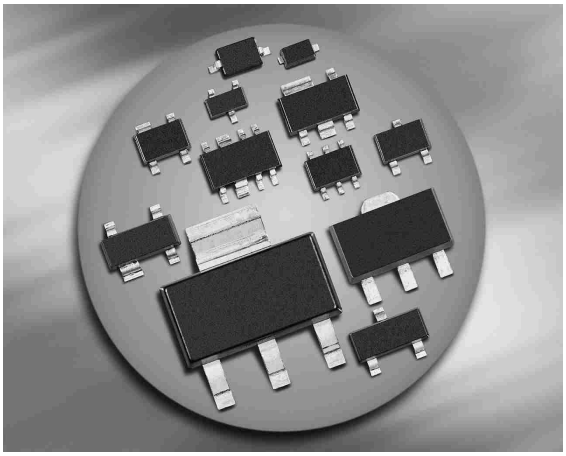
NPN Silicon AF Transistors

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCP51...BCP53 (PNP)
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



Type	Marking	Pin Configuration						Package
BCP54	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP54-16	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP55	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP55-16	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP56-10	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP56-16	*	1=B	2=C	3=E	4=C	-	-	SOT223

* Marking is the same as the type-name

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}		V
BCP54		45	
BCP55		60	
BCP56		80	
Collector-base voltage	V_{CBO}		
BCP54		45	
BCP55		60	
BCP56		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- $T_S \leq 120$°C	P_{tot}	2	W
Junction temperature	T_j	150	°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)

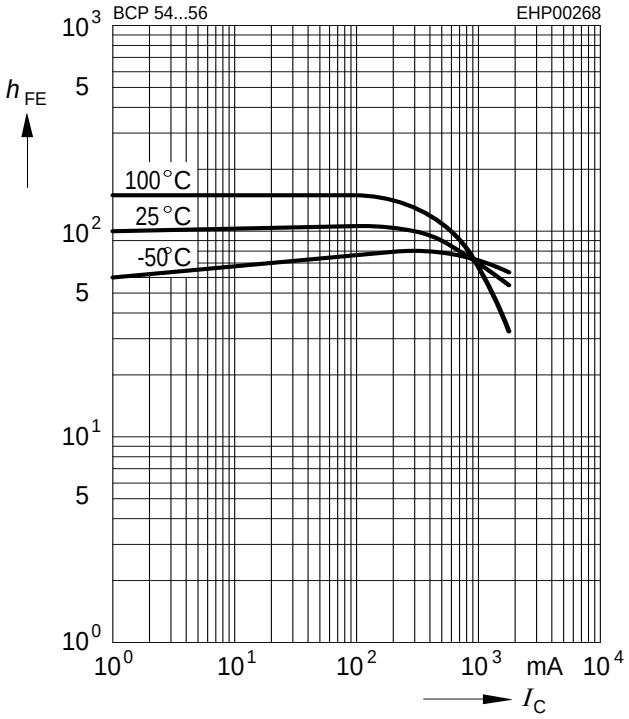
Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage	$V_{(BR)CEO}$				V
I_C = 10 mA, I_B = 0 , BCP54...		45	-	-	
I_C = 10 mA, I_B = 0 , BCP55...		60	-	-	
I_C = 10 mA, I_B = 0 , BCP56-10, -16		80	-	-	
Collector-base breakdown voltage	$V_{(BR)CBO}$				
I_C = 100 µA, I_E = 0 , BCP54...		45	-	-	
I_C = 100 µA, I_E = 0 , BCP55...		60	-	-	
I_C = 100 µA, I_E = 0 , BCP56-10, -16		100	-	-	
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5	-	-	
I_E = 10 µA, I_C = 0					
Collector-base cutoff current	I_{CBO}				µA
V_{CB} = 30 V, I_E = 0		-	-	0.1	
V_{CB} = 30 V, I_E = 0 , T_A = 150 °C		-	-	20	
DC current gain[1)]	h_{FE}				-
I_C = 5 mA, V_{CE} = 2 V		25	-	-	
I_C = 150 mA, V_{CE} = 2 V, BCP54/BCP55		40	-	250	
I_C = 150 mA, V_{CE} = 2 V, BCP56-10		63	100	160	
I_C = 150 mA, V_{CE} = 2 V, BCP54-16...BCP56-16		100	160	250	
I_C = 500 mA, V_{CE} = 2 V		25	-	-	
Collector-emitter saturation voltage[1)]	V_{CEsat}	-	-	0.5	V
I_C = 500 mA, I_B = 50 mA					
Base-emitter voltage[1)]	$V_{BE(ON)}$	-	-	1	
I_C = 500 mA, V_{CE} = 2 V					
AC Characteristics					
Transition frequency	f_T	-	100	-	MHz
I_C = 50 mA, V_{CE} = 10 V, f = 100 MHz					

