

# KSM-91 SY1E

The KSM-91 SY1E consist of a PIN Photodiode of high speed and a preamplifier IC in the package as an receiver for Infrared remote control systems

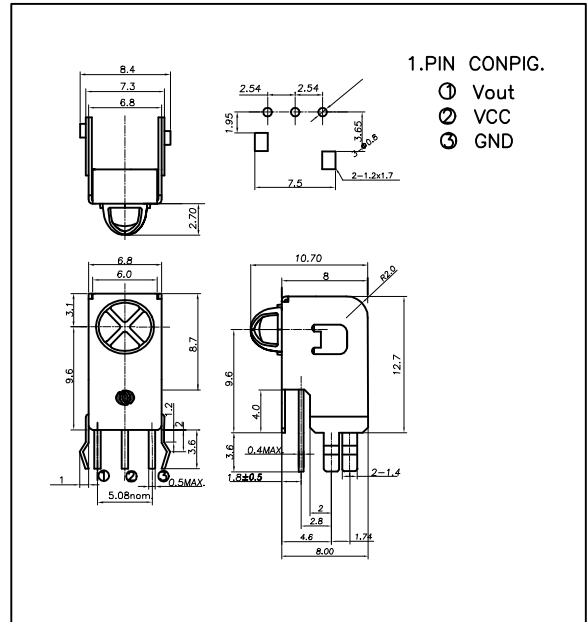
### Features

- Wide angle design
- Wide supply-voltage range : 2.7V to 5.5V
- Shielded against electrical field disturbance
- High immunity against ambient light disturbances (Logic Controller Adaptation)
- Available for carrier frequencies between 32.7KHz to 56.9KHz
- TTL and CMOS compatible

### Applications

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

### DIMENSIONS



### Maximum Ratings

[Ta=25 ]

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

### B.P.F Center Frequency

| Model No.   | B.P.F Center Frequency(kHz) |
|-------------|-----------------------------|
| KSM-911SY1E | 40.0                        |
| KSM-912SY1E | 36.7                        |
| KSM-913SY1E | 37.9                        |
| KSM-914SY1E | 32.7                        |
| KSM-915SY1E | 56.9                        |

### Electro-Optical Characteristics

[Ta=25 , Vcc=5.0V(Vcc=3.0V)]

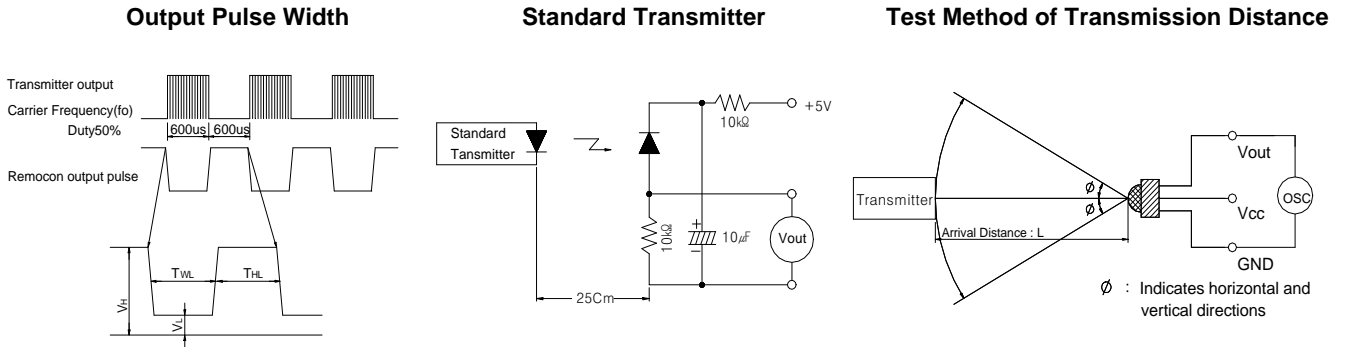
| Parameter                        | Symbol            | Condition              | Min.     | Typ.     | Max. | Unit    |   |
|----------------------------------|-------------------|------------------------|----------|----------|------|---------|---|
| Recommended Supply Voltage       | Vcc               |                        | 2.7      | -        | 5.5  | V       |   |
| Current Consumption              | Icc               | No signal input        | 0.5      | 1.2(1.0) | 1.7  | mA      |   |
| Peak Wavelength *1               | $\lambda$         |                        | -        | 940      | -    | nm      |   |
| B.P.F Center Frequency           | fo                |                        | -        | 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(2.8) | 5.0(3.0) | -    | 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=600 $\mu$ s | 500      | 600      | 700  | $\mu$ s |   |
| Low level Output Pulse Width *1  | T <sub>WL</sub>   | Period = 1.2ms         | 500      | 600      | 700  | $\mu$ s |   |
| 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 ± 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

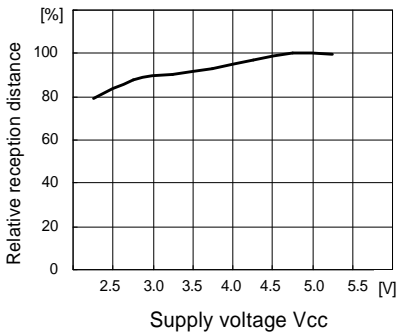
# KSM-91 SY1E

## Measuring Method [Ta=25°C]

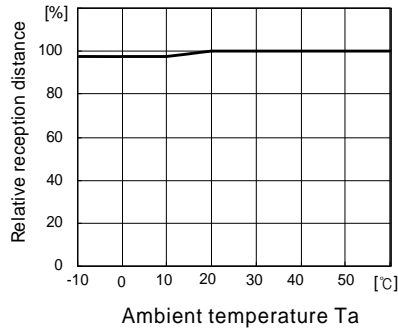


## Typical Characteristics Curve [Ta=25°C]

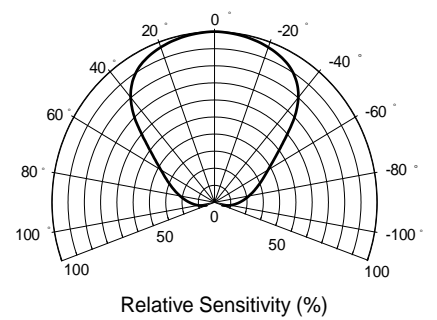
Relative reception distance Vs. Supply voltage



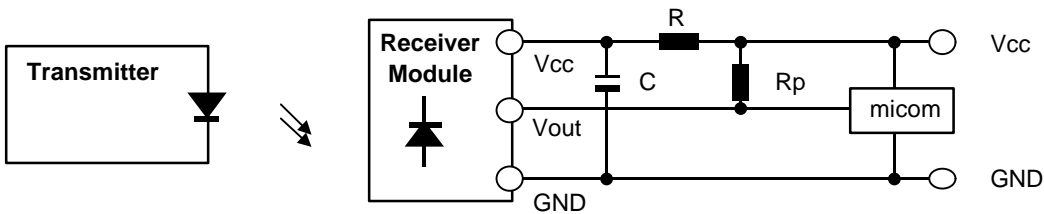
Relative reception distance Vs. Ambient temperature



Radiant pattern



## Standard Application Circuit with R-C Decoupling Filter



### \*1 Recommended Circuit Description

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