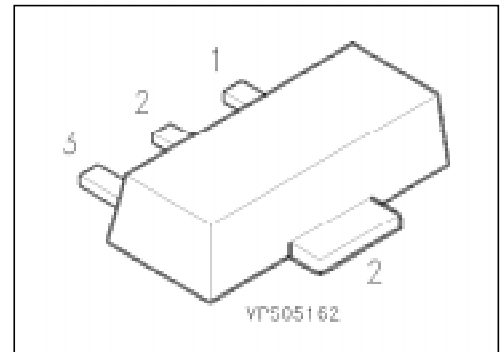# SIEMENS

NPN Silicon AF Transistors   **BCX 54 … BCX 56**

Features

● For AF driver and output stages
● High collector current
● Low collector-emitter saturation voltage
● Complementary types: BCX 51 … BCX 53 (PNP)

Type	Marking	Ordering Code (tape and reel)	Pin Configuration 1	2	3	Package[1]
BCX 54	BA	Q62702-C954	B	C	E	SOT-89
BCX 54-10	BC	Q62702-C1861				
BCX 54-16	BD	Q62702-C1731				
BCX 55	BE	Q62702-C1729				
BCX 55-10	BG	Q62702-C1730				
BCX 55-16	BM	Q62702-C1903				
BCX 56	BH	Q62702-C1614				
BCX 56-10	BK	Q62702-C1635				
BCX 56-16	BL	Q62702-C1613				

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[1] For detailed information see chapter Package Outlines.

Maximum Ratings

Parameter	Symbol	Values			Unit
		BCX 54	**BCX 55**	**BCX 56**	
Collector-emitter voltage	V_{CE0}	45	60	80	V
Collector-base voltage	V_{CB0}	45	60	100	
Emitter-base voltage	V_{EB0}	5	5	5	
Collector current	I_C	1			A
Peak collector current	I_{CM}	1.5			
Base current	I_B	100			mA
Peak base current	I_{BM}	200			
Total power dissipation, $T_S = 130\ ^\circ C$	P_{tot}	1			W
Junction temperature	T_j	150			$^\circ C$
Storage temperature range	T_{stg}	$-65 \dots +150$			

Thermal Resistance

Parameter	Symbol	Values	Unit
Junction - ambient[1]	$R_{th\ JA}$	≤ 75	K/W
Junction - soldering point	$R_{th\ JS}$	≤ 20	

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[1] Package mounted on epoxy pcb 40 mm $\times$ 40 mm $\times$ 1.5 mm/6 cm^2 Cu.

Electrical Characteristics

at $T_A = 25\ °C$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

DC characteristics

Parameter	Symbol	min.	typ.	max.	Unit
Collector-emitter breakdown voltage $I_C = 10$ mA	$V_{(BR)CE0}$				V
BCX 54		45	–	–	
BCX 55		60	–	–	
BCX 56		80	–	–	
Collector-base breakdown voltage $I_C = 100\ \mu A$	$V_{(BR)CB0}$				
BCX 54		45	–	–	
BCX 55		60	–	–	
BCX 56		100	–	–	
Emitter-base breakdown voltage $I_E = 10\ \mu A$	$V_{(BR)EB0}$	5	–	–	
Collector cutoff current $V_{CB} = 30$ V $V_{CB} = 30$ V, $T_A = 150\ °C$	I_{CB0}	– –	– –	100 20	nA μA
Emitter cutoff current $V_{EB} = 4$ V	I_{EB0}	–	–	20	nA

DC current gain[1)]
$I_C = 5$ mA, $V_{CE} = 2$ V
$I_C = 150$ mA, $V_{CE} = 2$ V
   BCX 54, BCX 55, BCX 56
   BCX 54-10, BCX 55-10, BCX 56-10
   BCX 54-16, BCX 55-16, BCX 56-16
$I_C = 500$ mA, $V_{CE} = 2$ V
	h_{FE}	25
		
