

SPECIFICATION

FOR APPROVAL

ISSUED DATE : 20-Sep-18

DOCUMENT NO : OQSS-R90□V1-5IX-01

CUSTOMER : _____

DESCRIPTION : IR RECEIVER MODULE

MODEL NO. : R903V1-5IX

[AUK CORP.]

ISSUE DEPT.			PRODUCTION		Q/A	
ISSUE	REVIEW	APPR'L	REVIEW	APPR'L	REVIEW	APPR'L
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[CUSTOMER APPROVAL]

ISSUE	REVIEW				
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[REVISION]

NO	DATE	REVISION ITEMS	ISSUED BY	APPR'D BY
0	2018-09-20	ISSUE	TY. KIM	YJ. JIN

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AUK takes no responsibility for damage caused by improper use of the devices which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet.

Please obey the instructions mentioned below for actual use of this device.

① This device is designed for general electronic equipment.

Main use of this device are as follows;

- * Computer * OA equipment * Telecommunication equipmet(Terminal)
- * Measuring instrument * Machine tool *Industrial robot
- * AV equipment * Home appliance,etc.

② Please take proper steps in order to maintain reliability and safety, in case this device is used for the uses mentioned below which require high reliability.

- * Unit concerning control and safety of a vehicle (air plane,train,automobile etc.)
- * Traffic signal * Gas leak detection breaker
- * Fire box and burglar alarm box * Other safety equipment,etc.

③ Please don't use for the uses mentioned below which require extremely high reliability.

- * Space equipment * Telecommunication equipment(Trunk)
- * Nuclear control equipment * Medical equipment(relating to any fatal element),etc.

1. Description

The R903V1-5IX consist of a PIN Photodiode of high speed and a preamplifier IC in the package as an receiver for Infrared remote control systems

2. Features

- ◆ 2.7 ~ 5.5 Volt supply voltage, low power consumption
- ◆ Shielded against electrical field disturbance
- ◆ High immunity against ambient light
- ◆ Easy interface with the main board
- ◆ TTL and CMOS compatibility
- ◆ One mold package
- ◆ RoHS Compliance



3. Applications

- ◆ TV, VTR, Audio, Air Conditioners, Car Stereo Units, Computers, Interior controlling appliances, and appliances that require remote controlling

4. Package Outlines

See the attached Drawing No. RM-R9□□V1-ASY-01

5. Absolute Maximum Ratings

[Ta = 25°C]

Parameter	Symbol	Rating	Unit
Supply Voltage / Output Voltage	V_{cc}	6	V
Supply Current / Output Current	I_{out}	2.5	mA
Maximum power dissipation	P_D	10	mW
Junction temperature	T_j	100°C	°C
Operating Temperature	$T_{opr.}$	-20°C~80°C	°C
Storage Temperature	$T_{stg.}$	-25°C~85°C	°C
Soldering Temperature	$T_{sol.}$	260(Max 5 sec)	°C

6. Reliability Test

Parameter	Rating
High Temperature *1	Ta= + 80°C, Vcc=5V t=240H
High Temperature / High Humidity *1	Ta= + 85°C, 85%RH, Vcc=5V t=240H
Low Temperature *1	Ta= - 30°C, Vcc=5V t=240H
Heat Cycle *1	-25°C(0.5H) ~ + 85°C(0.5H) 20cycle
Dropping *2	Test devices shall be dropped 3 time naturally onto hard wooden board from a 75cm height position

Note : *1. Electro-optical Characteristics shall be satisfied after leaving 2hours in the normal temperature

*2. Electro-optical Characteristics shall be satisfied and no deforms and destructions of appearance.
(excepting deforms of terminals)

