

# SPECIFICATION

< Preliminary >

ISSUED DATE : 24/November/2016

DOCUMENT NO. : KPDC-KIR5105J-01

CUSTOMER : \_\_\_\_\_

DESCRIPTION : PhotoInterrupter

MODEL NO. : KIR5105J

**[ AUK CORP. ]**

ISSUE DEPT.			PRODUCTION		Q/A	
ISSUE	REVIEW	APPR'L	REVIEW	APPR'L	REVIEW	APPR'L

**[ CUSTOMER APPROVAL ]**

ISSUE	REVIEW					

**[ REVISION]**

NO	DATE	REVISION ITEM	ISSUED BY	APPR'D BY
0	2016.11.24	신규 제 정	HB. Jeon	YH. Lee

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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.

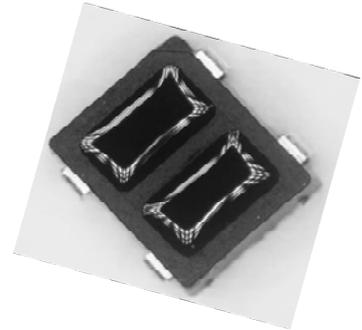
- \* Space equipment \* Telecommunication equipment(Trunk)
- \* Nuclear control equipment \* Medical equipment(relating to any fatal element),etc.

### 1. Description

The KIR5105J is an analog output reflective sensor with a GaAs IRED and a high-sensitivity phototransistor. This sensor is designed in a mini-size, low cost package to be used in wide range of applications such as mobile application, safety equipment, and position sensor for industry.

### 2. Features

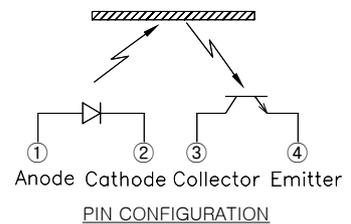
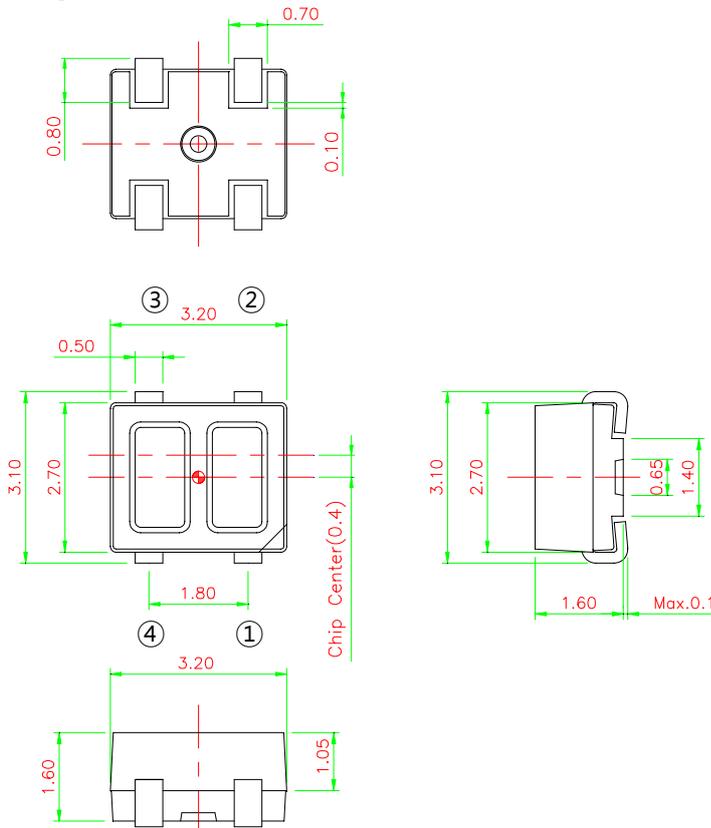
- ◆ Compact reflective photointerrupter
- ◆ Phototransistor output
- ◆ High speed response, Low optical cross-talk
- ◆ Compliant with RoHS directive



### 3. Applications

- ◆ Motion, proximity and edge sensing
- ◆ Mobile Phone, Digital Camera
- ◆ Printer, Optical Storage
- ◆ Industrial control, Home appliance

### 4. Package Outline



- Note
1. General Tolerance :  $\pm 0.2$
  2. ( ) : Reference Dimension

### 5. Absolute Maximum Ratings

[T<sub>A</sub> = 25°C]

