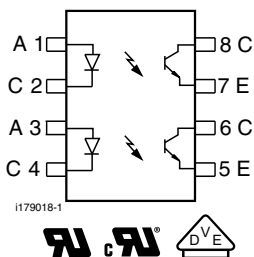
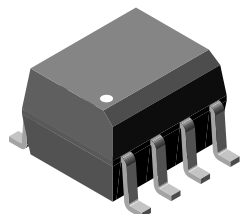


Optocoupler, Phototransistor Output, Dual Channel, SOIC-8 Package, 100 °C Rated


RoHS
COMPLIANT

LINKS TO ADDITIONAL RESOURCES



DESCRIPTION

The 100 % rated ILD1206T and ILD1207T are optically coupled pairs with a Gallium Arsenide infrared LED and a silicon NPN phototransistor. Signal information, including a DC level, can be transmitted by the device while maintaining a high degree of electrical isolation between input and output.

The ILD1206T and ILD1207T come in a standard SOIC-8 small outline package for surface mounting which makes it ideally suited for high density applications with limited space. In addition to eliminating through-holes requirements, this package conforms to standards for surface mounted devices.

A specified minimum and maximum CTR allows a narrow tolerance in the electrical design of the adjacent circuits. The high BV_{CEO} of 70 V gives a higher safety margin compared to the industry standard of 30 V.

FEATURES

- Two channel coupler
- SOIC-8 surface mountable package
- Standard lead spacing of 0.05"
- Available only on tape and reel option (conforms to EIA standard 481-2)
- Isolation test voltage, 4000 V_{RMS}
- Compatible with dual wave, vapor phase and IR reflow soldering
- Operating temperature from - 55 °C to + 110 °C
- Lead (Pb)-free component
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

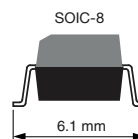
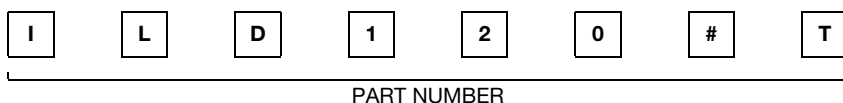
APPLICATIONS

- AC adapters
- PLCs
- Switch mode power supplies
- DC/DC converters
- Microprocessor I/O interfaces
- General impedance matching circuits

AGENCY APPROVALS

- [UL / cUL](#) 1577
- [DIN EN 60747-5-5 \(VDE 0884\)](#), available with option 1

ORDERING INFORMATION



AGENCY CERTIFIED / PACKAGE	CTR (%)	
	10 mA	
UL, cUL, VDE	63 to 125	100 to 200
SOIC-8	ILD1206T	ILD1207T

Note

- For additional information on the available options refer to option information



ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
INPUT				
Peak reverse voltage		V_R	6	V
Peak pulsed voltage	1 μs , 300 pps		1	A
Continuous forward current per channel			30	mA
Power dissipation		P_{diss}	50	mW
Derate linearly from 25 $^{\circ}\text{C}$			0.5	mW/ $^{\circ}\text{C}$
OUTPUT				
Collector emitter breakdown voltage		BV_{CEO}	70	V
Emitter collector breakdown voltage		BV_{ECO}	7	V
Power dissipation per channel		P_{diss}	125	mW
Derate linearly from 25 $^{\circ}\text{C}$			1.25	mW/ $^{\circ}\text{C}$
COUPLER				
Isolation test voltage	$t = 1\text{ min}$	V_{ISO}	3333	V_{RMS}
Total package dissipation ambient (2 LEDs and 2 detectors, 2 channels)		P_{tot}	300	mW
Derate linearly from 25 $^{\circ}\text{C}$			4	mW/ $^{\circ}\text{C}$
Storage temperature		T_{stg}	-55 to +150	$^{\circ}\text{C}$
Operating temperature		T_{amb}	-55 to +110	$^{\circ}\text{C}$
Soldering time from 260 $^{\circ}\text{C}$		T_{sld}	10	s

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 rating for extended periods of the time can adversely affect reliability.

