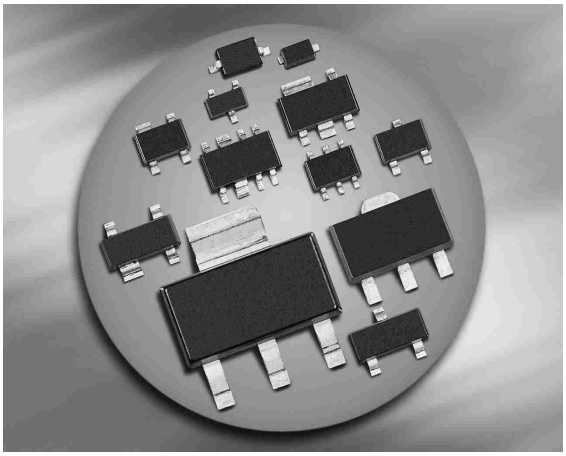
NPN Silicon AF Transistor

- For general AF applications
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



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

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- $T_S \leq 115$ °C, BC817K, BC818K $T_S \leq 130$ °C, BC817KW, BC818KW	P_{tot}	 500 250	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[1)] BC817K, BC818K BC817KW, BC818KW	R_{thJS}	 ≤ 70 ≤ 80	K/W

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

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 I_E = 10 µA, I_C = 0	$V_{(BR)EBO}$	5	-	-	V
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 V_{EB} = 4 V, I_C = 0	I_{EBO}	-	-	100	nA
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 = 500 mA, V_{CE} = 1 V, all h_{FE}-grps.		40	-	-	
Collector-emitter saturation voltage[1)] I_C = 500 mA, I_B = 50 mA	V_{CEsat}	-	-	0.7	V
Base emitter saturation voltage[1)] I_C = 500 mA, I_B = 50 mA	V_{BEsat}	-	-	1.2	

[1]Pulse test: t < 300µs; D < 2%

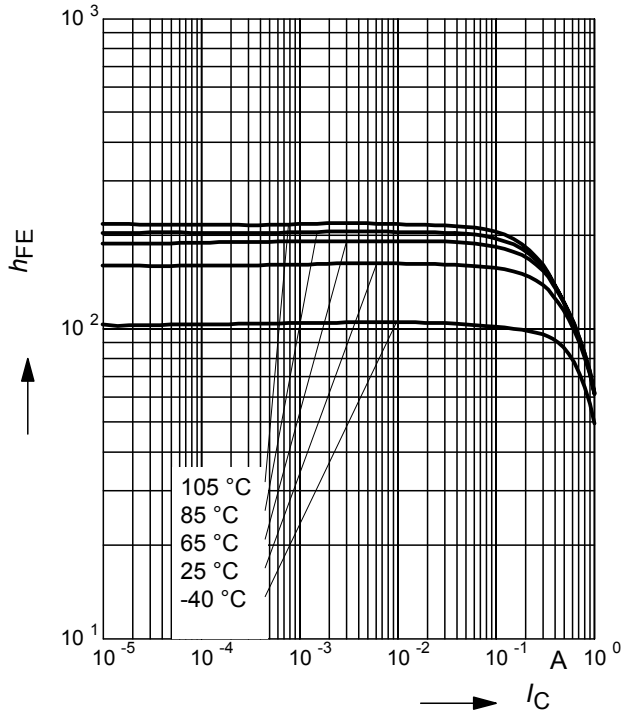
Electrical Characteristics at T_A = 25°C, unless otherwise specified

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 V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	3	-	pF
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz	C_{eb}	-	40	-	

