BAT62

Surface mount silicon RF Schottky diode, anti-parallel pair

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Product description

This Infineon RF Schottky diode is a silicon low barrier N-type device with an integrated guard ring on-chip for overvoltage protection. Its low barrier height, small forward voltage and low junction capacitance make BAT62 a suitable choice for mixer and detector applications for frequencies up to 6 GHz.

Feature list

- Low inductance L_S = 2 nH (typical)
- Low capacitance C = 0.41 pF (typical) at voltage V_R = 0 V and frequency f = 1 MHz
- Industry standard SOT143 package (2.9 mm x 2.4 mm x 1 mm)
- Pb-free, RoHS compliant and halogen-free

Product validation

Qualified for industrial applications according to the relevant tests of JEDEC47/20/22.

Potential applications

For mixers and detectors in:

- Wireless communication
- Smart metering
- Set top boxes
- Mobile devices

Device information

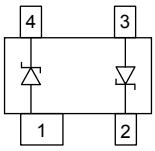

Table 1 Part information

Product name / Ordering code	Package	Configuration	Marking	Pieces / Reel
BAT62 / BAT62E6327HTSA1	SOT143	Reverse anti-parallel pair	62s	3 k

***Attention*: ESD (Electrostatic discharge) sensitive device, observe handling precautions!**

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1 Absolute maximum ratings

Table 2 Absolute maximum ratings at T_A = 25 °C, unless otherwise specified

Parameter	Symbol	Values		Unit	Note or test condition
		Min.	Max.		
Reverse voltage	V_R	–	40	V	
Forward current	I_F	–	20	mA	
Total power dissipation	P_{TOT}	–	100	mW	$T_S \leq 96$ °C [1)]
Junction temperature	T_J	–	150	°C	
Operating temperature	T_{OP}	-55	125		
Storage temperature	T_{STG}	-55	150		

Attention: ***Stresses above the maximum values listed here may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. Exceeding only one of these values may cause irreversible damage to the component.***

1 T_S is the soldering point temperature.

2 Electrical performance in test fixture

2.1 Electrical characteristics

Table 3 Electrical characteristics at T_A = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit	Note or test condition
		Min.	Typ.	Max.		
Breakdown voltage	V_{BR}	40	–	–	V	I_R = 10 µA
Reverse current	I_R	–	–	10	µA	V_R = 40 V
Forward voltage	V_F	–	0.4	–	V	I_F = 1 mA
		–	0.58	1		I_F = 2 mA
Forward voltage matching	ΔV_F	–	–	20	mV	I_F = 2 mA [2)]
Differential resistance	R_0	–	225	–	kΩ	V_R = 0 V, f = 10 kHz
Capacitance	C	–	0.41	0.6	pF	V_R = 0 V, f = 1 MHz
Inductance	L_S	–	2	–	nH	

2.2 Characteristic curves

At T_A = 25 °C, unless otherwise specified

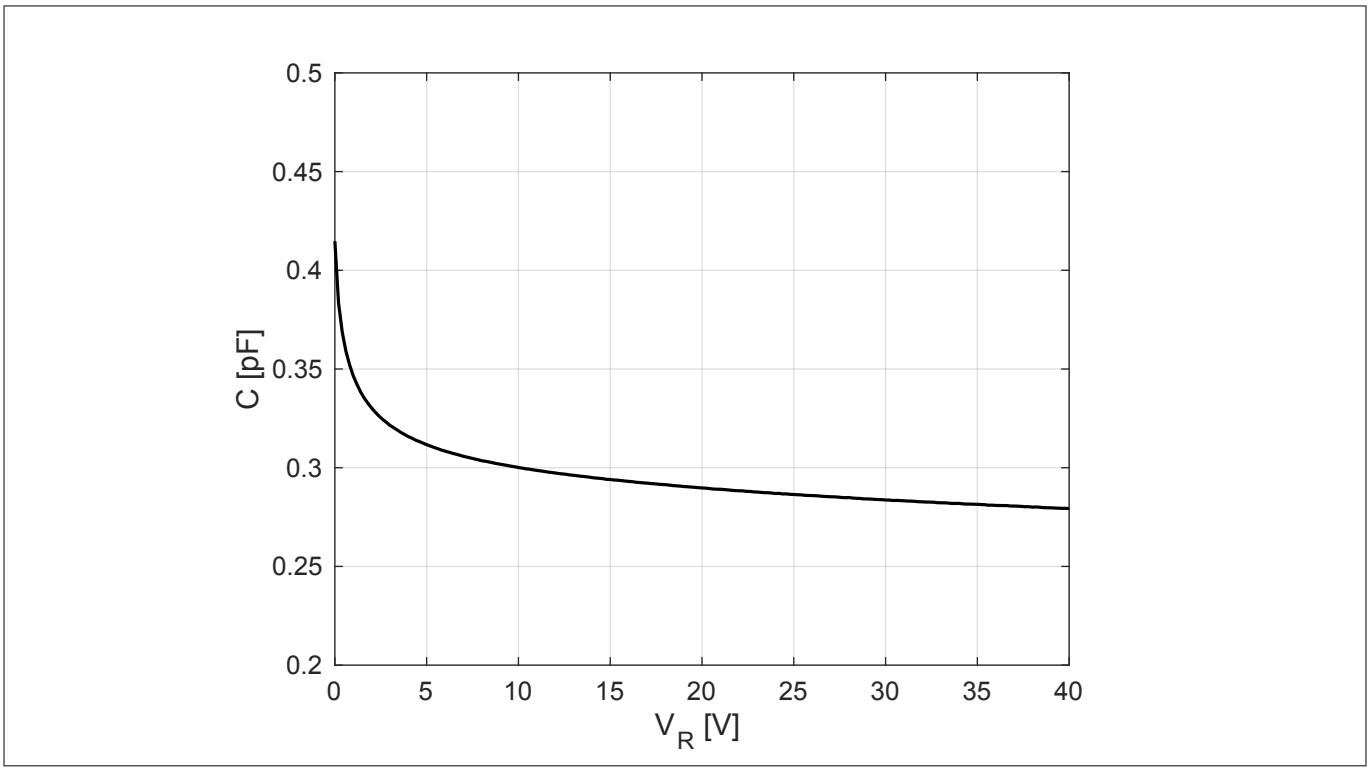

Figure 1 Capacitance C vs. reverse voltage V_R at frequency f = 1 MHz

2 ΔV_F is the difference between lowest and highest V_F in a multiple diode component.

