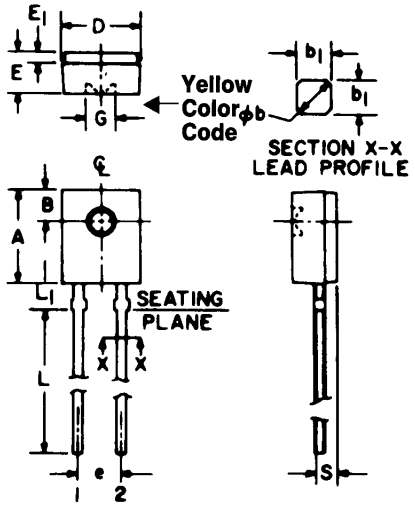
FAIRCHILD
SEMICONDUCTOR™

PLASTIC SILICON PHOTODARLINGTON

L14R1

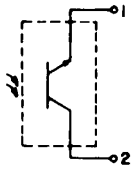
PACKAGE DIMENSIONS



ST1335

SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	5.59	5.80	.220	.228	
B	1.78	NOM.	.070	NOM.	2
Ⓜb	.60	.75	.024	.030	1
b_1	.51	NOM.	.020	NOM.	1
D	4.45	4.70	.175	.185	
E	2.41	2.67	.095	.105	
E_1	.58	.69	.023	.027	
e	2.41	2.67	.095	.105	3
G	1.98	NOM.	.078	NOM.	
L	12.7	—	.500	—	
L_1	1.40	1.65	.055	.065	
S	.83	.94	.033	.037	3

PACKAGE OUTLINE



ST1608

NOTES:
1. TWO LEADS. LEAD CROSS SECTION DIMENSIONS UNCONTROLLED WITHIN 1.27mm (.050") OF SEATING PLANE.
2. CENTERLINE OF ACTIVE ELEMENT LOCATED WITHIN .25mm (.010") OF TRUE POSITION.
3. AS MEASURED AT THE SEATING PLANE.
4. INCH DIMENSIONS DERIVED FROM MILLIMETERS.

DESCRIPTION

The L14R1 is a silicon photodarlington encapsulated in a clear, wide angle, sidelooker package.

FEATURES

- Good optical to mechanical alignment
- Mechanically and wavelength matched to the F5F LED
- Plastic package with a color stripe for easy recognition from LED

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ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless Otherwise Specified)

Storage Temperature	−55°C to +100°C
Operating Temperature	−55°C to +100°C
Soldering:	
Lead Temperature (Iron)	240°C for 5 sec.[2,3,4,5]
Lead Temperature (Flow)	260°C for 10 sec.[2,3,5]
Collector-Emitter Breakdown Voltage	30 Volts
Emitter-Collector Breakdown Voltage	7 Volts
Power Dissipation	150 mW[1]

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-Collector Breakdown	BV_{ECO}	7.0		—	V	I_E = 100 μA, Ee = 0
Collector-Emitter Leakage	I_{CEO}	—		100	nA	V_{CE} = 25, Ee = 0
Reception Angle at ½ Sensitivity	θ		±35		Degrees	
On-State Collector Current	$I_{C(ON)}$	5.0		—	mA	Ee = 0.3 mW/cm², V_{CE} = 1.5 V[6,7]
Turn-On Time	t_{on}		45		μS	I_F = 10 mA, V_{CC} = 5 V, R_L = 750Ω
Turn-Off Time	t_{off}		250		μS	I_F = 10 mA, V_{CC} = 5 V, R_L = 750Ω
Saturation Voltage	$V_{CE(SAT)}$	—		1.2	V	I_C = 20 mA, Ee = .60 mW/cm²[6,7]

NOTES

1. *Derate power dissipation linearly 2.00mW/°C above 25°C ambient.*
2. *RMA flux is recommended.*
3. *Methanol or Isopropyl alcohols are recommended as cleaning agents.*
4. *Soldering iron tip 1/16" (1.6 mm) minimum from housing.*
5. *As long as leads are not under any stress or spring tension.*
6. *Light source is a GaAs LED emitting light at a peak wavelength of 940 nm.*
7. *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

