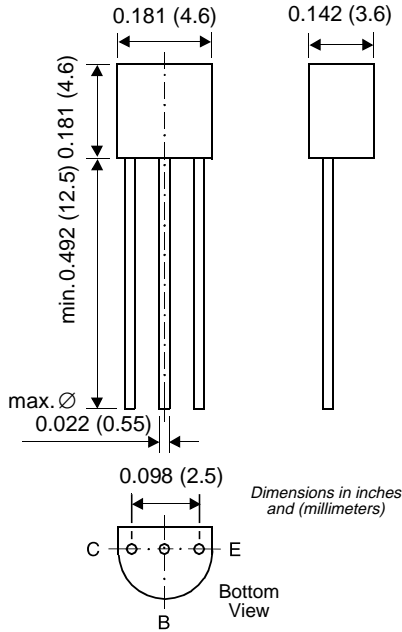


Small Signal Transistors (NPN)



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. The BC549 is a low-noise type and available in groups B and C. As complementary types the PNP transistors BC556...BC559 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

E7/4K per Ammo tape

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

Parameters		Symbols	Value	Units
Collector-Base Voltage	BC546	V_{CBO}	80	V
	BC547		50	
	BC548, BC549		30	
Collector-Emitter Voltage	BC546	V_{CES}	80	V
	BC547		50	
	BC548, BC549		30	
Collector-Emitter Voltage	BC546	V_{CEO}	65	V
	BC547		45	
	BC548, BC549		30	
Emitter-Base Voltage	BC546, BC547	V_{EBO}	6	V
	BC548, BC549		5	
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 $T_{amb} = 25^\circ\text{C}$		P_{tot}	500 ⁽¹⁾	mW
Thermal Resistance Junction to Ambient Air		$R_{\theta JA}$	250 ⁽¹⁾	$^\circ\text{C/W}$
Junction Temperature		T_j	150	$^\circ\text{C}$
Storage Temperature Range		T_s	- 65 to +150	$^\circ\text{C}$

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

Small Signal Transistors (NPN)

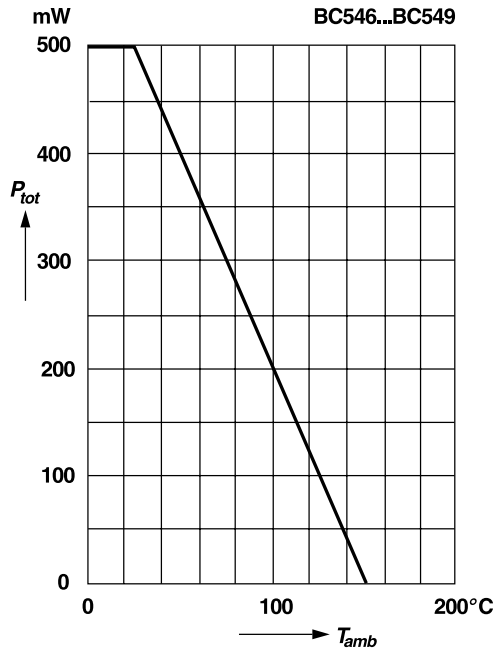
Electrical Characteristics (T_J = 25°C unless otherwise noted)

