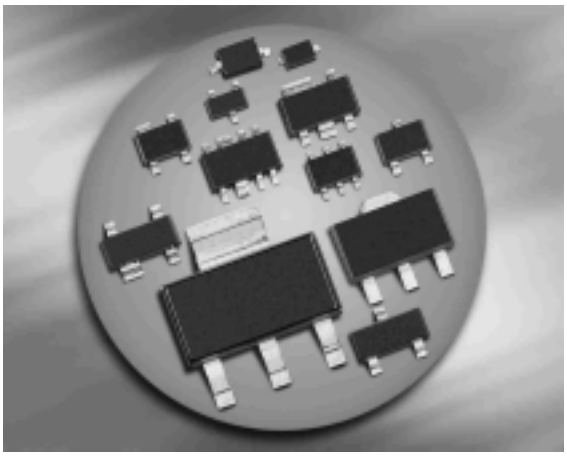
NPN Silicon AF Transistor

- 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 [1)]
- Qualified according AEC Q101



Type	Marking	Pin Configuration						Package
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

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

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}		V
BC817...		45	
BC818...		25	
Collector-base voltage	V_{CBO}		
BC817...		50	
BC818...		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-	P_{tot}		mW
$T_S \leq 79$ °C, BC817, BC818		330	
$T_S \leq 115$ °C, BC817K, BC818K		500	
$T_S \leq 130$ °C, BC817W/KW, BC818...W/KW		250	
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[1)]	R_{thJS}		K/W
BC817, BC818		≤ 215	
BC817K, BC818K		≤ 70	
BC817W/KW, BC818W/KW		≤ 80	

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

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

[1]Pulse test: t < 300µs; D < 2%
[2]For all BC817 and BC818 subtypes
[3]For all BC817K and BC818K subtypes

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

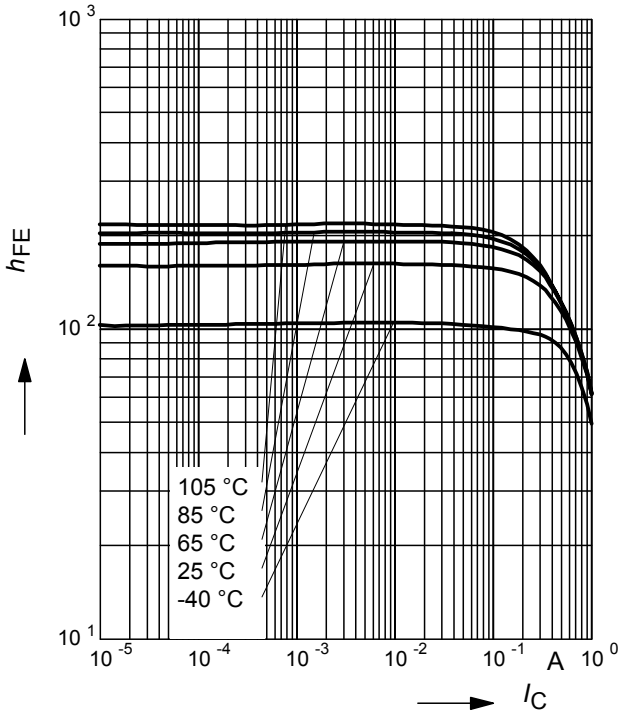
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency I_C = 50 mA, V_{CE} = 5 V, f = 100 MHz	f_T	-	170	-	MHz
Collector-base capacitance	C_{cb}				pF
V_{CB} = 10 V, f = 1 MHz[1)]		-	6	-	
V_{CB} = 10 V, f = 1 MHz[2)]		-	3	-	
Emitter-base capacitance	C_{eb}				
V_{EB}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

