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	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
$T_S \leq 115 \,°C$, BC817K, BC818K		500	
$T_S \leq 130 \,°C$, BC817KW, BC818KW		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
BC817K, BC818K		≤ 70	
BC817KW, BC818KW		≤ 80	

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

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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 = 500 mA, V_{CE} = 1 V, all h_{FE}-grps.		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%

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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	-	

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

$V_{CE} = 1$ V

h_{FE}-grp.16

105 °C
85 °C
65 °C
25 °C
-40 °C

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

$V_{CE} = 1$ V

h_{FE}-grp.25

105 °C
85 °C
65 °C
25 °C
-40 °C
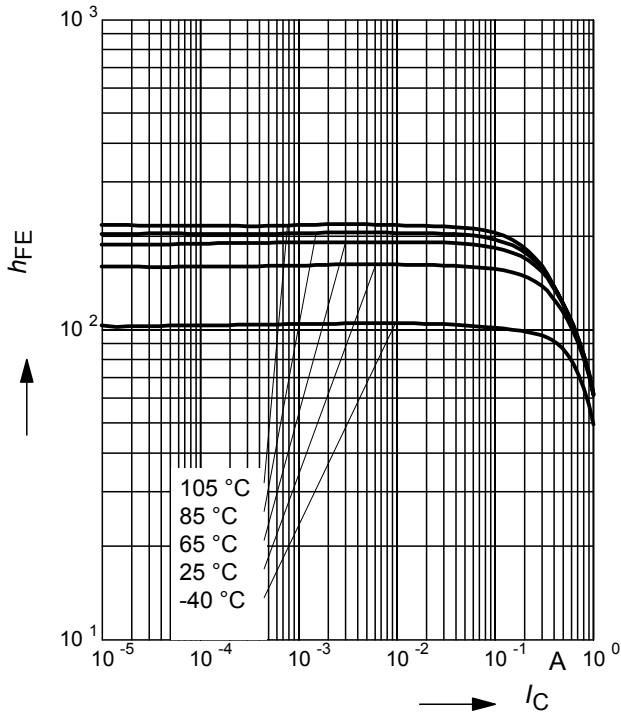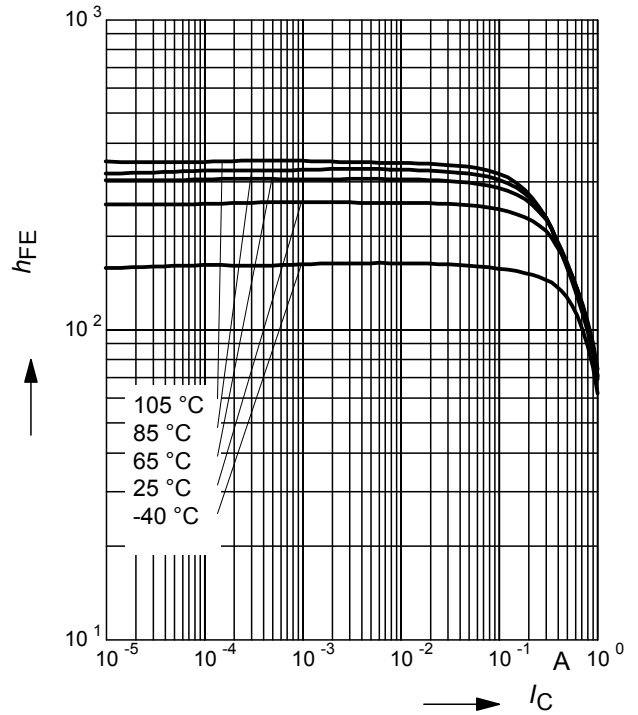
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 1$ V

