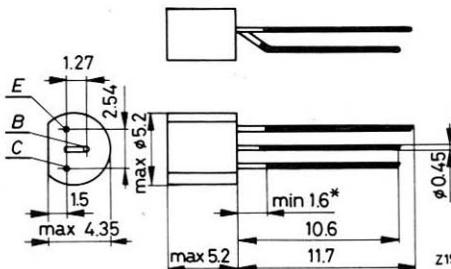


NPN Silicon Planar Epitaxial Transistors

intended for use in AF pre-amplifier, and driver stages as well as in DC voltage amplifiers. The BC 184 is primarily used for low-noise pre-amplifiers. BC 182, BC 183 and BC 184 are complementary pairs with BC 212, BC 213 and BC 214 together, respectively.

Dimensions in mm

* not tinned

Case: TO-92Z

Mass: approx. 0.25 g

Absolute maximum ratings

		BC 182	BC 183	BC 184	
Collector-emitter voltage	V_{CEO}	50	30	30	V
Collector-base voltage	V_{CBO}	60	45	45	V
Emitter-base voltage	V_{EBO}		6		V
Collector current	I_C		200		mA
Junction temperature	T_j		150		$^{\circ}C$
Storage temperature	T_s		-65 . . . + 150		$^{\circ}C$
Total power dissipation $T_{amb} = 25^{\circ}C$	P_{tot}		300		mW

Thermal resistance

junction to ambient	R_{thja}	= 420	K/W
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Static characteristics¹ $T_{amb} = 25^{\circ}C$

Collector-base cut-off current $V_{CB} = 50 V$	I_{CBO}	≤ 15	-	-	nA
Collector-base cut-off current $V_{CB} = 30 V$	I_{CBO}	-	≤ 15	≤ 15	nA
Emitter-base cut-off current $V_{EB} = 4 V$	I_{EBO}	≤ 15	≤ 15	≤ 15	nA
Collector-base breakdown voltage $I_C = 10 \mu A$	$V_{(BR)CBO}$	≥ 60	≥ 45	≥ 45	V
Collector-emitter breakdown voltage $I_C = 2 mA$	$V_{(BR)CEO}$	≥ 50	≥ 30	≥ 30	V
Emitter-base breakdown voltage $I_E = 10 \mu A$	$V_{(BR)EBO}$	≥ 6	≥ 6	≥ 6	V

¹ measured under pulsed conditions

		BC 182	BC 183	BC 184	
DC forward current transfer ratio ¹					
$V_{CE} = 5 \text{ V}, I_C = 0.01 \text{ mA}$	h_{21E}	90	90	—	in group A
	h_{21E}	150	150	150	in group B
	h_{21E}	—	270	270	in group C
$V_{CE} = 5 \text{ V}, I_C = 2 \text{ mA}$	h_{21E}	170 (120 ... 220)	170 (120 ... 220)	—	in group A
	h_{21E}	290	290	290	in group B
	h_{21E}	(180 ... 460) —	(180 ... 460) 500	(180 ... 460) 500	in group C
			(380 ... 800)	(380 ... 800)	
$V_{CE} = 5 \text{ V}, I_C = 100 \text{ mA}$	h_{21E}	120	120	—	in group A
	h_{21E}	200	200	—	in group B
	h_{21E}	—	400	—	in group C
Collector-emitter saturation voltage					
$I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$	V_{CEsat}		≤ 0.25		V
$I_C = 100 \text{ mA}, I_B = 5 \text{ mA}$	V_{CEsat}		≤ 0.6		V
Base-emitter saturation voltage					
$I_C = 100 \text{ mA}, I_B = 5 \text{ mA}$	V_{BEsat}		≤ 1.2		V
Base-emitter voltage					
$V_{CE} = 5 \text{ V}, I_C = 10 \mu\text{A}$	V_{BE}		0.52		V
$V_{CE} = 5 \text{ V}, I_C = 2 \text{ mA}$	V_{BE}		0.55 ... 0.7		V
Dynamic characteristics					
$T_{amb} = 25^\circ\text{C}$					
Transition frequency					
$V_{CE} = 5 \text{ V}, I_C = 10 \text{ mA}, f = 100 \text{ MHz}$	f_T		≥ 150		MHz
Collector-base capacitance					
$V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$	C_{CBO}		3 (≤ 5)		pF
Emitter-base capacitance					
$V_{EB} = 0.5 \text{ V}, f = 1 \text{ MHz}$	C_{EBO}		8		pF
Noise figure					
$V_{CE} = 5 \text{ V}, I_C = 200 \mu\text{A}, R_G = 2 \text{ k}\Omega, f = 1 \text{ kHz}, B = 1 \text{ Hz}$	F	2 (≤ 10)	2 (≤ 10)	—	dB
$V_{CE} = 5 \text{ V}, I_C = 200 \mu\text{A}, R_G = 2 \text{ k}\Omega, f = 10 \text{ Hz} \dots 10 \text{ kHz}$	F	—	—	≤ 4	dB

