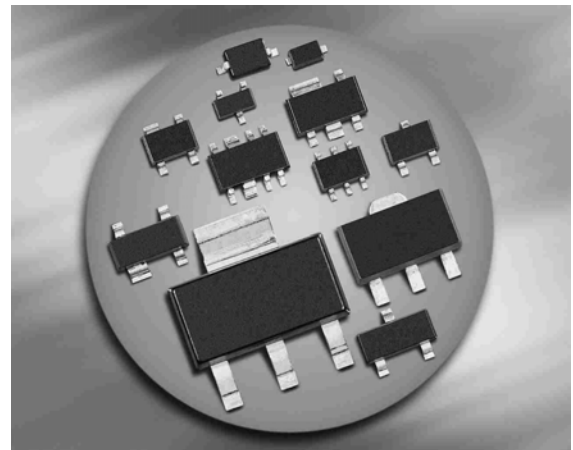
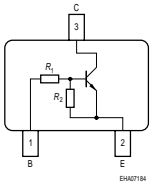


NPN Silicon Digital Transistor

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor ($R_1=47k\Omega$, $R_2=22k\Omega$)



BCR146/F/L3
BCR146T/W



Type	Marking	Pin Configuration						Package
		1=B	2=E	3=C	-	-	-	
BCR146	WLs	1=B	2=E	3=C	-	-	-	SOT23
BCR146F	WLs	1=B	2=E	3=C	-	-	-	TSFP-3
BCR146L3	WL	1=B	2=E	3=C	-	-	-	TSLP-3-4
BCR146T	WLs	1=B	2=E	3=C	-	-	-	SC75
BCR146W	WLs	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	
Emitter-base voltage	V_{EBO}	10	
Input on voltage	$V_{i(on)}$	50	
Collector current	I_C	70	mA
Total power dissipation- BCR146, $T_S \leq 102^\circ\text{C}$ BCR146F, $T_S \leq 128^\circ\text{C}$ BCR146L3, $T_S \leq 135^\circ\text{C}$ BCR146T, $T_S \leq 109^\circ\text{C}$ BCR146W, $T_S \leq 124^\circ\text{C}$	P_{tot}	200 250 250 250 250	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ¹⁾	R_{thJS}		K/W
BCR146		≤ 240	
BCR146F		≤ 90	
BCR146L3		≤ 60	
BCR146T		≤ 165	
BCR146W		≤ 105	

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

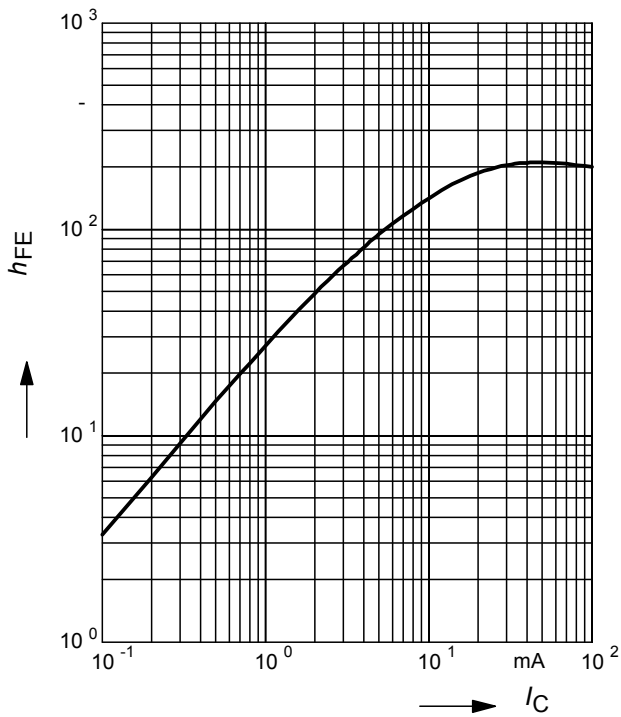
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 100 \mu\text{A}, I_B = 0$	$V_{(BR)CEO}$	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	μA
DC current gain ¹⁾ $I_C = 5 \text{ mA}, V_{CE} = 5 \text{ V}$	h_{FE}	50	-	-	-
Collector-emitter saturation voltage ¹⁾ $I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$	V_{CEsat}	-	-	0.3	V
Input off voltage $I_C = 100 \mu\text{A}, V_{CE} = 5 \text{ V}$	$V_{i(off)}$	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	$\text{k}\Omega$
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

