

IR Receiver Modules for Remote Control Systems

Description

The FM-8038□□-5DX is miniaturized receiver for infrared remote control system. The PIN Photodiode and preamplifier are assembled on lead frame. The epoxy package is designed as IR filter. The module has excellent performance even in disturbed ambient light application and provides protection against uncontrolled output pulses.

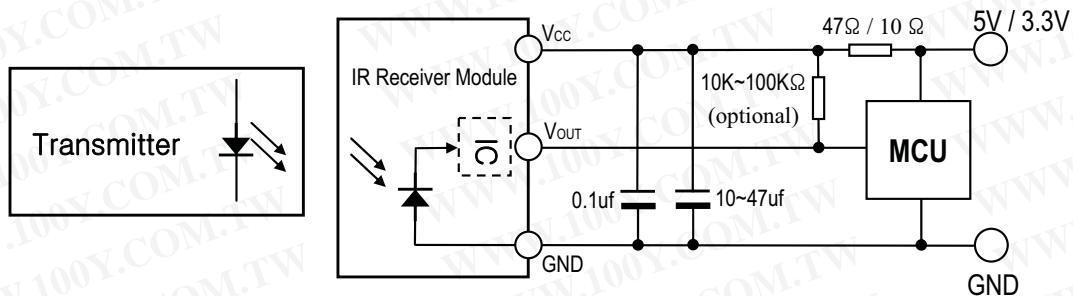


Features

- Transfer Mold Package.
- Supply Voltage Range: 2.7V to 5.5 V
- Supply Current : 0.4mA
- Epoxy IR filter characteristic : 940nm
- Maximum interference safety against optical and electrical disturbance.
- Internal filter for a high frequency lighting fluorescent lamp.
- Internal Pull-Up output.
- Operation with short burst possible (> 6 pulses / burst)
- Meet RoHS

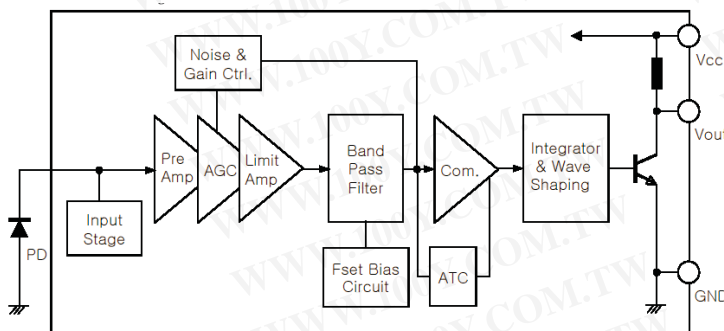
勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-34970699
 勝特力电子(深圳) 86-755-83298787
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Application Circuit



R-C filter recommended to suppress power supply disturbances.
 R-C filter should be connected closely between Vcc pin and GND pin.

Block Diagram



B.P.F Center Frequency

Model No.	Carrier Frequency (fo)
FM-8032LM-5DX	32.7 K
FM-8036LM-5DX	36.0 K
FM-8038LM-5DX	37.9 K
FM-8040LM-5DX	40.0 K
FM-8056LM-5DX	56.7 K

Suitable Data Format

NEC code	◆◆	RCS-80 code	◆◆	Sony 20-bit code	◆◆
RC5 code	◆◆	R-2000 code	◆◆	Zenith code	◆◆
RC6 code	◆◆	RCA code	◆◆	High data rate code	◆◆
r-step code	◆◆	Sharp code	◆◆	Disturbance suppression	◆◆
RCMM code	◆◆	Sony 12-bit code	◆◆		
XMP code	◆◆	Sony 15-bit code	◆◆		

Note : ◆◆ : Best for this application ; ◆ : Suitable for this IR code ; ◇ : Not recommended

Absolute Maximum Ratings

(Ta = 25°C)

