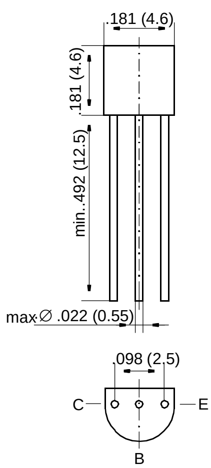
BC546 THRU BC549

Small Signal Transistors (NPN)

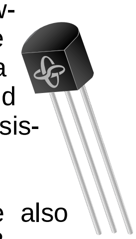
TO-92



Dimensions in inches and (millimeters)

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. 0.18 g

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

		Symbol	Value	Unit
Collector-Base Voltage	**BC546** **BC547** **BC548, BC549**	V_{CBO} V_{CBO} V_{CBO}	80 50 30	V V V
Collector-Emitter Voltage	**BC546** **BC547** **BC548, BC549**	V_{CES} V_{CES} V_{CES}	80 50 30	V V V
Collector-Emitter Voltage	**BC546** **BC547** **BC548, BC549**	V_{CEO} V_{CEO} V_{CEO}	65 45 30	V V V
Emitter-Base Voltage	**BC546, BC547** **BC548, BC549**	V_{EBO} V_{EBO}	6 5	V 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
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_S	–65 to +150	°C

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

GENERAL SEMICONDUCTOR®

BC546 THRU BC549

ELECTRICAL CHARACTERISTICS

	Symbol	Min.	Typ.	Max.	Unit
h-Parameters at V_{CE} = 5 V, I_C = 2 mA, f = 1 kHz, Small Signal Current Gain					
Current Gain Group A	h_{fe}	–	220	–	–
B	h_{fe}	–	330	–	–
C	h_{fe}	–	600	–	–
Input Impedance **Current Gain Group A**	h_{ie}	1.6	2.7	4.5	kΩ
B	h_{ie}	3.2	4.5	8.5	kΩ
C	h_{ie}	6	8.7	15	kΩ
Output Admittance **Current Gain Group A**	h_{oe}	–	18	30	µS
B	h_{oe}	–	30	60	µS
C	h_{oe}	–	60	110	µS
Reverse Voltage Transfer Ratio **Current Gain Group A**	h_{re}	–	$1.5 \cdot 10^{-4}$	–	–
B	h_{re}	–	$2 \cdot 10^{-4}$	–	–
C	h_{re}	–	$3 \cdot 10^{-4}$	–	–
DC Current Gain at V_{CE} = 5 V, I_C = 10µA **Current Gain Group A**	h_{FE}	–	90	–	–
B	h_{FE}	–	150	–	–
C	h_{FE}	–	270	–	–
at V_{CE} = 5 V, I_C = 2 mA **Current Gain Group A**	h_{FE}	110	180	220	–
B	h_{FE}	200	290	450	–
C	h_{FE}	420	500	800	–
at V_{CE} = 5 V, I_C = 100 mA **Current Gain Group A**	h_{FE}	–	120	–	–
B	h_{FE}	–	200	–	–
C	h_{FE}	–	400	–	–
Thermal Resistance Junction to Ambient Air	R_{thJA}	–	–	250[1)]	K/W
Collector Saturation Voltage at I_C = 10 mA, I_B = 0.5 mA	V_{CEsat}	–	80	200	mV
at I_C = 100 mA, I_B = 5 mA	V_{CEsat}	–	200	600	mV
Base Saturation Voltage at I_C = 10 mA, I_B = 0.5 mA	V_{BEsat}	–	700	–	mV
at I_C = 100 mA, I_B = 5 mA	V_{BEsat}	–	900	–	mV
Base-Emitter Voltage at V_{CE} = 5 V, I_C = 2 mA	V_{BE}	580	660	700	mV
at V_{CE} = 5 V, I_C = 10 mA	V_{BE}	–	–	720	mV
Collector-Emitter Cutoff Current at V_{CE} = 80 V **BC546**	I_{CES}	–	0.2	15	nA
at V_{CE} = 50 V **BC547**	I_{CES}	–	0.2	15	nA
at V_{CE} = 30 V **BC548, BC549**	I_{CES}	–	0.2	15	nA
at V_{CE} = 80 V, T_j = 125 °C **BC546**	I_{CES}	–	–	4	µA
at V_{CE} = 50 V, T_j = 125 °C **BC547**	I_{CES}	–	–	4	µA

