GaAs Infrared Emitters

Optoelectronic Products

FPE520
FPE530

General Description

The FPE520 and FPE530 are GaAs infrared-emitting diodes. When forward-biased, they emit an intense, narrow band of radiation peaking at approximately 940 nm (non-visible). The devices are packaged in TO-18 style hermetically-sealed packages with a glass lens.

These solid state lamps are ideally suited for use in conjunction with silicon photosensors, since their spectral peaks are closely matched.

High Reliability
Long Life
Ideally Suited For Use In Conjunction With Silicon Photosensors
Applications: Punched Card And Paper Tape Readers, Optical Shaft Encoders, Choppers, High-Speed, High-Voltage, Isolation Switches and High-Speed Optoelectronic Signal Links
Hermetic Metal Package For Stability And Reliability

Absolute Maximum Ratings

Maximum Temperatures

Storage Temperature	−65°C to +200°C
Operating Temperature	−65°C to +150°C
Pin Temperature (Soldering, 5 s)	260°C
Relative Humidity at 85°C	85%

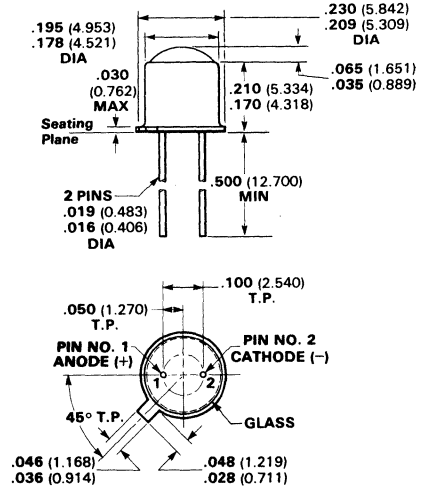
Maximum Power Dissipation

Total Dissipation at T_A = 25°C	250 mW
Derate Linearly from 25°C	2.0 mW/°C

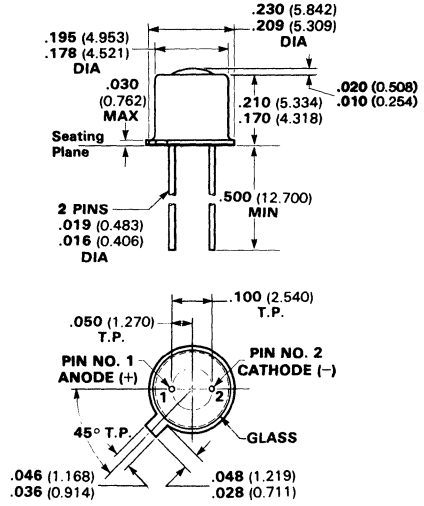
Maximum Voltage and Currents

V_R	Reverse Voltage	3.0 V
I_F	Forward dc Current	150 mA

Package Outlines
FPE520



FPE530



Notes
All dimensions in inches **bold** and millimeters (parentheses)
Tolerance unless specified = ±**.015** (0.381)

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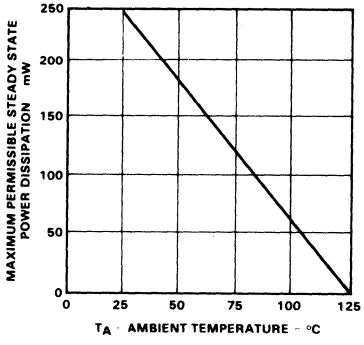
Typical Electrical Characteristics

FPE520
FPE530

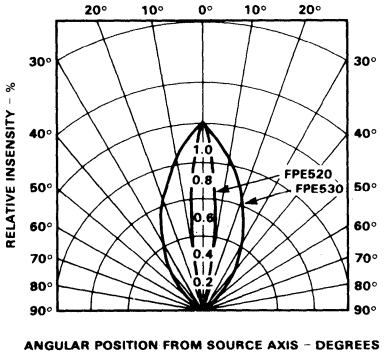
Electrical Characteristics T_A = 25°C, I_F = 100 mA, unless otherwise specified

