

## Part number notation

The part number noted on the following pages is a conventional part number.

The new Matsushita global number is:

**CNZ1110**

# ON1110

## Photo Interrupter

For contactless SW, object detection

### Outline

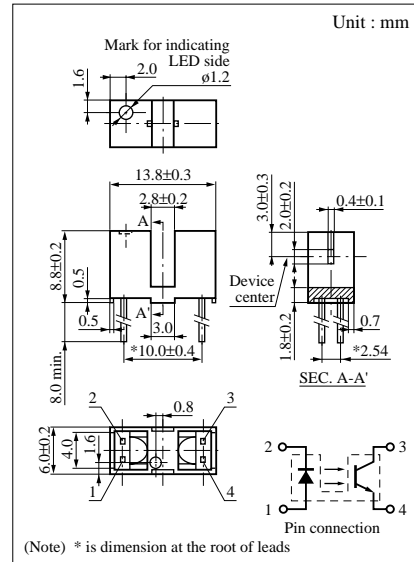
ON1110 is a photocoupler in which a high efficiency GaAs infrared light emitting diode is used as the light emitting element, and a high sensitivity phototransistor is used as the light detecting element. The two elements are arranged so as to face each other, and objects passing between them are detected.

### 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
- Small package used for saving mounting space

### 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	$^\circ C$



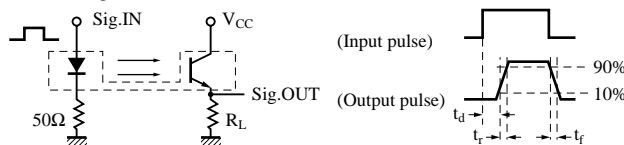
\*1 Input power derating ratio is 1.0 mW/ $^\circ C$  at  $T_a \geq 25^\circ C$ .

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

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

	Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	$V_F$	$I_F = 50mA$		1.2	1.5	V
	Reverse current (DC)	$I_R$	$V_R = 3V$			10	$\mu A$
	Capacitance between terminals	$C_t$	$V_R = 0V, f = 1MHz$		50		pF
Output characteristics	Collector cutoff current	$I_{CEO}$	$V_{CE} = 10V$			200	nA
	Collector to emitter capacitance	$C_C$	$V_{CE} = 10V, f = 1MHz$		5		pF
Transfer characteristics	Collector current	$I_C^{*2}$	$V_{CE} = 10V, I_F = 20mA$	0.3			mA
	Response time	$t_r, t_f^{*1}$	$V_{CC} = 10V, I_C = 1mA, R_L = 100\Omega$		6		$\mu s$
	Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_F = 50mA, I_C = 0.1mA$			0.3	V

