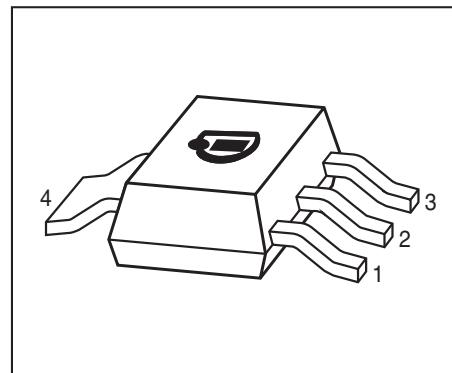


PNP Silicon AF Transistors

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCP54 ... BCP56 (NPN)
- Pb-free (RoHS compliant) package¹⁾
- Qualified according AEC Q101



Type	Marking	Pin Configuration			Package
BCP51	*	1=B	2=C	3=E	SOT223
BCP51-16	*	1=B	2=C	3=E	SOT223
BCP52-16	*	1=B	2=C	3=E	SOT223
BCP53-10	*	1=B	2=C	3=E	SOT223
BCP53-16	*	1=B	2=C	3=E	SOT223

* Marking is the same as type-name

¹Pb-containing package may be available upon special request

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage BCP51	V_{CEO}	45	V
BCP52		60	
BCP53		80	
Collector-base voltage BCP51	V_{CBO}	45	
BCP52		60	
BCP53		100	
Emitter-base voltage	V_{EBO}	5	
Collector current	I_C	1	A
Peak collector current, $t_p \leq 10$ ms	I_{CM}	1.5	
Base current	I_B	100	mA
Peak base current	I_{BM}	200	
Total power dissipation- $T_S \leq 120^\circ\text{C}$	P_{tot}	2	W
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ¹⁾	R_{thJS}	≤ 15	K/W

¹For calculation of R_{thJA} please refer to Application Note Thermal Resistance

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 10 \text{ mA}, I_B = 0$, BCP51	$V_{(\text{BR})\text{CEO}}$	45	-	-	V
		60	-	-	
		80	-	-	
Collector-base breakdown voltage $I_C = 100 \mu\text{A}, I_E = 0$, BCP51	$V_{(\text{BR})\text{CBO}}$	45	-	-	
		60	-	-	
		100	-	-	
Emitter-base breakdown voltage $I_E = 10 \mu\text{A}, I_C = 0$	$V_{(\text{BR})\text{EBO}}$	5	-	-	
		-	-	-	
Collector-base cutoff current $V_{CB} = 30 \text{ V}, I_E = 0$ $V_{CB} = 30 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	I_{CBO}	-	-	0.1	μA
		-	-	20	
		-	-	-	
DC current gain ¹⁾ $I_C = 5 \text{ mA}, V_{CE} = 2 \text{ V}$ $I_C = 150 \text{ mA}, V_{CE} = 2 \text{ V}$, BCP51 $I_C = 150 \text{ mA}, V_{CE} = 2 \text{ V}$, BCP53-10 $I_C = 150 \text{ mA}, V_{CE} = 2 \text{ V}$, BCP51-16...BCP53-16 $I_C = 500 \text{ mA}, V_{CE} = 2 \text{ V}$	h_{FE}	25	-	-	
		40	-	250	
		63	100	160	
		100	160	250	
		25	-	-	
		-	-	-	
Collector-emitter saturation voltage ¹⁾ $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$	V_{CEsat}	-	-	0.5	V
		-	-	-	
Base-emitter voltage ¹⁾ $I_C = 500 \text{ mA}, V_{CE} = 2 \text{ V}$	$V_{\text{BE}(\text{ON})}$	-	-	1	
		-	-	-	

