



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



CNZ3731, CNC7C501, CNZ3734, CNC2S501, CNC7C502, CNC7H501 (ON3731, ON3732, ON3734, ON3731A, ON3732A, ON3734A)

Optoisolators

Overview

The CNZ3731 series of optoisolators consist of a GaAs infrared LED which is optically coupled with a Si NPN Darlington phototransistor, and housed in a small DIL package. The series provides high I/O isolation voltage and high collector/emitter isolation voltage, as well as a high current transfer ratio (CTR). This opto isolator series also includes the two-channel CNC7C501 and the four-channel CNZ3734, and A type of these models with increased collector to emitter breakdown voltage ($V_{CEO} > 350V$).

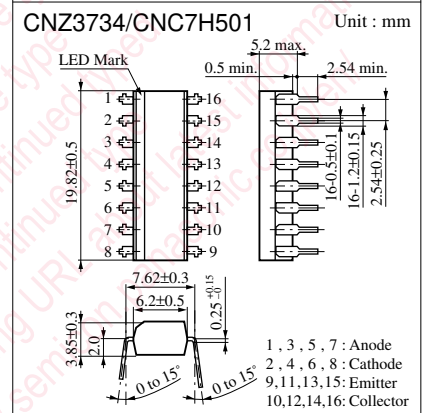
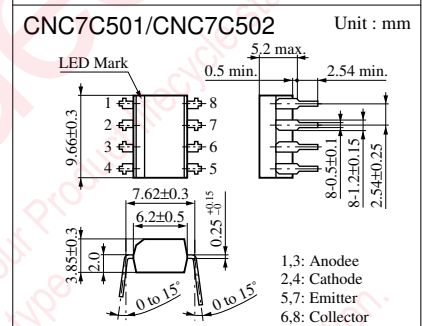
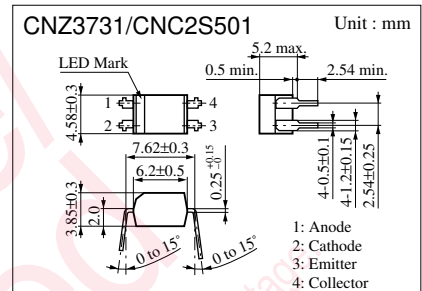
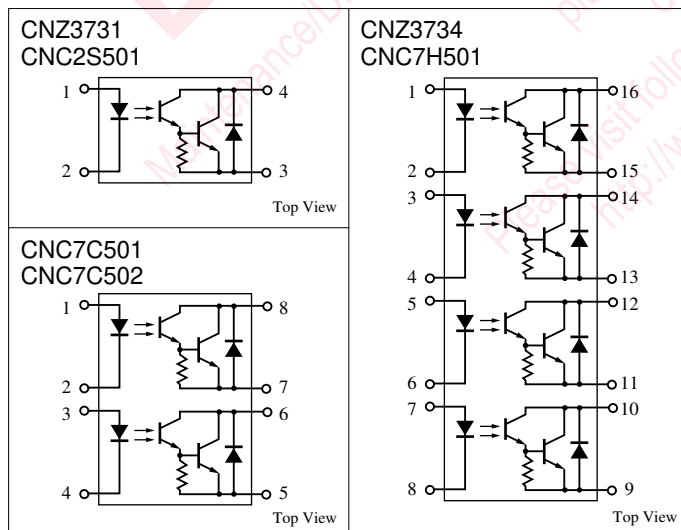
Features

- High collector to emitter breakdown voltage : $V_{CEO} > 300 V$,
A type : $V_{CEO} > 350 V$
- High current transfer ratio with Darlington phototransistor output :
CTR = 4000% (typ.)
- High I/O isolation voltage : $V_{ISO} \geq 5000 V_{rms}$
- Small DIL package for saving mounting space
- UL listed (UL File No. E79920)
- A-type models have a guaranteed internal insulating distance of 0.4 mm

Applications

- Telephones
- Telephone exchange
- FAX
- Programmable controllers
- Signal transfer between circuits with different potentials and impedances

Pin Connection



Note) The part numbers in the parenthesis show conventional part number.

