

CNC1S101 (ON3131), CNZ3132 (ON3132), CNZ3133 (ON3133), CNZ3134 (ON3134)

Optoisolators

Overview

CNC1S101 is a DIL type 4-pin single-channel optoisolator which is housed in a small package. This optoisolator series also includes the two channel CNZ3132, the three-channel CNZ3133, and the four-channel 3134.

The CNC1S101 series has a number of good features, including high I/O isolation voltage and current transfer ratio (CTR), as well as high speed response.

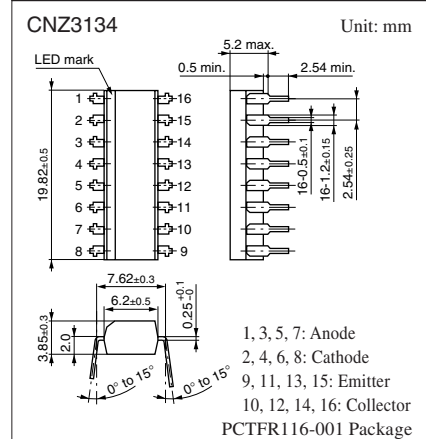
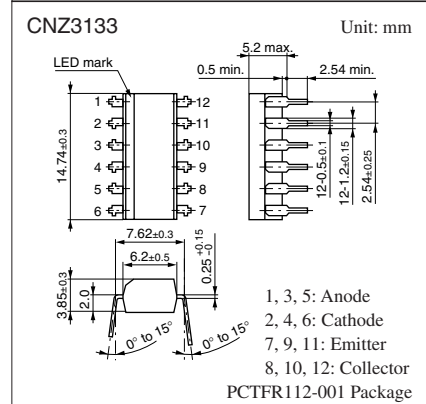
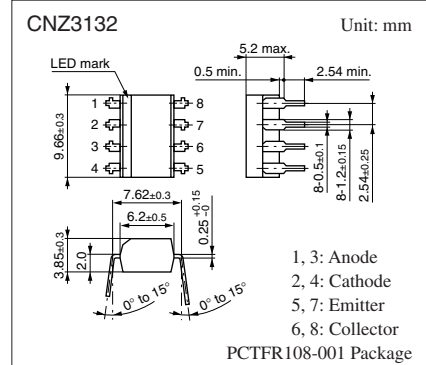
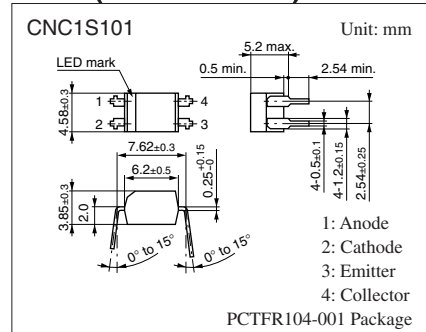
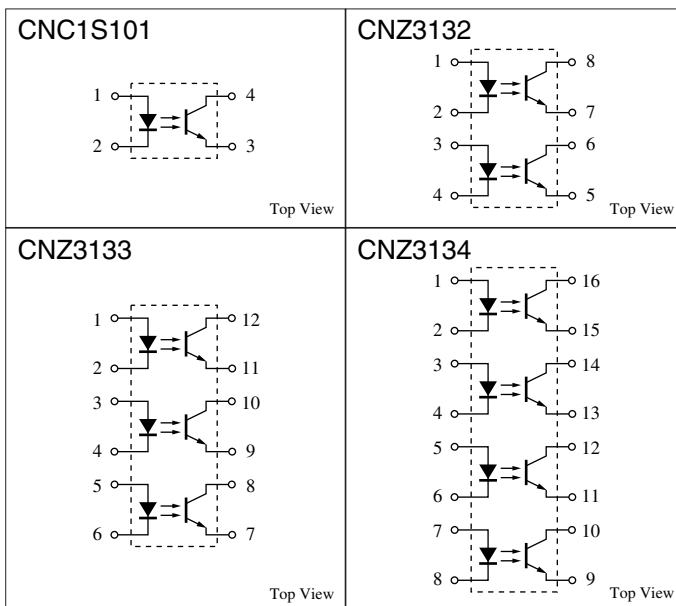
Features

- High current transfer ratio: CTR ≥ 100%
- High I/O isolation voltage: $V_{ISO} = 5\,000\text{ V[rms]}$ (min.)
- Fast response: $t_r = 2\ \mu\text{s}$, $t_f = 3\ \mu\text{s}$ (typ.)
- Collector-emitter cutoff current (Base open): $I_{CEO} \leq 100\ \text{nA}$
- UL listed (UL File No. E79920)

Applications

- Switching power supply
- Computer terminal equipment
- System equipment, measuring equipment
- Telephones, copier, vending machines
- Televisions, VCRs, and other consumer electronics products
- Medical equipment and physical and chemical equipment
- Signal transmission between circuits with different potentials and impedances