Parameter		Symbol	Rating	Unit
Input	Forward Current	I <sub>F</sub>	50	mA
	Power Dissipation	P <sub>D</sub>	75	mW
	Reverse Voltage	V <sub>R</sub>	5	V
	Pulse Forward Current *1	I <sub>FP</sub>	1	A
Output	Collector Power Dissipation	P <sub>C</sub>	50	mW
	Collector Current	I <sub>C</sub>	20	mA
	Collector-Emitter Voltage	BV <sub>CEO</sub>	30	V
	Emitter-Collector Voltage	BV <sub>ECO</sub>	3	V
Operating Temperature *2		Topr.	-25 ~ +85	°C
Storage Temperature *2		Tstg.	-30 ~ +100	°C
Soldering Temperature *3		Tsol	240	°C

\*1.  $t_w \leq 100 \mu s$ , period : T = 10ms.

\*2. No icebound or dew.

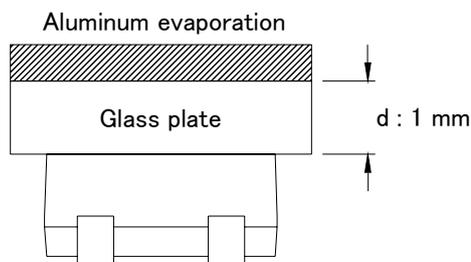
\*3. For MAX. 5 seconds at the position of 2mm from the package.

### 6. Elector-Optical Characteristics

[T<sub>A</sub> = 25°C]

Parameter		Symbol	Conditions	Min.	Typ.	Max.	Unit.
Input	Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 10mA	-	-	1.3	V
	Reverse Current	I <sub>R</sub>	V <sub>R</sub> = 5V	-	-	10	μA
	Peak Wavelength	λ <sub>P</sub>	I <sub>F</sub> = 20mA	-	940	-	nm
Output	Collector Dark Current	I <sub>CEO</sub>	V <sub>CE</sub> = 10V, 0 lux	-	-	0.2	μA
Trans- mission	Collector Current *4	I <sub>C</sub>	V <sub>CE</sub> = 5V, I <sub>F</sub> = 10mA, d = 1mm	90	-	-	μA
	Leakage Current	I <sub>CEOD</sub>	V <sub>CE</sub> = 5V, I <sub>F</sub> = 10mA	-	-	2	μA
Response Time	Rise Time	tr	V <sub>CC</sub> = 2V, I <sub>C</sub> = 0.1mA R <sub>L</sub> = 1kΩ	-	30	-	us
	Fall Time	tf		-	25	-	us

\*4. Test Conditon and Arrangement for Collector Current



No.	I <sub>C</sub> (μA)
A	90 ~ 220
B	180 ~ 300
C	250 ~ 440
D	360 ~ 660

**7. Inspection Criteria**

7-1. All of these products shall be inspected to the following items in electro-optical characteristics.

Collector Dark Current :  $I_{CEO}$

Collector Current :  $I_c$

7-2. The other items are things that shall not particularly inspected but these products shall satisfy our standards.

**8. Cautions in Usage**

8-1. Store and use where there is no exterior force that will cause change in shape.

8-2. Store and use where there is no Hydrogen Sulfide gas, or any other corrosive gas.

8-3. The bending or cutting of the lead should be done at room temperature, no force being applied on the package.

8-4. Solder the lead pin under conditions of the absolute maximum rating chart, and do not apply force on the lead pin & package during soldering process or after soldering.

8-5. Store and use where there is no force causing transformation or change in quality

8-6. Storage Condition : 5 to 30 °C @ 60% RH Max. Baking is required under the condition :

the pack has been opened for more than 72hours, baking recommended condition : 60±5°C for 48hours

\* In Reel

\* In Bulk

- 60 °C for 48 hours or more

- 100 °C for 4 hours or more or 125 °C for 2 hours or more

**9. Guarantee Period and Scope**

9-1. Period

One year after delivery to the desired place.

9-2. Scope

Replacement of products will be done, if any problems lie in our company's products.