h_{FE}-grp.40

105 °C
85 °C
65 °C
25 °C
-40 °C
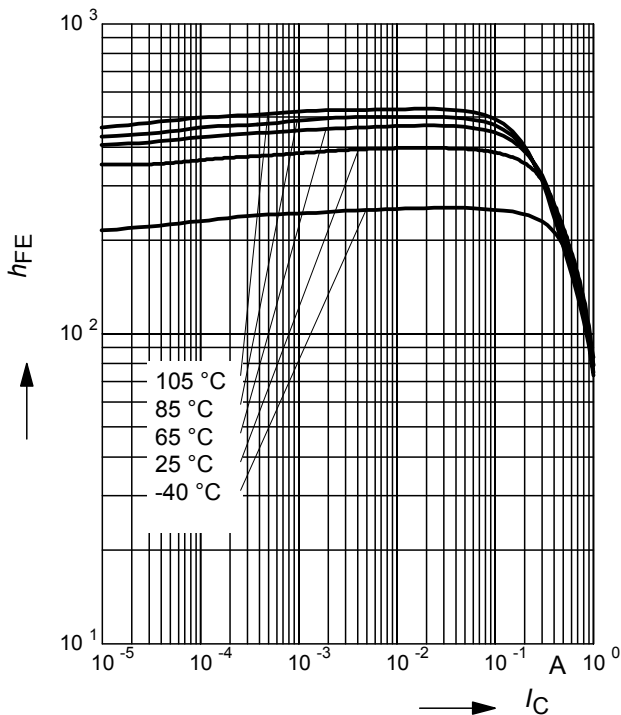
Collector-emitter saturation voltage

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

BC 817/818   EHP00223

150 °C
25 °C
-50 °C

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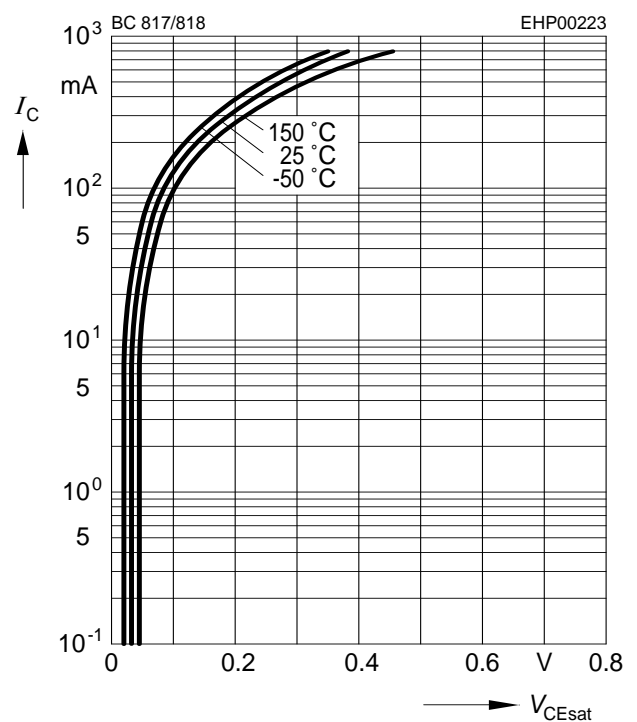
Base-emitter saturation voltage

