

**NPN Silicon AF Transistor**

- For general AF applications
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Complementary types:  
BC807.../W, BC808.../W (PNP)
- Pb-free (RoHS compliant) package <sup>1)</sup>
- Qualified according AEC Q101



Type	Marking	Pin Configuration						Package
		1 = B	2 = E	3 = C	-	-	-	
BC817-16	6As	1 = B	2 = E	3 = C	-	-	-	SOT23
BC817K-16*	6As	1 = B	2 = E	3 = C	-	-	-	SOT23
BC817-25	6Bs	1 = B	2 = E	3 = C	-	-	-	SOT23
BC817K-25*	6Bs	1 = B	2 = E	3 = C	-	-	-	SOT23
BC817-25W	6Bs	1 = B	2 = E	3 = C	-	-	-	SOT323
BC817K-25W*	6Bs	1 = B	2 = E	3 = C	-	-	-	SOT323
BC817-40	6Cs	1 = B	2 = E	3 = C	-	-	-	SOT23
BC817K-40*	6Cs	1 = B	2 = E	3 = C	-	-	-	SOT23
BC817-40W	6Cs	1 = B	2 = E	3 = C	-	-	-	SOT323
BC817K-40W*	6Cs	1 = B	2 = E	3 = C	-	-	-	SOT323
BC818-16W	6Es	1 = B	2 = E	3 = C	-	-	-	SOT323
BC818K-16W*	6Es	1 = B	2 = E	3 = C	-	-	-	SOT323
BC818-25	6Fs	1 = B	2 = E	3 = C	-	-	-	SOT23
BC818K-25*	6Fs	1 = B	2 = E	3 = C	-	-	-	SOT23
BC818-40	6Gs	1 = B	2 = E	3 = C	-	-	-	SOT23
BC818K-40*	6Gs	1 = B	2 = E	3 = C	-	-	-	SOT23

\* Shrinked chip version

<sup>1</sup>Pb-containing package may be available upon special request

**Maximum Ratings**

Parameter	Symbol	Value	Unit	
Collector-emitter voltage BC817... BC818...	$V_{CEO}$	45 25	V	
Collector-base voltage BC817... BC818...	$V_{CBO}$	50 30		
Emitter-base voltage	$V_{EBO}$	5		
Collector current	$I_C$	500	mA	
Peak collector current	$I_{CM}$	1000		
Base current	$I_B$	100		
Peak base current	$I_{BM}$	200		
Total power dissipation- $T_S \leq 79\text{ °C}$ , BC817, BC818 $T_S \leq 115\text{ °C}$ , BC817K, BC818K $T_S \leq 130\text{ °C}$ , BC817W/KW, BC818...W/KW	$P_{tot}$	330 500 250	mW	
Junction temperature	$T_j$	150		°C
Storage temperature	$T_{stg}$	-65 ... 150		

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup> BC817, BC818 BC817K, BC818K BC817W/KW, BC818W/KW	$R_{thJS}$	$\leq 215$ $\leq 70$ $\leq 80$	K/W

<sup>1</sup>For 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.	
<b>DC Characteristics</b>					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$ , $I_B = 0$ , BC817... $I_C = 10\text{ mA}$ , $I_B = 0$ , BC818...	$V_{(BR)CEO}$	45 25	- -	- -	V
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}$ , $I_E = 0$ , BC817... $I_C = 10\text{ }\mu\text{A}$ , $I_E = 0$ , BC818...	$V_{(BR)CBO}$	50 30	- -	- -	-
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$ , $I_C = 0$	$V_{(BR)EBO}$	5	-	-	V
Collector-base cutoff current $V_{CB} = 25\text{ V}$ , $I_E = 0$ $V_{CB} = 25\text{ V}$ , $I_E = 0$ , $T_A = 150^\circ\text{C}$	$I_{CBO}$	- -	- -	0.1 50	$\mu\text{A}$
Emitter-base cutoff current $V_{EB} = 4\text{ V}$ , $I_C = 0$	$I_{EBO}$	-	-	100	nA
DC current gain <sup>1)</sup> $I_C = 100\text{ mA}$ , $V_{CE} = 1\text{ V}$ , $h_{FE}\text{-grp.16}$ $I_C = 100\text{ mA}$ , $V_{CE} = 1\text{ V}$ , $h_{FE}\text{-grp.25}$ $I_C = 100\text{ mA}$ , $V_{CE} = 1\text{ V}$ , $h_{FE}\text{-grp.40}$ $I_C = 300\text{ mA}$ , $V_{CE} = 1\text{ V}$ , $h_{FE}\text{-grp.16}^{2)}$ $I_C = 300\text{ mA}$ , $V_{CE} = 1\text{ V}$ , $h_{FE}\text{-grp.25}^{2)}$ $I_C = 300\text{ mA}$ , $V_{CE} = 1\text{ V}$ , $h_{FE}\text{-grp.40}^{2)}$ $I_C = 500\text{ mA}$ , $V_{CE} = 1\text{ V}$ , all $h_{FE}\text{-grps.}^{3)}$	$h_{FE}$	100 160 250 60 100 170 40	160 250 350 - - - -	250 400 630 - - - -	-
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 500\text{ mA}$ , $I_B = 50\text{ mA}$	$V_{CEsat}$	-	-	0.7	V
Base emitter saturation voltage <sup>1)</sup> $I_C = 500\text{ mA}$ , $I_B = 50\text{ mA}$	$V_{BEsat}$	-	-	1.2	

