



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%

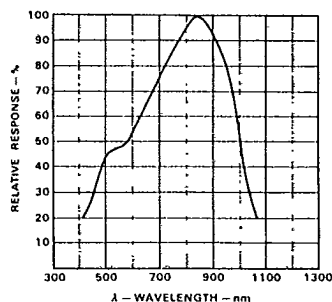
Maximum Power Dissipation

Total Dissipation at $T_C = 25^\circ\text{C}$	600 mW
Derate Linearly from 25°C	4.8 mW/°C
Total Dissipation at $T_A = 25^\circ\text{C}$	300 mW
Derate Linearly from 25°C	2.4 mW/°C

Maximum Voltages and Currents

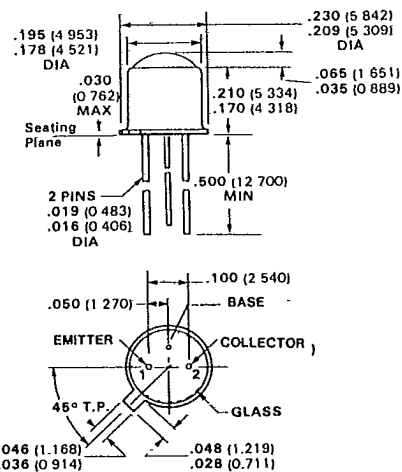
V_{CB}	Collector-to-Base Voltage	30 V
V_{CE}	Collector-to-Emitter Voltage	30 V
I_C	Collector Current	50 mA

Relative Spectral Response

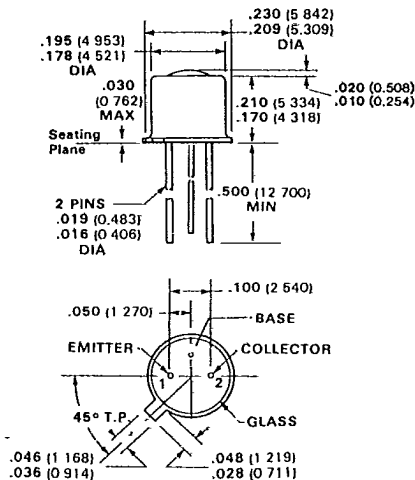


Package Outlines

FPT500



FPT510



Notes

All dimensions in inches bold and millimeters (parentheses)
Tolerance unless specified = $\pm .015$ ($\pm .381$)

Typical Electrical Characteristics

FPT500 FPT510

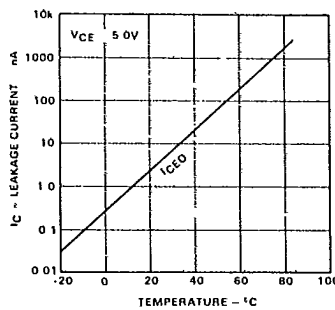
Electrical and Radiant Characteristics $T_A = 25^\circ\text{C}$

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
$V_{CE(sus)}$	Collector-to-Emitter Sustaining Voltage	30	60		V	$I_C = 1.0\text{ mA}$ (Note 3)
V_{CBO}	Collector-to-Base Voltage	30	60		V	$I_C = 100\text{ }\mu\text{A}$ (Note 3)
V_{ECO}	Emitter-to-Collector Voltage		10		V	$I_E = 100\text{ }\mu\text{A}$ (Note 3)
$V_{CE(sat)}$	Collector-to-Emitter Saturation Voltage		0.25	0.55	V	$I_C = 1.0\text{ mA}$, $H = 2.0\text{ mW/cm}^2$ (Note 1)
I_{CEO}	Collector Dark Current		10	100	nA	$V_{CE} = 5.0\text{ V}$ (Note 3)
$I_{CE(It)}$	Photo Current (Tungsten) FPT500 FPT510	1.0 0.1	3.0 0.33		mA mA	$V_{CE} = 5.0\text{ V}$, $H = 1.0\text{ mW/cm}^2$ (Notes 1, 5)
$I_{CE(It)}$	Photo Current (GaAs) FPT500 FPT510		6.0 0.7		mA mA	$V_{CE} = 5.0\text{ V}$, $H = 1.0\text{ mW/cm}^2$ (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 mm^2 .
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 $0.1\text{ }\mu\text{W/cm}^2$ over the spectrum from $100\text{--}1500\text{ nm}$.
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: $V_{CE} = 10\text{ V}$, $I_{CC} = 4.0\text{ mA}$, $R_L = 100\text{ }\Omega$, 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