Electrical performance in test fixture

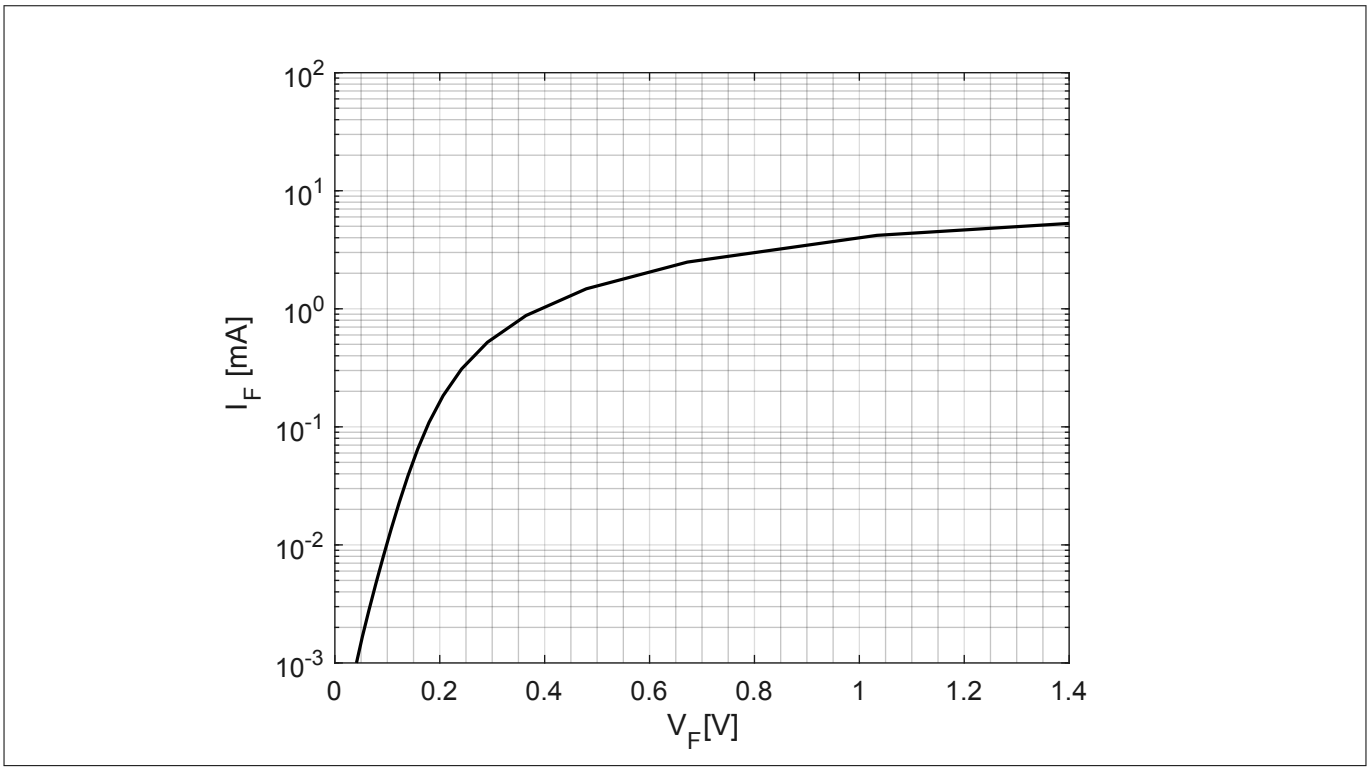

Figure 2 **Forward current I_F vs. forward voltage V_F**

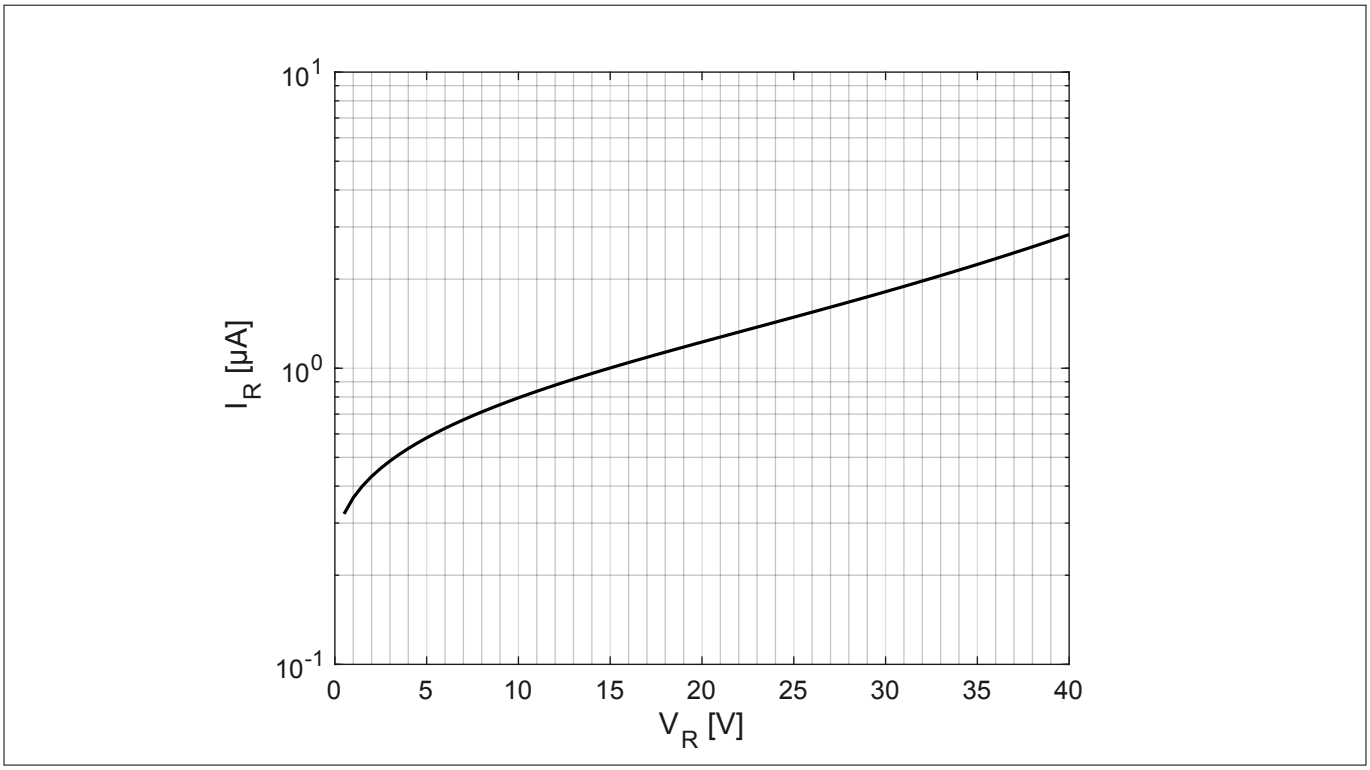

Figure 3 **Reverse current I_R vs. reverse voltage V_R**

Note: The curves shown in this chapter have been generated using typical devices but shall not be understood as a guarantee that all devices have identical characteristic curves.

3 Thermal characteristics

Table 4 Thermal resistance

Parameter	Symbol	Values			Unit	Note or test condition
		Min.	Typ.	Max.		
Thermal resistance (junction - soldering point)	R_{thJS}	–	540	–	K/W	T_S = 96 °C [3)]