■ Absolute Maximum Ratings (Ta = 25°C)

Parameter		Symbol	Ratings				Unit
			CNZ3731	CNC7C501 CNZ3734	CNC2S501	CNC7C502 CNC7H501	
Input (Light emitting diode)	Reverse voltage (DC)	V _R	6		6		V
	Forward current (DC)	I _F	50		50		mA
	Pulse forward current	I _{FP} ^{*1}	1		1		A
	Power dissipation	P _D ^{*2}	75		75		mW
Output (Photo transistor)	Collector current	I _C	150		150		mA
	Collector to emitter voltage	V _{CEO}	300		350		V
	Emitter to collector voltage	V _{ECO}	0.3		0.3		V
	Collector power dissipation	P _C ^{*3}	300	150	300	150	mW
Total power dissipation		P _T	320	200	320	200	mW
Isolation voltage, input to output		V _{ISO} ^{*4}	5000		5000		V _{rms}
Operating ambient temperature		T _{opr}	-30 to +100		-30 to +100		°C
Storage temperature		T _{stg}	-55 to +125		-55 to +125		°C

^{*1} Pulse width ≤ 100 μs, repeat 100 pps

^{*2} Input power derating ratio is 0.75 mW/°C at Ta ≥ 25°C.

^{*3} Output power derating ratio is 3.0 mW/°C at Ta ≥ 25°C (CNZ3731, CNC2S501).

Output power derating ratio is 0.75 mW/°C at Ta ≥ 25°C (CNC7C501, CNC2S502, CNZ3734, CNC7H501).

^{*4} AC 1min., RH < 60 %

■ Electrical Characteristics (Ta = 25°C)

