

Part Number: KTIR0821DS

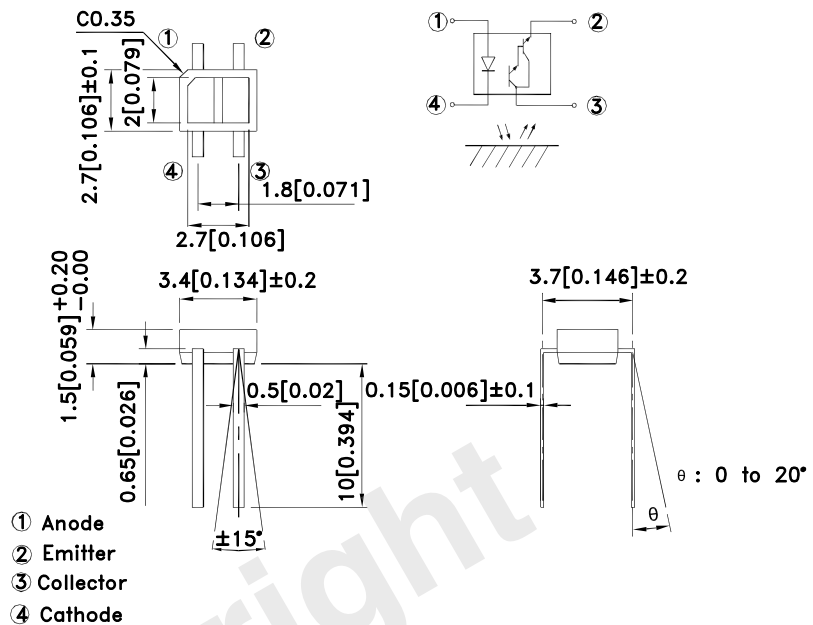
### \*Features

- Compact and thin
- Visible light cut-off type
- High sensitivity
- RoHS Compliant.

### \*Applications

- Cassette tape recorders, VCRs
- Floppy disk drives
- Various microcosm puterized control equipment

### Package Dimensions



#### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25(0.01)$  unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.
4. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.

### \*Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	$I_F$	50	mA
	Reverse voltage	$V_R$	6	V
	Power dissipation	$P_d$	75	mW
	Peak Forward Current (Pulse Width $\leq 100\mu s$ , Duty Cycle = 1%)	$I_{FP}$	1	A
Output	Collector-emitter voltage	$V_{CEO}$	35	V
	Emitter-collector voltage	$V_{ECO}$	6	V
	Collector current	$I_C$	50	mA
	Collector power dissipation	$P_C$	75	mW
Operating temperature		$T_{opr}$	-25~+85	°C
Storage temperature		$T_{stg}$	-40~+100	°C
soldering temperature (1/16 inch from body for 5 seconds)		$T_{sol}$	260	°C



### ■ Electro-optical Characteristics (Ta=25°C)

Parameter		Symbol	Conditions	Min.	TYP.	Max.	Unit
Input	Forward Voltage	$V_F$	$I_F=20\text{mA}$	1.0	1.2	1.5	V
	Reverse Current	$I_R$	$V_R=6\text{V}$	-	-	10	$\mu\text{A}$
	Peak Wavelength	$\lambda_P$	$I_F=20\text{mA}$	-	940	-	nm
Output	Collector Dark Current	$I_{CEO}$	$V_{CE}=10\text{V}$ $I_F=0\text{mA}$	-		$10^{-6}$	A
Transfer characteristics	*1 Collector Current	$I_C$	$V_{CE}=2\text{V}$ $I_F=4\text{mA}$	-	3	-	mA
	*2 Leak Current	$I_{LEAK}$	$V_{CE}=5\text{V}$ $I_F=4\text{mA}$	-	-	5	$\mu\text{A}$
	Response time	Rise time	$V_{CE}=2\text{V}$ $I_C=10\text{mA}$ $R_L=100\Omega, d=1\text{mm}$	-	80	400	$\mu\text{sec}$
		Fall time		-	70	400	$\mu\text{sec}$