<sup>1)</sup>Pulse test:  $t < 300\mu\text{s}$ ;  $D < 2\%$ 
<sup>2)</sup>For all BC817 and BC818 subtypes

<sup>3)</sup>For all BC817K and BC818K subtypes

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>AC Characteristics</b>					
Transition frequency $I_C = 50\text{ mA}, V_{CE} = 5\text{ V}, f = 100\text{ MHz}$	$f_T$	-	170	-	MHz
Collector-base capacitance $V_{CB} = 10\text{ V}, f = 1\text{ MHz}^1)$ $V_{CB} = 10\text{ V}, f = 1\text{ MHz}^2)$	$C_{cb}$	-	6 3	-	pF
Emitter-base capacitance $V_{EB} = 0.5\text{ V}, f = 1\text{ MHz}^1)$ $V_{EB} = 0.5\text{ V}, f = 1\text{ MHz}^2)$	$C_{eb}$	-	60 40	-	

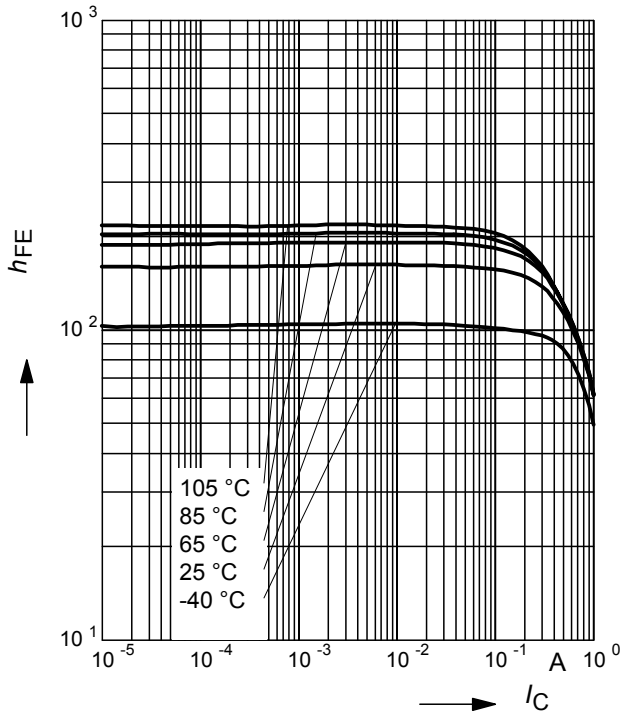
<sup>1</sup>For all BC817 and BC818 subtypes

