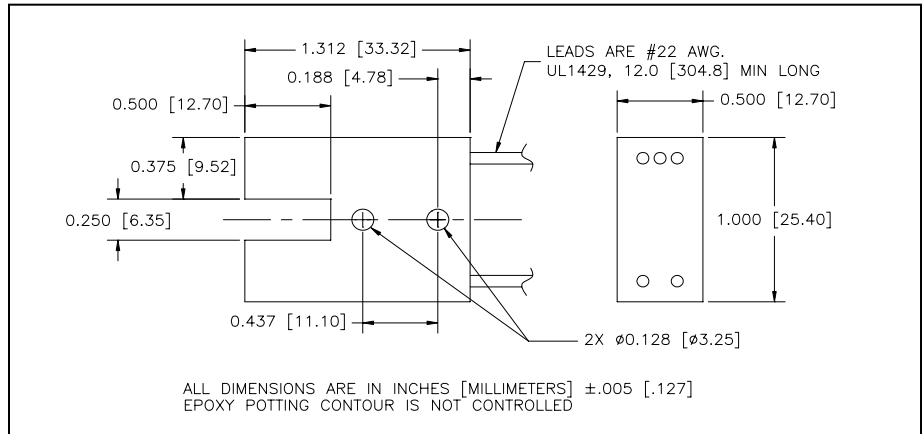


CLI300 Series

IRED - Photosensor Photointerrupters



March, 2005



features

- rugged plastic package
- hermetically sealed components
- various output configurations

description

The CLI300 series each consist of an IRED and photosensor mounted in a black plastic housing. Each device has 12 inch leads and two holes for bracket mounting in any position. Alternate output circuits and lead lengths are available. For assistance, call Clairex.

absolute maximum ratings ($T_A = 25^\circ\text{C}$ unless otherwise stated)

storage and operating temperature.....	-55°C to +100°C
IRED	
continuous forward current	60mA
reverse voltage	5V
continuous power dissipation ⁽¹⁾	100mW
CLI325, CLI355 and CLI375 OUTPUT	
collector-emitter voltage.....	30V
continuous collector current ⁽²⁾	50mA
continuous power dissipation ⁽³⁾	200mW
CLI385 OUTPUT ⁽⁴⁾	
supply voltage.....	18V
sink current	25mA
continuous power dissipation ⁽³⁾	200mW

notes:

1. Derate linearly 1.07mW/°C from 25°C free air temperature to $T_A = +100^\circ\text{C}$.
2. 200mA when pulsed at 1.0ms, 10% duty cycle.
3. Derate linearly 2.13mW/°C from 25°C free air temperature to $T_A = +100^\circ\text{C}$.
4. Buffer output. Output is LOW when input radiation is below threshold level.

electrical characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
symbol	parameter	min	typ	max	units	test conditions
Input IRED, all devices						
V_F	Forward voltage	-	-	1.5	V	$I_F = 10\text{mA}$
I_R	Reverse current	-	-	10	μA	$V_R = 5\text{V}$
Output CLI325, CLI355						
I_D	Collector-emitter dark current	-	-	100	nA	$V_{CE} = 10\text{V}, E_e = 0$
Output CLI375						
I_D	Collector-emitter dark current	-	-	50	nA	$V_{CE} = 10\text{V}, E_e = 0$
Output CLI385						
V_{CC}	Supply voltage	4	-	16	V	
I_{CC}	Supply current	-	-	12	mA	$V_{CC} = 4.5\text{V} - 16\text{V}$

