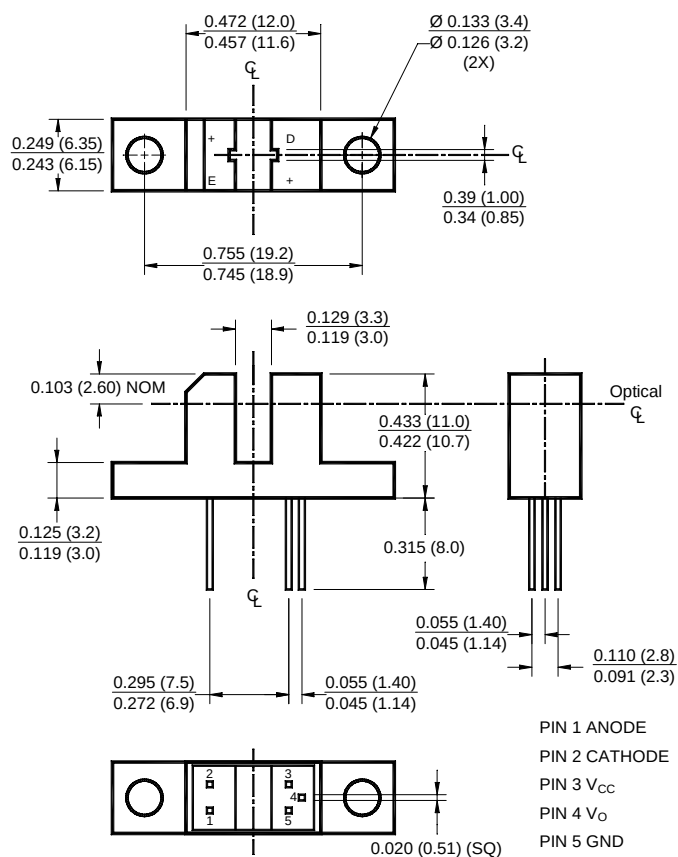


H21L SERIES

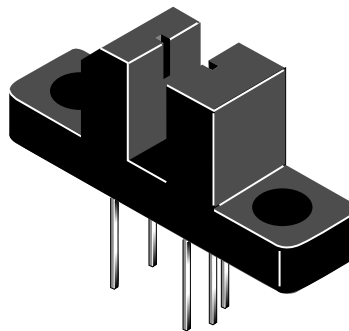
OPTOLOGIC® OPTICAL INTERRUPTER SWITCH

PACKAGE DIMENSIONS



NOTES:

1. Dimensions for all drawings are in inches (millimeters).
2. Tolerance of $\pm .010$ (.25) on all non-nominal dimensions unless otherwise specified.
3. Lead cross section is controlled between .050 (1.27) from the seating plane and the end of the leads.



FEATURES

- Black plastic housing
- Mounting tabs on housing
- Choice of inverter or buffer output functions
- Choice of open-collector or totem-pole output configuration
- TTL/CMOS compatible output functions

PART NUMBER DEFINITIONS

H21LTB	Totem-pole, buffer output
H21LTI	Totem-pole, inverter output
H21LOB	Open-collector, buffer output
H21LOI	Open-collector, inverter output

NOTES (Applies to Max Ratings and Characteristics Tables.)

1. Derate power dissipation linearly 1.67 mW/°C above 25°C.
2. Derate power dissipation linearly 2.50 mW/°C above 25°C.
3. RMA flux is recommended.
4. Methanol or isopropyl alcohols are recommended as cleaning agents.
5. Soldering iron 1/16" (1.6mm) from housing.
6. As long as leads are not under any stress or spring tension.

