



BAP70-05

Silicon PIN diode

Rev. 5 — 7 March 2014

Product data sheet

1. Product profile

1.1 General description

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

1.2 Features and benefits

- High voltage; current controlled
- Low diode capacitance
- Low series inductance

1.3 Applications

- RF attenuators and switches

2. Pinning information

Table 1. Discrete pinning

Pin	Description	Simplified outline	Symbol
1	anode (a1)		 <i>sym027</i>
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

Table 3. Marking

Type number	Marking code
BAP70-05	8Kp



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	$T_{sp} = 90\text{ }^{\circ}\text{C}$	-	250	mW
T_{stg}	storage temperature		-65	+150	$^{\circ}\text{C}$
T_j	junction temperature		-65	+150	$^{\circ}\text{C}$

6. Thermal characteristics

Table 5. Thermal characteristics

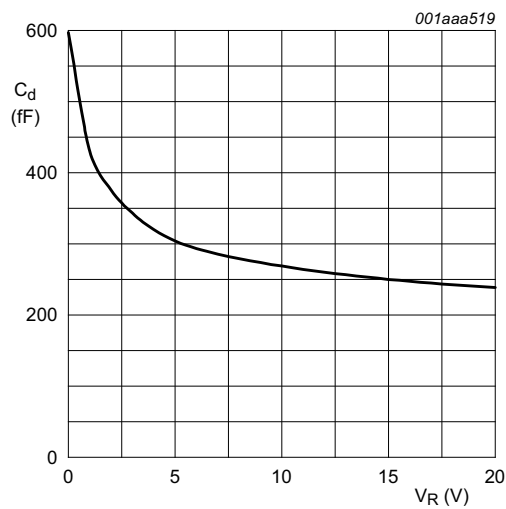
Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-sp)}$	thermal resistance from junction to solder point		220	K/W

7. Characteristics

Table 6. Characteristics

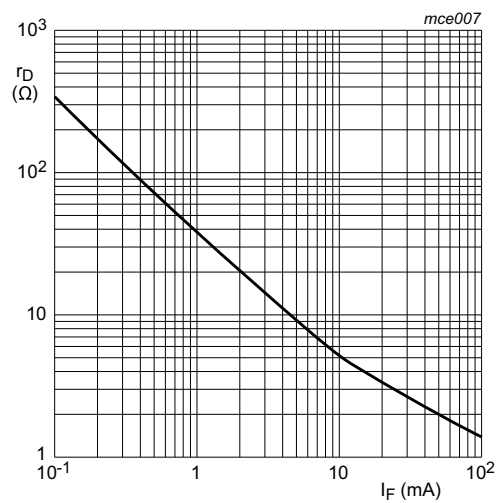
$T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

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



$f = 1\text{ MHz}$; $T_j = 25\text{ }^{\circ}\text{C}$.

Fig 1. Diode capacitance as a function of reverse voltage; typical values



$f = 100\text{ MHz}$; $T_j = 25\text{ }^{\circ}\text{C}$.

Fig 2. Diode forward resistance as a function of forward current; typical values

8. Package outline

Plastic surface-mounted package; 3 leads

SOT23

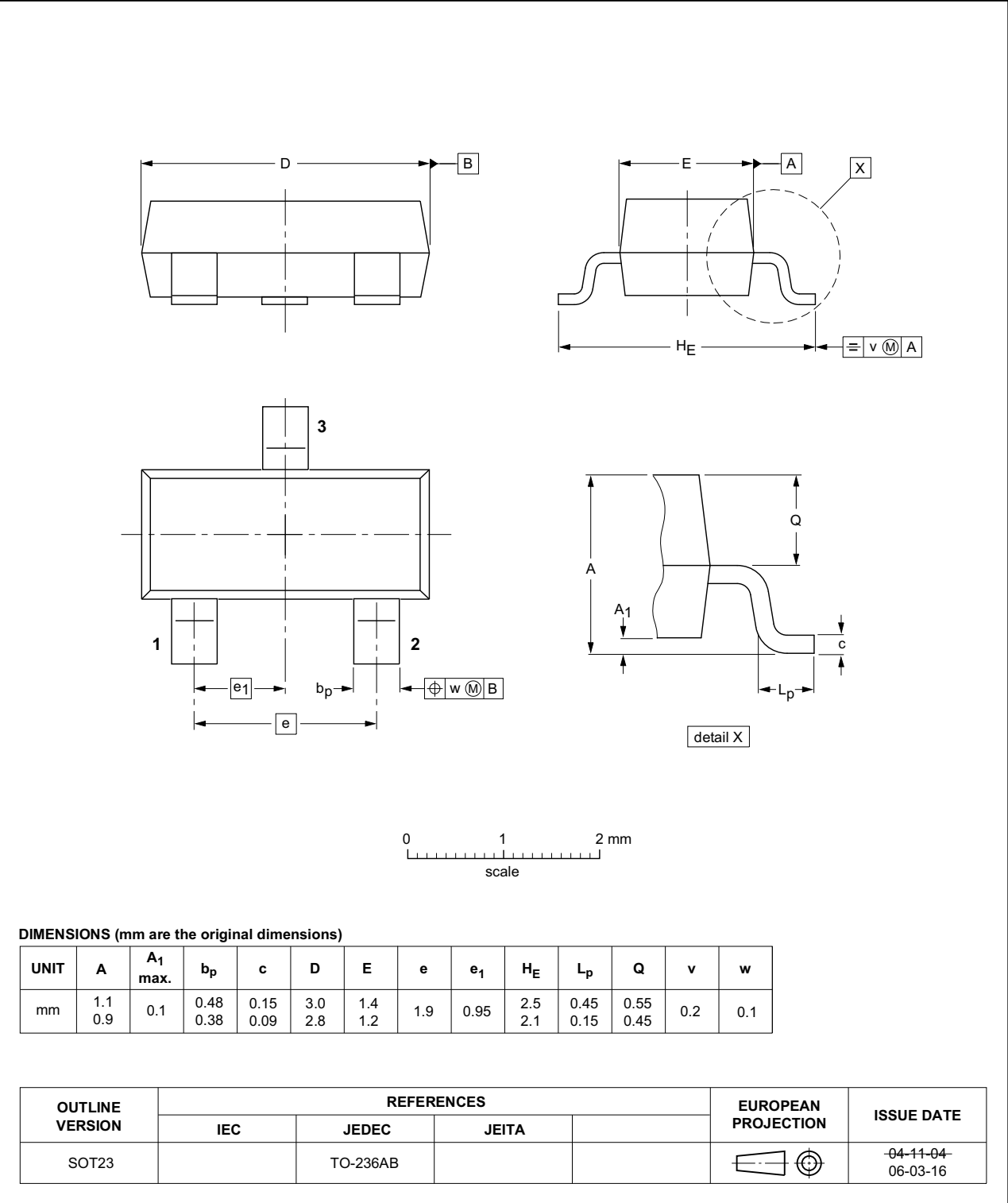


Fig 3. Package outline SOT23

9. Abbreviations

Table 7. Abbreviations

Acronym	Description
PIN	P-type, Intrinsic, N-type
SMD	Surface Mounted Device
RF	Radio Frequency

10. Revision history

Table 8. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP70-05 v.5	20140307	Product data sheet		BAP70-05 v.4
Modifications:	• Rollback to previous version			
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	-	-

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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