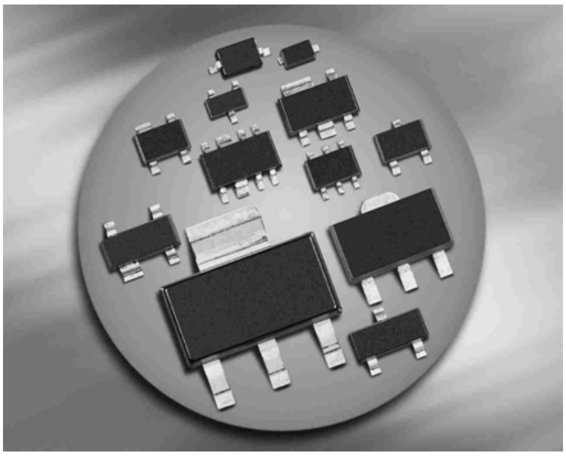
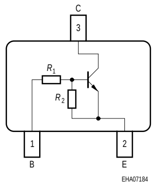
NPN Silicon Digital Transistor

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor (R_1=4.7kΩ, R_2=10kΩ)



BCR114/F
BCR114L3/T



Type	Marking	Pin Configuration						Package
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-	P_{tot}		mW
BCR114, $T_S \leq 102°C$		200	
BCR114F, $T_S \leq 128°C$		250	
BCR114L3, $T_S \leq 135°C$		250	
BCR114T, $T_S \leq 109°C$		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
BCR114		≤ 240	
BCR114F		≤ 90	
BCR114L3		≤ 60	
BCR114T		≤ 165	

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

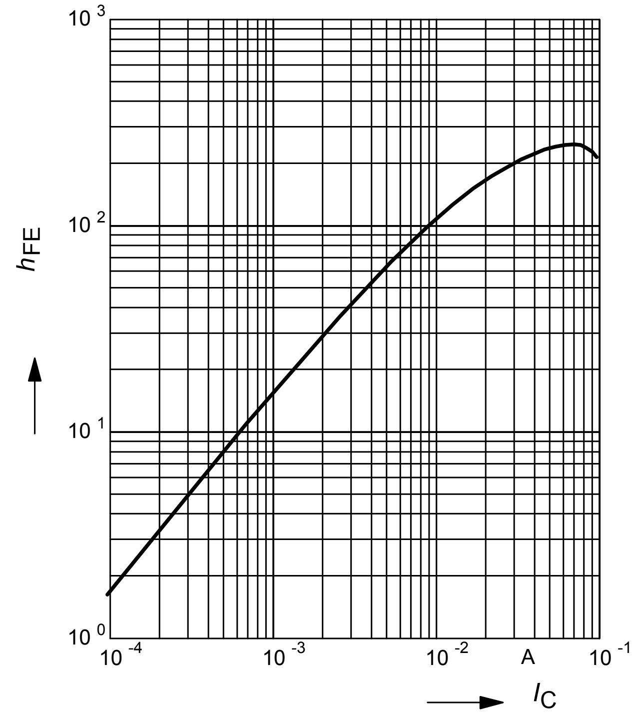
Electrical Characteristics at T_A = 25°C, unless otherwise specified

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}	-	-	520	µA
DC current gain1) I_C = 5 mA, V_{CE} = 5 V	h_{FE}	30	-	-	-
Collector-emitter saturation voltage1) 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	$V_{i(off)}$	0.5	-	1.1	
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	0.42	0.47	0.52	-
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%

