

# 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

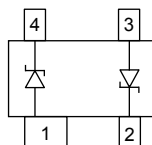
Qualified for industrial applications according to the relevant tests of JEDEC47/20/22.

## 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  $T_A = 25\text{ °C}$ , 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	$T_S \leq 96\text{ °C}$ <sup>1)</sup>
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.*

<sup>1</sup>  $T_S$  is the soldering point temperature.

**Electrical performance in test fixture**

**2 Electrical performance in test fixture**

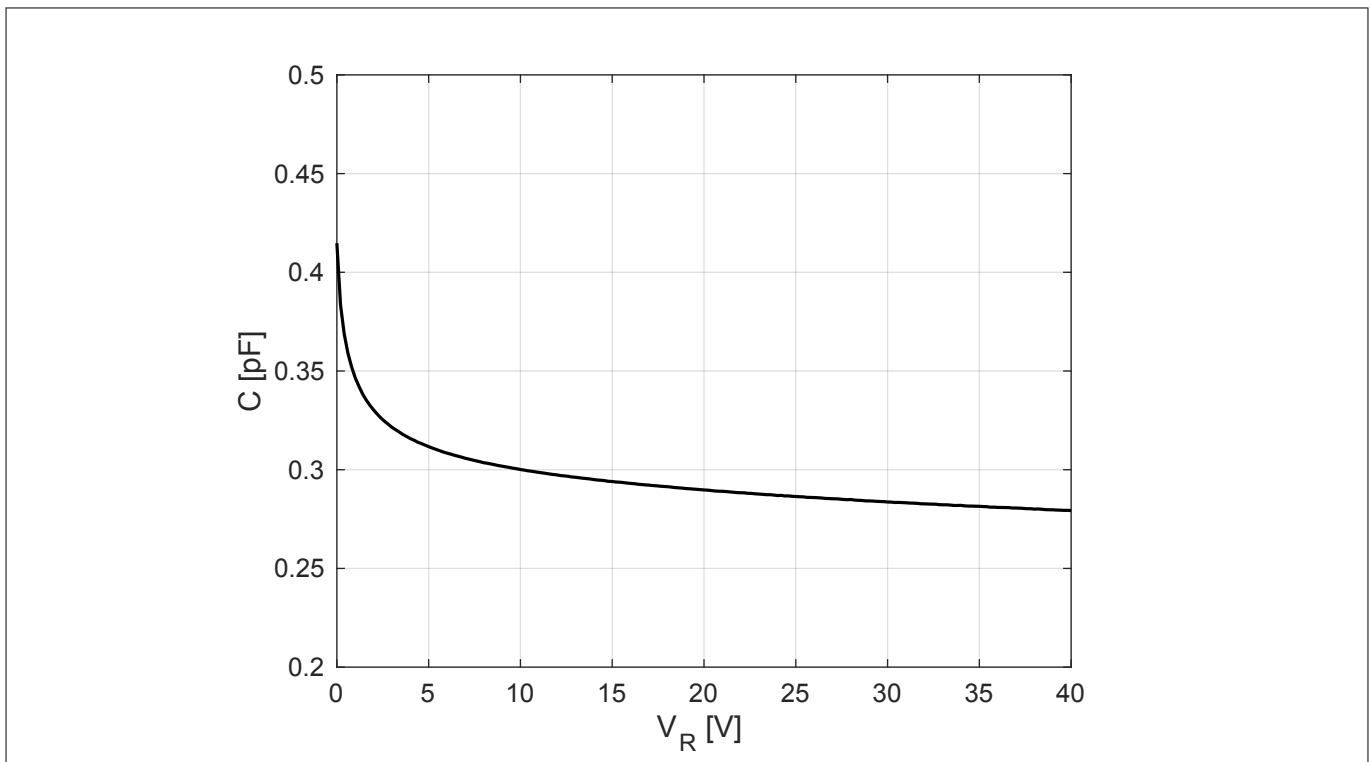
**2.1 Electrical characteristics**

**Table 3** Electrical characteristics at  $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise specified

Parameter	Symbol	Values			Unit	Note or test condition