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
V_F	Forward Voltage		1.35	1.7	V	
V_R	Reverse Voltage	3.0	6.0		V	I_R = 100 μA
I_O	Axial Intensity					
	FPE520	3.0	6.0		mW/sr	
	FPE530	1.0	2.0		mW/sr	
P_O	Infrared Total Power Output		1.5		mW	
$\Delta P_O/\Delta T$	Temperature Dependence of Power Output		−0.8		%/°C	
λ_{pk}	Peak Spectral Wavelength		940		nm	
BW	Spectral Bandwidth		50		nm	
$\theta_{1/2}$	Viewing Angle to Half Intensity					
	FPE520		9.0		degrees	
	FPE530		30		degrees	
t_r, t_f	Emission Rise and Fall Time		500		ns	I_F = 50 mA, 10 to 90%

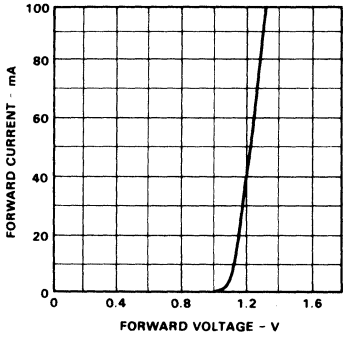
Power Dissipation vs Ambient Temperature



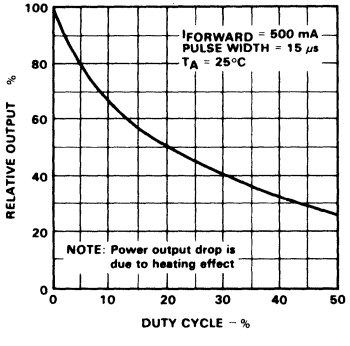
Radiation Pattern



Forward Current vs Forward Voltage (DC)



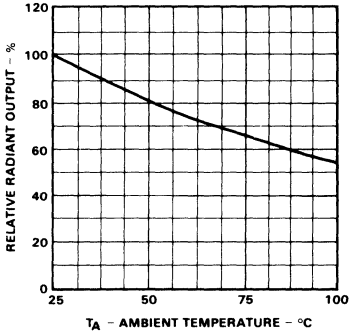
Radiant Output vs Duty Cycle



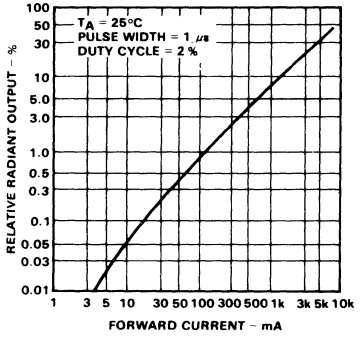
Typical Electrical Characteristic Curves

FPE520 FPE530

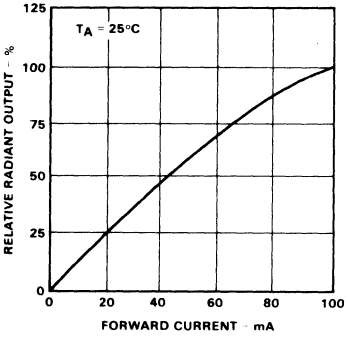
Radiant Output vs Temperature



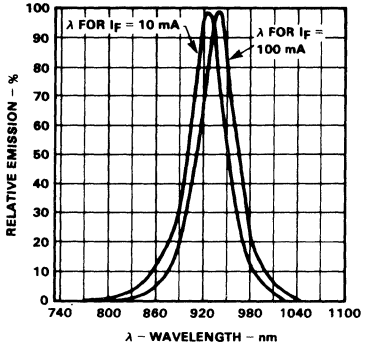
Radiant Output vs Forward Current (Pulsed)



Radiant Output vs DC Forward Current



Emission Spectrum



Radiant Emission Transient Response