<sup>2</sup>For all BC817K and BC818K subtypes

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

$V_{CE} = 1\text{ V}$

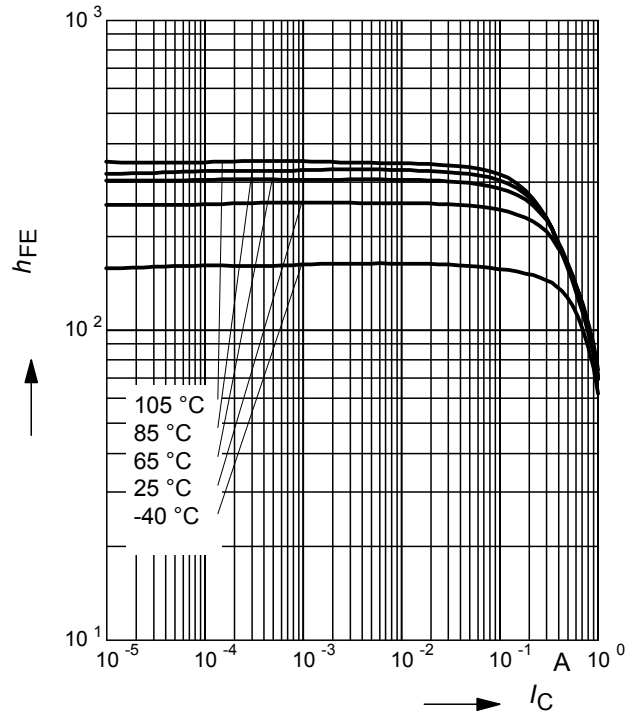
$h_{FE}\text{-grp.16}$



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

$V_{CE} = 1\text{ V}$

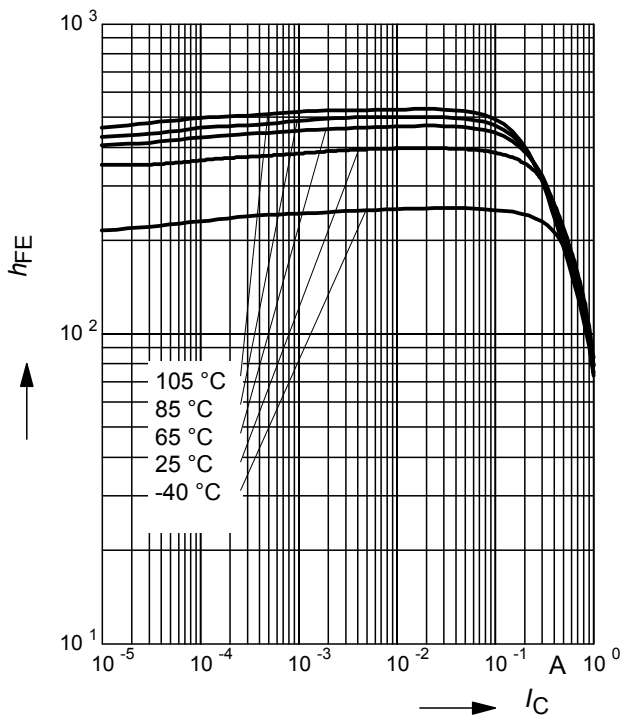
$h_{FE}\text{-grp.25}$



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

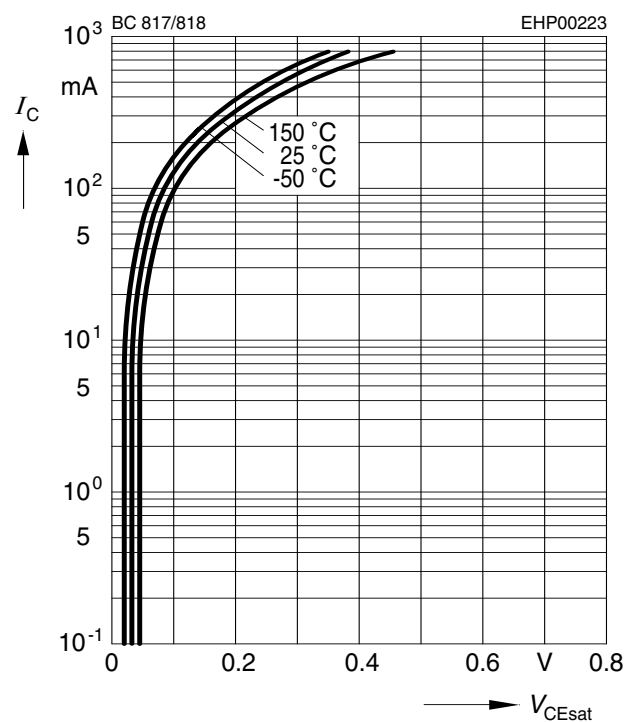
