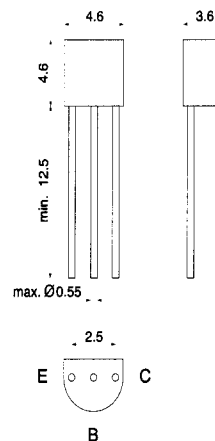


**NPN Silicon Expitaxial Planar Transistor**  
for switching and AF amplifier applications.

The transistor is subdivided into four groups, A, B, C, and D, according to its DC current gain. As complementary type the PNP transistor HN 9015 is 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.



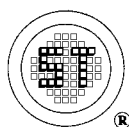
TO-92 Plastic Package  
Weight approx. 0.18 g  
Dimensions in mm

## Absolute Maximum Ratings

	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	30	V
Collector Emitter Voltage	$V_{CES}$	30	V
Collector Emitter Voltage	$V_{CEO}$	30	V
Emitter Base Voltage	$V_{EBO}$	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 $T_{amb} = 25\text{ }^\circ\text{C}$	$P_{tot}$	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**



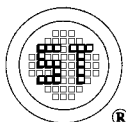
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## Characteristics at $T_{amb} = 25\text{ }^{\circ}\text{C}$

	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE} = 5\text{ V}$ , $I_C = 1\text{ mA}$ <b>Current Gain Group</b>	<b>A</b> $h_{FE}$	60	-	150	-
	<b>B</b> $h_{FE}$	100	-	300	-
	<b>C</b> $h_{FE}$	200	-	600	-
	<b>D</b> $h_{FE}$	400	-	1000	-
Collector Saturation Voltage at $I_C = 10\text{ mA}$ , $I_B = 0.5\text{ mA}$ at $I_C = 100\text{ mA}$ , $I_B = 5\text{ mA}$	$V_{CEsat}$	-	80	200	mV
	$V_{CEsat}$	-	200	600	mV
Base Saturation Voltage at $I_C = 10\text{ mA}$ , $I_B = 0.5\text{ mA}$ at $I_C = 100\text{ mA}$ , $I_B = 5\text{ mA}$	$V_{BEsat}$	-	700	-	mV
	$V_{BEsat}$	-	900	-	mV
Base Emitter Voltage at $V_{CE} = 5\text{ V}$ , $I_C = 2\text{ mA}$ at $V_{CE} = 5\text{ V}$ , $I_C = 10\text{ mA}$	$V_{BE}$	580	660	700	mV
	$V_{BE}$	-	-	750	mV
Collector Cutoff Current at $V_{CE} = 30\text{ V}$ at $V_{CE} = 30\text{ V}$ , $T_j = 125\text{ }^{\circ}\text{C}$ at $V_{CB} = 30\text{ V}$ at $V_{CB} = 30\text{ V}$ , $T_j = 150\text{ }^{\circ}\text{C}$	$I_{CES}$	-	0.2	15	nA
	$I_{CES}$	-	-	4	$\mu\text{A}$
	$I_{CBO}$	-	-	15	nA
	$I_{CBO}$	-	-	5	$\mu\text{A}$
Gain Bandwidth Product at $V_{CE} = 5\text{ V}$ , $I_C = 10\text{ mA}$ , $f = 100\text{ MHz}$	$f_T$	-	300	-	MHz
Collector Base Capacitance at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{CBO}$	-	3.5	6	pF
Emitter Base Capacitance at $V_{EB} = 0.5\text{ V}$ , $f = 1\text{ MHz}$	$C_{EBO}$	-	9	-	pF
Noise Figure at $V_{CE} = 5\text{ V}$ , $I_C = 200\text{ }\mu\text{A}$ , $R_G = 2\text{ k}\Omega$ $f = 1\text{ kHz}$ , $\Delta f = 200\text{ Hz}$	F	-	2	10	dB
Thermal Resistance Junction to Ambient	$R_{thA}$	-	-	250 <sup>1)</sup>	K/W
1) Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case					

