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: $R_{DS(on)}$ typ. = 170 mΩ (V_{GS} = 1.8 V)
- Low short-circuit input capacitance (common source): C_{iss} = 280 pF
- Small size surface mounting package: WSSMini6-F1
- Low drive voltage: 1.8 V drive

■ Packaging

Embossed type (Thermo-compression sealing): 10000 pcs / reel (standard)

■ Absolute Maximum Ratings T_a = 25°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	°C
Storage temperature	T_{stg}	–55 to +150	°C

Note) *1: Pulse width ≤ 10 μs, Duty cycle ≤ 1%
*2: Measuring on ceramic substrate at 40 mm × 38 mm × 0.2 mm
P_D absolute maximum rating without a heat shink: 150 mW

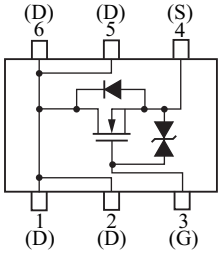
■ Package

- Code
  WSSMini6-F1
- Pin Name

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

■ Marking Symbol: JF

■ Internal Connection



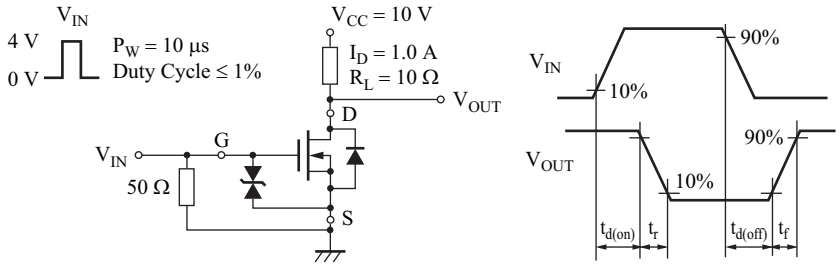
■ Electrical Characteristics $T_a = 25°C \pm 3°C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	V_{DSS}	$I_D = 1.0$ mA, $V_{GS} = 0$	20			V
Drain-source cutoff current	I_{DSS}	$V_{DS} = 20$ V, $V_{GS} = 0$			10	μA
Gate-source cutoff current	I_{GSS}	$V_{GS} = \pm 8.0$ V, $V_{DS} = 0$			±10	μA
Gate threshold voltage	V_{TH}	$I_D = 1.0$ mA, $V_{DS} = 10$ V	0.4	0.85	1.3	V
Drain-source ON resistance 1 *1	$R_{DS(on)}1$	$I_D = 1.0$ A, $V_{GS} = 4.0$ V		80	105	mΩ
Drain-source ON resistance 2 *1	$R_{DS(on)}2$	$I_D = 0.5$ A, $V_{GS} = 2.5$ V		100	150	mΩ
Drain-source ON resistance 3 *1	$R_{DS(on)}3$	$I_D = 0.5$ A, $V_{GS} = 1.8$ V		170	300	mΩ
Forward transfer admittance*1	$\lvert Y_{fs} \rvert$	$I_D = 1.0$ A, $V_{DS} = 10$ V	3.0	4.0		S
Short-circuit input capacitance (Common source)	C_{iss}	$V_{DS} = 10$ V, $V_{GS} = 0$, f = 1 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}	$V_{DD} = 10$ V, $V_{GS} = 0$ V to 4 V, $I_D = 1.0$ A		12		ns
Turn-off time *2	t_{off}	$V_{DD} = 10$ V, $V_{GS} = 4$ V to 0 V, $I_D = 1.0$ A		50		ns

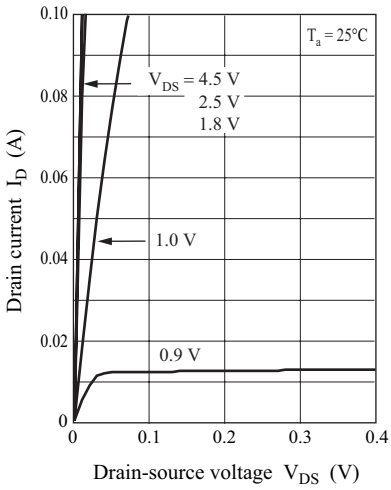
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. ∗1:Pulse measurement

