

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 drain-source ON resistance: $R_{DS(on)}$ typ. = 170 m Ω (V_{GS} = 1.8 V)
- Low drive voltage: 1.8 V drive
- Small size surface mounting package: WSSMini6-F1
- Contributes to miniaturization of sets, reduction of component count.
- Eco-friendly Halogen-free package

■ Packaging

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

■ 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 \times 38 mm \times 0.2 mm

P_D absolute maximum rating without a heat sink: 150 mW

■ Package

• Code

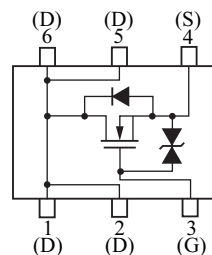
WSSMini6-F1

• Pin Name

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

■ Marking Symbol: JF

■ Internal Connection



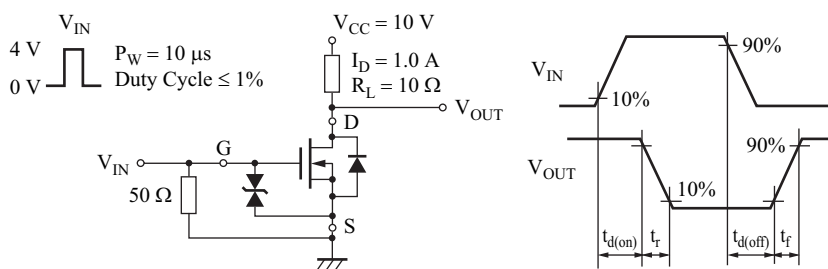
■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

