

BA591

Band-switching diode

Rev. 4 — 26 November 2018 Product data sheet

1 Product profile

1.1 General description

The BA591 is a planar, high performance band-switching diode in the very small SOD323 (SC-76) SMD plastic package.

1.2 Features and benefits

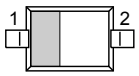
- Very small plastic SMD package
- Low diode capacitance: maximum 1.05 pF
- Low diode forward resistance: max. 0.7 Ω
- Small inductance
- AEC-Q101 qualified

1.3 Applications

- Low loss band-switching in VHF television tuners
- Surface-mount band-switching circuits.

2 Pinning information

Table 1. Discrete pinning

Pin	Description	Simplified outline	Graphic symbol
1	cathode	 Top view	 sym006
2	anode		

3 Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
BA591	-	plastic surface-mounted package; 2 leads	SOD323

4 Marking code

Table 3. Marking

Type number	Marking code
BA591	A1[1]

[1] The marking bar indicates the cathode (see simplified outline graphic in Table 1)

5 Limiting values

Table 4. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V_R	continuous reverse voltage		-	35	V
I_F	continuous forward current		-	100	mA
P_{tot}	total power dissipation	$T_{sp} \leq 90$ °C	-	500	mW
T_{stg}	storage temperature		-65	+150	°C
T_j	junction temperature		-65	+150	°C

6 Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-sp)}$	thermal resistance from junction to solder point		120	K/W

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7 Characteristics

Table 6. Characteristics

T_j = 25 °C unless otherwise specified.

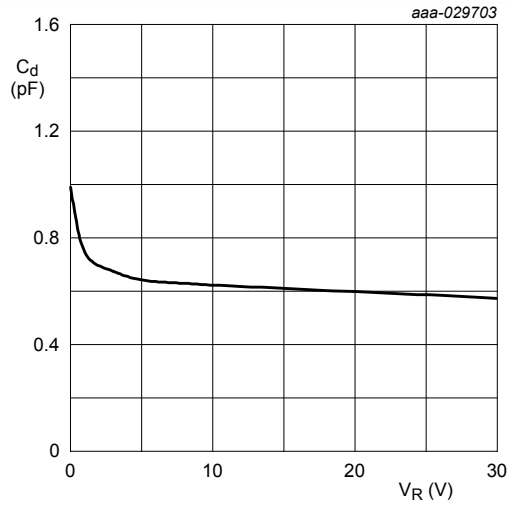
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 10 mA		-	-	1	V
I_R	reverse current	V_R = 20 V		-	-	20	nA
C_d	diode capacitance	f = 1 MHz (see Figure 1)					
		V_R = 1 V	[1]	-	0.8	1.05	pF
		V_R = 3 V	[1]	-	0.65	0.9	pF
r_D	diode forward resistance	f = 100 MHz (see Figure 2)					
		I_F = 3 mA	[1]	-	0.45	0.7	Ω
		I_F = 10 mA	[1]	-	0.36	0.5	Ω
$1/g_p$	reverse resistance	V_R = 1 V; f = 100 MHz	[1]	-	100	-	kΩ
L_S	series inductance			-	2	-	nH

[1] Guaranteed on AQL basis; inspection level S4, AQL 1.0

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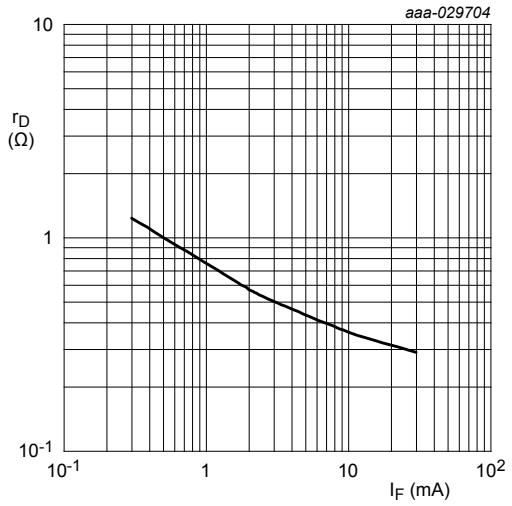
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8 Graphical data



T_j = 25 °C; f = 1 MHz

Figure 1. Diode capacitance as a function of reverse voltage (typical values)



T_j = 25 °C; f = 100 MHz.