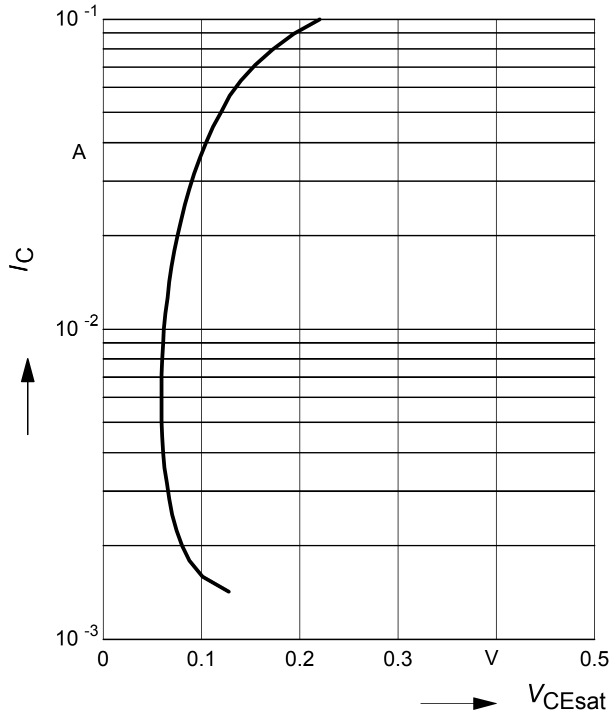
DC current gain h_{FE} = $f(I_C)$

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



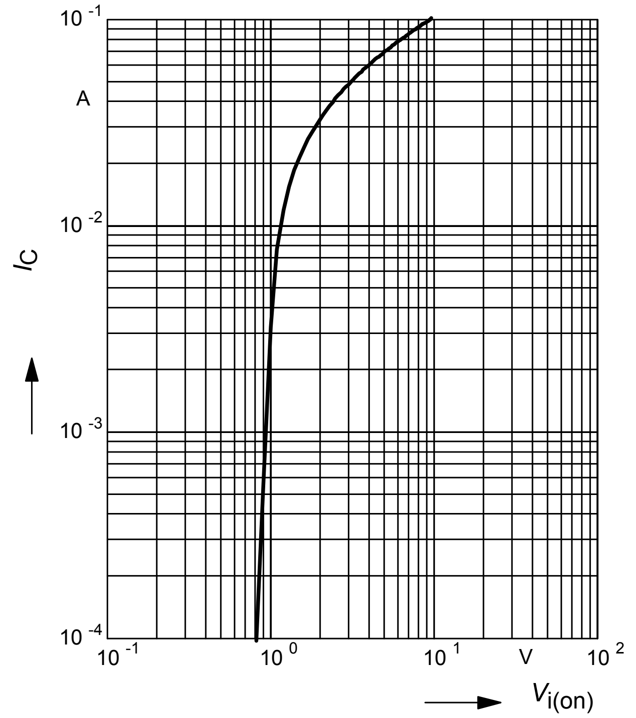
Collector-emitter saturation voltage

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



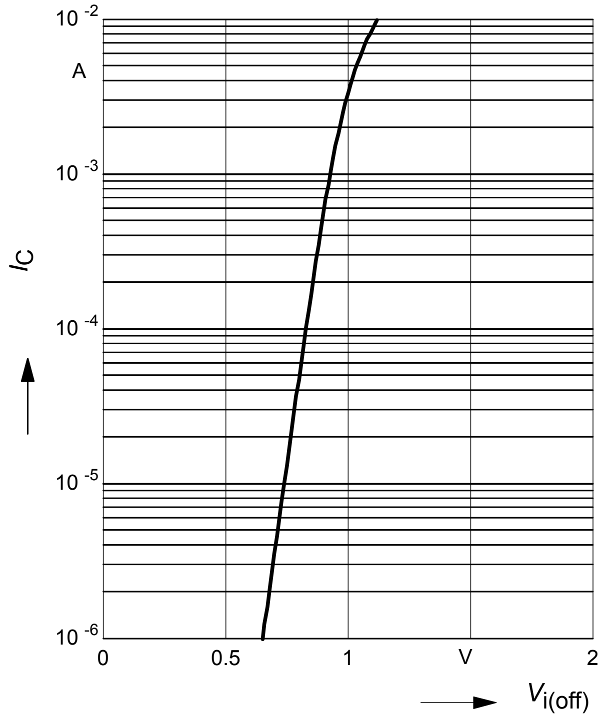
Input on Voltage $Vi_{(on)}$ = $f(I_C)$

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



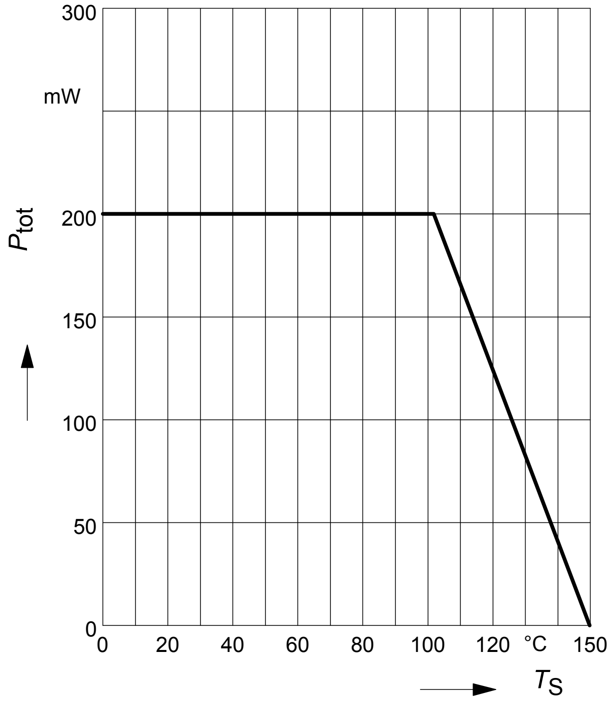
Input off voltage $V_{i(off)}$ = $f(I_C)$

