



# ILD205T/206T/207T/211T/213T/217T

## Dual Phototransistor

### Small Outline Surface Mount Optocoupler

#### FEATURES

- **Two Channel Coupler**
- **SOIC-8A Surface Mountable Package**
- **Standard Lead Spacing of .05"**
- **Available only on Tape and Reel Option (Conforms to EIA Standard 481-2)**
- **Isolation Test Voltage, 3000 V<sub>RMS</sub>**
- **High Current Transfer Ratios**  
**ILD205T, 40 – 80%**  
**ILD206T, 63 –125%**  
**ILD207T, 100 – 200%**  
**ILD211T, 20% Minimum**  
**ILD213T, 100% Minimum**  
**ILD217T, 100% Minimum at 1.0 mA**
- **High BV<sub>CEO</sub>, 70 V**
- **Compatible with Dual Wave, Vapor Phase and IR Reflow Soldering**
- **Underwriters Laboratory File #E52744 (Code Letter Y)**

#### DESCRIPTION

The ILD205T/206T/207T/211T/213T/217T 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 ILD205T/6T/7T/11T/13T/17T come in a standard SOIC-8A 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<sub>CEO</sub> of 70 volts gives a higher safety margin compared to the industry standard of 30 volts.

#### Maximum Ratings (Each Channel)

##### Emitter

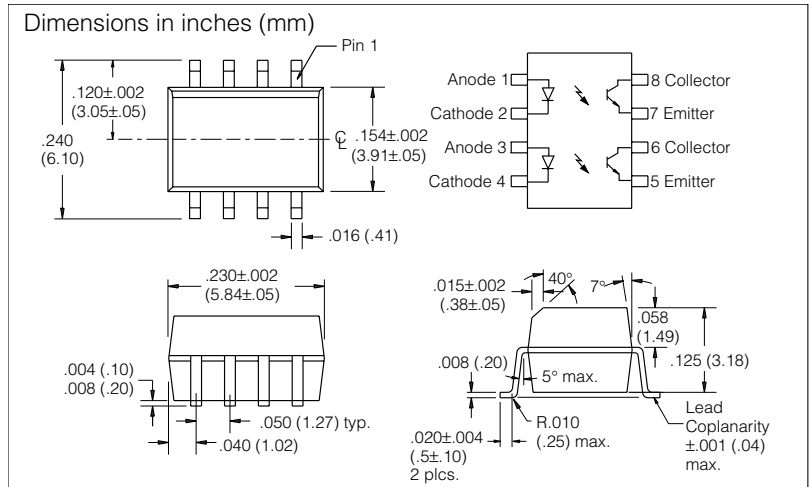
Peak Reverse Voltage ..... 6.0 V  
 Peak Pulsed Current (1.0 μs, 300 pps) ..... 1.0 A  
 Continuous Forward Current per Channel ..... 30 mA  
 Power Dissipation at 25°C ..... 50 mW  
 Derate Linearly from 25°C ..... 0.66 mW/°C

##### Detector

Collector-Emitter Breakdown Voltage ..... 70 V  
 Emitter-Collector Breakdown Voltage ..... 7.0 V  
 Power Dissipation per Channel ..... 125 mW  
 Derate Linearly from 25°C ..... 1.67 mW/°C

##### Package

Total Package Dissipation at 25°C Ambient  
 (2 LEDs + 2 Detectors, 2 Channels) ..... 300 mW  
 Derate Linearly from 25°C ..... 4.0 mW/°C  
 Storage Temperature ..... -55°C to +150°C  
 Operating Temperature ..... -55°C to +100°C  
 Soldering Time at 260°C ..... 10 sec.



**Table 1. Characteristics T<sub>A</sub>=25°C**

Parameter	Min.	Typ.	Max.	Unit	Condition	
<b>Emitter</b>						
Forward Voltage	—	1.2	1.55	V	I <sub>F</sub> =10 mA	
Reverse Current	—	0.1	100	μA	V <sub>R</sub> =6.0 V	
Capacitance	—	25	—	pF	V <sub>R</sub> =0	
<b>Detector</b>						
Breakdown Voltage	BV <sub>CEO</sub>	70	—	V	I <sub>C</sub> =10 μA	
	BV <sub>ECO</sub>	7.0	—	V	I <sub>E</sub> =10 μA	
	I <sub>CEO</sub>	—	5.0	50	nA	V <sub>CE</sub> =10 V I <sub>F</sub> =0
Collector-Emitter Capacitance	—	10	—	pF	V <sub>CE</sub> =0	
<b>Package</b>						
DC Current Transfer, V <sub>CE</sub> =5.0 V	ILD205	40	—	80	%	I <sub>F</sub> =10 mA
	ILD206	63	—	125		
	ILD207	100	—	200		
	ILD211	20	—	—		
	ILD213	100	—	—		I <sub>F</sub> =1.0 mA
	ILD205	13	30	—		
	ILD206	22	45	—		
ILD207	34	70	—			
ILD217	100	120	—			
Collector-Emitter Saturation Voltage V <sub>CE(sat)</sub>	—	—	0.4	V	I <sub>F</sub> =10 mA I <sub>C</sub> =2.5 mA	
Capacitance, Input to Output	—	0.5	—	pF	—	
Isolation Test Voltage	3000	—	—	V <sub>RMS</sub>	t=1.0 sec.	
Resistance, Input to Output	—	100	—	GΩ	—	
Turn-on Time	—	5.0	—	μs	I <sub>C</sub> =2.0 mA R <sub>L</sub> = 100 Ω V <sub>CC</sub> =5.0 V	
Turn-off Time	—	4.0	—	μs		