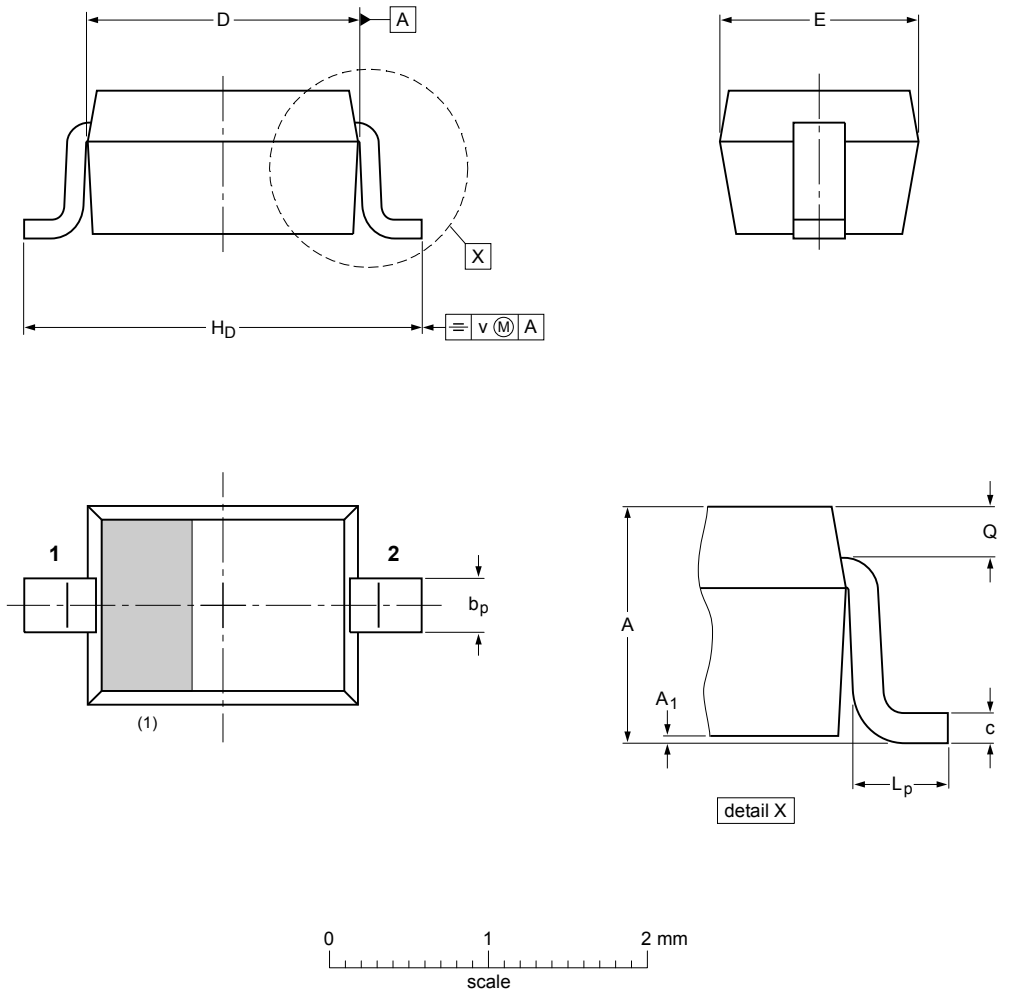
Figure 2. Diode forward resistance as a function of forward current (typical values)

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9 Package outline

Plastic surface-mounted package; 2 leads **SOD323**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	H_D	L_p	Q	v
mm	1.1 0.8	0.05	0.40 0.25	0.25 0.10	1.8 1.6	1.35 1.15	2.7 2.3	0.45 0.15	0.25 0.15	0.2

Note

1. The marking bar indicates the cathode

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD323			SC-76			~~03-12-17~~ 06-03-16

Figure 3. Package outline SOD323

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10 Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BA591 v.4	20181126	Product data sheet	-	BA591 v.3.1
Modifications:	• Section 1.2 "Features and benefits" has been updated. • The "Legal information" pages have been updated. • sheet has been adapted to the latest NXP rules • The condition under Limiting values is changed to $T_{j\text{-}sp} \leq 90$ °C			
BA591 v.3.1	20040217	Product data sheet	-	-

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11 Legal information

11.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.
[2] The term 'short data sheet' is explained in section "Definitions".
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