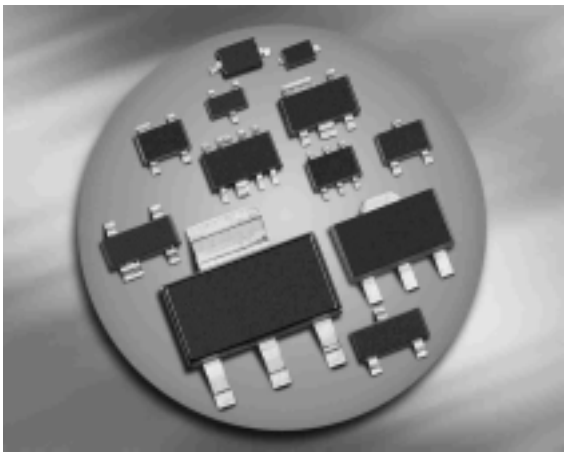
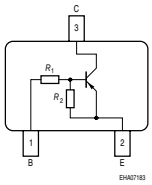
PNP Silicon Digital Transistor

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor (R_1 = 4.7 kΩ , R_2 = 47 kΩ)



BCR166/F/L3
BCR166T/W



Type	Marking	Pin Configuration						Package
BCR166	WTs	1=B	2=E	3=C	-	-	-	SOT23
BCR166F	WTs	1=B	2=E	3=C	-	-	-	TSFP-3
BCR166L3	WT	1=B	2=E	3=C	-	-	-	TSLP-3-4
BCR166T	WT	1=B	2=E	3=C	-	-	-	SC75
BCR166W	WTs	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	$V_{i(fwd)}$	30	
Input reverse voltage	$V_{i(rev)}$	5	
Collector current	I_C	100	mA
Total power dissipation-	P_{tot}		mW
BCR166, $T_S \leq 102°C$		200	
BCR166F, $T_S \leq 128°C$		250	
BCR166L3, $T_S \leq 135°C$		250	
BCR166T, $T_S \leq 109°C$		250	
BCR166W, $T_S \leq 124°C$		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
BCR166		≤ 240	
BCR166F		≤ 90	
BCR166L3		≤ 60	
BCR166T		≤ 165	
BCR166W		≤ 105	

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

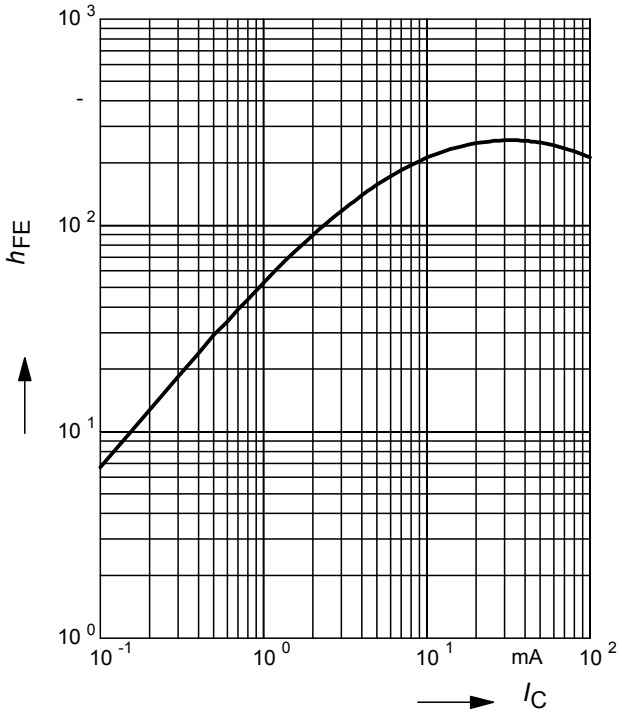
Electrical Characteristics at T_A = 25°C, unless otherwise specified

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} = 5 V, I_C = 0	I_{EBO}	-	-	155	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	$V_{i(off)}$	0.4	-	0.8	
Input on voltage I_C = 2 mA, V_{CE} = 0.3 V	$V_{i(on)}$	0.5	-	1.4	
Input resistor	R_1	3.2	4.7	6.2	kΩ
Resistor ratio	R_1/R_2	0.09	0.1	0.11	-
AC Characteristics					
Transition frequency I_C = 10 mA, V_{CE} = 5 V, f = 100 MHz	f_T	-	160	-	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	3	-	pF

