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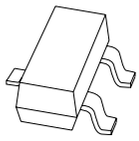


BB207

FM variable capacitance double diode

Rev. 02 — 27 April 2004 Product data sheet

1. Product profile

1.1 General description

The BB207 is a variable capacitance double diode with a common cathode, fabricated in silicon planar technology, and encapsulated in the SOT23 small plastic SMD package.

1.2 Features

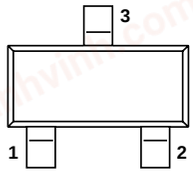
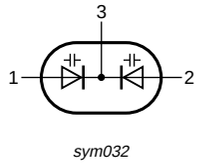
- Excellent linearity
- $C_{d(1V)}$: 81 pF; $C_{d(7.5V)}$: 27.6 pF
- $C_{d(1V)}$ to $C_{d(7.5V)}$ ratio: min. 2.6
- Very low series resistance
- Small plastic SMD package.

1.3 Applications

- Electronic tuning in FM-radio.

2. Pinning information

Table 1: Discrete pinning

Pin	Description	Simplified outline	Symbol
1	anode 1	 Top view	 sym032
2	anode 2		
3	common cathode		

3. Ordering information

Table 2: Ordering information

Type number	Package		
	Name	Description	Version
BB207	-	plastic surface mounted package; 3 leads	SOT23

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4. Marking

Table 3: Marking

Type number	Marking code [1]
BB207	*13

[1] * = p: made in Hong Kong.
* = w: made in China.

5. Limiting values

Table 4: Limiting values

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

Symbol	Parameter	Conditions	Min	Max	Unit
Per diode					
V_R	continuous reverse voltage		-	15	V
I_F	continuous forward current		-	20	mA
T_{stg}	storage temperature		–55	+150	°C
T_j	junction temperature		–55	+125	°C

6. Characteristics

Table 5: Electrical Characteristics

T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
I_R	reverse current	V_R = 15 V; see Figure 2	–	–	10	nA
		V_R = 15 V; T_j = 85 °C; see Figure 2	–	–	200	nA
r_s	diode series resistance	f = 100 MHz; V_R = 3 V	–	0.2	0.4	Ω
C_d	diode capacitance	V_R = 1 V; f = 1 MHz; see Figure 1	76	81	86	pF
		V_R = 3 V; f = 1 MHz; see Figure 1	–	50.5	–	pF
		V_R = 7.5 V; f = 1 MHz; see Figure 1	25.5	27.6	29.7	pF
		V_R = 8 V; f = 1 MHz; see Figure 1	–	26.3	–	pF
$\frac{C_{d(1V)}}{C_{d(7.5V)}}$	capacitance ratio	f = 1 MHz	2.6	–	3.3	

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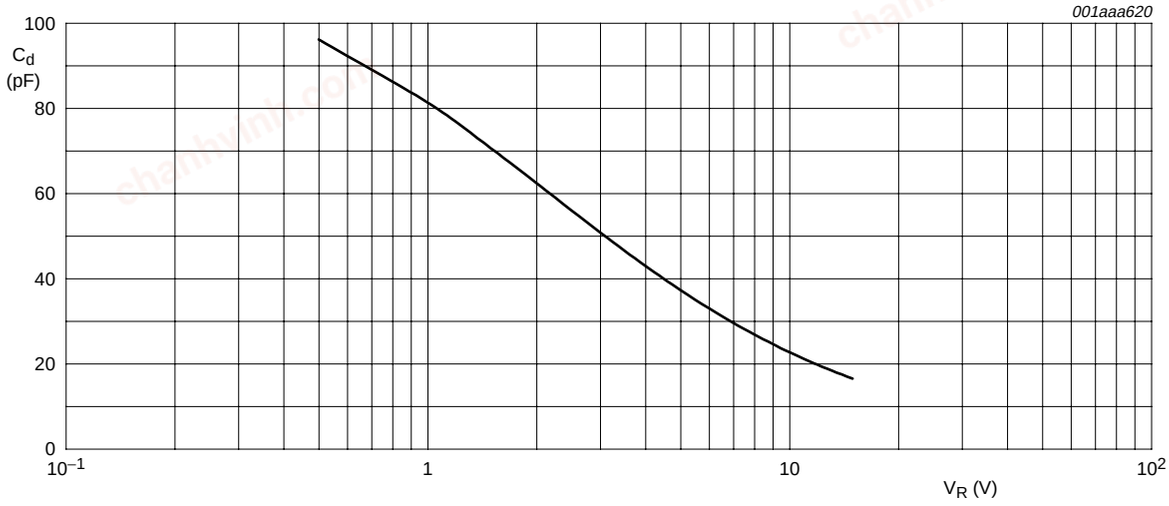

f = 1 MHz; T_j = 25 °C.