		Min.	Typ.	Max.		
Breakdown voltage	$V_{BR}$	40	–	–	V	$I_R = 10\text{ }\mu\text{A}$
Reverse current	$I_R$	–	–	10	$\mu\text{A}$	$V_R = 40\text{ V}$
Forward voltage	$V_F$	–	0.4	–	V	$I_F = 1\text{ mA}$
		–	0.58	1		$I_F = 2\text{ mA}$
Forward voltage matching	$\Delta V_F$	–	–	20	mV	$I_F = 2\text{ mA}$ <sup>2)</sup>
Differential resistance	$R_0$	–	225	–	k $\Omega$	$V_R = 0\text{ V}, f = 10\text{ kHz}$
Capacitance	$C$	–	0.41	0.6	pF	$V_R = 0\text{ V}, f = 1\text{ MHz}$
Inductance	$L_S$	–	2	–	nH	

**2.2 Characteristic curves**

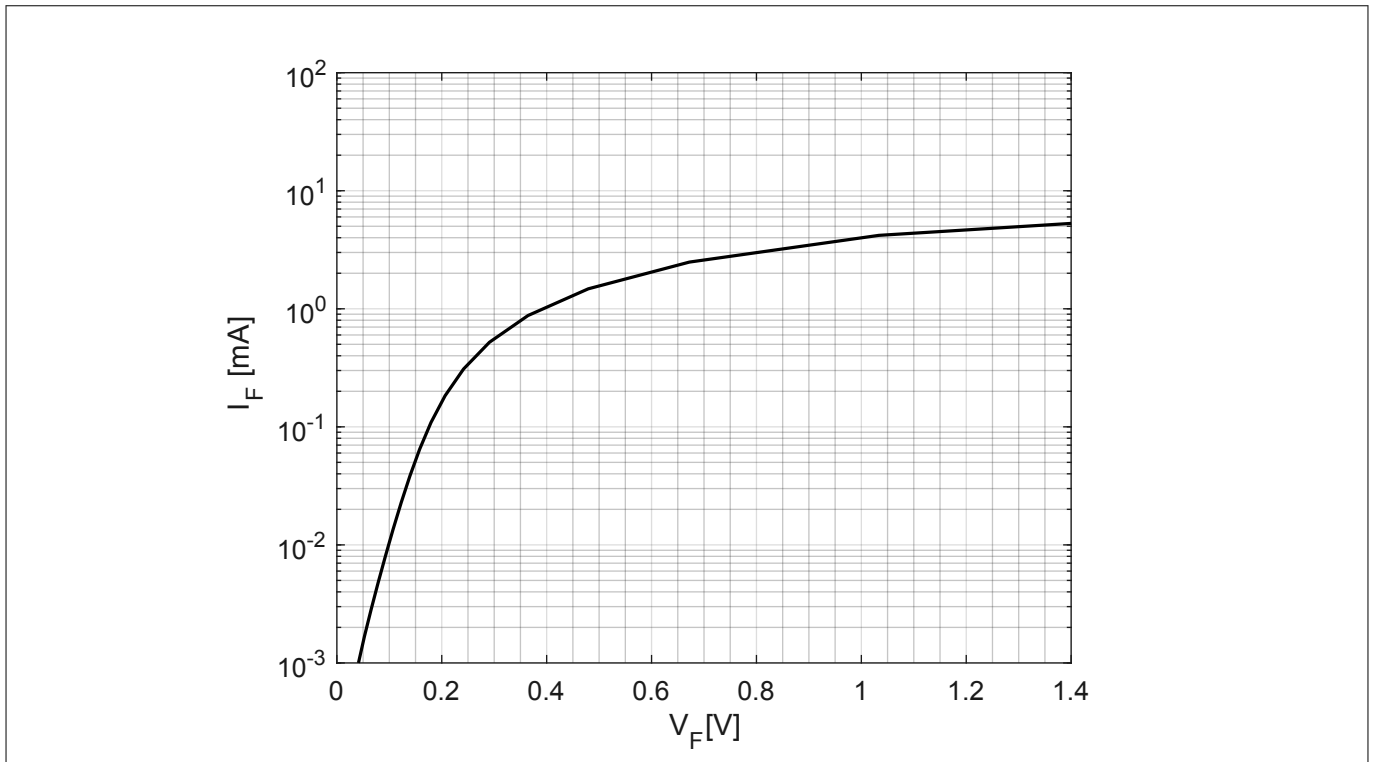
At  $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise specified



