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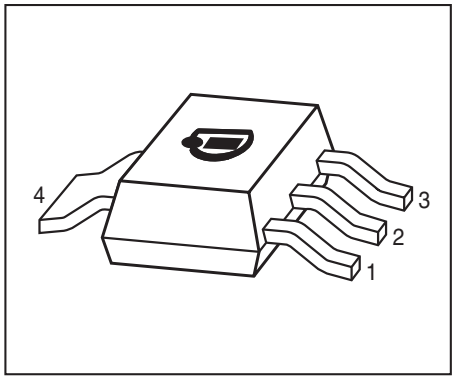
PNP Silicon Darlington Transistor



- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BSP50...BSP52 (NPN)
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101

Type	Marking	Pin Configuration						Package
BSP60	BSP60	1=B	2=C	3=E	4=C	-	-	SOT223
BSP61	BSP61	1=B	2=C	3=E	4=C	-	-	SOT223
BSP62	BSP62	1=B	2=C	3=E	4=C	-	-	SOT223

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}		V
BSP60		45	
BSP61		60	
BSP62		80	
Collector-base voltage	V_{CBO}		
BSP60		60	
BSP61		80	
BSP62		90	
Emitter-base voltage	V_{EBO}	5	
Collector current	I_C	1	A
Peak collector current, $t_p \leq 10$ ms	I_{CM}	2	
Base current	I_B	100	mA
Total power dissipation- $T_S \leq 124$ °C	P_{tot}	1.5	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}	≤ 17	K/W

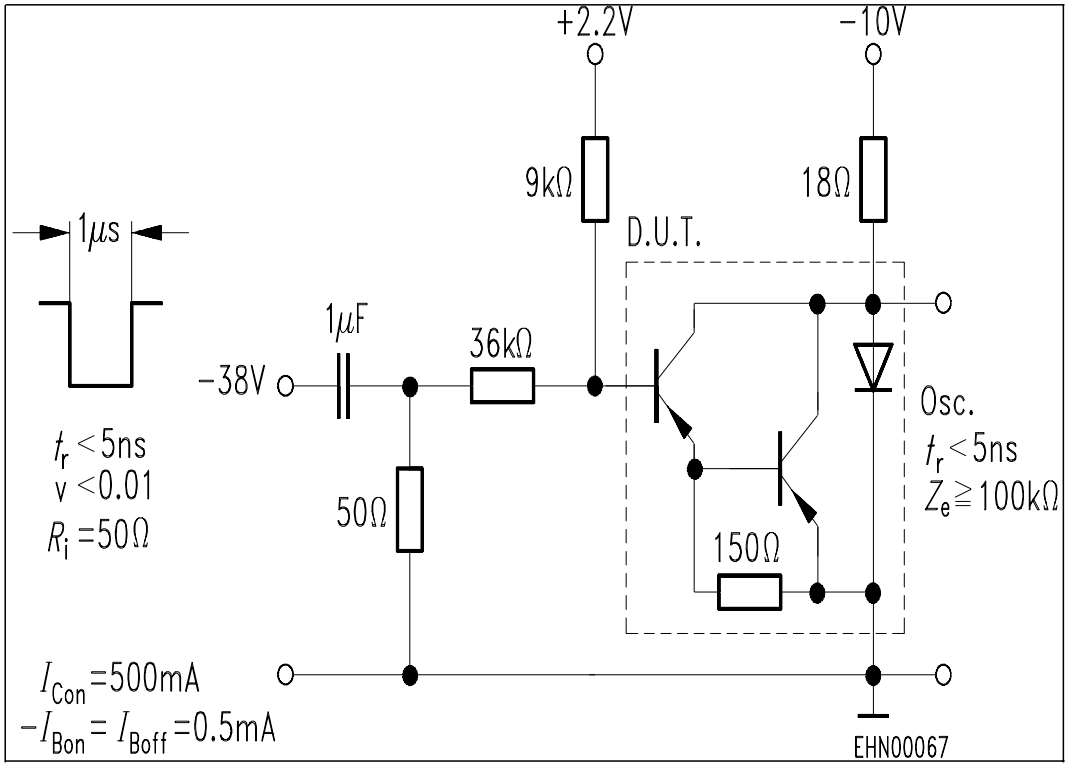
Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage	$V_{(BR)CEO}$				V
I_C = 10 mA, I_B = 0 , BSP60		45	-	-	
I_C = 10 mA, I_B = 0 , BSP61		60	-	-	
I_C = 10 mA, I_B = 0 , BCP62		80	-	-	
Collector-base breakdown voltage	$V_{(BR)CBO}$				
I_C = 100 µA, I_E = 0 , BSP60		60	-	-	
I_C = 100 µA, I_E = 0 , BSP61		80	-	-	
I_C = 100 µA, I_E = 0 , BSP62		90	-	-	
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5	-	-	
I_E = 100 µA, I_C = 0					
Collector-emitter cutoff current	I_{CES}	-	-	10	µA
V_{CE} = V_{CE0max} , V_{BE} = 0					
Emitter-base cutoff current	I_{EBO}	-	-	10	µA
V_{EB} = 4 V, I_C = 0					
DC current gain[2)]	h_{FE}				-
I_C = 150 mA, V_{CE} = 10 V		1000	-	-	
I_C = 500 mA, V_{CE} = 10 V		2000	-	-	
Collector-emitter saturation voltage[2)]	V_{CEsat}				V
I_C = 500 mA, I_B = 0.55 mA		-	-	1.3	
I_C = 1 A, I_B = 1 mA		-	-	1.8	
Base emitter saturation voltage[2)]	V_{BEsat}				
I_C = 500 mA, I_B = 0.5 mA		-	-	1.9	
I_C = 1 A, I_B = 1 mA		-	-	2.2	
AC Characteristics					
Transition frequency	f_T	-	200	-	MHz
I_C = 100 mA, V_{CE} = 5 V, f = 100 MHz					