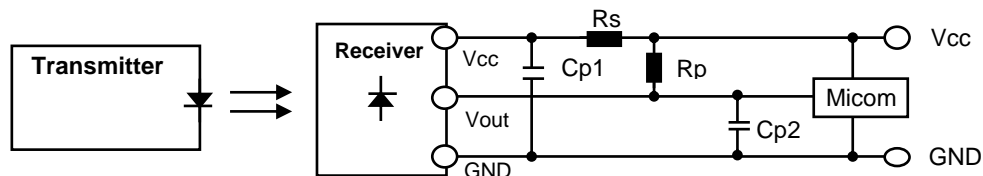
7. Electro-optical Characteristics

[Ta= 25°C, Vcc=5.0V]

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Supply Voltage Range	V _{cc}		2.7	-	5.5	V	
Current Consumption	I _{cc}	No Input	0.2	0.6	0.9	mA	
		Signal		V _{cc} =5V			
Peak Wavelength *3	λ _p		-	940	-	nm	
B.P.F Center Frequency	f _o		-	37.9	-	kHz	
Arrival Distance *3	L	200Lux	0°	40	-	-	m
			±30°	32	-	-	m
Directivity	Δθ	Half angle	-	±45	-	deg	
High Level Output Voltage *3	V _{OH}	30cm over the ray axis	V _{cc} -0.5	V _{cc} -0.3	-	V	
Low Level Output Voltage *3	V _{OL}		-	-	100	mV	
High Level Output Pulse Width *3	T _{WH}	Burst Wave = 600μs	450	-	750	μs	
Low Level Output Pulse Width *3	T _{WL}	Period = 1.2ms	450	-	750	μs	
Output Form	Active Low Output						

Note : *3. It specifies the maximum distance between emitter and detector that the output waveform satisfies the standard(8-2,3) 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±50Lux under ordinary white fluorescence lamp without high frequency lightning
- 3) Standard transmitter : Burst wave indicated in drawing(8-1) of standard transmitter shall be arranged to 1.6Vp-p under the measuring circuit specified in drawing(8-2,3)
- 4) Application Circuit : Recommend to design a circuit without using Rp & Cp2.



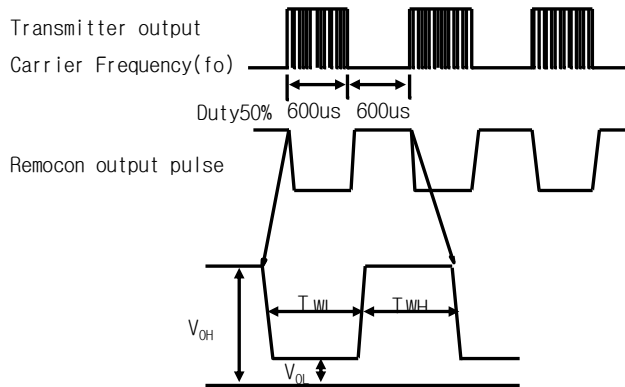
- Rs (Vcc input series resistor) : Typ. 100Ω (47Ω ~ 470Ω)
- Cp1(Vcc-GND terminal series Condenser) : Typ. 100μF (47μF ~ 470μF)
- Rp (Vcc-Vout terminal Pullup resistor) : Optional (when using 10kΩ or more)
When Rp is lower than 10kΩ, Micom can't reply by a VoL rise.
- Cp2(Vout-GND terminal parallel Condenser) : Optional (when using 1nF ~2nF)