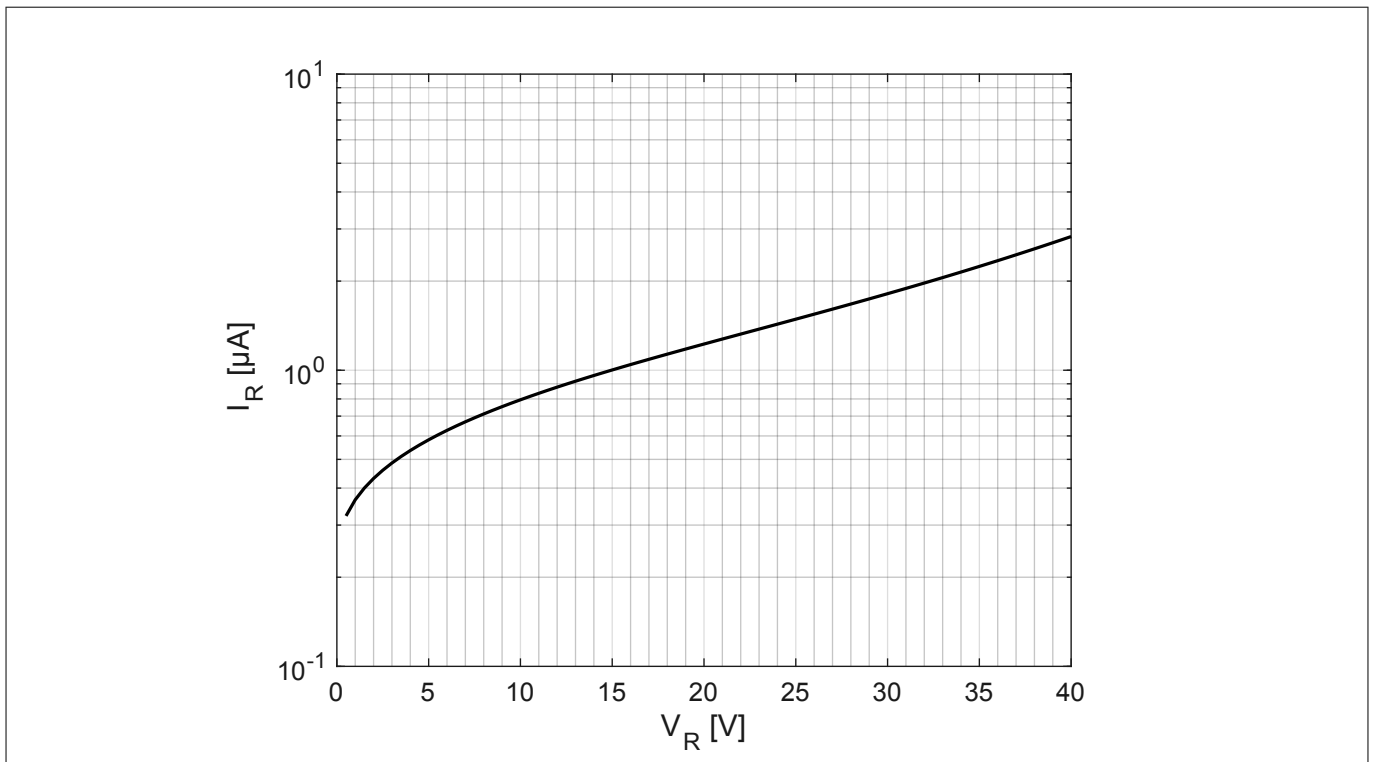
**Figure 1** Capacitance  $C$  vs. reverse voltage  $V_R$  at frequency  $f = 1\text{ MHz}$