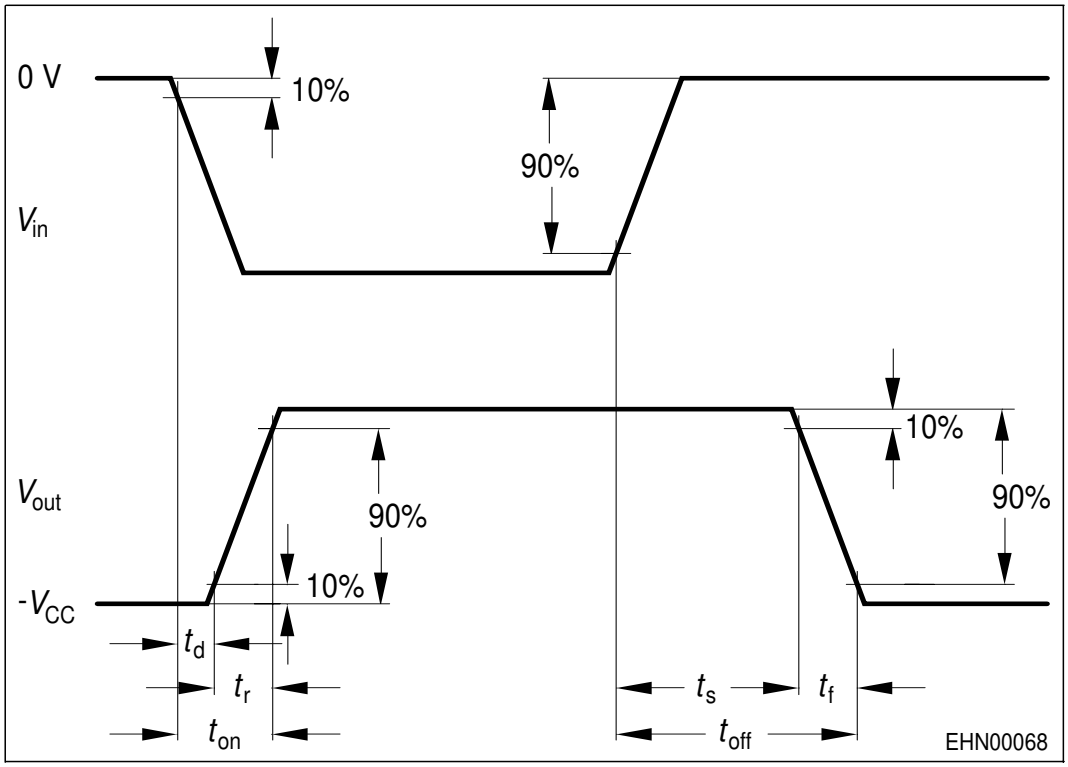
[1]For calculation of R_{thJA} please refer to Application Note AN077 (Thermal Resistance Calculation)

