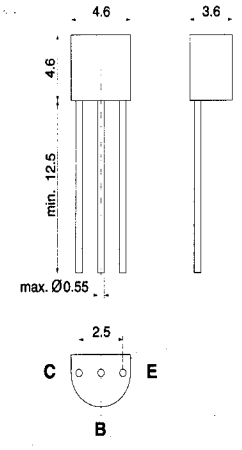
NPN Silicon Expitaxial Planar Transistor

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 can be manufactured in different pin configurations. Please refer to the "TO-92 TRANSISTOR PACKAGE OUTLINE" on page 80 for the available pin options.



TO-92 Plastic Package
Weight approx. 0.18 g
Dimensions in mm

Absolute Maximum Ratings (T_a = 25°C)

		Symbol	Value	Unit
Collector-Base Voltage	**HN / BC 546**	V_{CBO}	80	V
	HN / BC 547	V_{CBO}	50	V
	HN / BC 548, HN / BC 549	V_{CBO}	30	V
Collector-Emitter Voltage	**HN / BC 546**	V_{CES}	85	V
	HN / BC 547	V_{CES}	50	V
	HN / BC 548, HN / BC 549	V_{CES}	30	V
Collector-Emitter Voltage	**HN / BC 546**	V_{CEO}	65	V
	HN / BC 547	V_{CEO}	45	V
	HN / BC 548, HN / BC 549	V_{CEO}	30	V
Emitter-Base Voltage	**HN / BC 546, HN / BC 547**	V_{EBO}	6	V
	HN / BC 548, HN / BC 549	V_{EBO}	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
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

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Characteristics at T_{amb} =25 °C

		Symbol	Min.	Typ.	Max.	Unit
h-Parameters at V_{CE} = 5V, 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} = 5V, I_C = 10 µA						
	Current Gain Group A	h_{FE}	-	90	-	-
	B	h_{FE}	-	150	-	-
	C	h_{FE}	-	270	-	-
at V_{CE} = 5V, 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} = 5V, 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_{thA}	-	-	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	**HN / BC 546**	I_{CES}	-	0.2	15	nA
at V_{CE} = 50 V	**HN / BC 547**	I_{CES}	-	0.2	15	nA
at V_{CE} = 30 V	**HN / BC 548, HN / BC 549**	I_{CES}	-	0.2	15	nA
at V_{CE} = 80 V, T_j = 125 °C	**HN / BC 546**	I_{CES}	-	-	4	µA
at V_{CE} = 50 V, T_j = 125 °C	**HN / BC 547**	I_{CES}	-	-	4	µA

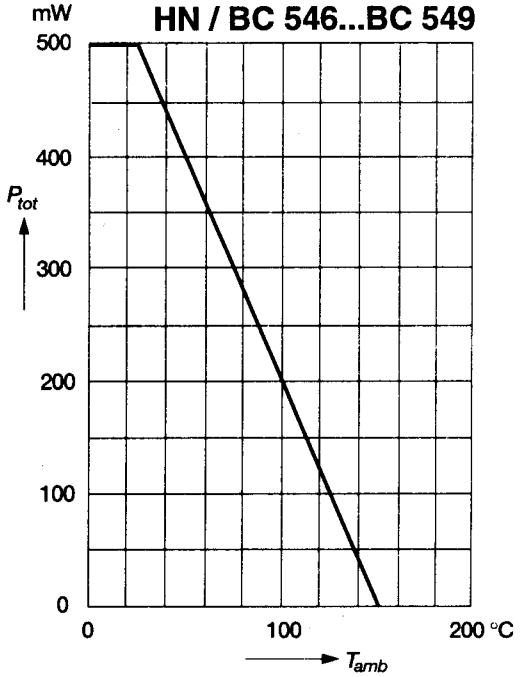
[1] Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case.

Characteristics, continuation

	Symbol	Min.	Typ.	Max.	Unit
at V_{CE} = 30V, T_j = 125 °C **HN / BC 548, HN / BC 549**	I_{CES}	-	-	4 4	µA µA
Gain-Bandwidth Product at V_{CE} = 5V, I_C = 10 mA, f = 100MHz	f_T	-	300	-	MHz
Collector-Base Capacitance at V_{CB} = 10 V, f = 1MHz	C_{CBO}	-	3.5	6	pF
Emitter-Base Capacitance at V_{EB} = 0.5 V, f = 1MHz	C_{EBO}	-	9	-	pF
Noise Figure at V_{CE} = 5 V, I_C = 200 µA, R_G = 2 kΩ, f = 1kHz, Δf = 200 Hz **HN / BC 546, HN / BC 547**	F	-	2	10	dB
HN / BC 548 **HN / BC 549**	F	-	1.2	4	dB