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

BC546 THRU BC549

ELECTRICAL CHARACTERISTICS

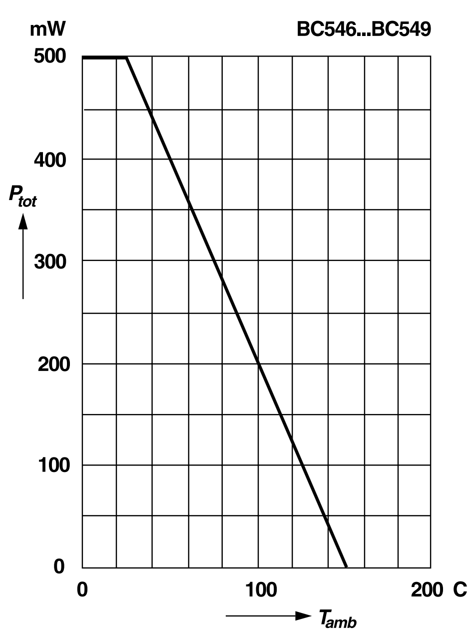
Ratings at 25 °C ambient temperature unless otherwise specified

	Symbol	Min.	Typ.	Max.	Unit
at V_{CE} = 30 V, T_j = 125 °C **BC548, BC549**	I_{CES}	–	–	4 4	µA µA
Gain-Bandwidth Product at V_{CE} = 5 V, I_C = 10 mA, f = 100 MHz	f_T	–	300	–	MHz
Collector-Base Capacitance at V_{CB} = 10 V, f = 1 MHz	C_{CBO}	–	3.5	6	pF
Emitter-Base Capacitance at V_{EB} = 0.5 V, f = 1 MHz	C_{EBO}	–	9	–	pF
Noise Figure at V_{CE} = 5 V, I_C = 200 µA, R_G = 2 kΩ, f = 1 kHz, Δf = 200 Hz **BC546, BC547**	F	–	2	10	dB
BC548 **BC549**	F	–	1.2	4	dB
at V_{CE} = 5 V, I_C = 200 µA, R_G = 2 kΩ, f = 30…15000 Hz **BC549**	F	–	1.4	4	dB

RATINGS AND CHARACTERISTIC CURVES BC546 THRU BC549

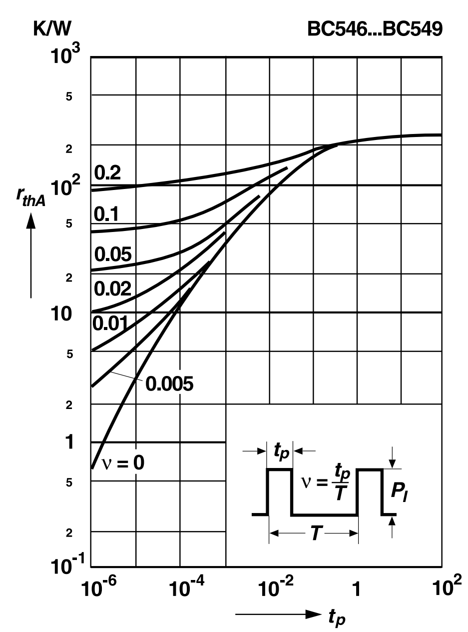
Admissible power dissipation versus temperature

