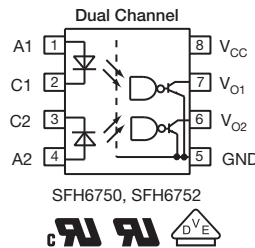
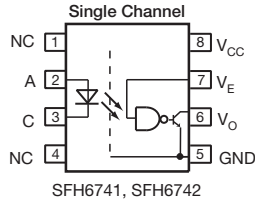
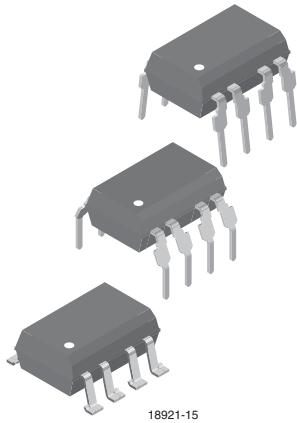


High Speed Optocoupler, Single and Dual, 10 MBd



FEATURES

- Choice of CMR performance of 10 kV/μs, 5 kV/μs, and 100 V/μs
- High speed: 10 MBd typical
- + 5 V CMOS compatibility
- Pure tin leads
- Guaranteed AC and DC performance over temperature: - 40 °C to + 100 °C temperature range
- Meets IEC 60068-2-42 (SO₂) and IEC 60068-2-43 (H₂S) requirements
- Low input current capability: 5 mA
- Compliant to RoHS Directive to 2002/95/EC and in accordance WEEE 2002/96/EC



RoHS
COMPLIANT

APPLICATIONS

- Microprocessor system interface
- PLC, ATE input/output isolation
- Computer peripheral interface
- Digital fieldbus isolation: CC-link, DeviceNet, profibus, SDS
- High speed A/D and D/A conversion
- AC plasma display panel level shifting
- Multiplexed data transmission
- Digital control power supply
- Ground loop elimination

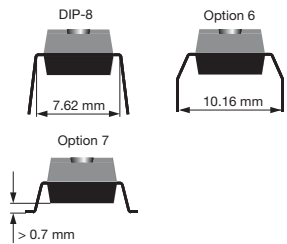
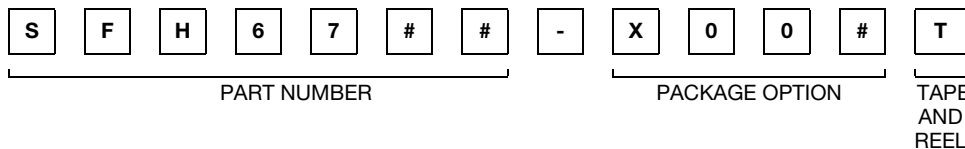
AGENCY APPROVALS

- UL1577, file no. E52744 system code H, double protection
- cUL - file no. E52744, equivalent to CSA bulletin 5A
- DIN EN 60747-5-2 (VDE 0884)/ VDE available with option 1
- Reinforced insulation rating per IEC60950 2.10.5.1

DESCRIPTION

The SFH674x and SFH675x are single channel 10 MBd optocouplers utilizing a high efficient input LED coupled with an integrated optical photodiode IC detector. The detector has an open drain NMOS-transistor output, providing less leakage compared to an open collector Schottky clamped transistor output. For the single channel type, an enable function on pin 7 allows the detector to be strobed. The internal shield provides a guaranteed common mode transient immunity of 5 kV/μs for the SFH6741 and 10 kV/μs for the SFH6742 and SFH6752.

ORDERING INFORMATION



| AGENCY CERTIFIED/PACKAGE | SINGLE CHANNEL | | DUAL CHANNEL | |
|--------------------------|----------------|--------------|--------------|---------------|
| | CMR (kV/μs) | | CMR (kV/μs) | |
| BSI, UL, cUL | 5 | 10 | 0.1 | 10 |
| DIP-8 | - | - | - | - |
| DIP-8, 400 mil, option 6 | - | SFH6742-X006 | SFH6750-X006 | - |
| SMD-8, option 7 | SFH6741-X007T | - | - | SFH6752-X007T |

Note

- For additional information on the available options refer to Option Information.

SFH6741, SFH6742, SFH6750, SFH6752



Vishay Semiconductors High Speed Optocoupler, Single and Dual,
10 MBd

| TRUTH TABLE (positive logic) | | |
|------------------------------|--------|--------|
| LED | ENABLE | OUTPUT |
| On | H | L |
| Off | H | H |
| On | L | H |
| Off | L | H |
| On | NC | L |
| Off | NC | H |

| ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | |
|---|------------------------------|------------|-------------------------|--------------------|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| INPUT | | | | |
| Average forward current (single channel) | | I_F | 20 | mA |
| Average forward current (per channel for dual channel) | | I_F | 15 | mA |
| Reverse input voltage | | V_R | 5 | V |
| Enable input voltage (single channel) | | V_E | $V_{CC} + 0.5\text{ V}$ | V |
| Enable input current (single channel) | | I_E | 5 | mA |
| Surge current | $t = 100\text{ }\mu\text{s}$ | I_{FSM} | 200 | mA |
| OUTPUT | | | | |
| Supply voltage | | V_{CC} | 7 | V |
| Output current | | I_O | 50 | mA |
| Output voltage | | V_O | 7 | V |
| Output power dissipation (single channel) | | P_{diss} | 85 | mW |
| Output power dissipation per channel (dual channel) | | P_{diss} | 60 | mW |
| COUPLER | | | | |
| Storage temperature | | T_{stg} | - 55 to + 150 | $^{\circ}\text{C}$ |
| Operating temperature | | T_{amb} | - 40 to + 100 | $^{\circ}\text{C}$ |
| Lead solder temperature (single channel) | for 10 s | | 260 | $^{\circ}\text{C}$ |
| Solder reflow temperature ⁽¹⁾ | for 1 min | | 260 | $^{\circ}\text{C}$ |
| Isolation test voltage | $t = 1\text{ s}$ | V_{ISO} | 5300 | V_{RMS} |

Notes

- 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.
- ⁽¹⁾ Refer to reflow profile for soldering conditions for surface mounted devices (SMD). Refer to wave profile for soldering conditions for through hole devices (DIP).

| RECOMMENDED OPERATING CONDITIONS | | | | | |
|----------------------------------|--------------------------|-----------|------|----------|--------------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | MAX. | UNIT |
| Operating temperature | | T_{amb} | - 40 | 100 | $^{\circ}\text{C}$ |
| Supply voltage | | V_{CC} | 4.5 | 5.5 | V |
| Input current low level | | I_{FL} | 0 | 250 | μA |
| Input current high level | | I_{FH} | 5 | 15 | mA |
| Logic high enable voltage | | V_{EH} | 2 | V_{CC} | V |
| Logic low enable voltage | | V_{EL} | 0 | 0.8 | V |
| Output pull up resistor | | R_L | 330 | 4K | Ω |
| Fanout | $R_L = 1\text{ k}\Omega$ | N | | 5 | - |



SFH6741, SFH6742, SFH6750, SFH6752

High Speed Optocoupler, Single and Dual, Vishay Semiconductors
10 MBd

| ELECTRICAL CHARACTERISTICS | | | | | | |
|--|--|-----------|------|-------|-------|---------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| INPUT | | | | | | |
| Input forward voltage | $I_F = 10 \text{ mA}$ | V_F | 1 | 1.4 | 1.7 | V |
| Reverse current | $V_R = 5 \text{ V}$ | I_R | | 0.01 | 10 | μA |
| Input capacitance | $f = 1 \text{ MHz}, V_F = 0 \text{ V}$ | C_i | | 55 | | pF |
| OUTPUT | | | | | | |
| High level supply current (single channel) | $V_E = 0.5 \text{ V}, I_F = 0 \text{ mA}$ | I_{CCH} | | 4.1 | 7 | mA |
| | $V_E = V_{CC}, I_F = 0 \text{ mA}$ | I_{CCH} | | 3.3 | 6 | mA |
| High level supply current (dual channel) | $I_F = 0 \text{ mA}$ | I_{CCH} | | 6.9 | 12 | mA |
| Low level supply current (single channel) | $V_E = 0.5 \text{ V}, I_F = 10 \text{ mA}$ | I_{CCL} | | 4 | 7 | mA |
| | $V_E = V_{CC}, I_F = 10 \text{ mA}$ | I_{CCL} | | 3.3 | 6 | mA |
| Low level supply current (dual channel) | $I_F = 10 \text{ mA}$ | I_{CCL} | | 6.5 | 12 | mA |
| High level output current | $V_E = 2 \text{ V}, V_O = 5.5 \text{ V}, I_F = 250 \mu\text{A}$ | I_{OH} | | 0.002 | 1 | μA |
| Low level output voltage | $V_E = 2 \text{ V}, I_F = 5 \text{ mA}, I_{OL} \text{ (sinking)} = 13 \text{ mA}$ | V_{OL} | | 0.2 | 0.6 | V |
| Input threshold current | $V_E = 2 \text{ V}, V_O = 5.5 \text{ V}, I_{OL} \text{ (sinking)} = 13 \text{ mA}$ | I_{TH} | | 2.4 | 5 | mA |
| High level enable current | $V_E = 2 \text{ V}$ | I_{EH} | | - 0.6 | - 1.6 | mA |
| Low level enable current | $V_E = 0.5 \text{ V}$ | I_{EL} | | - 0.8 | - 1.6 | mA |
| High level enable voltage | | V_{EH} | 2 | | | V |
| Low level enable voltage | | V_{EL} | | | 0.8 | V |

Note

- Minimum and maximum values are testing requirements. Typical values are characteristics of the device and are the result of engineering evaluation. Typical values are for information only and are not part of the testing requirements. All typicals at $T_{amb} = 25 \text{ }^\circ\text{C}$, $V_{CC} = 5.5 \text{ V}$, unless otherwise specified.