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

V_{CE} = 1 V

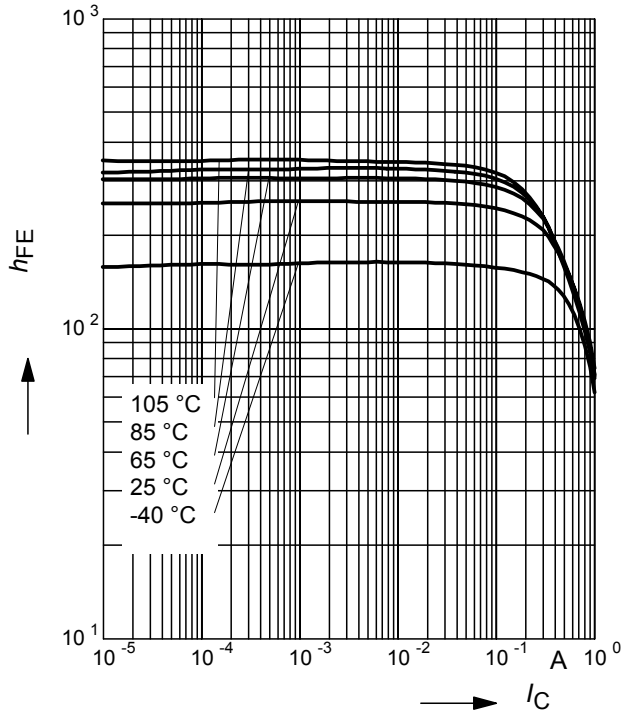
h_{FE}-grp.16



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

V_{CE} = 1 V

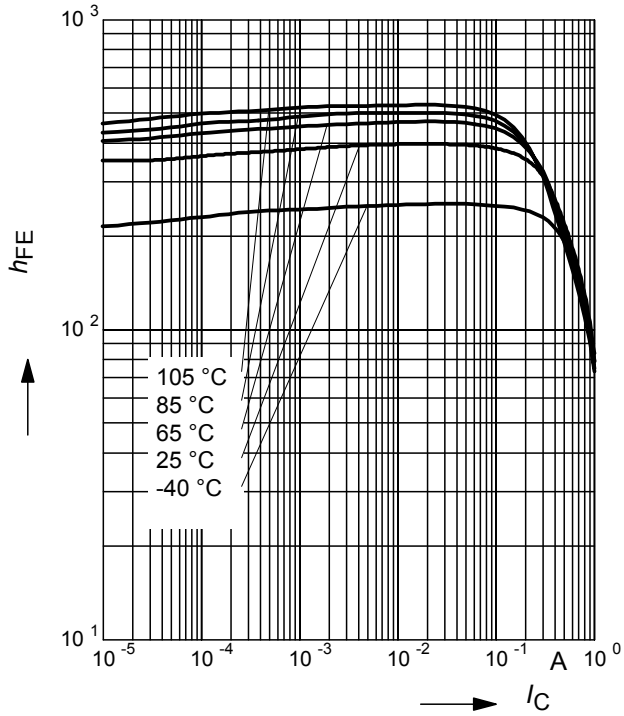
h_{FE}-grp.25



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

