

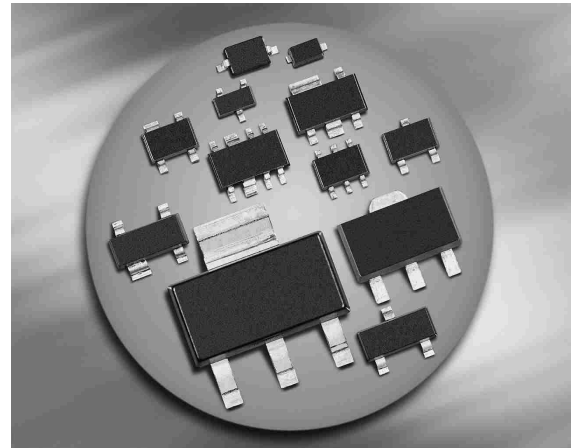


**THE DATASHEET OF  
BCP5316H6433XTMA1**



**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) package
- Qualified according AEC Q101



Type	Marking	Pin Configuration						Package
		1=B	2=C	3=E	4=C	-	-	
BCP51	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP51-16	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP52-16	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP53-10	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP53-16	*	1=B	2=C	3=E	4=C	-	-	SOT223

\* Marking is the same as type-name

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Collector-emitter voltage	$V_{CEO}$		V
BCP51		45	
BCP52		60	
BCP53		80	
Collector-base voltage	$V_{CBO}$		
BCP51		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 <sup>1)</sup>	$R_{thJS}$	$\leq 15$	K/W

<sup>1</sup>For calculation of  $R_{thJA}$  please refer to Application Note AN077 (Thermal Resistance Calculation)

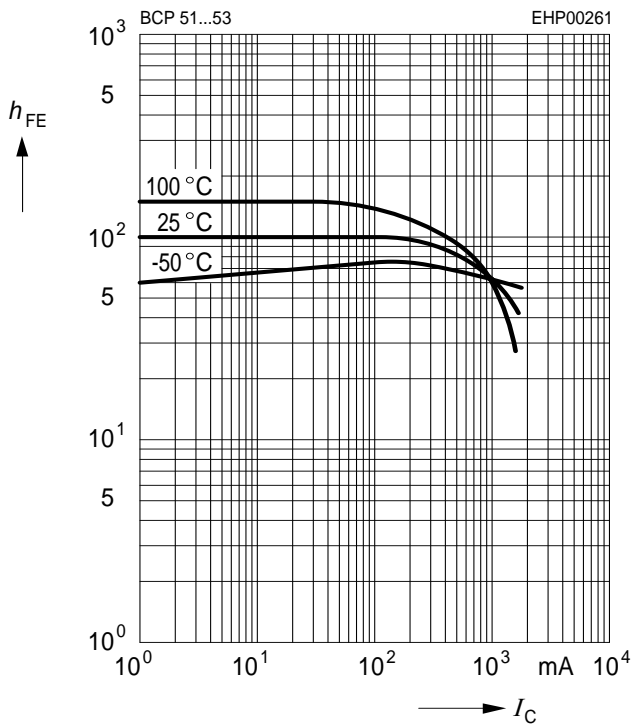
**Electrical Characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$ , $I_B = 0$ , BCP51	$V_{(BR)CEO}$	45	-	-	V
$I_C = 10\text{ mA}$ , $I_B = 0$ , BCP52		60	-	-	
$I_C = 10\text{ mA}$ , $I_B = 0$ , BCP53		80	-	-	
Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$ , $I_E = 0$ , BCP51	$V_{(BR)CBO}$	45	-	-	
$I_C = 100\text{ }\mu\text{A}$ , $I_E = 0$ , BCP52		60	-	-	
$I_C = 100\text{ }\mu\text{A}$ , $I_E = 0$ , BCP53		100	-	-	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$ , $I_C = 0$	$V_{(BR)EBO}$	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	$\mu\text{A}$
		-	-	20	
DC current gain <sup>1)</sup> $I_C = 5\text{ mA}$ , $V_{CE} = 2\text{ V}$	$h_{FE}$	25	-	-	-
$I_C = 150\text{ mA}$ , $V_{CE} = 2\text{ V}$ , BCP51		40	-	250	
$I_C = 150\text{ mA}$ , $V_{CE} = 2\text{ V}$ , BCP53-10		63	100	160	
$I_C = 150\text{ mA}$ , $V_{CE} = 2\text{ V}$ , BCP51-16...BCP53-16		100	160	250	
$I_C = 500\text{ mA}$ , $V_{CE} = 2\text{ V}$		25	-	-	
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 500\text{ mA}$ , $I_B = 50\text{ mA}$	$V_{CEsat}$	-	-	0.5	V
Base-emitter voltage <sup>1)</sup> $I_C = 500\text{ mA}$ , $V_{CE} = 2\text{ V}$	$V_{BE(ON)}$	-	-	1	
<b>AC Characteristics</b>					
Transition frequency $I_C = 50\text{ mA}$ , $V_{CE} = 10\text{ V}$ , $f = 100\text{ MHz}$	$f_T$	-	125	-	MHz

