

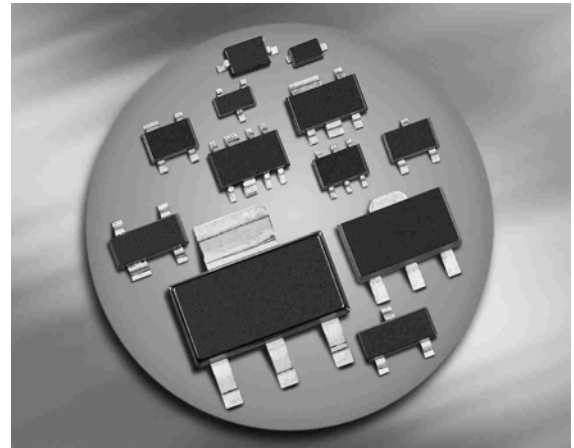


# THE DATASHEET OF BCR114F

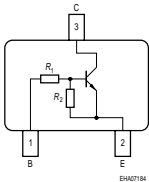


**NPN Silicon Digital Transistor**

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor ( $R_1=4.7k\Omega$ ,  $R_2=10k\Omega$ )



**BCR114/F**  
**BCR114L3/T**



Type	Marking	Pin Configuration						Package
		1=B	2=E	3=C	-	-	-	
BCR114	U4s	1=B	2=E	3=C	-	-	-	SOT23
BCR114F	U4s	1=B	2=E	3=C	-	-	-	TSFP-3
BCR114L3	U4	1=B	2=E	3=C	-	-	-	TSLP-3-4
BCR114T	U4s	1=B	2=E	3=C	-	-	-	SC75

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Collector-emitter voltage	$V_{CEO}$	50	V
Collector-base voltage	$V_{CBO}$	50	
Emitter-base voltage	$V_{EBO}$	5	
Input on voltage	$V_{i(on)}$	15	
Collector current	$I_C$	100	mA
Total power dissipation- BCR114, $T_S \leq 102^\circ\text{C}$ BCR114F, $T_S \leq 128^\circ\text{C}$ BCR114L3, $T_S \leq 135^\circ\text{C}$ BCR114T, $T_S \leq 109^\circ\text{C}$	$P_{tot}$	200 250 250 250	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> BCR114 BCR114F BCR114L3 BCR114T	$R_{thJS}$	≤ 240 ≤ 90 ≤ 60 ≤ 165	K/W

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

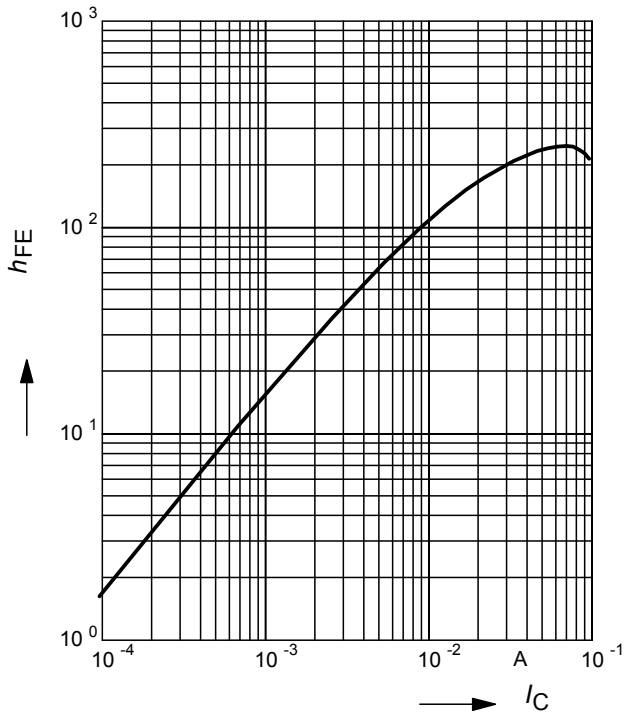
**Electrical Characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

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 $V_{EB} = 5 \text{ V}, I_C = 0$	$I_{EBO}$	-	-	520	$\mu\text{A}$
DC current gain <sup>1)</sup> $I_C = 5 \text{ mA}, V_{CE} = 5 \text{ V}$	$h_{FE}$	30	-	-	-
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 $I_C = 100 \mu\text{A}, V_{CE} = 5 \text{ V}$	$V_{i(off)}$	0.5	-	1.1	
Input on voltage $I_C = 2 \text{ mA}, V_{CE} = 0.3 \text{ V}$	$V_{i(on)}$	0.5	-	1.4	
Input resistor	$R_1$	3.2	4.7	6.2	$\text{k}\Omega$
Resistor ratio	$R_1/R_2$	0.42	0.47	0.52	-
<b>AC Characteristics</b>					
Transition frequency $I_C = 10 \text{ mA}, V_{CE} = 5 \text{ V}, f = 100 \text{ MHz}$	$f_T$	-	160	-	MHz
Collector-base capacitance $V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$	$C_{cb}$	-	3	-	pF