[1]For all BC817 and BC818 subtypes
[2]For all BC817K and BC818K subtypes

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

V_{CE} = 1 V

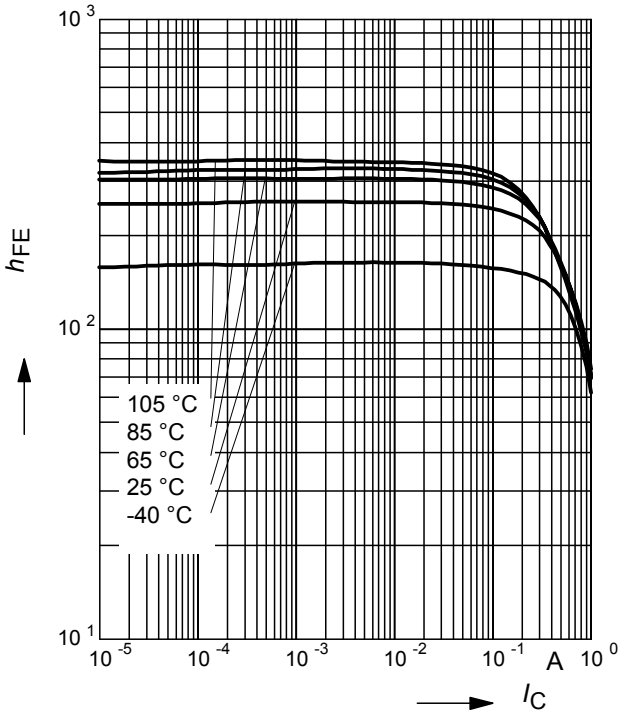
h_{FE}-grp.16



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

V_{CE} = 1 V

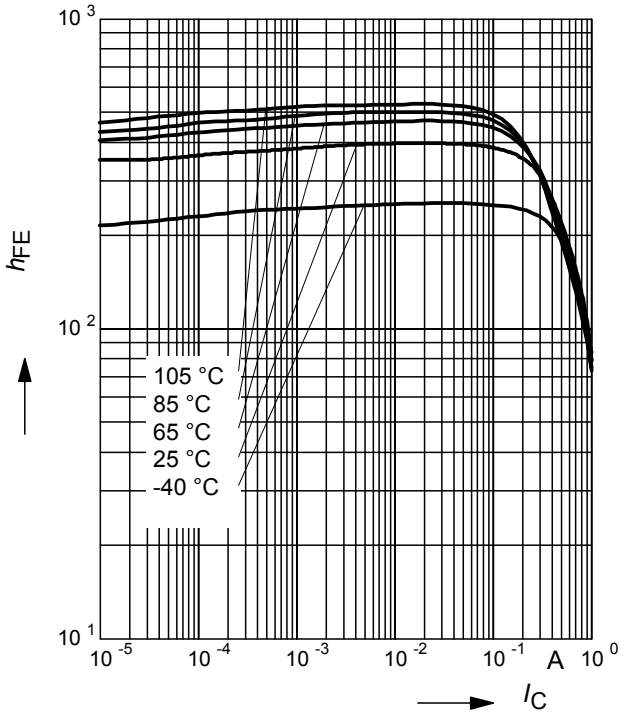
h_{FE}-grp.25



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

