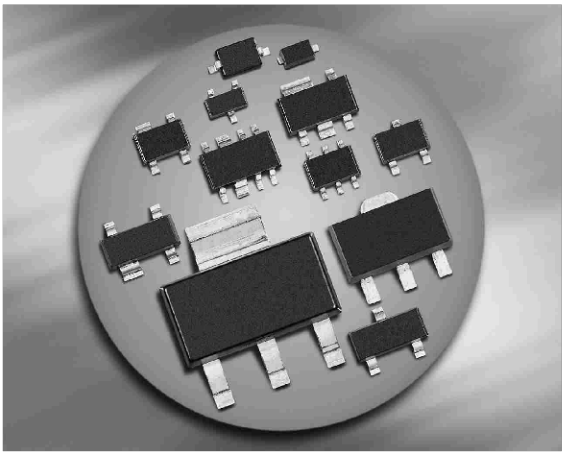
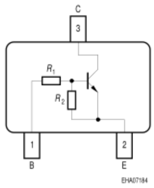
NPN Silicon Digital Transistors

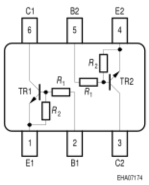


- Switching circuit, inverter circuit, driver circuit
- Built in bias resistor (R_1= 1 kΩ, R_2= 10 kΩ)
- BCR523U: Two (galvanic) internal isolated transistors with good matching in one package
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101

BCR523



BCR523U



Type	Marking	Pin Configuration						Package
BCR523	XGs	1=B	2=E	3=C	-	-	-	SOT23
BCR523U	XGs	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SC74

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	50	V
Collector-base voltage	V_{CBO}	50	
Input forward voltage	$V_{i(fwd)}$	12	
Input reverse voltage	$V_{i(rev)}$	5	
Collector current	I_C	500	mA
Total power dissipation-	P_{tot}		mW
$T_S \leq 79$ °C, BCR523		330	
$T_S \leq 115$ °C , BCR523U		330	
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
BCR523		$\leq$ 215	
BCR523U		$\leq$ 105	

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

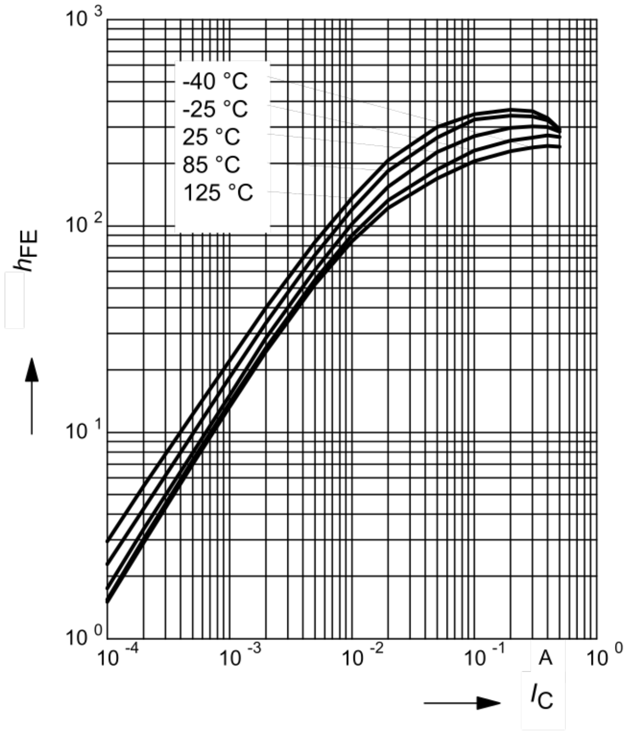
Parameter	**Symbol**	**Values**			**Unit**
		min.	**typ.**	**max.**	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 100 µA, I_B = 0	$V_{(BR)CEO}$	50	-	-	V
Collector-base breakdown voltage I_C = 10 µA, I_E = 0	$V_{(BR)CBO}$	50	-	-	
Collector-base cutoff current V_{CB} = 50 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter-base cutoff current V_{EB} = 5 V, I_C = 0	I_{EBO}	-	-	0.72	mA
DC current gain- I_C = 50 mA, V_{CE} = 5 V	h_{FE}	70	-	-	-
Collector-emitter saturation voltage[2] I_C = 50 mA, I_B = 2.5 mA	V_{CEsat}	-	-	0.3	V
Input off voltage I_C = 100 µA, V_{CE} = 5 V	$V_{i(off)}$	0.3	-	1	
Input on voltage I_C = 10 mA, V_{CE} = 0.3 V	$V_{i(on)}$	0.4	-	1.4	
Input resistor	R_1	0.7	1	1.3	kΩ
Resistor ratio	R_1/R_2	0.09	0.1	0.11	-
AC Characteristics					
Transition frequency I_C = 50 mA, V_{CE} = 5 V, f = 100 MHz	f_T	-	100	-	MHz

