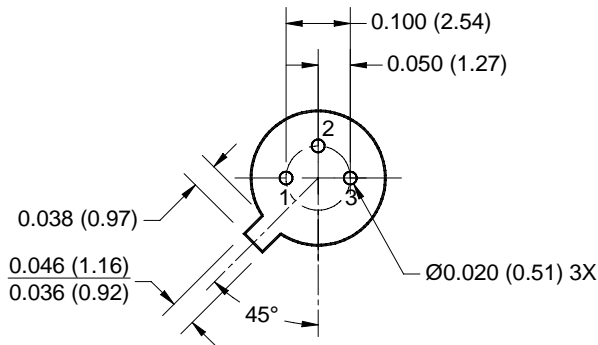
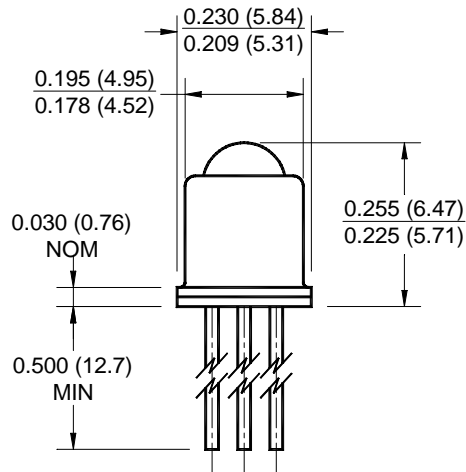
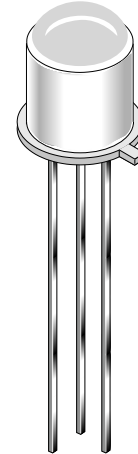


**PACKAGE DIMENSIONS**

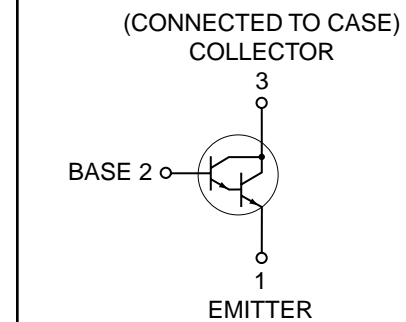


**NOTES:**

1. Dimensions for all drawings are in inches (mm).
2. Tolerance of  $\pm .010$  (.25) on all non-nominal dimensions unless otherwise specified.



**SCHEMATIC**



**DESCRIPTION**

The L14F1/L14F2 are silicon photodarlington mounted in a narrow angle, TO-18 package.

**FEATURES**

- Hermetically sealed package
- Narrow reception angle

**L14F1 L14F2**

**ABSOLUTE MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Rating	Unit
Operating Temperature	$T_{OPR}$	-65 to +125	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-65 to +150	$^\circ\text{C}$
Soldering Temperature (Iron) <sup>(3,4,5 and 6)</sup>	$T_{SOL-I}$	240 for 5 sec	$^\circ\text{C}$
Soldering Temperature (Flow) <sup>(3,4 and 6)</sup>	$T_{SOL-F}$	260 for 10 sec	$^\circ\text{C}$
Collector to Emitter Breakdown Voltage	$V_{CEO}$	25	V
Collector to Base Breakdown Voltage	$V_{CBO}$	25	V
Emitter to Base Breakdown Voltage	$V_{EBO}$	12	V
Power Dissipation ( $T_A = 25^\circ\text{C}$ ) <sup>(1)</sup>	$P_D$	300	mW
Power Dissipation ( $T_C = 25^\circ\text{C}$ ) <sup>(2)</sup>	$P_D$	600	mW

