

■ General Description

The DEVICE is a Bipolar IC for use in infrared remote control system. It consists of automatic gain control amplifier, post amplifier, Oscillator, automatic gain control circuit, a band pass filter, a signal waveform detection circuit, automatic threshold control circuit, a waveform rectifier.

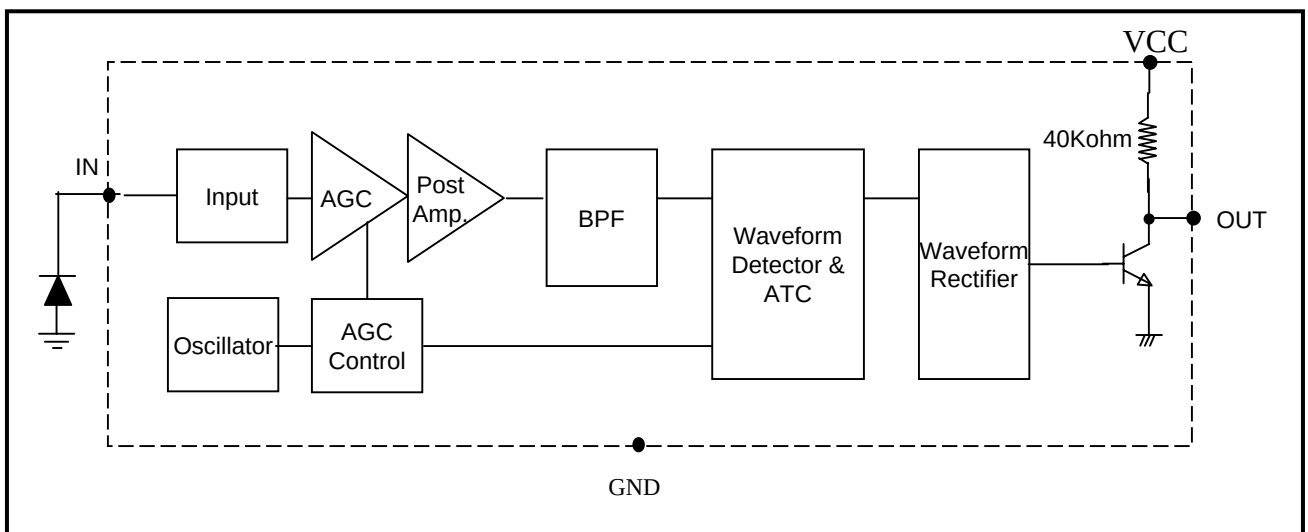
■ Features

- No external components except PIN photo diode
- Supply-voltage range: 2.7V to 5.5V
- Internal filter for PCM frequency
- Open collector output (built-in Pull-up resistor(40 k Ω))
- Output active low
- Enhanced immunity against all kinds of light disturbance
- TTL and CMOS compatible
- No occurrence of disturbance pulses at output pin within nominal conditions
- Short settling time after power On.(below 1msec)

■ Application

- Audio video applications
- Home appliances
- Remote control equipment

■ Block Diagram



FM-6038TM2-5AN

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	VCC		7	V
Supply Current	ICC		3	mA
Output Voltage	Vout		7	V
Output Current	Iout		2.5	mA
Operating Temperature	Tamb	-25	85	℃
Storage Temperature	Tstg	-40	125	℃
Soldering Temperature	Tsol	260, t<5 sec		℃

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	VCC	2.7		6	V
Input Frequency	fin		37.9		kHz
Operating Temperature	Tamb	-20	25	80	℃