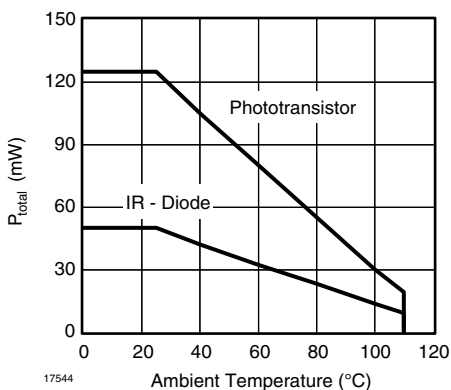


Fig. 1 - Power Dissipation vs. Ambient Temperature

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT							
Forward voltage	$I_F = 10\text{ mA}$		V_F	-	1.2	1.55	V
Reverse current	$V_R = 6\text{ V}$		I_R	-	0.1	100	μA
Capacitance	$V_R = 0\text{ V}$		C_O	-	25	-	pF
OUTPUT							
Collector emitter breakdown voltage	$I_C = 10\text{ }\mu\text{A}$		BV_{CEO}	70	-	-	V
Emitter collector breakdown voltage	$I_E = 10\text{ }\mu\text{A}$		BV_{ECO}	7	-	-	V
Collector emitter leakage current	$V_{CE} = 10\text{ V}$, $I_F = 0\text{ A}$		I_{CEO}	-	5	50	nA
Collector emitter capacitance	$V_{CE} = 0\text{ V}$		C_{CE}	-	10	-	pF
Collector emitter saturation voltage	$I_F = 10\text{ mA}$, $I_C = 2.5\text{ mA}$		V_{CEsat}	-	-	0.4	V
COUPLER							
Capacitance (input to output)			C_{IO}	-	0.5	-	pF
Resistance (input to output)			R_{IO}	-	100	-	G Ω

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.

CURRENT TRANSFER RATIO							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
I_C/I_F	$V_{CE} = 5\text{ V}$, $I_F = 10\text{ mA}$	ILD1206T	CTR_{DC}	63	-	125	%
		ILD1207T	CTR_{DC}	100	-	200	%

SWITCHING CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Turn-on time	I _C = 2 mA, R _L = 100 Ω, V _{CC} = 5 V	t _{on}	5	-	-	μs
Turn-off time	I _C = 2 mA, R _L = 100 Ω, V _{CC} = 5 V	t _{off}	4	-	-	μs

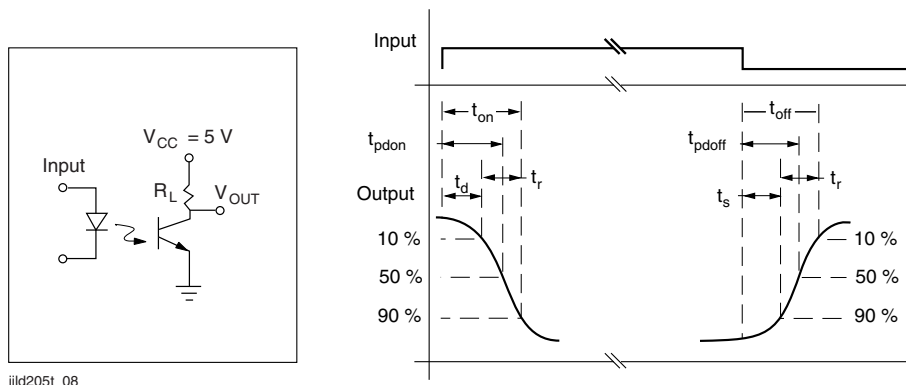


Fig. 2 - Switching Test Circuit

SAFETY AND INSULATION RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Climatic classification	According to IEC 68 part 1		55 / 100 / 21	
Pollution degree	According to DIN VDE 0109		2	
Comparative tracking index	Insulation group IIIa	CTI	175	
Maximum rated withstanding isolation voltage	According to UL1577, $t = 1\text{ min}$	V_{ISO}	3333	V_{RMS}
Maximum transient isolation voltage	According to DIN EN 60747-5-5	V_{IOTM}	6000	V_{peak}
Maximum repetitive peak isolation voltage	According to DIN EN 60747-5-5	V_{IORM}	560	V_{peak}
Isolation resistance	$T_{amb} = 25\text{ }^{\circ}\text{C}$, $V_{IO} = 500\text{ V}$	R_{IO}	$\geq 10^{12}$	Ω
	$T_{amb} = 100\text{ }^{\circ}\text{C}$, $V_{IO} = 500\text{ V}$	R_{IO}	$\geq 10^{11}$	Ω
Output safety power		P_{SO}	350	mW
Input safety current		I_{SI}	150	mA
Input safety temperature		T_S	165	$^{\circ}\text{C}$
Creepage distance			≥ 4	mm
Clearance distance			≥ 4	mm
Insulation thickness		DTI	≥ 0.2	mm

Note

- As per IEC 60747-5-5, §7.4.3.8.2, this optocoupler is suitable for “safe electrical insulation” only within the safety ratings. Compliance with the safety ratings shall be ensured by means of protective circuits.