<sup>2)</sup>  $\Delta V_F$  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  $V_R$

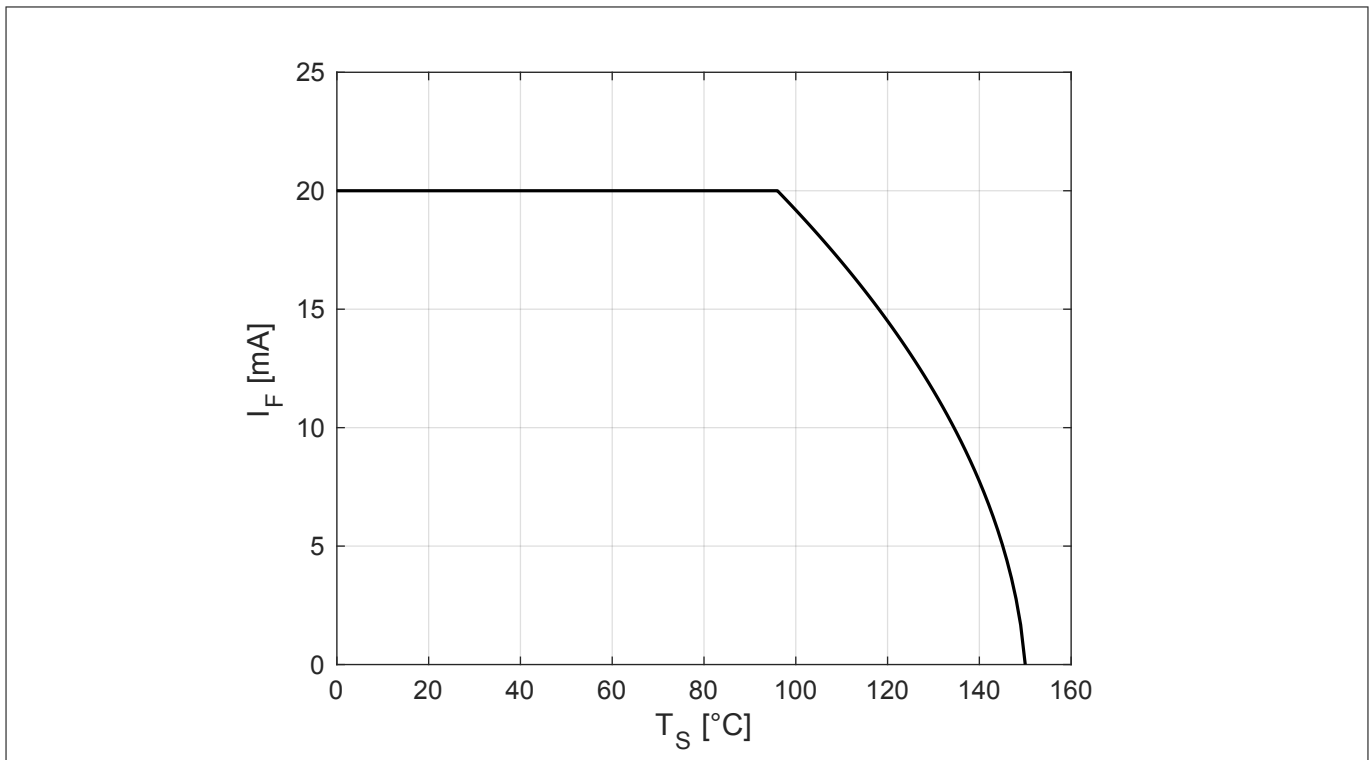
*Note:* The curves shown in this chapter have been generated using typical devices but shall not be understood as a guarantee that all devices have identical characteristic curves.

