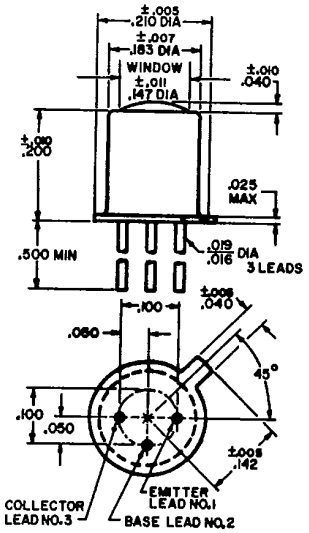
T-41-61

CLT2130
CLT2140
CLT2150
CLT2160

Silicon Planar Epitaxial Phototransistors

GENERAL DESCRIPTION — The Clairex CLT2130, CLT2140, CLT2150, and CLT2160 are silicon NPN planar epitaxial phototransistors in a hermetically sealed TO-18 case with lens. The base lead is provided to enable more flexible circuit design. The units offer a full range of high current sensitivity for low illumination levels.



PHYSICAL DIMENSIONS — in accordance with JEDEC (T018) outline except for window on top of can.

All dimensions in inches. Collector electrically connected to case. Leads gold plated Kovar.

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ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures
- Storage Temperature −65°C to +200°C
- Operating Junction Temperature +150°C

Maximum Power Dissipation
- Total Dissipation
- at 25°C Ambient Temperature P_T=250mW
- derate 2mW/°C
- at 100°C Ambient Temperature P_T=100mW

Maximum Voltages	CLT2130	CLT2140	CLT2150	CLT2160
V_{CBO} Collector to Base Voltage	60 volts	60 volts	60 volts	60 volts
V_{CEO} Collector to Emitter Voltage	50 volts	40 volts	40 volts	30 volts
V_{ECO} Emitter to Collector Voltage	5 volts	5 volts	5 volts	5 volts

Maximum Current
I_C Collector Current 200ma Pulsed conditions :300μ sec., 2% duty cycle.

ELECTRICAL CHARACTERISTICS (25°C Free Air unless otherwise designated.)

Symbol	Characteristics	Test Conditions	CLT2130 Min.	CLT2130 Max.	CLT2140 Min.	CLT2140 Max.	CLT2150 Min.	CLT2150 Max.	CLT2160 Min.	CLT2160 Max.	Unit
I_L (I_{CEO})	Light Current	V_{CE}=5v, H=5mW/cm², Note 1	0.6	1.8	1.2	3.6	2.4	7.2	4.0	12.0	ma
I_D (I_{CEO})	Dark Current	V_{CE}=10 volts, H=0		25		25		25		25	na
I_D (I_{CEO})	Dark Current	V_{CE}=10 volts, H=0, T=+100°C		25		25		25		25	μa
BV_{CEO}	Collector to Emitter Breakdown Voltage	I_C=.1ma	50		40		40		30		volts
BV_{CBO}	Collector to Base Breakdown Voltage	I_C=.1ma	60		60		60		60		volts
BV_{ECO}	Emitter to Collector Breakdown Voltage	I_{EC}=.1ma	5		5		5		5		volts
t_r	Light Current Rise Time (unsaturated)	R_1=100Ω, V_{CC}=+5.0 volts, Note 2	3 Typical		3 Typical		3 Typical		3 Typical		μsec
t_f	Light Current Fall Time (unsaturated)		3 Typical		3 Typical		3 Typical		3 Typical		μsec
$V_{CE\ (SAT)}$	Collector to Emitter Saturation Voltage	I_C=10ma. I_B=0.5ma H=0		0.35		0.30		0.30		0.30	volts

Note 1: The light source is a frosted tungsten incandescent lamp at 2854°K.
Note 2: The light source is a gallium arsenide LED pulsed with a rise and fall time of < 0.3 μsec.

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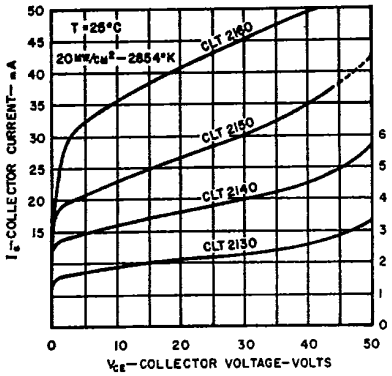
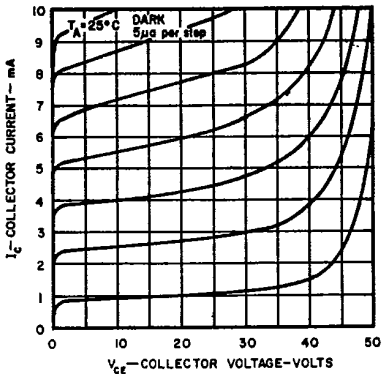
Typical Electrical Characteristics

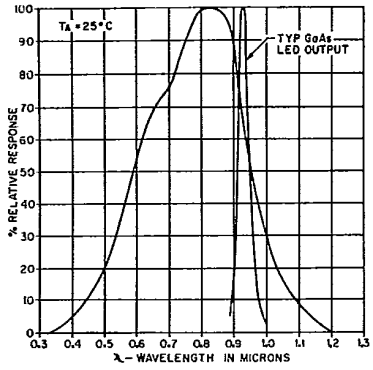
COLLECTOR CURRENT vs. COLLECTOR VOLTAGE



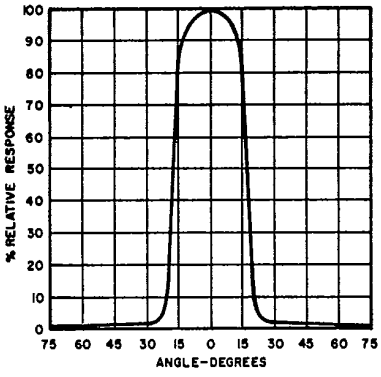
COLLECTOR CHARACTERISTICS CLT 2150



SPECTRAL RESPONSE



ANGULAR RESPONSE



LIGHT CURRENT vs. IRRADIATION