[2]Pulse test: t < 300µs; D < 2%

Switching time test circuit

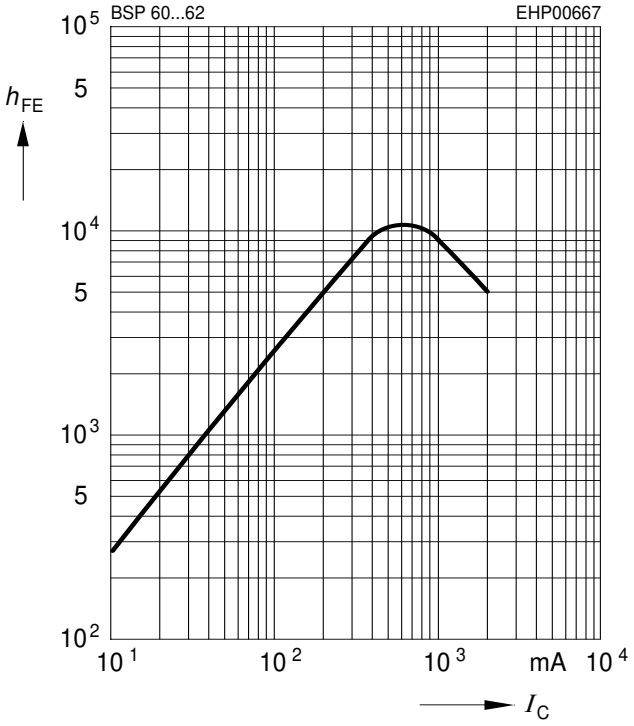


Switching time waveform



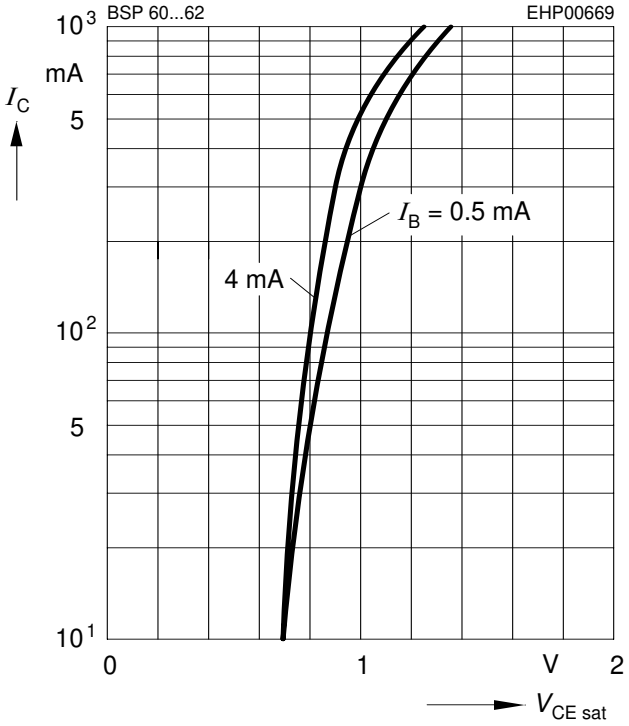
DC current gain $h_{FE} = f(I_C)$

V_{CE} = 10 V



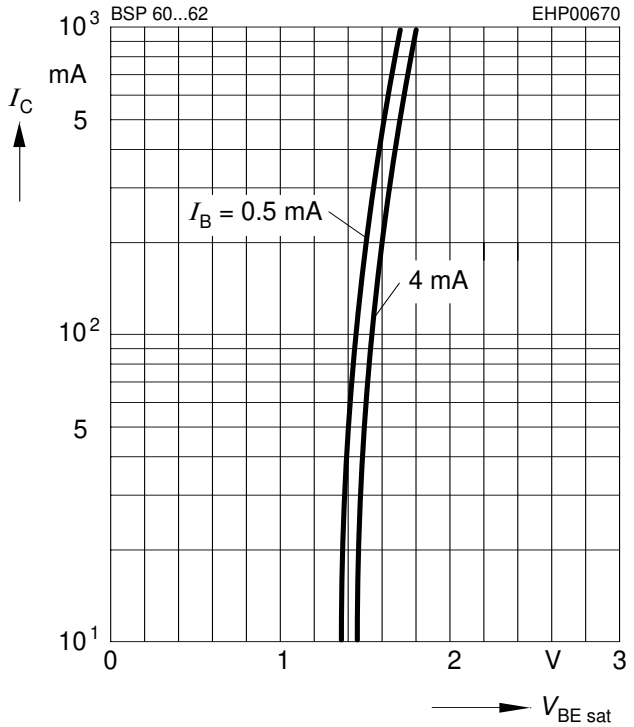
Collector-emitter saturation voltage

$I_C = f(V_{CEsat})$, I_B = Parameter



