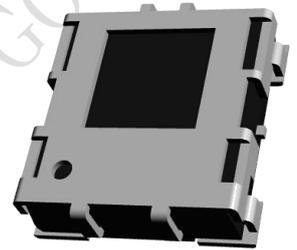


## IR Receiver Module for Surface Mount Assembly

### Description

The SNM7237 is miniaturized SMD-IR receiver for infrared remote control systems. PIN diodes and preamplifier are assembled on lead frame, the epoxy package is designed as IR filter.

The demodulated output signal can directly be decoded by a microprocessor. The main benefit is the reliable function even in disturbed ambient and the protection against uncontrolled output pulses.



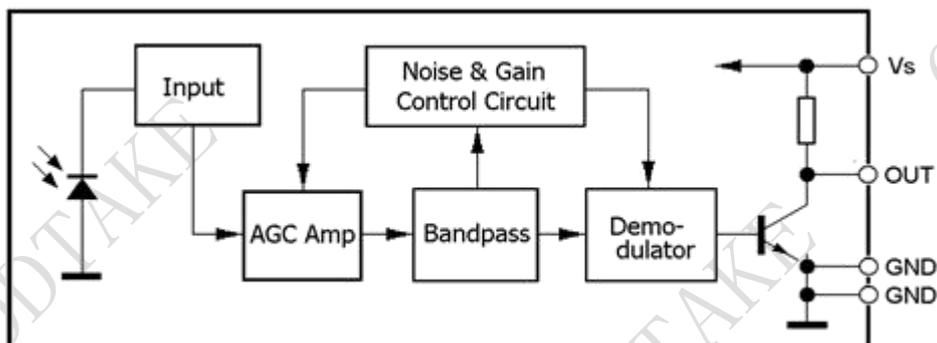
### Features

- Small size SMD package 4.3 W x 4.85 L x 1.35 H (mm)
- Wide supply voltage range : 2.5V to 5.5V
- Shielded against electrical field disturbance and RF filter
- High immunity against ambient light disturbances
- TTL and CMOS compatible
- Suitable burst length  $\geq 6$  cycles/burst
- Improved immunity against EMI from Wifi

### Applications

All TV, Set Top Box, and home appliances that require IR remote control function

### Block Diagram



**Maximum Ratings**

Ta =25°C , Vs=5.0V (Vs=3.0V)

Parameter	Test conditions	Symbol	Ratings	Unit
Supply Voltage		V <sub>max</sub>	6.0	V
Supply current		I <sub>max</sub>	3.5	mA
Operating Temperature	25°C	T <sub>opr</sub>	-25 ~ +85	°C
Storage Temperature		T <sub>stg</sub>	-25 ~ +105	°C
Soldering Temperature	Reflow time = 5seconds,max 2 times	T <sub>sol</sub>	255	°C

**Recommended operating condition**

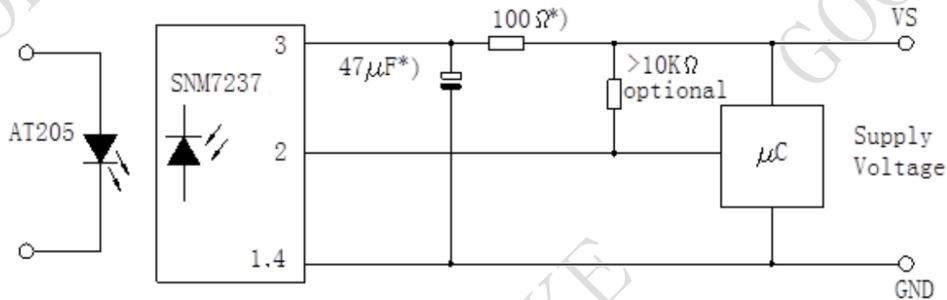
Parameter	Condition	Symbol	Min	Typ.	Max.	Unit
Operating supply Voltage		V <sub>s</sub>	2.5		5.5	V
Current Consumption	Input = 0	I <sub>s</sub>		0.45		mA

