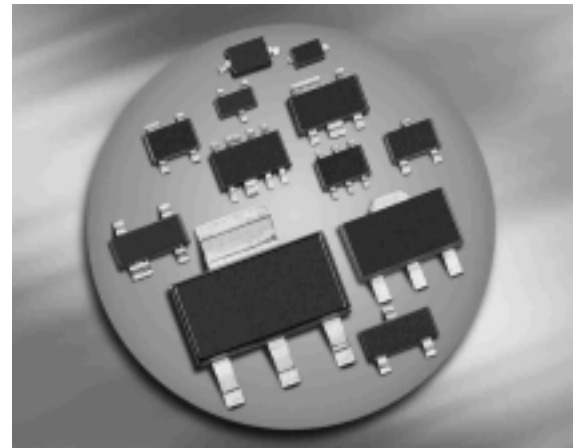




THE DATASHEET OF BCR116T

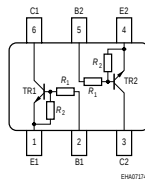
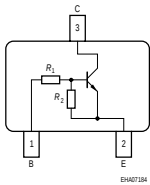
NPN Silicon Digital Transistor

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor ($R_1=4.7\text{ k}\Omega$, $R_2=47\text{ k}\Omega$)
- BCR116S: Two internally isolated transistors with good matching in one multichip package
- BCR116S: For orientation in reel see package information below



BCR116/F/L3 BCR116T/W

BCR116S



Type	Marking	Pin Configuration						Package
BCR116	WG _s	1=B	2=E	3=C	-	-	-	SOT23
BCR116F	WG _s	1=B	2=E	3=C	-	-	-	TSFP-3
BCR116L3	WG	1=B	2=E	3=C	-	-	-	TSLP-3-4
BCR116S	WG _s	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SOT363
BCR116T	WG	1=B	2=E	3=C	-	-	-	SC75
BCR116W	WG _s	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- BCR116, $T_S \leq 102^\circ\text{C}$ BCR116F, $T_S \leq 128^\circ\text{C}$ BCR116L3, $T_S \leq 135^\circ\text{C}$ BCR116S, $T_S \leq 115^\circ\text{C}$ BCR116T, $T_S \leq 109^\circ\text{C}$ BCR116W, $T_S \leq 124^\circ\text{C}$	P_{tot}	200 250 250 250 250 250	mW
Junction temperature	T_j	150	
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ¹⁾	R_{thJS}		K/W
BCR116		≤ 240	
BCR116F		≤ 90	
BCR116L3		≤ 60	
BCR116S		≤ 140	
BCR116T		≤ 165	
BCR116W		≤ 105	

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

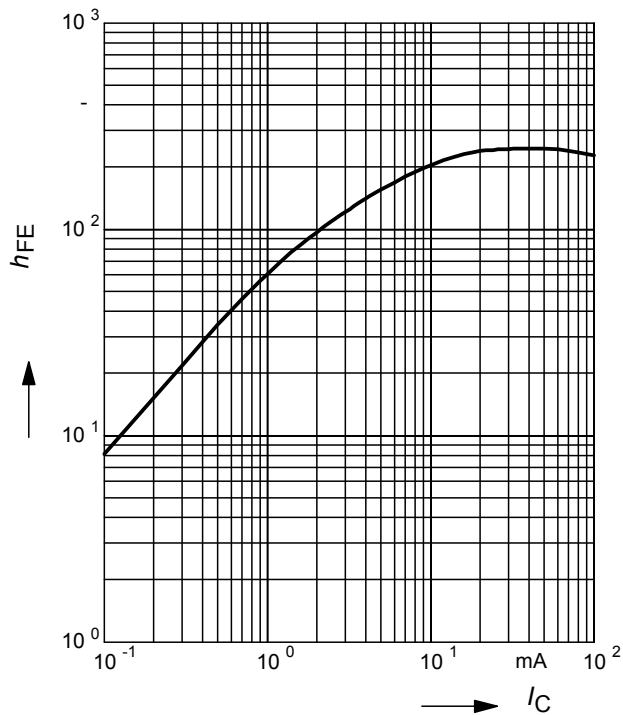
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 100\ \mu\text{A}$, $I_B = 0$	$V_{(\text{BR})\text{CEO}}$	50	-	-	V
Collector-base breakdown voltage $I_C = 10\ \mu\text{A}$, $I_E = 0$	$V_{(\text{BR})\text{CBO}}$	50	-	-	
Collector-base cutoff current $V_{\text{CB}} = 40\ \text{V}$, $I_E = 0$	I_{CBO}	-	-	100	nA
Emitter-base cutoff current $V_{\text{EB}} = 5\ \text{V}$, $I_C = 0$	I_{EBO}	-	-	155	μA
DC current gain ¹⁾ $I_C = 5\ \text{mA}$, $V_{\text{CE}} = 5\ \text{V}$	h_{FE}	70	-	-	-
Collector-emitter saturation voltage ¹⁾ $I_C = 10\ \text{mA}$, $I_B = 0.5\ \text{mA}$	V_{CEsat}	-	-	0.3	V
Input off voltage $I_C = 100\ \mu\text{A}$, $V_{\text{CE}} = 5\ \text{V}$	$V_{\text{i(off)}}$	0.4	-	0.8	
Input on voltage $I_C = 2\ \text{mA}$, $V_{\text{CE}} = 0.3\ \text{V}$	$V_{\text{i(on)}}$	0.5	-	1.4	
Input resistor	R_1	3.2	4.7	6.2	k Ω
Resistor ratio	R_1/R_2	0.09	0.1	0.11	-
AC Characteristics					
Transition frequency $I_C = 10\ \text{mA}$, $V_{\text{CE}} = 5\ \text{V}$, $f = 100\ \text{MHz}$	f_{T}	-	150	-	MHz
Collector-base capacitance $V_{\text{CB}} = 10\ \text{V}$, $f = 1\ \text{MHz}$	C_{cb}	-	3	-	pF

