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

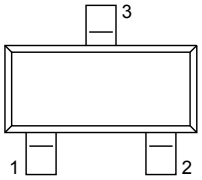
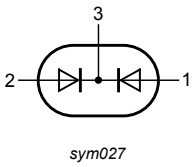
- High voltage; current controlled
- Low diode capacitance
- Low series inductance
- AEC-Q101 qualified

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
$R_{th(j-sp)}$	thermal resistance from junction to solder point		220	K/W

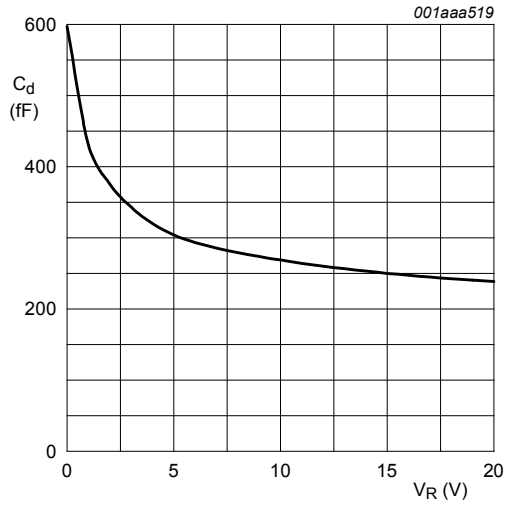
7 Characteristics

Table 6. Characteristics

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

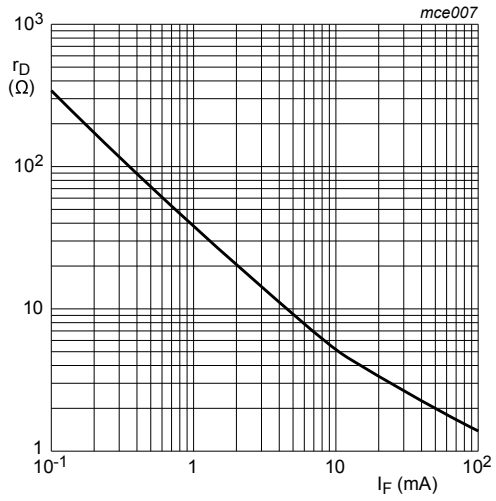
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	I_F = 50 mA	-	0.95	1.1	V
I_R	reverse current	V_R = 50 V	-	-	100	nA
C_d	diode capacitance	f = 1 MHz (see Figure 1)				
		V_R = 0 V	-	600	-	fF
		V_R = 1 V	-	430	-	fF
		V_R = 20 V	-	250	300	fF
r_D	diode forward resistance	f = 100 MHz (see 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)

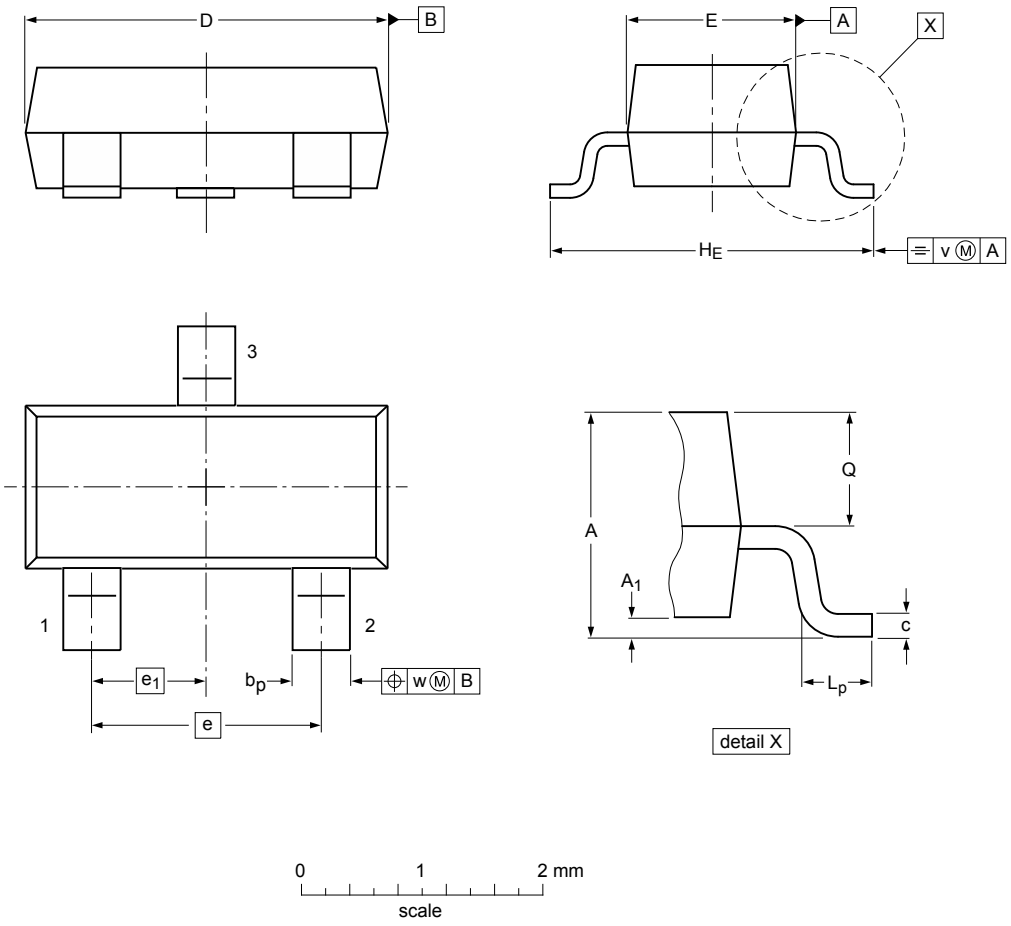


f = 100 MHz; T_j = 25 °C.

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".
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