

IR Receiver Modules for Remote Control Systems

Description

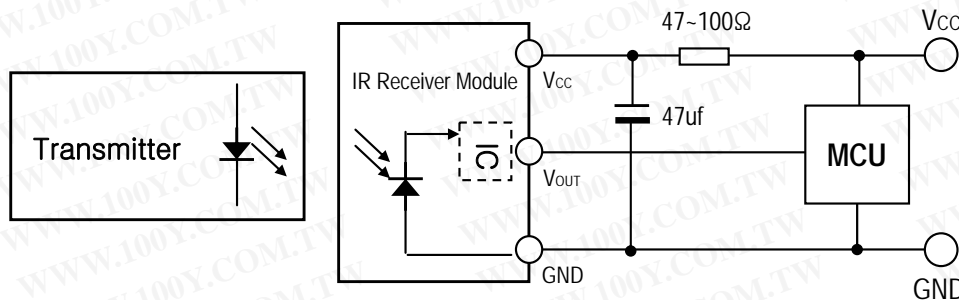
The FM-6038□□-5CN is a Bi-CMOS IC for use in infrared remote control system. Small-sized, light-weight, and low current consumption. modules have been achieved by using resin mold. The demodulated output signal can directly be decoded by a microprocessor. The main benefit is the reliable function even in disturbed ambient and the protection against uncontrolled output pulses.

勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-54151736
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Features

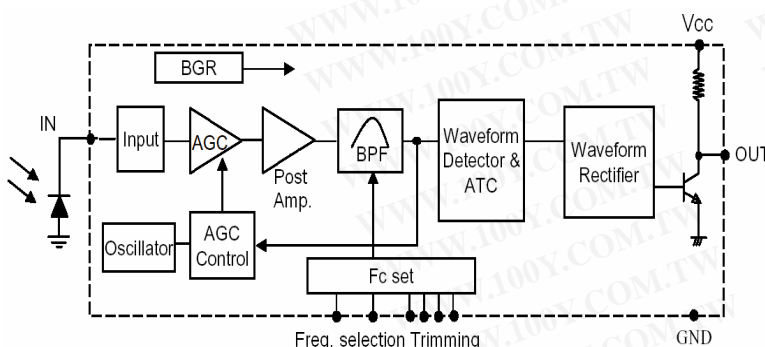
- Supply Voltage Range: 2.7V to 6 V
- TTL and CMOS compatibility
- Photo detector and preamplifier in one package.
- Internal filter for PCM frequency
- Open collector output (built-in Pull-up resistor(40K))
- Output active low
- Enhanced Immunity against all kinds of disturbance light
- No occurrence of disturbance pulses at output pin within nominal conditions.
- Short settling time after power On.(below 1msec)
- Meet RoHS

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-6032□□-5CN	32.7 K
FM-6036□□-5CN	36.0 K
FM-6038□□-5CN	37.9 K
FM-6040□□-5CN	40.0 K
FM-6056□□-5CN	56.0 K

Suitable Data Format

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

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
Supply Current	I _{CC}	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

