GaAs Infrared Emitters

Optoelectronic Products

FPE500 FPE510

General Description

The FPE500/FPE510 are GaAs infrared-emitting diodes. When forward-biased, they emit an intense, narrow band of radiation peaking at approximately 900 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. The FPE500/FPE510 use a Planar process and are especially designed for high reliability and long life.

High Reliability
Long Life
Ideally Suited For Use In Conjunction With Silicon Photosensors
Applications Include: Punched Card And Paper Tape Reading, 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 and Humidity

Storage Temperature	−65°C to +200°C
Operating Temperature	−65°C to +125°C
Pin Temperature (Soldering, 5 s)	260°C
Relative Humidity at 65°C	85%

Maximum Power Distribution

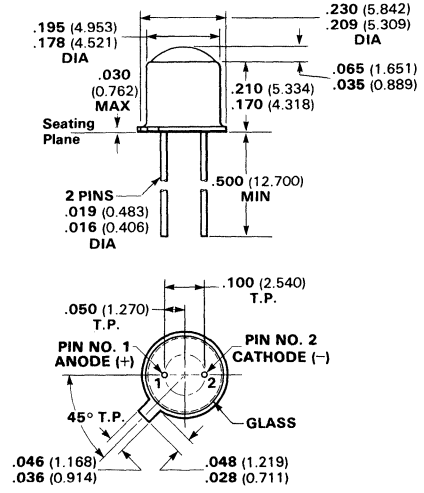
Power Dissipation	250 mW
Derate Linearly from 25°C	2.5 mW/°C

Maximum Voltages and Currents

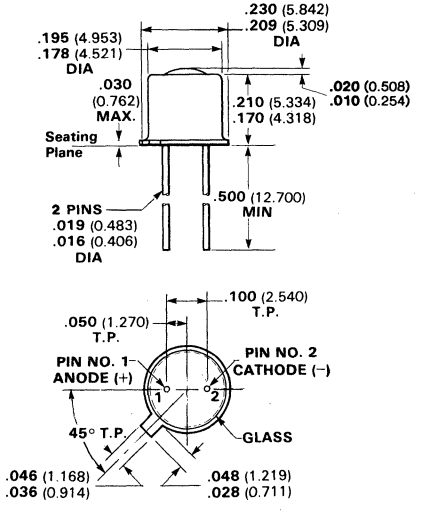
V_R	Reverse Voltage	3.0 V
I_F	Forward dc Current	150 mA

Package Outlines

FPE500



FPE510



Notes
All dimensions in inches **bold** and millimeters (parentheses)
Tolerance unless specified = ±**0.15** (0.381)

Typical Electrical Characteristics

FPE500
FPE510

Electrical Characteristics T_A = 25°C, I_F = 100 mA

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
V_F	Forward Voltage		1.35	1.7	V	
BV_R	Reverse Breakdown Voltage	3.0	6.0		V	I_R = 100 μA
I_O	Axial Intensity					
	FPE500	1.0	3.0		mW/Sr	
	FPE510	0.3	1.0		mW/Sr	
P_O	Infrared Total Power Output		0.5		mW	
$\Delta P_O/\Delta T$	Temperature Dependence of Power, Output		−0.8		%/°C	
BW	Spectral Bandwidth		50		nm	
$\theta_{1/2}$	Viewing Angle to Half Intensity					
	FPE500		9.0		degrees	
	FPE510		30		degrees	
t_r, t_f	Emission Rise and Fall Time		10		ns	I_F = 50 mA, 10 to 90%

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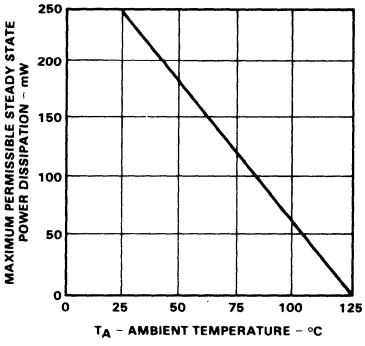
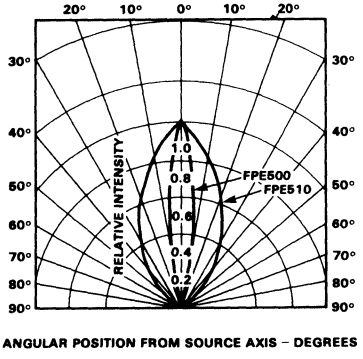
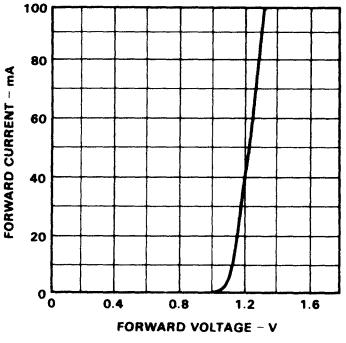
Power Dissipation vs Ambient Temperature



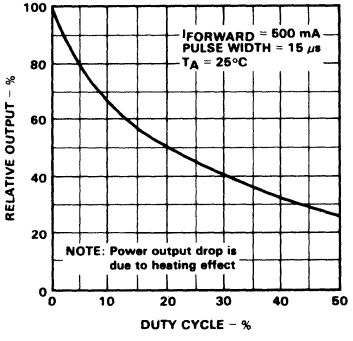
Radiation Pattern



Forward Current vs Forward Voltage (DC)



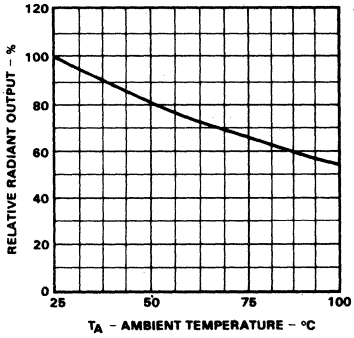
Radiant Output vs Duty Cycle



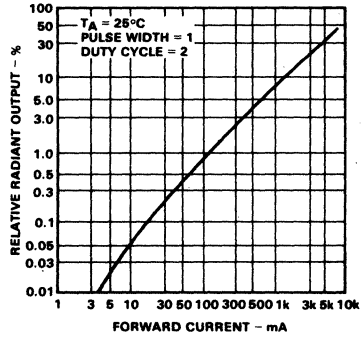
Typical Electrical Characteristic Curves

FPE500 FPE510

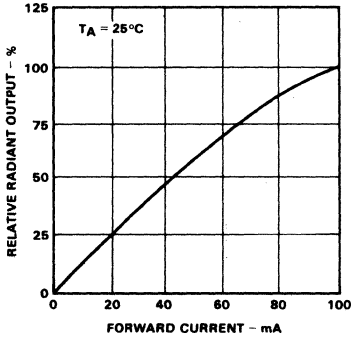
Radiant Output vs Temperature



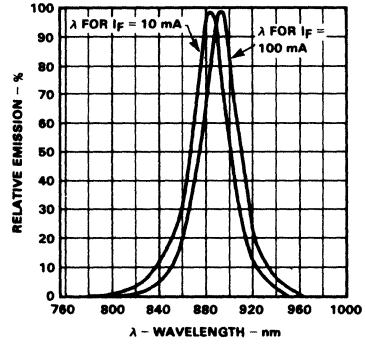
Radiant Output vs Forward Current (Pulsed)



Radiant Output vs DC Forward Current



Typical Emission Spectrum



Radiant Emission Transient Response