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

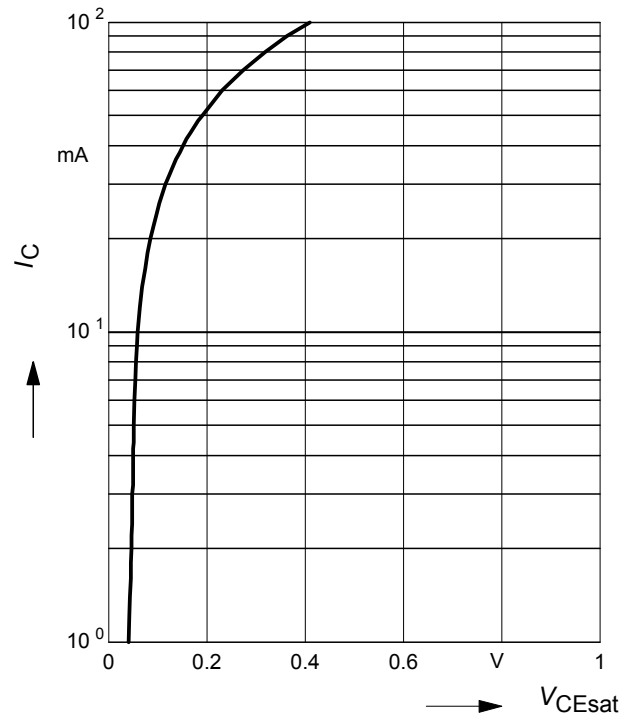
DC current gain $h_{FE} = f(I_C)$

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



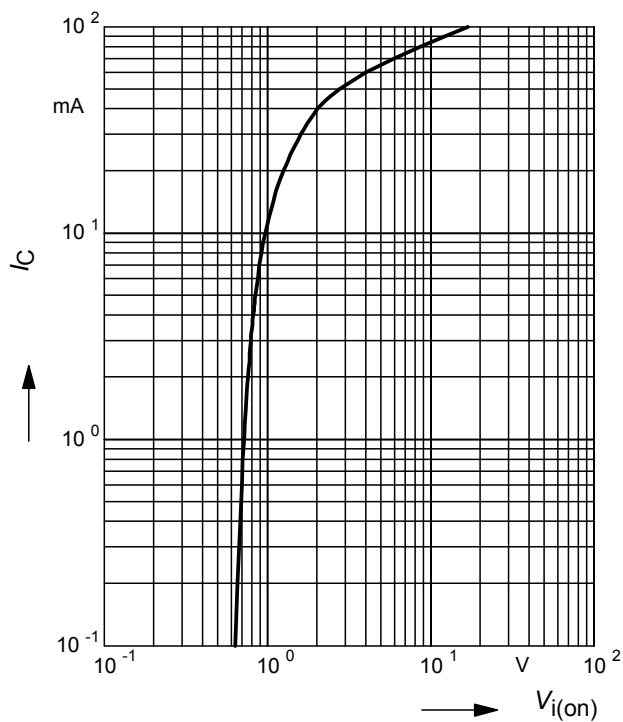
Collector-emitter saturation voltage

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



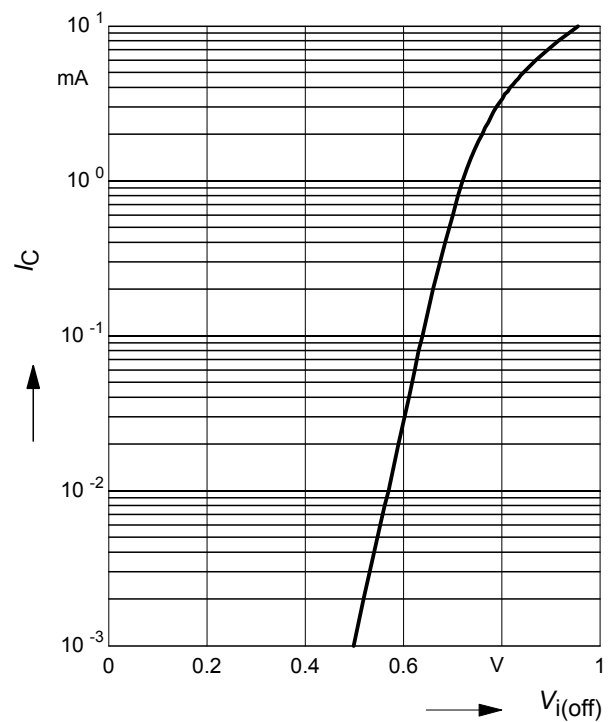
Input on Voltage $V_{i(on)} = f(I_C)$

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



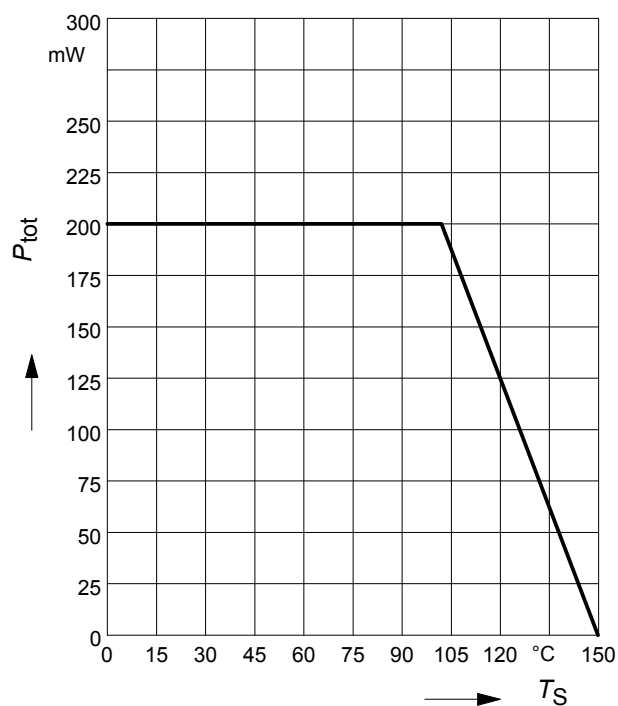
