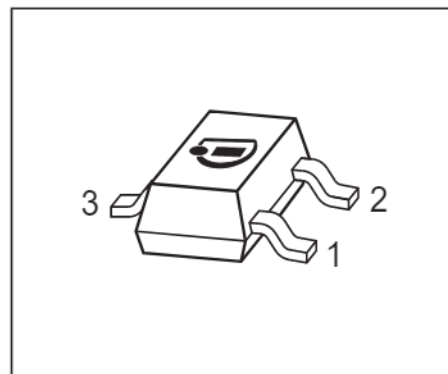


PNP Silicon Switching Transistor

- Low collector-emitter saturation voltage
- Complementary type:
SMBT2222A / MMBT2222A (NPN)
- Pb-free (RoHS compliant) package ¹⁾
- Qualified according AEC Q101



Type	Marking	Pin Configuration			Package
SMBT2907A/MMBT2907A	s2F	1 = B	2 = E	3 = C	SOT23

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	60	V
Collector-base voltage	V_{CBO}	60	
Emitter-base voltage	V_{EBO}	5	
Collector current	I_C	600	mA
Base current	I_B	100	
Peak base current	I_{BM}	200	
Total power dissipation $T_S \leq 77^\circ\text{C}$	P_{tot}	330	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ²⁾	R_{thJS}	≤ 220	K/W

¹Pb-containing package may be available upon special request

²For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}, I_B = 0$	$V_{(BR)CEO}$	60	-	-	V
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	60	-	-	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector-base cutoff current $V_{CB} = 50\text{ V}, I_E = 0$ $V_{CB} = 50\text{ V}, I_E = 0, T_A = 150\text{ }^\circ\text{C}$	I_{CBO}	- -	- -	0.01 10	μA
Emitter-base cutoff current $V_{EB} = 5\text{ V}, I_C = 0$	I_{EBO}	-	-	10	nA
DC current gain ¹⁾ $I_C = 100\text{ }\mu\text{A}, V_{CE} = 10\text{ V}$ $I_C = 1\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 10\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 150\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 500\text{ mA}, V_{CE} = 10\text{ V}$	h_{FE}	75 100 100 100 50	- - - - -	- - - 300 -	-
Collector-emitter saturation voltage ¹⁾ $I_C = 150\text{ mA}, I_B = 15\text{ mA}$ $I_C = 500\text{ mA}, I_B = 50\text{ mA}$	V_{CEsat}	- -	- -	0.4 1.6	V
Base emitter saturation voltage- ¹⁾ $I_C = 150\text{ mA}, I_B = 15\text{ mA}$ $I_C = 500\text{ mA}, I_B = 50\text{ mA}$	V_{BEsat}	- -	- -	1.3 2.6	

