



PMBFJ111; PMBFJ112; PMBFJ113

N-channel junction FETs

Rev. 03 — 4 August 2004

Product data sheet

1. Product profile

1.1 General description

Symmetrical N-channel junction FETs in a SOT23 package.

1.2 Features

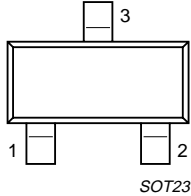

- High-speed switching
- Interchangeability of drain and source connections
- Low R_{DSon} at zero gate voltage ($< 30 \Omega$ for PMBFJ111).

1.3 Applications

- Analog switches
- Choppers
- Commutators
- Multiplexers
- Thin and thick film hybrids.

2. Pinning information

Table 1: Pinning

Pin	Description ^[1]	Simplified outline	Symbol
1	drain		
2	source		
3	gate		

[1] Drain and source are interchangeable.

3. Ordering information

Table 2: Ordering information

Type number	Package		Version
	Name	Description	
PMBFJ111	-	plastic surface mounted package; 3 leads	SOT23
PMBFJ112			
PMBFJ113			

4. Marking

Table 3: Marking

Type number	Marking code [1]
PMBFJ111	41*
PMBFJ112	42*
PMBFJ113	47*

[1] * = p: Made in Hong Kong

* = t: Made in Malaysia

* = 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
V_{DS}	drain-source voltage (DC)		-	± 40	V
V_{GSO}	gate-source voltage		-	-40	V
V_{GDO}	gate-drain voltage		-	-40	V
I_G	forward gate current (DC)		-	50	mA
P_{tot}	total power dissipation	$T_{amb} = 25\text{ °C}$	[1] -	300	mW
T_{stg}	storage temperature		-65	+150	°C
T_j	junction temperature		-	150	°C

[1] Mounted on a ceramic substrate, 8 mm × 10 mm × 0.7 mm.

6. Thermal characteristics

Table 5: Thermal characteristics

$$T_j = P (R_{th(j-t)} + R_{th(t-s)} + R_{th(s-a)}) + T_{amb}$$

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient		[1] 430	K/W
	thermal resistance from junction to ambient		[2] 500	K/W

[1] Mounted on a ceramic substrate, 8 mm × 10 mm × 0.7 mm.

[2] Mounted on printed circuit board.

7. Static characteristics

Table 6: Static characteristics

$T_j = 25\text{ }^\circ\text{C}$.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_{GSS}	gate-source leakage current	$V_{GS} = -15\text{ V}; V_{DS} = 0\text{ V}$	-	-	-1	nA
I_{DSS}	drain-source leakage current					
	PMBFJ111	$V_{GS} = 0\text{ V}; V_{DS} = 15\text{ V}$	20	-	-	mA
	PMBFJ112	$V_{GS} = 0\text{ V}; V_{DS} = 15\text{ V}$	5	-	-	mA
	PMBFJ113	$V_{GS} = 0\text{ V}; V_{DS} = 15\text{ V}$	2	-	-	mA
$V_{(BR)GSS}$	gate-source breakdown voltage	$I_G = -1\text{ }\mu\text{A}; V_{DS} = 0\text{ V}$	-40	-	-	V
V_{GSoff}	gate-source cut-off voltage					
	PMBFJ111	$I_D = 1\text{ }\mu\text{A}; V_{DS} = 5\text{ V}$	-10	-	-3	V
	PMBFJ112	$I_D = 1\text{ }\mu\text{A}; V_{DS} = 5\text{ V}$	-5	-	-1	V
	PMBFJ113	$I_D = 1\text{ }\mu\text{A}; V_{DS} = 5\text{ V}$	-3	-	-0.5	V
R_{DSon}	drain-source on-state resistance					
	PMBFJ111	$V_{GS} = 0\text{ V}; V_{DS} = 0.1\text{ V}$	-	-	30	Ω
	PMBFJ112	$V_{GS} = 0\text{ V}; V_{DS} = 0.1\text{ V}$	-	-	50	Ω
	PMBFJ113	$V_{GS} = 0\text{ V}; V_{DS} = 0.1\text{ V}$	-	-	100	Ω