Input off voltage $V_{i(off)} = f(I_C)$

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



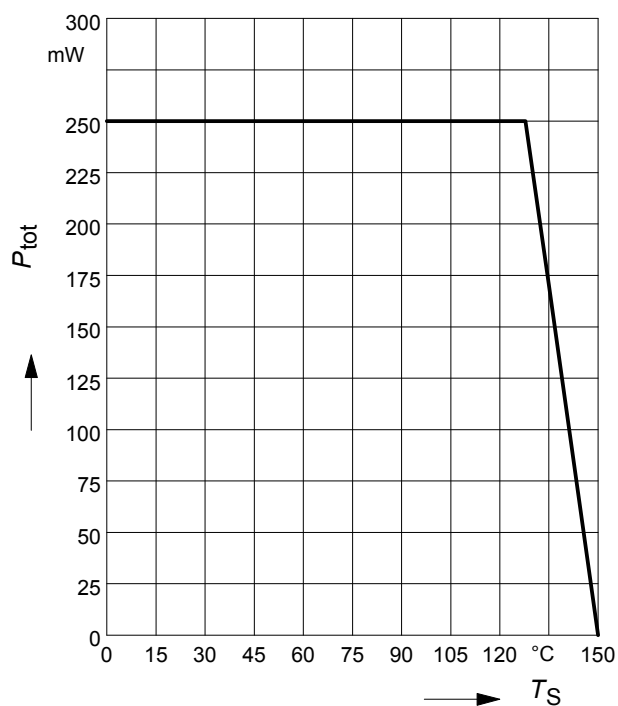
Total power dissipation $P_{\text{tot}} = f(T_S)$

BCR116



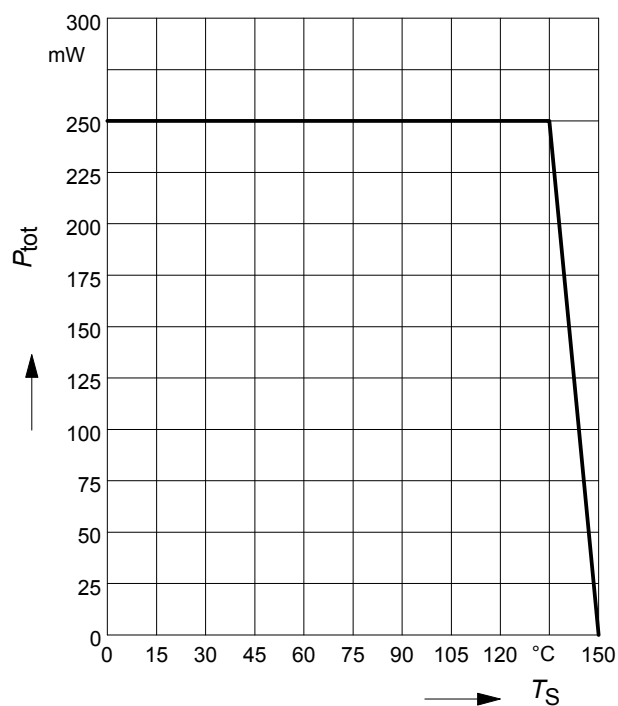
Total power dissipation $P_{\text{tot}} = f(T_S)$

BCR116F



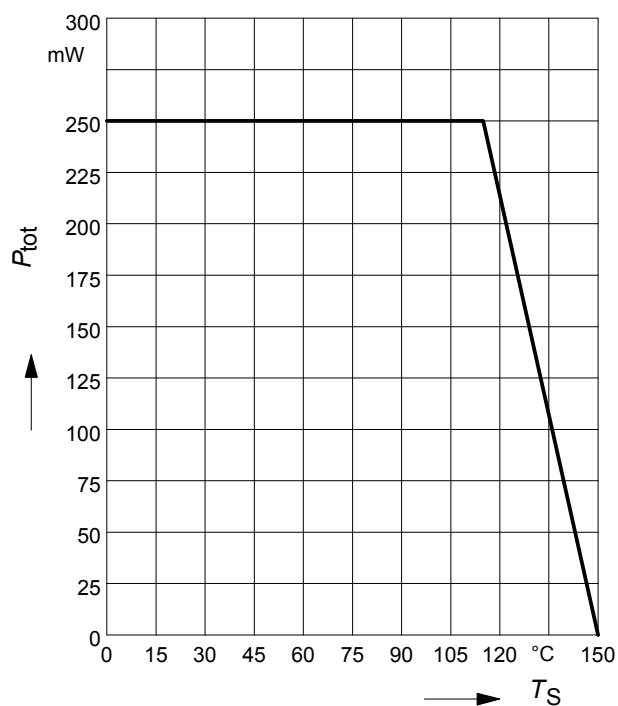
Total power dissipation $P_{\text{tot}} = f(T_S)$

BCR116L3



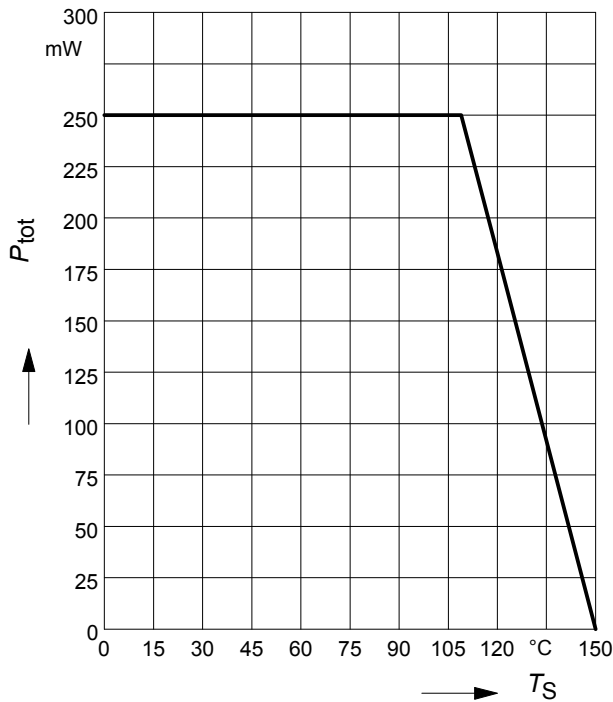
Total power dissipation $P_{\text{tot}} = f(T_S)$

