

HOT POPPER # B5114

49.860MHz RECEIVER OPERATIONAL DESCRIPTION

The Hot Popper car is a full function radio controlled toy car. It operates on 9v volts supplied by 6 AA batteries. It is designed to operate on a single fixed frequency in the 49.82-49.90MHz band. See the attached block diagram and schematic.

The modulated RF signal from the transmitter induces an electrical signal into the car's permanently attached wire loop antenna. A super regenerative circuit (Q1, L2, R1, L3, and C2-C6) selectively amplifies the electrical signal. The demodulated signal is capacitively coupled (via C8) to an integrated circuit (U2) where the signal is further amplified and decoded. A pair of digital outputs from the integrated circuit (U2) drives a full H-bridge drive circuit (Q7-Q12) for controlling the steering motor. Second pair of digital outputs from the integrated circuit (U2) input to another integrated circuit (U1) which can drive a full H-bridge drive circuit (Q14-Q19) for controlling the forward & backward direction of the drive motor.

Another pair of digital outputs from the integrated circuit (U1) drives a full H-bridge drive circuit (Q22-Q27) for controlling the winding, jumping or unload function of the jumping motor. A sequence of pulse can be produced by the IR sensor when the car is moving. The car can run winding or jumping when the signal works with the SW2 & Jump command signal.

The batteries voltage is detected by a Low voltage protection circuit (Q4, Q5, D12, R19~R24). The voltage of U2's D5 pin will turn to low level (from high level) when the battery voltage drop to preset low level. When the low level at U1's D5 pin maintain about 8 seconds, U1 Will cut off its output.

Power off the SW4, The motor M3 will run unload function till SW3 open.

The manufacturer performs all tuning and verifications and there are no adjustments that can be made by the user. No external ground is required or used with this receiver.