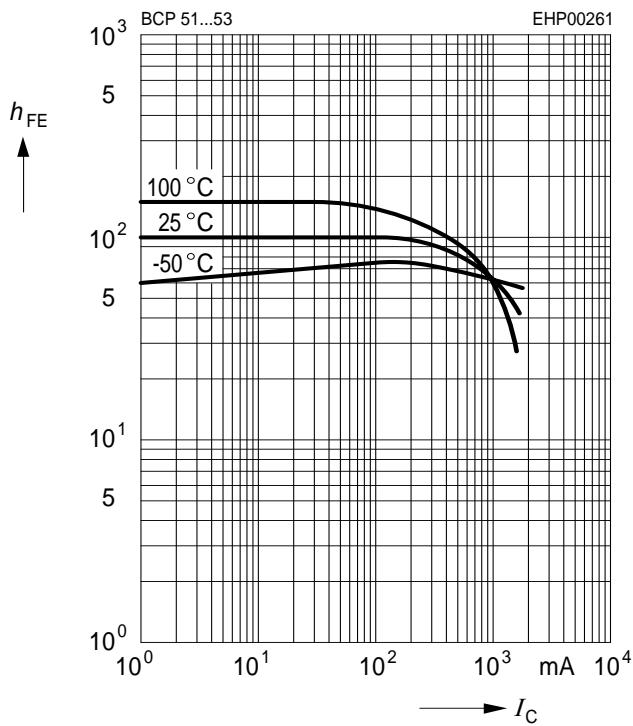
AC Characteristics

Transition frequency $I_C = 50 \text{ mA}, V_{CE} = 10 \text{ V}, f = 100 \text{ MHz}$	f_T	-	125	-	MHz
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¹Pulse test: $t < 300 \mu\text{s}$; $D < 2\%$

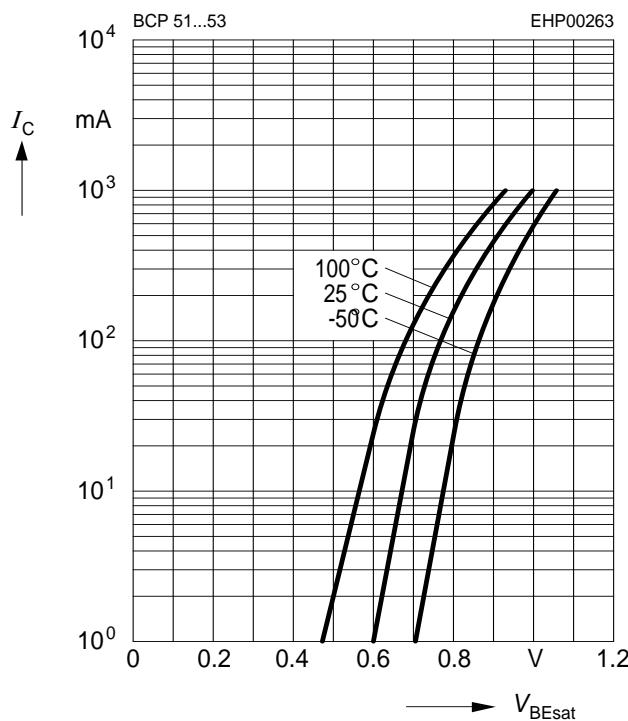
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 2 \text{ V}$