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

[2] Pulse test: t < 300µs; D < 2%

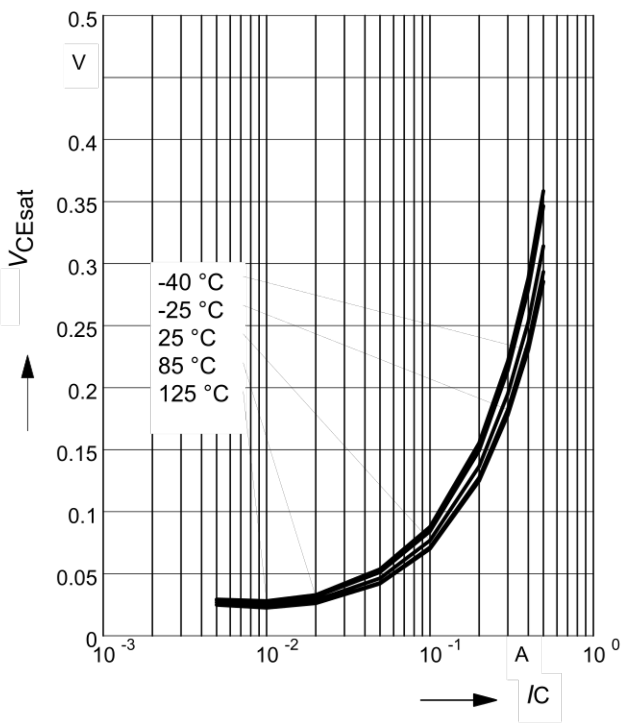
DC current gain $h_{FE} = f(I_C)$

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



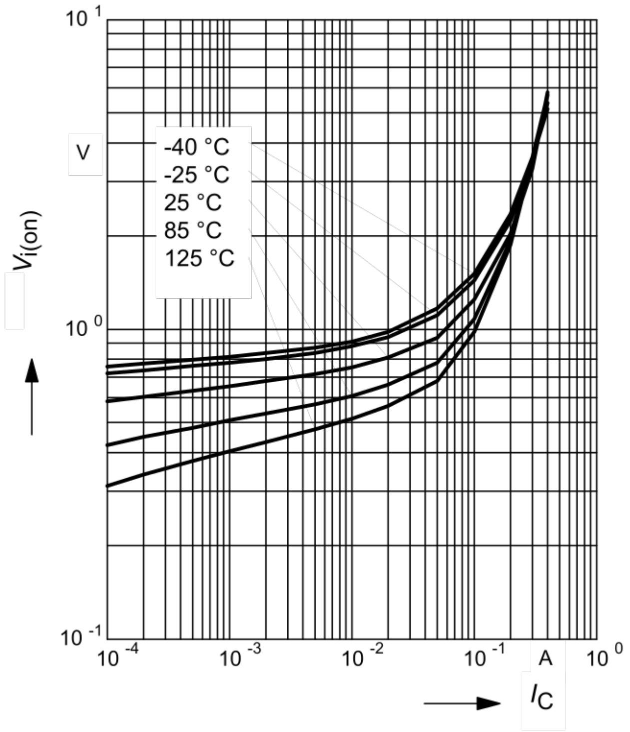
Collector-emitter saturation voltage

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



