MTM76720

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

For DC-DC converter circuits
For switching circuits

■ Overview

MTM76720 is the composite MOS FET (N-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 = 20 V, I_F = 1 A
- Low ON resistance: R_{on} = 80 mΩ (V_{GS} = 4.0 V)
- Low short-circuit input capacitance (common source): C_{iss} = 280 pF
- Small package: WSMini6-F1 (2.1 mm × 2.0 mm × 0.7 mm)
- Low drive voltage: 2.5 V drive

■ Absolute Maximum Ratings T_a = 25°C

Parameter		Symbol	Rating	Unit
FET	Drain-source surrender voltage	V_{DSS}	20	V
	Gate-source surrender voltage	V_{GSS}	±10	V
	Drain current	I_D	2.0	A
	Peak drain current	I_{DP}	12	A
	Drain power dissipation *1	P_D	700	mW
	Channel temperature	T_{ch}	150	°C
	Storage temperature	T_{stg}	−55 to +150	°C
SBD	Reverse voltage	V_R	20	V
	Forward current (Average)	$I_{F(AV)}$	1.0	A
	Non-repetitive peak reverse surge voltage *1	I_{FSM}	9.0	A
	Junction temperature	T_j	125	°C
	Storage temperature	T_{stg}	−55 to +125	°C
Overall	Total power dissipation *2	P_D	700	mW

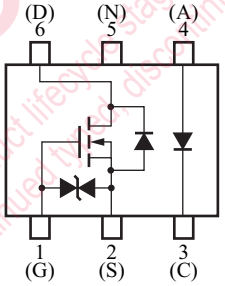
Note) *1: 60 Hz sine wave 1 cycle (Non-repetitive peak current)
*2: Measuring on ceramic substrate at 40 mm × 38 mm × 0.2 mm
P_D absolute maximum rating without a heat shink: 150 mW

■ Package

- Code
  WSMini6-F1
- Pin Name
  1. Gate
  2. Source
  3. Cathode
  4. Anode
  5. N.C.
  6. Drain

■ Marking Symbo: 8B

■ Internal Connection



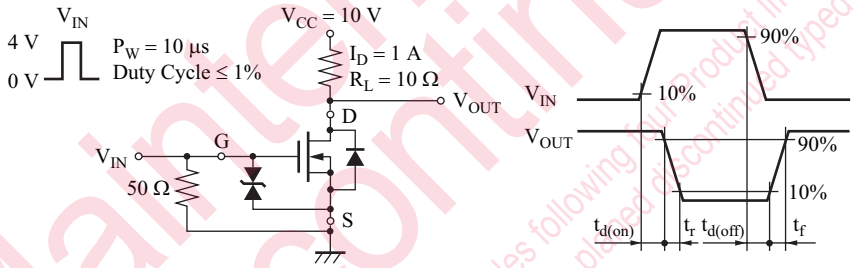
■ Electrical Characteristics $T_a = 25°C \pm 3°C$

• FET

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, $V_{GS} = 0$			1.0	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	0.40	0.85	1.30	V
Drain-source ON resistance 1	$R_{DS(on)}$ 1	$I_D = 1.0$ A, $V_{GS} = 4.0$ V		80	105	mΩ
Drain-source ON resistance 2	$R_{DS(on)}$ 2	$I_D = 0.5$ A, $V_{GS} = 2.5$ V		100	150	mΩ
Forward transfer admittance	$\lvert Y_{fs} \rvert$	$I_D = 1.0$ A, $V_{DS} = 10$ V	3.0			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 delay time *	$t_{d(on)}$	$V_{DD} = 10$ V, $V_{GS} = 0$ V to 4 V, $I_D = 1.0$ A		5		ns
Rise time *	t_r			8		ns
Turn-off delay time *	$t_{d(off)}$	$V_{DD} = 10$ V, $V_{GS} = 4$ V to 0 V, $I_D = 1.0$ A		20		ns
Fall time *	t_f			18		ns

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

2. *: Test circuit



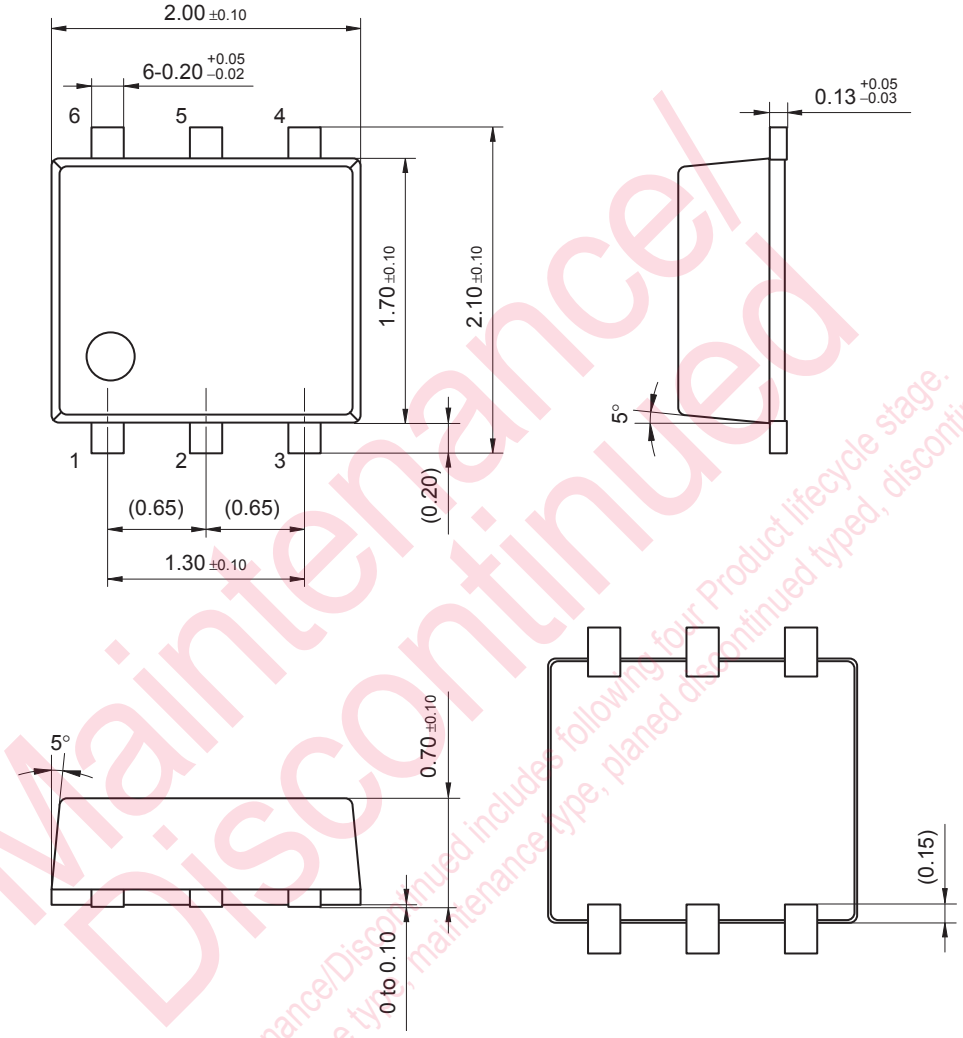
• SBD

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Forward voltage 1	V_F 1	$I_F = 800$ mA			0.47	V
Forward voltage 2	V_F 2	$I_F = 1.0$ A			0.52	V
Reverse current	I_R	$V_R = 20$ V			80	μA

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

WSMini6-F1

Unit: mm



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