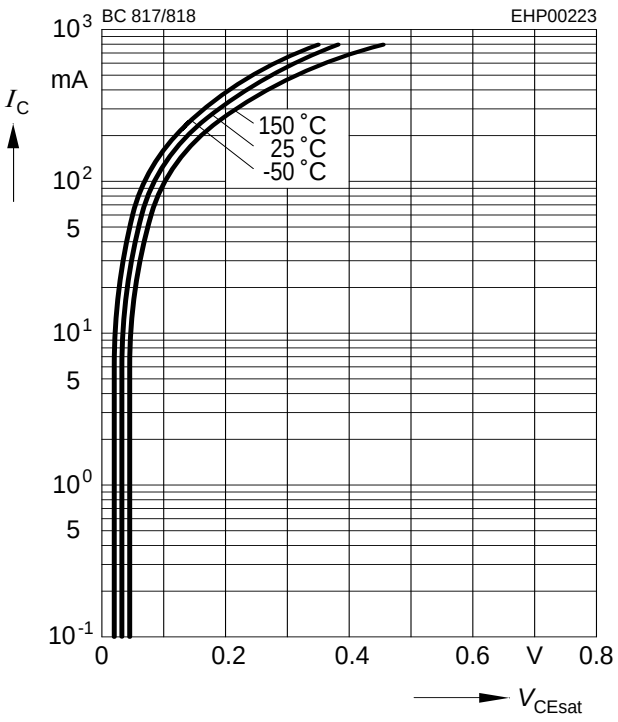
V_{CE} = 1 V

h_{FE}-grp.40



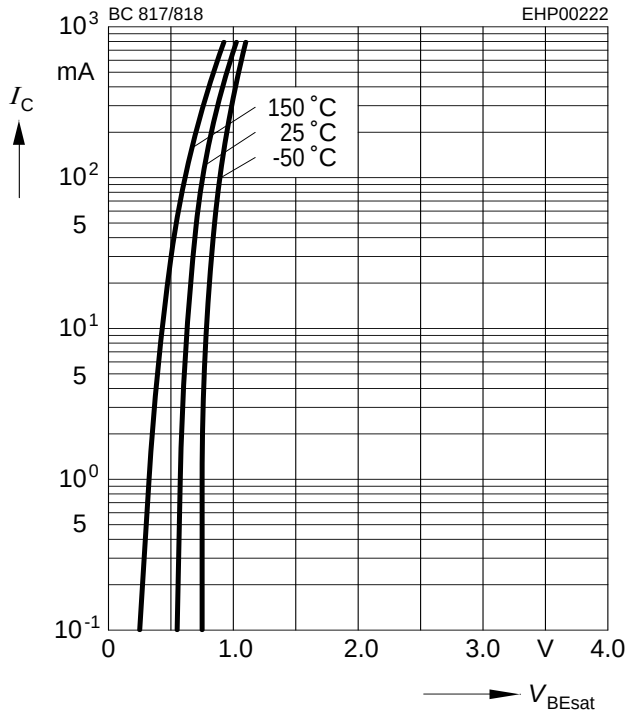
Collector-emitter saturation voltage

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



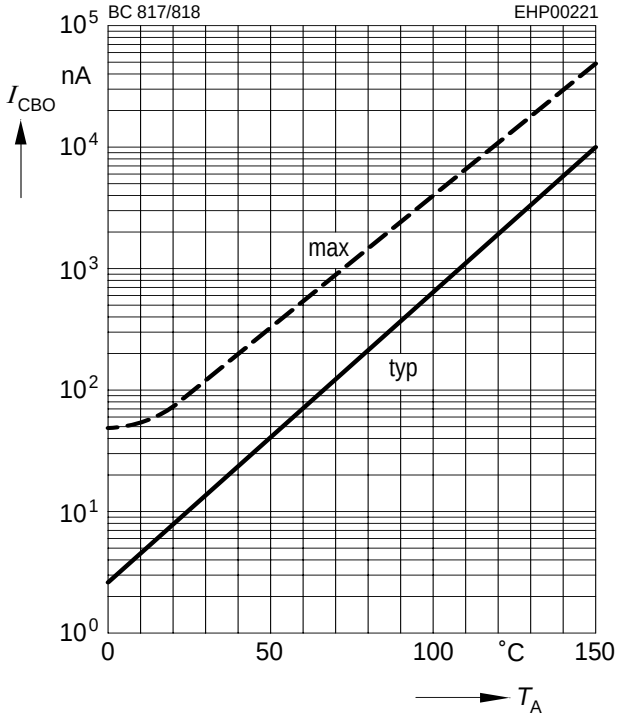
Base-emitter saturation voltage

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