*4. B.P.F Center Frequency(fo) of each model is shown below

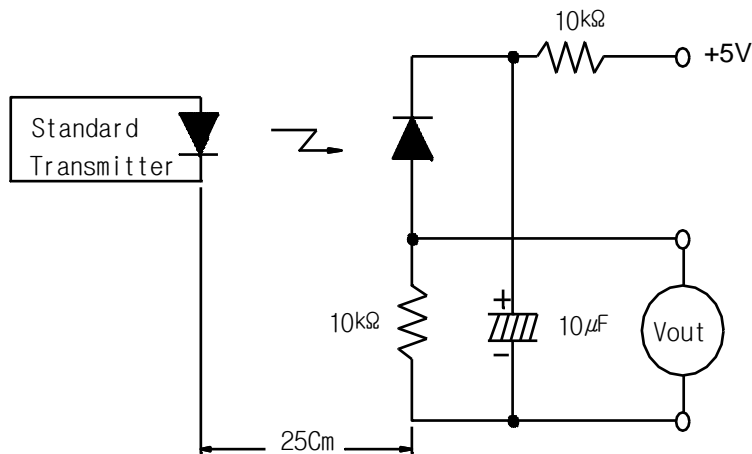
Model NO.	B.P.F Center Frequency(kHz)
R901V1-5IX Series	40.0
R902V1-5IX Series	36.0 & 36.7
R903V1-5IX Series	37.9
Not Support	32.7
R905V1-5IX Series	56.7

8. Measure Method

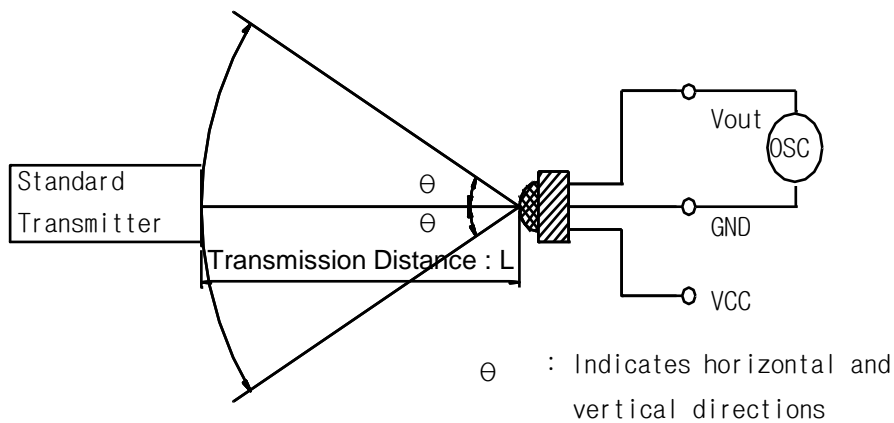
8-1. Output Pulse Width



8-2. Standard Transmitter



8-3. Test Condition of Transmission Distance



9. Inspection Criteria

In electro-optical characteristics, total quantity shall be inspected as below.

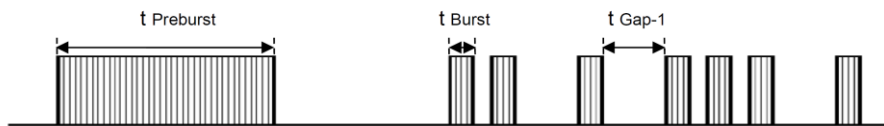
- Front distance between emitter and detector
- Current consumption
- High level output voltage
- Low level output voltage

10. Customer must check below clauses before using

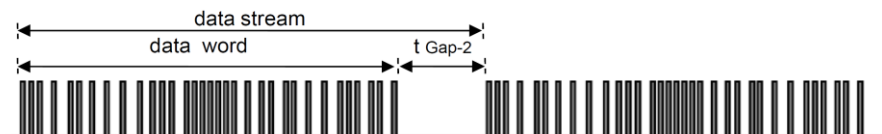
10-1. When this infrared remote control detecting unit shall be adopted for wireless remote control, please keep the following standards.