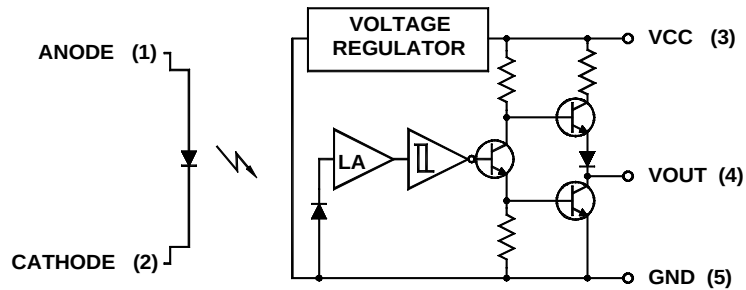
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Units
Operating Temperature	T _{OPR}	-40 to +85	°C
Storage Temperature	T _{STG}	-40 to +85	°C
Soldering Temperature (Iron) ^(3,4,5,6)	T _{SOL-I}	240 for 5 sec	°C
Soldering Temperature (Flow) ^(3,4,6)	T _{SOL-F}	260 for 10 sec	°C
EMITTER			
Continuous Forward Current	I _F	50	mA
Reverse Voltage	V _R	5	V
Power Dissipation ⁽¹⁾	P _D	100	mW
SENSOR			
Output Current	I _O	50	mA
Supply Voltage	V _{CC}	4.0 to 16	V
Output Voltage	V _O	30	V
Power Dissipation ⁽¹⁾	P _D	150	mW

ELECTRICAL / OPTICAL CHARACTERISTICS (T _A = 25°C)						
PARAMETER	TEST CONDITIONS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Operating Supply Voltage	V _{CC}	V _{CC}	4.5		16	V
INPUT DIODE						
Forward Voltage	I _F = 20 mA	V _F	—		1.7	V
Reverse Leakage Current	V _R = 5 V	I _R	—		10	μA
COUPLED						
Operating Supply Current	I _F = 15 mA or 0 mA, V _{CC} = 16 V	I _{CC}	—		5	mA
Low Level Output Voltage H21LTB, H21LOB	I _F = 0 mA, V _{CC} = 5 V, R _L = 100 Ω	V _{OL}	—		0.4	V
Low Level Output Voltage H21LTI, H21LOI	I _F = 15 mA, V _{CC} = 5 V, R _L = 360 Ω	V _{OL}	—		0.4	V
High Level Output Voltage H21LTB	I _F = 15 mA, V _{CC} = 5 V, I _{OH} = -800 μA	V _{OH}	2.4		—	V
High Level Output Voltage H21LTI	I _F = 0 mA, V _{CC} = 5 V, I _{OH} = -800 μA	V _{OH}	2.4		—	V
High Level Output Current H21LOB	I _F = 0 mA, V _{CC} = 5 V, I _{OH} = -800 μA	I _{OH}			100	μA
High Level Output Current H21LOI	I _F = 0 mA, V _{CC} = 5 V, V _{OH} = 30 V	I _{OH}	—		100	μA
Turn on Threshold Current	V _{CC} = 5 V, R _L = 360 Ω	I _F (+)	—		15	mA
Turn off Threshold Current	V _{CC} = 5 V, R _L = 360 Ω	I _F (-)	0.50		—	mA
Hysteresis Ratio		I _F (+) / I _F (-)		1.3		
Propagation Delay	V _{CC} = 5 V, R _L = 360 Ω	t _{PLH} , t _{PHL}		5		μs
Output Rise and Fall Time	V _{CC} = 5 V, R _L = 360 Ω	t _r , t _f		70		ns

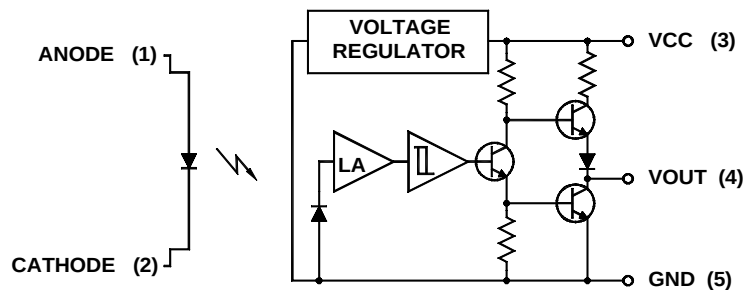
INPUT/OUTPUT TABLE		
Part Number	LED	Output
H21LTB	On	High
H21LTB	Off	Low
H21LTI	On	Low
H21LTI	Off	High
H21LOB	On	High
H21LOB	Off	Low
H21LOI	On	Low
H21LOI	Off	High

