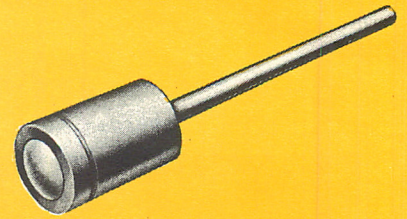


Product Data

CLT4020  
CLT4030



Silicon NPN Planar Epitaxial Phototransistors

**GENERAL DESCRIPTION**—The Clairex CLT 4020 and CLT 4030 are silicon, planar epitaxial phototransistors in a flat-window, miniature, coaxial, hermetic package. The 0.060" outside diameter enables high device density with modest mounting tolerances. The series is characterized by a wide acceptance angle, fast switching and narrow tolerance ranges of sensitivity. The flat window minimizes the need for critical sensor positioning in many applications.

**ABSOLUTE MAXIMUM RATINGS**

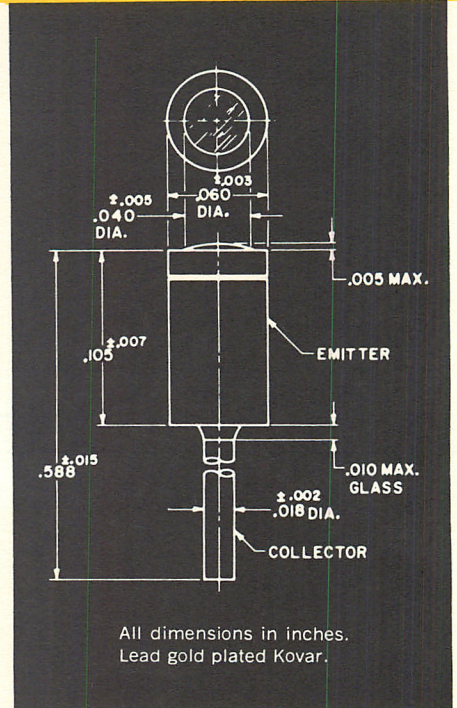
Maximum Temperatures  
 Storage Temperature -65°C to +180°C  
 Operating Junction Temperature +150°C

Maximum Power Dissipation  
 Total Dissipation  
 at 25°C Ambient Temperature  $P_T=50\text{mW}$  derate 0.5mW/°C  
 at 100°C Ambient Temperature  $P_T=12.5\text{mW}$

Maximum Voltages	CLT4020	CLT4030
$V_{CEO}$ 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	CLT4020		CLT4030		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	0.10		0.25		ma
$I_L (I_{CEO})$	Light Current	$V_{CE}=5\text{v}$ , $H=20\text{mW}/\text{cm}^2$ , Note 1	0.40	1.2	1.0	3.0	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		$\mu\text{sec}$
$t_f$	Light Current Fall Time (unsaturated)		1.5 Typical		1.5 Typical		$\mu\text{sec}$
$V_{CE (SAT)}$	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.



**CLAIREX ELECTRONICS**

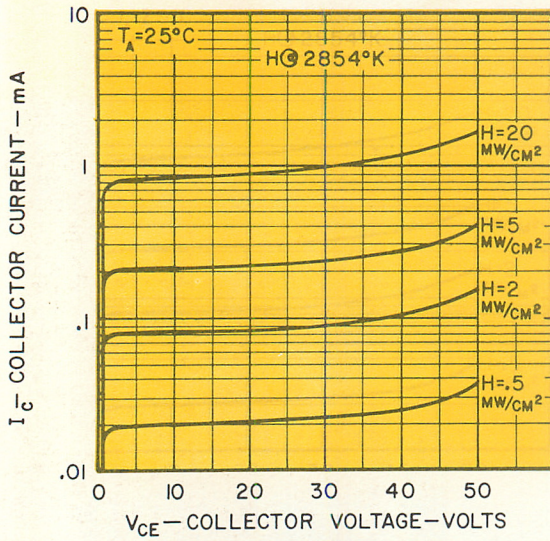
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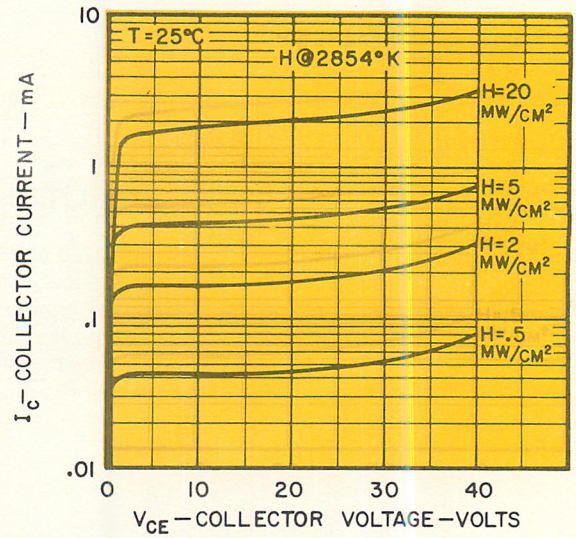


# Typical Electrical Characteristics

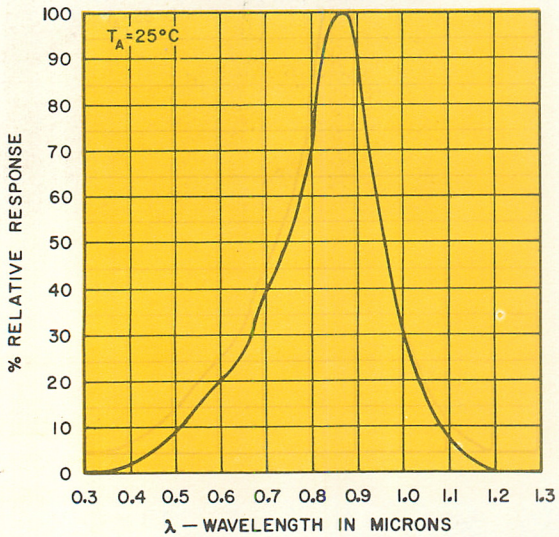
COLLECTOR CHARACTERISTICS CLT 4020



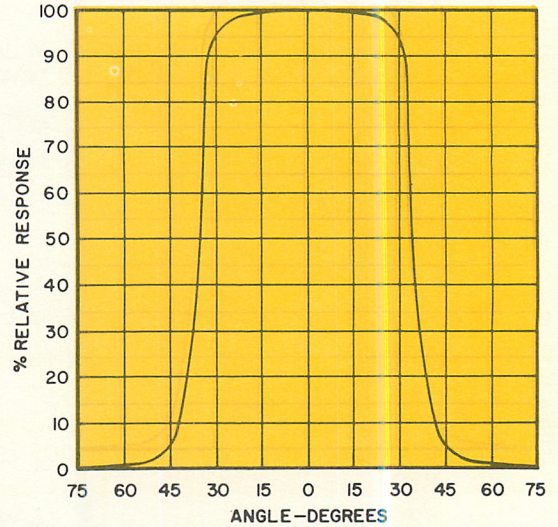
COLLECTOR CHARACTERISTICS CLT 4030



SPECTRAL RESPONSE



ANGULAR RESPONSE



LIGHT CURRENT vs. IRRADIATION

