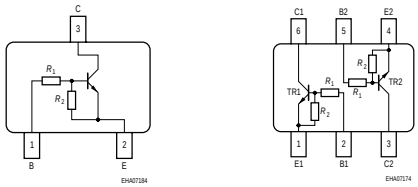
Multi Package Surface Mount Digtal Transistor

BCR116...

NPN Silicon Digital Transistor

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor (R_1=4.7 kΩ, R_2=47 kΩ)
- BCR116S: Two internally isolated transistors with good matching in one multichip package
- BCR116S: For orientation in reel see package information below
- Pb-free (RoHS compliant) package

BCR116 **BCR116S**
BCR116W



Type	Marking	Pin Configuration						Package
BCR116	WGs	1=B	2=E	3=C	-	-	-	SOT23
BCR116S	WGs	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SOT363
BCR116W	WGs	1=B	2=E	3=C	-	-	-	SOT323

Maximum Ratings

Symbol	Parameter	Value	Unit
V_{CEO}	Collector-emitter voltage	50	V
V_{CBO}	Collector-base voltage	50	
$V_{i(fwd)}$	Input forward voltage	30	
$V_{i(rev)}$	Input reverse voltage	5	
I_C	Collector current	100	mA
P_{tot}	Total power dissipation-		mW
	BCR116, $T_S \le 102°C$	200	
	BCR116S, $T_S \le 115°C$	250	
	BCR116W, $T_S \le 124°C$	250	
T_j	Junction temperature	150	°C
T_{stg}	Storage temperature	-65 ... 150	

Thermal Resistance

Symbol	Parameter	Value	Unit
R_{thJS}	Junction - soldering point[1)]		K/W
	BCR116	≤ 240	
	BCR116S	≤ 140	
	BCR116W	≤ 105	

[1]For calculation of R_{thJA} please refer to Application Note AN077 (Thermal Resistance Calculation)

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

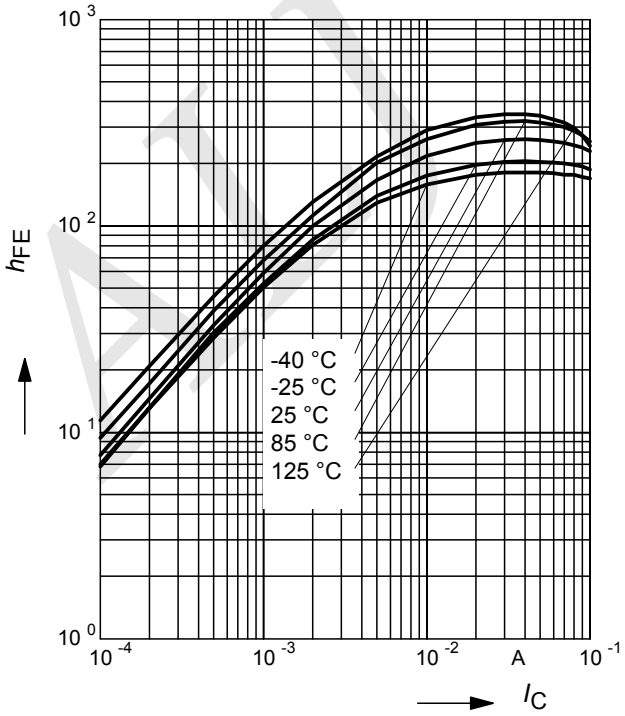
Symbol	Parameter	min.	typ.	max.	Unit
DC Characteristics					
$V_{(BR)CEO}$	Collector-emitter breakdown voltage I_C = 100 µA, I_B = 0	50	-	-	V
$V_{(BR)CBO}$	Collector-base breakdown voltage I_C = 10 µA, I_E = 0	50	-	-	
I_{CBO}	Collector-base cutoff current V_{CB} = 40 V, I_E = 0	-	-	100	nA
I_{EBO}	Emitter-base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