[1]Pulse test: t < 300µs; D < 2%

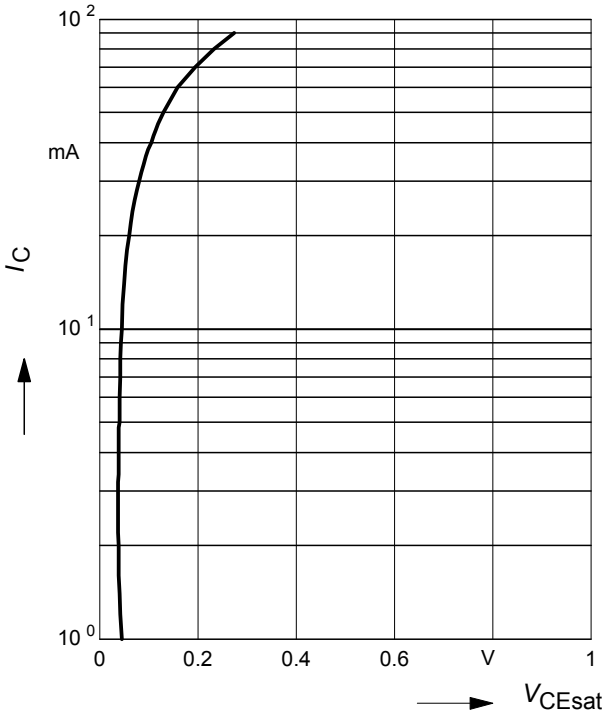
DC current gain $h_{FE} = f(I_C)$

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



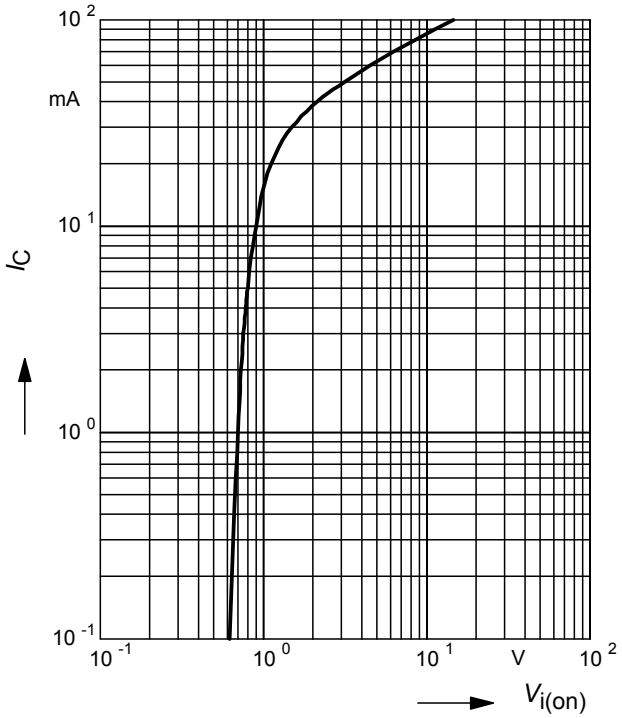
Collector-emitter saturation voltage

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



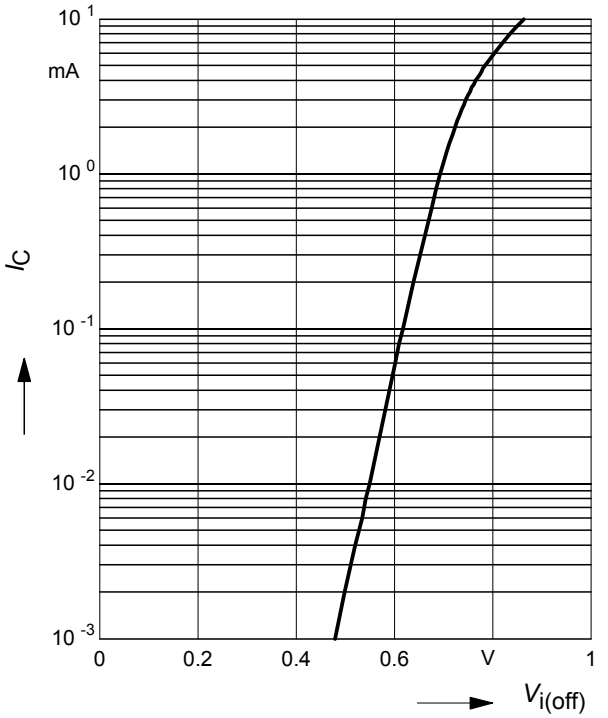
Input on Voltage $V_{i(on)} = f(I_C)$