| SWITCHING CHARACTERISTICS | | | | | | |
|--|---|-----------------------|------|------|------|------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Propagation delay time to high output level | $R_L = 350 \Omega, C_L = 15 \text{ pF}$ | t_{PLH} | 20 | 48 | 100 | ns |
| Propagation delay time to low output level | $R_L = 350 \Omega, C_L = 15 \text{ pF}$ | t_{PHL} | 25 | 50 | 100 | ns |
| Pulse width distortion | $R_L = 350 \Omega, C_L = 15 \text{ pF}$ | $ t_{PHL} - t_{PLH} $ | | 2.9 | 35 | ns |
| Propagation delay skew | $R_L = 350 \Omega, C_L = 15 \text{ pF}$ | t_{PSK} | | 8 | 40 | ns |
| Output rise time (10 % to 90 %) | $R_L = 350 \Omega, C_L = 15 \text{ pF}$ | t_r | | 23 | | ns |
| Output fall time (90 % to 10 %) | $R_L = 350 \Omega, C_L = 15 \text{ pF}$ | t_f | | 7 | | ns |
| Propagation delay time of enable from V_{EH} to V_{EL} | $R_L = 350 \Omega, C_L = 15 \text{ pF}, V_{EL} = 0 \text{ V}, V_{EH} = 3 \text{ V}$ | t_{ELH} | | 12 | | ns |
| Propagation delay time of enable from V_{EL} to V_{EH} | $R_L = 350 \Omega, C_L = 15 \text{ pF}, V_{EL} = 0 \text{ V}, V_{EH} = 3 \text{ V}$ | t_{EHL} | | 11 | | ns |

Note

- Over recommended temperature ($T_{amb} = - 40 \text{ }^\circ\text{C}$ to $+ 100 \text{ }^\circ\text{C}$), $V_{CC} = 5 \text{ V}$, $I_F = 7.5 \text{ mA}$ unless otherwise specified. All typicals at $T_{amb} = 25 \text{ }^\circ\text{C}$, $V_{CC} = 5 \text{ V}$.

SFH6741, SFH6742, SFH6750, SFH6752



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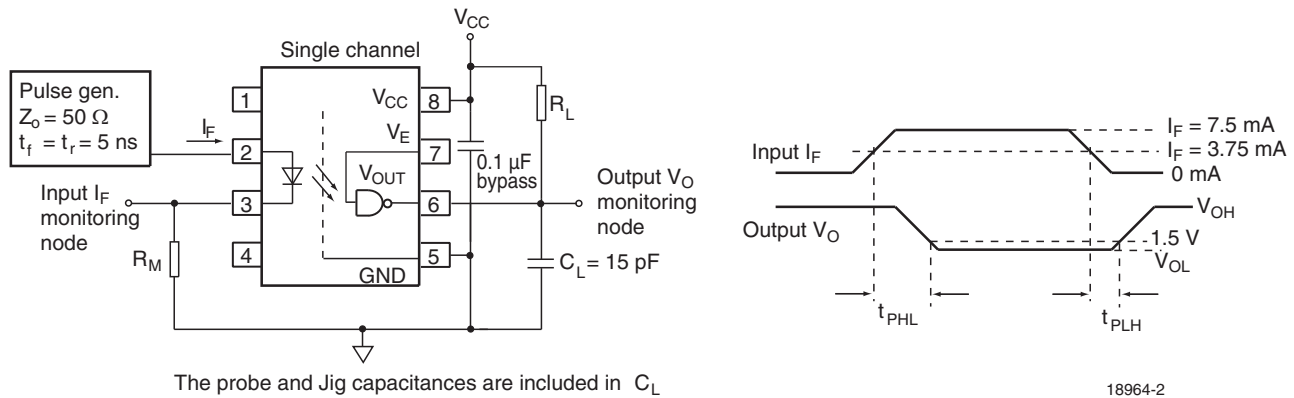