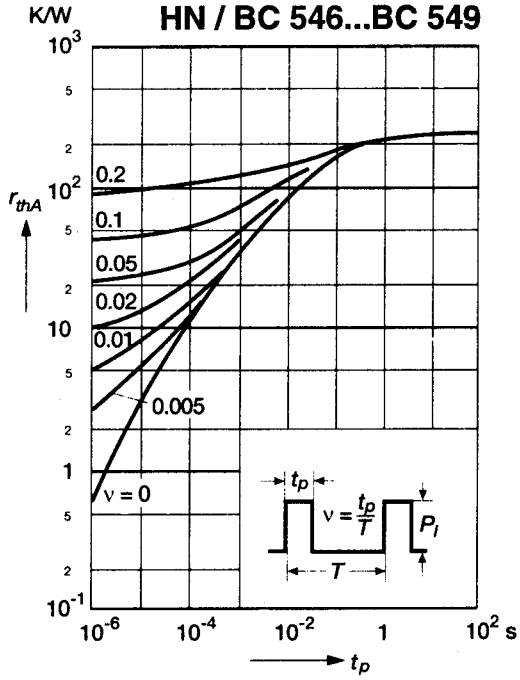
Admissible power dissipation versus temperature

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

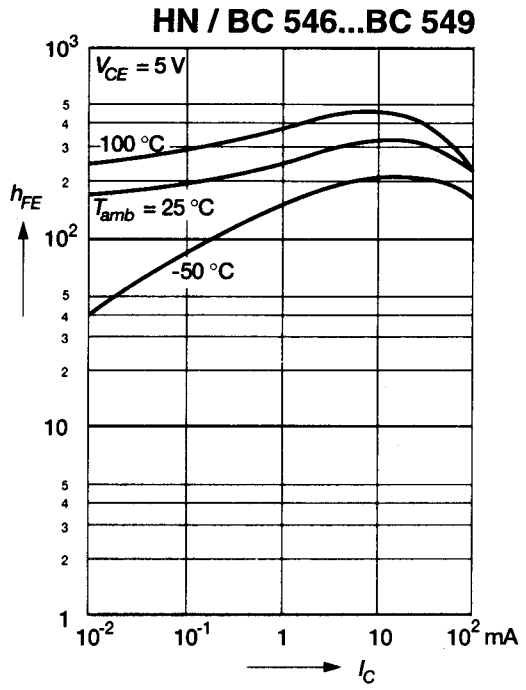


Pulse thermal resistance versus pulse duration

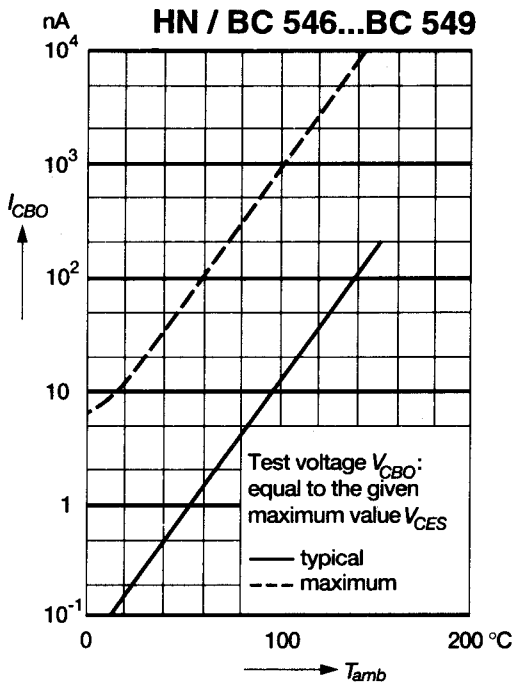
Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case



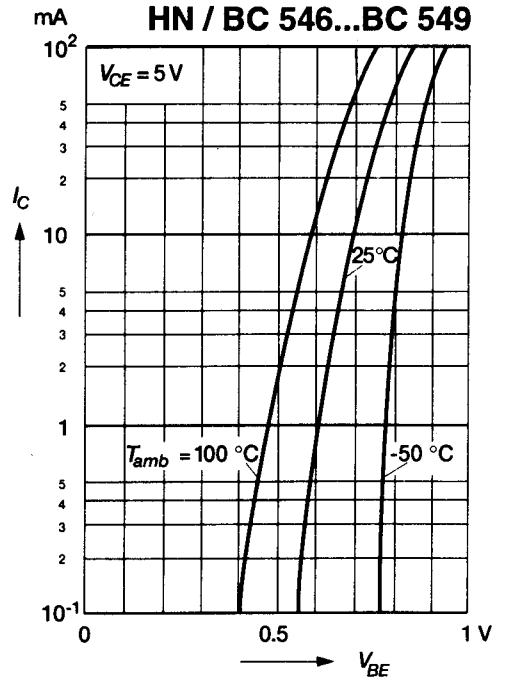
DC current gain versus collector current