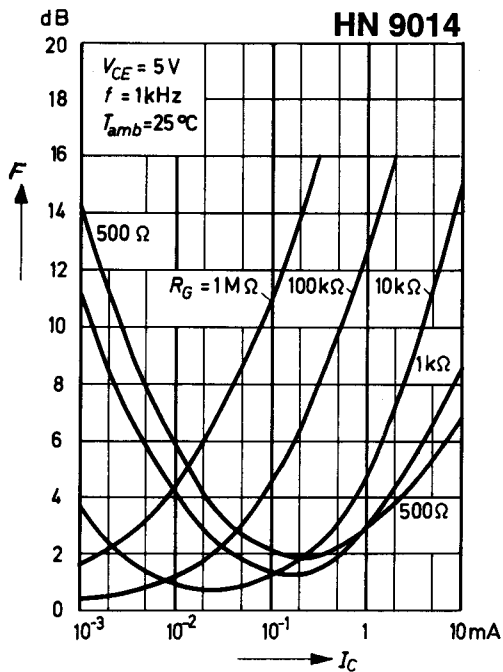
**G S P FORM A AVAILABLE**



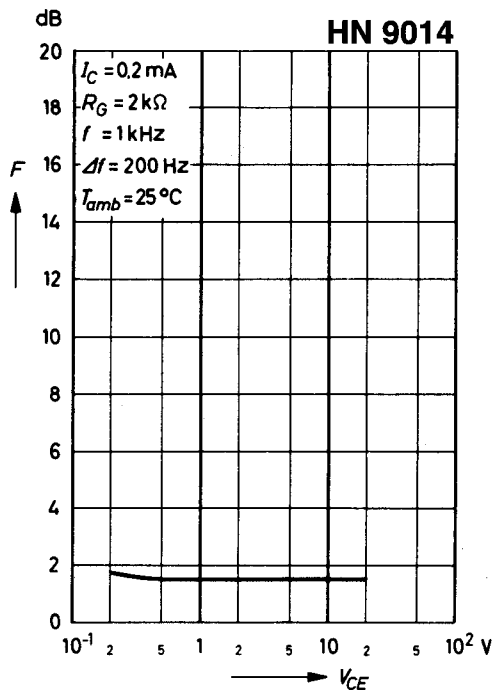
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Noise figure versus collector current

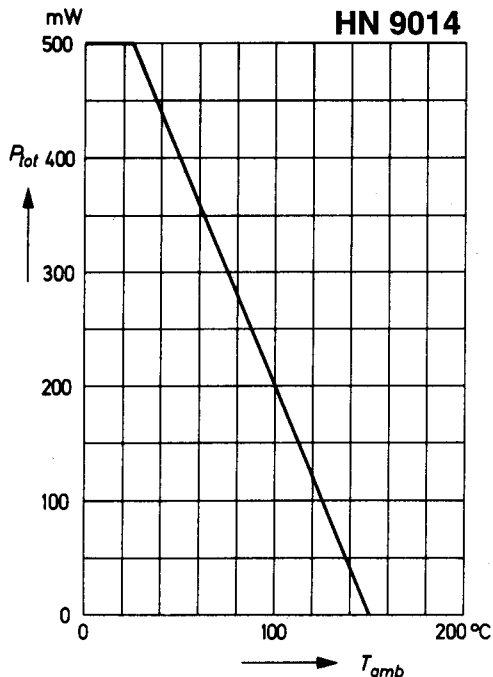


Noise figure versus collector emitter voltage



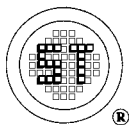
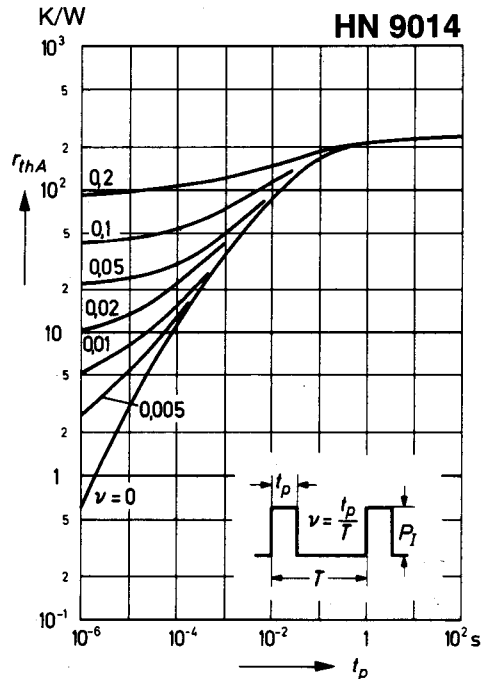
Admissible power dissipation versus temperature