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

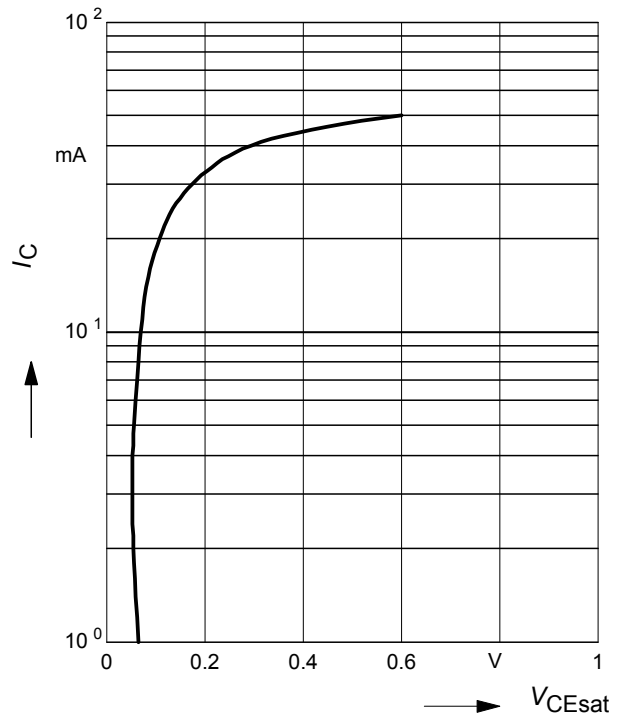
DC current gain $h_{FE} = f(I_C)$

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



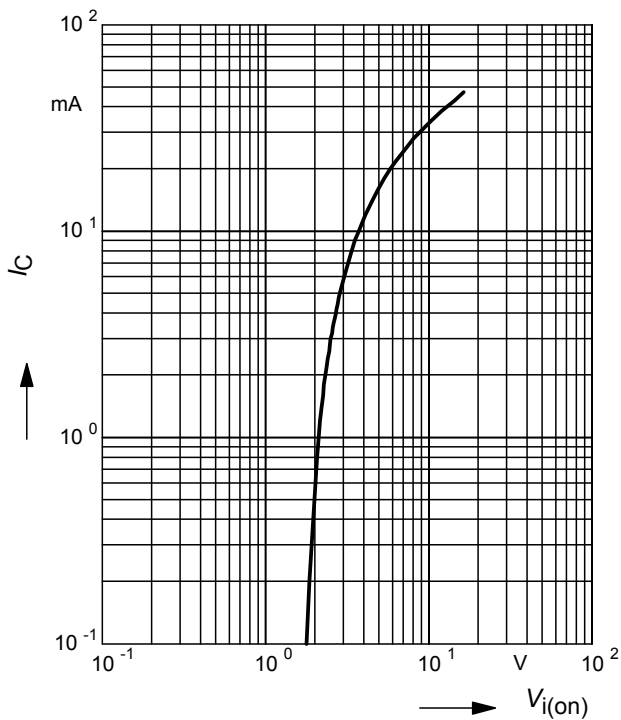
Collector-emitter saturation voltage

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



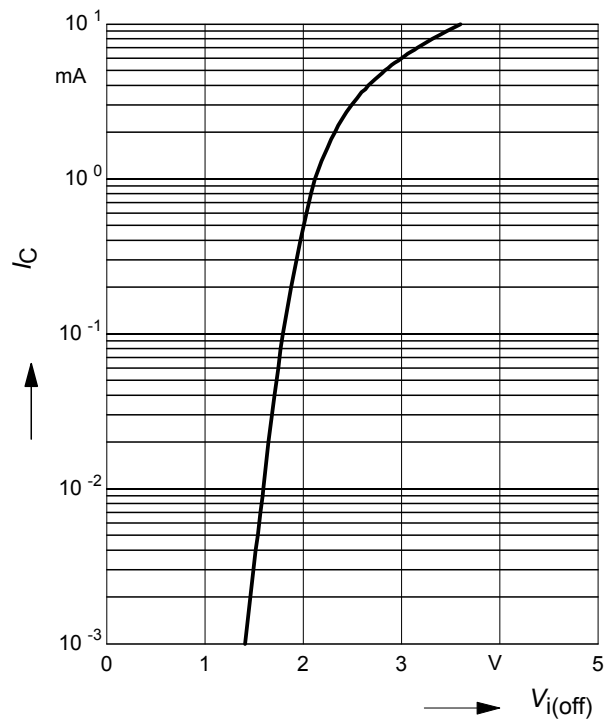
Input on Voltage $V_{i(on)} = f(I_C)$

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