**Thermal characteristics**

**3 Thermal characteristics**

**Table 4 Thermal resistance**

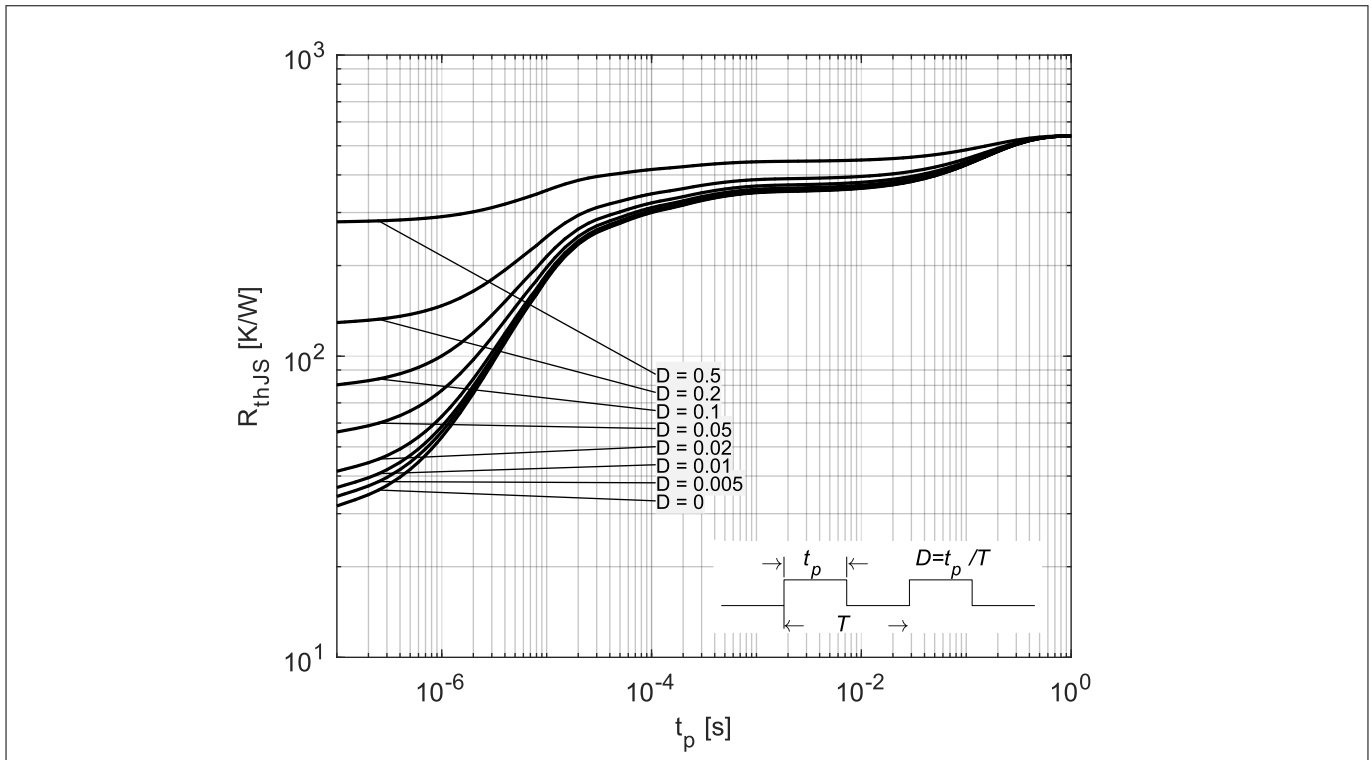
Parameter	Symbol	Values			Unit	Note or test condition
		Min.	Typ.	Max.		
Thermal resistance (junction - soldering point)	$R_{thJS}$	-	540	-	K/W	$T_S = 96\text{ °C}$ <sup>3)</sup>