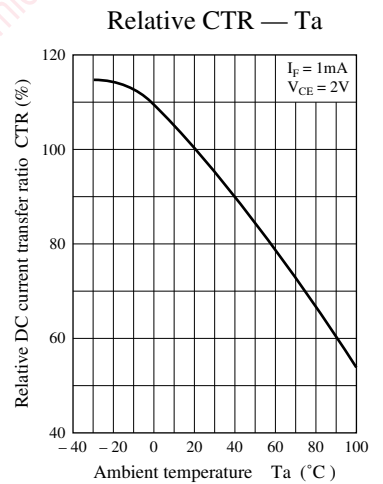
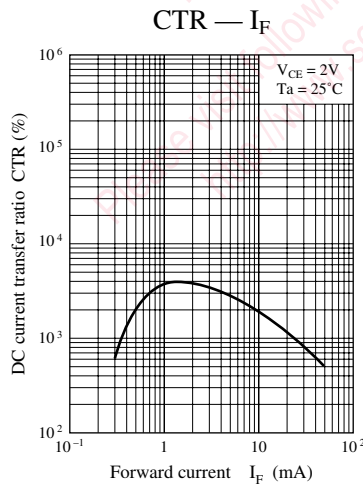
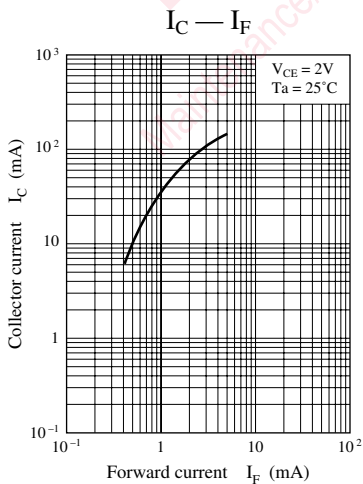
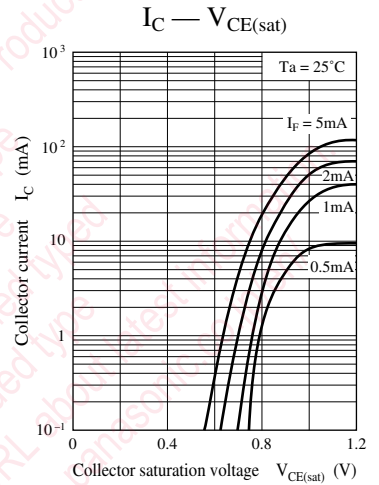
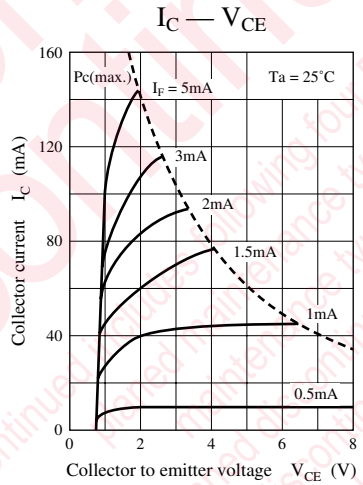
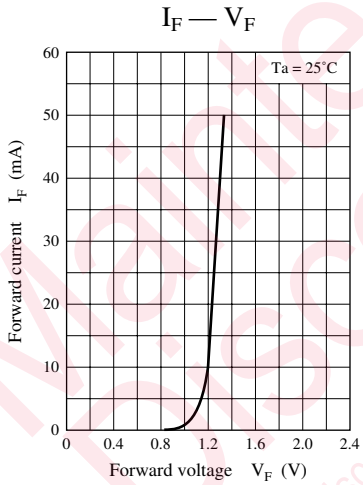
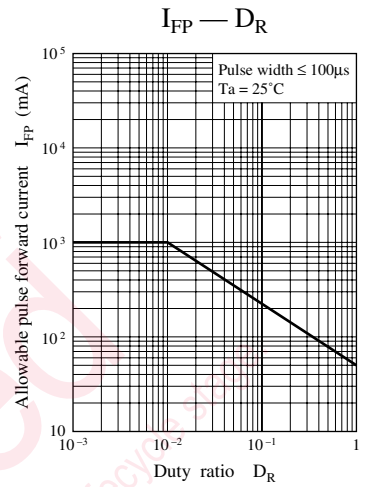
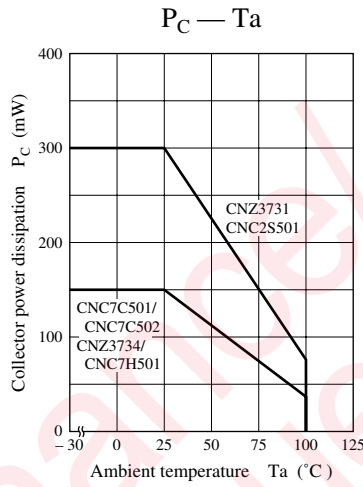
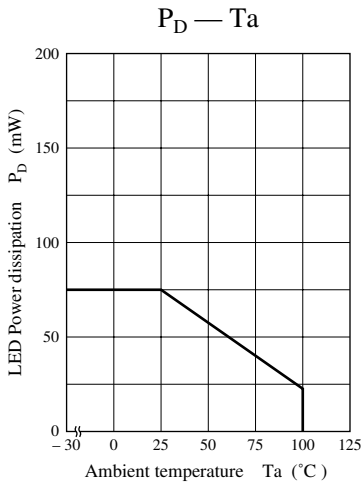
Parameter		Symbol	Conditions	min	typ	max	Unit
Input characteristics	Reverse current (DC)	I _R	V _R = 3V			10	μA
	Forward voltage (DC)	V _F	I _F = 50mA		1.35	1.5	V
	Capacitance between pins	C _t	V _R = 0V, f = 1MHz		30		pF
Output characteristics	Collector cutoff current	I _{CEO}	V _{CE} = 200V			200	nA
	Collector to emitter capacitance	C _C	V _{CE} = 10V, f = 1MHz		10		pF
Transfer characteristics	DC current transfer ratio	CTR ^{*1}	V _{CE} = 2V, I _F = 1mA	1000	4000		%
	Isolation capacitance, input to output	C _{ISO}	f = 1MHz		0.7		pF
	Isolation resistance, input to output	R _{ISO}	V _{ISO} = 500V	10 ¹¹			Ω
	Rise time	t _r ^{*2}	V _{CC} = 10V, I _C = 10mA,		40		μs
	Fall time	t _f ^{*3}	R _t = 100Ω		15		μs
Collector to emitter saturation voltage		V _{CE(sat)}	I _F = 1mA, I _C = 2mA			1.0	V