[1]Pulse test: t < 300µs; D < 2%

Typical Characteristics

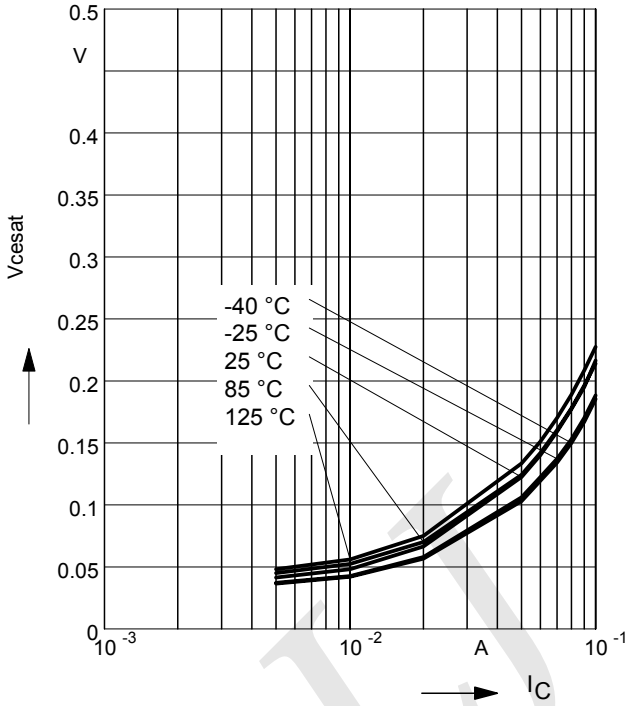
DC current gain h_{FE} = $f(I_C)$

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



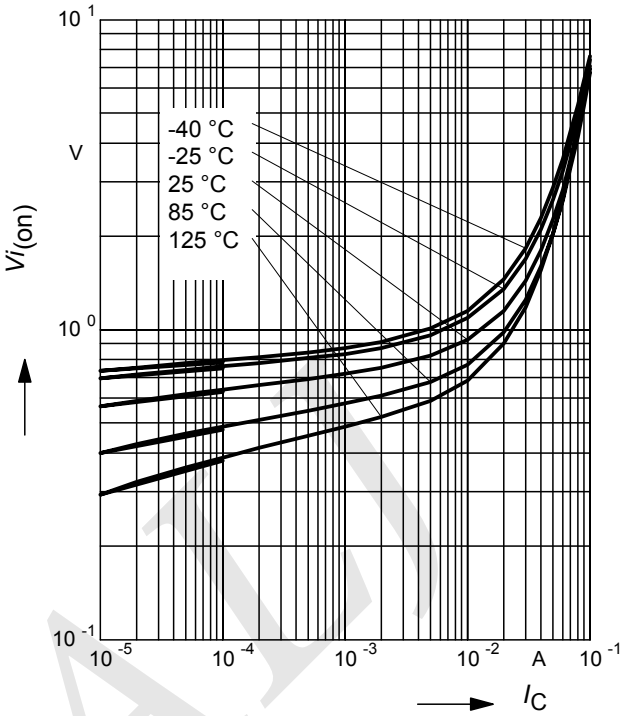
Collector-emitter saturation voltage

V_{CEsat} = $f(I_C)$, I_C/I_B = 20



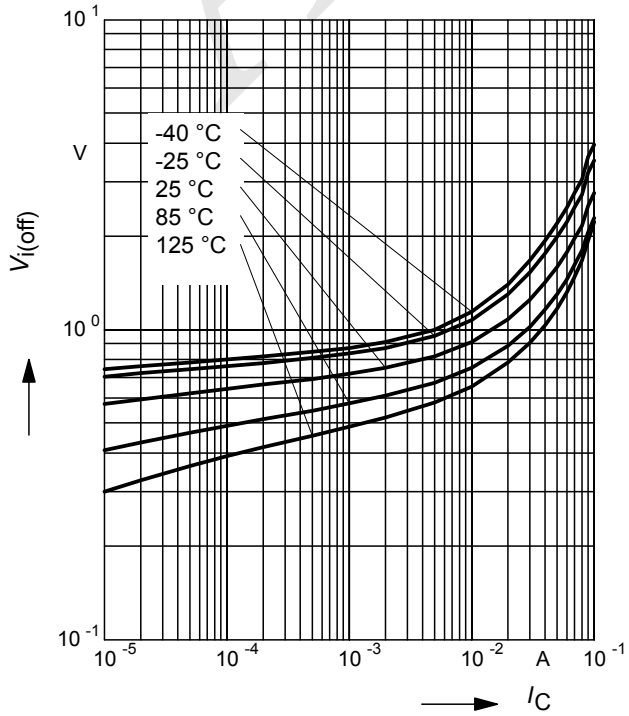
Input on Voltage $V_{i(on)}$ = $f(I_C)$

