CNA1011K (ON1113)

Photo Interrupter

For contactless SW and object detection

■ Overview

CNA1011K is a small size photocoupler package consisting of a high efficiency GaAs infrared light emitting diode used as the light emitting element, and a high sensitivity phototransistor is used as the light detecting element.

■ Features

- Highly precise position detection: 0.3 mm
- Wide gap between emitting and detecting elements, suitable for thick plate detection
- Fast response: t_r , t_f = 6.0 μs (typ.)
- Small output current variation against change in temperature

■ Absolute Maximum Ratings T_a = 25°C

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

Note) *1: Input power derating ratio is 1.0 mW/°C at $T_a \geq 25$°C

*2: Output power derating ratio is 1.34 mW/°C at $T_a \geq 25$°C

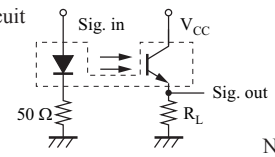
■ Electrical-Optical Characteristics T_a = 25°C±3°C

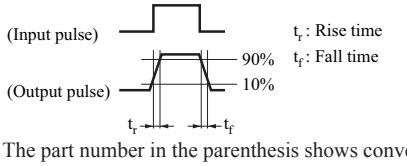
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Input characteristics	Reverse current	I_R	V_R = 3 V			10	μA
	Forward voltage	V_F	I_F = 50 mA		1.2	1.5	V
	Terminal capacitance	C_t	V_R = 0 V, f = 1 MHz		35		pF
Output characteristics	Collector-emitter cutoff current (Base open)	I_{CEO}	V_{CE} = 10 V			200	nA
	Collector-emitter capacitance	C_C	V_{CE} = 10 V, f = 1 MHz		5		pF
Transfer characteristics	Collector current	I_C	V_{CC} = 10 V, I_F = 20 mA, R_L = 100 Ω	0.3			mA
	Collector-emitter saturation voltage	$V_{CE(sat)}$	I_F = 50 mA, I_C = 0.1 mA			0.5	V
	Rise time *	t_r	V_{CC} = 10 V, I_C = 1 mA, R_L = 100 Ω		6.0		μs
	Fall time *	t_f			6.0		μs

Note) 1. Input and output are practiced by electricity.

2. This device is designed by disregarding radiation.

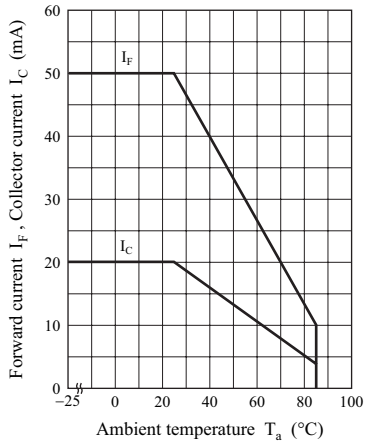
3. *: Switching time measurement circuit



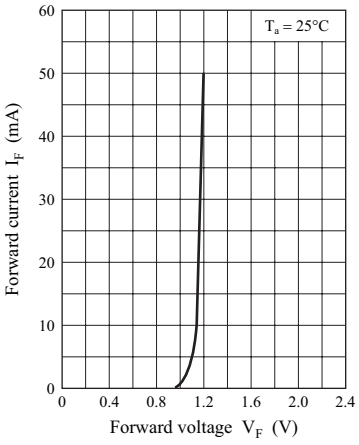


Note) The part number in the parenthesis shows conventional part number.

