

T-41-61

**CLT6181
CLT2164
CLT2165**

**Silicon Planar
Epitaxial Phototransistors**

GENERAL DESCRIPTION — The Clairex CLT6181, CLT2164, and CLT2165 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.

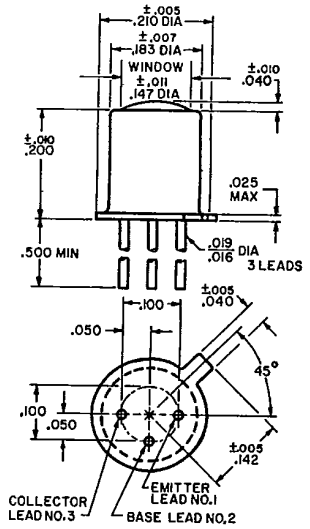
ABSOLUTE MAXIMUM RATINGS

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

Maximum Power Dissipation

Total Dissipation
at 25°C Ambient Temperature $P_T = 250\text{mW}$
derate 2mW/°C
at 100°C Ambient Temperature $P_T = 100\text{mW}$

Maximum Voltages	CLT6181	CLT2164	CLT2165
V_{CB0} Collector to Base Voltage	60 volts	60 volts	60 volts
V_{CE0} Collector to Emitter Voltage	40 volts	40 volts	40 volts
V_{ECO} Emitter to Collector Voltage	5 volts	5 volts	5 volts



PHYSICAL DIMENSIONS — In accordance with JEDEC (TO18) 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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Maximum Current
 I_C Collector Current 200ma Pulsed conditions :300 μ sec., 2% duty cycle.

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

Symbol	Characteristics	Test Conditions	CLT6181		CLT2164		CLT2165		Unit
			Min.	Max.	Min.	Max.	Min.	Max.	
$I_L (I_{CEO})$	Light Current	$V_{CE} = 5\text{v}, H = 5\text{mW/cm}^2$, Note 1	6		7		15		ma
$I_D (I_{CEO})$	Dark Current	$V_{CE} = 10\text{ volts}, H = 0$		50		50		50	na
h_{FE}	DC current gain	$V_{CR} = 10\text{ volts}, I_b = 1\mu\text{a}$	250		250		250		μa
BV_{CEO}	Collector to Emitter Breakdown Voltage	$I_C = .1\text{ma}$	40		40		40		volts
BV_{CBO}	Collector to Base Breakdown Voltage	$I_C = .1\text{ma}$	60		60		60		volts
BV_{ECO}	Emitter to Collector Breakdown Voltage	$I_{EC} = .1\text{ma}$	5		5		5		volts
t_r	Light Current Rise Time (unsaturated)	$R_L = 100\Omega$ $V_{CC} = +5.0\text{ volts}$ Note 2	3 Typical		3 Typical		3 Typical		μsec
t_f	Light Current Fall Time (unsaturated)		3 Typical		3 Typical		3 Typical		μsec
$V_{CE (SAT)}$	Collector to Emitter Saturation Voltage	$I_C = 10\text{ma}, I_B = 0.5\text{ma}$ $H = 0$		0.35		0.35		0.35	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

