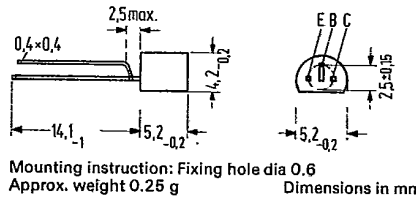


BC 546, BC 547, BC 548, BC 549 and BC 550 are epitaxial NPN silicon planar transistors in TO 92 plastic packages (10 A 3 DIN 41868). They are intended for use in AF input and driver stages (BC 549; BC 550 for low-noise input stages) and as complementary transistors to BC 556, BC 557, BC 558, BC 559 and BC 560.

Type	Ordering code	Type	Ordering code
BC 546 <sup>1)</sup>	Q62702-C687	BC 549 <sup>1)</sup>	Q62702-C690
BC 546 VI	Q62702-C687-V3	BC 549 B	Q62702-C690-V1
BC 546 A	Q62702-C687-V1	BC 549 C	Q62702-C690-V2
BC 546 B	Q62702-C687-V2	BC 550 <sup>1)</sup>	Q62702-C691
BC 547 <sup>1)</sup>	Q62702-C688	BC 550 B	Q62702-C691-V1
BC 547 VI	Q62702-C688-V3	BC 550 C	Q62702-C691-V2
BC 547 A	Q62702-C688-V1		
BC 547 B	Q62702-C688-V2		
BC 548 <sup>1)</sup>	Q62702-C689		
BC 548 VI	Q62702-C689-V4		
BC 548 A	Q62702-C689-V1		
BC 548 B	Q62702-C689-V2		
BC 548 C	Q62702-C689-V3		



**Maximum ratings**

	BC 546	BC 547	BC 548	BC 549	BC 550		
Collector-base voltage	$V_{CBO}$	80	50	30	30	50	V
Collector-emitter voltage	$V_{CES}$	80	50	30	30	50	V
Collector-emitter voltage	$V_{CEO}$	65	45	30	30	45	V
Emitter-base voltage	$V_{EBO}$	6	6	5	5	5	V
Collector current	$I_C$	100	100	100	100	100	mA
Collector peak current	$I_{CM}$	200	200	200	200	200	mA
Base peak current	$I_{BM}$	200	200	200	200	200	mA
Emitter-peak current	$I_{EM}$	200	200	200	200	200	mA
Junction temperature	$T_j$	150	150	150	150	150	°C
Storage temperature range	$T_{stg}$		-65 to +150				°C
Total power dissipation ( $T_{amb} = 25^\circ\text{C}$ )	$P_{tot}$	500	500	500	500	500	mW

**Thermal resistance**

Junction to ambient air	$R_{thJA}$	$\leq 250$	$\leq 250$	$\leq 250$	$\leq 250$	$\leq 250$	K/W
Junction to case	$R_{thJC}$	$\leq 150$	$\leq 150$	$\leq 150$	$\leq 150$	$\leq 150$	K/W

<sup>1)</sup> If the order does not include any exact indication of the current amplification group desired, a transistor of a current amplification group just available from stock will be delivered.

**Static characteristics** ( $T_{amb} = 25^{\circ}\text{C}$ )

The transistors are grouped in accordance with the DC current gain  $h_{FE}$  and are marked by A, B, and C. At  $V_{CE} = 5\text{ V}$  and the collector currents tabulated below the following static characteristics apply.

Type	BC 546 BC 547 BC 548	BC 546 BC 547 BC 548	BC 546 BC 547, BC 549 BC 548, BC 550	BC 548, BC 549, BC 550
$h_{FE}$ group	VI	A	B	C
$I_C$ mA	$h_{FE}$ $I_C/I_B$	$h_{FE}$ $I_C/I_B$	$h_{FE}$ $I_C/I_B$	$h_{FE}$ $I_C/I_B$
0.01		90	150	270
2	110 (75 to 150)	180 (110 to 220)	290 (200 to 450)	500 (420 to 800)
100		120	200	400

