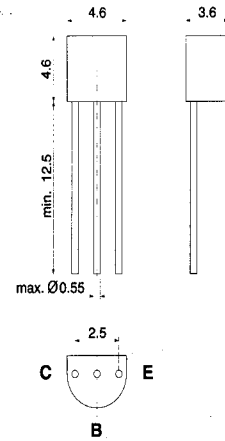


NPN Silicon Expitaxial Planar Transistor

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.



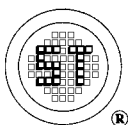
TO-92 Plastic Package
Weight approx. 0.18 g
Dimensions in mm

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

		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 $T_{amb} = 25^\circ\text{C}$		P_{tot}	500 ¹⁾	mW
Junction Temperature		T_j	150	$^\circ\text{C}$
Storage Temperature Range		T_s	-65 to + 150	$^\circ\text{C}$

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

G S P FORM A AVAILABLE



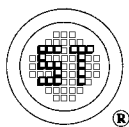
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Characteristics at $T_{amb} = 25\text{ }^\circ\text{C}$

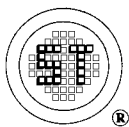
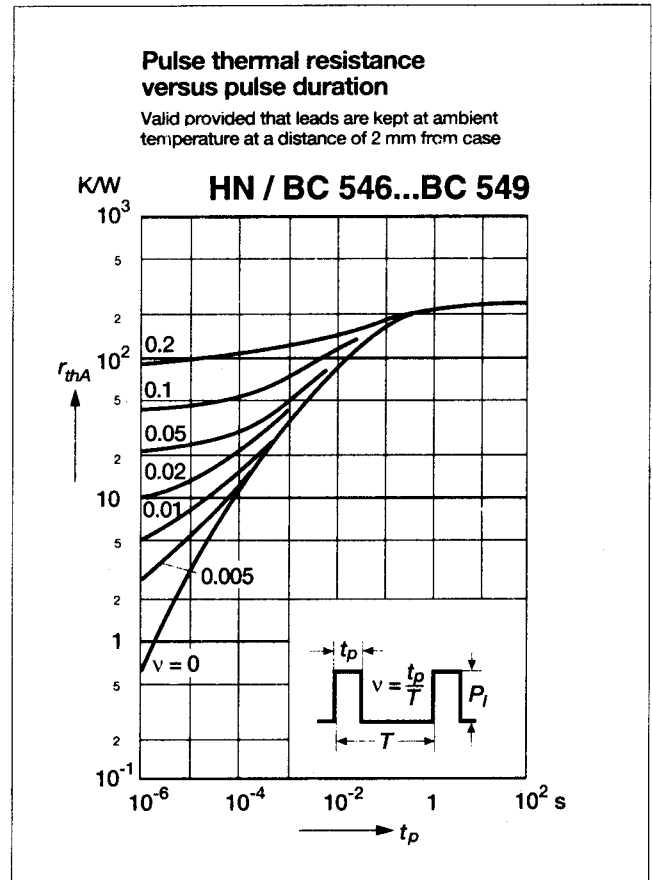
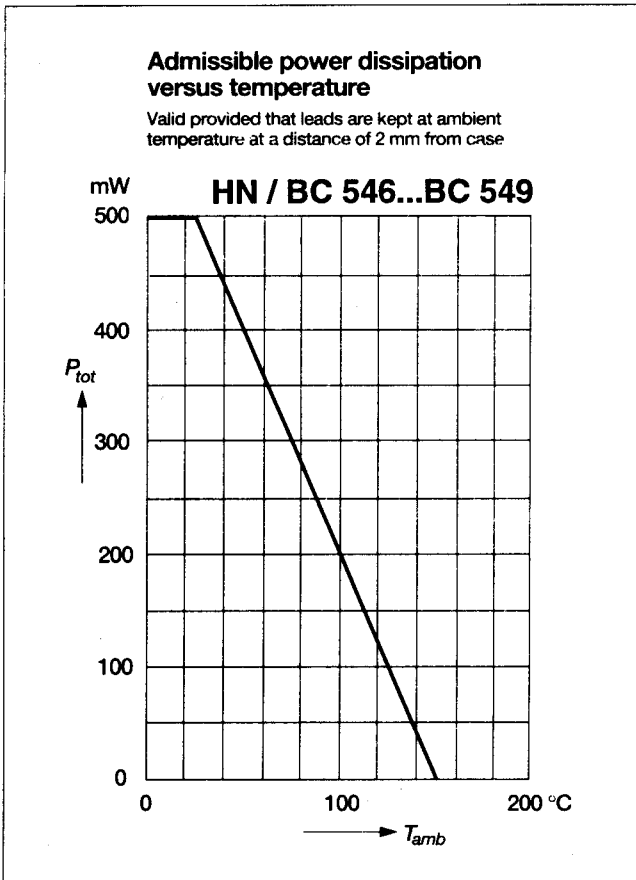
	Symbol	Min.	Typ.	Max.	Unit
h-Parameters at $V_{CE} = 5\text{V}$, $I_C = 2\text{ mA}$, $f = 1\text{ kHz}$,					
Small Signal Current Gain	Current Gain Group A	h_{fe}	-	220	-
	B	h_{fe}	-	330	-
	C	h_{fe}	-	600	-
Input Impedance	Current Gain Group A	h_{ie}	1.6	2.7	4.5
	B	h_{ie}	3.2	4.5	8.5
	C	h_{ie}	6	8.7	15
Output Admittance	Current Gain Group A	h_{oe}	-	18	30
	B	h_{oe}	-	30	60
	C	h_{oe}	-	60	110
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 $V_{CE} = 5\text{V}$, $I_C = 10\text{ }\mu\text{A}$	Current Gain Group A	h_{FE}	-	90	-
	B	h_{FE}	-	150	-
	C	h_{FE}	-	270	-
at $V_{CE} = 5\text{V}$, $I_C = 2\text{ mA}$	Current Gain Group A	h_{FE}	110	180	220
	B	h_{FE}	200	290	450
	C	h_{FE}	420	500	800
at $V_{CE} = 5\text{V}$, $I_C = 100\text{ mA}$	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 $I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$	V_{CEsat}	-	80	200	mV
	V_{CEsat}	-	200	600	mV
Base Saturation Voltage					
at $I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$	V_{BEsat}	-	700	-	mV
	V_{BEsat}	-	900	-	mV
Base Emitter Voltage					
at $V_{CE} = 5\text{ V}$, $I_C = 2\text{ mA}$	V_{BE}	580	660	700	mV
at $V_{CE} = 5\text{ V}$, $I_C = 10\text{ mA}$	V_{BE}	-	-	720	mV
Collector Emitter Cutoff Current					
at $V_{CE} = 80\text{ V}$	I_{CES}	-	0.2	15	nA
at $V_{CE} = 50\text{ V}$	I_{CES}	-	0.2	15	nA
at $V_{CE} = 30\text{ V}$	I_{CES}	-	0.2	15	nA
at $V_{CE} = 80\text{ V}$, $T_j = 125\text{ }^\circ\text{C}$	I_{CES}	-	-	4	μA
at $V_{CE} = 50\text{ V}$, $T_j = 125\text{ }^\circ\text{C}$	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 $V_{CE} = 30V, T_j = 125^\circ C$ 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 $V_{CE} = 5 V, I_C = 200 \mu A, R_G = 2 k\Omega,$ $f = 1kHz, \Delta f = 200 Hz$ HN / BC 546, HN / BC 547	F	-	2	10	dB
HN / BC 548 HN / BC 549	F	-	1.2	4	dB