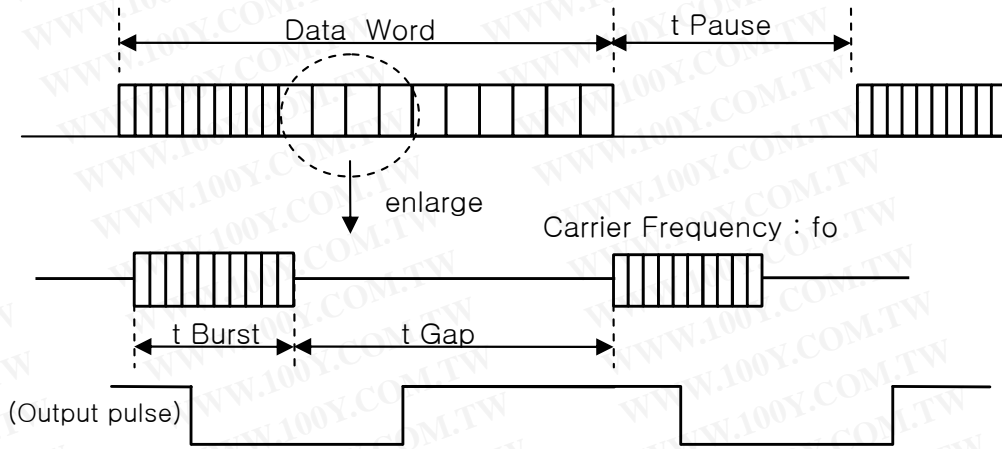
Electro-optical Characteristics

(Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	
Supply Current	I _{CC}	0.6	1	1.2	mA	No signal
Output Voltage	V _{oh}	V _{CC} -0.5	-	-	V	
	V _{ol}	-	0.2	0.4	V	
Peak Wave Length	λ _p	-	940	-	nm	
Internal Pull-up Resistor	R _{pul}	36	40	44	kΩ	
BPF frequency	f _c	-3.5	f _o	+3.5	%	
Output Pulse width	T _{pw}	400	600	800	μs	Burst Wave = 600μs Period = 1.2ms

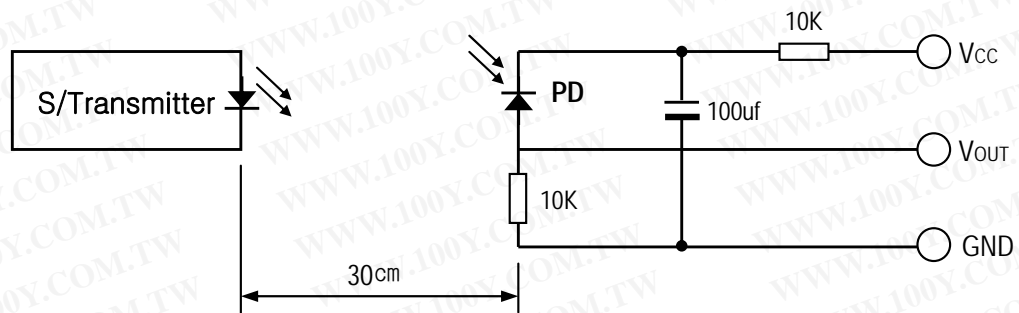
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[Fig.1] Data Signal diagram



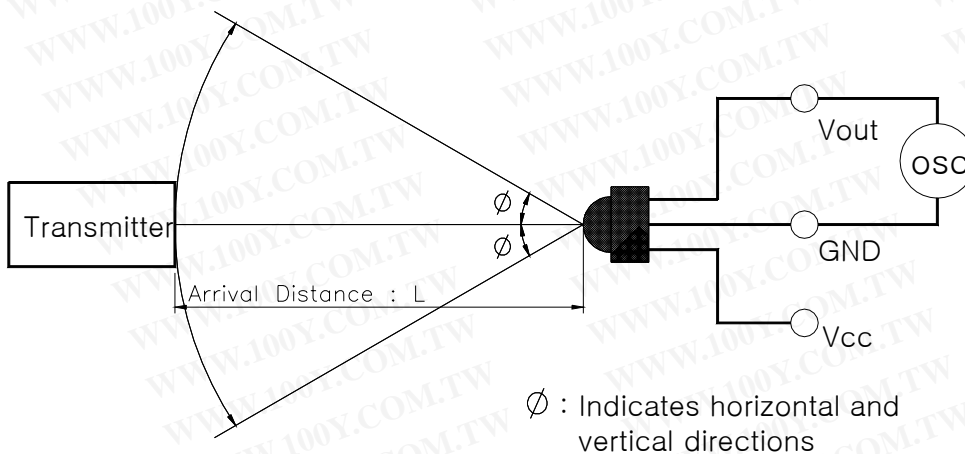
- t_{Gap} : Signal gap time between two burst in pulses of carrier. Minimum Gap Time $\geq 300\mu\text{s}$
- t_{Burst} : Length of a burst in pulses of the carrier frequency. Minimum Burst $\geq 300\mu\text{s}$
- t_{pause} : Data pause between two data words. Minimum Data Pause Time $\geq 20\text{ms}$