$V_{CE} = 1\text{ V}$

$h_{FE}\text{-grp.40}$



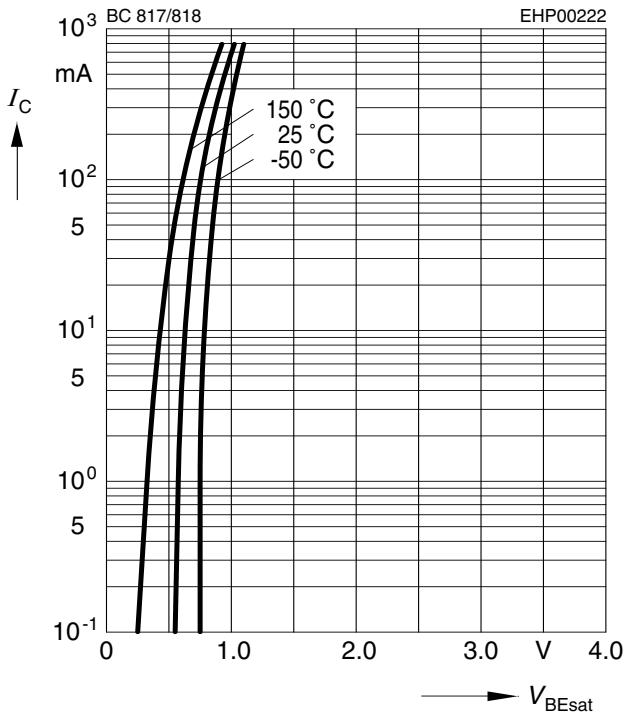
**Collector-emitter saturation voltage**

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



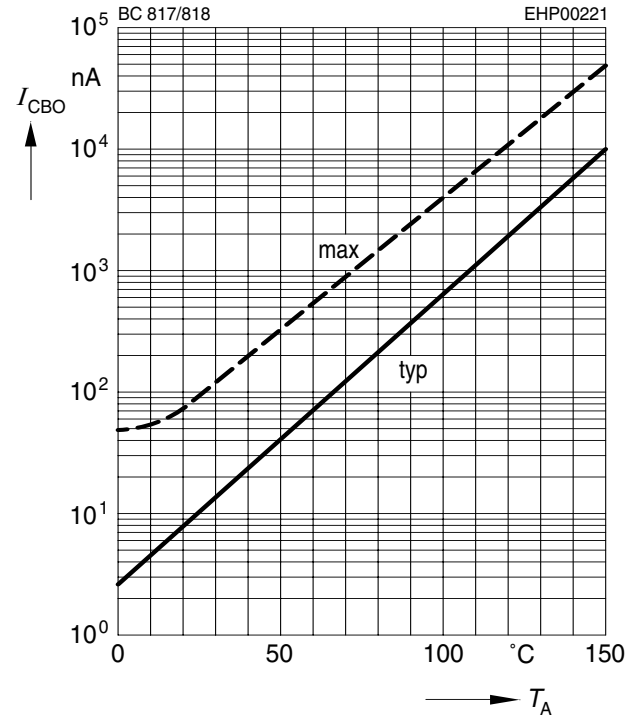
**Base-emitter saturation voltage**

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



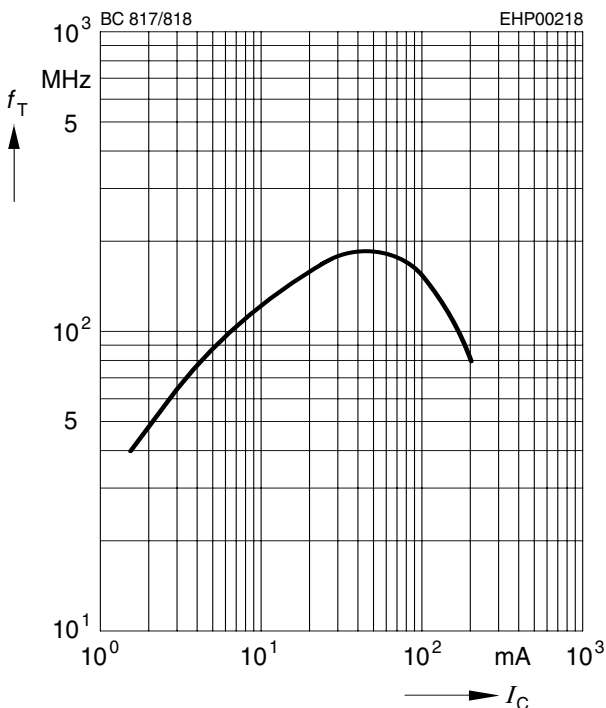
**Collector cutoff current  $I_{CBO} = f(T_A)$**