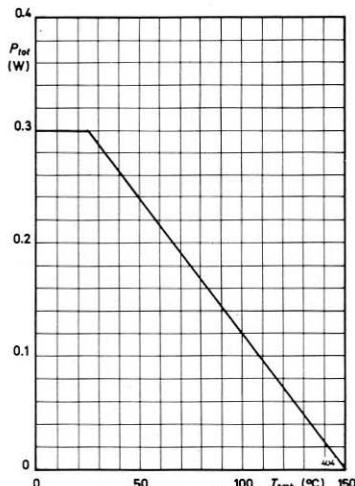
¹ as requested, the devices are available, at extra charge, selected in group A, B or C according to their DC forward current transfer ratios h_{21E}

Low frequency small signal hybrid parameters
 $V_{CE} = 5 \text{ V}$, $I_C = 2 \text{ mA}$, $f = 1 \text{ kHz}$

Type	BC 182	BC 183	BC 184	
h_{11e}	3.6 (1.6 ... 8.5)	4.5 (1.6 ... 15)	6.6 (3.2 ... 15)	$\text{k}\Omega$
h_{12e}	1.7	2.0	2.5	10^{-4}
h_{21e}	222 (125 ... 260) 330 (240 ... 500) —	222 (125 ... 260) 330 (240 ... 500) 600 (450 ... 900)	— 330 (240 ... 500) 600 (450 ... 900)	in group A in group B in group C
h_{22e}	25 (≤ 60)	30 (≤ 110)	45 (≤ 110)	μS

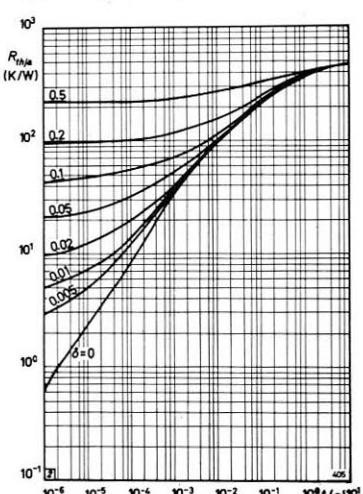
Permissible total power dissipation versus ambient temperature

$$P_{tot} = f(T_{amb})$$



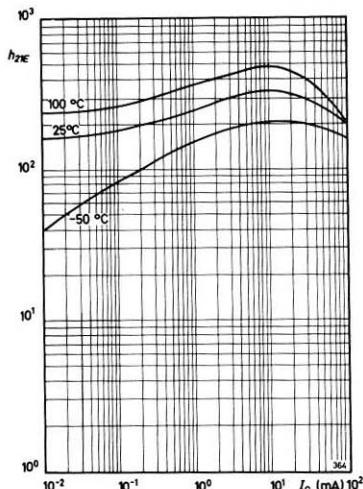
Pulse thermal resistance versus pulse duration

$$R_{thja} = f(t), \delta = \text{parameter}$$



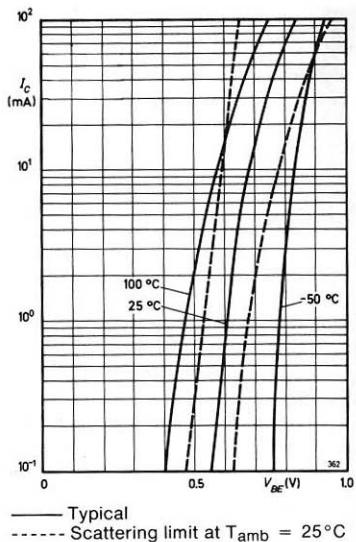
DC forward current transfer ratio versus collector current

$h_{21E} = f(I_C)$
 $V_{CE} = 5 \text{ V}$, T_{amb} = parameter
 (common emitter configuration)



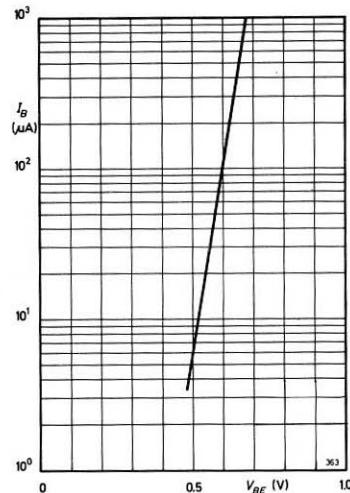
Collector current versus base-emitter voltage

