

ATIR0811S

Photointerrupter - Reflective Type



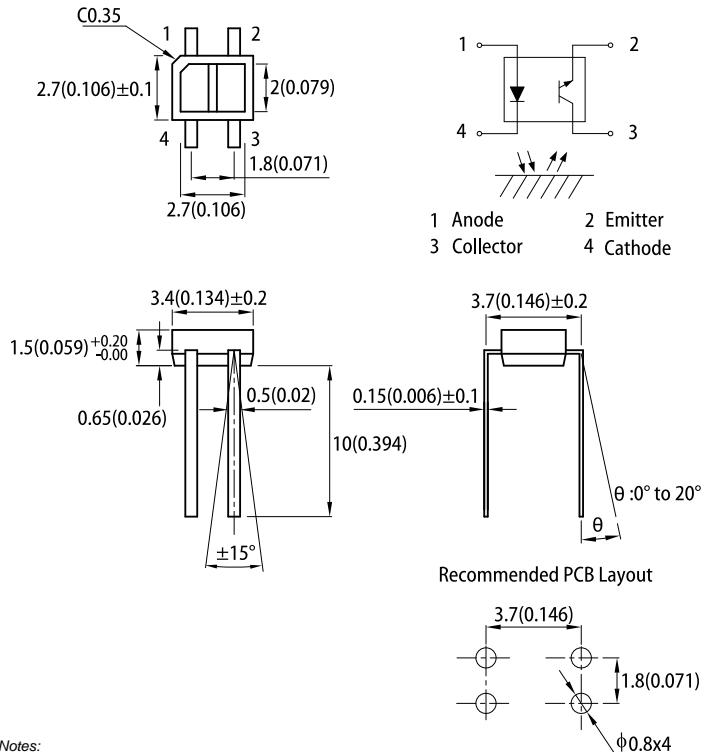
FEATURES

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

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. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.

ELECTRICAL / OPTICAL CHARACTERISTICS at $T_A=25^\circ\text{C}$

Parameter		Symbol	Value				Unit	Test Conditions	
			Code.	Min.	Typ.	Max.			
Input	Forward Voltage	V_F	-	1.0	1.2	1.5	V	$I_F=20\text{mA}$	
	Reverse Current	I_R	-	-	-	10	μA	$V_R=6\text{V}$	
Output	Collector Dark Current	I_{CEO}	-	-	10^{-9}	10^{-7}	A	$V_{CE}=20\text{V}$	
Transfer Characteristics	Collector Current ^[1]		I_C	E	10	-	120	μA $I_F=4\text{mA}, V_{CE}=2\text{V}$	
				F	100	-	250		
				G	200	-	400		
Response Time	Leak Current ^[2]	I_{LEAK}	-	-	-	0.1	μA	$I_F=4\text{mA}, V_{CE}=2\text{V}$	
	Collector-Emitter Saturation Voltage	$V_{CE(\text{sat})}$	-	-	-	0.4	V	$I_F=20\text{mA}, I_C=0.1\text{mA}$	
	Rise Time	t_r	-	-	20	100	μs	$V_{CE}=2\text{V}, I_C=100\mu\text{A}$ $R_L=1\text{K}\Omega, d=1\text{mm}$	
Response Time	Fall Time	t_f	-	-	20	100	μs		

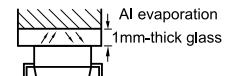
Notes:

1. Test condition of collector current is shown below.

2. Without reflective object.

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

Test Condition and Arrangement for Collector Current



ABSOLUTE MAXIMUM RATINGS at $T_A=25^\circ\text{C}$

Parameter		Symbol	Rating	Unit
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	6	V
	Power Dissipation	P_D	75	mW
	Peak Forward Current (Pulse Width $\leq 100\mu\text{s}$, 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	20	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	$^\circ\text{C}$

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.

