BAP70-05

Silicon PIN diode

Rev. 6 — 11 December 2018 Product data sheet

1 Product profile

1.1 General description

Two planar PIN diodes in common cathode configuration in an SOT23 small SMD plastic package.

1.2 Features and benefits

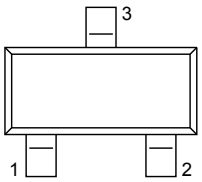
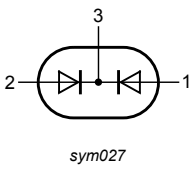
- High voltage; current controlled
- Low diode capacitance
- Low series inductance
- AEC-Q101 qualified

1.3 Applications

- RF attenuators and switches

2 Pinning information

Table 1. Discrete pinning

Pin	Description	Simplified outline	Symbol
1	anode (a1)		
2	anode (a2)		
3	common cathode		

3 Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
BAP70-05	-	plastic surface-mounted package; 3 leads	SOT23

4 Marking code

Table 3. Marking

Type number	Marking code
BAP70-05	8K%

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	reverse voltage	continuous voltage	-	50	V
I_F	forward current	continuous current	-	100	mA
P_{tot}	total power dissipation	$T_{sp} \leq 90$ °C	-	250	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
$R_{th(j\text{-}sp)}$	thermal resistance from junction to solder point		220	K/W

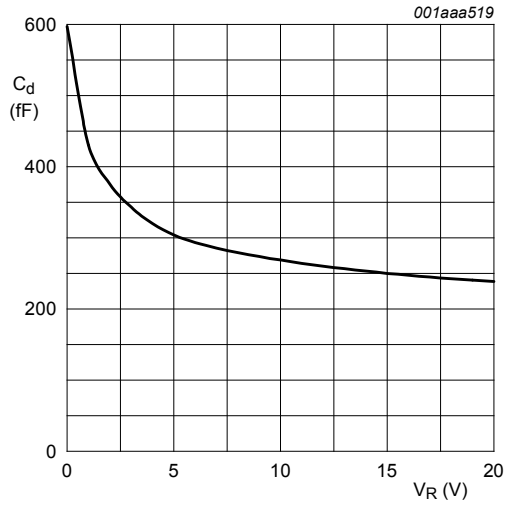
7 Characteristics

Table 6. Characteristics

T_{amb} = 25 °C unless otherwise specified.

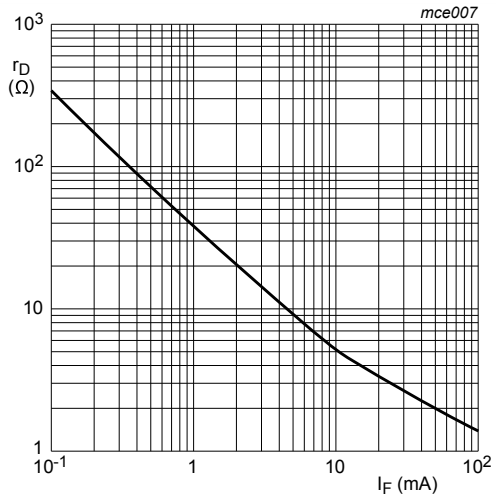
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	I_F = 50 mA	-	0.95	1.1	V
I_R	reverse current	V_R = 50 V	-	-	100	nA
C_d	diode capacitance	f = 1 MHz (see Figure 1)				
		V_R = 0 V	-	600	-	fF
		V_R = 1 V	-	430	-	fF
		V_R = 20 V	-	250	300	fF
r_D	diode forward resistance	f = 100 MHz (see Figure 2)				
		I_F = 0.5 mA	-	77	100	Ω
		I_F = 1 mA	-	40	50	Ω
		I_F = 10 mA	-	5.4	7	Ω
		I_F = 100 mA	-	1.4	1.9	Ω
τ_L	charge carrier life time	when switched from I_F = 10 mA to I_R = 6 mA; R_L = 100 Ω; measured at I_R = 3 mA	-	1.25	-	µs
L_S	series inductance	I_F = 100 mA; f = 100 MHz	-	1.4	-	nH

8 Graphical data



f = 1 MHz; T_j = 25 °C.