Pin Connection



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

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

| Parameter | | Symbol | Rating | Unit |
|---------------------------------------|---------------------------------------|-----------|-------------|------------------|
| Input (Light emitting diode) | Reverse voltage | V_R | 6 | V |
| | Forward current | I_F | 50 | mA |
| | Pulse forward current *1 | I_{FP} | 1 | A |
| | Power dissipation *2 | P_D | 75 | mW |
| Output (Photo transistor) | Collector-emitter voltage (Base open) | V_{CEO} | 80 | V |
| | Emitter-collector voltage (Base open) | V_{ECO} | 7 | V |
| | Collector current | I_C | 50 | mA |
| | Collector power dissipation *3 | P_C | 150 | mW |
| Isolation voltage, input to output *4 | | V_{ISO} | 5 000 | V[rms] |
| Total power dissipation | | P_T | 200 | mW |
| Operating ambient temperature | | T_{opr} | -30 to +100 | $^\circ\text{C}$ |
| Storage temperature | | T_{stg} | -55 to +125 | $^\circ\text{C}$ |

Note) *1: Pulse width $\leq 100 \mu\text{s}$, repeat 100 pps

*2: Input power derating ratio is
0.75 mW/ $^\circ\text{C}$ at $T_a \geq 25^\circ\text{C}$

*3: Output power derating ratio is
1.5 mW/ $^\circ\text{C}$ at $T_a \geq 25^\circ\text{C}$

*4: AC 1 min., RH < 60%

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

| Parameter | | Symbol | Conditions | Min | Typ | Max | Unit |
|--------------------------------------|--|--|--|-----------|------|------|---------------|
| Input characteristics | Forward voltage | V_F | $I_F = 50 \text{ mA}$ | | 1.35 | 1.50 | V |
| | Reverse current | I_R | $V_R = 3 \text{ V}$ | | | 10 | μA |
| | Terminal capacitance | C_t | $V_R = 0 \text{ V}$, $f = 1 \text{ MHz}$ | | 15 | | pF |
| Output characteristics | Collector-emitter voltage (Base open) | V_{CEO} | $I_C = 100 \mu\text{A}$ | 80 | | | V |
| | Emitter-collector voltage (Base open) | V_{ECO} | $I_E = 10 \mu\text{A}$ | 7 | | | V |
| | Collector-emitter cutoff current (Base open) | I_{CEO} | $V_{CE} = 20 \text{ V}$ | | 5 | 100 | nA |
| | Collector-emitter capacitance | C_C | $V_{CE} = 10 \text{ V}$, $f = 1 \text{ MHz}$ | | 10 | | pF |
| Transfer characteristics | DC current transfer ratio *1 | CNZ3132 | $V_{CE} = 5 \text{ V}$, $I_F = 5 \text{ mA}$ | 100 | | 600 | % |
| | | CNZ3133 | | | | | |
| | | CNZ3134 | | | | | |
| | | CNC1S101 *4 | | | | | |
| | Isolation capacitance, input to output | C_{ISO} | $f = 1 \text{ MHz}$ | | 0.7 | | pF |
| | Isolation resistance, input to output | R_{ISO} | $V_{ISO} = 500 \text{ V}$ | 10^{11} | | | Ω |
| | Rise time *2 | t_r | $V_{CC} = 10 \text{ V}$, $I_C = 2 \text{ mA}$ | | 2 | | μs |
| | Fall time *3 | t_f | $R_L = 100 \Omega$ | | 3 | | μs |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_F = 20 \text{ mA}$, $I_C = 1 \text{ mA}$ | | 0.1 | 0.2 | V | |

Note) 1. Input and output are handled electrically.