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

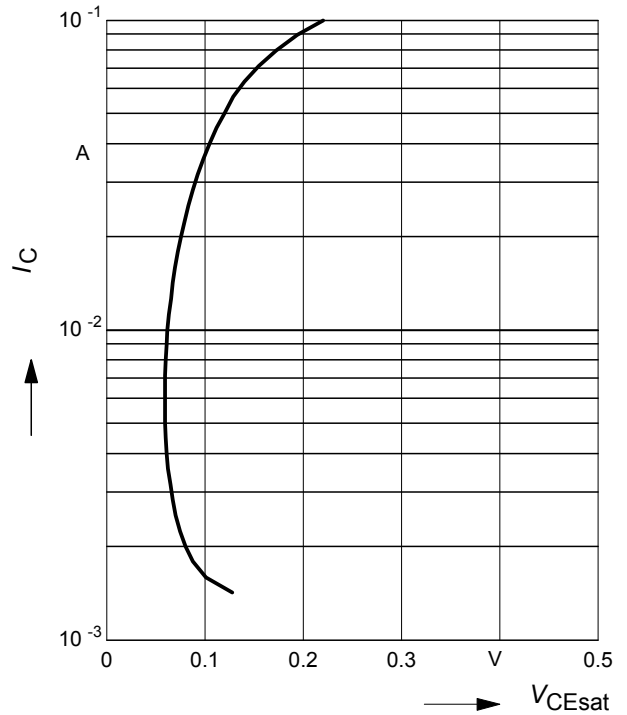
**DC current gain  $h_{FE} = f(I_C)$**

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



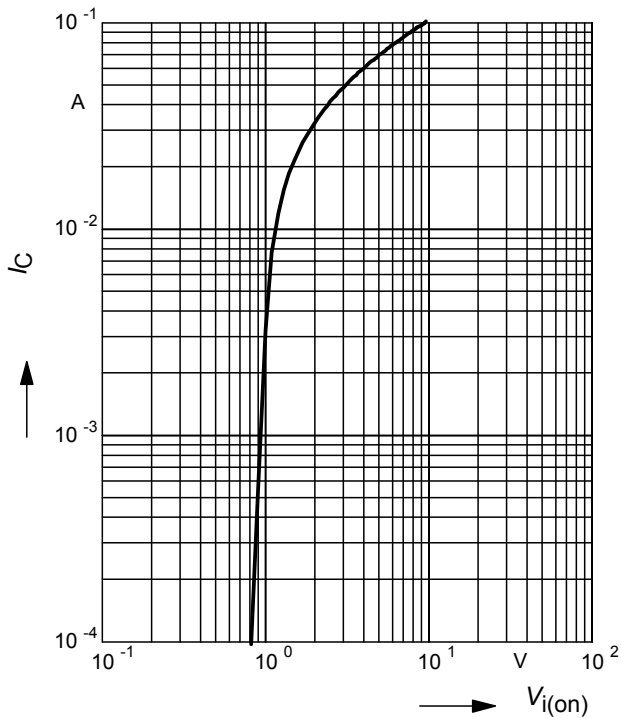
**Collector-emitter saturation voltage**

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



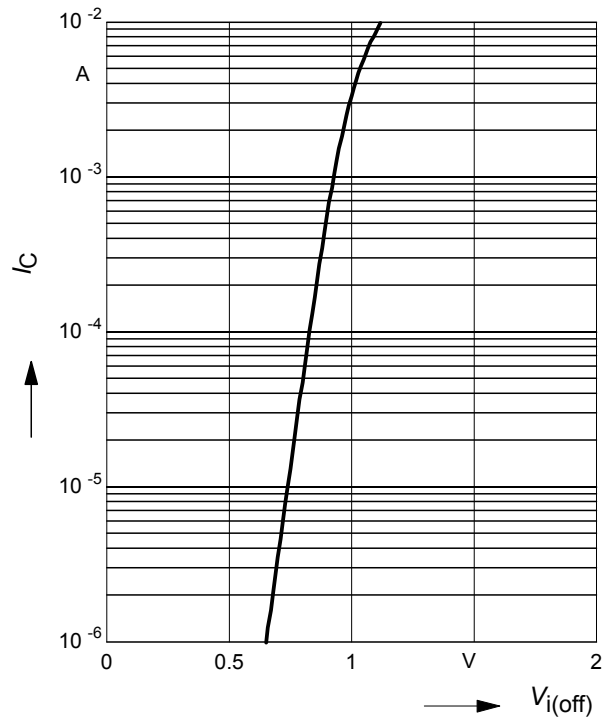
**Input on Voltage  $V_{i(on)} = f(I_C)$**

