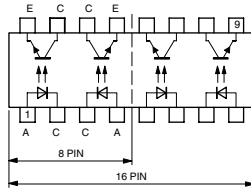
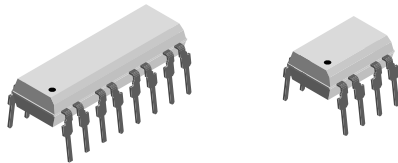


Optocoupler, Phototransistor Output, Multichannel



17188



FEATURES

- CNY74-2H includes 2 isolator channels
- CNY74-4H includes 4 isolator channels
- Isolation test voltage $V_{ISO} = 5000 V_{RMS}$
- Test class 25/100/21 DIN 40 045
- Low coupling capacitance of typical 0.3 pF
- Current transfer ratio (CTR) of typical 100 %
- Low temperature coefficient of CTR
- Wide ambient temperature range
- Coupling system U
- Lead (Pb)-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC


**RoHS
COMPLIANT**

DESCRIPTION

The CNY74-2H and CNY74-4H consist of a phototransistor optically coupled to a gallium arsenide infrared-emitting diode in an 8-pin, resp. 16-pin plastic dual inline package.

The elements are mounted on one leadframe providing a fixed distance between input and output for highest safety requirements.

APPLICATIONS

- Galvanically separated circuits, non-interacting switches

AGENCY APPROVALS

- UL1577, file no. E76222 system code U, double protection
- CSA22.2 bulletin 5A

ORDER INFORMATION

| PART | REMARKS |
|----------|-------------------------|
| CNY74-2H | CTR 50 to 600 %, DIP-8 |
| CNY74-4H | CTR 50 to 600 %, DIP-16 |

Note

CNY74-2H and CNY74-4M are marked as CNY74-2 and CNY74-4 respectively.

ABSOLUTE MAXIMUM RATINGS ⁽¹⁾

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|---------------------------|-------------------------------|------------|-------|------|
| INPUT | | | | |
| Reverse voltage | | V_R | 6 | V |
| Forward current | | I_F | 60 | mA |
| Forward surge current | $t_p \leq 10 \mu s$ | I_{FSM} | 1.5 | A |
| Power dissipation | | P_{diss} | 100 | mW |
| Junction temperature | | T_j | 125 | °C |
| OUTPUT | | | | |
| Collector emitter voltage | | V_{CEO} | 70 | V |
| Emitter collector voltage | | V_{ECO} | 7 | V |
| Collector current | | I_C | 50 | mA |
| Collector peak current | $t_p/T = 0.5, t_p \leq 10 ms$ | I_{CM} | 100 | mA |
| Power dissipation | | P_{diss} | 150 | mW |
| Junction temperature | | T_j | 125 | °C |

| ABSOLUTE MAXIMUM RATINGS (1) | | | | |
|---------------------------------|--------------------------|-----------------|---------------|-----------|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| COUPLER | | | | |
| AC isolation test voltage (RMS) | t = 1 min | $V_{ISO}^{(2)}$ | 5000 | V_{RMS} |
| Total power dissipation | | P_{tot} | 250 | mW |
| Ambient temperature range | | T_{amb} | - 40 to + 100 | °C |
| Storage temperature range | | T_{stg} | - 55 to + 125 | °C |
| Soldering temperature | 2 mm from case, t ≤ 10 s | T_{slid} | 260 | °C |

Notes

(1) $T_{amb} = 25\text{ °C}$, unless otherwise specified.

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute maximum ratings for extended periods of the time can adversely affect reliability.

(2) Related to standard climate 23/50 DIN 50014.

(3) Refer to wave profile for soldering conditions for through hole devices (DIP).