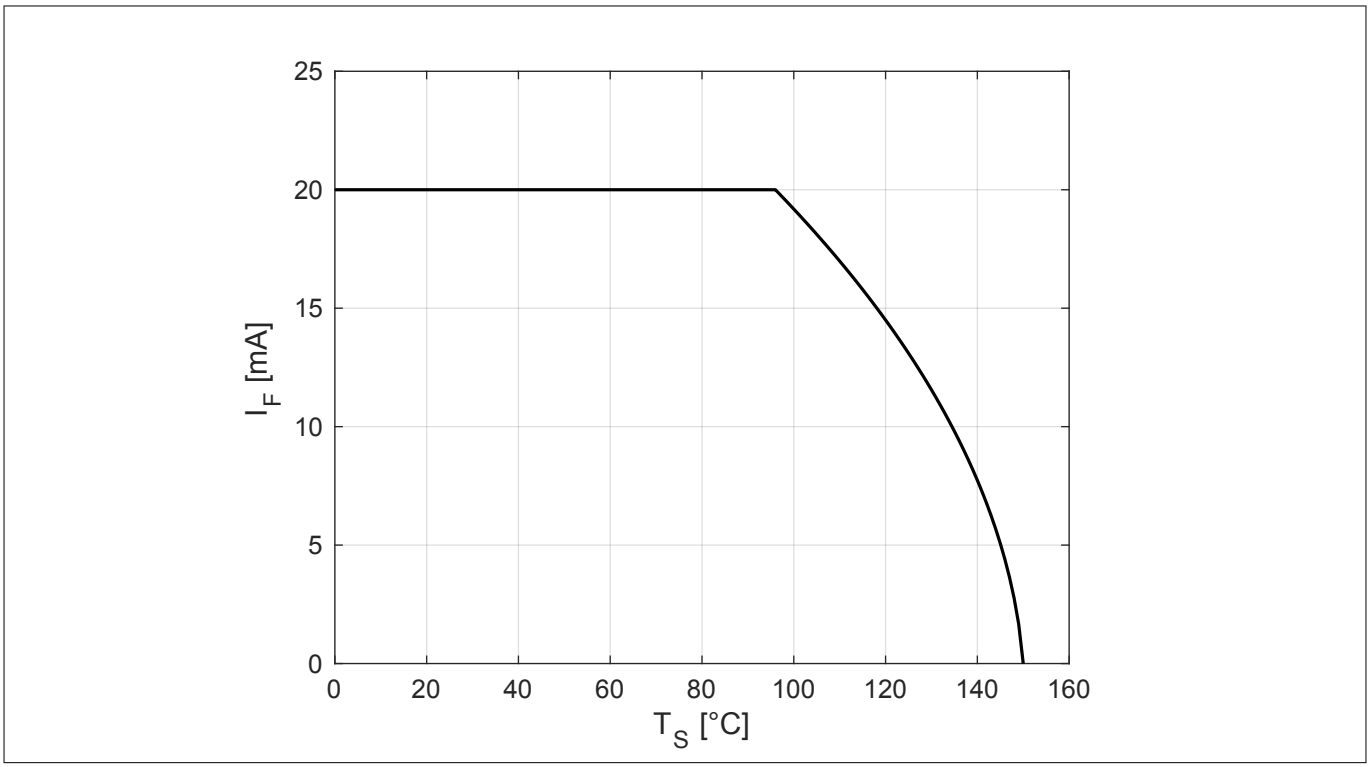

Figure 4 Permissible forward current I_F in DC operation

3 For R_{thJS} in other conditions refer to the curves in this chapter.

Thermal characteristics

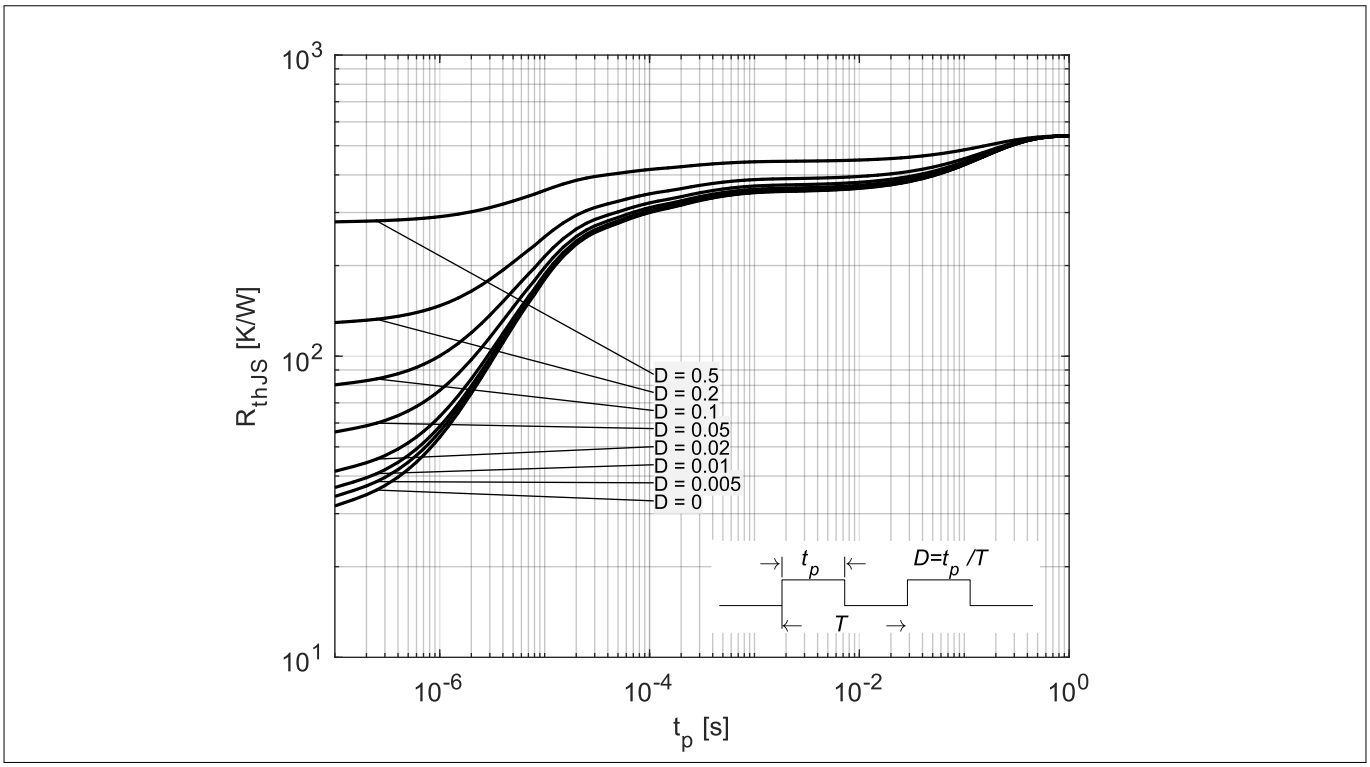

Figure 5 **Thermal resistance R_{thJS} in pulse operation**

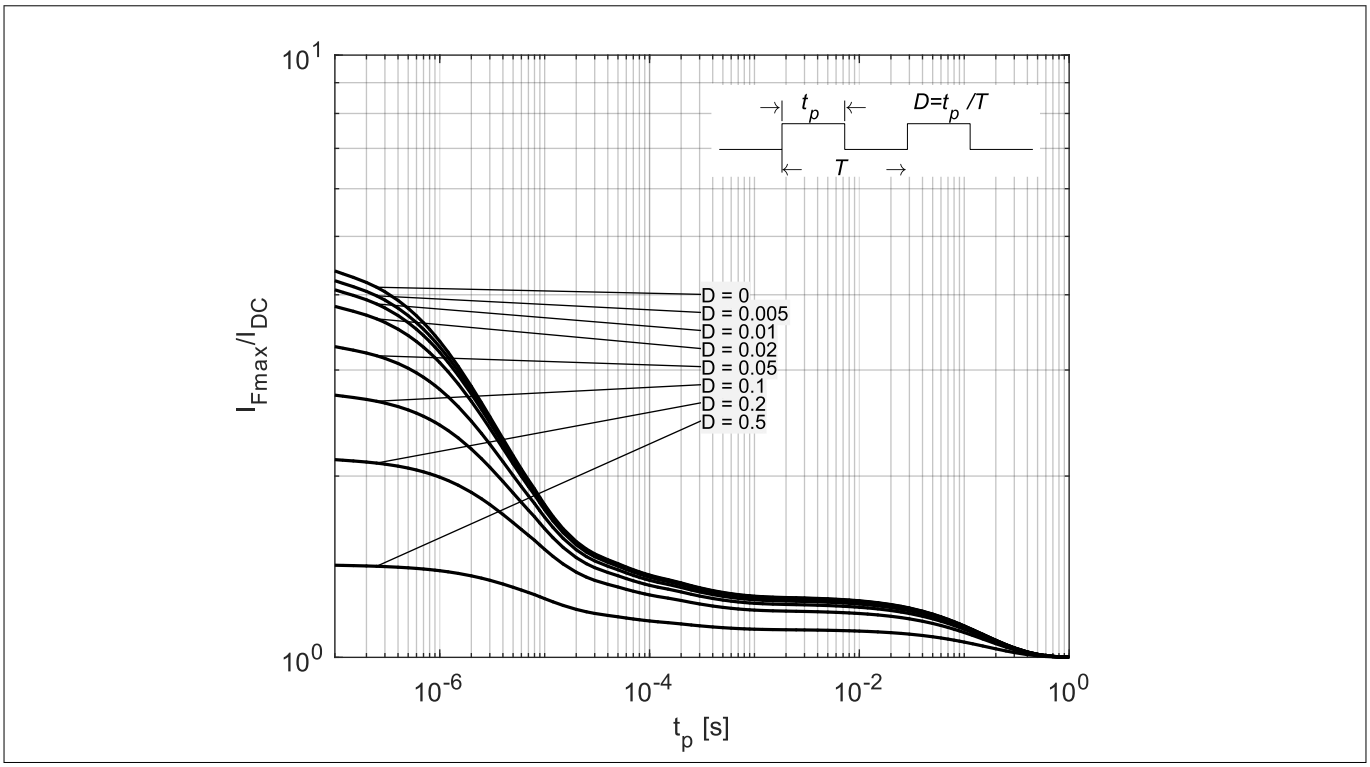