Figure 1. Forward current versus forward voltage

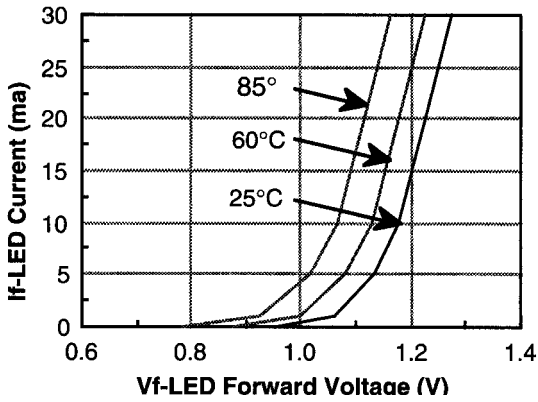


Figure 5. Switching speed versus load resistor

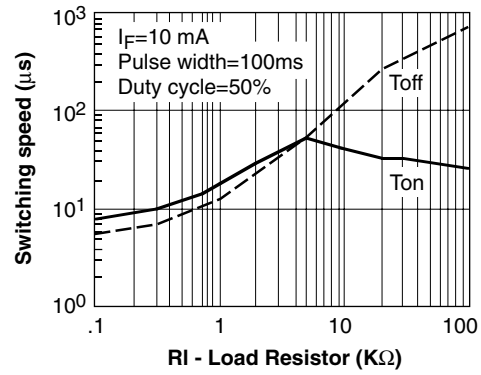


Figure 2. Collector-emitter current versus temperature

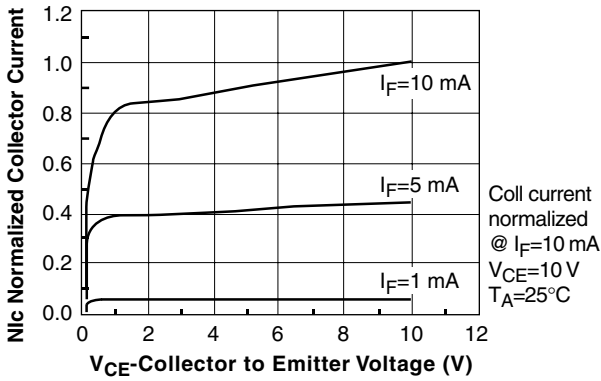


Figure 6. Collector current versus temperature

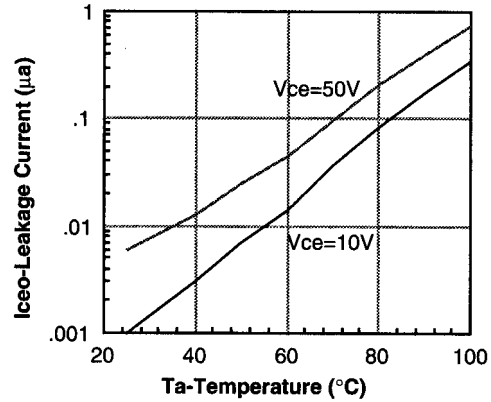


Figure 3. Normalized  $CTR_{ce}$  versus forward current

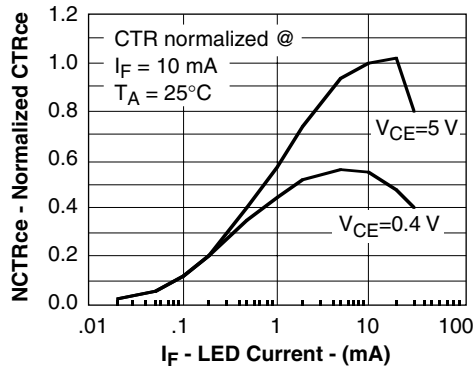


Figure 7. Power dissipation versus ambient temperature

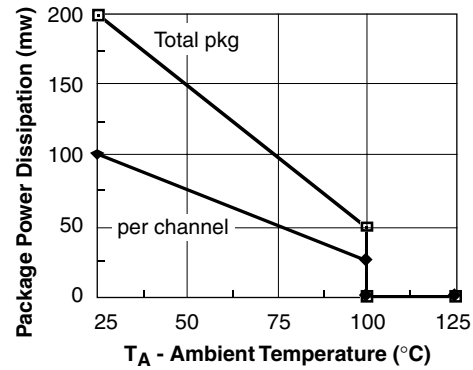


Figure 4. CTR (normalized) versus temperature

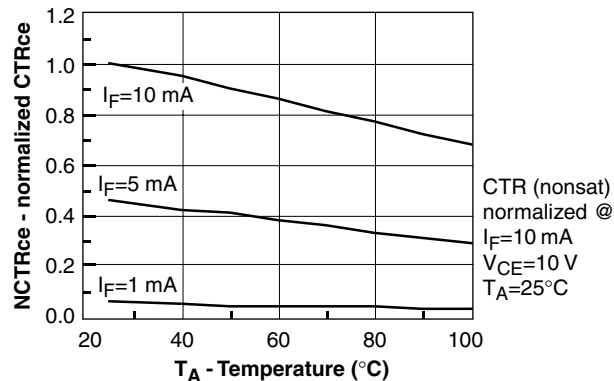


Figure 8. Switching time test schematic and waveform