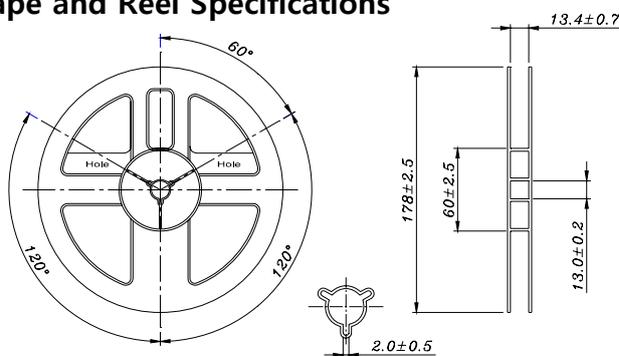
However, we are not liable for your damage by lack of caution.

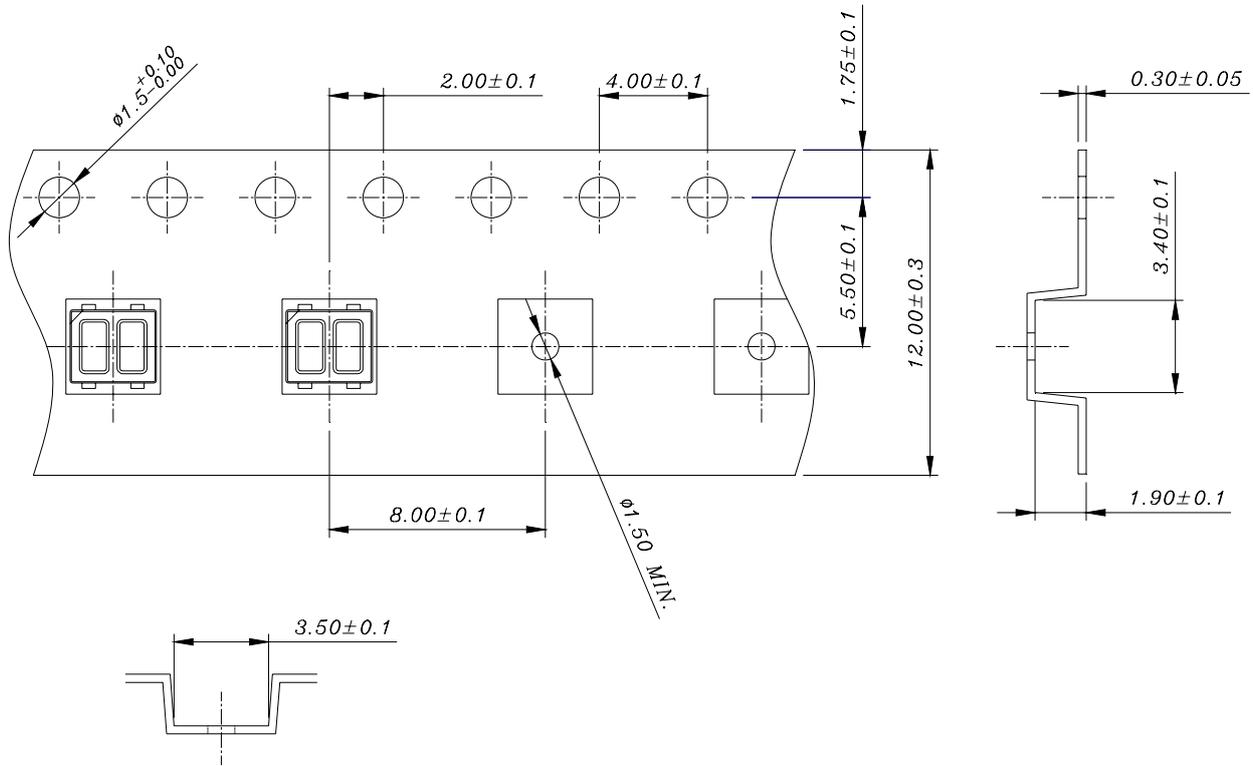
9-3. This part is compliant to JEDEC Level 4

**10. Others**

Any doubts concerning this specification should be discussed fully by both parties.

