

SUBMINIATURE, HIGH SENSITIVITY PHOTOINTERRUPTER

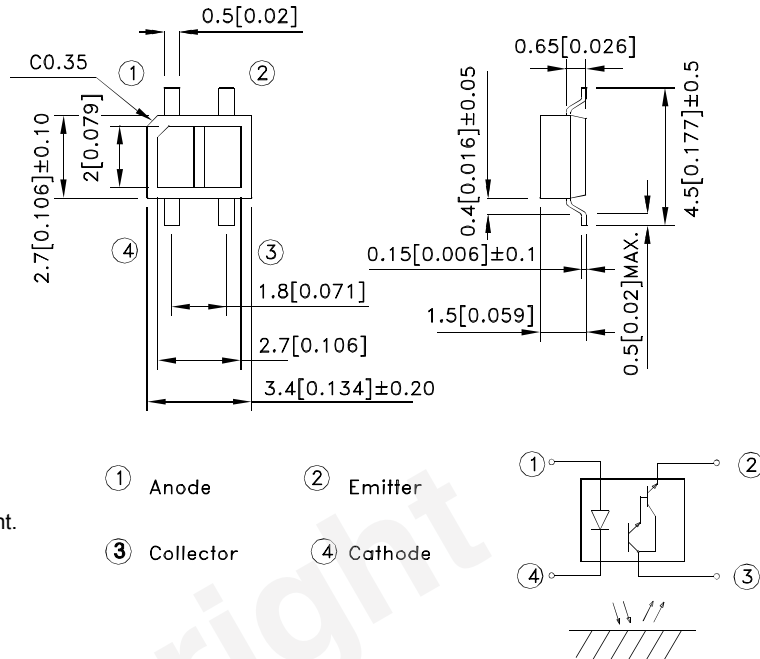
Package Dimensions

*Features

- Compact and thin.
- Visible light cut-off type.
- High sensitivity.
- Package: 1000pcs/Reel.
- MSL level: level 4
- RoHS Compliant.

*Applications

- Cassette tape recorders, VCRs.
- Floppy disk drives.
- Various microcomputerized control equipment.



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 $T_a=25^\circ\text{C}$

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	6	V
	Power dissipation	PD	75	mW
	Peak Forward Current (Pulse Width $\leq 100\mu\text{s}$, Duty Cycle $\approx 1\%$)	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}	$-25\sim+85$	$^\circ\text{C}$
Storage temperature		T_{stg}	$-40\sim+100$	$^\circ\text{C}$
soldering temperature (1/16 inch from body for 5 seconds)		T_{sol}	260	$^\circ\text{C}$

Note:

1. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.



■Electro-optical Characteristics

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	μA
	Peak Wavelength	λ_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	μA
	Response time	Rise time	$V_{CE}=2\text{V}$ $I_C=10\text{mA}$ $R_L=100\Omega, d=1\text{mm}$	-	80	400	μsec
		Fall time		-	70	400	μsec

*1 Excess driving current and/or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