| ELECTRICAL CHARACTERISTICS (1) | | | | | | |
|--------------------------------------|--|-----------------|------|-----------|------|----------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| INPUT | | | | | | |
| Forward voltage | $I_F = 50\text{ mA}$ | V_F | | 1.25 | 1.6 | V |
| OUTPUT | | | | | | |
| Collector emitter voltage | $I_C = 1\text{ mA}$ | V_{CEO} | 70 | | | V |
| Emitter collector voltage | $I_E = 100\text{ }\mu\text{A}$ | V_{ECO} | 7 | | | V |
| Collector dark current | $V_{CE} = 20\text{ V}$, $I_F = 0\text{ A}$, $E = 0$ | I_{CEO} | | | 100 | nA |
| COUPLER | | | | | | |
| DC isolation test voltage | t = 2 s | $V_{ISO}^{(2)}$ | 5000 | | | V |
| Isolation resistance | $V_{IO} = 1000\text{ V}$, 40 % relative humidity | $R_{IO}^{(2)}$ | | 10^{12} | | Ω |
| Collector emitter saturation voltage | $I_F = 10\text{ mA}$, $I_C = 1\text{ mA}$ | V_{CEsat} | | | 0.3 | V |
| Cut-off frequency | $V_{CE} = 5\text{ V}$, $I_F = 10\text{ mA}$, $R_L = 100\text{ }\Omega$ | f_c | | 100 | | kHz |
| Coupling capacitance | f = 1 MHz | C_k | | 0.3 | | pF |

Note

(1) $T_{amb} = 25\text{ °C}$, unless otherwise specified. Minimum and maximum values were tested requirements. Typical values are characteristics of the device and are the result of engineering evaluations. Typical values are for information only and are not part of the testing requirements.

(2) Related to standard climate 23/50 DIN 50014.

| CURRENT TRANSFER RATIO | | | | | | |
|------------------------|--|--------|------|------|------|------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| I_C/I_F | $V_{CE} = 5\text{ V}$, $I_F = 5\text{ mA}$ | CTR | 50 | 100 | 600 | % |
| | $V_{CE} = 5\text{ V}$, $I_F = 10\text{ mA}$ | CTR | 60 | 120 | | % |

| SWITCHING CHARACTERISTICS | | | | | | |
|---------------------------|---|-----------|------|------|------|---------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Delay time | $V_S = 5\text{ V}$, $I_C = 2\text{ mA}$, $R_L = 100\text{ }\Omega$ (see figure 1) | t_d | | 3.0 | | μs |
| Rise time | $V_S = 5\text{ V}$, $I_C = 2\text{ mA}$, $R_L = 100\text{ }\Omega$ (see figure 1) | t_r | | 3.0 | | μs |
| Fall time | $V_S = 5\text{ V}$, $I_C = 2\text{ mA}$, $R_L = 100\text{ }\Omega$ (see figure 1) | t_f | | 4.7 | | μs |
| Storage time | $V_S = 5\text{ V}$, $I_C = 2\text{ mA}$, $R_L = 100\text{ }\Omega$ (see figure 1) | t_s | | 0.3 | | μs |
| Turn-on time | $V_S = 5\text{ V}$, $I_C = 2\text{ mA}$, $R_L = 100\text{ }\Omega$ (see figure 1) | t_{on} | | 6.0 | | μs |
| Turn-off time | $V_S = 5\text{ V}$, $I_C = 2\text{ mA}$, $R_L = 100\text{ }\Omega$ (see figure 1) | t_{off} | | 5.0 | | μs |
| Turn-on time | $V_S = 5\text{ V}$, $I_C = 10\text{ mA}$, $R_L = 1\text{ k}\Omega$ (see figure 2) | t_{on} | | 9.0 | | μs |
| Turn-off time | $V_S = 5\text{ V}$, $I_C = 10\text{ mA}$, $R_L = 1\text{ k}\Omega$ (see figure 2) | t_{off} | | 18.0 | | μs |

