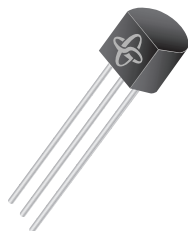
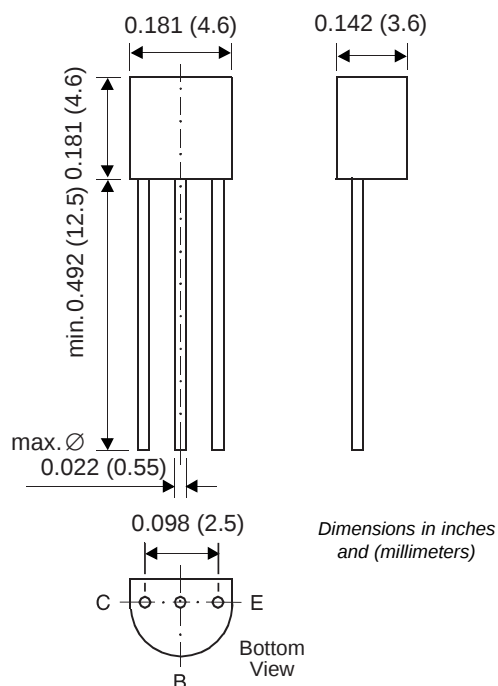


Small Signal Transistors (NPN)



TO-226AA (TO-92)



Features

- NPN Silicon Epitaxial Planar Transistors
- These transistors are subdivided into three groups A, B, and C according to their current gain. The type BC546 is available in groups A and B, however, the types BC547 and BC548 can be supplied in all three groups. As complementary types the PNP transistors BC556...BC558 are recommended.
- On special request, these transistors are also manufactured in the pin configuration TO-18.

Mechanical Data

Case: TO-92 Plastic Package

Weight: approx. 0.18g

Packaging Codes/Options:

E6/Bulk – 5K per container, 20K/box

E7/4K per Ammo mag., 20K/box

Maximum Ratings & Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Collector-Base Voltage	BC546 BC547 BC548	80 50 30	V
Collector-Emitter Voltage	BC546 BC547 BC548	80 50 30	V
Collector-Emitter Voltage	BC546 BC547 BC548	65 45 30	V
Emitter-Base Voltage	BC546, BC547 BC548	6 5	V
Collector Current	I _C	100	mA
Peak Collector Current	I _{CM}	200	mA
Peak Base Current	I _{BM}	200	mA
Peak Emitter Current	-I _{EM}	200	mA
Power Dissipation at T _{amb} = 25°C	P _{tot}	500 ⁽¹⁾	mW
Thermal Resistance Junction to Ambient Air	R _{ΘJA}	250 ⁽¹⁾	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature Range	T _S	-65 to +150	°C

Note: (1) Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case.