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

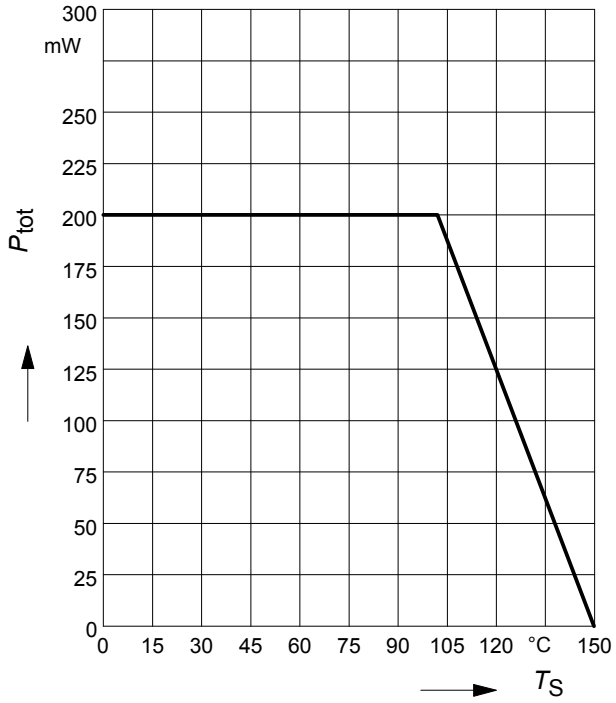


Input off voltage $V_{i(off)} = f(I_C)$

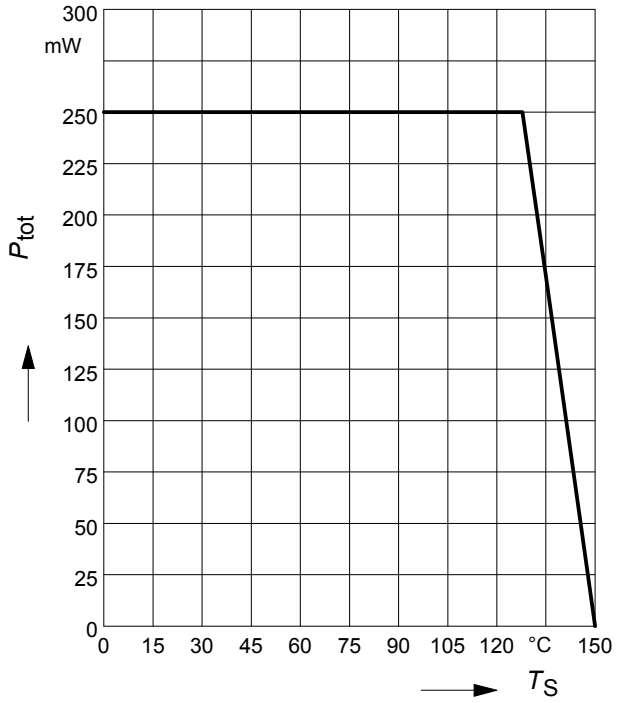
V_{CE} = 5V (common emitter configuration)



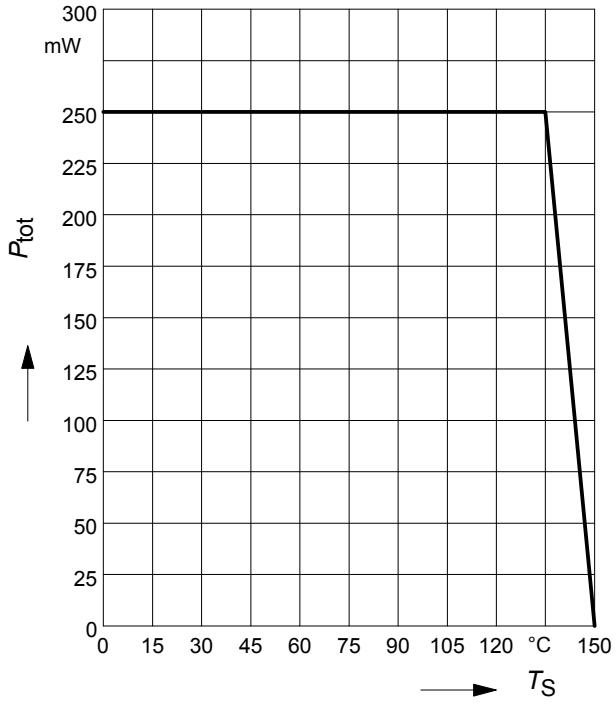
Total power dissipation $P_{tot} = f(T_S)$
BCR166



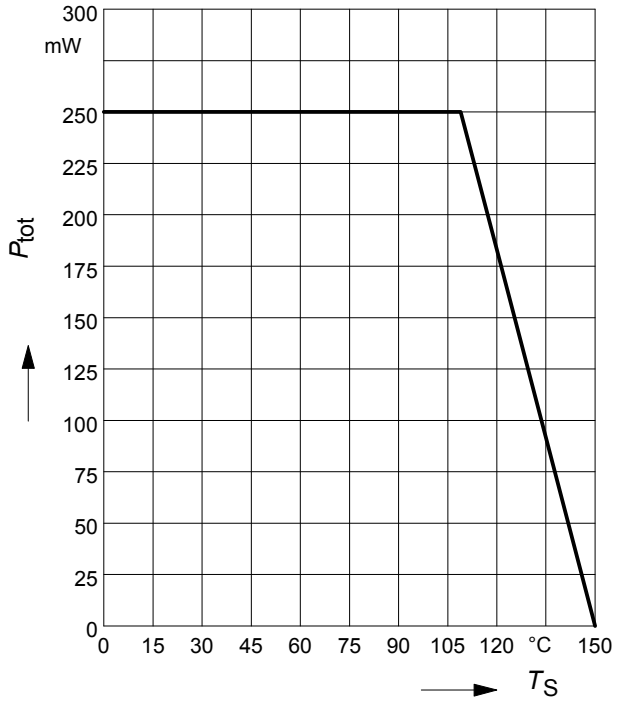
Total power dissipation $P_{tot} = f(T_S)$
BCR166F