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



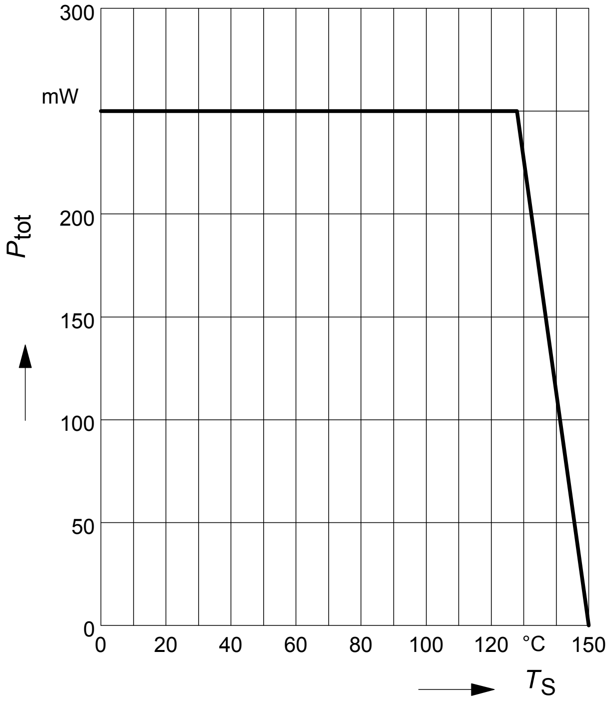
Total power dissipation $P_{tot} = f(T_S)$

BCR114



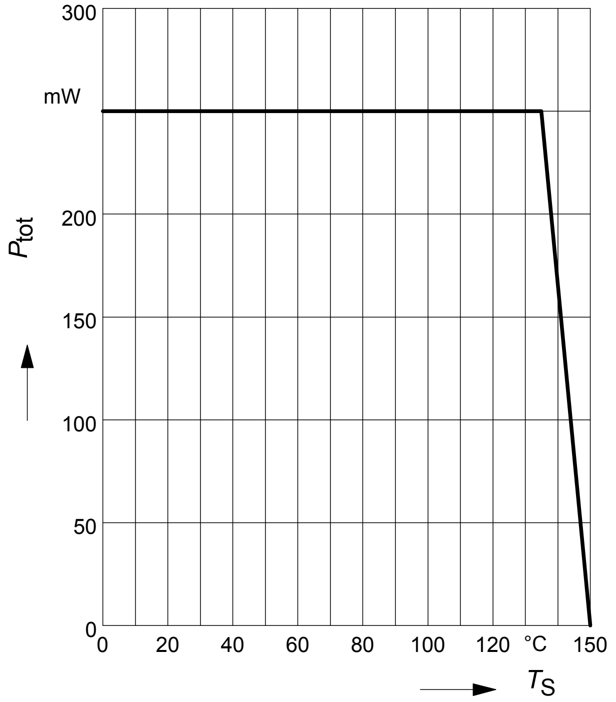
Total power dissipation $P_{tot} = f(T_S)$

BCR114F



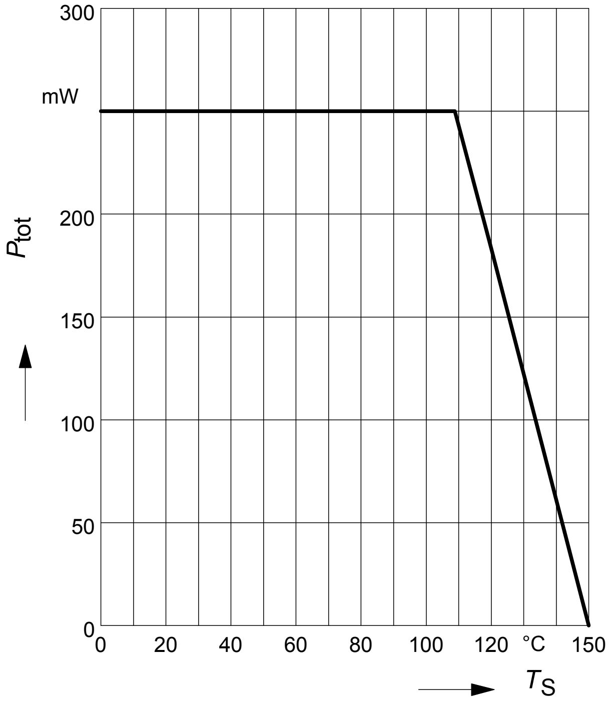
Total power dissipation $P_{tot} = f(T_S)$

