## PNP Silicon Darlington Transistor

- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BSP50...BSP52 (NPN)
- Pb-free (RoHS compliant) package[1]
- 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	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	

[1]Pb-containing package may be available upon special request

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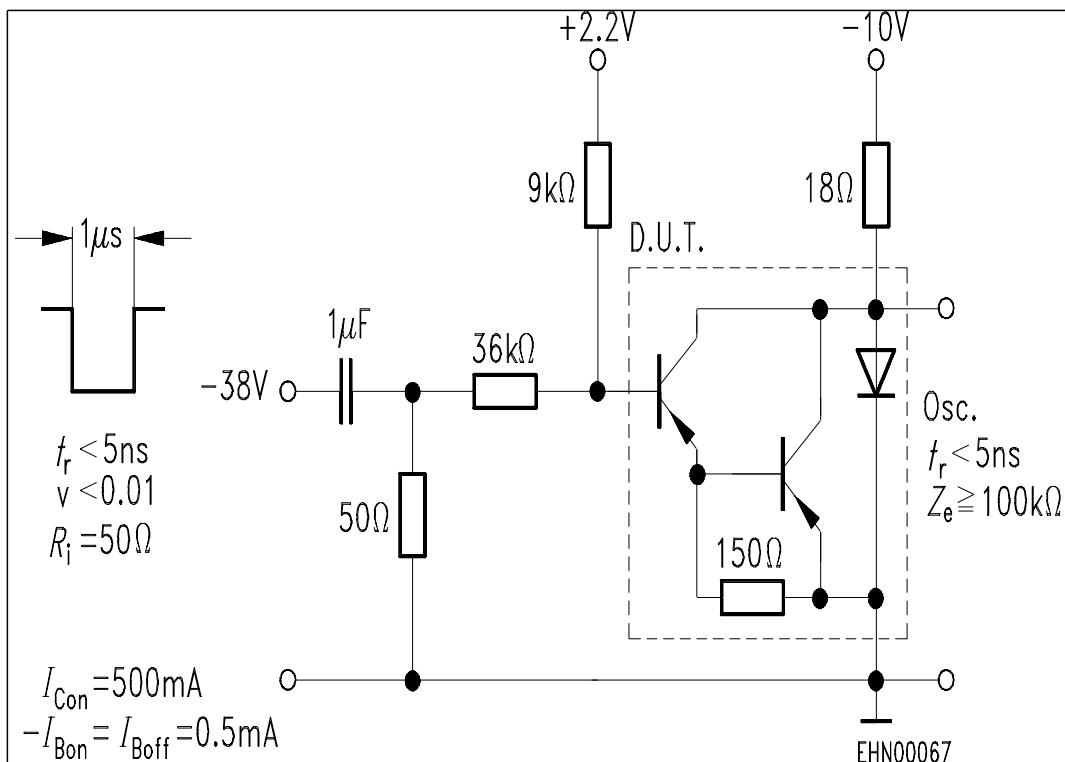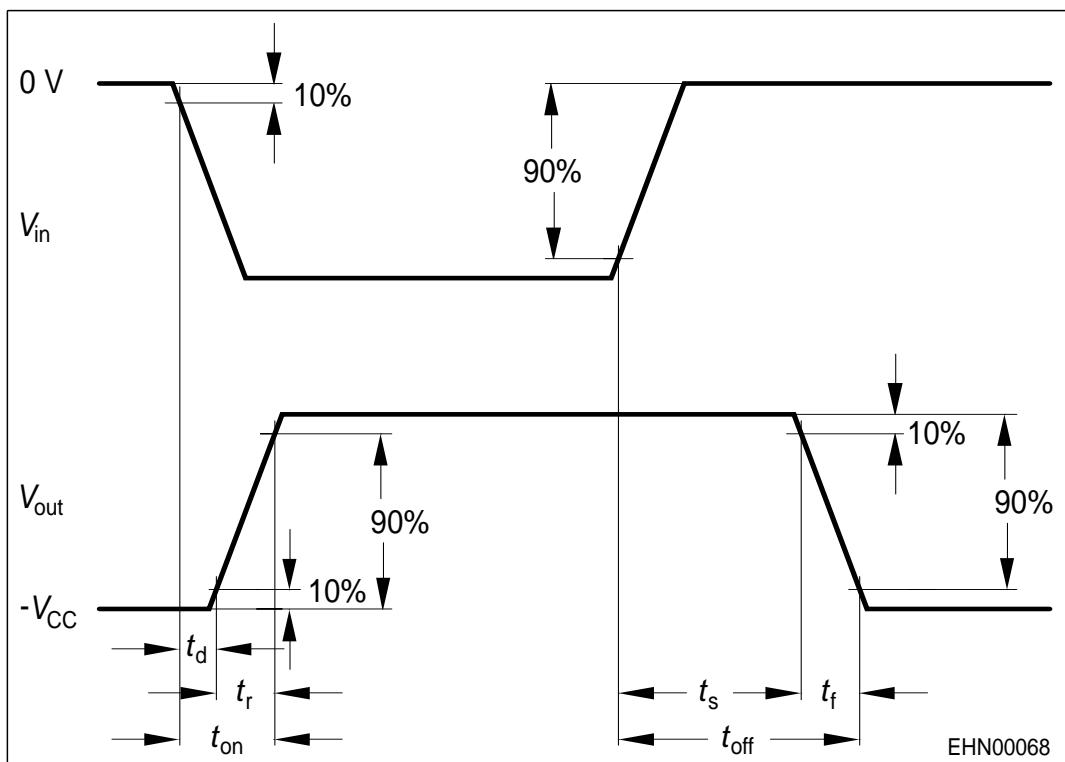
[1]For calculation of R_{thJA} please refer to Application Note Thermal Resistance