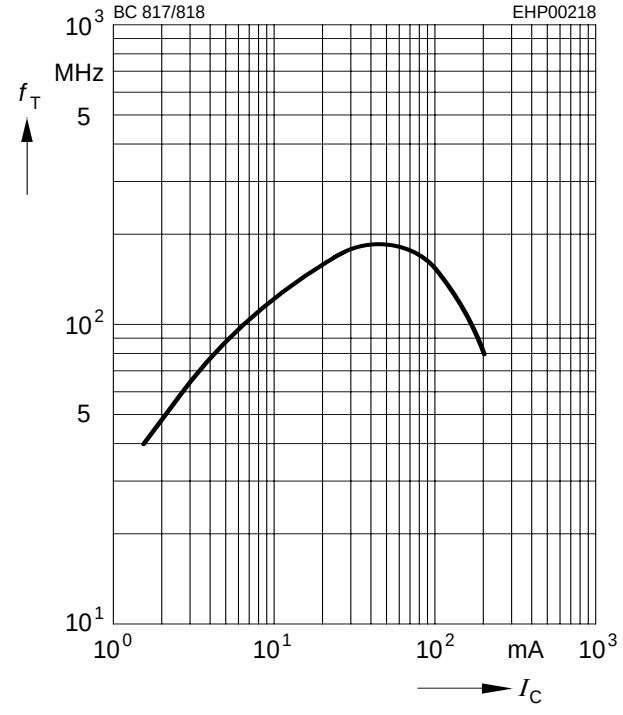
Collector cutoff current $I_{CBO} = f(T_A)$

V_{CBO} = 25 V



Transition frequency $f_T = f(I_C)$

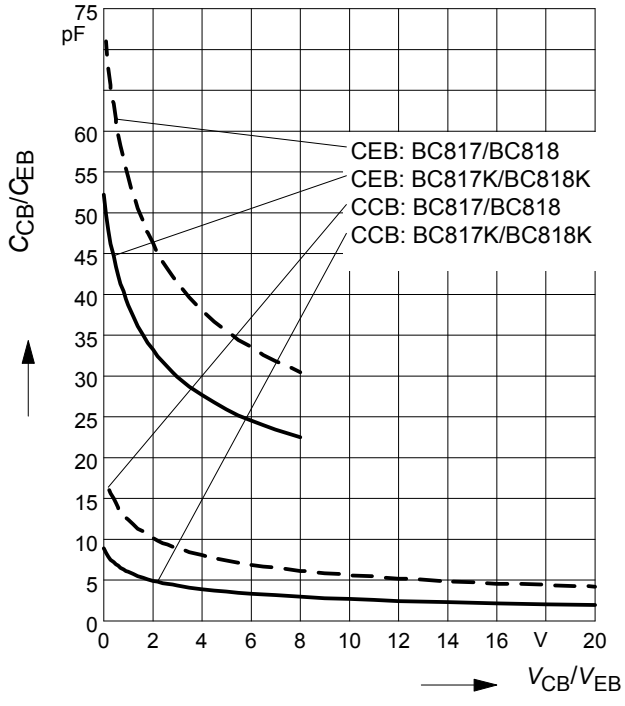
V_{CE} = parameter in V, f = 2 GHz



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

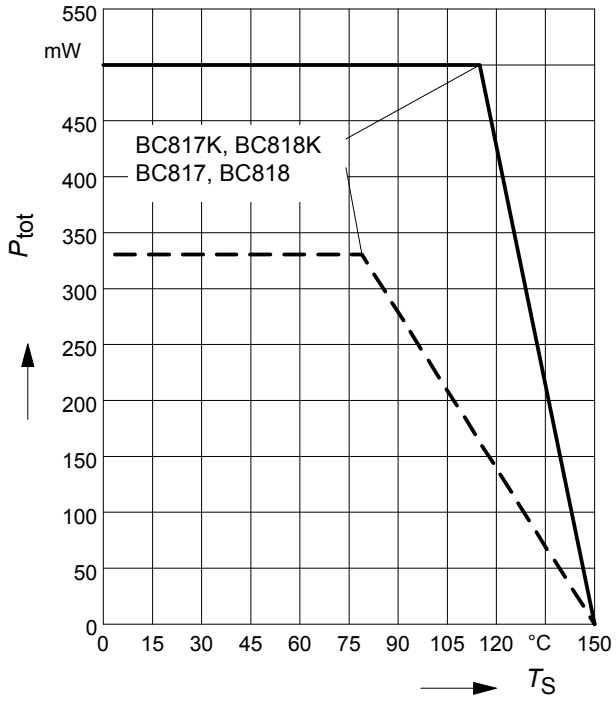
Emitter-base capacitance $C_{eb} = f(V_{EB})$