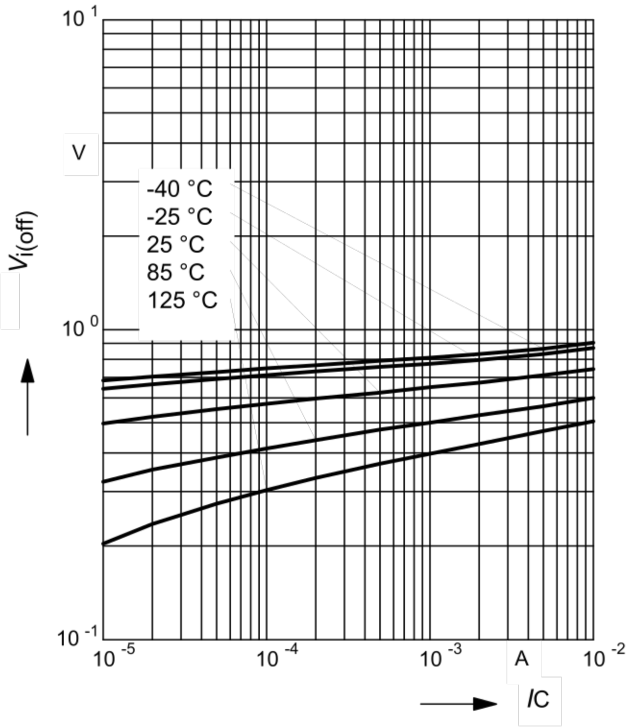
Input on Voltage $V_{i(on)} = f(I_C)$

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



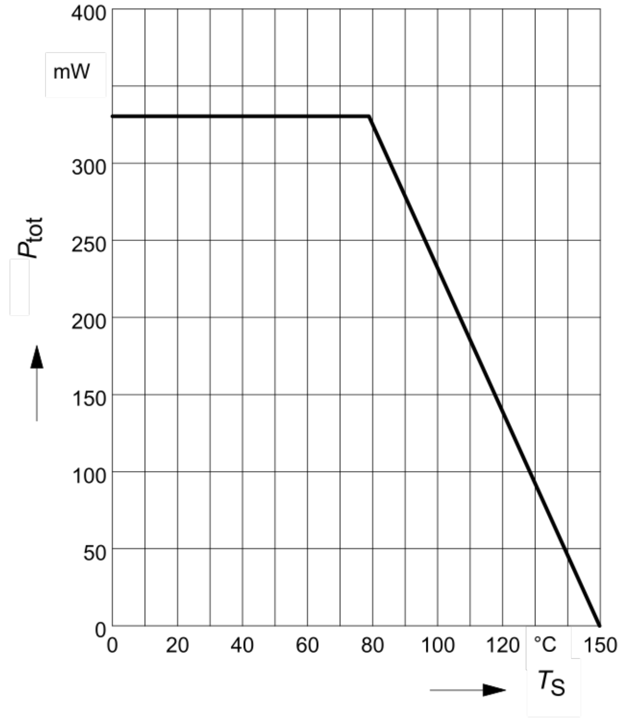
Input off voltage $V_{i(off)} = f(I_C)$

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



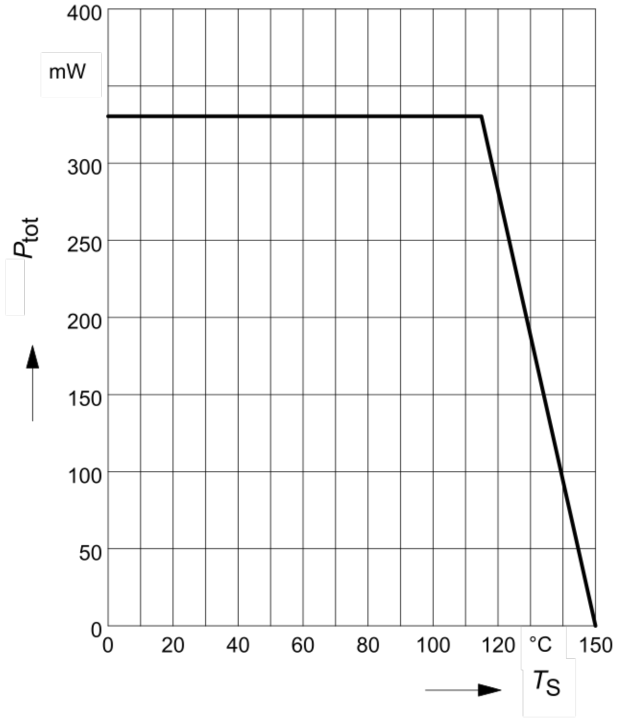
Total power dissipation $P_{tot} = f(T_S)$