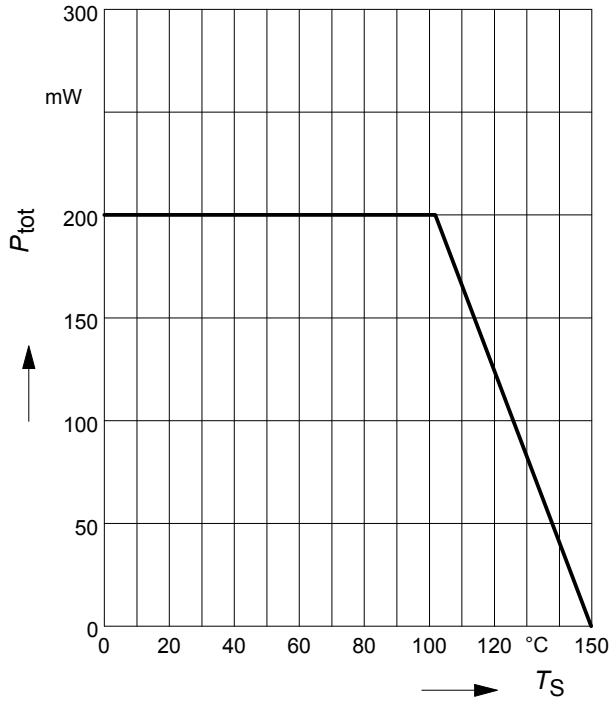
Input off voltage $V_{i(off)} = f(I_C)$

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



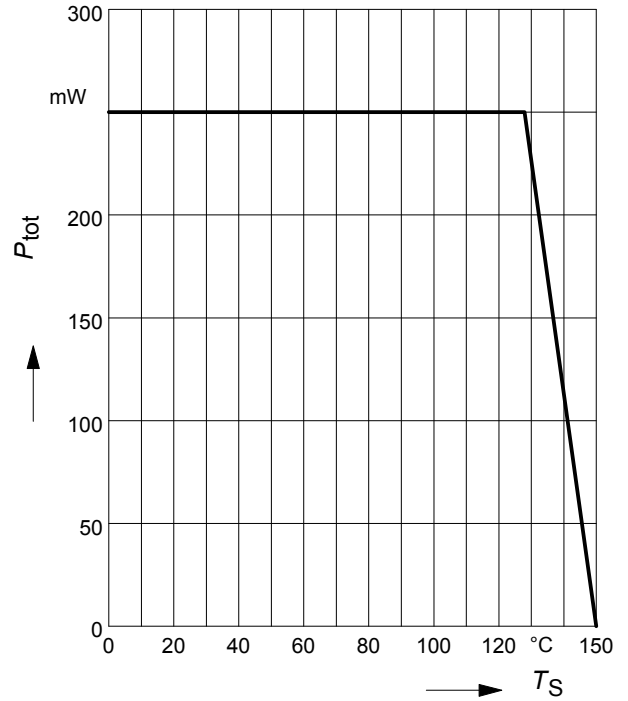
Total power dissipation $P_{tot} = f(T_S)$

BCR146



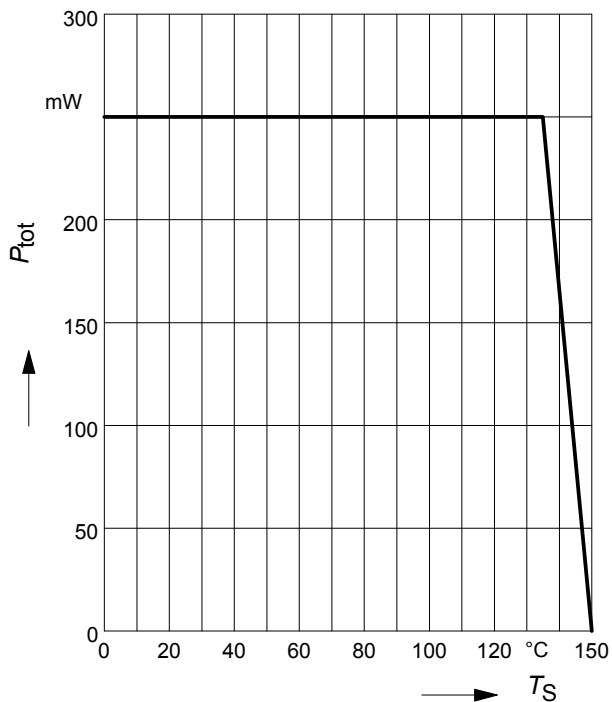
Total power dissipation $P_{tot} = f(T_S)$

BCR146F



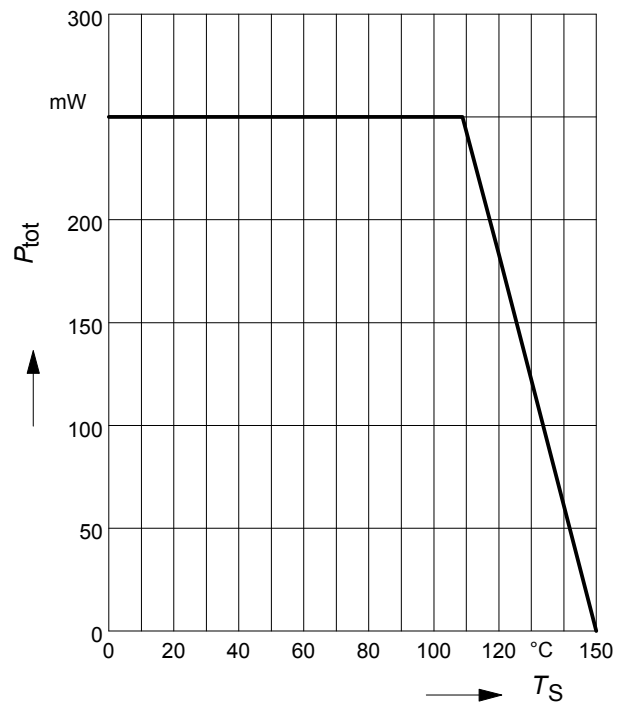
Total power dissipation $P_{tot} = f(T_S)$