**Electro-Optical Characteristics**

Ta =25°C

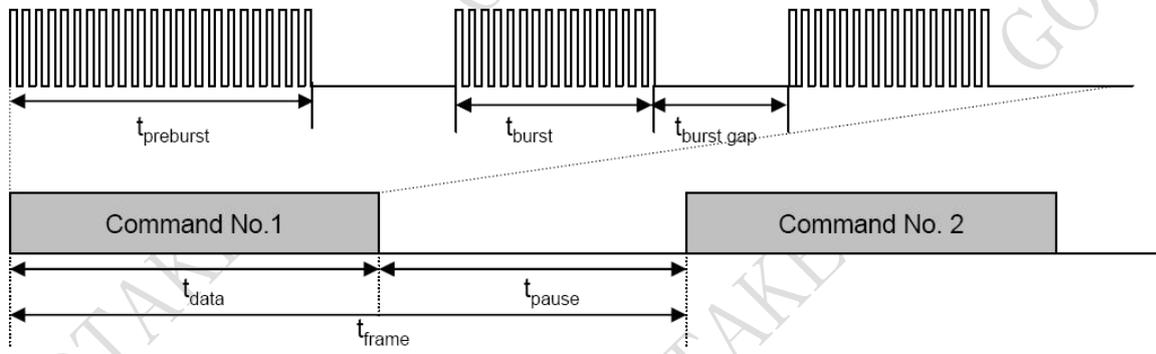
Parameter	Condition	Symbol	Min	Typ	Max	Unit
Test Voltage		V <sub>s</sub>		5.0 (3.0)		V
Current Consumption	No signal input	I <sub>s</sub>		0.5 (0.45)	0.7	mA
High level Output voltage		V <sub>OH</sub>	V <sub>s</sub> - 0.25			V
Low level Output voltage	(Active Low)	V <sub>OL</sub>	-	0.2	0.4	V
Peak Wavelength		λ <sub>p</sub>		940		nm
Transmission Distance	IR diode AT205,I <sub>F</sub> = 400 mA,E <sub>v</sub> =150Lux;IRCodeRC5	L <sub>0</sub>	20			m
High level output pulse width	I Cycle 1.2mS , 50% duty	T <sub>WH</sub>	400		800	μs
Low level output pulse width		T <sub>WL</sub>	400		800	μs
Center Frequency of carrier	Band-pass filter	f <sub>o</sub>		36.7		kHz
Directivity	Angle of half transmission distance	½θ		±75		deg

**Application Circuit**



\*) recommended to suppress power supply disturbances

**Suitable Data Format**



**Recommended burst timing data**

- Minimum burst length ( $t_{burst}$ ) of 6 pulses per burst.
- Minimum burst gap time ( $t_{burst.gap}$ ) of 12 pulses
- Minimum pause between two commands ( $t_{pause}$ ) > 1 mS
- Suitable RC protocol : RC-5, NEC, Sharp , RCMM, XMP