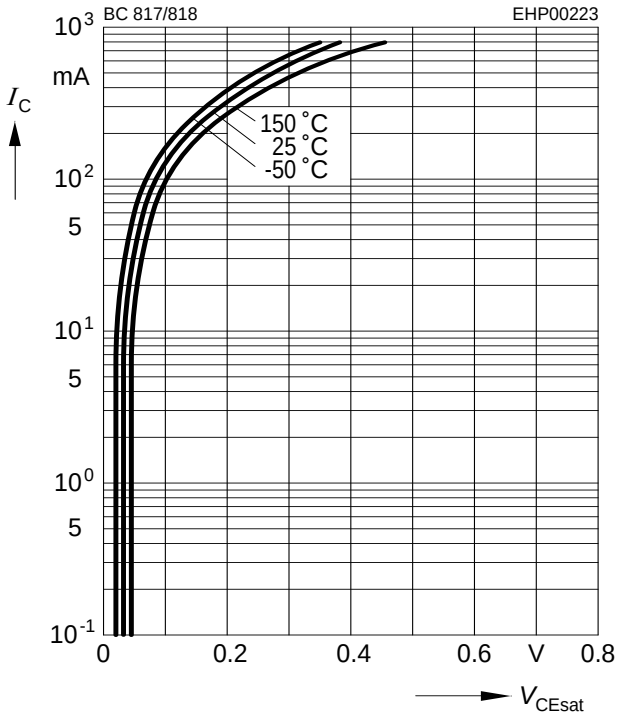
V_{CE} = 1 V

h_{FE}-grp.40



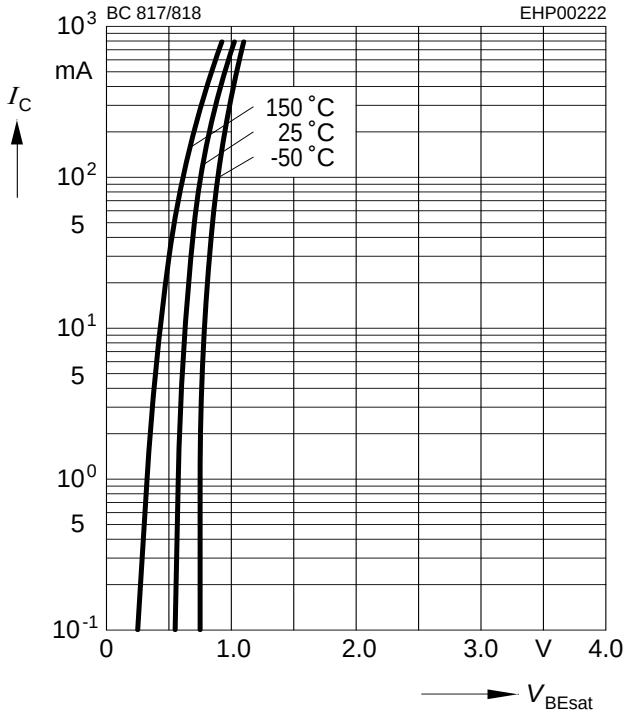
Collector-emitter saturation voltage

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



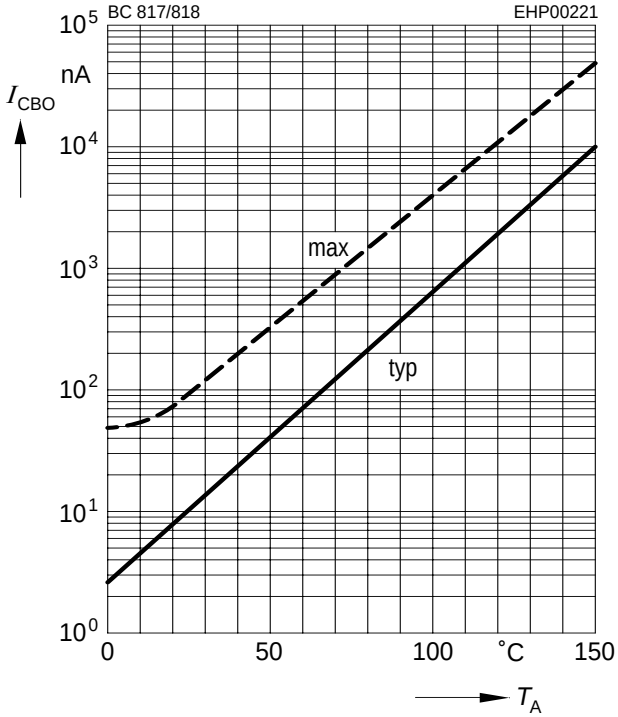
Base-emitter saturation voltage

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