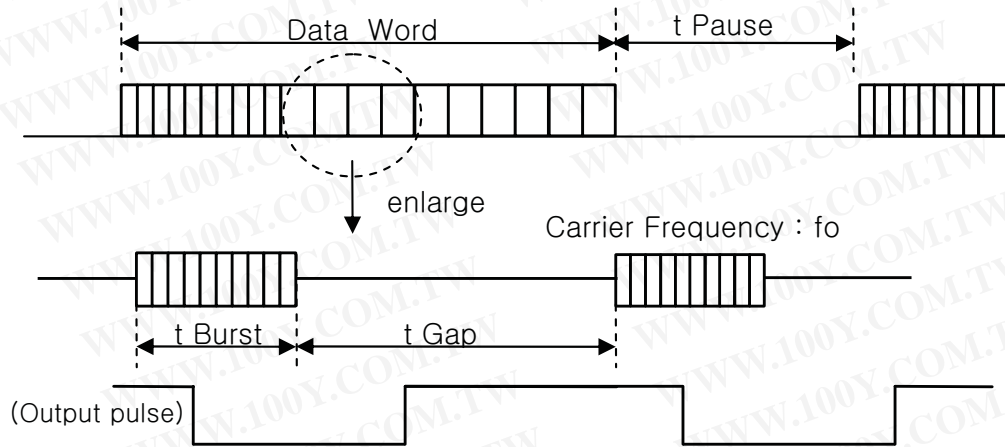
Parameter	Symbol	Ratings	Unit
Supply Voltage	V _{CC}	6.5	V
Output Current	I _{sink}	1.5	mA
Operating Temperature	T _{opr}	-20 ~ +80	°C
Storage Temperature	T _{stg}	-30 ~ +85	°C
Soldering Temperature	T _{sd}	260°C, Max 5 sec	°C

Electro-optical Characteristics

(Ta = 25°C)

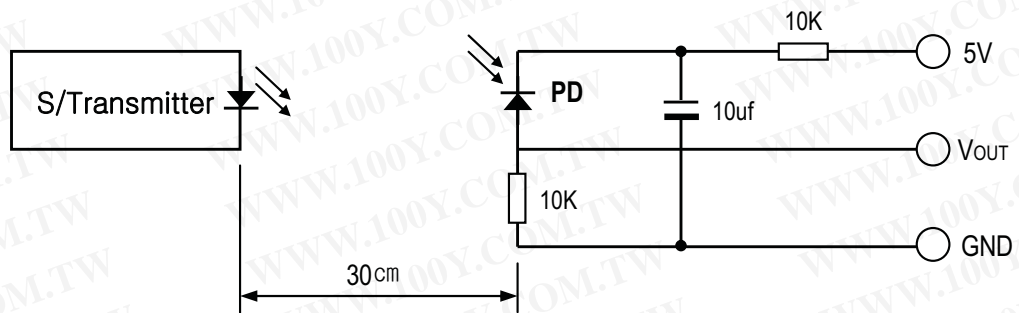
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	
Supply Current	ICC	0.3	0.4	0.5	mA	No signal input	
Output Voltage	V _{oh}	V _{CC} -0.5	-	-	V	No external pull-up resistor (I _{sink} < 1mA)	
	V _{ol}	-	0.2	0.4	V		
Peak Wave Length	λ _p	-	940	-	nm		
Internal Pull-up Resistor	R _{pul}	-	115	-	kΩ		
Arrival Distance	L	±0°	20	-	-	m	Fig 1,2,3
		±30°	15	-	-	m	
		±45°	10	-	-	m	
Output Pulse width	T _{pw}	400	600	800	us	Burst Wave =600us Period = 1.2ms	

[Fig.1] Data Signal diagram



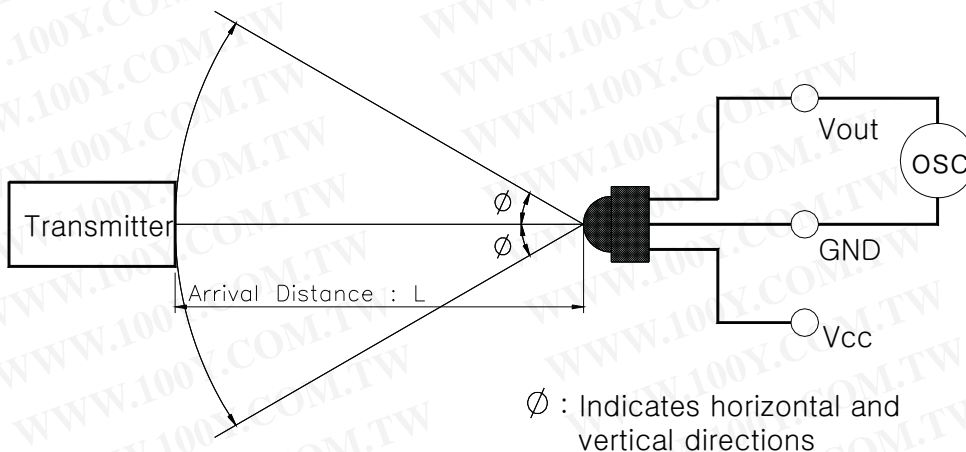
- t_{Gap} : Signal gap time between two burst in pulses of carrier. Minimum Gap Time ≥ 10 pulses
- t_{Burst} : Length of a burst in pulses of the carrier frequency. Minimum Burst ≥ 6 pulses
- t_{pause} : Data pause between two data words. Minimum Data Pause Time $\geq 1\text{ms}$