$I_C = f(V_{BE})$
 $V_{CE} = 5 \text{ V}$, T_{amb} = parameter
 (common emitter configuration)



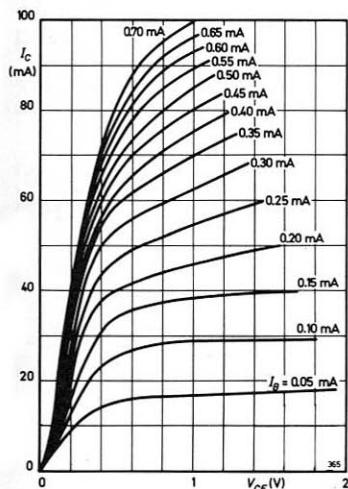
Base current versus base-emitter voltage

$I_B = f(V_{BE})$, $V_{CE} = 5 \text{ V}$
 (common emitter configuration)

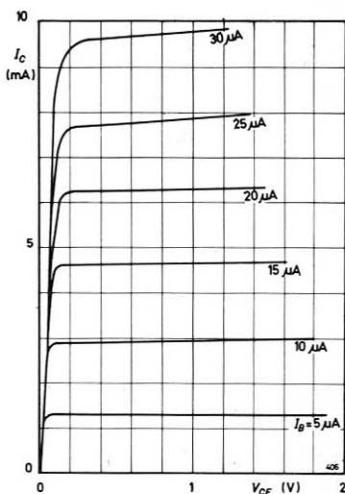


Collector current versus collector-emitter voltage

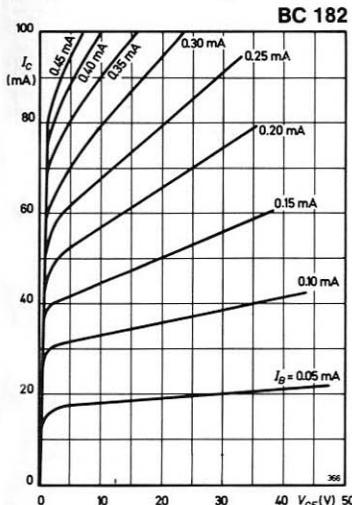
$I_C = f(V_{CE})$, I_B = parameter
(common emitter configuration)

**Collector current versus collector-emitter voltage**

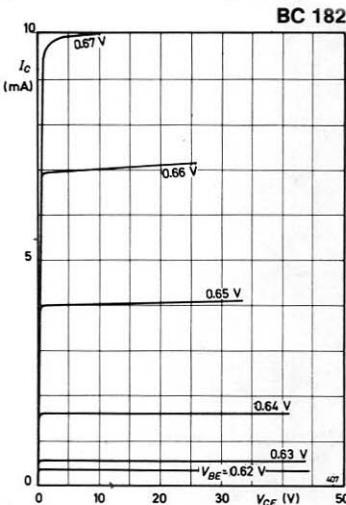
$I_C = f(V_{CE})$, I_B = parameter
(common emitter configuration)

**Collector current versus collector-emitter voltage**

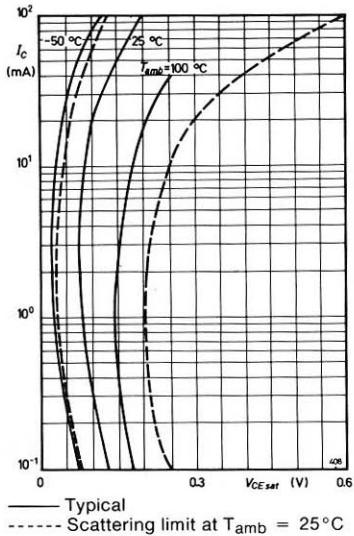
$I_C = f(V_{CE})$, I_B = parameter
(common emitter configuration)

**Collector current versus collector-emitter voltage**

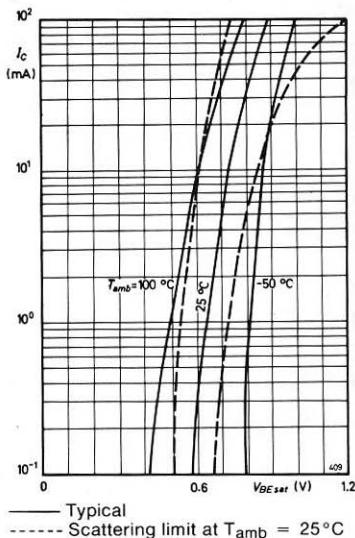
$I_C = f(V_{CE})$, V_{BE} = parameter
(common emitter configuration)



