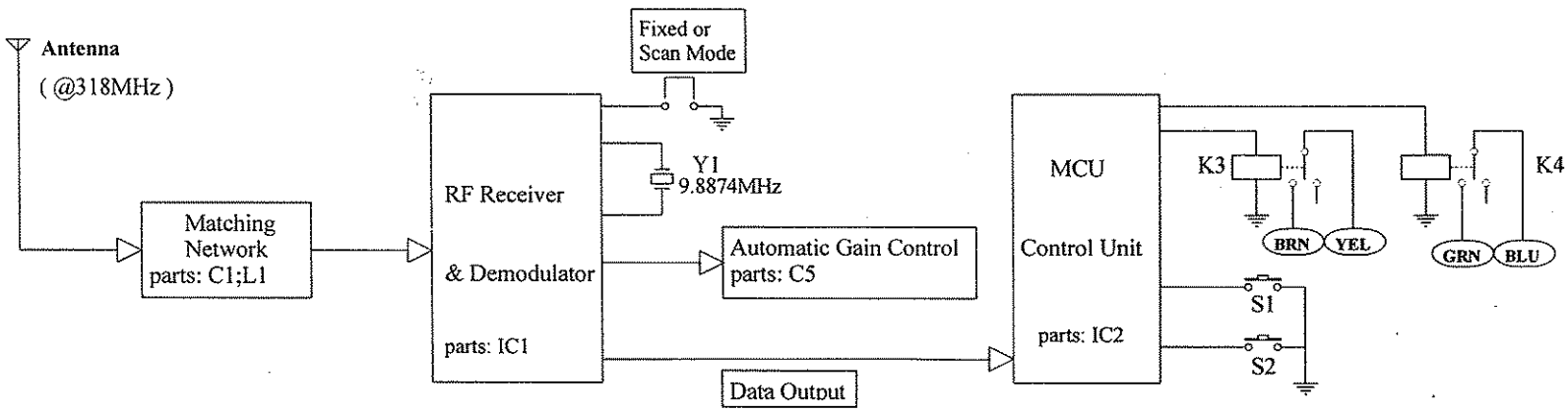

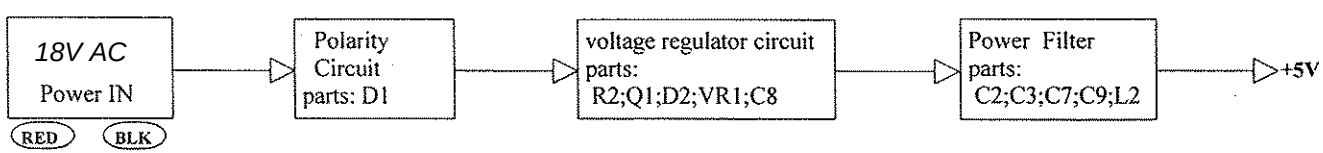

DOC NAME:	Block Diagram	SMART ELECTRONIC INDUSTRIAL (DONG GUAN) CO.LTD			
DESIGN:		MODEL:	RF-1245	DOC NO:	
CHECKED BY:		NAME:	Narrow Band Receiver	REV:	A
PERMITTED BY:		DATE:		PAGE:	1 of 1