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



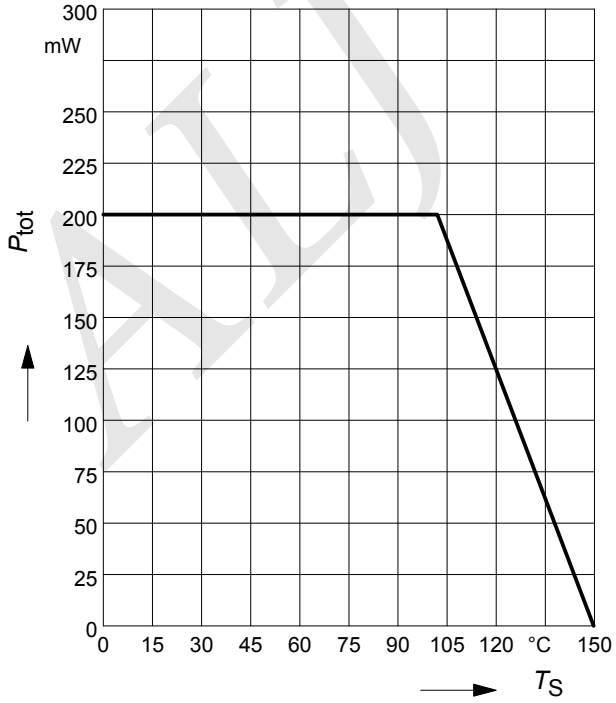
Input off voltage $V_{i(off)}$ = $f(I_C)$

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

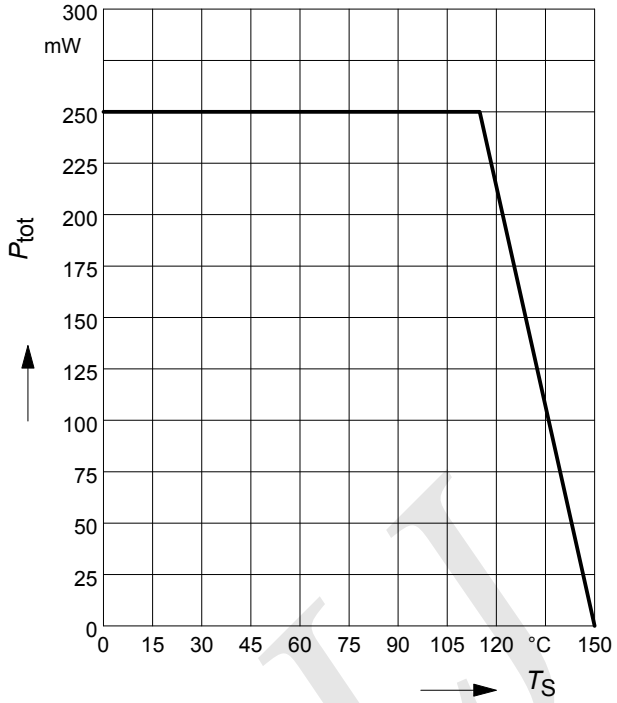


Typical Characteristics

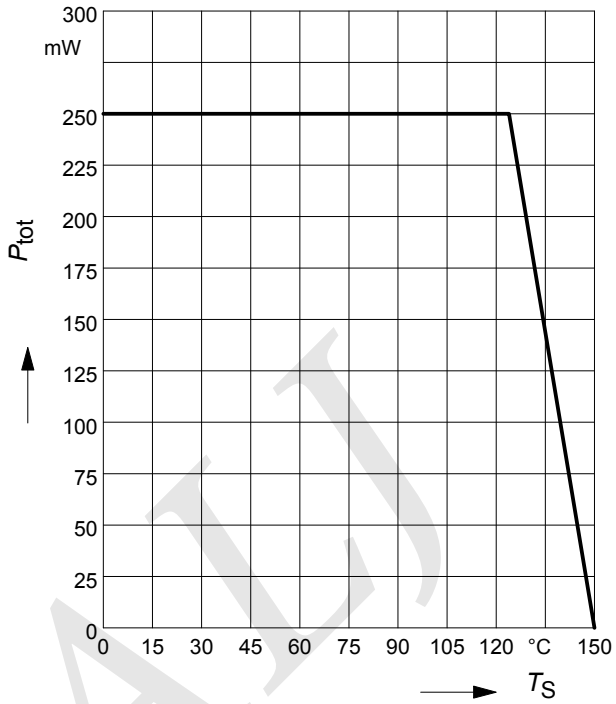
Total power dissipation $P_{tot} = f(T_S)$
BCR116



