a comparator. A triangle wave generator circuit generates a 5.1 kHz triangle wave and is taken to the inverting input of the comparator. The output of the comparator is a pulse-width modulated (PWM) signal and is taken to the input of the T5750. Regardless of the input signals amplitude and frequency (audio frequency range) the average duty cycle of the PWM signal is 50%. The placement of the shunt on header J3 determines which crystal is used to generate the carrier frequency. The carrier frequency is determined by multiplying the crystal frequency (14.1835, 14.31818, 14.4492 MHz) by 64. The T5750 is set to ASK mode and the open collector output is taken to a feed inductor in parallel with a 100 resistor connected to 1.8V. A capacitor is taken from the open collector output to ground to both reduce the output of the fundamental and allow for better resonance between the feed inductor and the capacitance of the output transistor. An LC-matching network is used to match the output of the T5750 to a loop antenna. Capacitors C13 and C14 are used to adjust the impedance of the loop.