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



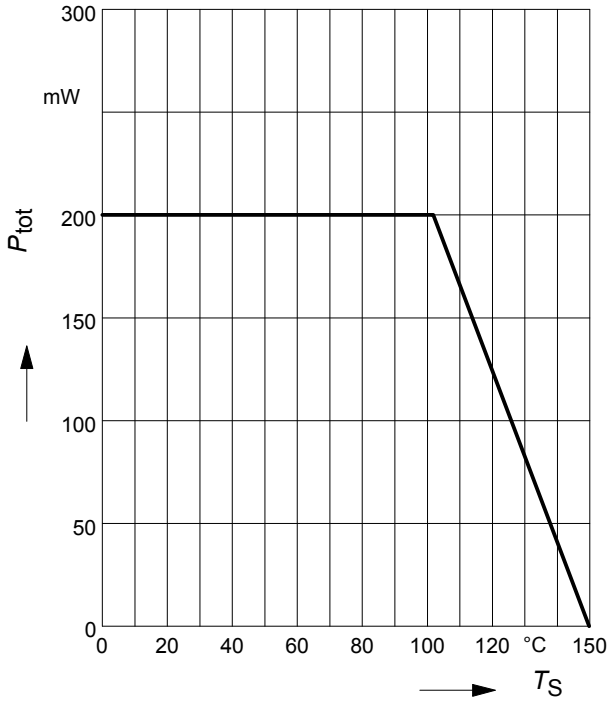
**Input off voltage  $V_{i(off)} = f(I_C)$**

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



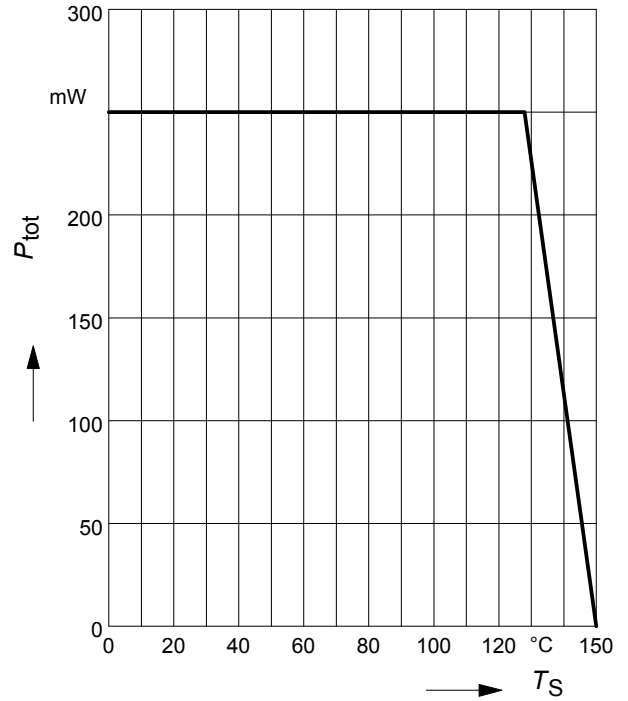
Total power dissipation  $P_{tot} = f(T_S)$

BCR114



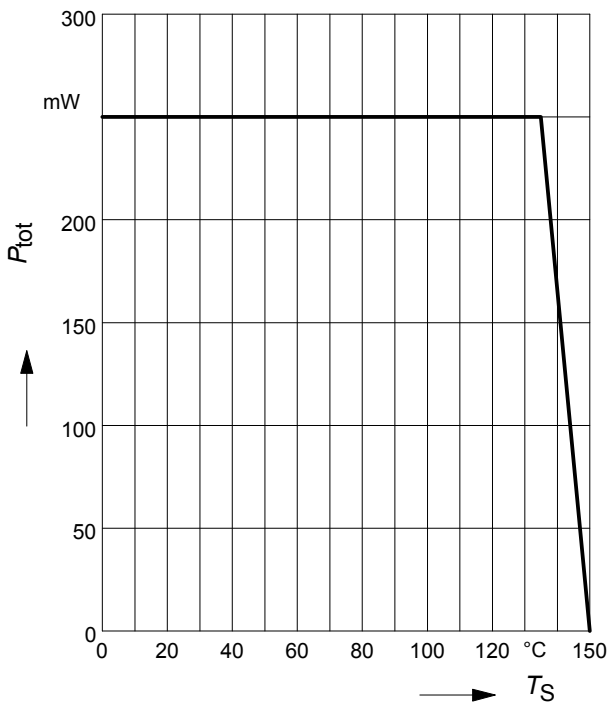
Total power dissipation  $P_{tot} = f(T_S)$