Total power dissipation $P_{tot} = f(T_S)$
BCR166L3

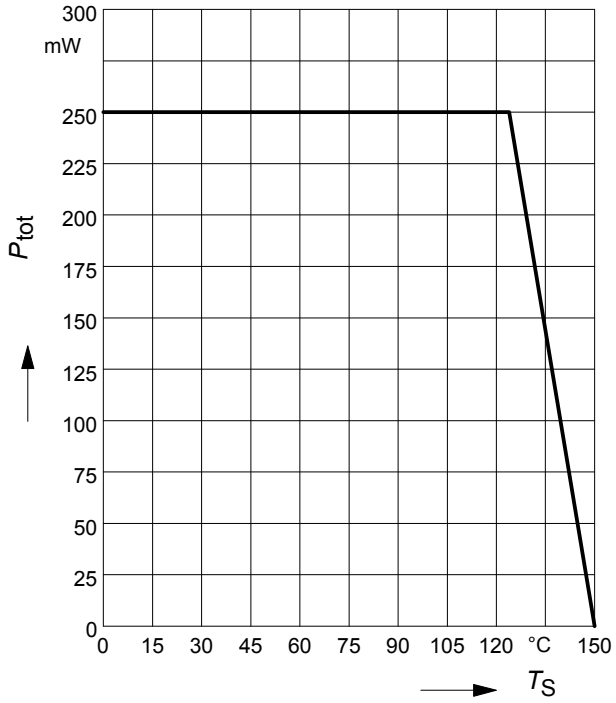


Total power dissipation $P_{tot} = f(T_S)$
BCR166T



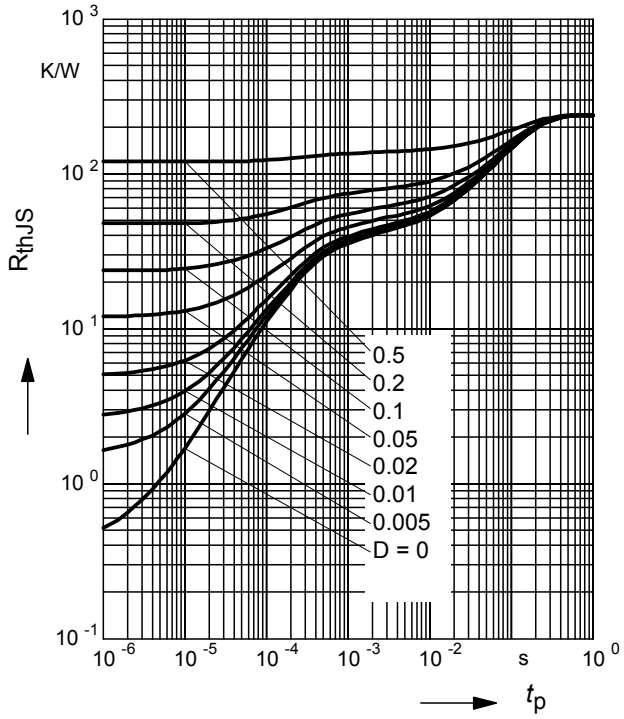
Total power dissipation $P_{tot} = f(T_S)$