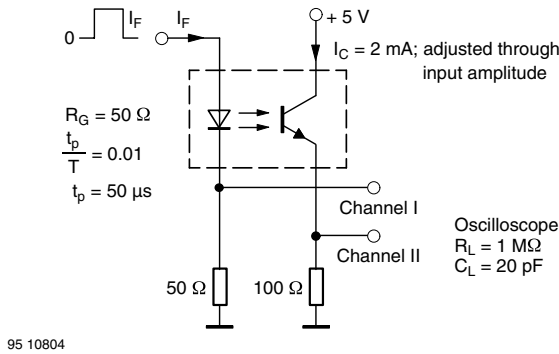


Fig. 1 - Test Circuit, Non-Saturated Operation

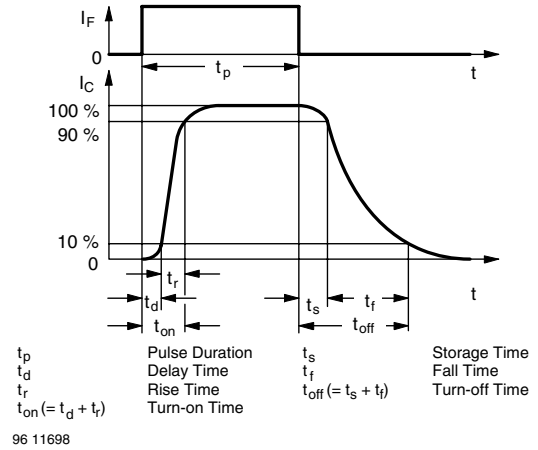


Fig. 3 - Switching Times

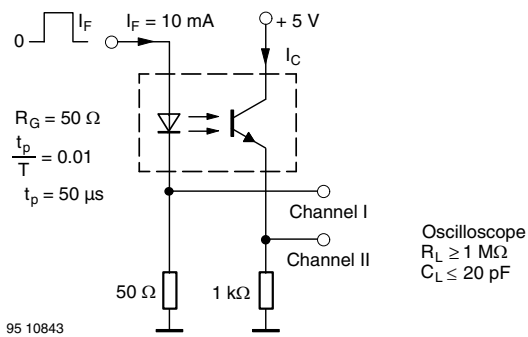


Fig. 2 - Test Circuit, Saturated Operation

TYPICAL CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

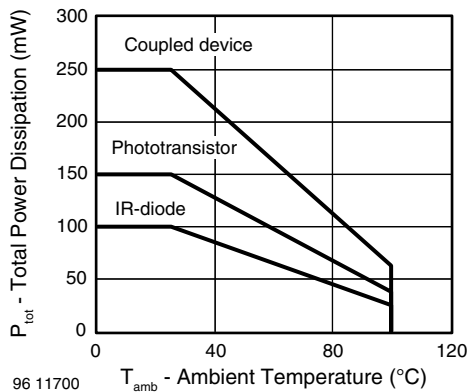


Fig. 4 - Total Power Dissipation vs. Ambient Temperature

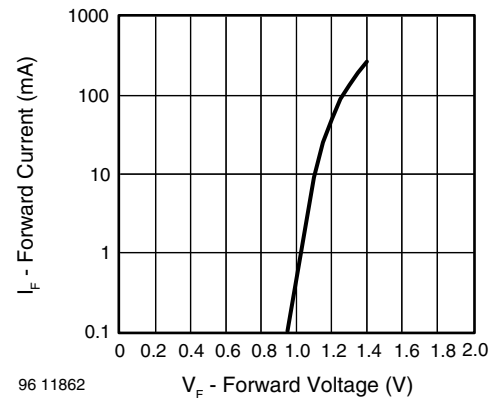


Fig. 5 - Forward Current vs. Forward Voltage

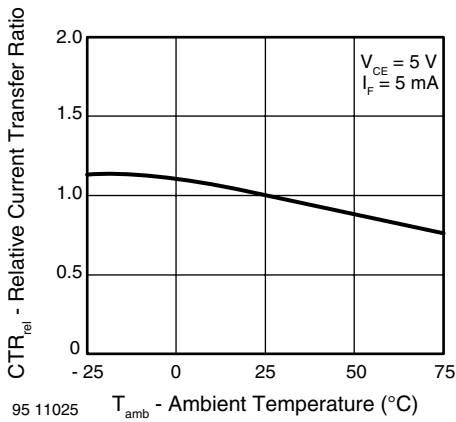


Fig. 6 - Relative Current Transfer Ratio vs. Ambient Temperature