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Small Signal Current Gain	Current gain group A	$V_{CE} = 5\text{ V}, I_C = 2\text{ mA},$ $f = 1\text{ kHz}$	—	220	—	—
	B		—	330	—	
	C		—	600	—	
Input Impedance	Current gain group A	$V_{CE} = 5\text{ V}, I_C = 2\text{ mA},$ $f = 1\text{ kHz}$	1.6	2.7	4.5	k Ω
	B		3.2	4.5	8.5	
	C		6	8.7	15	
Output Admittance	Current gain group A	$V_{CE} = 5\text{ V}, I_C = 2\text{ mA},$ $f = 1\text{ kHz}$	—	18	30	μS
	B		—	30	60	
	C		—	60	110	
Reverse Voltage Transfer Ratio	Current gain group A	$V_{CE} = 5\text{ V}, I_C = 2\text{ mA},$ $f = 1\text{ kHz}$	—	$1.5 \cdot 10^{-4}$	—	—
	B		—	$2 \cdot 10^{-4}$	—	
	C		—	$3 \cdot 10^{-4}$	—	
DC Current Gain	Current gain group A	$V_{CE} = 5\text{ V}, I_C = 10\text{ }\mu\text{A}$	—	90	—	—
	B		—	150	—	
	C		—	270	—	
	Current gain group A	$V_{CE} = 5\text{ V}, I_C = 2\text{ mA}$	110	180	220	
	B		200	290	450	
	C		420	500	800	
	Current gain group A	$V_{CE} = 5\text{ V}, I_C = 100\text{ mA}$	—	120	—	
	B		—	200	—	
	C		—	400	—	
Collector Saturation Voltage	V_{CEsat}	$I_C = 10\text{ mA}, I_B = 0.5\text{ mA}$	—	80	200	mV
		$I_C = 100\text{ mA}, I_B = 5\text{ mA}$	—	200	600	
Base Saturation Voltage	V_{BEsat}	$I_C = 10\text{ mA}, I_B = 0.5\text{ mA}$	—	700	—	mV
		$I_C = 100\text{ mA}, I_B = 5\text{ mA}$	—	900	—	
Base-Emitter Voltage	V_{BE}	$V_{CE} = 5\text{ V}, I_C = 2\text{ mA}$	580	660	700	mV
		$V_{CE} = 5\text{ V}, I_C = 10\text{ mA}$	—	—	720	
Collector-Emitter Cutoff Current	BC546	$V_{CE} = 80\text{ V}$	—	0.2	15	nA
	BC547	$V_{CE} = 50\text{ V}$	—	0.2	15	nA
	BC548	$V_{CE} = 30\text{ V}$	—	0.2	15	nA
	BC546	$V_{CE} = 80\text{ V}, T_J = 125^\circ\text{C}$	—	—	4	μA
	BC547	$V_{CE} = 50\text{ V}, T_J = 125^\circ\text{C}$	—	—	4	μA
	BC548	$V_{CE} = 30\text{ V}, T_J = 125^\circ\text{C}$	—	—	4	μA
Gain-Bandwidth Product	f_T	$V_{CE} = 5\text{ V}, I_C = 10\text{ mA},$ $f = 100\text{ MHz}$	—	300	—	MHz
Collector-Base Capacitance	C_{CBO}	$V_{CB} = 10\text{ V}, f = 1\text{ MHz}$	—	3.5	6	pF
Emitter-Base Capacitance	C_{EBO}	$V_{EB} = 0.5\text{ V}, f = 1\text{ MHz}$	—	9	—	pF
Noise Figure	BC546, BC547 BC548	F $V_{CE} = 5\text{ V}, I_C = 200\text{ }\mu\text{A},$ $R_G = 2\text{ k}\Omega, f = 1\text{ kHz},$ $\Delta f = 200\text{ Hz}$	—	2	10	dB

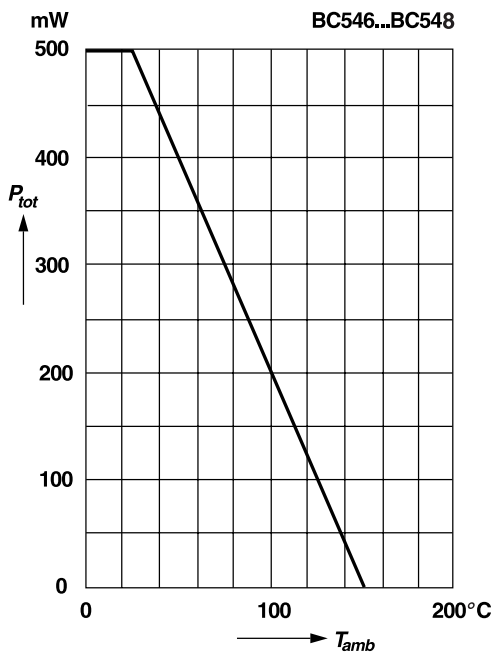
BC546 thru BC548

Small Signal Transistors (NPN)

Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

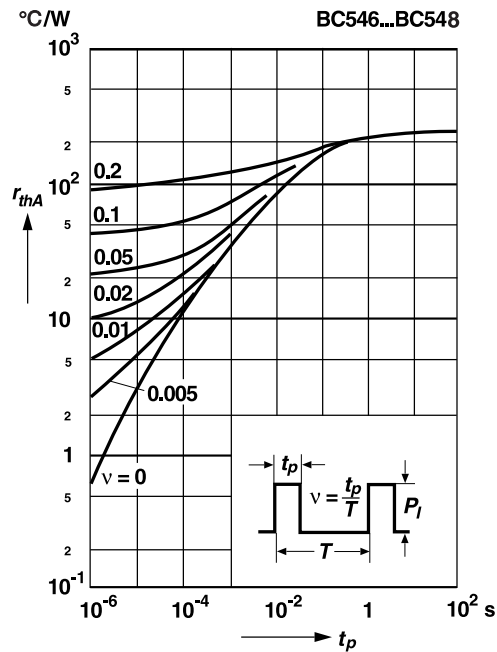
Admissible power dissipation versus temperature

Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case

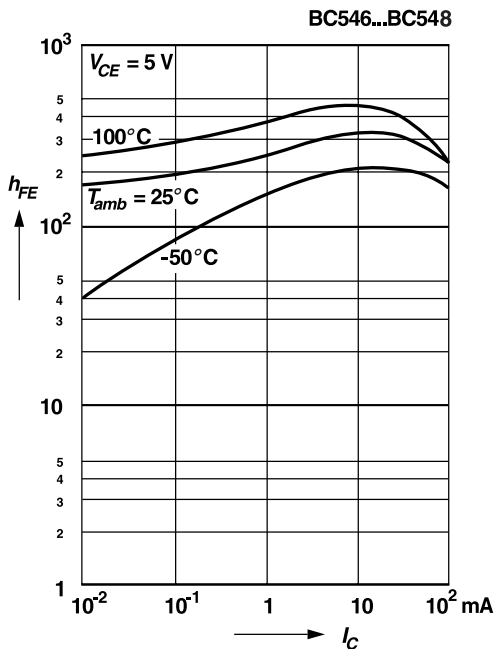


Pulse thermal resistance versus pulse duration

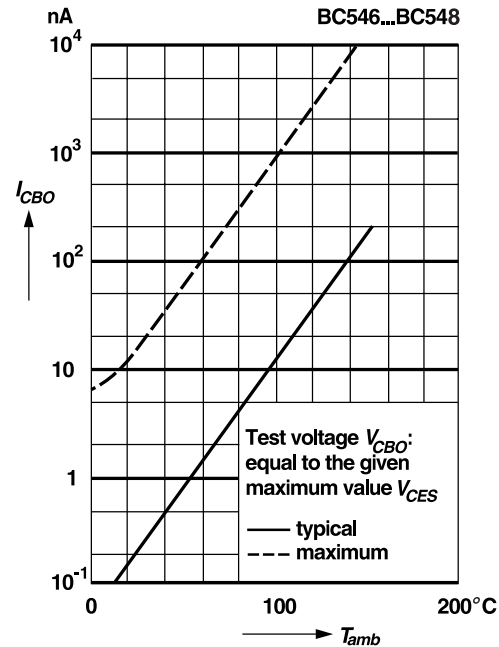
Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case



DC current gain versus collector current



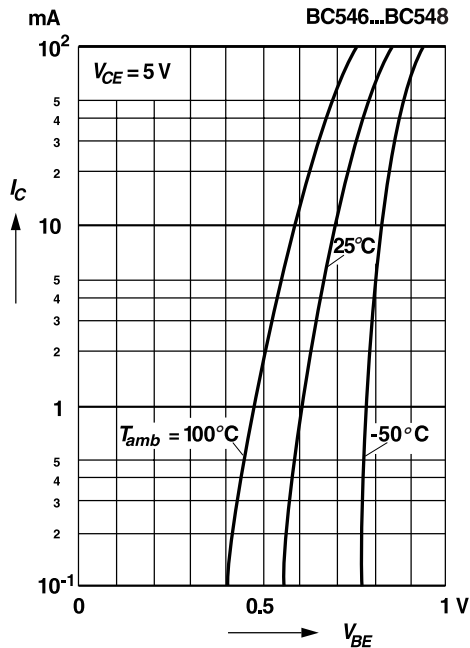
Collector-base cutoff current versus ambient temperature