[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

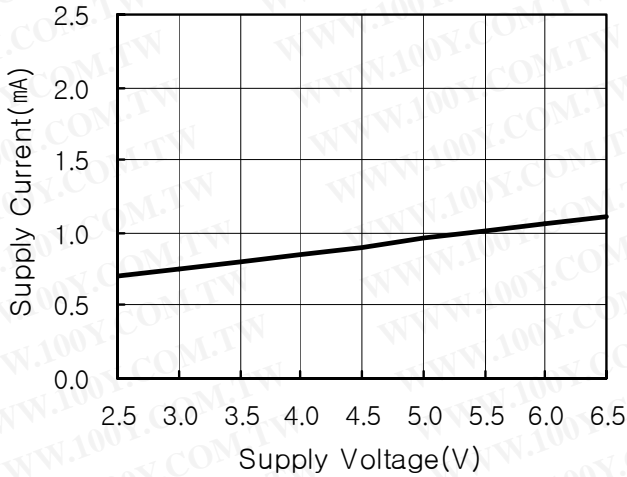


[Measurement condition for arrival distance]

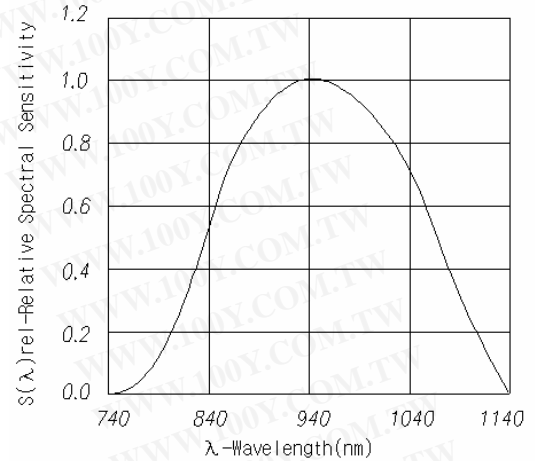
- ☞ Ambient light source : Detecting surface illumination shall be irradiate $200\pm 50\text{Lux}$ under ordinary white fluorescence lamp without high frequency lighting

Electrical/Optical Characteristics

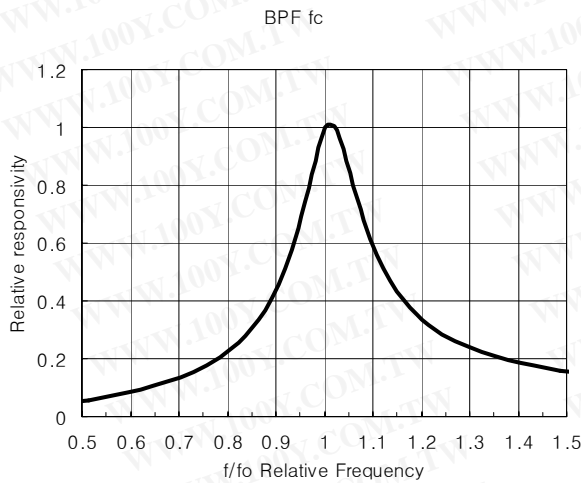
[Fig.4] Supply Current vs. Voltage



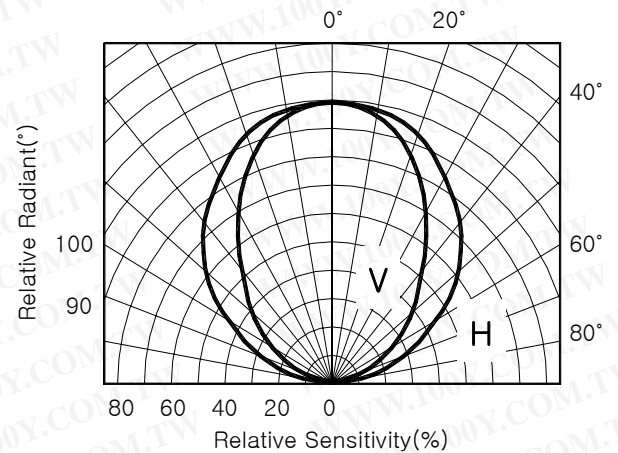
[Fig.5] Relative Spectral Sensitivity vs. Wavelength