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



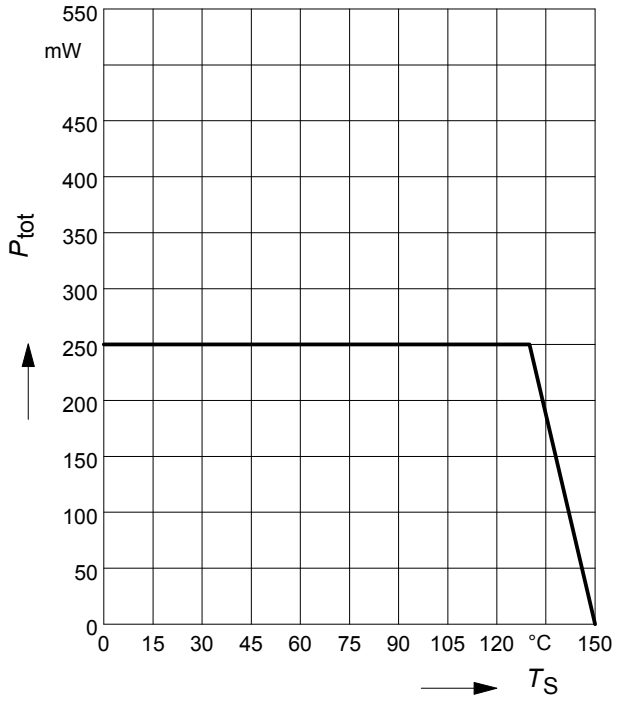
Total power dissipation $P_{tot} = f(T_S)$

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



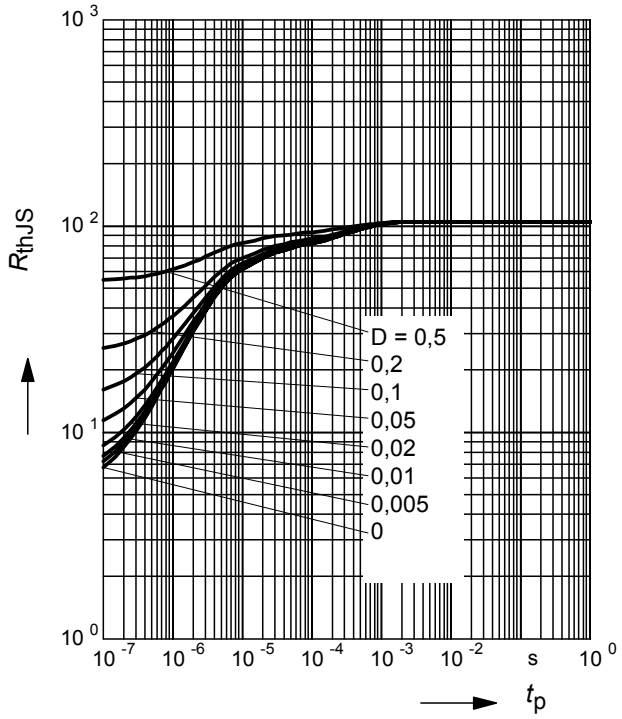
Total power dissipation $P_{tot} = f(T_S)$

