

# Reflective photosensor (photoreflector)

## RPR-359F

The RPR-359F is a reflective photosensor. The emitter is a GaAs infrared light emitting diode and the detector is a high-sensitivity, silicon planar phototransistor. A plastic lens is used for high sensitivity. In addition, since it is molded in plastic with a visible light filter, there is almost no effect from stray light.

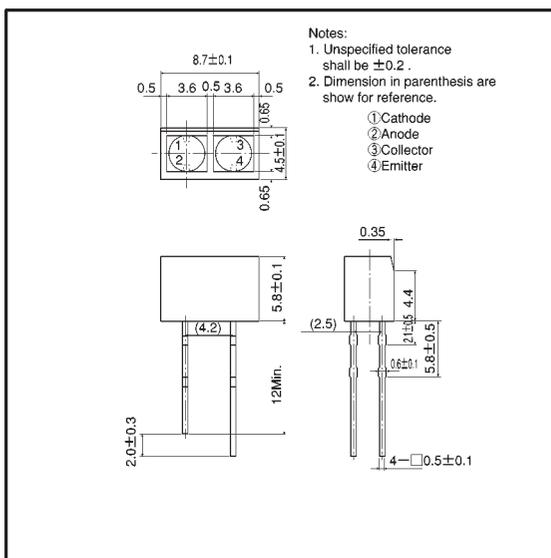
### ●Applications

Copiers  
Compact disc players

### ●Features

- 1) A plastic lens is used for high sensitivity.
- 2) A built-in visible light filter minimizes the influence of stray light.
- 3) Low collector-emitter saturation voltage.
- 4) Sturdy leads allow easy mounting.
- 5) Lightweight and compact.

### ●External dimensions (Units: mm)



### ●Absolute maximum ratings ( $T_a = 25^\circ\text{C}$ )

	Parameter	Symbol	Limits	Unit
Input(LED)	Forward current	$I_F$	50	mA
	Reverse voltage	$V_R$	5	V
	Power dissipation	$P_D$	80	mW
Output (photo-transistor)	Collector-emitter voltage	$V_{CE0}$	30	V
	Emitter-collector voltage	$V_{ECO}$	4.5	V
	Collector current	$I_C$	30	mA
	Collector power dissipation	$P_C$	100	mW
	Operating temperature	$T_{opr}$	$-25 \sim +85$	$^\circ\text{C}$
	Storage temperature	$T_{stg}$	$-40 \sim +100$	$^\circ\text{C}$

●Electrical and optical characteristics (Ta = 25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input characteristics	Forward voltage	$V_F$	—	1.3	1.6	V	$I_F=50\text{mA}$
	Reverse current	$I_R$	—	—	10	$\mu\text{A}$	$V_R=5\text{V}$
Output characteristics	Dark current	$I_{CEO}$	—	—	0.5	$\mu\text{A}$	$V_{CE}=10\text{V}$
	Peak sensitivity wavelength	$\lambda_P$	—	800	—	nm	—
Transfer characteristics	Collector current	$I_C$	200	500	1800	$\mu\text{A}$	$V_{CC}=5\text{V}$ , $I_F=20\text{mA}$ , $R_L=100\Omega$ , $d=3.5\text{mm}$
	Collector-emitter saturation voltage	$V_{CE(sat)}$	—	0.1	0.3	V	$I_F=20\text{mA}$ , $I_C=100\mu\text{A}$
	Response time	$t_r \cdot t_f$	—	10	—	$\mu\text{s}$	$V_{CC}=10\text{V}$ , $I_F=20\text{mA}$ , $R_L=100\Omega$

\* Standard paper (90%reflection)