[Fig.2] Transmitter



※ The specifications shall be satisfied under the following conditions. The standard transmitter shall be specified of the burst wave form adjusted to $V_{\text{out}} 200\text{mVp-p}$ upon P_0 measuring circuit Standard Transmitter

[Fig.3] Test condition of arrival distance

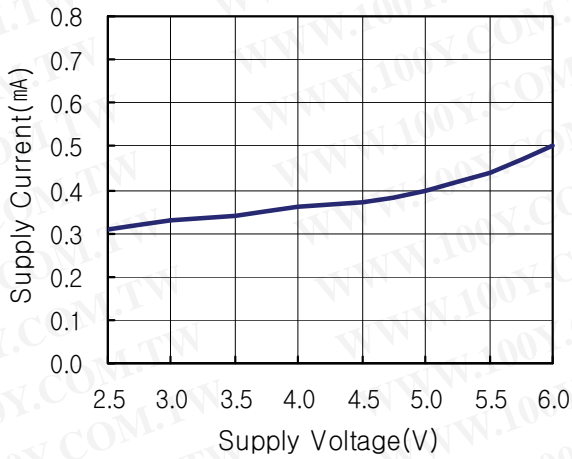


[Measurement condition for arrival distance]

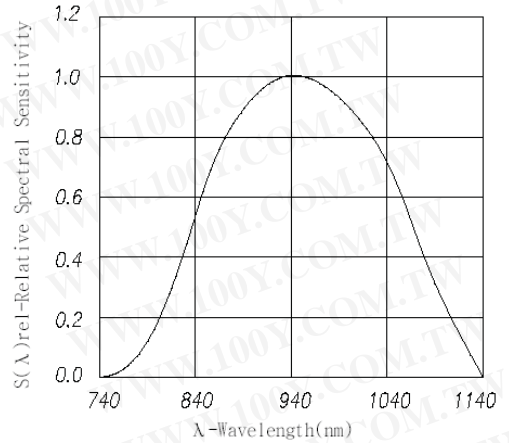
☞ Ambient light source : Detecting surface illumination shall be irradiate $200 \pm 50\text{Lux}$ under ordinary white fluorescence lamp without high frequency lighting

Electrical/Optical Characteristics

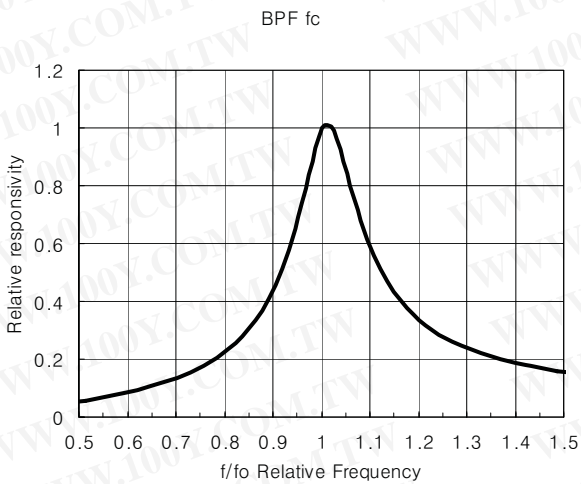
[Fig.4] Supply Current vs. Voltage



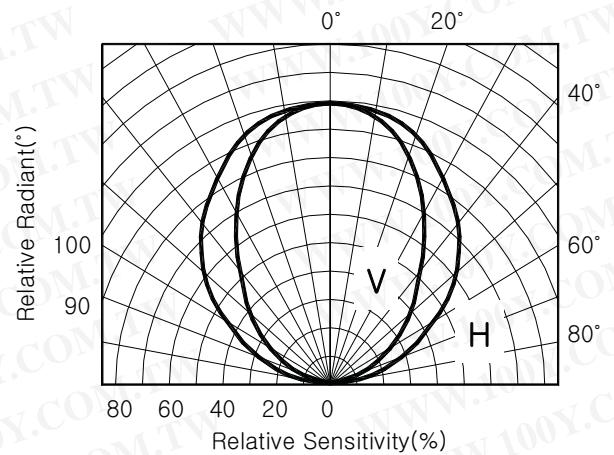
[Fig.5] Relative Spectral Sensitivity vs. Wavelength