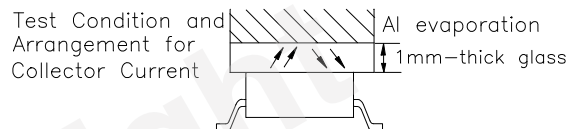


Fig. 1 Forward Current vs. Forward Voltage

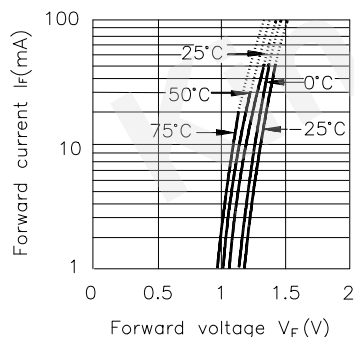


Fig. 2 Collector Current vs. Forward Current

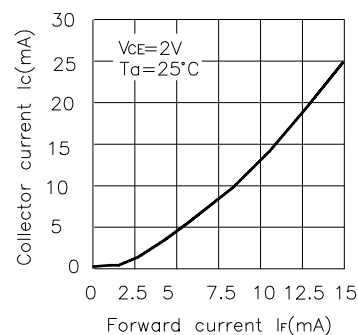


Fig. 3 Collector Current vs. Collector-emitter Voltage

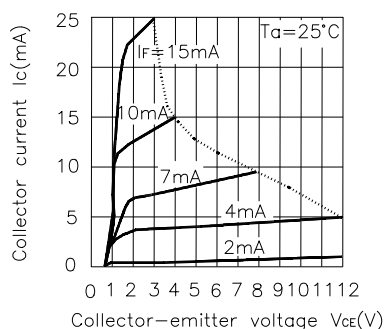


Fig. 4 Relative Collector Current vs. Ambient Temperature

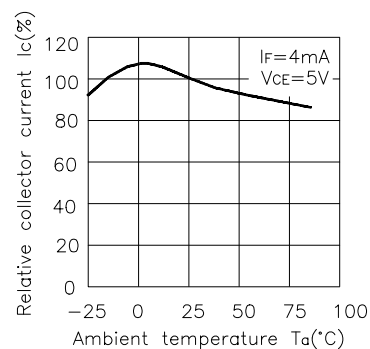
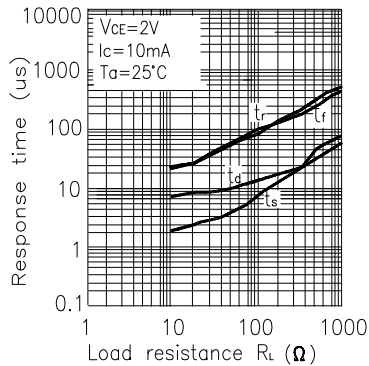


Fig. 5 Response Time vs. Load Resistance



Test Circuit for Response Time

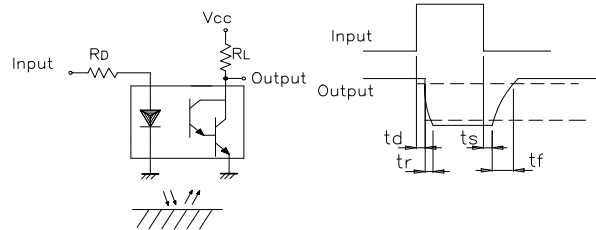


Fig. 6 Collector Dark Current vs. Ambient Temperature

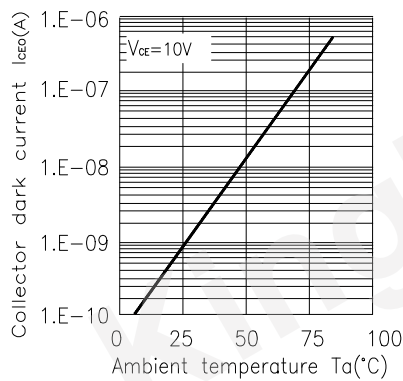


Fig. 7 Relative Collector Current vs. Distance between Sensor and Al Evaporation Glass

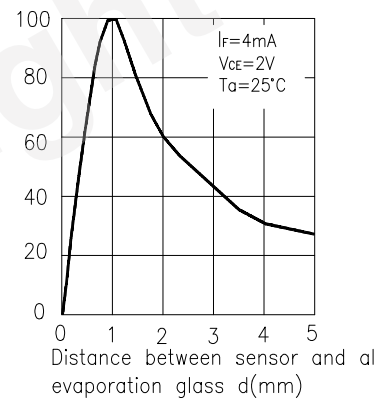


Fig. 8 Relative Collector Current vs. Card Moving Distance (1)

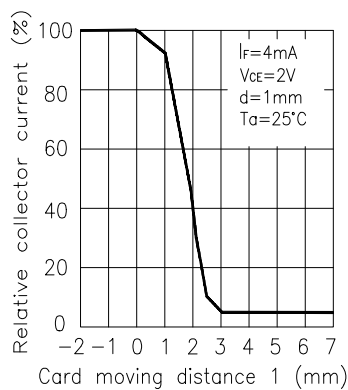
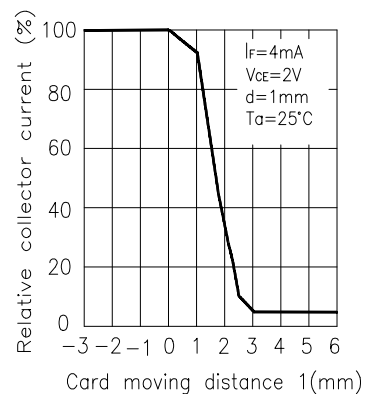
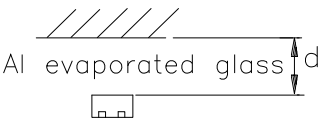