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

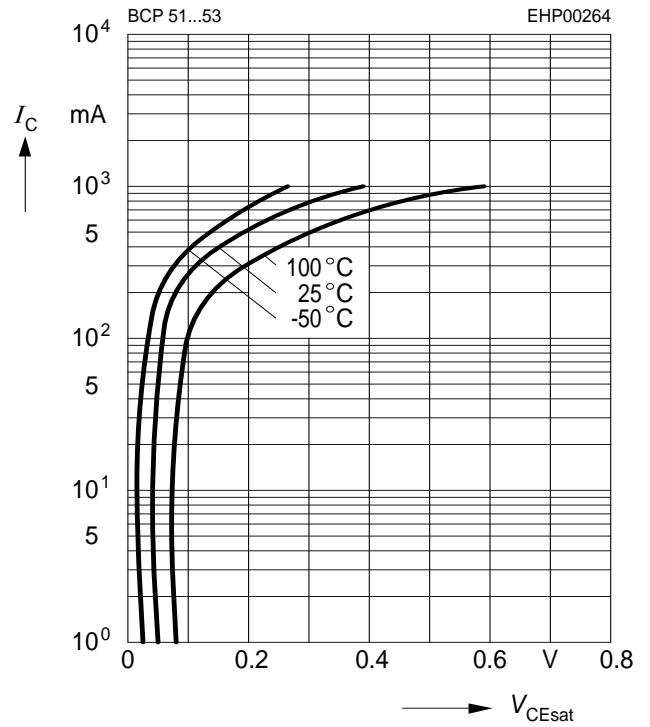
**DC current gain  $h_{FE} = f(I_C)$**

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



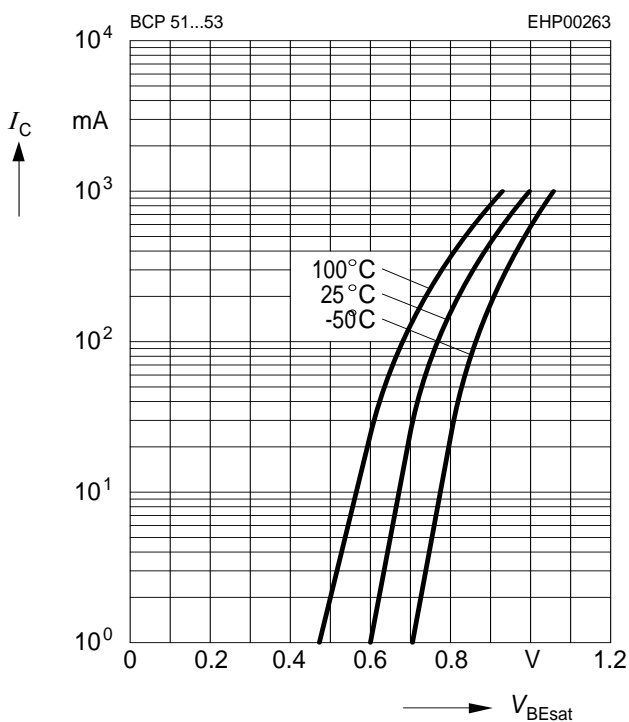
**Collector-emitter saturation voltage**