Item	Symbol	R903V1-5IX	Suitable data format					
Minimum Burst length	tBurst_min	150us	● : Continuous key, x : One key					
Maximum Burst length	tBurst_max	700us	NEC	●	SONY 12Bit	x	XMP-2	●
Minimum gap time after each burst (For bursts less than 700usec)	tGap- 1	300us	RC5	●	SONY 15Bit	x	Matsushita	●
	tGap- 2		RC6	●	SONY 20Bit	x	Mitsubishi	●
Minimum gap time in the data stream (For bursts greater than 700usec)	tPause- 1	>(2xburst length) +30ms	Toshiba	●	RCMM	●	Zenith	●
	tPause- 2		Sharp	●	RECS-80	●	JVC	●
Maximum number of continuous short bursts/second		2000 Bit/sec	r-step	●	XMP-1	●	Continuous Data	●

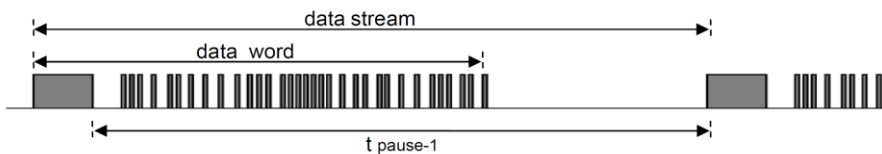
※ Data signal diagram



▶ Case-1 : All Burst Signal ≤ 700usec (e.g. RCMM code , XMP code)



▶ Case-2 : tPreburst > 700usec & tBurst(Data Bit) ≤ 700usec (e.g. NEC , Toshiba code)



▶ Case-3 : tPreburst & tBurst(Data Bit) > 700usec (e.g. SONY , RC5 code)



10-2. We recommend minimum 30cm distance between RC-M and transmitter for normal operating.

If the distance between RC-M and Transmitter is too near, it might not respond.

10-3. If your condition doesn't meet the above statement, it might not operate properly.

11. Caution(When use and storage of this device)

11-1. Store and use where there is no force causing transformation or change in quality

11-2. Store and use when there is no extreme humidity

11-3. Do not wash this device. Wipe the stains of diode side with a soft cloth.

You can use the solvent, ethylalcohol or methylalcohol or isopropylalcohol only.

11-4. The shield case shall be grounded on the PCB pattern. There are two cases, one is that shield case and GND pin are connected in the shield case, the other is not connected in it.

If the receiver modules of shield case is not becoming ground connection, there is a possibility of being weak in the EMI(ElectroMagnetic interference) condition.

11-5. Solder pad within the condition of ratings. after soldering do not add extrorse force.

11-6. Solder pad within the condition of ratings. after soldering do not add extrorse force.

11-7. Put decoupling device between Vcc and GND for reduce the noise from power supply line.

recommand Vcc-GND 47 μ F and Vcc- 100 Ω . Decoupling device should be near receiver modules.

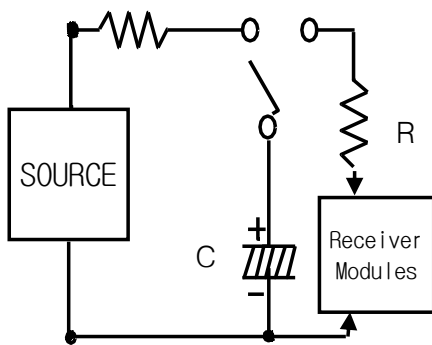
11-8. The decrease in distance, the output noise, the malfunction, etc. might occur because of a surrounding electromagnetic environment.

11-9. To prevent static electricity damage to the Pre-AMP make sure that the human body, the soldering iron is connected to ground before using

11-10. This device has to control of static electricity

KODENSHIAUK Corp. guarantees a R903V1-5IX

up to M.M 200V , HBM 2KV



M.M = MACHINE MODEL(Resistance: 0K Ω Capacitor: 200pF)

HBM = HUMAN BODY MODEL(Resistance: 1.5k Ω Capacitor: 100pF)

11-11. This device is not design to endure radiate rays and heavily charged particles.

12. Period of Guarantee and Extent of Guarantee

12-1. Period of Guarantee

1 year after designated place.

12-2. Extent of Guarantee

KODENSHI AUK Corp. Shall supply the replacements against defects that will caused from KODENSHI AUK Corp. fault.

