

OPTOELECTRONIC PACKAGING & PRODUCTS



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CLAIREX TODAY

Clairex Technologies, incorporated in Texas in 1994, has grown to become an internationally recognized leader in semiconductor packaging, specializing in the design and manufacture of high quality, high performance optoelectronic products. Clairex products are used today in a wide variety of military, medical, automotive and industrial applications.

- Hybrids
- High-Reliability processing
- High temperature packaging
- Arrays
- Infrared and visible LEDs
- Photo-IC design
- Custom optics
- Custom assemblies
- Custom design
- Emitter-detector assemblies



Corporate headquarters in Plano, Texas

QUALITY ASSURANCE ---- Our Major Concentration

Clairex is dedicated to delivering high quality products, defect free, on time, and that meet or exceed our customers' requirements. Every employee is responsible for the quality of their own work and the continual improvement of the operations they impact.

- Clairex is ISO 9001:2000 certified.
- Clairex uses SPC in manufacturing control.
- IRED and LED die lots are prequalified for performance and reliability.
- All products are subject to comprehensive in-house qualification procedures, as required, prior to shipment.
- All metal can products are RoHS compliant.



Destructive testing to ensure wire bond quality

CUSTOM CAPABILITIES ---- Our Specialty

Clairex specializes in the design and manufacture of custom products to solve a broad spectrum of sensing problems.




- Design, manufacture and use of high volume automated assembly machines to reduce customer costs.
- Value added assembly programs that reduce customer design time and assembly costs.
- Specially designed emitters and sensors with unique optics.
- Multiple chip arrays
- ESD processing
- High reliability processing
- Competitive pricing








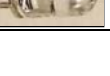
Cleanroom assembly area

Visit our website at www.clairex.com
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850nm POINT SOURCE EMITTERS

Package	Part Number	P _o (typ) mW	@I _F mA	I _R @V _R = 5V μA (max)	V _F (max) @ rated I _F	Θ _{HP} deg. (typ)	t _r , t _f ns (typ)
	CLE331	3.0	100	10 (3V)	2.2	10	5.0
	CLE332	2.0	50	10	2.0	15	10
	CLE333	3.0	100	10	2.2	2.0	5.0
	CLE331E	1.5	100	10 (3V)	2.2	100	5.0
	CLE332E	4.5	50	10	2.0	135	10
	CLE331W	3.0	100	10 (3V)	2.2	70	5.0
	CLE332W	2.0	50	10	2.2	80	10





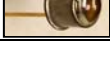
850nm HIGH POWER OUTPUT EMITTERS

Package	Part Number	P _o (typ) mW	@I _F mA	I _R @V _R = 5V μA (max)	V _F (max) @ rated I _F	Θ _{HP} deg. (typ)	t _r , t _f ns (typ)
	CLE300F	4.0	20	10	1.6	100	20/40
	CLE310F	2.0	20	10	1.6	10	20/40
	CLE330E	25	100	10	1.9	100	20/40
	CLE330W	20	100	10	1.9	70	20/40
	CLE335	20	100	10	1.9	22	20/40
	CLE336	20	100	10	1.9	9.0	20/40
	CLE367	40	100	10	1.9	24	20/40


850nm FIBER OPTIC EMITTERS

Package	Part Number	P _o (typ) μW	@I _F mA	V _F (max) @ I _F = 100mA	t _r , t _f ns (typ)
	CFE320A	19	100	2.2	5.0
	CFE370A	29	100	2.2	5.0
	CFE370B	20	100	2.2	5.0



940nm HIGH POWER OUTPUT EMITTERS

Package	Part Number	P _o (typ) mW	@I _F mA	I _R @V _R = 5V μA (max)	V _F (max) @ rated I _F	Θ _{HP} deg. (typ)	t _r , t _f ns (typ)
	CLE100F	2.5	20	10	1.5	100	700
	CLE110F	2.5	20	10	1.5	10	700
	CLE130E	12.5	100	10	1.5	100	700
	CLE130W	10	100	10	1.8	70	700
	CLE135	10	100	10	1.8	22	700

