

ON2175

Reflective Photosensor

Tape end sensor for DAT

Outline

ON2175 is a sensor which consists of a high efficiency GaAs infrared light emitting diode and a high sensitivity Si phototransistor which are arranged together in the same direction. It detects the beginning and end of a tape based on changes in the amount of light reflected from a prism which is situated outside of the sensor.

Features

- Fast response
- Small size and light weight

Absolute Maximum Ratings (Ta = 25°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	°C
	Storage temperature	T_{stg}	-30 to +100	°C

*1 Input power derating ratio is 1.0 mW/°C at Ta ≥ 25°C.

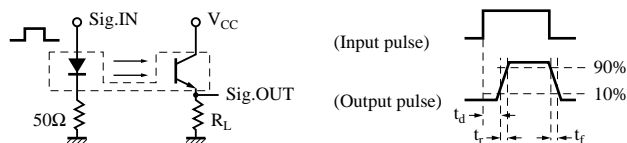
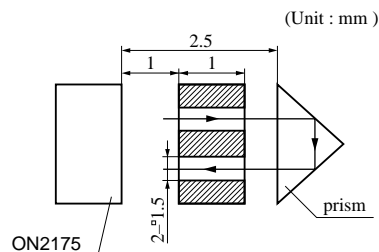
*2 Output power derating ratio is 1.34 mW/°C at Ta ≥ 25°C.

Electrical Characteristics (Ta = 25°C)

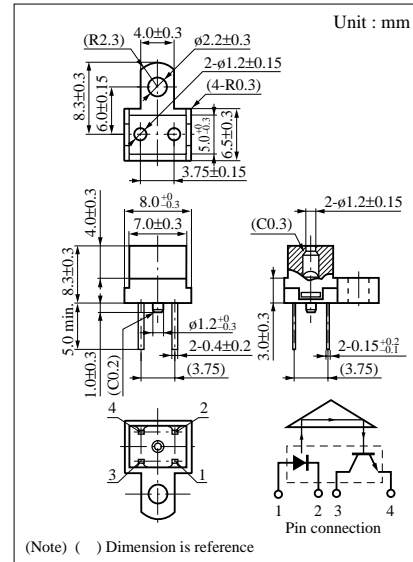
	Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F	$I_F = 50\text{mA}$			1.5	V
	Reverse current (DC)	I_R	$V_R = 3\text{V}$			10	μA
Output characteristics	Collector cutoff current	I_{CEO}	$V_{CE} = 10\text{V}$			0.2	μA
Transfer characteristics	Collector current	I_C^{*1}	$V_{CE} = 5\text{V}, I_F = 20\text{mA}, R_L = 100\Omega$	30			μA
	Response time	t_r, t_f^{*2}	$V_{CC} = 10\text{V}, I_C = 0.5\text{mA}, R_L = 100\Omega$		6		μs
	Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_F = 50\text{mA}, I_C = 0.1\text{mA}$			0.5	V

*1 I_C Measurement method

*2 Switching time measurement circuit



t_d : Delay time
 t_r : Rise time (Time required for the collector current to increase from 10% to 90% of its final value)
 t_f : Fall time (Time required for the collector current to decrease from 90% to 10% of its initial value)



(Note) () Dimension is reference