12-3. This product complies with RoHS directive.

Object : mercury, lead, cadmium, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl others

13. Manual Soldering

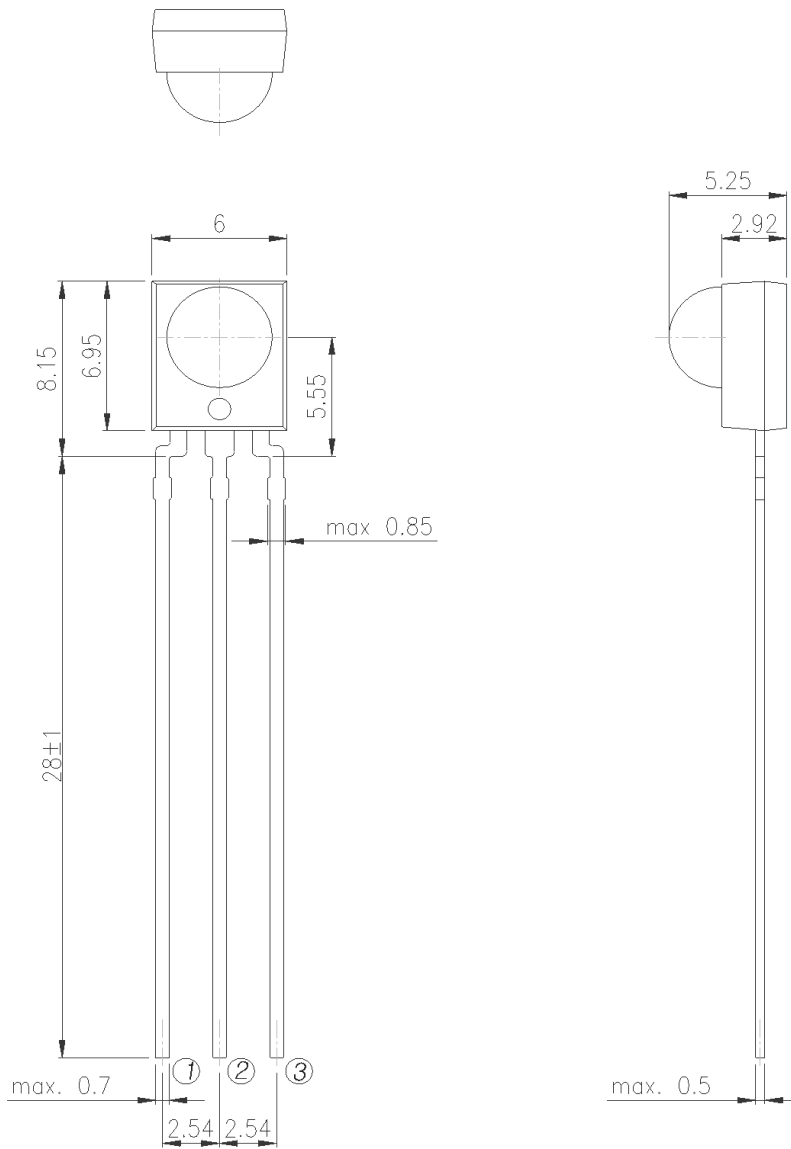
13-1. Use a soldering iron of 25W or less. Adjust the temperature of the soldering iron below 350°C.

13-2. Finish soldering within three seconds.

13-3. Handle products only after the temperature has cooled off.

13-4. To avoid the product is transformed and breakdown, it needs to take care that the power should not join to the product at soldering or immediately after soldering.