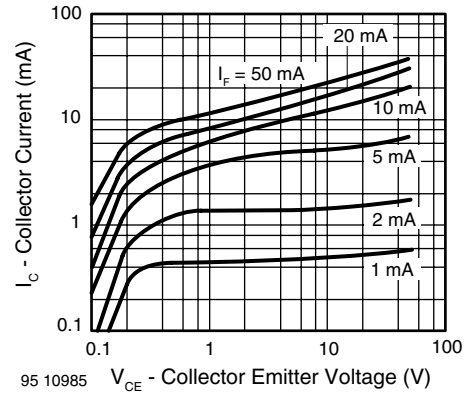


Fig. 9 - Collector Current vs. Collector Emitter Voltage

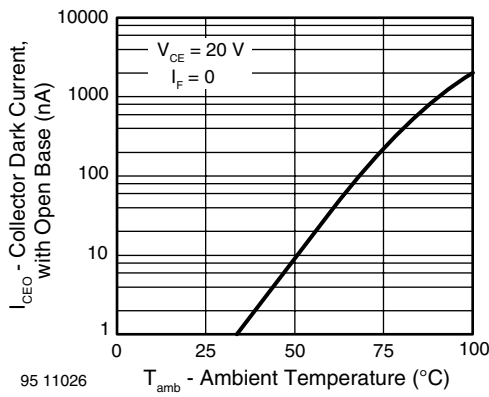


Fig. 7 - Collector Dark Current vs. Ambient Temperature

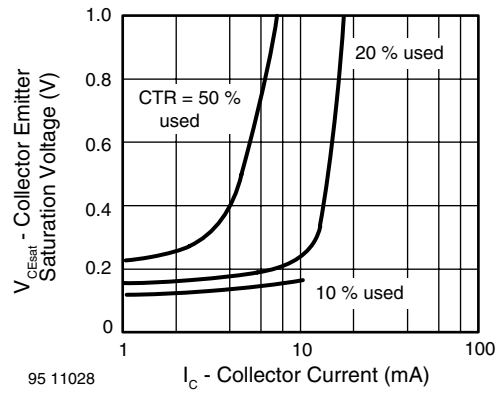


Fig. 10 - Collector Emitter Saturation Voltage vs. Collector Current

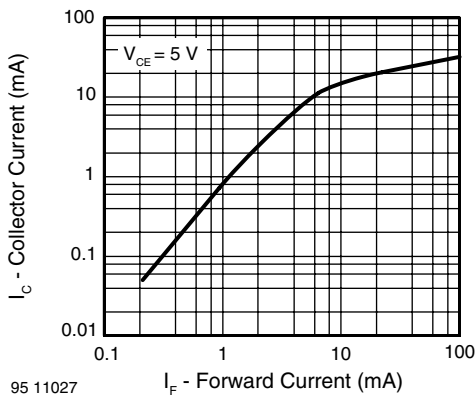


Fig. 8 - Collector Current vs. Forward Current

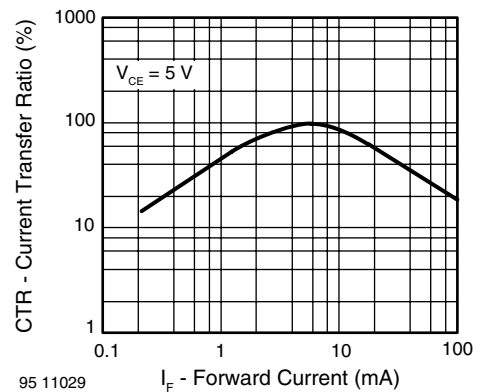
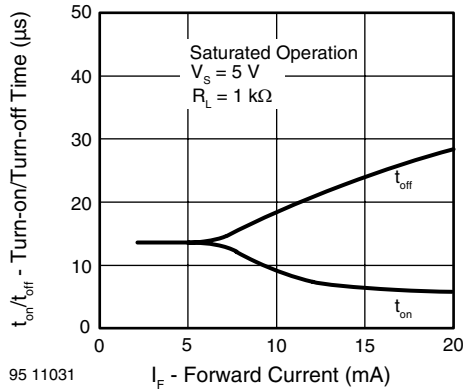


Fig. 11 - Current Transfer Ratio vs. Forward Current



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Fig. 12 - Turn-on/off Time vs. Forward Current