[1]Pulse test: t < 300µs; D < 2%

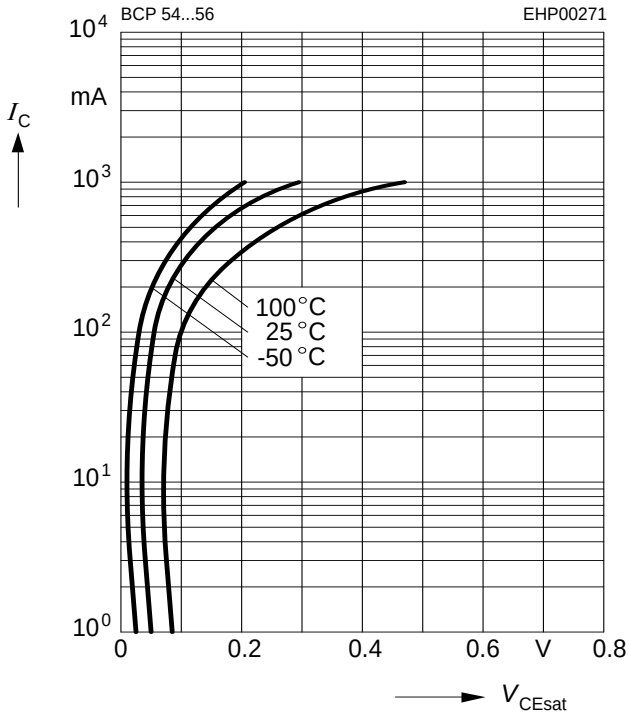
DC current gain $h_{FE} = f(I_C)$

V_{CE} = 2 V



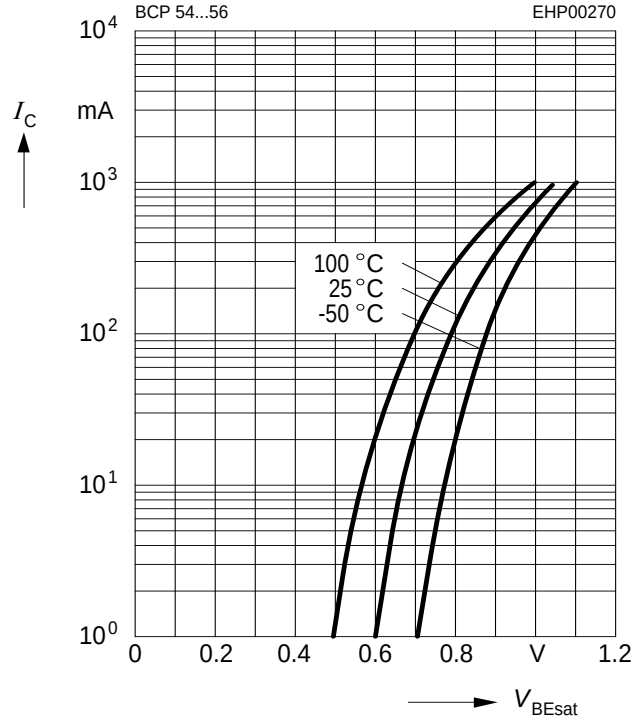
Collector-emitter saturation voltage

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



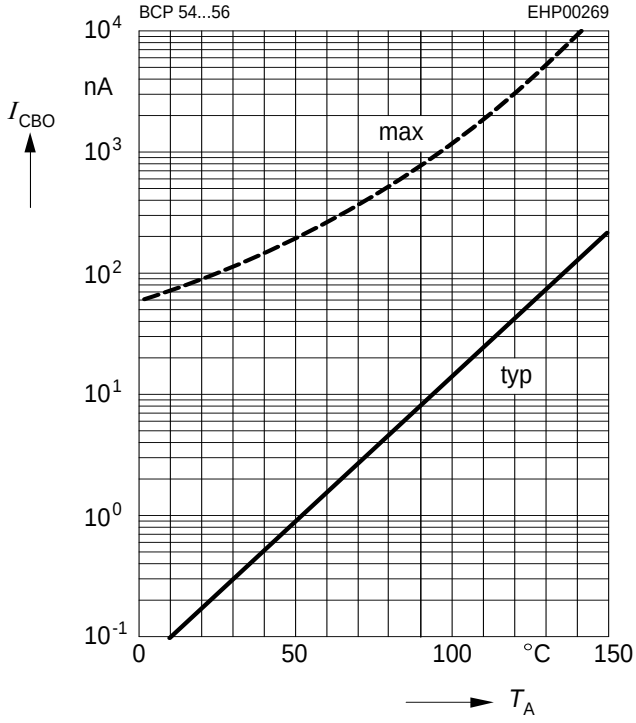
Base-emitter saturation voltage

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



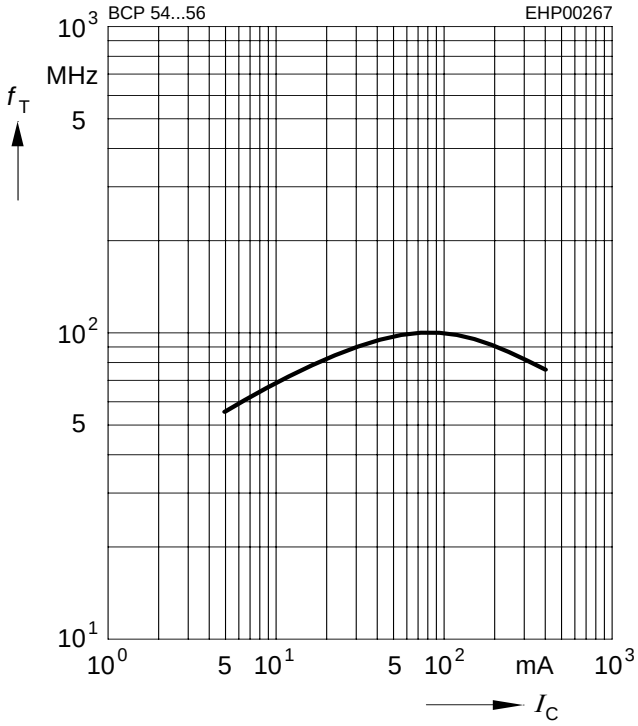
Collector cutoff current $I_{CBO} = f(T_A)$

