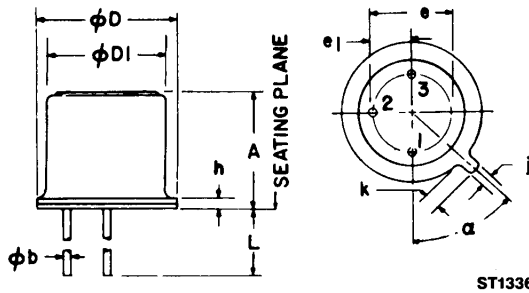


**PACKAGE DIMENSIONS**



**DESCRIPTION**

The L14N series is a silicon phototransistor mounted in a wide angle, TO-18 package.

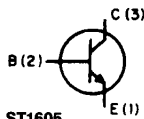
**FEATURES**

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

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	—	.210	—	5.34	
@b	.016	.021	.406	.534	
@D	.209	.230	5.30	5.85	
@D <sub>1</sub>	.178	.195	4.52	4.96	
e	.100 NOM		2.54 NOM		2
e <sub>1</sub>	0.50 NOM		1.27 NOM		2
h	—	.030	—	.76	
j	.036	.046	.91	1.17	
k	.028	.048	.71	1.22	1
L	.500	—	12.7	—	
α	45°	45°	45°	45°	3

**PACKAGE OUTLINE**

(COLLECTOR  
CONNECTED  
TO CASE)



NOTES:

1. MEASURED FROM MAXIMUM DIAMETER OF DEVICE.
2. LEADS HAVING MAXIMUM DIAMETER .021" (.533mm) MEASURED IN GAUGING PLANE .054" + .001" - .000 (137 + .025 - .000mm) BELOW THE REFERENCE PLANE OF THE DEVICE SHALL BE WITHIN .007" (.778mm) THEIR TRUE POSITION RELATIVE TO MAXIMUM WIDTH TAB.
3. FROM CENTERLINE TAB.



## HERMETIC SILICON PHOTOTRANSISTOR

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C Unless Otherwise Specified)

Storage Temperature	-65°C to +150°C
Operating Temperature	-65°C to +125°C
Soldering:	
Lead Temperature (Iron)	240°C for 5 sec. <sup>(3,4,5,6)</sup>
Lead Temperature (Flow)	260°C for 10 sec. <sup>(3,4,6)</sup>
Collector-Emitter Breakdown Voltage	30 Volts
Collector-Base Breakdown Voltage	40 Volts
Emitter-Base Breakdown Voltage	5 Volts
Power Dissipation (T <sub>A</sub> = 25°C)	300 mW <sup>(1)</sup>
Power Dissipation (T <sub>C</sub> = 25°C)	600 mW <sup>(2)</sup>

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C Unless Otherwise Specified) (All measurements made under pulse conditions.)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Collector-Emitter Breakdown	BV <sub>CEO</sub>	30	—	—	V	I <sub>C</sub> = 10 mA, E <sub>e</sub> = 0
Emitter-Base Breakdown	BV <sub>EBO</sub>	5	—	—	V	I <sub>E</sub> = 100 μA, E <sub>e</sub> = 0
Collector-Base Breakdown	BV <sub>CBO</sub>	40	—	—	V	I <sub>C</sub> = 100 μA, E <sub>e</sub> = 0
Collector-Emitter Leakage	I <sub>CEO</sub>	—	—	100	nA	V <sub>CE</sub> = 10 V, E <sub>e</sub> = 0
Collector-Base Leakage	I <sub>CBO</sub>	—	—	25	nA	V <sub>CB</sub> = 25 V, E <sub>e</sub> = 0
Reception Angle at ½ Sensitivity	θ	—	±40	—	Degrees	
On-State Collector Current L14N1	I <sub>C(ON)</sub>	3.0	—	—	mA	E <sub>e</sub> = 1.5 mW/cm <sup>2</sup> , V <sub>CE</sub> = 5 V <sup>(7,8)</sup>
On-State Collector Current L14N2	I <sub>C(ON)</sub>	6.0	—	—	mA	E <sub>e</sub> = 1.5 mW/cm <sup>2</sup> , V <sub>CE</sub> = 5 V <sup>(7,8)</sup>
On-State Photodiode Current	I <sub>CB(ON)</sub>	—	5.0	—	μA	E <sub>e</sub> = 1.5 mW/cm <sup>2</sup> , V <sub>CB</sub> = 5 V
Rise Time	t <sub>r</sub>	—	14	—	μS	I <sub>C</sub> = 10 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100Ω
Fall Time	t <sub>f</sub>	—	16	—	μS	I <sub>C</sub> = 10 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100Ω
Saturation Voltage L14N1	V <sub>CE(SAT)</sub>	—	—	0.40	V	I <sub>C</sub> = 0.8 mA, E <sub>e</sub> = 3.0 mW/cm <sup>2(7,8)</sup>
Saturation Voltage L14N2	V <sub>CE(SAT)</sub>	—	—	0.40	V	I <sub>C</sub> = 1.6 mA, E <sub>e</sub> = 3.0 mW/cm <sup>2(7,8)</sup>

### NOTES

1. Derate power dissipation linearly 3.00mW/°C above 25°C ambient.
2. Derate power dissipation linearly 6.00mW/°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" (1.6 mm) 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<sup>2</sup> is approximately equivalent to a tungsten source, at 2870°K, of 10 mW/cm<sup>2</sup>.

