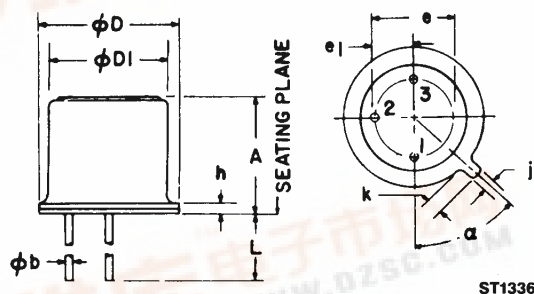




HERMETIC SILICON PHOTOTRANSISTOR

L14N1/2

PACKAGE DIMENSIONS



ST1336

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	—	.210	—	5.34	
φb	.016	.021	.406	.534	
φD	.209	.230	5.30	5.85	
φDI	.178	.195	4.52	4.96	
e	.100 NOM		2.54 NOM		2
e ₁	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

DESCRIPTION

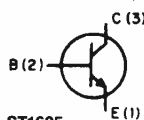
The L14N series is a silicon phototransistor mounted in a wide angle, TO-18 package.

FEATURES

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

PACKAGE OUTLINE

(COLLECTOR
CONNECTED
TO CASE)



ST1605

NOTES:

1. MEASURED FROM MAXIMUM DIAMETER OF DEVICE.
2. LEADS HAVING MAXIMUM DIAMETER .021" (.533mm) MEASURED IN GAUGING PLANE .054" + .001" - .000 (1.37 + .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 ($T_A = 25^\circ\text{C}$ Unless Otherwise Specified)

Storage Temperature	-65°C to $+150^\circ\text{C}$
Operating Temperature	-65°C to $+125^\circ\text{C}$
Soldering:	
Lead Temperature (Iron)	240°C for 5 sec. ^(3,4,5,6)
Lead Temperature (Flow)	260°C for 10 sec. ^(3,4,6)
Collector-Emitter Breakdown Voltage	30 Volts
Collector-Base Breakdown Voltage	40 Volts
Emitter-Base Breakdown Voltage	5 Volts
Power Dissipation ($T_A = 25^\circ\text{C}$)	300 mW ⁽¹⁾
Power Dissipation ($T_C = 25^\circ\text{C}$)	600 mW ⁽²⁾

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless Otherwise Specified)

(All measurements made under pulse conditions.)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Collector-Emitter Breakdown	BV_{CEO}	30	—	—	V	$I_C = 10\text{ mA}$, $E_e = 0$
Emitter-Base Breakdown	BV_{EBO}	5	—	—	V	$I_E = 100\text{ }\mu\text{A}$, $E_e = 0$
Collector-Base Breakdown	BV_{CBO}	40	—	—	V	$I_C = 100\text{ }\mu\text{A}$, $E_e = 0$
Collector-Emitter Leakage	I_{CEO}	—	—	100	nA	$V_{CE} = 10\text{ V}$, $E_e = 0$
Collector-Base Leakage	I_{CBO}	—	—	25	nA	$V_{CB} = 25\text{ V}$, $E_e = 0$
Reception Angle at $\frac{1}{2}$ Sensitivity	θ	—	± 40	—	Degrees	
On-State Collector Current L14N1	$I_{C(ON)}$	3.0	—	—	mA	$E_e = 1.5\text{ mW/cm}^2$, $V_{CE} = 5\text{ V}$ ^(7,8)
On-State Collector Current L14N2	$I_{C(ON)}$	6.0	—	—	mA	$E_e = 1.5\text{ mW/cm}^2$, $V_{CE} = 5\text{ V}$ ^(7,8)
On-State Photodiode Current	$I_{CB(ON)}$	—	5.0	—	μA	$E_e = 1.5\text{ mW/cm}^2$, $V_{CB} = 5\text{ V}$
Rise Time	t_r	—	14	—	μS	$I_C = 10\text{ mA}$, $V_{CC} = 5\text{ V}$, $R_L = 100\Omega$
Fall Time	t_f	—	16	—	μS	$I_C = 10\text{ mA}$, $V_{CC} = 5\text{ V}$, $R_L = 100\Omega$
Saturation Voltage L14N1	$V_{CE(SAT)}$	—	—	0.40	V	$I_C = 0.8\text{ mA}$, $E_e = 3.0\text{ mW/cm}^2$ ^(7,8)
Saturation Voltage L14N2	$V_{CE(SAT)}$	—	—	0.40	V	$I_C = 1.6\text{ mA}$, $E_e = 3.0\text{ mW/cm}^2$ ^(7,8)

NOTES

- Derate power dissipation linearly $3.00\text{ mW}/^\circ\text{C}$ above 25°C ambient.
- Derate power dissipation linearly $6.00\text{ mW}/^\circ\text{C}$ above 25°C case.
- RMA flux is recommended.
- Methanol or Isopropyl alcohols are recommended as cleaning agents.
- Soldering iron tip $\frac{1}{16}$ " (1.6 mm) minimum from housing.
- As long as leads are not under any stress or spring tension.
- Light source is a GaAs LED emitting light at a peak wavelength of 940 nm.
- 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 .

