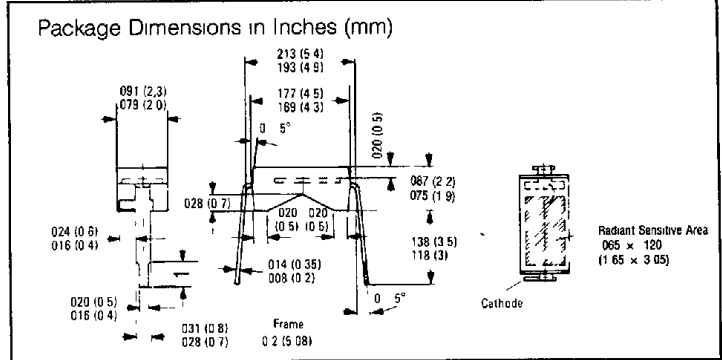
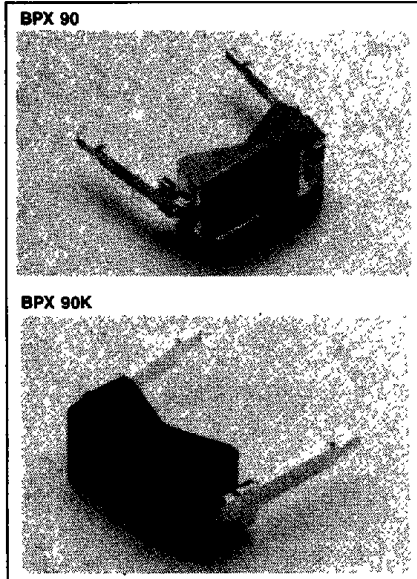


SIEMENS

BPX 90
WITH DAYLIGHT FILTER BPX 90K
PLANAR SILICON PHOTODIODE

T-41-53



FEATURES

- **Transparent Plastic Package – BPX 90**
- **Daylight Filter – BPX 90K**
- **Silicon Planar Photodiode**
- **0.2" Lead Spacing**
- **High Sensitivity, BPX 90: 45 nA/lx; BPX 90K: 13 nA/lx**
- **Lead Bend Option (for SMD)**

DESCRIPTION

The BPX90 and BPX90K are planar silicon photodiodes. The BPX90 is in a transparent plastic package. The BPX90K is in a black plastic package with IR filter. Its terminals are soldering tabs arranged in 0.2" (508 mm) lead spacing. Due to its design, the diode can be easily assembled on PC boards. The flat back of the epoxy resin case makes rigid fixing of the component feasible. Arrays can be realized by multiple arrangements.

This versatile photodetector is suitable for diode as well as voltaic cell operation. The signal/noise ratio is particularly favorable, even at low illuminances. The open circuit voltage at low illuminances is higher than with comparable mesa photovoltaic cells.

Maximum Ratings

Reverse Voltage (V_R)	32 V
Operating and Storage Temperature Range	-40 to +80°C
Soldering Temperature in a 2 mm Distance from the Case Bottom ($t_{\leq 3 \text{ s}}$) (T_S)	230°C
Power Dissipation (P_{tot})	100 mW

Characteristics ($T_{amb} = 25^\circ\text{C}$)

	Symbol	BPX90	BPX90K	Unit
Photosensitivity ($V_R = 5 \text{ V}$, Note 1) ($V_R = 5 \text{ V}$, $\lambda = 950 \text{ nm}$ $E_o = 0.5 \text{ mW/cm}^2$)	S	45 (≥ 25)	—	nA/lx μA
Wavelength of Max Photosensitivity	λ_{Smax}	850	950	nm
Spectral Range of Photosensitivity ($S = 10\%$ of S_{max})	λ	400 1100	800 1150	nm
Radiant Sensitive Area	A	5.5	5	mm^2
Dimensions of the Radiant Sensitive Area	L x W	1.75 x 3.15	1.65 x 3.05	mm
Distance Between Chip Surface and Package Surface	H	0.5	0.5	mm
Half Angle	φ	± 60	± 60	Deg
Dark Current ($V_R = 10 \text{ V}$)	I_R	5 (≤ 200)	5 (≤ 200)	nA
Spectral Photosensitivity ($\lambda = 850 \text{ nm}$)	S_λ	0.50	0.48	A/W
Quantum Efficiency ($\lambda = 850 \text{ nm}$)	η	0.73	0.62	$\frac{\text{Electrons}}{\text{Photon}}$
Open Circuit Voltage ($E_o = 0.5 \text{ mW/cm}^2$ $\lambda = 950 \text{ nm}$)	V_O	450 (≥ 380)	400 (≥ 340)	mV
Short Circuit Current ($E_o = 0.5 \text{ mW/cm}^2$ $\lambda = 950 \text{ nm}$)	I_{SC}	45 (≥ 25)	13 (≥ 8)	μA
Rise and Fall Time of the Photocurrent from 10% to 90% and from 90% to 10% of the Final Value ($R_L = 1 \text{ K}\Omega$, $V_R = 5 \text{ V}$, $\lambda = 830 \text{ nm}$, $I_p = 45 \mu\text{A/BPX90}$, $I_p = 30 \mu\text{A/BPX90K}$)	t_r, t_f	1.3	1.3	μsec
Forward Voltage ($I_F = 100 \text{ mA}$, $E_o = 0$ $T_{amb} = 25^\circ\text{C}$)	V_F	1.3	1.3	V
Capacitance ($V_R = 0 \text{ V}$, $f = 1 \text{ MHz}$ $E_v = 0 \text{ lx}$)	C_O	430	430	pF
($V_R = 10 \text{ V}$, $f = 1 \text{ MHz}$ $E_v = 0 \text{ lx}$)	C_{I0}	100	100	pF
Temperature Coefficient V_O	TC_V	-2.6	-2.6	mV/K
Temperature Coefficient I_S	TC_I	0.18	0.18	%/K
Noise Equivalent Power ($V_R = 1 \text{ V}$)	NEP	8×10^{-14}	8×10^{-14}	$\frac{\text{W}}{\sqrt{\text{Hz}}}$
Detection Limit ($V_R = 1 \text{ V}$)	D	2.9×10^{12}	2.9×10^{12}	$\frac{\text{cm} \cdot \sqrt{\text{Hz}}}{\text{W}}$

¹The illuminance indicated refers to unfiltered radiation of a tungsten-filament lamp at a color temperature of 2856 K (Standard light A in accordance with DIN 5033 and IEC publ. 306.1).

Photodiodes

