

# KSM-90 ☐ LM

The KSM-90□LM consist of a PIN Photodiode of high speed and a preamplifier IC in the package as an receiver for Infrared remote control systems

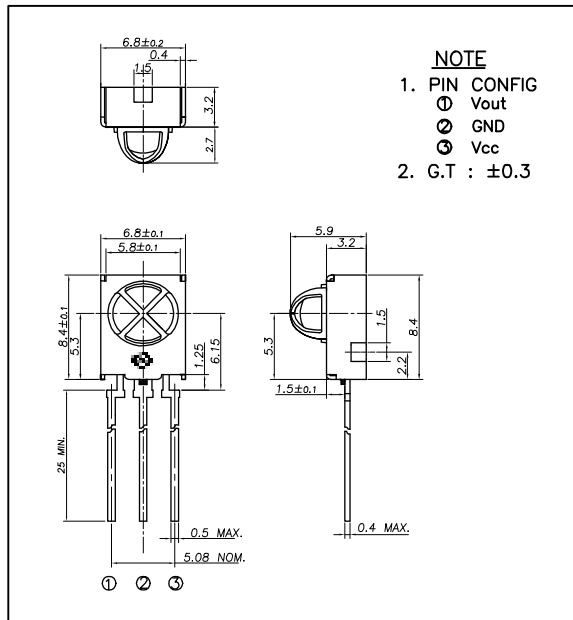
## Features

- Wide angle design
- Supply-voltage range : 4.5V to 5.5V
- Shielded against electrical field disturbance
- Enhanced immunity against ambient light disturbances
- Available for carrier frequencies between 32.7KHz to 56.9KHz
- TTL and CMOS compatible

## Applications

- Audio & Video Applications (TV, VTR, Audio, DVD, CDP)
- Home Appliances (Air conditioner, Computer, Camcorder)
- Wireless Toys
- Remote Control Equipment

## DIMENSIONS



### Maximum Ratings

Parameter	Symbol	Ratings	Unit
Supply Voltage	Vcc	6.0	V
Operating Temperature	Topr	-10 ~ +60	
Storage Temperature	Tstg	-20 ~ +75	
Soldering Temperature	Tsol	260 (Max 5 sec)	

### B.P.F Center Frequency

Model No.	B.P.F Center Frequency(kHz)
KSM-901LM	40.0
KSM-902LM	36.7
KSM-903LM	37.9
KSM-904LM	32.7
KSM-905LM	56.9

## Electro-Optical Characteristics

Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
Recommended Supply Voltage	Vcc			4.5	5	5.5	V
Current Consumption	Icc	No signal input		-	1.2	2.5	mA
Peak Wavelength *1	λ			-	940	-	nm
B.P.F Center Frequency	f <sub>o</sub>			-	37.9	-	kHz
Transmission Distance *1	L	250 ± 50lx	0 °	15	-	-	m
			± 30 °	12	-	-	
High level Output voltage *1	V <sub>OH</sub>	30cm over the ray axis		4.5	5.0	-	V
Low level Output voltage *1	V <sub>OL</sub>			-	0.1	0.5	V
High level Output Pulse Width *1	T <sub>WH</sub>	Burst wave=600μs		500	600	700	μs
Low level Output Pulse Width *1	T <sub>WL</sub>	Period = 1.2ms		500	600	700	μs
Output Form	Active Low Output						

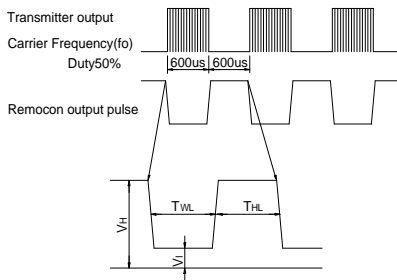
\*1. It specifies the maximum distance between emitter and detector that the output wave form satisfies the standard under the conditions below against the standard transmitter.