Functional Diagram

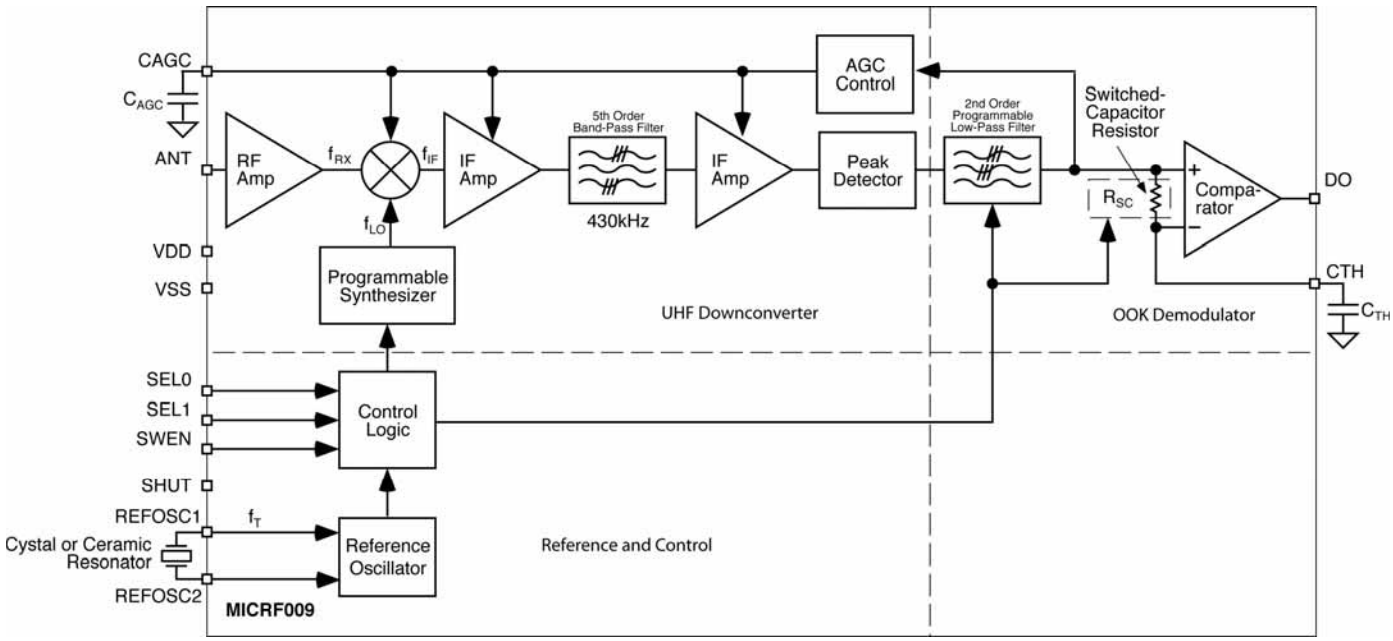

Figure 1. MICRF009 Block Diagram

Application Information and Function Description

Refer to "MICRF009 Block Diagram." Identified in the block diagram are the three sections of the IC: 1) UHF Downconverter, 2) OOK Demodulator, 3) Reference and Control. Also shown in the figure are two capacitors (C_{TH}, C_{AGC}) and one timing component, which is usually a crystal or ceramic resonator. With the exception of a supply decoupling capacitor and antenna impedance matching network, these are the only external components needed by the MICRF009 to assemble a complete UHF receiver.

For optimal performance it is highly recommended that the MICRF009 is impedance-matched to the antenna. The matching network will add additional two or three components.

Four control inputs are shown in the block diagram: SEL0, SEL1, SWEN, and SHUT. Using these logic inputs, the user can control the operating mode and selectable features of the IC. These inputs are CMOS compatible and are internally pulled-up. The IF Bandpass Filter Roll-off response of the IF Filter is 5th order, while the demodulator data filter exhibits a 2nd order response.

Design Steps

The following steps are the basic design steps for using the MICRF009 receiver:

1. Select the operating mode (sweep or fixed)
2. Select the reference oscillator
3. Select the demodulator filter bandwidth
4. Select the C_{TH} capacitor
5. Select the C_{AGC} capacitor

Step 1: Selecting The Operating Mode

Fixed-Mode Operation

For applications where the transmit frequency is set accurately (that is, applications where a SAW or crystal-based transmitter is used), the MICRF009 may be configured as a standard superheterodyne receiver (fixed-mode). In fixed-mode operation, the RF bandwidth is narrower making the receiver less susceptible to interfering signals. Fixed-mode is selected by connecting SWEN to ground.

Sweep-Mode Operation

When used in conjunction with low-cost LC transmitters, the MICRF009 should be configured in sweep-mode. In sweep-mode, while the topology is still superheterodynes, the local oscillator (LO) is swept over a range of frequencies at rates greater than the data rate. This technique effectively increases the RF bandwidth of the