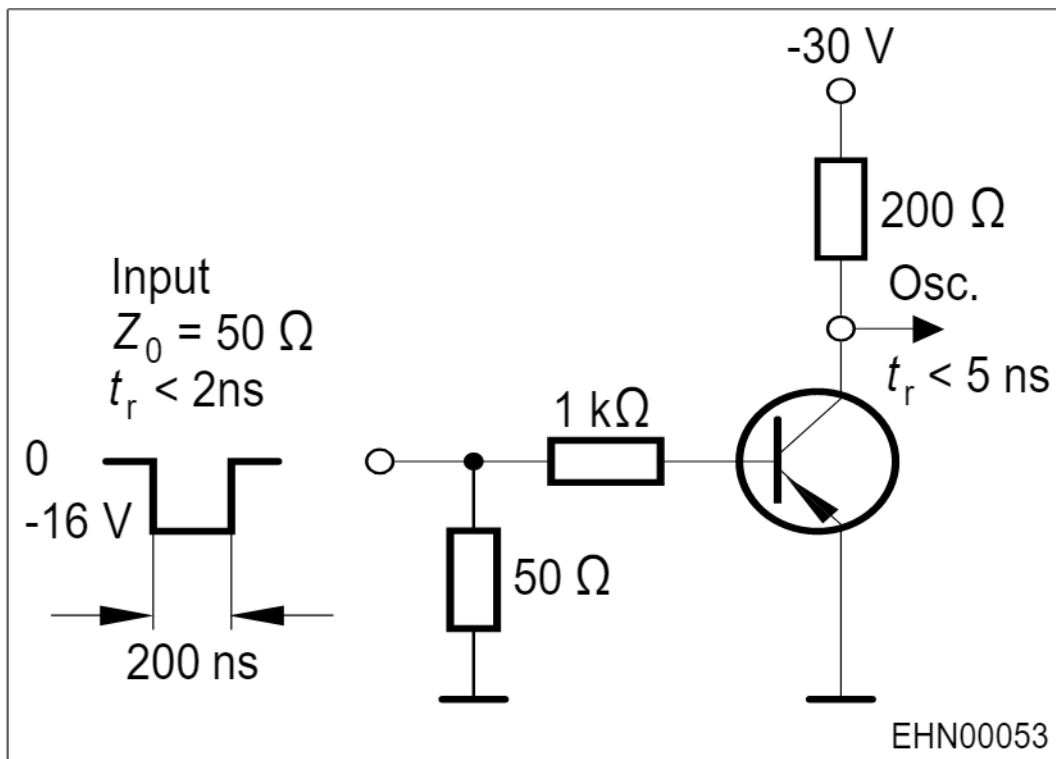
¹⁾Puls test: $t \leq 300\mu\text{s}$, $D = 2\%$

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

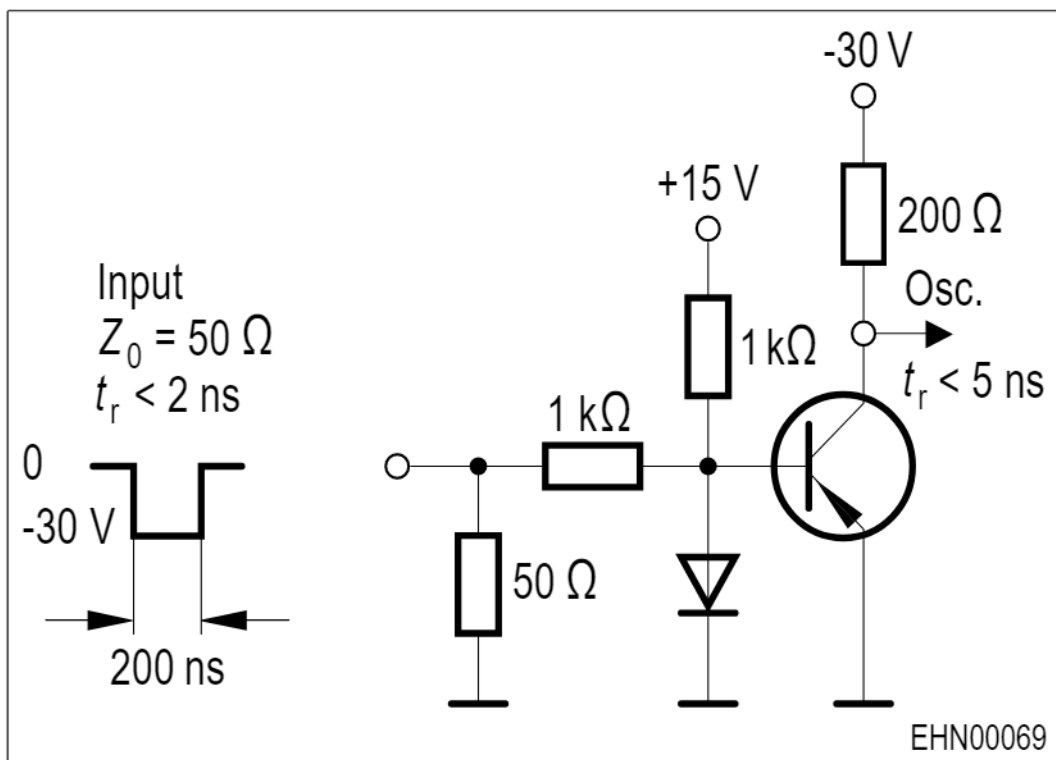
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency $I_C = 20\text{ mA}$, $V_{CE} = 20\text{ V}$, $f = 100\text{ MHz}$	f_T	200	-	-	MHz
Collector-base capacitance $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$	C_{cb}	-	-	8	pF
Emitter-base capacitance $V_{EB} = 0.5\text{ V}$, $f = 1\text{ MHz}$	C_{eb}	-	-	30	
Delay time $V_{CC} = 30\text{ V}$, $I_C = 150\text{ mA}$, $I_{B1} = 15\text{ mA}$, $V_{BE(off)} = 0.5\text{ V}$	t_d	-	-	10	ns
Rise time $V_{CC} = 30\text{ V}$, $I_C = 150\text{ mA}$, $I_{B1} = 15\text{ mA}$, $V_{BE(off)} = 0.5\text{ V}$	t_r	-	-	40	
Storage time $V_{CC} = 30\text{ V}$, $I_C = 150\text{ mA}$, $I_{B1} = I_{B2} = 15\text{mA}$	t_{stg}	-	-	80	
Fall time $V_{CC} = 30\text{ V}$, $I_C = 150\text{ mA}$, $I_{B1} = I_{B2} = 15\text{mA}$	t_f	-	-	30	

