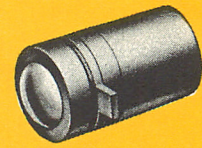


Product Data

CLT3160
CLT3170Silicon NPN Planar
Epitaxial Phototransistors

GENERAL DESCRIPTION—The Clairex CLT 3160 and CLT 3170 are silicon planar epitaxial phototransistors in a lensed-window, miniature, hermetic package. The 0.060" outside diameter enables high device density with modest mounting tolerances. The package design is ideally suited for mounting in printed circuit boards. The series is characterized by a narrow acceptance angle, fast switching and narrow tolerance ranges of sensitivity. The lensed window unit reduces optical cross-talk from stray light present in many applications.

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature -65°C to $+180^{\circ}\text{C}$
Operating Junction Temperature $+150^{\circ}\text{C}$

Maximum Power Dissipation

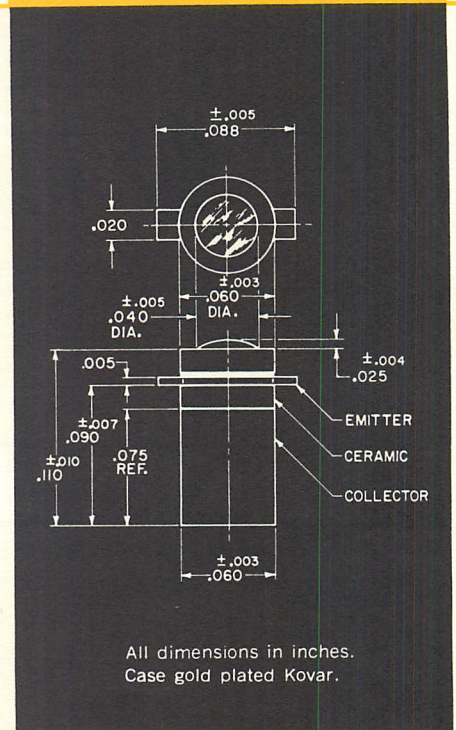
Total Dissipation

at 25°C Ambient Temperature $P_T=50\text{mW}$ derate $0.5\text{mW}/^{\circ}\text{C}$
at 100°C Ambient Temperature $P_T=12.5\text{mW}$

Maximum Voltages	CLT3160	CLT3170
V_{CE0} Collector to Emitter Voltage	50 volts	40 volts
V_{ECO} Emitter to Collector Voltage	5 volts	5 volts

Maximum Current: Note 3

I_C Collector Current 200ma

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

Symbol	Characteristics	Test Conditions	CLT3160		CLT3170		Unit
			Min.	Max.	Min.	Max.	
$I_L (I_{CEO})$	Light Current	$V_{CE}=5\text{v}$, $H=5\text{mW}/\text{cm}^2$, Note 1	0.5		2.0		ma
$I_L (I_{CEO})$	Light Current	$V_{CE}=5\text{v}$, $H=20\text{mW}/\text{cm}^2$, Note 1	2.0	7.0	7.0		ma
$I_D (I_{CEO})$	Dark Current	$V_{CE}=10$ volts, $H=0$		10		10	na
BV_{CEO}	Collector to Emitter Breakdown Voltage	$I_C=0.1\text{ma}$	50		40		volts
BV_{ECO}	Emitter to Collector Breakdown Voltage	$I_{EC}=0.1\text{ma}$	5.0		5.0		volts
t_r	Light Current Rise Time (unsaturated)	$R_L=1000\Omega$, $I_C=0.5\text{ma}$ $V_{CC}=5.0$ volts Note 2	1.5 Typical		1.5 Typical		μsec
t_f	Light Current Fall Time (unsaturated)		1.5 Typical		1.5 Typical		μsec
$V_{CE (SAT)}$	Collector to Emitter Saturation Voltage	$I_C=0.4\text{ma}$, $H=20\text{mW}/\text{cm}^2$	0.3 Typical		0.3 Typical		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 $< 0.3 \mu\text{sec}$.

Note 3: Pulsed conditions: $300 \mu\text{sec}$, 2% duty cycle.