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



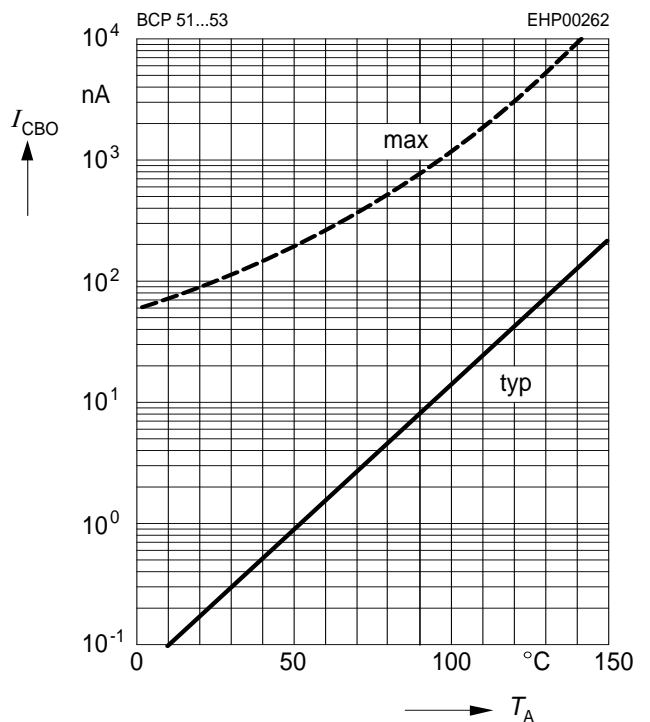
**Base-emitter saturation voltage**

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



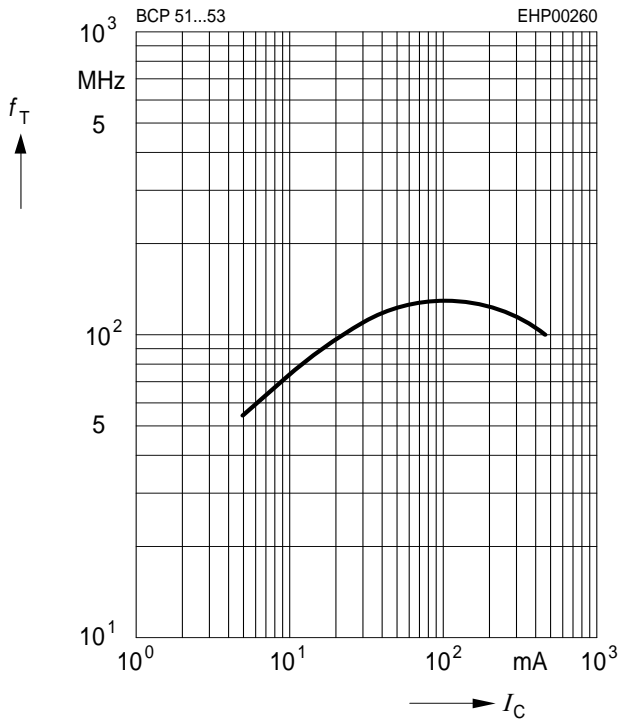
**Collector cutoff current  $I_{CBO} = f(T_A)$**