BCR166W



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

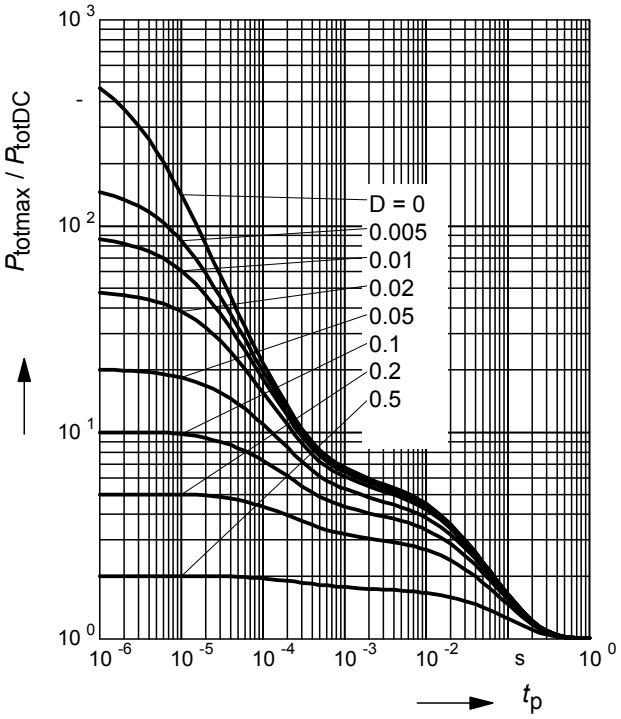
BCR166



Permissible Pulse Load

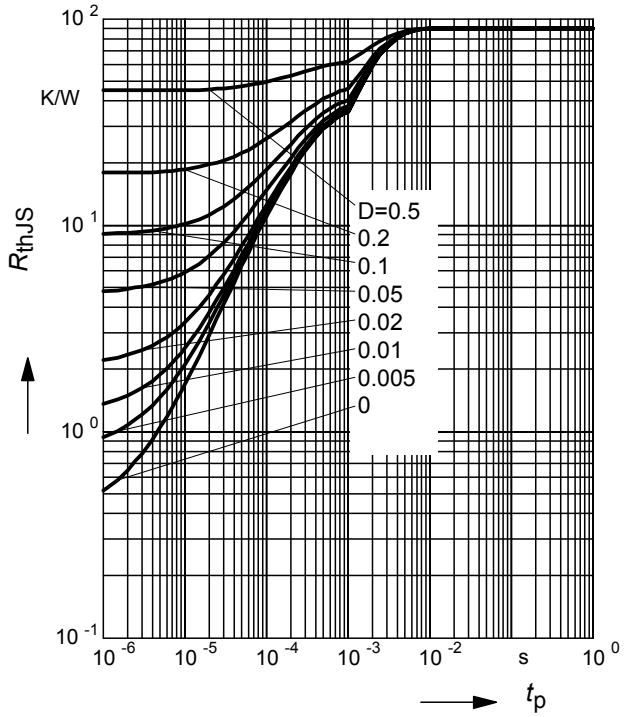
$P_{totmax}/P_{totDC} = f(t_p)$

BCR166



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

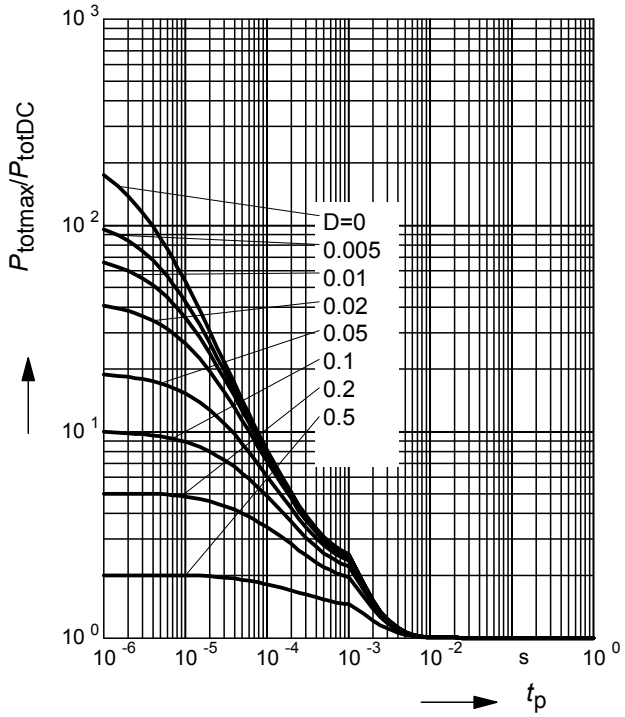
BCR166F



Permissible Pulse Load

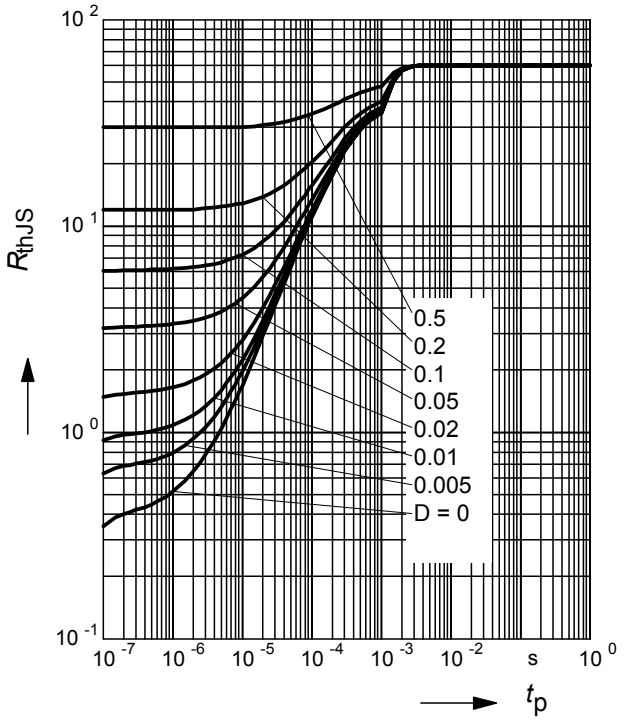
$P_{totmax}/P_{totDC} = f(t_p)$

BCR166F



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

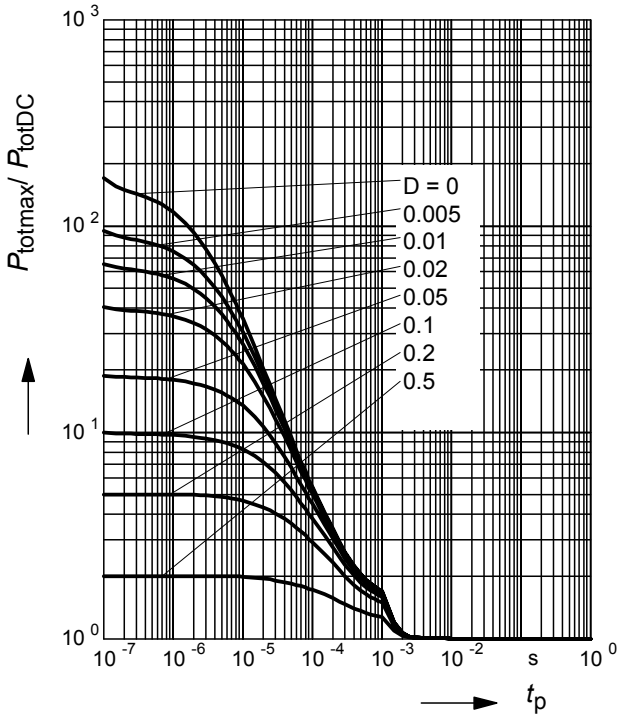
BCR166L3



Permissible Pulse Load

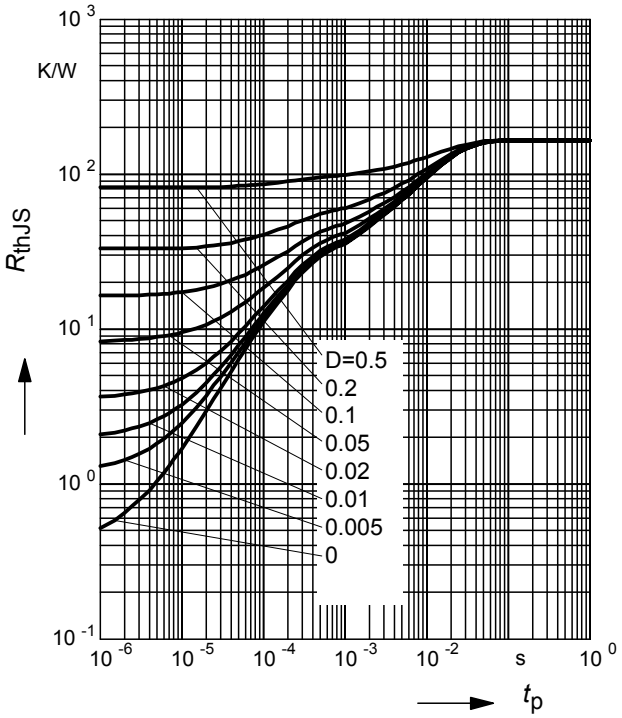
$P_{totmax}/P_{totDC} = f(t_p)$

BCR166L3



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

