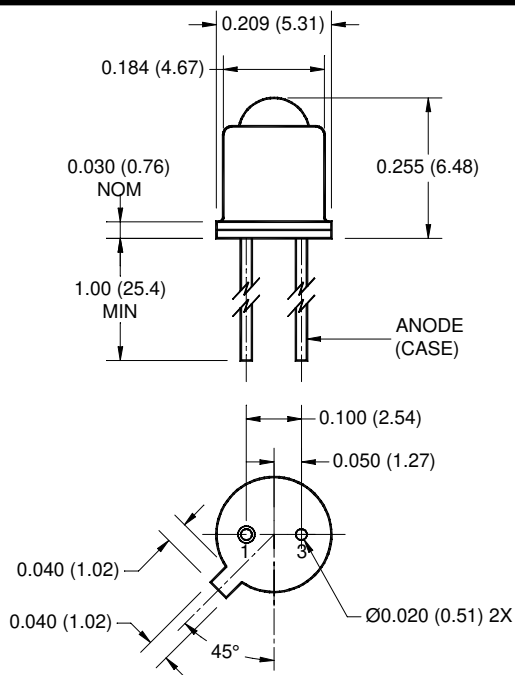


**PACKAGE DIMENSIONS**

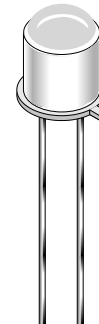


**NOTES:**

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

**DESCRIPTION**

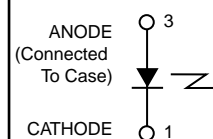
- The F5D series is a 880 nm LED in a narrow angle, TO-46 package.



**FEATURES**

- Good optical to mechanical alignment
- Mechanically and wavelength matched to the TO-18 series phototransistor
- Hermetically sealed package
- High irradiance level

**SCHEMATIC**



1. Derate power dissipation linearly 1.70 mW/°C above 25°C ambient.
2. Derate power dissipation linearly 13.0 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. Total power output, P<sub>O</sub>, is the total power radiated by the device into a solid angle of 2 π steradians.

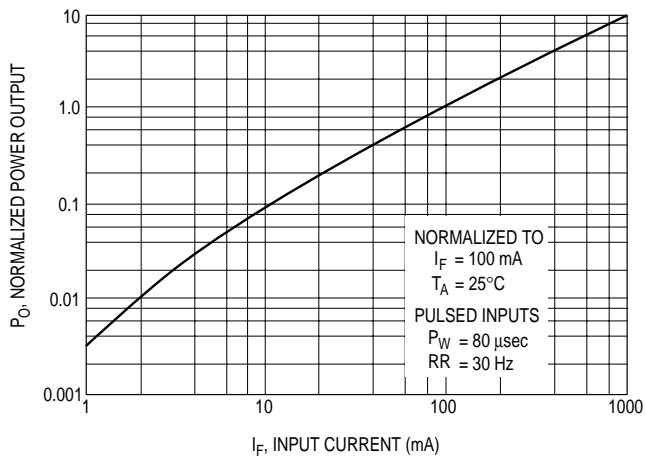
**ABSOLUTE MAXIMUM RATINGS** (T<sub>A</sub> = 25°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Operating Temperature	T <sub>OPR</sub>	-65 to +125	°C
Storage Temperature	T <sub>STG</sub>	-65 to +150	°C
Soldering Temperature (Iron) <sup>(3,4,5 and 6)</sup>	T <sub>SOL-I</sub>	240 for 5 sec	°C
Soldering Temperature (Flow) <sup>(3,4 and 6)</sup>	T <sub>SOL-F</sub>	260 for 10 sec	°C
Continuous Forward Current	I <sub>F</sub>	100	mA
Forward Current (pw, 10µs; 100Hz)	I <sub>F</sub>	3	A
Forward Current (pw, 1µs; 200Hz)	I <sub>F</sub>	10	A
Reverse Voltage	V <sub>R</sub>	3	V
Power Dissipation (T <sub>A</sub> = 25°C) <sup>(1)</sup>	P <sub>D</sub>	170	mW
Power Dissipation (T <sub>C</sub> = 25°C) <sup>(2)</sup>	P <sub>D</sub>	1.3	W

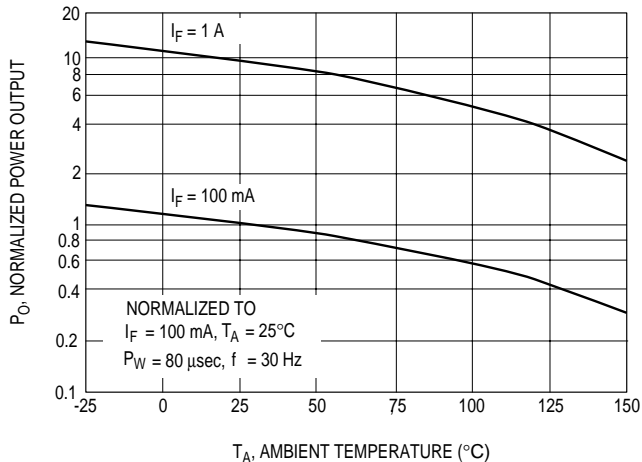
**ELECTRICAL / OPTICAL CHARACTERISTICS** (T<sub>A</sub> = 25°C) (All measurements made under pulse conditions)

PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Peak Emission Wavelength	I <sub>F</sub> = 100 mA	λ <sub>P</sub>	—	880	—	nm
Emission Angle at 1/2 Power	I <sub>F</sub> = 100 mA	θ	—	±8	—	Deg.
Forward Voltage	I <sub>F</sub> = 100 mA	V <sub>F</sub>	—	—	1.7	V
Reverse Leakage Current	V <sub>R</sub> = 3 V	I <sub>R</sub>	—	—	10	µA
Total Power F5D1 <sup>(7)</sup>	I <sub>F</sub> = 100 mA	P <sub>O</sub>	12.0	—	—	mW
Total Power F5D2 <sup>(7)</sup>	I <sub>F</sub> = 100 mA	P <sub>O</sub>	9.0	—	—	mW
Total Power F5D3 <sup>(7)</sup>	I <sub>F</sub> = 100 mA	P <sub>O</sub>	10.5	—	—	mW
Rise Time 0-90% of output		t <sub>r</sub>	—	1.5	—	µs
Fall Time 100-10% of output		t <sub>f</sub>	—	1.5	—	µs

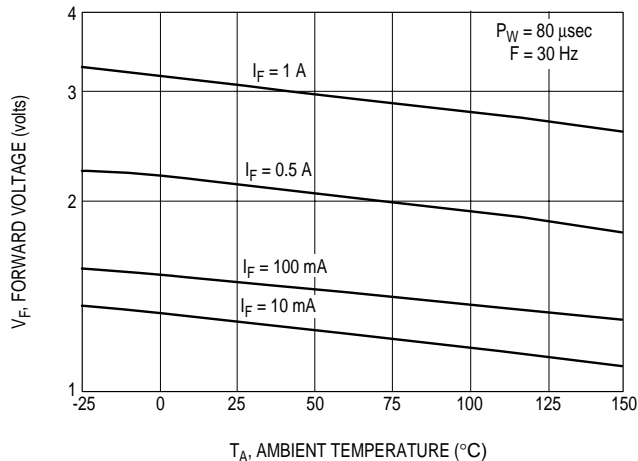
**Figure 1. Power Output vs. Input Current**



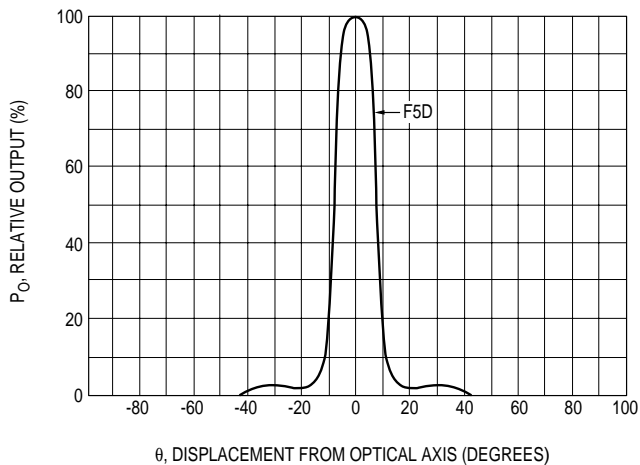
**Figure 2. Power Output vs. Temperature**



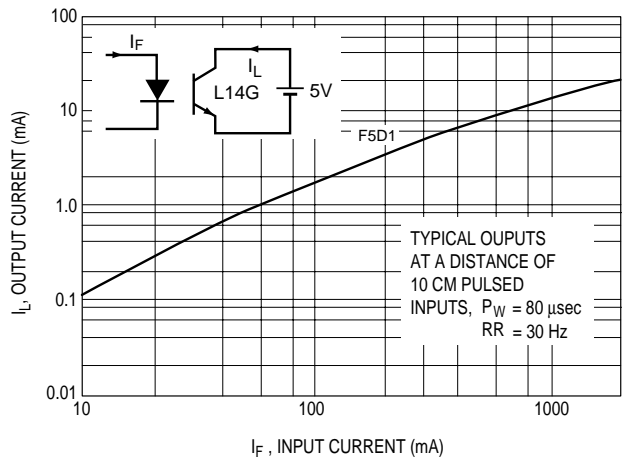
**Figure 3. Forward Voltage vs. Temperature**



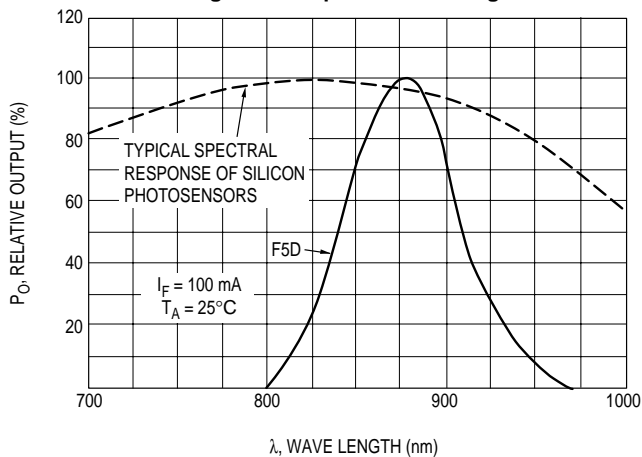
**Figure 4. Typical Radiation Pattern**



**Figure 5. Output vs. Input with L14G Detector**



**Figure 6. Output vs. Wavelength**



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F5D1  
AlGaAs Infrared Emitting Diode

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General description

The F5D series is 880 nm LED in a narrow angle, TO-46 package.

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- Features
- Good optical to mechanical alignment
  - Mechanically and wavelength matched to TO-18 series phototransistor
  - Hermetically sealed package
  - High irradiance level

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- Testing conditions
- $P_0 @ I_F = 100 \text{ mA}$

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Product status/pricing/packaging

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Product	Product status	Pricing*	Inventory check & ordering	Package type	Packing method
F5D1	Full Production	\$1.00	<input type="button" value="Purchase"/>	TO-46	BULK
F5D1B	Full Production	N/A	<input type="button" value="Purchase"/>	TO-46	BULK

\* Fairchild 1,000 piece Budgetary Pricing

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