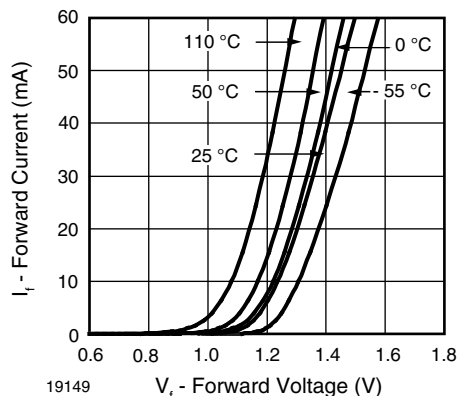
TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 3 - Forward Current vs. Forward Voltage

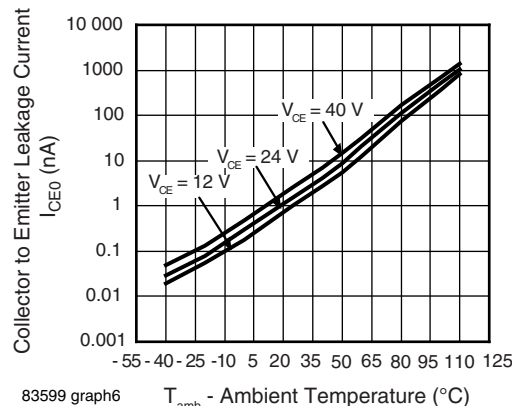
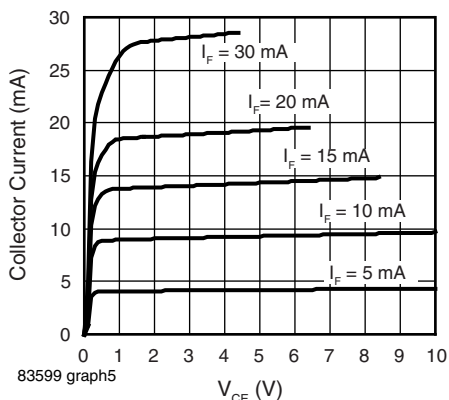
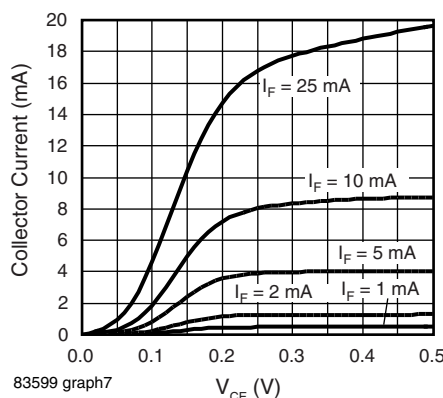


Fig. 5 - Collector to Emitter Leakage Current vs. Ambient Temperature


Fig. 4 - V_{CE} vs. I_C , (Non-Saturated)

Fig. 6 - V_{CE} vs. I_C , (Saturated)

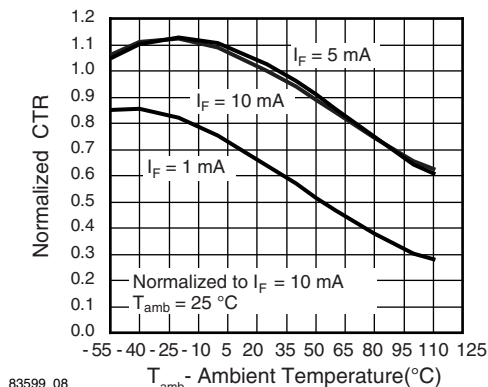


Fig. 7 - Normalized CTR vs. Ambient Temperature (Saturated, $V_{CE} = 0.4$ V)

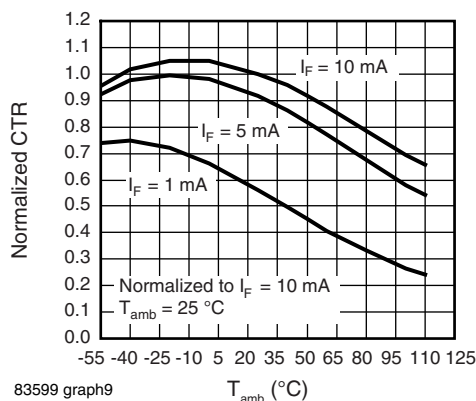


Fig. 8 - Normalized CTR vs. Ambient Temperature (Non-Saturated, $V_{CE} = 5$ V)