\*1 The condition and arrangement of the reflective object are shown below

\*2 Without reflective object

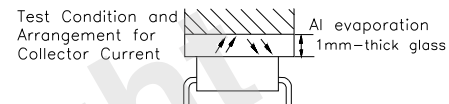


Fig. 1 Forward Current vs. Forward Voltage

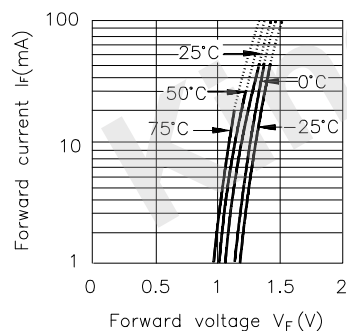


Fig. 3 Collector Current vs. Collector-emitter Voltage

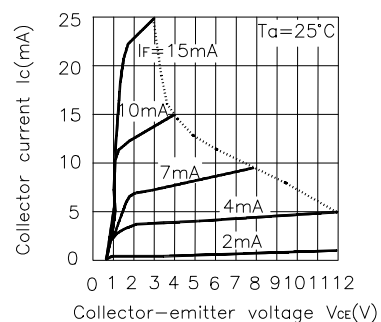


Fig. 2 Collector Current vs. Forward Current

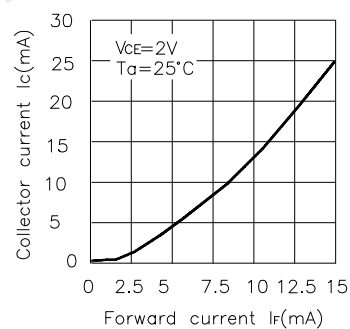


Fig. 4 Relative Collector Current vs. Ambient Temperature

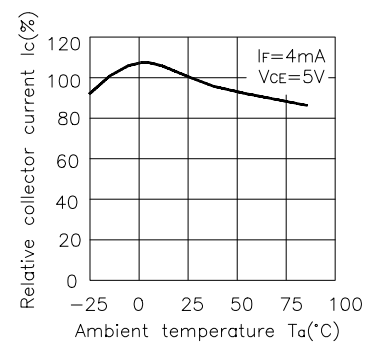
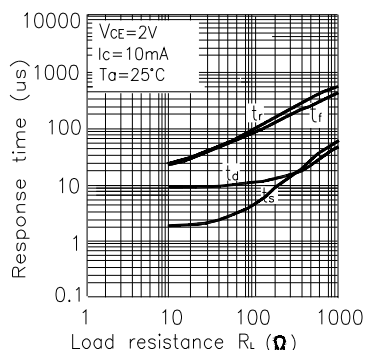


Fig. 5 Response Time vs. Load Resistance



Test Circuit for Response Time

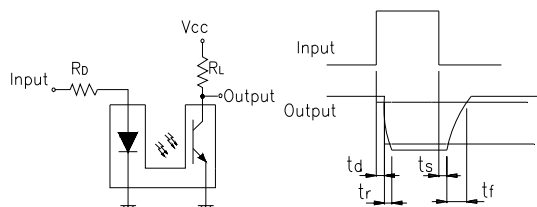


Fig. 6 Collector Dark Current vs. Ambient Temperature

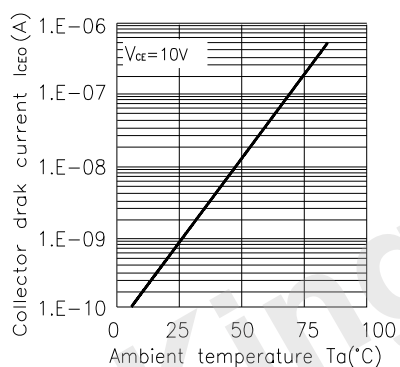


Fig. 7 Relative Collector Current vs. Distance between Sensor and Al Evaporation Glass

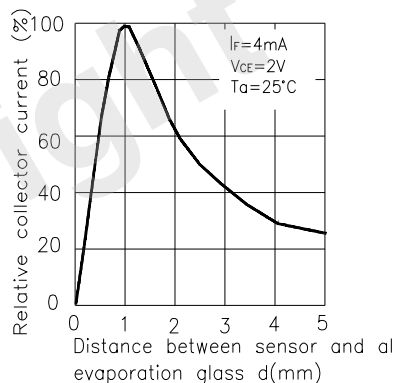


Fig. 8 Relative Collector Current vs. Card Moving Distance (1)

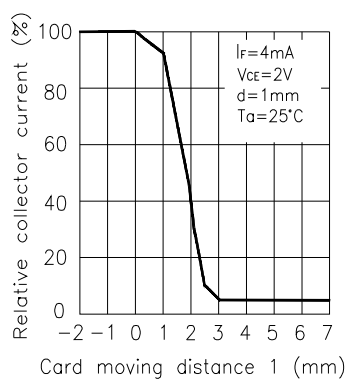
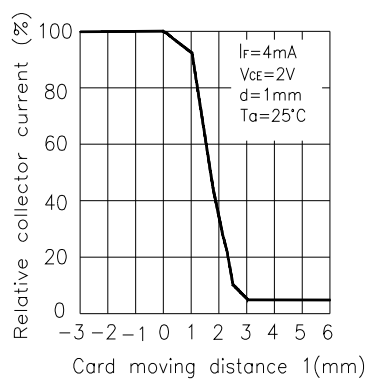
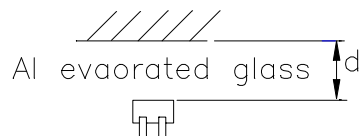


Fig. 9 Relative Collector Current vs. Card Moving Distance (2)