BCR114F



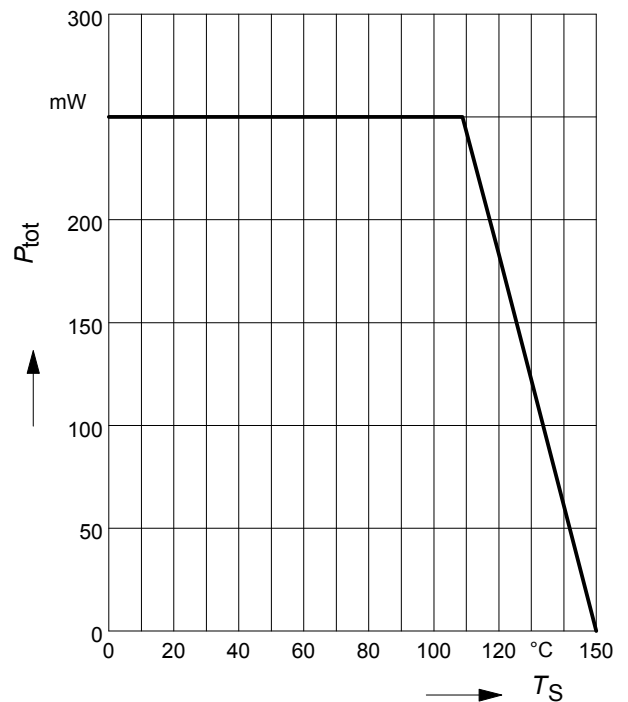
Total power dissipation  $P_{tot} = f(T_S)$

BCR114L3



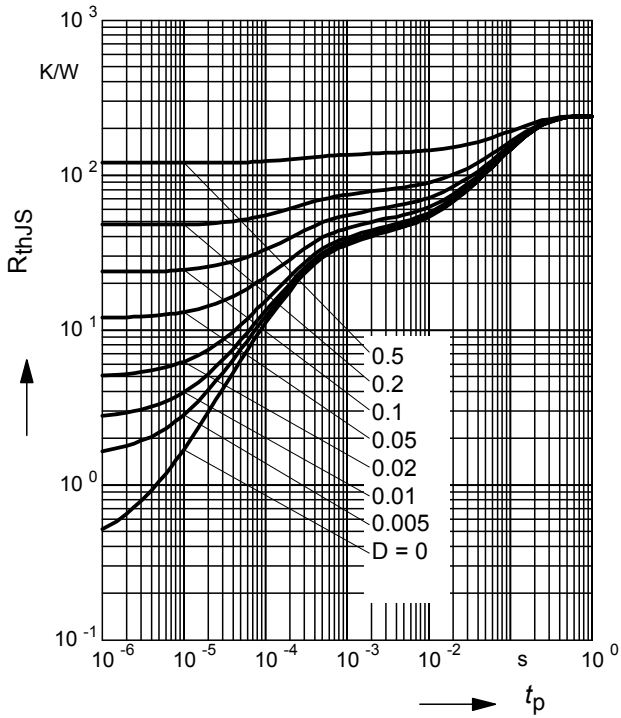
Total power dissipation  $P_{tot} = f(T_S)$