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

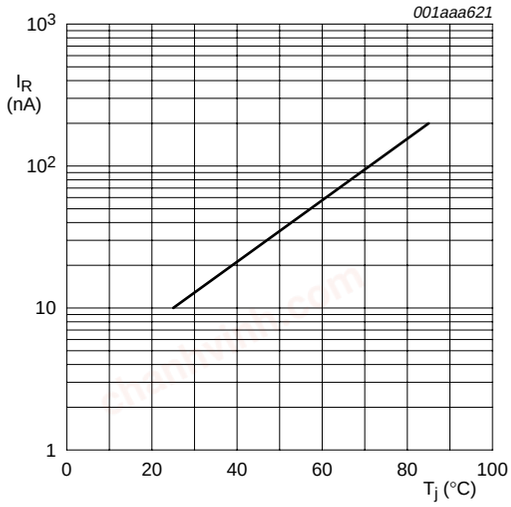

Fig 2. Reverse current as a function of junction temperature; maximum values.

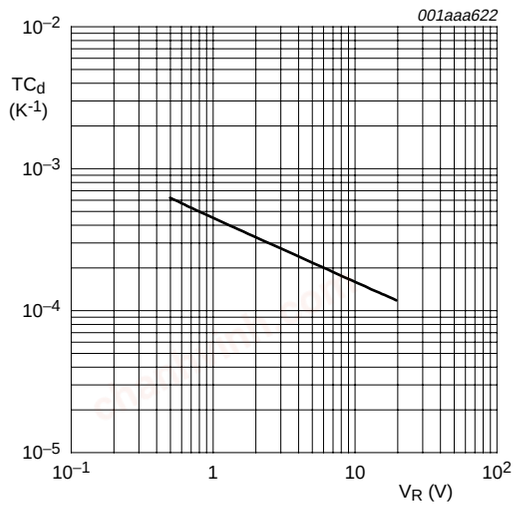

Fig 3. Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.

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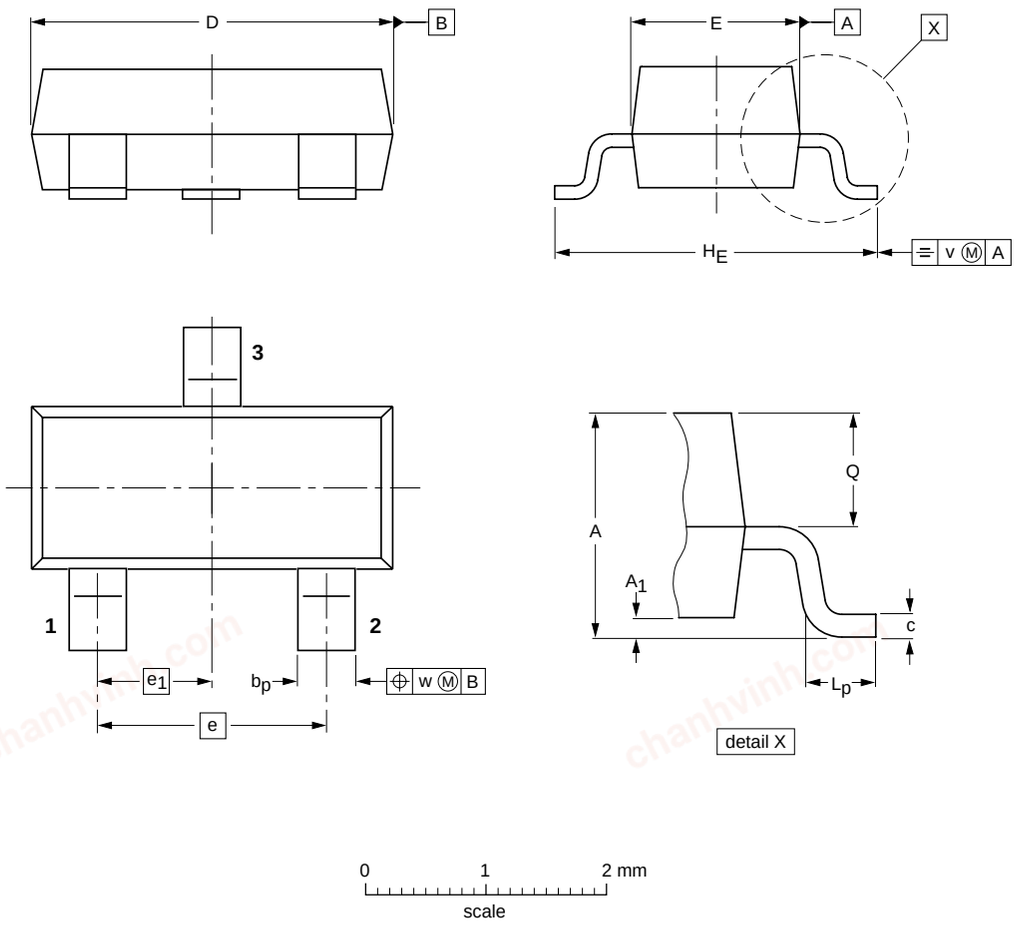
7. Package outline

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



DIMENSIONS (mm are the original dimensions)

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

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				~~97-02-28~~ 99-09-13

Fig 4. Package outline.

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8. Revision history

Table 6: Revision history

Document ID	Release date	Data sheet status	Change notice	Order number	Supersedes
BB207_2	20040427	Product data	-	9397 750 13003	BB207_N_1
Modifications:	• The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors.				
BB207_N_1	20031117	Preliminary data	-	9397 750 12695	-

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9. Data sheet status

Level	Data sheet status [1]	Product status [2] [3]	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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