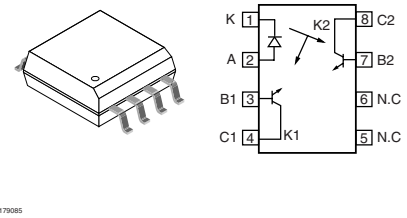
Linear Optocoupler, PCMCIA package

Features

- 2.3 mm High SMD package
- High sensitivity (K1) at low operating LED current
- Couples AC and DC signals
- Low input-output capacitance
- Isolation test voltage, 2130 V_{DC}
- Low distortion, below - 80 db (typical)
- 0.4 mm internal insulation thickness
- Lead-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

RoHS COMPLIANT



Agency Approvals

- CSA 93751

Applications

- Optical DAA for V.90 FAX/Modem
- PCMCIA cards
- Digital telephone line isolation

Description

The IL388DAA Linear Optocoupler consist of an IRLED optically coupled to two photodiodes. The emitter is located such that both photodiodes receive approximately an equal amount of infrared light. The diodes produce a proportional amount of photocurrent. The ratio of the photocurrent stays constant with high accuracy when either the LED current or the ambient temperature changes. Thus one can control the output diode current optically by controlling the input photodiode current.

The IL388DAA is designed to be part of the DAA2000 kit which consists of one DL207DAA, one DM207DAA, and two IL388DAAs.

The DL207DAA and DM207DAA ICs provide the drivers and receivers for the IL388DAA as well as all other telephone termination functions.

Order Information

Part	Remarks
IL388DAA	Couples AC and DC signals, SOP-8

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

Absolute Maximum Ratings

T_{amb} = 25 °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
Reverse voltage		V_R	≤ 3.0	V
Forward current		I_F	≤ 30	mA
Surge current pulse width < 10 µs		I_{PK}	≤ 150	mA
Power dissipation		P_{diss}	≤ 150	mW
Derate linearly from 25 °C			≤ 2.0	mW/°C
Junction temperature		T_j	≤ 100	°C

Output

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	≤ 15	V
Power dissipation		P_{diss}	≤ 50	mW
Derate linearly from 25 °C			≤ 0.65	mW/°C
Junction temperature		T_j	≤ 100	°C

Coupler

Parameter	Test condition	Symbol	Value	Unit
Isolation test voltage		V_{ISO}	≤ 2130	V_{DC}
Total package power dissipation		P_t	≤ 250	mW
Derate linearly from 25 °C			≤ 2.8	mW/°C
Storage temperature		T_{stg}	- 40 to + 150	°C
Operating temperature		T_{amb}	0 to + 75	°C
Lead soldering time at 260 °C			≤ 10	s
Isolation resistance	V_{IO} = 500, T_{amb} = 25 °C	R_{IO}	≥ 10^{12}	Ω
	V_{IO} = 500, T_{amb} = 100 °C	R_{IO}	≤ 10^{11}	Ω

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		1.8	2.1	V
Reverse current	V_R = 3.0 V	I_R		0.01	10	µA
V_F temperature coefficient		$\Delta V_F/\Delta$ °C		TBD		mV/°C
Junction capacitance	V_F = 0 V, f = 1.0 MHz	C_j		15		pF
Dynamic resistance		$\Delta V_F/\Delta I_F$		6.0		Ω

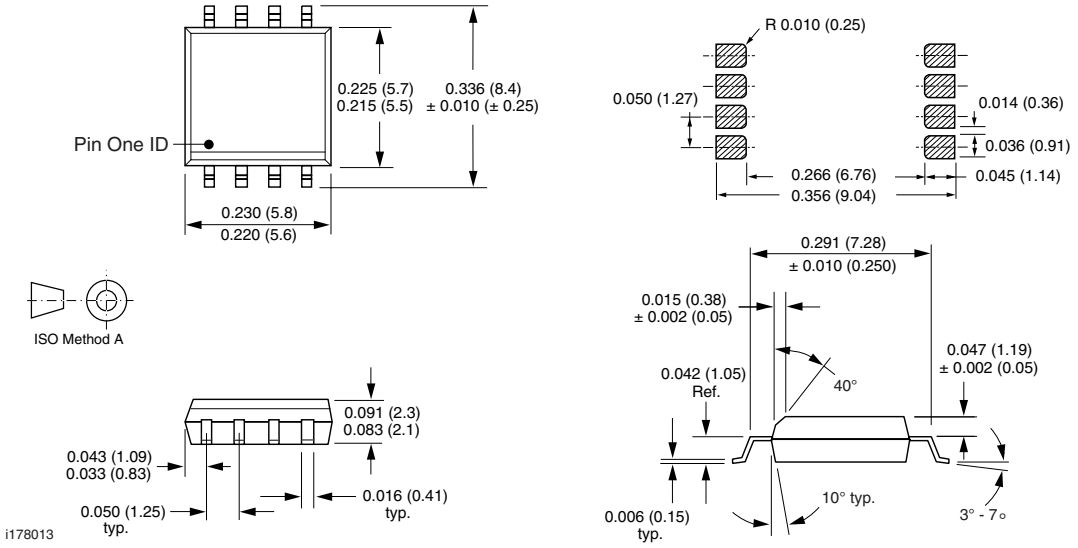
Output

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Junction capacitance	V_F = 0 V, f = 1.0 MHz	C_j		12		pF
AC Characteristics photovoltaic mode						
Frequency response	I_{P1} = 25 A Modulation current ΔI_{P1} = ± 6.0 µA	BW (-3 db)		1.0		MHz
Phase response	I_{P1} = 25 A Modulation current ΔI_{P1} = ± 6.0 µA			45		Deg.
Rise time	I_{P1} = 25 A Modulation current ΔI_{P1} = ± 6.0 µA	t_r		350		ns

Coupler

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Capacitance (input-output)	V_F = 0 V, f = 1.0 MHz	C_{IO}		1.0		pF
Common mode capacitance	V_F = 0 V, f = 1.0 MHz	C_{CM}		0.5		pF
Coupled characteristics						
K_1	I_F = 2.0 mA, V_D = 0 V	K1	0.007			
THD	f_0 = 316, I_{PI} = 35 µA, V_D = 0 V				- 79	db
$K_3 = K_2/K_1$	I_F = 2.0 mA, V_D = 0 V		0.70		1.30	

Package Dimensions in Inches (mm)



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.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany

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