

MTM86628

Silicon P-channel MOS FET (FET)
Silicon epitaxial planar type (SBD)

For DC-DC converter
For switching circuits

Overview

MTM86628 is the composite MOS FET (P-channel MOS FET and Schottky Barrier Diode) that is highly suitable for DC-DC converter and other switching circuits.

Features

- Built-in schottky barrier diode: $V_R = 15\text{ V}$, $I_F = 700\text{ mA}$
- Low on-resistance: $R_{on} = 300\text{ m}\Omega$ ($V_{GS} = -4.0\text{ V}$)
- Low short-circuit input capacitance (Common source): $C_{iss} = 80\text{ pF}$
- Small surface mounting halogen-free package: WSSMini6-F1 (1.6 mm × 1.6 mm × 0.5 mm)

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

Parameter		Symbol	Rating	Unit
FET	Drain-source surrender voltage	V_{DSS}	-20	V
	Gate-source surrender voltage	V_{GSS}	±12	V
	Drain current	I_D	-1.0	A
	Peak drain current *1	I_{DP}	-4.0	A
	Channel temperature	T_{ch}	150	°C
	Storage temperature	T_{stg}	-55 to +150	°C
	Total power dissipation	P_{D1} *2	540	mW
P_{D2} *3		150	mW	
SBD	Reverse voltage	V_R	15	V
	Forward current (Average)	$I_{F(AV)}$	700	mA
	Junction temperature	T_j	125	°C
	Storage temperature	T_{stg}	-55 to +125	°C

Note) *1: $t = 10\ \mu\text{s}$, Duty Cycle < 1%

*2: Glass epoxy board: 25.4 mm × 25.4 mm × 0.8 mm

Copper foil of the drain portion should have a area of 300 mm² or more

*3: Stand-alone (without the board)

Package

Code

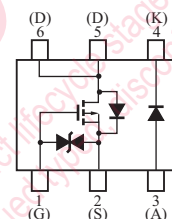
WSSMini6-F1

Pin Name

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

Marking Symbol: PL

Internal Connection



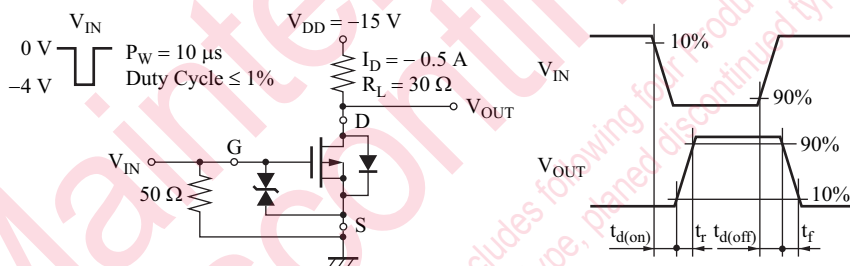
■ Electrical Characteristics $T_a = 25^{\circ}\text{C} \pm 3^{\circ}\text{C}$

• FET

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}	$V_{DS} = -20 \text{ V}, V_{GS} = 0$			-1.0	μA
Gate-source cutoff current	I_{GSS}	$V_{GS} = \pm 10 \text{ V}, V_{DS} = 0$			± 10	μA
Gate threshold voltage	V_{TH}	$I_D = -1.0 \text{ mA}, V_{DS} = -10 \text{ V}$	-0.45	-1.0	-1.5	V
Drain-source ON resistance	$R_{DS(on)}$	$I_D = -0.5 \text{ A}, V_{GS} = -4.0 \text{ V}$		300	420	m Ω
		$I_D = -0.5 \text{ A}, V_{GS} = -2.5 \text{ V}$		420	560	
Forward transfer admittance	$ Y_{fs} $	$I_D = -0.5 \text{ A}, V_{DS} = -10 \text{ V}$	1.0	2.0		S
Short-circuit input capacitance (Common source)	C_{iss}	$V_{DS} = -10 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$		80		pF
Short-circuit output capacitance (Common source)	C_{oss}			12		pF
Reverse transfer capacitance (Common source)	C_{rss}			12		pF
Turn-on delay time *	$t_{d(on)}$	$V_{DD} = -15 \text{ V}, V_{GS} = -4.0 \text{ V}, I_D = -0.5 \text{ A}$		12		ns
Rise time *	t_r			6		ns
Turn-off delay time *	$t_{d(off)}$			17		ns
Fall time *	t_f			10		ns

