

INFRARED TOY CAR MOTOR CONTROLLER



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This add-on circuit enables remote switching on/off of battery-operated toy cars with the help of a TV/video remote control handset operating at 30–40 kHz.

When the circuit is energised from a 6V battery, the decade counter CD4017 (IC2), which is configured as a toggle flip-flop, is immediately reset by the power-on-reset combination of capacitor C3 and resistor R6. LED1 connected to pin 3 (Q0) of IC2 via resistor R5 glows to indicate the standby condition. In standby condition, data output pin of the integrated infrared receiver/demodulator (SFH505A or TSOP1738) is at a high level (about 5 volts) and transistor T1 is 'off' (reverse biased). The monostable wired around IC1 is inactive in this condition.

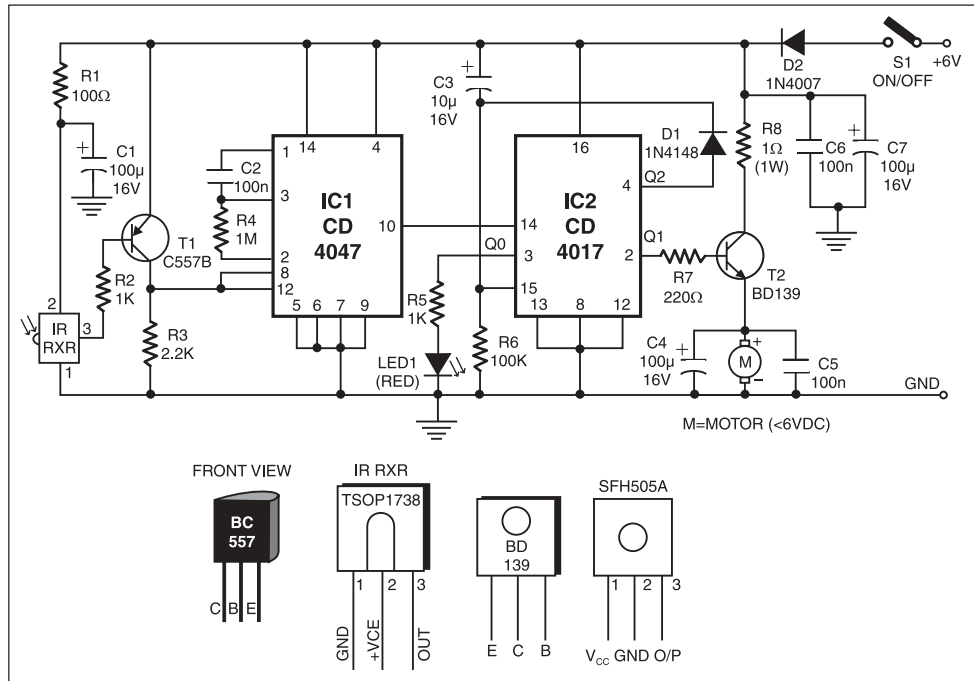
When any key on the remote control handset is depressed, the output of the IR receiver momentarily transits through low state and transistor T1 conducts. As a result, the monostable is triggered and a short pulse is applied to the clock input (pin 14) of IC2, which takes Q1 output (pin 2) of IC2 high to switch on motor driver transistor T2 via base bias resistor R7 and the motor starts rotating continuously (car starts running). Resistor R8 limits the starting current.

When any key on the handset is

depressed again, the monostable is retriggered to reset decade counter IC2 and the motor is switched off. Standby LED1 glows again.

example, behind the front glass, and connect its wires to the circuit board using a short 3-core ribbon cable/shielded wire.

Note. Since the circuit uses modu-



This circuit can be easily fabricated on a general-purpose printed board. After construction, enclose it inside the toy car and connect the supply wires to the battery of the toy car with right polarity. Rewire the DC motor connections and fix the IR receiver module in a suitable location, for

lated infrared beam for control function, ambient light reflections will not affect the circuit operation. However, fluorescent tubelights with electronic ballasts and CFL lamps may cause malfunctioning of the circuit.