BCR523



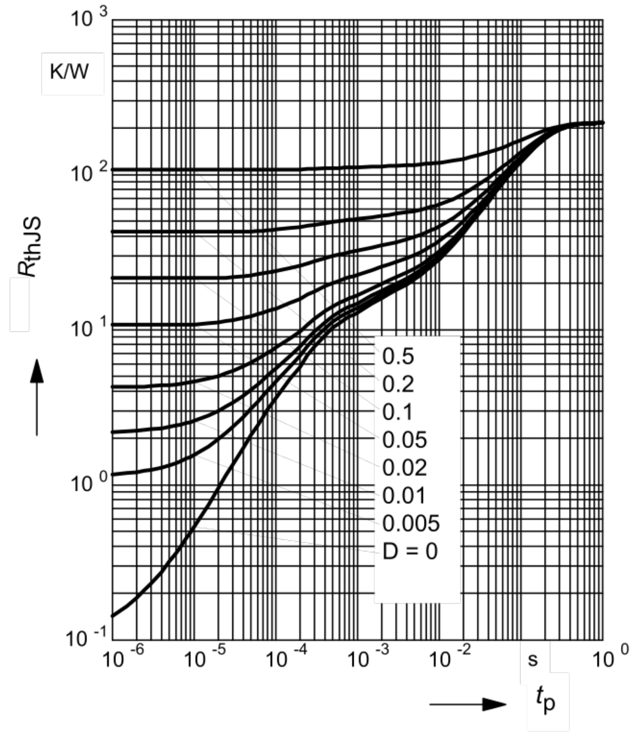
Total power dissipation $P_{tot} = f(T_S)$