$I_C = f(V_{BEsat})$, $h_{FE} = 10$
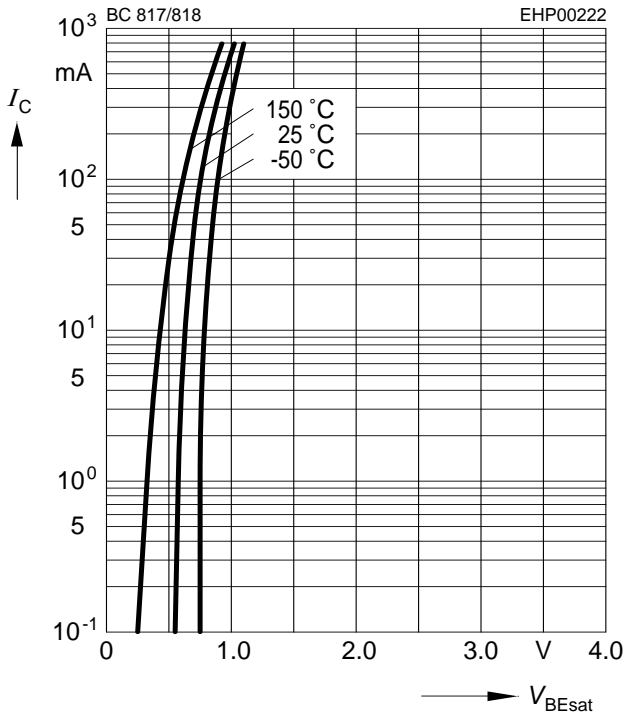
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CBO} = 25$ V
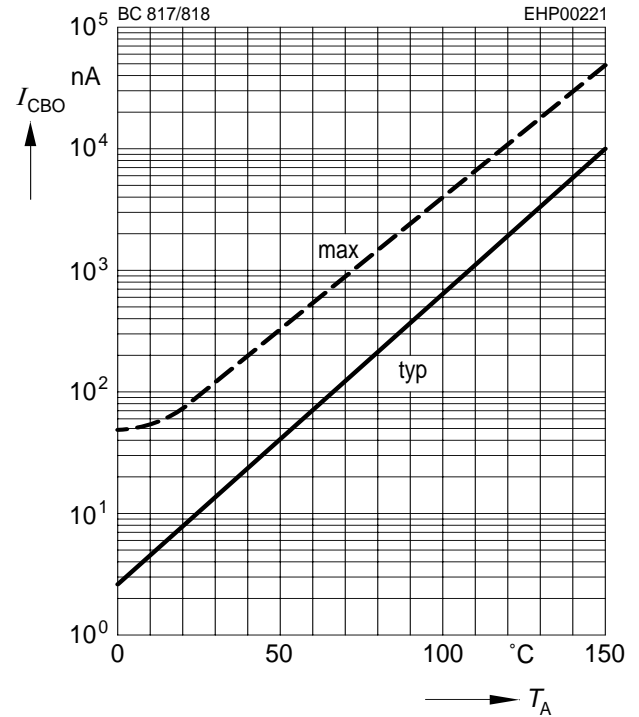
Transition frequency $f_T = f(I_C)$

V_{CE} = parameter in V, f = 2 GHz
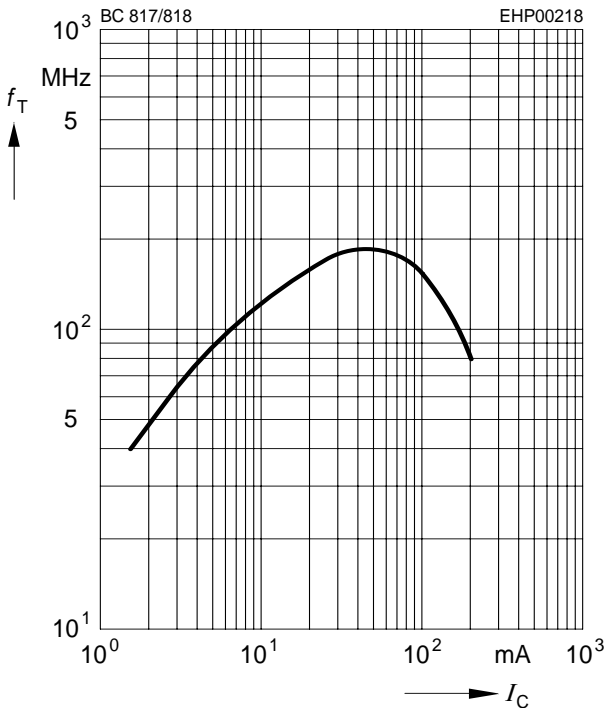
Collector-base capacitance $C_{cb} = f(V_{CB})$