[Fig.6] BPF Fc Curve



[Fig.7] Directivity (Horizontal/Vertical)

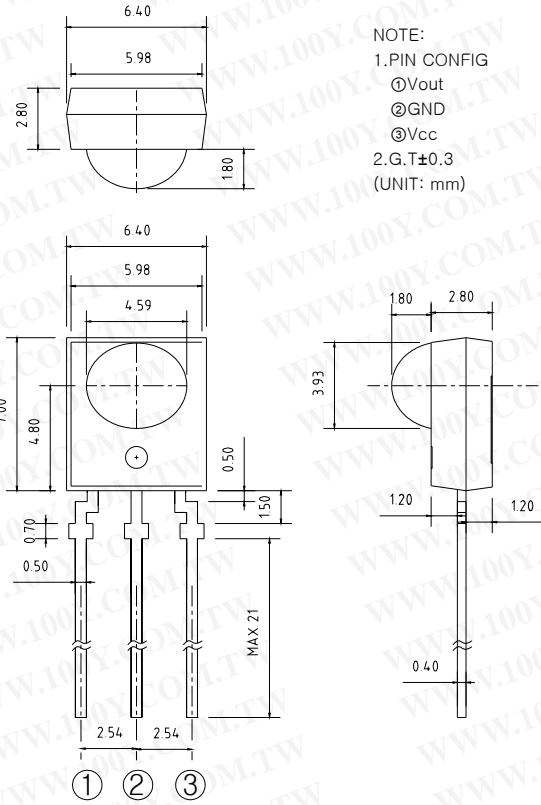


ESD Test Results

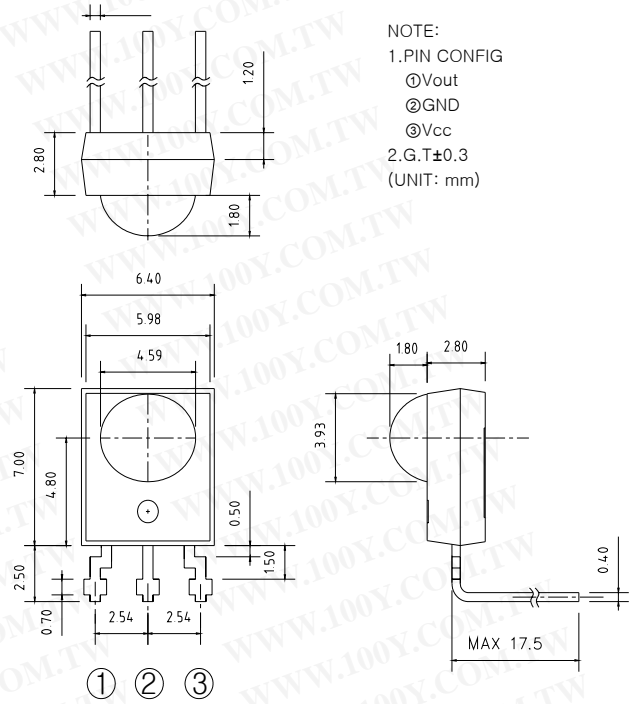
Parameter	Conditions	Specification	Results
Machine Model	C=200pF, R=0Ω	Min ±200V	>±200V
Human Body Model	C=100pF, R=1.5kΩ	Min ±2000V	>±2000V