BCR523U



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

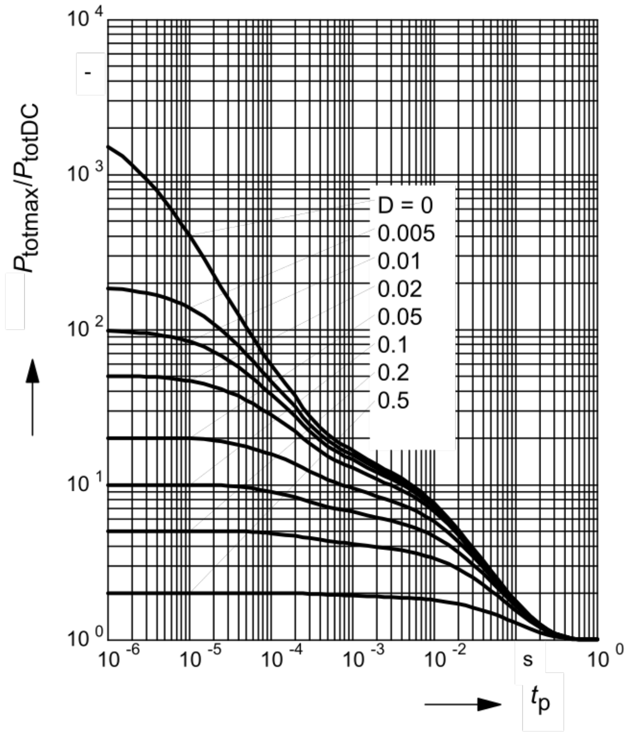
BCR523



Permissible Pulse Load

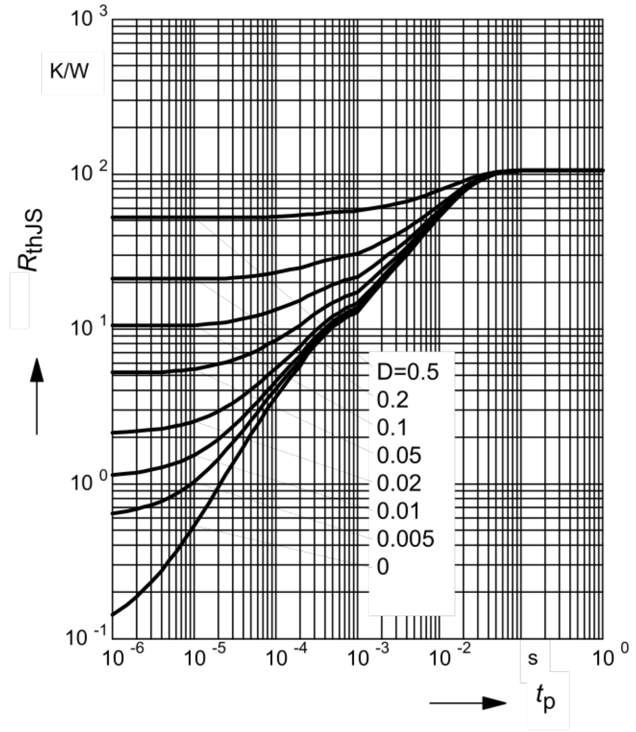
$P_{totmax}/P_{totDC} = f(t_p)$

BCR523



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

BCR523U



Permissible Pulse Load

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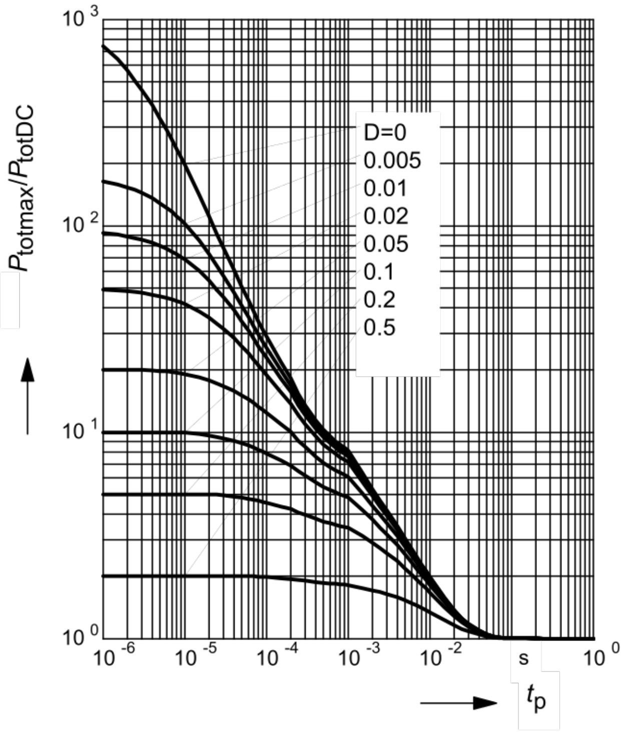
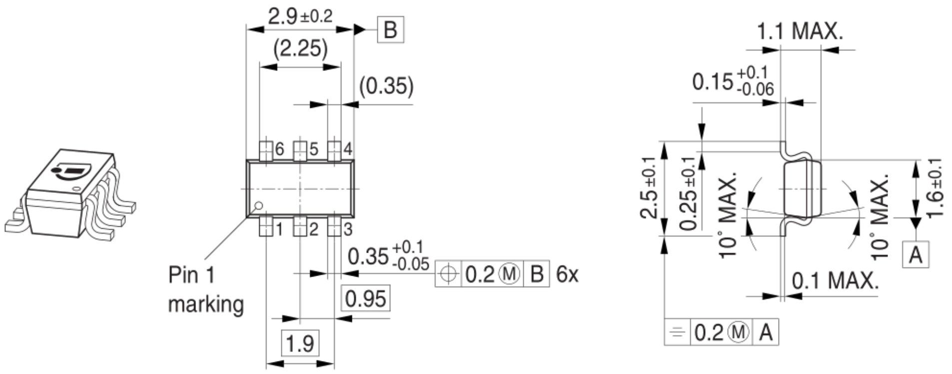
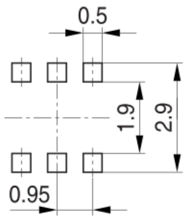
BCR523U



