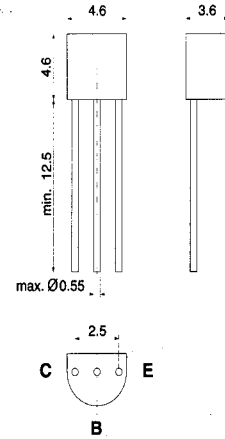


## NPN Silicon Epitaxial Planar Transistor

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.



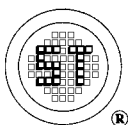
TO-92 Plastic Package  
Weight approx. 0.18 g  
Dimensions in mm

### 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 <sup>1)</sup>	mW
Junction Temperature		$T_j$	150	$^\circ\text{C}$
Storage Temperature Range		$T_s$	-65 to + 150	$^\circ\text{C}$

<sup>1)</sup> 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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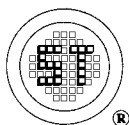
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**Characteristics at T<sub>amb</sub> = 25 °C**

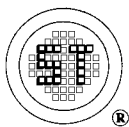
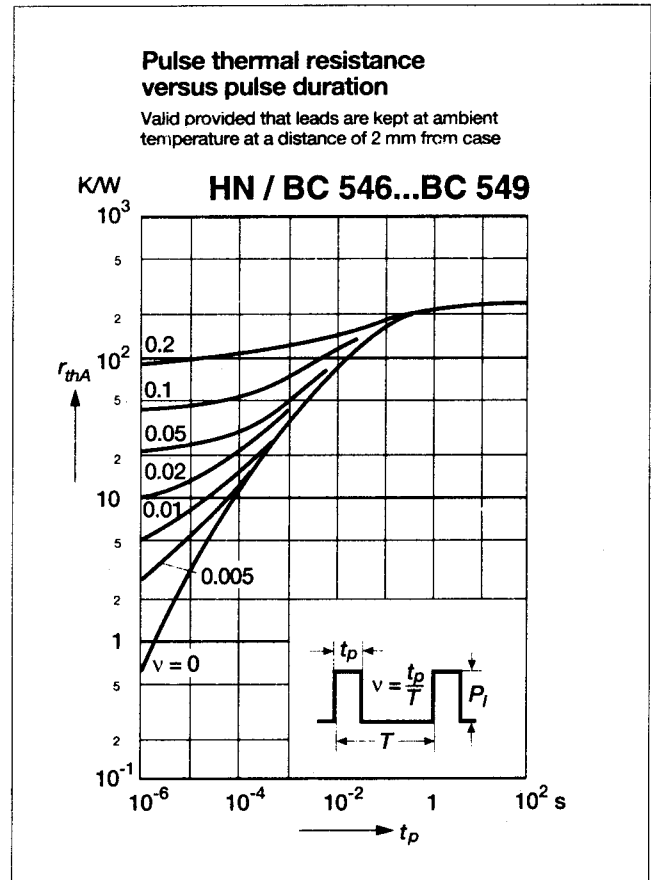
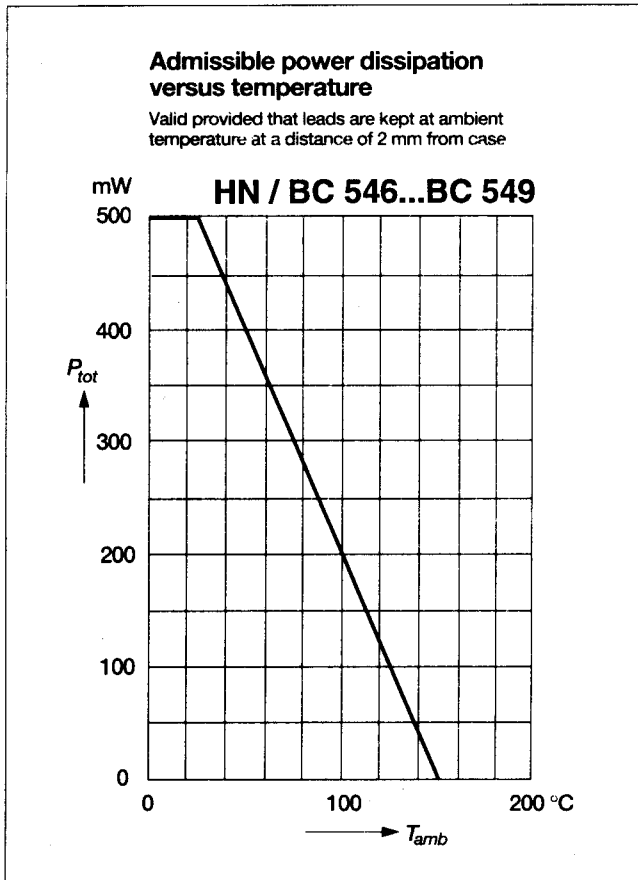
	Symbol	Min.	Typ.	Max.	Unit
h-Parameters at V <sub>CE</sub> = 5V, I <sub>C</sub> = 2 mA, f = 1 kHz,					
Small Signal Current Gain	Current Gain Group A	$h_{fe}$	-	220	-
	B	$h_{fe}$	-	330	-
	C	$h_{fe}$	-	600	-
Input Impedance	Current Gain Group A	$h_{ie}$	1.6	2.7	4.5
	B	$h_{ie}$	3.2	4.5	8.5
	C	$h_{ie}$	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 <sub>CE</sub> = 5V, I <sub>C</sub> = 10 µA	Current Gain Group A	$h_{FE}$	-	90	-
	B	$h_{FE}$	-	150	-
	C	$h_{FE}$	-	270	-
at V <sub>CE</sub> = 5V, I <sub>C</sub> = 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 <sub>CE</sub> = 5V, I <sub>C</sub> = 100 mA	Current Gain Group A	$h_{FE}$	-	120	-