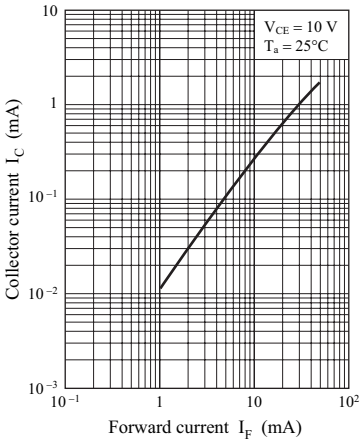
I_F , I_C — T_a



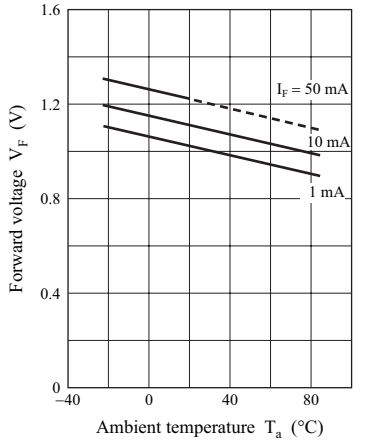
I_F — V_F



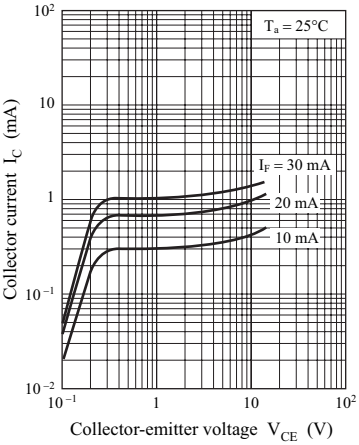
I_C — I_F



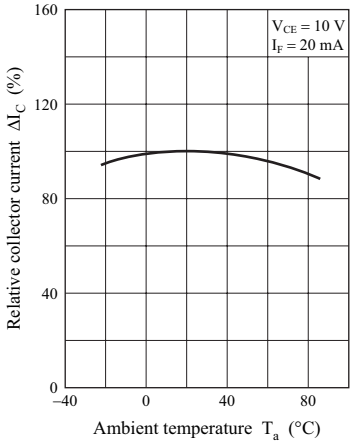
V_F — T_a



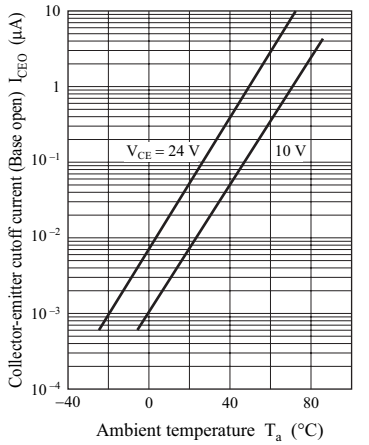
I_C — V_{CE}



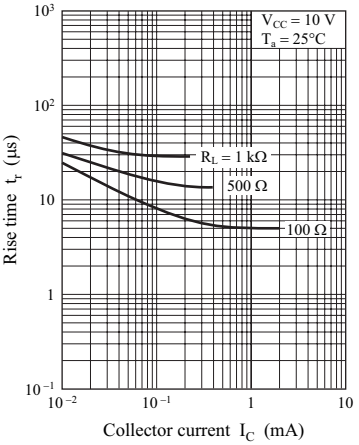
ΔI_C — T_a



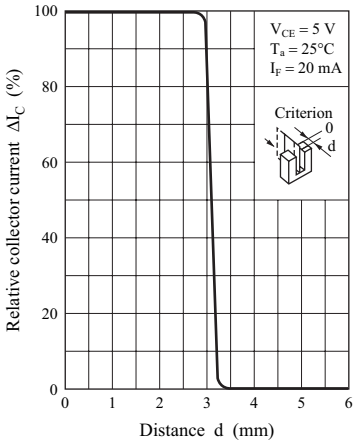
I_{CEO} — T_a



