

NPN Silicon AF Transistors

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCX51...BCX53 (PNP)
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



Type	Marking	Pin Configuration			Package
		1=B	2=C	3=E	
BCX54-16	BD	1=B	2=C	3=E	SOT89
BCX55	BE	1=B	2=C	3=E	SOT89
BCX55-16	BM	1=B	2=C	3=E	SOT89
BCX56	BH	1=B	2=C	3=E	SOT89
BCX56-10	BK	1=B	2=C	3=E	SOT89
BCX56-16	BL	1=B	2=C	3=E	SOT89

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}		-
BCX54		45	
BCX55		60	
BCX56		80	
Collector-base voltage	V_{CBO}		V
BCX54		45	
BCX55		60	
BCX56		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

¹⁾For calculation of R_{thJA} please refer to Application Note AN077 (Thermal Resistance Calculation)

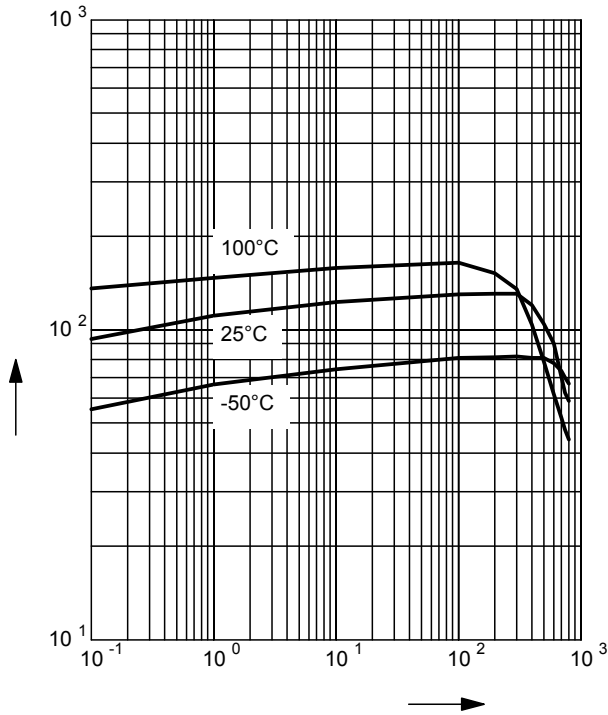
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$, $I_B = 0$, BCX54 $I_C = 10\text{ mA}$, $I_B = 0$, BCX55 $I_C = 10\text{ mA}$, $I_B = 0$, BCX56	$V_{(BR)CEO}$	45 60 80	- - -	- - -	V
Collector-base breakdown voltage $I_C = 100\ \mu\text{A}$, $I_E = 0$, BCX54 $I_C = 100\ \mu\text{A}$, $I_E = 0$, BCX55 $I_C = 100\ \mu\text{A}$, $I_E = 0$, BCX56	$V_{(BR)CBO}$	45 60 100	- - -	- - -	
Emitter-base breakdown voltage $I_E = 10\ \mu\text{A}$, $I_C = 0$	$V_{(BR)EBO}$	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 20	μA
DC current gain ¹⁾ $I_C = 5\text{ mA}$, $V_{CE} = 2\text{ V}$ $I_C = 150\text{ mA}$, $V_{CE} = 2\text{ V}$, BCX55/BCX56 $I_C = 150\text{ mA}$, $V_{CE} = 2\text{ V}$, BCX55-10/BCX56-10 $I_C = 150\text{ mA}$, $V_{CE} = 2\text{ V}$, BCX54-16...BCX56-16 $I_C = 500\text{ mA}$, $V_{CE} = 2\text{ V}$	h_{FE}	25 40 63 100 25	- - 100 160 -	- 250 160 250 -	-
Collector-emitter saturation voltage ¹⁾ $I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$	V_{CEsat}	-	-	0.5	V
Base-emitter voltage- $I_C = 500\text{ mA}$, $V_{CE} = 2\text{ V}$	$V_{BE(ON)}$	-	-	1	
AC Characteristics					
Transition frequency $I_C = 50\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 20\text{ MHz}$	f_T	-	100	-	MHz

