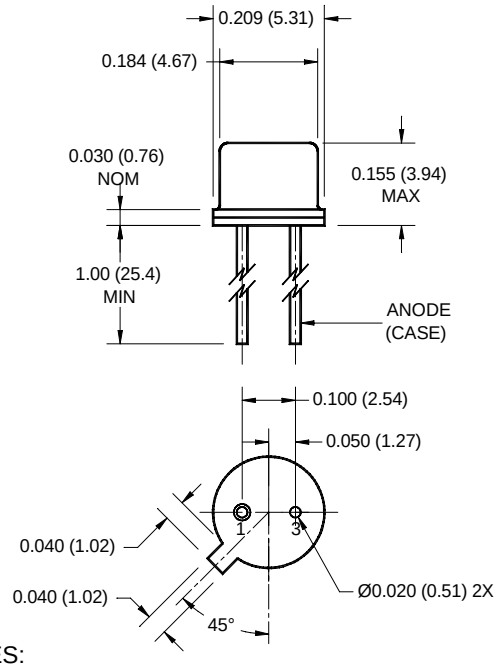
FAIRCHILD
SEMICONDUCTOR™

F5E1/2/3

AlGaAs INFRARED EMITTING DIODE

PACKAGE DIMENSIONS

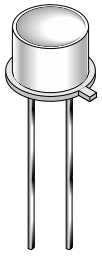


NOTES:

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

DESCRIPTION

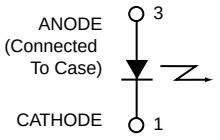
The F5E series are 880nm LEDs in a wide angle, TO-46 package.



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_O, is the total power radiated by the device into a solid angle of 2 π steradians.

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Operating Temperature	T_{OPR}	-65 to +125	°C
Storage Temperature	T_{STG}	-65 to +150	°C
Soldering Temperature (Iron)(3,4,5 and 6)	T_{SOL-I}	240 for 5 sec	°C
Soldering Temperature (Flow)(3,4 and 6)	T_{SOL-F}	260 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°C)(1)	P_D	170	mW
Power Dissipation (T_C = 25°C)(2)	P_D	1.3	W

ELECTRICAL / OPTICAL CHARACTERISTICS (T_A =25°C) (All measurements made under pulse conditions)

PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Peak Emission Wavelength	I_F = 100 mA	λ_{PE}	—	880	—	nm
Emission Angle at 1/2 Power		Θ	—	±40	—	Deg.
Forward Voltage	I_F = 100 mA	V_F	—	—	1.7	V
Reverse Leakage Current	V_R = 3 V	I_R	—	—	10	µA
Total Power F5E1 (7)	I_F = 100 mA	P_O	12.0	—	—	mW
Total Power F5E2 (7)	I_F = 100 mA	P_O	9.0	—	—	mW
Total Power F5E3 (7)	I_F = 100 mA	P_O	10.5	—	—	mW
Rise Time 0-90% of output		t_r	—	1.5	—	µs
Fall Time 100-10% of output		t_f	—	1.5	—	µs