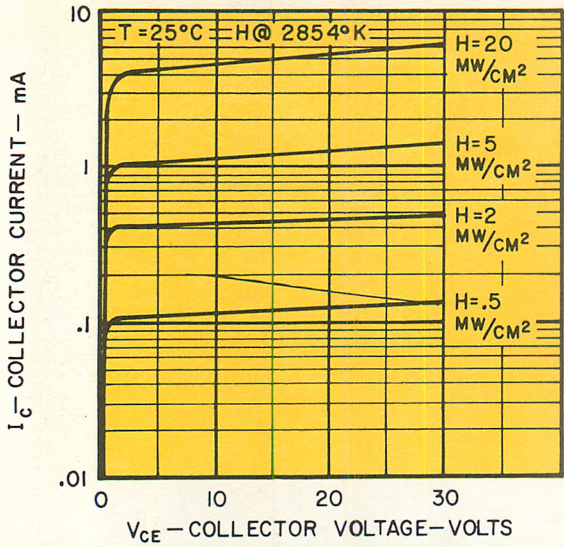
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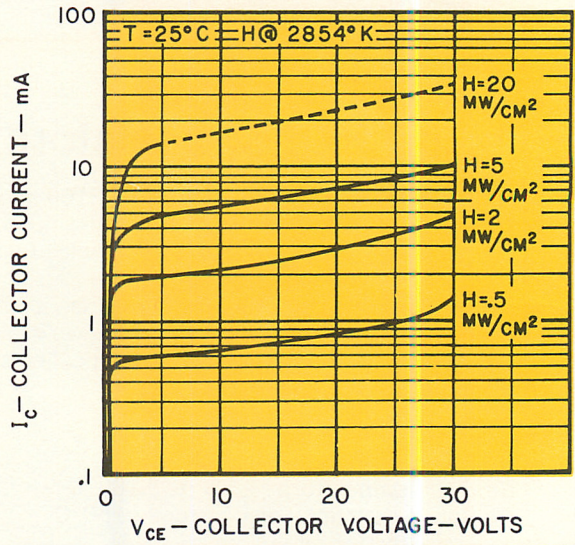
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Typical Electrical Characteristics

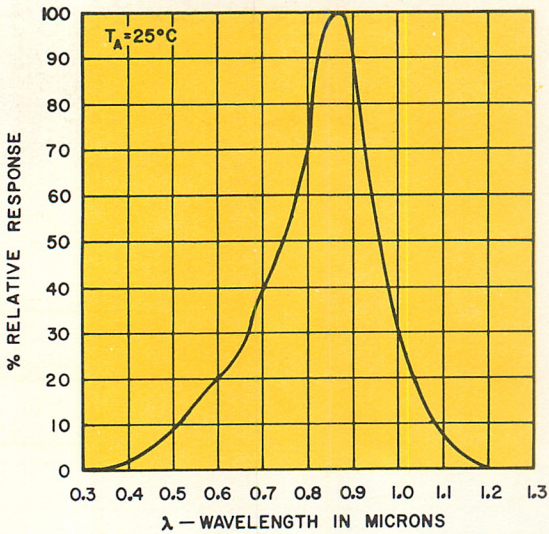
COLLECTOR CHARACTERISTICS CLT 3160



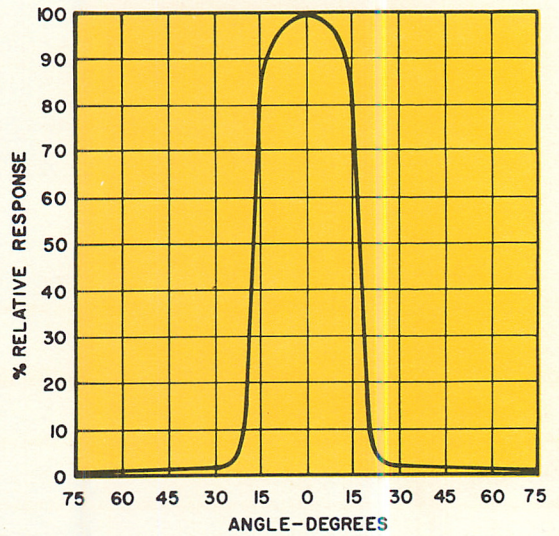
COLLECTOR CHARACTERISTICS CLT 3170



SPECTRAL RESPONSE



ANGULAR RESPONSE



LIGHT CURRENT vs. IRRADIATION