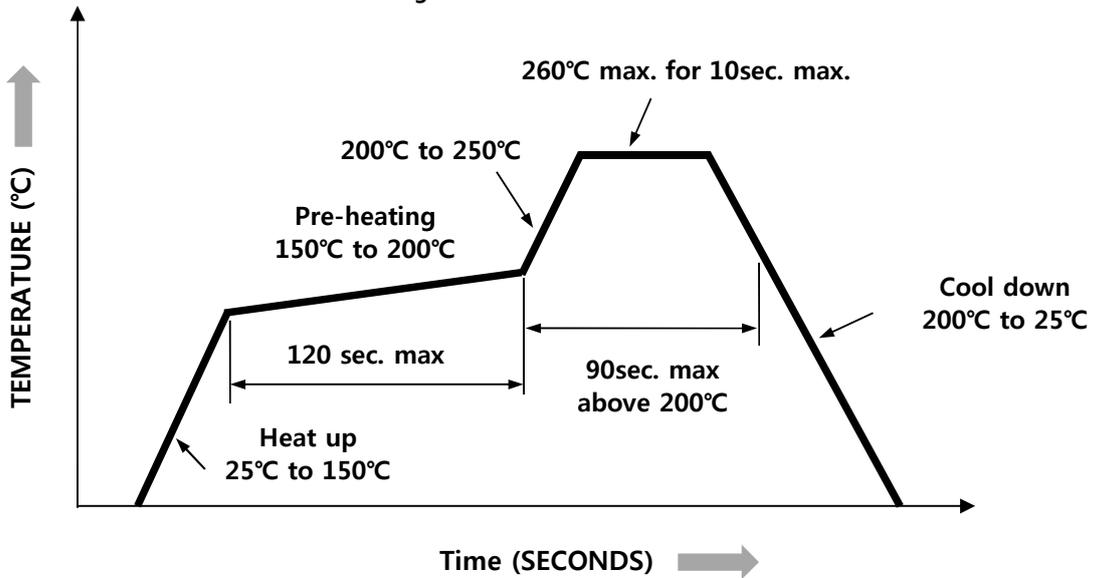
**11. Tape and Reel Specifications**



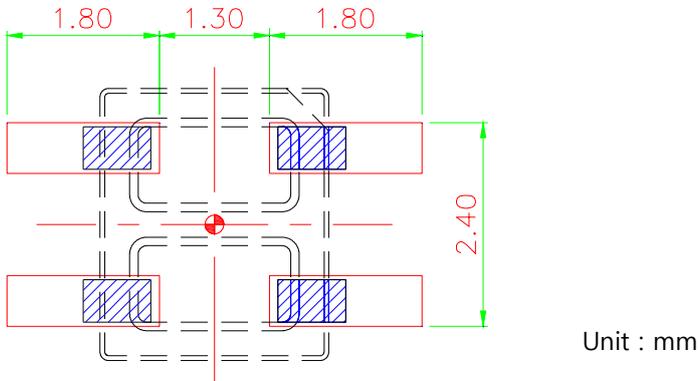


※ Recommended Reflow Soldering Profile for SMT Options

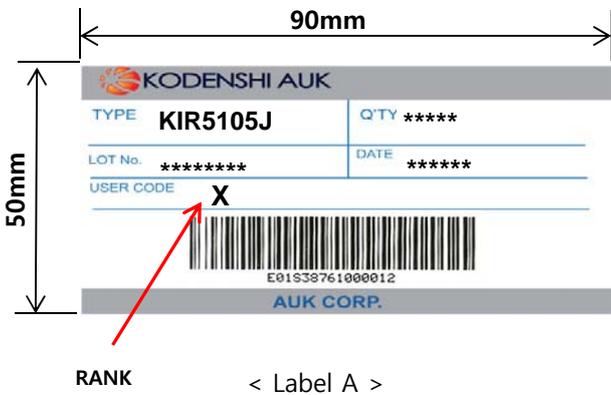
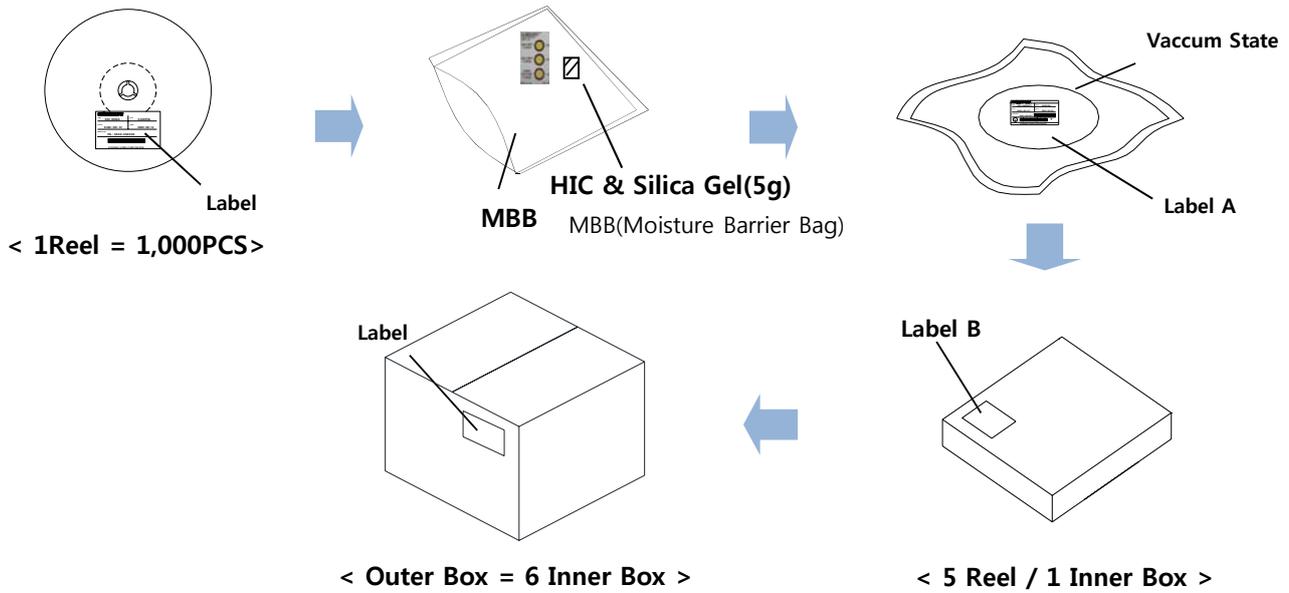
Recommended Reflow Soldering Profile.  