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

Revised 3/16/06

CLI300 Series

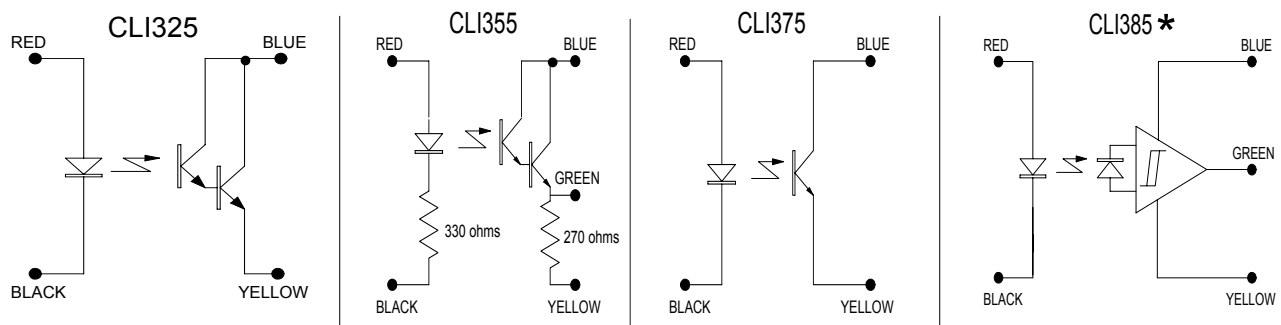
IRED - Photosensor Photointerrupters



electrical characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
symbol	parameter	min	typ	max	units	test conditions
Coupled CLI325						
I_L	Sensor light current	3.0	-	-	mA	$I_F = 10\text{mA}$, $V_{CE} = 5\text{V}$
$V_{CE(\text{sat})}$	Saturation voltage	-	-	1.2	V	$I_F = 10\text{mA}$, $I_C = 4\text{mA}$
t_r, t_f	Output rise and fall time	-	50	-	μsec	$I_C = 2.0\text{mA}$, $V_{CC} = 10\text{V}$, $R_L = 100\Omega$
Coupled CLI355						
$V_{CE(\text{sat})}$	Saturation voltage	-	-	1.2	V	$I_F = 10\text{mA}$, $I_C = 4\text{mA}$
I_L	Sensor light current	12.0	-	-	mA	$I_F = 10\text{mA}$, $V_{CC} = 5\text{V}$
V_O	Voltage output across 270Ω resistor	3.2	-	-	V	$I_F = 10\text{mA}$, $V_{CC} = 5\text{V}$
V_{OFF}	Voltage output across 270Ω resistor	-	-	0.4	V	$E_e = 0$
t_r, t_f	Output rise and fall time	-	300	-	μsec	$I_C = 2.0\text{mA}$, $V_{CC} = 10\text{V}$, $R_L = 100\Omega$
Coupled CLI375						
$V_{CE(\text{sat})}$	Saturation voltage	-	-	0.5	V	$I_F = 20\text{mA}$, $I_C = 1\text{mA}$
I_L	Sensor light current	1.0	-	-	mA	$I_F = 10\text{mA}$, $V_{CE} = 5\text{V}$
t_r, t_f	Output rise and fall time	-	5.0	-	μsec	$I_C = 2.0\text{mA}$, $V_{CC} = 10\text{V}$, $R_L = 100\Omega$
Coupled CLI385 ($V_{CC} = 5\text{V}$ unless otherwise noted)						
V_{OL}	Low level output voltage	-	-	0.4	V	$I_{OL} = 15\text{mA}$, $I_F = 0^{(6)}$
I_{OH}	High level output leakage	-	-	5.0	μA	$I_F = 15\text{mA}$, $V_{OH} = 18\text{V}$
I_{F+}	IRED positive going threshold ⁽⁷⁾	10	-	-	mA	
I_{F+}/I_{F-}	Hysteresis ratio	-	1.2	-		
t_r, t_f	Output rise and fall time	-	75	-	ns	$I_F = 0^{(6)}$ or 15mA ,
t_{PLH}	Propagation delay, low to high	-	6.0	-	μs	$f = 10\text{kHz}$, Duty Cycle = 50%,
t_{PHL}	Propagation delay, high to low	-	6.0	-	μs	$R_L = 240\Omega$, $C_L = 15\text{pF}$

note: 6. $I_F = 0$ equates to light path being blocked by opaque object.
7. Minimum current applied to IRED to cause output to change state.

Schematic Configurations



* The CLI385 features an open collector, buffer, digital output. Other output functions such as inverter and internal 10K pull-up are available. Obtain a copy of the CLL Series data sheet from our website at www.clairex.com to see other available output configurations.

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