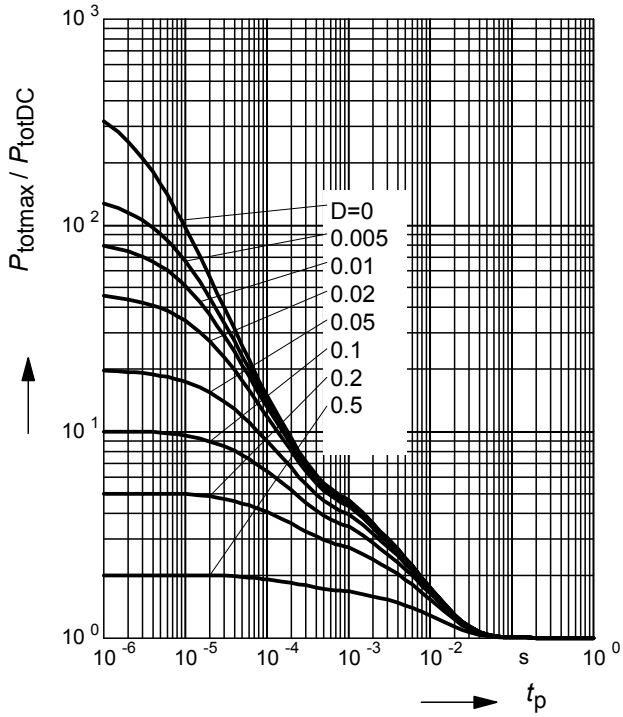
BCR166T



Permissible Pulse Load

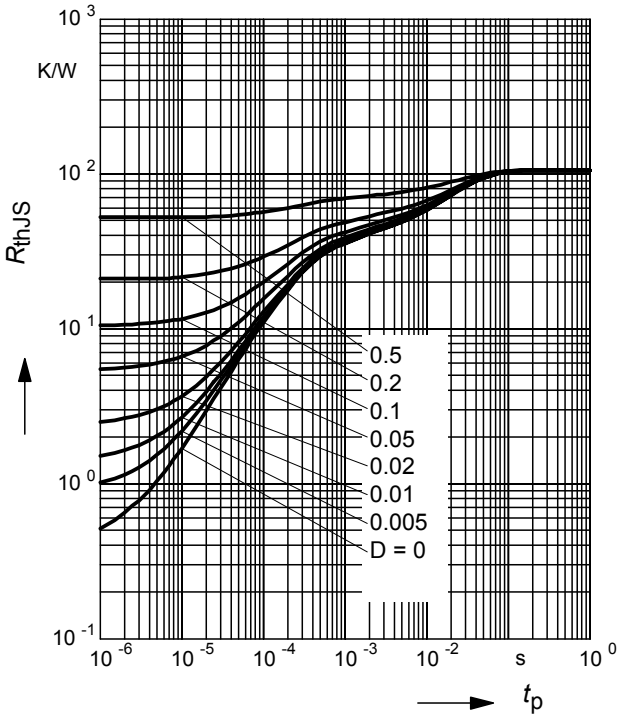
$P_{totmax}/P_{totDC} = f(t_p)$

BCR166T



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

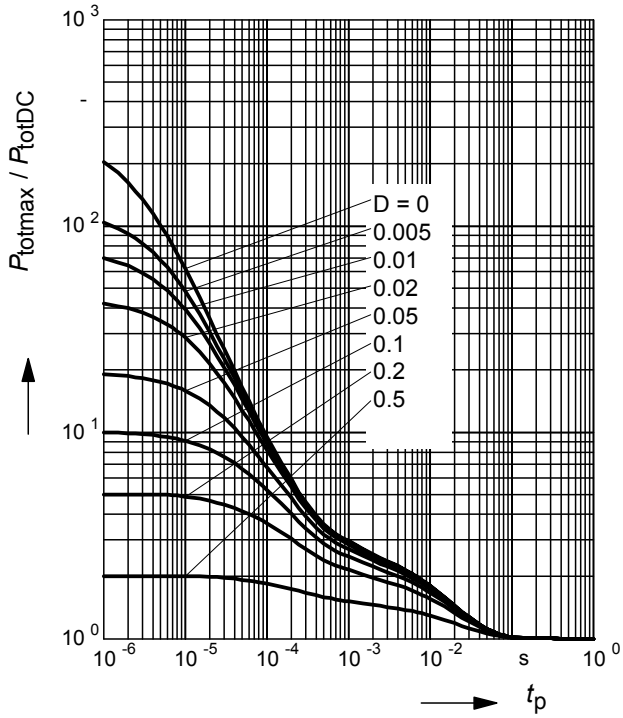
BCR166W



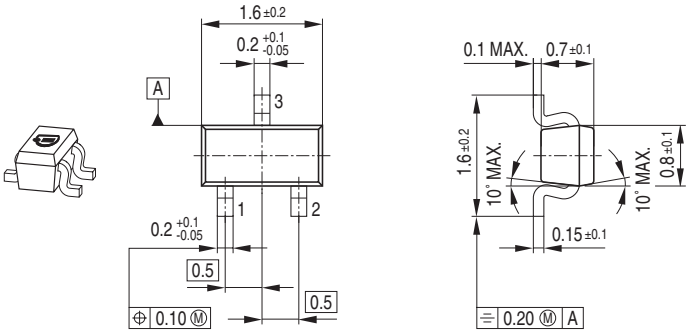
Permissible Pulse Load

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

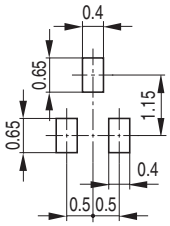
BCR166W



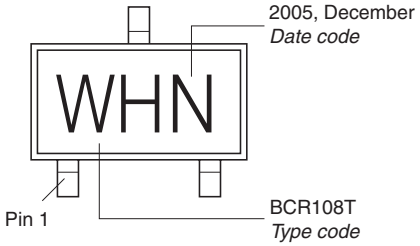
Package Outline



Foot Print

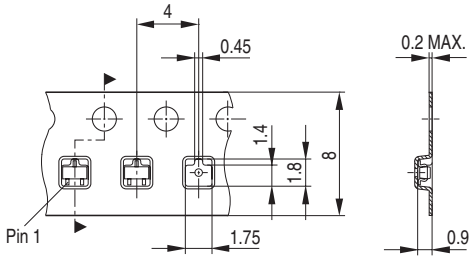


Marking Layout (Example)



Standard Packing

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



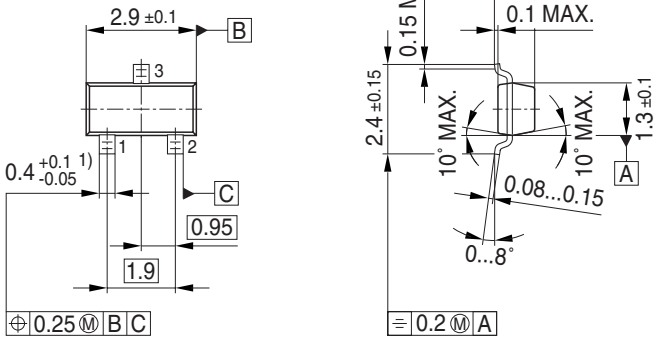