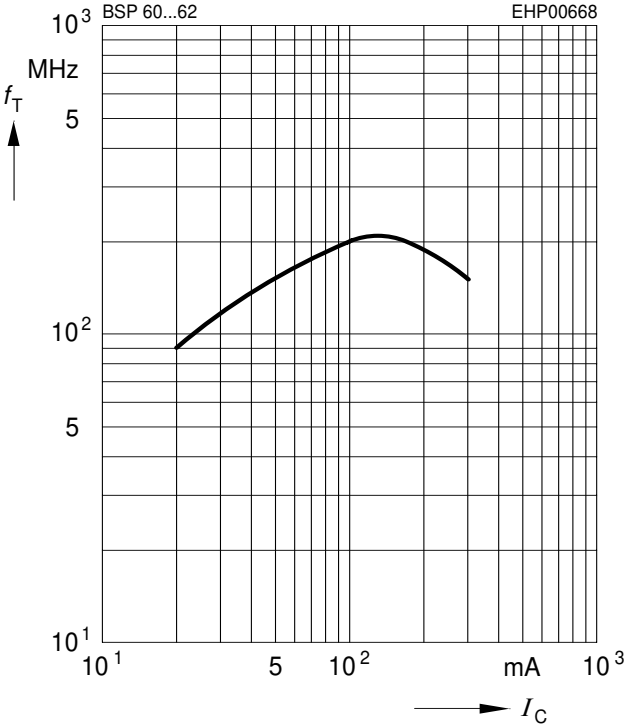
Base-emitter saturation voltage

$I_C = f(V_{BEsat})$, I_B = Parameter

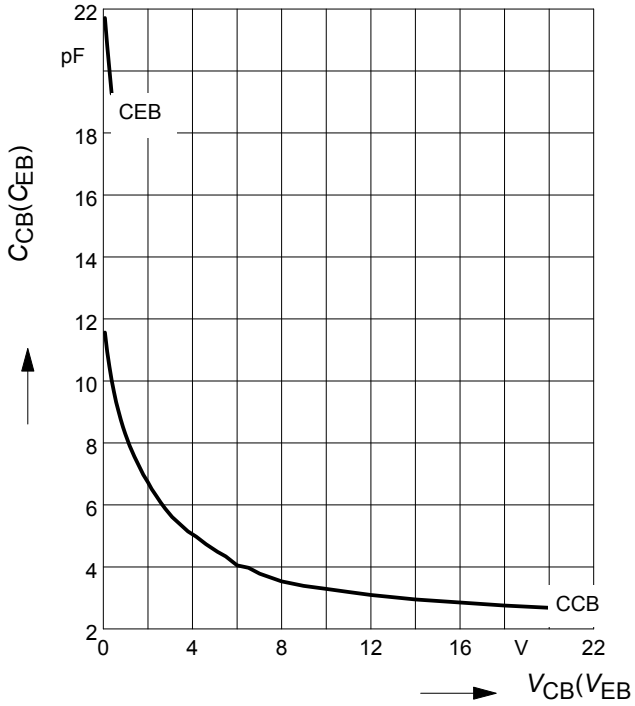


Transition frequency $f_T = f(I_C)$

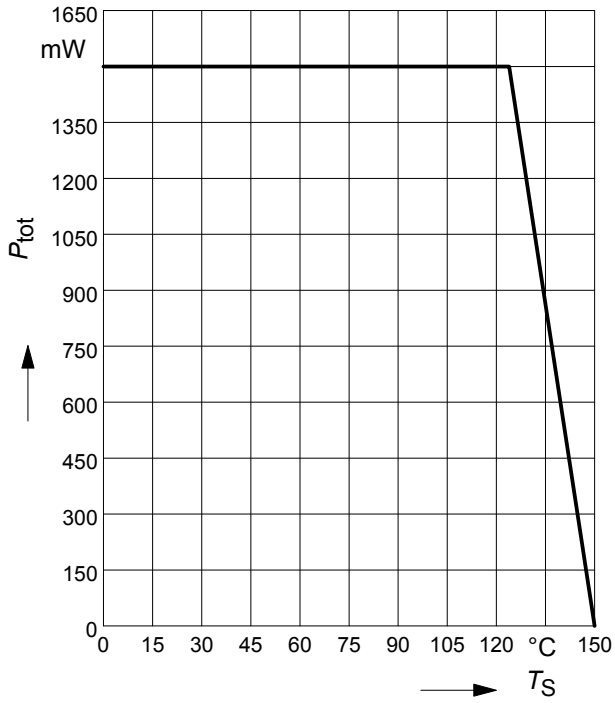
V_{CE} = 10 V, f = 100 MHz



Collector-base capacitance $C_{cb} = f(V_{CB})$
Emitter-base capacitance $C_{eb} = f(V_{EB})$