Parameter		Symbol	Test Condition	Min	Typ	Max	Unit
Small Signal Current Gain	Current gain group A	h _{fe}	V _{CE} = 5 V, I _C = 2 mA, f = 1 kHz	—	220	—	—
	B			—	330	—	
	C			—	600	—	
Input Impedance	Current gain group A	h _{ie}	V _{CE} = 5 V, I _C = 2 mA, f = 1 kHz	1.6	2.7	4.5	kΩ
	B			3.2	4.5	8.5	
	C			6	8.7	15	
Output Admittance	Current gain group A	h _{oe}	V _{CE} = 5 V, I _C = 2 mA, f = 1kHz	—	18	30	μS
	B			—	30	60	
	C			—	60	110	
Reverse Voltage Transfer Ratio	Current gain group A	h _{re}	V _{CE} = 5 V, I _C = 2 mA, f = 1kHz	—	1.5 • 10 ⁻⁴	—	—
	B			—	2 • 10 ⁻⁴	—	
	C			—	3 • 10 ⁻⁴	—	
DC Current Gain	Current gain group A	h _{FE}	V _{CE} = 5 V, I _C = 10 μA	—	90	—	—
	B			—	150	—	
	C			—	270	—	
	Current gain group A		V _{CE} = 5 V, I _C = 2 mA	110	180	220	
	B			200	290	450	
	C			420	500	800	
	Current gain group A		V _{CE} = 5 V, I _C = 100 mA	—	120	—	
	B			—	200	—	
	C			—	400	—	
Collector Saturation Voltage		V _{CEsat}	I _C = 10 mA, I _B = 0.5 mA I _C = 100 mA, I _B = 5 mA	— —	80 200	200 600	mV
Base Saturation Voltage		V _{BEsat}	I _C = 10 mA, I _B = 0.5 mA I _C = 100 mA, I _B = 5 mA	— —	700 900	—	mV
Base-Emitter Voltage		V _{BE}	V _{CE} = 5 V, I _C = 2 mA V _{CE} = 5 V, I _C = 10 mA	580 —	660 —	700 720	mV
Collector-Emitter Cutoff Current	BC546	I _{CES}	V _{CE} = 80 V	—	0.2	15	nA
	BC547		V _{CE} = 50 V	—	0.2	15	nA
	BC548, BC549		V _{CE} = 30 V	—	0.2	15	nA
	BC546		V _{CE} = 80 V, T _j = 125°C	—	—	4	μA
	BC547		V _{CE} = 50 V, T _j = 125°C	—	—	4	μA
	BC548, BC549		V _{CE} = 30 V, T _j = 125°C	—	—	4	μA
Gain-Bandwidth Product		f _T	V _{CE} = 5 V, I _C = 10 mA, f = 100 MHz	—	300	—	MHz
Collector-Base Capacitance		C _{CBO}	V _{CB} = 10 V, f = 1 MHz	—	3.5	6	pF
Emitter-Base Capacitance		C _{EBO}	V _{EB} = 0.5 V, f = 1 MHz	—	9	—	pF
Noise Figure	BC546, BC547 BC548 BC549	F	V _{CE} = 5 V, I _C = 200 μA, R _G = 2 kΩ, f = 1 kHz, Δf = 200 Hz	— —	2 1.2	10 4	dB
	BC549		V _{CE} = 5 V, I _C = 200 μA, R _G = 2 kΩ, f = 30...15000 Hz	—	1.4	4	

Ratings and Characteristic Curves

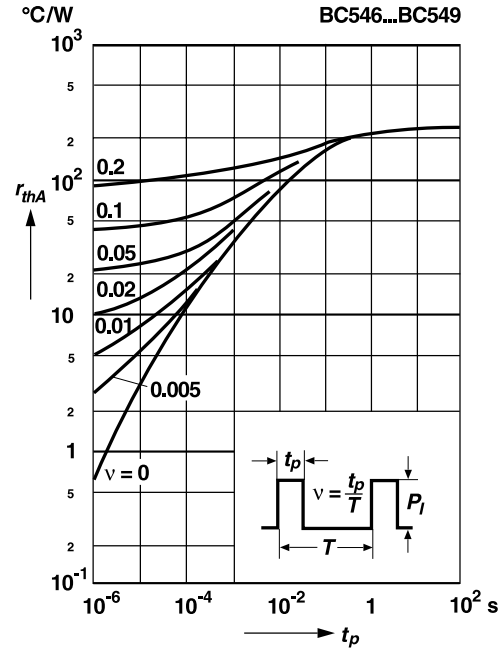
Admissible power dissipation versus temperature