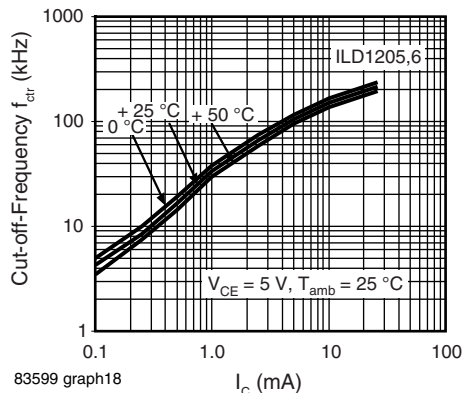


Fig. 9 - Cut-off-Frequency (- 3 dB) vs. Collector Current

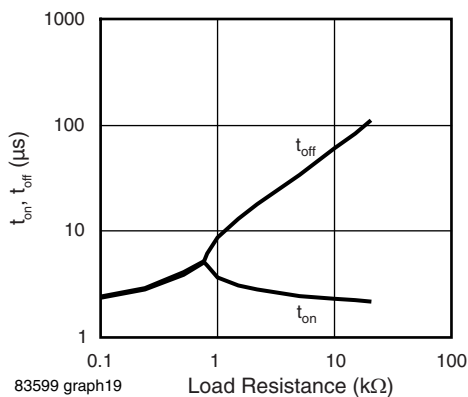
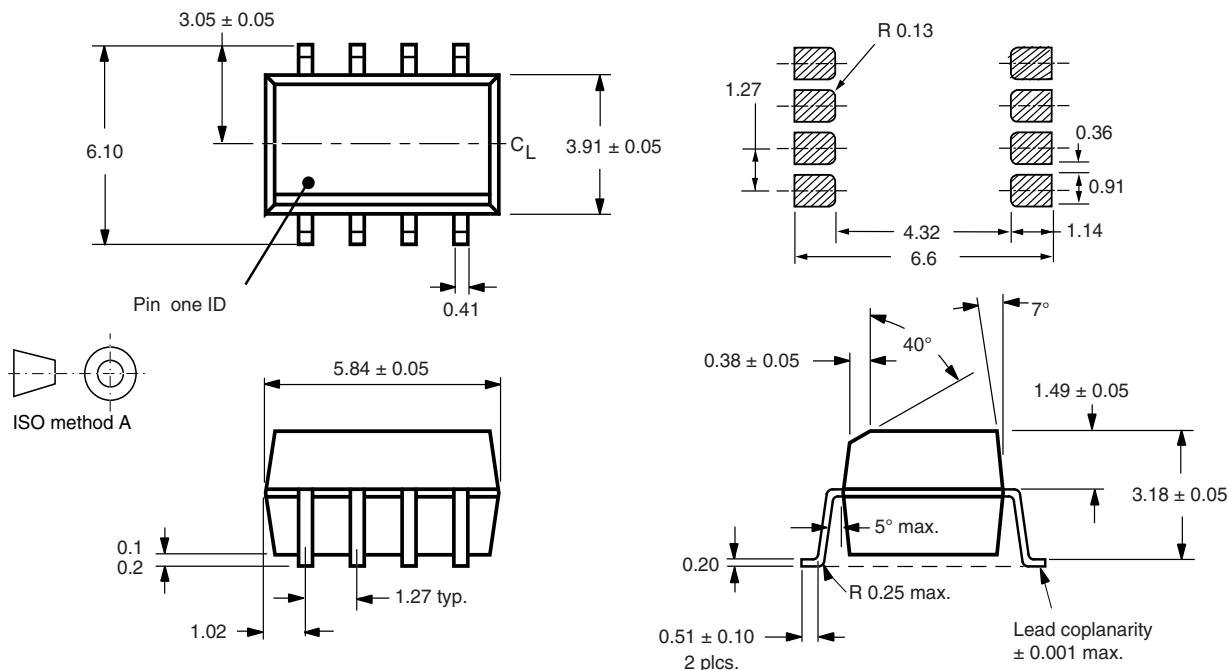


Fig. 10 - t_{on} , t_{off} vs. Load Resistance (100 Ω to 20 000 Ω)



PACKAGE DIMENSIONS (in millimeters)



i178020

PACKAGE MARKING (example)

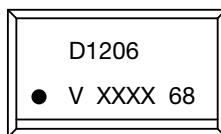


Fig. 11 - Example of ILD1206T

Notes

- XXXX = LMC (lot marking code)
- Tape and reel suffix (T) is not part of the package marking



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