¹Pulse test: $t < 300\ \mu\text{s}$; $D < 2\%$

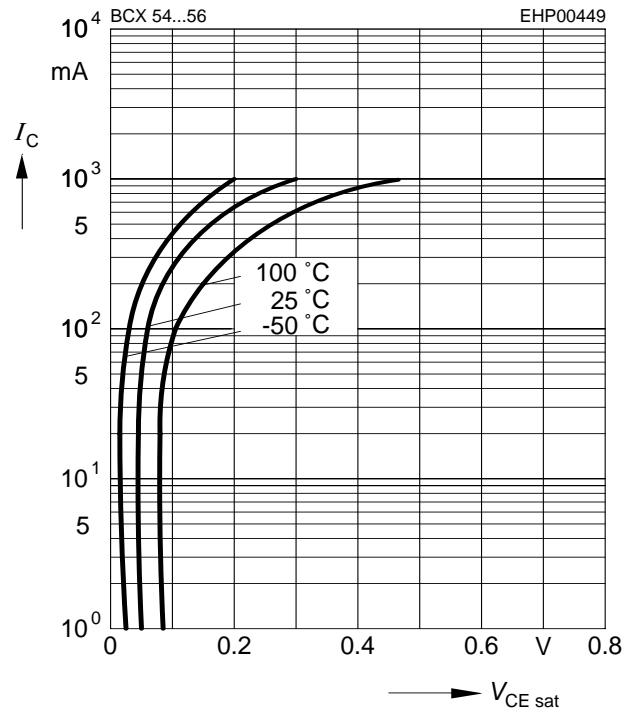
DC current gain $h_{FE} = f(I_C)$

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



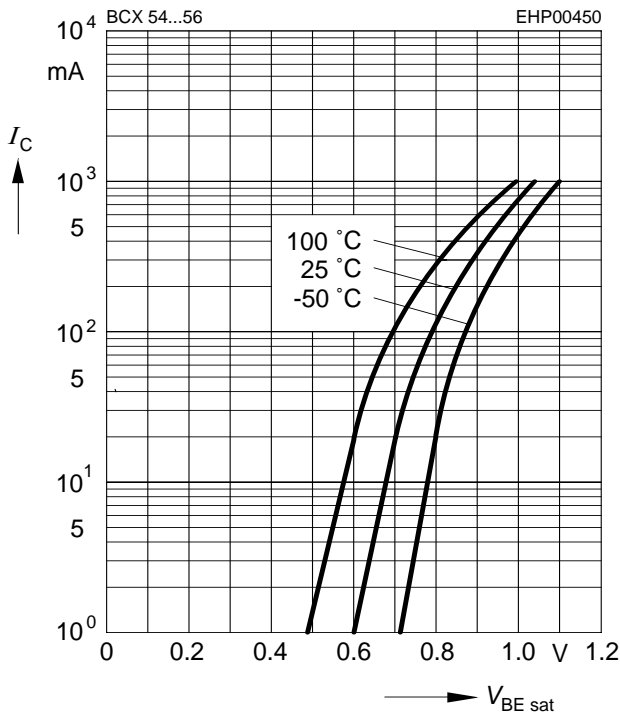
Collector-emitter saturation voltage

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