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

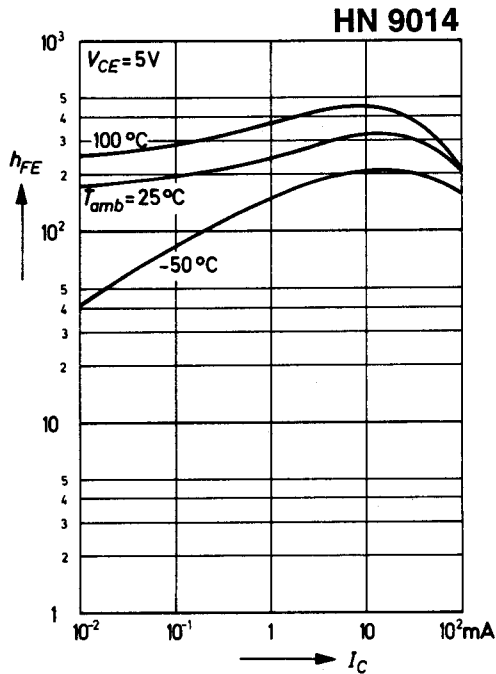


Pulse thermal resistance versus pulse duration

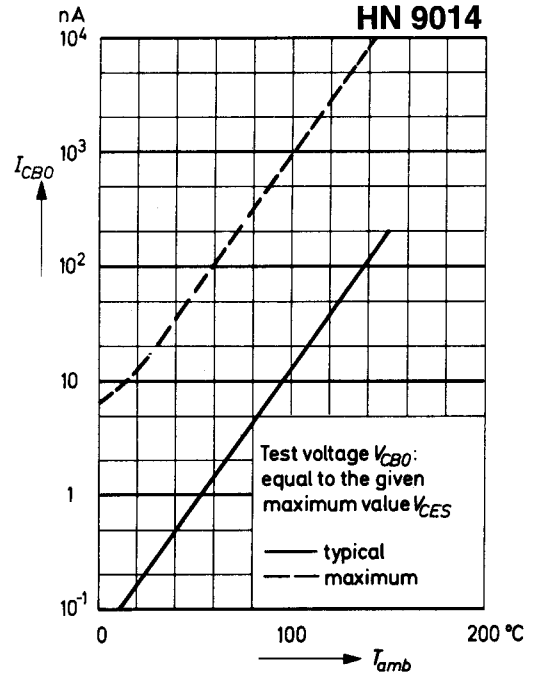
Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case



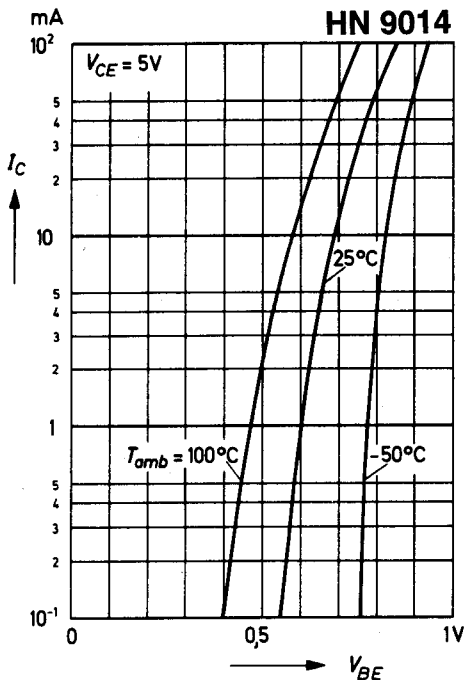
DC current gain versus collector current



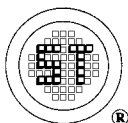
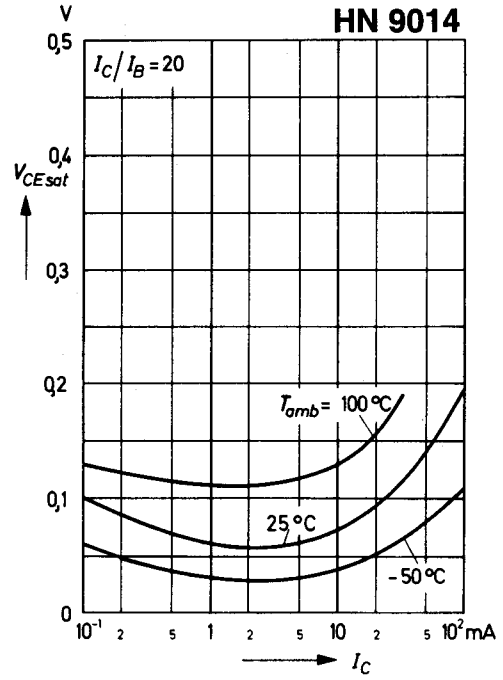
Collector cutoff current versus ambient temperature