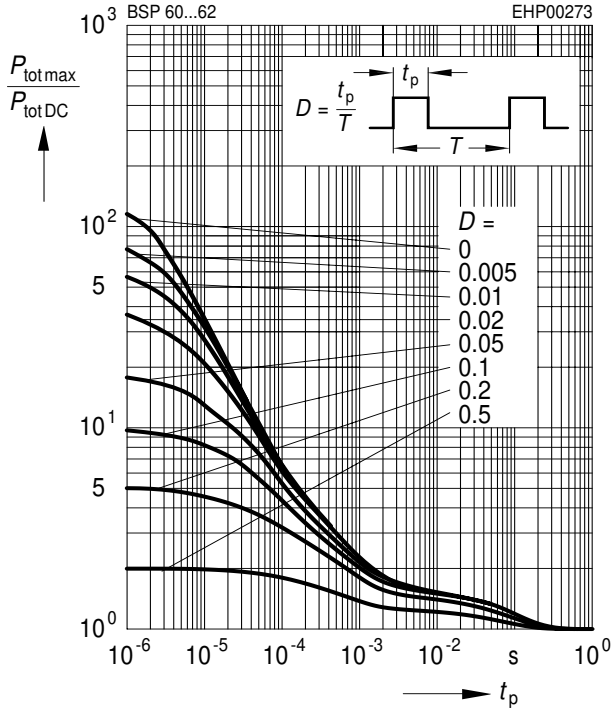


Total power dissipation $P_{tot} = f(T_S)$



Permissible Pulse Load

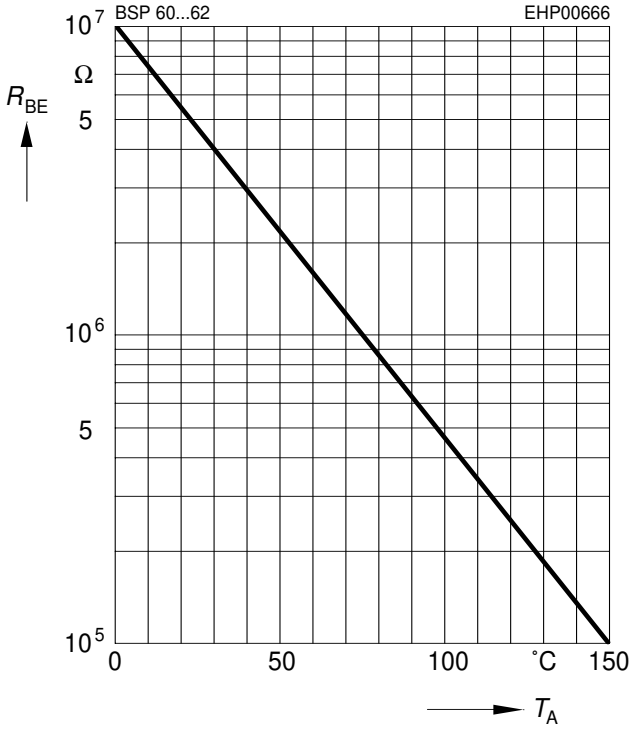
$P_{totmax}/P_{totDC} = f(t_p)$



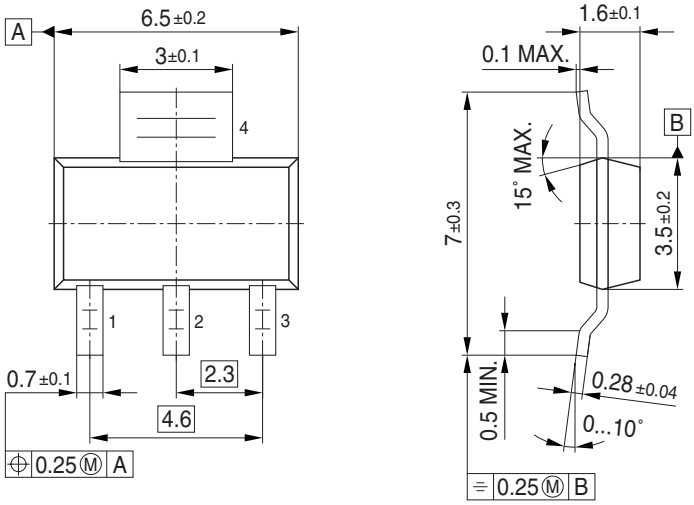
External resistance $R_{BE} = f(T_A)$**

$V_{CB} = V_{CEmax}$

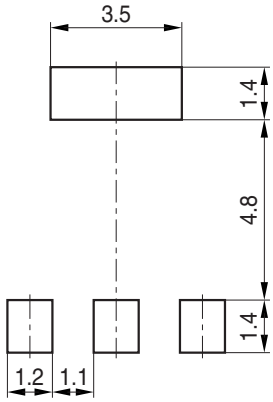