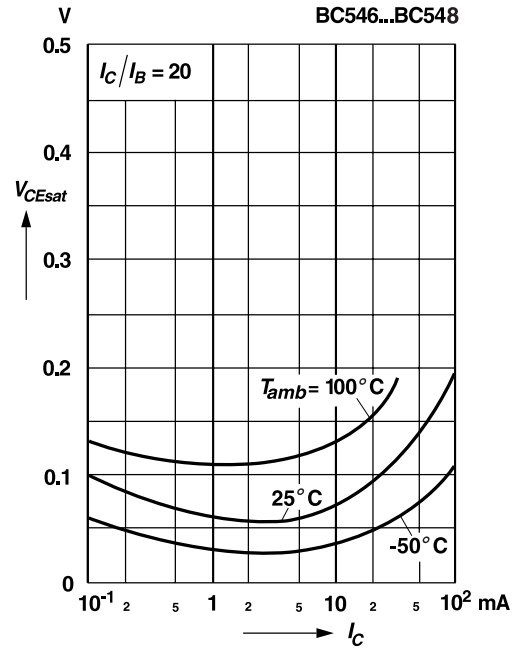
Small Signal Transistors (NPN)

Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

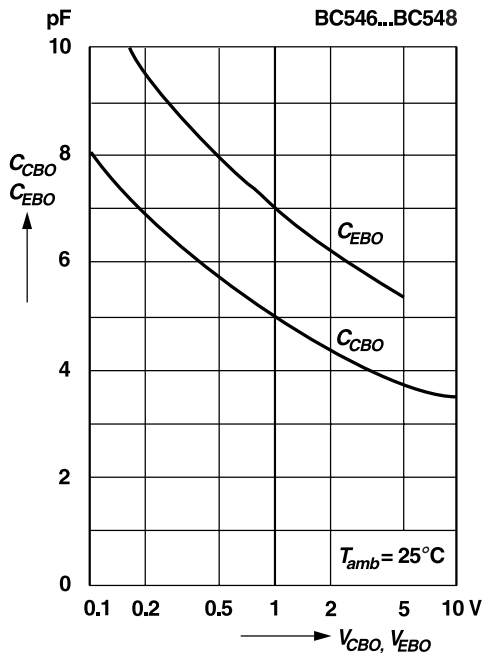
**Collector current versus
base-emitter voltage**



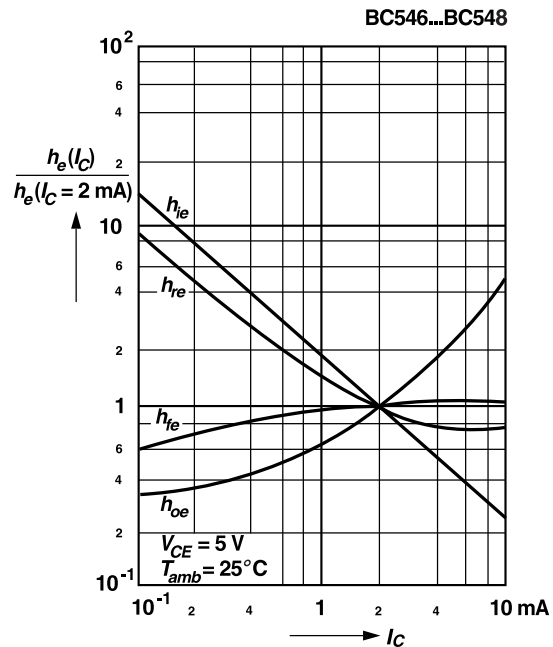
**Collector saturation voltage
versus collector current**



**Collector-base capacitance,
Emitter-base capacitance
versus reverse bias voltage**



**Relative h-parameters
versus collector current**



Small Signal Transistors (NPN)

Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Gain-bandwidth product
versus collector current