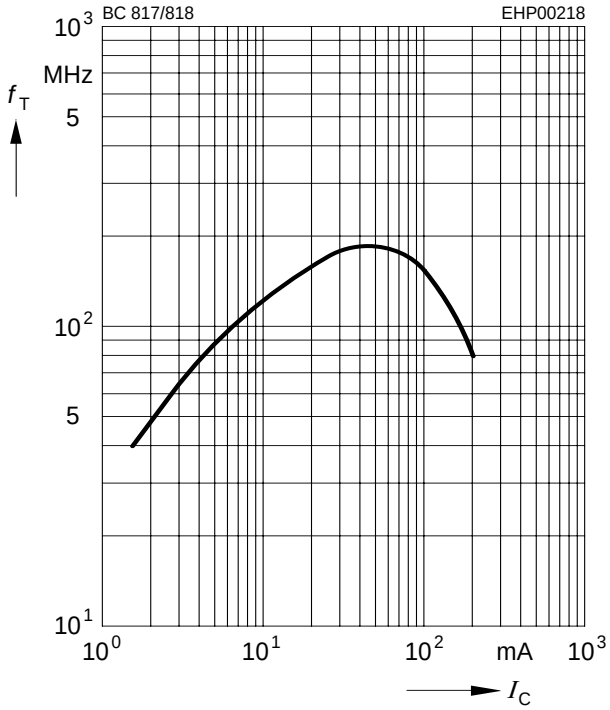
Collector cutoff current $I_{CBO} = f(T_A)$

V_{CBO} = 25 V



Transition frequency $f_T = f(I_C)$

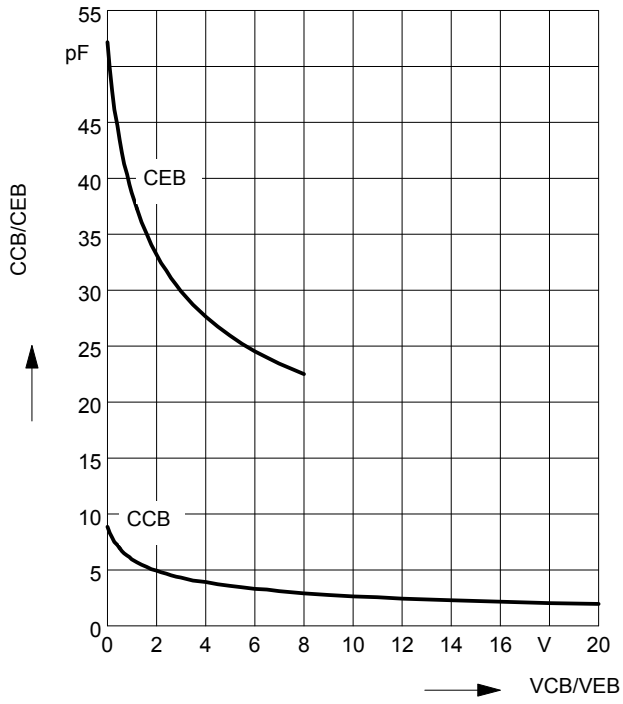
V_{CE} = parameter in V, f = 2 GHz



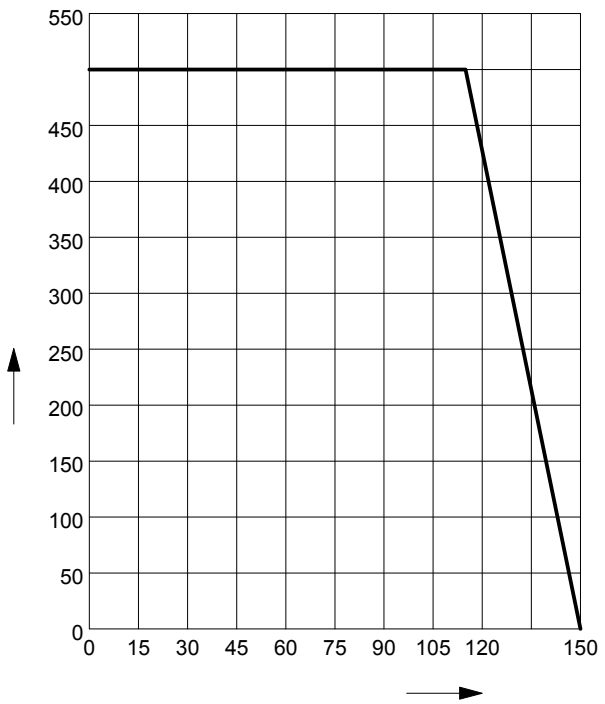
Collector-base capacitance $C_{cb} = f(V_{CB})$