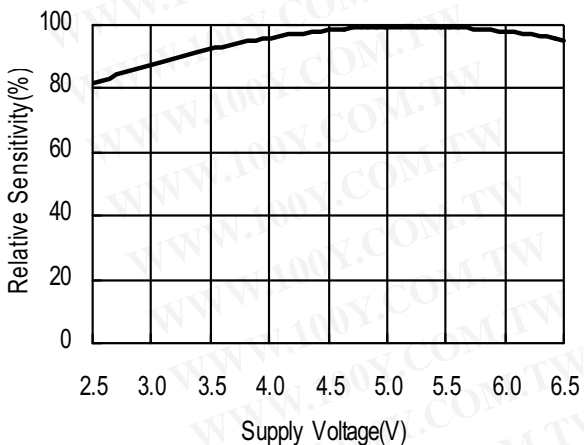
[Fig.6] BPF Fc Curve



[Fig.7] Directivity (Horizontal/Vertical)



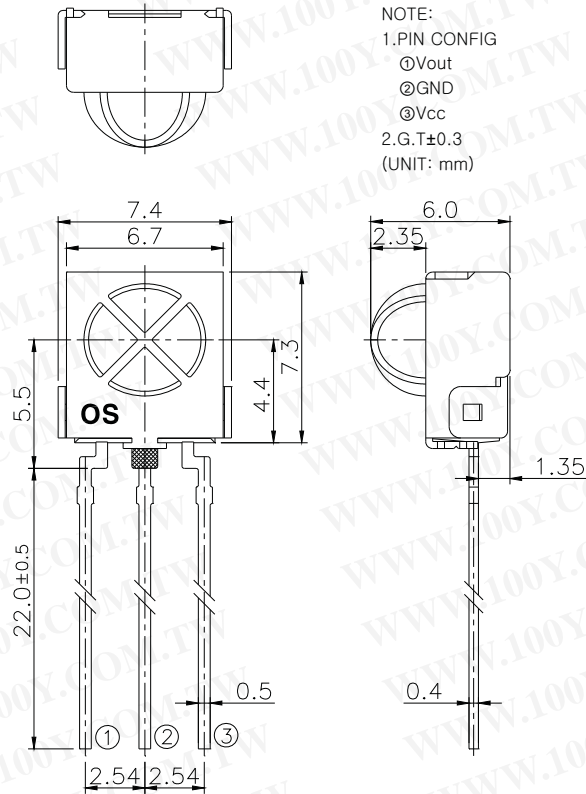
[Fig.8] Sensitivity vs. Supply Voltage



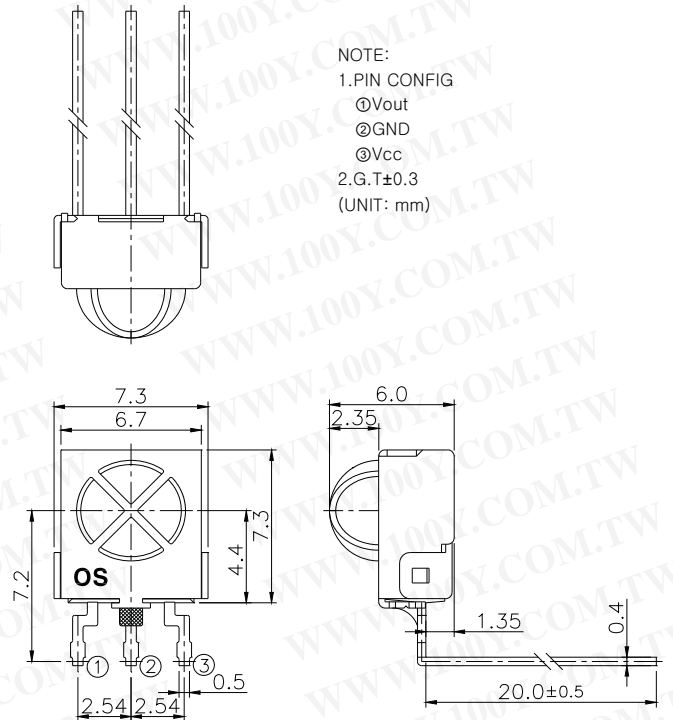
ESD Test Results

Parameter	Conditions	Specification	Results
Machine Model	C=200PF R=0Ω	Min ±200V	>±200V
Human Body Model	C=100PF R=1.5KΩ	Min ±2000V	>±2000V