Fig. 9 Relative Collector Current vs. Card Moving Distance (2)



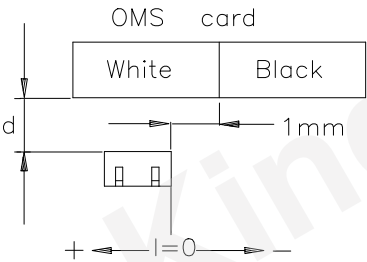
Test Condition for Distance & Detecting
Position Characteristics

Correpond to Fig. 7



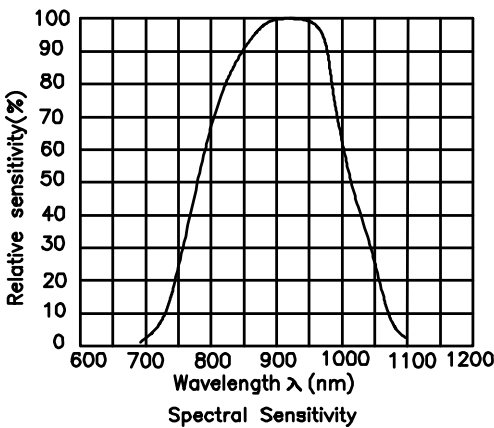
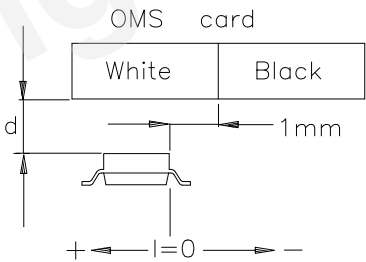
Correpond to Fig. 8
Test condition

$I_F = 4\text{mA}$
 $V_{CE} = 2\text{V}$
 $d = 1\text{mm}$



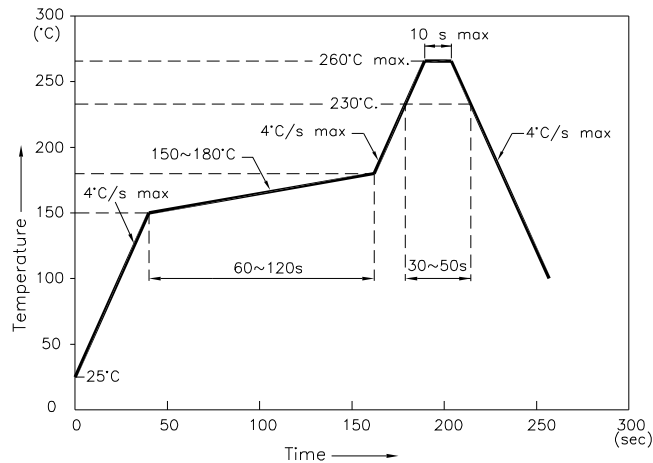
Correpond to Fig. 9
Test condition

$I_F = 4\text{mA}$
 $V_{CE} = 2\text{V}$
 $d = 1\text{mm}$



KTIR0721DS

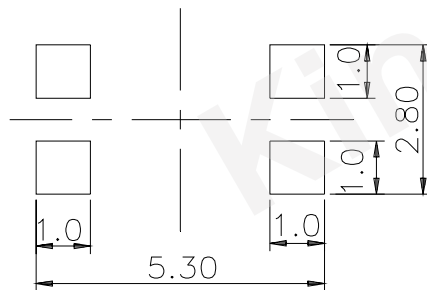
Reflow Soldering Profile For Lead-free SMT Process.



