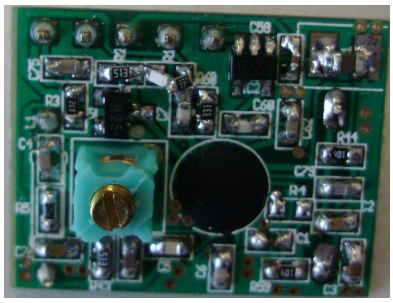


1.0 Introduction

The LW103M-SR is a 300MHz to 930MHz receiver module employing super-regenerative amplitude-shift-keying (ASK) modulation (or On-Off keying, OOK) with superior receiving sensitivity. Customer can specify the receiving frequency and the factory will preset the receiving frequency accordingly. With our innovative design, the module can meet the FCC and ETSI EMI/EMC compliance requirements including the latest ETSI blocking requirement. Working together with LW203M, a transmitter module, LW103M-SR will achieve a communication range of greater than 500 meters in open field. LW103M-SR is designed to operate for low power device (LPD) applications with demanding operating distance.

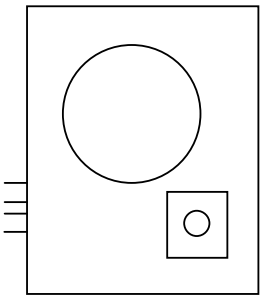
2.0 Features

- Frequency range from 300 MHz to 930 MHz
- Super-high sensitivity
- Small size (24mm x 19mm)
- Low power consumption
- Operate from -20 °C to 70 °C
- Low cost
- FCC and ETSI - compliant

3.0 Applications

- Remote controllers
- Security or monitoring systems
- Wireless door bells
- Garage openers
- Radio controlled toys

4.0 Pin Description



Pin no.	Symbol	Description
1	ANT	Antenna input
2	GND	RF ground
3	VCC	Power supply
4	DATA	Data output
5	CE	Chip Enable

5.0 Electrical Characteristics

5.1 Maximum ratings

Rating	Symbol	Value	Unit
Power Supply Voltage	V_{BATT}	6	Vdc
RF Input Power	P_{max}	-25	dBm
Junction Temperature	T_J	125	℃
Storage Temperature Range	T_{STg}	-55 to 125	℃

5.2 Recommended Operating Conditions

Characteristics	Value	Unit
Supply voltage	2.5 – 3.3	V
RF frequency range	300 - 930	MHz
Max data rate	5	Kbps

5.3 DC Electrical Characteristics

Characteristics	Minimum	Typical	Maximum	Unit
Standby current	1	-	10	μA
Operating current				mA
315/433MHz		6		
868/915MHz		10		
Input Low Voltage	0.8*Vdd	-	Vdd	V
Input High Voltage	Vss	-	0.1*Vdd	V

5.4 AC Electrical Characteristics

Characteristics	Minimum	Typical	Maximum	Unit
Sensitivity				dBm
315/433M (250Hz modulation)		-118		
315/433M (1KHz modulation)		-114		
868/915M (250Hz modulation)		-116		
868/915M (1KHz modulation)		-112		
Stabilization time	-	-	50	ms

6.0 Functional Descriptions

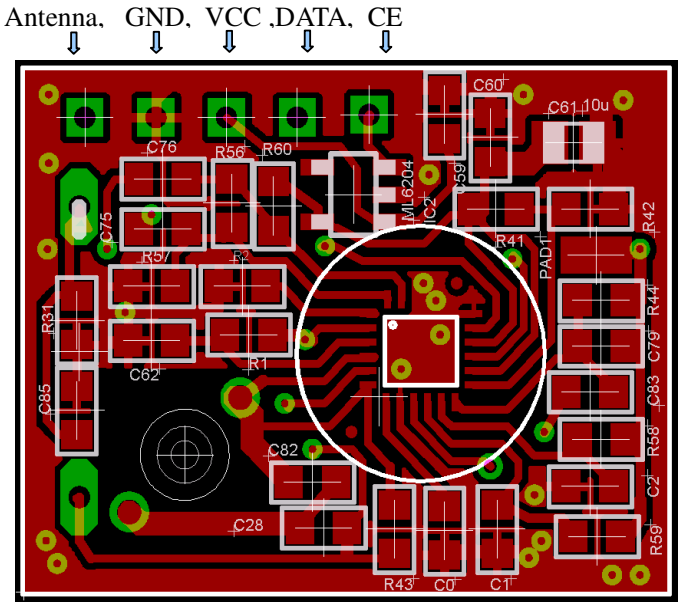
LW103SM is a super-regenerative receiver module. It employs Lexiwave's receiver RFIC LW103 as the core component in the module. The heart of the chip is an oscillator operating in super-regenerative mode. The demodulated baseband signal is filtered by a low pass filter. The filtered signal is then amplified by an operational amplifier. The amplified signal is compared with reference voltage at a data comparator. The transmitted "0" and "1" will be exported at the DATA output.

A bandgap reference is implemented inside the chip for stable operation over temperature and supply voltages. In addition, our unique design approach allows the module to operate normally from 2.5V to 3.3V and remain stable at component variations. The chip is thus ideal for mass production applications of which no tight tolerance components are required.

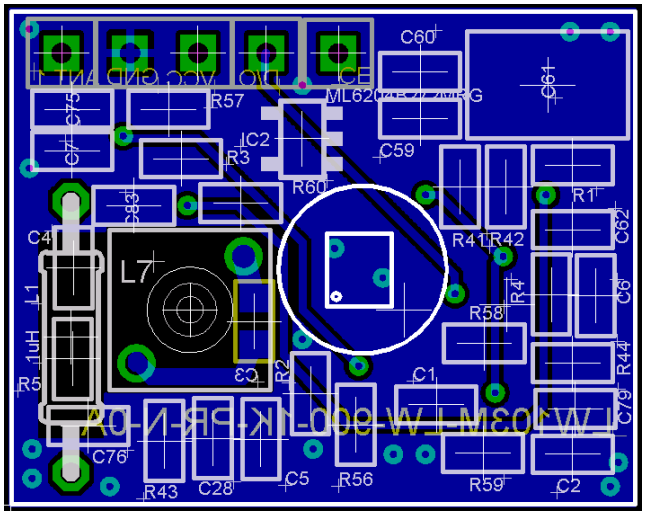
LW103M-SR makes use of both internal and external Low Noise Amplifiers (LNAs) to achieve higher sensitivity and isolation to meet emission requirements. At the time when oscillation frequency of the super-regenerative oscillator is affected by a closing object, (hand effect), the LNAs will offer signal isolation and minimize receiver sensitivity degradation.

7.0 Evaluation Board

LW103M-SR PCB Bottom Layer (23.3 x 18.5 x 1 mm)



LW103M-SR PCB Bottom Layer (23.3 x 18.5 x 1 mm)



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