

# DATA SHEET

## **PMBFJ174 to 177** P-channel silicon field-effect transistors

Product specification

April 1995



**P-channel silicon field-effect transistors**

**PMBFJ174 to 177**

**DESCRIPTION**

Silicon symmetrical p-channel junction FETs in plastic microminiature SOT23 envelopes. They are intended for application with analogue switches, choppers, commutators etc. using SMD technology. A special feature is the interchangeability of the drain and source connections.

**PINNING**

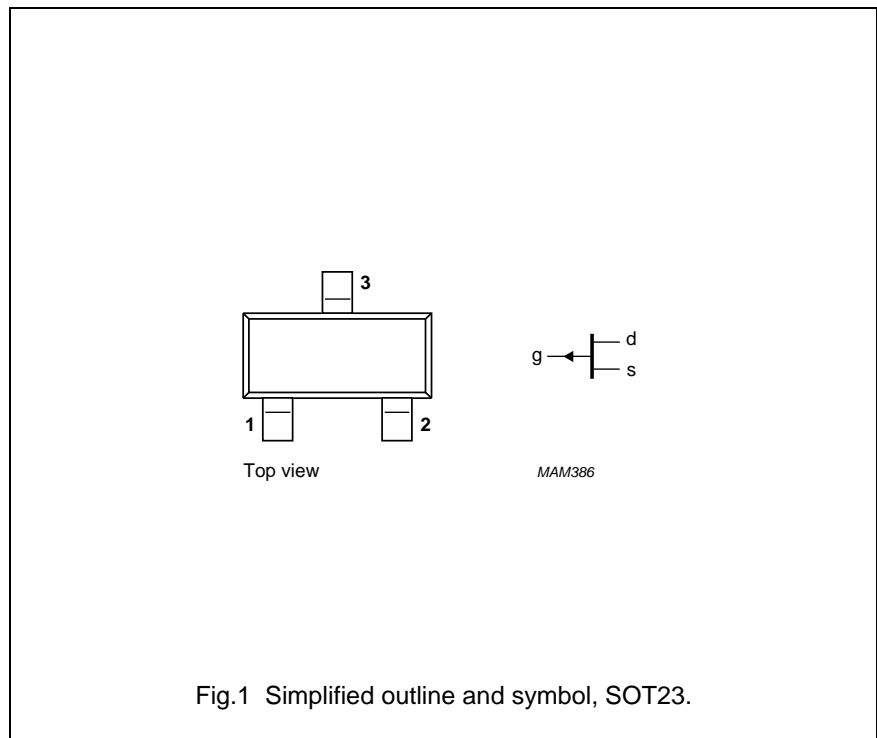
- 1 = drain
- 2 = source
- 3 = gate

**Note**

- 1. Drain and source are interchangeable.

**Marking codes:**

- 174 : p6X
- 175 : p6W
- 176 : p6S
- 177 : p6Y



**QUICK REFERENCE DATA**

Drain-source voltage	$\pm V_{DS}$	max.	30	V		
Gate-source voltage	$V_{GS0}$	max.	30	V		
Gate current	$-I_G$	max.	50	mA		
Total power dissipation up to $T_{amb} = 25\text{ }^\circ\text{C}$	$P_{tot}$	max.	300	mW		
Drain current $-V_{DS} = 15\text{ V}; V_{GS} = 0$	$-I_{DSS}$		<b>PMBFJ174</b>	<b>175</b>	<b>176</b>	<b>177</b>
		>	20	7	2	1.5 mA
		<	135	70	35	20 mA
Drain-source ON-resistance $-V_{DS} = 0.1\text{ V}; V_{GS} = 0$	$R_{DS\ on}$	<	85	125	250	300 $\Omega$

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**RATINGS**

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Drain-source voltage	$\pm V_{DS}$	max.	30	V
Gate-source voltage	$V_{GSO}$	max.	30	V
Gate-drain voltage	$V_{GDO}$	max.	30	V
Gate current (d.c.)	$-I_G$	max.	50	mA
Total power dissipation				
up to $T_{amb} = 25\text{ }^\circ\text{C}^{(1)}$	$P_{tot}$	max.	300	mW
Storage temperature range	$T_{stg}$		-65 to + 150	$^\circ\text{C}$
Junction temperature	$T_j$	max.	150	$^\circ\text{C}$

**THERMAL RESISTANCE**

From junction to ambient in free air	$R_{th\ j-a}$	=	430	K/W
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**STATIC CHARACTERISTICS**