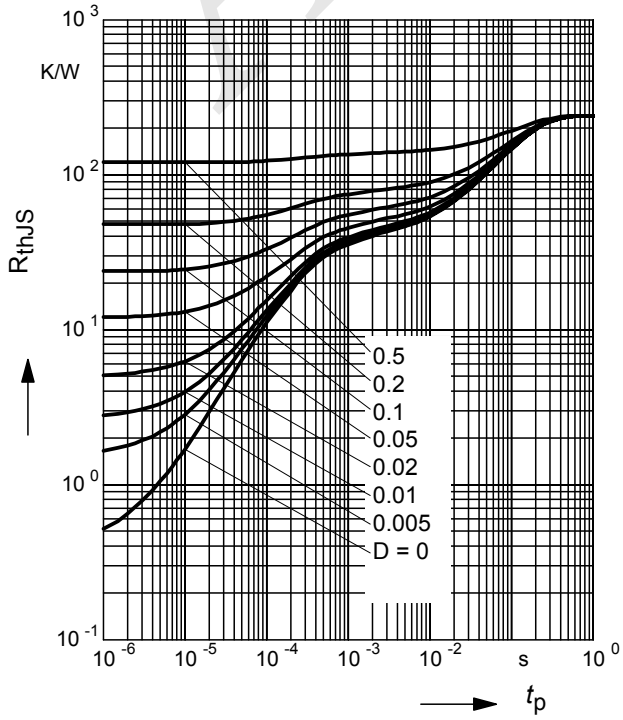
Total power dissipation $P_{tot} = f(T_S)$
BCR116S