Collector cutoff current ( $V_{CBO} = 30\text{ V}$ )	$I_{CBO}$	$\leq 15$	nA
Collector cutoff current ( $V_{CBO} = 30\text{ V}; T_{amb} = 150^{\circ}\text{C}$ )	$I_{CBO}$	$\leq 5$	$\mu\text{A}$
Collector-emitter saturation voltage ( $I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$ )	$V_{CEsat}$	90 (<250)	mV
( $I_C = 100\text{ mA}; I_B = 5\text{ mA}$ )	$V_{CEsat}$	200 (<600)	mV
( $I_C = 10\text{ mA}$ ) <sup>1)</sup>	$V_{CEsat}$	300 (<600)	mV
Base-emitter saturation voltage <sup>2)</sup> ( $I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$ )	$V_{BEsat}$	700	mV
( $I_C = 100\text{ mA}; I_B = 5\text{ mA}$ )	$V_{BEsat}$	900	mV
Base-emitter voltage ( $V_{CE} = 5\text{ V}; I_C = 2\text{ mA}$ )	$V_{BE}$	660 (580 to 700)	mV
Base-emitter voltage ( $V_{CE} = 5\text{ V}; I_C = 10\text{ mA}$ )	$V_{BE}$	<720	mV

1) For the characteristic which passes through the point  $I_C = 11\text{ mA}; V_{CE} = 1\text{ V}$  at constant base current.

2)  $\frac{\Delta V_{BEsat}}{\Delta T}$  approx. = 1.7 mV/K;  $\frac{\Delta V_{BE}}{\Delta T}$  approx. = -2 mV/K

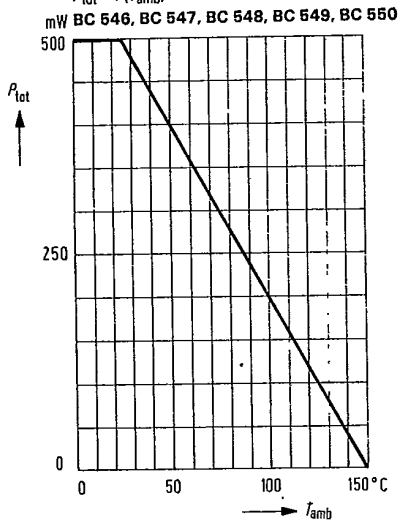
Dynamic characteristics ( $T_{amb} = 25^{\circ}C$ )		BC 546 BC 547 BC 548	BC 549	BC 550	
Transition frequency ( $V_{CE} = 5 V; I_C = 10 mA; f = 100 MHz$ )	$f_T$	300	300	300	MHz
Collector-base capacitance ( $V_{CBO} = 10 V; f = 1 MHz$ )	$C_{CBO}$	2.5 (<4.5)	2.5 (<4.5)	2.5 (<4.5)	pF
Emitter-base capacitance ( $V_{EBO} = 0.5 V; f = 1 MHz$ )	$C_{EBO}$	9	9	9	pF
Noise figure ( $V_{CE} = 5 V; I_C = 200 \mu A; R_g = 2 k\Omega;$ $f = 1 kHz; \Delta f = 200 Hz$ )	NF	2 (<10)	1.2 (<4)	1 (<4)	dB
Equivalent noise voltage ( $V_{CE} = 5 V; I_C = 200 \mu A; R_g = 2 k\Omega;$ $f = 10 to 50 Hz; T_{amb} = 25^{\circ}C$ )	$E_n$	-	<0.135	<0.135	$\mu V$

Dynamic characteristics ( $T_{amb} = 25^{\circ}C$ )

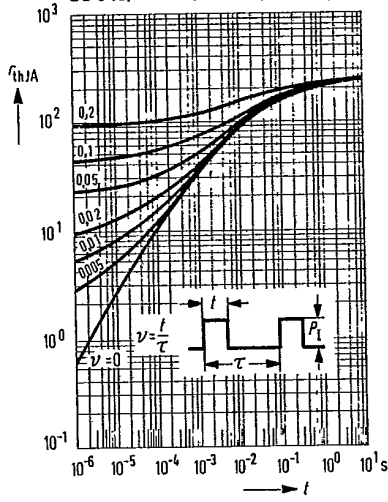
$I_C = 2 mA; V_{CE} = 5 V; f = 1 kHz$

Type	BC 546 BC 547 BC 548	BC 546 BC 547 BC 548	BC 546 BC 547, BC 549 BC 548, BC 550	BC 548, BC 549, BC 550	
$h_{FE}$ group	VI	A	B	C	
$h_{11e}$	1.2 (0.4 to 2.2)	2.7 (1.6 to 4.5)	4.5 (3.2 to 8.5)	8.7 (6 to 15)	k $\Omega$
$h_{12e}$	2.5	1.5	2	3	$10^{-4}$
$h_{21e}$	110	220	330	600	-
$h_{22e}$	20 (<40)	18 (<30)	30 (<60)	60 (<110)	$\mu S$