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

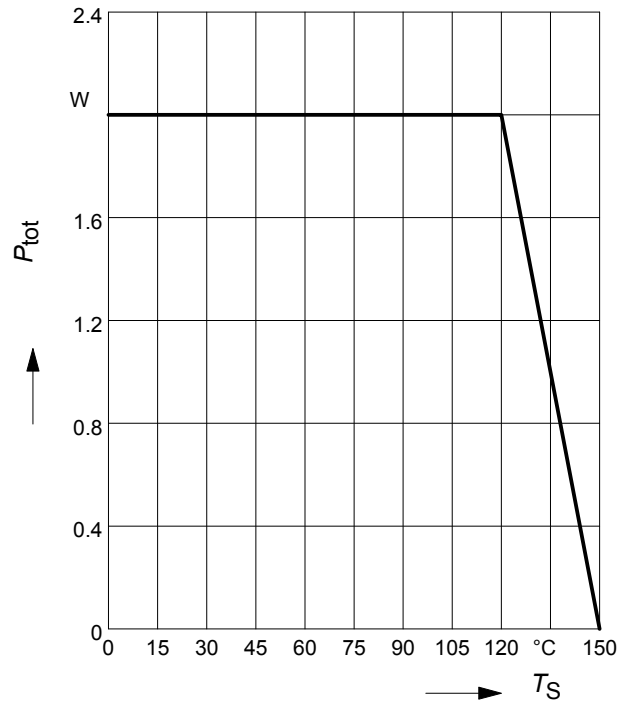


Transition frequency  $f_T = f(I_C)$

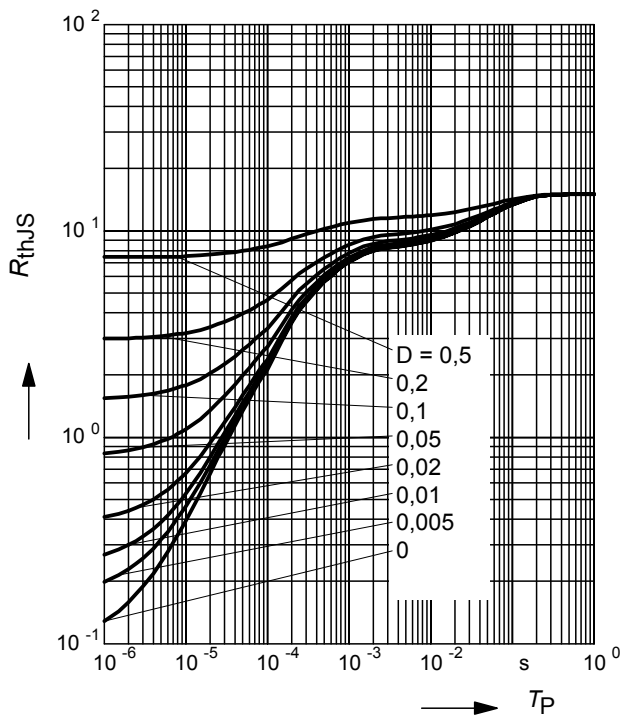
$V_{CE} = 10\text{ V}$



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

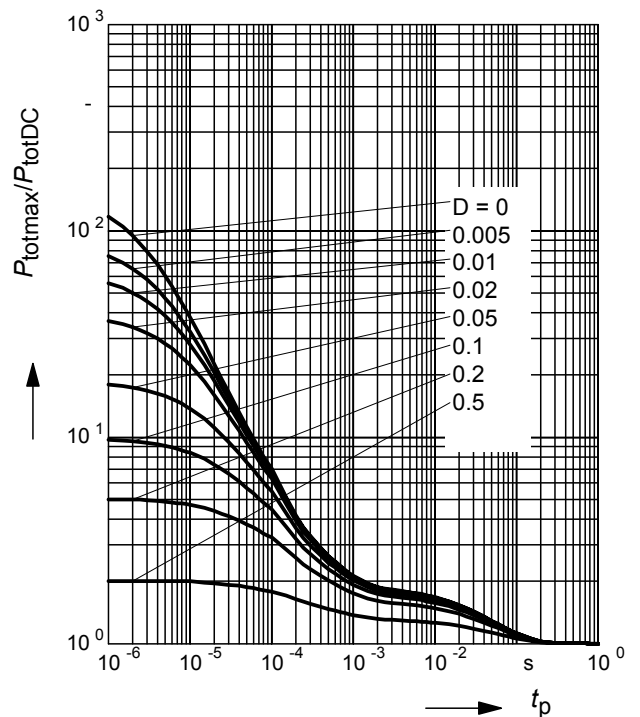


Permissible Pulse Load  $R_{thJS} = f(t_p)$

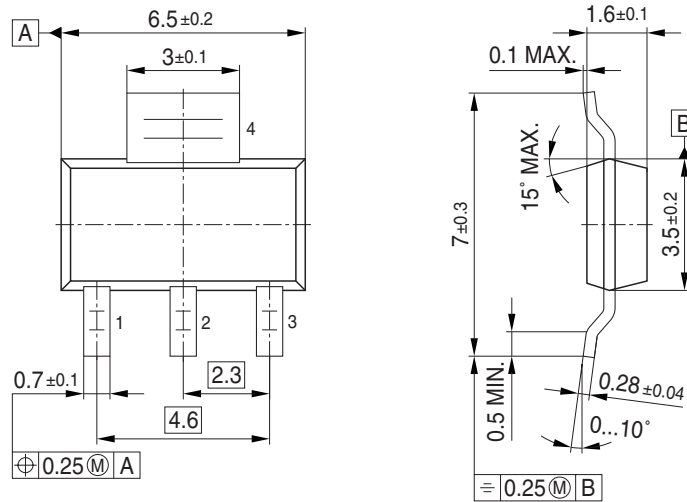
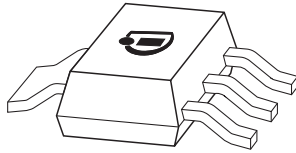