Typical Characteristics

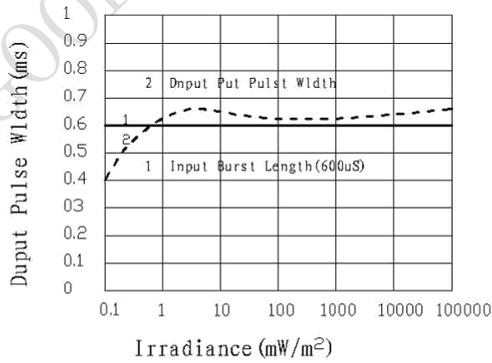


Figure 1. Pulse Length and Sensitivity in Dark Ambient

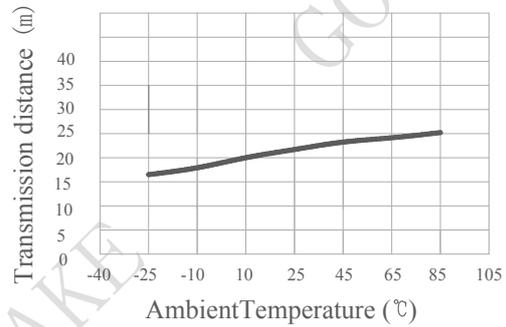


Fig.2 Transmission distance VS. Ambient Temperature

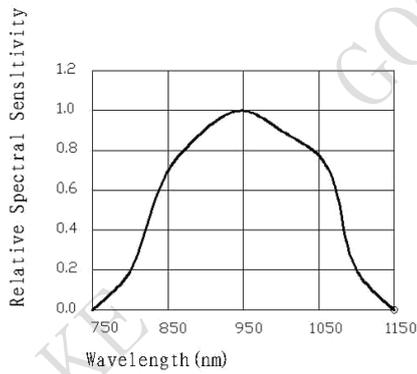


Figure3. Relative Spectral Sensitivity VS. Wavelength

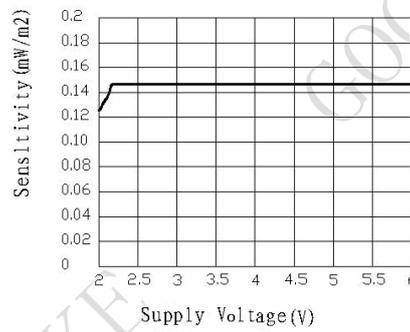


Figure 4. Sensitivity VS. Supply Voltage

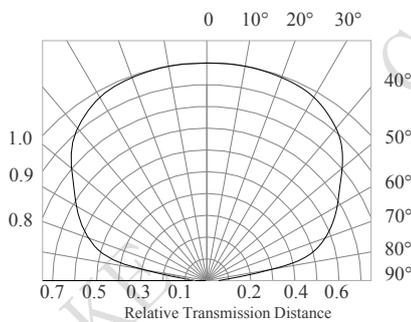


Figure.5 Vertical Directivity

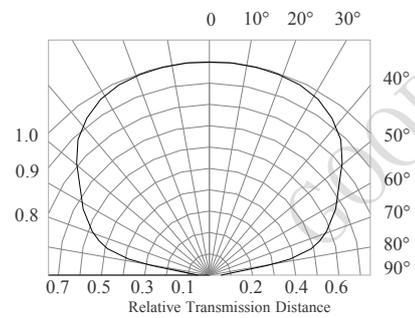


Figure.6 Horizontal Directivity

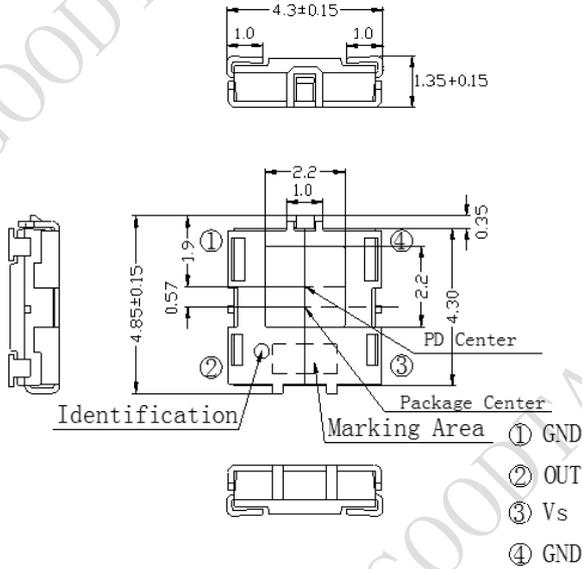
**Reliability**

Test Item	Test Method	Test Condition	Sample = n pcs.	Failure = n pcs.	
High Temp Storage	Tstg at max +85°C	1000 hours	22	0	
Low Temperature Storage	Tstg at min -25°C	1000 hours	22	0	