V_{CBO} = 30 V

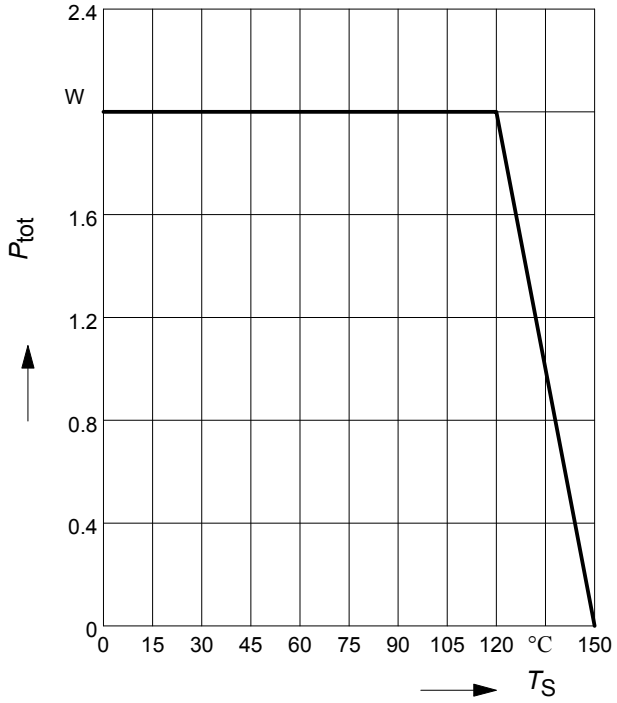


Transition frequency $f_T = f(I_C)$

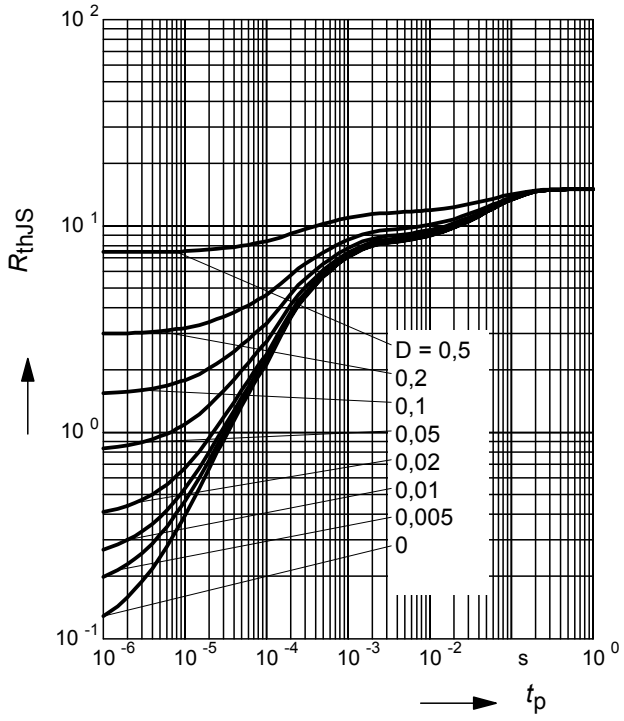
V_{CE} = 10 V



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

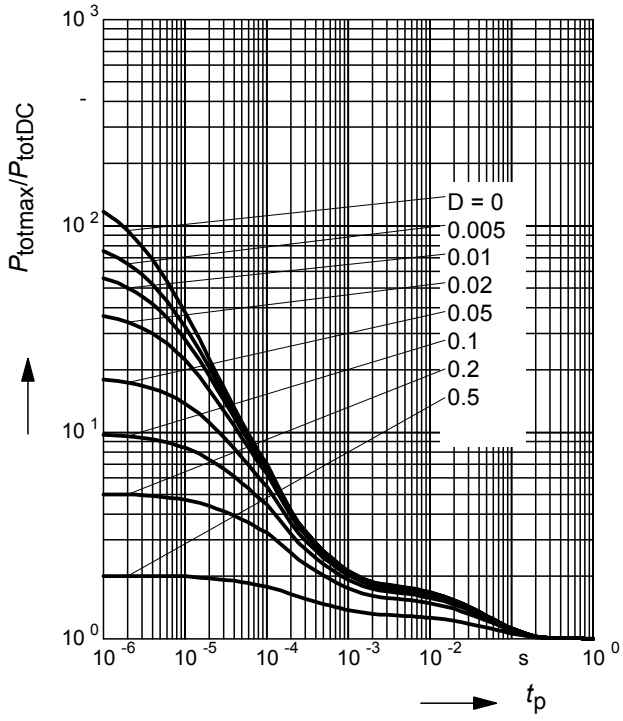


Permissible Pulse Load $R_{thJS} = f(t_p)$

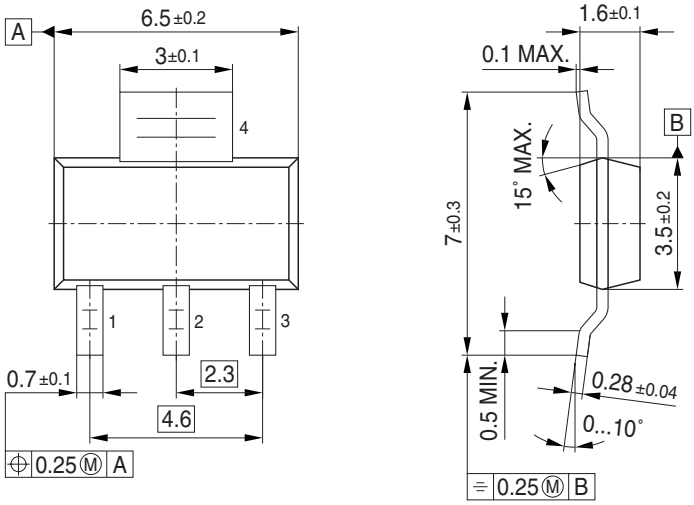


Permissible Pulse Load