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

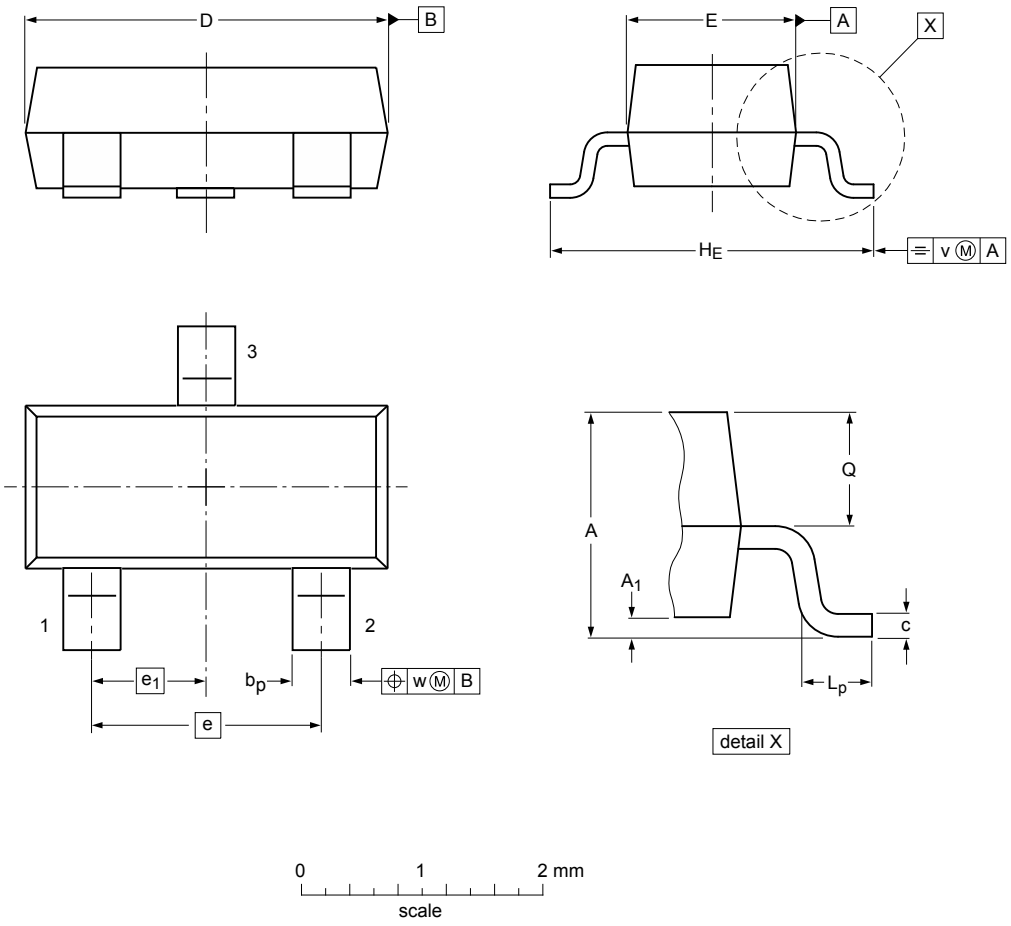


f = 100 MHz; T_j = 25 °C.

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

9 Package outline

Plastic surface-mounted package; 3 leads **SOT23**



Dimensions (mm are the original dimensions)

Unit		A	A_1	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	max	1.1	0.1	0.48	0.15	3.0	1.4			2.5	0.45	0.55		
	nom							1.9	0.95				0.2	0.1
	min	0.9		0.38	0.09	2.8	1.2			2.1	0.15	0.45		

sot023_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOT23		TO-236AB				~~14-06-19~~ 14-09-22

Figure 3. Package outline SOT23

10 Abbreviations

Table 7. Abbreviations

Acronym	Description
PIN	P-type, intrinsic, N-type
SMD	surface-mounted device
RF	radio frequency

11 Revision history

Table 8. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP70-05 v.6	20181211	Product data sheet	-	BAP70-05 v.5
Modifications:	• Section 1.2 "Features and benefits" has been updated. • adapted marking code • The "Legal information" pages have been updated.			
BAP70-05 v.5	20140307	Product data sheet		BAP70-05 v.4
BAP70-05 v.4	20140127	Product data sheet	-	BAP70-05 v.3
BAP70-05 v.3	20070405	Product data sheet	-	BAP70-05 v.2
BAP70-05 v.2	20061221	Product data sheet	-	BAP70-05 v.1
BAP70-05 v.1 (9397 750 12811)	20040405	Product data sheet	-	-

12 Legal information

12.1 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".
[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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