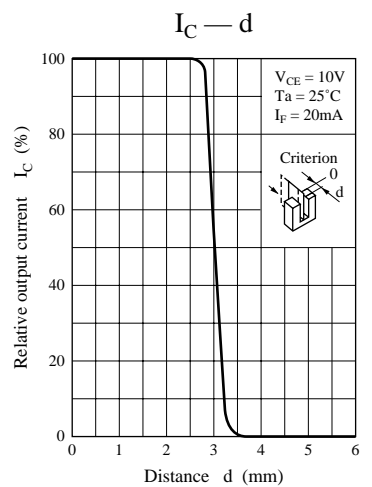
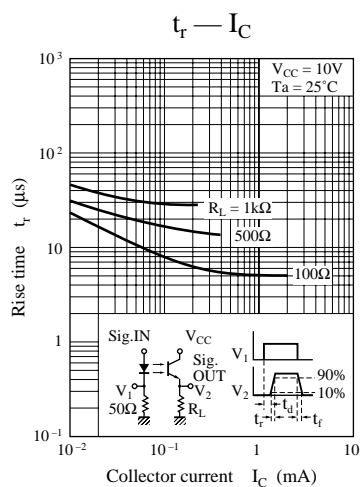
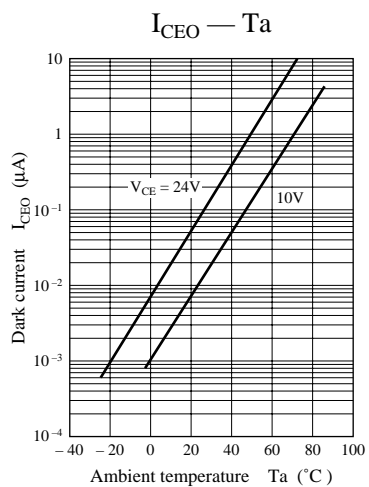
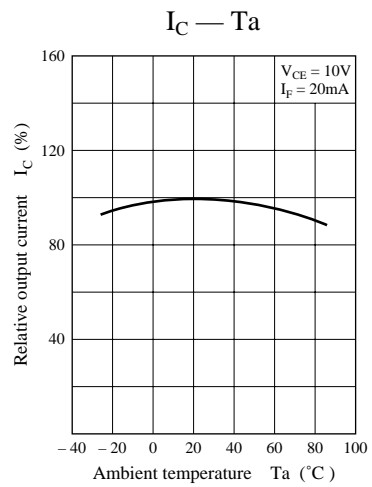
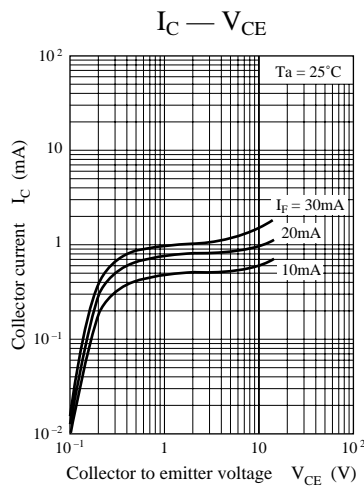
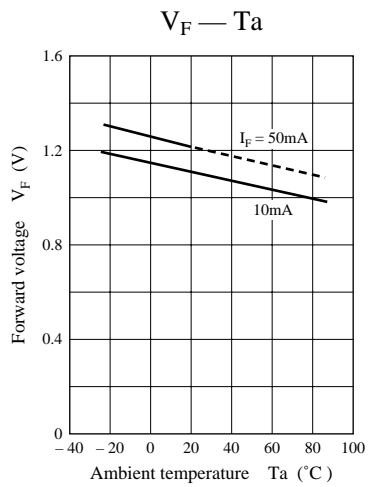
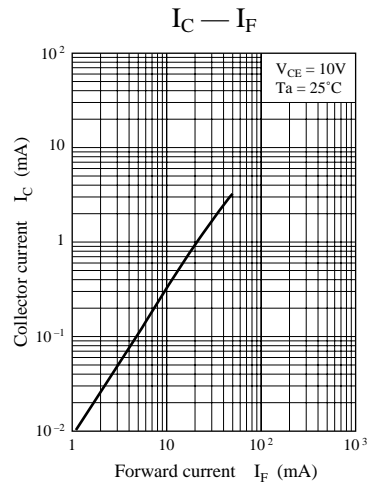
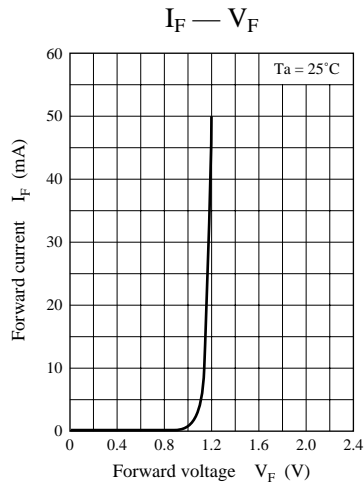
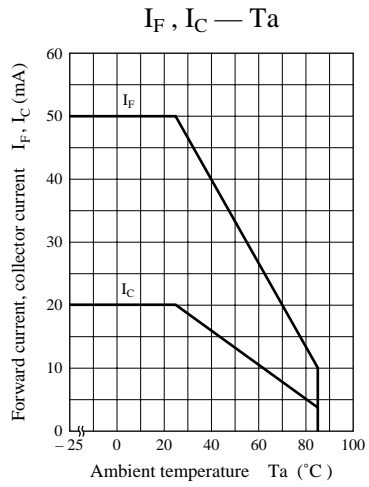
\* Switching time measurement circuit



$t_d$ : 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)

\*2  $I_C$  classifications

Class	Q	R	S
$I_C$ (mA)	0.3 to 0.85	0.75 to 2.15	> 1.85



# Caution for Safety

 **DANGER**

Gallium arsenide material (GaAs) is used in this product.

Therefore, do not burn, destroy, cut, crush, or chemically decompose the product, since gallium arsenide material in powder or vapor form is harmful to human health.

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