Fig. 1 - Single Channel Test Circuit for t_{PLH} , t_{PHL} , t_r and t_f

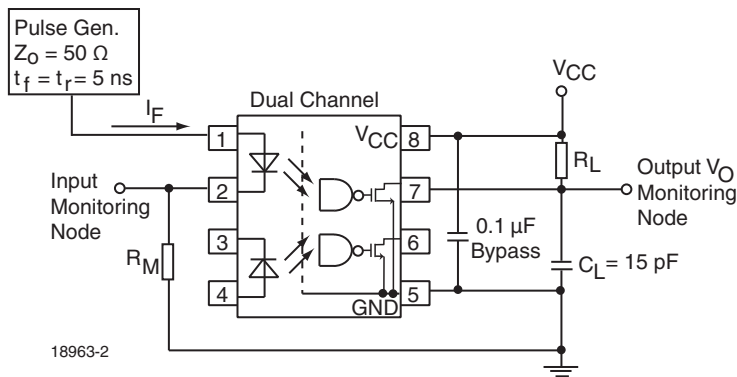


Fig. 2 - Dual Channel Test Circuit for t_{PLH} , t_{PHL} , t_r and t_f

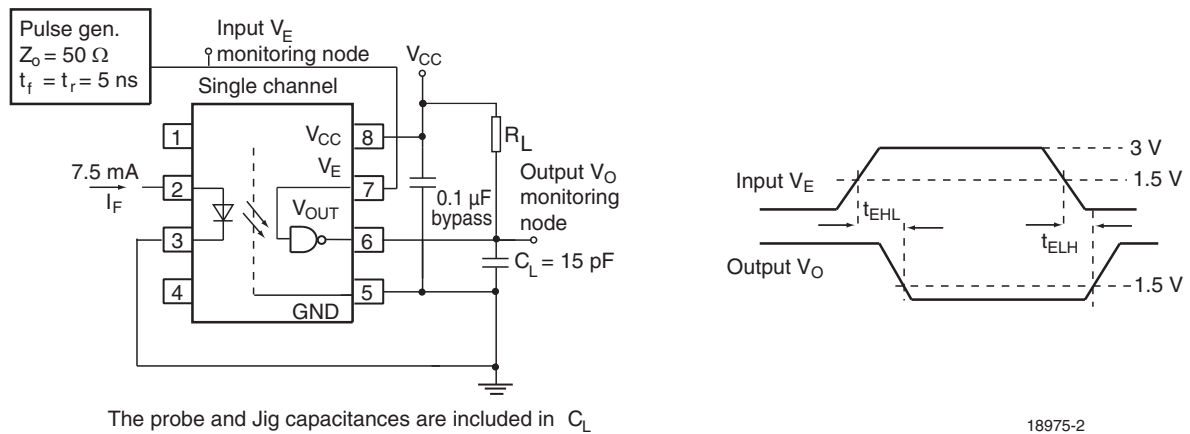


Fig. 3 - Single Channel Test Circuit for t_{EHL} , and t_{ELH}



SFH6741, SFH6742, SFH6750, SFH6752

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10 MBd

| COMMON MODE TRANSIENT IMMUNITY | | | | | | |
|---------------------------------------|---|----------|--------|--------|------|------------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Common mode transient immunity (high) | $ V_{CM} = 10\text{ V}$, $V_{CC} = 5\text{ V}$, $I_F = 0\text{ mA}$, $V_{O(\min.)} = 2\text{ V}$, $R_L = 350\ \Omega$, $T_{\text{amb}} = 25\text{ }^\circ\text{C}$ (1) | $ CM_H $ | 100 | | | V/ μs |
| | $ V_{CM} = 50\text{ V}$, $V_{CC} = 5\text{ V}$, $I_F = 0\text{ mA}$, $V_{O(\min.)} = 2\text{ V}$, $R_L = 350\ \Omega$, $T_{\text{amb}} = 25\text{ }^\circ\text{C}$ (2) | $ CM_H $ | 5000 | 10 000 | | V/ μs |
| | $ V_{CM} = 1\text{ kV}$, $V_{CC} = 5\text{ V}$, $I_F = 0\text{ mA}$, $V_{O(\min.)} = 2\text{ V}$, $R_L = 350\ \Omega$, $T_{\text{amb}} = 25\text{ }^\circ\text{C}$ (3) | $ CM_H $ | 10 000 | 15 000 | | V/ μs |
| | $ V_{CM} = 10\text{ V}$, $V_{CC} = 5\text{ V}$, $I_F = 7.5\text{ mA}$, $V_{O(\max.)} = 0.8\text{ V}$, $R_L = 350\ \Omega$, $T_{\text{amb}} = 25\text{ }^\circ\text{C}$ (1) | $ CM_L $ | 100 | | | V/ μs |
| | $ V_{CM} = 50\text{ V}$, $V_{CC} = 5\text{ V}$, $I_F = 7.5\text{ mA}$, $V_{O(\max.)} = 0.8\text{ V}$, $R_L = 350\ \Omega$, $T_{\text{amb}} = 25\text{ }^\circ\text{C}$ (2) | $ CM_L $ | 5000 | 10 000 | | V/ μs |
| | $ V_{CM} = 1\text{ kV}$, $V_{CC} = 5\text{ V}$, $I_F = 7.5\text{ mA}$, $V_{O(\max.)} = 0.8\text{ V}$, $R_L = 350\ \Omega$, $T_{\text{amb}} = 25\text{ }^\circ\text{C}$ (3) | $ CM_L $ | 10 000 | 15 000 | | V/ μs |

