

MTM86227

Silicon N-channel MOS FET

For DC-DC converter circuits

For switching circuits

Overview

MTM86227 is the N-channel MOS FET that is highly suitable for DC-DC converter and other switching circuits.

Features

- Low ON resistance: $R_{on} = 80 \text{ m}\Omega$ ($V_{GS} = 4.0 \text{ V}$)
- Low short-circuit input capacitance (common source): $C_{iss} = 280 \text{ pF}$
- Small package: WSSMini6-F1 (1.6 mm × 1.6 mm × 0.5 mm)
- Low drive voltage: 1.8 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}	± 10	V
Drain current	I_D	2.2	A
Peak drain current *1	I_{DP}	8.0	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}	$I_D = 1.0 \text{ mA}$, $V_{GS} = 0$	20			V
Drain-source cutoff current	I_{DSS}	$V_{DS} = 20 \text{ V}$, $V_{GS} = 0$			10	μA
Gate-source cutoff current	I_{GSS}	$V_{GS} = \pm 8.0 \text{ V}$, $V_{DS} = 0$			± 10	μA
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	$R_{DS(on)1}$	$I_D = 1.0 \text{ A}$, $V_{GS} = 4.0 \text{ V}$		80	105	$\text{m}\Omega$
Drain-source ON resistance 2 *1	$R_{DS(on)2}$	$I_D = 0.5 \text{ A}$, $V_{GS} = 2.5 \text{ V}$		100	150	$\text{m}\Omega$
Drain-source ON resistance 3 *1	$R_{DS(on)3}$	$I_D = 0.5 \text{ A}$, $V_{GS} = 1.8 \text{ V}$		170	300	$\text{m}\Omega$
Forward transfer admittance *1	$ Y_{fs} $	$I_D = 1.0 \text{ A}$, $V_{DS} = 10 \text{ V}$	3.0	4.0		S
Short-circuit input capacitance (Common source)	C_{iss}	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$		280		pF
Short-circuit output capacitance (Common source)	C_{oss}			18		pF
Reverse transfer capacitance (Common source)	C_{rss}			17		pF
Turn-on time *2	t_{on}	$V_{DD} = 10 \text{ V}$, $V_{GS} = 0 \text{ V}$ to 4 V , $I_D = 1.0 \text{ A}$		12		ns
Turn-off time *2	t_{off}	$V_{DD} = 10 \text{ V}$, $V_{GS} = 4 \text{ V}$ to 0 V , $I_D = 1.0 \text{ A}$		50		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

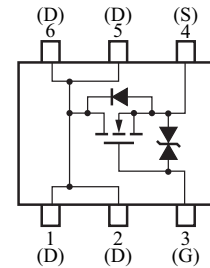
WSSMini6-F1

Pin Name

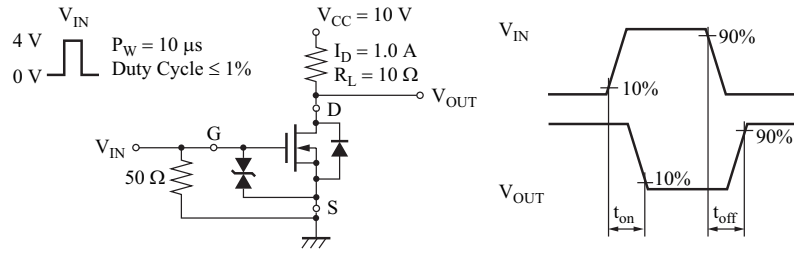
1: Drain	4: Source
2: Drain	5: Drain
3: Gate	6: Drain

Marking Symbol: JF

Internal Connection

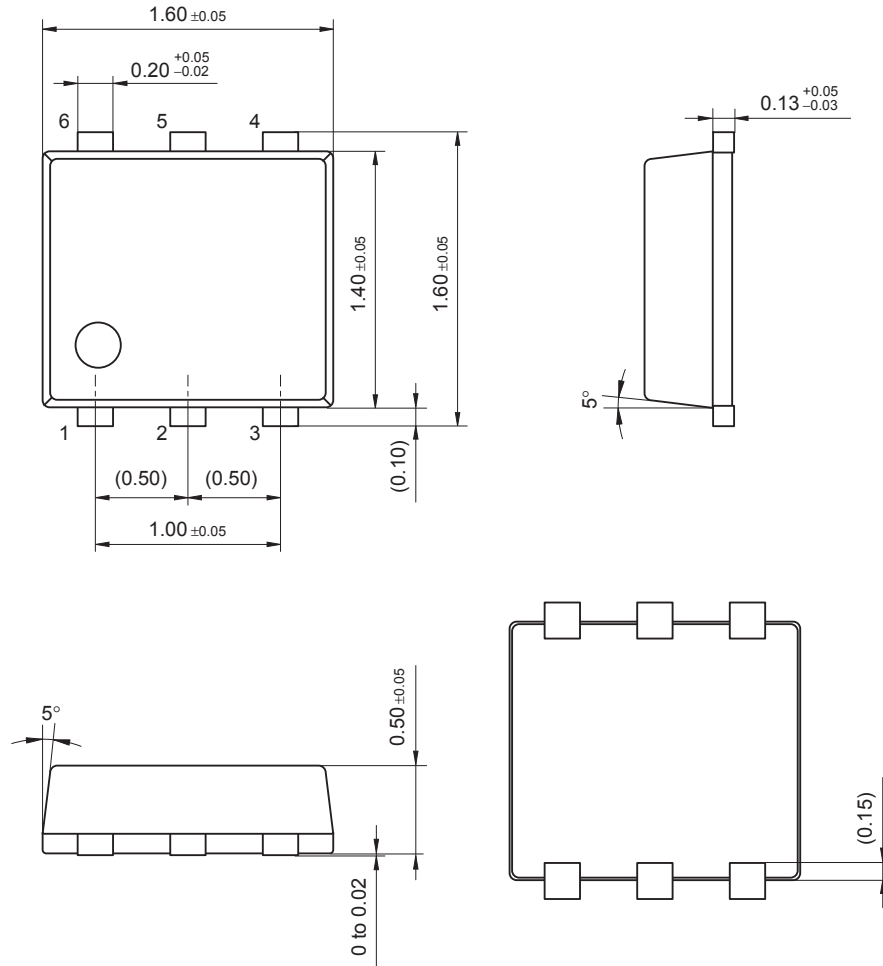


Test circuit



WSSMini6-F1

Unit: mm



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