BCR146L3



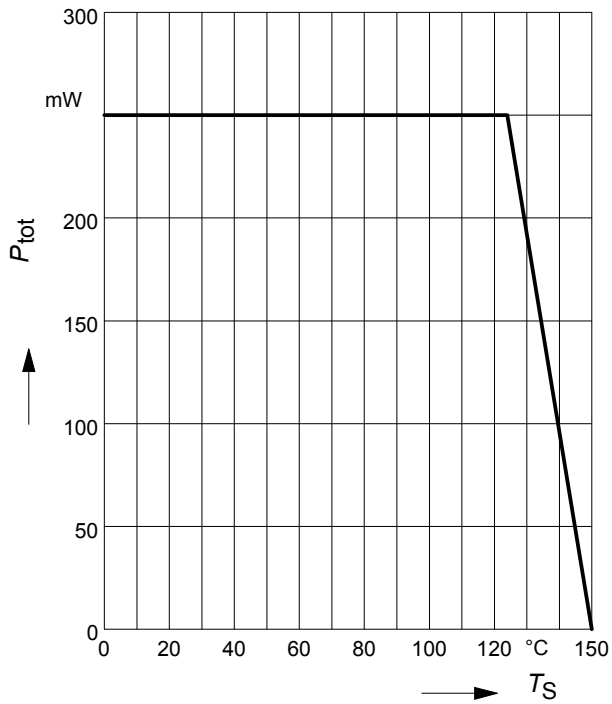
Total power dissipation $P_{tot} = f(T_S)$

BCR146T



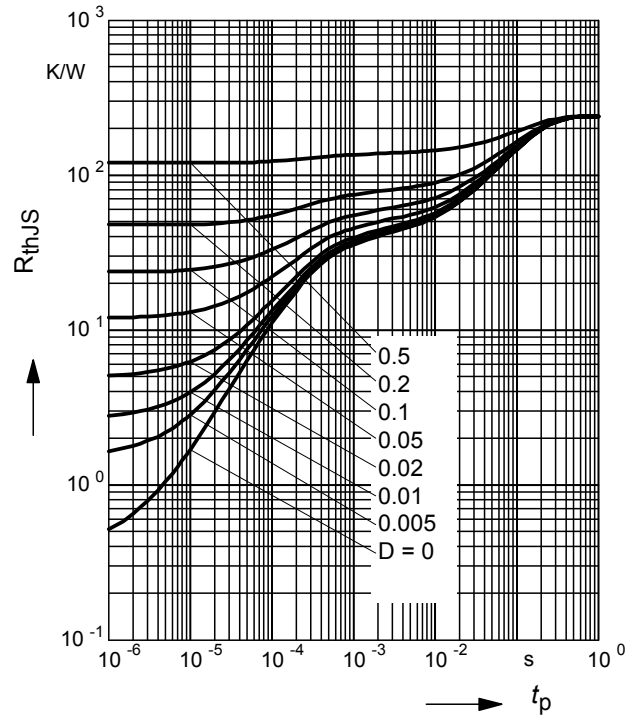
Total power dissipation $P_{tot} = f(T_S)$