Notes

- (1) For SFH6750
- (2) For SFH6741
- (3) For SFH6742 and SFH6752

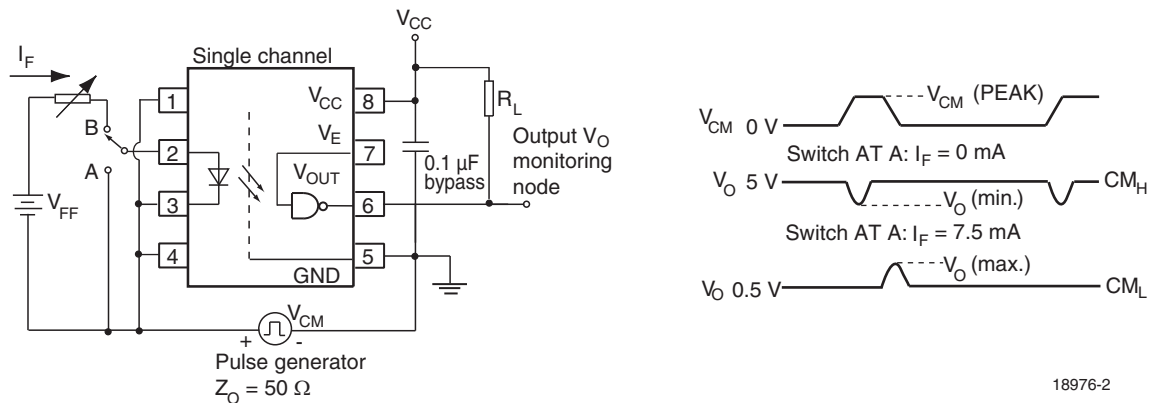


Fig. 4 - Single Channel Test Circuit for Common Mode Transient Immunity

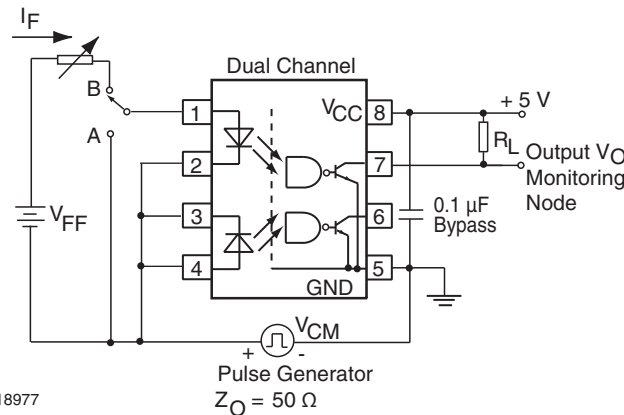


Fig. 5 - Dual Channel Test Circuit for Common Mode Transient Immunity

| SAFETY AND INSULATION RATINGS | | | | | | |
|--|----------------------------|------------|------|-----------|------|------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Climatic classification | according to IEC 69 part 1 | | | 55/110/21 | | |
| Comparative tracking index | | CTI | 175 | | 399 | |
| Peak transient overvoltage | | V_{IOTM} | 8000 | | | V |
| Peak insulation voltage | | V_{IORM} | 630 | | | V |
| Safety rating - power output | | P_{SO} | | | 500 | mW |
| Safety rating - input current | | I_{SI} | | | 300 | mA |
| Safety rating - temperature | | T_{SI} | | | 175 | °C |
| Creepage distance | Standard DIP-8 | | 7 | | | mm |
| Clearance distance | Standard DIP-8 | | 7 | | | mm |
| Creepage distance | 400 mil DIP-8 | | 8 | | | mm |
| Clearance distance | 400 mil DIP-8 | | 8 | | | mm |
| Insulation thickness, reinforced rated | per IEC60950.2.10.5.1 | | 0.2 | | | mm |

Note

- As per IEC 60747-5-2, §7.4.3.8.1, this optocoupler is suitable for “safe electrical insulation” only within the safety ratings. Compliance with the safety ratings shall be ensured by means of protective circuits.