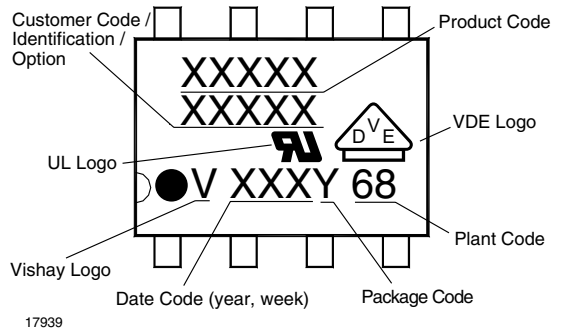
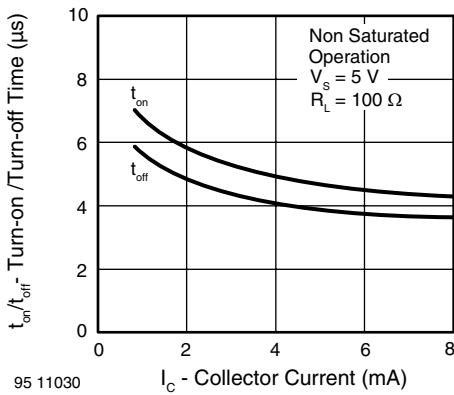


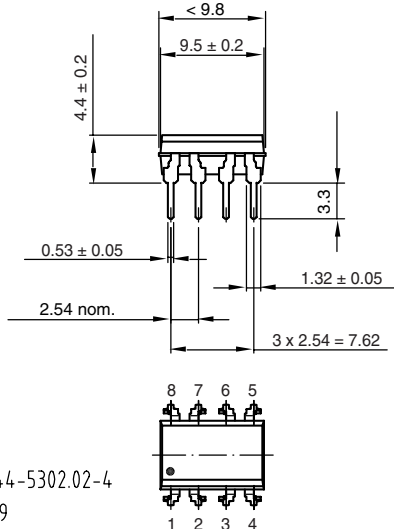
Fig. 14 - Marking Example



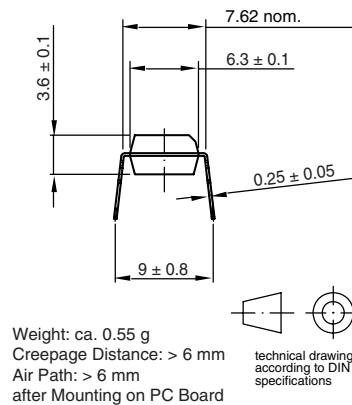
95 11030

Fig. 13 - Turn-on/off Time vs. Collector Current

PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5302.02-4
Issue: 4; 02.06.99



Weight: ca. 0.55 g
Creepage Distance: > 6 mm
Air Path: > 6 mm
after Mounting on PC Board

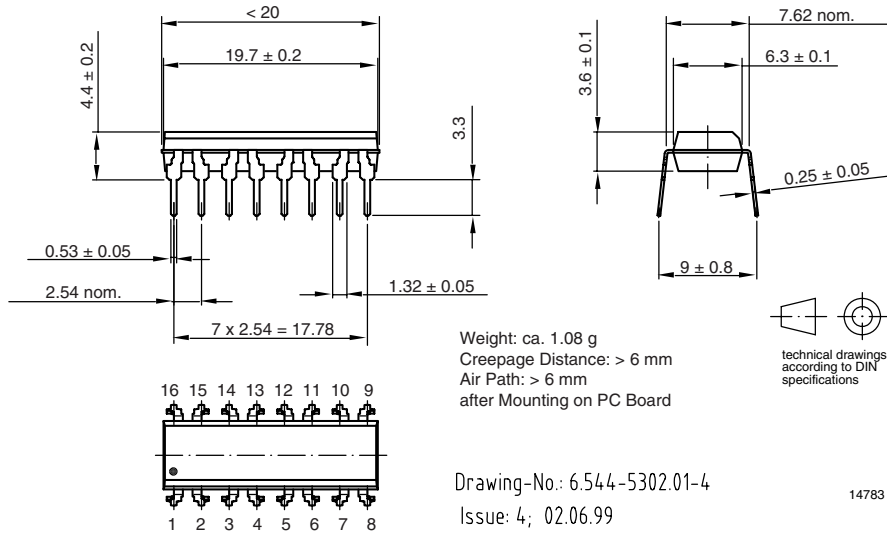
14784

CNY74-2H/CNY74-4H



Vishay Semiconductors Optocoupler, Phototransistor Output,
Multichannel

PACKAGE DIMENSIONS in millimeters



**OZONE DEPLETING SUBSTANCES POLICY STATEMENT**

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively.
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

We reserve the right to make changes to improve technical design
and may do so without further notice.

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