810nm INFRARED EMITTER

Package	Part Number	P _o (typ) mW	@I _F mA	I _R @V _R = 5V μA (max)	V _F (max) @ rated I _F	Θ _{HP} deg. (typ)	t _r , t _f ns (typ)
	CLE320W	25	100	10	2.5	70	10


390nm UV EMITTERS



Package	Part Number	P _o (min) mW	@I _F mA	I _R @V _R = 5V μA (max)	V _F (max) @ I _F = 20mA	Θ _{HP} deg. (typ)
	CLE501	1.5	20	1.0	3.9	9.0*
	CLE509	13.5	180*	10	3.9 (180mA)**	70

*This is a converging beam device. Emission angle at 1" (2.54mm) from the lens tip is essentially zero. Emission angle at 2" (5.08mm) is ± 4.5 degrees.



**The CLE509 is a nine diode LED array. This drive current equates to 20mA per diode.

LEDs – VISIBLE WAVELENGTHS






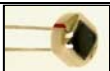

Package	Part Number	Color	I _v /Φ _v (typ) mcd/mlm	@ I _F mA	I _R @V _R = 5V μA (max)	V _F (max) @I _F = 20mA	Θ _{HP} deg. (typ)
	CLE435	Red	650/72	20	10	2.4	22
	CLE436	Red, < .1% IR	650/72	20	10	2.2	22
	CLE535	Green	10.5K/1.2K	20	10	3.6	22
	CLE536	Blue	750/87.5	20	10	3.6	22
	CLE539	White	5.5K/635	20	5.0	3.6	22

Package	Part Number	Color	Φ _v (typ) mlm	@ I _F mA	I _R @V _R = 5V μA (max)	V _F (max) @I _F = 20mA	Θ _{HP} deg. (typ)
	CLE435W	Red	72	20	10	2.4	70
	CLE436W	Red, < .1% IR	72	20	10	2.2	70
	CLE535W	Green	1200	20	10	3.6	70
	CLE536W	Blue	875	20	10	3.6	70
	CLE539W	White	635	20	10	3.6	70
	CLE445W	Red	95	20	10	2.4	100
	CLE545W	Green	1500	20	10	3.6	100
	CLE546W	Blue	113	20	10	3.6	100
	CLE549W	White	820	20	5.0	3.6	100

QUAD CHIP – 2 x 2 ARRAY EMITTERS


Package	Part Number	λ _P	P _o (typ) mW	@ I _F mA	I _R @V _R = 5V μA (max)	V _F (max) @I _F = 20mA	t _r , t _f ns (typ)
	CLE334W	850	10	20	10	2.4	20/40
	CLE234W	880	10	20	10	2.2	700
	CLE334E	850	25	20	10	3.6	20/40
	CLE234E	880	8.0	20	10	3.6	700

SILICON PHOTODIODES

Package	Part Number	I _{sc} μA (typ)	I _D nA (max)	C _J pF (typ)	Θ _{HP} deg. (typ)	Active Area L" x W"
	CLD240	40	10	14	14	0.060 x 0.060
	CLD240E	13	10	14	80	0.060 x 0.060
	CLD240W	13	10	14	70	0.060 x 0.060
	CLD156/156R	100	50	400(max)	100	0.122 x 0.222
	CLD160	50	5.0	200(max)	100	0.122 x 0.122
	CLD271/271R	100	5.0	30(max)	130	0.120 x 0.120
	CLD370F*	60	30	25	60	0.080 x 0.080



* The CLD370F provides a 4X larger active area than other 5mm (T-1 3/4) packaged photodiodes.

GALLIUM ALUMINUM ARSENIDE PHOTODIODE

Package	Part Number	I _{sc} μA (typ)	I _D nA (max)	C _J pF (typ)	Θ _{HP} deg. (typ)	Active Area L" x W"
	CLD340*	3.5	1.0	170	70	0.040 x 0.040



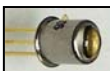
* The CLD340 provides excellent high temperature characteristics and very low responsivity to visible light.