BC817W/KW, BC818W/KW



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

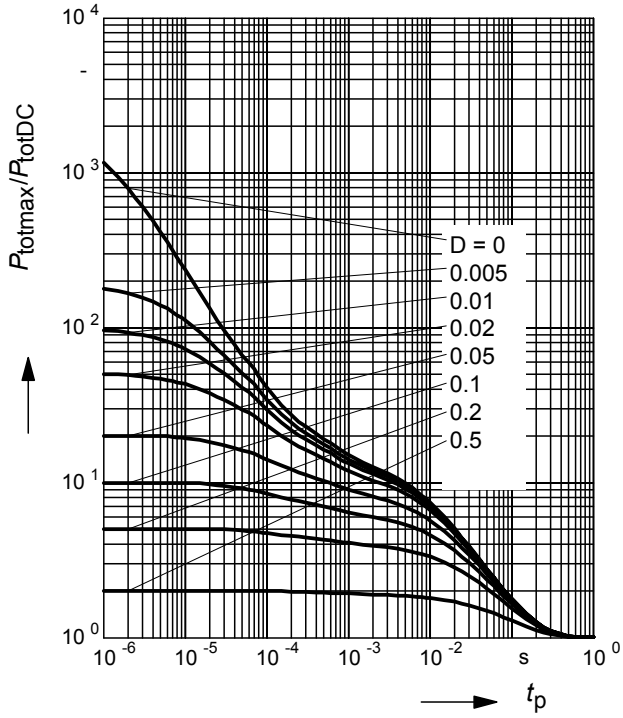
BC817, BC818



Permissible Pulse Load

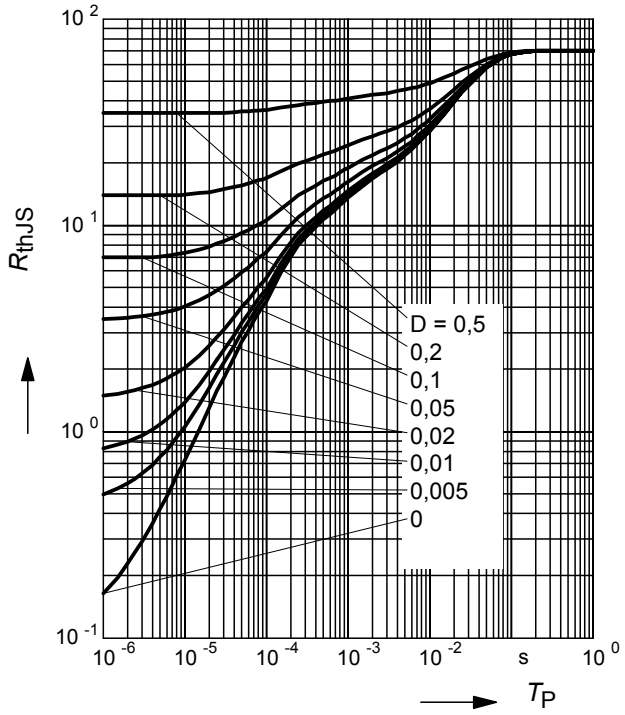
$P_{totmax}/P_{totDC} = f(t_p)$

BC817, BC818



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

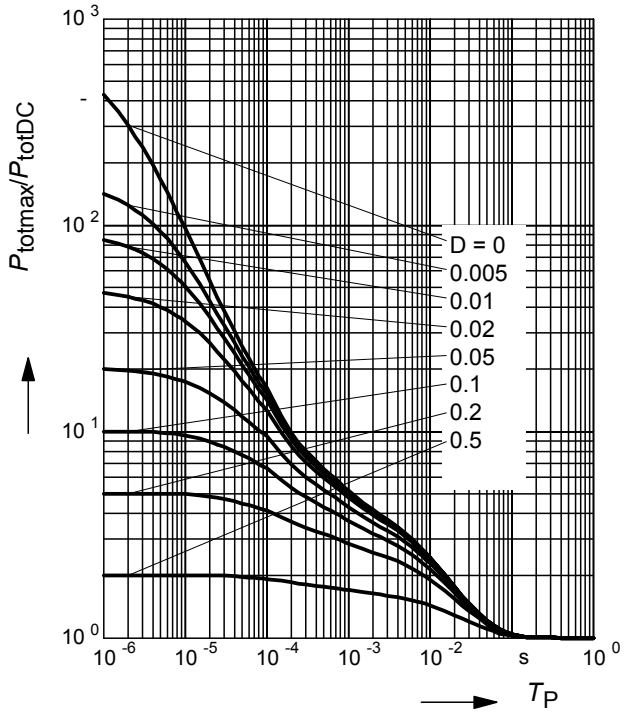
BC817/K, BC818/K



Permissible Pulse Load

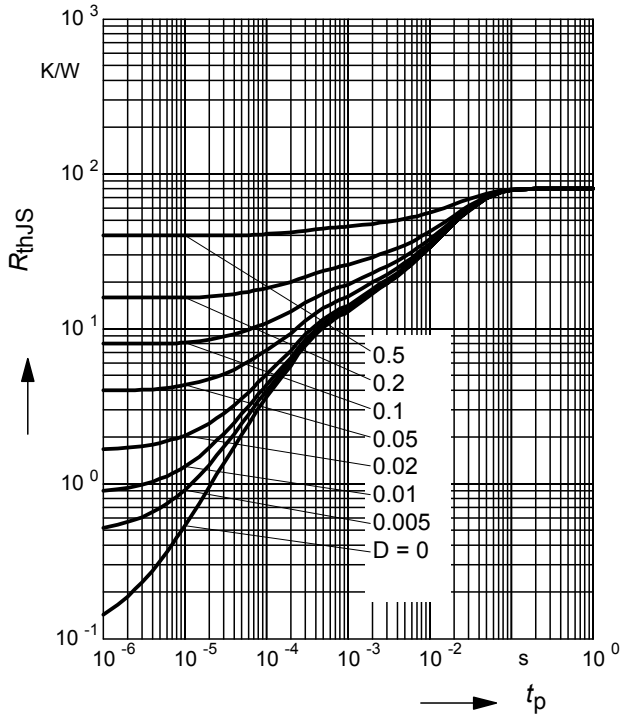
$P_{totmax}/P_{totDC} = f(t_p)$

BC817K, BC818K