Test circuit

Delay and rise time



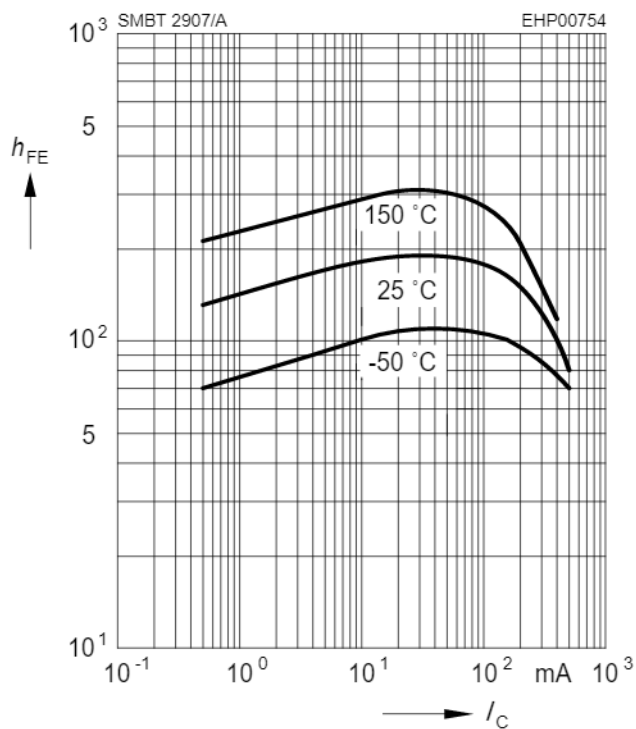
Storage and fall time



Oscilloscope: $R > 100$, $C < 12 \text{ pF}$, $t_r < 5 \text{ ns}$

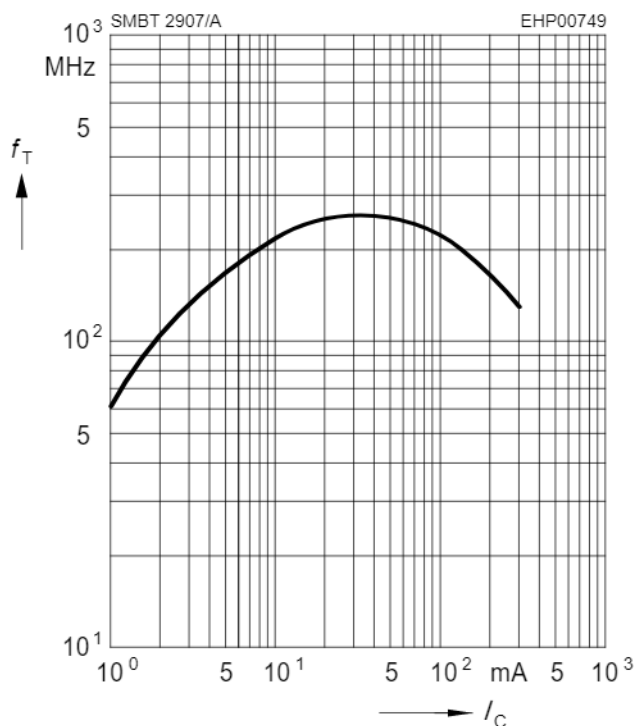
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 5 \text{ V}$



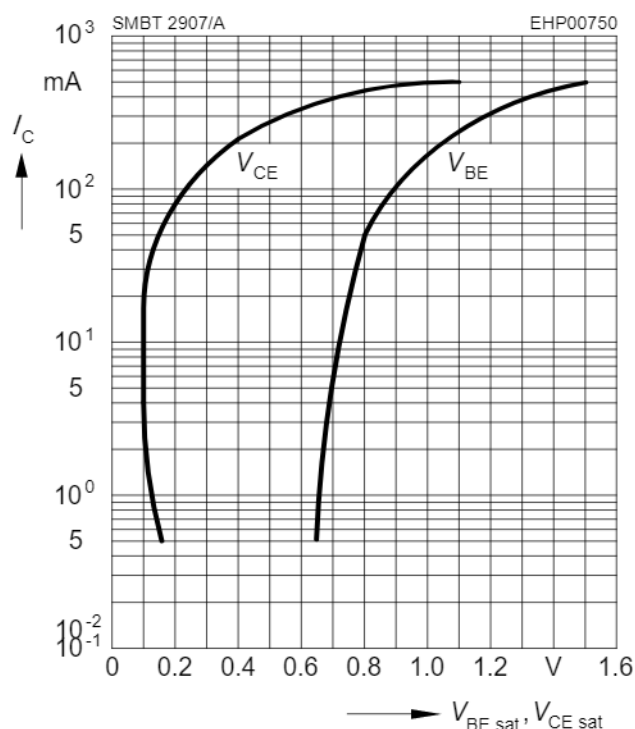
Transition frequency $f_T = f(I_C)$

$V_{CE} = 5 \text{ V}$



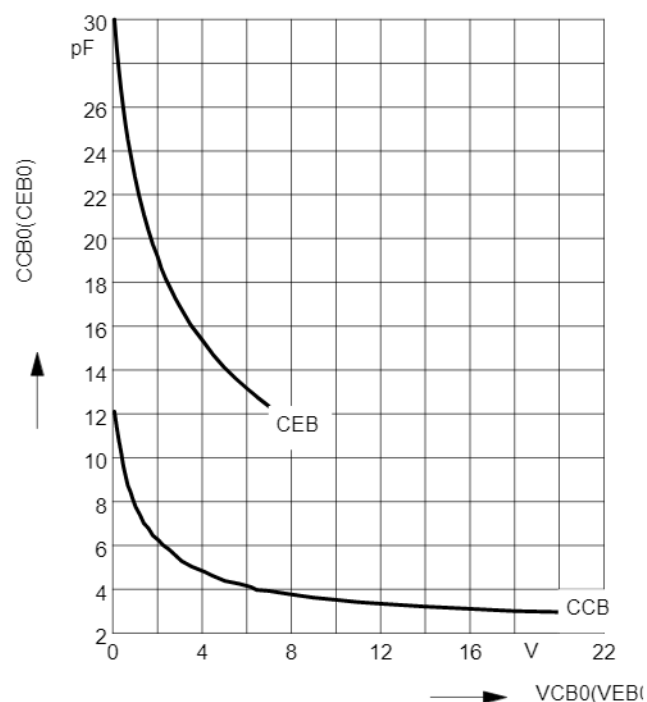
Saturation voltage $I_C = f(V_{BEsat}, V_{CEsat})$

