

## Operational Description (Receiver function)

The product, RK950NAR, has several parts as Remote Keyless Entry and Anti-Theft System.

- power supply
- microprocessor
- EEPROM
- drivers for the external status led
- drivers for the external siren, flashing bulb and door lock relay unit
- drivers for the external trunk open actuator
- serial data link for communication with the test equipment
- ignition signal input circuit
- theft detection input circuit(door open, hood open, trunk open)
- key cylinder lock / unlock input circuit
- RF signal receiver
- RF signal receiving antenna

### PART: RF signal receiver

See block diagram and schematics.

The receiver IC (U101) demodulates RF signals from the transmitter (RK950NAT) and the DATA is transmitted to microprocessor (U6).

The receiver IC (U101) is a fully integrated single-chip receiver, primarily intended for use in VHF and UHF systems. It supports both Amplitude Shift Keying (ASK) and Frequency Shift Keying (FSK) demodulation. By connecting pin 10 as shown the product schematics, the IC works as an FSK receiver.

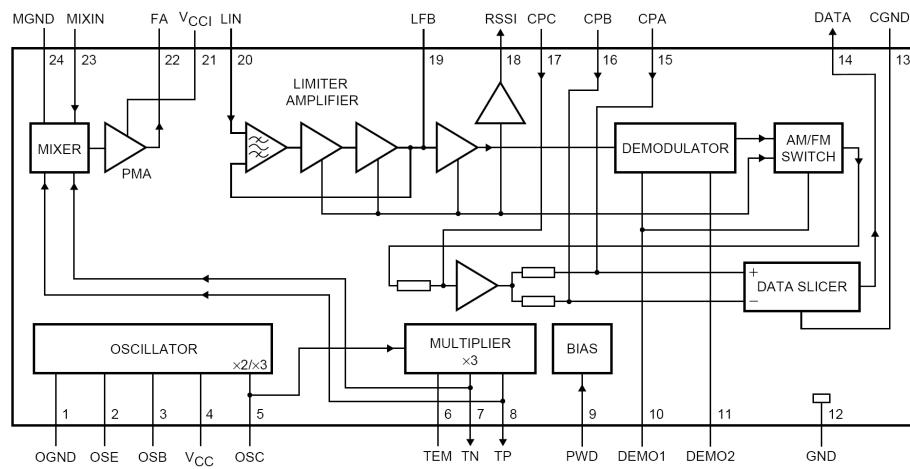
The IC (U101) incorporates a crystal stabilized local oscillator, frequency multiplier, balanced mixer, post mixer amplifier, limiter, Received Signal Strength Indicator (RSSI), FSK demodulator, data filter, data slicer and power down circuit.

**MIXER:** Matching of the RF source impedance to the mixer input (pin 23) is achieved by using 315 MHz SAW filter (SAWF1).

**OSCILLATOR:** The oscillator frequency is controlled by the crystal (X40 – 50.7167 MHz). Off-chip capacitors between base and emitter (C111) and ground (C41) make the oscillator transistor appear as having negative resistance at small signal levels. This causes the oscillator to start. A parallel resonance circuit (L103 and C110) connected to the emitter of the oscillator transistor prevents oscillation at the fundamental frequency of the crystal.

**IF FILTER:** IF filtering with high selectivity is achieved by means of the external ceramic filter (C/F ), which feeds the IF from the PMA to the limiter.

**FM DEMODULATOR:** Coming from the limiter the FSK signal is fed differential to the input of the FM demodulator. After buffering the signal is fed to a phase detector. The phase shift is generated by the external LC combination connected to DEMO1 (pin 10) and DEMO2 (pin 11). The baseband is coupled out single ended via an output buffer and is fed to the FSK input of the ASK/FSK switch.



Block diagram of the receiver IC (U101)