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

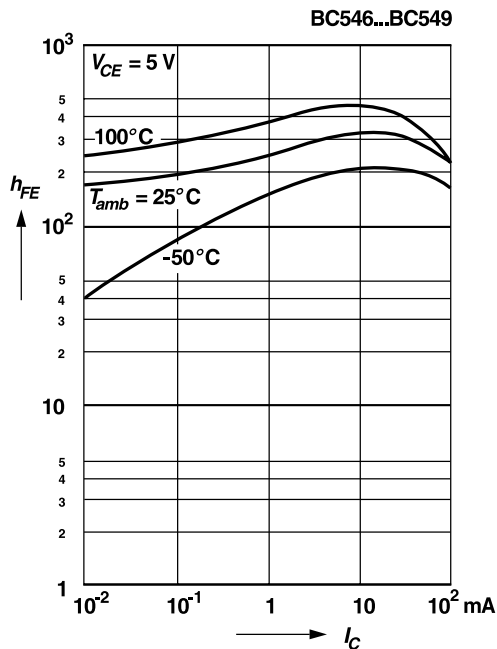


Pulse thermal resistance versus pulse duration

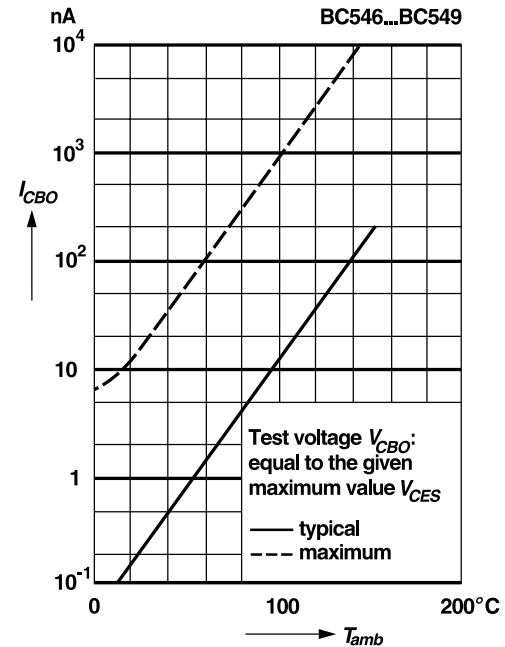
Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case



DC current gain versus collector current



Collector-base cutoff current versus ambient temperature

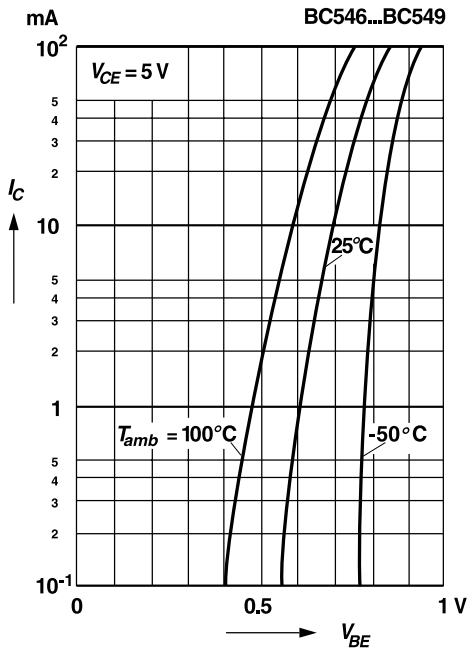


BC546 thru BC549

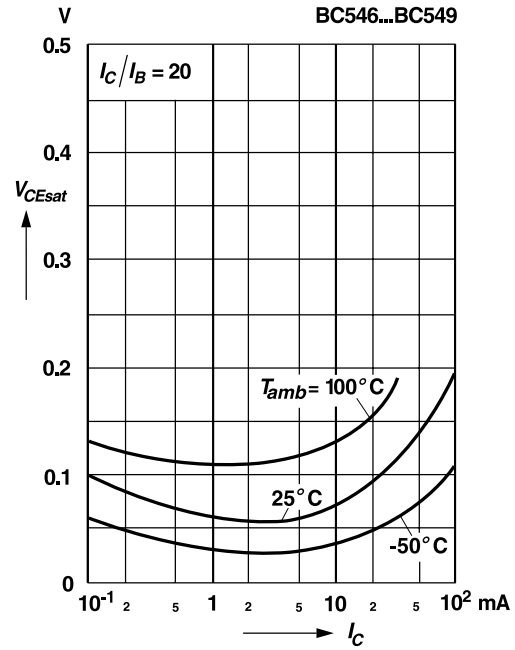
Small Signal Transistors (NPN)

Ratings and Characteristic Curves

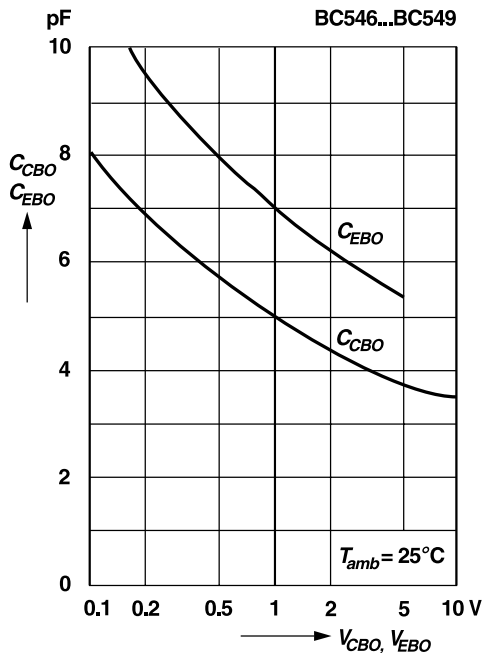
Collector current versus
base-emitter voltage