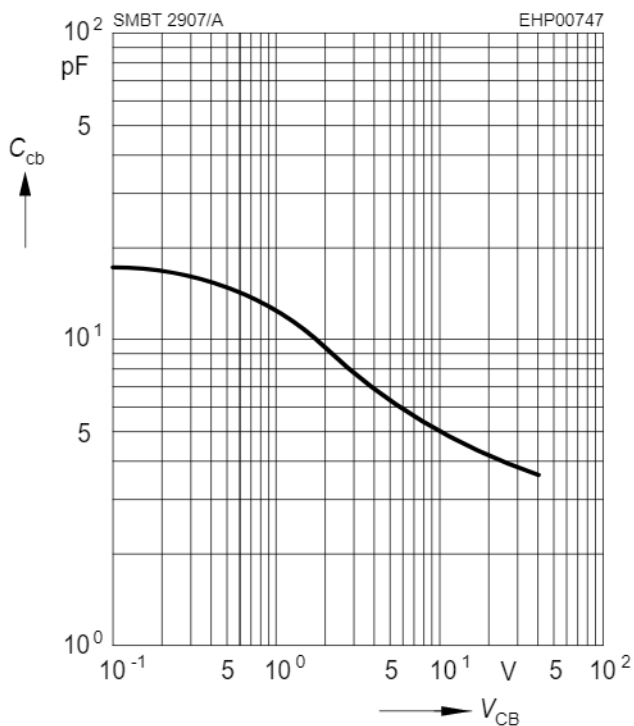
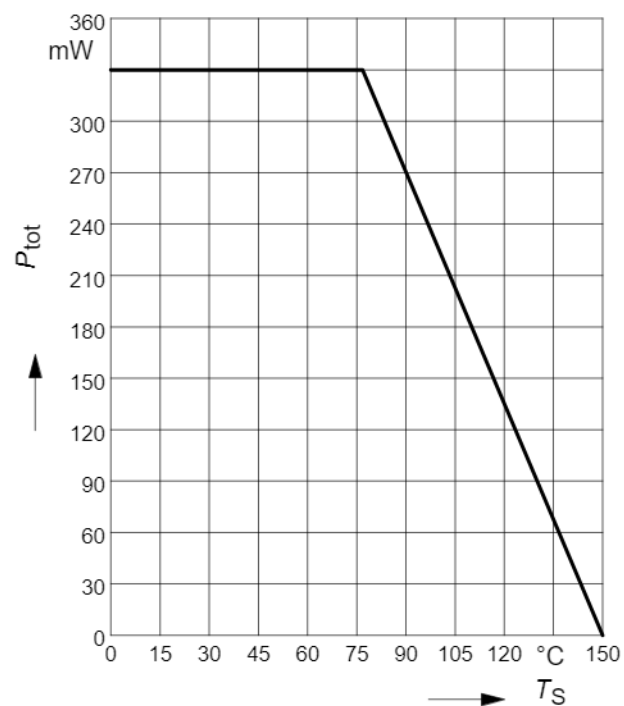
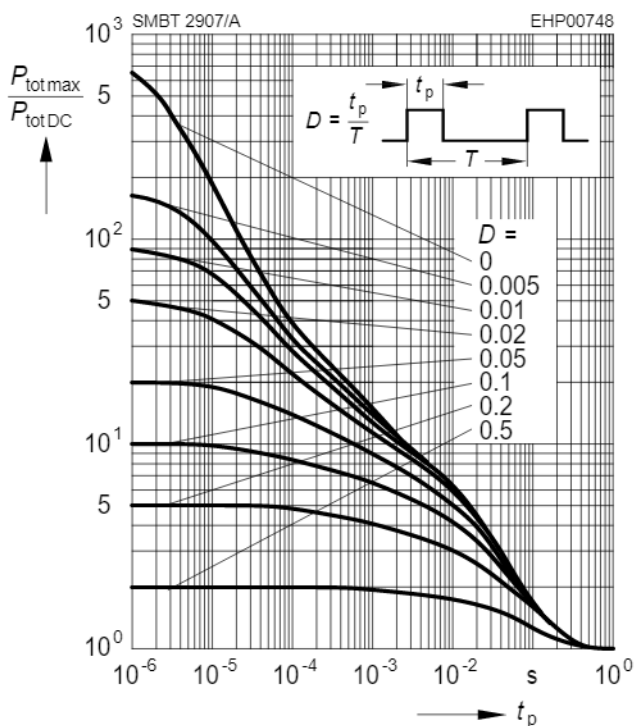
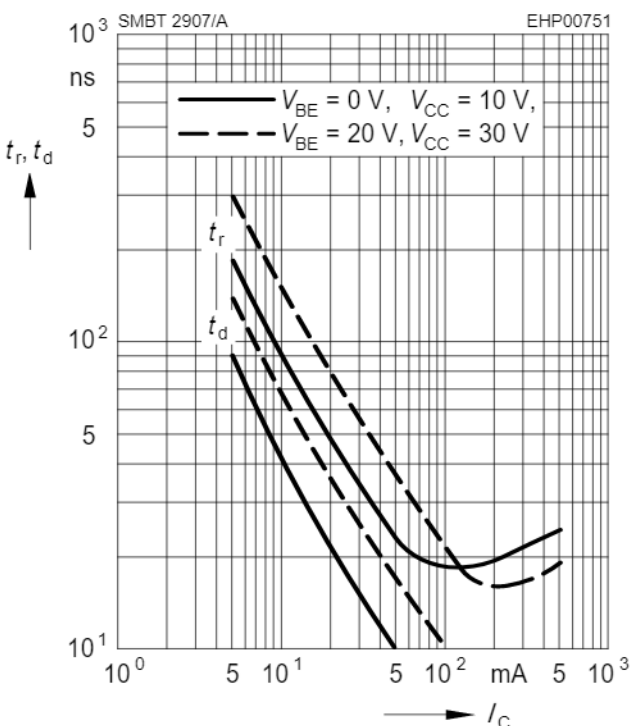
$h_{FE} = 10$