BCR116S



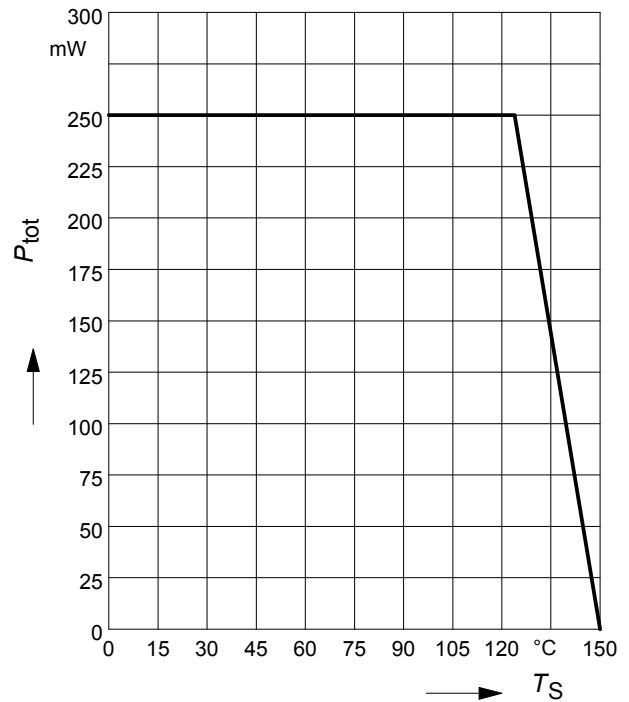
Total power dissipation $P_{\text{tot}} = f(T_S)$

BCR116T



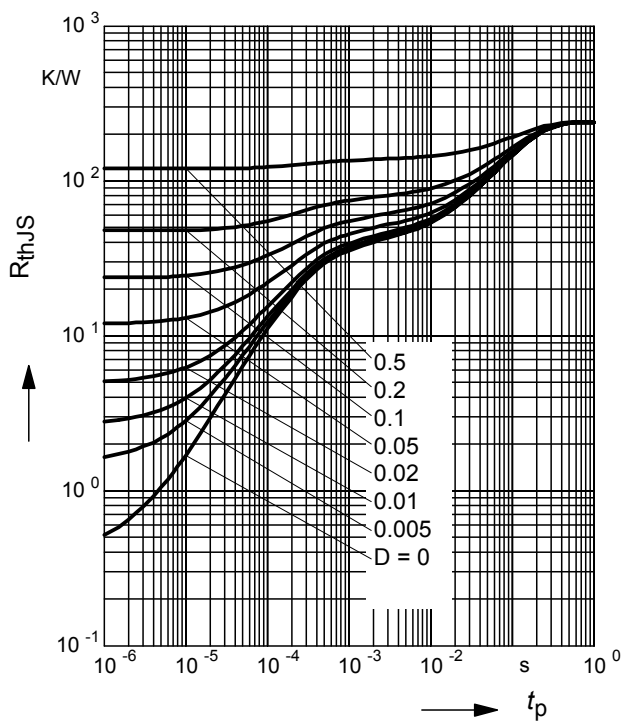
Total power dissipation $P_{\text{tot}} = f(T_S)$

BCR116W



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

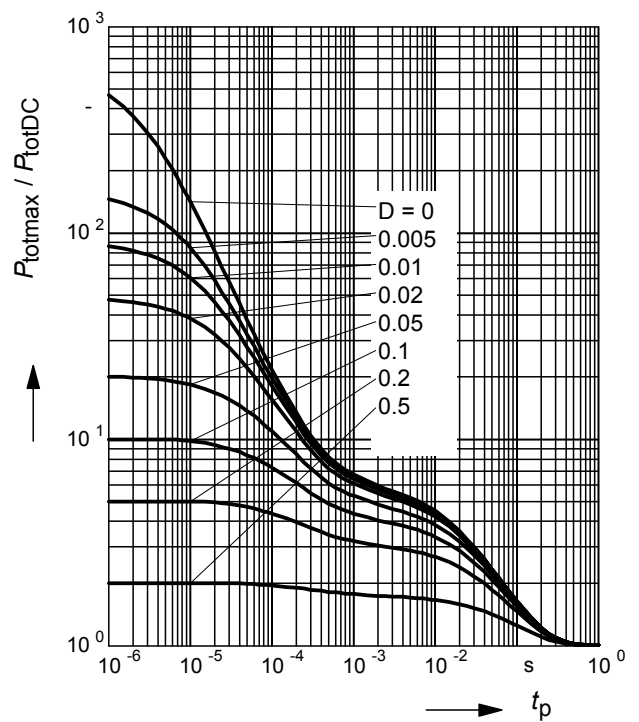
BCR116



Permissible Pulse Load

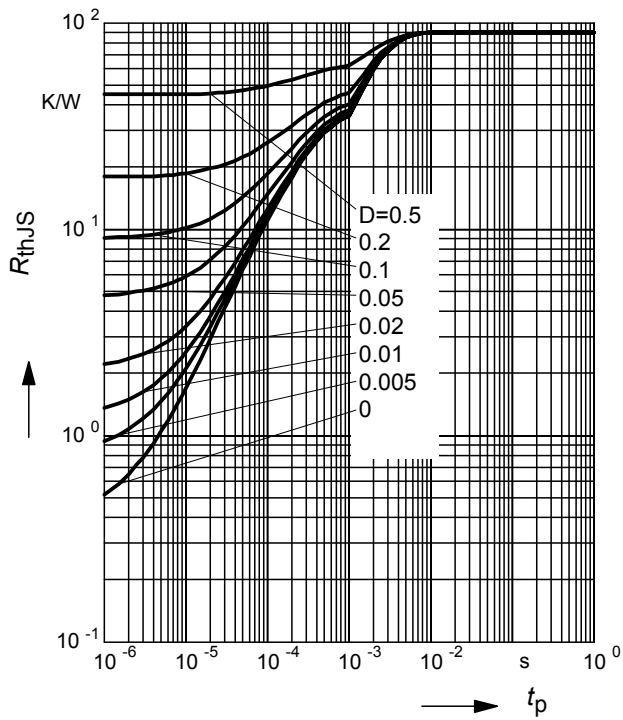
$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$

