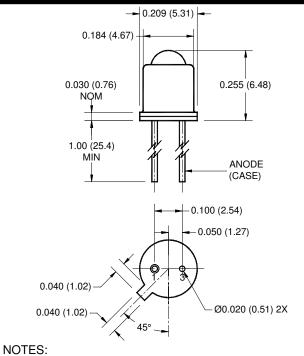


# F5D1/2/3 AIGaAs INFRARED EMITTING DIODE

## PACKAGE DIMENSIONS



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

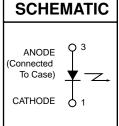
### DESCRIPTION

• 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





- 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,  $P_O$ , is the total power radiated by the device into a solid angle of 2  $\pi$  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	0°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	0°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 $(T_A = 25^{\circ}C)^{(1)}$	PD	170	mW
Power Dissipation $(T_C = 25^{\circ}C)^{(2)}$	PD	1.3	W

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

PARAMETER	TEST CONDITIONS	SYMBOL	MIN	ТҮР	MAX	UNITS
Peak Emission Wavelength	I <sub>F</sub> = 100 mA	$\lambda_{P}$	—	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	$V_R = 3 V$	I <sub>R</sub>		—	10	μA
Total Power F5D1(7)	I <sub>F</sub> = 100 mA	Po	12.0	—	_	mW
Total Power F5D2(7)	I <sub>F</sub> = 100 mA	Po	9.0	—	_	mW
Total Power F5D3(7)	I <sub>F</sub> = 100 mA	Po	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



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Figure 1. Power Output vs. Input Current

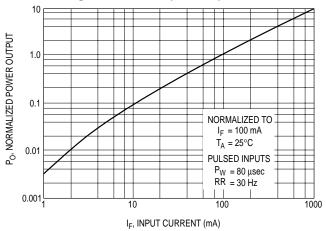


Figure 2. Power Output vs. Temperature 20 I<sub>F</sub> = 1 A 10 8 P<sub>0</sub>, NORMALIZED POWER OUTPUT 6 4 2  $I_{\rm F} = 100 \, {\rm mA}$ 0.8 0.6 0.4 NORMALIZED TO  $I_F$  = 100 mA,  $T_A$  = 25°C 0.2  $P_W = 80 \ \mu sec, f = 30 \ Hz$ 0.1 └─ -25 0 25 50 75 100 125 150

T<sub>A</sub>, AMBIENT TEMPERATURE (°C)

Figure 3. Forward Voltage vs. Temperature

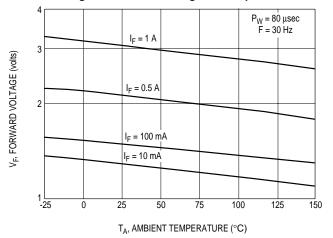


Figure 5. Output vs. Input with L14G Detector

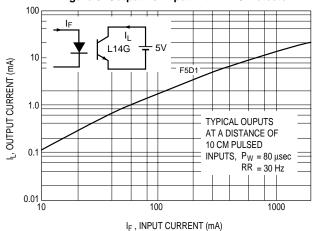


Figure 4. Typical Radiation Pattern

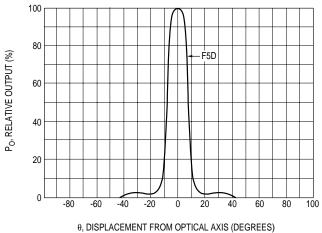
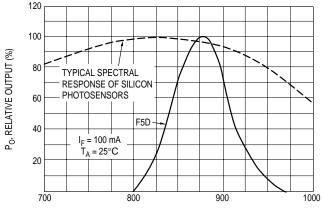


Figure 6. Output vs. Wavelength



λ, WAVE LENGTH (nm)



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