Reflective photosensor (photoreflector)

RPR-220

The RPR-220 is a reflective photosensor. The emitter is a GaAs infrared light emitting diode and the detector is a high-sensitivity, silicon planar phototransistor. A custom lamp was developed to enable the achievement of a smaller package than with conventional reflectors.

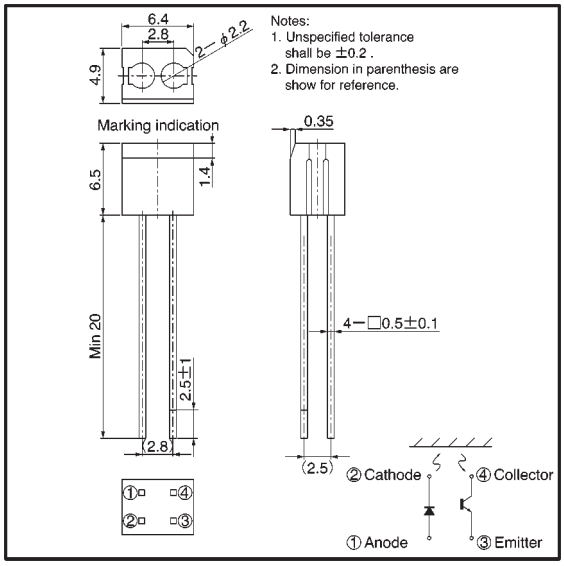
●Applications

Compact disk players, Copiers, Game machines, Office automation equipment

●Features

1) A plastic lens is used for high sensitivity.
2) A built-in visible light filter minimizes the influence of stray light.
3) Lightweight and compact.

●External dimensions (Units: mm)



●Absolute maximum ratings (Ta = 25°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_{CEO}	30	V
	Emitter-collector voltage	V_{ECO}	4.5	V
	Collector current	I_C	30	mA
	Collector power dissipation	P_C	80	mW
Operating temperature		Topr	−25～+85	℃
Storage temperature		Tstg	−30～+85	℃

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

	Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input characteristics	Forward voltage	V_F	—	1.34	1.6	V	I_F=50mA
	Reverse current	I_R	—	—	10	μA	V_R=5V
Output characteristics	Dark current	I_{CEO}	—	—	0.5	μA	V_{CE}=10V
	Peak sensitivity wavelength	λ_P	—	800	—	nm	—
Transfer characteristics	Collector current	I_C	0.08	0.3	0.8	mA	V_{CE}=2V, I_F=10mA
	Collector-emitter saturation voltage	$V_{CE(sat)}$	—	0.1	0.3	V	I_F=20mA, I_C=0.1mA
	Response time	tr・tf	—	10	—	μs	V_{CC}=10V, I_F=20mA, R_L=100Ω

●Electrical and optical characteristic curves

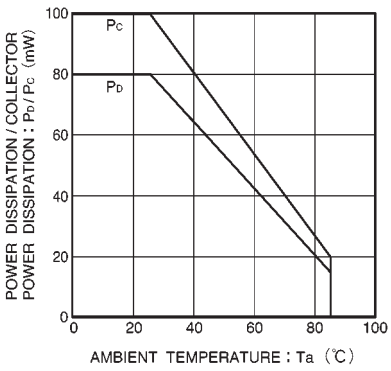


Fig.1 Power dissipation / collector power dissipation vs. ambient temperature

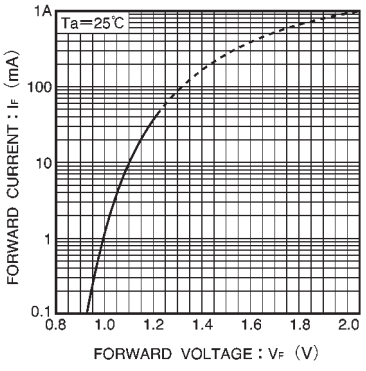


Fig.2 Forward current vs. forward voltage

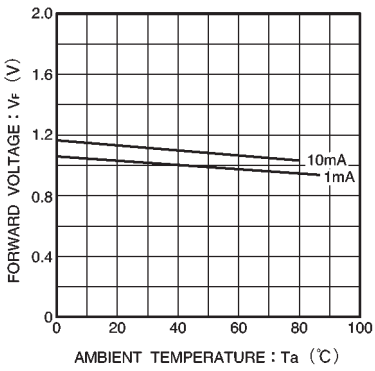


Fig.3 Forward voltage vs.ambient temperature

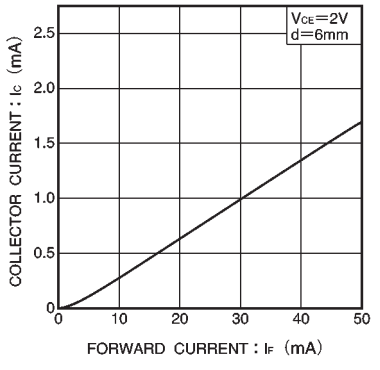


Fig.4 Collector current vs. forward current

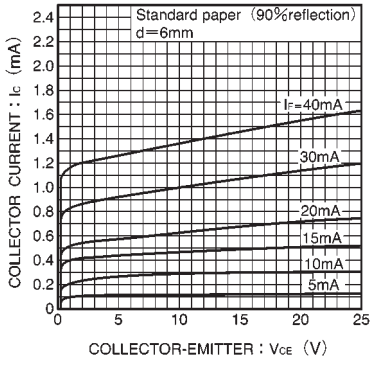


Fig.5 Output characteristics

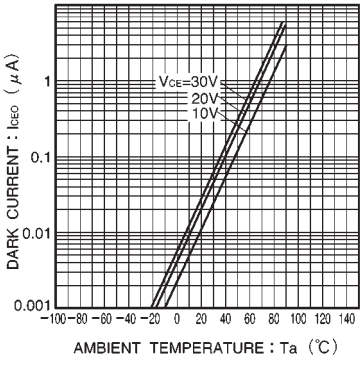


Fig.6 Dark current vs. ambient temperature

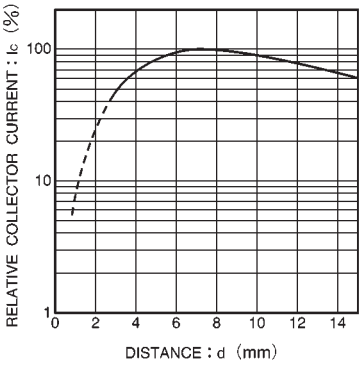


Fig.7 Relative output vs. distance

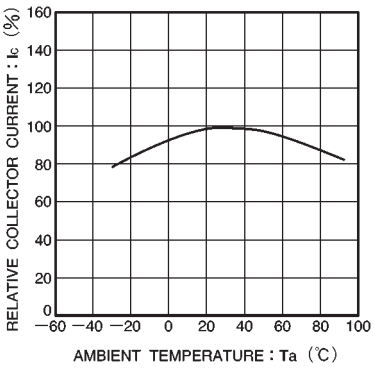


Fig.8 Relative output vs. ambient temperature

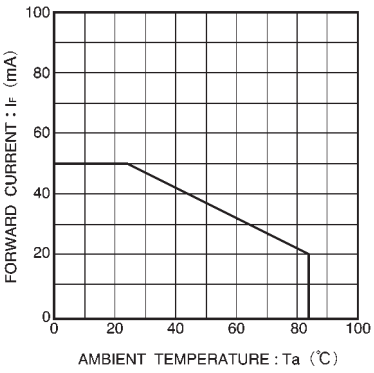


Fig.9 Forward current vs. ambient temperature

●Circuit for testing transfer characteristics