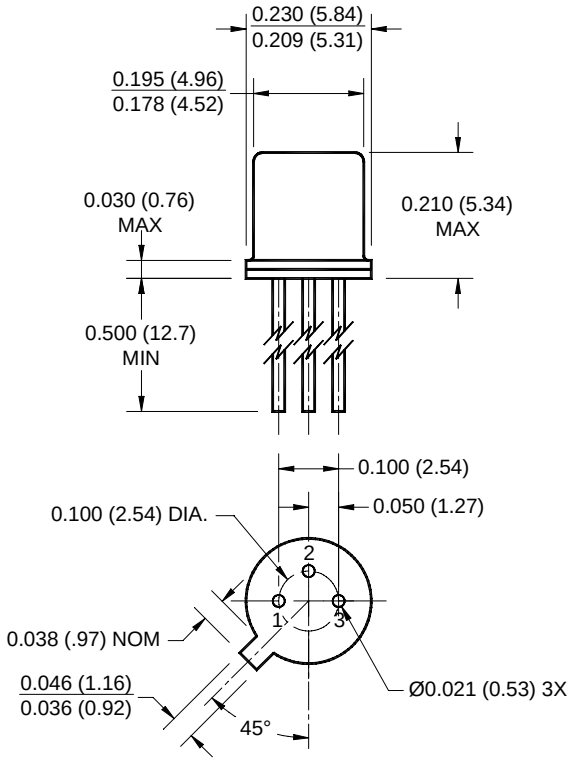
HERMETIC SILICON PHOTOTRANSISTOR

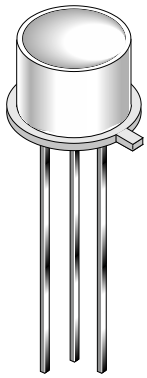
L14N1 L14N2

PACKAGE DIMENSIONS

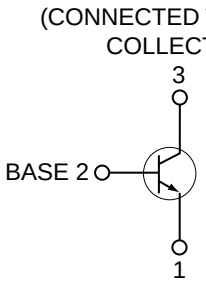


NOTES:

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



SCHEMATIC



DESCRIPTION

The L14N1/L14N2 are silicon phototransistors mounted in a wide angle, TO-18 package.

FEATURES

- Hermetically sealed package
- Wide reception angle
- Device can be used as a photodiode by using the collector and base leads.

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ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Operating Temperature	T_{OPR}	-65 to +125	°C
Storage Temperature	T_{STG}	-65 to +150	°C
Soldering Temperature (Iron)(3,4,5 and 6)	T_{SOL-I}	240 for 5 sec	°C
Soldering Temperature (Flow)(3,4 and 6)	T_{SOL-F}	260 for 10 sec	°C
Collector to Emitter Breakdown Voltage	V_{CEO}	30	V
Collector to Base Breakdown Voltage	V_{CBO}	40	V
Emitter to Base Breakdwon Voltage	V_{EBO}	5	V
Power Dissipation (T_A = 25°C)(1)	P_D	300	mW
Power Dissipation (T_C = 25°C)(2)	P_D	600	mW

NOTE:
1. Derate power dissipation linearly 3.00 mW/°C above 25°C ambient.
2. Derate power dissipation linearly 6.00 mW/°C above 25°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°K color temperature. A GaAs source of 3.0 mW/cm^2 is approximately equivalent to a tungsten source, at 2870°K, of 10 mW/cm^2.