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

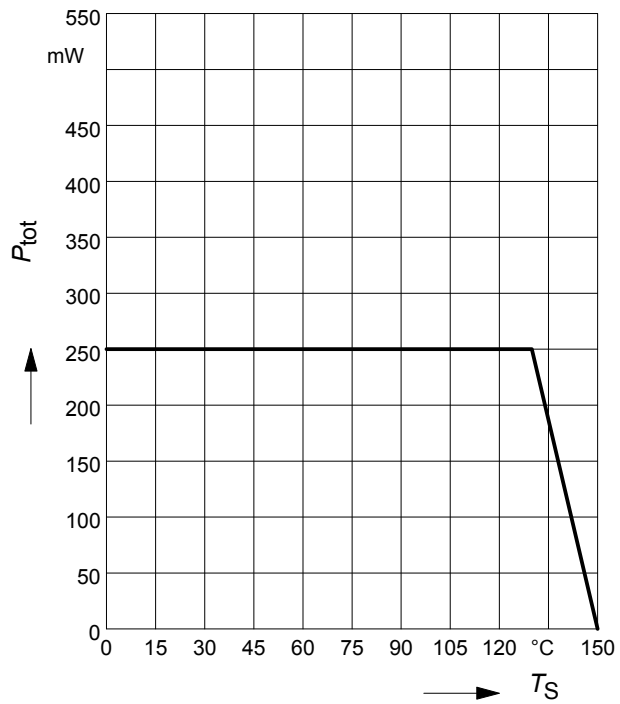
BC817K, BC818K



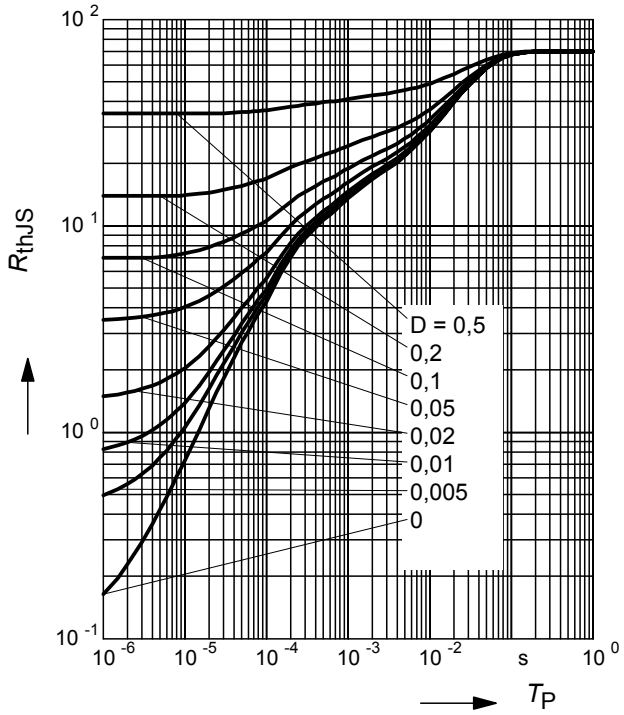
Total power dissipation $P_{tot} = f(T_S)$
BC817K, BC818K



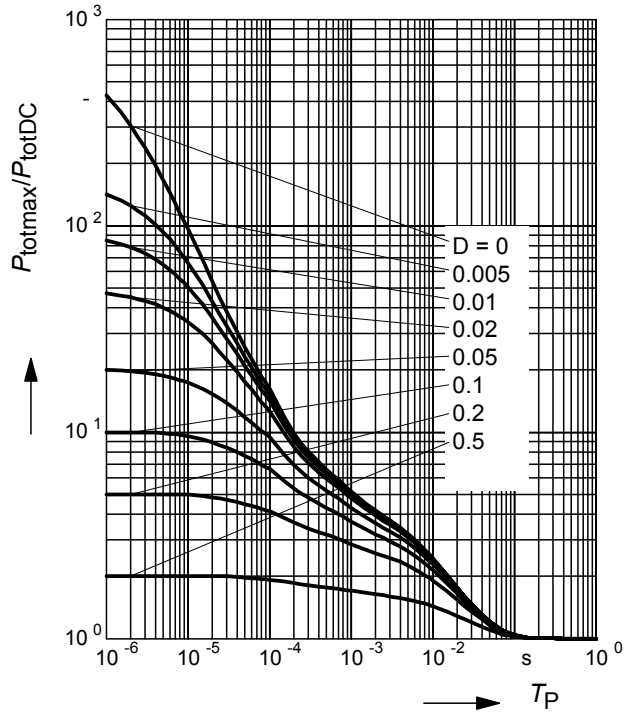
Total power dissipation $P_{tot} = f(T_S)$
BC817KW, BC818KW