Date Code marking for discrete packages with one digit (SCD80, SC79, SC75[1)]) CES-Code

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.

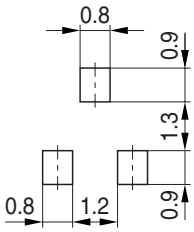
Package Outline



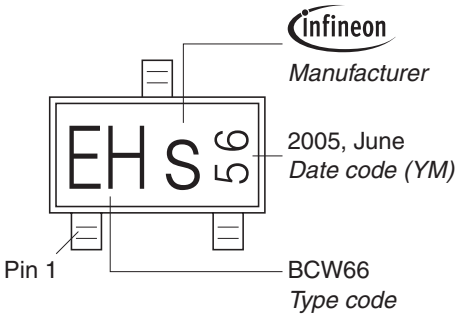


1) Lead width can be 0.6 max. in dambar area

Foot Print

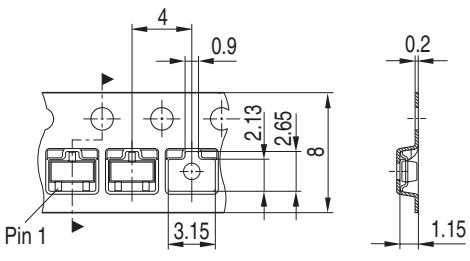


Marking Layout (Example)



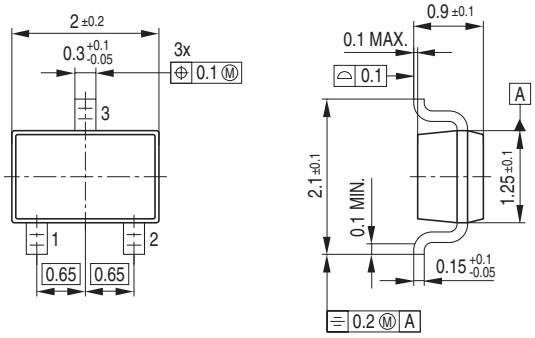
Standard Packing

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

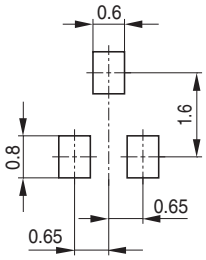


Package Outline

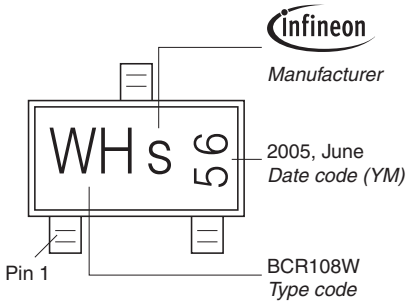




Foot Print

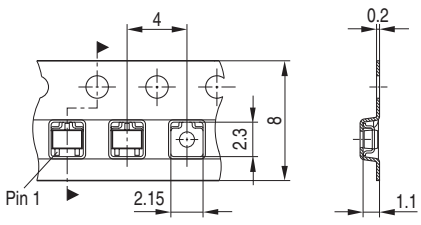


Marking Layout (Example)

