

Mattel #h7308 Drop Stars RX

49. 860 MHz Receiver Operational Description

The 6.0V Drop Stars is full function radio controlled toy car which has light and sound, It operates on 6.0 volts supplied by four 1.5 volts alkaline AA batteries. It is designed to operate on a single fixed frequency in the 49.82 – 49.90 MHz band. See the attached block diagram and schematic.

The vehicle receiver receives and demodulates the AM transmitted signal from the transmitter, using a standard super-regenerative AM receiver/demodulator circuit comprised of ANT1, Q1, L2, L3, and associated passive components. L3 is a tunable core slug inductor that is used to tune the receiver for maximum sensitivity. The output of the AM receiver/demodulator is AC coupled to a high input impedance CMOS inverter is connected to the U1 decoder IC, it is biased into their linear region through C12, C14, C9, R4, R13, R6, R7 and function as amplify, filter and shape the data. After passing through the last inverter stage, the incoming waveform is a digitized enough to be fed into the IN1 pin for on-chip decoding.

A Zener regulator circuit comprised of C11, C13, R3, D1, C8, C15, it supplied voltage VDD for the super-regenerative radio, decoder IC.

Drive motor is controlled by the U1 decoder IC, low power switching transistors Q6, Q7, and a high power H-bridge comprised of Q4, Q5, Q8, Q9, The Steering Motor is controlled by the U1 decoder IC low power switching transistors Q12, Q14, and a high power H-bridge comprised of Q10, Q11, Q13, Q15,

The voice and light IC U2 is also triggered by the L, F, R, W output of U1 decoder IC, it lights and sounds accordingly when controlling the car

All tuning and verifications are performed by the manufacturer and there are no adjustments which can be made by the user. No external ground is required or used with this receiver.