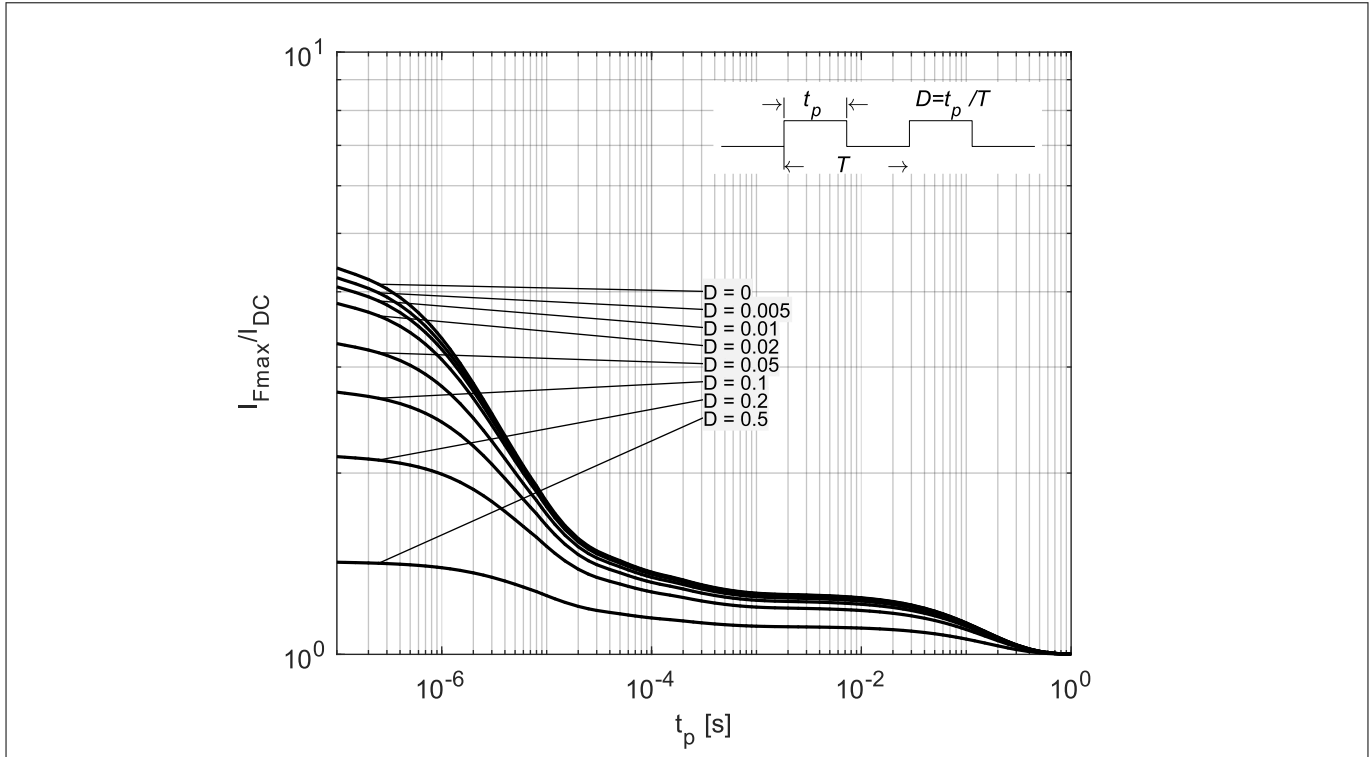
**Figure 4 Permissible forward current  $I_F$  in DC operation**

<sup>3</sup> For  $R_{thJS}$  in other conditions refer to the curves in this chapter.