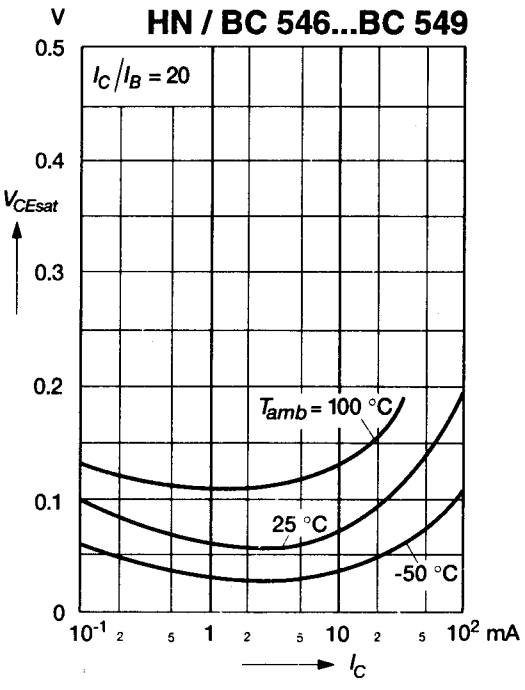
Collector-base cutoff current versus ambient temperature



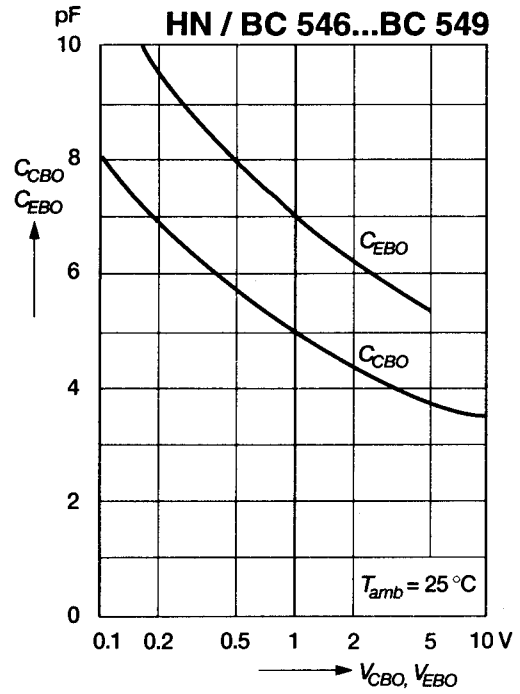
Collector current versus base-emitter voltage



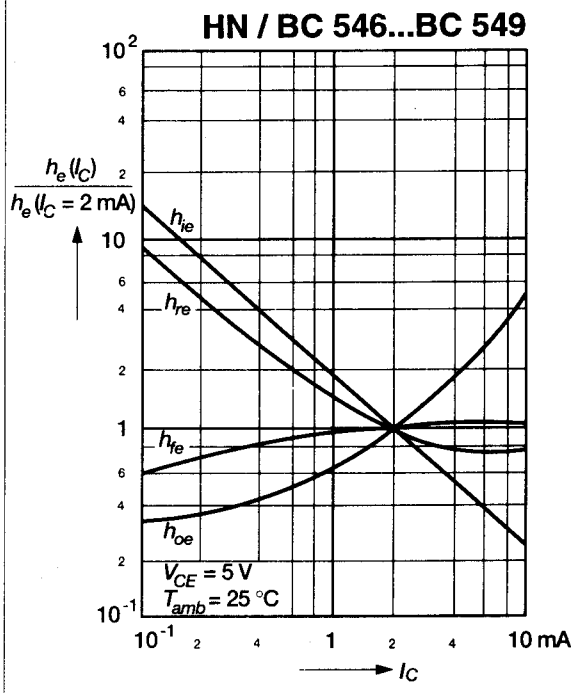
Collector saturation voltage versus collector current



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



Relative h-parameters versus collector current



Gain-bandwidth product versus collector current