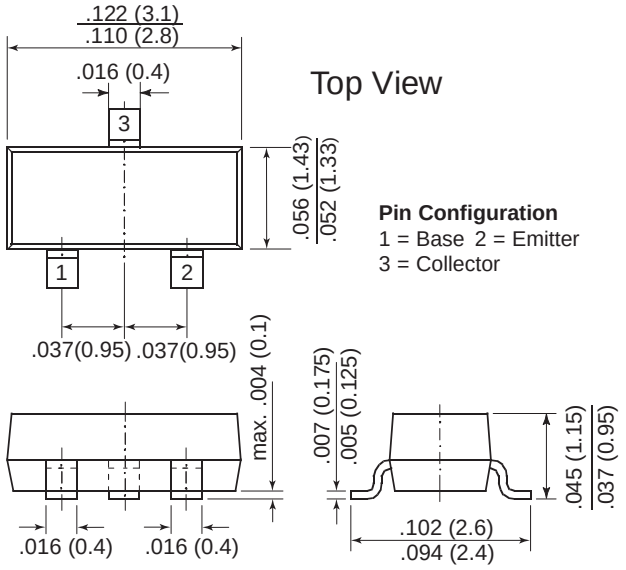
New Product

Vishay Semiconductors
formerly General Semiconductor

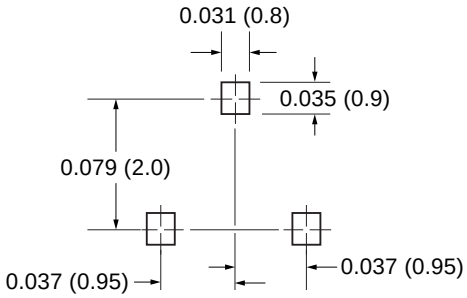
Small Signal Transistors (PNP)

TO-236AB (SOT-23)



Pin Configuration
1 = Base 2 = Emitter
3 = Collector

Mounting Pad Layout



Dimensions in inches and (millimeters)

Features

- PNP Silicon Epitaxial Planar Transistors for switching and AF amplifier applications.
- Suited for low level, low noise, low frequency applications in hybrid circuits.
- Low current, low voltage.
- As complementary types, BCX70 Series NPN transistors are recommended.

Mechanical Data

Case: SOT-23 Plastic Package

Weight: approx. 0.008g

Marking Code: BCX71G = BG
BCX71H = BH
BCX71J = BJ
BCX71K = BK

Packaging Codes/Options:
E8/10K per 13” reel (8mm tape), 30K/box
E9/3K per 7” reel (8mm tape), 30K/box

Maximum Ratings & Thermal Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Collector-Base Voltage	$-V_{CBO}$	45	V
Collector-Emitter Voltage	$-V_{CEO}$	45	V
Emitter-Base Voltage	$-V_{EBO}$	5.0	V
Collector Current	$-I_C$	200	mA
Peak Base Current	$-I_B$	50	mA
Power Dissipation	P_{tot}	250	mW
Thermal Resistance Junction to Ambient Air	$R_{\Theta JA}$	500(1)	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{STG}	–65 to +150	°C

Note: (1) Mounted on FR-4 printed-circuit board.

Electrical Characteristics (T_J = 25°C unless otherwise noted)

Parameter		Symbol	Test Condition	Min	Typ	Max	Unit
DC Current Gain	BCX71G	h_{FE}	$-V_{CE}$ = 5 V, $-I_C$ = 10 µA	—	—	—	—
	BCX71H		$-V_{CE}$ = 5 V, $-I_C$ = 10 µA	30	—	—	
	BCX71J		$-V_{CE}$ = 5 V, $-I_C$ = 10 µA	40	—	—	
	BCX71K		$-V_{CE}$ = 5 V, $-I_C$ = 10 µA	100	—	—	
	BCX71G		$-V_{CE}$ = 5 V, $-I_C$ = 2 mA	120	—	220	
	BCX71H		$-V_{CE}$ = 5 V, $-I_C$ = 2 mA	180	—	310	
	BCX71J		$-V_{CE}$ = 5 V, $-I_C$ = 2 mA	250	—	460	
	BCX71K		$-V_{CE}$ = 5 V, $-I_C$ = 2 mA	380	—	630	
	BCX71G		$-V_{CE}$ = 1 V, $-I_C$ = 50 mA	60	—	—	
	BCX71H		$-V_{CE}$ = 1 V, $-I_C$ = 50 mA	80	—	—	
	BCX71J		$-V_{CE}$ = 1 V, $-I_C$ = 50 mA	100	—	—	
	BCX71K		$-V_{CE}$ = 1 V, $-I_C$ = 50 mA	110	—	—	
Collector-Emitter Saturation Voltage		$-V_{CEsat}$	$-I_C$ = 10 mA, $-I_B$ = 0.25 mA	60	—	250	mV
			$-I_C$ = 50 mA, $-I_B$ = 1.25 mA	120	—	550	
Base-Emitter Saturation Voltage		$-V_{BEsat}$	$-I_C$ = 10 mA, $-I_B$ = 0.25 mA	600	—	850	mV
			$-I_C$ = 50 mA, $-I_B$ = 1.25 mA	680	—	1050	
Base-Emitter Voltage		$-V_{BE}$	$-V_{CE}$ = 5 V, $-I_C$ = 2 mA	600	650	750	mV
			$-V_{CE}$ = 5 V, $-I_C$ = 10 µA	—	550	—	
			$-V_{CE}$ = 1 V, $-I_C$ = 50 mA	—	720	—	
Collector Cut-off Current		$-I_{CBO}$	$-V_{CB}$ = 45 V, V_{EB} = 0	—	—	20	nA
			$-V_{CB}$ = 45 V, V_{EB} = 0, T_A = 150°C	—	—	20	µA
Emitter Cut-off Current		$-I_{EBO}$	$-V_{EB}$ = 4 V, I_C = 0	—	—	20	nA
Gain-Bandwidth Product		f_T	$-V_{CE}$ = 5 V, $-I_C$ = 10 mA, f = 100 MHz	100	—	—	MHz
Collector-Base Capacitance		C_{CBO}	$-V_{CB}$ = 10 V, f = 1 MHz, I_E = 0	—	4.5	—	pF
Emitter-Base Capacitance		C_{EBO}	$-V_{CB}$ = 0.5 V, f = 1 MHz, I_C = 0	—	11	—	pF
Noise Figure		F	$-V_{CE}$ = 5 V, $-I_C$ = 200 µA, R_S = 2 kΩ, f = 100 kHz, B = 200 Hz	—	2	6	dB
Small Signal Current Gain	BCX71G	h_{fe}	$-V_{CE}$ = 5 V, $-I_C$ = 2 mA, f = 1.0 kHZ	—	200		
	BCX71H			—	260		
	BCX71J			—	330		
	BCX71K			—	520		
Turn-on Time at R_L = 990Ω (see fig. 1)		t_{on}	$-V_{CC}$ = 10 V, $-I_C$ = 10 mA, $-I_{B(on)} = I_{B(off)}$ = 1 mA	—	85	150	ns
Turn-off Time at R_L = 990Ω (see fig. 1)		t_{off}	$-V_{CC}$ = 10 V, $-I_C$ = 10 mA, $-I_{B(on)} = I_{B(off)}$ = 1 mA	—	480	800	ns

Ratings and Characteristic Curves (T_A = 25°C unless otherwise noted)

Fig. 1 Switching Waveforms