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# MTM86124

## Silicon P-channel MOS FET

For DC-DC converter circuits

For switching circuits

### Overview

MTM86124 is the P-channel MOS FET that is highly suitable for DC-DC converter and other switching circuits.

### Features

- Low ON resistance:  $R_{on} = 100 \text{ m}\Omega$  ( $V_{GS} = 4.0 \text{ V}$ )
- Low short-circuit input capacitance (common source):  $C_{iss} = 400 \text{ pF}$
- Small package: WSSMini6-F1 (1.6 mm × 1.6 mm × 0.5 mm)
- Low drive voltage: 2.5 V drive

### Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	$V_{DSS}$	-20	V
Gate-source surrender voltage	$V_{GSS}$	$\pm 10$	V
Drain current	$I_D$	-2.0	A
Peak drain current *1	$I_{DP}$	-8	A
Power dissipation *2	$P_D$	540	mW
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Note) \*1: Pulse width  $\leq 10 \mu\text{s}$ , Duty cycle  $\leq 1\%$

\*2: Measuring on ceramic substrate at 40 mm × 38 mm × 0.2 mm

$P_D$  absolute maximum rating without a heat sink: 150 mW

### Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	$V_{DSS}$	$I_D = -1 \text{ mA}, V_{GS} = 0$	-20			V
Drain-source cutoff current	$I_{DSS}$	$V_{DS} = -20 \text{ V}, V_{GS} = 0$			-1.0	$\mu\text{A}$
Gate-source cutoff current	$I_{GSS}$	$V_{GS} = \pm 8 \text{ V}, V_{DS} = 0$			$\pm 10$	$\mu\text{A}$
Gate threshold voltage	$V_{TH}$	$I_D = -1.0 \text{ mA}, V_{DS} = -10 \text{ V}$	-0.4	-0.85	-1.3	V
Drain-source ON resistance 1 *1	$R_{DS(on)1}$	$I_D = -1 \text{ A}, V_{GS} = -4.0 \text{ V}$		100	130	$\text{m}\Omega$
Drain-source ON resistance 2 *1	$R_{DS(on)2}$	$I_D = -0.6 \text{ A}, V_{GS} = -2.5 \text{ V}$		130	200	$\text{m}\Omega$
Forward transfer admittance*1	$ Y_{fs} $	$I_D = -1.0 \text{ A}, V_{DS} = -10 \text{ V}, f = 1 \text{ kHz}$	3.0			S
Short-circuit input capacitance (Common source)	$C_{iss}$	$V_{DS} = -10 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$		400		pF
Short-circuit output capacitance (Common source)	$C_{oss}$			40		pF
Reverse transfer capacitance (Common source)	$C_{rss}$			35		pF
Turn-on time *2	$t_{on}$	$V_{DD} = -10 \text{ V}, V_{GS} = 0 \text{ V to } -4 \text{ V}, I_D = -1 \text{ A}$		15		ns
Turn-off time *2	$t_{off}$	$V_{DD} = -10 \text{ V}, V_{GS} = -4 \text{ V to } 0 \text{ V}, I_D = -1 \text{ A}$		100		ns

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. \*1: Pulse measurement

\*2: Test circuit

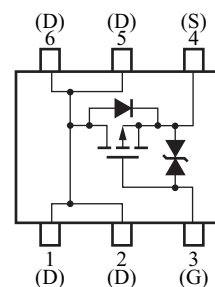
### Package

- Code  
WSSMini6-F1
- Pin Name

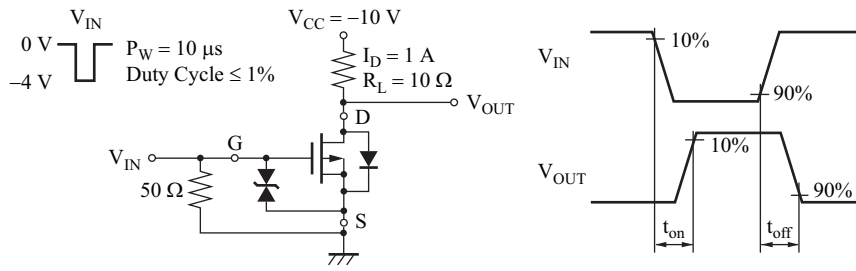
1: Drain	4: Source
2: Drain	5: Drain
3: Gate	6: Drain

### Marking Symbol: DM

### Internal Connection

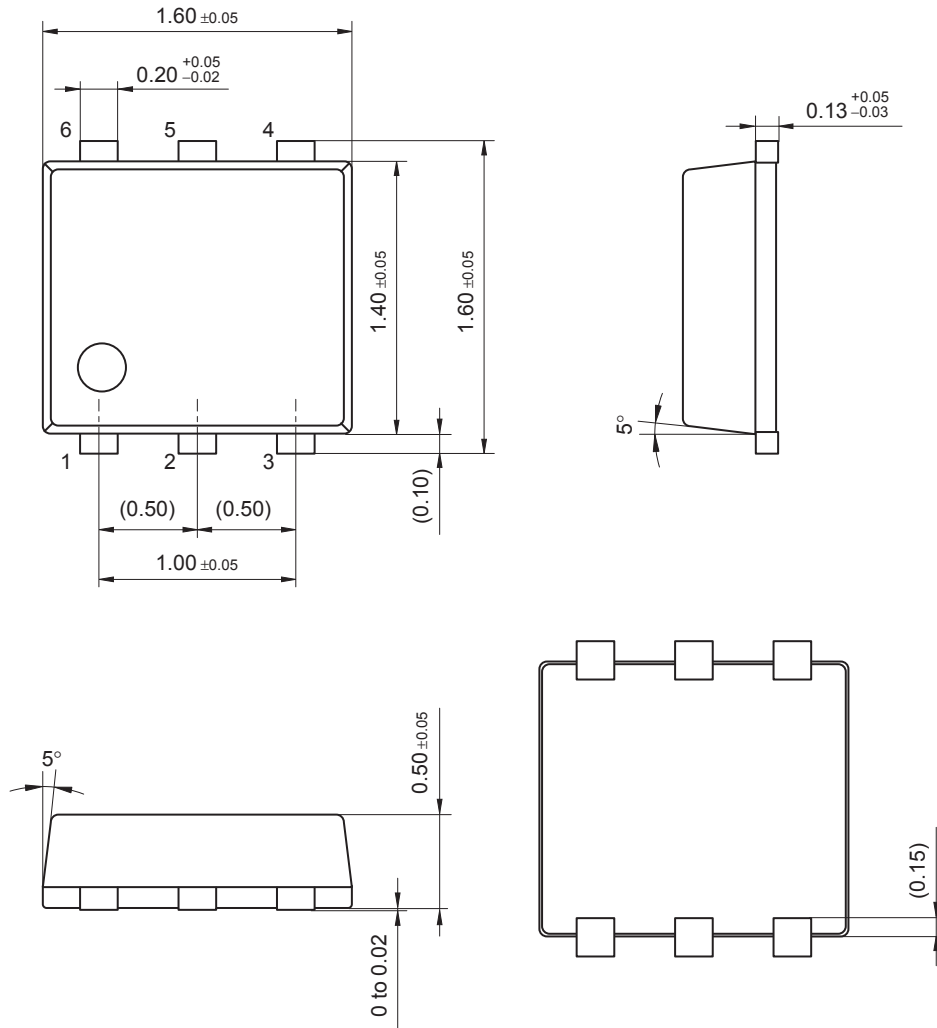


Test circuit



WSSMini6-F1

Unit: mm



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