Temperature humidity Bias Test	Applied the specific voltage at Ta = +85°C / RH =85%	1000 hours	22	0	
Thermal cycling	Temperature cycle chart			22	0
	Sequence /cycle	Temp (°C)	Time (minute)		
	LT storage	-25	30		
	Restored in Standard atmosphere		10		
	HT storage	+85	30		
Restored in Standard atmosphere		10	20 cycles		
Electro Static Discharge	HBM C = 100pF, R = 1.5kΩ, 4kV	each pin apply test once	22	0	
Operating life test	Apply with specified working voltage (3V) and resistive load 4.7kΩ, continuous operation with temperature below maximum rating	1000 hours	22	0	
Terminal strength (Tension)	Attach 5N weight to terminal	30secs @ terminal	22	0	

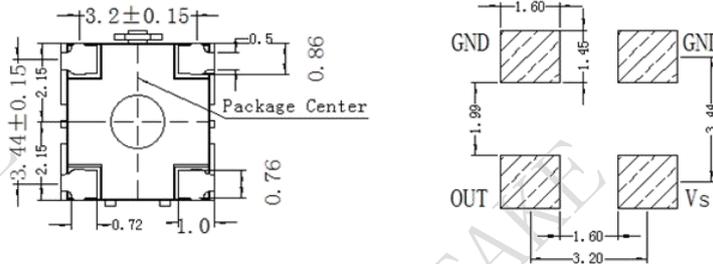
Judging criteria: Compare all electrical data of the tested devices before and after tests, no significant difference accepted.

