

CNC1H001

Optoisolator

■ Features

- Housed in a surface mount package alternative to mini-flat package of 1.27 mm pitch
- Double molded package
- 2.5 kV isolation voltage
- UL approved (File No. E79920)

■ Applications

- Suited for interface circuits requiring high density mounting of parts, especially hybrid ICs and programmable controllers
- Signal transfer between circuits with different potentials and with impedances

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

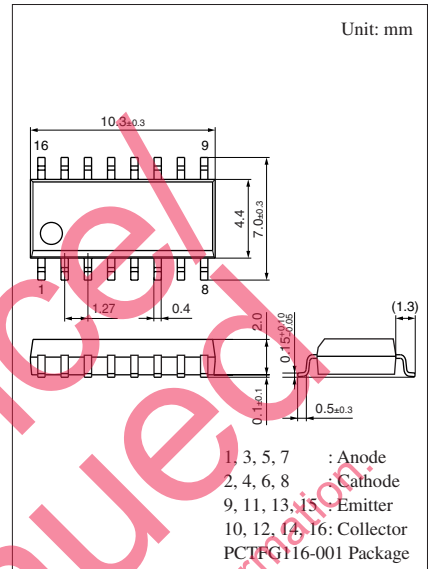
Parameter		Symbol	Rating	Unit
Input (light emitting diode)	Reverse voltage (DC)	V_R	6	V
	Forward current (DC)	I_F	50	mA
	Pulse forward current *1	I_{FP}	1	A
	Power dissipation *2	P_D	75	mW/ch
Output (photo transistor)	Collector current	I_C	50	mA
	Collector-emitter voltage	V_{CEO}	80	V
	Emitter-collector voltage	V_{ECO}	7	V
	Collector power dissipation *3	P_C	120	mW/ch
Isolation voltage, input to output *4		V_{ISO}	2500	V[rms]
Operating ambient temperature		T_{opr}	-30 to +100	$^\circ\text{C}$
Storage temperature		T_{stg}	-55 to +125	$^\circ\text{C}$

Note) *1: Pulse repetition rate = 100 pps. Pulse wide $\leq 100 \mu\text{s}$

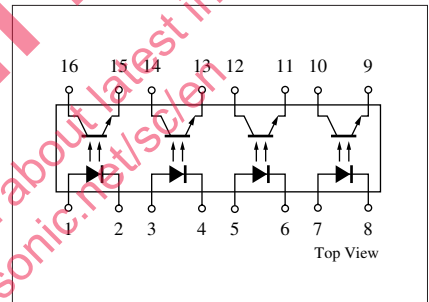
*2: Above 25 $^\circ\text{C}$ ambient temperature, derate dissipation at the rate of 0.75 mW/ $^\circ\text{C}$.

*3: Above 25 $^\circ\text{C}$ ambient temperature, derate dissipation at the rate of 1.2 mW/ $^\circ\text{C}$.

*4: AC voltage (t = 1.0 min., RH < 60%)



Pin Connection



Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

	Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input diode	Forward voltage	V_F	$I_F = 50 \text{ mA}$		1.35	1.5	V
	Reverse current	I_R	$V_R = 3 \text{ V}$			10	μA
	Capacitance	C_t	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$		15		pF
Output transistor	Collector-emitter dark current	I_{CEO}	$V_{CE} = 20 \text{ V}$		5	100	nA
	Collector-emitter voltage	V_{CEO}	$I_C = 100 \mu\text{A}$	80			V
	Emitter-collector voltage	V_{ECO}	$I_E = 10 \mu\text{A}$	7			V
	Collector capacitance	C_C	$V_{CE} = 10 \text{ V}, f = 1 \text{ MHz}$		10		pF
Coupled	Current transfer ratio *1	CTR	$V_{CE} = 5 \text{ V}, I_F = 5 \text{ mA}$	100		600	%
	Capacitance	C_{ISO}	$f = 1 \text{ MHz}$		0.6		pF
	Resistance	R_{ISO}	$V_{ISO} = 500 \text{ V}$	10^{11}			Ω
	Rise time *2	t_r	$V_{CC} = 10 \text{ V}, I_C = 2 \text{ mA}$		4		μs
	Fall time *3	t_f	$R_L = 100 \Omega$		3		
	Saturation voltage	$V_{CE(sat)}$	$I_F = 20 \text{ mA}, I_C = 1 \text{ mA}$		0.1	0.2	V

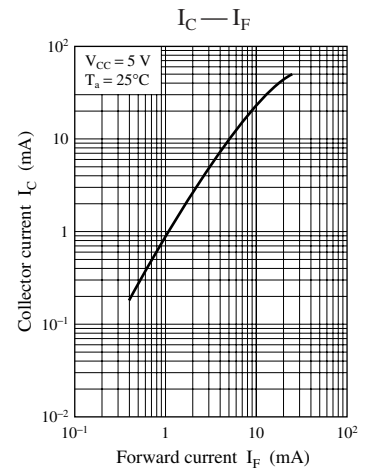
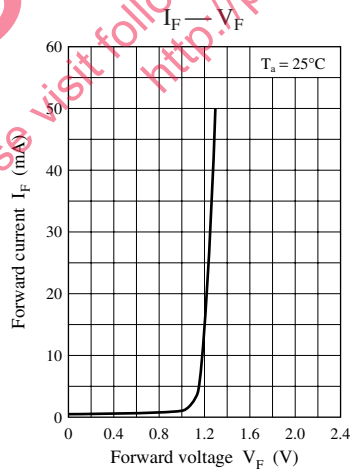
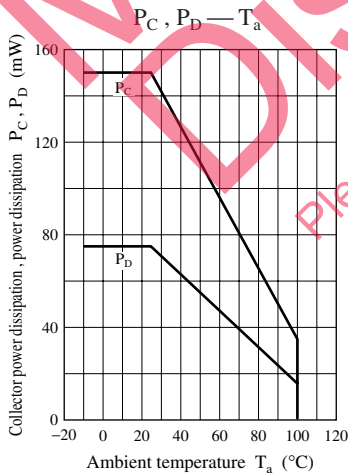
Note) *1: $CTR = I_C / I_F \times 100\%$

