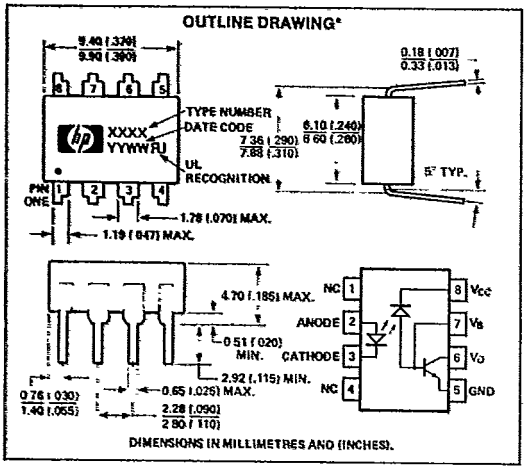
HEWLETT PACKARD

HIGH SPEED OPTOCOUPLER

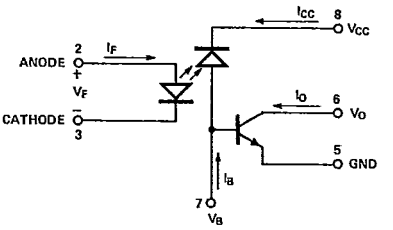
SL5505

OUTLINE DRAWING*



DIMENSIONS IN MILLIMETRES AND (INCHES).

SCHEMATIC



Absolute Maximum Ratings

Storage Temperature ..... -55°C to +125°C
Operating Temperature ..... -55°C to 100°C
Lead Solder Temperature ..... 260°C for 10s
(1.6mm below seating plane)
Average Input Current — I_F ..... 25mA [1]
Peak Input Current — I_F ..... 50mA [2]
(50% duty cycle, 1 ms pulse width)
Peak Transient Input Current — I_F 1.0A
(≤1μs pulse width, 300pps)
Reverse Input Voltage — V_R (Pin 3-2) 3V
Input Power Dissipation ..... 45mW [3]
Average Output Current — I_O (Pin 6) 8mA
Peak Output Current 16mA
Emitter-Base Reverse Voltage (Pin 5-7) 5V
Supply and Output Voltage — V_{CC} (Pin 8-5),
V_O (Pin 6-5) ..... -0.5V to 15V
Base Current — I_B (Pin 7 ..... 5mA
Output Power Dissipation ..... 100mW [4]

Switching Specifications at T_A=25°C

V_{CC} = 5V, I_F = 16mA, unless otherwise specified

Parameter	Symbol	Min.	Max.	Units	Test Conditions	Note
Propagation Delay Time to Logic Low at Output (Fig. 1)	t_{PHL}		0.8	μs	R_L = 1.9kΩ	7
Propagation Delay Time to Logic High at Output (Fig. 1)	t_{PLH}		0.8	μs	R_L = 1.9kΩ	7

Electrical Specifications (T_A = 25°C) unless otherwise specified.

Parameter	Symbol	Min.	Max.	Units	Test Conditions	Note
Current Transfer Ratio	CTR	15	40	%	I_F = 16mA, V_O = 0.4V, V_{CC} = 4.5V	5
	CTR	8		%	I_F = 2mA, V_O = 5.0V, V_{CC} = 4.5V	
Logic Low Output Voltage	V_{OL}		0.4	V	I_F = 16mA, I_O = 2.4mA, V_{CC} = 4.5V	
Logic High Output Current	I_{OH}		50	nA	I_F = 0mA, V_O = V_{CC} = 10V	
	I_{OH}		25	μA	I_F = 0mA, V_O = V_{CC} = 10V, T_A = 70°C	
Input Forward Voltage	V_F		1.8	V	I_F = 20mA	
Input Reverse Current	I_R		50	μA	V_R = 3V	
Input-Output Insulation Leakage Current	I_{I-O}		1.0	μA	45% Relative Humidity, t = 5s V_{I-O} = 1500Vdc	6
Resistance (Input-Output)	R_{I-O}	10^9		Ω	V_{I-O} = 100Vdc	6
Transistor DC Current Gain	h_{FE}	100	400	—	V_O = 5V, I_O = 3mA	
Capacitance	C_{I-O}		1.3	pF	f = 1 MHz	6
Breakdown Voltage Collector/Emitter	$V_{(BR)}$ CEO	22		V	I_C = 10mA	8
Breakdown Voltage Collector/Base	$V_{(BR)}$ CBO	40		V	I_C = 10μA	
Breakdown Voltage Emitter/Base	$V_{(BR)}$ EBO	3		V	I_E = 10μA	
Collector/Base Current	I_{CBO}		50	nA	V_{CB} = 22V	

Notes:
1. Derate linearly above 70°C free-air temperature at a rate of 0.8mA/ °C.
2. Derate linearly above 70°C free-air temperature at a rate of 1.6mA/ °C.
3. Derate linearly above 70°C free-air temperature at a rate of 0.9mW/°C.
4. Derate linearly above 70°C free-air temperature at a rate of 2.0mW/°C.
5. CURRENT TRANSFER RATIO is defined as the ratio of output collector current, I_O, to the forward LED input current, I_F, times 100%.
6. Device considered a two-terminal device: Pins 1, 2, 3, and 4 shorted together and Pins 5, 6, 7, and 8 shorted together.
7. The 1.9 KΩ load represents 1 TTL unit load of 1.6 mA and the 5.6 KΩ pull-up resistor.
8. Duration of this test should not exceed 300 μs.

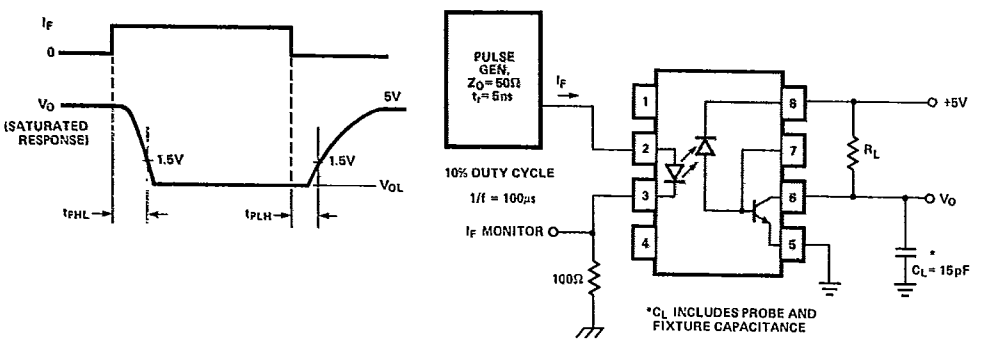


Figure 1. Switching Test Circuit.

CAUTION: The small junction sizes inherent to the design of this bipolar component increases the component's susceptibility to damage from electrostatic discharge (ESD). It is advised that normal static precautions be taken in handling and assembly of this component to prevent damage and/or degradation which may be induced by ESD.