14. DIMENSION



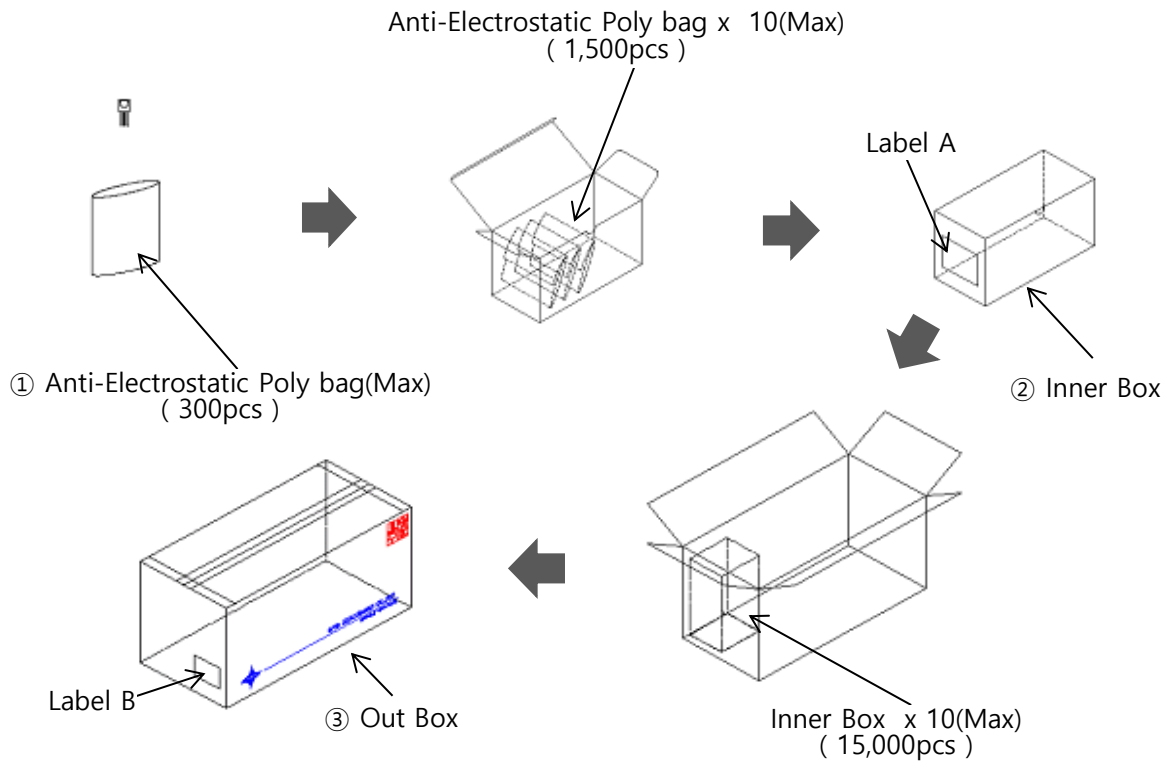
Drawing No : RM-R9□□V1-ASY-01

- Pin configuration

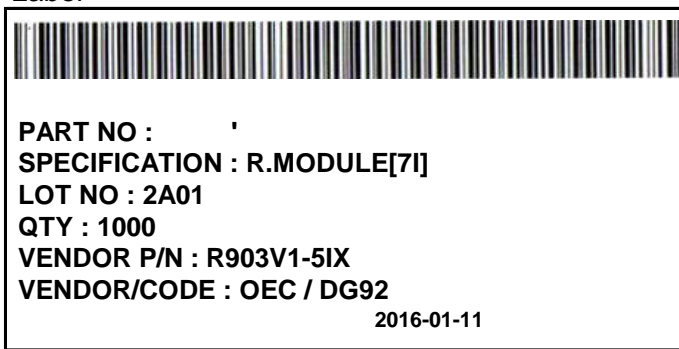
- ① Vout
- ② GND
- ③ Vcc

- 1. Unit : mm
- 2. Unspecified tolerance : ± 0.3 mm
- 3. Lead edge finish : Solder dip

15. PACKING



Label



	Dimension(mm)	Quantity(pcs)
Poly bag	-	300
Inner Box	235×130×110	1,500
Out Box	575×285×265	15,000