8. Dynamic characteristics

Table 7: Dynamic characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
C_{iss}	input capacitance	$V_{DS} = 0\text{ V}; V_{GS} = -10\text{ V}; f = 1\text{ MHz}$	-	6	-	pF
		$V_{DS} = 0\text{ V}; V_{GS} = 0\text{ V}; f = 1\text{ MHz}; T_{amb} = 25\text{ }^\circ\text{C}$	-	22	28	pF
C_{rss}	feedback capacitance		-	3	-	pF
Switching times; see Figure 2						
t_r	rise time		[1]	6	-	ns
t_{on}	turn-on time		[1]	13	-	ns
t_f	fall time		[1]	15	-	ns
t_{off}	turn-off time		[1]	35	-	ns

[1] Test conditions for switching times are as follows:

$V_{DD} = 10\text{ V}, V_{GS} = 0\text{ V}$ to V_{GSoff} (all types);

$V_{GSoff} = -12\text{ V}, R_L = 750\text{ }\Omega$ (PMBFJ111);

$V_{GSoff} = -7\text{ V}, R_L = 1550\text{ }\Omega$ (PMBFJ112);

$V_{GSoff} = -5\text{ V}, R_L = 3150\text{ }\Omega$ (PMBFJ113).

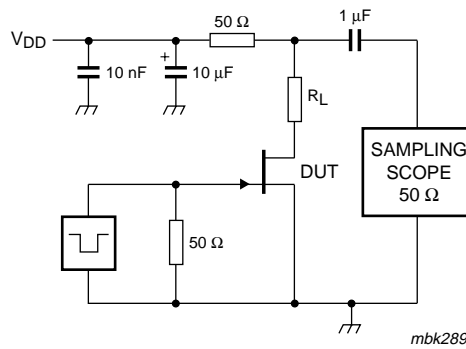


Fig 1. Switching circuit.

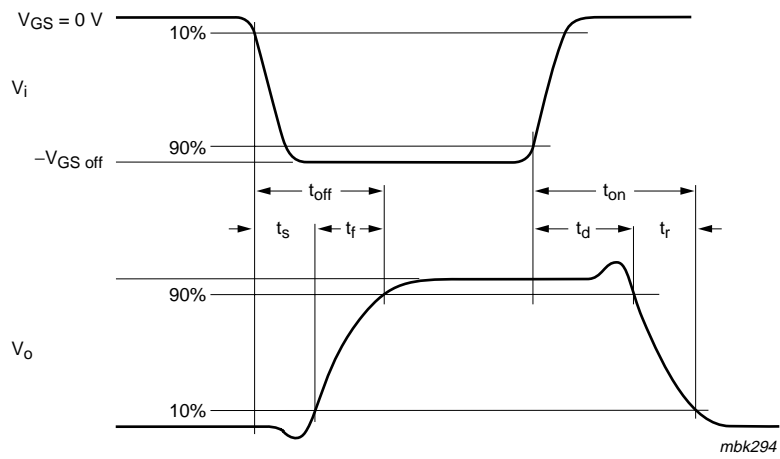


Fig 2. Input and output waveforms.

