

FAIRCHILD SEMICONDUCTOR

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FAIRCHILD

A Schlumberger Company

FPT120/A/B/C
FPT130/A/B

T-41-61

High Sensitivity Silicon
Phototransistors**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

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

$V_{CE(sus)}$ 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:

- 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 33.3 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 mm² (FPT120A/B) and 0.78 mm² (FPT130A/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 $\mu\text{W}/\text{cm}^2$ over the spectrum from 100-1500 nm.
- 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: $V_C = 5.0 \text{ V}$, $I_{CC} = 4.0 \text{ mA}$, $R_L = 100 \Omega$, GaAs source.
- Same electrical characteristics as FPT120 except for $I_{CE(sat)}$.
- Same electrical characteristics as FPT130 except for $I_{CE(sat)}$.
- For product family characteristic curves, refer to Curve Set FPT120.