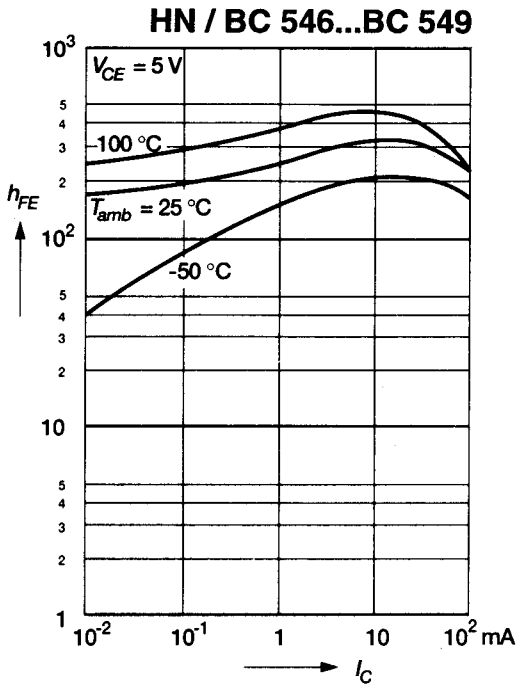


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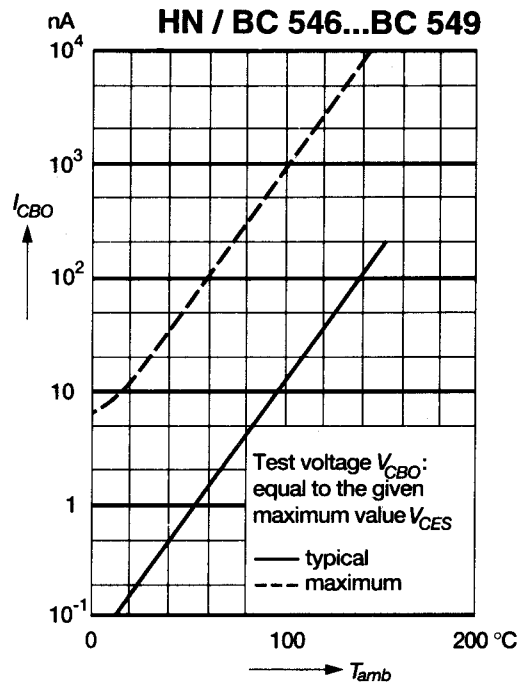
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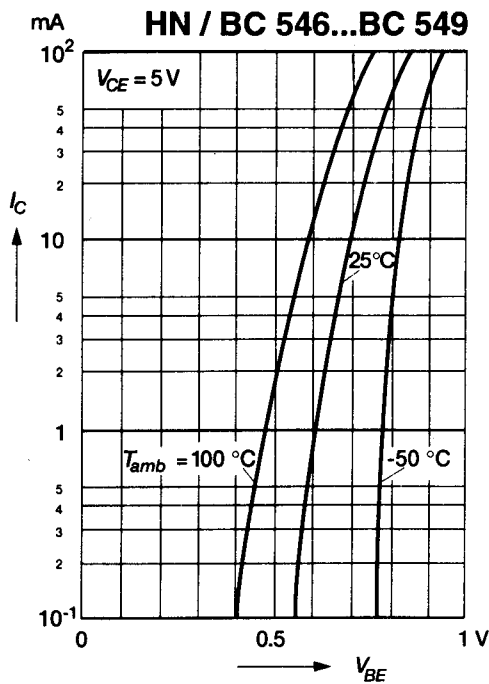
DC current gain versus collector current



