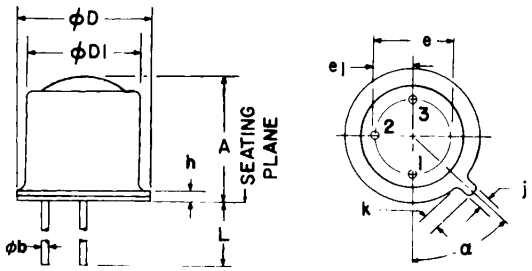
OPTOELECTRONICS

HERMETIC SILICON PHOTOTRANSISTOR

L14P1/2

PACKAGE DIMENSIONS



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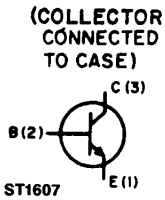
SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	.225	.255	5.71	6.47	
Ⓜb	.016	.021	.407	533	
ⓂD	.209	.230	5.31	5.84	
ⓂD$_1$	.178	.195	4.52	4.96	
e	100 NOM		2.54 NOM		2
e$_1$	.050 NOM		1.27 NOM		2
h	—	.030	—	.76	
j	.036	.046	.92	1.16	
k	.028	.048	.71	1.22	1
L	.500	—	12.7	—	
α	45°	45°	45°	45°	3

PACKAGE OUTLINE



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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.

DESCRIPTION

The L14P series is a silicon phototransister mounted in a narrow angle, TO-18 package.

FEATURES

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

QT OPTOELECTRONICS

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ABSOLUTE MAXIMUM RATINGS (T_A = 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.[3,4,5,6]
Lead Temperature (Flow) ..... 260°C for 10 sec.[2,3,6]
Collector-Emitter Breakdown Voltage ..... 30 Volts
Collector-Base Breakdown Voltage ..... 40 Volts
Emitter-Base Breakdown Voltage ..... 5 Volts
Power Dissipation (T_A = 25°C) ..... 300 mW[1]
Power Dissipation (T_C = 25°C) ..... 600 mW[2]

ELECTRICAL CHARACTERISTICS (T_A = 25°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 mA, Ee = 0
Emitter-Base Breakdown	BV_{EBO}	5.0		—	V	I_E = 100 μA, Ee = 0
Collector-Base Breakdown	BV_{CBO}	40		—	V	I_C = 100 μA, Ee = 0
Collector-Emitter Leakage	I_{CEO}	—		100	nA	V_{CE} = 10 V, Ee = 0
Collector-Base Leakage	I_{CBO}	—		25	nA	V_{CB} = 25 V, Ee = 0
Reception Angle at ½ Sensitivity	θ		±12		Degrees	
On-State Collector Current L14P1	$I_{C(ON)}$	4.0		—	mA	Ee = 0.3 mW/cm², V_{CE} = 5 V[7,8]
On-State Collector Current L14P2	$I_{C(ON)}$	8.0		—	mA	Ee = 0.3 mW/cm², V_{CE} = 5 V[7,8]
On-State Photodiode Current	$I_{CB(ON)}$		6.0		μA	Ee = 0.3 mW/cm², V_{CB} = 5 V
Rise Time	t_r		10		μS	I_C = 10 mA, V_{CC} = 5 V, R_L = 100Ω
Fall Time	t_f		12		μS	I_C = 10 mA, V_{CC} = 5 V, R_L = 100Ω
Saturation Voltage L14P1	$V_{CE(SAT)}$	—		0.40	V	I_C = 0.8 mA, Ee = .6 mW/cm²[7,8]
Saturation Voltage L14P2	$V_{CE(SAT)}$	—		0.40	V	I_C = 1.6 mA, Ee = .6 mW/cm²[7,8]

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/cm² is approximately equivalent to a tungsten source, at 2870°K, of 10 mW/cm².*

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TYPICAL CHARACTERISTICS

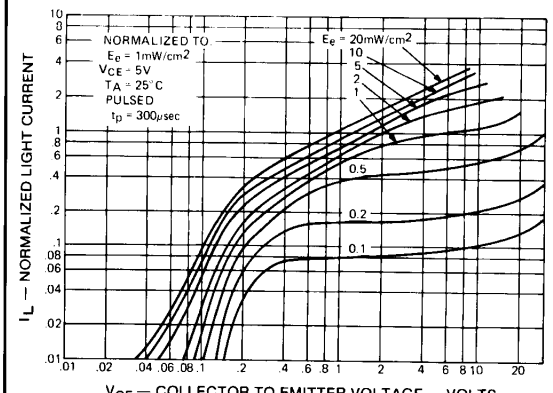

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Fig. 1. Light Current vs. Collector to Emitter Voltage