Total power dissipation $P_{tot} = f(T_S)$
BCR116W



Permissible Pulse Load $R_{thJS} = f(t_p)$
BCR116

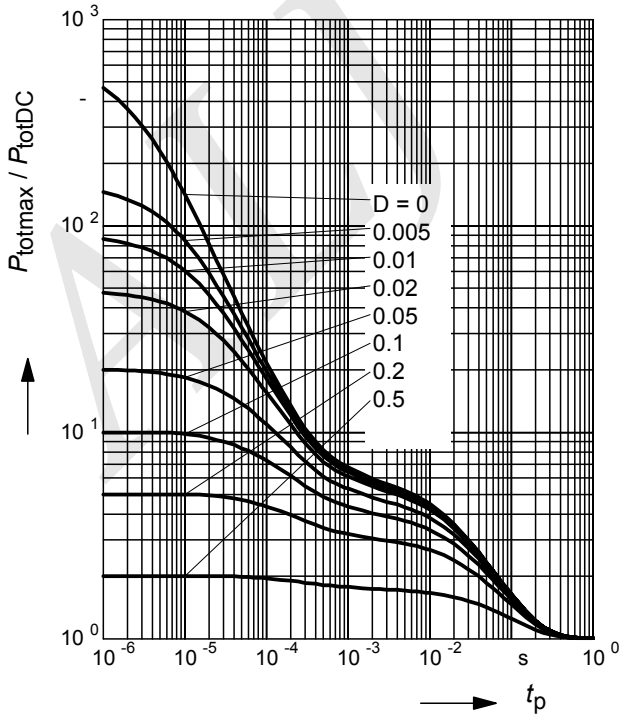


Typical Characteristics

Permissible Pulse Load

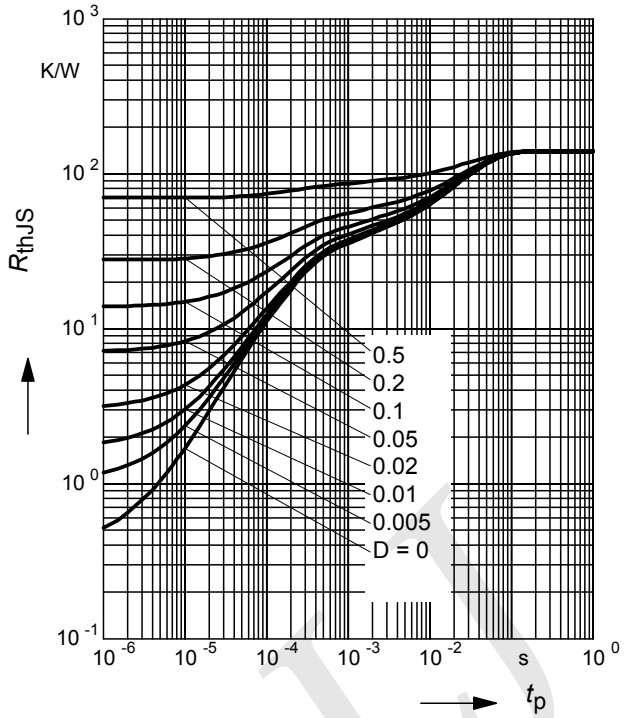
$P_{totmax}/P_{totDC} = f(t_p)$

BCR116



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

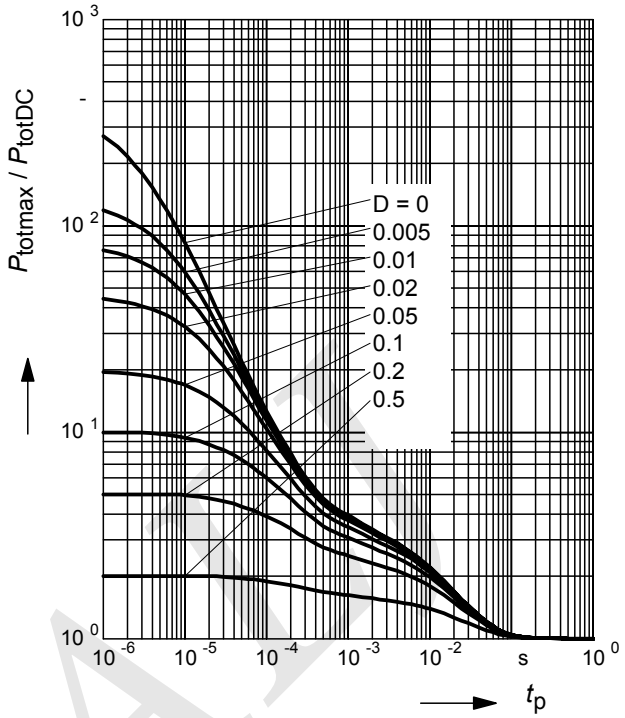
BCR116S



Permissible Pulse Load

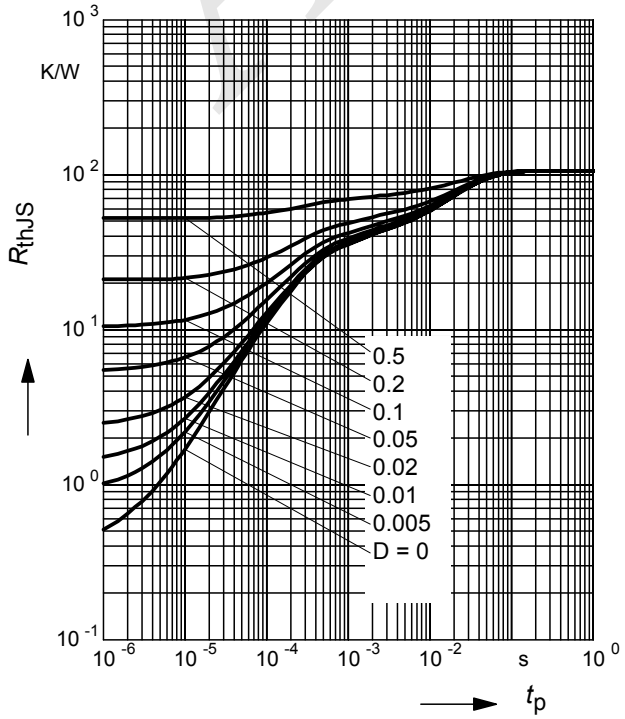
$P_{totmax}/P_{totDC} = f(t_p)$

BCR116S



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

BCR116W

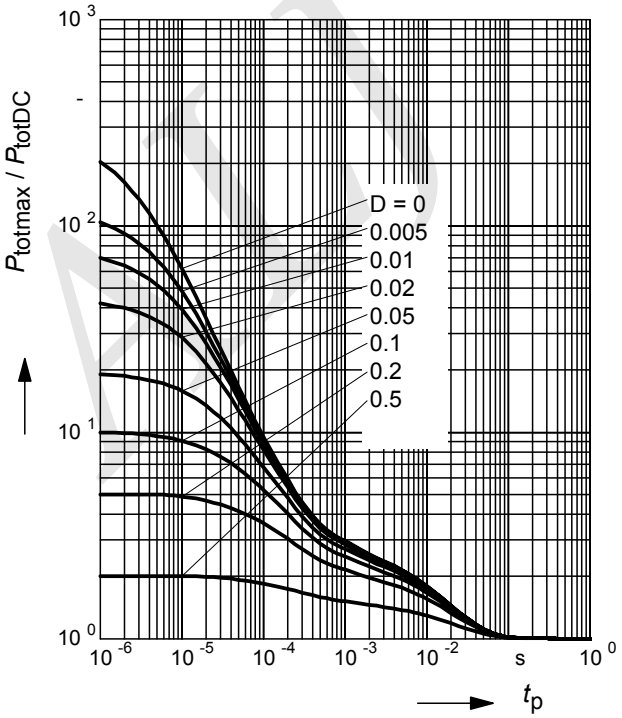


Typical Characteristics

Permissible Pulse Load

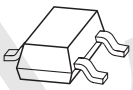
$P_{totmax}/P_{totDC} = f(t_p)$

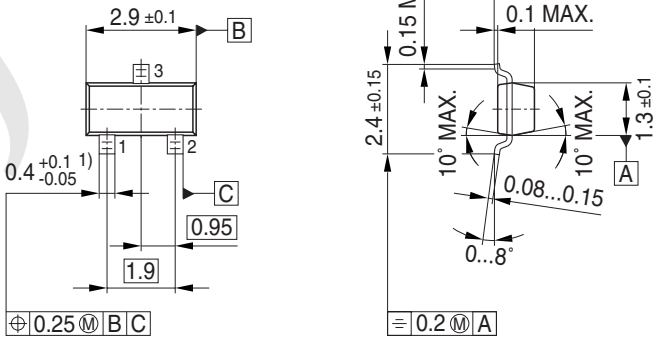
BCR116W



Package SOT23

