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[Vishay Semiconductor/Opto Division](#)
[IL350](#)

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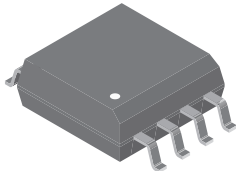


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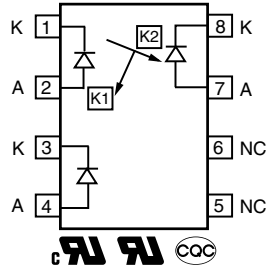
IL350, IL358

Vishay Semiconductors

Linear Optocoupler for Optical DAA in Telecommunications, High Performance



1179028



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 V_{RMS}
- Low distortion
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



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.

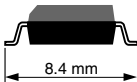
The IL350, IL358 optocouplers can be used with the aid of operational amplifiers in closed loop conditions to achieve highly linear and electrically isolated AC and or DC signal amplifiers.

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-# 
PART NUMBER					TAPE AND REEL	
AGENCY CERTIFIED/PACKAGE		K3 BIN				
UL, cUL, CQC		0.557 to 1.681		0.690 to 1.311		
SOP-8		IL350T ⁽¹⁾		IL358T ⁽¹⁾		

Note

⁽¹⁾ Also available in tubes, do not put T on the end.



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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_r		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.



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

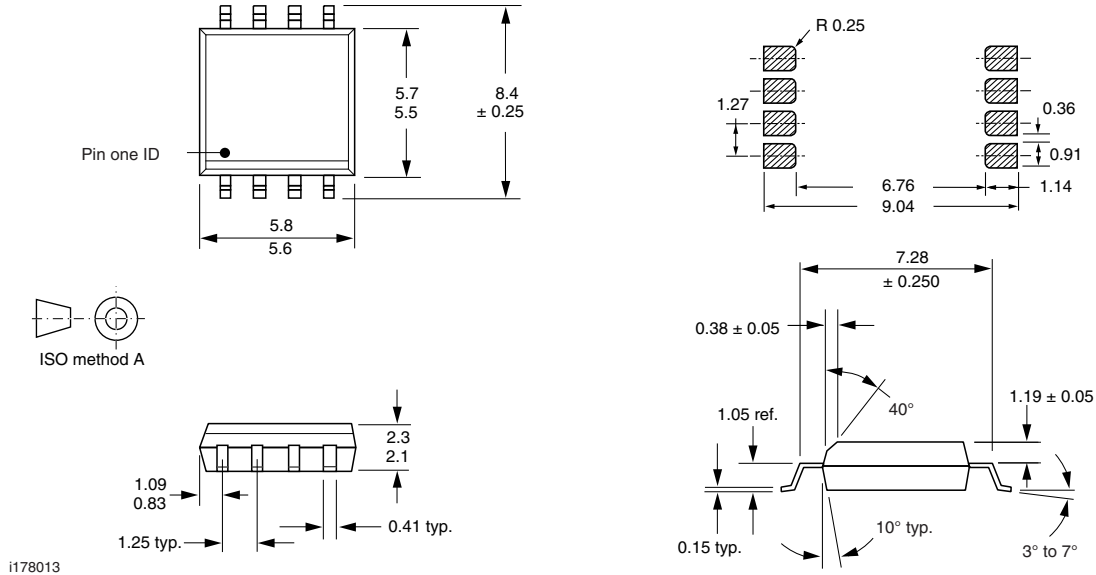


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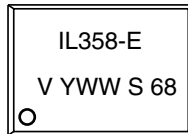
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PACKAGE DIMENSIONS in millimeters



PACKAGE MARKING (example)



Note

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



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