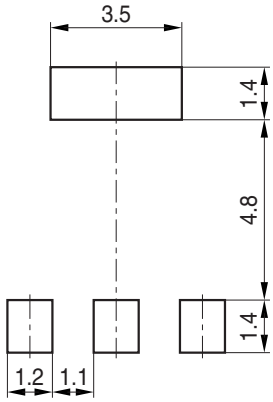
$P_{totmax}/P_{totDC} = f(t_p)$



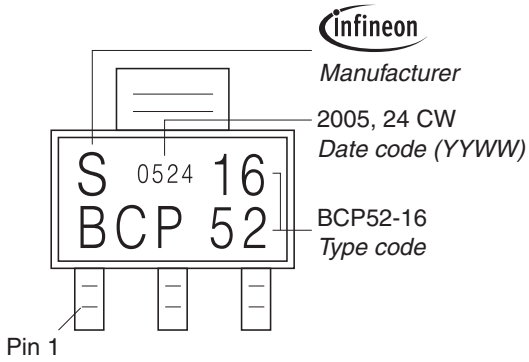
Package Outline



Foot Print

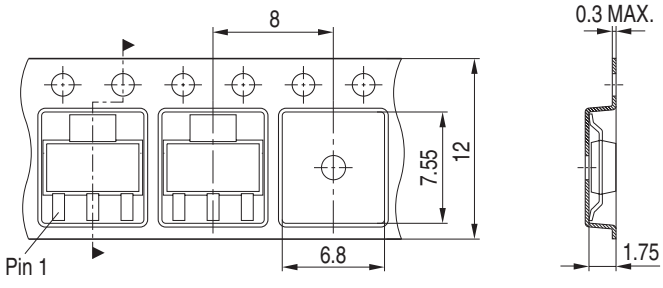


Marking Layout (Example)



Packing

Reel ø180 mm = 1.000 Pieces/Reel
Reel ø330 mm = 4.000 Pieces/Reel



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