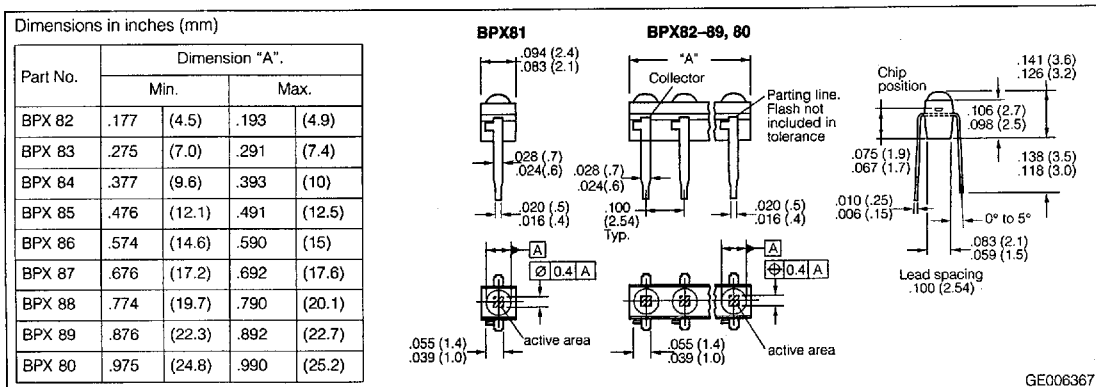


SIEMENS

SINGLE TRANSISTOR BPX81 2-10 TRANSISTOR ARRAYS BPX82-89, 80 Silicon NPN Phototransistor



FEATURES

- Especially suitable for applications from 440 nm to 1070 nm
- High linearity
- Multiple-digit array package of transparent epoxy
- Spectral sensitivity selections*

APPLICATIONS

- Miniature photointerrupters
- Punched tape reading
- Industrial electronics
- For control and drive circuits

DESCRIPTION

The BPX81 is a single transistor plastic encapsulated phototransistor; the BPX82 to BPX89, BPX80 are arrays. These silicon NPN epitaxial planar photo-transistors have standard lead spacing of 0.100" (2.54 mm).

The small angle of the lens-shaped window avoids optical "cross modulation" from an adjacent system. The collector leads are marked by tabs.

*The components are marked -A, -B, -C. Due to differing yields, not possible to order a definite dash number.

Note: 1. I_{PCEmin} is the min. photocurrent of the specified dash number.

Maximum Ratings

Operating and Storage Temperature Range (T_{OP} , T_{STG}) -40° to +80°C
Soldering Temperature (≥ 2 mm from case bottom)
Dip Soldering Time (T_S) ≤ 3 s 230°C
Iron Soldering Time (T_S) ≤ 5 s 300°C
Collector Emitter Voltage (V_{CE}) 32 V
Collector Current (I_C) 50 mA
Collector Surge Current (I_{CS}) $\tau < 10$ μ s 200 mA
Power Dissipation (P_{TOT}) $T_A = 25^\circ\text{C}$ 90 mW
Thermal Resistance (R_{THJA}) 750 K/W

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

Parameter	Sym.	Value	Unit	Condition		
Wavelength, Max. Sensitivity	λ_{Smax}	850	nm			
Spectral Sensitivity Range	λ	440 to 1070				
Radiant Sensitive Area	A	0.17	mm ²			
Chip Area Dimensions	L x W	0.6 x 0.6	mm			
Distance, Chip to Case	H	1.3 to 1.9	mm			
Half Angle	φ	±18	Deg.			
Capacitance	C _{CE}	6	pF		V _{CE} =0 V, f=1 MHz, E=0	
Dark Current	I _{CEO}	25 (≤200)	nA	V _{CE0} =25 V, E=0		
Saturation Voltage, Collector Emitter ⁽¹⁾		150	mV	I _C =I _{PCEmin} x 0.3, E _e =0.5 mW/cm ²		
Parameter	Symbol	-A	-B	-C	Unit	Condition
Photocurrent, λ=950 nm	I _{PCE}	.32 to .63	.40 to .80	≥.5	mA	E _e =0.5 mW/cm ² , V _{CE} =5 V
		1.7	2.2	2.7		E _v =1000 lx, Std. Light A, V _{CE} =5 V
Parameter	Symbol	BPX81-2	BPX81-3	BPX81-4	Unit	Condition
Photocurrent, λ=950 nm	I _{PCE}	.2 to .5	≥.63	≥.63	mA	E _e =0.5 mW/cm ² , V _{CE} =5 V
		1.4	2.2	3.4		E _v =1000 lx, Std. Light A, V _{CE} =5 V
Rise/Fall Time	t _R , t _F	5.5	6	8	μs	I _C =1 mA, V _{CC} =5 V, R _L =1 kΩ

