

FAIRCHILD SEMICONDUCTOR

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FAIRCHILD

A Schlumberger Company

FPT120/A/B/C  
FPT130/A/BHigh Sensitivity Silicon  
Phototransistors

T-H1-61

**General Description**

The FPT120/A/B/C and FPT130/A/B are silicon nitride protected NPN Planar phototransistors with exceptionally stable characteristics and high illumination-sensitivity. The case is made of a special plastic compound with transparent resin encapsulation. The controlled sensitivities offered in the A, B and C versions give the circuit designer increased flexibility.

**PACKAGE**

FPT120	OPTO-26
FPT120A	OPTO-26
FPT120B	OPTO-26
FPT120C	OPTO-26
FPT130	OPTO-28
FPT130A	OPTO-28
FPT130B	OPTO-28

**High Illumination Sensitivity****Availability of Base Pins for Flexible Circuit Design**

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**ABSOLUTE MAXIMUM RATINGS****Temperatures & Humidity**

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

**Power Dissipation (Note 1)**

Total Device Dissipation at	
$T_c = 25^\circ\text{C}$	200 mW
Total Dissipation at $T_A = 25^\circ\text{C}$	100 mW

**Voltages & Currents**

$V_{CE(\text{sus})}$ Collector-to-Emitter	
Sustaining Voltage (Note 4)	20 V
$I_C$ Collector Current	25 mA

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

SYMBOL	CHARACTERISTIC	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$BV_{ECO}$	Emitter-to-Collector Breakdown Voltage (Note 5)		5.0		V	$I_{EC} = 100 \mu\text{A}$
$I_{CEO}$	Collector Dark Current (Note 5)	10	100	nA		$V_{CE} = 5.0 \text{ V}$

**NOTES:**

1. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
2. These ratings give a maximum junction temperature of 85°C and junction-to-case thermal resistance of 300°C/W (derating factor of 33.3 mW/°C). Measured at noted irradiance as emitted from a tungsten filament lamp at a color temperature of 2854K. The effective photosensitive area is typically 1.25 mm<sup>2</sup> (FPT120A/B) and 0.78 mm<sup>2</sup> (FPT130A/B).
3. These are values obtained at noted irradiance as emitted from a GaAs source at 900 nm.
4. Measured with radiation flux intensity of less than 0.1  $\mu\text{W}/\text{cm}^2$  over the spectrum from 100-1500 nm.
5. Rise time is defined as the time required for  $I_C$  to rise from 10% to 90% of peak value. Fall time is defined as the time required for  $I_C$  to decrease from 90% to 10% of peak value. Test conditions are:  $V_C = 5.0 \text{ V}$ ,  $I_{CC} = 4.0 \text{ mA}$ ,  $R_L = 100 \Omega$ , GaAs source.
6. Same electrical characteristics as FPT120 except for  $I_{CEO}$ .
7. Same electrical characteristics as FPT130 except for  $I_{CEO}$ .
8. For product family characteristic curves, refer to Curve Set FPT120.