CLI710

IRED – Phototransistor
Reflective Object Sensor

Clairex®
Technologies, Inc.

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1. Cathode   3. Emitter
2. Anode   4. Collector

Internally connected to header

0.500(12.7) min.
0.175 (4.46)
0.165 (4.21)
0.187 (4.75)
0.179 (4.55)
0.100 Dia
0.048 (1.22)
0.028 (0.71)
0.046 (1.17)
0.036 (0.91)
0.021 (0.53) Dia
0.017 (0.43) 4 Places
0.030 (0.76) max.
0.230 (5.84)
0.209 (5.31)
45°
0.160 (4.08) Emitting Window
0.150 (3.81) Diameter
0.020 (0.50) Diameter Detection Area
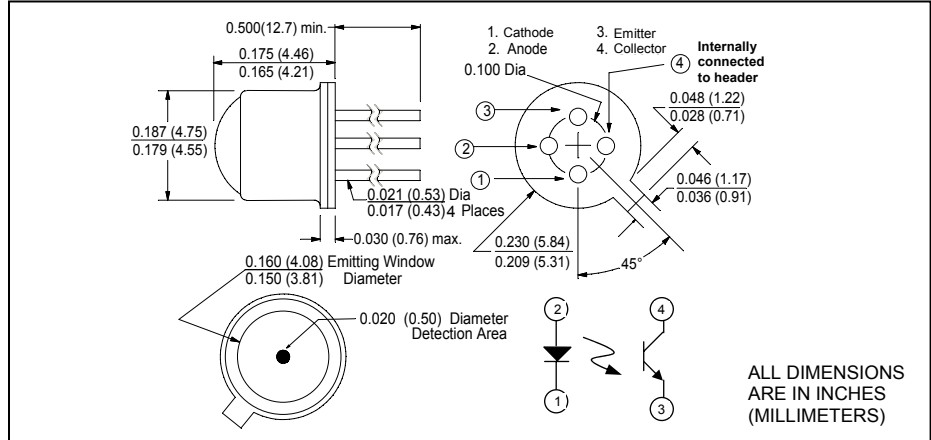
ALL DIMENSIONS ARE IN INCHES (MILLIMETERS)

features

- 0.020" dia. light pipe aperture
- T0-72 package
- analog output

description

The CLI710 consists of an 880nm AlGaAs IRED and a phototransistor mounted on a custom TO-72 header. The IRED emits a broad radiation pattern through the formed clear epoxy lens. Radiation reflected from the target is received by a 0.020" diameter fiber optic light pipe attached to the active area of the phototransistor. For assistance or other configurations, call Clairex.

absolute maximum ratings (T$_A$ = 25°C unless otherwise stated)

storage temperature ....-40°C to +125°C
operating temperature ....-40°C to +100°C
lead soldering temperature[1] ....260°C
IRED
continuous forward DC current[2] 35mA
reverse DC voltage...5V
continuous power dissipation[3] 100mW
PHOTOTRANSISTOR
collector-emitter voltage 30V
emitter-collector voltage 5V
continuous power dissipation[4] 100mW

note:
1. 0.06" (1.5mm) from the header for 5 seconds maximum
2. Derate linearly 0.37mA/°C from 25°C free air temperature to T$_A$ = +100°C.
3. Derate linearly 1.07mW/°C from 25°C free air temperature to T$_A$ = +100°C.
4. Derate linearly 1.07mW/°C from 25°C free air temperature to T$_A$ = +100°C.

electrical characteristics (T$_A$ = 25°C and V$_{CC}$ = 5.0V unless otherwise noted)

symbol	parameter	min	typ	max	units	test conditions
Input IRED						
V$_F$	Forward voltage	-	1.50	1.65	V	I$_F$ = 20mA
I$_R$	Reverse current	-	-	10	μA	V$_R$ = 5V
Output Phototransistor						
V$_{(BR)CEO}$	Collector-emitter breakdown voltage	30	-	-	V	I$_C$ = 1mA, I$_F$ = 0, E$_e$ = 0
V$_{(BR)ECO}$	Emitter-collector breakdown voltage	5.0	-	-	V	I$_E$ = 100μA, I$_F$ = 0, E$_e$ = 0
I$_D$	Dark current	-	-	20	nA	V$_{CE}$ = 10V, I$_F$ = 0, E$_e$ = 0
Coupled						
I$_L$	Light current[4]	150	250	-	μA	V$_{CE}$ = 5V, I$_F$ = 20mA, d = 0.030"
I$_{CX (ratio)}$	Crosstalk ratio[5]	3	10	-		V$_{CE}$ = 5V, I$_F$ = 20mA

notes: 4. Measured using a Kodak 90% diffuse reflectance neutral white test card.
5. No reflective surface. I$_{CX(ratio)}$ = I$_{L(μA)}$/I$_{CX(μA)}$.

Revised 3/16/06