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

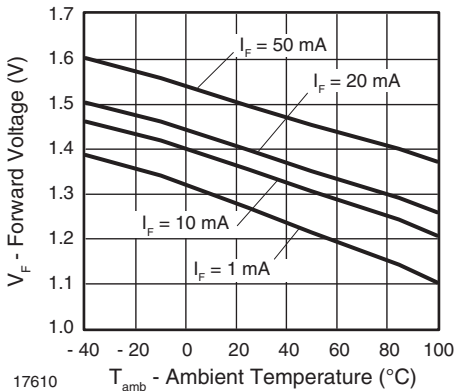


Fig. 6 - Forward Voltage vs. Ambient Temperature

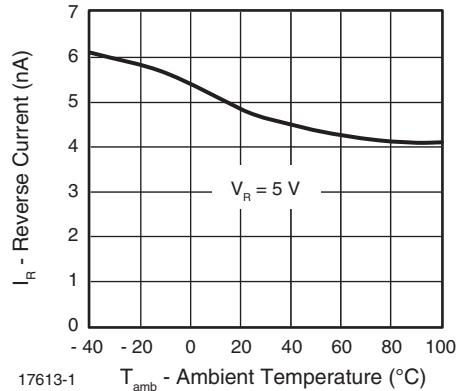


Fig. 8 - Reverse Current vs. Ambient Temperature

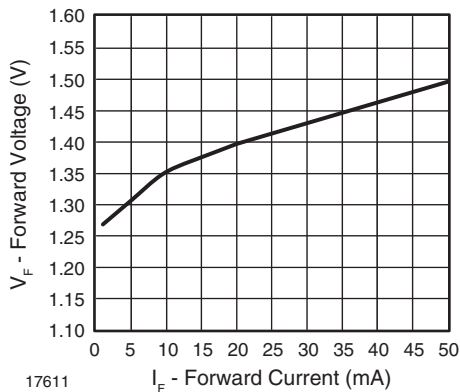


Fig. 7 - Forward Voltage vs. Forward Current

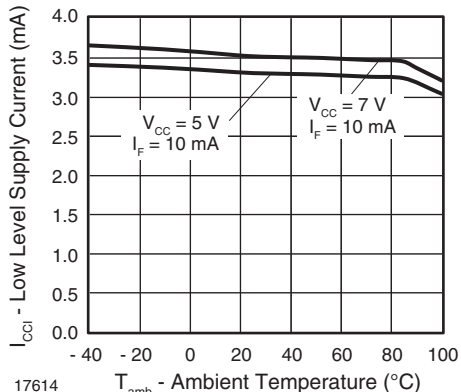


Fig. 9 - Low Level Supply Current vs. Ambient Temperature



SFH6741, SFH6742, SFH6750, SFH6752

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10 MBd

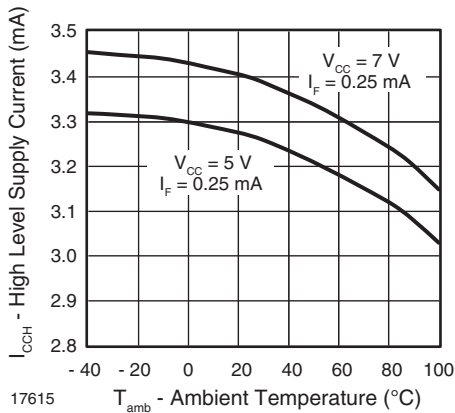


Fig. 10 - High Level Supply Current vs. Ambient Temperature

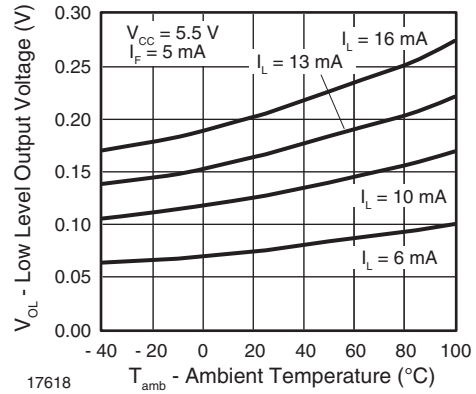


Fig. 13 - Low Level Output Voltage vs. Ambient Temperature

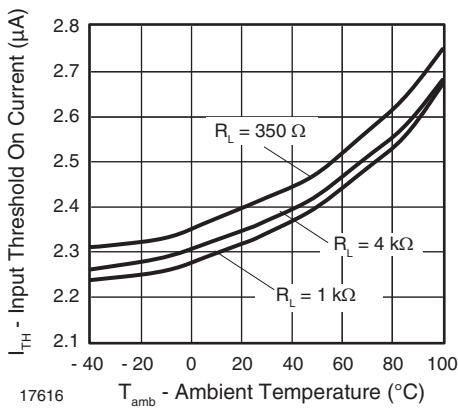


Fig. 11 - Input Threshold On Current vs. Ambient Temperature

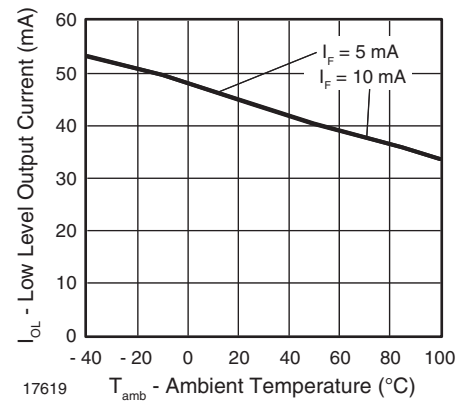