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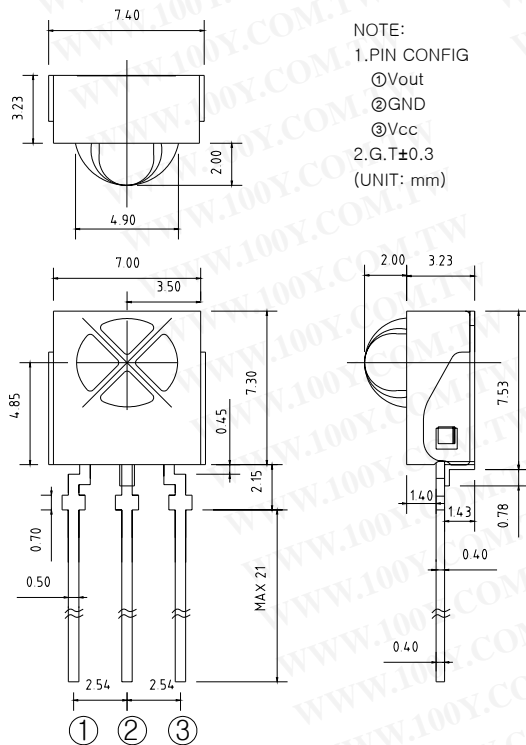
FM-6038LN-5CN