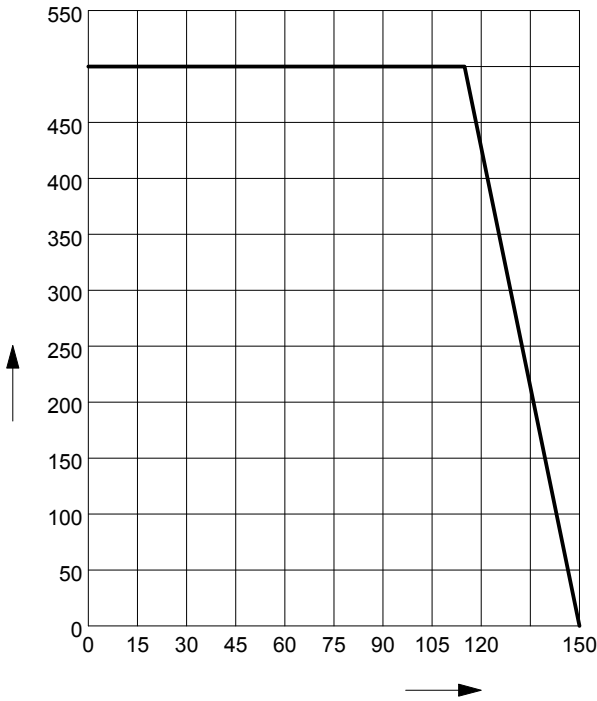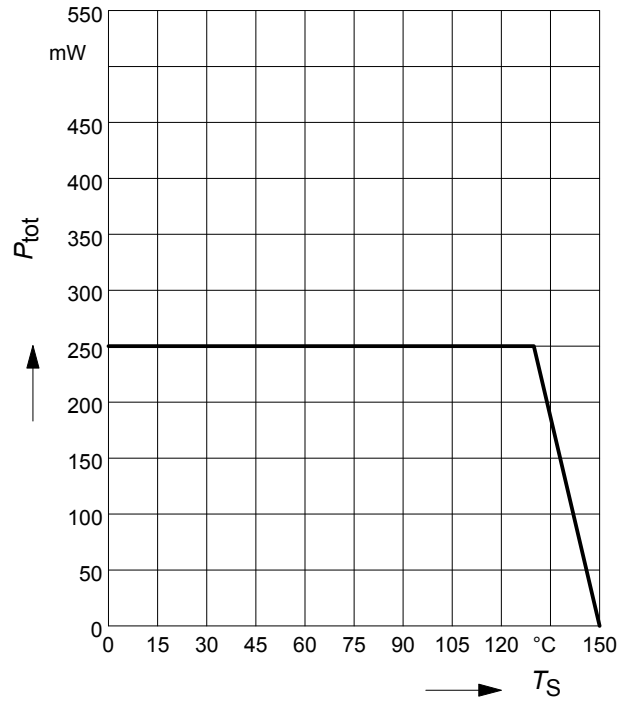**Emitter-base capacitance** $C_{eb} = f(V_{EB})$

BC817K, BC818K

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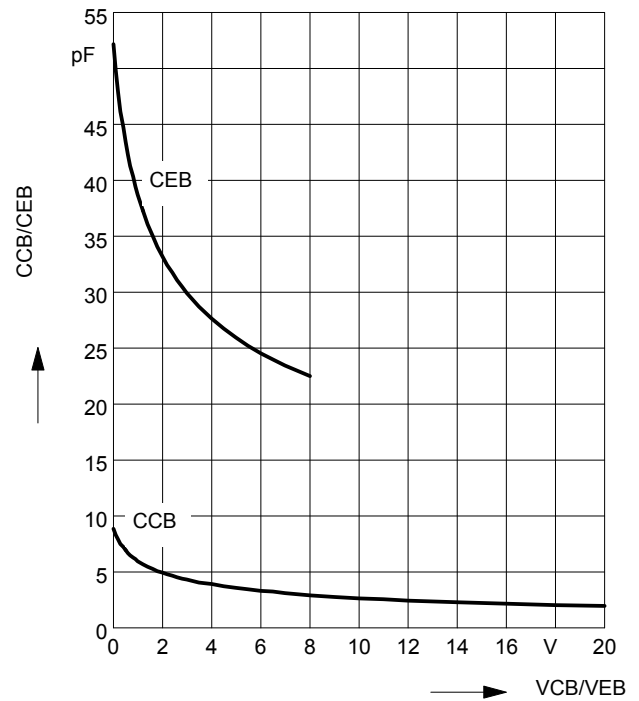
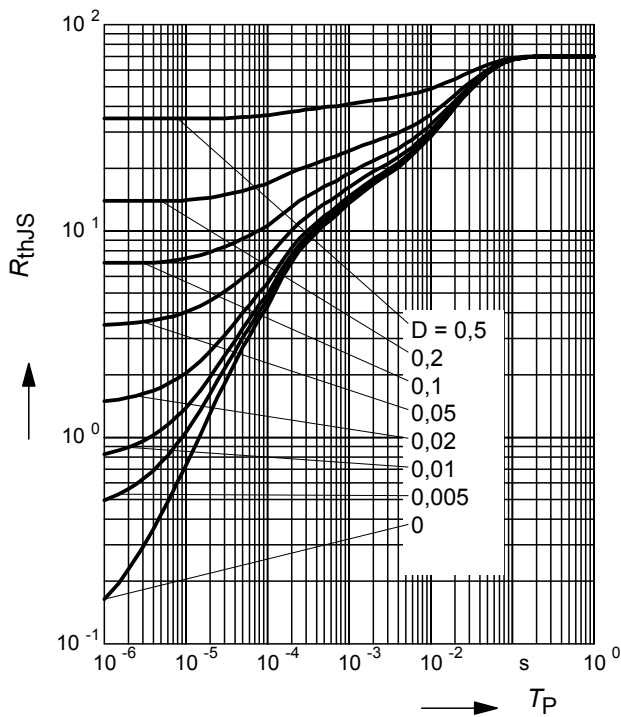**Total power dissipation** $P_{tot} = f(T_S)$

BC817K, BC818K

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

BC817KW, BC818KW

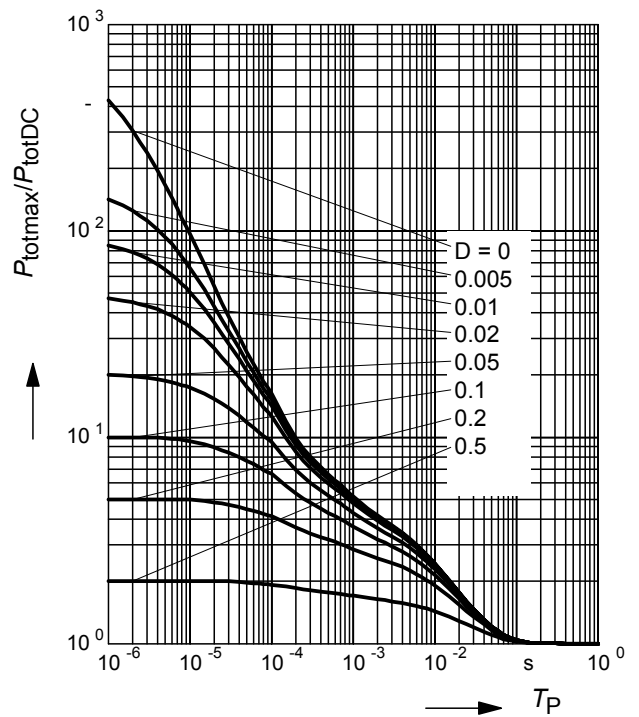**Permissible Pulse Load** $R_{thJS} = f(t_p)$
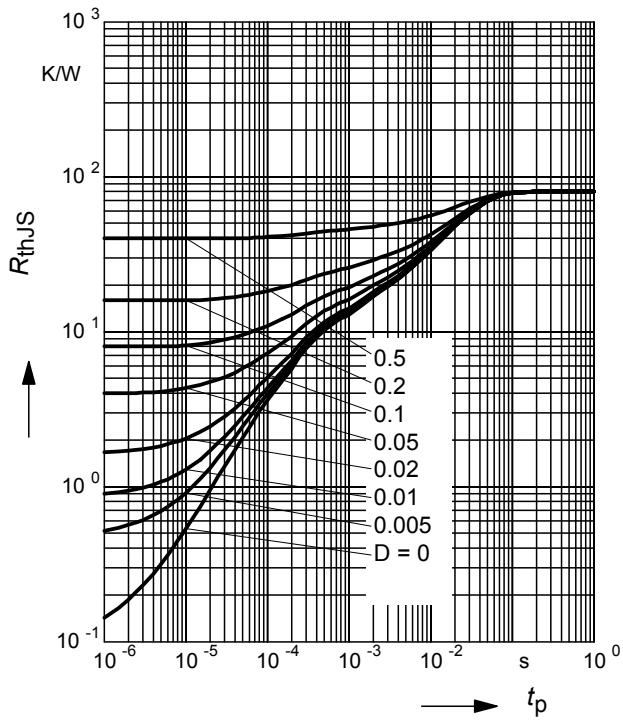
BC817K, BC818K