reflow soldering should not be done more than twice.



※ Recommended Soldering Pattern

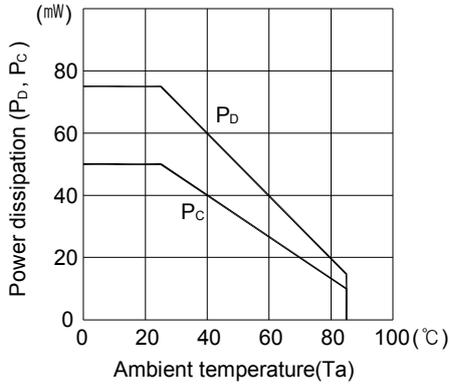


12. Packing Specifications

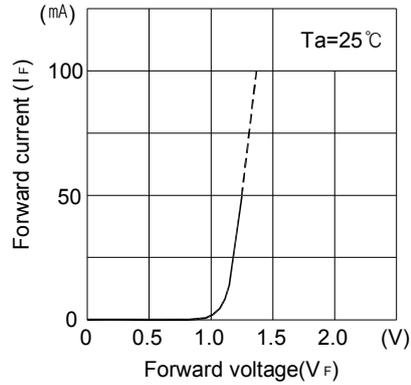


Typical Electrical - Optical Characteristics Curves

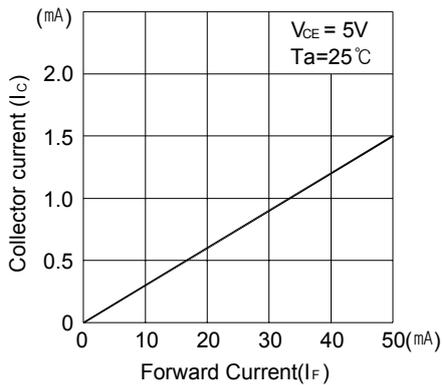
■ Input, Output power dissipation Vs. Ambient temperature