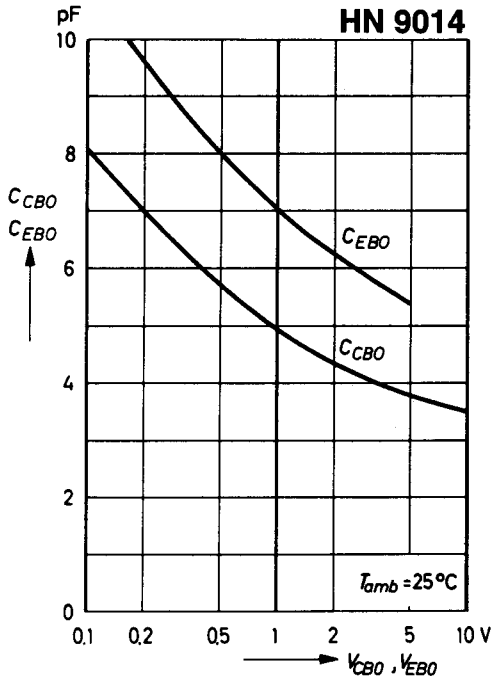
Collector current versus base emitter voltage



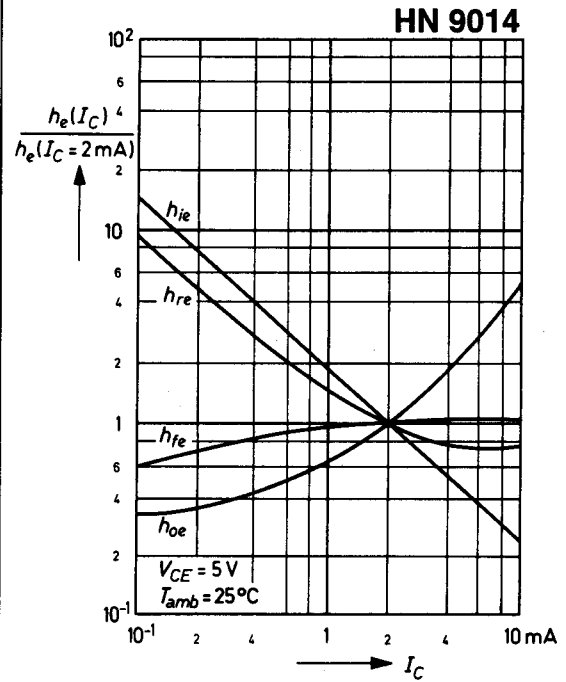
Collector saturation voltage versus collector current



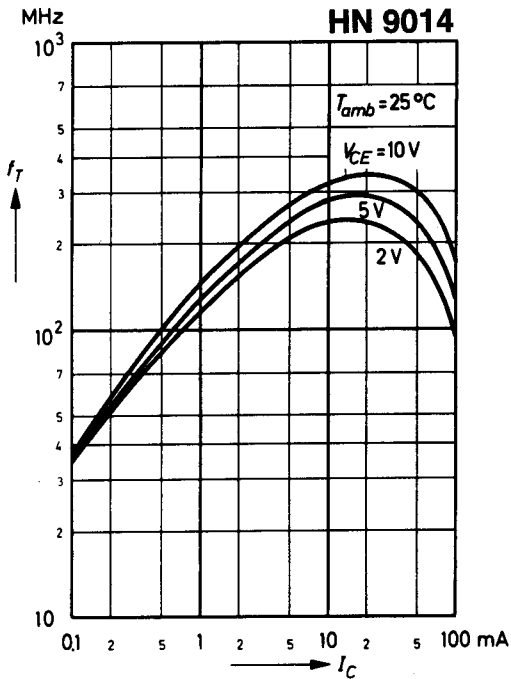
Collector base capacitance,  
Emitter base capacitance  
versus reverse bias voltage



Relative h-parameters  
versus collector current



Gain bandwidth product  
versus collector current



Noise figure  
versus collector current

