

### KTIR0721DS

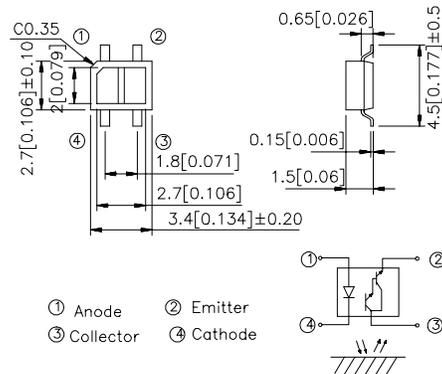
#### Features

- Compact and thin
- Visible light cut-off type
- High sensitivity

#### Applications

- Cassette tape recorders, VCRs
- Floppy disk drives
- Various microcomputerized 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 lead emerge package.
4. Specifications are subject to change without notice.

#### Absolute Maximum Ratings ( $T_a=25^\circ\text{C}$ )

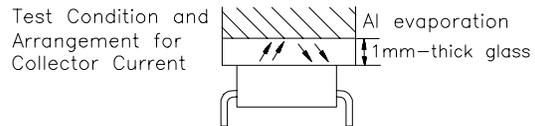
Parameter		Symbol	Rating	Unit
Input	Forward current	$I_F$	50	mA
	Reverse voltage	$V_R$	6	V
	Power dissipation	$P$	75	mW
Output	Collector-emitter voltage	$V_{CEO}$	35	V
	Emitter-collector voltage	$V_{ECO}$	6	V
	Collector current	$I_C$	50	mA
	Collector power dissipation	$P_C$	75	mW
Operating temperature		$T_{opr}$	-25~+85	$^\circ\text{C}$
Storage temperature		$T_{stg}$	-40~+100	$^\circ\text{C}$
Soldering temperature (1/16 inch from body for 5 seconds)		$T_{sol}$	260	$^\circ\text{C}$

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

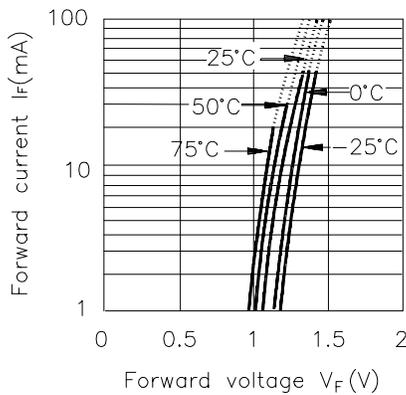
Parameter		Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage	$V_F$	$I_F=20\text{mA}$	—	1.2	1.5	V
	Reverse current	$I_R$	$V_R=5\text{V}$	—	—	10	$\mu\text{A}$
Output	Collector dark current	$I_{CEO}$	$V_{CE}=10\text{V}, I_F=0\text{mA}$	—	—	$10^{-6}$	A
Transfer characteristics	*1Collector current	$I_C$	$V_{CE}=2\text{V}, I_F=4\text{mA}$	—	3	—	mA
	*2Leak current	$I_{LEAK}$	$V_{CE}=5\text{V}, I_F=4\text{mA}$	—	—	5	$\mu\text{A}$
	Response time	Rise time	$t_r$	$V_{CE}=2\text{V}, I_C=10\text{mA}$ $R_L=100\Omega, d=1\text{mm}$	—	80	400
Fall time		$t_f$	—		70	400	$\mu\text{sec}$

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

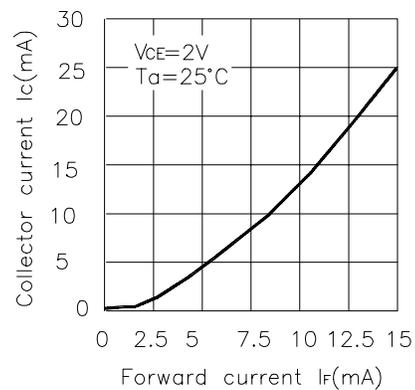
\*2 Without reflective object



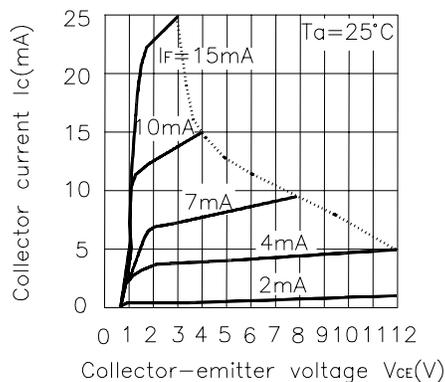
**Fig.1 Forward Current vs. Forward Voltage**