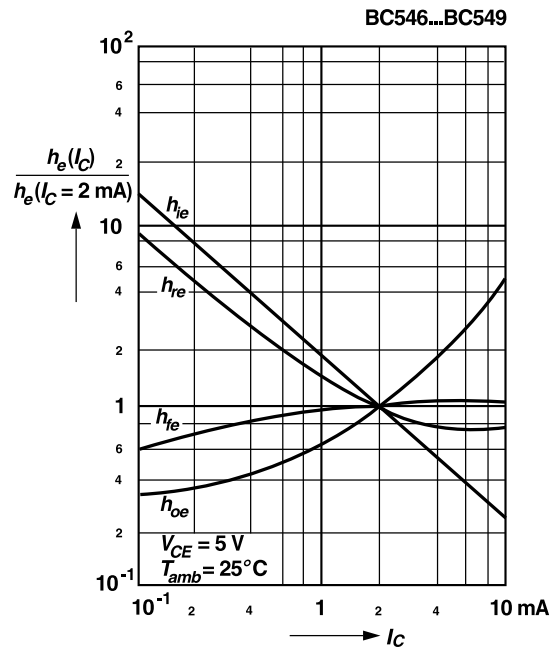
Collector saturation voltage
versus collector current



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



Relative h-parameters
versus collector current

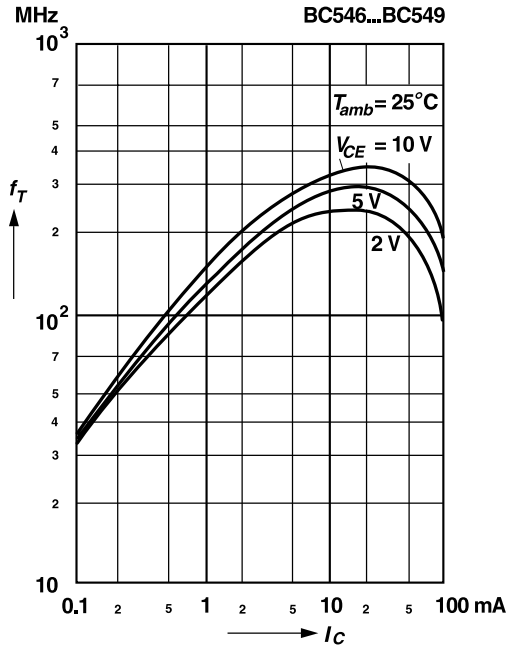


BC546 thru BC549

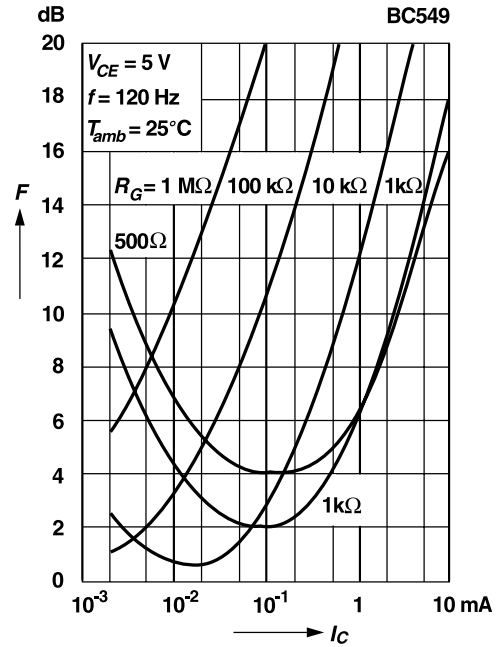
Small Signal Transistors (NPN)

Ratings and Characteristic Curves

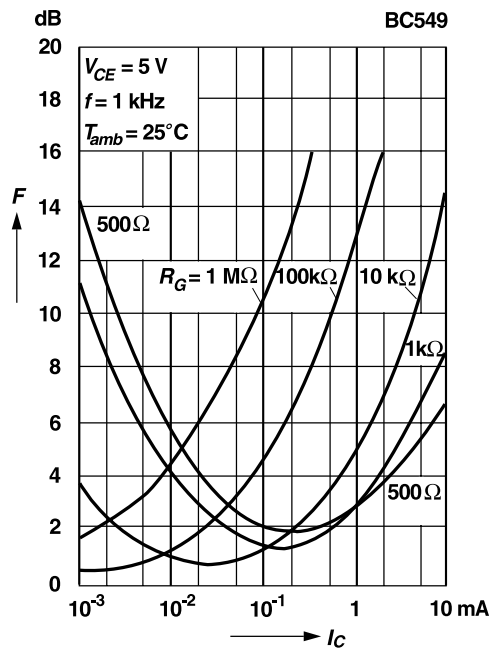
Gain-bandwidth product
versus collector current



Noise figure
versus collector current



Noise figure
versus collector current



Noise figure
versus collector emitter voltage