Permissible Pulse Load

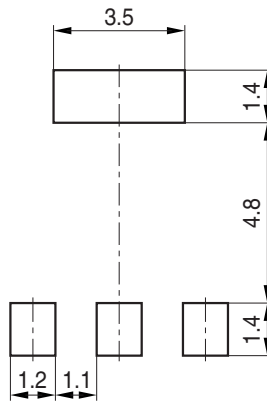
$P_{totmax}/P_{totDC} = f(t_p)$



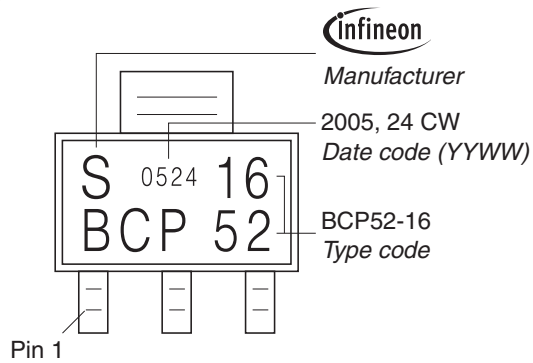
Package Outline



Foot Print

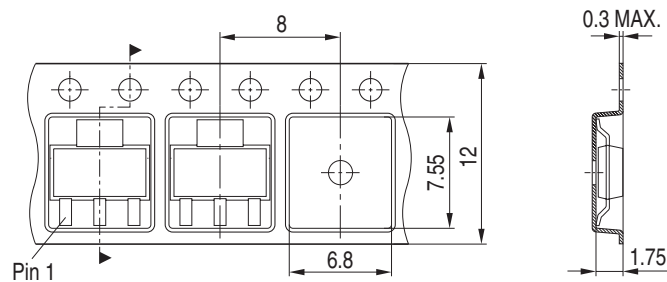


Marking Layout (Example)



Packing

Reel  $\varnothing 180$  mm = 1.000 Pieces/Reel  
 Reel  $\varnothing 330$  mm = 4.000 Pieces/Reel



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