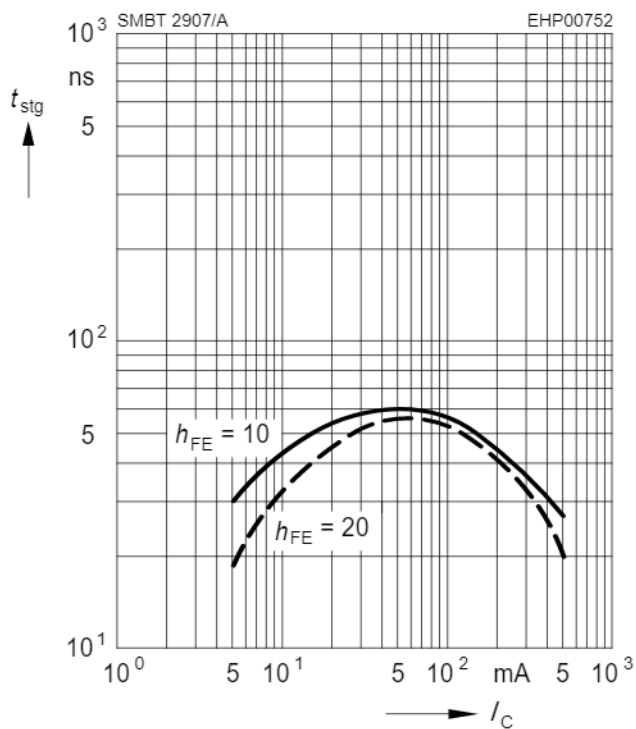
Collector-base capacitance $C_{cb} = f(V_{CB})$