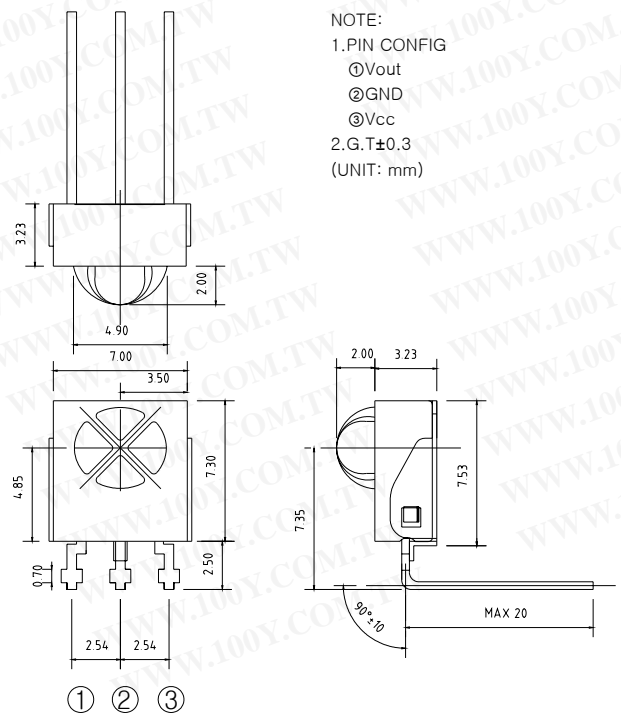
FM-6038TN2-5CN



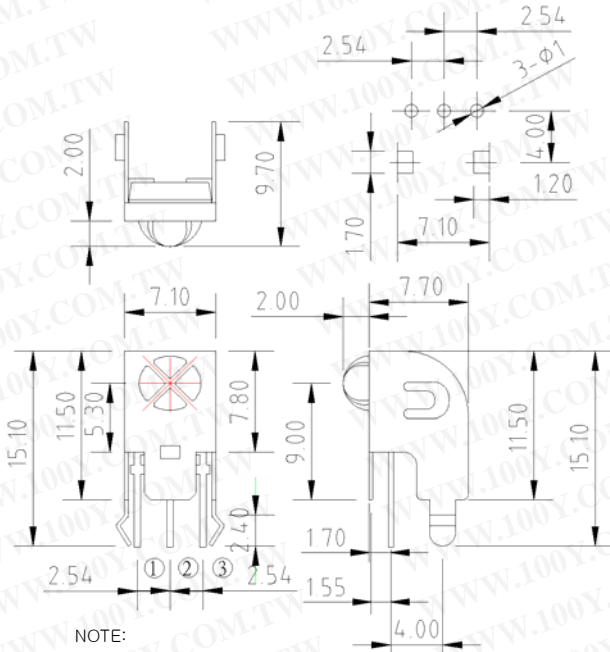
FM-6038LM-5CN



FM-6038TM2-5CN

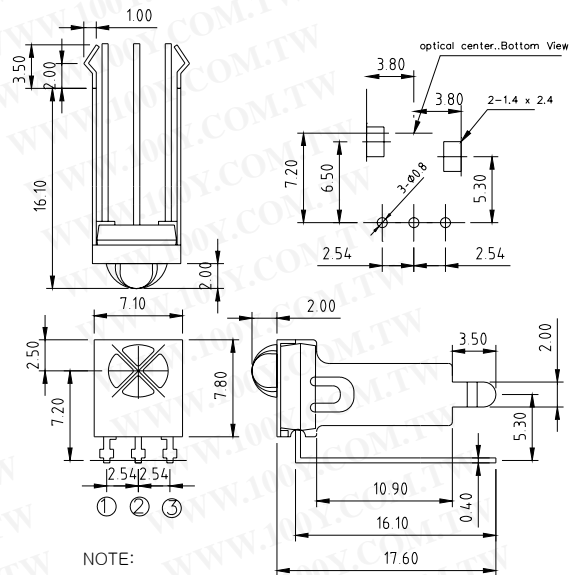


FM-6038SR-5CN



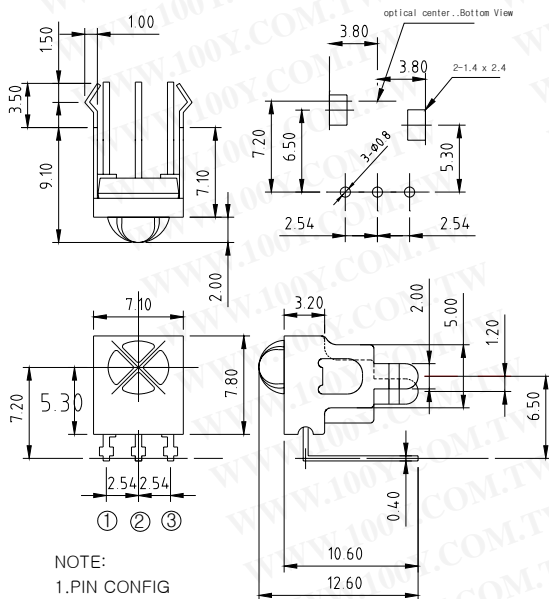
NOTE:
 1. PIN CONFIG
 ①Vout
 ②GND
 ③Vcc
 2. G.T \pm 0.3
 (UNIT: mm)

FM-6038TE2-5CN



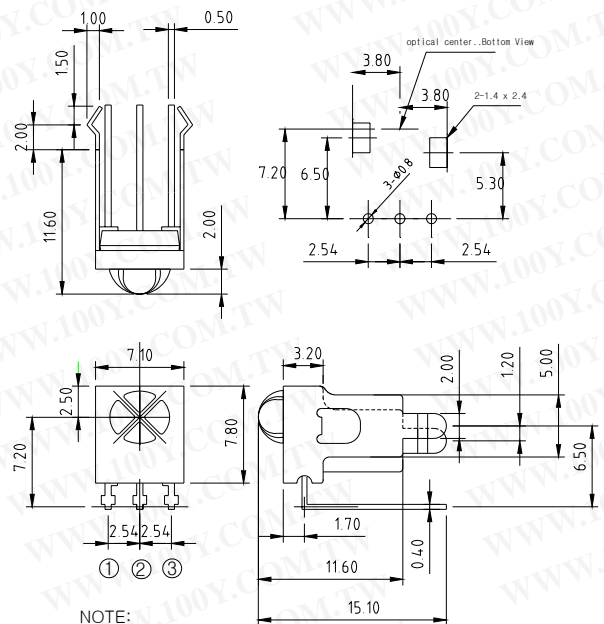
NOTE:
 1. PIN CONFIG
 ①Vout
 ②GND
 ③Vcc
 2. G.T \pm 0.3
 (UNIT: mm)

FM-6038TF2-5CN



NOTE:
 1. PIN CONFIG
 ①Vout
 ②GND
 ③Vcc
 2. G.T \pm 0.3
 (UNIT: mm)

FM-6038TH2-5CN



NOTE:
 1. PIN CONFIG
 ①Vout
 ②GND
 ③Vcc
 2. G.T \pm 0.3
 (UNIT: mm)