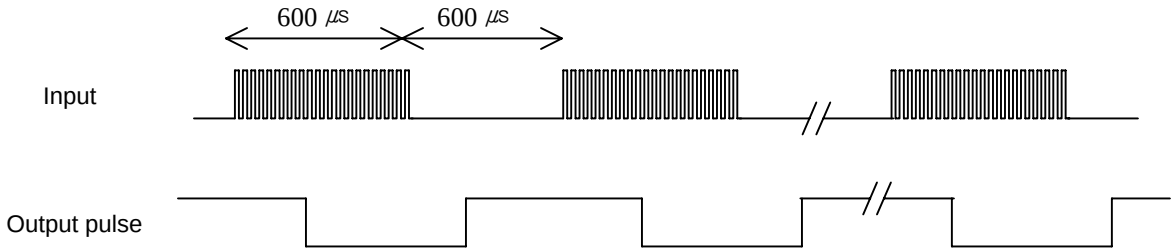
Electrical Specifications (Vcc=5V, Tamb=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	
Supply Current	ICC	0.5	1.2	1.7	mA	
Max input current	IIN	0.5	1.0	1.5	mA	Vin=0
Output Voltage	Voh		4.8		V	
	Vol		0.2	0.4	V	
Max. Voltage Gain	Av	70	76	82	dB	fin=37.9kHz Vin=30μVpp
Max. value of variable gain	Gavmax		40		dB	
Min. value of variable gain	Gavmin		-10		dB	
Internal Pull-up Resistor	Rpul		40		kΩ	
BPF Bandwidth	fbw		3.5		kHz	fin=37.9kHz Vin=30μVpp
BPF frequency	fc	-3.5	Fo	+3.5	%	
Output Pulse width	Tpw	500	600	700	μs	Vin=500 μVpp *Fig.1
Arrival Distance (L)	0°	10	15		m	200 ± 50 Lux
	±45°	7	10			