BCR114T



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

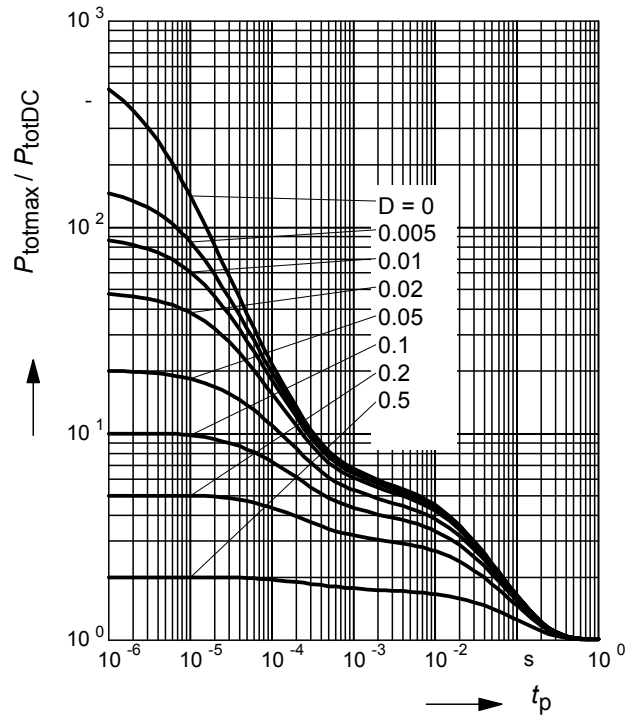
BCR114



**Permissible Pulse Load**

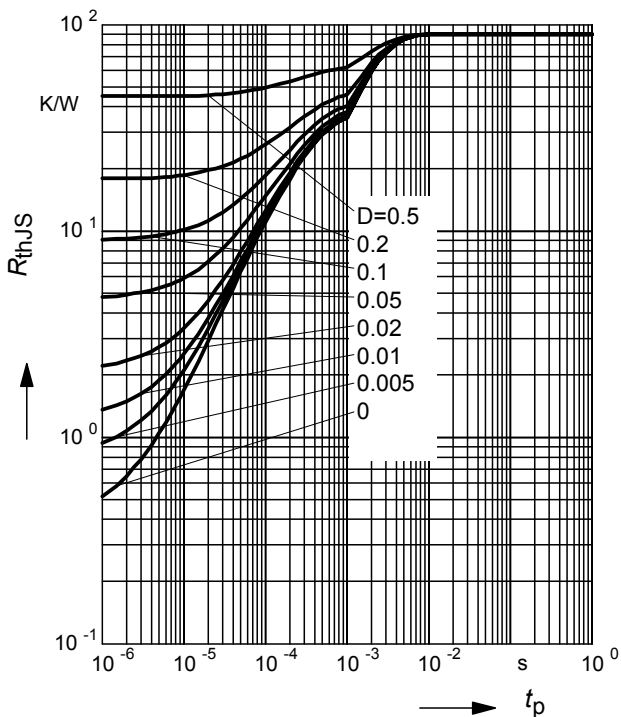
$P_{totmax}/P_{totDC} = f(t_p)$

BCR114



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

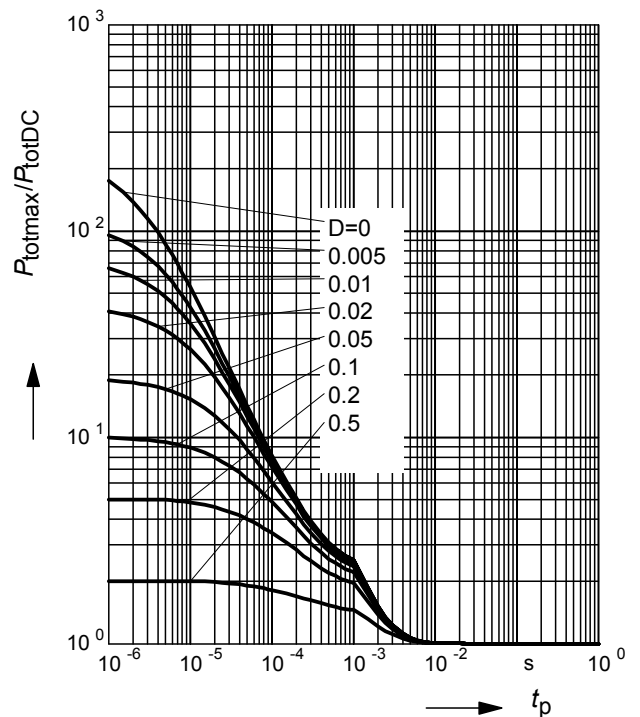
BCR114F



**Permissible Pulse Load**

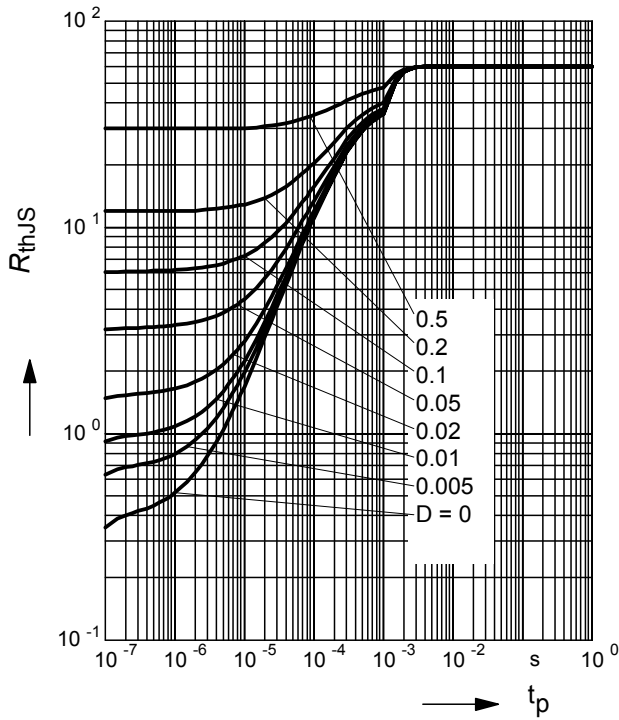
$P_{totmax}/P_{totDC} = f(t_p)$

BCR114F



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

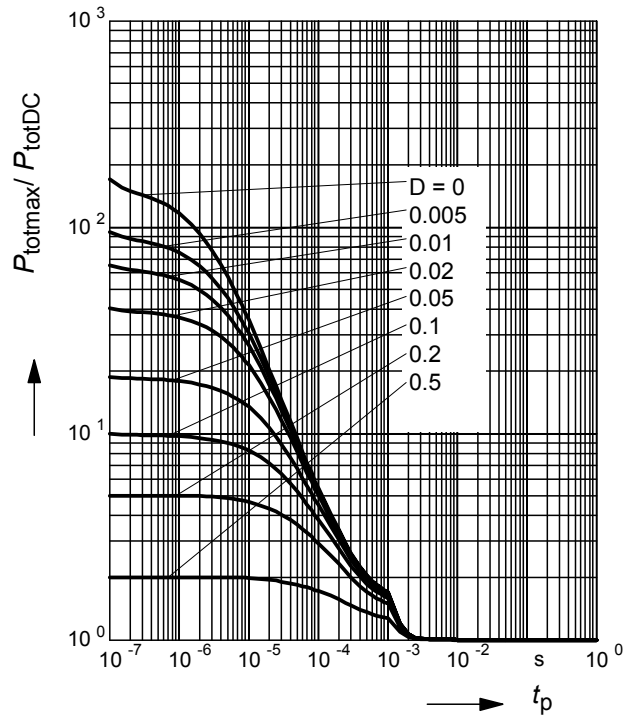
BCR114L3