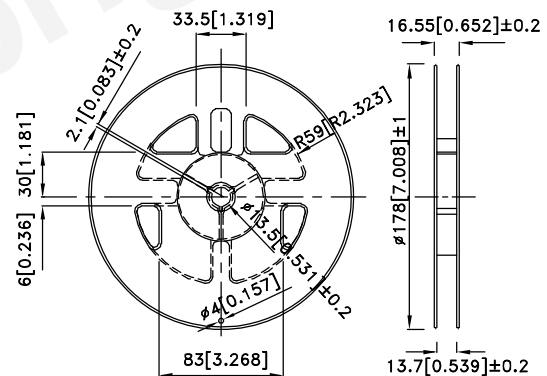
NOTES:

1. We recommend the reflow temperature $245^{\circ}\text{C} (+/-5^{\circ}\text{C})$. The maximum soldering temperature should be limited to 260°C .
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

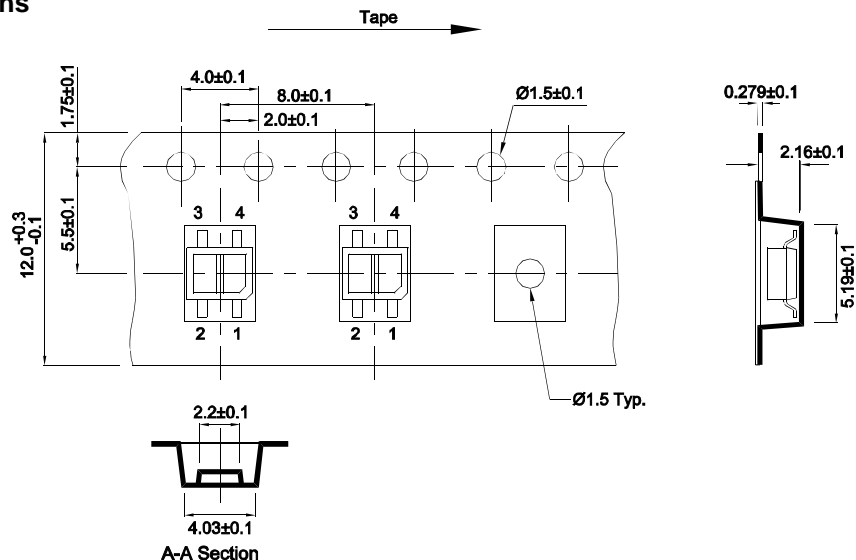
Recommended Soldering Pattern (Units : mm; Tolerance: ± 0.1)



Reel Dimension

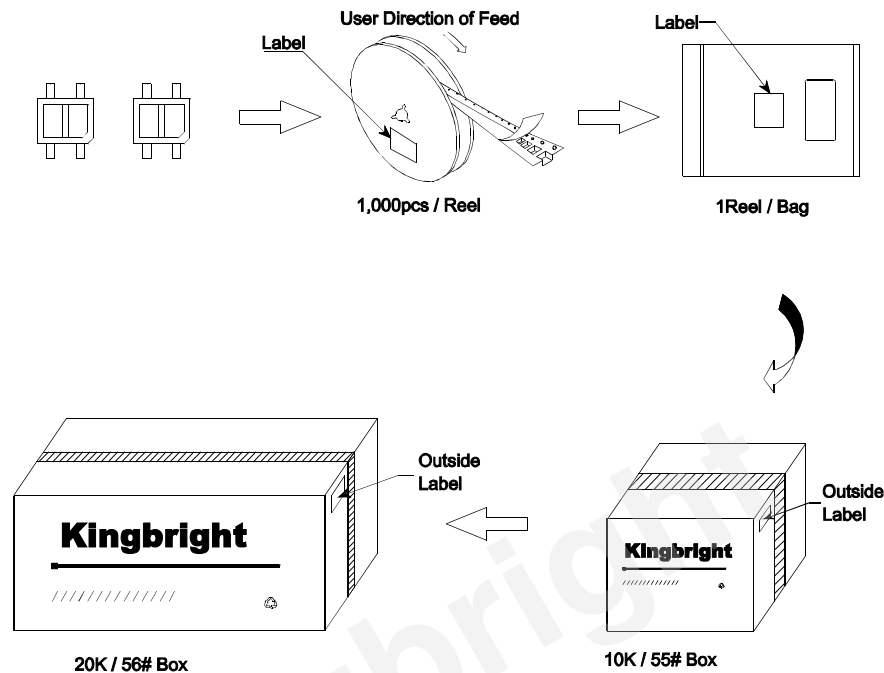


Tape Specifications (Units : mm)



PACKING & LABEL SPECIFICATIONS

KTIR0721DS



Kingbright	
P/NO: KTIRXXX	
QTY: 1,000 pcs	Q.C.
S/N: XXXX	QC xxxxxxx PASSED
CODE: XXX	
LOT NO:	
RoHS Compliant	

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