BCR114L3



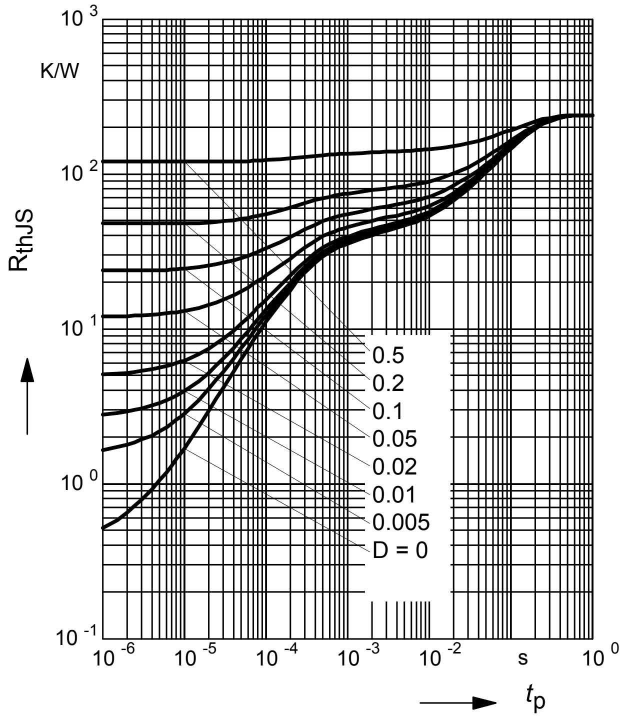
Total power dissipation $P_{tot} = f(T_S)$