Total perm. power dissipation versus temperature  
 $P_{tot} = f(T_{amb})$

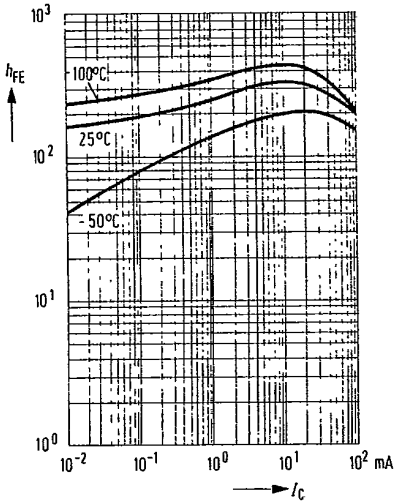


Permissible pulse load  
 $r_{thJA} = f(t) v = \text{parameter}$

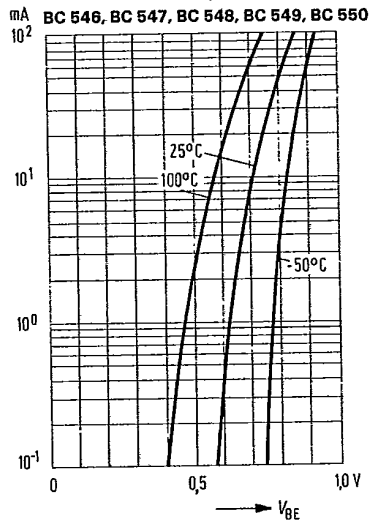


DC current gain  $h_{FE} = f(I_C)$   
 $V_{CE} = 5 \text{ V}; T_{amb} = \text{parameter}$   
 (common-emitter configuration)

BC 546 B, BC 547 B, BC 548 B,  
 BC 549 B, BC 550 B



Collector current  $I_C = f(V_{BE})$   
 $V_{CE} = 5 \text{ V}$   
 (common-emitter configuration)



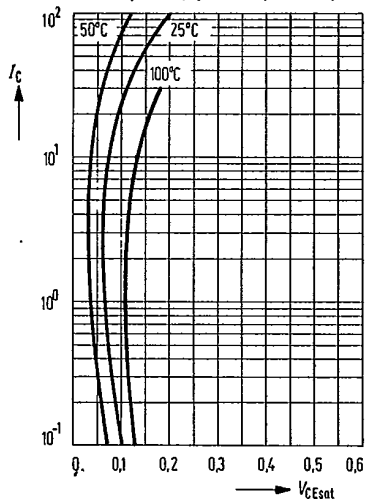
**Collector-emitter saturation voltage**

$V_{CEsat} = f(I_C)$ ;  $\beta_{FE} = 20$ ;

$T_{amb}$  = parameter

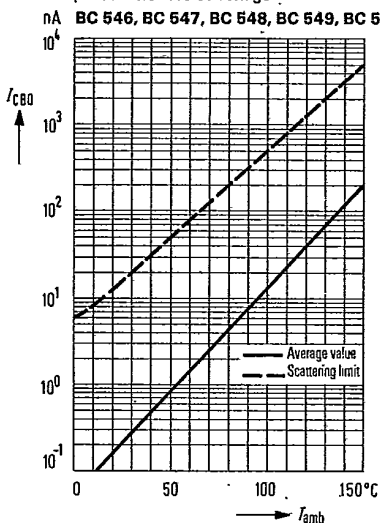
(common-emitter configuration)