●Electrical and optical characteristic curves

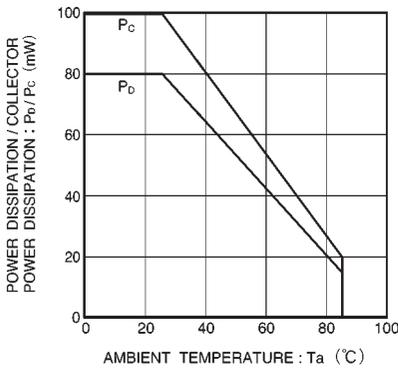


Fig.1 Power dissipation / collector power dissipation vs. ambient temperature

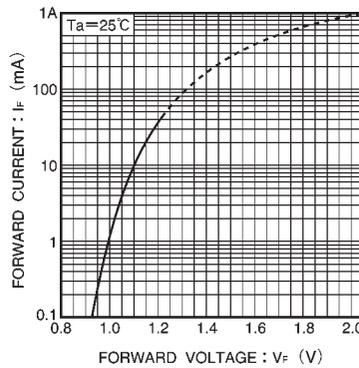


Fig.2 Forward current vs. forward voltage

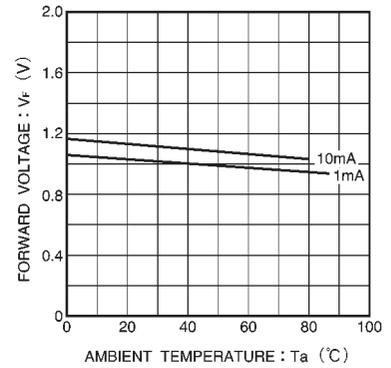


Fig.3 Forward voltage vs. ambient temperature

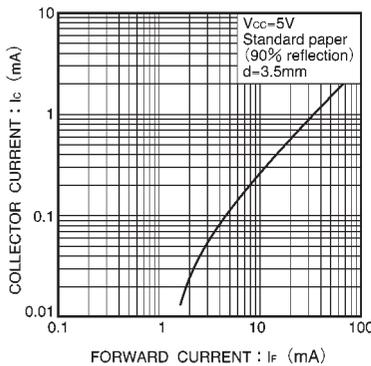


Fig.4 Collector current vs. forward current

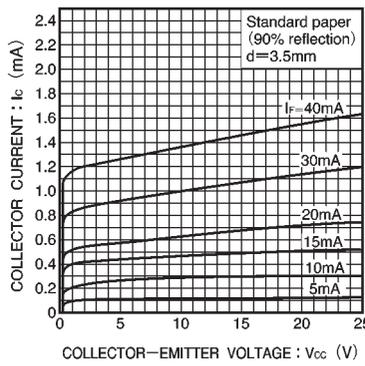


Fig.5 Output characteristics

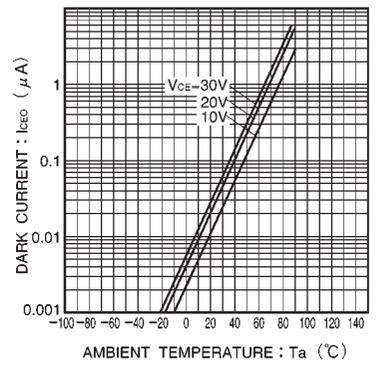


Fig.6 Dark current vs. ambient temperature

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Photo transistor output

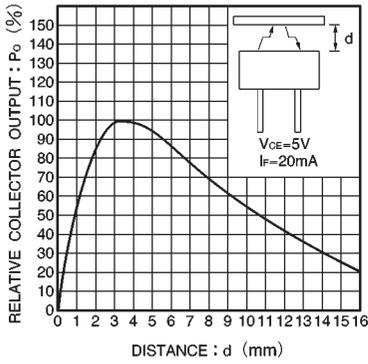


Fig.7 Relative output vs. distance

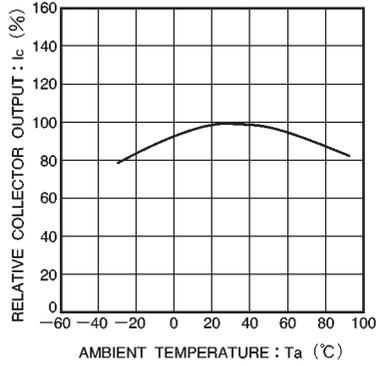


Fig.8 Relative output vs. ambient temperature

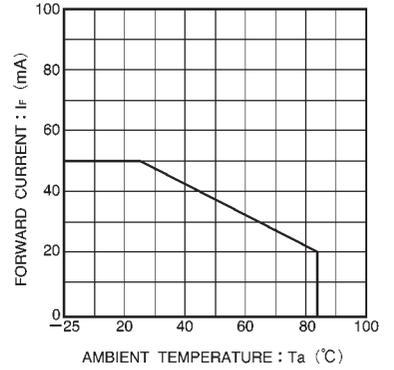


Fig.9 Forward current vs. ambient temperature

● Circuit for testing transfer characteristics