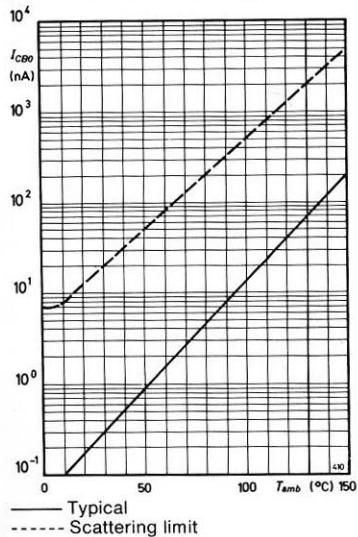
Collector current versus collector-emitter saturation voltage
 $I_C = f(V_{CEsat})$
 $h_{21E} = 20$, T_{amb} = parameter
 (common emitter configuration)



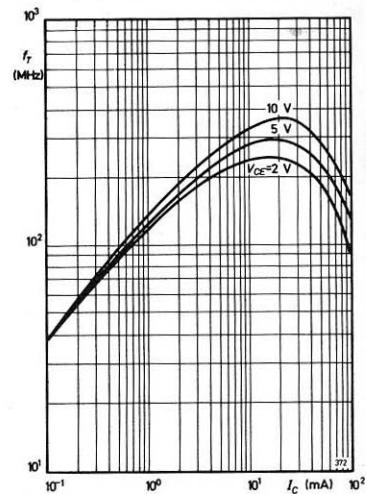
Collector current versus base-emitter saturation voltage
 $I_C = f(V_{BEsat})$
 $h_{21E} = 20$, T_{amb} = parameter
 (common emitter configuration)



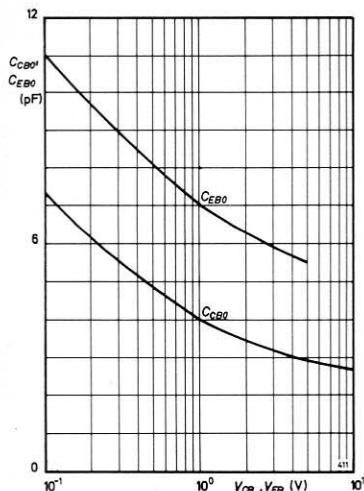
Collector-base cut-off current versus ambient temperature
 $I_{CBO} = f(T_{amb})$ at the maximum permissible reverse voltage



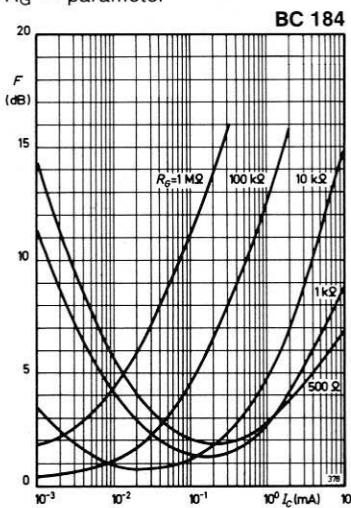
Transition frequency versus collector current
 $f_T = f(I_C)$, $V_{CE} = \text{parameter}$



Collector-base and emitter-base capacitance versus collector-base and emitter-base voltage, respectively
 $C_{CBO} = f(V_{CB})$; $C_{EBO} = f(V_{EB})$

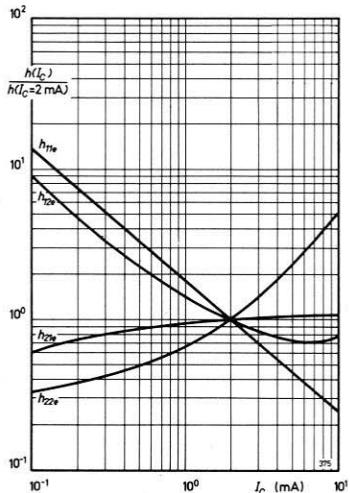


Noise figure versus collector current
 $F = f(I_C)$, $V_{CE} = 5$ V, $f = 1$ kHz
 R_G = parameter



h -parameters versus collector current

$$\frac{h_e(I_C)}{h_e(I_C = 2 \text{ mA})} = f(I_C)$$
 $h_e(I_C = 2 \text{ mA})$
 $V_{CE} = 5$ V



h -parameters versus collector-emitter voltage

$$\frac{h_e(V_{CE})}{h_e(V_{CE} = 5 \text{ V})} = f(V_{CE})$$
 $h_e(V_{CE} = 5 \text{ V})$
 $I_C = 2 \text{ mA}$

