

PMBFJ111; PMBFJ112; PMBFJ113

N-channel junction FETs

Rev. 4 — 20 September 2011 Product data sheet

1. Product profile

1.1 General description

Symmetrical N-channel junction FETs in a SOT23 package.

1.2 Features and benefits

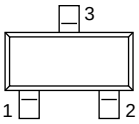
- High-speed switching
- Interchangeability of drain and source connections
- Low R_{DSon} at zero gate voltage (< 30 Ω for PMBFJ111).

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		

sym053

[1] Drain and source are interchangeable.

3. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
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 °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.

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7. Static characteristics

Table 6. Static characteristics

$T_j = 25$ °C.

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

8. Dynamic characteristics

Table 7. Dynamic characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
C_{iss}	input capacitance	V_{DS} = 0 V; V_{GS} = –10 V; f = 1 MHz		-	6	-	pF
		V_{DS} = 0 V; V_{GS} = 0 V; f = 1 MHz; T_{amb} = 25 °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 V, V_{GS} = 0 V to V_{GSoff} (all types);
V_{GSoff} = –12 V, R_L = 750 Ω (PMBFJ111);
V_{GSoff} = –7 V, R_L = 1550 Ω (PMBFJ112);
V_{GSoff} = –5 V, R_L = 3150 Ω (PMBFJ113).

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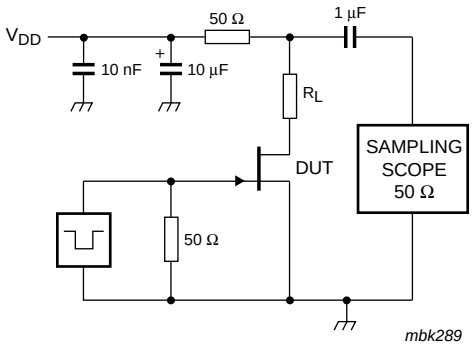


Fig 1. Switching circuit.

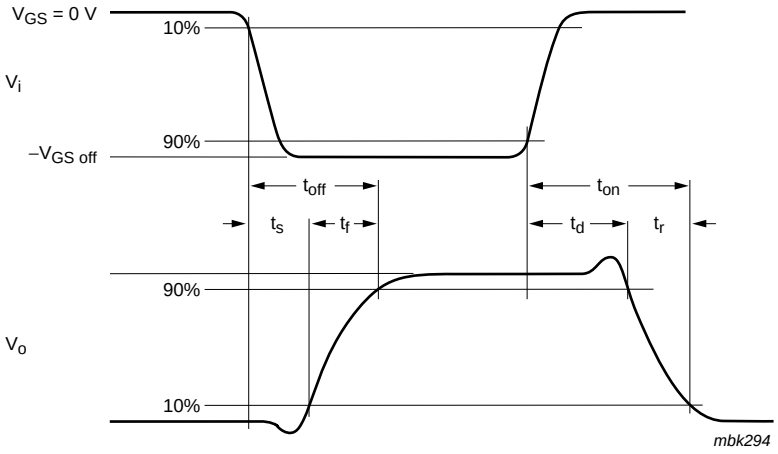


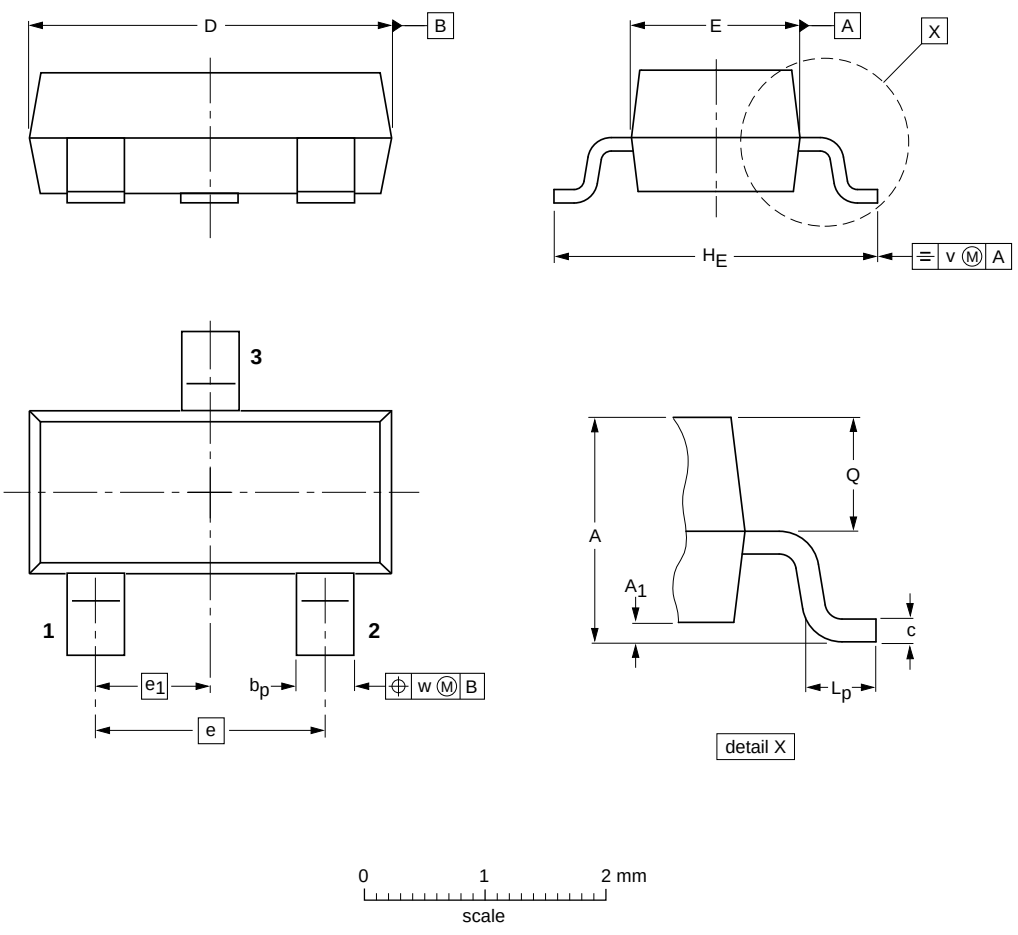
Fig 2. Input and output waveforms.

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9. 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	JEITA			
SOT23		TO-236AB				~~04-11-04~~ 06-03-16

Fig 3. Package outline.

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10. Revision history

Table 8. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PMBFJ111_112_113 v.4	20110920	Product data sheet	-	PMBFJ111_112_113 v.3
Modifications:	• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Package outline drawings have been updated to the latest version.			
PMBFJ111_112_113 v.3 (9397 750 13402)	20040804	Product data sheet	-	PMBFJ111_112_113_CNV v.2
PMBFJ111_112_113_CNV v.2	19971201	Product specification	-	-

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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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Date of release: 20 September 2011
Document identifier: PMBFJ111_112_113