** R_{BEmax} for thermal stability



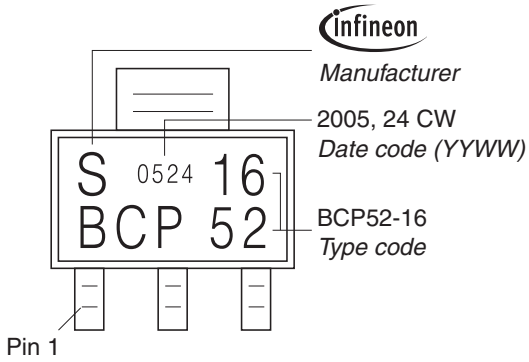
Package Outline



Foot Print

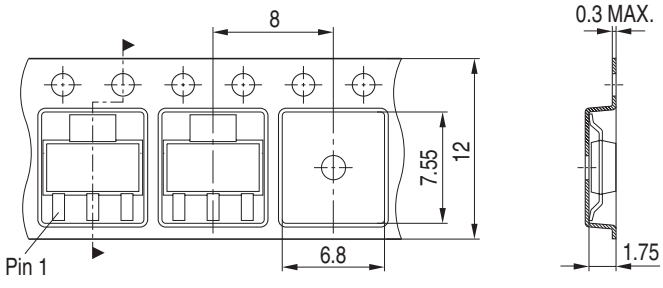


Marking Layout (Example)



Packing

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



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