

CLL131 Sensor

Adjustable-gain, Digital Output IC Sensor

Inverter with 10K Pull-up



17-1310A

electrical characteristics (T _A = 25°C unless otherwise noted)						
symbol	parameter	min	typ	max	units	test conditions
V _{CC}	Operating supply voltage	4.5	-	18	V	
E _e T(+)	Positive going threshold irradiance ⁽⁴⁾	0.005	-	0.05	mW/cm ²	4.5 V ≤ V _{CC} ≤ 18 V, ADJ open
E _e T(+)/E _e T(-)	Hysteresis ratio	1.1	-	1.8		operate point/release point
I _{CC}	Supply current ⁽⁴⁾	-	-	12	mA	4.5 V ≤ V _{CC} ≤ 18 V, E _e = 0 or 0.5 mW, ADJ open
θ _P	Total acceptance angle	-	30	-	Deg.	
V _{OH}	High state output voltage	4.5	-	-	V	V _{CC} = 5 V, E _e = 0
V _{OL}	Low state output voltage ⁽⁴⁾	-	-	0.4	V	V _{CC} = 5 V, E _e (+) ≥ 0.5 mW/cm ²
t _r , t _f	Output rise and fall time ⁽⁴⁾	-	75	-	ns	V _{CC} = 5 V, E _e = 0 or 0.5 mW/cm ²
t _{PHL} , t _{PLH}	Propagation delay ⁽⁴⁾	-	5	-	μs	f = 10 kHz. D.C. = 50%, R _L = 330Ω

Gain threshold can be adjusted on the CLL131 by placing a resistor between the ADJ and GND leads in accordance with the following table. Decreasing the resistance causes the output to switch at a higher threshold level.

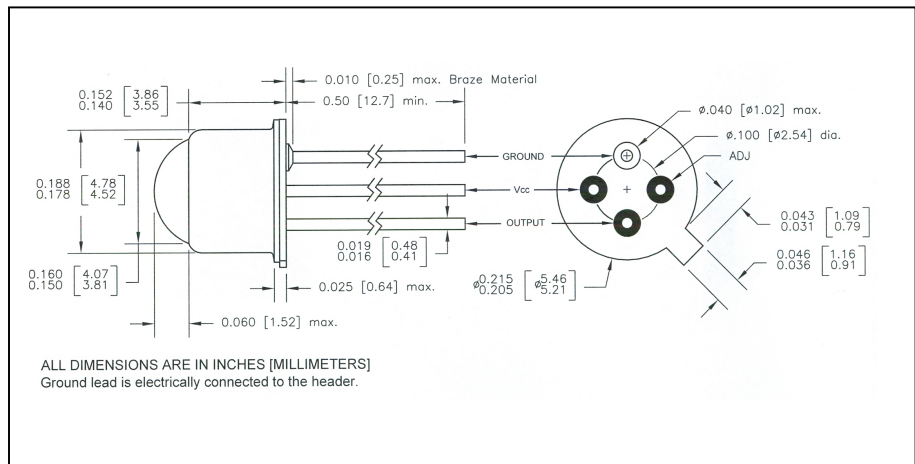
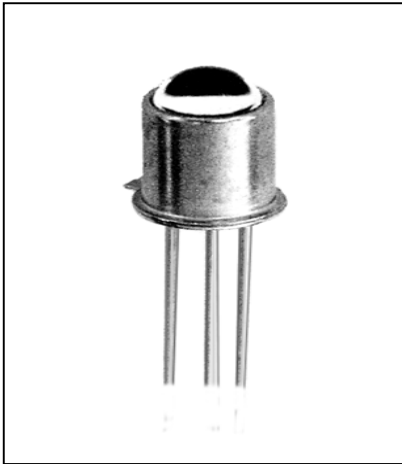
ADJ Resistor	Normalized Threshold
open	1.00
10k	2.00
4.7k	2.75
2.2k	3.75
1k	5.00
Connected to GND	7.25

Clairex reserves the right to make changes at any time to improve design and to provide the best possible product.

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features

- internal 10kΩ pull-up resistor
- low current drain
- 7:1 user accessible gain adjustment
- thermally compensated for IREDS
- 60nW sensitivity
- operates to +125°C
- TO-72 header with domed lens

description

The CLL131 is an integrated optical sensor designed to provide a digital output from optical excitation. The CLL131 provides an OFF condition when input radiation is below the threshold level. It is optically and physically compatible with most families of Clairex IREDS.

absolute maximum ratings (T_A = 25°C unless otherwise stated)

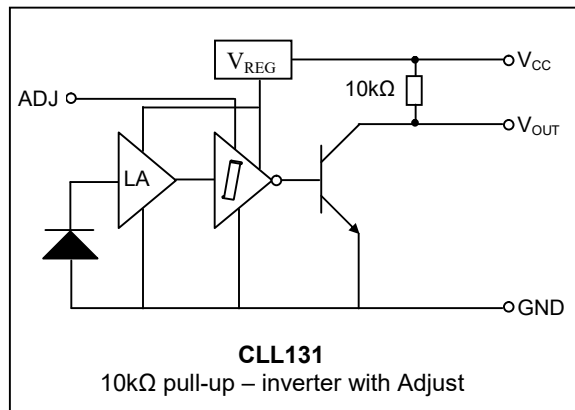
storage temperature.....	-65°C to +150°C
operating temperature.....	55°C to 125°C
lead soldering temperature ⁽¹⁾	260°C
V _{CC} supply voltage.....	4.5 V to +18 V
V _{ADJ}	-0.5 to +3.0 V
V _{OUT} ⁽²⁾	-0.5 to (V _{CC} +0.5 V)
I _{OUT} ⁽³⁾	30 mA

notes:

1. 1/16" from the case for 5 seconds maximum.
2. This rating applies when the output is in the OFF state only.
3. This rating applies when the output is in the ON state only.
4. Light measurements are made with an IRED source having a wavelength of 850nm.
5. Due to the high sensitivity of the CLL series, when used in high speed switching applications, Clairex recommends installing a 0.1 μF capacitor between V_{CC} and GND.

definitions:

inverter - output is LOW when input radiation is above the threshold level.
E₀T₊ is the minimum irradiance required to cause the output to change state.



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