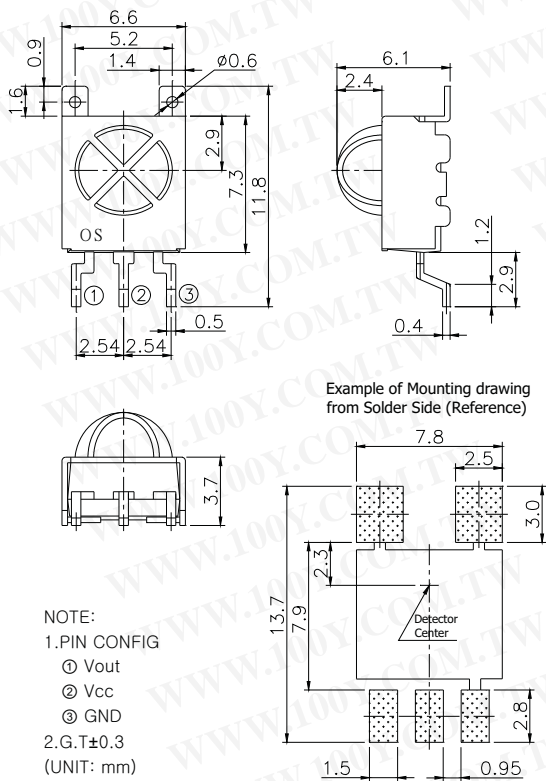
FM-8038LM-5DX



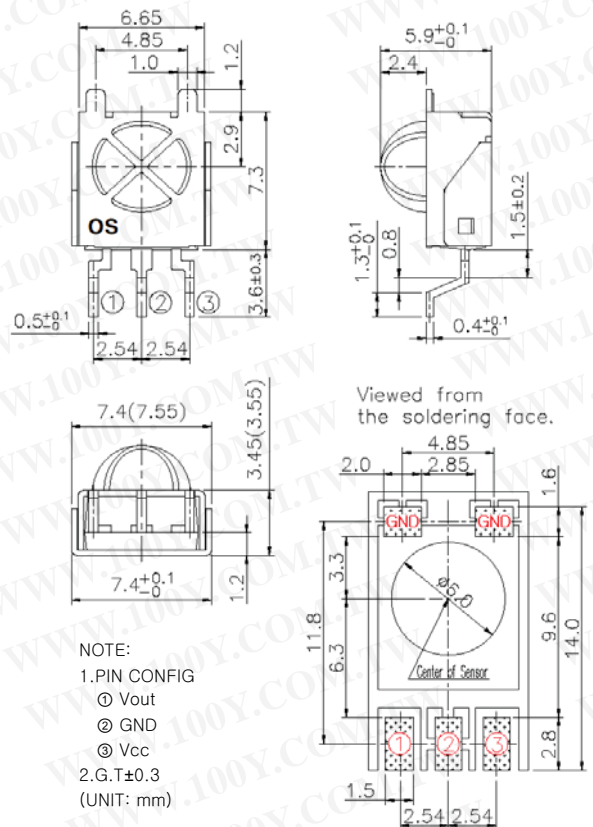
FM-8038TM2-5DX



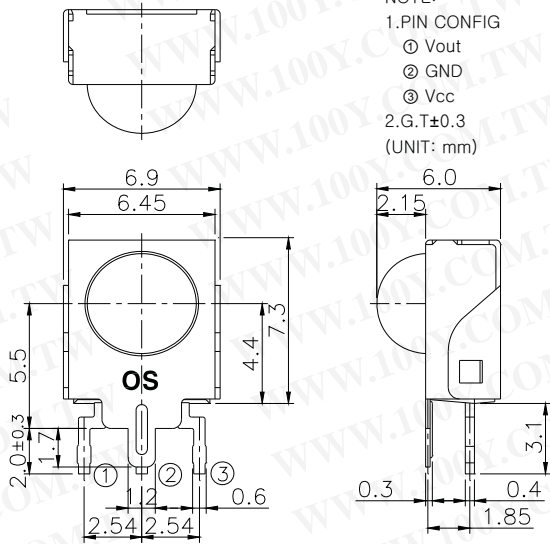
FM-8138SM-5DX



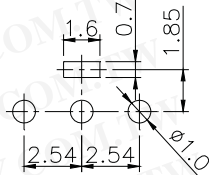
FM-8038SS-5DX



FM-8038SL-5DX



Example of Mounting drawing from Solder Side (Reference)



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