BCR146W



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

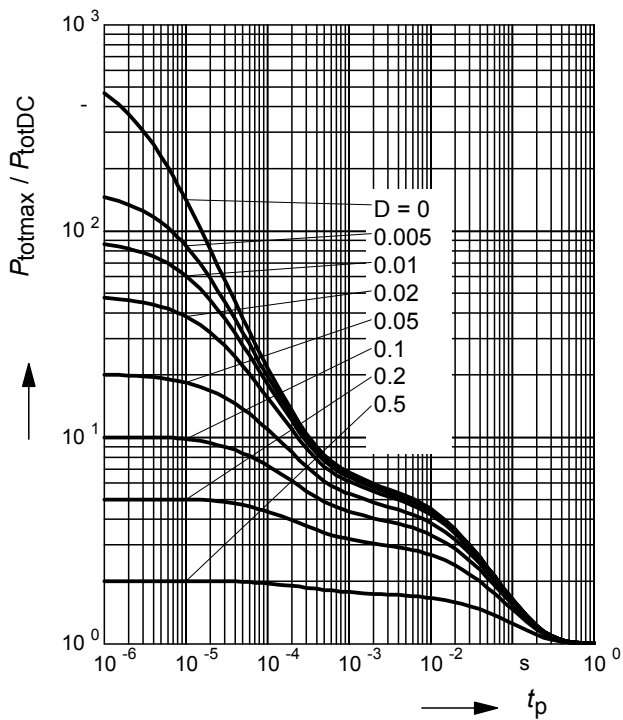
BCR146



Permissible Pulse Load

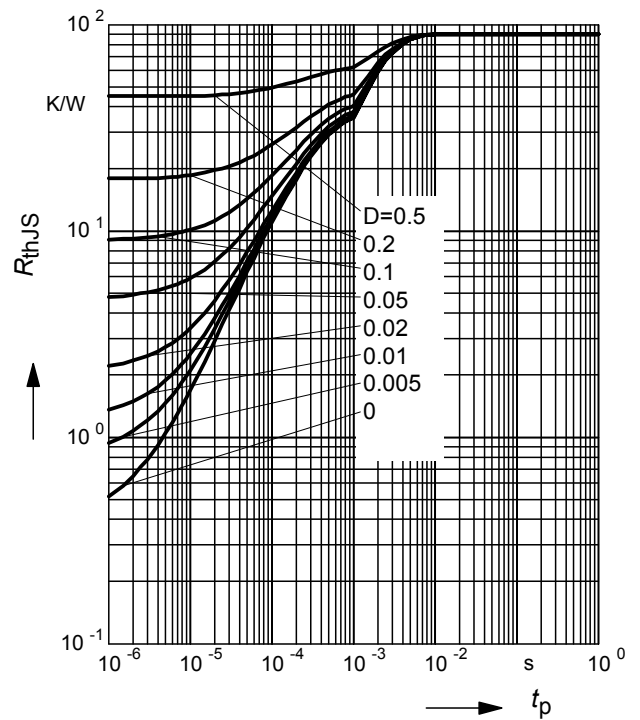
$P_{totmax}/P_{totDC} = f(t_p)$

BCR146



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

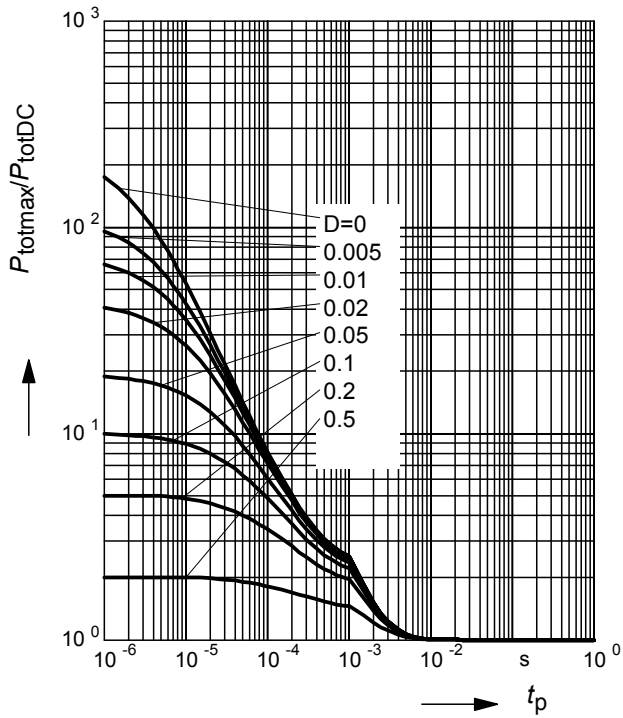
BCR146F



Permissible Pulse Load

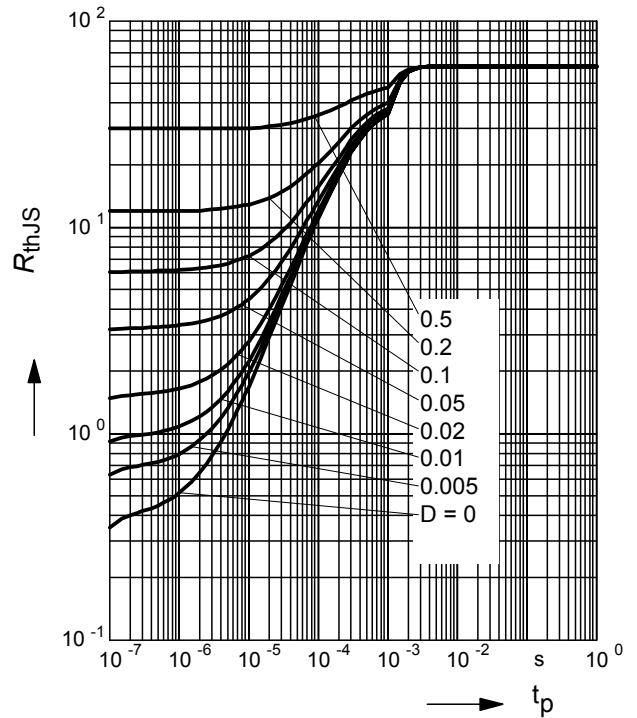
$$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$$