TECHNICAL DATA

Fig. 1 Forward Current vs. Forward Voltage

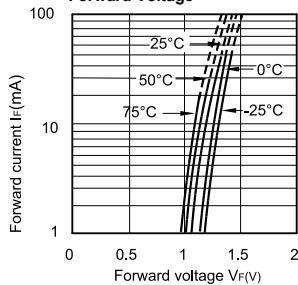


Fig. 2 Collector Current vs. Forward Current

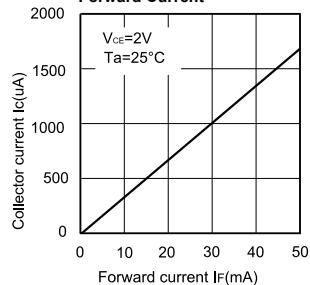


Fig. 3 Collector Current vs. Collector-Emitter Voltage

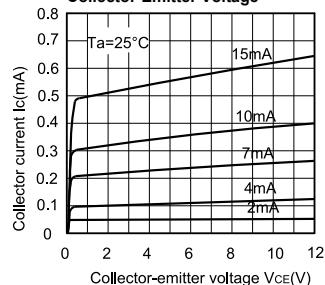


Fig. 4 Relative Collector Current vs. Ambient Temperature

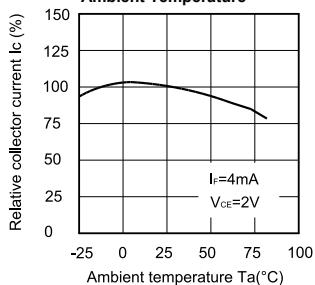


Fig. 5 Response Time vs. Load Resistance

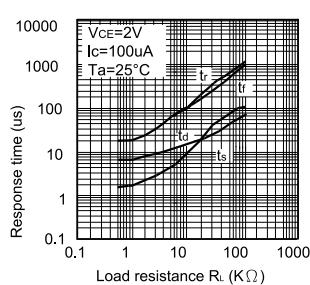


Fig. 6 Collector Dark Current vs. Ambient Temperature

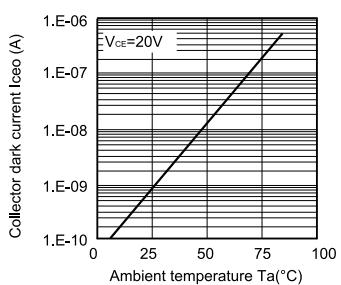


Fig. 7 Relative Collector Current vs. Distance Between Sensor and Al Evaporation Glass

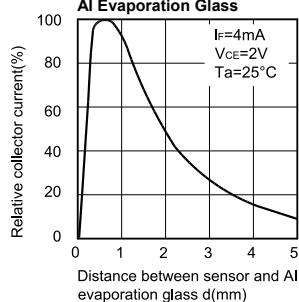


Fig. 8 Relative Collector Current vs. Card Moving Distance (1)

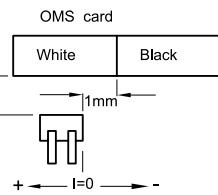
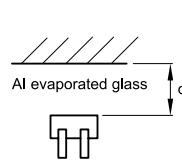
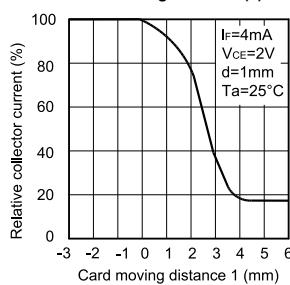
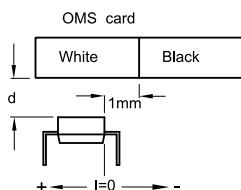
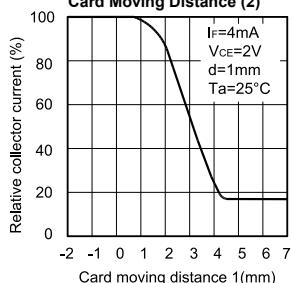
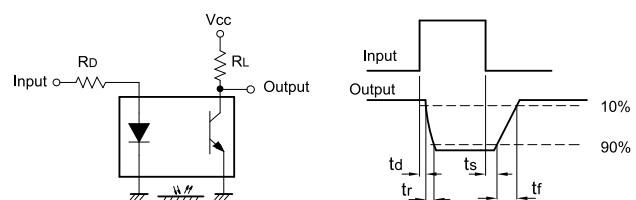


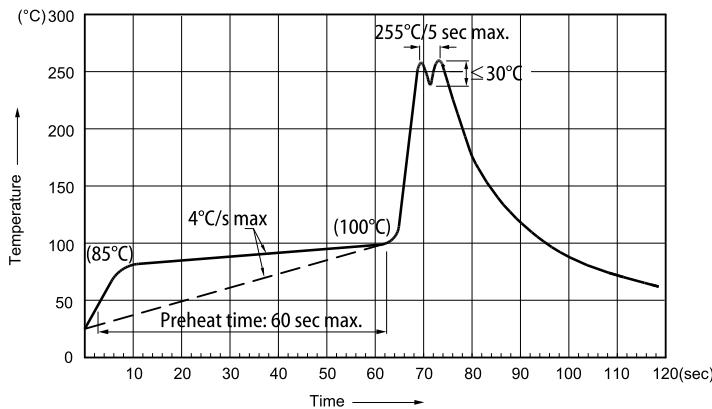
Fig. 9 Relative Collector Current vs. Card Moving Distance (2)



Test Circuit for Response Time



RECOMMENDED WAVE SOLDERING PROFILE



Notes:

1. Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C .
2. Peak wave soldering temperature between 245°C ~ 255°C for 3 sec (5 sec max).
3. Do not apply stress to the epoxy resin while the temperature is above 85°C .
4. Fixtures should not incur stress on the component when mounting and during soldering process.
5. SAC 305 solder alloy is recommended.
6. No more than one wave soldering pass.
7. After opening the package: The LEDs should be kept at 30°C or less and 60%RH or less. The LEDs should be soldered within 72 hours (3days) after opening the package.

PACKING & LABEL SPECIFICATIONS