Figure 6 **Permissible forward current ratio I_{Fmax}/I_{DC} in pulse operation**

4 Package information SOT143

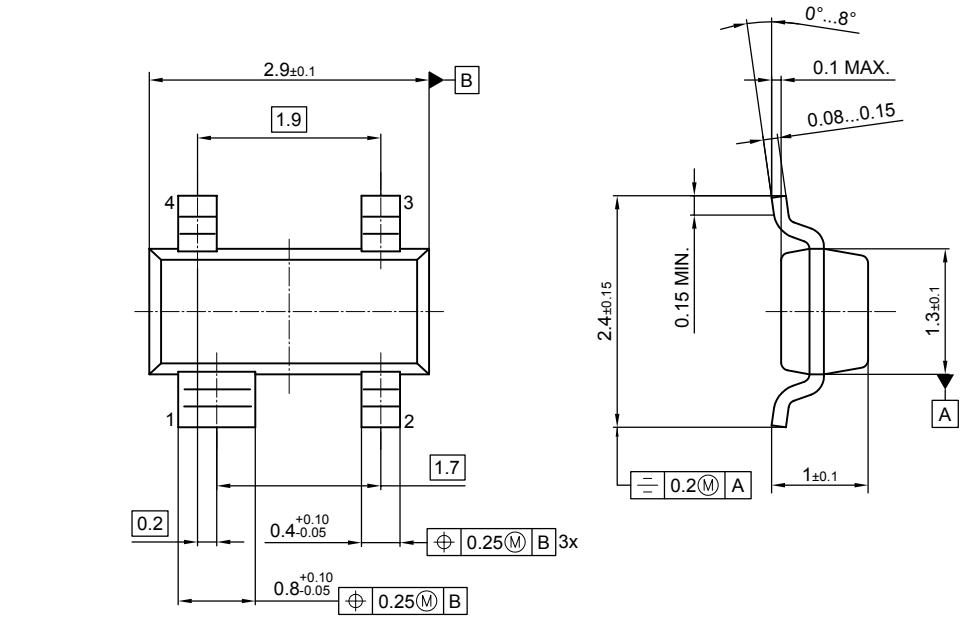

Figure 7 SOT143 package

Note: For package information including footprint, packing and assembly recommendation refer to:

https://www.infineon.com/cms/en/product/packages/PG-SOT143/PG-SOT143-4-4/

Revision history

Document version	Date of release	Description of changes
1.0	2021-06-07	• Change from series datasheet to individual one • Initial release of datasheet • Typical values and curves updated to the values of the production (No product or process change behind)

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