[2]Pulse test: t < 300µs; D < 2%

Switching time test circuit

+2.2V
−10V

9kΩ
18Ω

D.U.T.

1µs

1µF
36kΩ

−38V

Osc.
$t_r < 5\text{ns}$
$Z_e \geqq 100\text{k}\Omega$

$t_r < 5\text{ns}$
$v < 0.01$
$R_i = 50\Omega$

50Ω

150Ω

$I_{Con} = 500\text{mA}$
$-I_{Bon} = I_{Boff} = 0.5\text{mA}$

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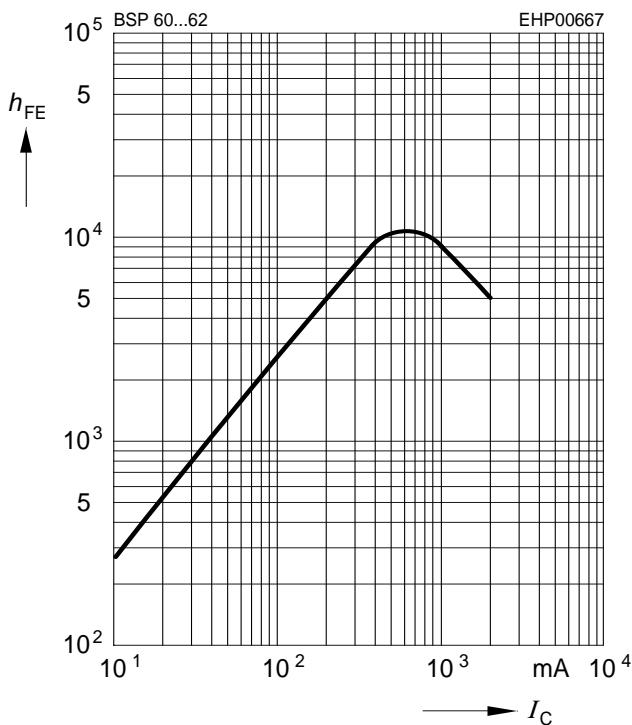
Switching time waveform

0 V

10%

90%

V_{in}

10%

90%

V_{out}

90%

10%

$-V_{CC}$

t_d

t_r

t_s

t_f

t_{on}

t_{off}

EHN00068

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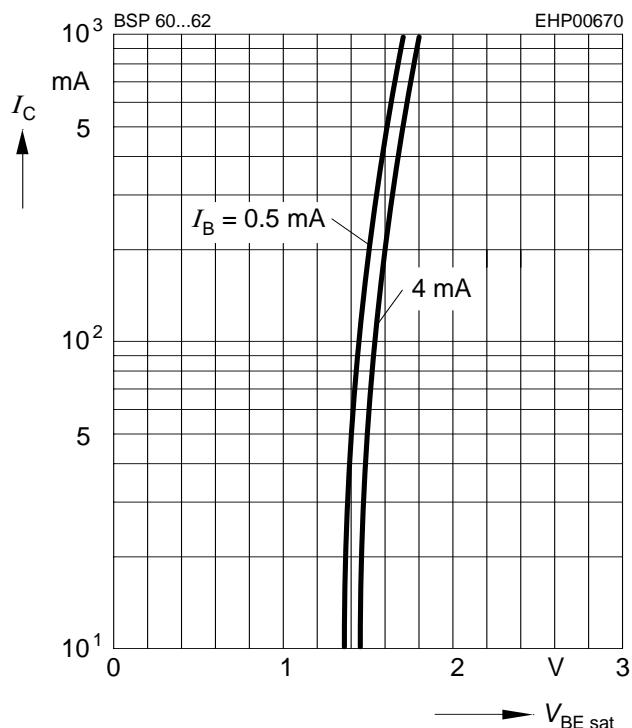
DC current gain $h_{FE} = f(I_C)$