t_r — I_C

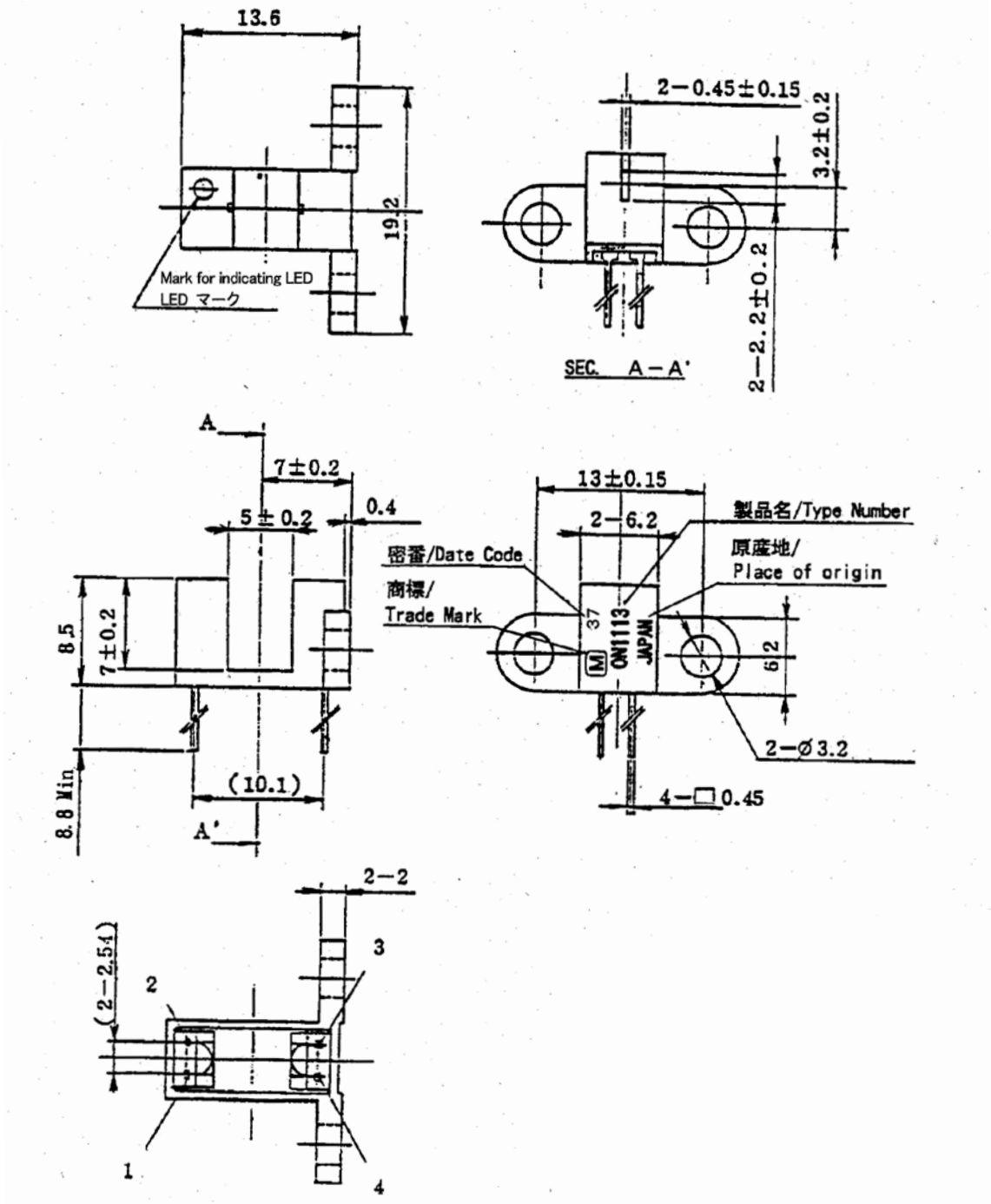


ΔI_C — d



■ Package (Unit: mm)

LSSSIR4S0004



(注 1) 指示なき寸法公差：±0.3／(Note1)No appointment tolerance :±0.3
(注 2) マークは、目視又は顕微鏡に於いて解読できる事。
(Note2)What a mark sees an attention and can decode in a microscope.

- Pin name
  1: Anode
  2: Cathode
  3: Collector
  4: Emitter

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