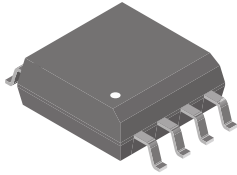
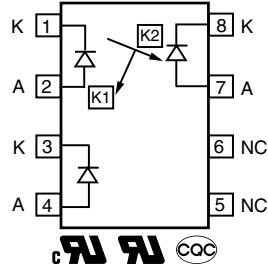


## Linear Optocoupler for Optical DAA in Telecommunications, High Performance



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<sub>RMS</sub>
- Low distortion
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://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.

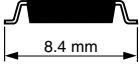
The IL350, IL358 optocouplers can be used with the aid of operational amplifiers in closed loop conditions to achieve highly linear and electrically isolated AC and or DC signal amplifiers.

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

### Note

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



<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
<b>INPUT</b>				
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
<b>OUTPUT</b>				
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
<b>COUPLER</b>				
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	$V_{IO} = 500\text{ V}$ , $T_{amb} = 25\text{ }^{\circ}\text{C}$	$R_{IO}$	$\geq 10^{12}$	$\Omega$
	$V_{IO} = 500\text{ V}$ , $T_{amb} = 100\text{ }^{\circ}\text{C}$	$R_{IO}$	$\geq 10^{11}$	$\Omega$

**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.

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>INPUT</b>							
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	$\mu\text{A}$
$V_F$ 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		$\Omega$
Switching time IL358/359	$I_F = 2.5\text{ mA}$ , $\Delta I_F = 1\text{ mA}$		$t_f$		40		ns
			$t_r$		40		ns
<b>OUTPUT</b>							
Junction capacitance	$V_F = 0\text{ V}$ , $f = 1\text{ MHz}$		$C_j$		12		pF
NEP	$V_{DET} = 0\text{ V}$				< 4 <sup>-14</sup>		W/ $\sqrt{\text{Hz}}$
<b>COUPLER</b>							
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.

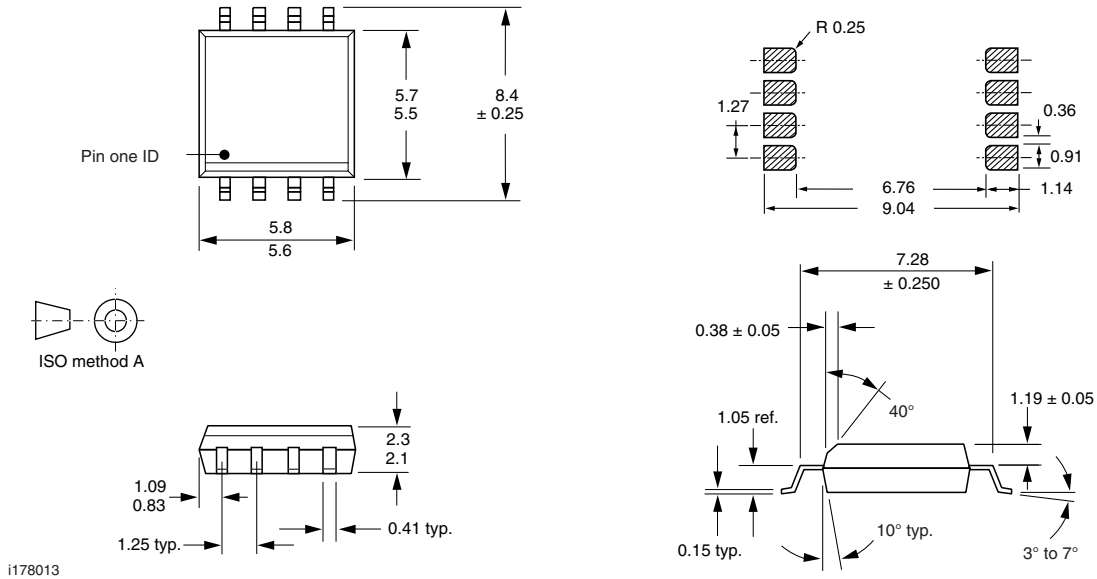


SWITCHING CHARACTERISTICS - AC CHARACTERISTICS PHOTOVOLTAIC MODE							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Frequency response	$I_{P1} = 25 \mu A$ , modulation current $\Delta I_P = \pm 6 \mu A$	IL358	BW (- 3 db)		1		MHz
Phase response	$I_{P1} = 25 \mu A$ , modulation current $\Delta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

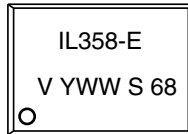
BIN TABLE		
BIN	MIN.	MAX.
A	0.557	0.626
B	0.620	0.696
C	0.690	0.773
D	0.765	0.859
E	0.851	0.955
F	0.945	1.061
G	1.051	1.181
H	1.169	1.311
I	1.297	1.456
J	1.442	1.618

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



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