Permissible Pulse Load

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

BC817K, BC818K

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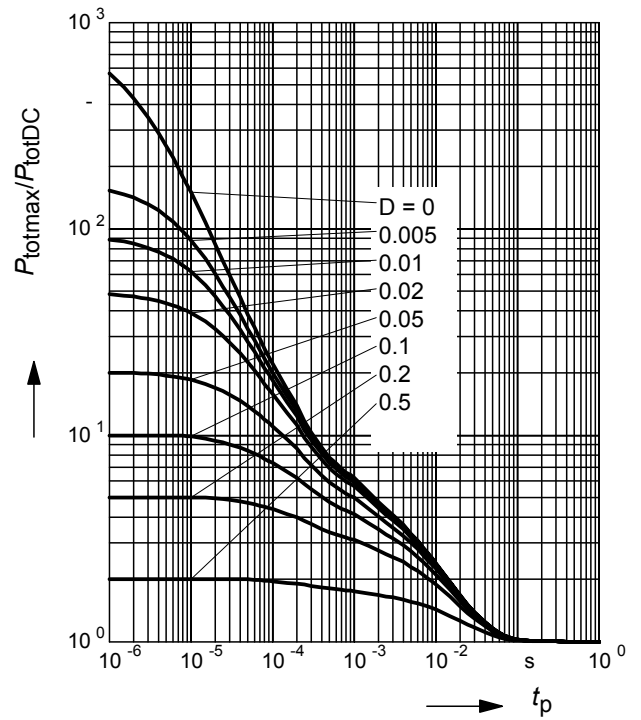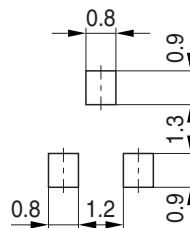
Permissible Puls Load R_{thJS} = f (t_p)

BC817KW, BC818KW

Permissible Pulse Load

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

BC817KW, BC818KW

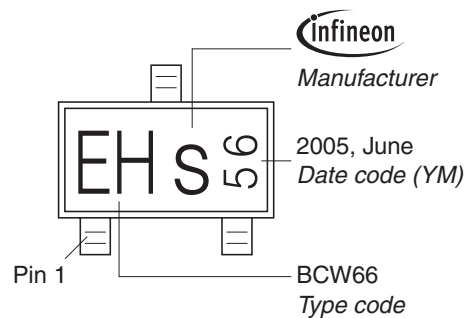2011-09-19

Package Outline

2.9 ±0.1　　B

3

1

2

0.4 $^{+0.1}_{-0.05}$ ¹⁾　　C

0.95

1.9

⊕ |0.25Ⓜ|B|C

1 ±0.1

0.1 MAX.

0.15 MIN.

2.4 ±0.15

10˚ MAX.　10˚ MAX.

1.3 ±0.1

A

0.08...0.15

0...8˚

= |0.2Ⓜ|A

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

Foot Print

0.8

0.9

1.3

0.9

0.8　1.2

Marking Layout (Example)

Infineon

Manufacturer

EH S

56

2005, June
Date code (YM)

Pin 1

BCW66
Type code

Standard Packing

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

4

0.9

0.2

2.13

2.65

8

Pin 1

3.15

1.15

Package Outline

Foot Print

Marking Layout (Example)

Manufacturer

2005, June
Date code (YM)

Pin 1

BCR108W
Type code

Standard Packing

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

Pin 1
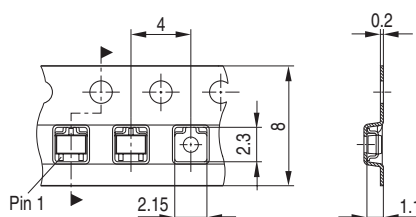
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