**NOTE:**

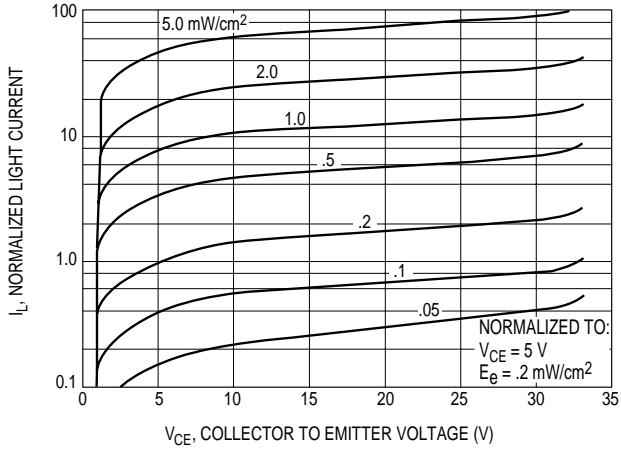
1. Derate power dissipation linearly 3.00 mW/ $^\circ\text{C}$  above 25 $^\circ\text{C}$  ambient.
2. Derate power dissipation linearly 6.00 mW/ $^\circ\text{C}$  above 25 $^\circ\text{C}$  case.
3. RMA flux is recommended.
4. Methanol or isopropyl alcohols are recommended as cleaning agents.
5. Soldering iron tip 1/16" (1.6mm) minimum from housing.
6. As long as leads are not under any stress or spring tension.
7. Light source is a GaAs LED emitting light at a peak wavelength of 940 nm.
8. Figure 1 and figure 2 use light source of tungsten lamp at 2870 $^\circ\text{K}$  color temperature. A GaAs source of 0.05 mW/cm<sup>2</sup> is approximately equivalent to a tungsten source, at 2870 $^\circ\text{K}$ , of 0.2 mW/cm<sup>2</sup>.

**ELECTRICAL / OPTICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$ ) (All measurements made under pulse conditions)

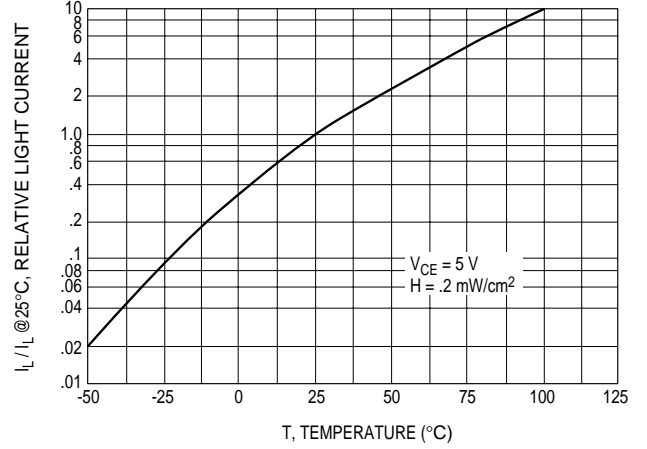
PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Collector-Emitter Breakdown	$I_C = 10\text{ mA}, E_e = 0$	$BV_{CEO}$	25		—	V
Emitter-Base Breakdown	$I_E = 100\ \mu\text{A}, E_e = 0$	$BV_{EBO}$	12		—	V
Collector-Base Breakdown	$I_C = 100\ \mu\text{A}, E_e = 0$	$BV_{CBO}$	25		—	V
Collector-Emitter Leakage	$V_{CE} = 12\text{ V}, E_e = 0$	$I_{CEO}$	—		100	nA
Reception Angle at 1/2 Sensitivity		$\theta$		$\pm 8$		Degrees
On-State Collector Current L14F1	$E_e = .125\text{ mW/cm}^2, V_{CE} = 5\text{ V}^{(7)}$	$I_{C(ON)}$	7.5		—	mA
On-State Collector Current L14F2	$E_e = .125\text{ mW/cm}^2, V_{CE} = 5\text{ V}^{(7)}$	$I_{C(ON)}$	2.5			mA
Rise Time	$I_C = 10\text{ mA}, V_{CC} = 5\text{ V}, R_L = 100\ \Omega$	$t_r$		300		$\mu\text{s}$
Fall Time	$I_C = 10\text{ mA}, V_{CC} = 5\text{ V}, R_L = 100\ \Omega$	$t_f$		250		$\mu\text{s}$

