

CLR4180 CLR4185

Silicon NPN Planar Epitaxial Darlington Phototransistor

GENERAL DESCRIPTION — The CLR4180 and CLR4185 Darlington phototransistors are molded in a clear epoxy package. This package includes a molded lense over the transistor to provide controlled angular response for precise sensing. Guaranteed minimum light currents at low irradiance levels of .1mw/cm² and 1.0mw/cm² offer high sensitivities. The CLR4180 is spectrally compatible with the Clairex CLED400, I.R. Emitter.

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature — 40°C to + 100°C

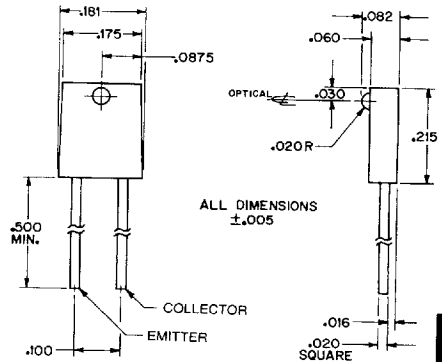
Operating Junction Temperature + 150°C

Maximum Power Dissipation

Total Dissipation

at 25°C Ambient Temperature P_T = 75mW

derate 0.9mW/°C



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Maximum Voltages

	CLR4180	CLR4185
V _{CEO} Collector to Emitter Voltage	40 volts	40 volts
V _{ECO} Emitter to Collector Voltage	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	CLR4180		CLR4185		Unit
			Min.	Max.	Min.	Max.	
I _L (I _{CEO})	Light Current	V _{CE} = 5v, H = .1mW/cm ² , Note 1	.1		.6		ma
I _L (I _{CEO})	Light Current	V _{CE} = 5v, H = 1.0mW/cm ² , Note 1	1.0		5.0		ma
I _D (I _{CEO})	Dark Current	V _{CE} = 10 volts, H = 0		200		200	na
BV _{CEO}	Collector to Emitter Breakdown Voltage	I _C = 0.1ma	40		40		volts
t _r	Light Current Rise Time (unsaturated)	R _L = 100 Ω I _C = 0.5ma V _{CC} = 5.0 volts Note 2	100 Typical		100 Typical		μsec
t _f	Light Current Fall Time (unsaturated)		150 Typical		150 Typical		μsec
V _{CE(SAT)}	Collector to Emitter Saturation Voltage	I _C = .25ma H = 20mW/cm ²		1.2		1.2	volts

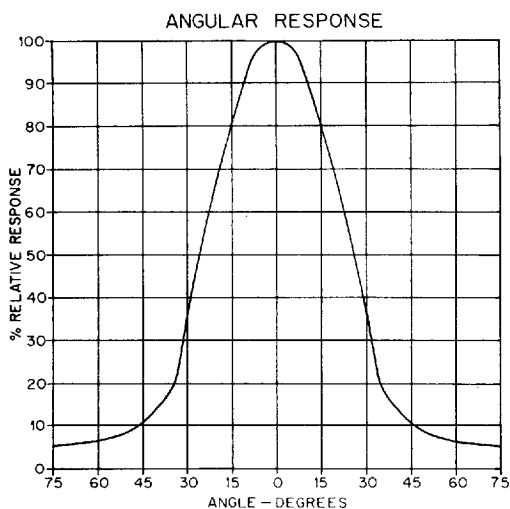
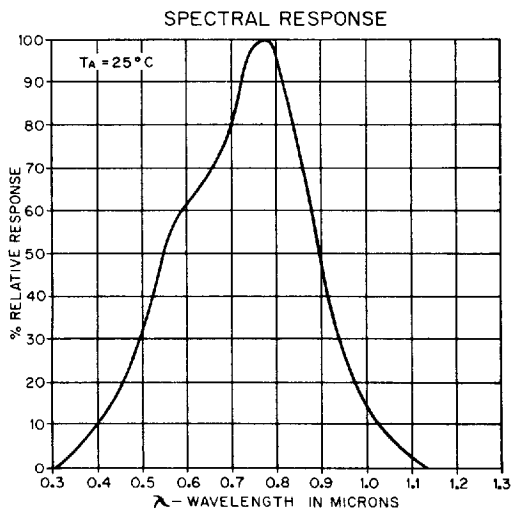
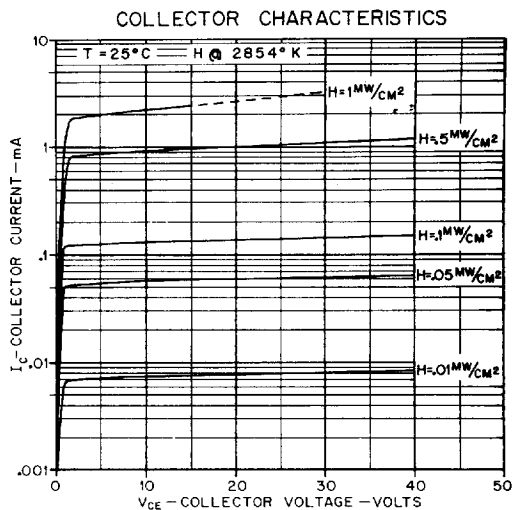
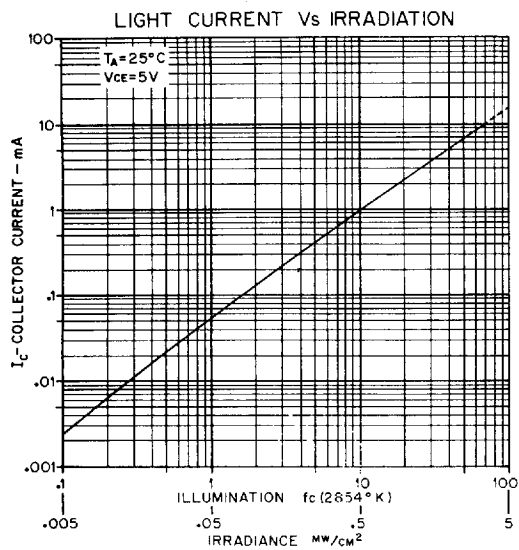
Note 1: The light source is a frosted tungsten incandescent lamp at 2854° K.

Note 2: The light source is a gallium arsenide LED pulsed with a rise and fall time of <0.3 μsec.

Note 3: Pulsed conditions: 300 μsec., 2% duty cycle.

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Typical Electrical Characteristics



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