BCR114T



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

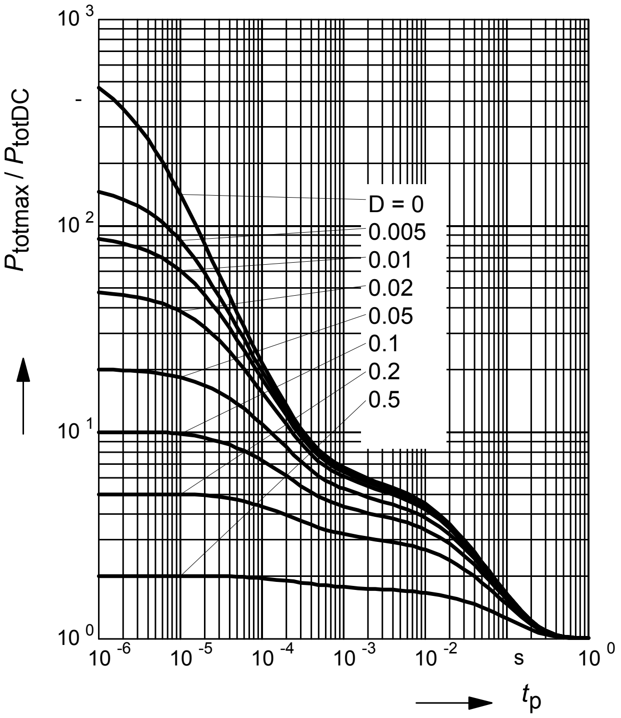
BCR114



Permissible Pulse Load

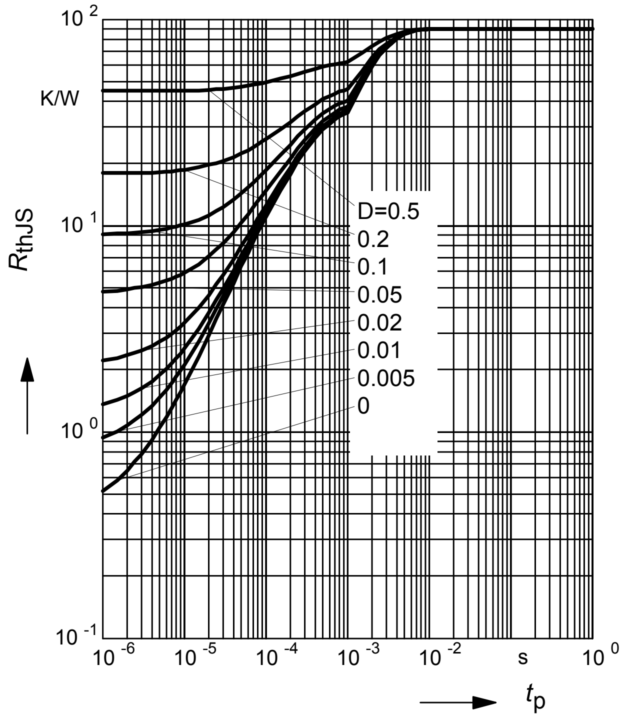
$P_{totmax}/P_{totDC} = f(t_p)$

BCR114



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

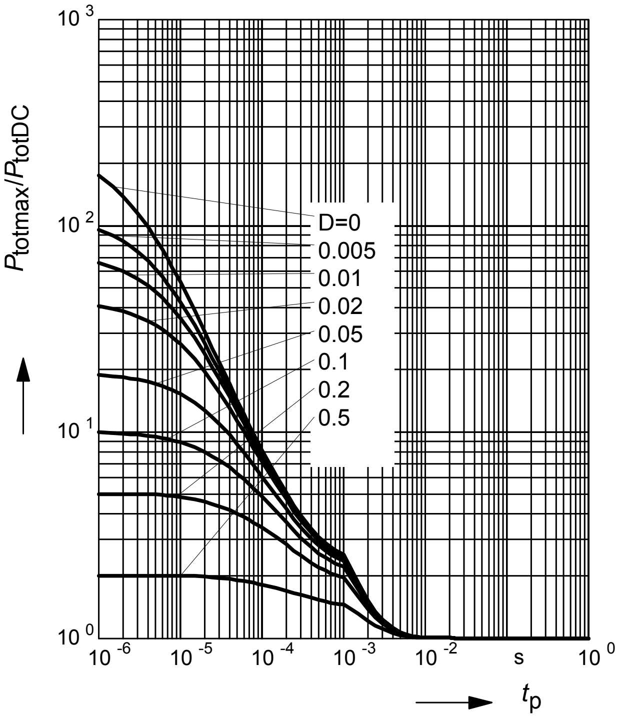
BCR114F



Permissible Pulse Load

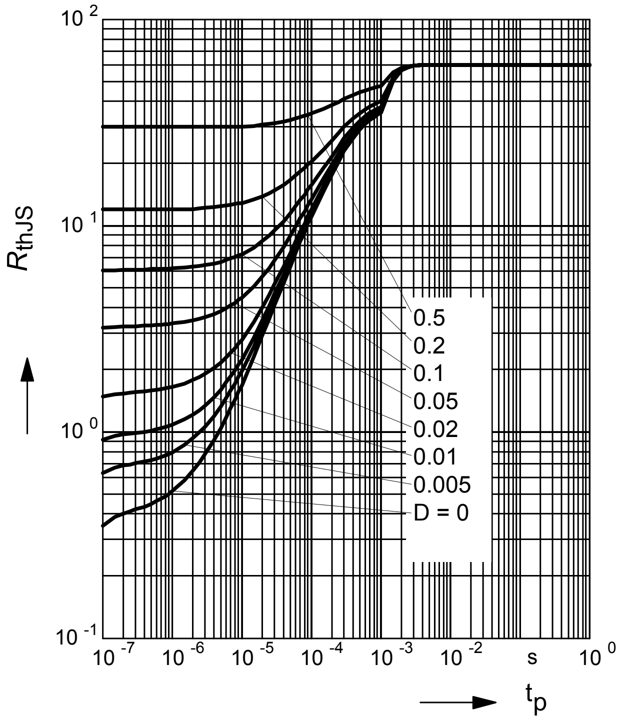
$P_{totmax}/P_{totDC} = f(t_p)$

BCR114F



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

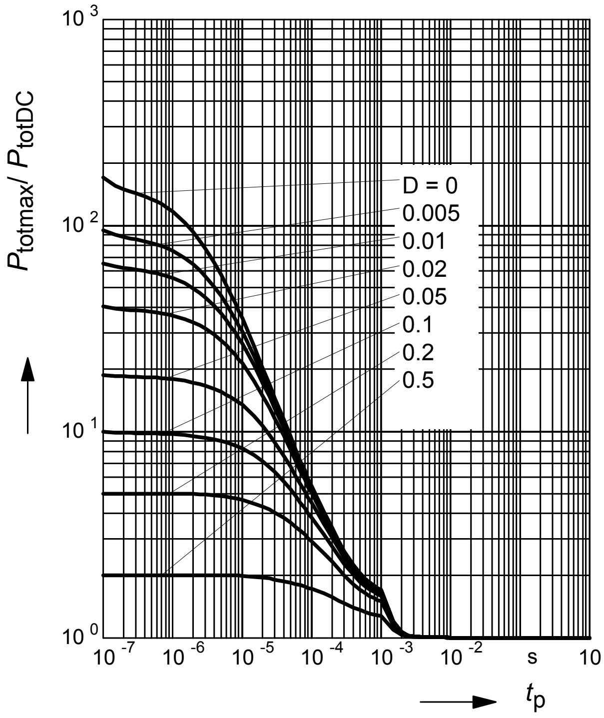
BCR114L3



Permissible Pulse Load