BCR116



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

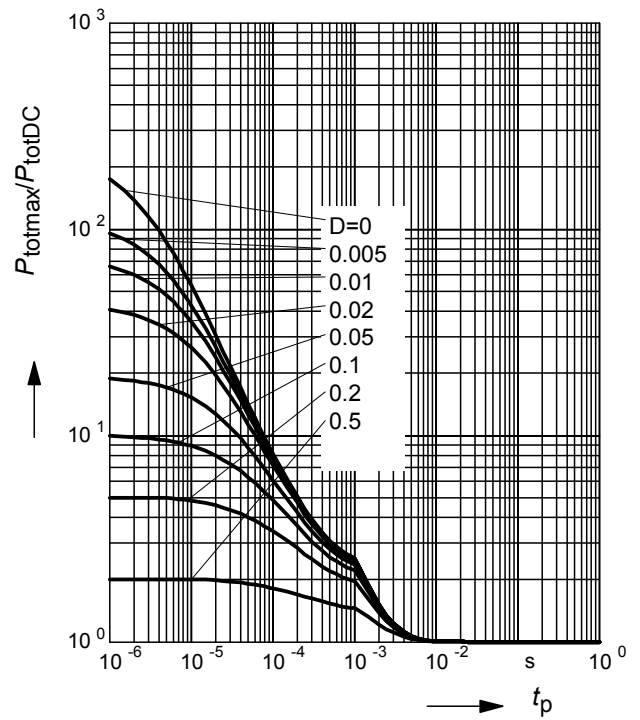
BCR116F



Permissible Pulse Load

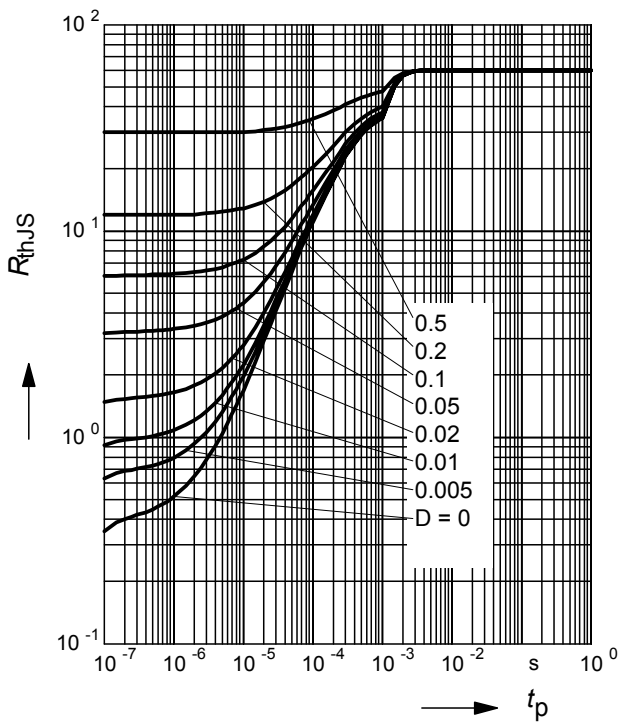
$$P_{totmax}/P_{totDC} = f(t_p)$$

BCR116F



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

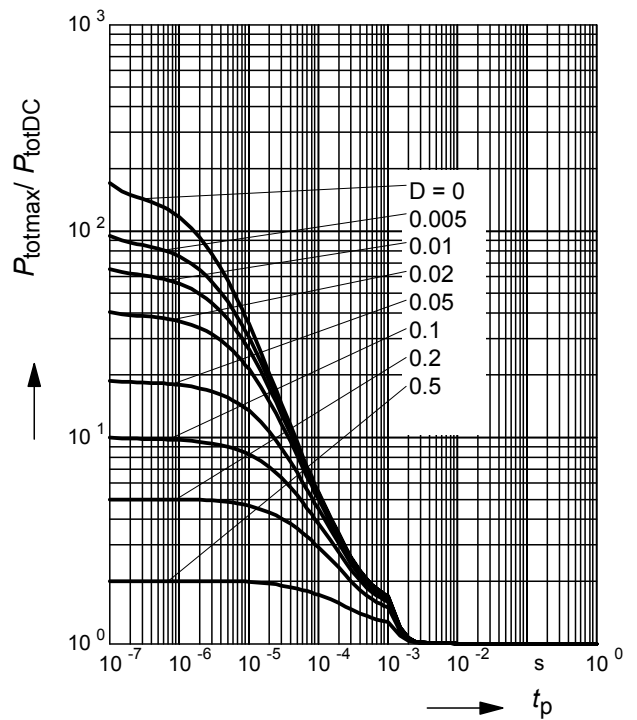
BCR116L3



Permissible Pulse Load

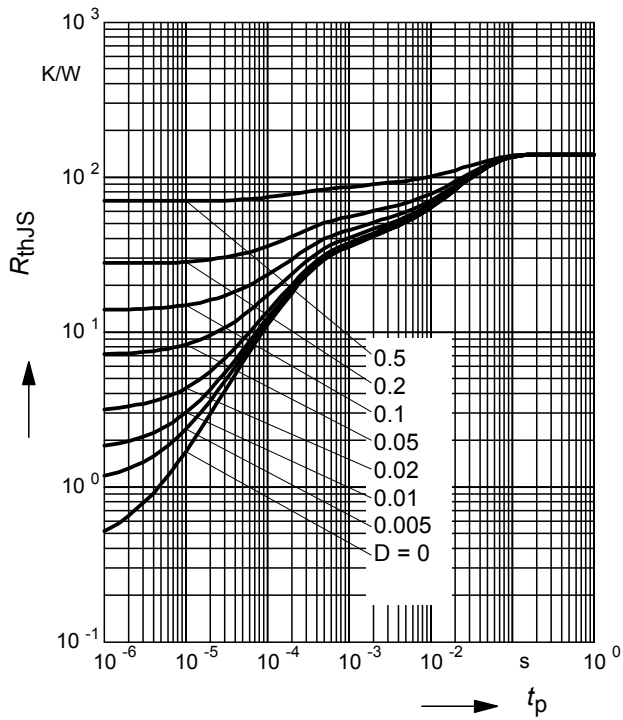
$$P_{totmax}/P_{totDC} = f(t_p)$$

BCR116L3



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

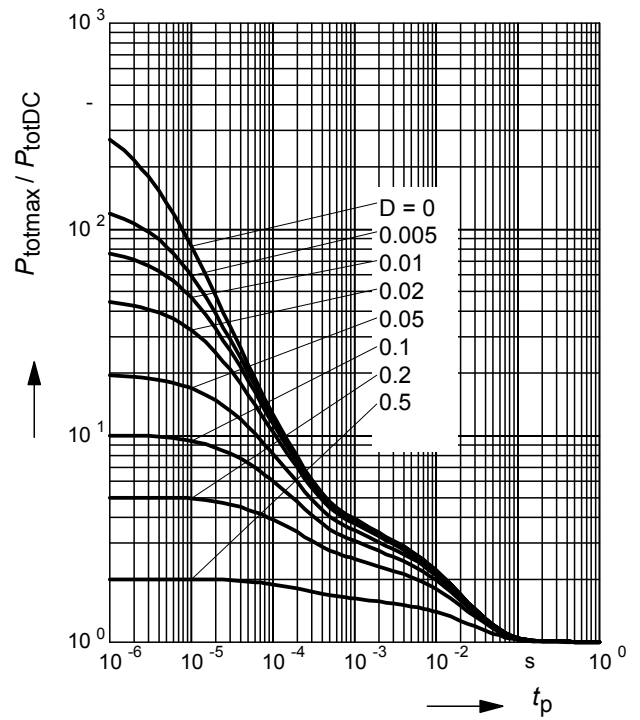
BCR116S



Permissible Pulse Load

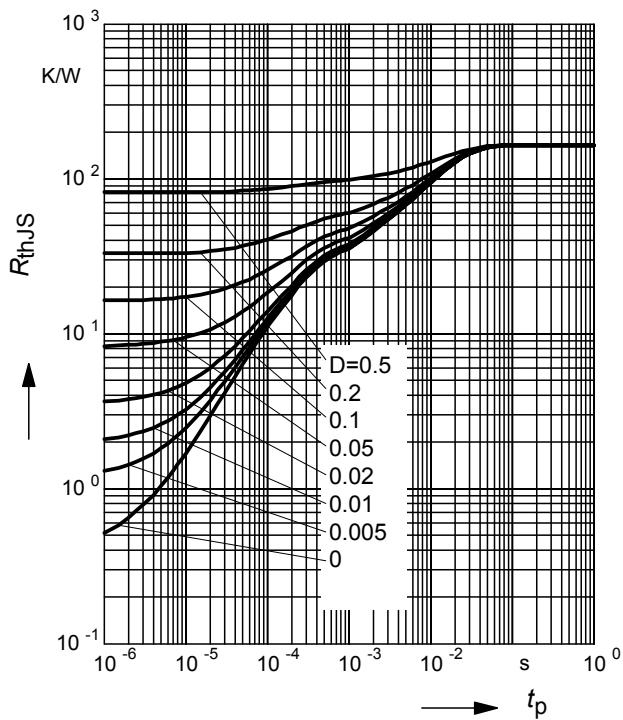
$$P_{totmax}/P_{totDC} = f(t_p)$$

BCR116S



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

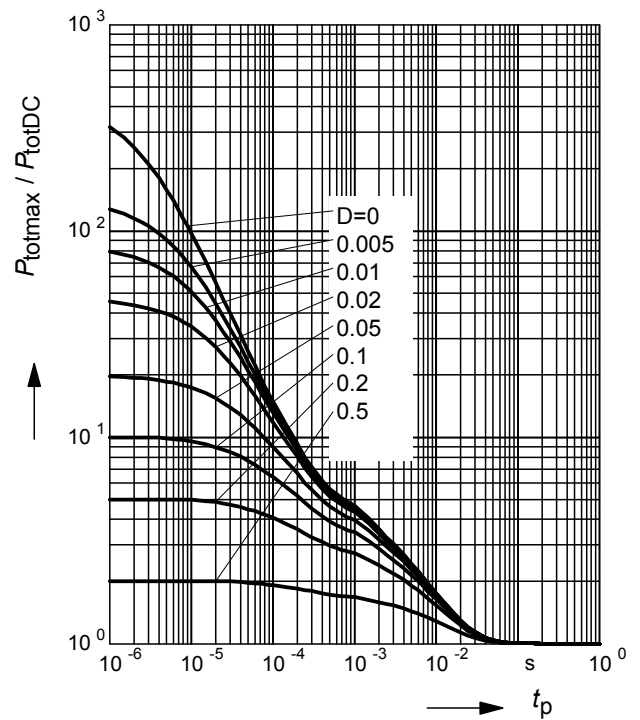