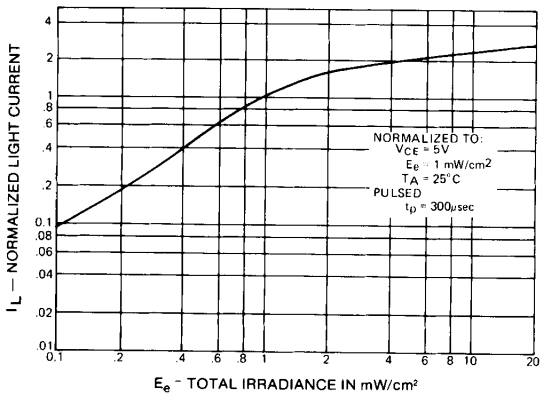

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Fig. 2. Light Current vs. Radiation

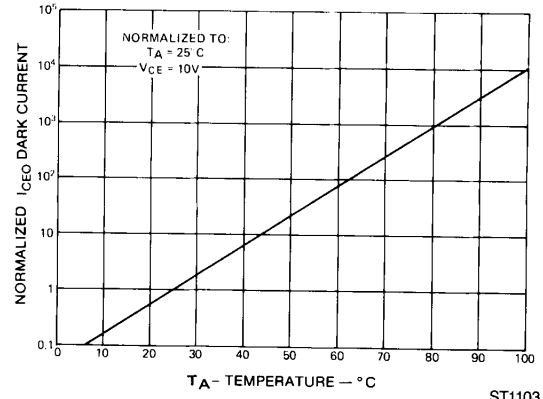

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Fig. 3. Dark Current vs. Temperature

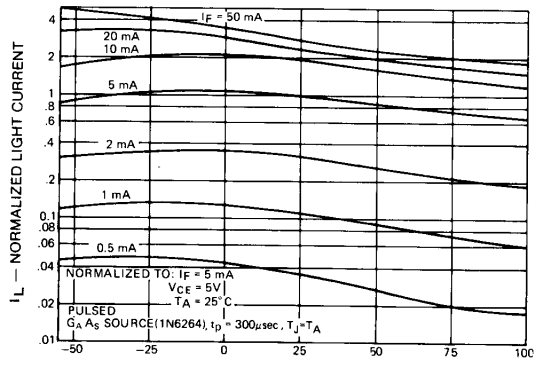

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Fig. 4. Light Current vs. Temperature

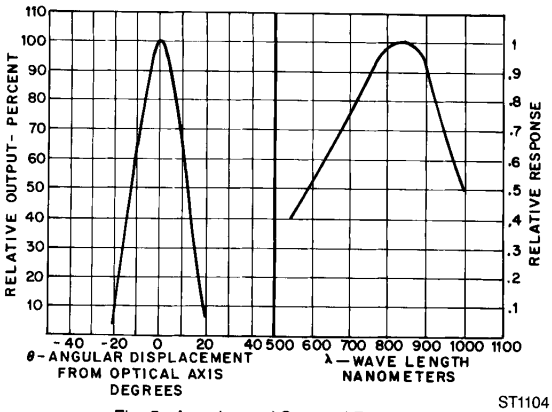

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Fig. 5. Angular and Spectral Response

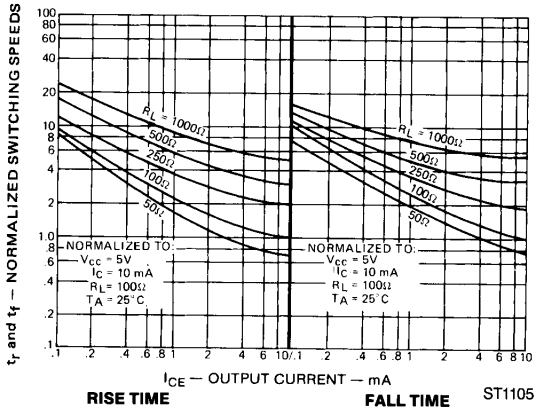

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Fig. 6. Switching Speed vs. Bias