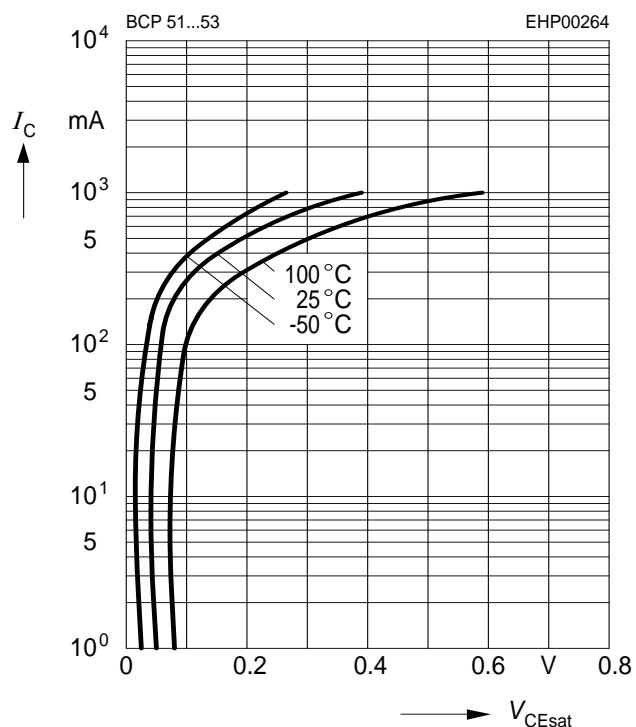
Base-emitter saturation voltage

$I_C = f(V_{BEsat}), h_{FE} = 10$



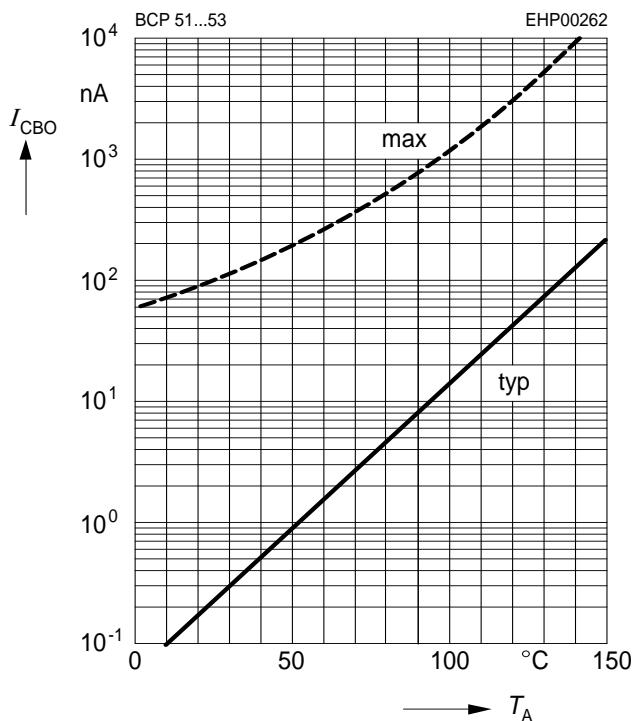
Collector-emitter saturation voltage

$I_C = f(V_{CEsat}), h_{FE} = 10$

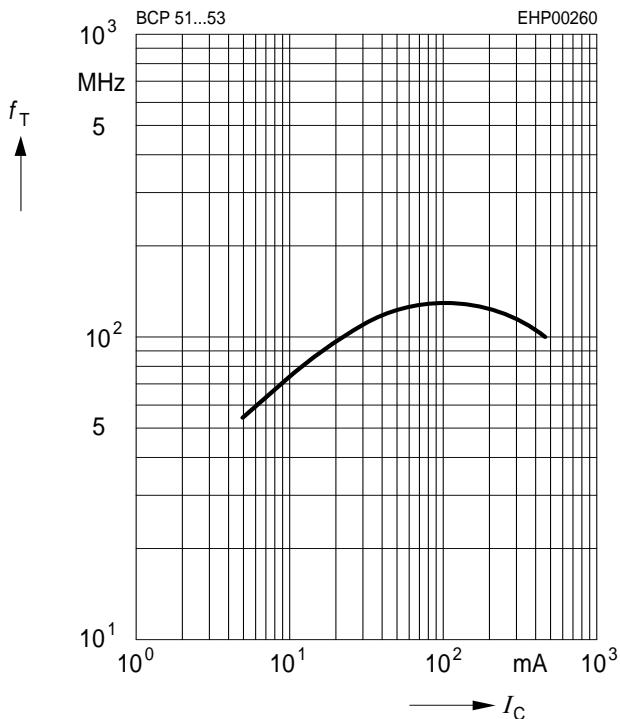


Collector cutoff current $I_{CBO} = f(T_A)$

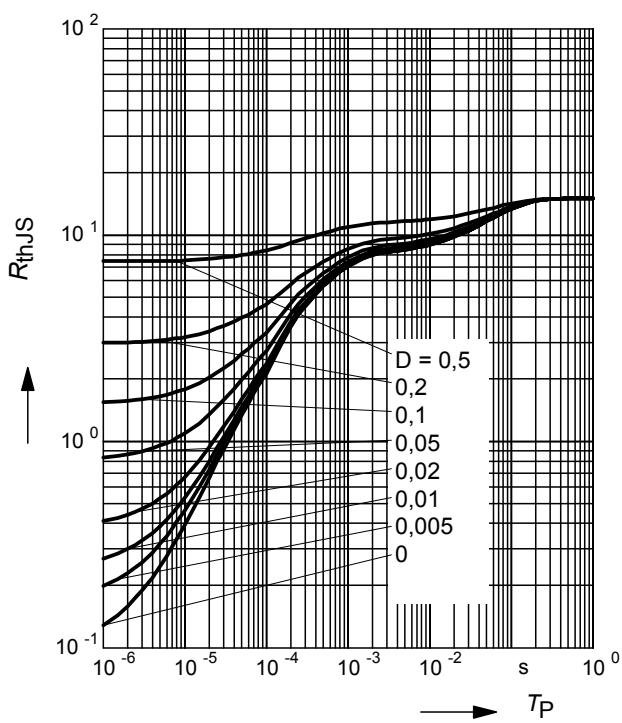