CIRCUIT SCHEMATICS



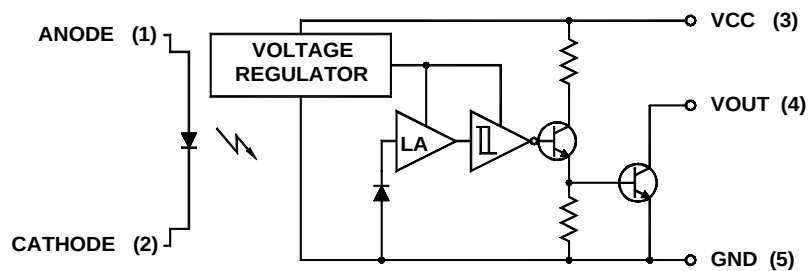
H21LTB

Totem-Pole Output Buffer



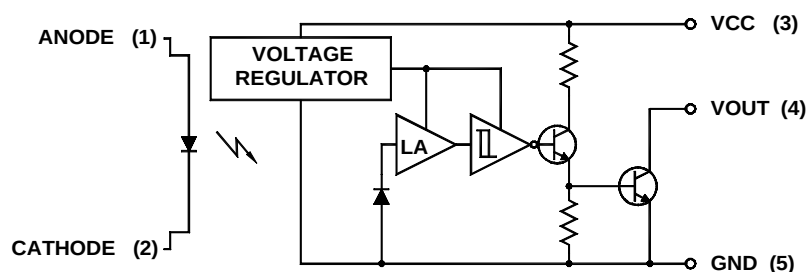
H21LTI

Totem-Pole Output inverter



H21LOB

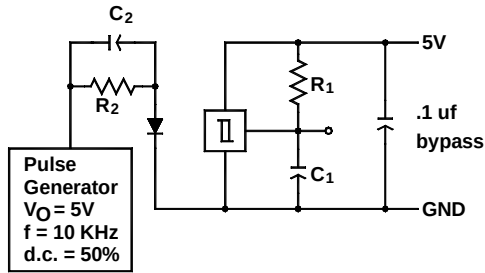
Open-Collector Output Buffer



H21LOI

Open-Collector Output Inverter

Switching Speed Test Circuit

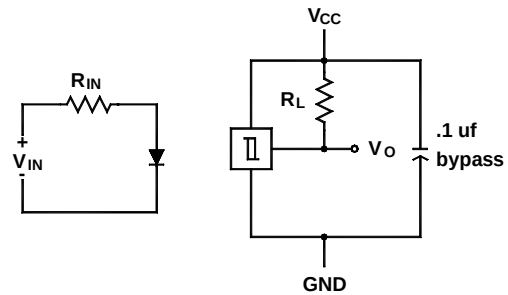


$R_1 = 180\ \Omega$
 $R_2 = 360\ \Omega$

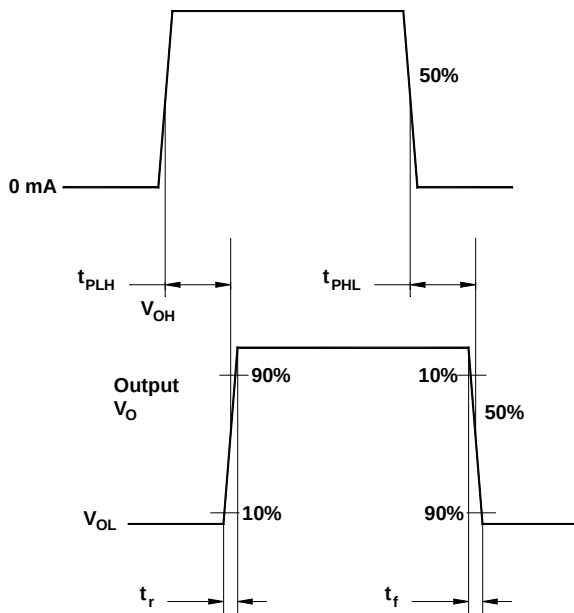
$C_1 = 15\text{ pf}$
 $C_2 = 20\text{ pf}$

C_1 and C_2 include probe and
stray wire capacitance

Typical Operating Circuit



Switching Test Curve for Buffers



Switching Test Curve for Inverters