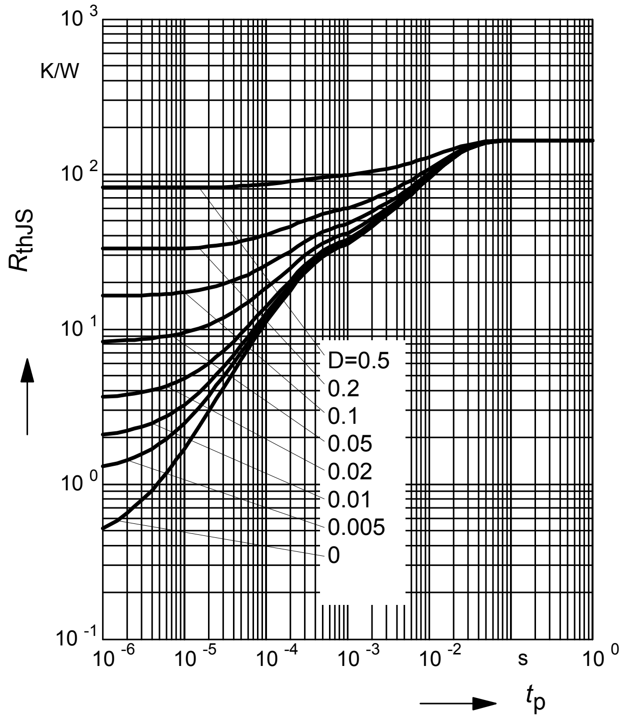
$P_{totmax}/P_{totDC} = f(t_p)$

BCR114L3



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

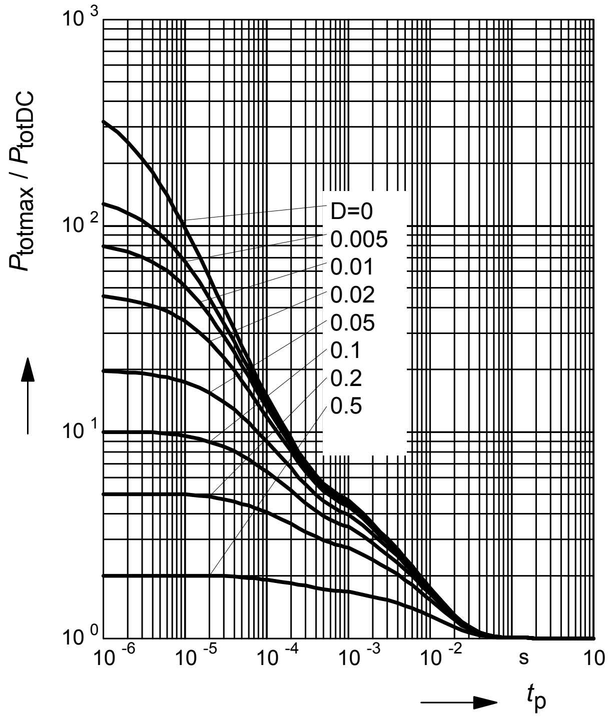
BCR114T



Permissible Pulse Load

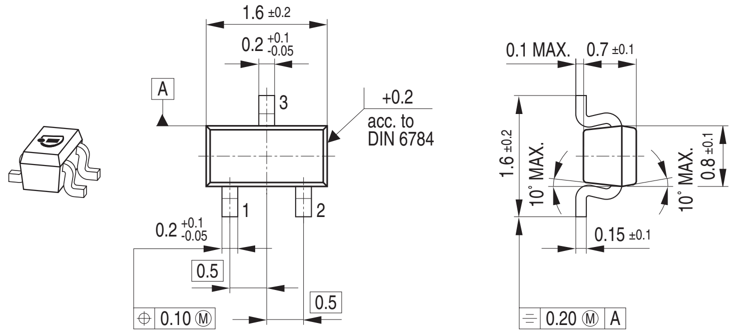
$P_{totmax}/P_{totDC} = f(t_p)$

BCR114T

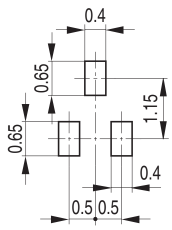


Package SC75

Package Outline



Foot Print



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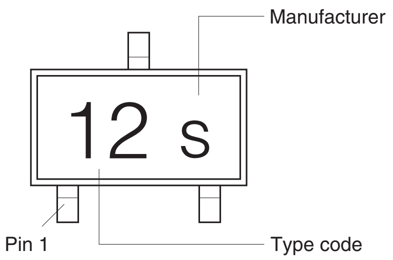
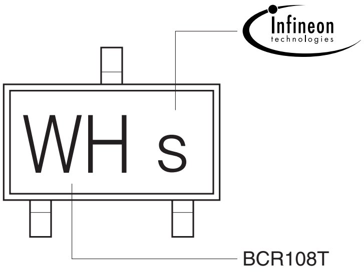
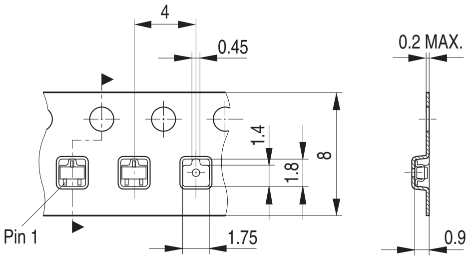




