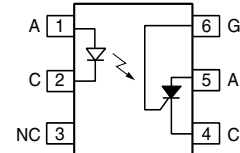
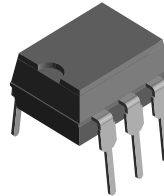




## Photo SCR Optocoupler

### Features

- Turn on current ( $I_{FT}$ ), 5.0 mA typical
- Gate trigger current ( $I_{GT}$ ), 20 mA typical
- Surge anode current, 5.0 A
- Blocking voltage, 400 V gate trigger voltage ( $V_{GT}$ ), 0.6 V typical
- Isolation test voltage 5300 V<sub>RMS</sub>
- Solid State reliability



### Agency Approvals

- UL - File No. E52744 System Code H or J

1179006

### Description

The H11C4/H11C5/H11C6 are optically coupled SCRs with a gallium arsenide infrared emitter and a silicon photo SCR sensor. Switching can be achieved while maintaining a high degree of isolation between triggering and load circuits. These optocouplers can be used in SCR triac and solid state relay applications where high blocking voltages and low input current sensitivity are required.

The H11C4 and H11C5 are identical and have a maximum turn-on-current of 11 mA. The H11C6 has a maximum of 14 mA.

### Order Information

Part	Remarks
H11C4	$I_{FT} \leq 11$ mA, 6 pin DIP-6
H11C5	$I_{FT} \leq 11$ mA, 6 pin DIP-6
H11C6	$I_{FT} \leq 14$ mA, 6 pin DIP-6
H11C4-Xxx6	$I_{FT} \leq 11$ mA, 6 pin DIP-6 400 mil (option 6)
H11C6-Xxx9	$I_{FT} \leq 14$ mA, 6 pin SMD-6 (option 9)

For additional option information and package dimensions see Option Section.

### Absolute Maximum Ratings

$T_{amb} = 25^\circ\text{C}$ , 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 Rating for extended periods of the time can adversely affect reliability.

### Input

Parameter	Test condition	Symbol	Value	Unit
Peak reverse voltage		$V_{RSM}$	6.0	V
Continuous forward current		$I_F$	60	mA
Peak forward current	1.0 ms, 1 % Duty Cycle	$I_{FSM}$	3.0	A
Power dissipation		$P_{diss}$	100	mW
Derate linearly from 25 °C			1.33	mW/°C

## Output

Parameter	Test condition	Symbol	Value	Unit
Reverse gate voltage			6.0	V
Anode voltage	DC or AC peak		400	V
RMS forward current			300	mA
Surge anode current	10 ms duration		5.0	A
Peak forward current	100 $\mu$ s, 1% Duty Cycle		10	A
Surge gate current	5.0 ms duration		200	mA
Power dissipation		$P_{diss}$	1000	mW
Derate linearly from 25°C			13.3	mW/°C

## Coupler

Parameter	Test condition	Symbol	Value	Unit
Isolation test voltage (between emitter and detector referred to standard climate 23 °C/50 %RH, DIN 50014)		$V_{ISO}$	5300	$V_{RMS}$
Creepage			$\geq 7.0$	mm
Clearance			$\geq 7.0$	mm
Comparative tracking index per DIN IEC 112/VDE 0303, part 1			175	
Isolation resistance	$V_{IO} = 500$ V, $T_{amb} = 25$ °C	$R_{IO}$	$\geq 10^{12}$	$\Omega$
	$V_{IO} = 500$ V, $T_{amb} = 100$ °C	$R_{IO}$	$\geq 10^{11}$	$\Omega$
Total package dissipation		$P_{tot}$	400	mW
Derate linearly from 25 °C			- 55 to + 100	°C
Storage temperature range		$T_{stg}$	- 55 to + 150	°C
Lead soldering time at 260 °C			10	sec.

## Electrical Characteristics

$T_{amb} = 25$  °C, unless otherwise specified

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.