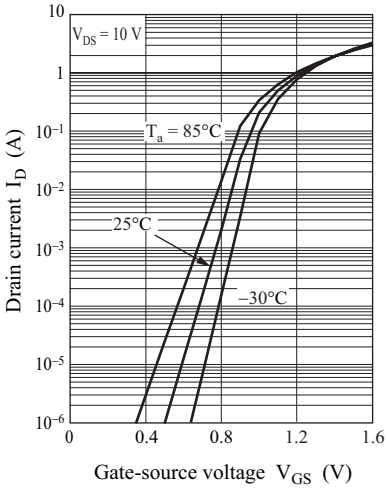
∗2:Test circuit



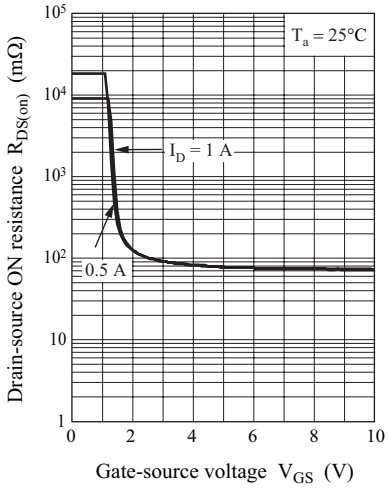
I_D — V_{DS}



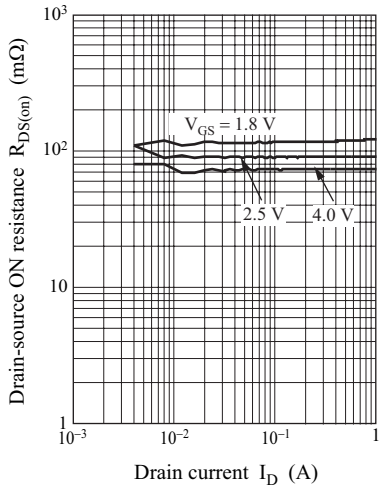
I_D — V_{GS}



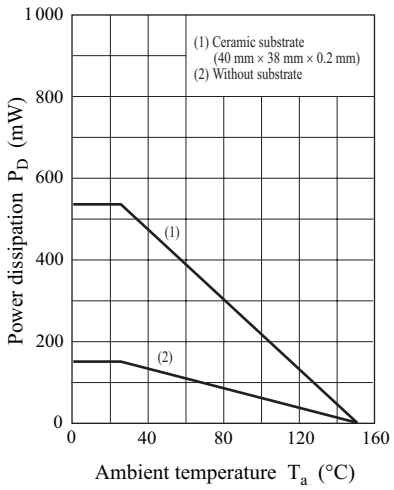
$R_{DS(on)}$ — V_{GS}



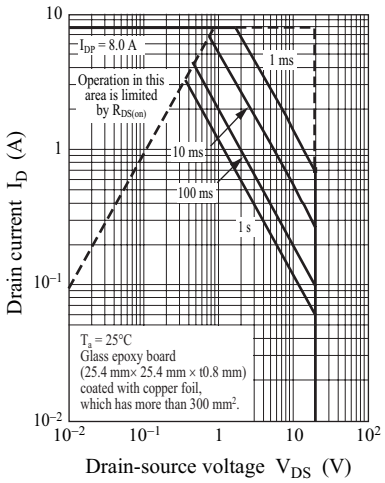
$R_{DS(on)}$ — I_D



