




F5D1, F5D2, F5D3 Hermetic AlGaAs Infrared Emitting Diode

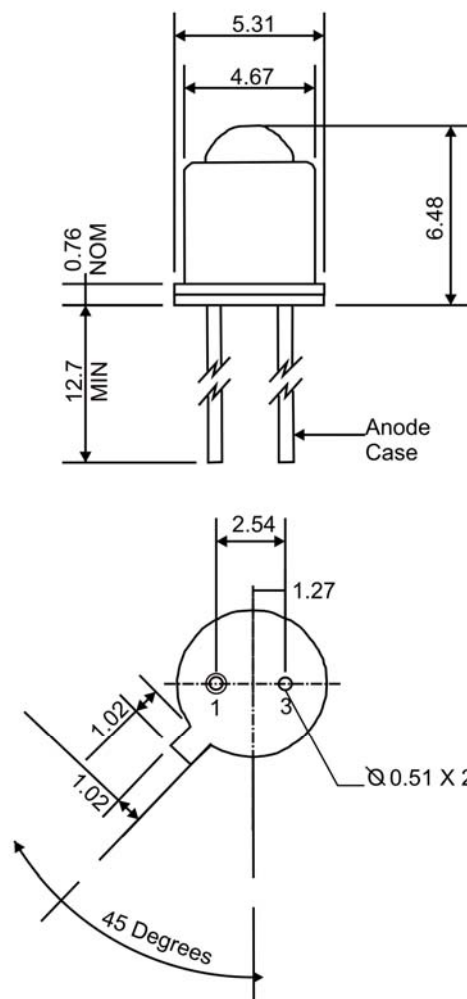
Features

- Good optically to mechanical alignment
- Mechanically and wavelength matched to the TO-18 series phototransistor
- High radiant intensity - typ. 63mW/Sr
- RoHS compliant 

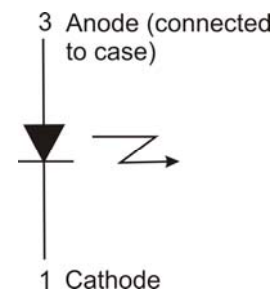
Description

The F5D1, F5D2 & F5D3 are a 880nm LED in a narrow angle TO-46 package.

Package Dimensions



Schematic



Notes:

1. Dimensions for all drawings are in mm.
2. Tolerances of + or - 0.25mm on all non-nominal dimensions, unless otherwise specified.

Absolute Maximum Ratings ($T_A = 25^{\circ}\text{C}$ unless otherwise specified)

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In Addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Parameter	Symbol	Rating	Units
Operating Temperature	T_{OPG}	-65°C to +125°C	°C
Storage Temperature	T_{STG}	-65°C to +150°C	°C
Solder Temperature (Iron) ^(3,4,5,6)	$T_{\text{SOL-I}}$	240°C for 5 sec	°C
Solder Temperature (Flow) ^(3,4,6)	$T_{\text{SOL-F}}$	260°C for 10 sec	°C
Continuous Forward Current	I_F	100	mA
Forward Current (pw, 10µS; 100Hz)	I_F	3	A
Forward Current (pw, 1µS; 200Hz)	I_F	10	A
Reverse Voltage	V_R	3	V
Power Dissipation $T_A = 25^{\circ}\text{C}$ ⁽¹⁾	P_D	170	mW
Power Dissipation $T_A = 25^{\circ}\text{C}$ ⁽²⁾	P_D	1.3	W

Electrical/Optical Characteristics ($T_A = 25^{\circ}\text{C}$)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Units
Peak Emission Wavelength	$I_F = 100\text{mA}$	λ_p		880		nm
Emission Angle at 1/2 Power	$I_F = 100\text{mA}$	Θ		+/- 8		Deg.
Forward Voltage	$I_F = 100\text{mA}$	V_{F1}			1.7	V
Reverse Leakage Current	$V_R = 3\text{V}$	I_R			10	µA
Total Radiant Flux F5D1 ⁽⁷⁾	$I_F = 100\text{mA}$	P_O	12			mW
Total Radiant Flux F5D2 ⁽⁷⁾	$I_F = 100\text{mA}$	P_O	9			mW
Total Radiant Flux F5D3 ⁽⁷⁾	$I_F = 100\text{mA}$	P_O	10.5			mW
Radiant Intensity F5D1	$I_F = 100\text{mA}$	I_E		63		mW/Sr
Radiant Intensity F5D2	$I_F = 100\text{mA}$	I_E		48		mW/Sr
Radiant Intensity F5D3	$I_F = 100\text{mA}$	I_E		55		mW/Sr
Rise Time 0-90% of output		t_r		1.5		µs
Fall Time 100-10% of output		t_f		1.5		µs

Notes:

- 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 1.6mm minimum from housing.
- 6 As long as leads are not under stress or spring tension.
- 7 Total power output, P_O , is the total power radiated by the device into a solid angle of 2π steradians.

