Information on sensor products

●Features

From production of the detector element to assembly of the final product, ROHM handles all stages of our photosensor manufacturing process. This allows precise control of sensitivity, output power, and other characteristics. ROHM infrared LEDs and phototransistors are available in a wide variety of packages to meet the diverse needs of our customers. We apply a silicon coating to all of our infrared LED chips to ensure long term reliability.

ROHM is a pioneer in the development of double-layer molding photointerrupters. The use of single chip molded technology in place of the conventional casing method has allowed us to attain an ultra-small package. These photointerrupters will undoubtedly make a significant contribution to the development of increasingly lightweight and compact devices.

●Explanation of symbols

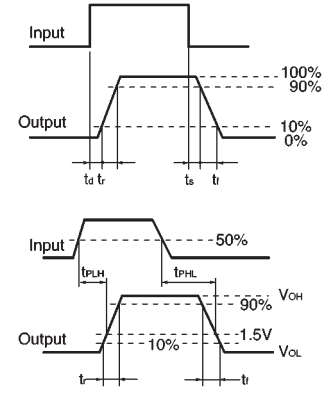
(1) General symbols

Term	Symbol	Explanation
Absolute maximum rating		A limiting value which must not be exceeded even instantaneously.
Ambient temperature	Ta	Temperature of the environment of a semiconductor element.
Operating temperature	Topr	Ambient temperature when a semiconductor element is operating.
Storage temperature	Tstg	Temperature at which a semiconductor element should be stored.
Soldering temperature	Tsol	Temperature at which designated parts of a terminal can be soldered.

(2) Symbols related to infrared LEDs, photointerrupters and photoreflectors

Term	Symbol	Explanation
Power dissipation	P_D	Maximum allowable power dissipation of infared LEDs.
Forward current	I_F	Direct current flowing forward through infared LEDs.
Peak forward current	I_{FP}	Maximum instantaneous value of forward current.
Forward voltage	V_F	Voltage drop between anode and cathode due to forward current.
Peak forward voltage	V_{FP}	Maximum instantaneous value of voltage drop between anode and cathode due to peak forward current.
Reverse current	I_R	Current flowing in reverse direction between anode and cathode.
Reverse voltage	V_R	Voltage applied in reverse direction between anode and cathode.
Capacitance between terminals	C_t	Capacitance between anode and cathode terminaes.
Peak light emitting wavelength	λ_P	Wavelength of maximum radiant intensity.
Spectral line half width	$\Delta\lambda$	Spectral bandwidth in which radiant intensity is 50% or more of peak value.
Half-viewing angle	$\theta_{1/2}$	Angle at which radiant intensity is 50% of the peak value.

(3) Symbols related to, phototransistors, photo IC's, photointerrupters and photoreflectors

Term	Symbol	Explanation
Collector-emitter voltage	V_{CEO}	DC voltage from collector to emitter when base terminal is open.
Emitter-collector voltage	V_{ECO}	DC voltage from emitter to collector when base terminal is open.
Collector-base voltage	V_{CBO}	DC voltage from collector to base when emitter terminal is open.
Emitter-base voltage	V_{EBO}	DC voltage from emitter to base when collector terminal is open.
Reverse voltage	V_R	DC voltage applied in reverse direction between anode and cathode.
Collector power dissipation	P_C	Maximum power dissipation of collector.
Power dissipation	P_D	Maximum allowable power dissipation between anode and cathode.
Collector current	I_C	Direct current flowing to collector terminal.
Dark current	I_{CEO}	Collector current which flows when base terminal is open and reverse voltage is applied between collector and emitter.
	I_d	Current which flows when reverse voltage is applied to diode when shielded from light.
Illuminance	E_V	Incident luminous flux per unit area.
Irradiance	E_e	Incident radiation flux per unit area.
Threshold irradiance	E_{VLH} or E_{VHL}	The amount of irradiance when the output goes from low to high, or from high to low.
Direct current amplification	h_{FE}	The direct current amplification when the emitter is grounded.
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	DC voltage from collector to emitter under specified saturation conditions.
Capacitance between terminals	C_t	Electrostatic capacitance between anode and cathode terminals.
Peak sensitivity wavelength	λ_P	Wavelength of incident light at which sensitivity is greatest.
Half angle	$\theta_{1/2}$	Angle at which sensitivity is 50% of peak value.
Cutoff frequency	f_c	When the frequency of the constant-amplitude sine wave component of the input parameter is changed, this is the frequency which causes a 3 dB drop in the amplitude of the base AC wave of the corresponding output parameter.
Response time	tr tr	Time required for output to respond to input. Rise time : t_r Delay time : t_d Fall time : t_f Store time : t_s Turn-on time : $t_{on} = t_d + t_r$ Turn-off time : $t_{off} = t_s + t_f$ Low-to-high propagation time : t_{PLH} High-to-low propagation time : t_{PHL} 
Threshold input current	I_{FLH} or I_{FHL}	Input current when output level goes from low to high, or high to low.

Term	Symbol	Explanation
Output low level voltage	V_{OL}	Output voltage when a designated low level output current is applied to output terminal.
Output high level voltage	V_{OH}	Output voltage when a designated high level output current is applied to output terminal.
Output low level current	I_{OL}	Output voltage when a designated low level output voltage is applied to output terminal.
High level output current	I_{OH}	Output voltage when a designated high level output voltage is applied to output terminal.
Low level power supply current	I_{CCL}	Supply current which flows when output level is low.
High level power supply current	I_{CCH}	Supply current which flows when output level is high.
Hysteresis	I_{FLH} / I_{FHL} or I_{FHL} / I_{FLH}	The ratio of the threshold input current when the output level goes from low to high to the threshold input current when the output goes from high to low.

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