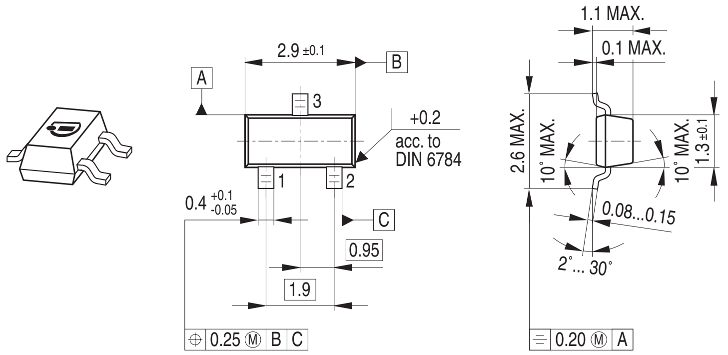
Example

Packing

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



Package Outline



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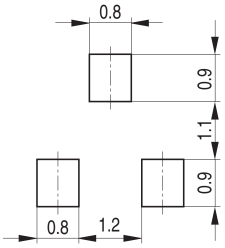
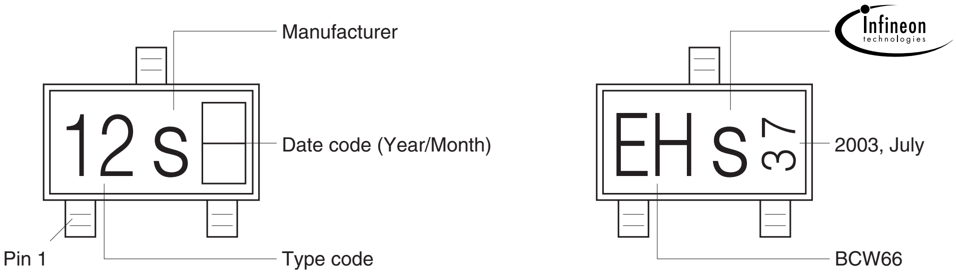


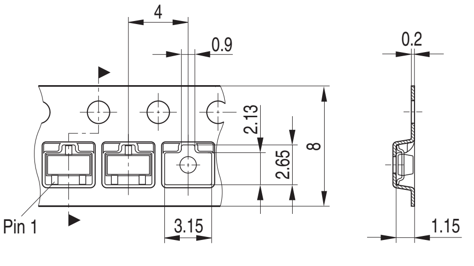
Marking Layout



Example

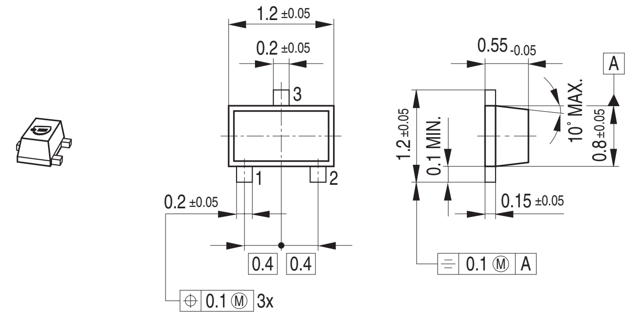
Packing

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



Package TSFP-3

Package Outline



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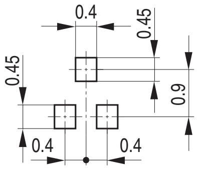