	B	$h_{FE}$	-	200	-
	C	$h_{FE}$	-	400	-
Thermal Resistance Junction to Ambient Air	R <sub>thA</sub>	-	-	250 <sup>1)</sup>	K/W
Collector Saturation Voltage					
at I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0.5 mA	V <sub>CEsat</sub>	-	80	200	mV
	V <sub>CEsat</sub>	-	200	600	mV
Base Saturation Voltage					
at I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0.5 mA	V <sub>BEsat</sub>	-	700	-	mV
	V <sub>BEsat</sub>	-	900	-	mV
Base Emitter Voltage					
at V <sub>CE</sub> = 5 V, I <sub>C</sub> = 2 mA	V <sub>BE</sub>	580	660	700	mV
	V <sub>BE</sub>	-	-	720	mV
Collector Emitter Cutoff Current					
at V <sub>CE</sub> = 80 V	HN / BC 546	I <sub>CES</sub>	-	0.2	15
	HN / BC 547	I <sub>CES</sub>	-	0.2	15
at V <sub>CE</sub> = 50 V		I <sub>CES</sub>	-	0.2	15
at V <sub>CE</sub> = 30 V	HN / BC 548, HN / BC 549	I <sub>CES</sub>	-	0.2	15
at V <sub>CE</sub> = 80 V, T <sub>j</sub> = 125 °C	HN / BC 546	I <sub>CES</sub>	-	-	4
	HN / BC 547	I <sub>CES</sub>	-	-	4
at V <sub>CE</sub> = 50 V, T <sub>j</sub> = 125 °C		I <sub>CES</sub>	-	-	4

<sup>1)</sup> 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 $V_{CE} = 30V, T_j = 125^\circ C$ <b>HN / BC 548, HN / BC 549</b>	$I_{CES}$	-	-	4 4	$\mu A$ $\mu A$
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 $V_{CE} = 5 V, I_C = 200 \mu A, R_G = 2 k\Omega,$ $f = 1kHz, \Delta f = 200 Hz$ <b>HN / BC 546, HN / BC 547</b>	F	-	2	10	dB
<b>HN / BC 548</b> <b>HN / BC 549</b>	F	-	1.2	4	dB