BCR116T



Permissible Pulse Load

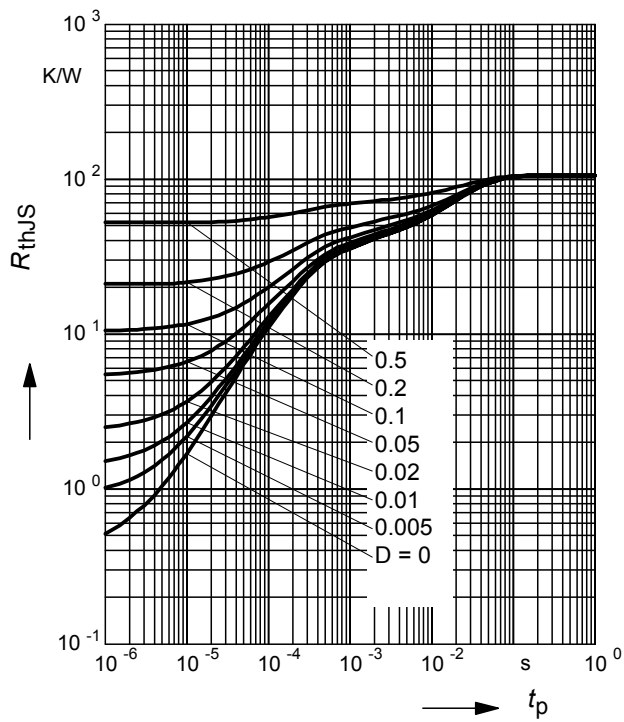
$$P_{totmax}/P_{totDC} = f(t_p)$$

BCR116T



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

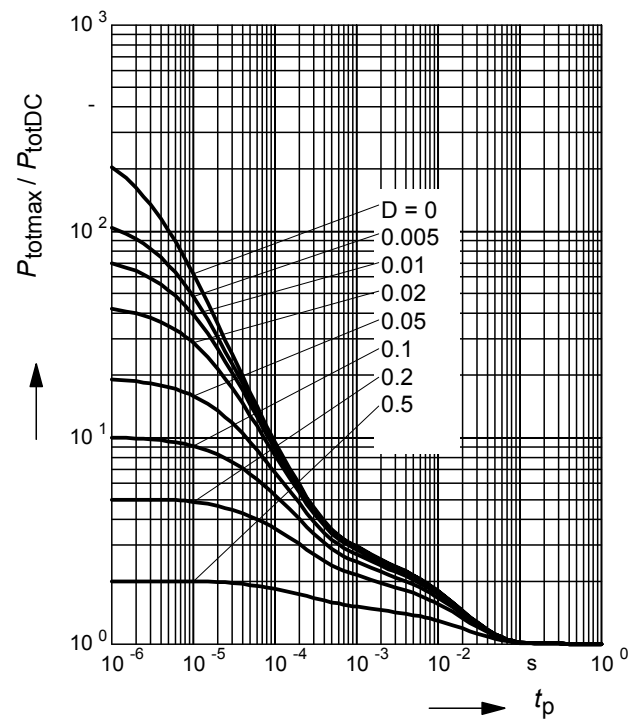
BCR116W



Permissible Pulse Load

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

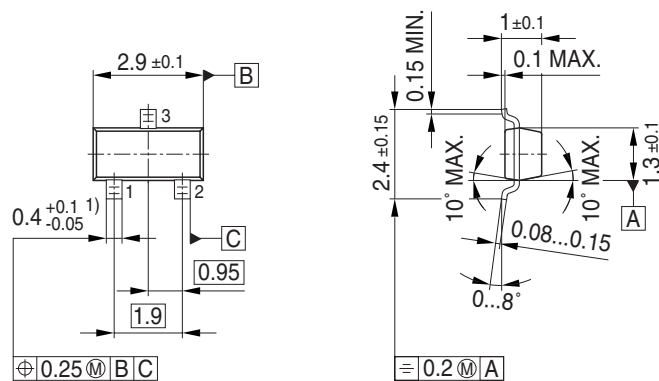
BCR116W



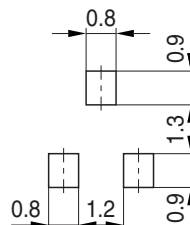
Date Code marking for discrete packages with one digit (SCD80, SC79, SC75¹⁾) CES-Code

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.

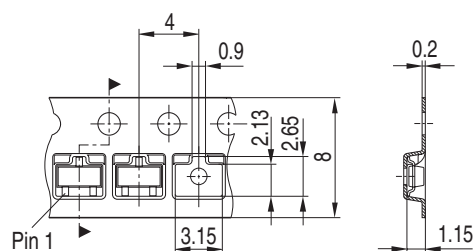


Foot Print

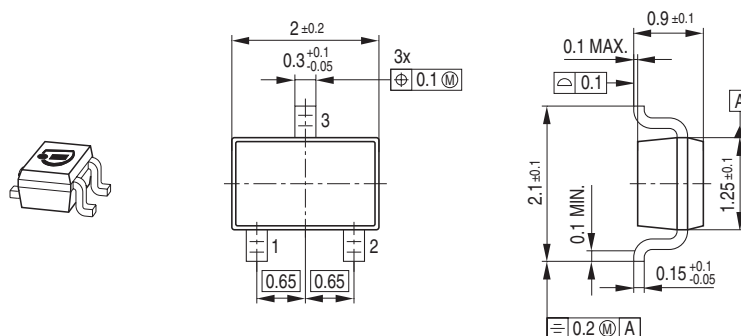


The diagram shows a top-down view of a BCW66 LED package. It is a rectangular component with four pins. The top pin is