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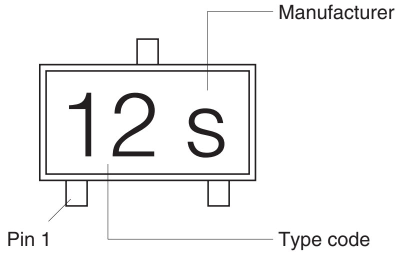
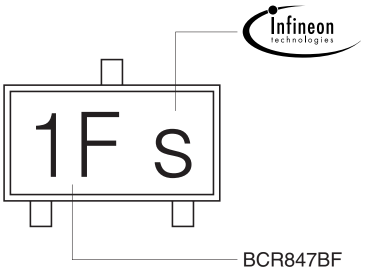
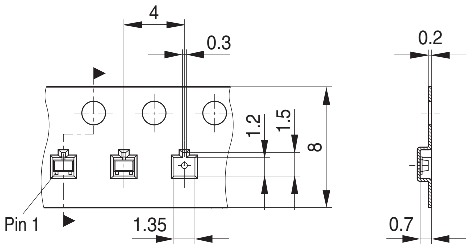




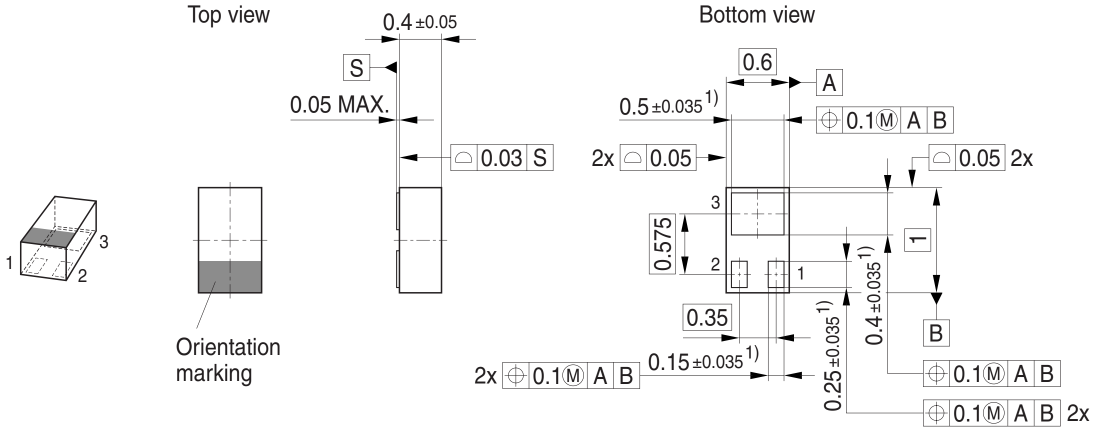
Example

Packing

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

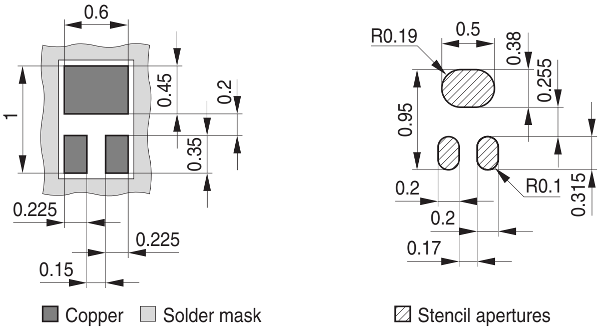


Package Outline



1) Dimension applies to plated terminals

Foot Print



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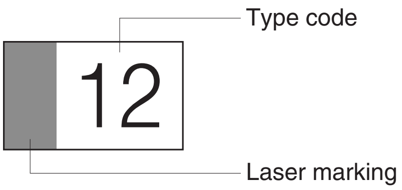
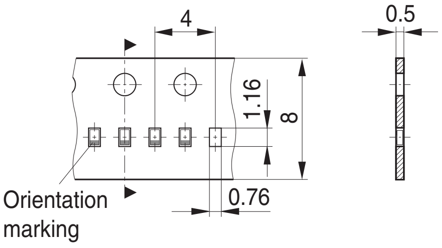


Packing

Code E6327: Reel ø180 mm = 15.000 Pieces/Reel



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