BCR146F



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

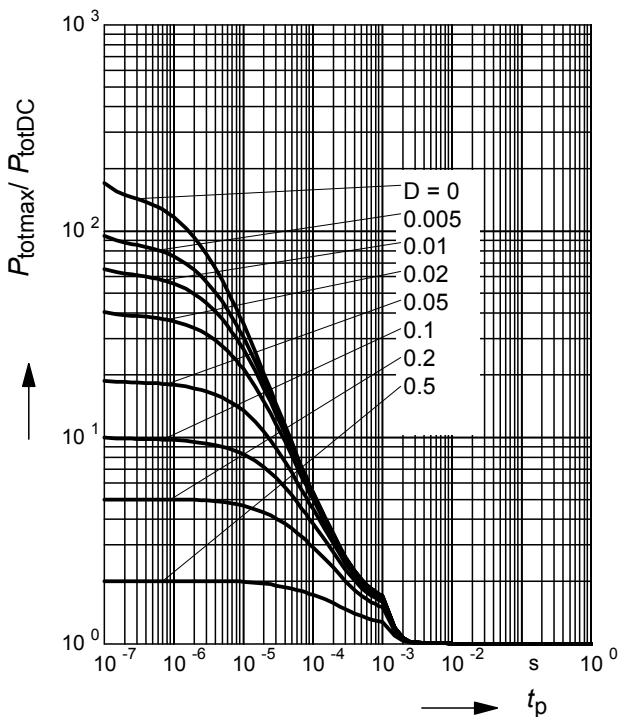
BCR146L3



Permissible Pulse Load

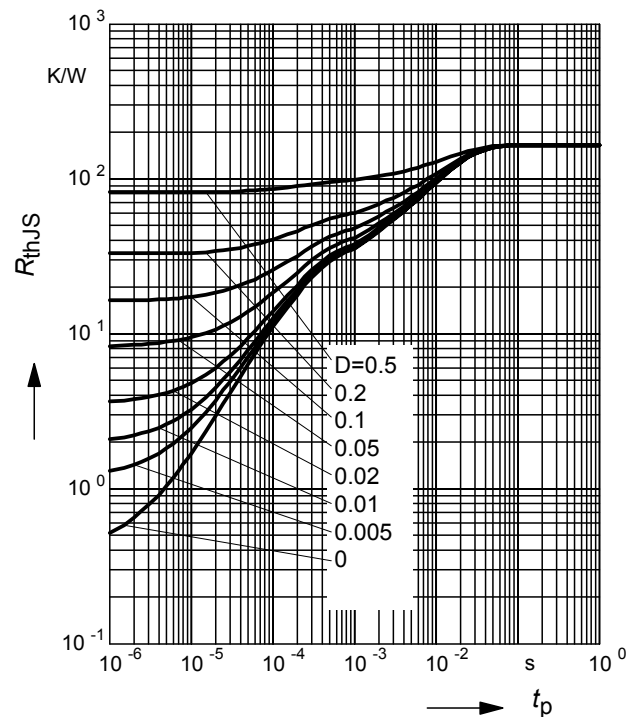
$$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$$

BCR146L3



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

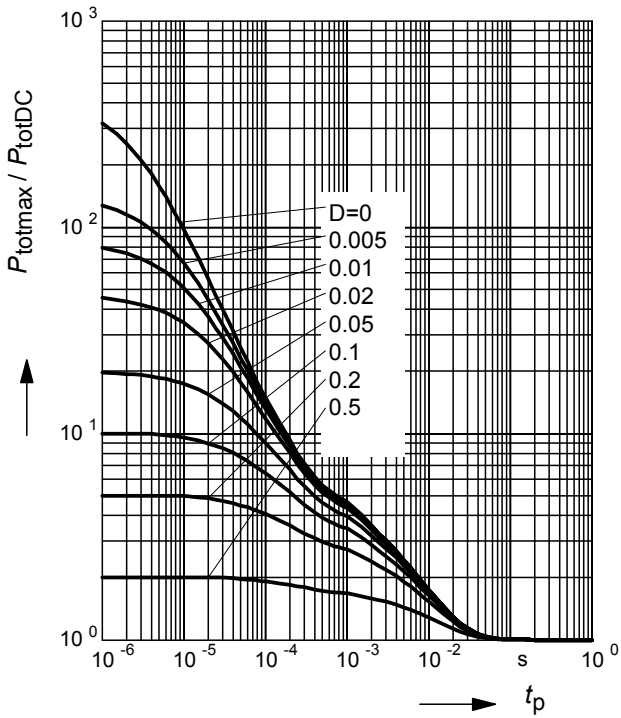
BCR146T



Permissible Pulse Load

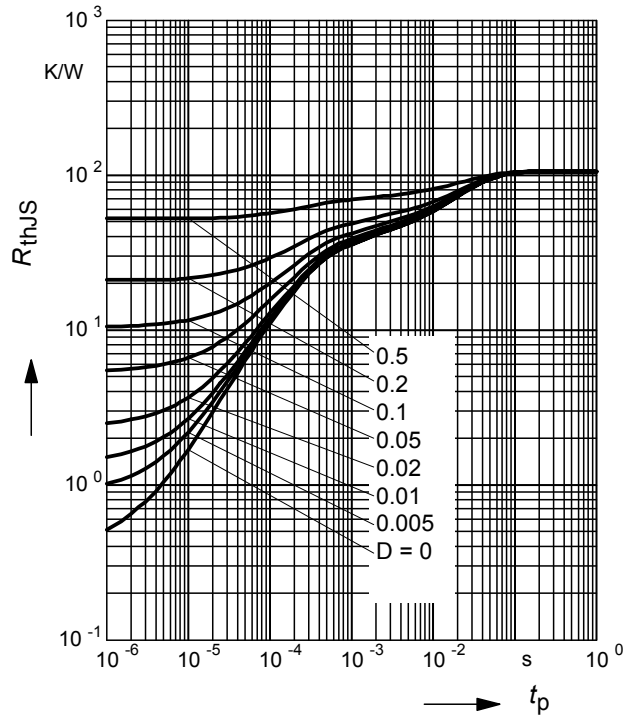
$$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$$