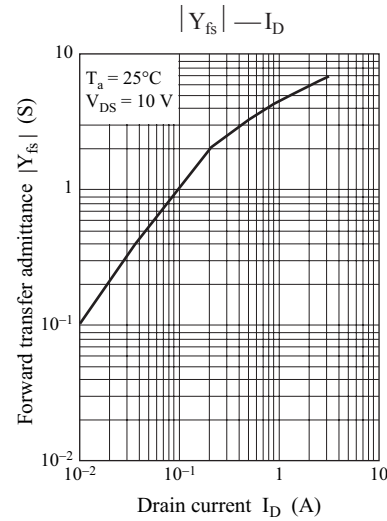
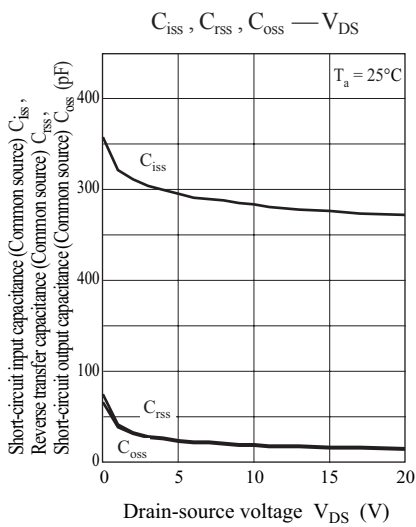
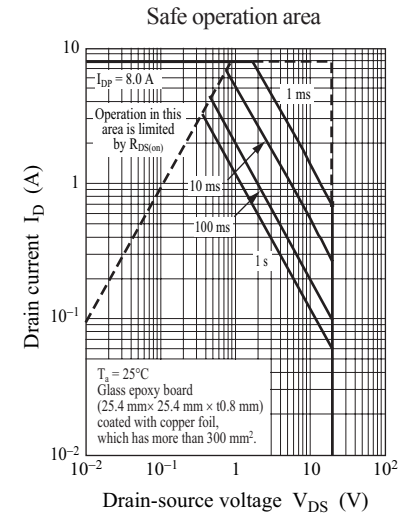
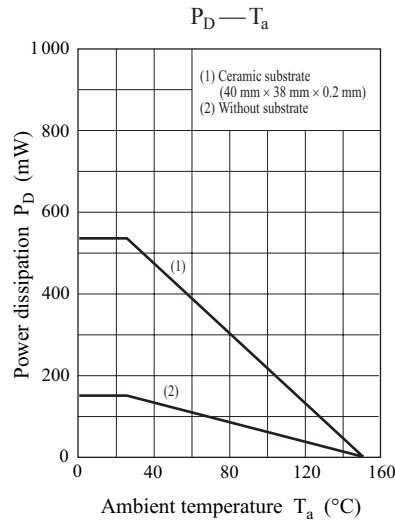
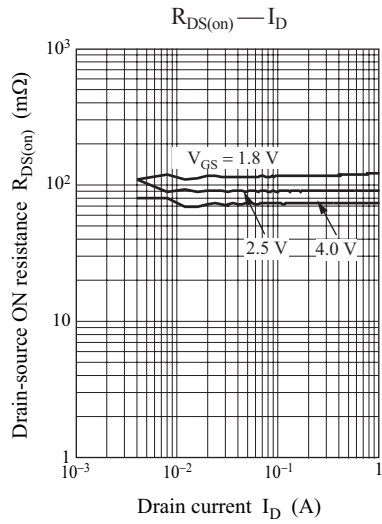
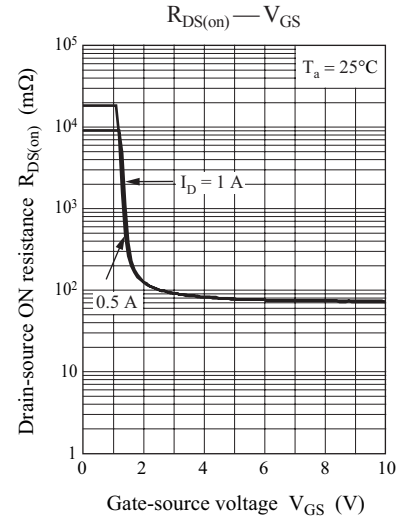
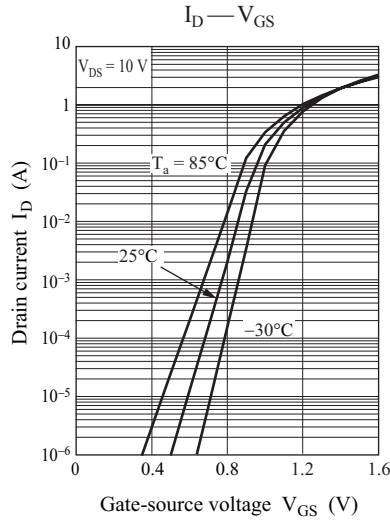
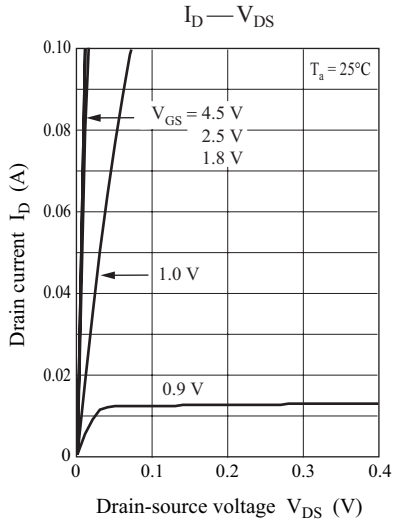
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	V_{DSS}	$I_D = 1.0\text{ mA}, V_{GS} = 0$	20			V
Drain-source cutoff current	I_{DSS}	$V_{DS} = 20\text{ V}, V_{GS} = 0$			10	μA
Gate-source cutoff current	I_{GSS}	$V_{GS} = \pm 8.0\text{ V}, V_{DS} = 0$			± 10	μA
Gate threshold 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}	$V_{DD} = 10\text{ V}, V_{GS} = 0\text{ V to } 4\text{ V}, I_D = 1.0\text{ A}$		12		ns
Turn-off time ^{*2}	t_{off}	$V_{DD} = 10\text{ V}, V_{GS} = 4\text{ V to } 0\text{ V}, I_D = 1.0\text{ A}$		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





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