$V_{CBO} = 30 \text{ V}$



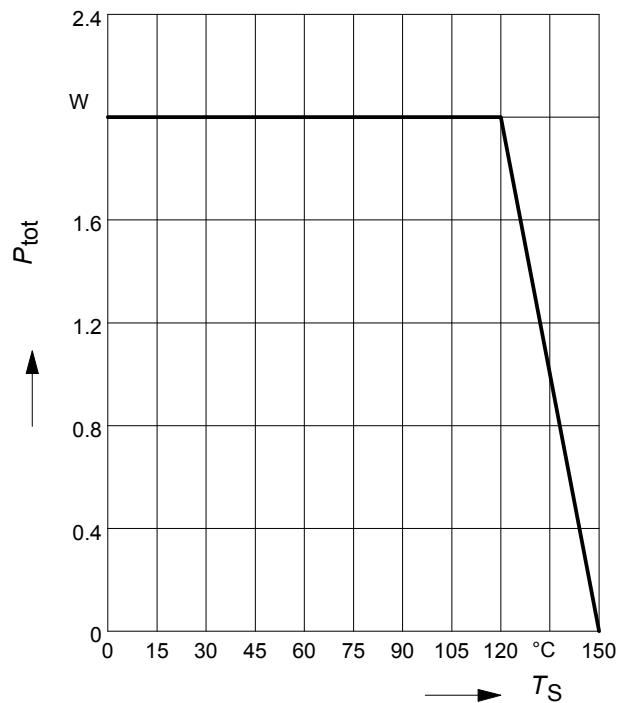
Transition frequency $f_T = f(I_C)$
 $V_{CE} = 10 \text{ V}$



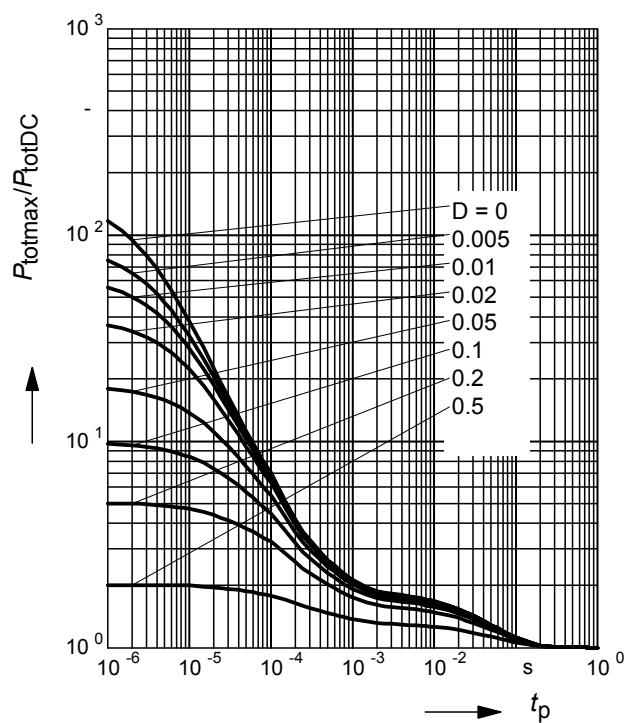
Permissible Pulse Load $R_{thJS} = f(t_p)$



Total power dissipation $P_{tot} = f(T_S)$



Permissible Pulse Load
 $P_{totmax}/P_{totDC} = f(t_p)$



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