BCR146T



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

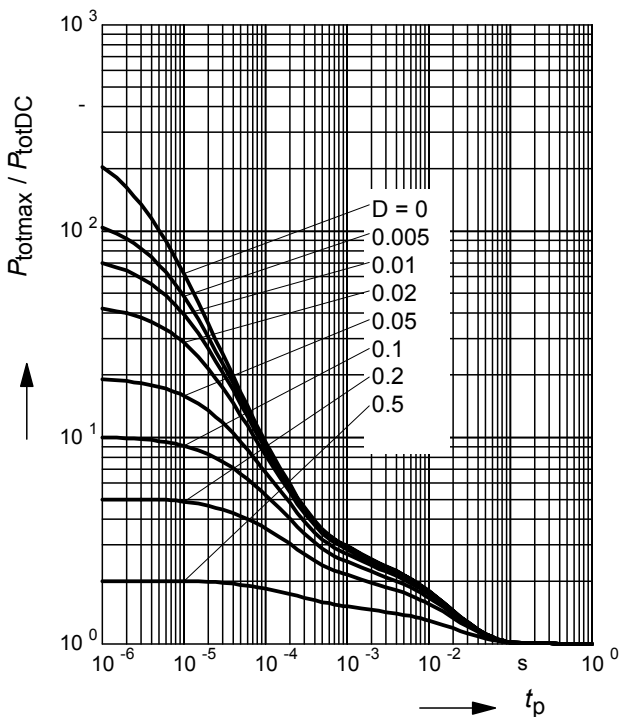
BCR146W



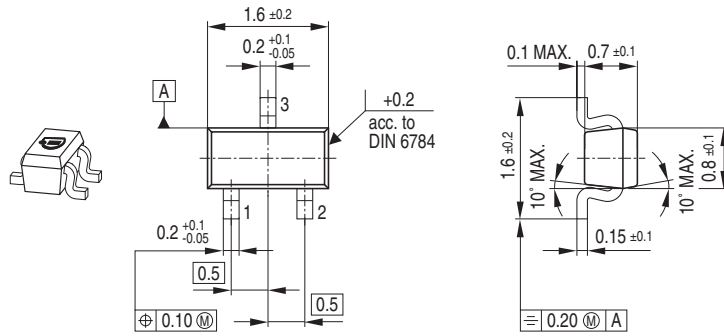
Permissible Pulse Load

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

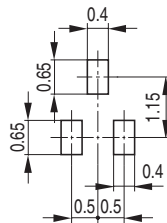
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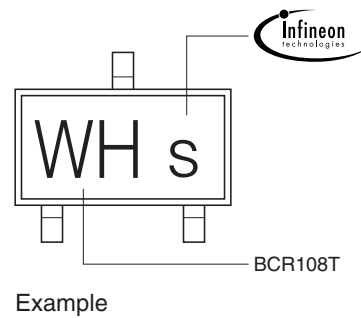
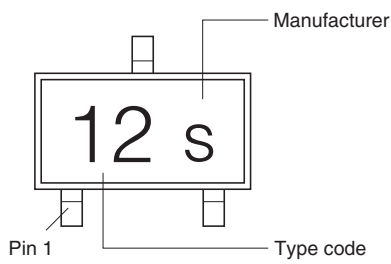
Package Outline



Foot Print

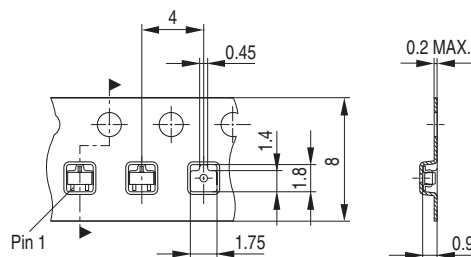


Marking Layout

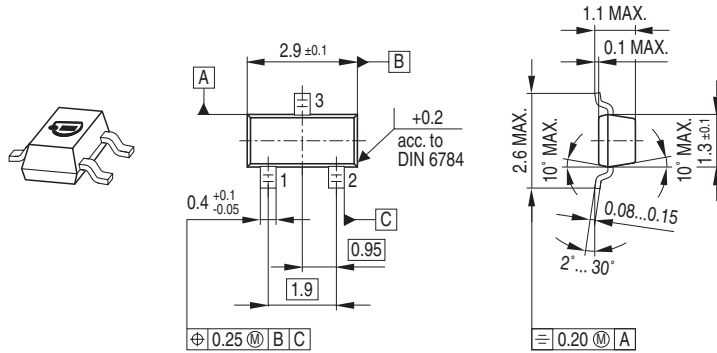


Packing

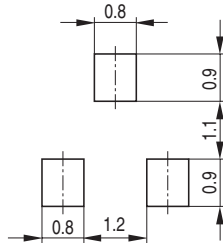
Code E6327: Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Code E6433: Reel \varnothing 330 mm = 10.000 Pieces/Reel



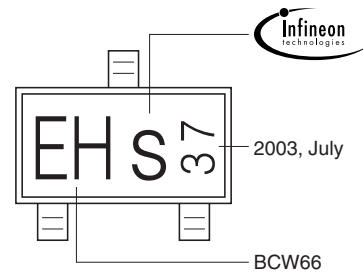
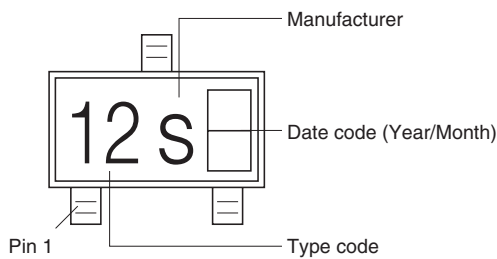
Package Outline



