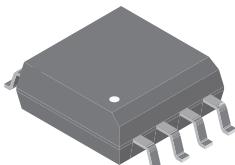
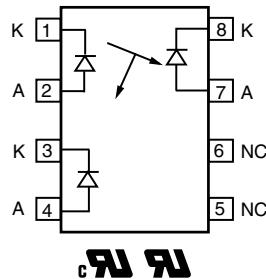


Linear Optocoupler for Optical DAA in Telecommunications, High Performance



i179028



FEATURES

- 2 mm high SMD package
- High sensitivity (K1) at low operating LED current
- Couples AC and DC signals
- Low input-output capacitance
- Isolation voltage, 3000 VRMS
- Low distortion
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
GREEN
(5-2008)

DESCRIPTION

The IL350, IL358 family of linear optocoupler consist of an IRLED optically coupled to two photodiodes. The emitter mechanically faces both diodes enabling them to receive approximately an equal amount of infrared light. The diodes produce a proportional amount of photocurrents. The ratio of the photocurrents stays constant with high accuracy when either the LED current changes or the ambient temperature changes. Thus one can control the output diode current optically by controlling the input photodiode current.

The IL350, IL358 optocouplers can be used with the aid of operational amplifiers in closed loop conditions to achieve highly linear and electrically isolated AC and or DC signal amplifiers.

APPLICATIONS

- Optical DAA for V.34 FAX/modem PCMCIA cards
- Digital telephone line isolation

AGENCY APPROVALS

- UL file no. E52744 system code S
- cUL tested to CSA 22.2 bulletin 5A

ORDERING INFORMATION

I	L	3	5	#	T	SOP-# 8.4 mm
PART NUMBER					TAPE AND REEL	
AGENCY CERTIFIED/PACKAGE		K1 BIN		K3 BIN		
UL, cUL		0.003		0.008		0.557 to 1.681
SOP-8		IL350T ⁽¹⁾		IL358T ⁽¹⁾		IL350T ⁽¹⁾
Note		(1) Also available in tubes, do not put T on the end.				

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25 \text{ }^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
INPUT				
Reverse voltage		V_R	3	V
Forward current		I_F	30	mA
Surge current	Pulse width < 10 ms	I_{FSM}	150	mA
Power dissipation	$T_{amb} = 25 \text{ }^{\circ}\text{C}$	P_{diss}	150	mW
Derate linearly from 25 °C			2	mW/°C
OUTPUT				
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				
Isolation test voltage	$t = 1 \text{ s}$	V_{ISO}	3000	V_{RMS}
Total package power dissipation		P_{tot}	250	mW
Derate linearly from 25 °C			2.8	mW/°C
Storage temperature range		T_{stg}	- 40 to + 150	°C
Operating temperature		T_{amb}	75	°C
Lead soldering time at 260 °C			10	s
Isolation resistance	$V_{IO} = 500 \text{ V}, T_{amb} = 25 \text{ }^{\circ}\text{C}$	R_{IO}	$\geq 10^{12}$	Ω
	$V_{IO} = 500 \text{ V}, T_{amb} = 100 \text{ }^{\circ}\text{C}$	R_{IO}	$\geq 10^{11}$	Ω

Note

- 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.

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

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT							
Forward voltage	$I_F = 10 \text{ mA}$		V_F		1.8	2.1	V
Reverse current	$V_R = 3 \text{ V}$		I_R		0.01	10	μA
V_F temperature coefficient			$\Delta V_F/\Delta \text{ }^{\circ}\text{C}$		- 2.2		mW/°C
Junction capacitance	$V_F = 0 \text{ V}, f = 1 \text{ MHz}$		C_j		15		pF
Dynamic resistance	$I_F = 2.5 \text{ mA}, \Delta I_F = 1 \text{ mA}$		$\Delta V_F/\Delta I_F$		6		Ω
Switching time IL358/359	$I_F = 2.5 \text{ mA}, \Delta I_F = 1 \text{ mA}$		t_f		40		ns
			t_f		40		ns
OUTPUT							
Junction capacitance	$V_F = 0 \text{ V}, f = 1 \text{ MHz}$		C_j		12		pF
NEP	$V_{DET} = 0 \text{ V}$				$< 4^{-14}$		W/√Hz
COUPLER							
Capacitance (input to output)	$V_F = 0 \text{ V}, f = 1 \text{ MHz}$		C_{IO}		1		pF
Common mode capacitance	$V_F = 0 \text{ V}, f = 1 \text{ MHz}$		C_{CM}		0.5		pF

Note

- 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.

