NPN Silicon Digital Transistor

- Switching circuit, inverter, interface circuit driver circuit

- Built in bias resistor (R_1=10 kΩ, R_2=47 kΩ)

- BCR135S: Two internally isolated transistors with good matching in one multichip package

- BCR135S: For orientation in reel see package information below

- Pb-free (RoHS compliant) package [1]

- Qualified according AEC Q101
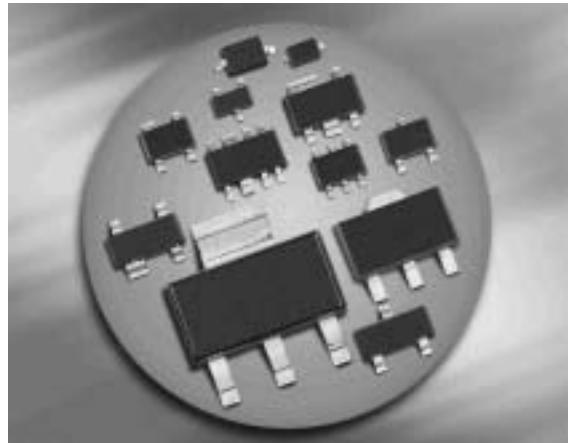
BCR135/F   BCR135S
BCR135W
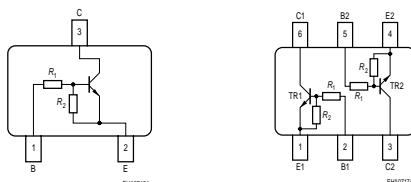
Type	Marking	Pin Configuration						Package
BCR135	WJs	1=B	2=E	3=C	-	-	-	SOT23
BCR135F	WJs	1=B	2=E	3=C	-	-	-	TSFP-3
BCR135S	WJs	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SOT363
BCR135W	WJs	1=B	2=E	3=C	-	-	-	SOT323

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

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Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	50	V
Collector-base voltage	V_{CBO}	50	
Input forward voltage	$V_{i(fwd)}$	40	
Input reverse voltage	$V_{i(rev)}$	6	
Collector current	I_C	100	mA
Total power dissipation	P_{tot}		mW
BCR135, $T_S \leq 102°C$		200	
BCR135F, $T_S \leq 128°C$		250	
BCR135S, $T_S \leq 115°C$		250	
BCR135W, $T_S \leq 124°C$		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
BCR135		≤ 240	
BCR135F		≤ 90	
BCR135S		≤ 140	
BCR135W		≤ 105	

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

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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 I_C = 100 µA, I_B = 0	$V_{(BR)CEO}$	50	-	-	V
Collector-base breakdown voltage I_C = 10 µA, I_E = 0	$V_{(BR)CBO}$	50	-	-	
Collector-base cutoff current V_{CB} = 40 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter-base cutoff current V_{EB} = 6 V, I_C = 0	I_{EBO}	-	-	167	µA
DC current gain[1] I_C = 5 mA, V_{CE} = 5 V	h_{FE}	70	-	-	-
Collector-emitter saturation voltage[1] I_C = 10 mA, I_B = 0.5 mA	V_{CEsat}	-	-	0.3	V
Input off voltage I_C = 100 µA, V_{CE} = 5 V	$V_{i(off)}$	0.5	-	1	
Input on voltage I_C = 2 mA, V_{CE} = 0.3 V	$V_{i(on)}$	0.5	-	1.4	
Input resistor	R_1	7	10	13	kΩ
Resistor ratio	R_1/R_2	0.19	0.21	0.24	-
AC Characteristics					
Transition frequency I_C = 10 mA, V_{CE} = 5 V, f = 100 MHz	f_T	-	150	-	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	3	-	pF

[1]Pulse test: t < 300µs; D < 2%

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

V_{CE} = 5V (common emitter configuration)

Collector-emitter saturation voltage
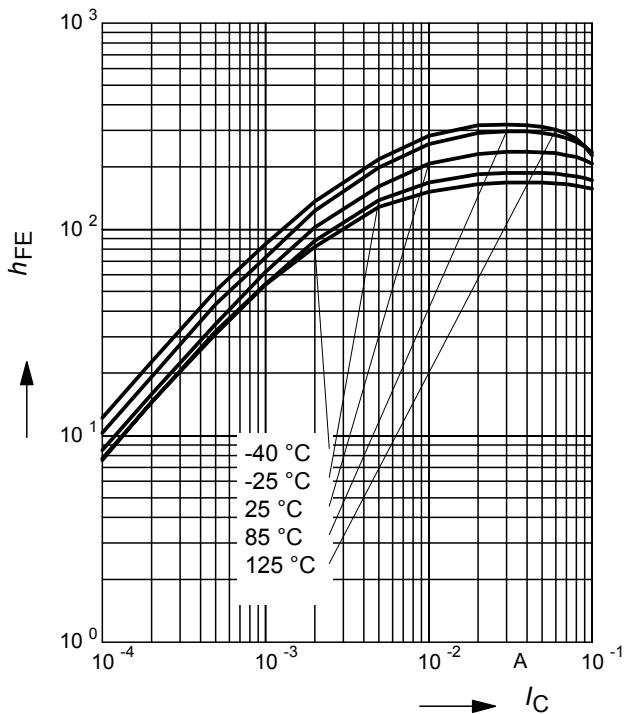
$V_{CEsat} = f(I_C)$, I_C/I_B = 20

Input on Voltage $V_{i(on)} = f(I_C)$

V_{CE} = 0.3V (common emitter configuration)
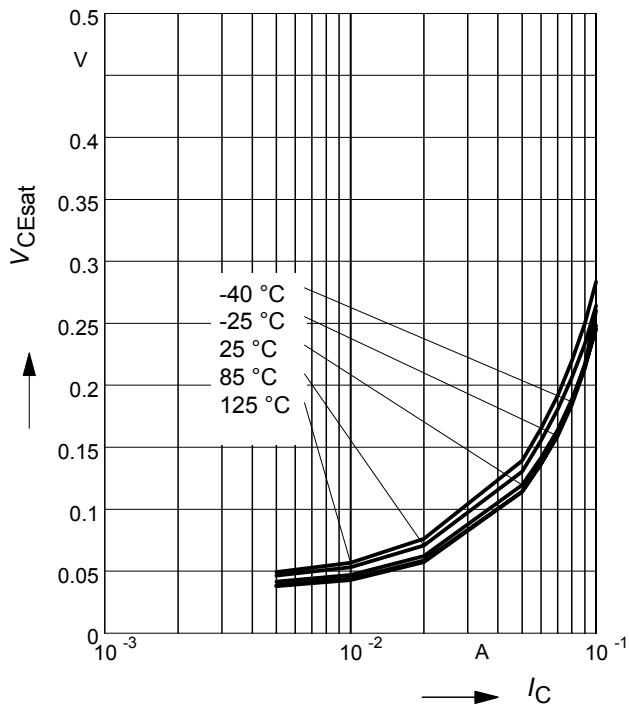
Input off voltage $V_{i(off)} = f(I_C)$

V_{CE} = 5V (common emitter configuration)

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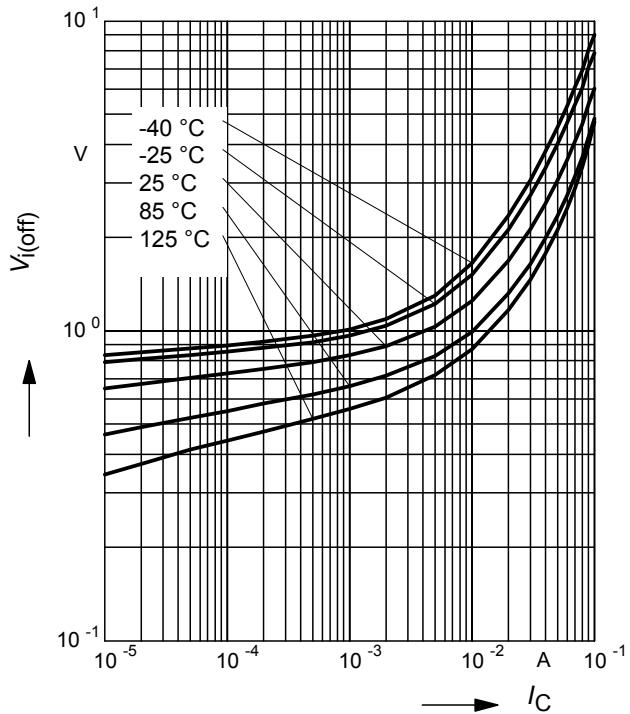
**Total power dissipation $P_\text{tot} = f(T_S)$**
BCR135
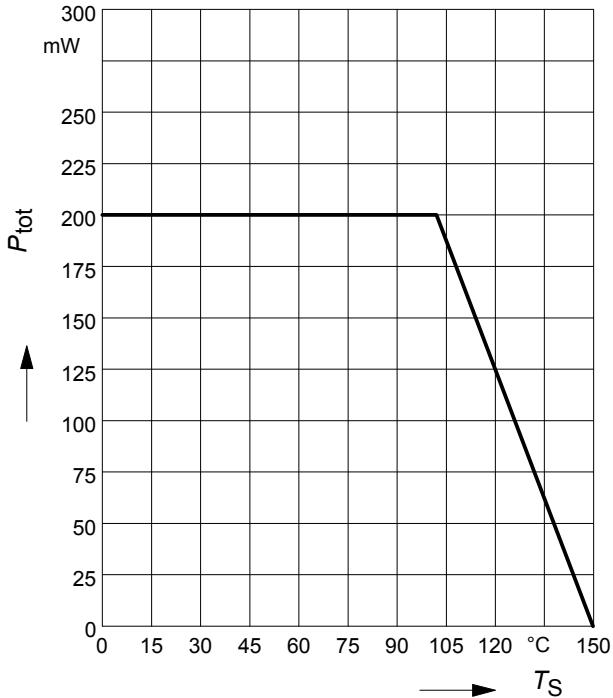
Total power dissipation $P_\text{tot} = f(T_S)$
BCR135F
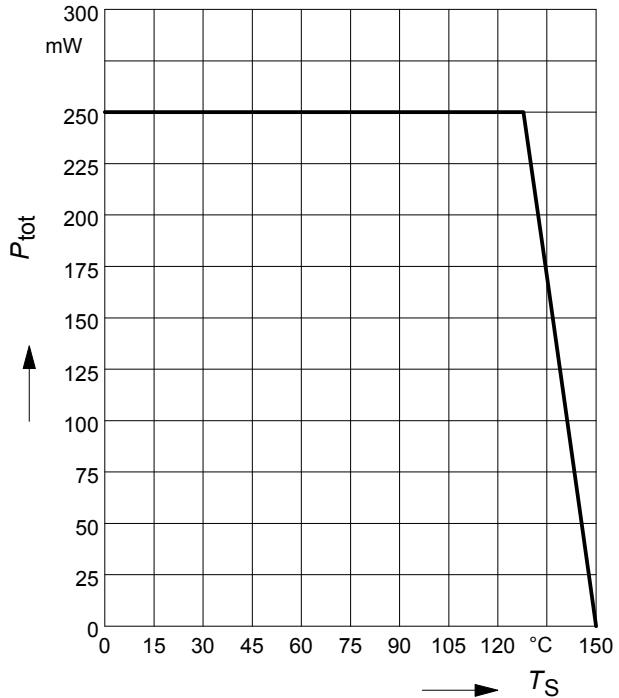
Total power dissipation $P_\text{tot} = f(T_S)$
BCR135S

Total power dissipation $P_\text{tot} = f(T_S)$
BCR135W

5

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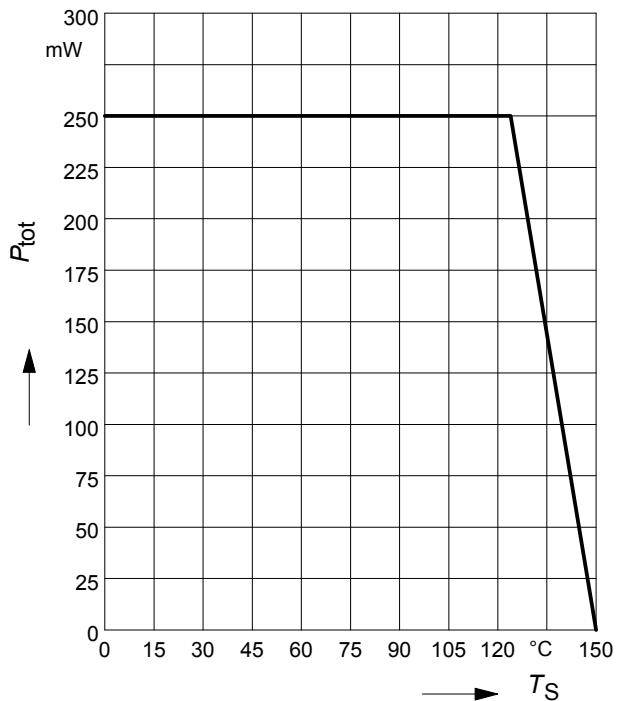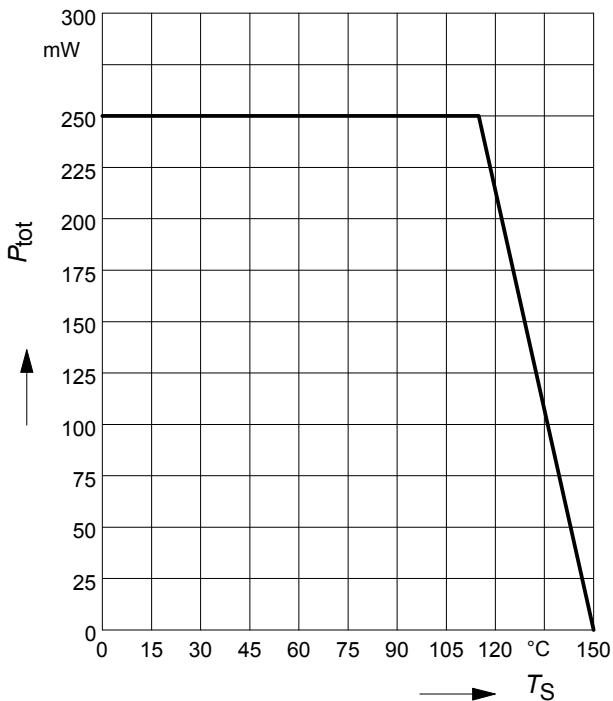
Permissible Pulse Load $R_{thJS} = f(t_p)$

BCR135

Permissible Pulse Load

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

BCR135

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

BCR135F

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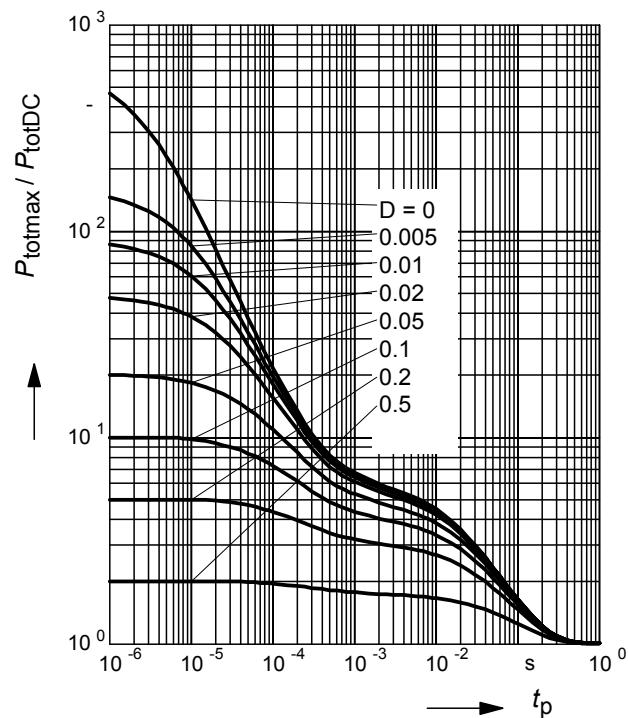
$P_{totmax}/P_{totDC} = f(t_p)$

BCR135F

2007-07-23
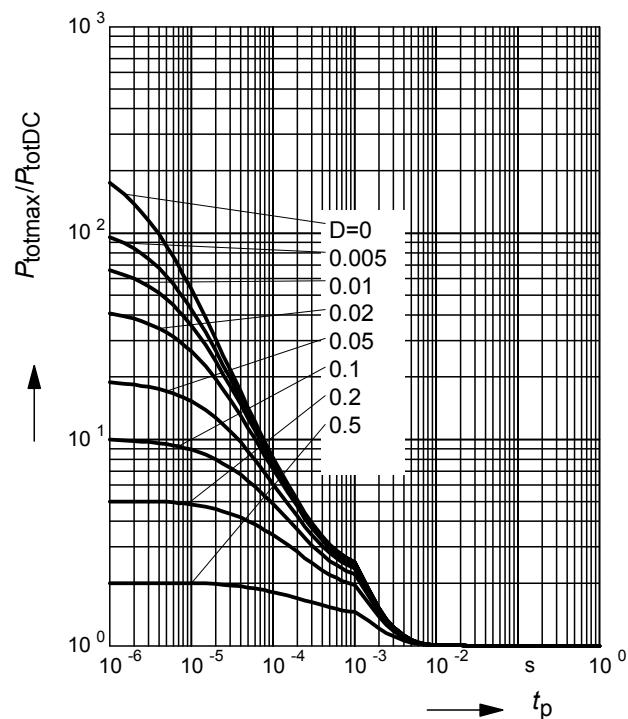
Permissible Puls Load $R_{\text{thJS}} = f(t_p)$

BCR135S

Permissible Pulse Load

$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$
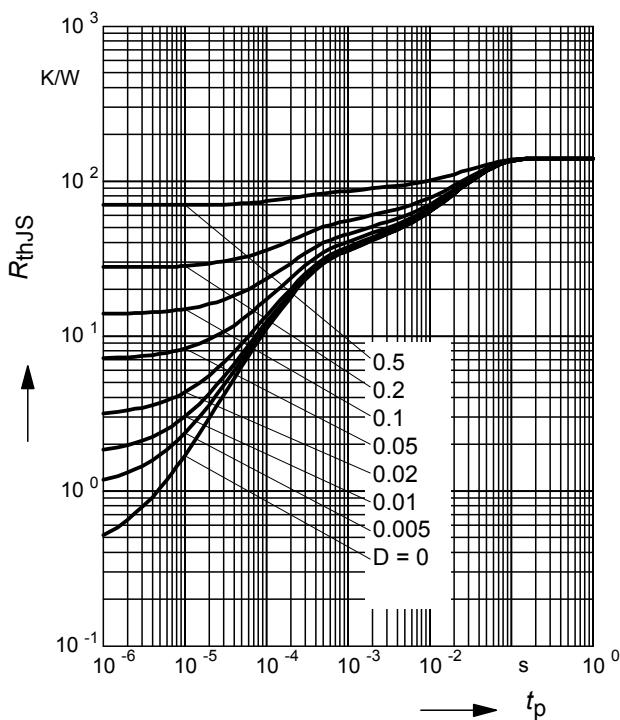
BCR135S

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

BCR135W

Permissible Pulse Load

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

BCR135W

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Package Outline

2.9 ±0.1   B

3

1

2

0.4 +0.1 1) -0.05

C

0.95

1.9

1 ±0.1

0.1 MAX.

0.15 MIN.

2.4 ±0.15

10° MAX.   10° MAX.

0.08...0.15

1.3 ±0.1

A

0...8°

⊕ 0.25 Ⓜ B C

≡ 0.2 Ⓜ A
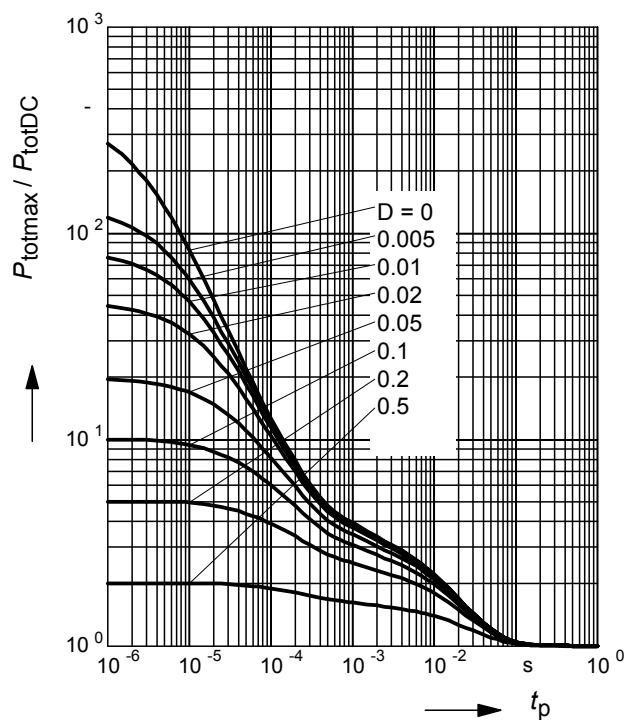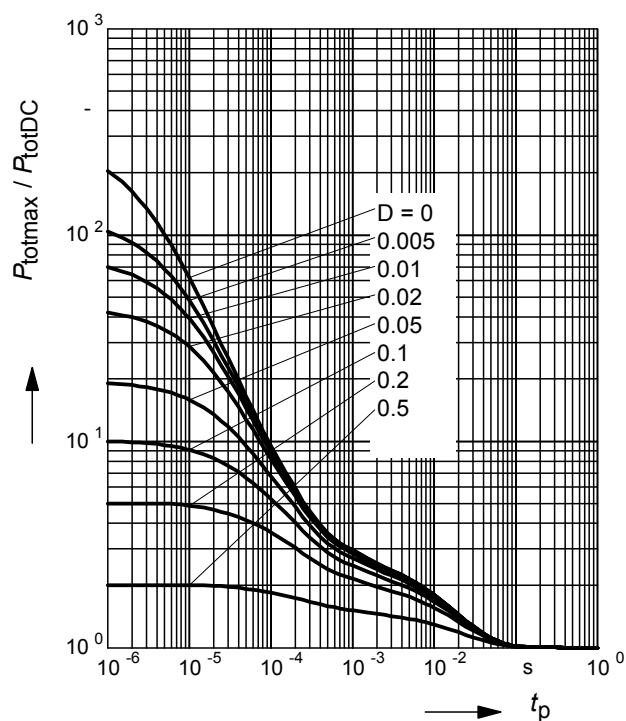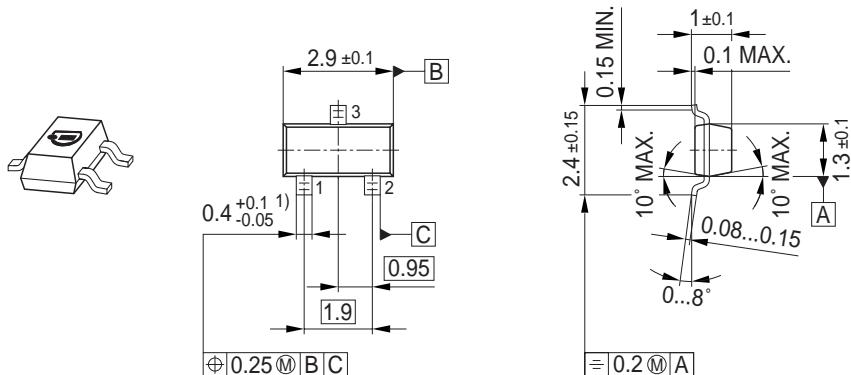
1) Lead width can be 0.6 max. in dambar area

Foot Print
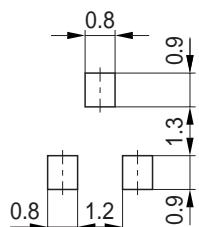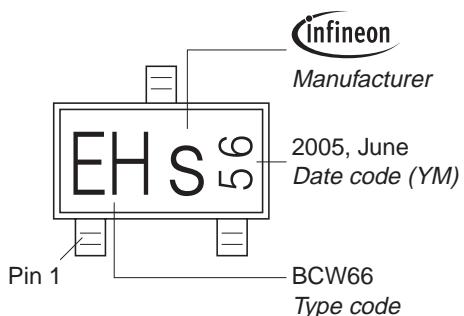
0.8

0.9

1.3

0.8   1.2

0.9

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)

BCR108W
Type code

Pin 1

WH s 56

Standard Packing

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

Pin 1

Package Outline

2 ±0.2

0.2 +0.1 -0.05

6x
⊕ 0.1 Ⓜ

6 5 4

Pin 1
marking

1 2 3

0.65 0.65

0.9 ±0.1

0.1 MAX.

◇ 0.1

A

2.1 ±0.1

0.1 MIN.

1.25 ±0.1

0.15 +0.1 -0.05

≡ 0.2 Ⓜ A

Foot Print

0.3

0.9 0.7

1.6

0.65

0.65
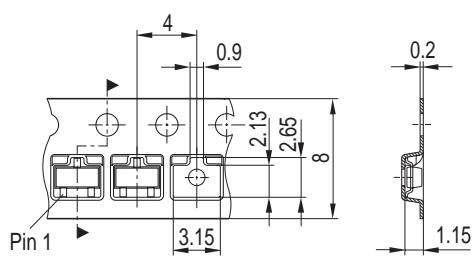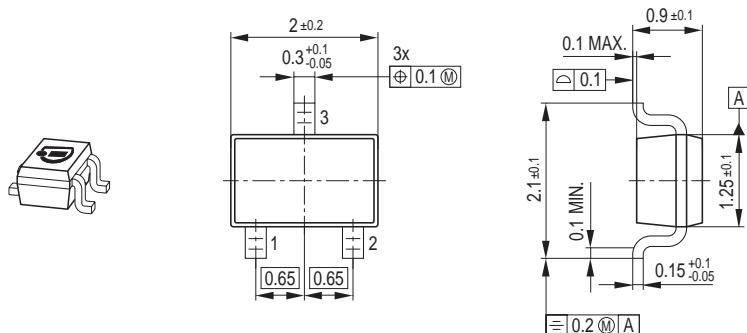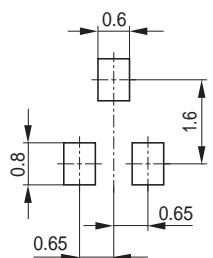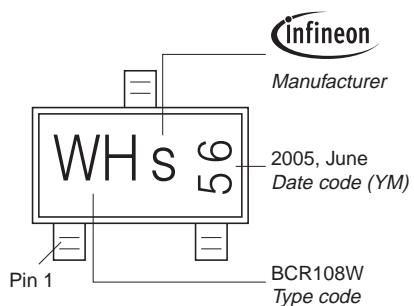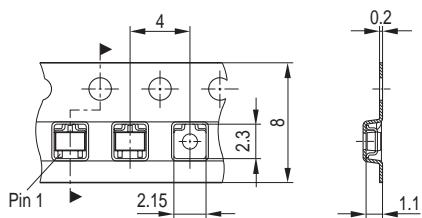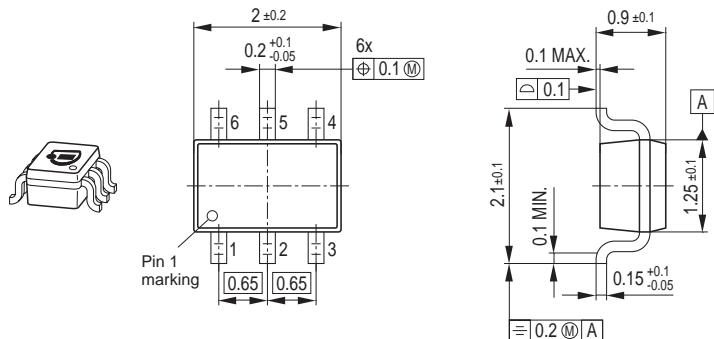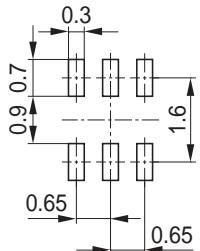
Marking Layout (Example)

Small variations in positioning of
Date code, Type code and Manufacture are possible.

Infineon
technologies

Manufacturer

WH s 5 6

2005, June
Date code (Year/Month)

Pin 1 marking
Laser marking

BCR108S
Type code
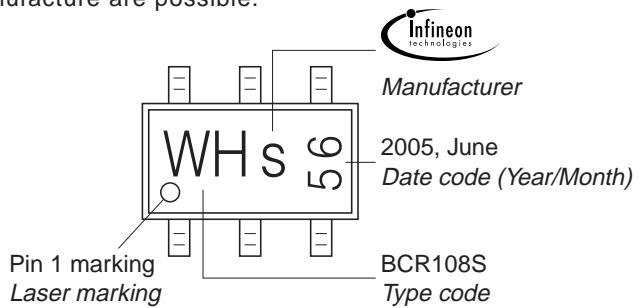
Standard Packing

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

For symmetric types no defined Pin 1 orientation in reel.
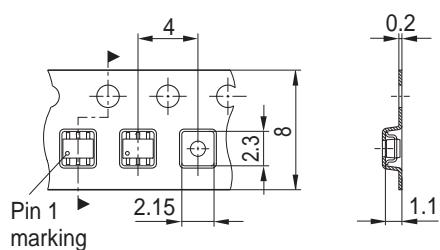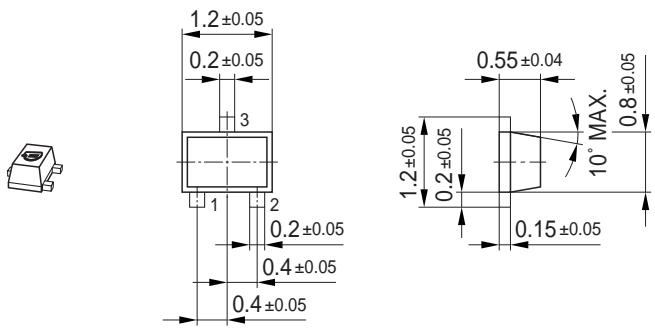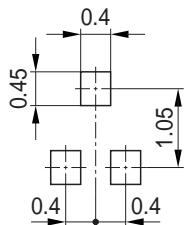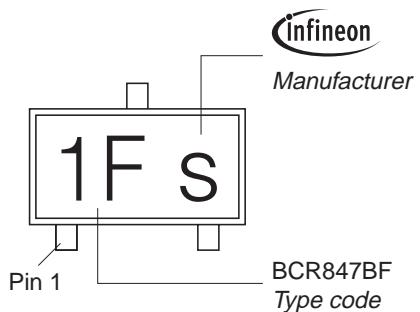
4

0.2

8

2.3

Pin 1
marking

2.15

1.1

2007-07-23

## Package Outline

Foot Print

Marking Layout (Example)

Infineon
Manufacturer

1F s

Pin 1   BCR847BF
                         Type code

Standard Packing

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

Pin 1   1.35
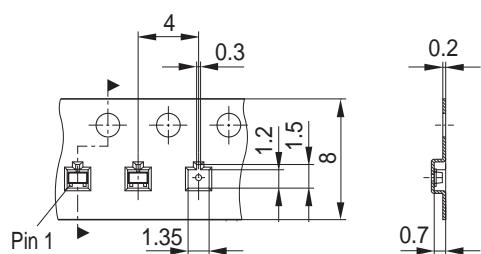
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