Fig. 14 - Low Level Output Current vs. Ambient Temperature

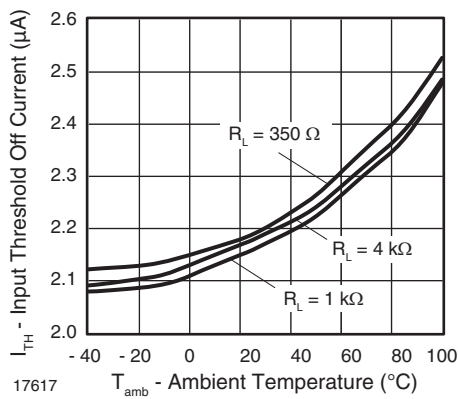


Fig. 12 - Input Threshold Off Current vs. Ambient Temperature

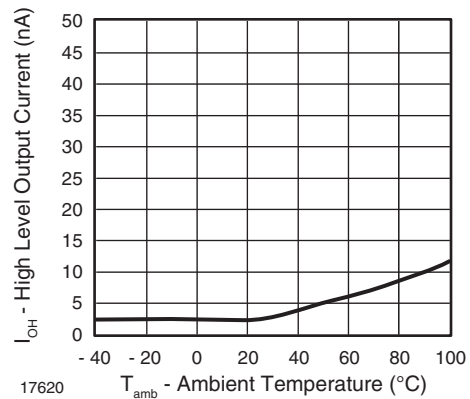


Fig. 15 - High Level Output Current vs. Ambient Temperature

SFH6741, SFH6742, SFH6750, SFH6752

Vishay Semiconductors High Speed Optocoupler, Single and Dual, 10 MBd

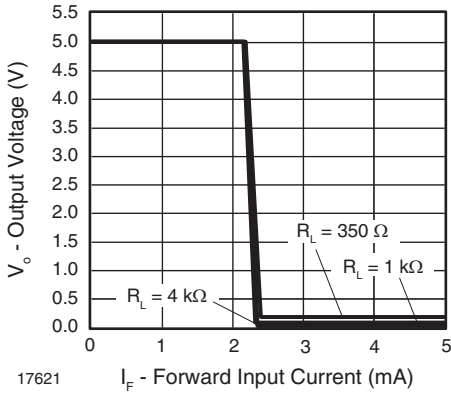


Fig. 16 - Output Voltage vs. Forward Input Current

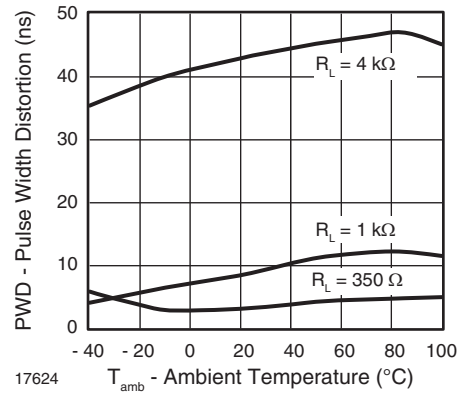


Fig. 19 - Pulse Width Distortion vs. Ambient Temperature

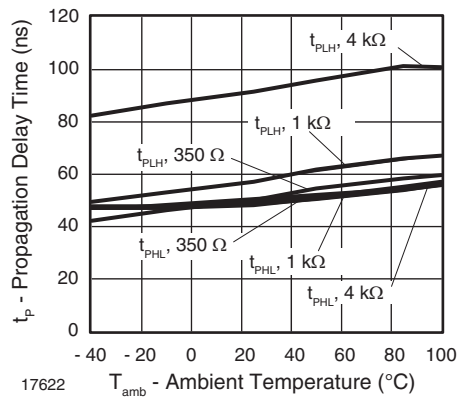


Fig. 17 - Propagation Delay vs. Ambient Temperature

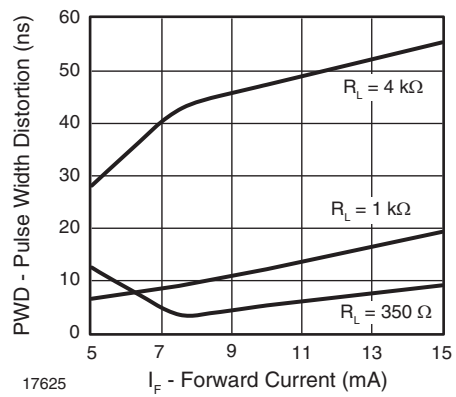


Fig. 20 - Pulse Width Distortion vs. Forward Current

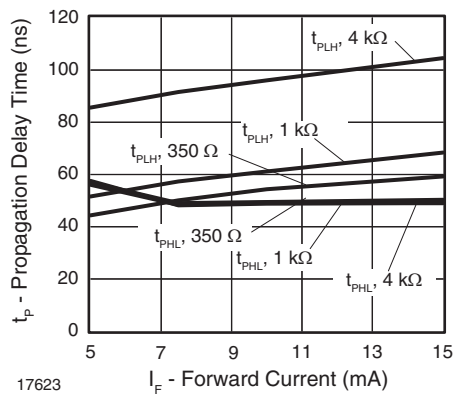


Fig. 18 - Propagation Delay vs. Forward Current

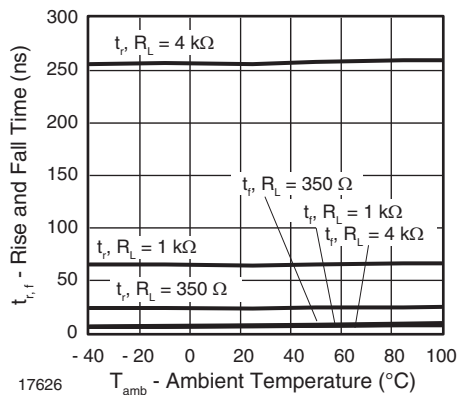


Fig. 21 - Rise and Fall Time vs. Ambient Temperature