2. This product is not designed to withstand radiation

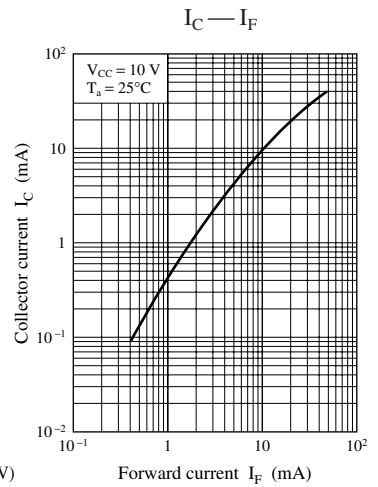
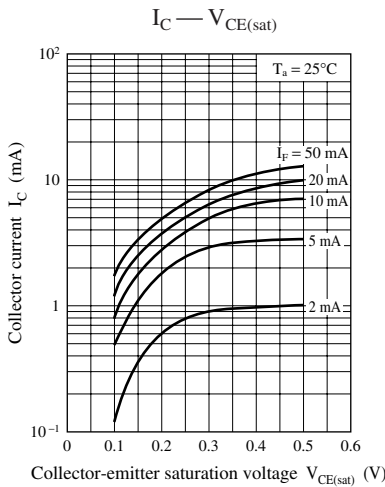
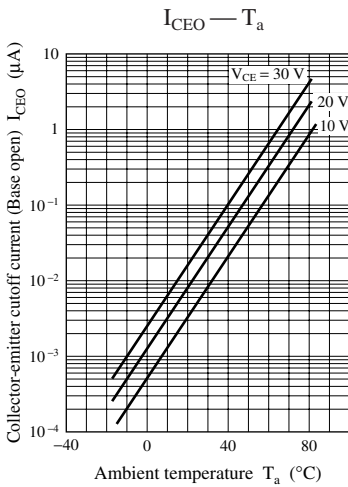
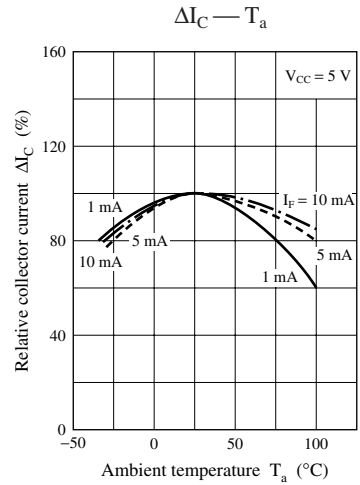
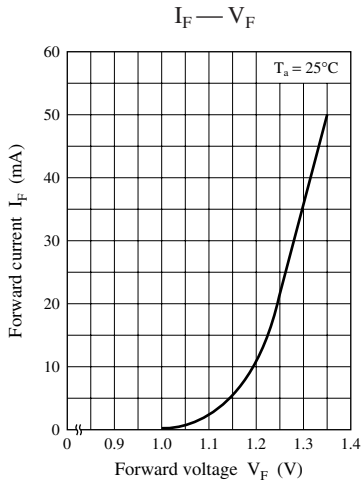
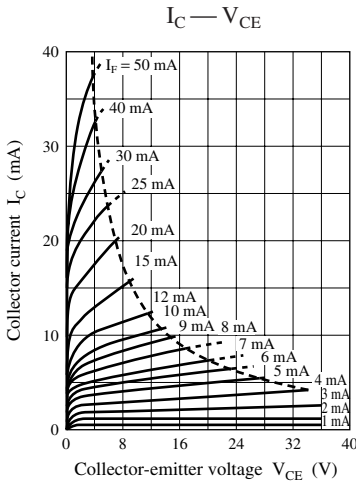
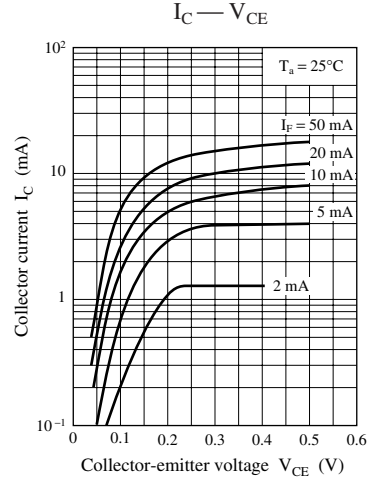
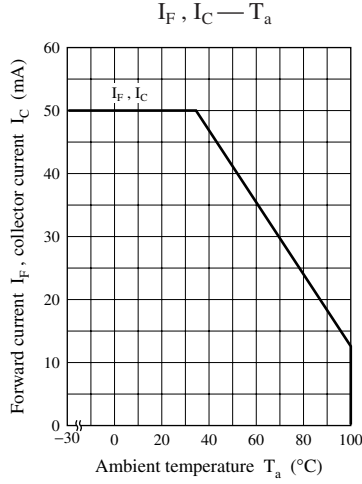
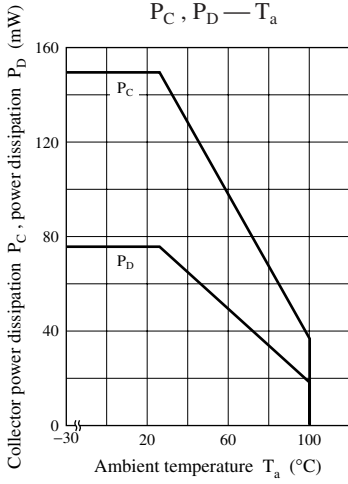
3. *1:
$$\text{CTR} = \frac{I_C}{I_F} \times 100\%$$