Permissible Pulse Load $R_{thJS} = f(t_p)$
BC817K, BC818K

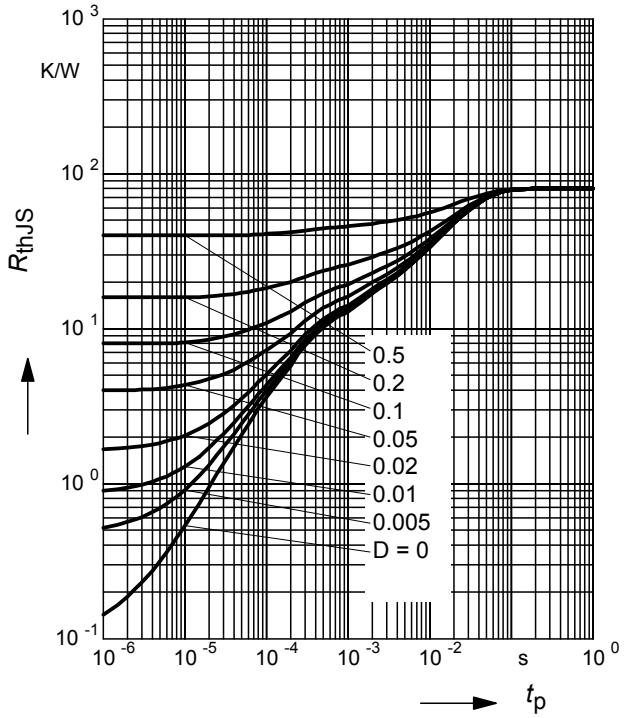


Permissible Pulse Load
$P_{totmax}/P_{totDC} = f(t_p)$
BC817K, BC818K



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

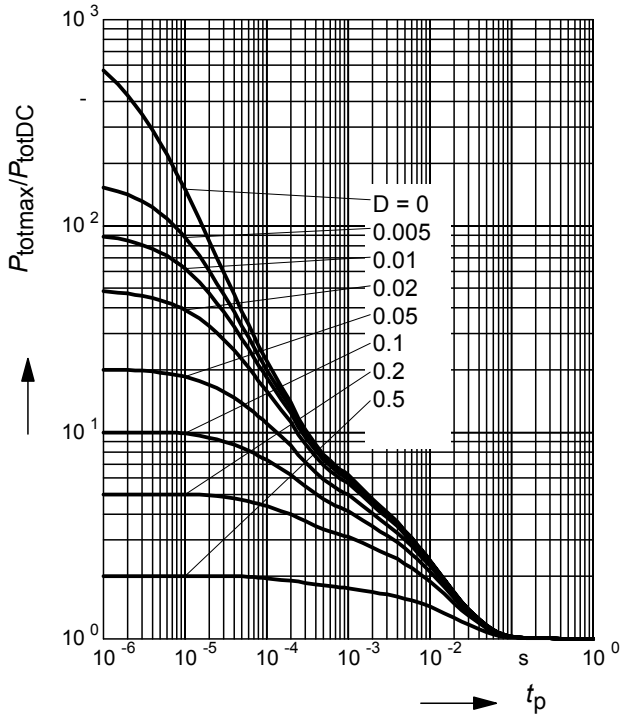
BC817KW, BC818KW



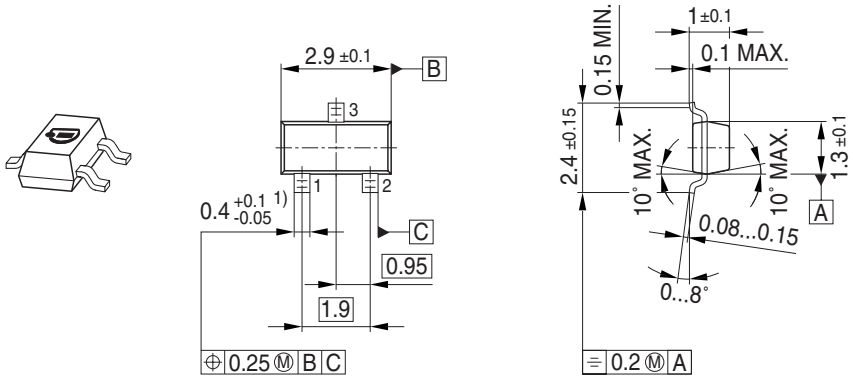
Permissible Pulse Load

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

BC817KW, BC818KW

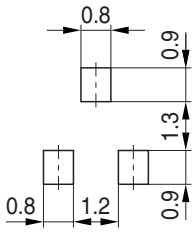


Package Outline

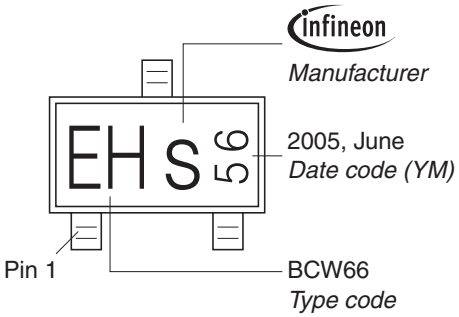


1) Lead width can be 0.6 max. in dambar area