**L14F1 L14F2**

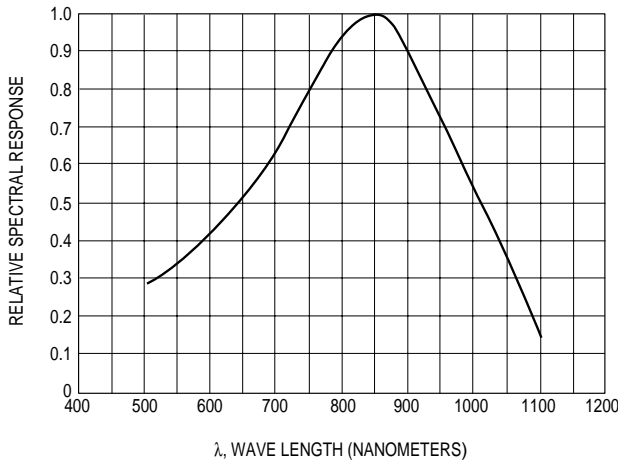
**Figure 1. Light Current vs. Collector to Emitter Voltage**



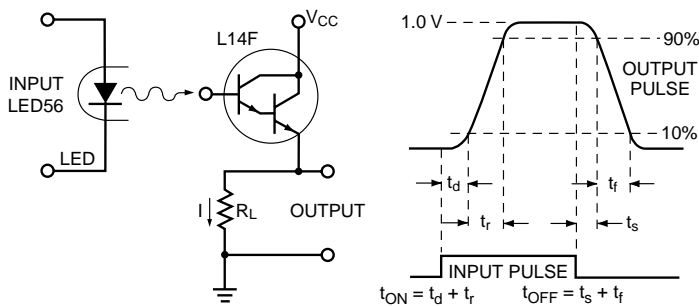
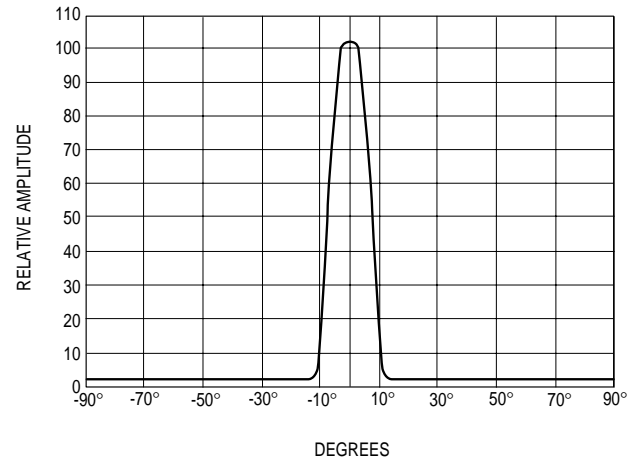
**Figure 2. Relative Light Current vs. Ambient Temperature**



**Figure 3. Spectral Response**

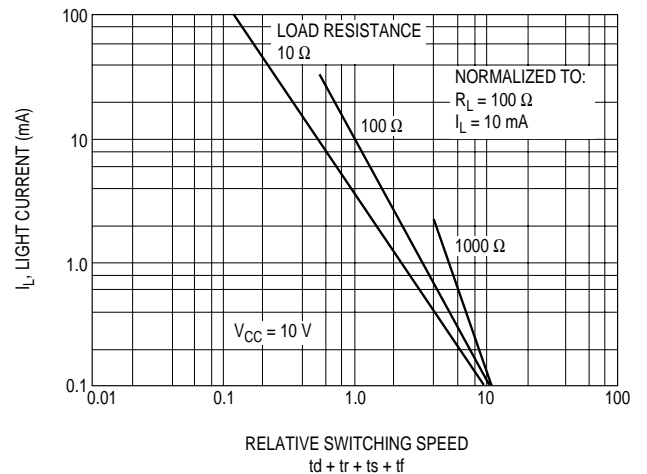


**Figure 4. Angular Response**



**Figure 5. Test Circuit and Voltage Waveforms**

**Figure 6. Light Current vs. Relative Switching Speed**



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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.