Figure 1. Directional characteristic $S_{REL}=f(\varphi)$

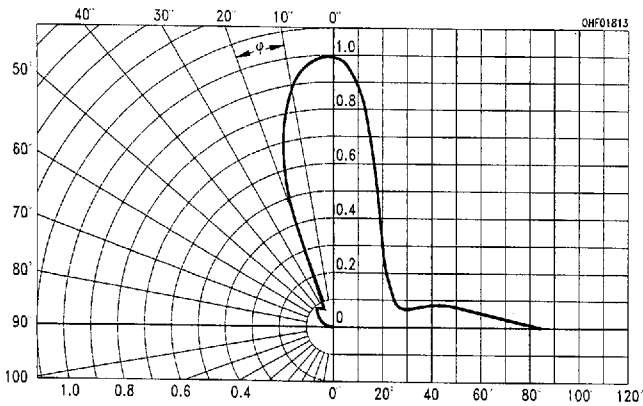


Figure 2. Relative spectral sensitivity $S_{REL}=f(\lambda)$

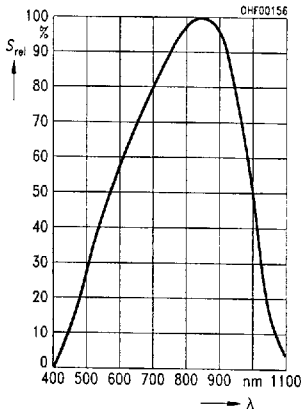


Figure 4. Total power dissipation $P_{TOT}=f(T_A)$

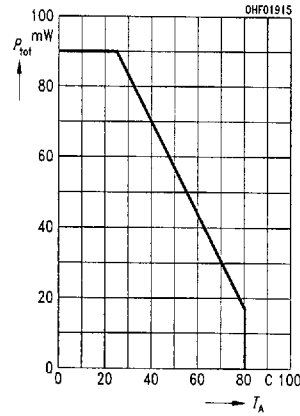


Figure 3. Photocurrent $I_{PCE}=f(E_g)$, $V_{CE}=5V$

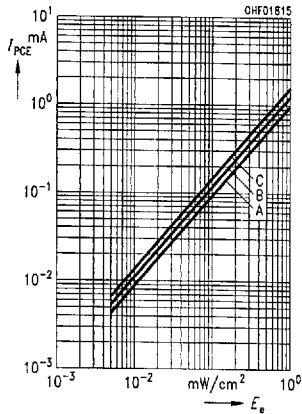


Figure 5. Photocurrent $I_{PCE}/I_{PCE25^{\circ}}=f(T_A)$, $V_{CE}=5V$

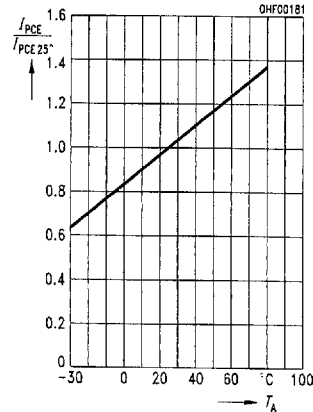


Figure 6. Collector emitter capacitance $C_{CE}=f(V_{CE})$, $f=1\text{ MHz}$, $E=0$