FIBER OPTIC SILICON PIN PHOTODIODES

Package	Part Number	Responsivity A/W (typ)	I _D nA (max)	C _J pF (typ)	Active Area L" x W"
	CFD420	0.55	5.0	3.0	0.040 x 0.040
	CFD470	0.50	5.0	3.0	0.040 x 0.040

Other packages and die sizes are available on special request.

PHOTOTRANSISTORS

Package	Part Number	I _L (min) mA	@E _e mW/cm ²	V _{(BR)CEO} V (min)	Θ _{HP} deg. (typ)	I _D nA (max)
	CLT130	0.6	1.5	30	18	25
	CLT131	1.2	1.5	30	18	25
	CLT132	2.4	1.5	30	18	25
	CLT133	4.0	1.5	30	18	25
	CLT130W	0.4	5.0	30	70	25
	CLT131W	1.0	5.0	30	70	25
	CLT132W	2.5	5.0	30	70	25
	CLT135	2.5	0.5	30	18	25
	CLT335	2.5	0.5	30	18	25
	CLT435	1.0	0.5	30	18	25

CLT130 thru CLT133 and CLT130W thru CLT132W have base lead bonded. CLT135, CLT335 and CLT435 have no connection to base lead. Alternate versions are available on special request.

PHOTODARLINGTONS





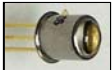

Package	Part Number	I_L (min) mA	@ E_0 mW/cm ²	$V_{(BR)CEO}$ V (min)	Θ_{HP} deg. (typ)	I_D nA (max)
	CLR130	0.5	0.06	15	40	100
	CLR131	2.0	0.06	15	40	100
	CLR132	4.0	0.06	15	40	100
	CLR130W	0.2	0.06	15	70	100
	CLR131W	0.6	0.06	15	70	100
	CLR132W	1.4	0.06	15	70	100

PHOTO-IC SENSORS

Package	Schmitt Trigger with ADJUST lead.			Θ_{HP} deg. (typ)
	Part Nos.	Function	Package	
	CLL130	Buffer, w/10K pull-up resistor	TO-72 – 4 leads	30
	CLL131	Inverter, w/10K pull-up resistor	TO-72 – 4 leads	30
	CLL133	Inverter, open collector output	TO-72 – 4 leads	30
	CLL130W	Buffer, w/10K pull-up resistor	TO-72 – 4 leads	70
	CLL131W	Inverter, w/10K pull-up resistor	TO-72 – 4 leads	70
	CLL133W	Inverter, open collector output	TO-72 – 4 leads	70


Package	Schmitt Trigger Photo-IC Sensors			Θ_{HP} deg. (typ)
	Part Nos.	Function	Package	
	CLL134	Buffer, open collector output	TO-18 – 3 leads	30
	CLL135	Inverter, open collector output	TO-18 – 3 leads	30
	CLL136	Buffer, w/10K pull-up resistor	TO-18 – 3 leads	30
	CLL137	Inverter, w/10K pull-up resistor	TO-18 – 3 leads	30
	CLL134W	Buffer, open collector output	TO-18 – 3 leads	70
	CLL135W	Inverter, open collector output	TO-18 – 3 leads	70
	CLL136W	Buffer, w/10K pull-up resistor	TO-18 – 3 leads	70
	CLL137W	Inverter, w/10K pull-up resistor	TO-18 – 3 leads	70

Alternate pinouts and custom assemblies are available. Contact Clairex.


Definitions: Buffer: Output is HIGH when input irradiance is $> E_0+$.

Inverter: Output is LOW when input irradiance is $> E_0+$.