$V_{CBO} = 25 V$



**Transition frequency  $f_T = f(I_C)$**

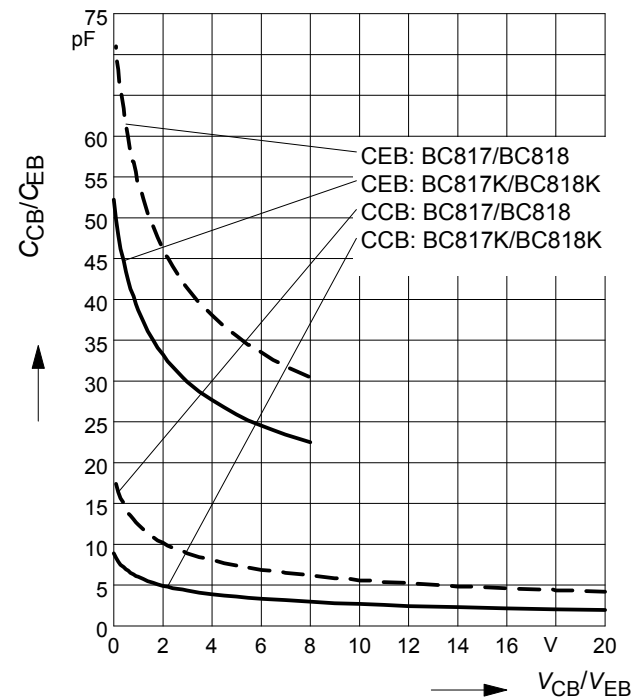
$V_{CE} = \text{parameter in V}, f = 2 \text{ GHz}$



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

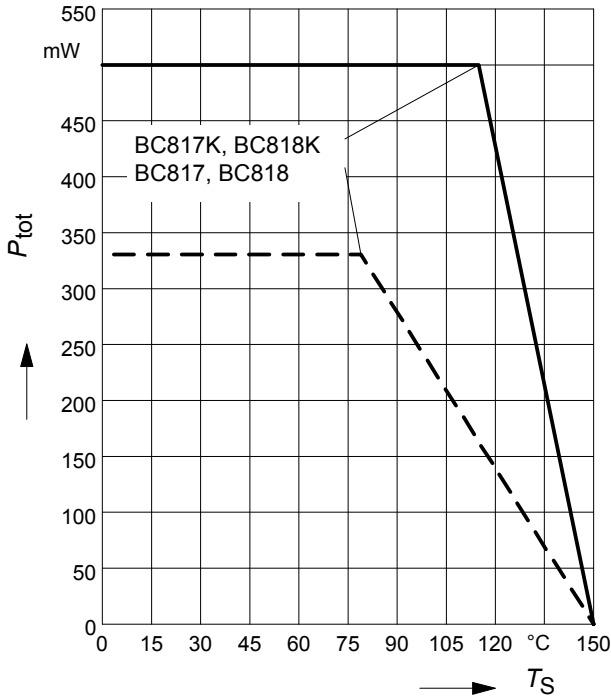
**Emitter-base capacitance  $C_{eb} = f(V_{EB})$**

BC817, BC818: - - - , BC817K, BC818K: —



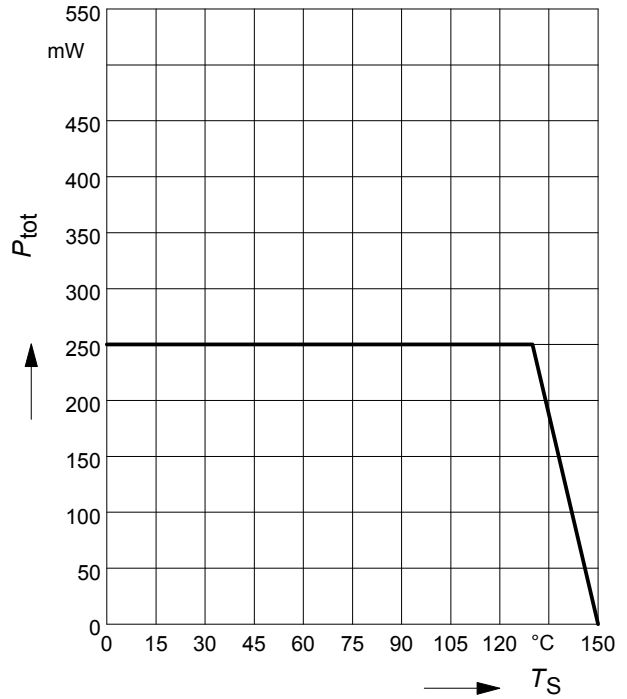
**Total power dissipation  $P_{tot} = f(T_S)$**