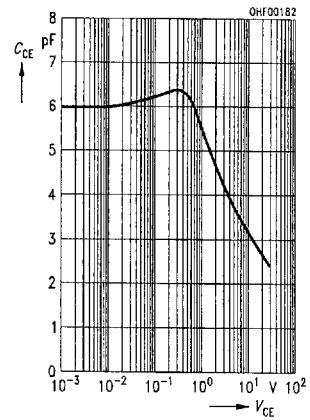


Figure 1. 6-pin DIP

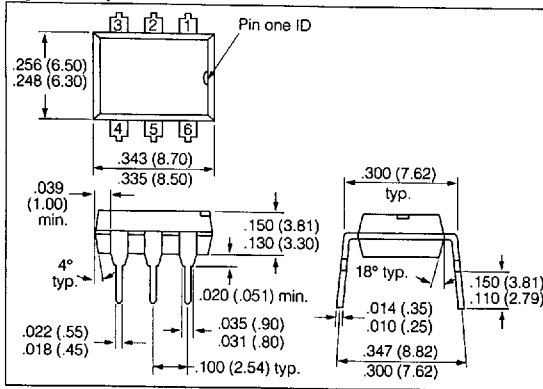


Figure 2. 6-pin, SMD

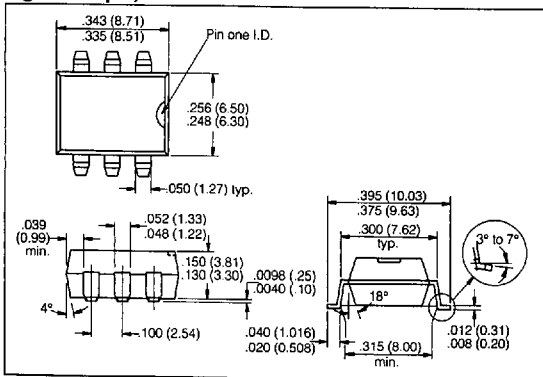


Figure 3. 8-pin DIP

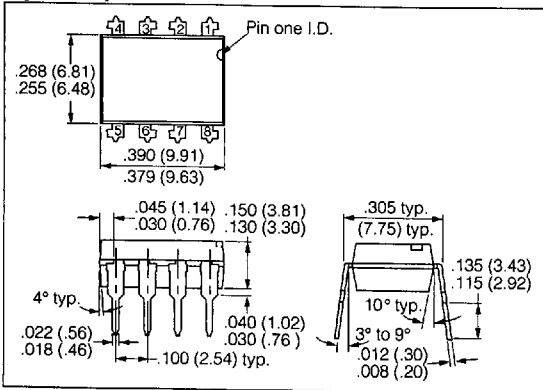


Figure 4. 8-pin, SMD

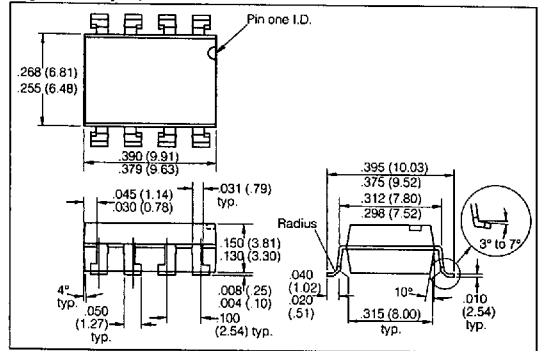


Figure 5. 8-pin SOP (PCMCIA)

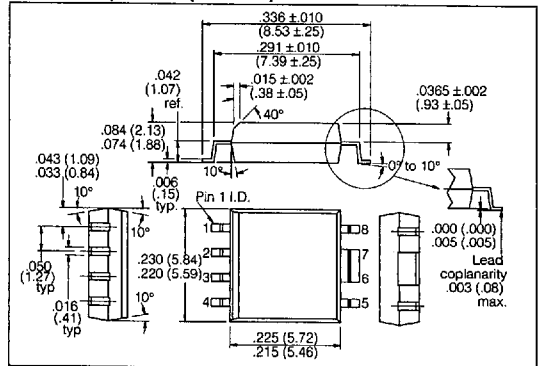


Figure 6. 18-pin SOP (PCMCIA)