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

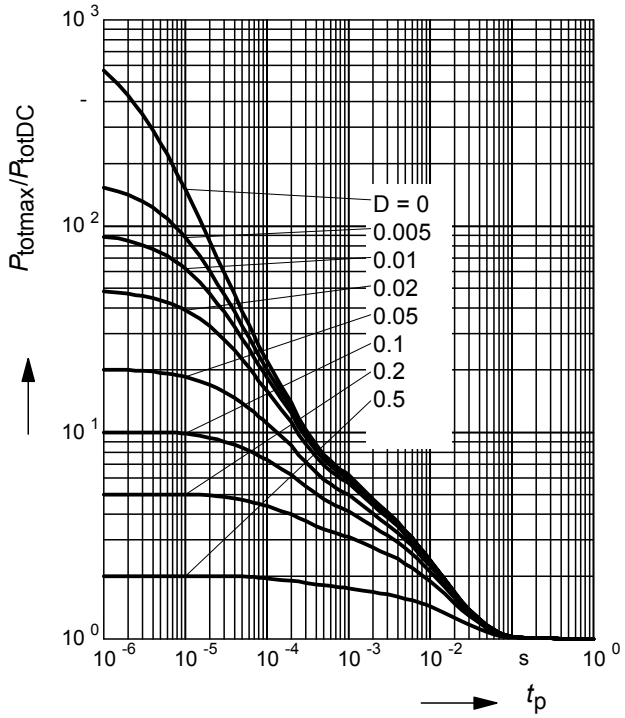
BC817W/KW, BC818W/KW



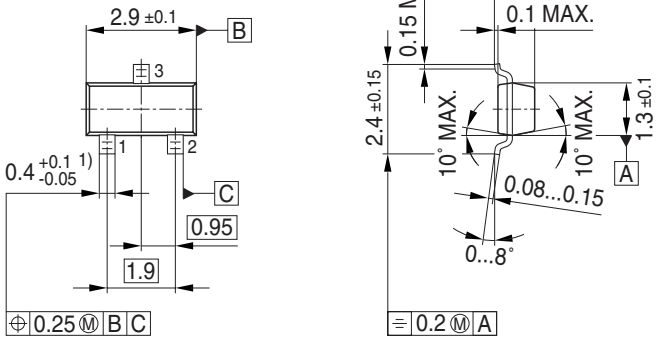
Permissible Pulse Load

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

BC817W/KW, BC818W/KW

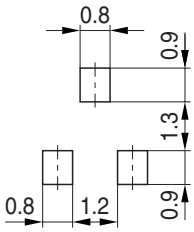


Package Outline

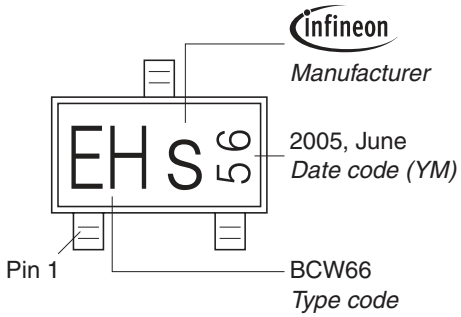


1) Lead width can be 0.6 max. in dambar area

Foot Print

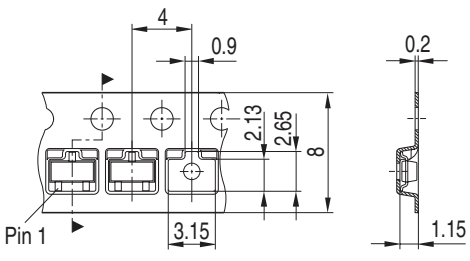


Marking Layout (Example)



Standard Packing

