

## **Product Description 3180R/3190R Battery Doorbell Receiver**

### **I Introduction**

The 3190R receiver is designed to mimic a conventional (wired) doorbell in both function and appearance. The receiver operates in a system consisting of a chime button and the 3190R. Typically, the chime button is placed at the entrance of a home and the 3190R receiver is placed inside. When the button is depressed the 3190R receiver makes a pleasant sound alerting the occupants of the building of the presence of a visitor. The chime button and receiver communicate with each other using an AM modulated UHF radio signal. Both units are battery operated.

The 3180R is identical to the 3190R except that it has a differently styled plastic cover.

### **II System Description**

The chime button transmits an ASK modulated 315 MHz signal. The modulating signal is a 32 kHz pulse train. This 32 kHz signal is produced by a crystal oscillator.

An RF superregenerative receiver, tuned to 315 MHz is used to detect and demodulate the ASK signals from the chime button. The demodulated signal is further filtered by a crystal filter that uses a crystal that matches the one in the button. The bandwidth of the filter is quite small (50 Hz). If a signal is present at the output of the filter, then a sound making IC is activated.

### **III Detailed Description**

Referring to the schematic. Q1, Q2, and Q3 form a voltage regulator. Q4 and associated circuitry form the superregenerative detector. J1 is used to connect the receiver to production test equipment. Q5 is a baseband amplifier. Q6, Y1, Q7 and associated circuitry form the crystal filter. This filter is tuned to 32.768kHz the same frequency that modulates the transmitter. Q9 rectifies the amplified 32 kHz signal from the output of the crystal filter. Q10 and C19 form a timer. If an uninterrupted 32 kHz signal is present for more than 250msec, then collector of Q11 goes to ground. This timer prevents the receiver from responding to noise or other false signals. When Q11 goes low, the sound chip, U1 produces a chime sound. The audio signal is amplified by Q12 and Q13.

**EXHIBIT F**  
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