FM-6038TM2-5AN

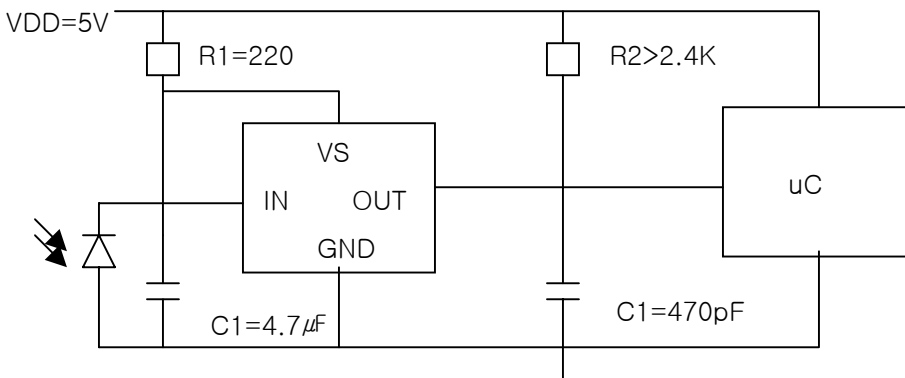
● Ustration of used terms

Fig.1 $f=37.9\text{kHz}$, burst with 22 pulses

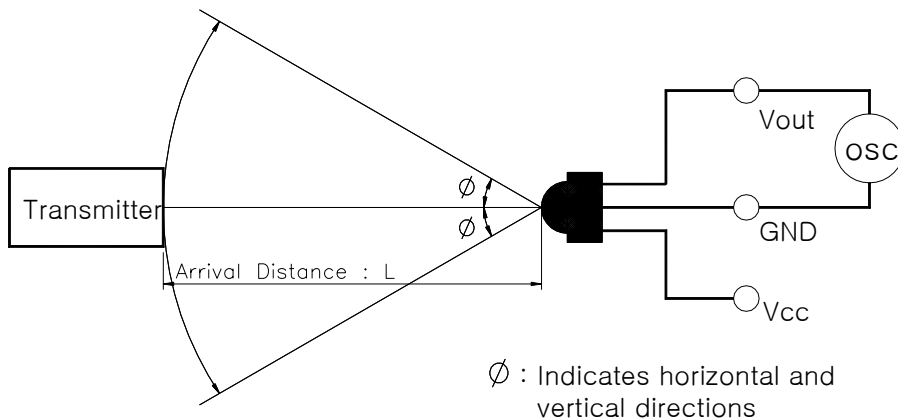


Example: $f=30\text{kHz}$, burst with 16 pulses, 16 periods

● Application circuit



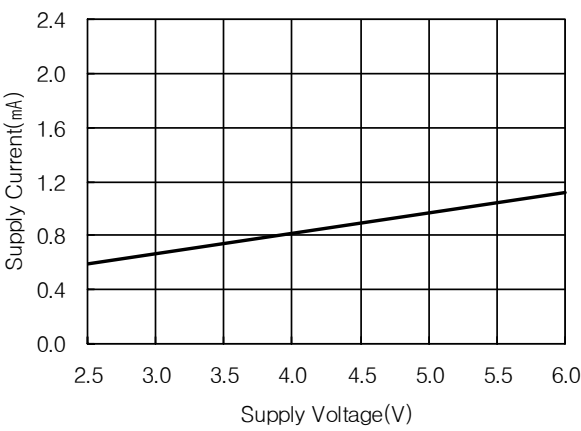
● Test condition of arrival distance



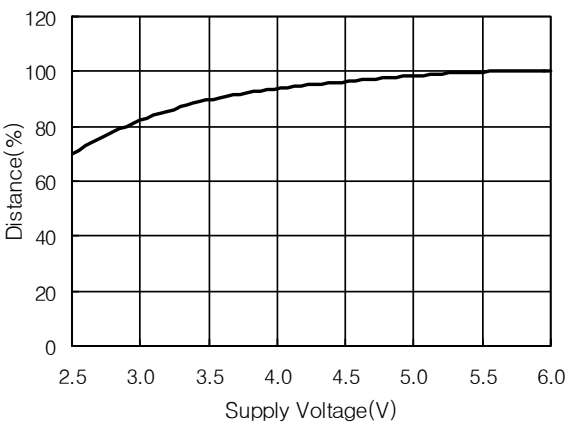
[Measurement condition for arrival distance]

☞ Ambient light source : Detecting surface illumination shall be irradiate $200 \pm 50\text{Lux}$ under ordinary white fluorescence lamp without high frequency lighting

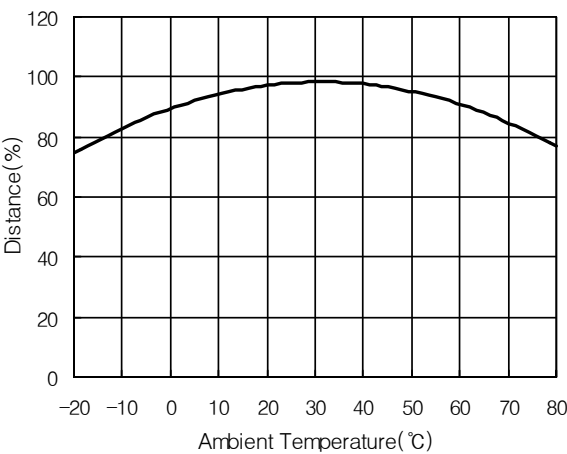
■ Typical Characteristics (Tamb = 25℃)



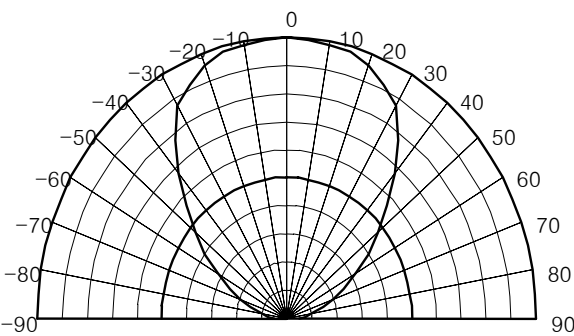
Supply Current vs.
Supply Voltage



Relative Distance vs.
Supply Voltage



Relative Distance vs.
Ambient Temperature



Sensitivity Angle
Characteristics for Reference

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NOTE:

1.PIN CONFIG

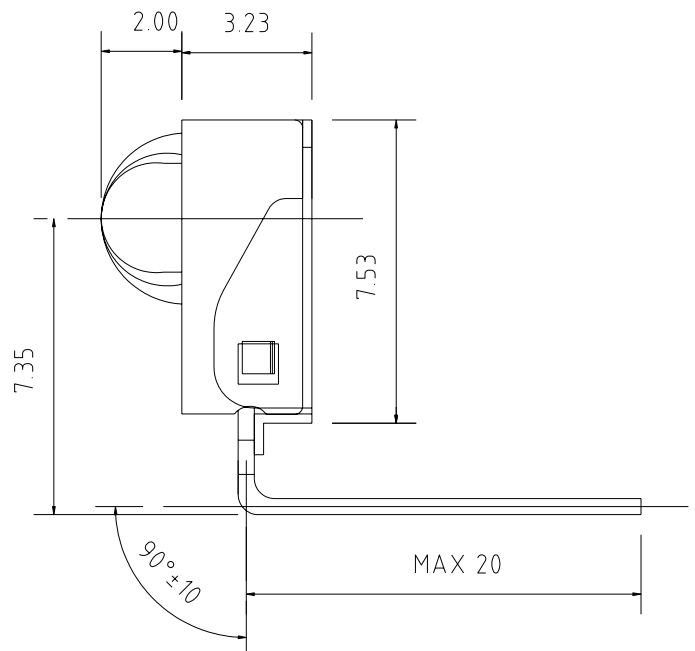
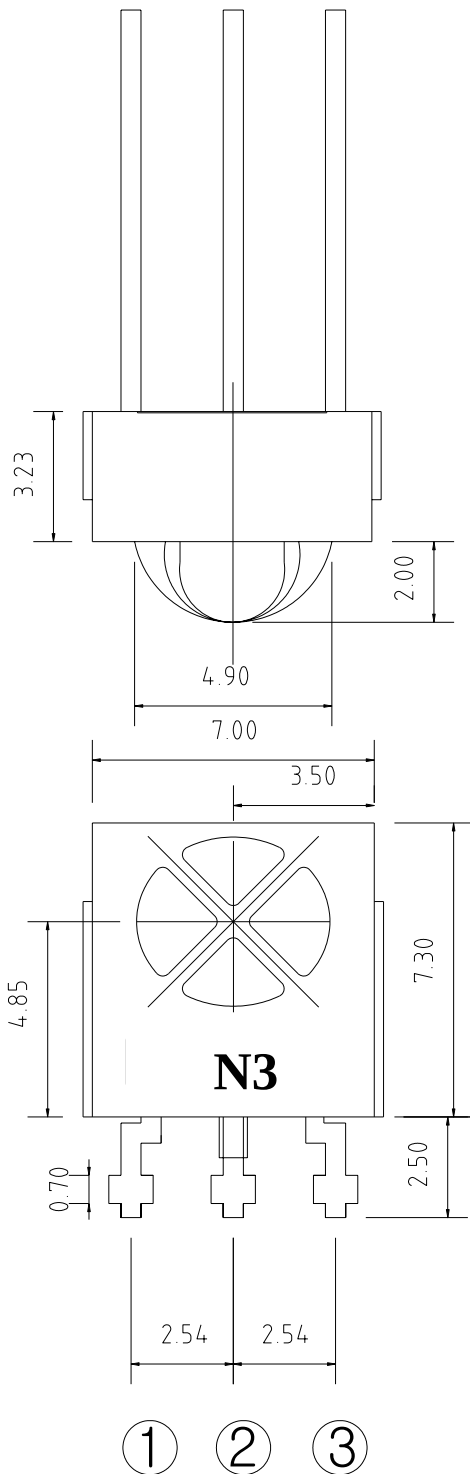
①Vout

②GND

③Vcc

2.G.T ± 0.3

(UNIT: mm)



FM-6038TM2-5AN

1. Packing unit for Remote control module

Package	Device	Packing Method	Units / Tube	Poly Bag/ Inner Box	Max Devices / Inner Box	Max Inner Box / Outer Box	Partial Shipment of Outer Box
Transfer mold Type		Poly Bag	200	5	1000	10	
				* Inner Box # 1	* Inner Box # 1	* Outer Box # 2	* Outer Box # 3

(unit : mm)

Inner Box #1 with Opto-Sensor Logo (170*240*65)

Outer Box #2 with Opto-Sensor Logo (365*360*270)

Outer Box #3 with Opto-Sensor Logo (385*750*300)

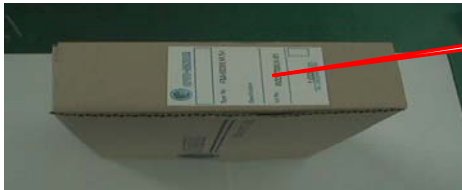
2. Packing method

- 1) Input max 200 units to one Poly bag and label should be attached middle of it.



Antistatic Vinyl

- 2) Input 5 poly bags to one inner box and label should be attached as below.



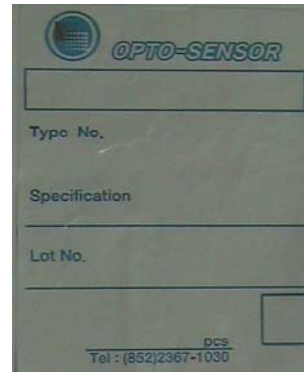
Label #1

<Inner Box # 1>

- 3) Input 10 inner boxes to outer box.



<Outer Box # 2>



- 4) Input 2 outer boxes into Box #3.



<Outer Box # 3>