Foot Print



Marking Layout

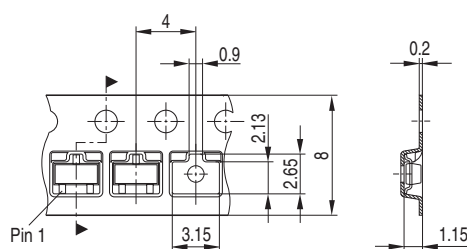


Example

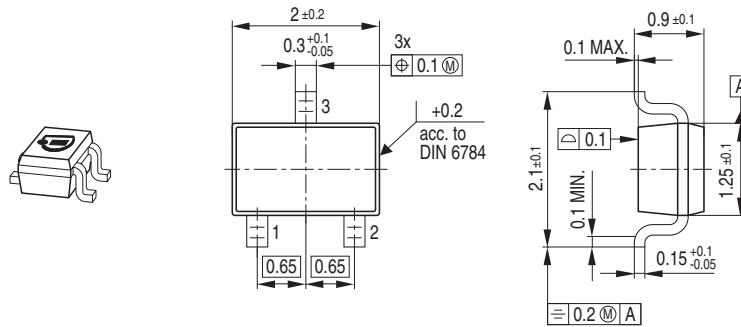
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Code E6327: Reel \varnothing 180 mm = 3.000 Pieces/Reel

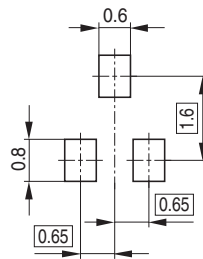
Code E6433: Reel \varnothing 330 mm = 10.000 Pieces/Reel



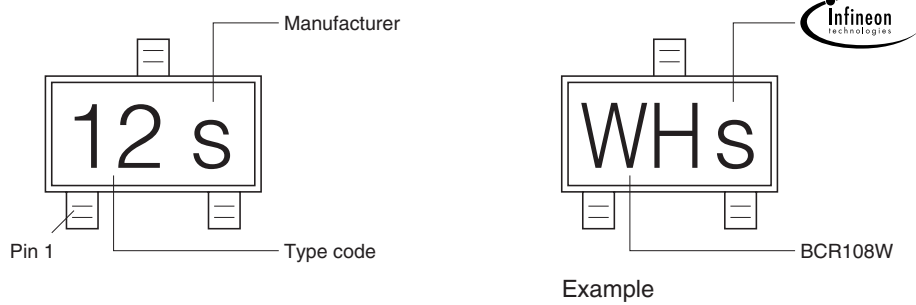
Package Outline



Foot Print

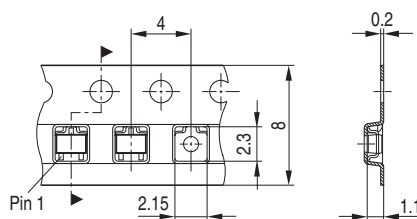


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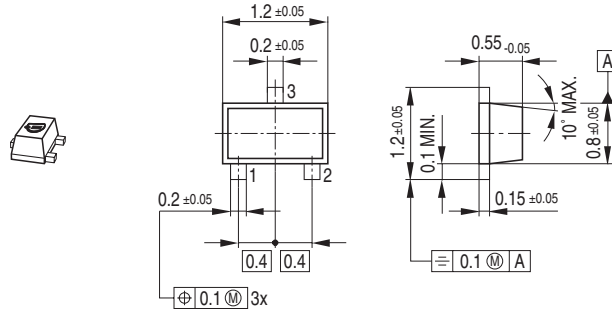


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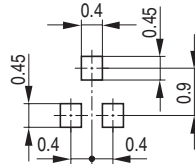
Code E6327: Reel ø180 mm = 3.000 Pieces/Reel
 Code E6433: Reel ø330 mm = 10.000 Pieces/Reel



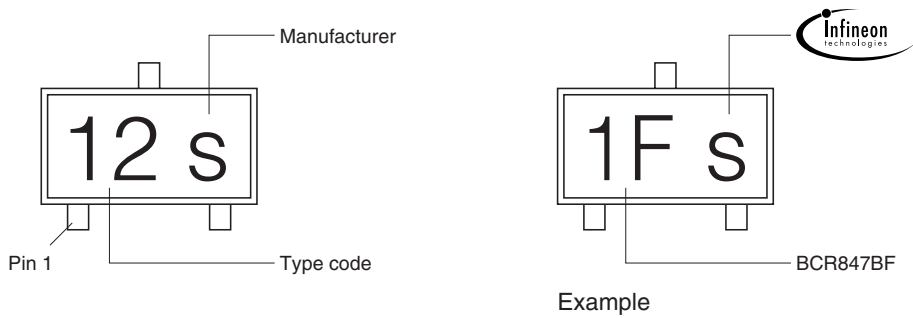
Package Outline



Foot Print

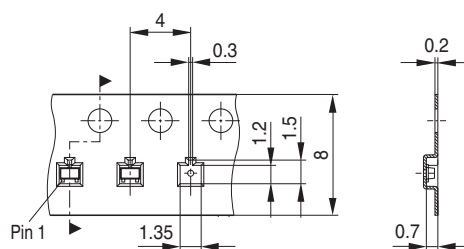


Marking Layout



Packing

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



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