**Thermal characteristics**

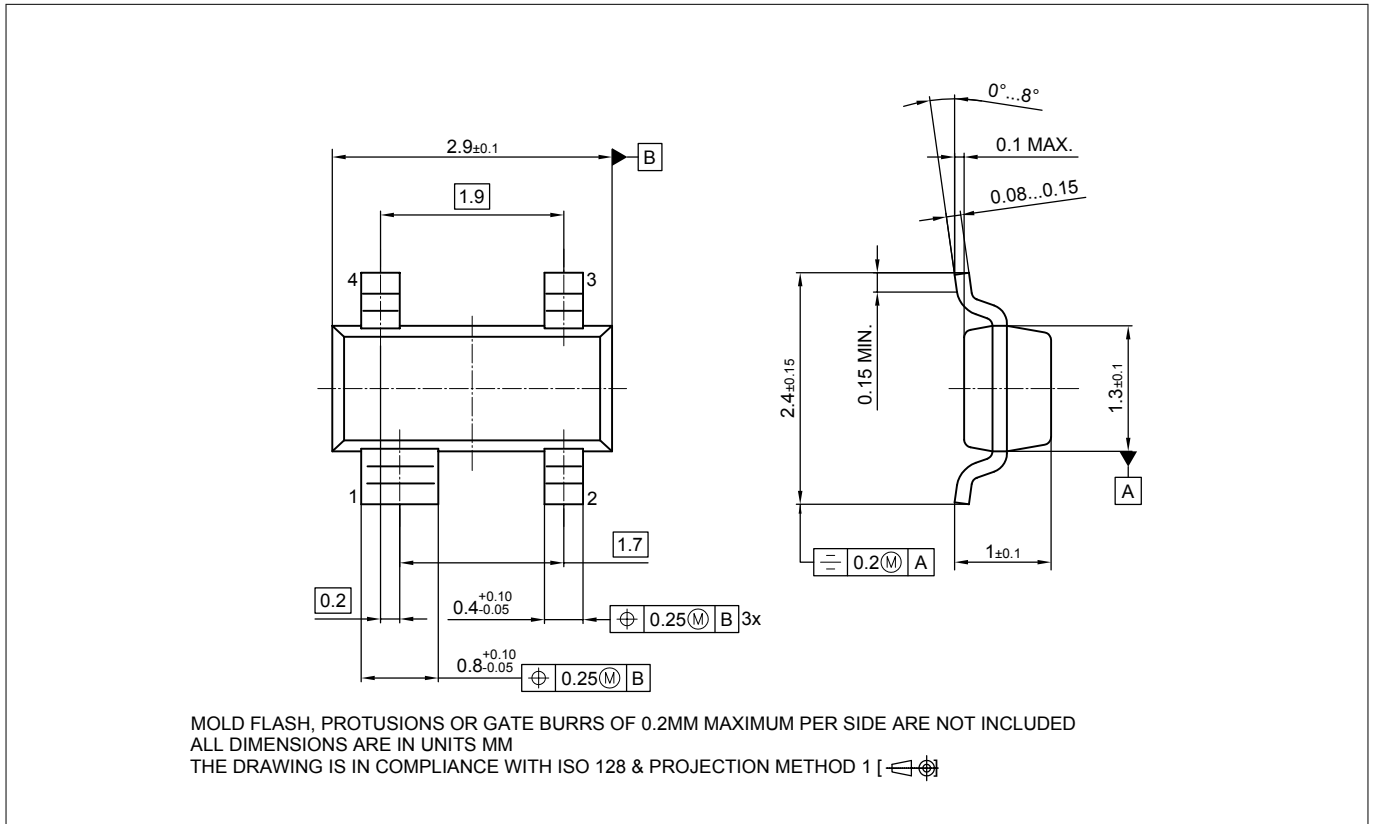


**Figure 5 Thermal resistance  $R_{thJS}$  in pulse operation**



**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	<ul style="list-style-type: none"> <li>Change from series datasheet to individual one</li> <li>Initial release of datasheet</li> <li>Typical values and curves updated to the values of the production (No product or process change behind)</li> </ul>

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