Typical Performance Characteristics

Figure 1. Power Output vs. Input Current

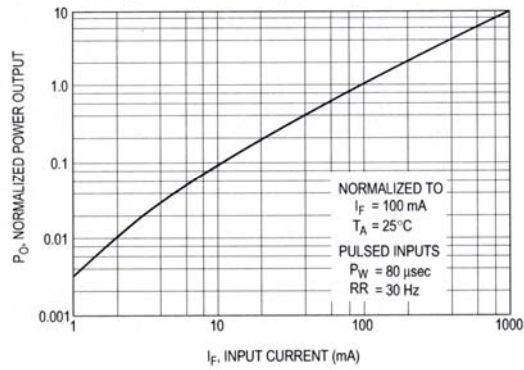


Figure 2. Power Output vs. Temperature

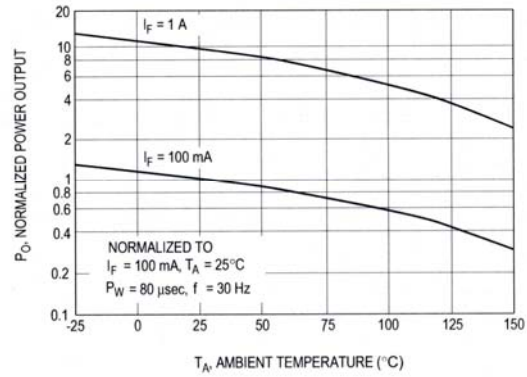


Figure 3. Forward Voltage vs. Temperature

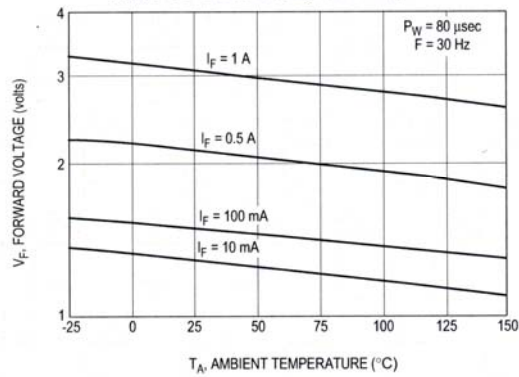


Figure 4. Typical Radiation Pattern

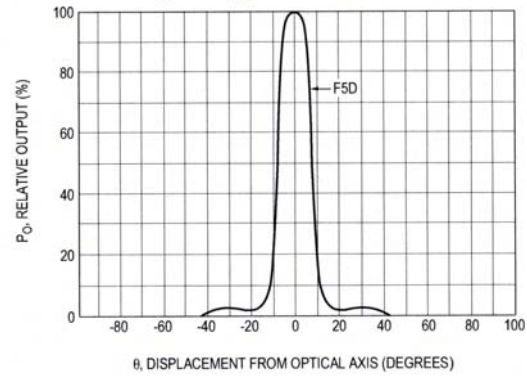


Figure 5. Output vs. Input with L14G Detector

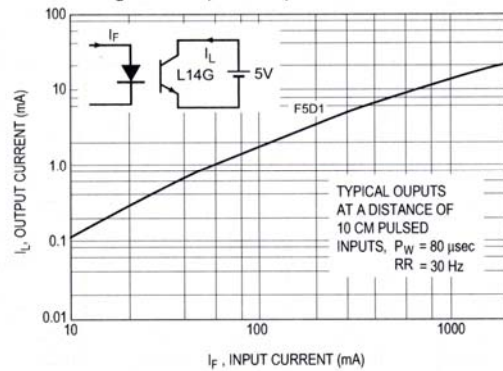
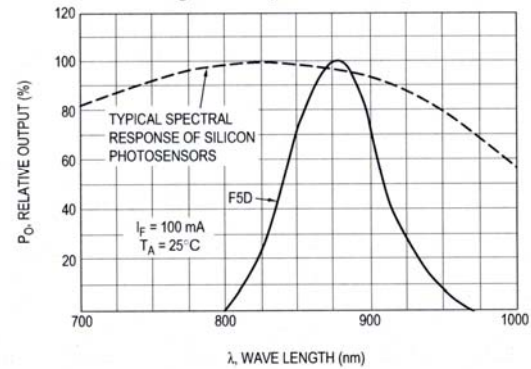


Figure 6. Output vs. Wavelength



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