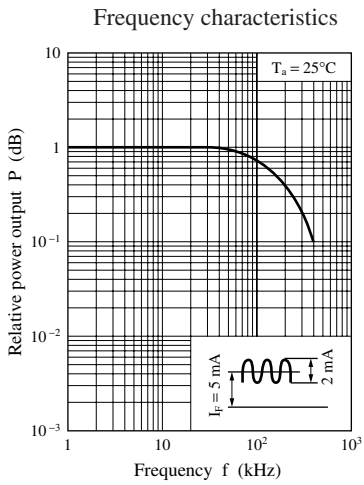
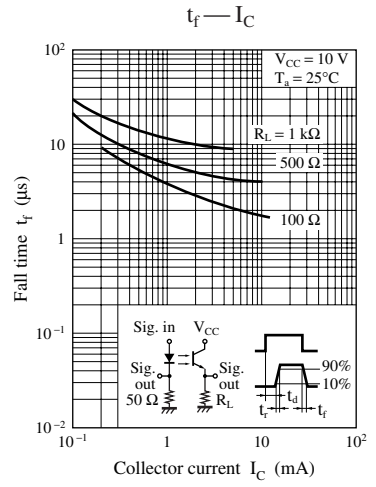
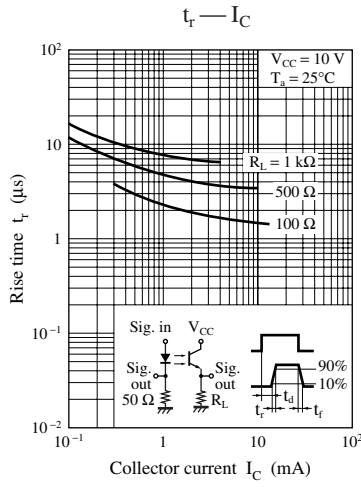
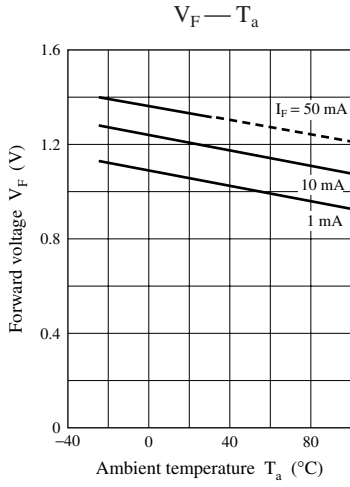
*2: t_r : Time required for the collector current to increase from 10% to 90% of its final value

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

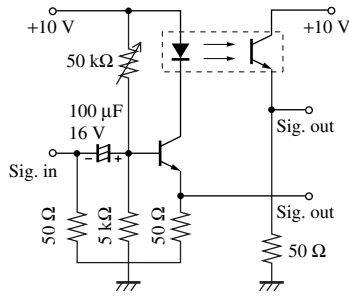
*4: Rank classification

| Rank | R | S | V | No-rank |
|---------|------------|------------|-----------|------------|
| CTR (%) | 100 to 300 | 200 to 600 | 80 to 130 | 100 to 600 |





Measurement circuit of frequency characteristics



for Safety

contains Gallium Arsenide (GaAs).

vapor are hazardous to human health if inhaled or
burn, destroy, cut, cleave off, or chemically dissolve the
related laws and ordinances for disposal. The product
from general industrial waste or household garbage.

Precautions in using the technical information and described in this book

This book is to be exported or provided to non-residents, the laws and
regulations related to security export control, must be observed.

This book is to show the main characteristics and application circuit examples
of our products. All the rights of copyright, trademark, or other property right or other right owned by our company or any other
party are reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted in any form or by any means
electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission
of our company. Any infringement upon any such right owned by any other party is the responsibility of the infringer.

This book is for standard applications or general electronic equipment (such as office
equipment and household appliances).

Special applications:

Automobiles, traffic control equipment, combustion equipment, life support
equipment, etc. where high reliability are required, or if the failure or malfunction of the prod-

ucts are subject to change without notice for modification and/or im-
provement of the products, therefore, ask for the most up-to-date Product
Data Sheet to satisfy your requirements.

Do not exceed the absolute maximum rating and the guaranteed operating conditions
(see the Product Data Sheet). Especially, please be careful not to exceed the range of absolute
maximum ratings for turn-on and mode-switching. Otherwise, we will not be liable for any

damages, take into the consideration of incidence of break down and failure
of the systems such as redundant design, arresting the spread of fire
and personal injury, fire, social damages, for example, by using the products.

Performance and characteristics change due to external factors (ESD, EOS,
mechanical stress, etc.) during mounting or at customer's process. When using products for which
high reliability is required, please refer to the Product Data Sheet for shelf life and the elapsed time since first opening the packages.

Do not modify or partially, without the prior written permission of Matsushita

For more information on our semiconductor products, please contact one
of our Sales Offices or our Semiconductor Company's Department.







Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View CNC1S101 on WIN SOURCE](#)

 [Panasonic Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management