**Package Outline**

Dimensions in mm: Tolerance is  $\pm 0.3$  unless otherwise noted

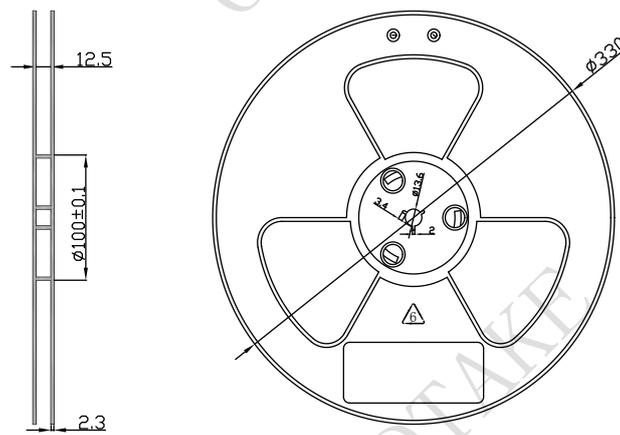


Proposed Pad Layout  
Viewed From Component Side

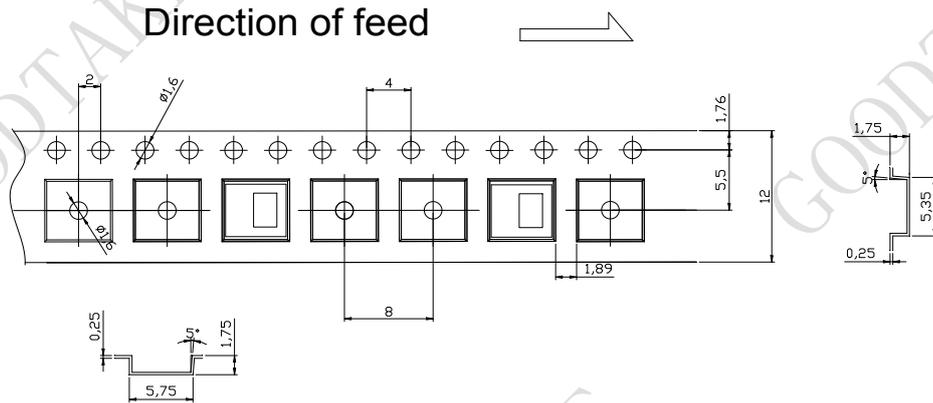


**Taping Specification**

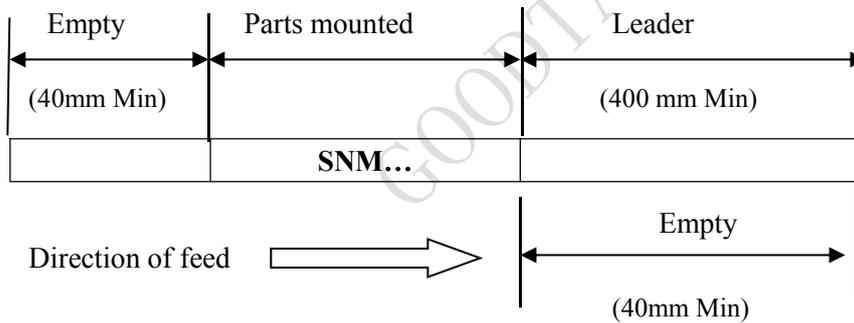
(1) Shape and dimensions of reels: unit in mm



(2) Dimensions of tape



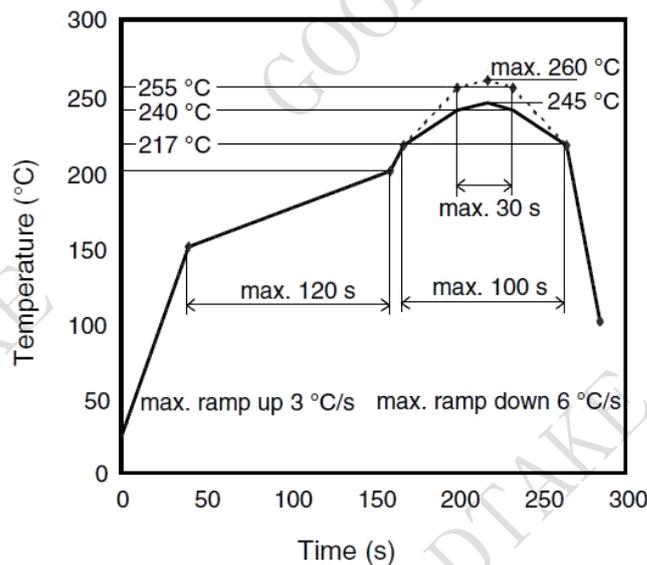
(3) Configuration of tape



(4) Quantity: 3,000pcs. / reel

(5) Unit weight: 0.06g per piece

**Reflow Soldering profile**



**Soldering Iron:** With rating 25watt or below, ESD protected iron, maximum 350 °C & complete soldering within 3 seconds. Do not put force on device while soldering, and leave 2 seconds or more before apply heat to another terminal pad.

**Pb-free solder :** Pb-free soldering paste, melting temperature: 230~235°C  
Compositions : Sn/Ag 3%/ Cu 0.5%

## Antistatic Dry Packing

Opto devices in SMD package may be sensitive to moisture. Devices are taped & reeled, sealed in antistatic bag with silica gel desiccants.

Do not open the sealed moisture-proof bag before ready to use. If sealing is void, baking treatment may be required.

## Storage

**Shelf life** – Devices should be stored in its original packing, in a controlled environment of temperature less than 40°C and relative humidity below 90%.  
Suggested shelf life is 12 months.

**Floor life** – MSL:4. After opening of the sealed package, the reeled devices should be consumed within 72 hours, in a controlled environment with such condition of  $T_{amb} < 30\text{ °C}$ ,  $RH = < 60\%$ .  
Remaining unused parts should be stored in DRY BOX.

### **Drying (Baking Process) -**

If original packing is voided (such as faded silica gel or exceeded storage time), baking treatment should be performed with the following conditions:  $T_{storage} = 40 \pm 5\text{ °C}$ ,  $RH < 5\%$ , time = 192hours.