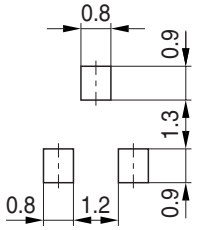
Package Outline





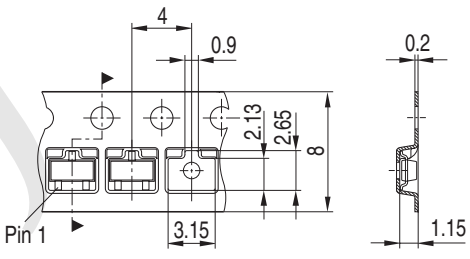
1) Lead width can be 0.6 max. in dambar area

Foot Print



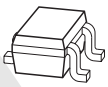
Standard Packing

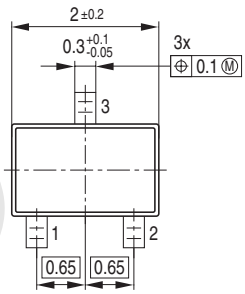
Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel

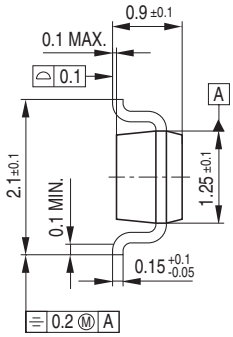


Package SOT323

Package Outline







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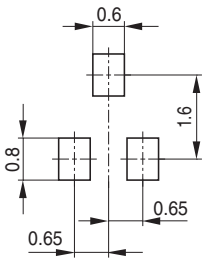
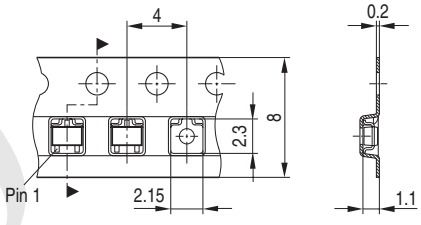


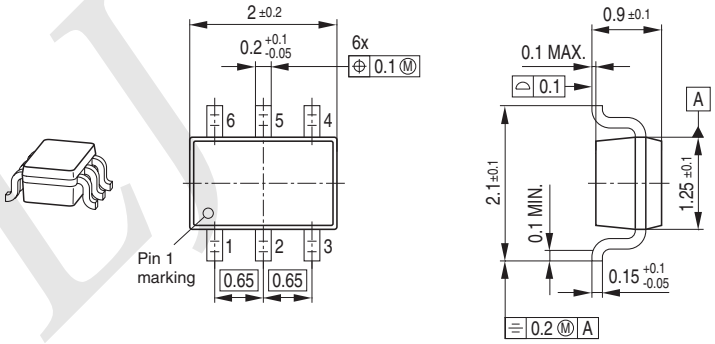
Standard Packing

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

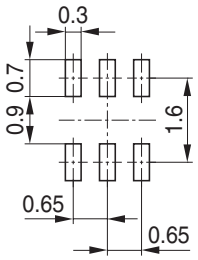


Package SOT363

Package Outline



Foot Print



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.