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

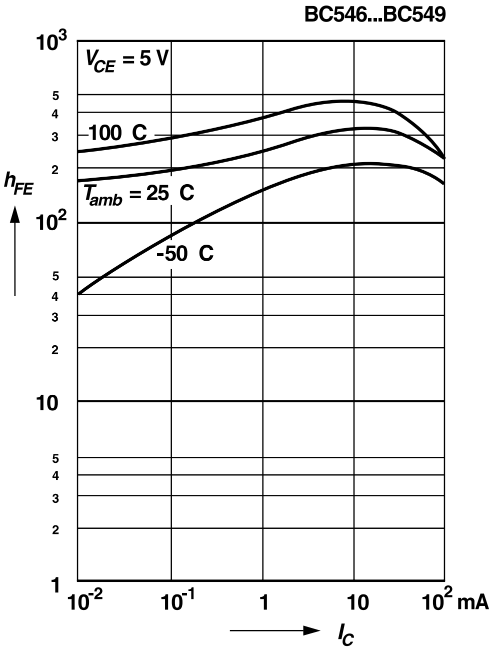


Pulse thermal resistance versus pulse duration

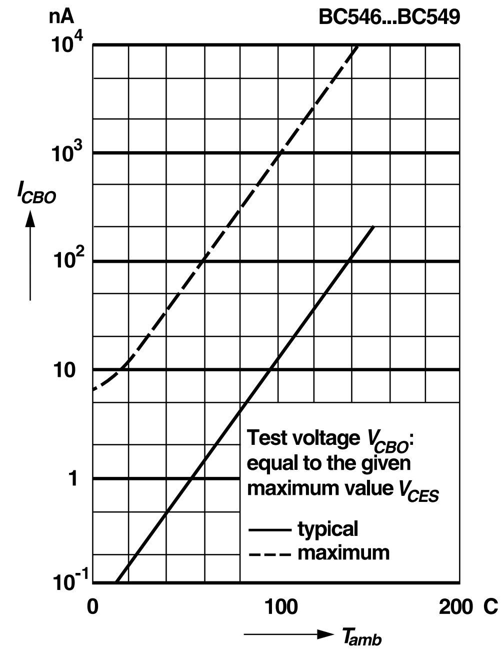
Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case



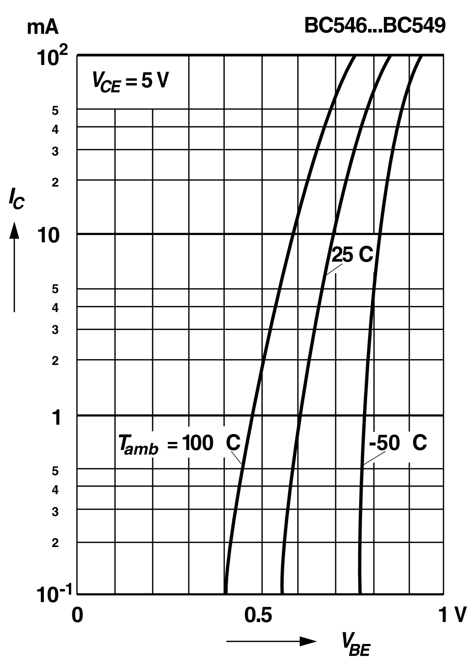
DC current gain versus collector current



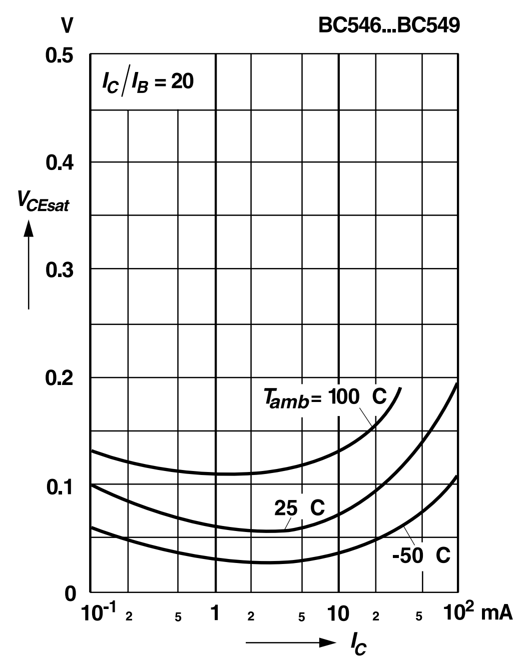
Collector-base cutoff current versus ambient temperature



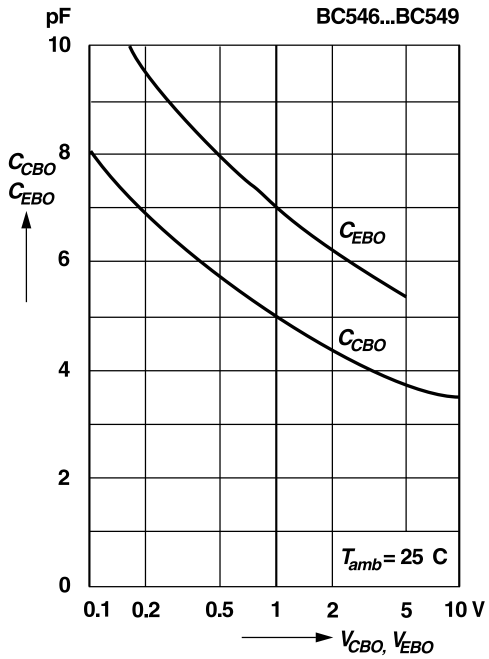
Collector current versus base-emitter voltage



