

T-41-61

**CLT4140  
CLT4150  
CLT4160**

**Silicon NPN Planar  
Epitaxial Phototransistors**

**GENERAL DESCRIPTION** — The CLT4000 series are phototransistors molded in a clear epoxy package. Lead frame construction allows direct soldering into circuit board or socket mounting. All 3 types have guaranteed light sensitivities, low dark currents and high voltage ratings. This package design includes a molded lens over the transistor to provide controlled angular response. All units are spectrally compatible with the Clairex CLED400 I.R. Emitters.

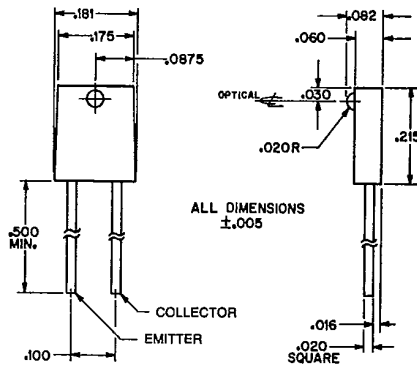
**ABSOLUTE MAXIMUM RATINGS**

**Maximum Temperatures**

Storage Temperature - 40° to + 100° C  
Operating Junction Temperature + 150° C

**Maximum Power Dissipation**

Total Dissipation  
at 25° C Ambient Temperature  $P_T = 75mW$   
derate 0.9mW/° C



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Maximum Voltages	CLT4140	CLT4150	CLT4160
$V_{CEO}$ Collector to Emitter Voltage	40 volts	40 volts	40 volts
$V_{ECO}$ Emitter to Collector Voltage	5 volts	5 volts	5 volts

Maximum Current: Note 3

$I_C$  Collector Current = 200ma max.

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

Symbol	Characteristics	Test Conditions	CLT4140		CLT4150		CLT4160		Unit
			Min.	Max.	Min.	Max.	Min.	Max.	
$I_L (I_{CEO})$	Light Current	$V_{CE}=5v, H=5mW/cm^2$ , Note 1	0.5		1.0	3.0	2.0		ma
$I_L (I_{CEO})$	Light Current	$V_{CE}=5v, H=20mW/cm^2$ , Note 1	5.0 Typical		8.0 Typical		12 Typical		ma
$I_D (I_{CEO})$	Dark Current	$V_{CE}=10$ volts, $H=0$		50		50		50	na
$BV_{CEO}$	Collector to Emitter Breakdown Voltage	$I_C=0.1$ ma	40		40		40		volts
$BV_{ECO}$	Emitter to Collector Breakdown Voltage	$I_{EC}=0.1$ ma	5.0		5.0		5.0		volts
$t_r$	Light Current Rise Time (unsaturated)	$R_L=100 \Omega$ $I_C=0.5$ ma $V_{CC}=5.0$ volts Note 2	3 Typical		3 Typical		3 Typical		$\mu$ sec
$t_f$	Light Current Fall Time (unsaturated)		3 Typical		3 Typical		3 Typical		$\mu$ sec
$V_{CE(SAT)}$	Collector to Emitter Saturation Voltage	$I_C=.25$ ma $H=20mW/cm^2$		.3		.3		.3	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  $\mu$ sec.

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

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### Typical Electrical Characteristics

