

ON1105

Photo Interrupter

For contactless SW, object detection

Outline

ON1105 is a photocoupler in which a high efficiency GaAs infrared light emitting diode is used as the light emitting element, and a high sensitivity phototransistor is used as the light detecting element. The two elements are arranged so as to face each other, and objects passing between them are detected.

Features

- Highly precise position detection : 0.3 mm
- Fast response : $t_r, t_f = 6 \mu s$ (typ.)
- Small output current variation against change in temperature

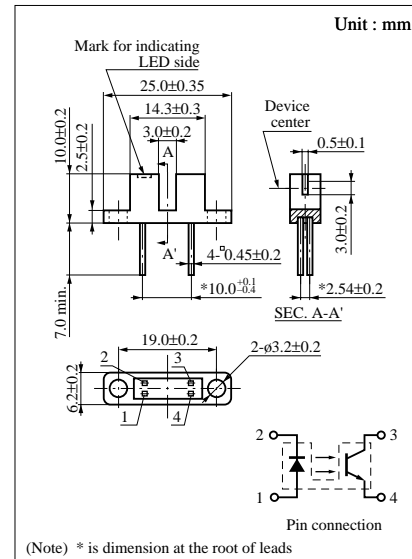
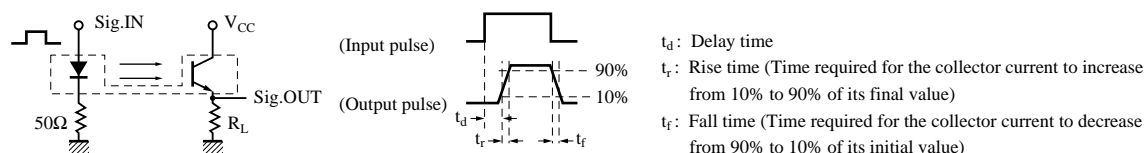
Absolute Maximum Ratings ($T_a = 25^\circ C$)

	Parameter	Symbol	Ratings	Unit
Input (Light emitting diode)	Reverse voltage (DC)	V_R	3	V
	Forward current (DC)	I_F	50	mA
	Power dissipation	P_D^{*1}	75	mW
Output (Photo transistor)	Collector current	I_C	20	mA
	Collector to emitter voltage	V_{CEO}	30	V
	Emitter to collector voltage	V_{ECO}	5	V
Temperature	Collector power dissipation	P_C^{*2}	100	mW
	Operating ambient temperature	T_{opr}	-25 to +85	$^\circ C$
	Storage temperature	T_{stg}	-30 to +100	$^\circ C$

Electrical Characteristics ($T_a = 25^\circ C$)

	Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F	$I_F = 50 \text{ mA}$		1.2	1.5	V
	Reverse current (DC)	I_R	$V_R = 3 \text{ V}$			10	μA
	Capacitance between terminals	C_t	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$		50		pF
Output characteristics	Collector cutoff current	I_{CEO}	$V_{CE} = 10 \text{ V}$			200	nA
	Collector to emitter capacitance	C_C	$V_{CE} = 10 \text{ V}, f = 1 \text{ MHz}$		5		pF
Transfer characteristics	Collector current	I_C	$V_{CE} = 10 \text{ V}, I_F = 20 \text{ mA}$	0.3			mA
	Response time	t_r, t_f^*	$V_{CC} = 10 \text{ V}, I_C = 1 \text{ mA}, R_L = 100 \Omega$		6		μs
	Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_F = 50 \text{ mA}, I_C = 0.1 \text{ mA}$			0.3	V

* Switching time measurement circuit



*¹ Input power derating ratio is 1.0 mW/ $^\circ C$ at $T_a \geq 25^\circ C$.

*² Output power derating ratio is 1.33 mW/ $^\circ C$ at $T_a \geq 25^\circ C$.