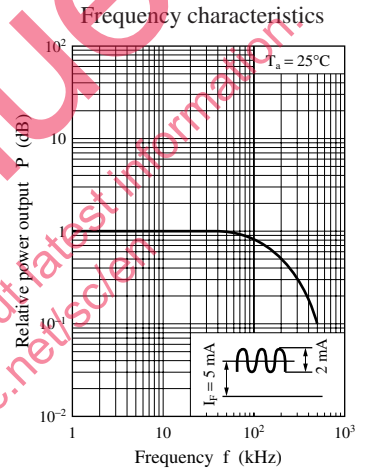
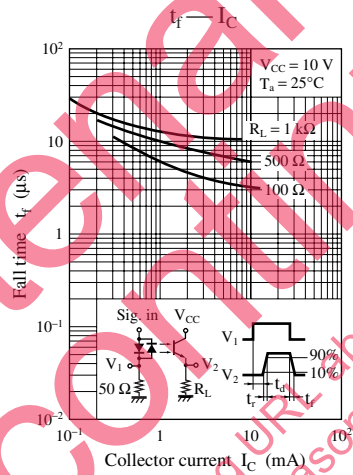
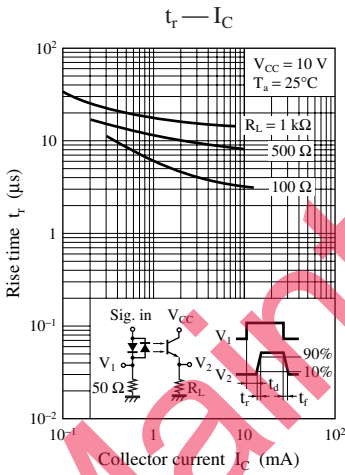
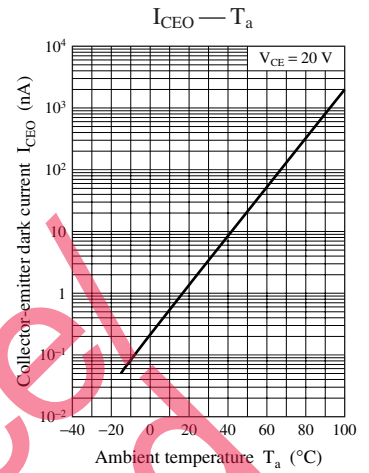
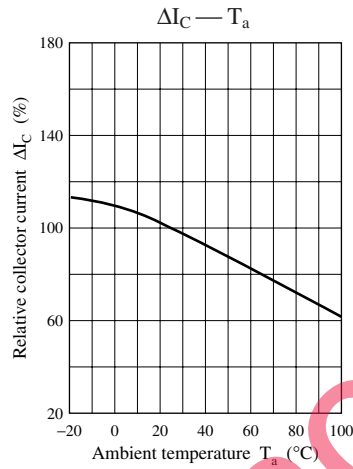
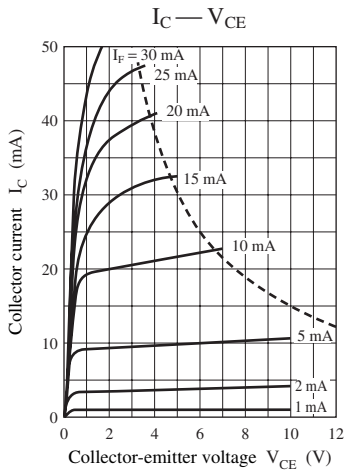
*2: Rise time is defined as the time required for the I_C to rise from 10% to 90% of peak value.

*3: Fall time is defined as the time required for the I_C to decrease from 90% to 10% of peak value.

Input and output are practiced by electricity.

The device is designed be disregarded radiation.





Caution for Safety

 **DANGER**

■ This product contains Gallium Arsenide (GaAs).

GaAs powder and vapor are hazardous to human health if inhaled or ingested. Do not burn, destroy, cut, cleave off, or chemically dissolve the product. Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.

Request for your special attention and precautions in using the technical information and semiconductors described in this book

- (1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.
- (2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products, and no license is granted under any intellectual property right or other right owned by our company or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information described in this book.
- (3) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).
Consult our sales staff in advance for information on the following applications:
 - Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
 - Any applications other than the standard applications intended.
- (4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.
- (5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
 - Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.
- (6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.
- (7) This book may be not reprinted or reproduced whether wholly or partially, without the prior written permission of Matsushita Electric Industrial Co., Ltd.

- If you have any inquiries or questions about this book or our semiconductor products, please contact one of our sales offices listed on the back or Semiconductor Company's Department.