labeled 'Pin 1'. The package has a central rectangular area containing the text 'EHS' and '65'. To the right of this area, the text '2005, June' and 'Date code (YM)' is shown. Above the package, the Infineon logo and the text 'Manufacturer' are displayed. Below the package, the text 'BCW66' and 'Type code' are shown.

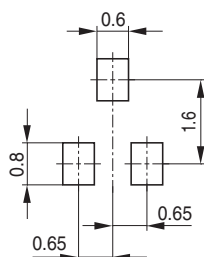
Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel



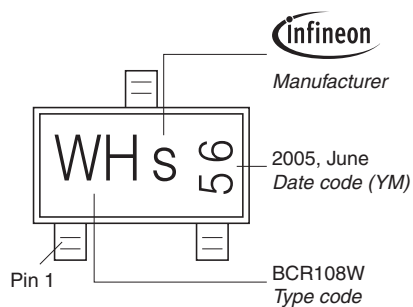
Package Outline



Foot Print

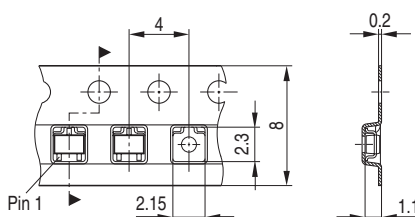


Marking Layout (Example)

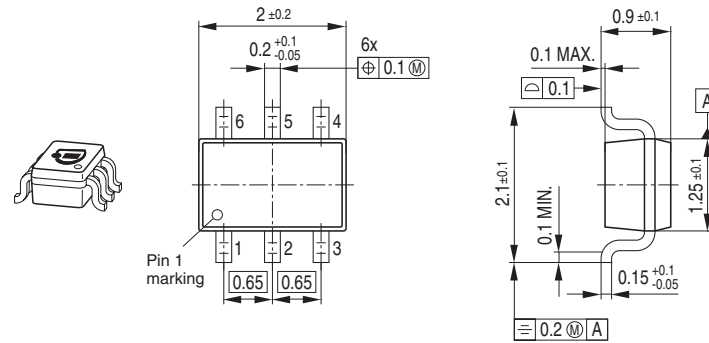


Standard Packing

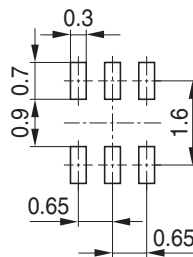
Reel $\varnothing 180$ mm = 3.000 Pieces/Reel
 Reel $\varnothing 330$ mm = 10.000 Pieces/Reel