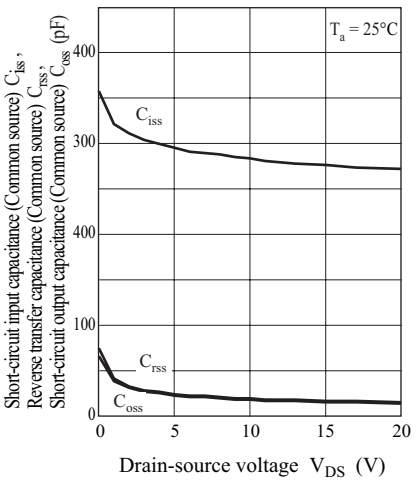
P_D — T_a



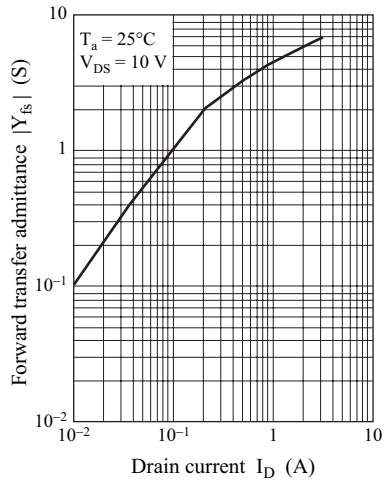
Safe operation area



C_{iss} , C_{rss} , C_{oss} — V_{DS}

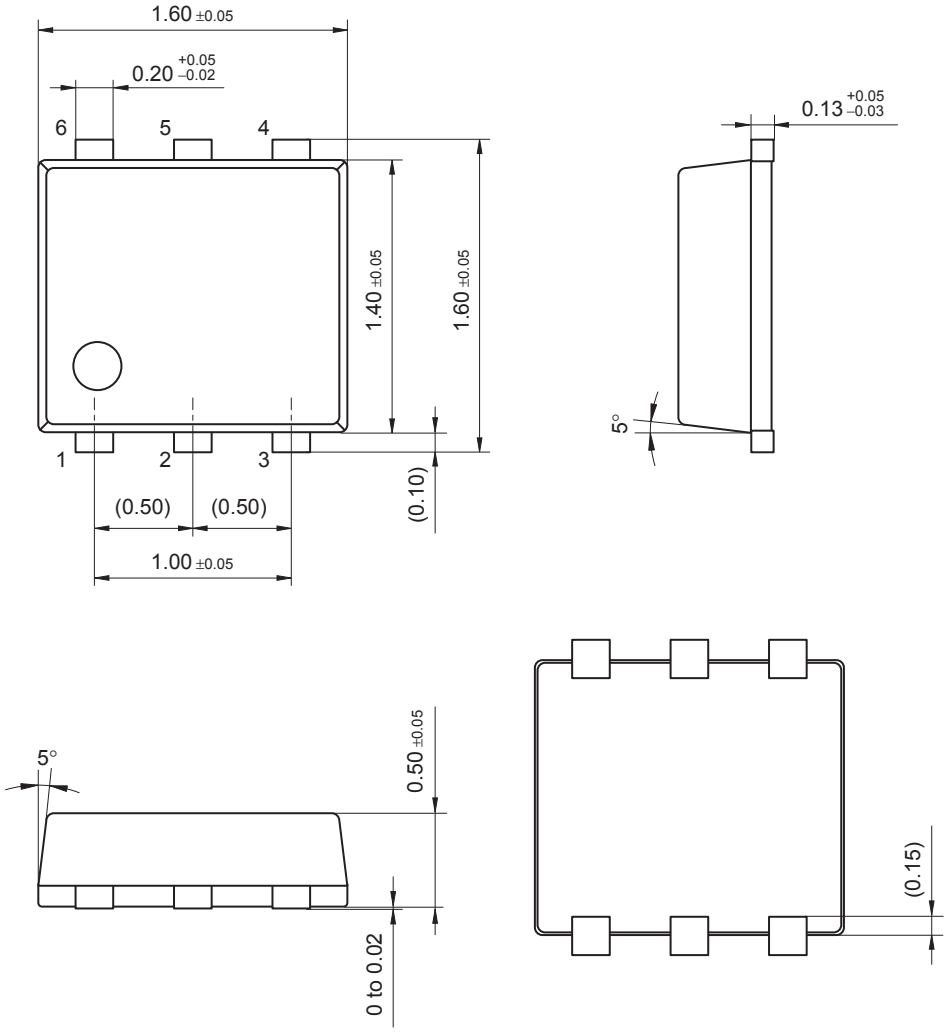


$|Y_{fs}|$ — I_D



WSSMini6-F1

Unit: mm



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