

IR Receiver Module for Remote Control Systems

General Description

The HM 556-S3 is a miniaturized receiver for use in Infrared carrier frequency PCM remote control systems. A high quality photo diode and a low noise preamplifier are assembled on lead frame, and the epoxy package is designed as IR filter. The demodulated output signal can directly be decoded by a microprocessor.



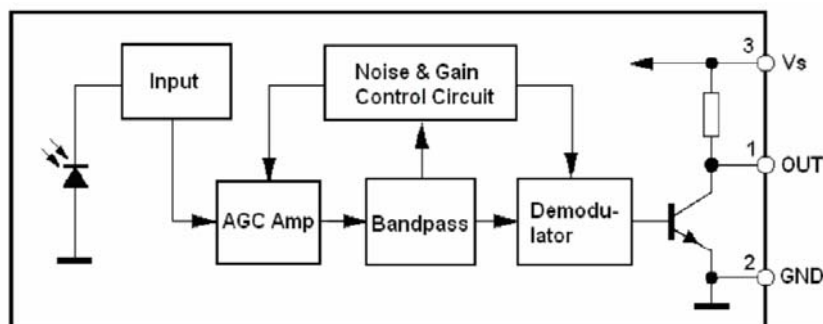
Features

- Small size package 6 x 7 mm
- Internal filter for PCM frequency
- TTL & CMOS compatibility
- Output active low
- Suitable for continuous transmission code
- Min. burst length >6 cycles per burst
- Low supply voltage 2.7 ~ 5.5 Volt

Applications

- DVD & DVB receivers
- AV equipments
- Toy applications
- IR remote control equipments

Block Diagram



Absolute Maximum Ratings

Tamb = 25°C

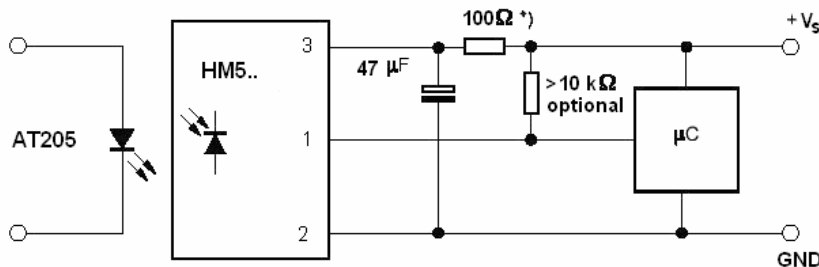
Parameter	Test Conditions	Symbol	Value	Unit
Supply Voltage	(Pin 3)	Vs	6.0	V
Supply Current	(Pin 3)	Is	2.5	mA
Output Voltage	(Pin 1)	Vo	6.0	V
Output Current	(Pin 1)	Io	2.5	mA
Operating Temperature range		Tamb	-25...+85	°C
Storage Temperature range		Tstg	-30...+105	°C
Power Consumption	Tcase ≤ 85°C	Ptot	50	mW
Soldering Temperature	t ≤ 5 sec.	Tsod	260	°C

Electrical & Optical Characteristics

Tamb = 25°C Vs = 3.0V unless otherwise stated

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Supply current	Vs = 3V, Ev = 0	Is	0.4	0.7	1.2	mA
	Vs = 5V, Ev = 0	Is	0.5	0.8	1.3	mA
Operating Voltage	(Pin 3)	Vs	2.7		5.5	V
Transmission distance	IR diode AT205, IF = 400mA			18		m
Output Voltage Low	Active low, (Pin 1)	VOL			250	mV
Peak Wavelength	Internal IR filter	λ		940		nm
Carrier frequency	Internal BPF	fc		56.8		kHz
Output pulse width	Input burst = 600µS, Cycle 1.2mS	Tp	500	600	730	µS
Directivity	Angle of 1/2 transmission distance			± 45		deg

Application Circuit

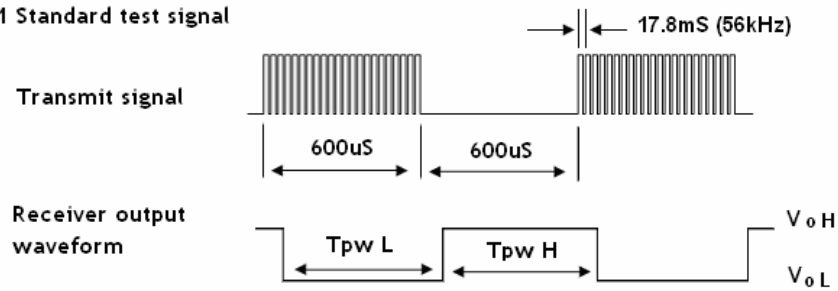


* Note: Power line filter is recommended

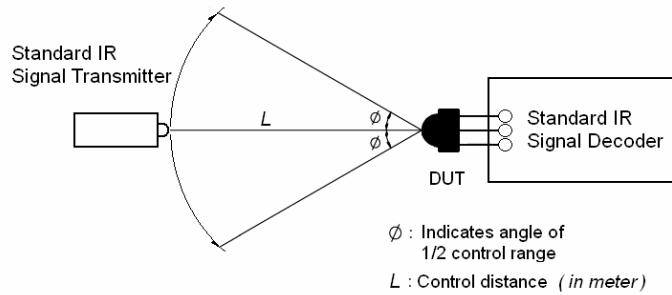
Test Condition:

1. Test signal for output pulse width

Fig. 1 Standard test signal

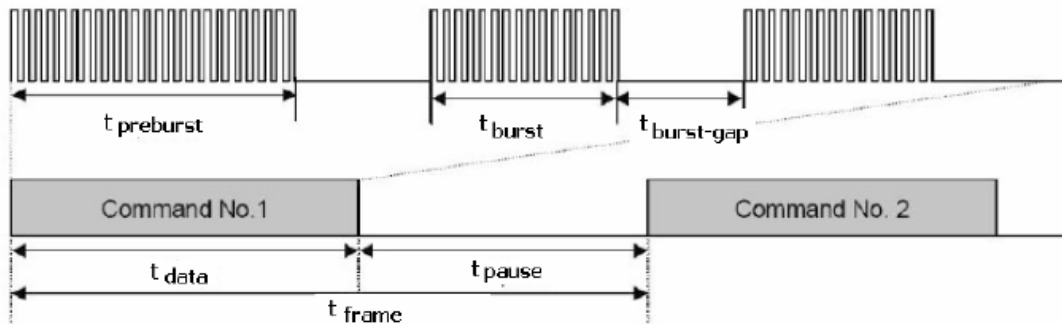


2. Arrival distance



Test condition for measuring the control distance

3. Signal data format



Recommended burst timing data	Requirements
Minimum burst length (t_{burst}) of	6 pulses per burst.
Minimum burst gap time ($t_{burst-gap}$) of	10 pulses
Minimum pause between two commands (t_{pause})	> 1 mS

