

FCC ID: TLBTFY3094R

Technical Description :

The brief circuit description is listed as follows :

- W55RFS27R1B and associated circuit act as Super-regenerative Receiver (49.860 MHz), Amplifier and Decoder.
- Q1, Q2, Q3 and associated circuit act as Motor Driver for M1.

Antenna Used :

A permanent wire antenna has been used.



General Description

Winbond W55RFS27R1B is a fully integrated S-R (Super-regenerative) RF receiver with full-function of baseband control command decoder for application of R/C vehicle, toy, or wireless data communication.

W55RFS27R1B provides both **uC-mode** for general purpose micro-controller programming interface and **manual-mode** for RF receiver with on-chip 6-function baseband command decoder.

W55RFS27R1B provides **Smart-Detector^{WB}** function which overcomes component deviation, maintain the best receiver sensitivity in mass-production. **Smart-Detector^{WB}** is also capable of adjusting itself to fit various kinds of environmental

problems. Some factors like temperature, moisture, or object caused antenna characteristic change could be recovered by the **Smart-Detector^{WB}** function.

The Super-Regenerative RF front-end architecture is convenient for 27MHz ~ 49MHz manufacturing with minimum external components. With wide range of operating voltage 2.1V ~ 5.5V, W55RFS27R1B is suitable for remote controlled toy on 2-battery or 3-battery application.

W55RFS27R1B cooperate with W55RFS27T1B is easy and convenient to provide simple remote control function with long control distance and low production cost.

1.1 W55RFS27R1B Features

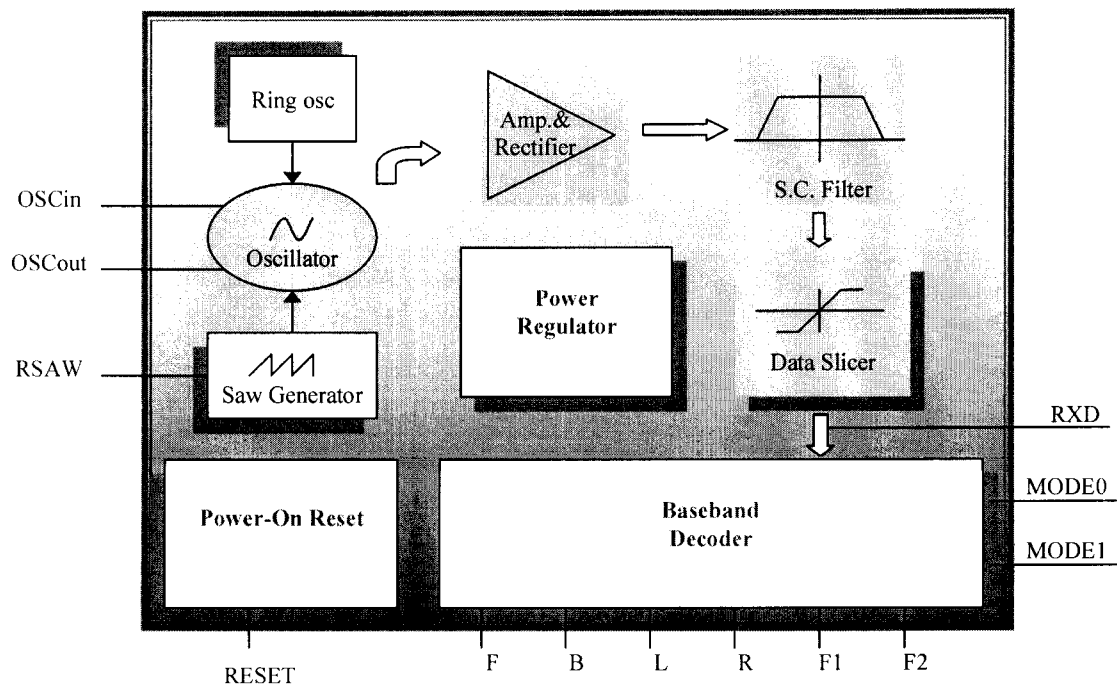
- ┘ Operating frequency: 27MHz, 35MHz, 40MHz, 49MHz
- ┘ **Smart-Detector^{WB}** function overcomes the components deviation and environmental problem and maintain best sensitivity in mass-production and operation
- ┘ Operating voltage: 2.1V ~ 5.5V
- ┘ S-R (Super-regeneration) demodulation scheme
- ┘ Receiving data rates up to 1.25Kbps for 50% duty cycle
- ┘ **Manual-mode** supports 6-function baseband decoder, i.e., Forward, Backward, Left-turn, right-turn, and 2 user defined function F1 and F2
- ┘ Minimization of current consumption in system
- ┘ Very low power down current consumption (**uC-mode** only)
- ┘ Less manual adjustment needed in production
- ┘ Fewer external components required in production
- ┘ Lower manufacture production cost
- ┘ Dice form available for PCB bonding
- ┘ Operating temperature: 0°C ~ 70°C

W55RFS27R1B Data Sheet



System Description

2.1 W55RFS27R1B System Block Diagram



W55RFS27R1B Data Sheet



2.2 W55RFS27R1B Functional Description

Power Regulator

W55RFS27R1B build-in on chip power regulator provides a stable operating performance under operating voltage from 2.1V ~ 5.5V, the very wide range of operating voltage is suitable for mini R/C toy or R/C vehicle application. Especially for 2-battery or 3-battery .

RF Receiver

W55RFS27R1B has been implemented by using "Super-Regenerative" receiving architecture for R/C toy application. The high noise immunity structure is very

suitable for getting higher RF receiving performance in very high noise level environment. The **Smart-Detector^{WB}** function overcomes component deviation and various environmental problems, maintain the best receiver sensitivity in mass-production and operation.

Baseband Control Function Decoder

W55RFS27R1B build-in 6-function of general R/C toy baseband control function for R/C toy "Forward"; "Backward"; "Left-turn"; "Right-turn", and 2 more reserved control functions of "F1"; "F2".

Electronic Characteristics

3.1 W55RFS27R1B Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage to Ground Potential	- 0.3 to 6.5	V
Applied Input/Output Voltage	- 0.3 to 6.5	V
Power Dissipation (T _a = 70°C)	150	mW
Ambient Operating Temperature	0 to 70	°C
Storage Temperature	-40 to 85	°C

Note: Exposure to conditions beyond those listed under Absolute Maximum Ratings may adversely affect the life and reliability of the device.