BC817, BC818: - - - , BC817K, BC818K: —



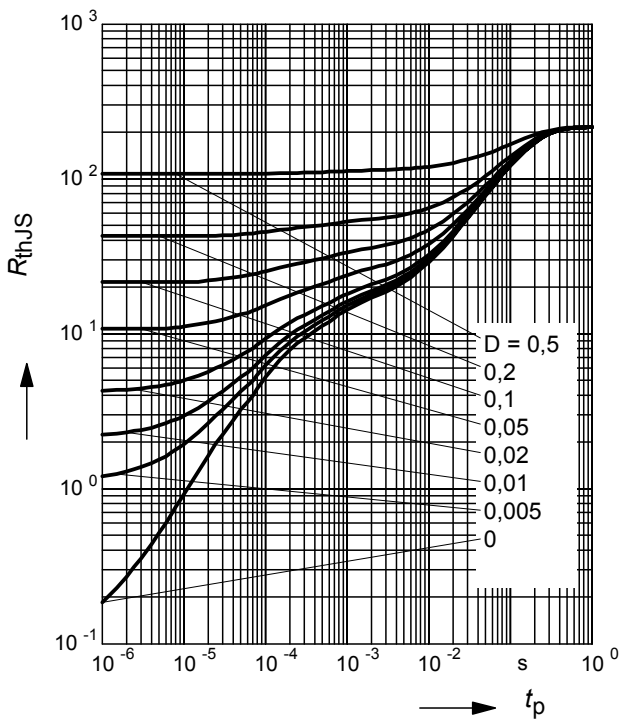
**Total power dissipation  $P_{tot} = f(T_S)$**