4. Suitable IR control codes

NEC, RC5/6, RCA, Sony 15/20 bit, RCMM

Typical Characteristics

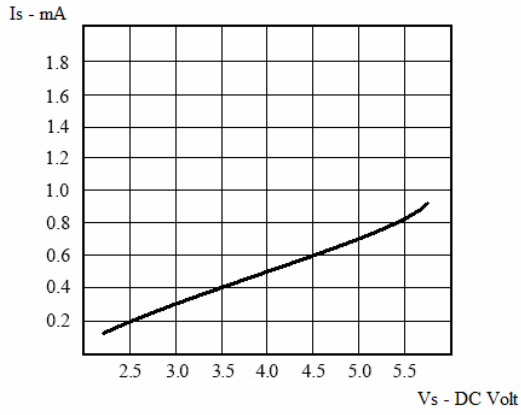


Fig. 1 Supply Voltage versus Current

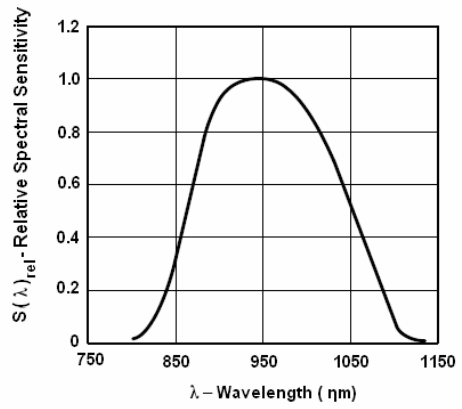


Fig 2. - Relative Spectral Sensitivity vs. Wavelength

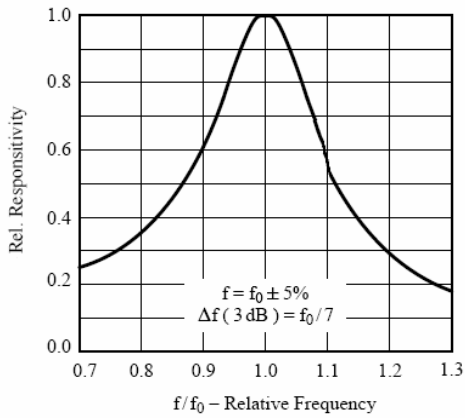


Fig. 3 - Carrier Band pass response

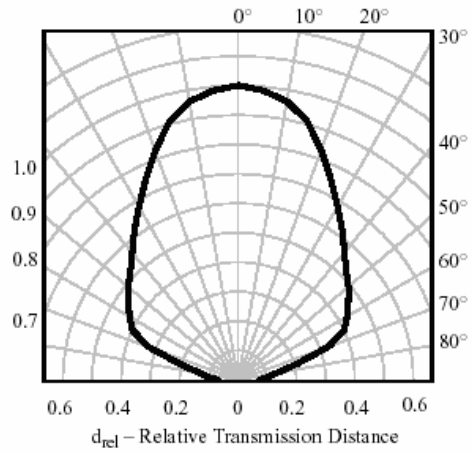


Figure 4. Horizontal Directivity ϕ_x

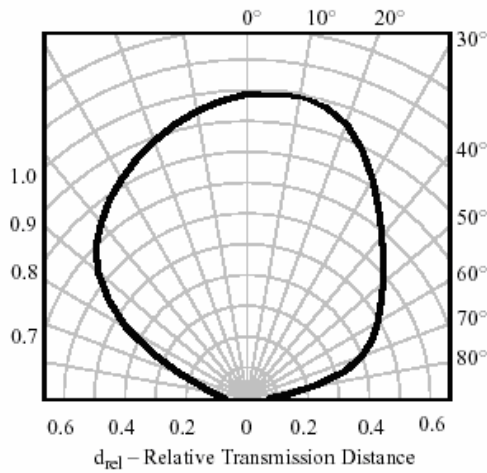
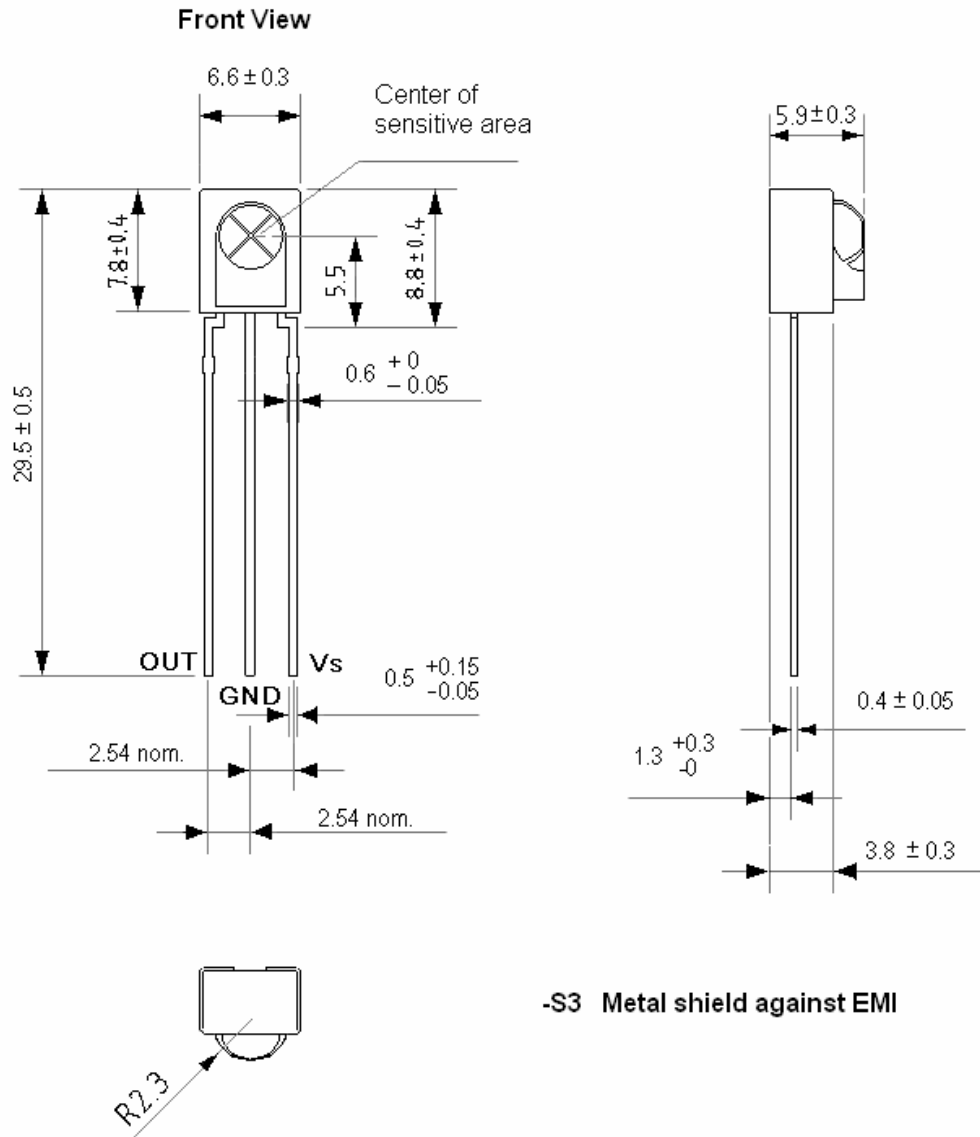


Figure 5. Vertical Directivity ϕ_y

Package Drawings

Dimensions in mm, general tolerances $\pm 0.3\text{mm}$



Lead-free product according to RoHS directives.