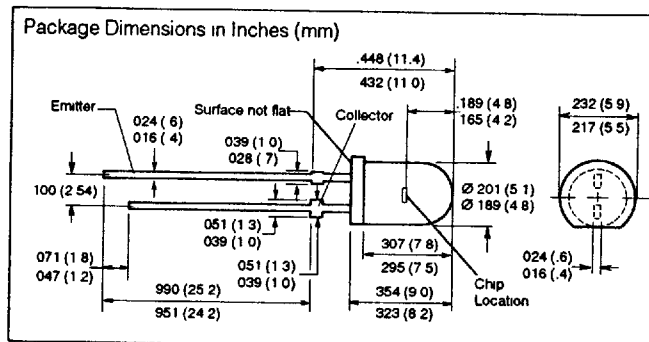
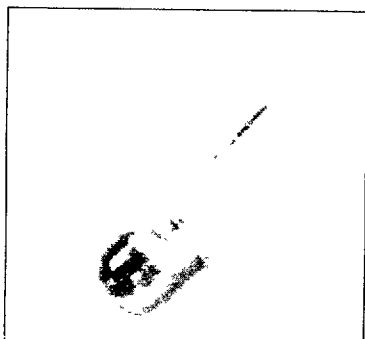


SIEMENS

BP 103B SILICON NPN PHOTOTRANSISTOR



FEATURES

- Silicon NPN Epitaxial Phototransistor
- Acceptance Angle, 50°
- Low Cost
- Very High Gain
- Short Switching Time
- Good Linearity
- Matches IR Emitters LD271, LD273, SFH484 and SFH485
- Package: T1¾ (5 mm)
- Clear Plastic Lens

FEATURES

The BP103B is a high-sensitivity epitaxial NPN silicon planar phototransistor. It is enclosed in a T1¾ (5 mm) clear plastic package.

The collector is denoted by a "flat" on the case bottom.

Maximum Ratings

Operating and Storage Temperature Range (T_{OP} , T_{STG})	 -55° to +100°C
Soldering Temperature (≥ 2 mm from case bottom)	
Dip Soldering Time (T_s) $t \leq 5$ s	 260°C
Iron Soldering Time (T_s) $t \leq 3$ s	 300°C
Collector Emitter Voltage (V_{CEO})	 35 V
Emitter Base Voltage (V_{EB})	 7 V
Collector Current (I_C)	 50 mA
Collector Peak Current (I_{PK}) $t < 10 \mu s$	 100 mA
Power Dissipation (P_{TOT}) $T_A = 25^\circ C$	 200 mW
Thermal Resistance (R_{THJA})	 375 K/W

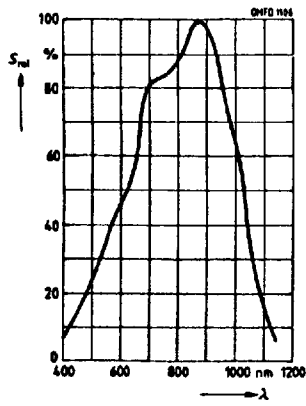
Characteristics ($T_A = 25^\circ C$)

Parameter	Symbol	Value	Unit
Maximum Sensitivity Wavelength	λ_{Smax}	850	nm
Spectral Range, Photosensitivity	λ	420 to 1130	nm
Radiant Sensitive Area	A	0.12	mm ²
Die Area Dimensions	L x W	0.5 x 0.5	mm
Distance, Die Surface to Case Surface	H	4.1 to 4.7	mm
Half Angle	ϕ	± 25	Deg.
Capacitance			
($V_{CE} = 0$ V, $f = 1$ MHz, $E = 0$)	C_{CE}	6.5	pF
Collector Emitter Leakage Current			
($V_{CE} = 35$ V, $E = 0$ lx)	I_{CEO}	5 (≤ 100)	nA