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

2. *: t_{on}, t_{off} measurement circuit

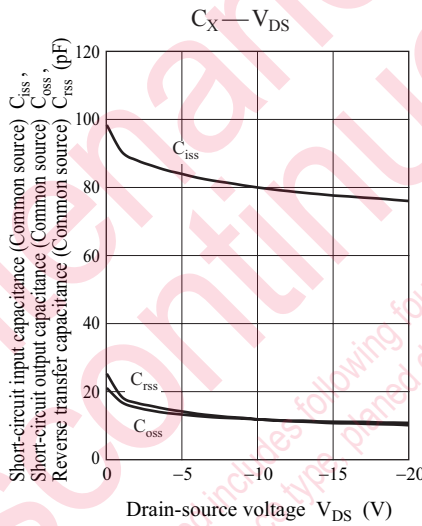
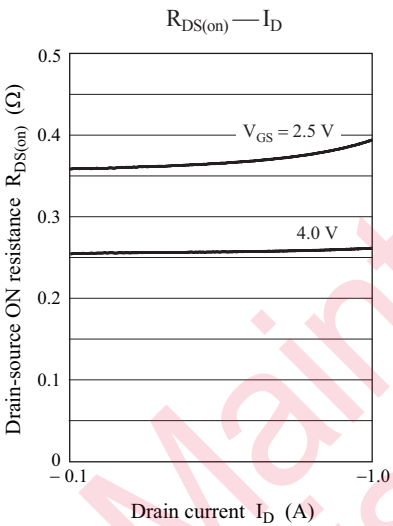
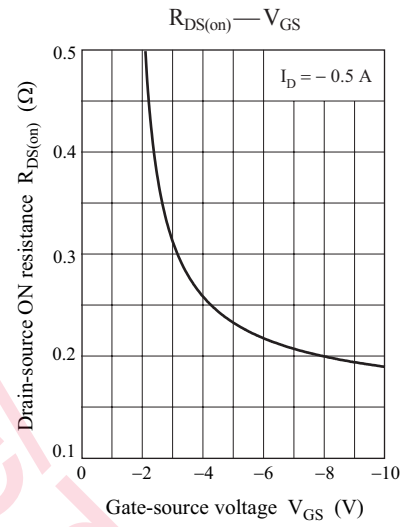
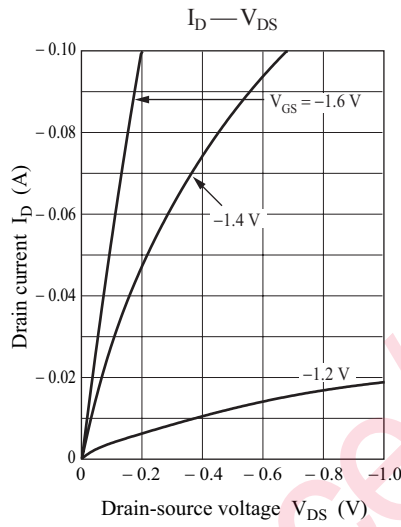
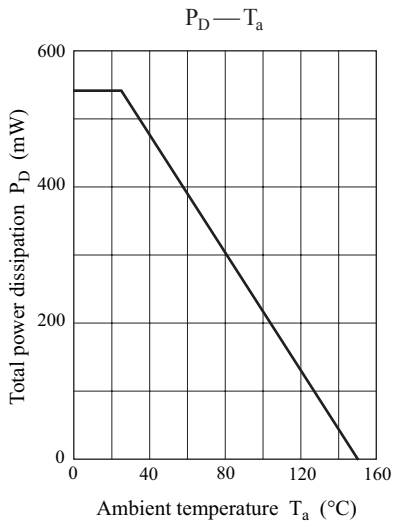