**Permissible Pulse Load**

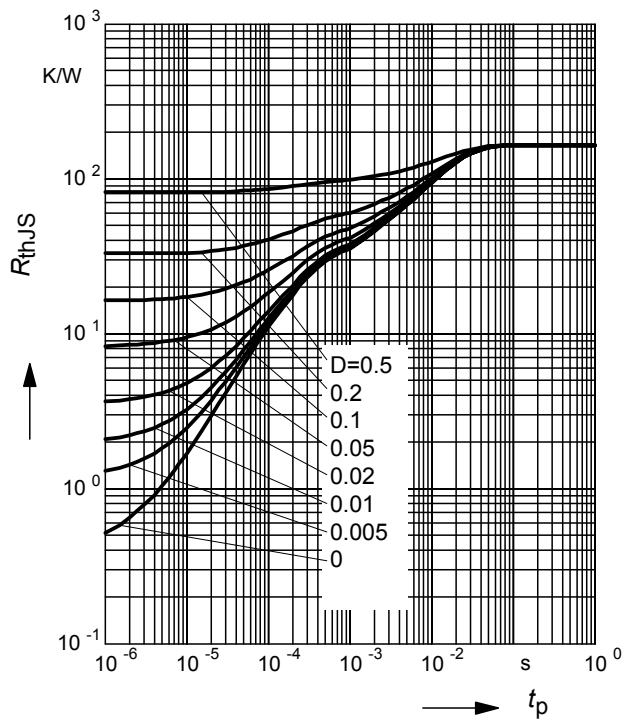
$P_{totmax}/P_{totDC} = f(t_p)$

BCR114L3



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

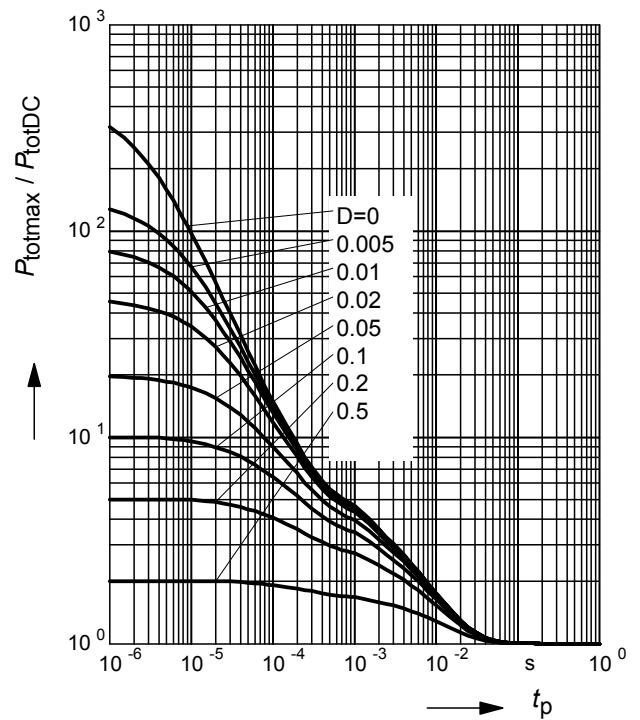
BCR114T



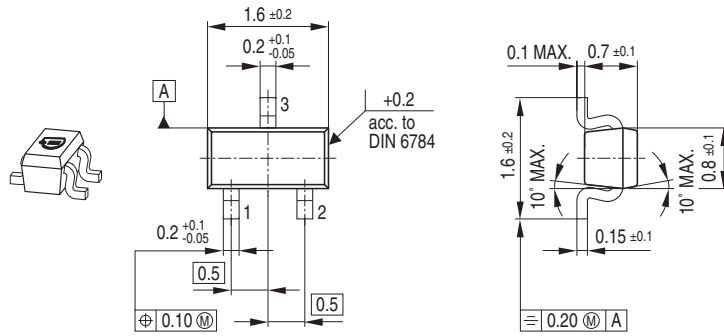
**Permissible Pulse Load**

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

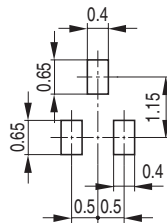
BCR114T



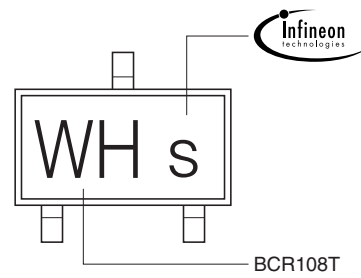
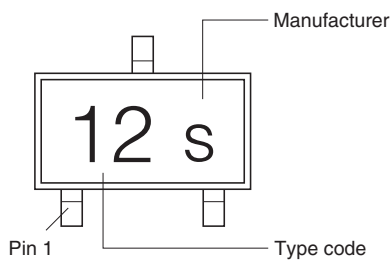
### Package Outline



### Foot Print



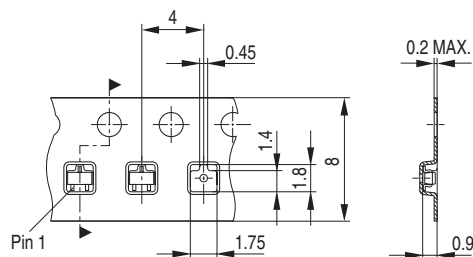
### Marking Layout



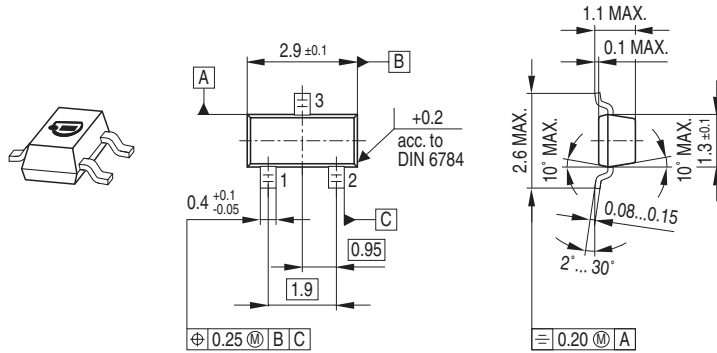