ELECTRICAL / OPTICAL CHARACTERISTICS (T_A =25°C) (All measurements made under pulse conditions)

PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Collector-Emitter Breakdown	I_C = 10 mA, Ee = 0	BV_{CEO}	30		—	V
Emitter-Base Breakdown	I_E = 100 µA, Ee = 0	BV_{EBO}	5		—	V
Collector-Base Breakdown	I_C = 100 µA, Ee = 0	BV_{CBO}	40		—	V
Collector-Emitter Leakage	V_{CE} = 10 V, Ee = 0	I_{CEO}	—		100	nA
Collector-Base leakage	V_{CB} = 25 V, Ee = 0	I_{CBO}	—		25	nA
Reception Angle at 1/2 Sensitivity		θ		±40		Degrees
On-State Collector Current L14N1	Ee = 0.5 mW/cm^2, V_{CE} = 5 V(7,8)	$I_{C(ON)}$	1.0		—	mA
On-State Collector Current L14N2	Ee = 0.5 mW/cm^2, V_{CE} = 5 V(7,8)	$I_{C(ON)}$	2.0			mA
On-State Photodiode Current	Ee = 1.5 mW/cm^2, V_{CB} = 5 V(7,8)	$I_{CB(ON)}$		5.0		µA
Rise Time	I_C = 10 mA, V_{CC} = 5 V, R_L =100 Ω	t_r		14		µs
Fall Time	I_C = 10 mA, V_{CC} = 5 V, R_L =100 Ω	t_f		16		µs
Saturation Voltage L14N1	I_C = 0.8 mA, Ee = 3.0 mW/cm^2(7,8)	$V_{CE(SAT)}$	—		0.40	V
Saturation Voltage L14N2	I_C = 1.6 mA, Ee = 3.0 mW/cm^2(7,8)	$V_{CE(SAT)}$	—		0.40	V

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Figure 1. Light Current vs. Collector to Emitter Voltage