Foot Print

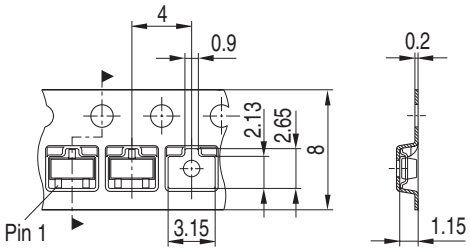


Marking Layout (Example)



Standard Packing

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



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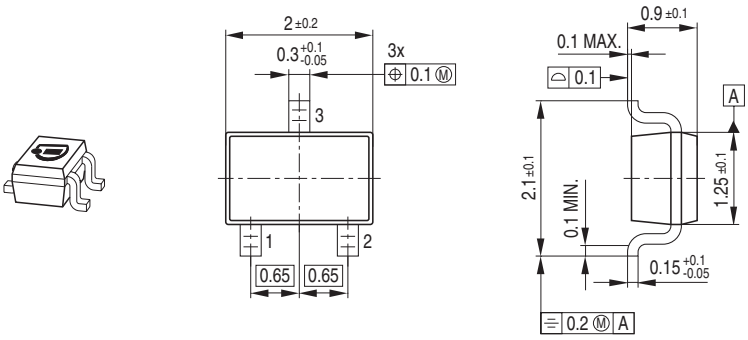

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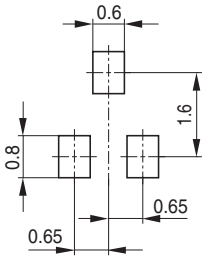
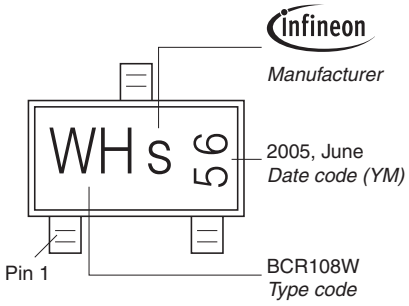


Marking Layout (Example)



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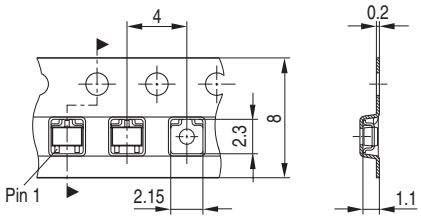

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