V_{CE} = 10 V

Collector-emitter saturation voltage

$I_C = f(V_{CEsat})$, I_B = Parameter
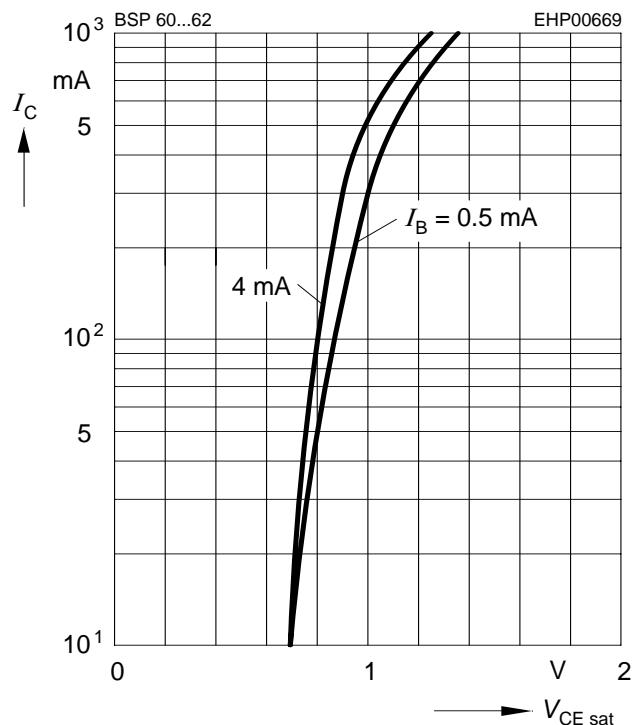
**Base-emitter saturation voltage**

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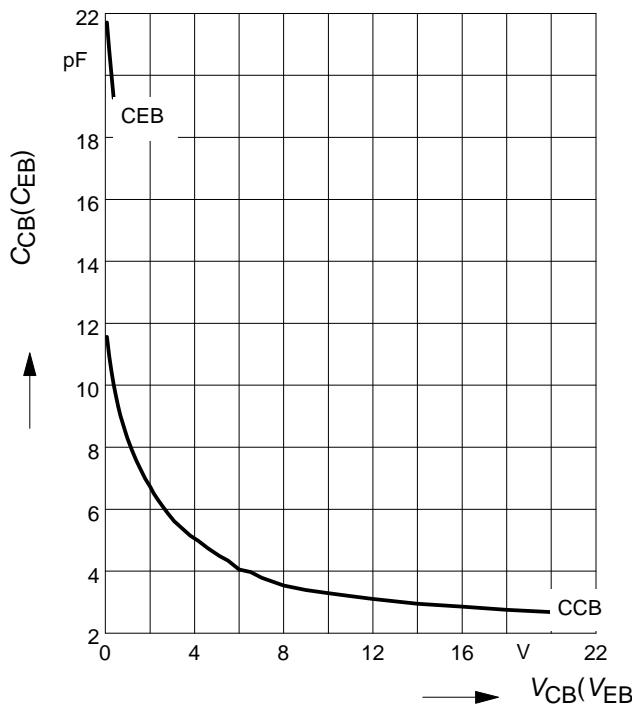
Transition frequency $f_T = f(I_C)$

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

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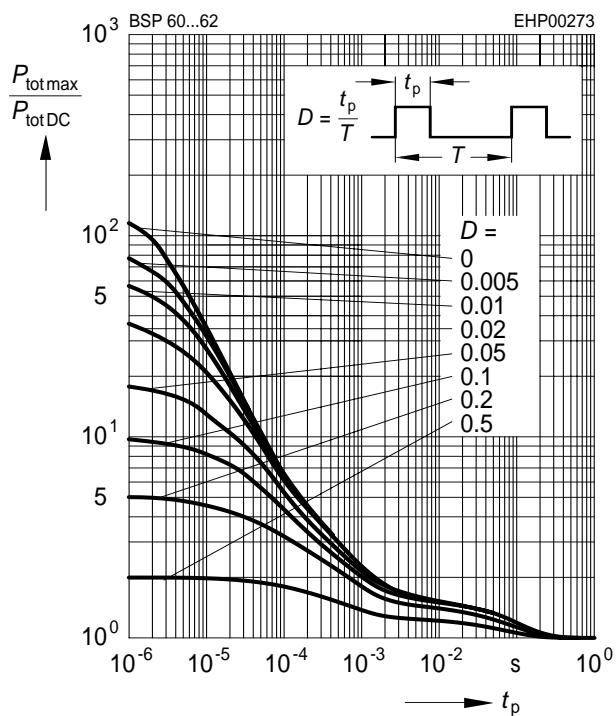
Collector-base capacitance $C_{cb} = f(V_{CB})$
**Emitter-base capacitance** $C_{eb} = f(V_{EB})$