SFH6741, SFH6742, SFH6750, SFH6752

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10 MBd

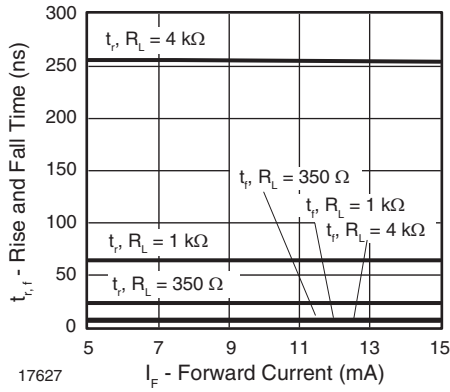


Fig. 22 - Rise and Fall Time vs. Forward Current

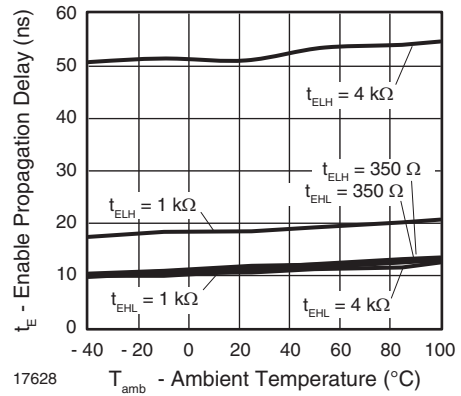
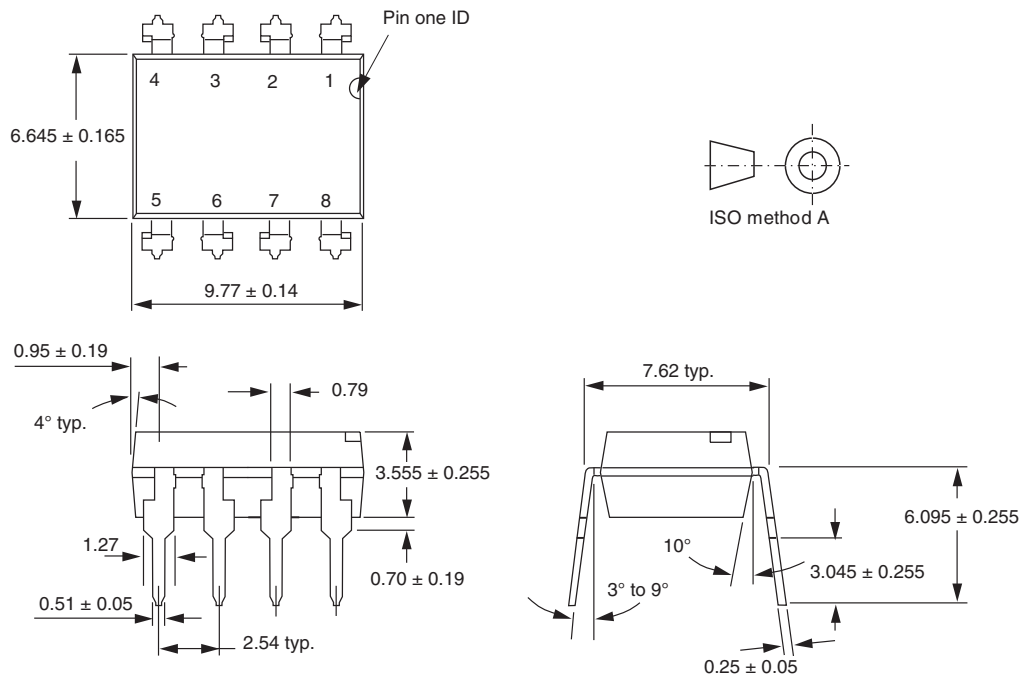


Fig. 23 - Enable Propagation Delay vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters



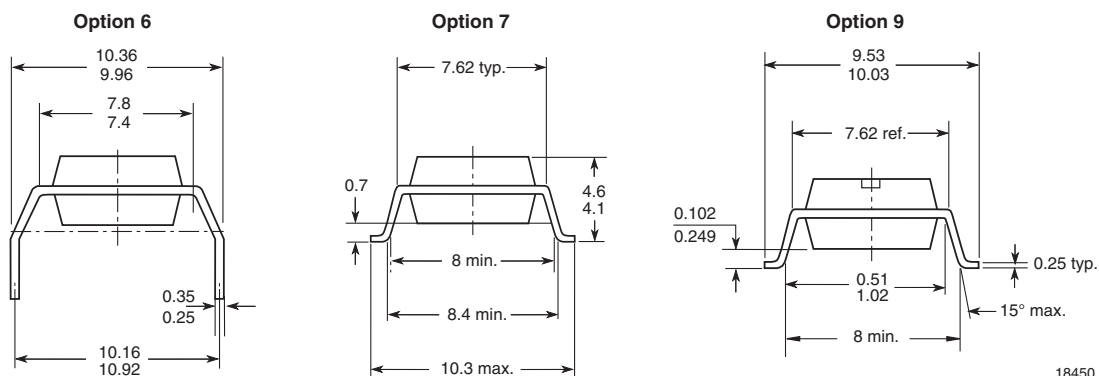
i178006

SFH6741, SFH6742, SFH6750, SFH6752



Vishay Semiconductors High Speed Optocoupler, Single and Dual,
10 MBd

PACKAGE DIMENSIONS in millimeters



PACKAGE MARKING (for example)



Notes

- Option 1 and VDE logos are only marked on option 1 parts.
- Tape and reel suffix (T) is not part of the package marking.



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Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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