Package Outline

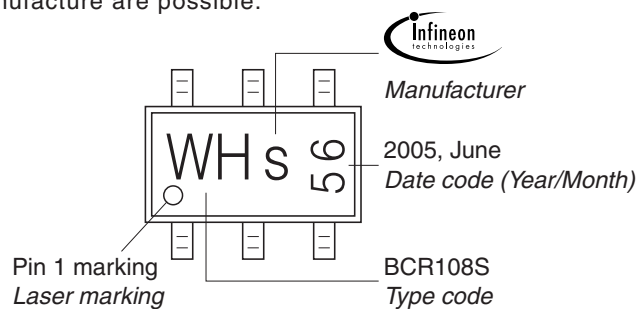


Foot Print



Marking Layout (Example)

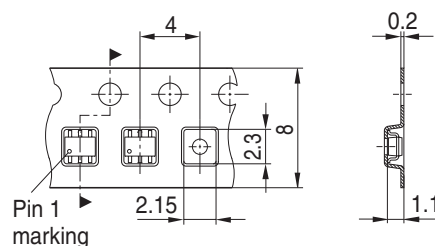
Small variations in positioning of Date code, Type code and Manufacture are possible.



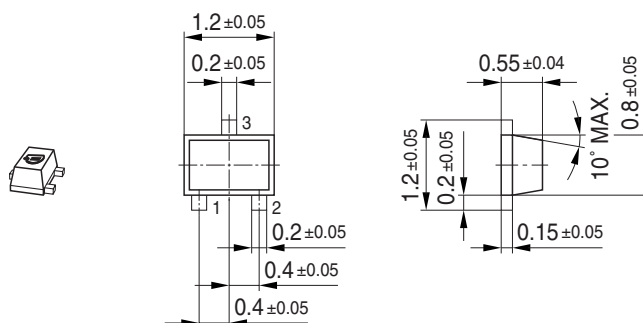
Standard Packing

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

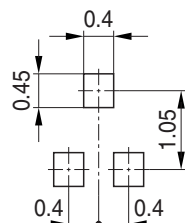
For symmetric types no defined Pin 1 orientation in reel.



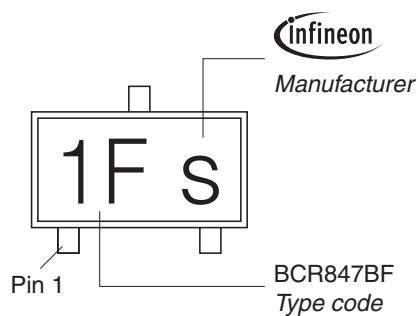
Package Outline



Foot Print

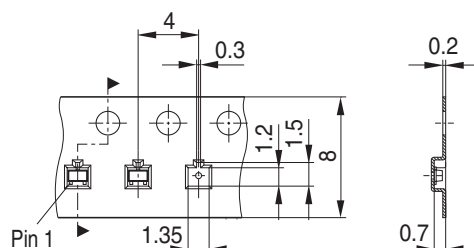


Marking Layout (Example)

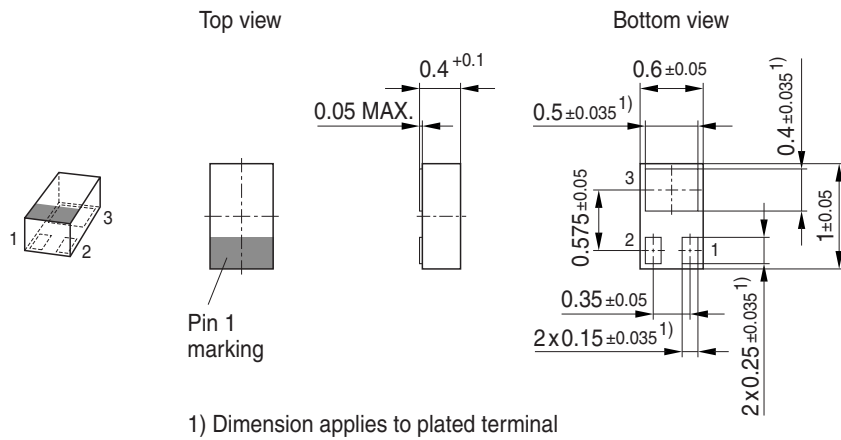


Standard Packing

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

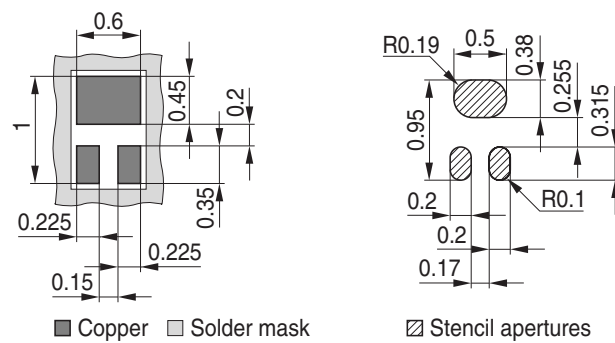


Package Outline

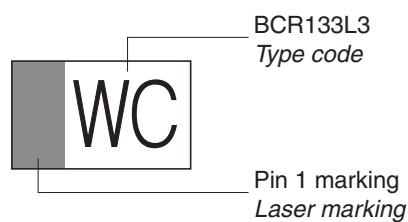


Foot Print

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

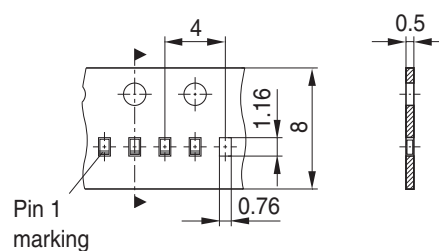


Marking Layout



Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel



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