Operational Description of Hunter Radio 45-1125

General Description

The Hunter radio 45-1125 consists of 6 major components:

1. A microcontroller (MCU) that is used to prepare and validate data for radio transmission and reception.
2. Radio IC MC13193 that is a short range, low power 2.4GHz ISM band transceiver.
3. A 3.3 voltage regulator that supplies regulated voltage to all components.
4. A single 16MHz crystal that is used to develop a time base for all components and RF frequencies.
5. A digital signal buffer to isolate the MCU from input signal connector
6. On-board transmit and receive antennae.

Data Transmission

A packet of data to be transmitted is sent to the Serial UART of the Microcontroller (MCU). The serial data packet is transmitted at a data rate of 125k baud, 1 Start bit, 1 Stop bit and is at standard TTL voltage levels. The data packet and related control signals pass through a non-inverting buffer to maintain isolation between the input connector and the MCU.

When a data packet is received by the MCU the data is encapsulated in a packet structure that allows for reliable radio transmission. The altered packet is sent to the radio (MC13193) for RF transmission. (Figure 1.1)

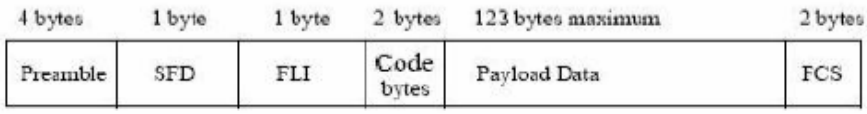
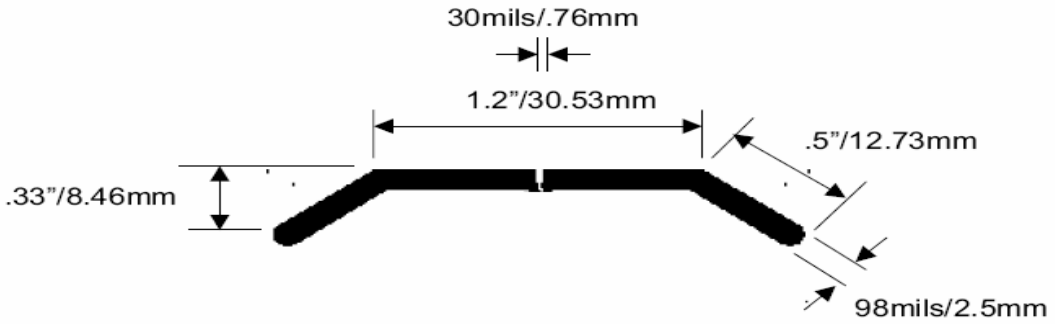


Figure 1-1. SMAC Packet Structure

The MC13193 radio is a short range, low power 2.4GHz ISM band transceiver. It is compliant with IEEE standard 802.15.4. RF data is transmitted via an onboard antenna. The antenna is etched in the copper of the radio printed circuit board as described in Figure 2.



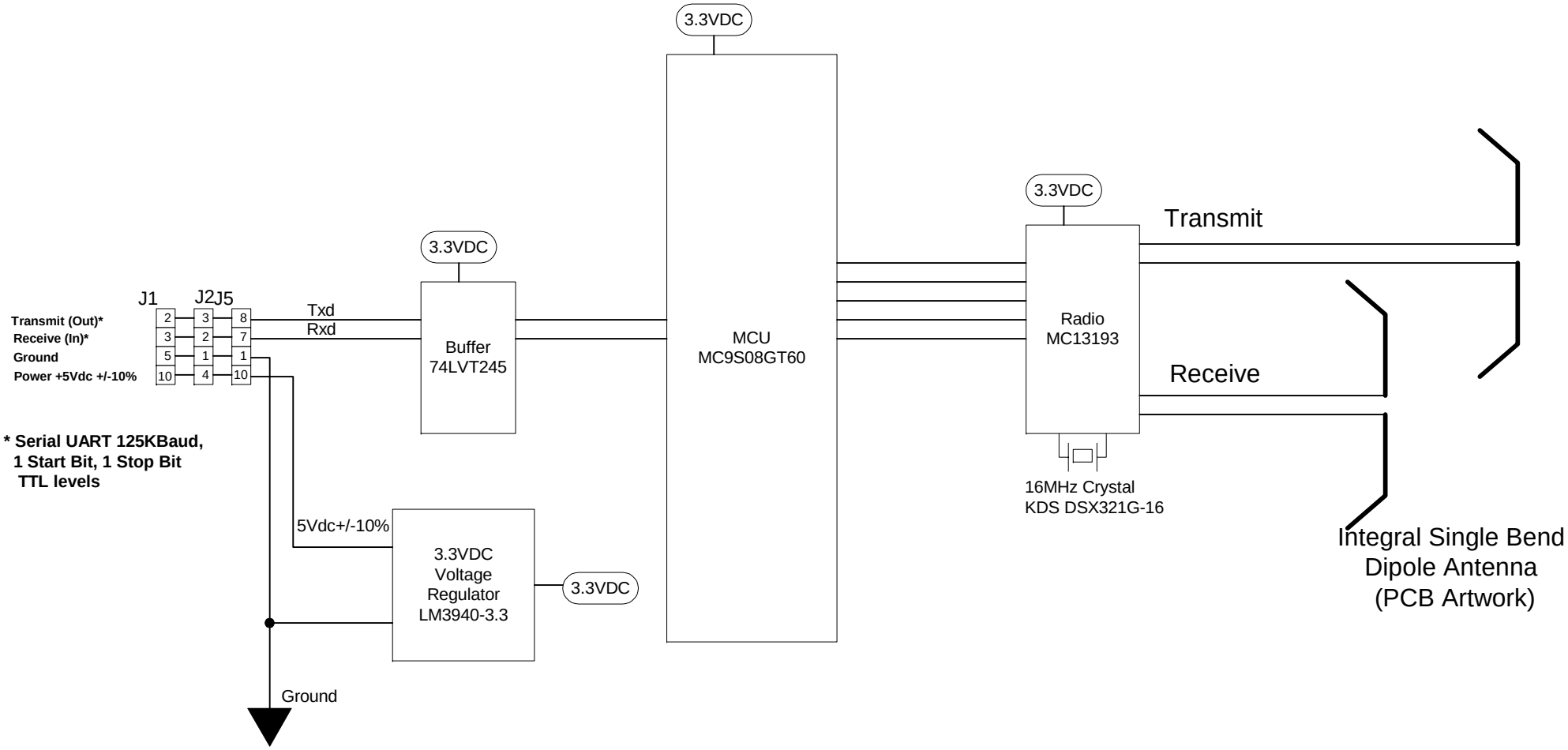
Single Bend Dipole Antenna
Gain = 0dBD (2.14dBi)

Hunter Engineering Printed Circuit Board Antenna Dimensions (P/N 45-1125)

Figure 2

Data Reception

A data packet received by the radio is sent to the MCU. The MCU validates and removes the encapsulating radio packet structure. The received data is then sent to the host via the serial UART.



Hunter 45-1125 Block Diagram