

# CNC4L901 (ON3401)

## Optoisolator

### Overview

CNC4L901 is a high speed response opto isolator in which a high speed, high output power GaAlAs red light emitting diode is combined with an Si photo IC. It has a fast photoelectric conversion speed, permitting high efficiency video signal transmission.

### Features

- Good linearity and wide dynamic range
- High I/O isolation voltage :  $V_{ISO} = 2500 V_{rms}$  (min.)
- UL listed (UL File No. E79920)

### Applications

- High speed solid relay
- High frequency pulse transformer
- Wide band isolation

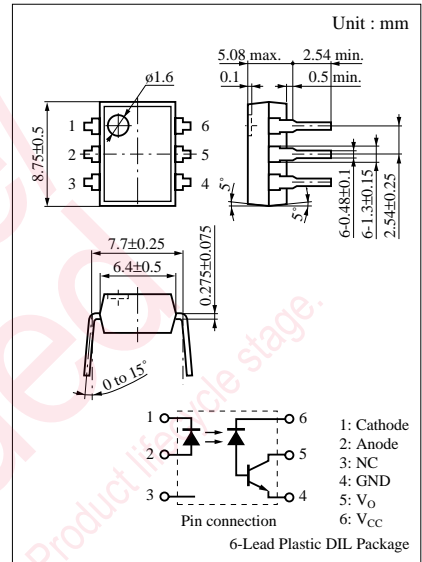
### Absolute Maximum Ratings (Ta = 25°C)

	Parameter	Symbol	Ratings	Unit
Input (Light emitting diode)	Reverse voltage (DC)	$V_R$	3	V
	Forward current (DC)	$I_F$	25	mA
	Power dissipation	$P_D^{*2}$	75	mW
Output (Photo IC)	Supply voltage	$V_{CC}$	15	V
	Output voltage	$V_O$	15	V
	Power dissipation	$P_C^{*3}$	120	mW
Total power dissipation		$P_T$	150	mW
Operating ambient temperature		$T_{opr}$	-25 to +85	°C
Storage temperature		$T_{sig}$	-40 to +100	°C

\*1 Pulse width 1 ms, Duty cycle 50%

\*2 Input power derating ratio is 1.0 mW/°C at Ta ≥ 25°C.

\*3 Output power derating ratio is 1.6 mW/°C at Ta ≥ 25°C.



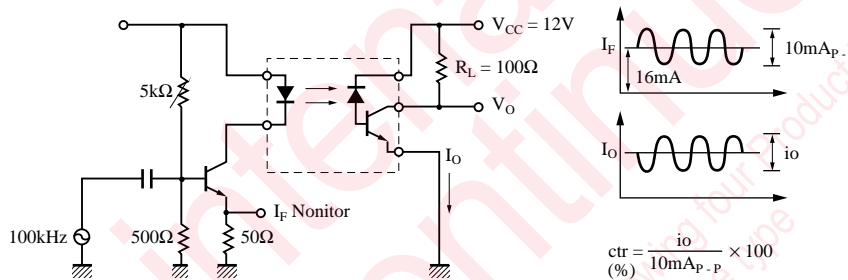
Note) The part number in the parenthesis shows conventional part number.

■ Electrical Characteristics (Ta = 25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit
Input characteristics	Reverse current (DC)	$I_R$	$V_R = 3V$			100	$\mu A$
	Forward voltage (DC)	$V_F$	$I_F = 16mA$		1.8	2.6	V
	Capacitance between pins	$C_t$	$V_R = 0V, f = 1MHz$		40		pF
Output characteristics	"H" output current	$I_{OH}$	$I_F = 0mA, V_{CC} = V_O = 15V$			100	$\mu A$
	"H" supply current	$I_{CCH}$	$I_F = 0mA, V_{CC} = 15V$			1	$\mu A$
Transfer characteristics	AC current transfer ratio	$ctr^{*1}$	$V_{CC} = 12V, I_F = 16mA$	15		80	%
	Isolation voltage, input to output	$V_{ISO}$	$t = 1min., RH < 60\%$	2500			$V_{rms}$
	Isolation capacitance, input to output	$C_{ISO}$	$f = 1MHz$		0.5		pF
	Isolation resistance, input to output	$R_{ISO}$	$V_{ISO} = 500V$		$10^{11}$		$\Omega$
	Frequency response	$BW^{*2}$	$I_F = 16mA, V_{CC} = 12V, R_L = 100\Omega$	-5.0	-3.0	-1.0	dB