		40
		63
		100
		25
			–
			
			–
			100
			160
			–
				–
				
				250
				160
				250
				–
					–

Collector-emitter saturation voltage[1)] $I_C = 500$ mA, $I_B = 50$ mA	V_{CEsat}	–	–	0.5	V
Base-emitter voltage[1)] $I_C = 500$ mA, $V_{CE} = 2$ V	V_{BE}	–	–	1	

AC characteristics

Parameter	Symbol	min.	typ.	max.	Unit
Transition frequency $I_C = 50$ mA, $V_{CE} = 10$ V, $f = 20$ MHz	f_T	–	100	–	MHz

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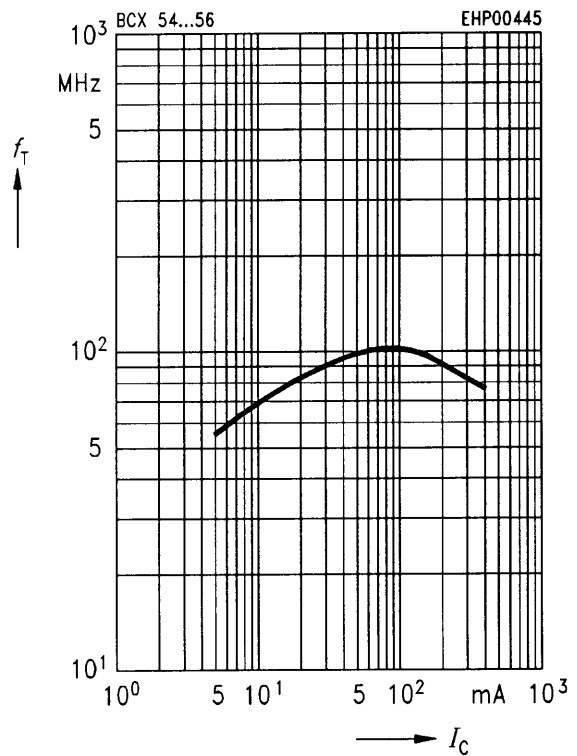[1)] Pulse test: $t \leq 300\ \mu s$, $D = 2\ \%$.

