

FAIRCHILD SEMICONDUCTOR

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**FPT100/A/B**  
**FPT110/A/B**

T-41-61

General Purpose Silicon Planar  
Phototransistor

**General Description**

The FPT100 and FPT110 are 3-terminal npn Planar phototransistors with exceptionally stable characteristics and high illumination-sensitivity. The availability of the base pin gives wide latitude for flexible circuit design. The case is made of a special plastic compound with transparent resin encapsulation that exhibits stable characteristics under high humidity conditions. The controlled sensitivities offered in the A and B versions give the circuit designer increased flexibility.

**PACKAGE**

FPT100	OPTO-26
FPT100A	OPTO-26
FPT100B	OPTO-26
FPT110	OPTO-28
FPT110A	OPTO-28
FPT110B	OPTO-28

**Exceptionally Stable Characteristics**  
**Controlled Sensitivities**

**ABSOLUTE MAXIMUM RATINGS**

**Temperatures & Humidity**

Storage Temperature	-55°C to 100°C
Operating Temperature	-55°C to 85°C
Relative Humidity at 65°C	85%

**Power Dissipation (Notes 1 & 2)**

Total Dissipation at	
T <sub>C</sub> = 25°C	200 mW
T <sub>A</sub> = 25°C	100 mW

**Voltages & Currents (Note 5)**

V <sub>CB</sub> Collector-to-Base Voltage	50 V
V <sub>CES</sub> Collector-to-Emitter Sustaining Voltage (Note 3)	30 V
I <sub>C</sub> Collector Current	25 mA

**ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted) (Note 9)**

SYMBOL	CHARACTERISTIC	MIN	TYP	MAX	UNITS	TEST CONDITIONS
BV <sub>Eco</sub>	Emitter-to-Collector Breakdown Voltage (Note 5)		7.0		V	I <sub>E</sub> = 100 μA
BV <sub>CBo</sub>	Collector-to-Base Breakdown Voltage (Note 5)	50	120		V	I <sub>C</sub> = 100 μA

**NOTES:**

- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
- These ratings give a maximum junction temperature of 85°C and junction-to-case thermal resistance of 300°C/W (derating factor of 3.33 mW/°C, and a junction-to-ambient thermal resistance of 600°C/W (derating factor of 1.67 mW/°C).
- Measured at noted irradiance as emitted from a tungsten filament lamp at a color temperature of 2854°K. The effective photosensitive area is typically 1.25 mm<sup>2</sup> (FPT100A/B) and 0.78 mm<sup>2</sup> (FPT110A/B).
- These are values obtained at noted irradiance as emitted from a GaAs source at 900 nm.
- Measured with radiation flux intensity of less than 0.1 μW/cm<sup>2</sup> over the spectrum from 100-1500 nm.
- Rise time is defined as the time required for I<sub>Ce</sub> to rise from 10% to 90% of peak value. Fall time is defined as the time required for I<sub>Ce</sub> to decrease from 90% to 10% of peak value. Test conditions are: V<sub>C</sub> = 5.0 V, I<sub>Ce</sub> = 4.0 mA, R<sub>L</sub> = 100 Ω, GaAs source.
- No electrical connection to base lead.
- No electrical connection to emitter lead.
- For product family characteristic curves, refer to Curve Set FPT100.