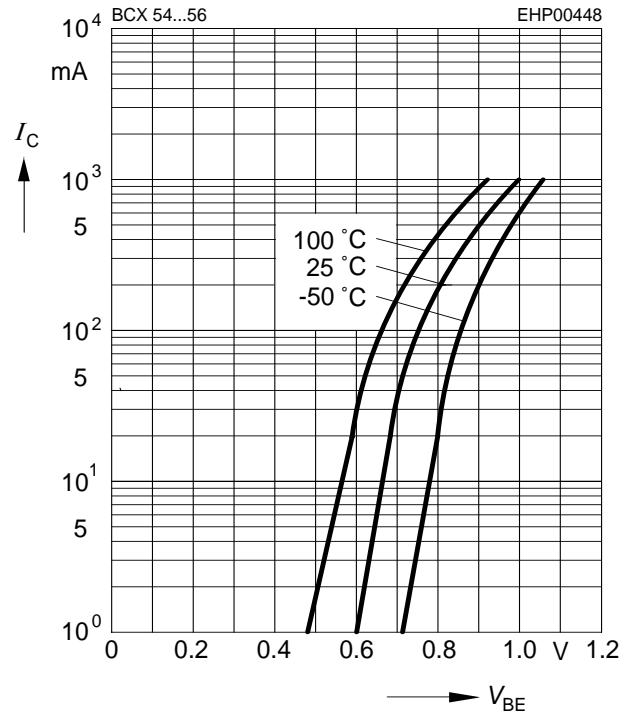
Base-emitter saturation voltage

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



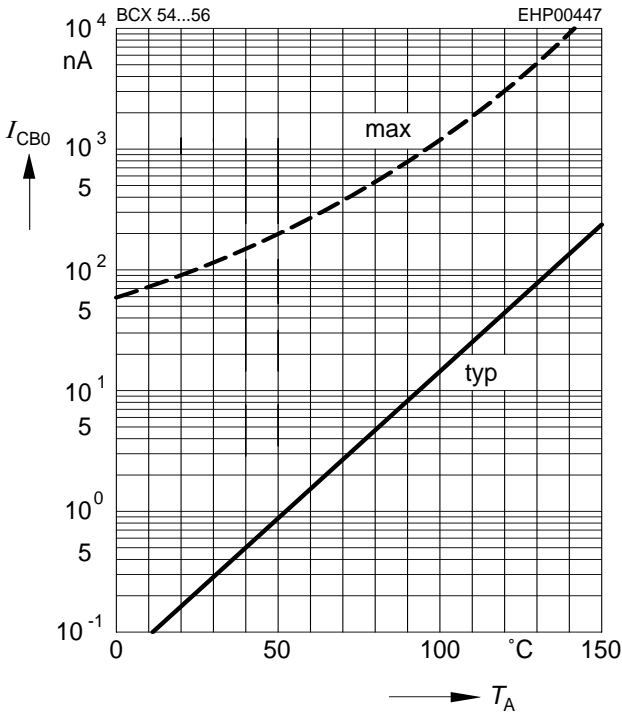
Collector current $I_C = f(V_{BE})$

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



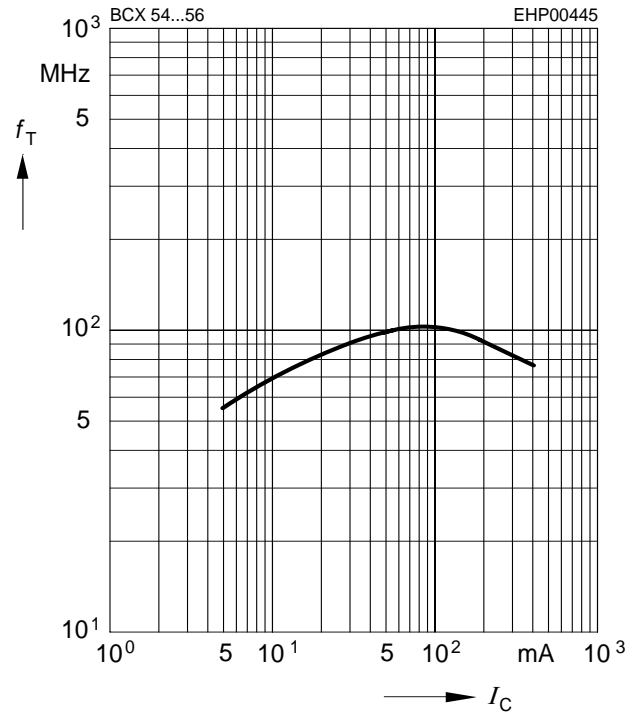
Collector cutoff current $I_{CBO} = f(T_A)$