### Test Condition for Distance & Detecting Position Characteristics

Correspond to Fig. 7



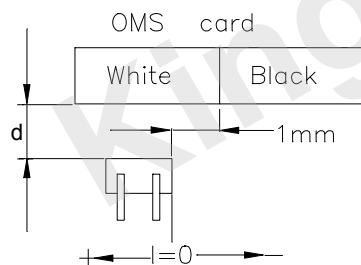
Correspond to Fig. 8

Test condition

$$I_F = 4\text{mA}$$

$$V_{CE} = 2\text{V}$$

$$d = 1\text{mm}$$



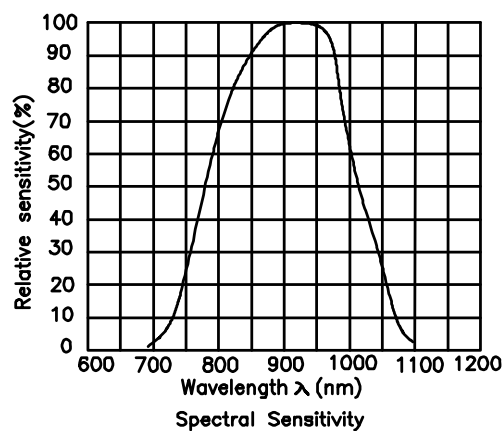
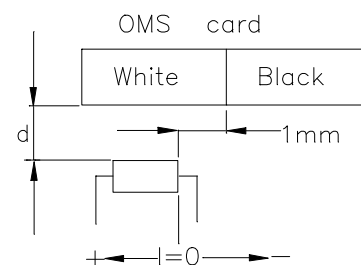
Correspond to Fig. 9

Test condition

$$I_F = 4\text{mA}$$

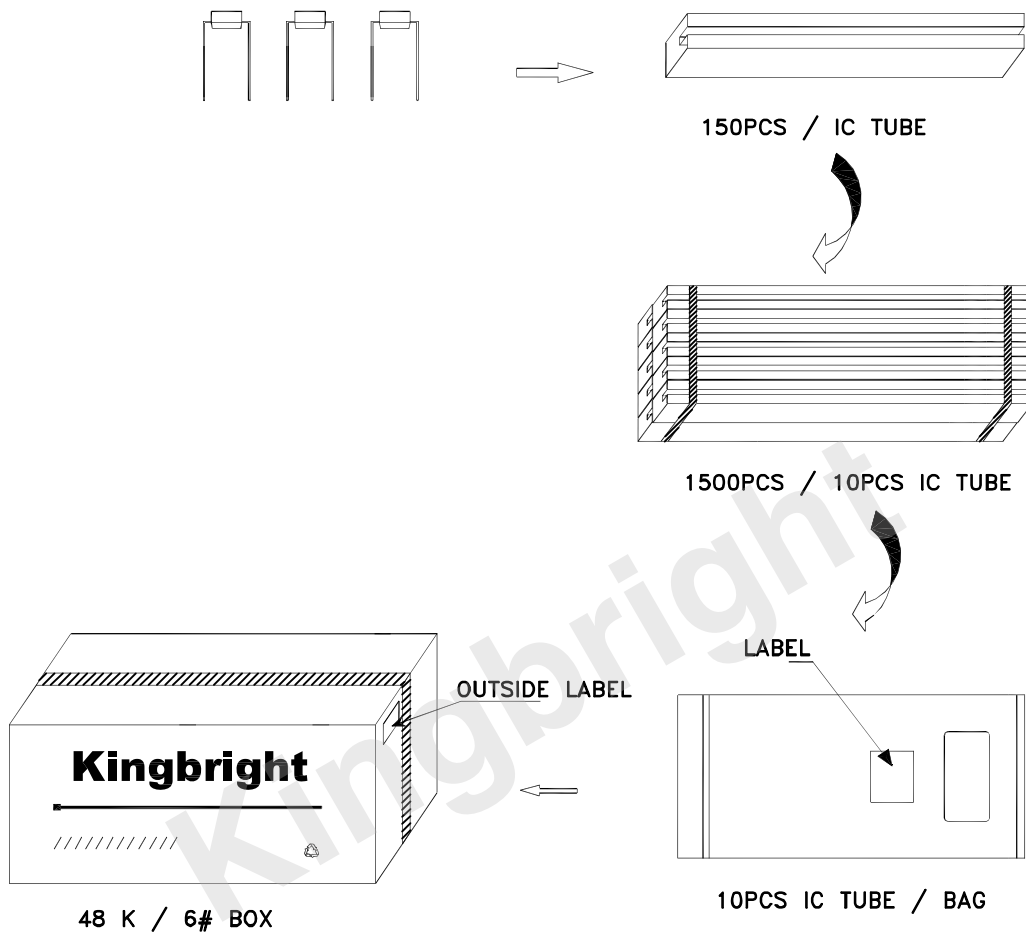
$$V_{CE} = 2\text{V}$$


$$d = 1\text{mm}$$



### PACKING & LABEL SPECIFICATIONS

KTIR0821DS



<b>Kingbright</b>		
P/NO: KTIR0821DS		
QTY: 1500 pcs	Q.C.	<div style="border: 1px solid black; border-radius: 50%; padding: 5px; text-align: center;"> Q C  XX XX XXXX  PASSED </div>
S/N: XXXX		
CODE: XXX		
LOT NO:		
 XXXXXXXXXXXXXXXXXX		
RoHS Compliant		

Detailed application notes are listed on our website.  
[http://www.kingbright.com/application\\_notes](http://www.kingbright.com/application_notes)