**TYPICAL CHARACTERISTICS**

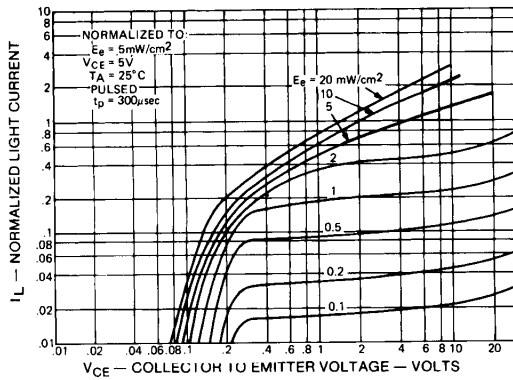


Fig. 1. Light Current vs. Collector to Emitter Voltage ST1092

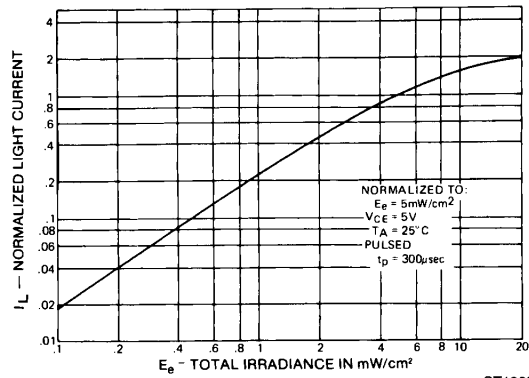


Fig. 2. Light Current vs. Radiation ST1097

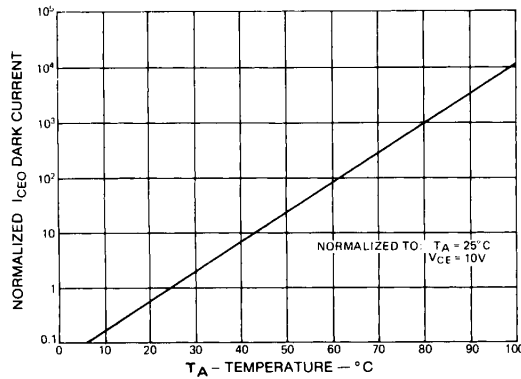


Fig. 3. Dark Current vs. Temperature ST1093

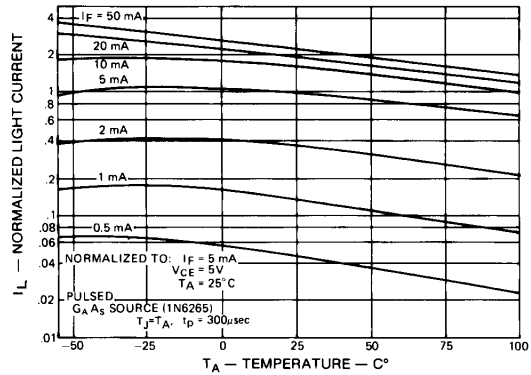


Fig. 4. Light Current vs. Temperature ST1096

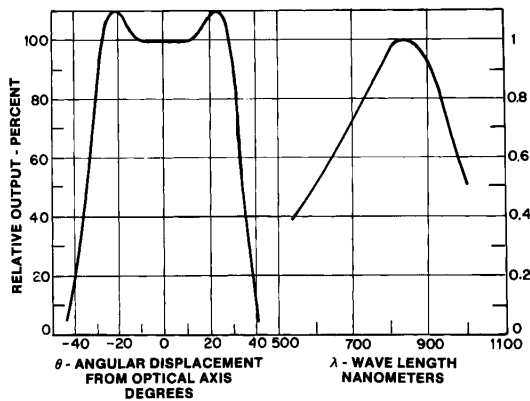


Fig. 5. Angular and Spectral Response ST1094

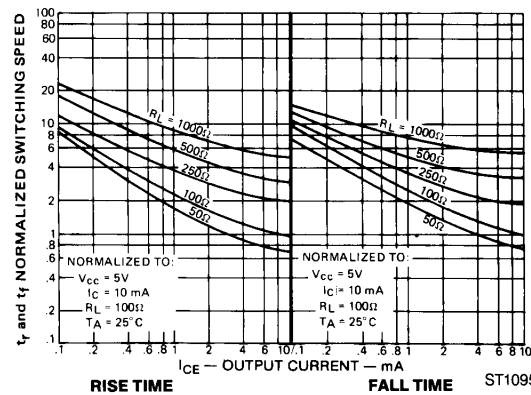


Fig. 6. Switching Speed vs. Bias ST1095