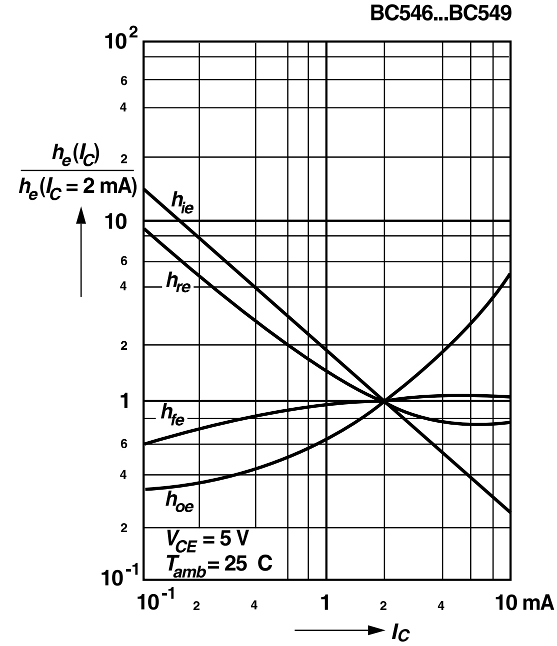
Collector saturation voltage versus collector current



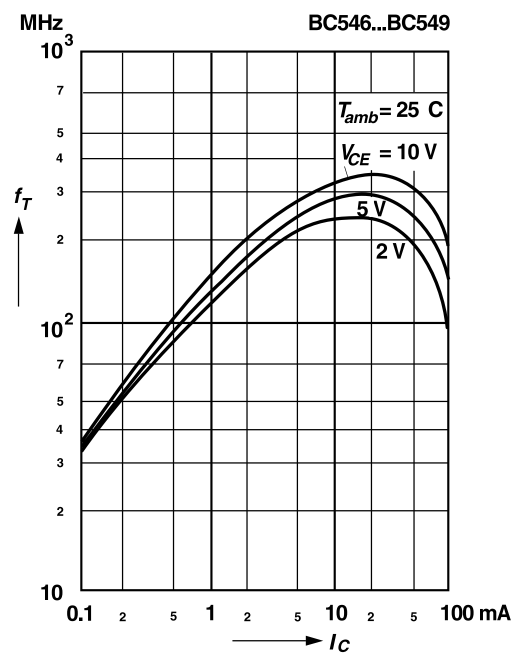
Collector-base capacitance, Emitter-base capacitance versus reverse bias voltage



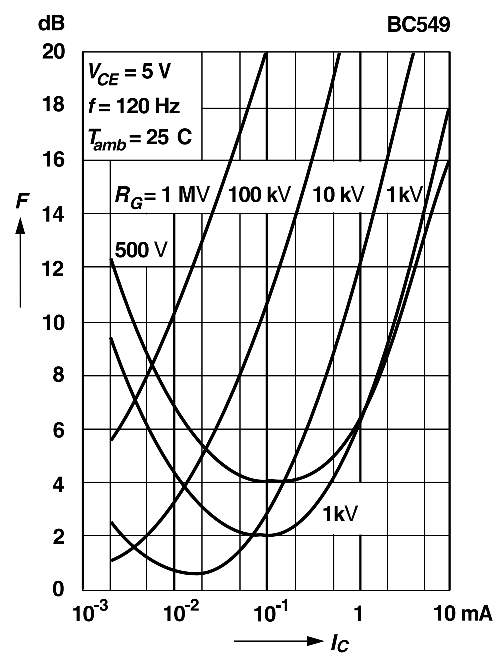
Relative h-parameters versus collector current



Gain-bandwidth product versus collector current

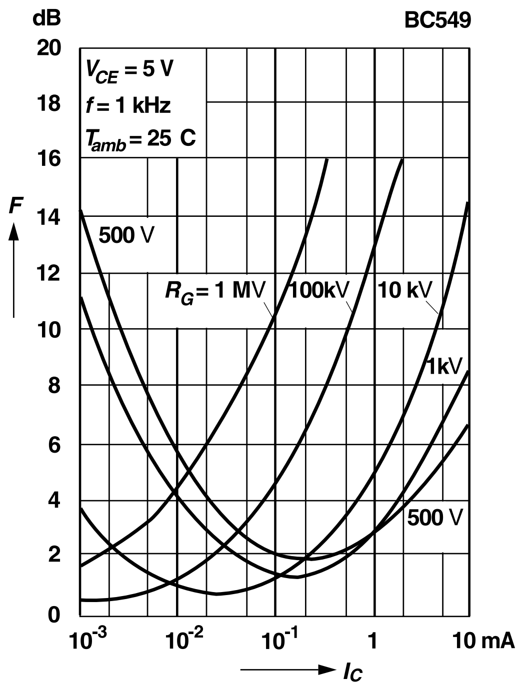


Noise figure versus collector current



RATINGS AND CHARACTERISTIC CURVES BC546 THRU BC549

Noise figure versus collector current



Noise figure versus collector emitter voltage