PHOTOINTERRUPTER – SLOTTED SWITCHES

Package	Part Number	I_L mA (min)	I_D nA (max)	Output Configuration
	CLI305	20	n/a	Emitter follower transistor
	CLI325	3.0	100	Photodarlington
	CLI355	12	100	Photodarlington with load resistor
	CLI375	1.0	50	Phototransistor
	CLI385	n/a	n/a	Photo-IC, *configuration options available.


PHOTOINTERRUPTER – REFLECTIVE SWITCHES

Package	Part Number	I_L μ A (min)	I_D nA (max)	Output Configuration
	CLI700	n/a	n/a	Photo-IC, *configuration options available.
	CLI710	250	20	Phototransistor

Special selections and custom assemblies available. Contact Clairex.

*Any of CLL photo-IC output configurations can be used.

PHOTOCONDUCTOR – LIGHT SENSITIVE RESISTOR*

Package	Part Number	R_{ON} (typ) ohms	R_{OFF} (min) ohms	Material Type
	CL9P5LQ	10K	670K	CdS, CdSe

*This device contains compounds of cadmium and is not RoHS compliant.

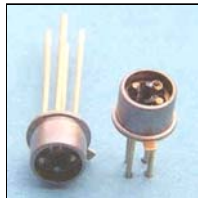
More Optoelectronic solutions from Clairex

PHOTOELECTRIC SENSORS

Emitters and Detectors



High performance reflective assembly containing an emitter and a photodetector for sensing object location and position change.

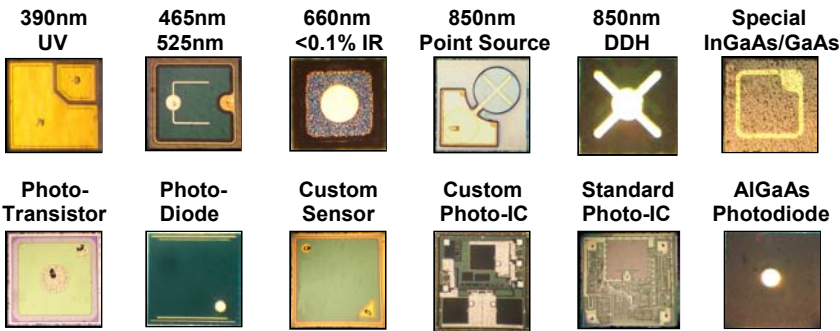


TO-72 reflective sensor. Phototransistor or photo-IC output. Can sense objects less than 0.010" in size.



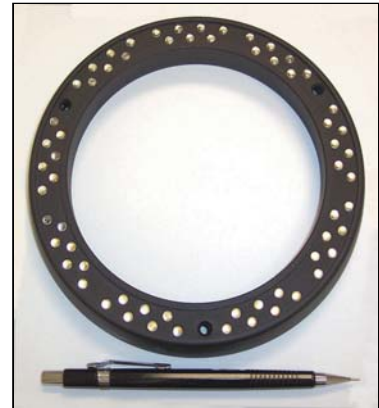
Emitter-detector pair, metal housings. Senses single or multiple layers, penetrates dusty environments and operates reliably at up to 6 feet separation.

Emitter and Sensor Chips

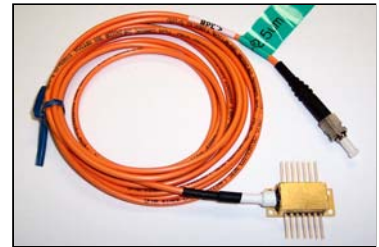


MILITARY COMPONENTS

Emitters and Detectors



Night vision infrared illumination ring, designed to fit around a PAR-36 flood lamp. Able to withstand harsh environments. On-board regulators allow 20 to 30VDC input at less than 1 amp. Output is greater than 16 watts per steradian.



Fiber optic data link in "butterfly" package. Current design includes LED and thermister which controls a thermoelectric cooler. Choice of wavelengths and multiple circuit functions are available.

Contact CLAIREX for custom design and special chip, component or assembly requirements.

Represented By: