

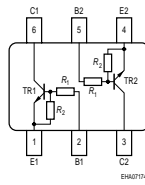
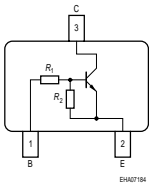
**NPN Silicon Digital Transistor**

- Switching circuit, inverter, interface circuit driver circuit
- Built in bias resistor ( $R_1=47\text{ k}\Omega$ ,  $R_2=47\text{ k}\Omega$ )
- BCR148S / U: Two internally isolated transistors with good matching in one multichip package
- BCR148S / U: For orientation in reel see package information below



**BCR148/F/L3  
BCR148T/W**

**BCR148S/U**



Type	Marking	Pin Configuration						Package
BCR148	WEs	1=B	2=E	3=C	-	-	-	SOT23
BCR148F	WEs	1=B	2=E	3=C	-	-	-	TSFP-3
BCR148L3	WE	1=B	2=E	3=C	-	-	-	TSLP-3-4
BCR148S	WEs	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SOT363
BCR148T	WE	1=B	2=E	3=C	-	-	-	SC75
BCR148U	WEs	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SC74
BCR148W	WEs	1=B	2=E	3=C	-	-	-	SOT323

**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- BCR148, $T_S \leq 102^\circ\text{C}$ BCR148F, $T_S \leq 128^\circ\text{C}$ BCR148L3, $T_S \leq 135^\circ\text{C}$ BCR148S, $T_S \leq 115^\circ\text{C}$ BCR148T, $T_S \leq 109^\circ\text{C}$ BCR148U, $T_S \leq 118^\circ\text{C}$ BCR148W, $T_S \leq 124^\circ\text{C}$	$P_{tot}$	200 250 250 250 250 250 250	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-65 ... 150	

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup>	$R_{thJS}$		K/W
BCR148		$\leq 240$	
BCR148F		$\leq 90$	
BCR148L3		$\leq 60$	
BCR148S		$\leq 140$	
BCR148T		$\leq 165$	
BCR148U		$\leq 133$	
BCR148W		$\leq 105$	

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

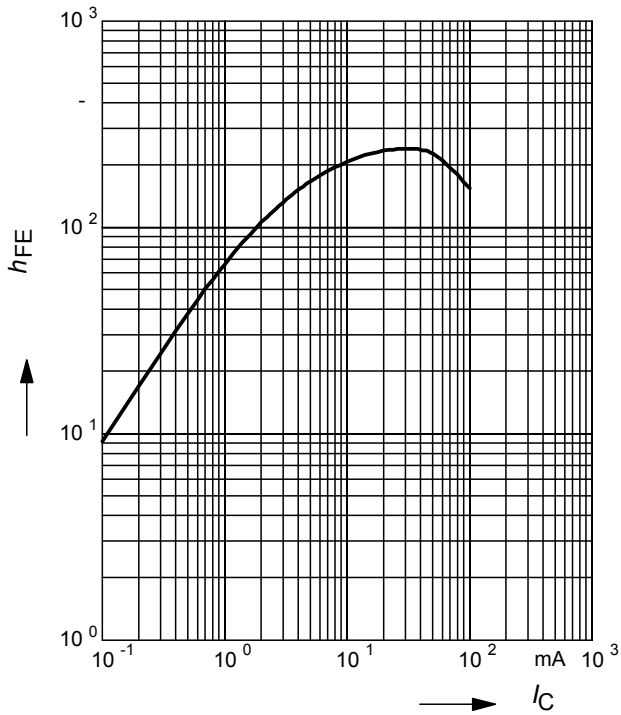
**Electrical Characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
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 $V_{EB} = 10 \text{ V}, I_C = 0$	$I_{EBO}$	-	-	164	$\mu\text{A}$
DC current gain <sup>1)</sup> $I_C = 5 \text{ mA}, V_{CE} = 5 \text{ V}$	$h_{FE}$	70	-	-	-
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$	$V_{CEsat}$	-	-	0.3	V
Input off voltage $I_C = 100 \mu\text{A}, V_{CE} = 5 \text{ V}$	$V_{i(off)}$	0.8	-	1.5	
Input on voltage $I_C = 2 \text{ mA}, V_{CE} = 0.3 \text{ V}$	$V_{i(on)}$	1	-	3	
Input resistor	$R_1$	32	47	62	$\text{k}\Omega$
Resistor ratio	$R_1/R_2$	0.9	1	1.1	-
<b>AC Characteristics</b>					
Transition frequency $I_C = 10 \text{ mA}, V_{CE} = 5 \text{ V}, f = 100 \text{ MHz}$	$f_T$	-	100	-	MHz
Collector-base capacitance $V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$	$C_{cb}$	-	3	-	pF

<sup>1</sup>Pulse test:  $t < 300 \mu\text{s}$ ;  $D < 2\%$

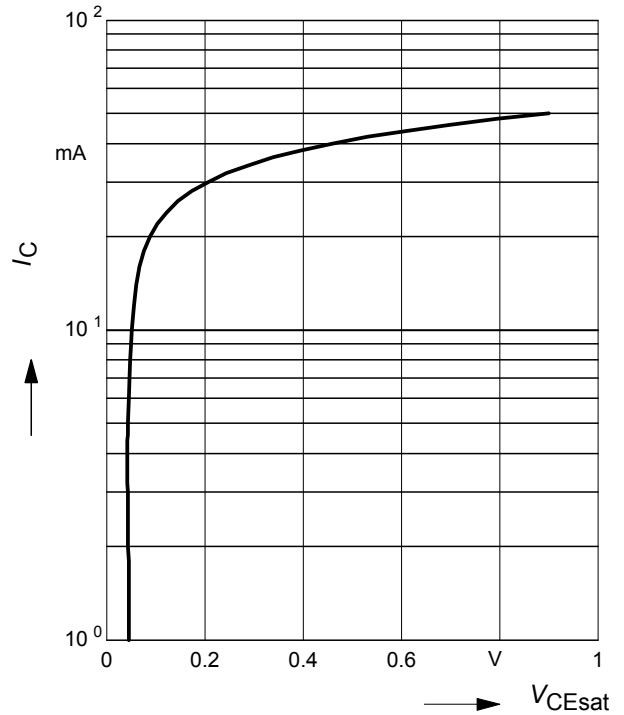
**DC current gain  $h_{FE} = f(I_C)$**

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



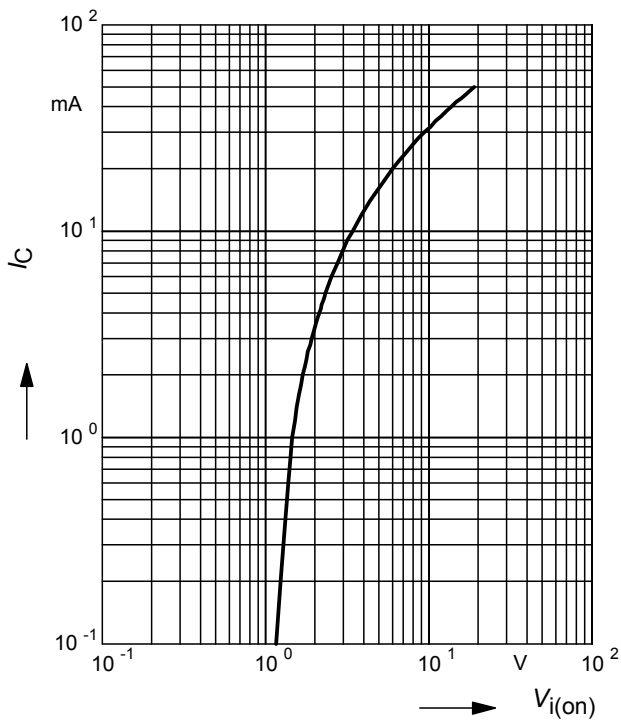
**Collector-emitter saturation voltage**

$V_{CEsat} = f(I_C), h_{FE} = 20$



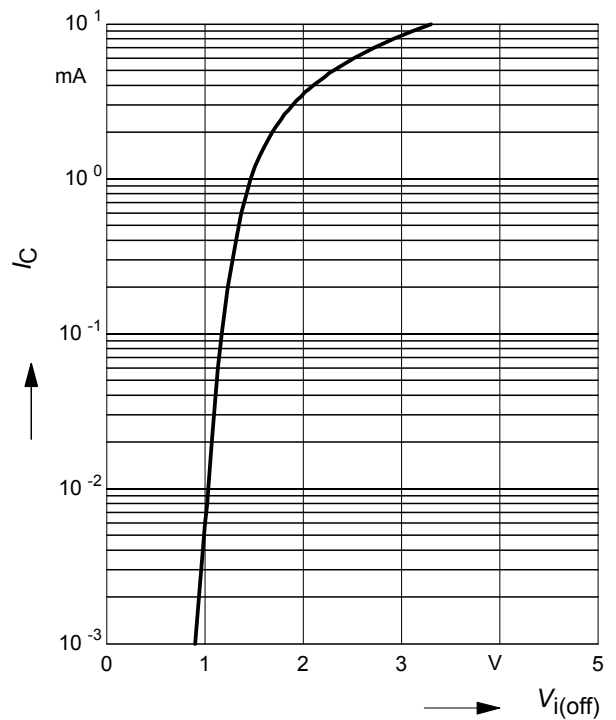
**Input on Voltage  $V_{i(on)} = f(I_C)$**

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



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

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



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

BCR148



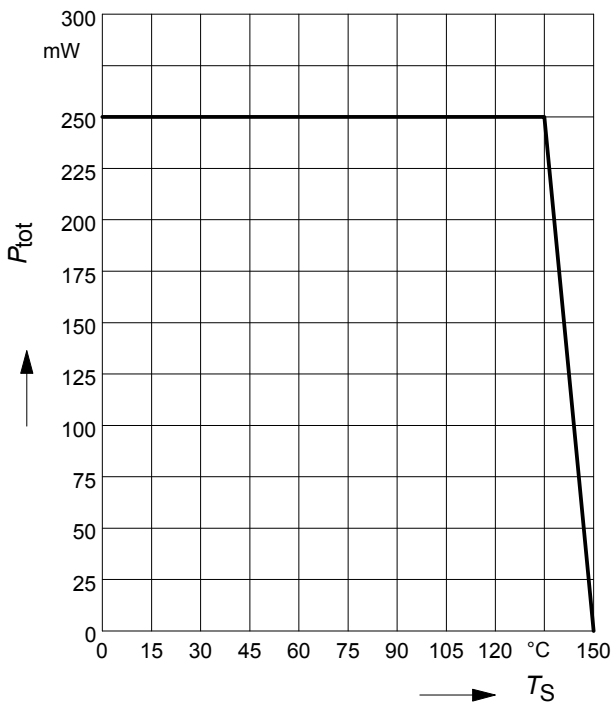
Total power dissipation  $P_{tot} = f(T_S)$

BCR148F



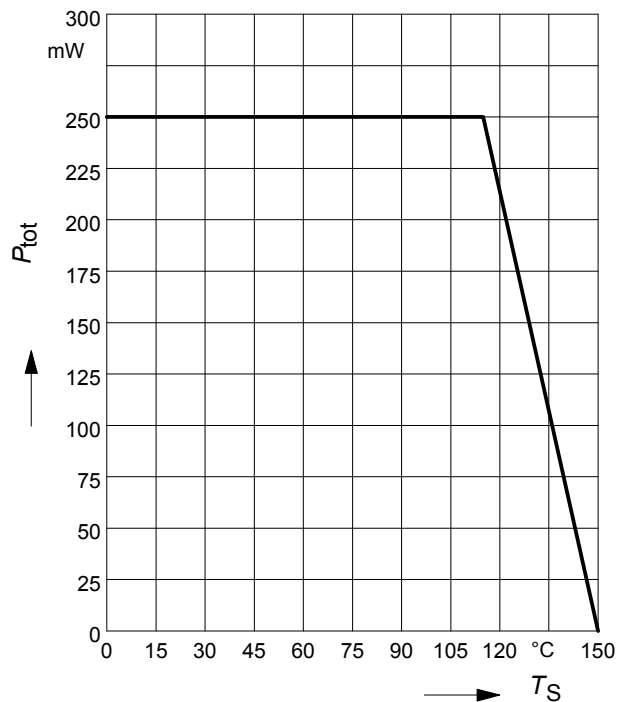
Total power dissipation  $P_{tot} = f(T_S)$

BCR148L3



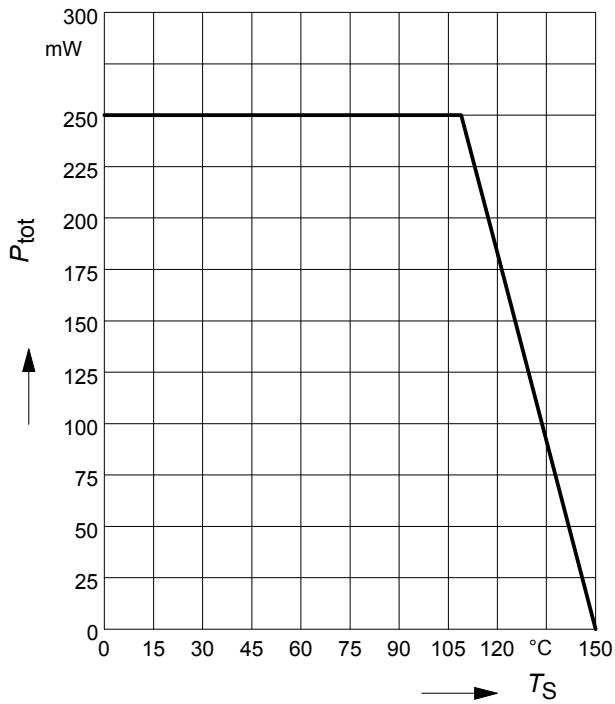
Total power dissipation  $P_{tot} = f(T_S)$

BCR148S



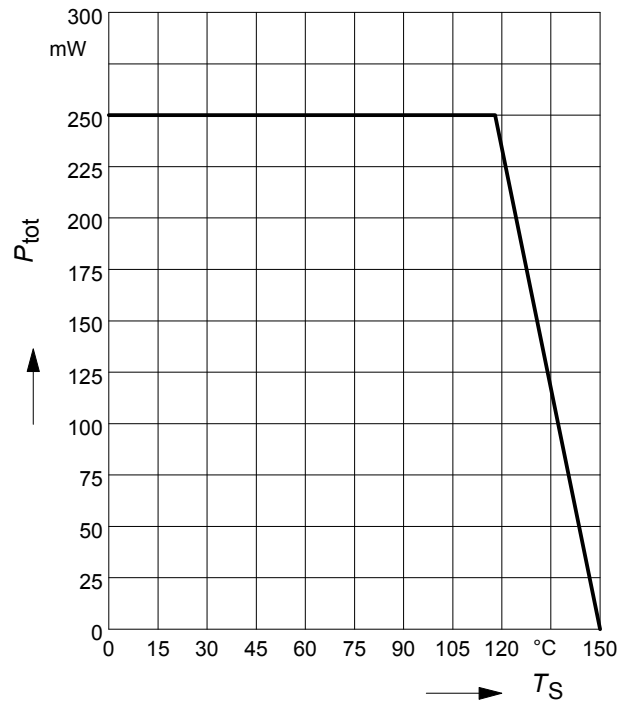
Total power dissipation  $P_{\text{tot}} = f(T_S)$

BCR148T



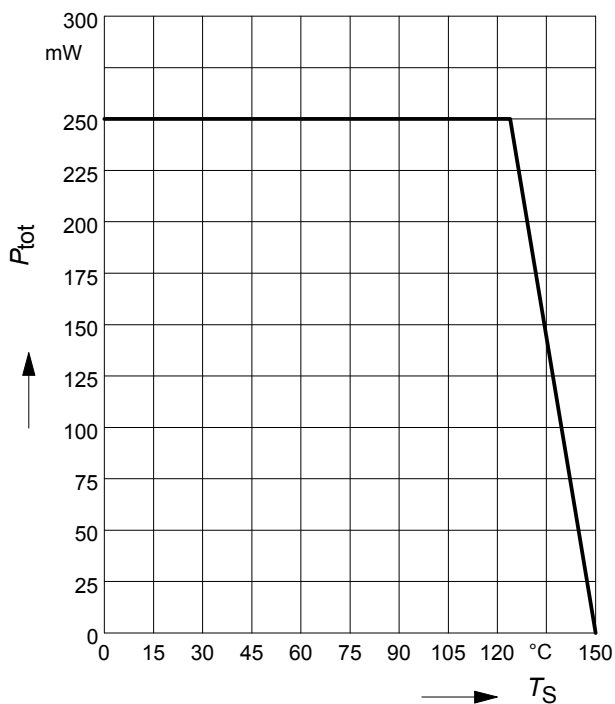
Total power dissipation  $P_{\text{tot}} = f(T_S)$

BCR148U



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

BCR148W



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

BCR148



**Permissible Pulse Load**

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

BCR148



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

BCR148F



**Permissible Pulse Load**

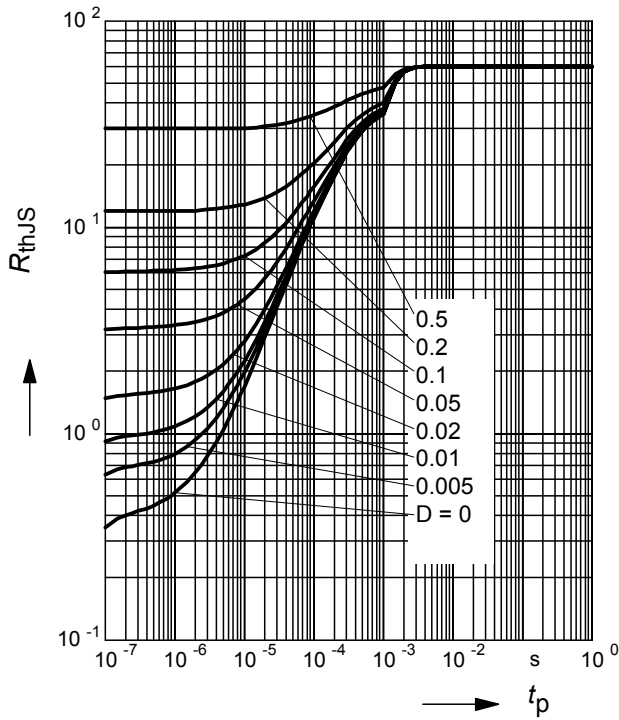
$P_{totmax}/P_{totDC} = f(t_p)$

BCR148F



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

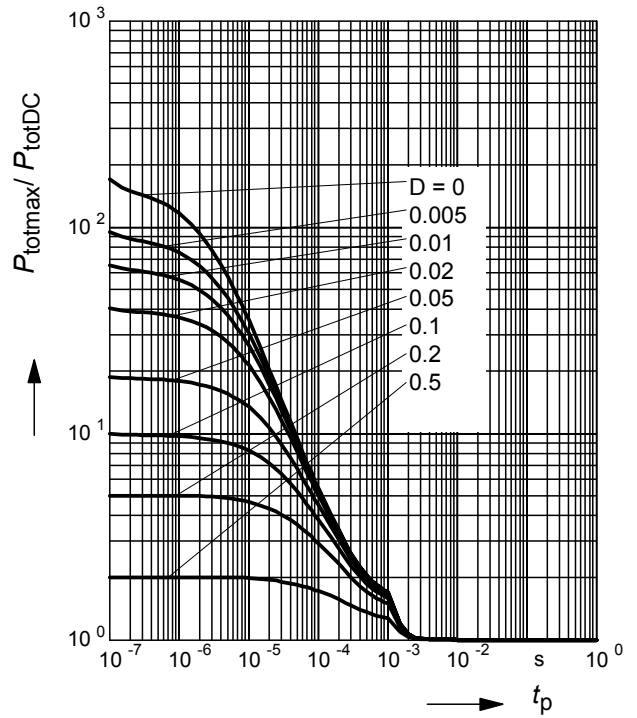
BCR148L3



**Permissible Pulse Load**

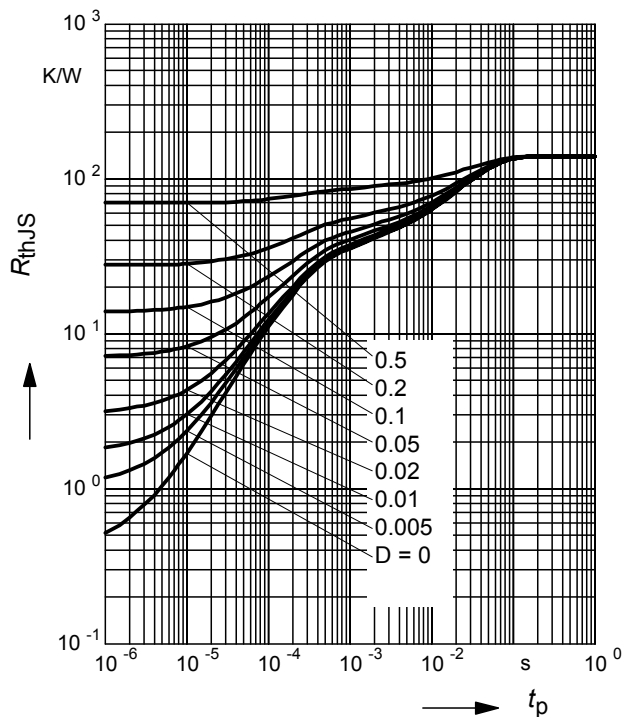
$P_{totmax}/P_{totDC} = f(t_p)$

BCR148L3



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

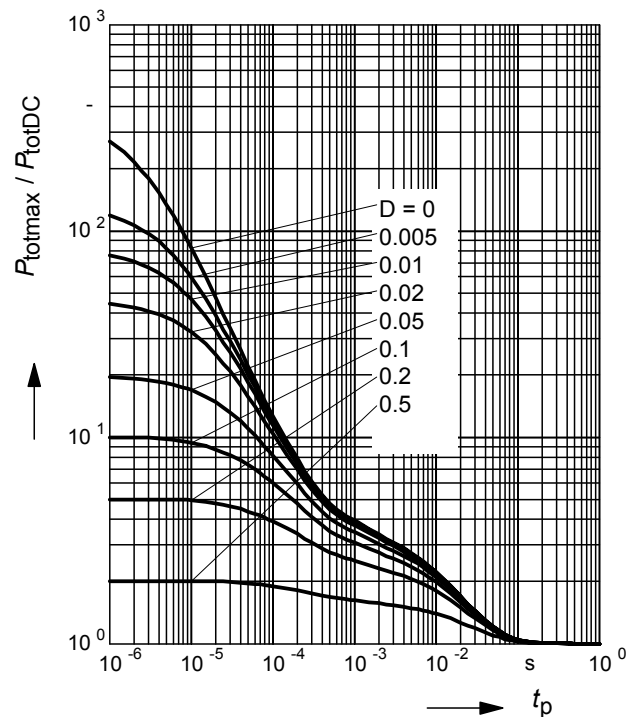
BCR148S



**Permissible Pulse Load**

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

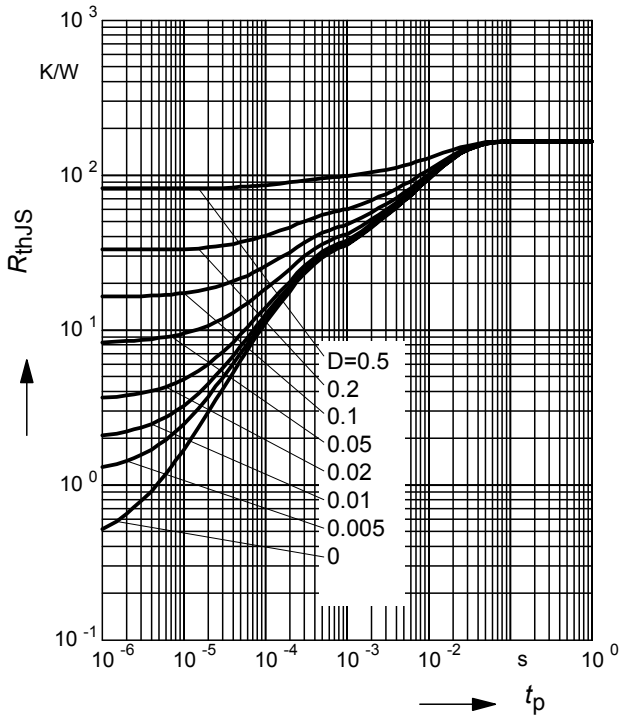
BCR148S





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

BCR148T



**Permissible Pulse Load**

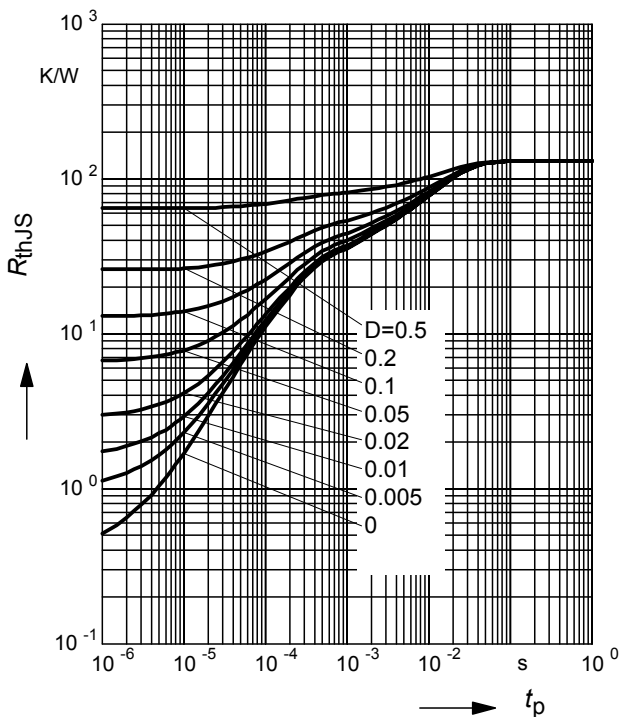
$P_{totmax}/P_{totDC} = f(t_p)$

BCR148T



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

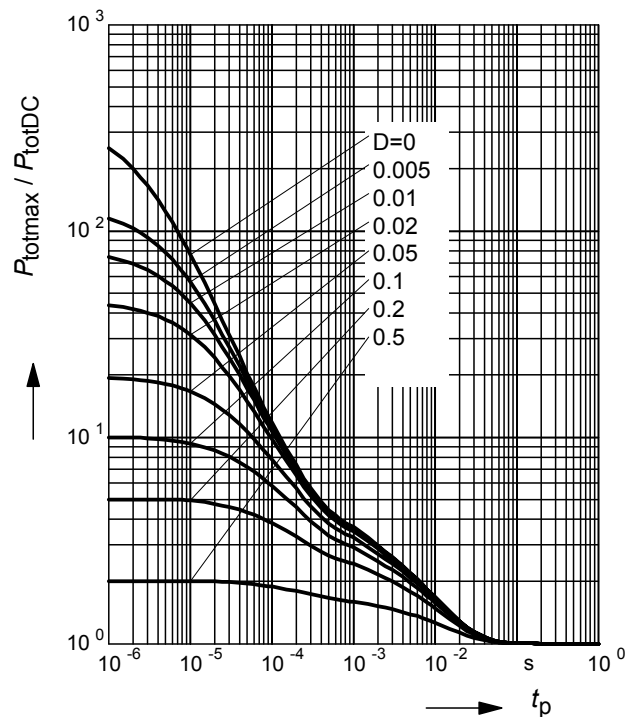
BCR148U



**Permissible Pulse Load**

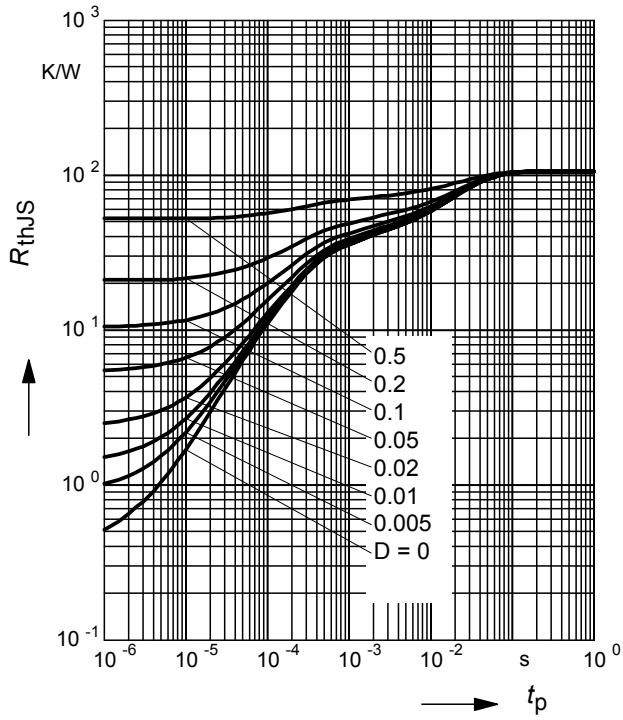
$P_{totmax}/P_{totDC} = f(t_p)$

BCR148U



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

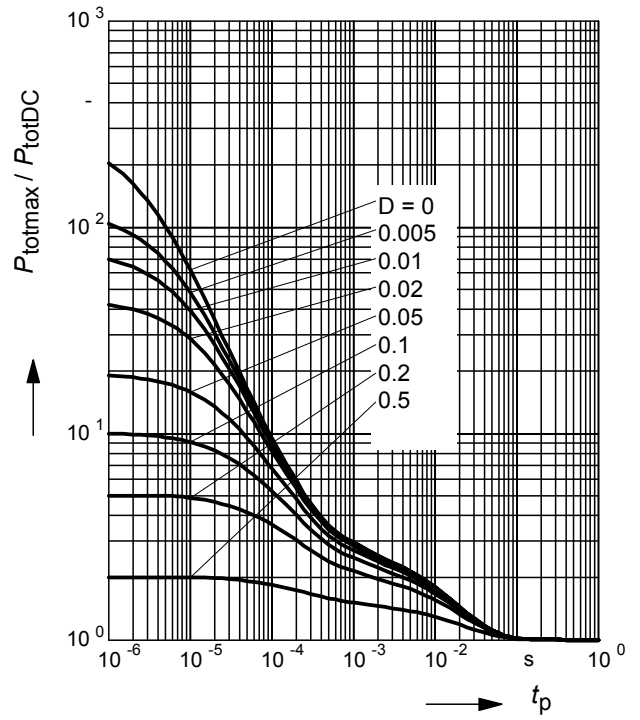
BCR148W



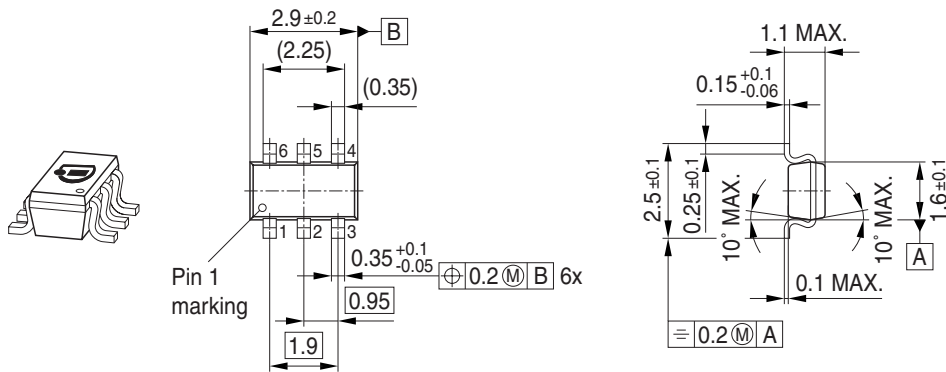
**Permissible Pulse Load**

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

BCR148W



Package Outline



Foot Print



Marking Layout (Example)

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



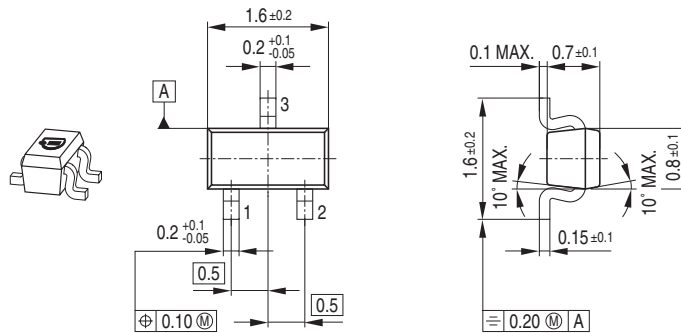
Standard Packing

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

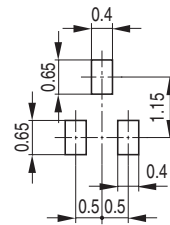
For symmetric types no defined Pin 1 orientation in reel.



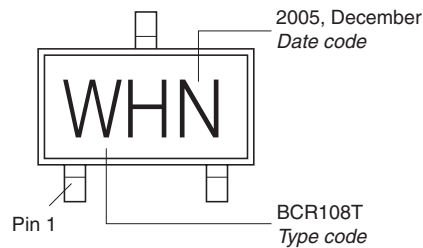
Package Outline



Foot Print

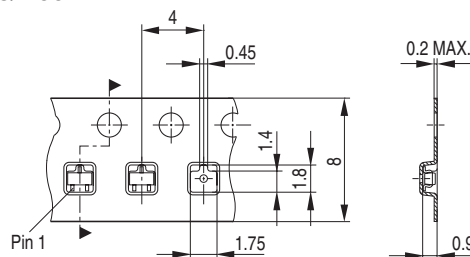


Marking Layout (Example)



Standard Packing

Reel  $\phi 180 \text{ mm} = 3.000 \text{ Pieces/Reel}$   
 Reel  $\phi 330 \text{ mm} = 10.000 \text{ Pieces/Reel}$

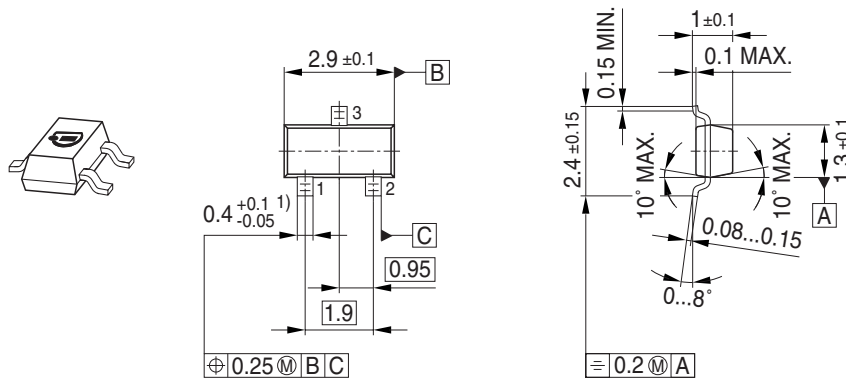


Date Code marking for discrete packages with one digit (SCD80, SC79, SC75<sup>1)</sup>) CES-Code

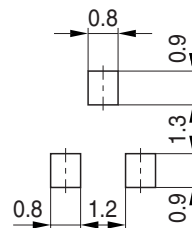
Month	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
01	a	p	A	P	a	p	A	P	a	p	A	P
02	b	q	B	Q	b	q	B	Q	b	q	B	Q
03	c	r	C	R	c	r	C	R	c	r	C	R
04	d	s	D	S	d	s	D	S	d	s	D	S
05	e	t	E	T	e	t	E	T	e	t	E	T
06	f	u	F	U	f	u	F	U	f	u	F	U
07	g	v	G	V	g	v	G	V	g	v	G	V
08	h	x	H	X	h	x	H	X	h	x	H	X
09	j	y	J	Y	j	y	J	Y	j	y	J	Y
10	k	z	K	Z	k	z	K	Z	k	z	K	Z
11	l	2	L	4	l	2	L	4	l	2	L	4
12	n	3	N	5	n	3	N	5	n	3	N	5

1) New Marking Layout for SC75, implemented at October 2005.

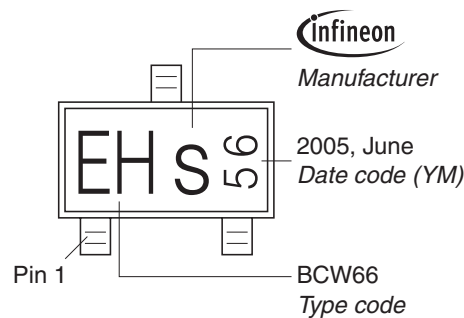
Package Outline



Foot Print

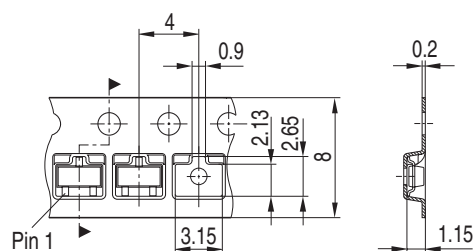


Marking Layout (Example)

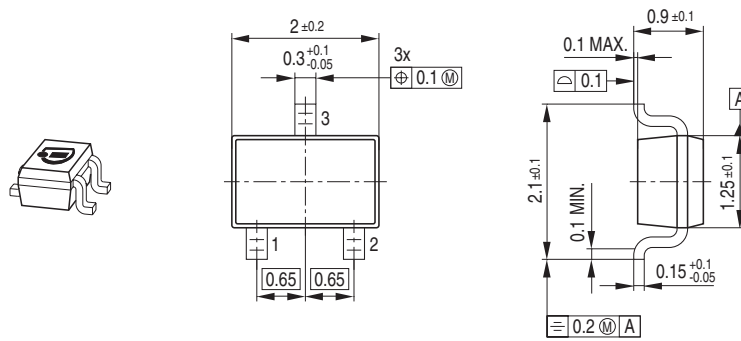


Standard Packing

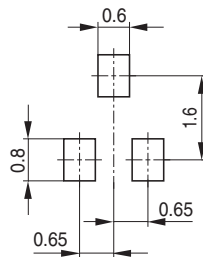
Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



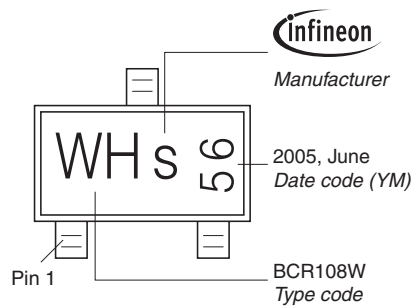
Package Outline



Foot Print

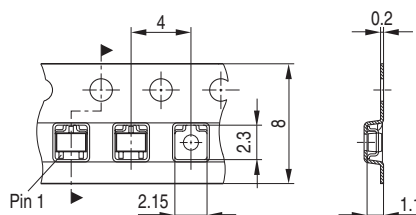


Marking Layout (Example)

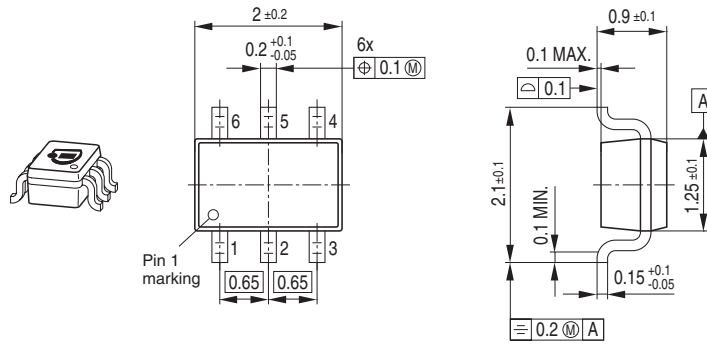


Standard Packing

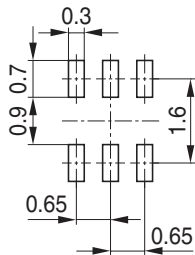
Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



Package Outline

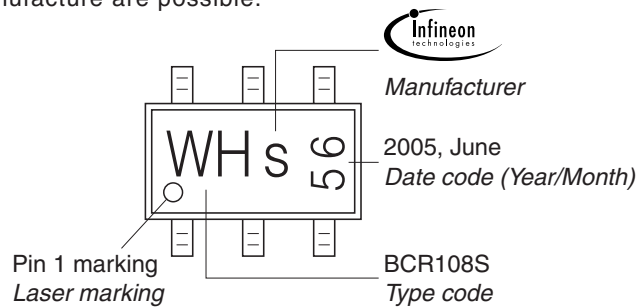


Foot Print



Marking Layout (Example)

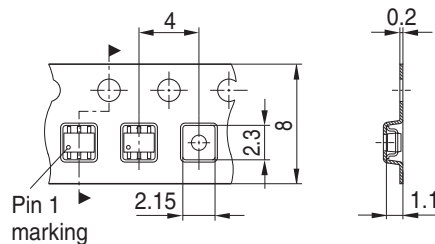
Small variations in positioning of Date code, Type code and Manufacture are possible.



Standard Packing

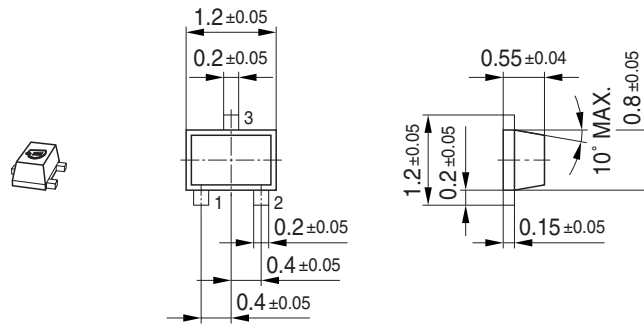
Reel ø180 mm = 3.000 Pieces/Reel  
 Reel ø330 mm = 10.000 Pieces/Reel

For symmetric types no defined Pin 1 orientation in reel.

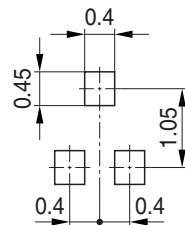




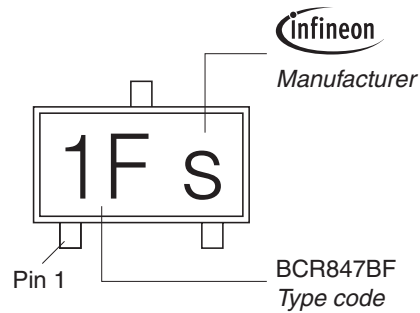
Package Outline



Foot Print



Marking Layout (Example)

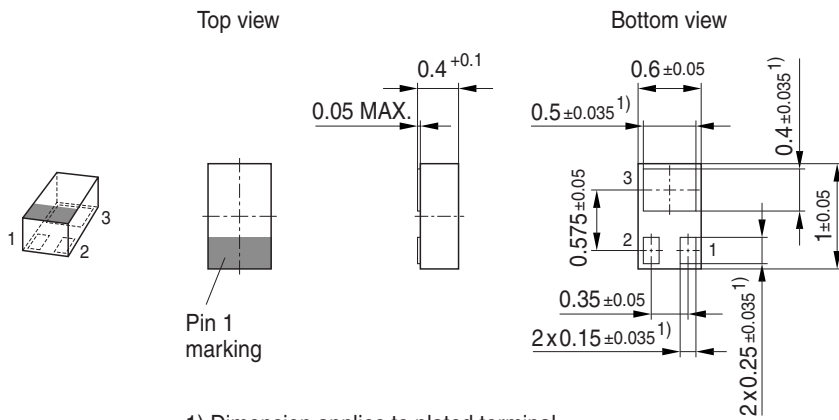


Standard Packing

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



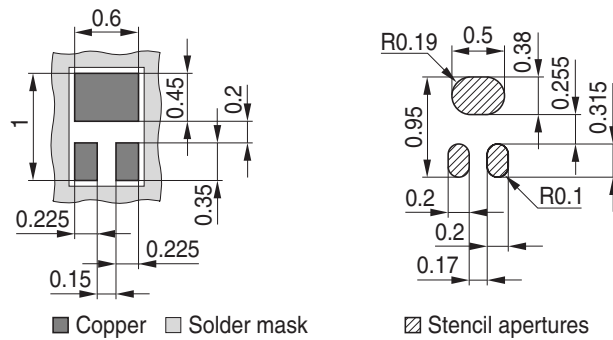
### Package Outline



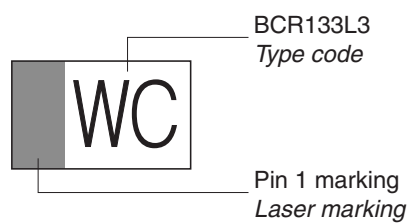
1) Dimension applies to plated terminal

### Foot Print

For board assembly information please refer to Infineon website "Packages"

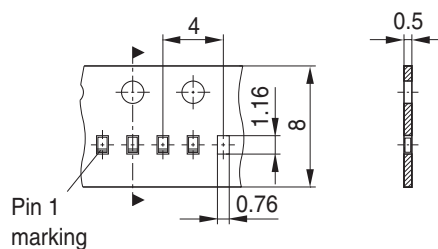


### Marking Layout



### Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel



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