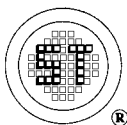
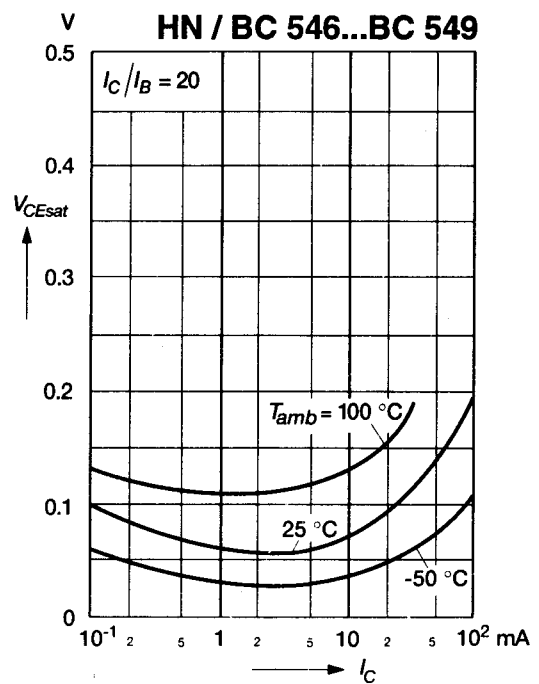
Collector-base cutoff current versus ambient temperature



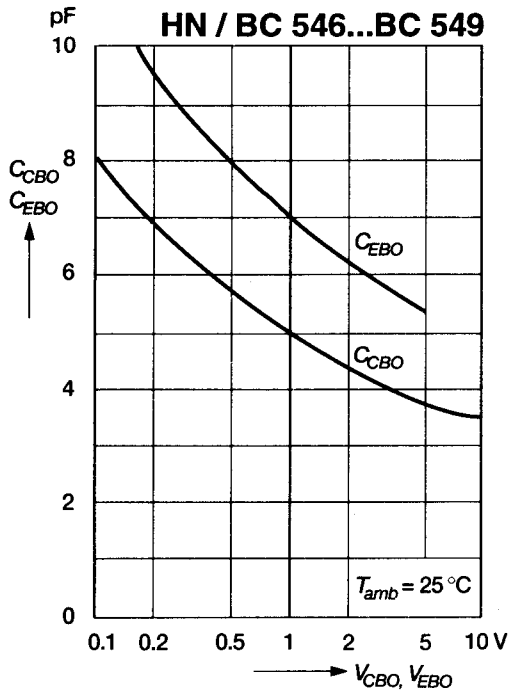
Collector current versus base-emitter voltage



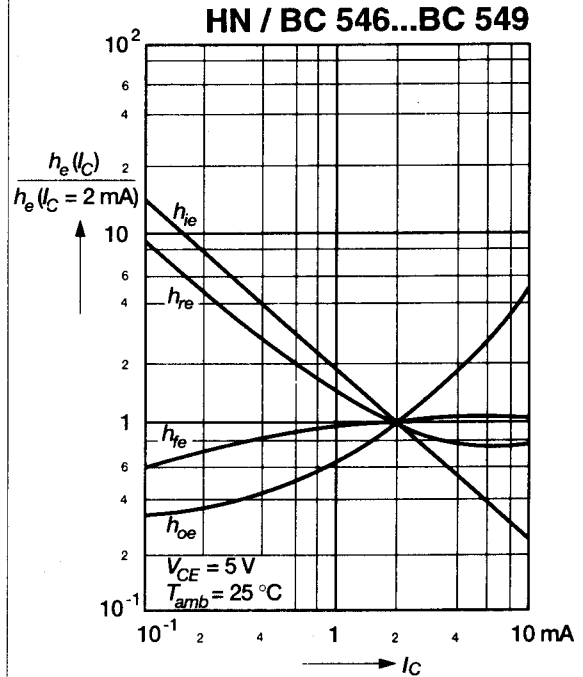
Collector saturation voltage versus collector current



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



Relative h-parameters
versus collector current



Gain-bandwidth product
versus collector current