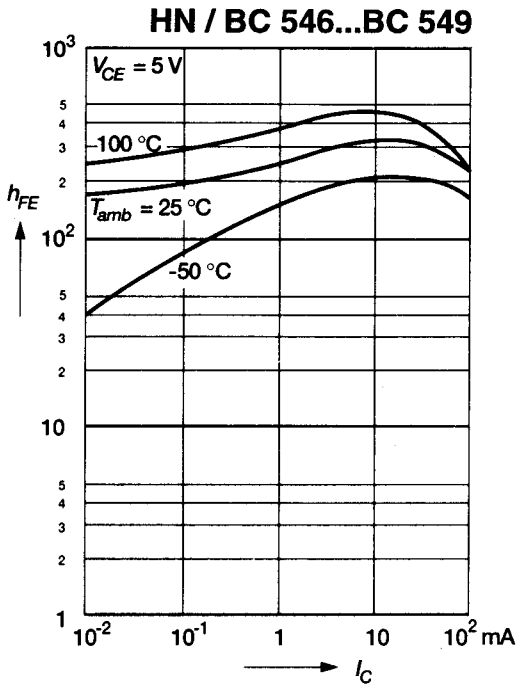


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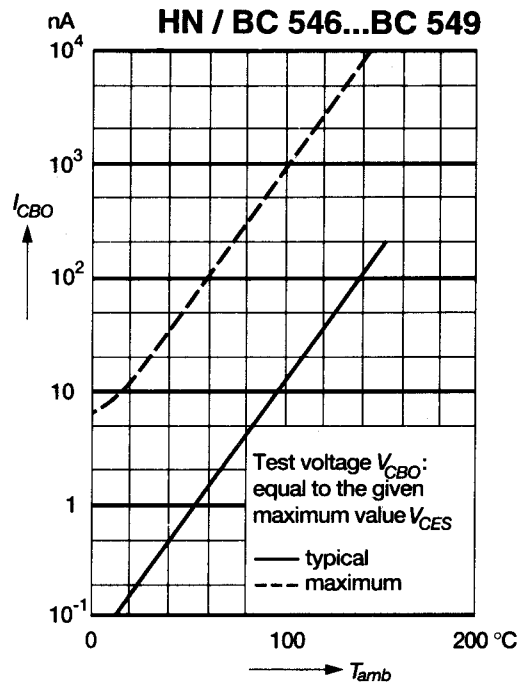
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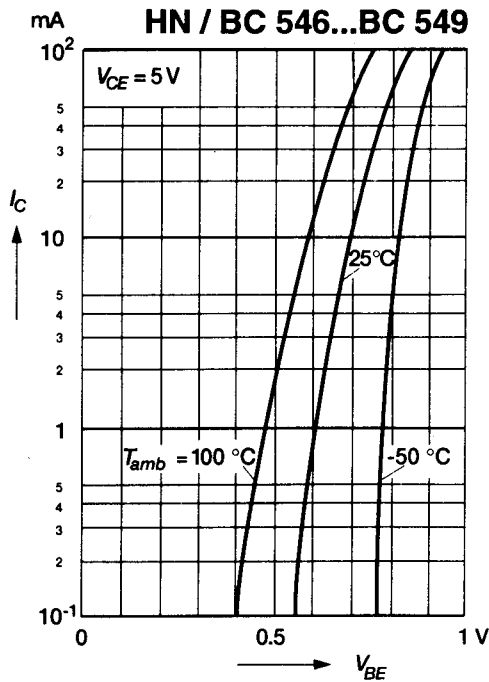
DC current gain versus collector current



