

P-CHANNEL SILICON FIELD-EFFECT TRANSISTORS

Silicon symmetrical p-channel junction FETs in plastic microminiature SOT-23 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.

QUICK REFERENCE DATA

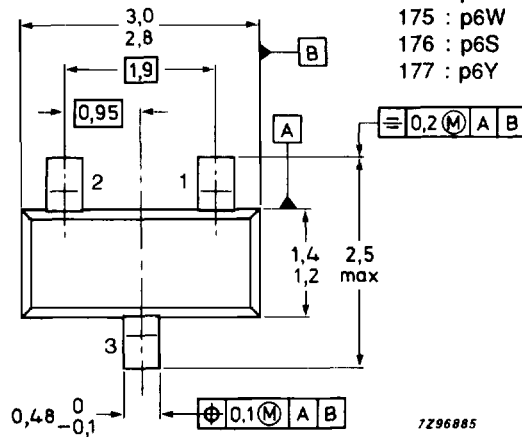
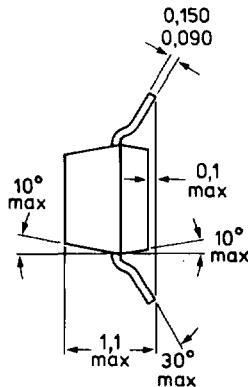
Drain-source voltage	$\pm V_{DS}$	max.	30	V		
Gate-source voltage	V_{GS0}	max.	30	V		
Gate current	$-I_G$	max.	50	mA		
Total power dissipation up to $T_{amb} = 25\text{ }^\circ\text{C}$	P_{tot}	max.	300	mW		
PMBFJ174 175 176 177						
Drain current $-V_{DS} = 15\text{ V}; V_{GS} = 0$	$-I_{DSS}$	> 20	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	Ω

MECHANICAL DATA

Fig. 1 SOT-23.

Pinning:

- 1 = Drain
- 2 = Source
- 3 = Gate



Dimensions in mm

Marking codes:

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

TOP VIEW

Note: Drain and source are interchangeable.

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 $T_{amb} = 25\text{ }^\circ\text{C}^*$	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_{thj-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 < 135	7 70	2 35	1,5 20	mA 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 $-I_D = 10\text{ nA}; V_{DS} = -15\text{ V}$	$V_{GS\text{ off}}$	> 5 < 10	3 6	1 4	0,8 2,25	V V
Drain-source ON-resistance $-V_{DS} = 0,1\text{ V}; V_{GS} = 0$	$R_{DS\text{ on}}$	< 85	125	250	300	Ω

* Mounted on a ceramic substrate of 8 mm x 10 mm x 0,7 mm.

DYNAMIC CHARACTERISTICS

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

Input capacitance, $f = 1\text{ MHz}$

$V_{GS} = 10\text{ V}; V_{DS} = 0\text{ V}$

$V_{GS} = V_{DS} = 0$

C_{is}	typ.	8	pF
C_{is}	typ.	30	pF

Feedback capacitance, $f = 1\text{ MHz}$

$V_{GS} = 10\text{ V}; V_{DS} = 0\text{ V}$

C_{rs}	typ.	4	pF
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Switching times (see Fig. 2 + 3)

Delay time

t_d	typ.	2	5	15	20	ns
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Rise time

t_r	typ.	5	10	20	25	ns
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Turn-on time

t_{on}	typ.	7	15	35	45	ns
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Storage temperature

t_s	typ.	5	10	15	20	ns
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Fall time

t_f	typ.	10	20	20	25	ns
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Turn-off time

t_{off}	typ.	15	30	35	45	ns
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Test conditions:

$-V_{DD}$	10	6	6	6	V
$V_{GS\text{off}}$	12	8	6	3	V
R_L	560	1200	2000	2900	Ω
$V_{GS\text{on}}$	0	0	0	0	V

Rise time input voltage $< 1\text{ ns}$

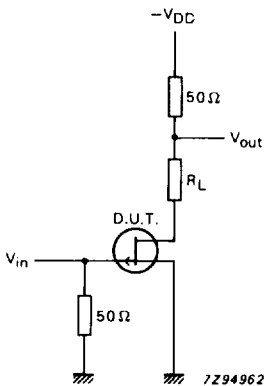


Fig. 2 Switching times test circuit

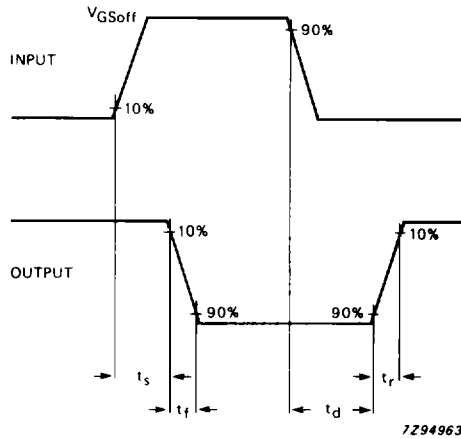


Fig. 3 Input and output waveforms

$t_d + t_r = t_{on}$
 $t_s + t_f = t_{off}$