SWITCHING CHARACTERISTICS - AC CHARACTERISTICS PHOTOVOLTAIC MODE

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Frequency response	$I_{P1} = 25 \mu A$, modulation current $\Delta I_P = \pm 6 \mu A$	IL358	BW (- 3 dB)		1		MHz
Phase response	$I_{P1} = 25 \mu A$, modulation current $\Delta I_P = \pm 6 \mu A$				45		°
Rise time	$I_{P1} = 25 \mu A$, modulation current $\Delta I_P = \pm 6 \mu A$				350		ns

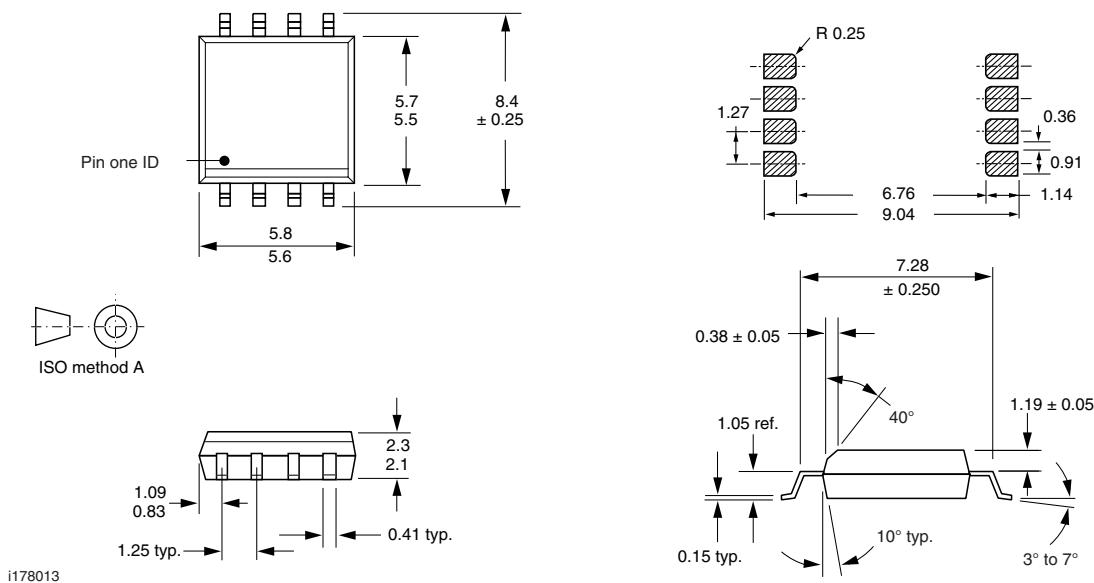
BIN TABLE

BIN	MIN.	MAX.
A	0.557	0.626
B	0.620	0.696
C	0.690	0.773
D	0.765	0.859
E	0.851	0.955
F	0.945	1.061
G	1.051	1.181
H	1.169	1.311
I	1.297	1.456
J	1.442	1.618

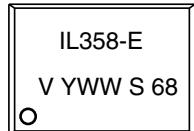
COUPLED CHARACTERISTICS

PART NUMBER	K1 AT $I_F = 2 \text{ mA}$, $V_O = 0 \text{ V}$ MIN.	K3 BINS
IL350	0.003	A to J
IL358	0.008	C, D, E, F, G, H

PACKAGE DIMENSIONS in millimeters



PACKAGE MARKING (example)



Note

- Tape and reel suffix (T) is not part of the package marking

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

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.