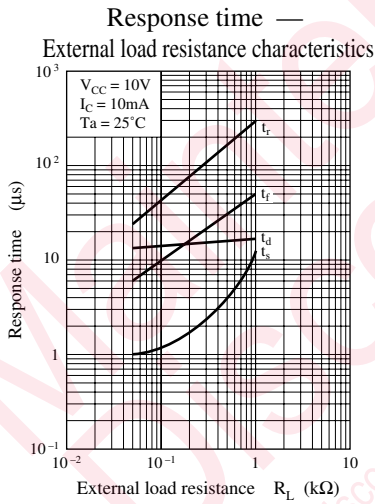
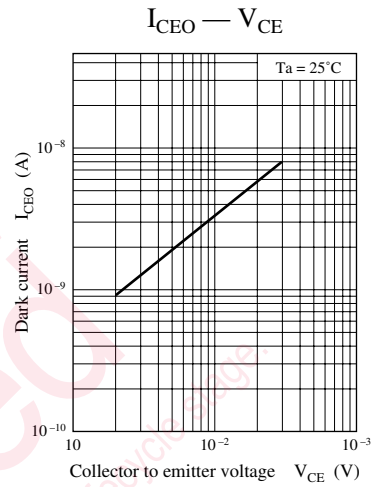
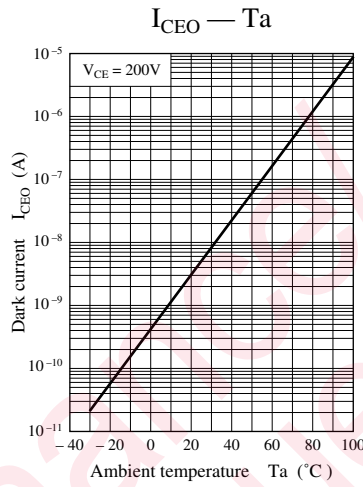
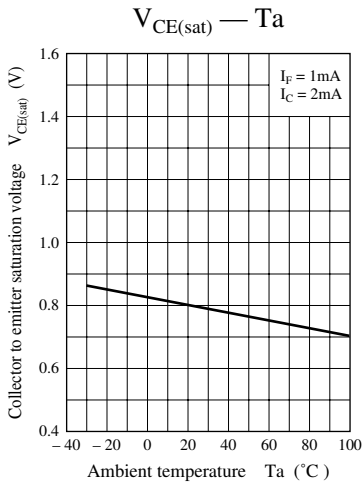
^{*1} DC current transfer ratio (CTR) is a ratio of output current against DC input current.

$$CTR = \frac{I_C}{I_F} \times 100 (\%)$$

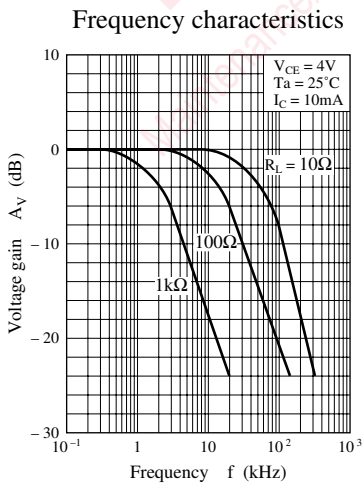
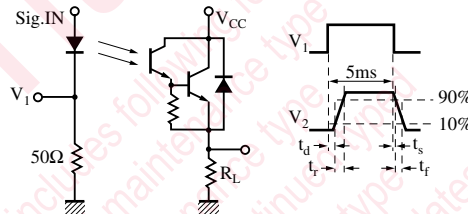
^{*2} t_r : Time required for the collector current to increase from 10% to 90% of its final value

^{*3} t_f : Time required for the collector current to decrease from 90% to 10% of its initial value

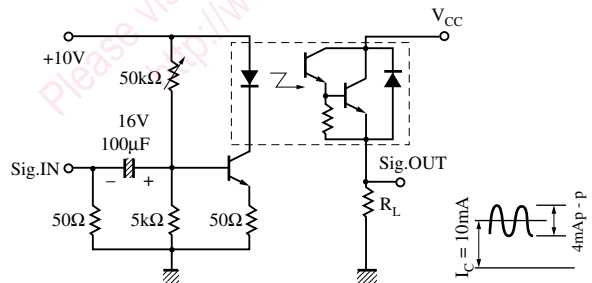




Response time measurement circuit



Measurement circuit of frequency characteristics



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.