BC 546, BC 547, BC 548, BC 549, BC 550



**Collector-cutoff current versus temperature**  $I_{CBO} = f(T_{amb})$  for max. permissible reverse voltage

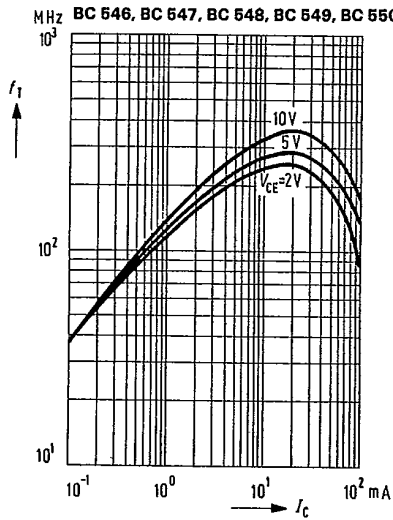
BC 546, BC 547, BC 548, BC 549, BC 550



**Transition frequency  $f_T = f(I_C)$**

$V_{CE} = \text{parameter}$ ;  $T_{amb} = 25^\circ\text{C}$

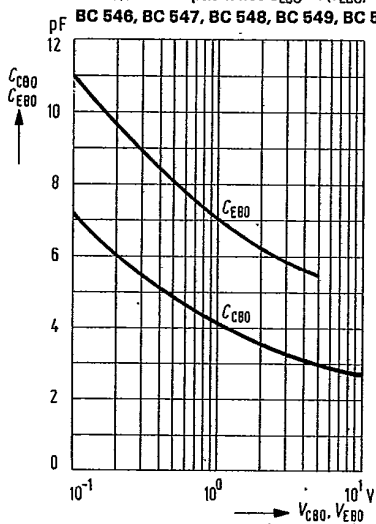
BC 546, BC 547, BC 548, BC 549, BC 550



**Collector-base capacitance  $C_{CBO} = f(V_{CBO})$**

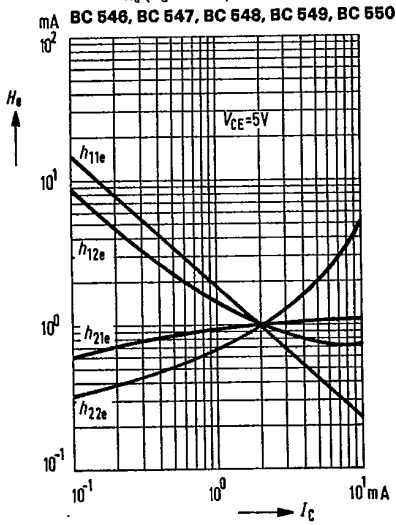
**Emitter-base capacitance  $C_{EBO} = f(V_{EBO})$**

BC 546, BC 547, BC 548, BC 549, BC 550

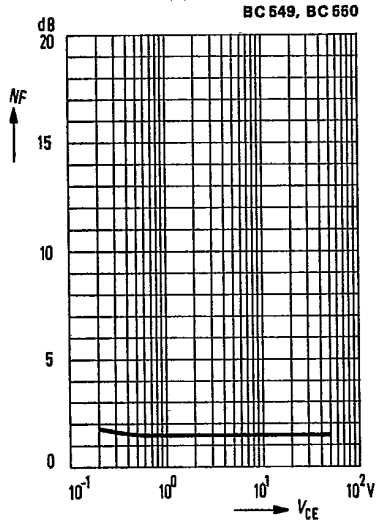


**h-parameter versus collector current**

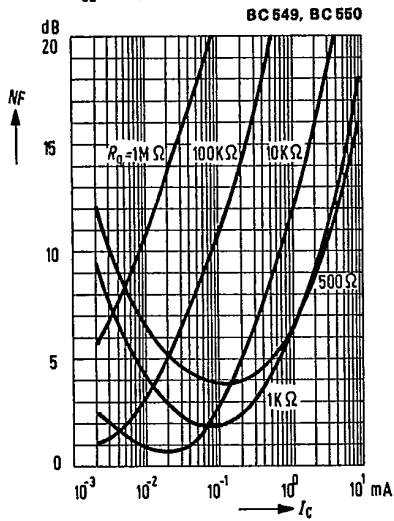
$$H_e = \frac{h_a(I_C)}{h_a(I_C = 2 \text{ mA})} = f(I_C)$$



**Noise figure  $NF = f(V_{CE})$**   
 $I_C = 0.2 \text{ mA}; R_G = 2 \text{ k}\Omega; f = 1 \text{ kHz}$   
 $\Delta f = 200 \text{ Hz}; T_{amb} = 25 \text{ }^\circ\text{C}$



**Noise figure  $NF = f(I_C)$**   
 $V_{CE} = 5 \text{ V}; f = 1 \text{ kHz}$



**Noise figure  $NF = f(I_C)$**   
 $V_{CE} = 5 \text{ V}; f = 120 \text{ Hz}$