BC817W/KW, BC818W/KW



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

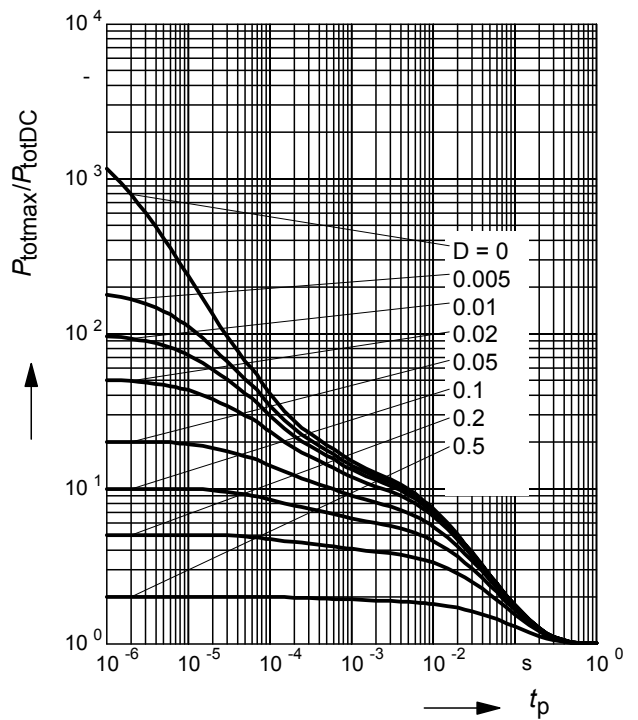
BC817, BC818



**Permissible Pulse Load**

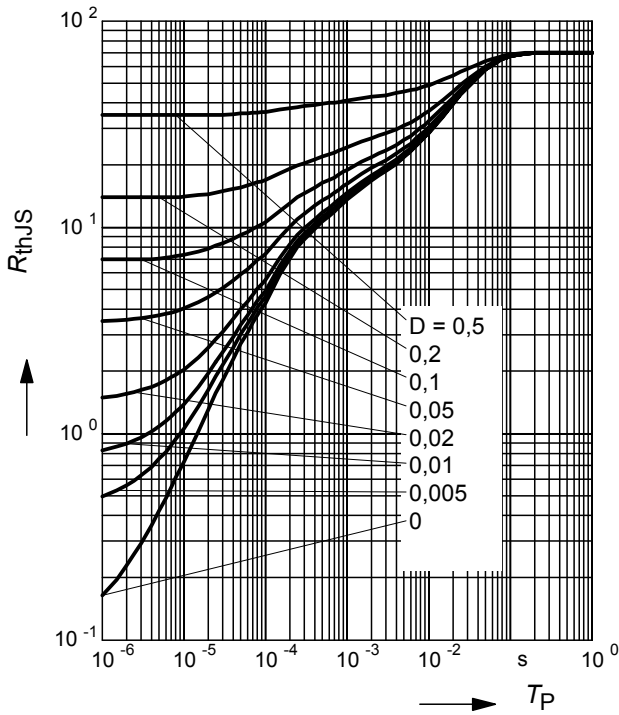
$P_{totmax}/P_{totDC} = f(t_p)$

BC817, BC818



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

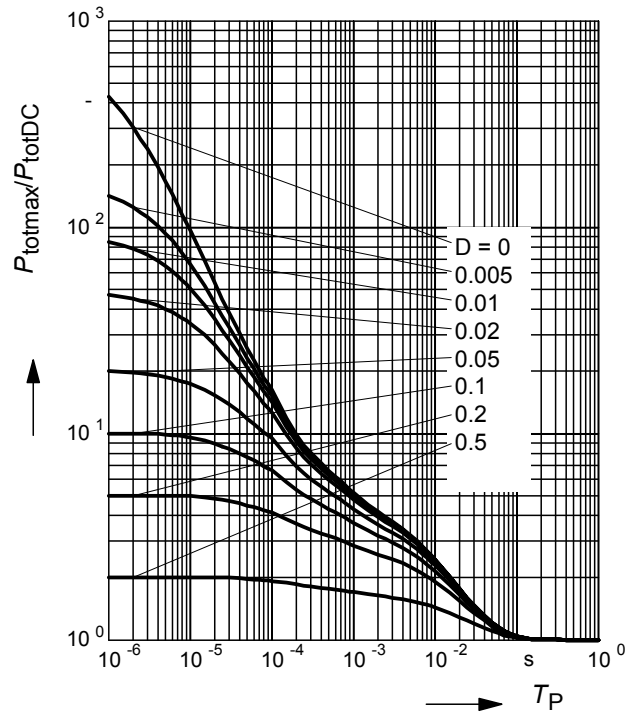
BC817/K, BC818/K



**Permissible Pulse Load**

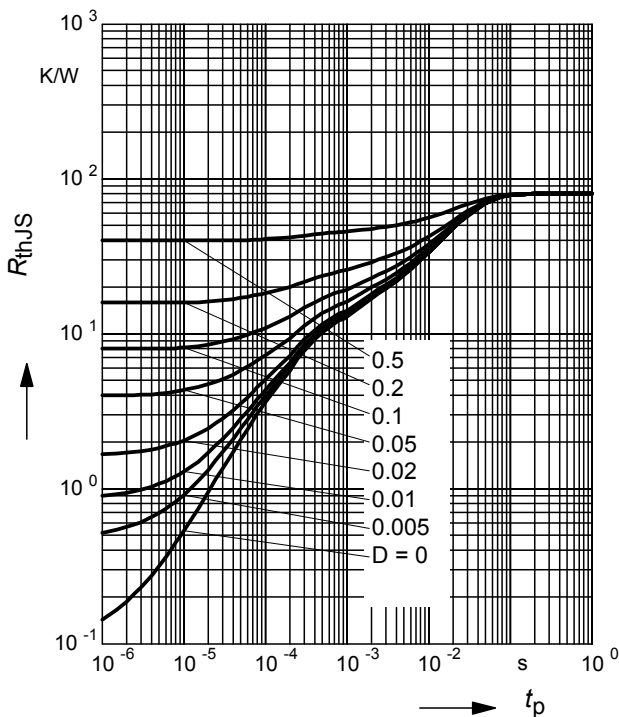
$P_{totmax}/P_{totDC} = f(t_p)$

BC817K, BC818K



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

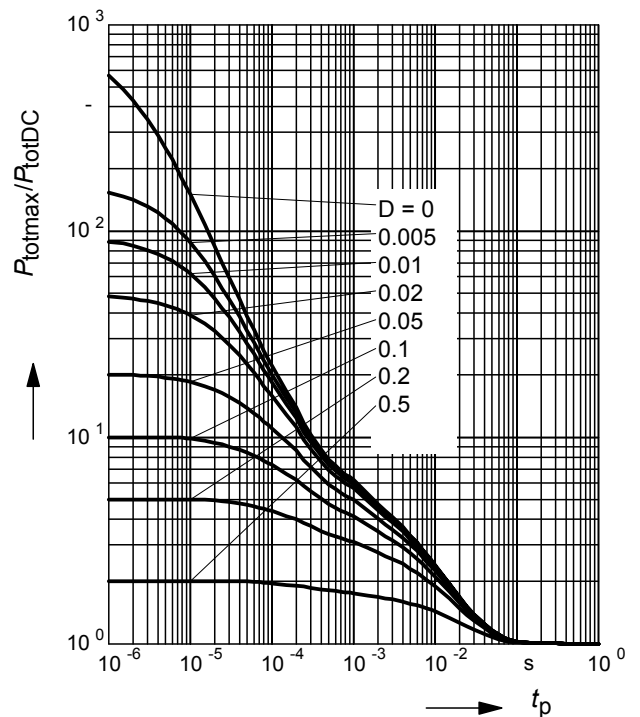
BC817W/KW, BC818W/KW



**Permissible Pulse Load**

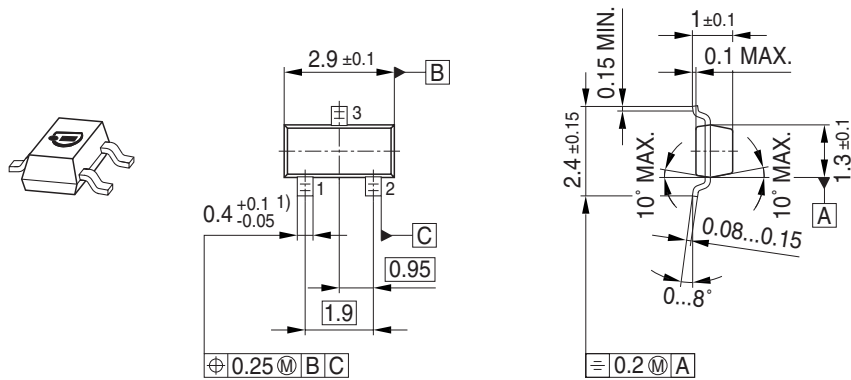
$P_{totmax}/P_{totDC} = f(t_p)$