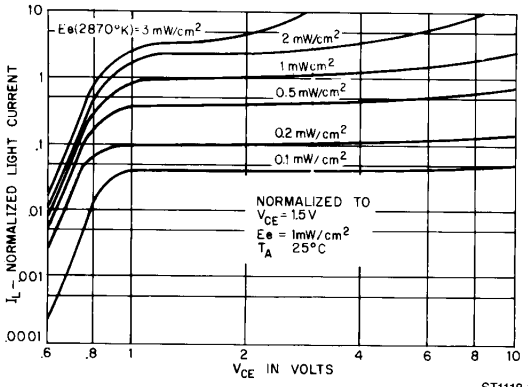

Fig. 1. Light Current vs. Collector-Emitter Voltage ST1118-11

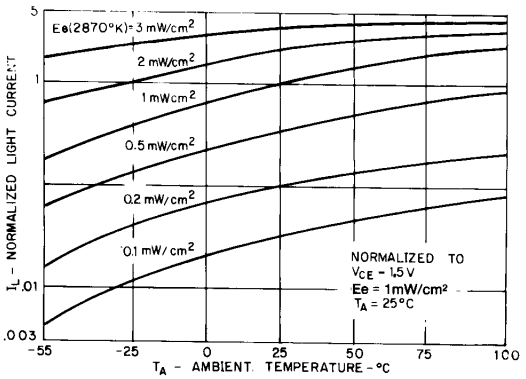

Fig. 2. Light Current vs. Ambient Temperature ST1123-11

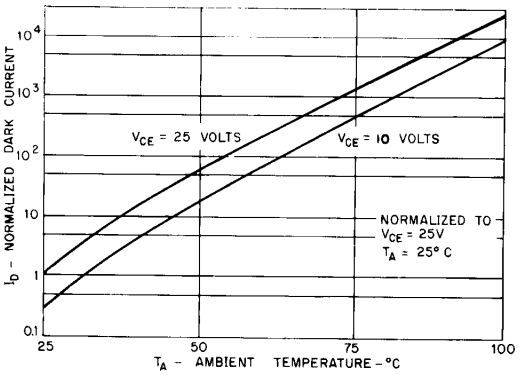

Fig. 3. Leakage Current vs. Temperature ST1119-11

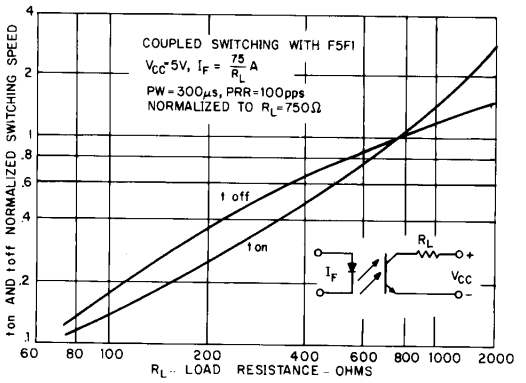

Fig. 4. Switching Time vs. Load Resistance ST1122-11

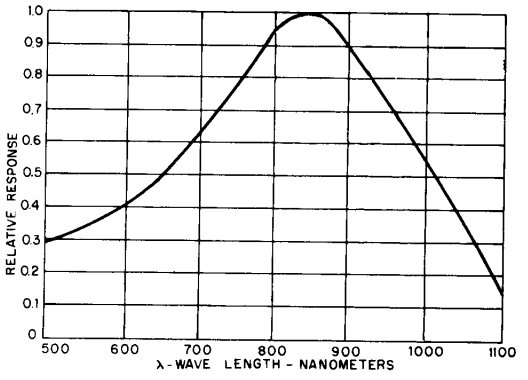

Fig. 5. Spectral Response ST1120-11

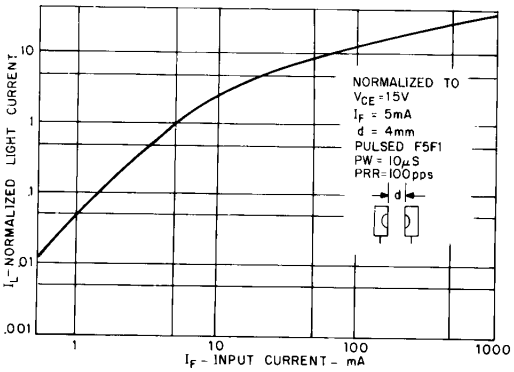

Fig. 6. Coupled Light Current vs. F5F1 Input Current ST1121-11

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HERMETIC SILICON
PHOTODARLINGTON

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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.