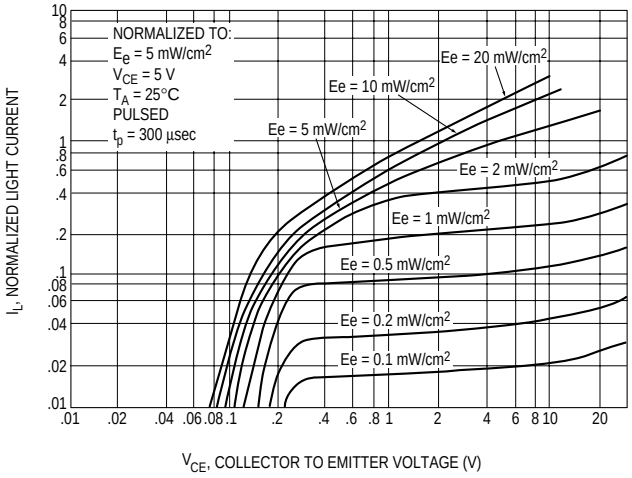


Figure 2. Normalized Light Current vs. Radiation

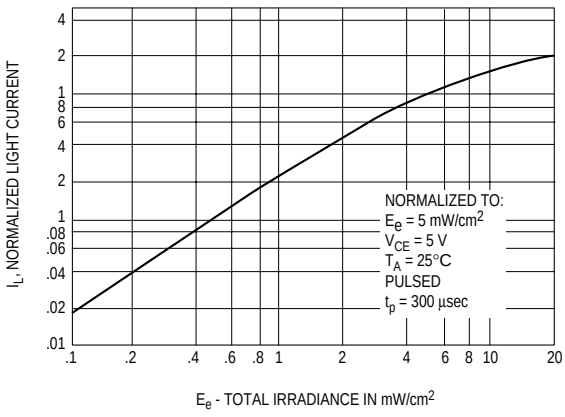


Figure 3. Dark Current vs. Temperature

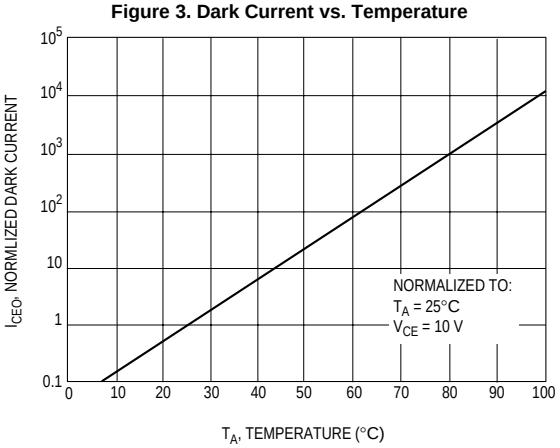


Figure 4. Light Current vs. Temperature

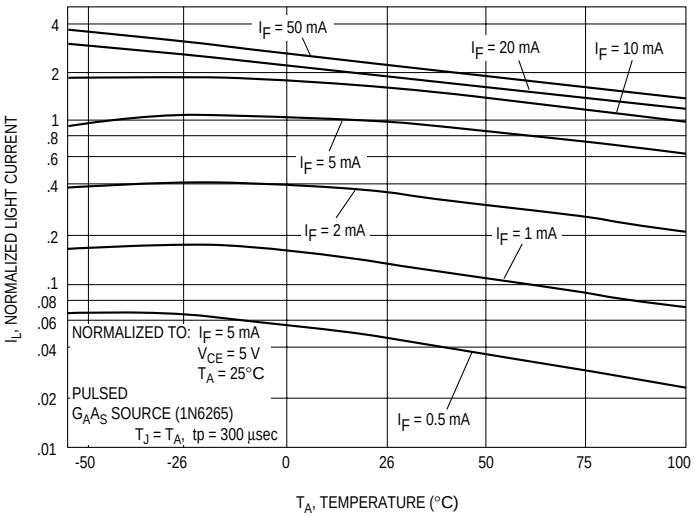


Figure 5. Angular and Spectral Response

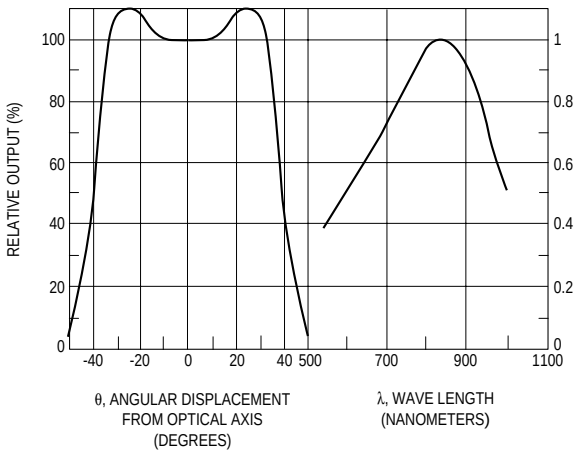
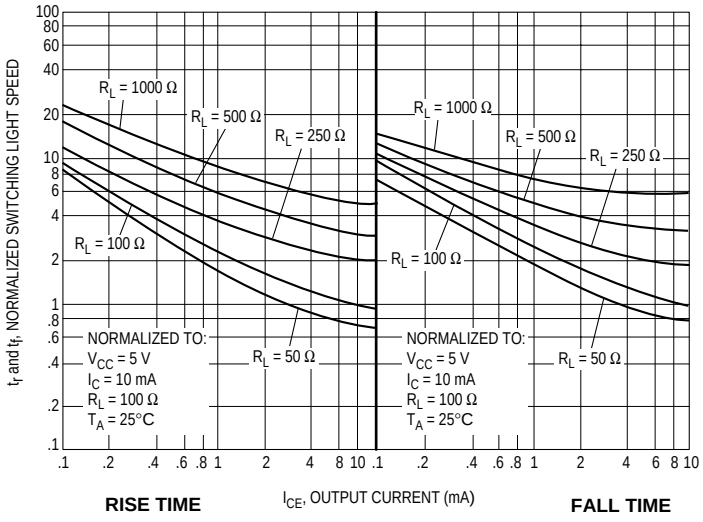


Figure 6. Switching Speed vs. Bias



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