

SIEMENS

NEW

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

Preliminary Data Sheet

FEATURES

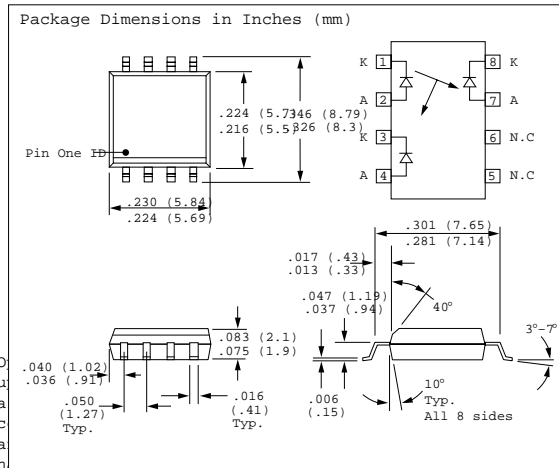
- 2 mm High SMT Package
- High Sensitivity (K1) at Low Operating LED Current
- Couples AC and DC Signals
- Low Input-Output Capacitance
- Isolation Voltage, 2500 V_{RMS}
- Low Distortion
- Available in Tape and Reel (suffix T)

APPLICATIONS

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

DESCRIPTION

The IL350T/1T/8T/9T family of Linear Optocoupler consist of an IRLED optically coupled to two photodiodes. The emitter mechanical faces both diodes enabling them to receive approximately an equal amount of infra red 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	F _K		150	mA
Pulse Width μs				
Power Dissipation @ 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 @ 260			10	sec.
Isolation Resistance				
V _{IO} =500 V, TA=25		10 ¹² Ω		
V _{IO} =500 V, TA=100		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 mA
Reverse Current		I _R		.01	10	μA	V _R =3 V
V _F Temperature Coefficient		ΔV _F /ΔT		-2.2		mV/°C	
Junction Capacitance		C _J		TBD		pF	V _F =0 V, f=1 MHz
Dynamic Resistance		r _d		6		Ω	
Switching Time IL358T/9T		t _F		40		ns	I _F =2.5 mA ΔI _F =1 mA
		t _R		40		ns	
Detector							
Junction Capacitance		C _J		12		pF	V _F =0 V, f=1 MHz
NEP				<4 ⁻¹⁴		W/√Hz	V _{DET} =0 V
AC Characteristics Photovoltaic Mode							
Frequency Response	IL358T/9T	FBW (-3dB)		1.0		MHz	I _F =25 μA Modulation current ΔI _F ±6 μA
Phase Response				45		Deg.	
Rise Time				350		ns	
Package							
Input-Output Capacitance		C _{IO}		1		pF	V _F =0 V, f=1 MHz
Common Mode Capacitance		C _{cm}		0.5		pF	V _F =0 V, f=1 MHz
Coupled Characteristics							
				K1 at I_F=2 mA, V_D=0 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