



IL350T/351T/358T/359T
HIGH PERFORMANCE LINEAR OPTOCOUPLER
for Optical DAA in Telecommunications

Preliminary Data Sheet

FEATURES

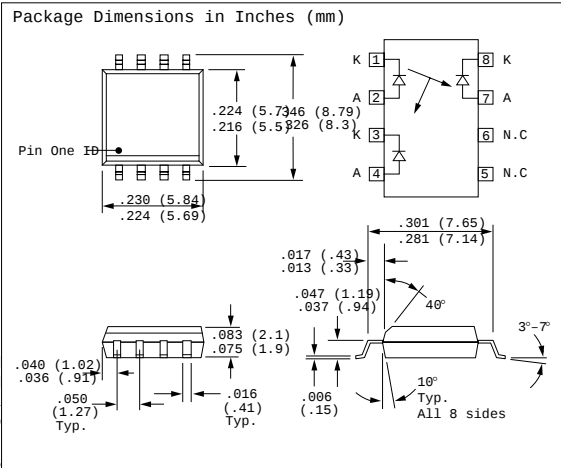
- 2 mm High SMT Package
- High Sensitivity (K1) at Low Operating LED Current
- Couples AC and DC Signals
- Low Input-Output Capacitance
- Isolation Voltage, 2500 V_{RMS}
- Low Distortion
- Available in Tape and Reel (suffix T)

APPLICATIONS

- Optical DAA for V.34 FAX/Modem PCMCIA Cards
- Digital Telephone Line Isolation

DESCRIPTION

The IL350T/1T/8T/9T family of Linear Optocouplers 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 proportionate amount of photocurrents. The ratio of photocurrents stays constant with high accuracy when either the LED current changes or ambient temperature changes. Thus one can control the output diode current optically controlling the input photodiode current. The IL350T/1T/8T/9T optocouplers can be used with the aid of operational amplifiers in closed loop conditions to achieve high and electrically isolated AC and or DC amplifiers.



Absolute Maximum Ratings

Emitter	Sym	Min.	Max.	Units
Reverse Voltage	R V		3	V
Forward Current	F I		30	mA
Surge Current	PK I		150	mA
Pulse Width ≤ 10				
Power Dissipation at 25°C	P LED		150	mW
Derate Linearly from 25			2	mW/°C
Junction Temperature	J T		100	°C
Detector (each)				
Reverse Voltage	R V		15	V
Power Dissipation	P		50	mW
Derate Linearly from 25			0.65	mW/°C
Junction Temperature	J T		100	°C
Coupler				
Isolation Test Voltage	ISOL V	2500		RMS
Total Package Power Dissipation	Pt		250	mW
Derate Linearly from 25			2.8	mW/°C
Storage Temperature	S T	- 40	150	°C
Operating Temperature	OP T	0	75	°C
Lead Soldering Time at 260°C			10	sec.
Isolation Resistance				
V _{IO} =500 V, TA=25°C		10 ¹² Ω		
V _{IO} =500 V, TA=100°C		10 ¹¹ Ω		

Electrical Characteristics (T_A=25°C)

LED Emitter		Symbol	Min.	Typ.	Max.	Units	Test Conditions
Forward Voltage		V_F		1.8	2.1	V	$I_F=10\text{ mA}$
Reverse Current		I_R		.01	10	μA	$V_R=3\text{ V}$
V_F Temperature Coefficient		$\Delta V_F/\Delta^\circ\text{C}$		-2.2		mV/°C	
Junction Capacitance		C_J		TBD		pF	$V_F=0\text{ V}$, $f=1\text{ MHz}$
Dynamic Resistance		$\Delta V_F/\Delta I_F$		6		Ω	
Switching Time IL358T/9T		t_F		40		ns	$I_F=2.5\text{ mA}$
		t_R		40		ns	$\Delta I_F=1\text{ mA}$
Detector							
Junction Capacitance		C_J		12		pF	$V_F=0\text{ V}$, $f=1\text{ MHz}$
NEP				$<4^{-14}$		W/ $\sqrt{\text{Hz}}$	$V_{DET}=0\text{ V}$
AC Characteristics Photovoltaic Mode							
Frequency Response		IL358T/9T BW (-3dB)		1.0		MHz	$I_P=25\text{ }\mu\text{A}$ Modulation current $\Delta I_P=6\text{ }\mu\text{A}$
Phase Response				45		Deg.	
Rise Time				350		ns	
Package							
Input-Output Capacitance		C_{IO}		1		pF	$V_F=0\text{ V}$, $f=1\text{ MHz}$
Common Mode Capacitance		C_{cm}		0.5		pF	$V_F=0\text{ V}$, $f=1\text{ MHz}$
Coupled Characteristics							
				K1 at $I_F=2\text{ mA}$, $V_D=0\text{ V}$			K3 Bins
				Min.	Typ.	Max.	
IL350T				0.003			A-J
IL351T				0.005			D, E, F, G
IL358T				0.008			D, E, F, G
IL359T				0.008			E, F

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