Total power dissipation $P_{tot} = f(T_A^*; T_S)$
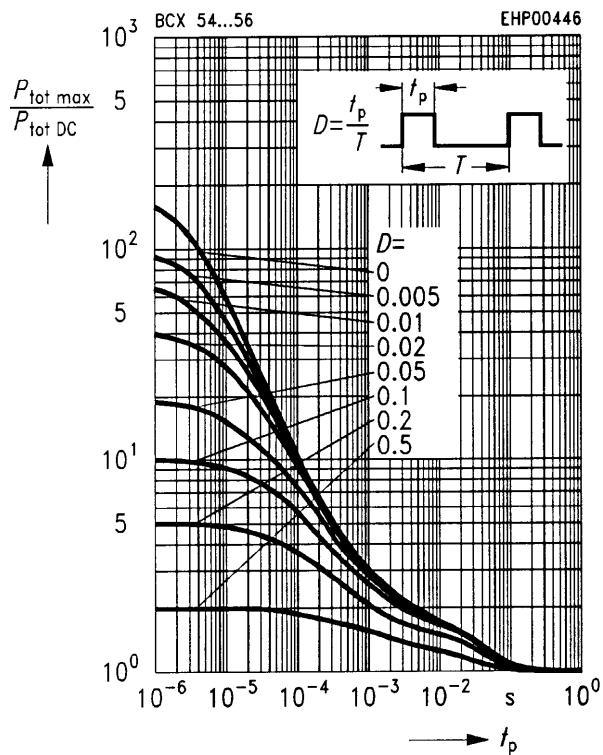* Package mounted on epoxy
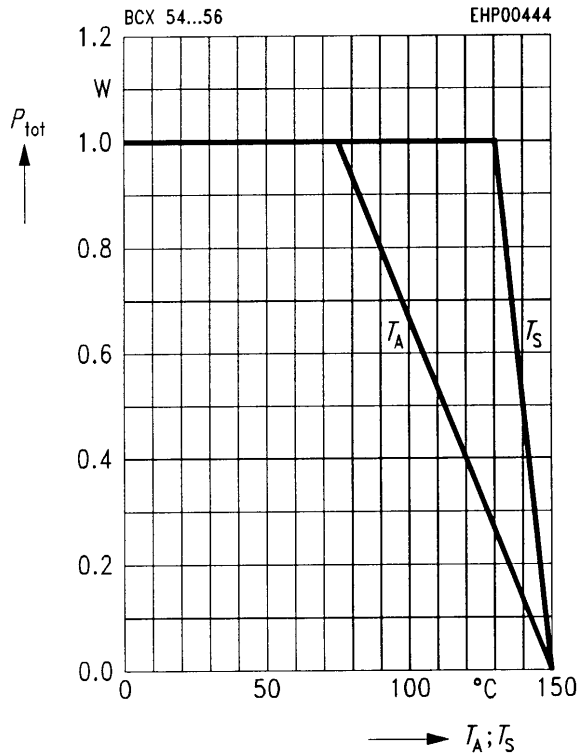
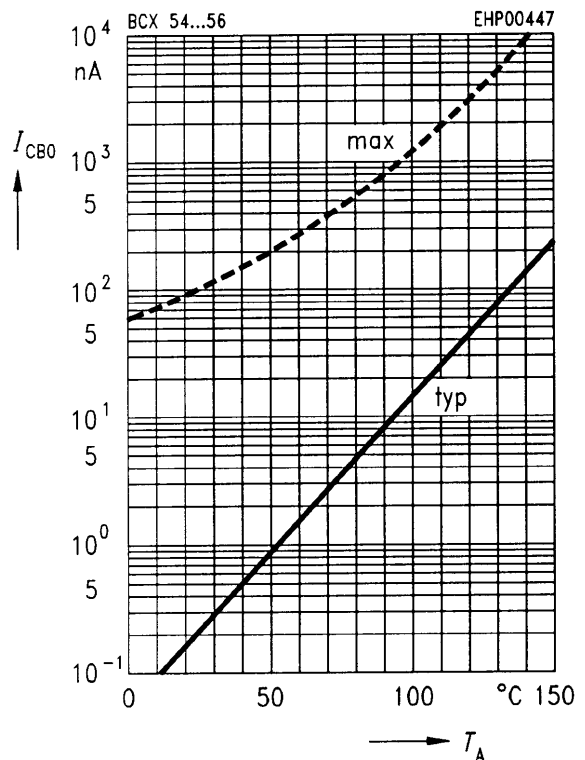**Transition frequency** $f_T = f(I_C)$
$V_{CE} = 10$ V

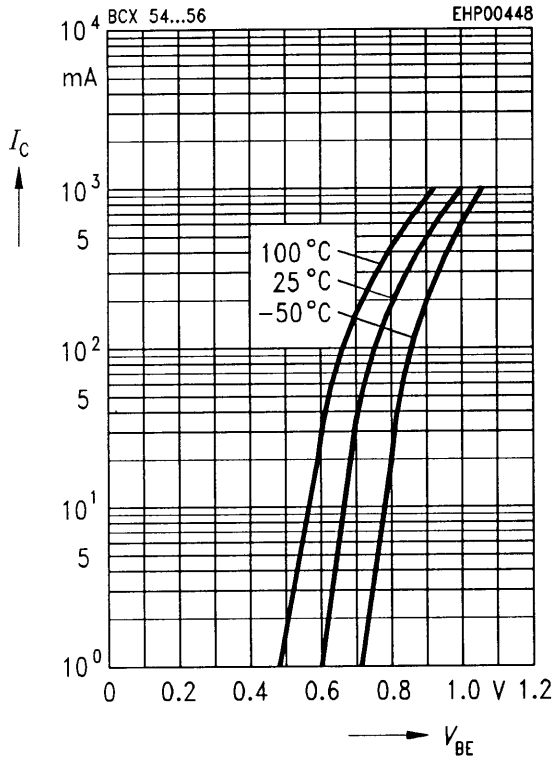**Permissible pulse load** $P_{tot\,max}/P_{tot\,DC} = f(t_p)$