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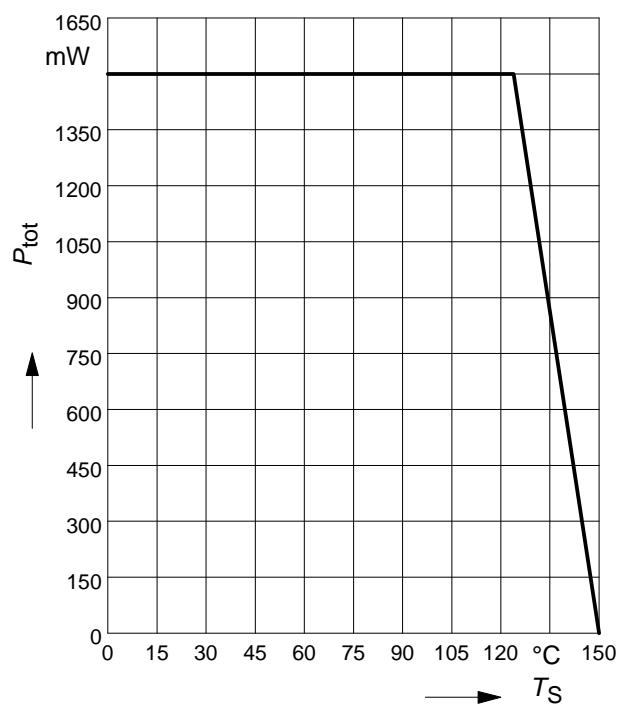

Permissible Pulse Load

$P_{totmax}/P_{totDC} = f(t_p)$
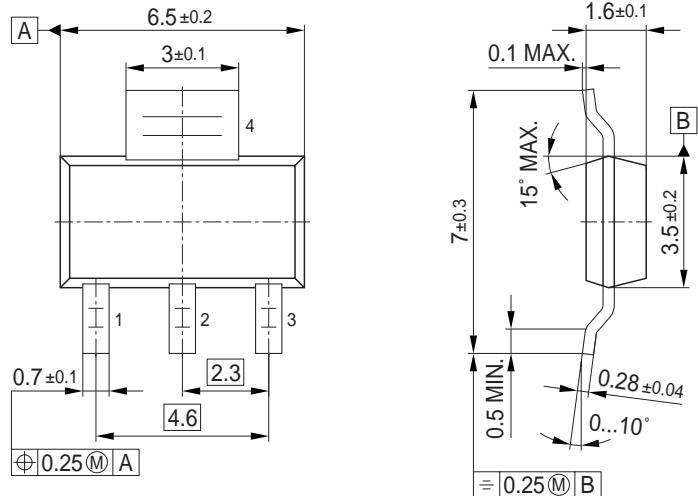
**External resistance** $R_{BE} = f(T_A)$**

$V_{CB} = V_{CEmax}$
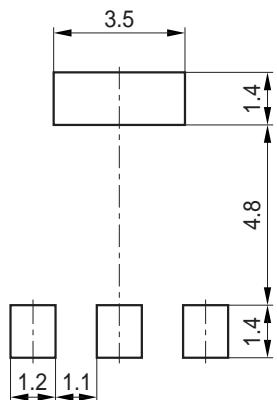
** R_{BEmax} for thermal stability

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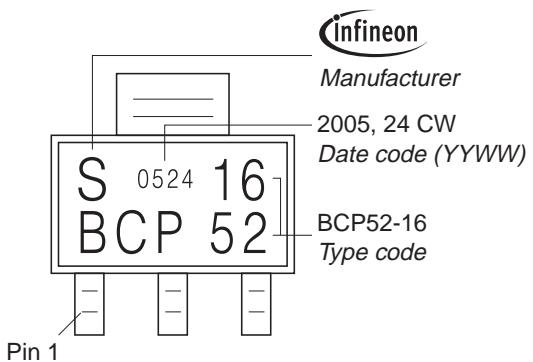
Package Outline

Foot Print

Marking Layout (Example)

Infineon
Manufacturer

2005, 24 CW
Date code (YYWW)

BCP52-16
Type code

S 0524 16
BCP 52

Pin 1
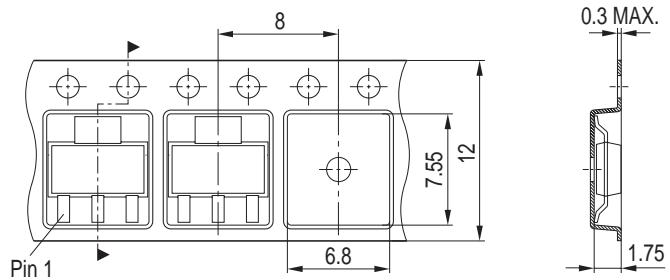
Packing

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

Pin 1

Attention please!

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