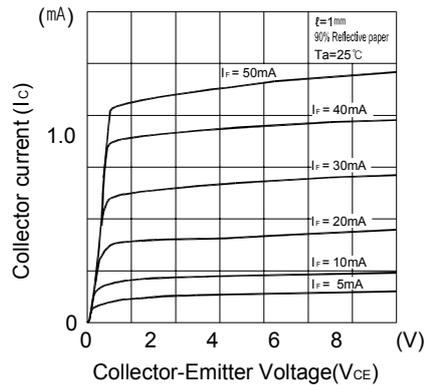
■ Forward current Vs. Forward voltage



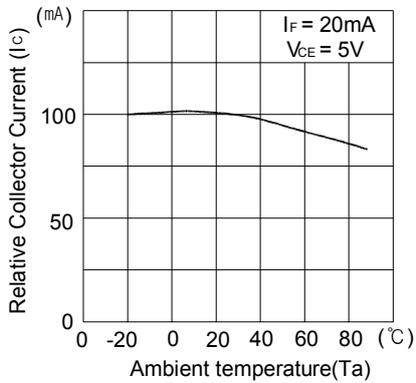
■ Collector current Vs. Forward current



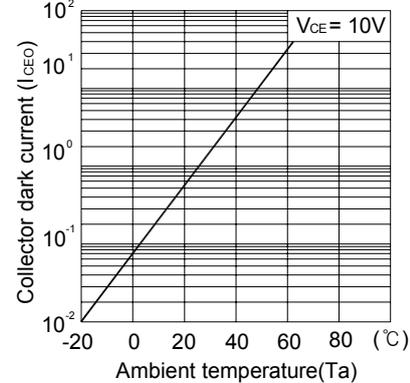
■ Collector current Vs. Collector-Emitter voltage



■ Relative collector current Vs. Ambient temperature

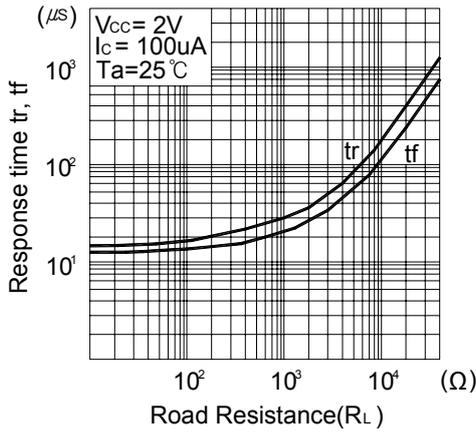


■ Dark current Vs. Ambient temperature

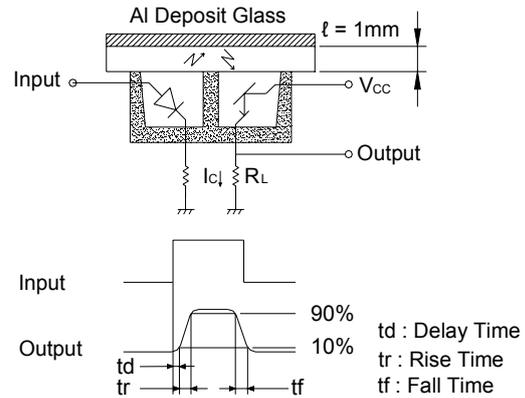


Typical Electrical - Optical Characteristics Curves

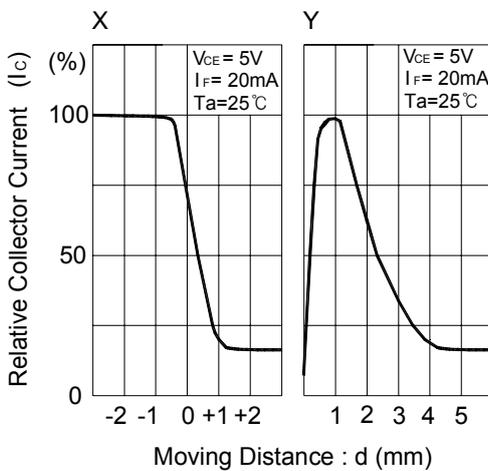
■ Switching time Vs. Load resistance



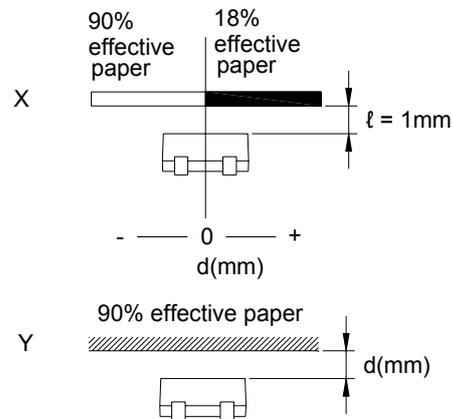
■ Test Circuit for Switching time



■ Relative Collector current Vs. Moving distance



■ Test Condition for Distance & Detecting Position Characteristics



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