TYPICAL CHARACTERISTICS

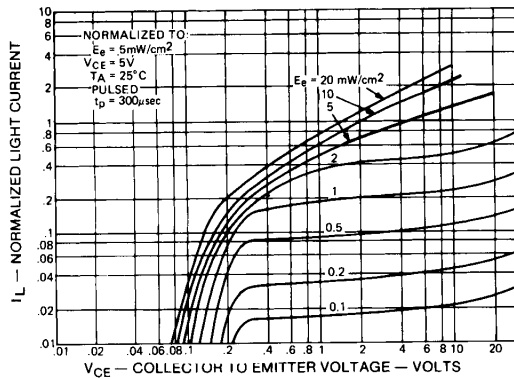


Fig. 1. Light Current vs. Collector to Emitter Voltage ST1092

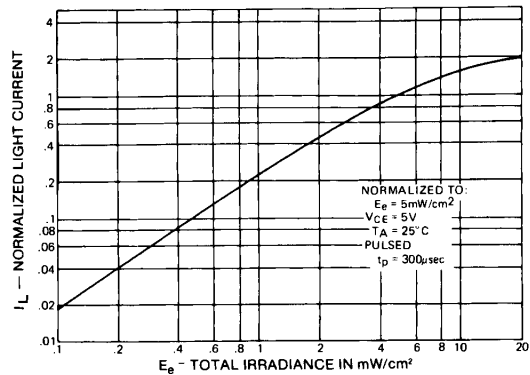


Fig. 2. Light Current vs. Radiation ST1097

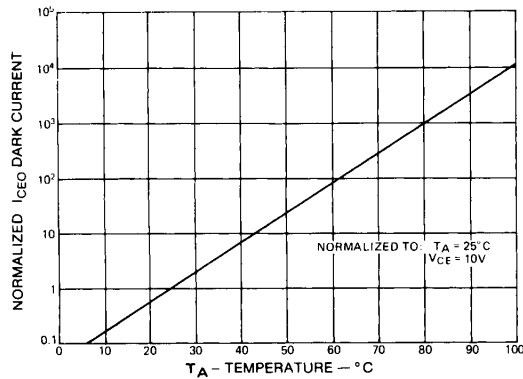


Fig. 3. Dark Current vs. Temperature ST1093

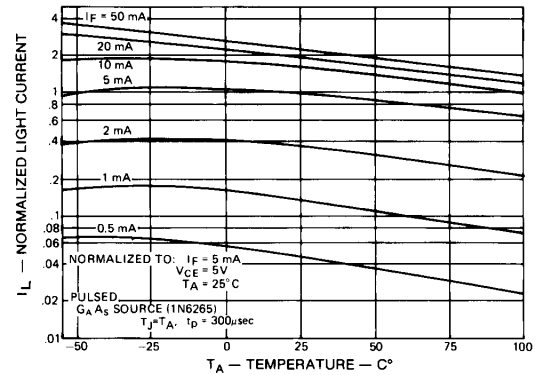


Fig. 4. Light Current vs. Temperature ST1096

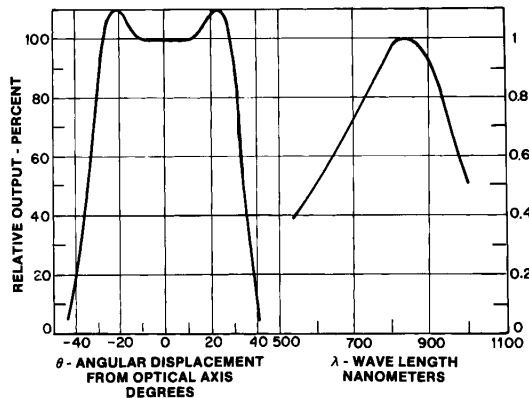


Fig. 5. Angular and Spectral Response

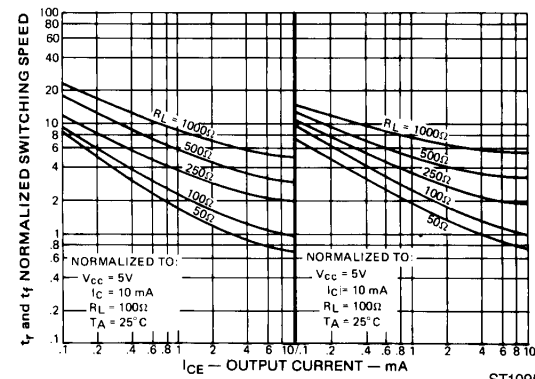


Fig. 6. Switching Speed vs. Bias