- 1) Measuring place : Indoor without extreme reflection of light
- 2) Ambient light source : Detecting surface illumination shall be irradiate  $200 \pm 50lx$  under ordinary white fluorescence lamp without high frequency lightning
- 3) Standard transmitter : Burst wave of standard transmitter shall be arranged to 50mVP-P under the measuring circuit

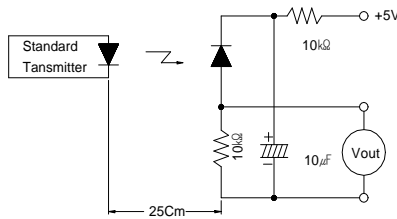
# KSM-90 LM

## Measuring Method [Ta=25°C]

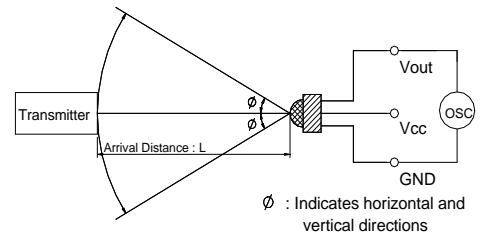
### Output Pulse Width



### Standard Transmitter

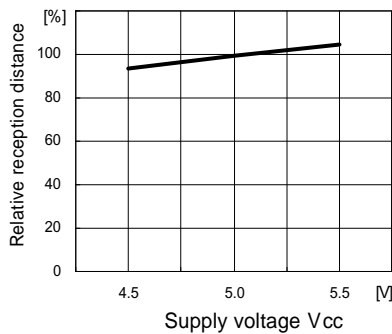


### Test Method of Transmission Distance

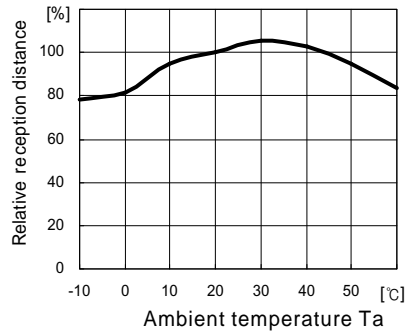


## Typical Characteristics Curve [Ta=25°C]

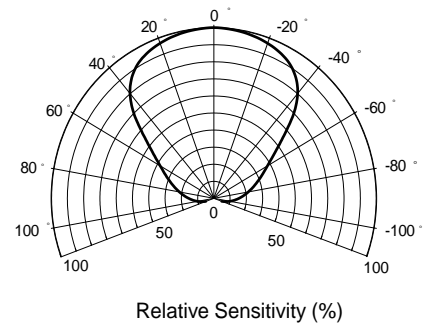
### Relative reception distance Vs. Supply voltage



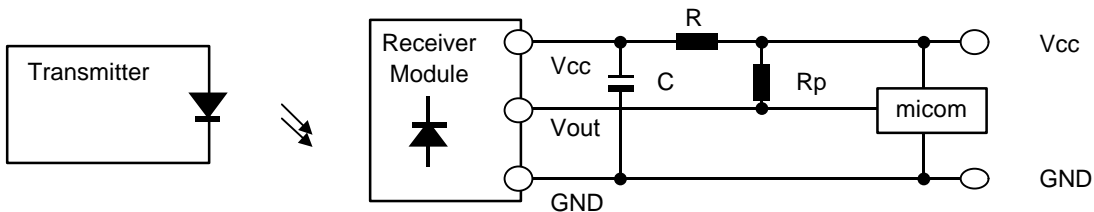
### Relative reception distance Vs. Ambient temperature



### Radiant pattern



## Standard Application Circuit with R-C Decoupling Filter



### \*1 Recommended Circuit Description

- 1) Transmitter(IRED) drive current  
:  $I_{FP} = 300\text{mA}_{P-P} \sim 600\text{mA}_{P-P}$
- 2) R-C Decoupling Filter with Lower Cut-off Frequency  
:  $R=100\Omega$ ,  $C=47\mu\text{F} \Rightarrow f_c = 1/2\pi RC = 33.9\text{Hz}$
- 3) External pull-up resistor(optional)  
:  $10k\Omega$  over