Collector cutoff current $I_{CB0} = f(T_A)$
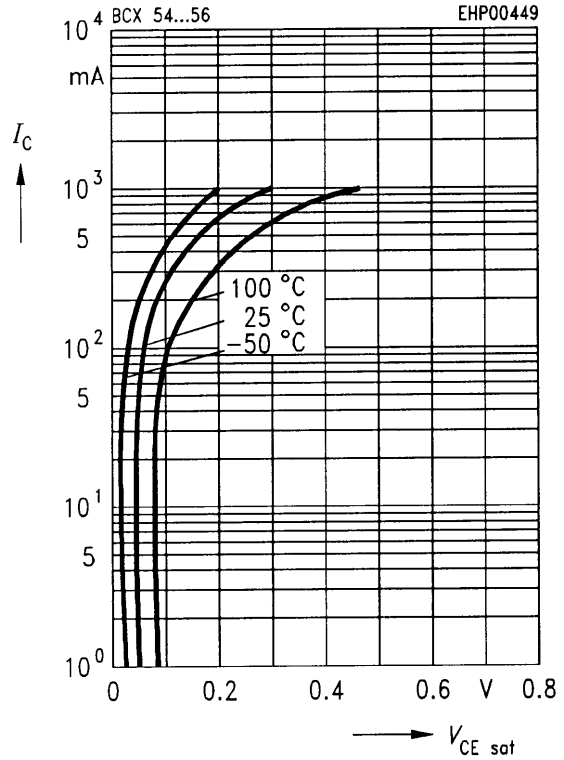$V_{CB} = 30$ V

Collector current $I_C = f(V_{BE})$
$V_{CE} = 2$ V
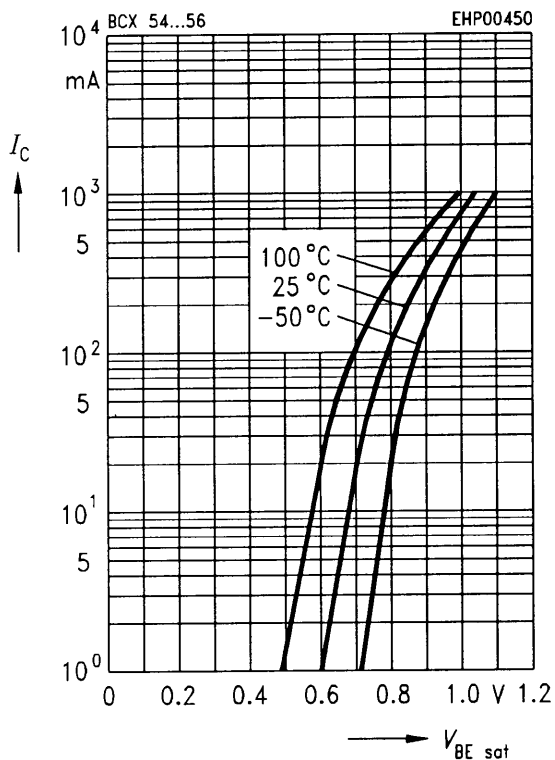

Collector-emitter saturation voltage
$I_C = f(V_{CEsat})$
$h_{FE} = 10$

Base-emitter saturation voltage
$I_C = f(V_{BEsat})$
$h_{FE} = 10$

DC current gain $h_{FE} = f(I_C)$
$V_{CE} = 2$ V