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



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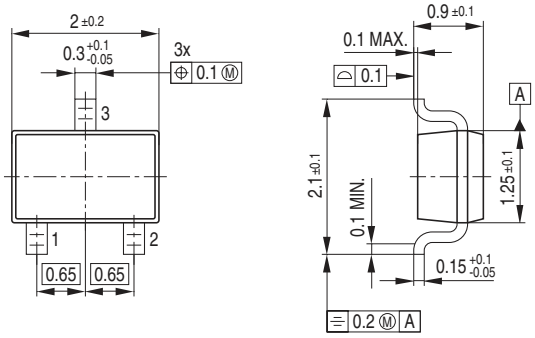

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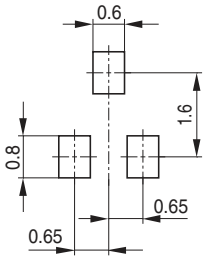

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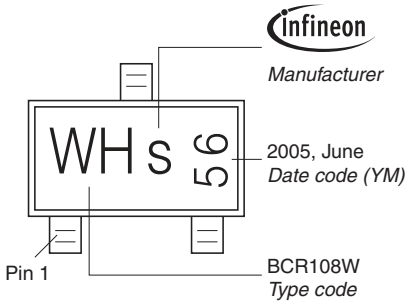

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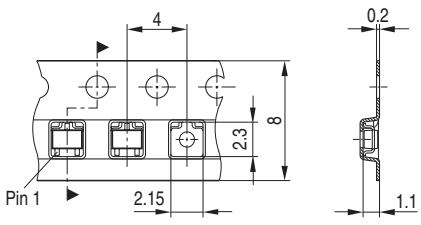

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