BC817W/KW, BC818W/KW



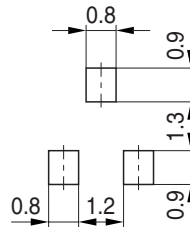


Package Outline

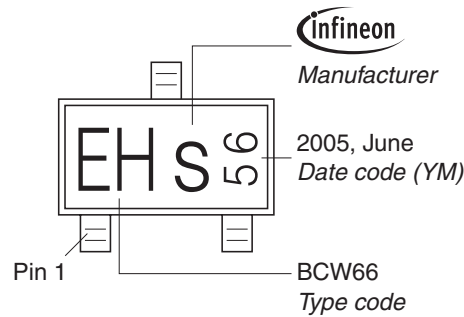


1) Lead width can be 0.6 max. in dambar area

Foot Print

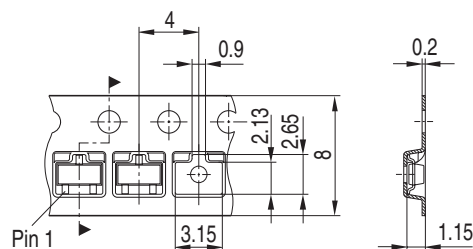


Marking Layout (Example)

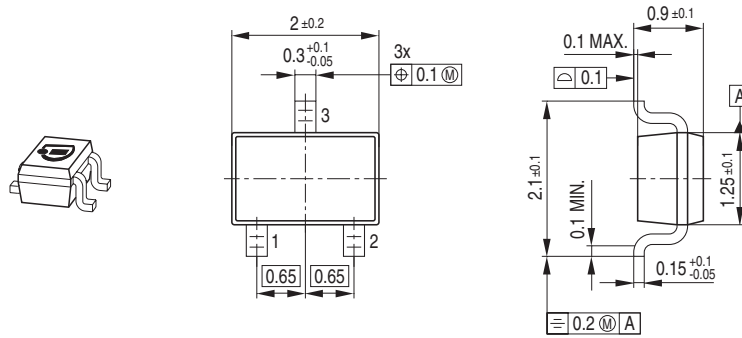


Standard Packing

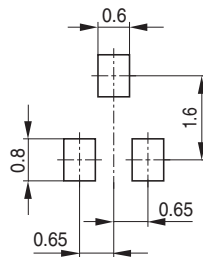
Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



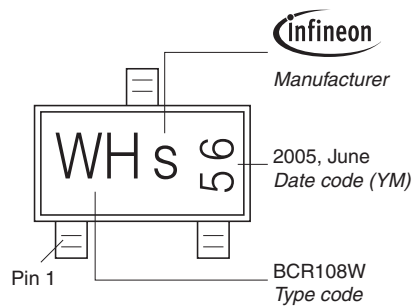
Package Outline



Foot Print

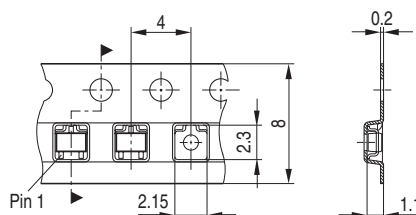


Marking Layout (Example)



Standard Packing

Reel  $\phi 180$  mm = 3.000 Pieces/Reel  
 Reel  $\phi 330$  mm = 10.000 Pieces/Reel



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