ABORN ELECTRONICS
AN OPTOELECTRONIC COMPANY

High-Sensitivity Silicon Phototransistors

Optoelectronic Products

FPT500
FPT510

General Description

FPT500/FPT510 are nitride passivated silicon photo transistors. Each device is packaged in a TO-18 style, hermetically sealed package with lens cap. For most applications two pins are used (collector and emitter pins). The availability of the base pin gives wide latitude for flexible circuit design.

Super High Illumination Sensitivity
Exceptionally Stable Characteristics
Excellent For Low Light Level Applications
High Output Current

Absolute Maximum Ratings

Maximum Temperature and Humidity

Storage Temperature	−65°C to +200°C
Operating Temperature	−55°C to +150°C
Pin Temperature (Soldering, 5 s)	260°C
Relative Humidity at 65°C	85%

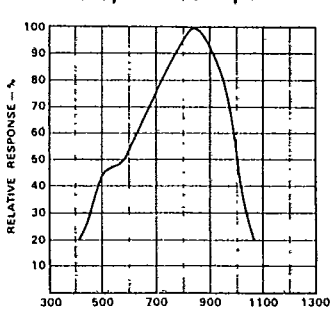
Maximum Power Dissipation

Total Dissipation at T_C = 25°C	600 mW
Derate Linearly from 25°C	4.8 mW/°C
Total Dissipation at T_A = 25°C	300 mW
Derate Linearly from 25°C	2.4 mW/°C

Maximum Voltages and Currents

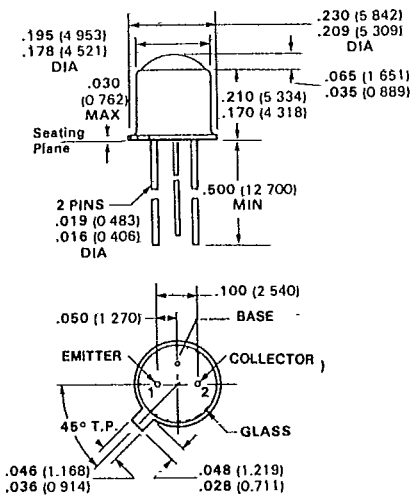
V_{CB}	Collector-to-Base Voltage	30 V
V_{CE}	Collector-to-Emitter Voltage	30 V
I_C	Collector Current	50 mA

Relative Spectral Response

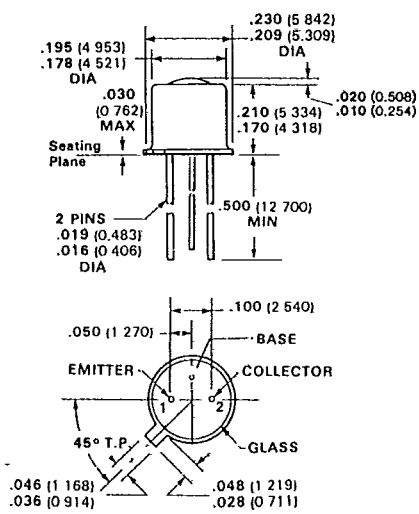


Package Outlines

FPT500



FPT510



Notes
All dimensions in inches bold and millimeters (parentheses)
Tolerance unless specified = ±.015 (±.381)

Typical Electrical Characteristics

FPT500
FPT510

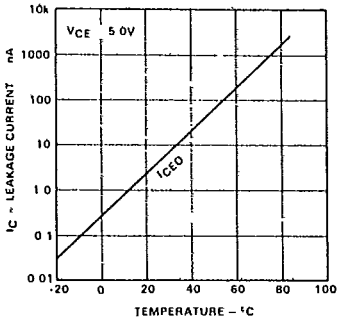
Electrical and Radiant Characteristics $T_A = 25°C$

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
$V_{CEO(sus)}$	Collector-to-Emitter Sustaining Voltage	30	60		V	I_C = 1.0 mA (Note 3)
V_{CBO}	Collector-to-Base Voltage	30	60		V	I_C = 100 μA (Note 3)
V_{ECO}	Emitter-to-Collector Voltage		10		V	I_E = 100 μA (Note 3)
$V_{CE(sat)}$	Collector-to-Emitter Saturation Voltage		0.25	0.55	V	I_C = 1.0 mA, H = 2.0 mW/cm² (Note 1)
I_{CEO}	Collector Dark Current		10	100	nA	V_{CE} = 5.0 V (Note 3)
$I_{CE(lt)}$	Photo Current (Tungsten)					
	FPT500	1.0	3.0		mA	V_{CE} = 5.0 V,
	FPT510	0.1	0.33		mA	H = 1.0 mW/cm² (Notes 1, 5)
$I_{CE(lt)}$	Photo Current (GaAs)					
	FPT500		6.0		mA	V_{CE} = 5.0 V,
	FPT510		0.7		mA	H = 1.0 mW/cm² (Notes 2, 5)
θ_{50}	50% Response Angle		15		degrees	
t_r	Light Current Rise Time		2.8		μs	(Note 4)
t_f	Light Current Fall Time		2.8		μs	(Note 4)

Notes

1. Measured at noted irradiance as emitted from a Tungsten filament lamp at a color temperature of 2854°K. The effective photosensitive area is typically 7 mm².
2. These are values obtained at noted irradiance as emitted from a GaAs source at 900 nm.
3. Measured with radiation flux intensity of less than 0.1 μW/cm² over the spectrum from 100-1500 nm.
4. Rise time is defined as the time required for I_{CE} to rise from 10% to 90% of peak value. Fall time is defined as the time required for I_{CE} to decrease from 90% to 10% of peak value. Test conditions are: V_{CE} = 10 V, I_{CC} = 4.0 mA, R_L = 100 Ω, GaAs source.
5. No electrical connection to base pin.
6. No electrical connection to emitter pin.

Collector Dark Current vs Temperature



Rise And Fall Time vs Collector Current