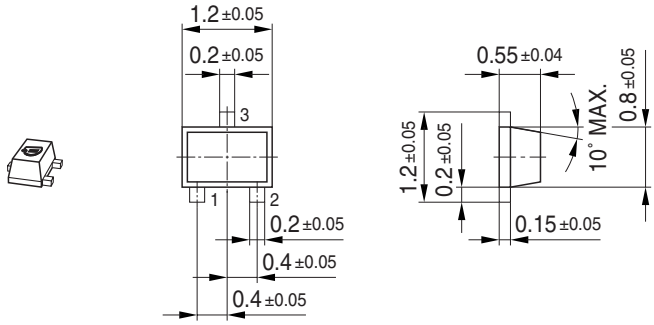


Standard Packing

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



Package Outline



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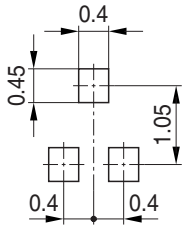
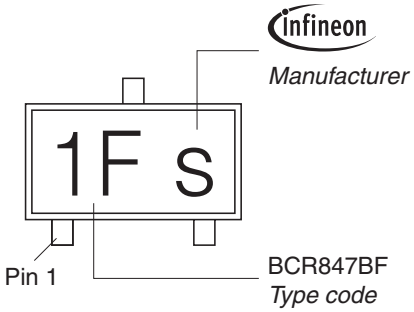
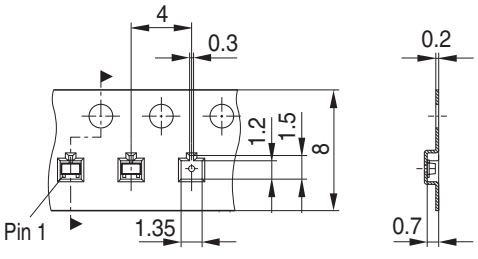


Marking Layout (Example)

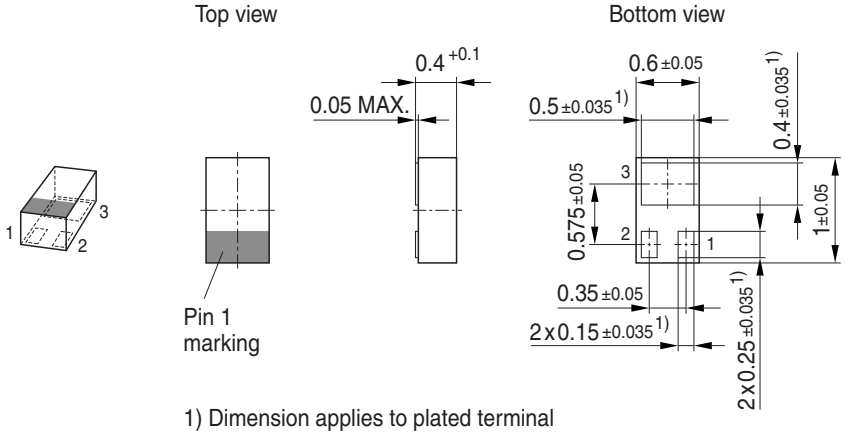


Standard Packing

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



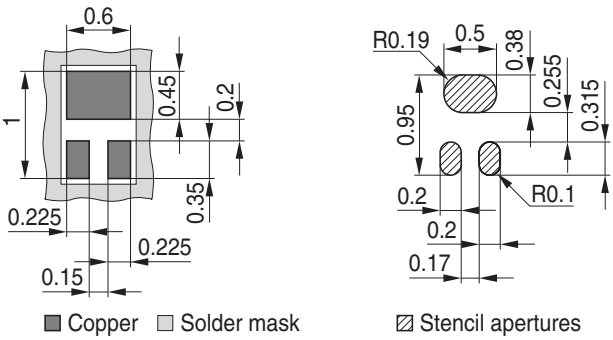
Package Outline



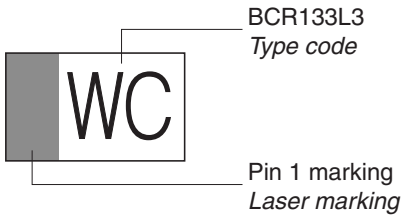
1) Dimension applies to plated terminal

Foot Print

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

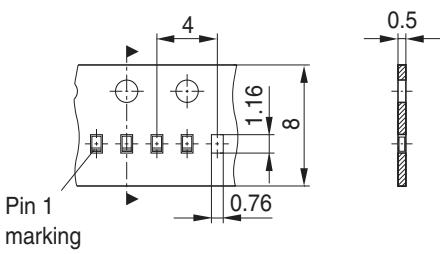


Marking Layout



Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel



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Life support devices or systems are intended to be implanted in the human body, or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.