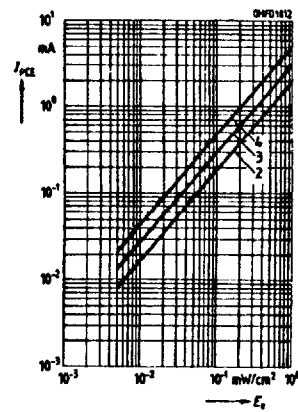
Parameter	Symbol	-2	-3	-4	Unit
Photocurrent, Collector-Emitter ⁽¹⁾					
($E_E = 0.5$ mW/cm ² , $V_{CE} = 5$ V)	I_{PCE}	63 to 125	1 to 2	≥ 16	mA
($E_V = 1000$ lx, $V_{CC} = 5$ V)	I_{PCE}	3.4	5.4	8.6	mA
Rise/Fall Time ($I_C = 1$ mA, $V_{CC} = 5$ V, $R_L = 1$ k Ω)	t_R, t_F	7.5	10	10	μs
Collector Emitter					
Saturation Voltage	V_{CEsat}	130	140	150	mV
($I_C = I_{PCEmin} \cdot 0.3$)					

Phototransistors/
Photodarlington

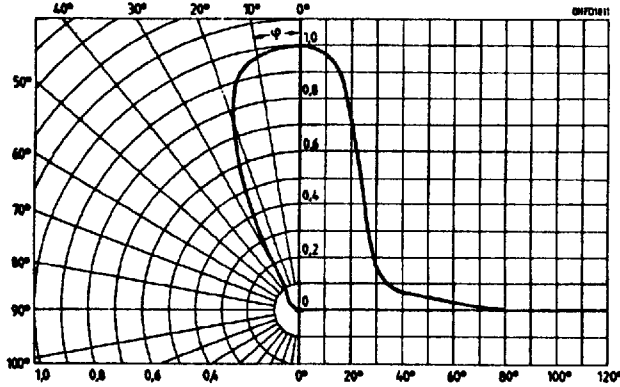
Relative spectral sensitivity
 $S_{REL} = f(\lambda)$



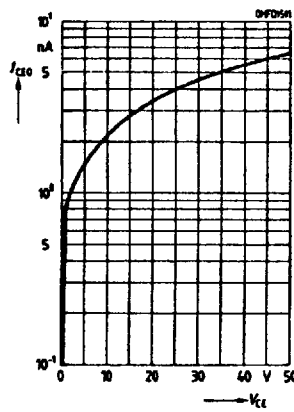
Photocurrent $I_{PCE} = f(E_0)$, $V_{CE} = 5$ V



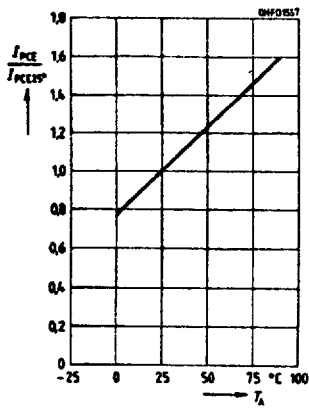
Directional characteristic
 $S_{REL} = f(\varphi)$



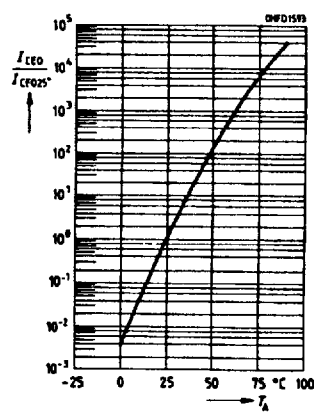
Dark current $I_{CEO} = f(V_{CE})$, $E = 0$



Photocurrent $I_{PCE}/I_{PCE25} = f(T_A)$,
 $V_{CE} = 5$ V



Dark current $I_{CEO}/I_{CEO25} = f(T_A)$,
 $V_{CE} = 25$ V, $E = 0$



Collector emitter capacitance
 $C_{CE} = f(V_{CE})$, $f = 1$ MHz, $E = 0$