Example

### Packing

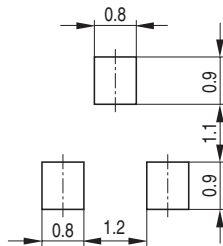
Code E6327: Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Code E6433: Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



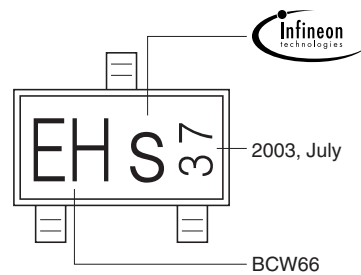
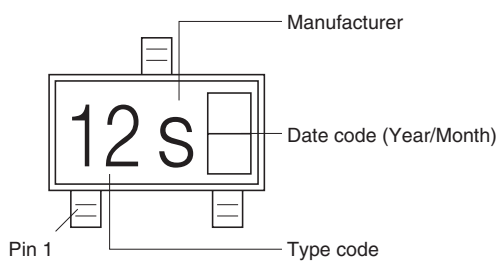
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### Marking Layout

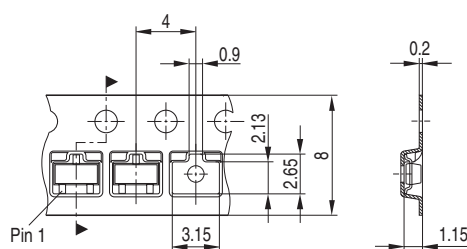


Example

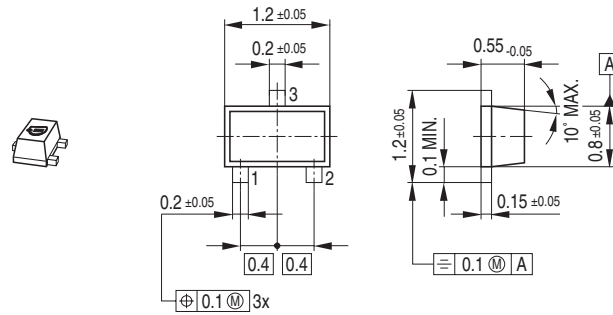
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Code E6327: Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel

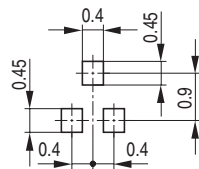
Code E6433: Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



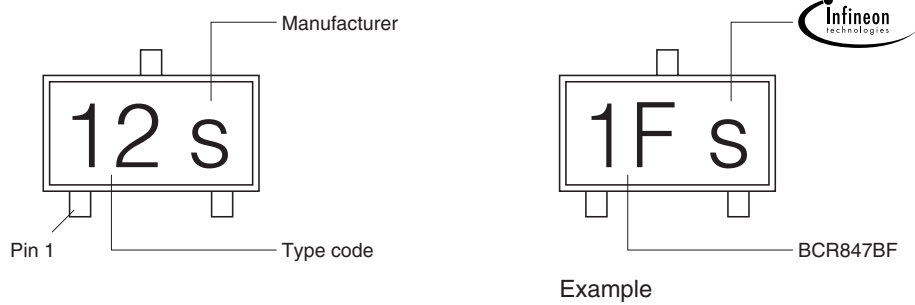
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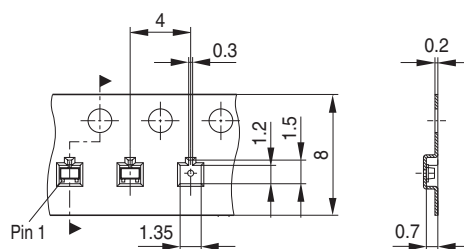


### Marking Layout

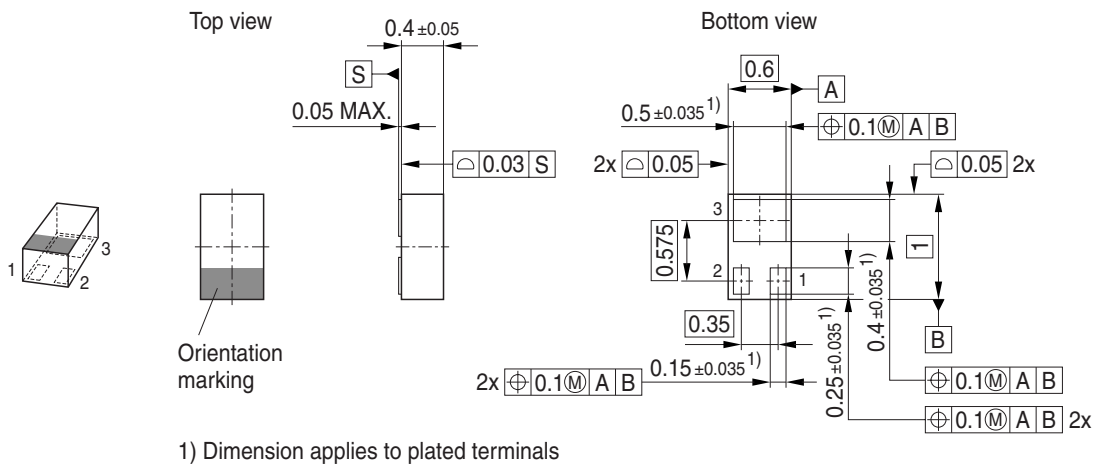


### Packing

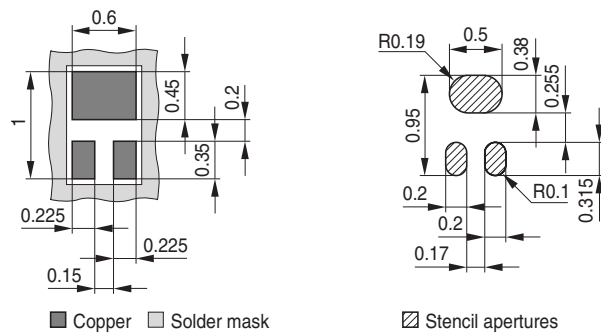
Code E6327: Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Code E6433: Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



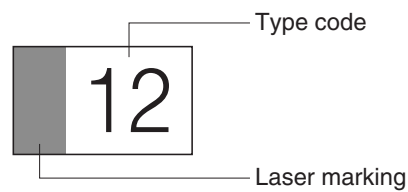
### Package Outline



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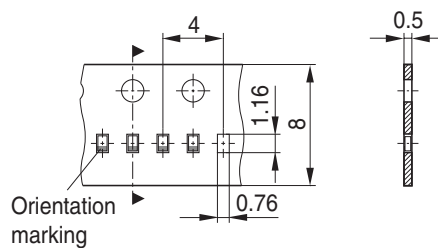


### Marking Layout



### Packing

Code E6327: Reel  $\varnothing 180 \text{ mm}$  = 15.000 Pieces/Reel



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