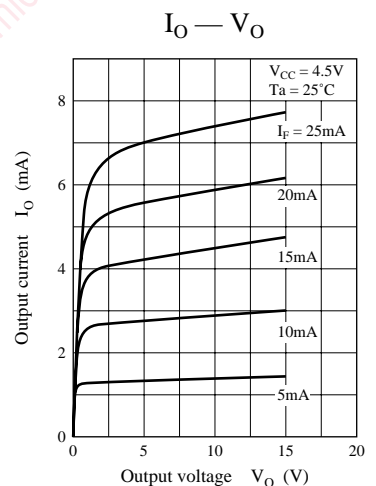
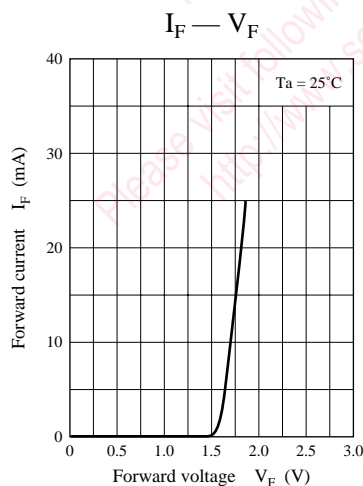
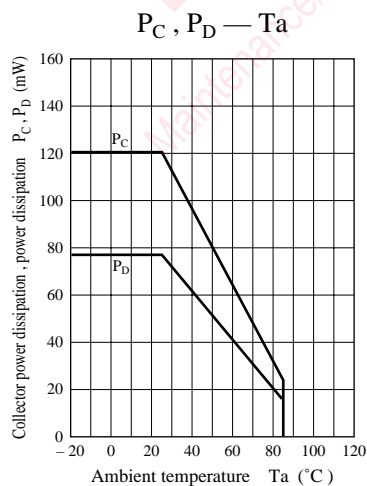
\*1 AC Current transfer ratio (ctr) is a ratio of output current against AC input current.

ctr measurement circuit

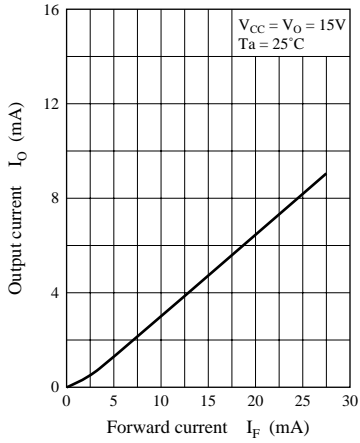


\*2 Frequency response (BW) is a ratio of ctr at the frequency of f = 100 kHz and 3.58 MHz.

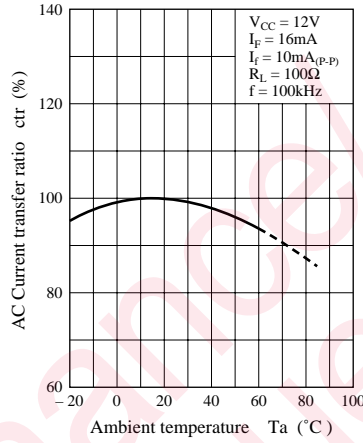
$$BW = 20 \log \frac{ctr(f = 3.58MHz)}{ctr(f = 100kHz)}$$



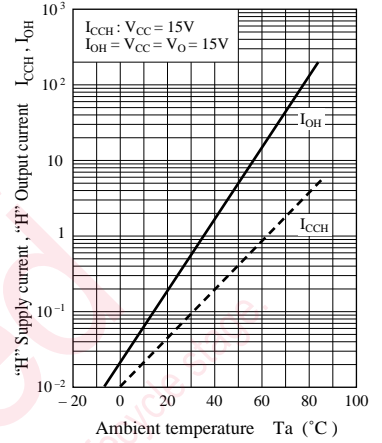
$I_O - I_F$



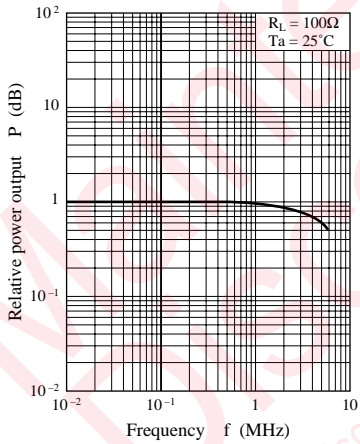
ctr —  $T_a$



$I_{CCH}, I_{OH} - T_a$



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.

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