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

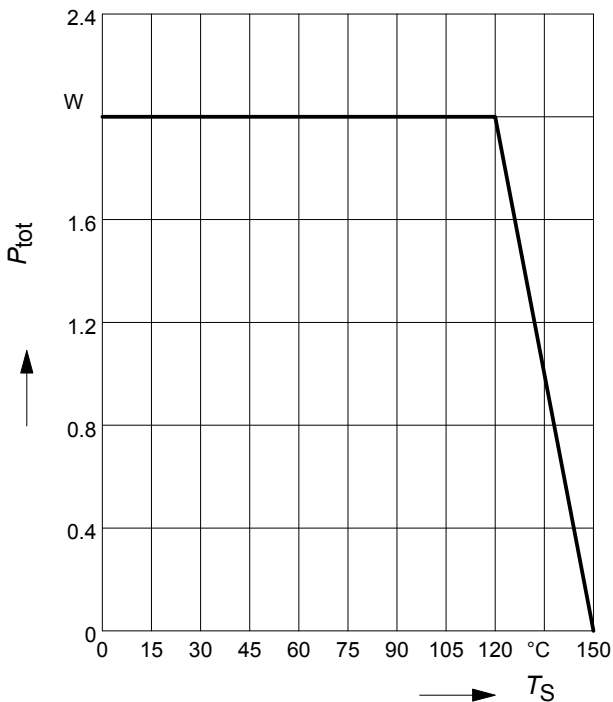


Transition frequency $f_T = f(I_C)$

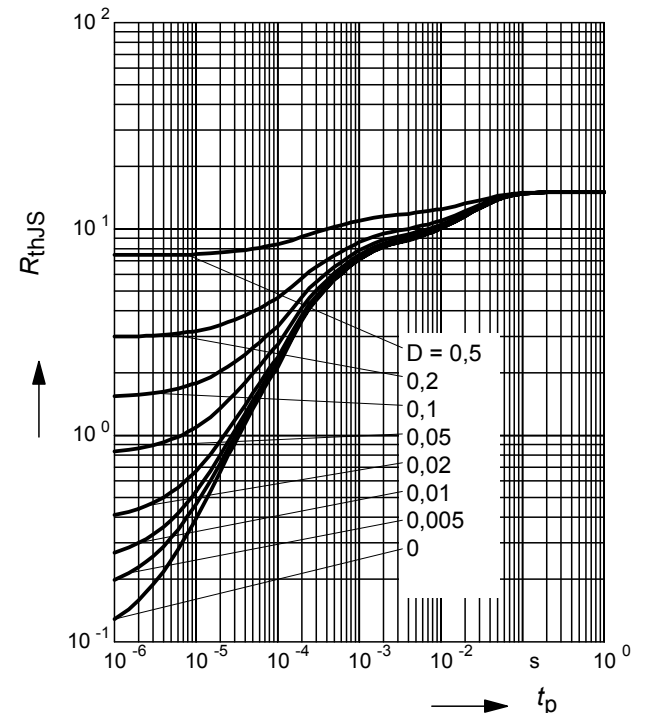
$V_{CE} = \text{parameter in V, } f = 2\text{ GHz}$