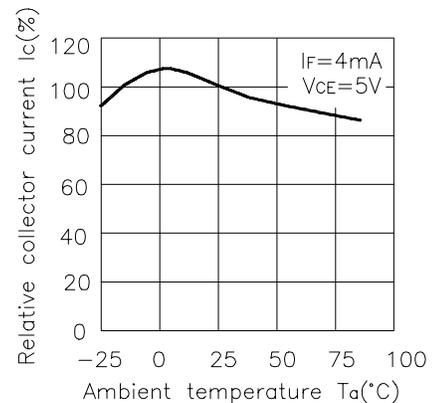
**Fig.2 Collector Current vs. Forward Current**



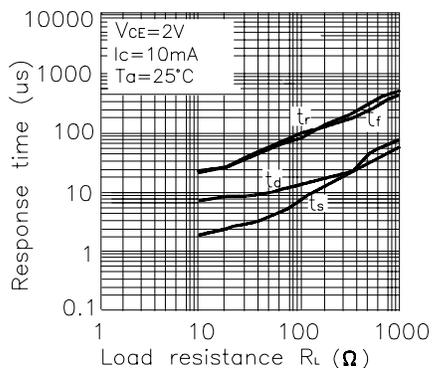
**Fig.3 Collector Current vs. Collector-emitter Voltage**



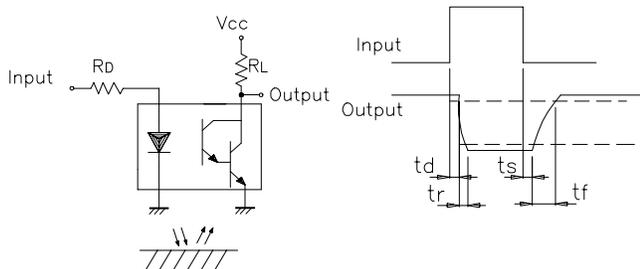
**Fig.4 Relative Collector Current vs. Ambient Temperature**



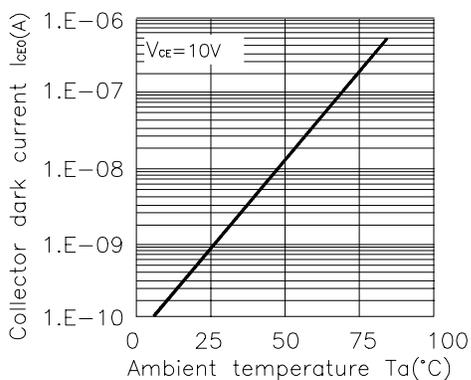
**Fig.5 Response Time vs Load Resistance**



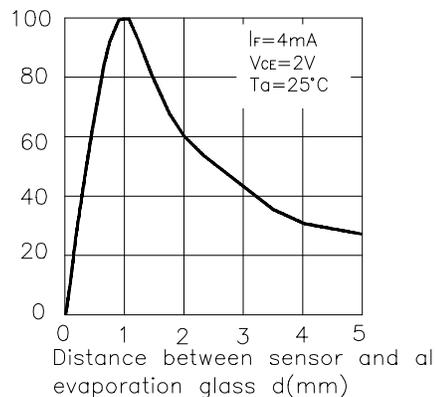
**Test Circuit for Response Time**



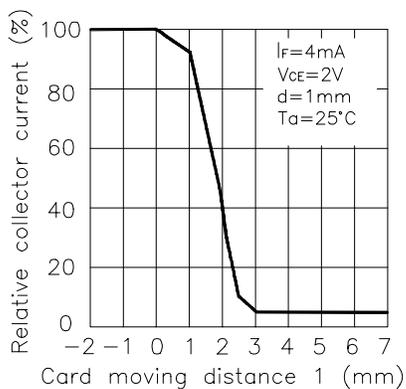
**Fig.6 Collector Dark Current vs Ambient Temperature**



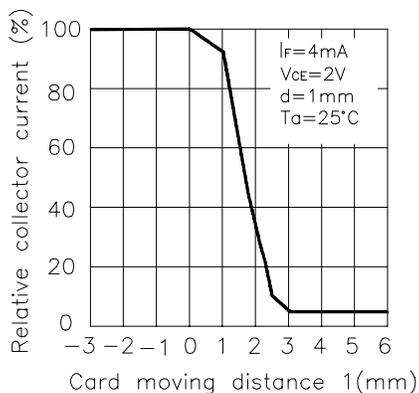
**Fig.7 Relative Collector Current vs Distance between Sensor and Al Evaporation Glass**



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

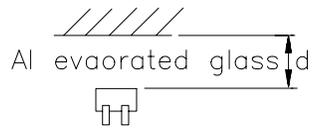


**Fig.9 Relative Collector Current vs. Card Moving Distance (2)**



## Test Condition for Distance&Detecting Position Characteristics

Correpond to Fig.7

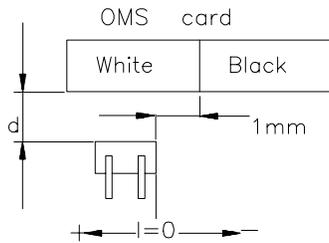


Correpond to Fig.8  
Test condition

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

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

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



Correpond to Fig.9  
Test condition

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

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

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