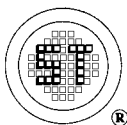
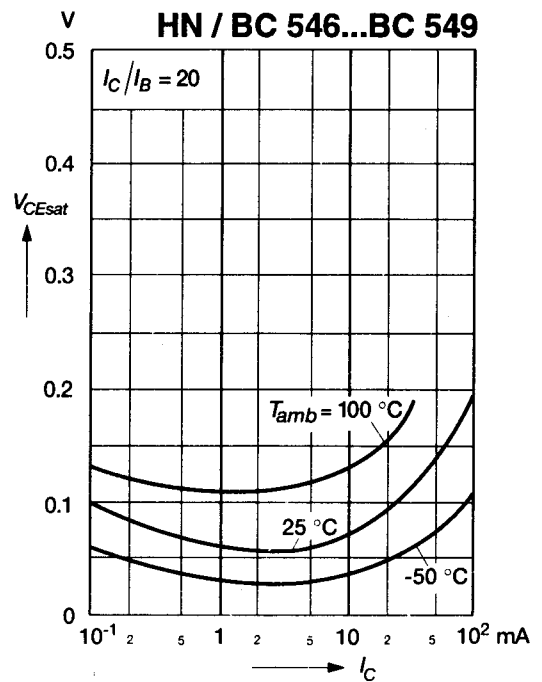
Collector-base cutoff current versus ambient temperature



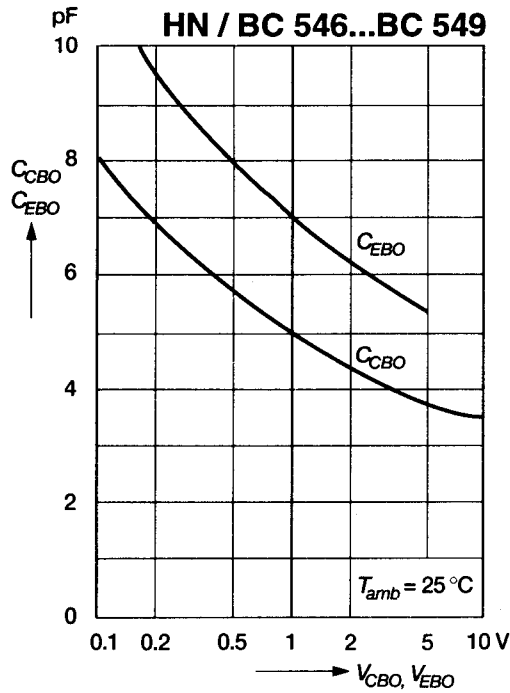
Collector current versus base-emitter voltage



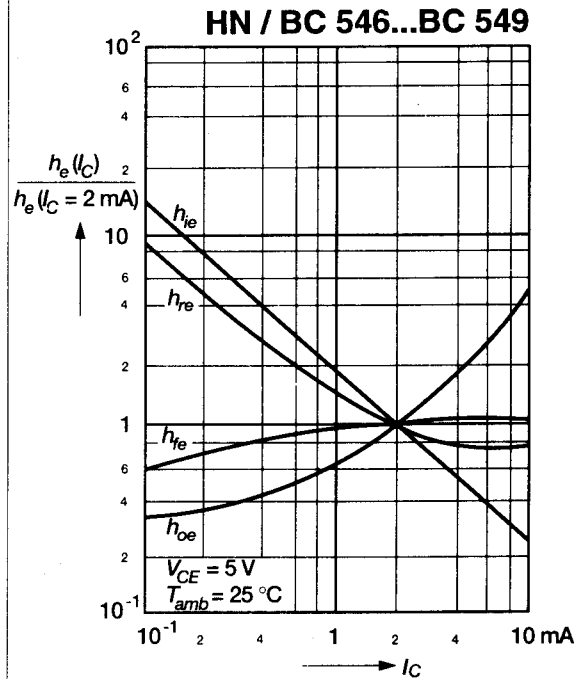
Collector saturation voltage versus collector current



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



Relative h-parameters  
versus collector current



Gain-bandwidth product  
versus collector current