$T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified

			PMBFJ174	175	176	177	
Gate cut-off current							
$V_{GS} = 20\text{ V}; V_{DS} = 0$	$I_{GSS}$	<	1	1	1	1	nA
Drain cut-off current							
$-V_{DS} = 15\text{ V}; V_{GS} = 10\text{ V}$	$-I_{DSX}$	<	1	1	1	1	nA
Drain current							
$-V_{DS} = 15\text{ V}; V_{GS} = 0$	$-I_{DSS}$	>	20	7	2	1.5	mA
		<	135	70	35	20	mA
Gate-source breakdown voltage							
$I_G = 1\text{ }\mu\text{A}; V_{DS} = 0$	$V_{(BR)GSS}$	>	30	30	30	30	V
Gate-source cut-off voltage							
$-I_D = 10\text{ nA}; V_{DS} = -15\text{ V}$	$V_{GS\ off}$	>	5	3	1	0.8	V
		<	10	6	4	2.25	V
Drain-source ON-resistance							
$-V_{DS} = 0.1\text{ V}; V_{GS} = 0$	$R_{DS\ on}$	<	85	125	250	300	$\Omega$

**Note**

1. Mounted on a ceramic substrate of 8 mm × 10 mm × 0.7 mm.

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**DYNAMIC CHARACTERISTICS**

T<sub>j</sub> = 25 °C unless otherwise specified

Input capacitance, f = 1 MHz

V<sub>GS</sub> = 10 V; V<sub>DS</sub> = 0 V

V<sub>GS</sub> = V<sub>DS</sub> = 0

C <sub>is</sub>	typ.	8	pF
C <sub>is</sub>	typ.	30	pF

Feedback capacitance, f = 1 MHz

V<sub>GS</sub> = 10 V; V<sub>DS</sub> = 0 V

C <sub>rs</sub>	typ.	4	pF
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Switching times (see Fig.2 + 3)

Delay time

t <sub>d</sub>	typ.	2	5	15	20	ns
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Rise time

t <sub>r</sub>	typ.	5	10	20	25	ns
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Turn-on time

t <sub>on</sub>	typ.	7	15	35	45	ns
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Storage temperature

t <sub>s</sub>	typ.	5	10	15	20	ns
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Fall time

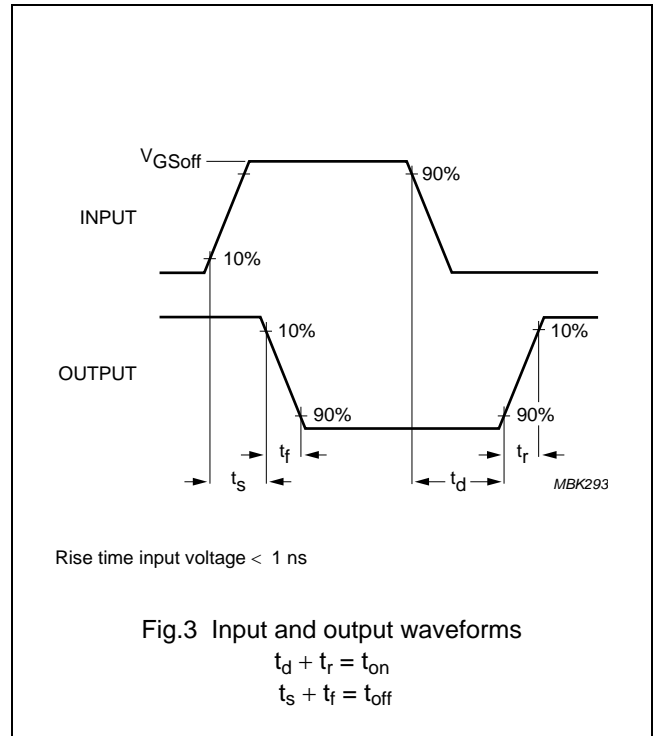
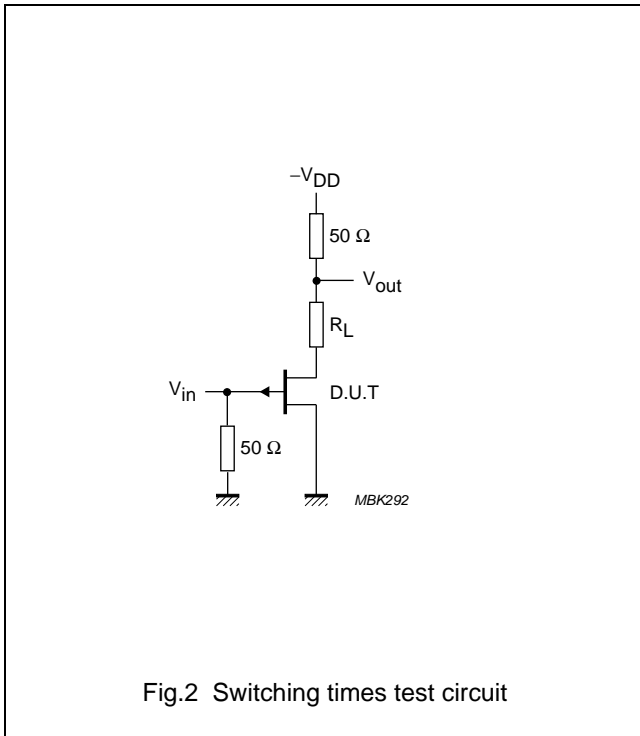
t <sub>f</sub>	typ.	10	20	20	25	ns
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Turn-off time

t <sub>off</sub>	typ.	15	30	35	45	ns
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Test conditions:

-V <sub>DD</sub>	10	6	6	6	V
V <sub>GS off</sub>	12	8	6	3	V
R <sub>L</sub>	560	1200	2000	2900	Ω
V <sub>GS on</sub>	0	0	0	0	V



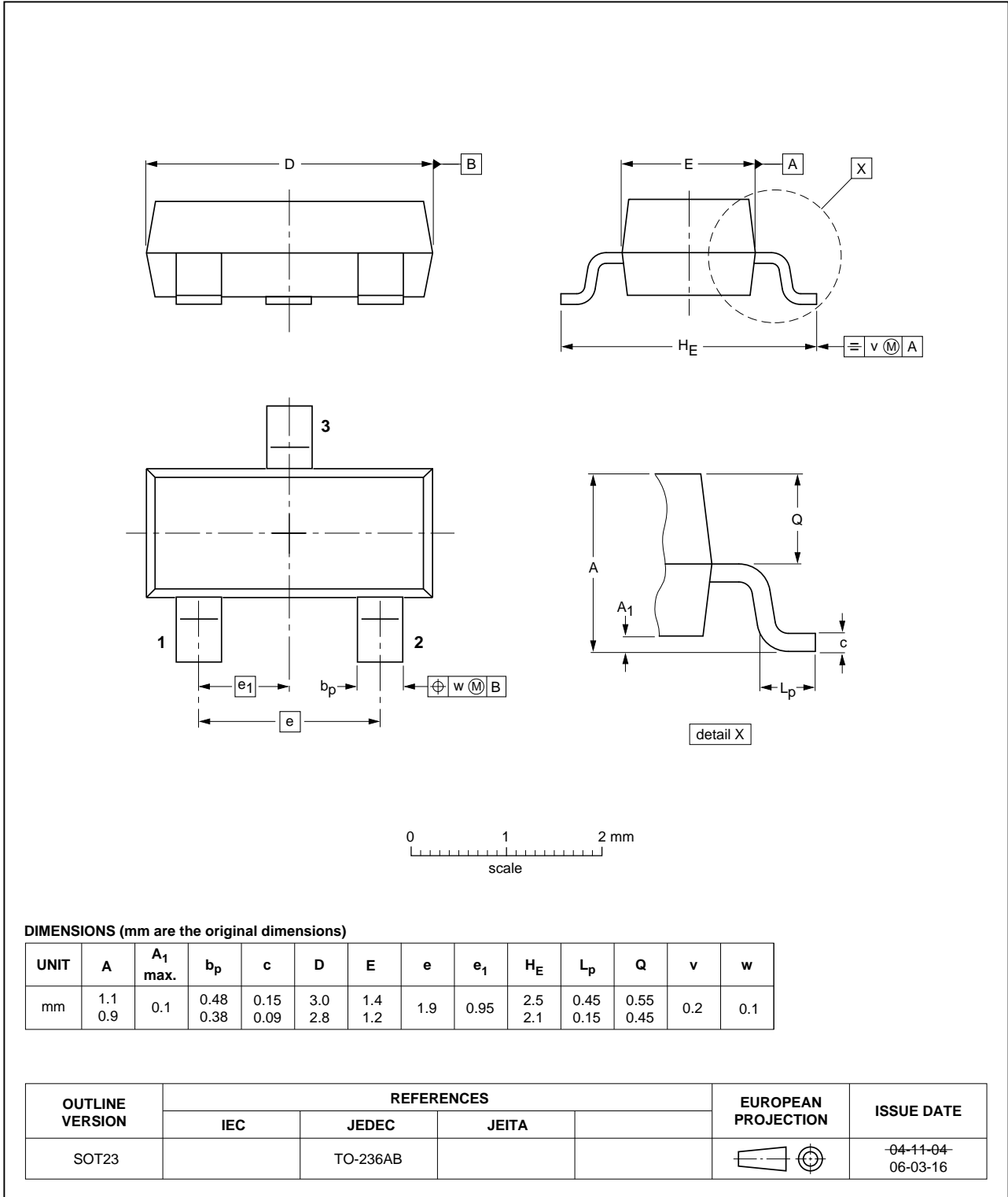
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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



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**DATA SHEET STATUS**

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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## **Contact information**

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