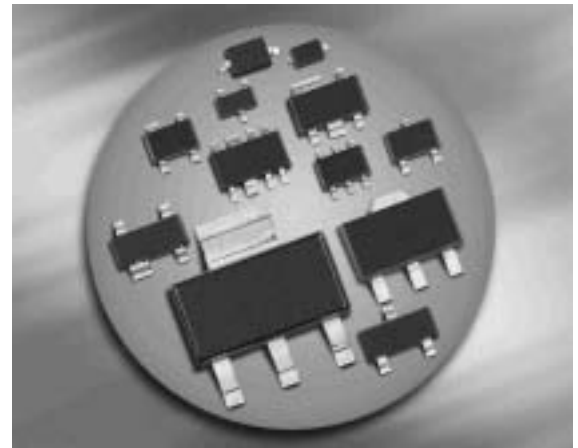
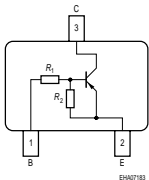


**PNP Silicon Digital Transistor**

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor ( $R_1 = 47k\Omega$ ,  $R_2 = 22k\Omega$ )
- Pb-free (RoHS compliant) package <sup>1)</sup>
- Qualified according AEC Q101


**BCR196/F**  
**BCR196W**


Type	Marking	Pin Configuration						Package
		1=B	2=E	3=C	-	-	-	
BCR196	WXs	1=B	2=E	3=C	-	-	-	SOT23
BCR196F	WXs	1=B	2=E	3=C	-	-	-	TSFP-3
BCR196W	WXs	1=B	2=E	3=C	-	-	-	SOT323

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

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Collector-emitter voltage	$V_{CEO}$	50	V
Collector-base voltage	$V_{CBO}$	50	
Input forward voltage	$V_{i(fwd)}$	80	
Input reverse voltage	$V_{i(rev)}$	10	
Collector current	$I_C$	70	mA
Total power dissipation-	$P_{tot}$		mW
BCR196, $T_S \leq 102^\circ\text{C}$		200	
BCR196F, $T_S \leq 128^\circ\text{C}$		250	
BCR196W, $T_S \leq 124^\circ\text{C}$		250	
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	150 ... -65	

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup>	$R_{thJS}$		K/W
BCR196		$\leq 240$	
BCR196F		$\leq 90$	
BCR196W		$\leq 105$	

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

**DC Characteristics**

Collector-emitter breakdown voltage $I_C = 100 \mu\text{A}, I_B = 0$	$V_{(BR)CEO}$	50	-	-	V
Collector-base breakdown voltage $I_C = 10 \mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	50	-	-	
Collector-base cutoff current $V_{CB} = 40 \text{ V}, I_E = 0$	$I_{CBO}$	-	-	100	nA
Emitter-base cutoff current $V_{EB} = 10 \text{ V}, I_C = 0$	$I_{EBO}$	-	-	220	$\mu\text{A}$
DC current gain <sup>2)</sup> $I_C = 5 \text{ mA}, V_{CE} = 5 \text{ V}$	$h_{FE}$	50	-	-	-
Collector-emitter saturation voltage <sup>2)</sup> $I_C = 10 \text{ mA}, I_B = 0,5 \text{ mA}$	$V_{CEsat}$	-	-	0.3	V
Input off voltage $I_C = 100 \mu\text{A}, V_{CE} = 5 \text{ V}$	$V_{i(off)}$	1.2	-	2.6	
Input on voltage $I_C = 2 \text{ mA}, V_{CE} = 0,3 \text{ V}$	$V_{i(on)}$	1.5	-	4	
Input resistor	$R_1$	32	47	62	k $\Omega$
Resistor ratio	$R_1/R_2$	1.92	2.14	2.36	-

**AC Characteristics**

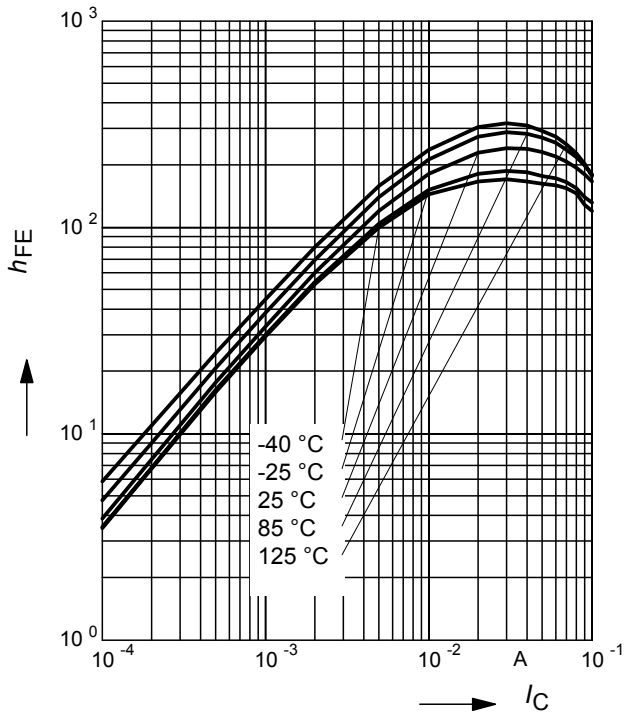
Transition frequency $I_C = 10 \text{ mA}, V_{CE} = 5 \text{ V}, f = 100 \text{ MHz}$	$f_T$	-	150	-	MHz
Collector-base capacitance $V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$	$C_{cb}$	-	3	-	pF

<sup>1</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

<sup>2</sup>Pulse test:  $t < 300 \mu\text{s}; D < 2\%$

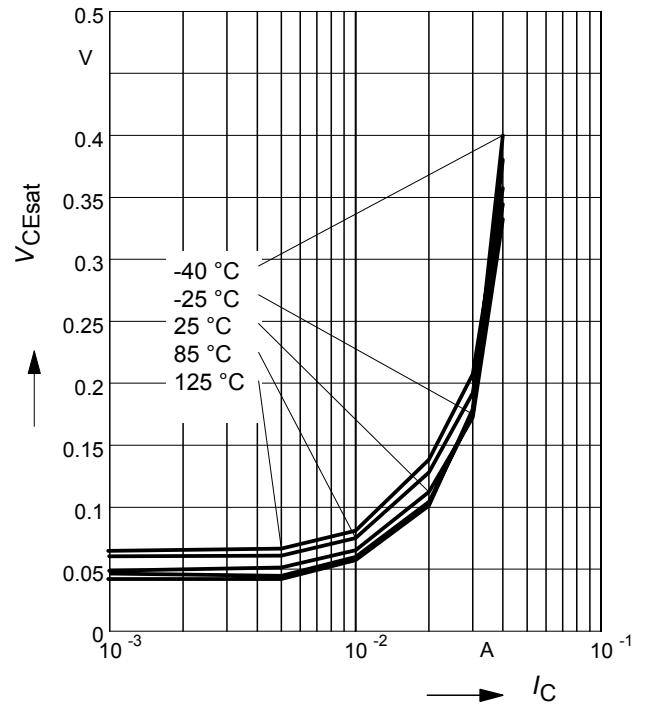
**DC current gain  $h_{FE} = f(I_C)$**

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



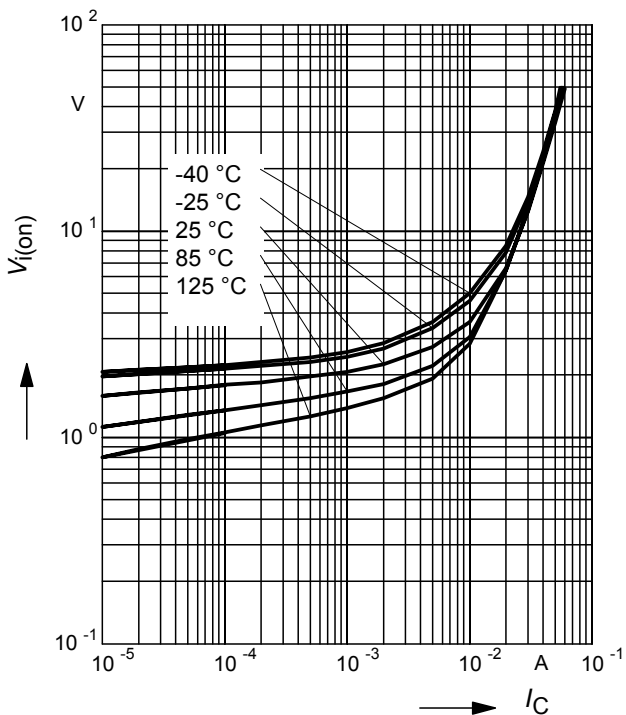
**Collector-emitter saturation voltage**

$V_{CEsat} = f(I_C), I_C/I_B = 20$



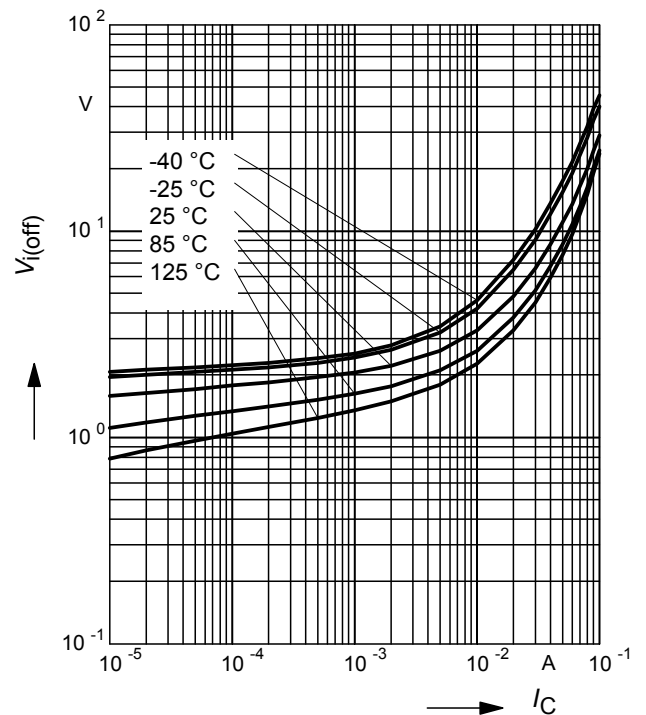
**Input on Voltage  $V_{i(on)} = f(I_C)$**

$V_{CE} = 0.3\text{V}$  (common emitter configuration)



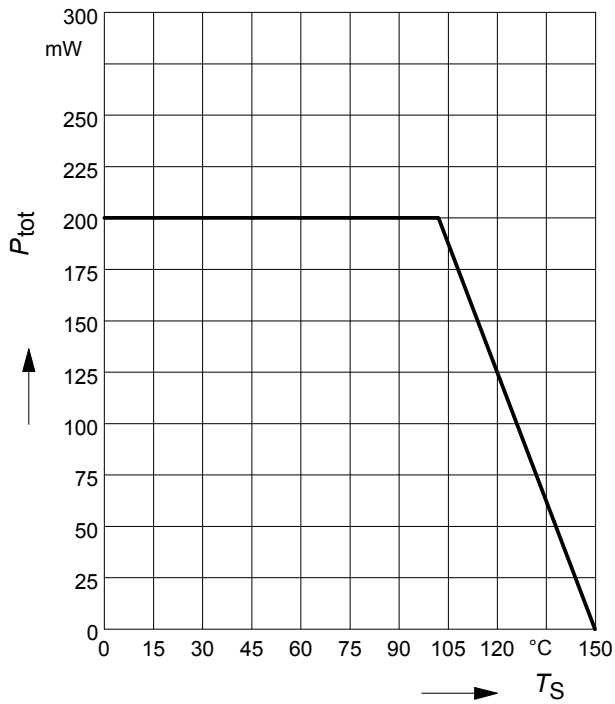
**Input off voltage  $V_{i(off)} = f(I_C)$**

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



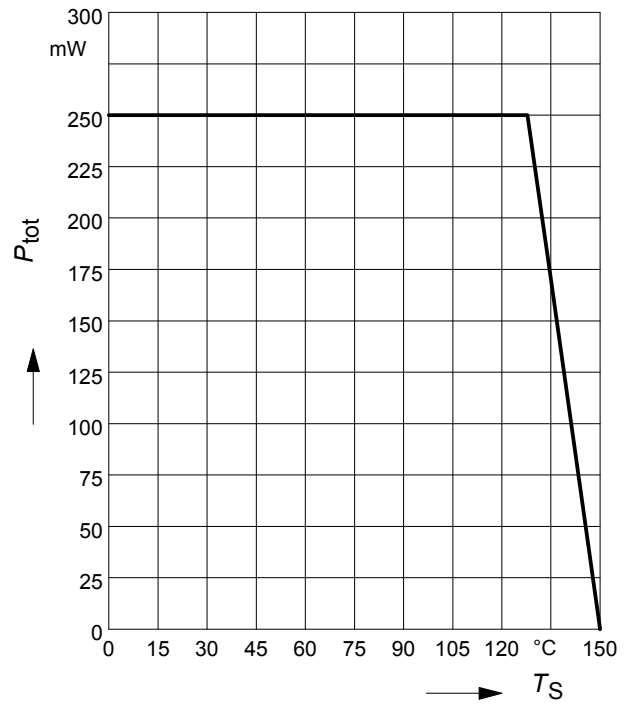
**Total power dissipation  $P_{tot} = f(T_S)$**

BCR196



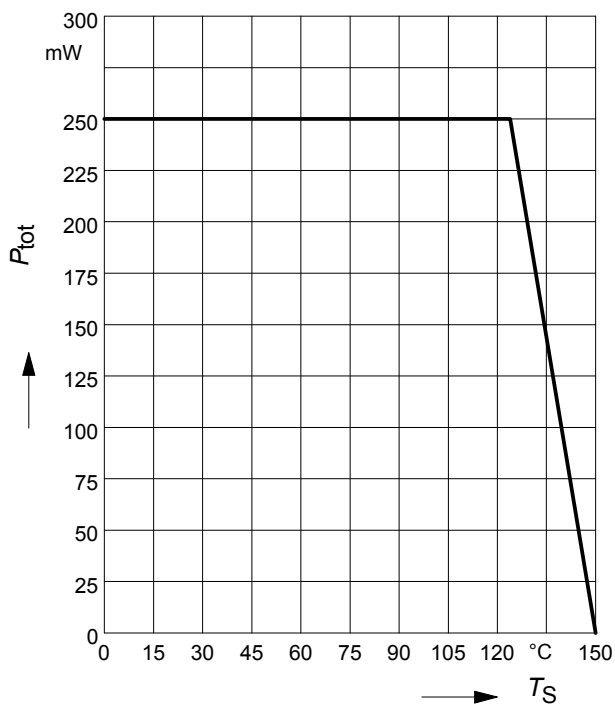
**Total power dissipation  $P_{tot} = f(T_S)$**

BCR196F



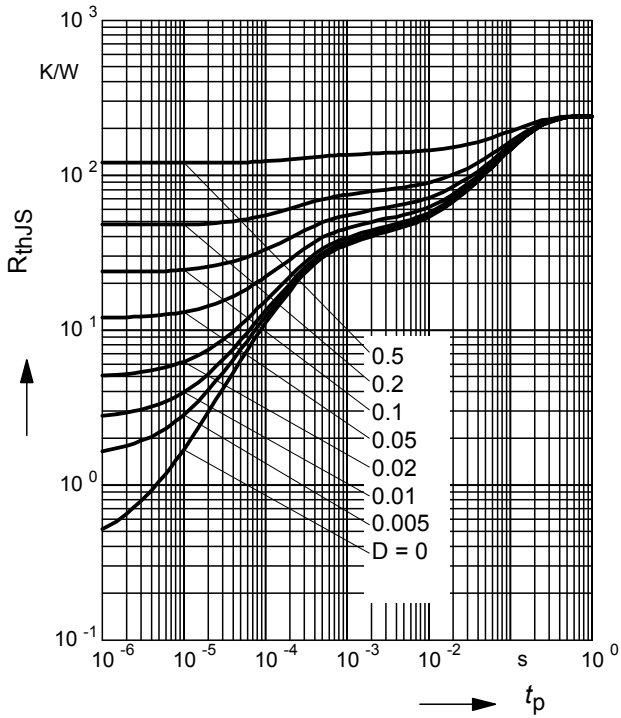
**Total power dissipation  $P_{tot} = f(T_S)$**

BCR196W



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

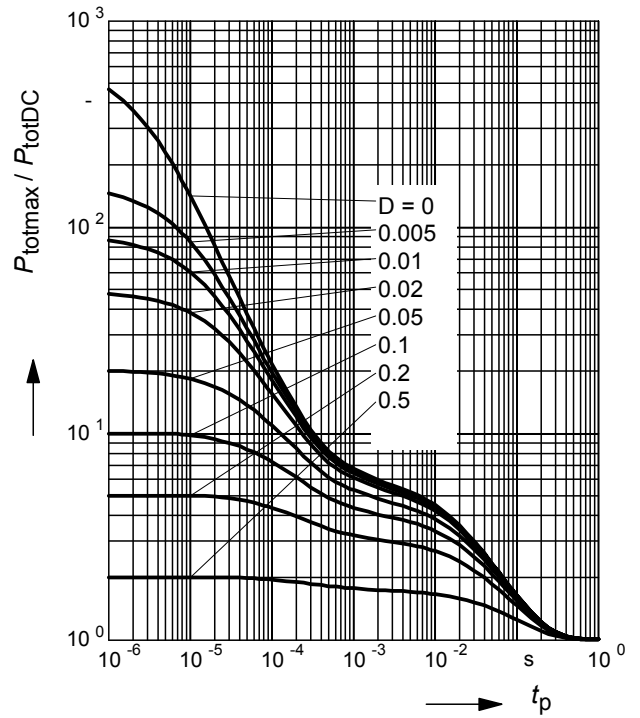
BCR196



**Permissible Pulse Load**

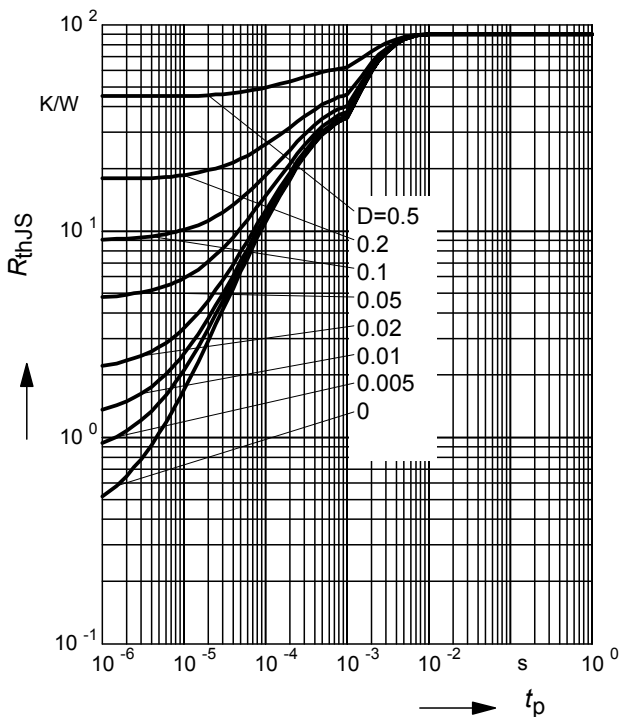
$P_{totmax}/P_{totDC} = f(t_p)$

BCR196



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

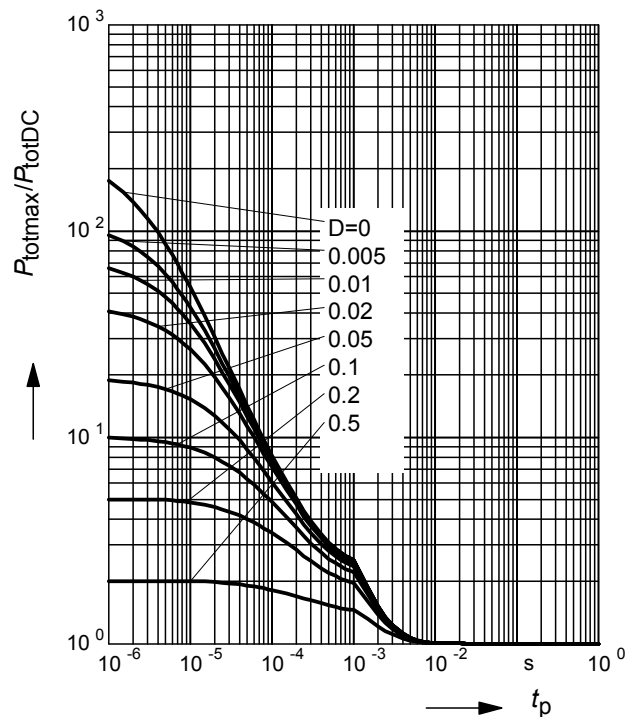
BCR196F



**Permissible Pulse Load**

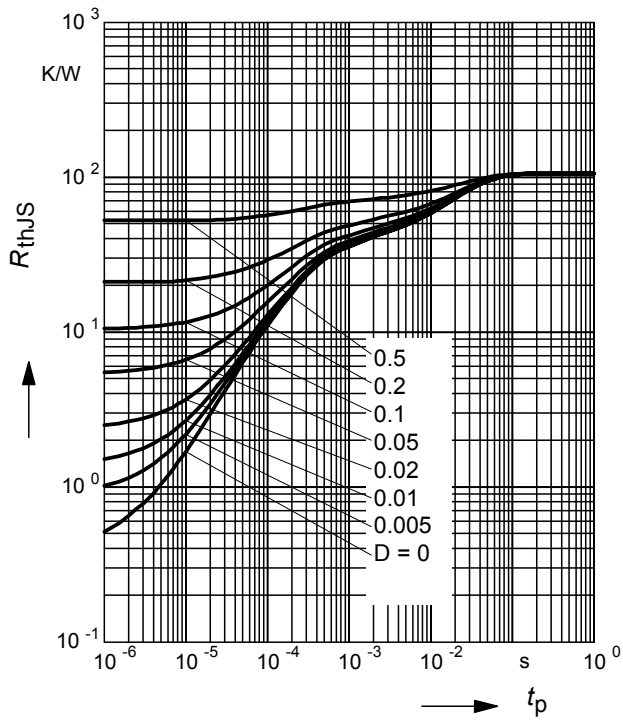
$P_{totmax}/P_{totDC} = f(t_p)$

BCR196F



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

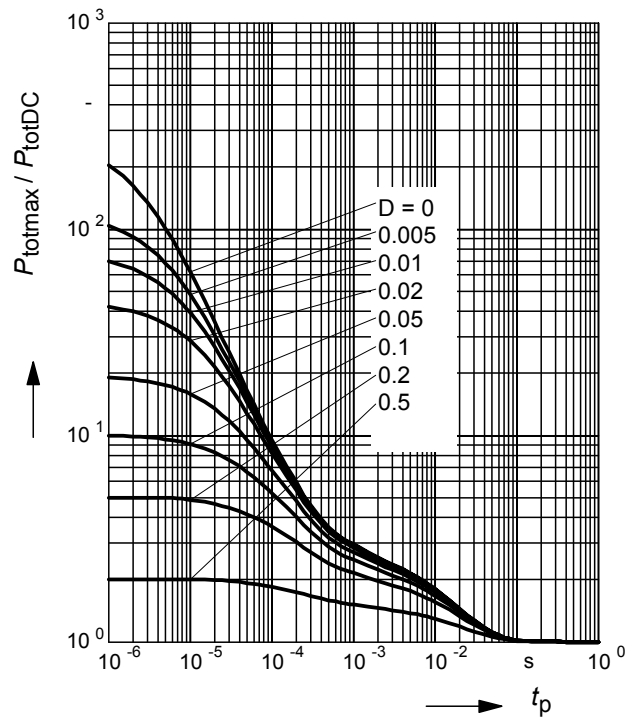
BCR196W



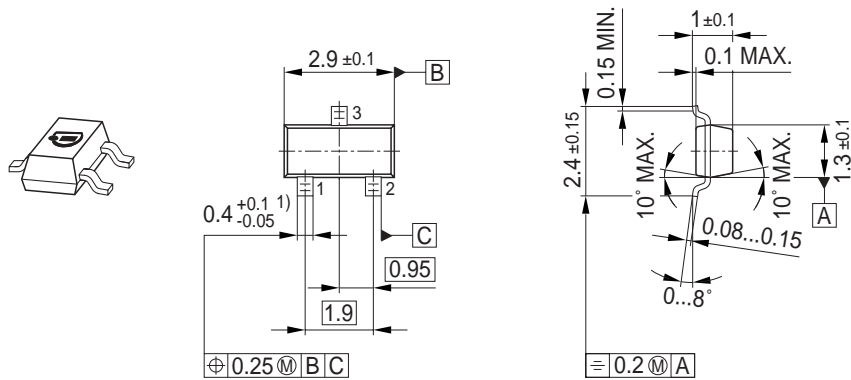
**Permissible Pulse Load**

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

BCR196W

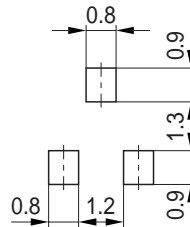


Package Outline

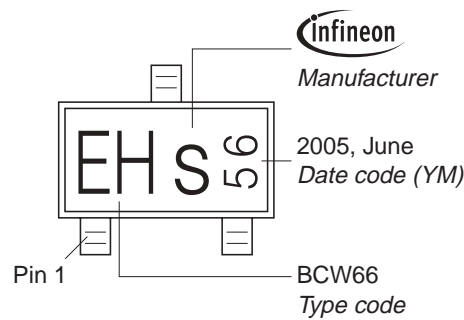


1) Lead width can be 0.6 max. in dambar area

Foot Print

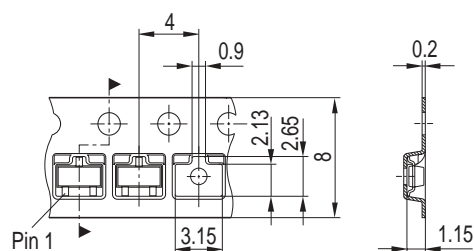


Marking Layout (Example)

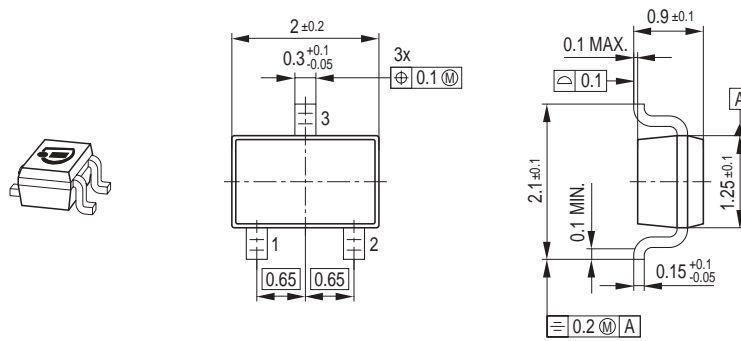


Standard Packing

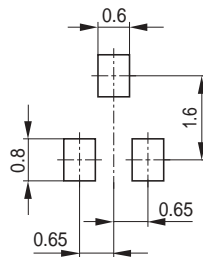
Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



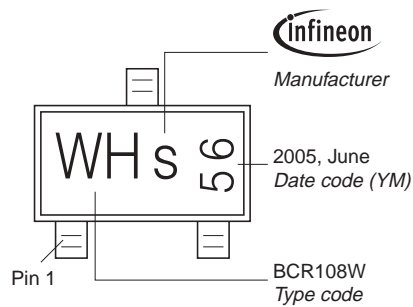
Package Outline



Foot Print

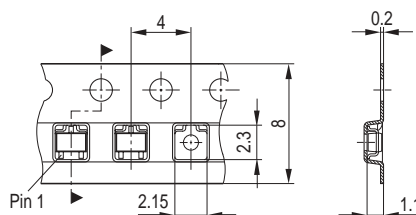


Marking Layout (Example)



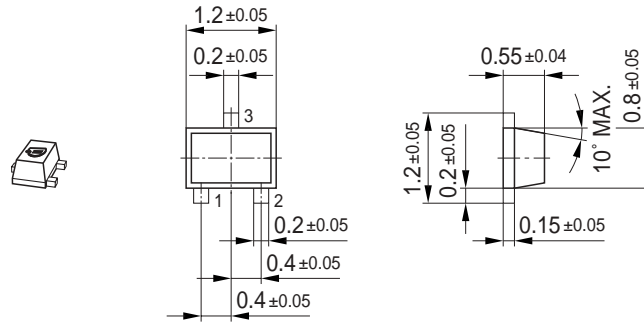
Standard Packing

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

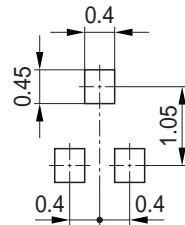




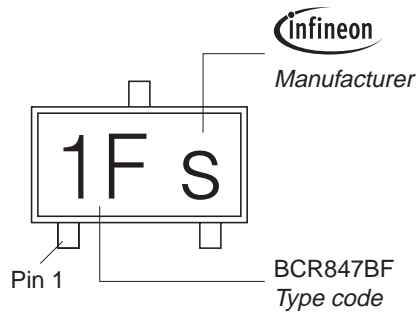
Package Outline



Foot Print

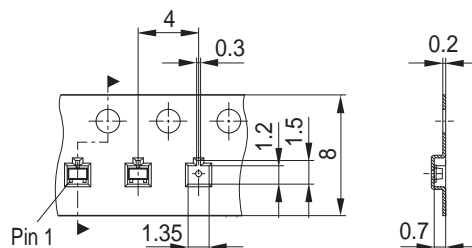


Marking Layout (Example)



Standard Packing

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



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