## Input

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	$I_F = 10$ mA	$V_F$		1.2	1.5	V
Reverse current	$V_R = 3.0$ V	$I_R$			10	$\mu$ A
Capacitance	$V_R = 0$ , $f = 1.0$ MHz	$C_O$		50		pF

## Output

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward blocking voltage	$R_{GK} = 10$ K $\Omega$ , $T_A = 100$ °C, $I_d = 150$ $\mu$ A	$V_{DM}$	400			V
Reverse blocking voltage	$R_{GK} = 10$ K $\Omega$ , $T_A = 100$ °C, $I_d = 150$ $\mu$ A	$V_{DM}$	400			V
On-state voltage	$I_T = 300$ mA	$V_t$		1.1	1.3	V
Holding current	$R_{GK} = 27$ K $\Omega$ , $V_{FX} = 50$ V	$I_H$			500	$\mu$ A
Gate trigger voltage	$V_{FX} = 100$ V, $R_{GK} = 27$ K $\Omega$ , $R_L = 10$ K $\Omega$	$V_{GT}$		0.6	1.0	V

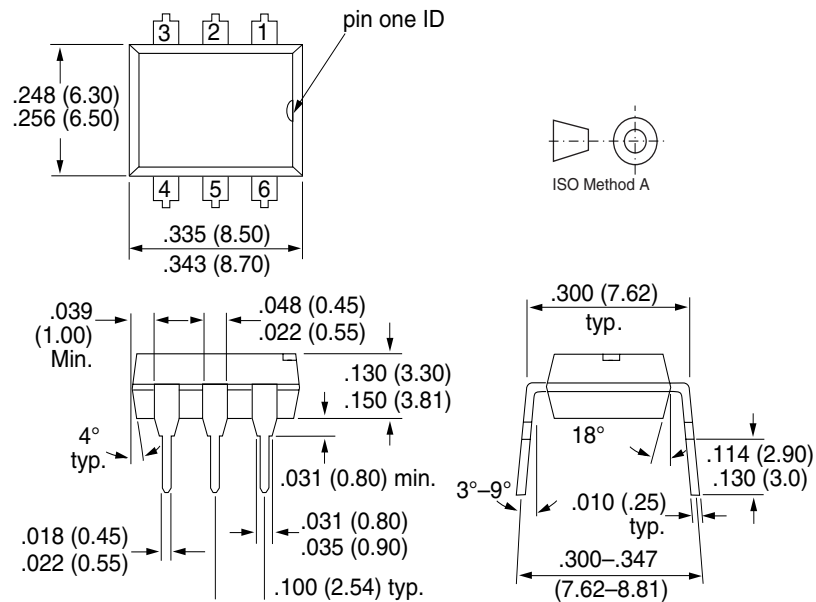


Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward leakage current	$R_{GK} = 10\text{ K}\Omega$ , $V_{RX} = 400\text{ V}$ , $I_F = 0$ , $T_A = 100\text{ }^\circ\text{C}$	$I_R$		150		$\mu\text{A}$
Reverse leakage current	$R_{GK} = 10\text{ K}\Omega$ , $V_{RX} = 400\text{ V}$ , $I_F = 0$ , $T_A = 100\text{ }^\circ\text{C}$	$I_R$		150		$\mu\text{A}$
Gate trigger current	$V_{FX} = 100\text{ V}$ , $R_{RG} = 27\text{ K}\Omega$ , $R_L = 10\text{ K}\Omega$	$I_{GT}$		20	50	$\mu\text{A}$
Capacitance, Anode to gate	$V = 0$ , $f = 1.0\text{ MHz}$			20		$\text{pF}$
Capacitance, Gate to cathode	$V = 0$ , $f = 1.0\text{ MHz}$			350		$\text{pF}$

## Coupler

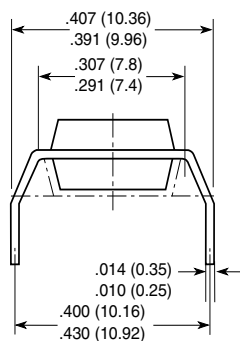
Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Turn-on current	$V_{DM} = 50\text{ V}$ , $R_{GK} = 10\text{ K}\Omega$	H11C4	$I_{FT}$			20	$\text{mA}$
		H11C5	$I_{FT}$			20	$\text{mA}$
		H11C6	$I_{FT}$			30	$\text{mA}$
	$V_{DM} = 100\text{ V}$ , $R_{GK} = 27\text{ K}\Omega$	H11C4	$I_{FT}$		5.0	11	$\text{mA}$
		H11C5	$I_{FT}$		5.0	11	$\text{mA}$
		H11C6	$I_{FT}$		7.0	14	$\text{mA}$

## Package Dimensions in Inches (mm)



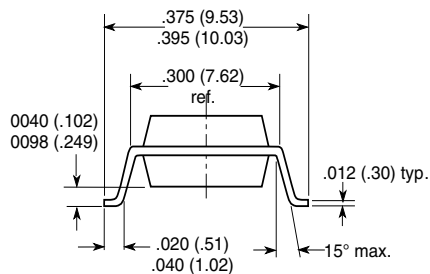
i178004

Option 6



18493

Option 9





## 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.**

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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