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

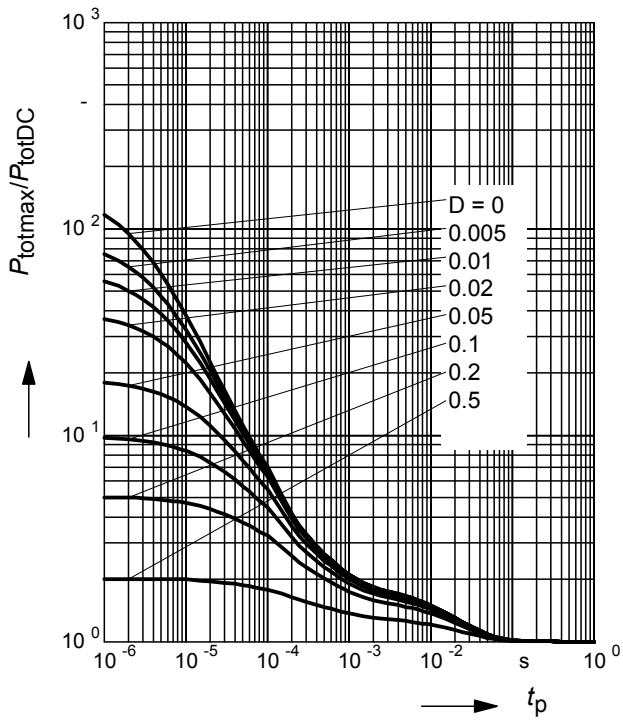


Permissible Pulse Load $R_{thJS} = f(t_p)$

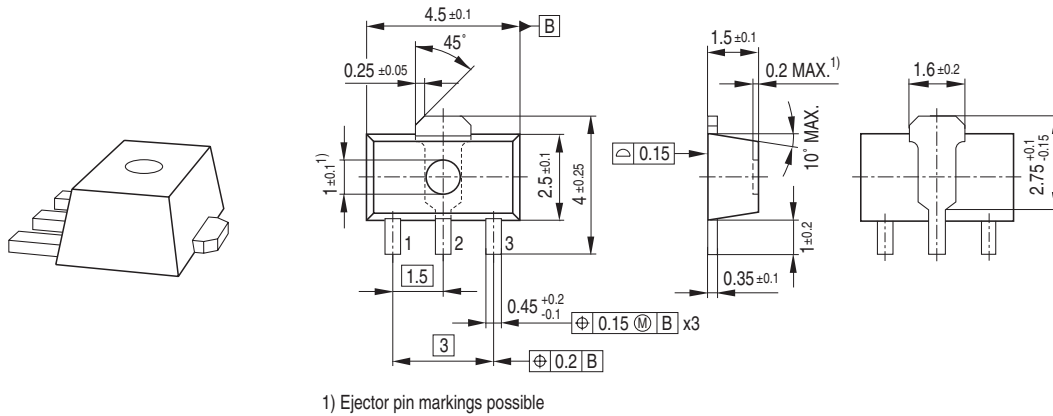


Permissible Pulse Load

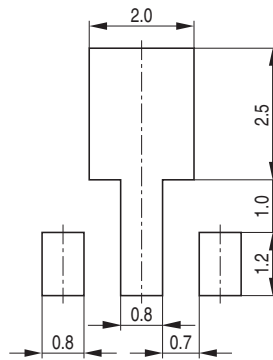
$$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$$



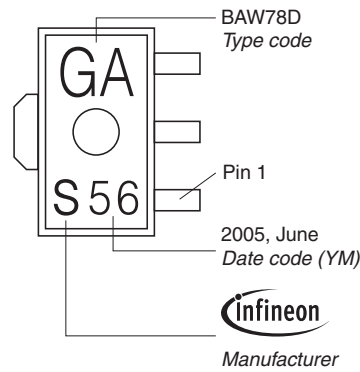
Package Outline



Foot Print

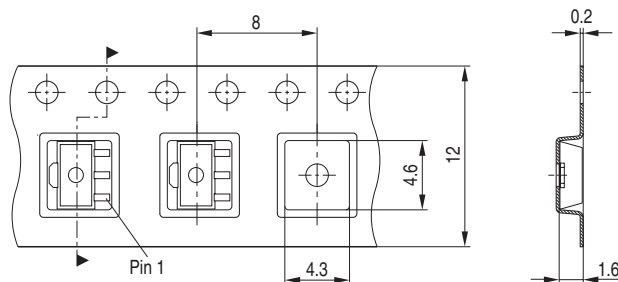


Marking Layout (Example)



Standard Packing

Reel ϕ 180 mm = 1.000 Pieces/Reel
 Reel ϕ 330 mm = 4.000 Pieces/Reel



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