Package Outline

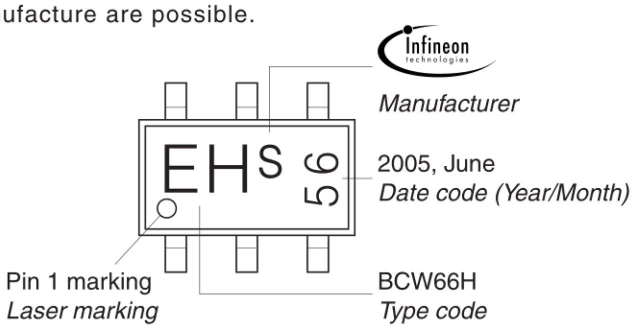


Foot Print



Marking Layout (Example)

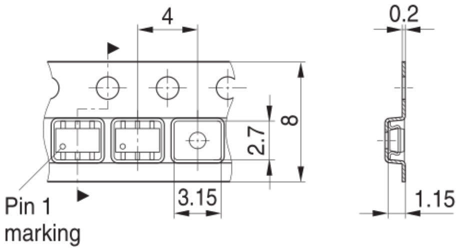
Small variations in positioning of
Date code, Type code and Manufacture are possible.



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.



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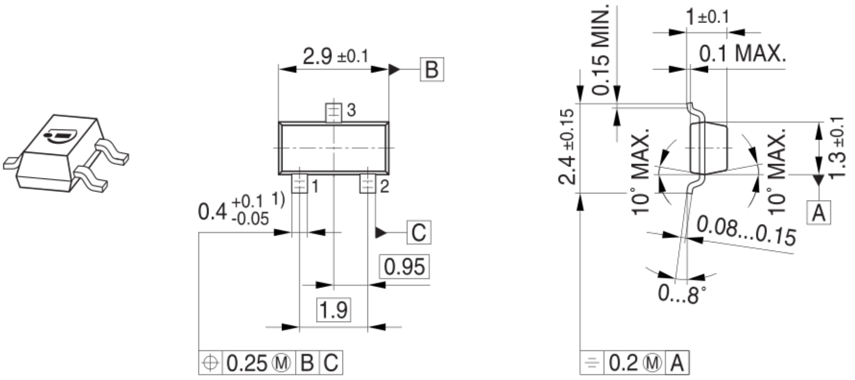
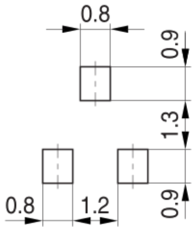


1) Lead width can be 0.6 max. in dambar area

Foot Print



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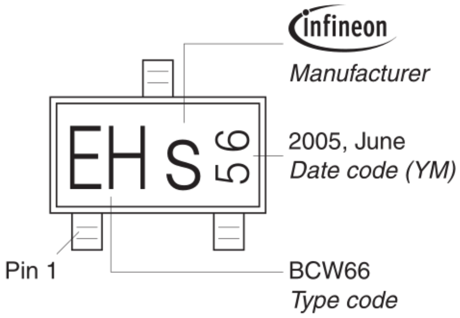

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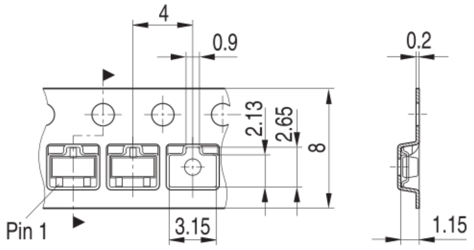

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