• SBD

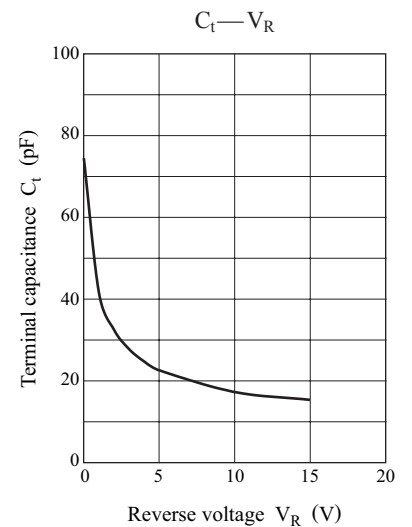
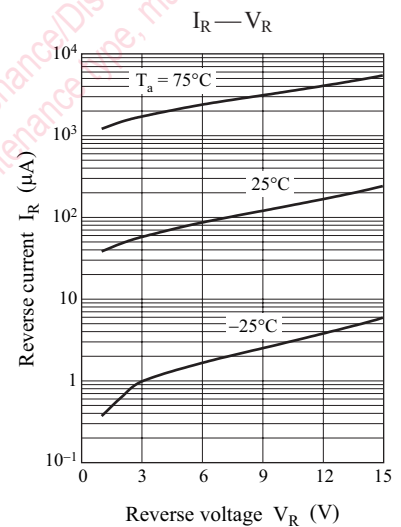
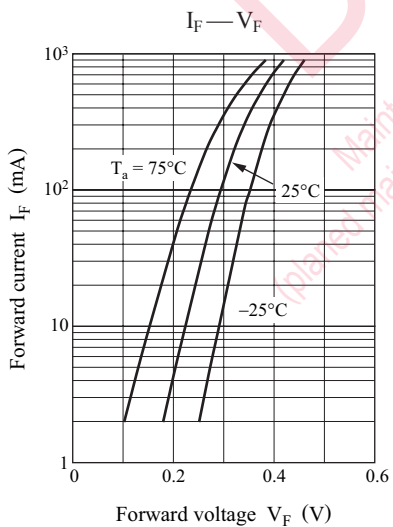
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Forward voltage	V_F	$I_F = 500 \text{ mA}$			0.42	V
		$I_F = 700 \text{ mA}$			0.45	V
Reverse current	I_R	$V_R = 6 \text{ V}$			90	μA
		$V_R = 15 \text{ V}$			250	μA

Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7031 measuring methods for diodes.

Characteristics charts of FET

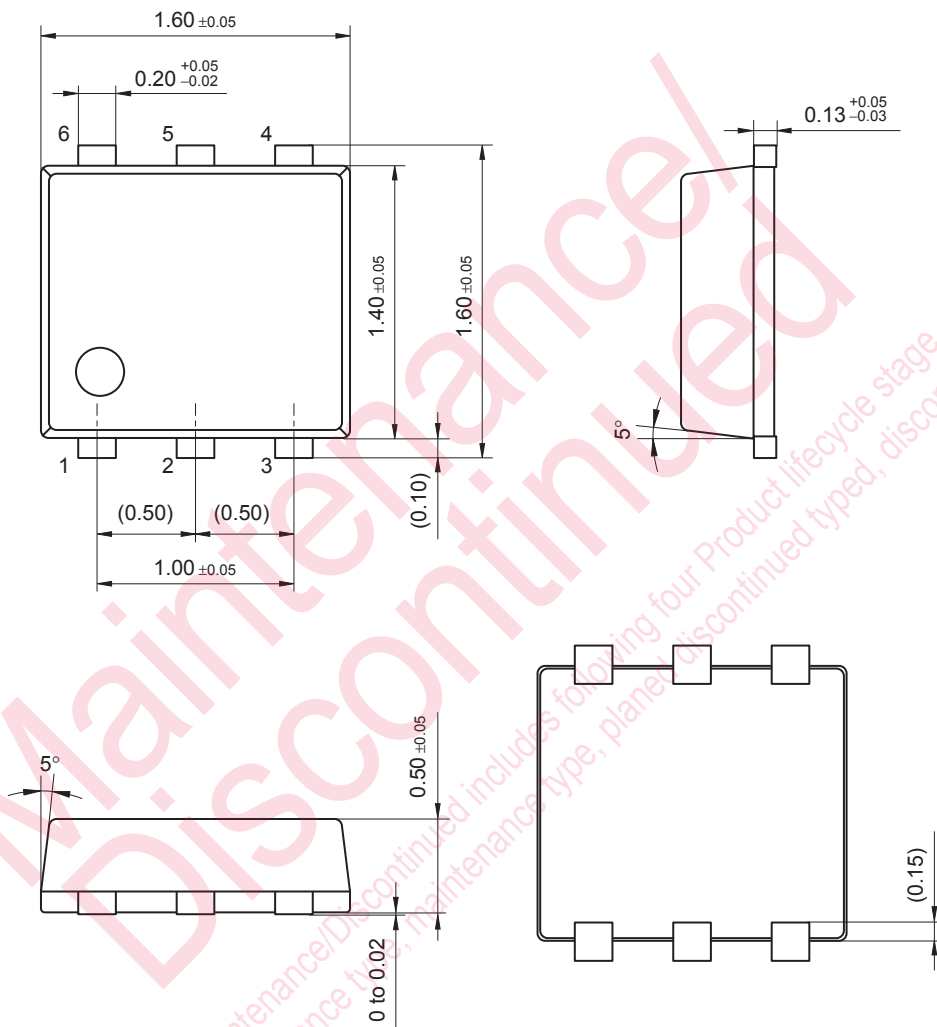


Characteristics charts of SBD



WSSMini6-F1

Unit: mm



Maintenance/Discontinued includes following four Product lifecycle stage.
(planned maintenance type, maintenance type, plane discontinued type, discontinued type)

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