9. Package outline

Plastic surface mounted package; 3 leads

SOT23

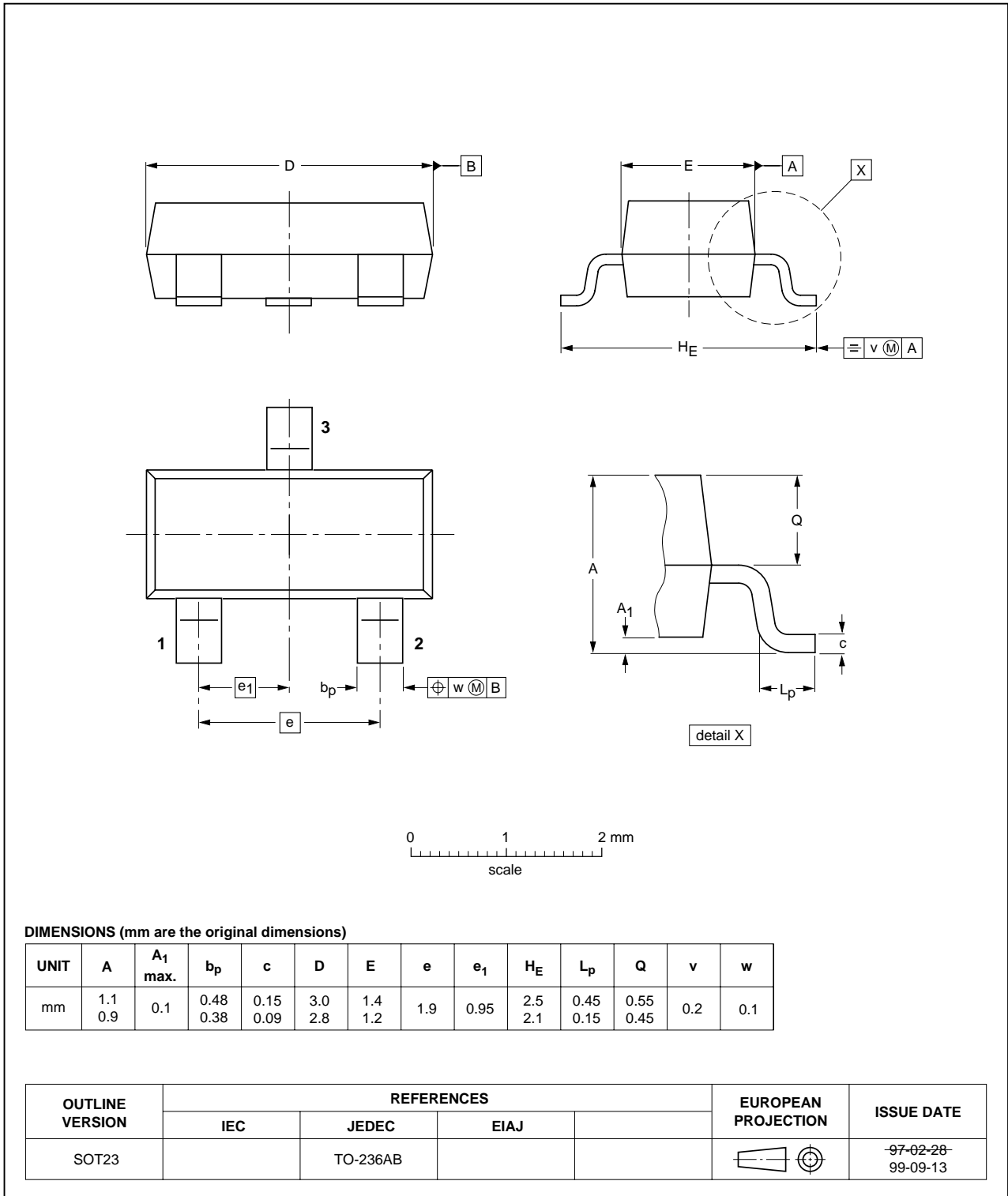


Fig 3. Package outline.

10. Revision history

Table 8: Revision history

Document ID	Release date	Data sheet status	Change notice	Order number	Supersedes
PMBFJ111_112_113_3	20040804	Product data sheet	-	9397 750 13402	PMBFJ111_112_113_CNV_2
Modifications:					
			<ul style="list-style-type: none">The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors.Table 3 "Marking": added new marking codes		
PMBFJ111_112_113_CNV_2	19971201	Product specification	-	not applicable	-

11. 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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Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

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