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

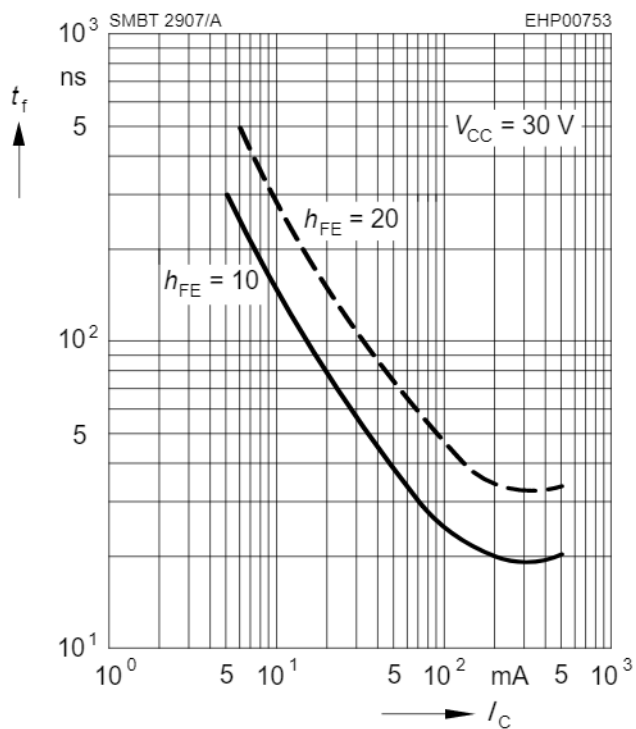


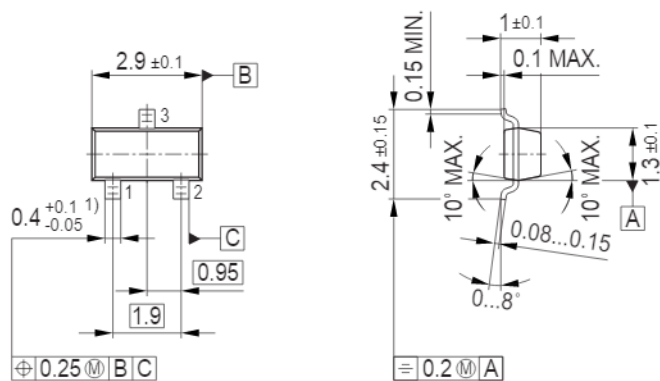
Collector-base capacitance $C_{CB} = f(V_{CB})$
 $f = 1\text{MHz}$

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

Permissible Pulse Load
 $P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$

Delay time $t_d = f(I_C)$
Rise time $t_r = f(I_C)$


Storage time $t_{\text{stg}} = f(I_C)$

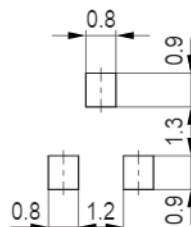


Fall time $t_f = f(I_C)$



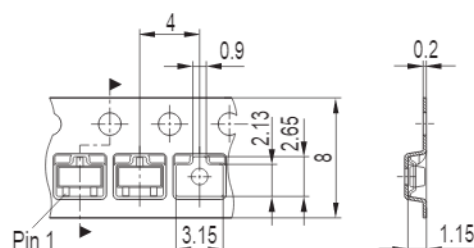


Foot Print



The diagram shows a top-down view of a BCW66 LED package. It is a rectangular component with four pins. The top pin is labeled 'Pin 1'. The package has a central rectangular area containing the text 'EHS' and 'CO' (with a small 'S' below it). To the right of the package, the Infineon logo is shown with the word 'Infineon' in a stylized font. Below the logo, the text 'Manufacturer' is written. Further down, the text '2005, June' is shown, followed by 'Date code (YM)'. At the bottom, the text 'BCW66' is shown, followed by 'Type code'.

Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel



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