Figure 1. Power Output vs. Input Current

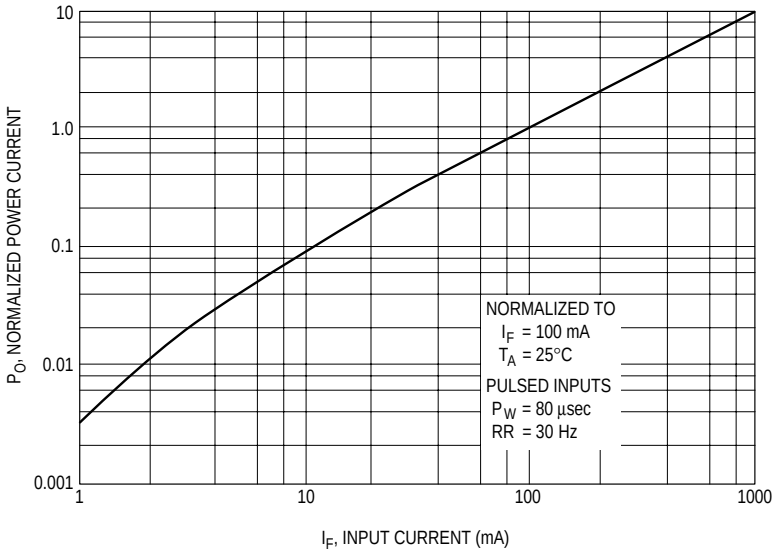


Figure 2. Power Output vs. Temperature

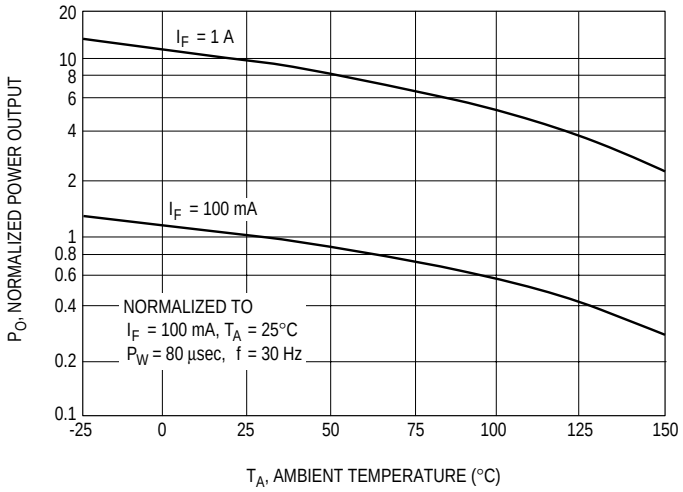


Figure 3. Forward Voltage vs. Temperature

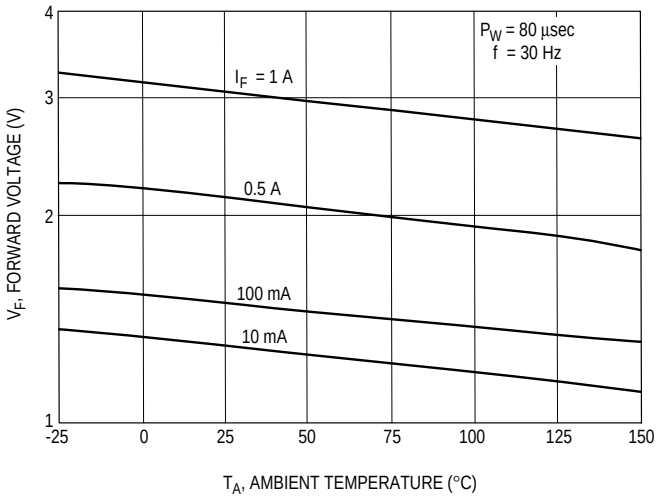


Figure 4. Typical Radiation Pattern

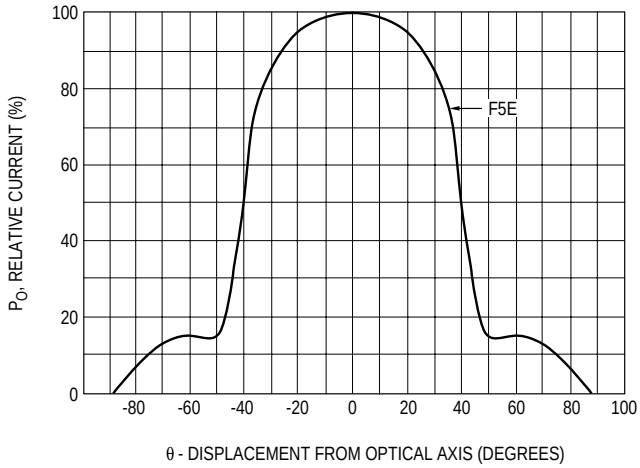
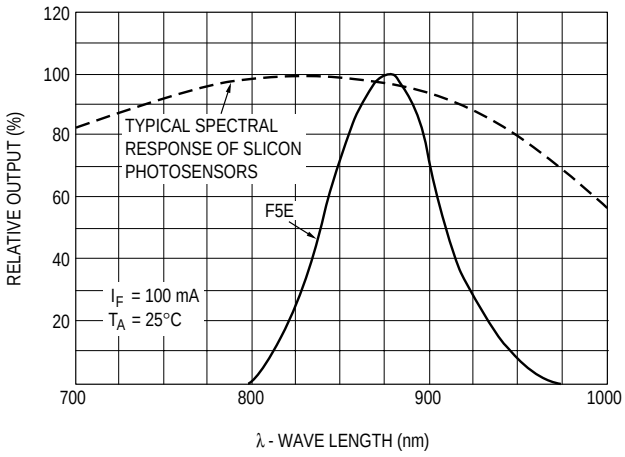


Figure 5. Output vs. Wavelength



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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.