Product Standards

MOS FET

Panasonic

MTM78E2B0LBF

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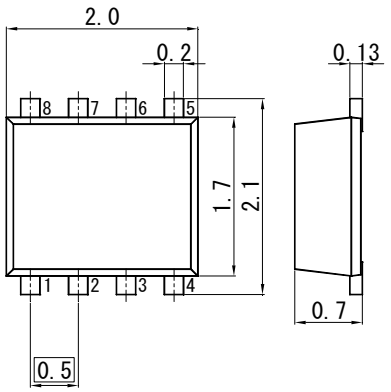
Gate Resistor installed Dual N-Channel MOS Type

For lithium-ion secondary battery protection circuit

Unit: mm



1. Source 1
2. Gate 1
3. Source 2
4. Gate 2
5. Drain
6. Drain
7. Drain
8. Drain

Panasonic	WSMini8-F1-B
JEITA	SC-113E
Code	—

■ Features

- Low drain-source On-state Resistance
  RDS(on) typ. = 21.5 mΩ (VGS =4.0 V)
- Halogen-free / RoHS compliant
  (EU RoHS / UL-94 V-0 / MSL:Level 1 compliant)

■ Marking Symbol: 5A

■ Packaging

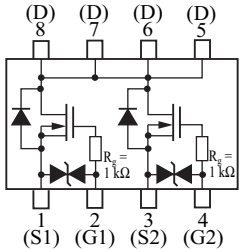
Embossed type (Thermo-compression sealing) : 3 000 pcs / reel (standard)

■ Absolute Maximum Ratings Ta = 25 °C

	Parameter	Symbol	Rating	Unit
FET1 FET2	Drain-source Voltage	VDS	20	V
	Gate-source Voltage	VGS	±12	V
	Drain current	ID	4.0	A
	Peak drain current *1	IDp	40	A
Overall	Total power dissipation	PD1 *2	700	mW
		PD2 *3	150	
	Channel temperature	Tch	150	°C
	Operating ambient temperature	Topr	-40 to +85	°C
	Storage temperature	Tstg	-55 to +150	°C

Note) *1 t = 10 µs, Duty Cycle < 1 %
Ceramic substrate (70 × 70 × t 1.0 mm)
*2 Dual operating
*3 Stand-alone (without the substrate)

Internal Connection



Pin Name

1. Source 1
2. Gate 1
3. Source 2
4. Gate 2
5. Drain
6. Drain
7. Drain
8. Drain

Established : 2010-03-03
Revised : 2013-10-15

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■ Electrical Characteristics Ta = 25°C ± 3°C

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	VDSS	ID = 1.0 mA, VGS = 0	20			V
Drain-source cutoff current	IDSS	VDS = 20 V, VGS = 0			1.0	μA
Gate-source cutoff current	IGSS	VGS = ±12 V, VDS = 0			±10	μA
Gate threshold voltage	Vth	ID = 1.0 mA, VDS = 10 V	0.40	0.85	1.30	V
Drain-source ON resistance	RDS(ON)1	ID = 2.0 A, VGS = 4.0 V		21.5	25.0	mΩ
	RDS(ON)2	ID = 1.5 A, VGS = 3.0 V		26.0	30.0	mΩ
	RDS(ON)3	ID = 1.0 A, VGS = 2.5 V		30.0	36.0	mΩ
Forward transfer admittance	|Yfs|	ID = 1.0 A, VDS = 10 V	1.0			S
Short-circuit input capacitance (Common source)	Ciss	VDS = 10 V, VGS = 0, f = 1 MHz		1100		pF
Short-circuit output capacitance (Common source)	Coss			75		pF
Reverse transfer capacitance (Common source)	Crss			70		pF
Turn-on delay time *1, *2	td(on)	VDD = 10 V, VGS = 4 V, ID = 1.0 A, RL = 10 Ω		0.2		μs
Rise time *1, *2	tr			0.5		μs
Turn-off delay time *1, *2	td(off)			2.0		μs
Fall time *1, *2	tf			1.5		μs

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 Measuring methods for transistors.
2. *1 t = 10 μs, Duty Cycle < 1 %
*2 Measurement circuit for Turn-on Delay Time/Rise Time/Turn-off Delay Time/Fall Time

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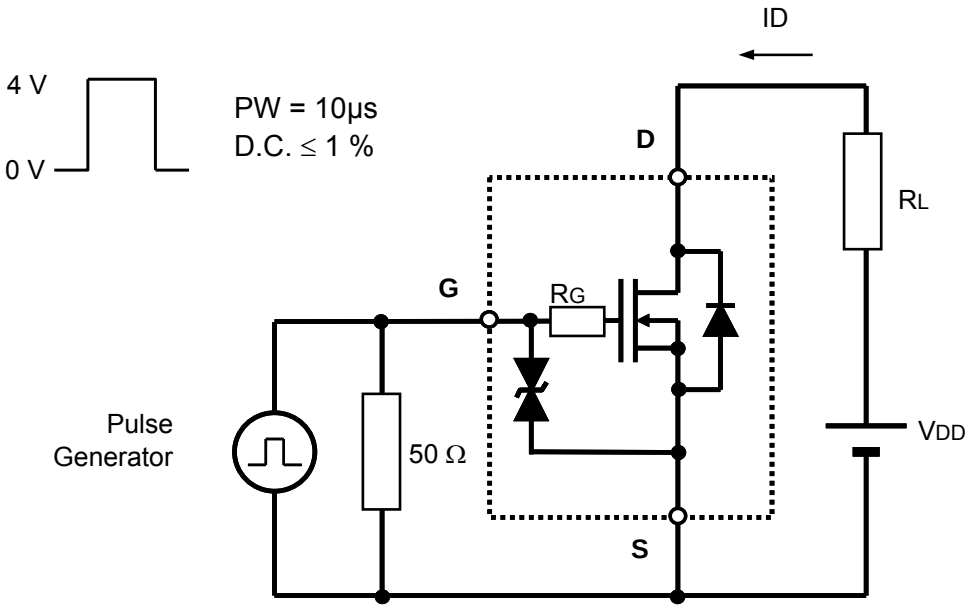
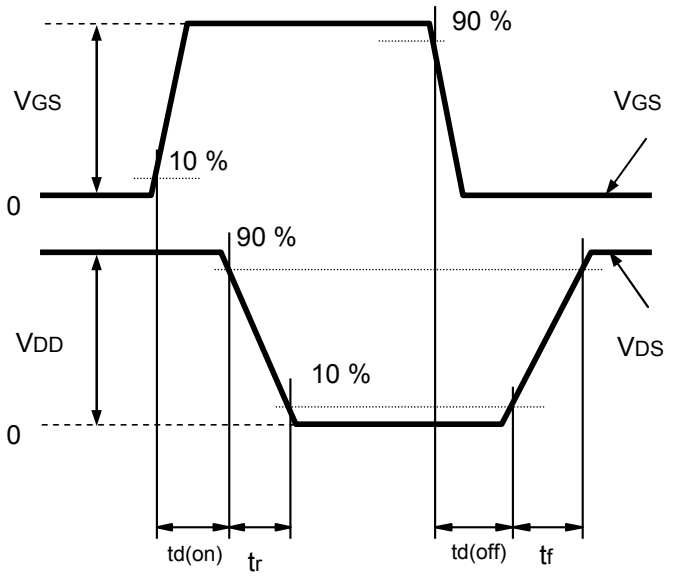
*2 Measurement circuit for Turn-on Delay Time/Rise Time/Turn-off Delay Time/Fall Time





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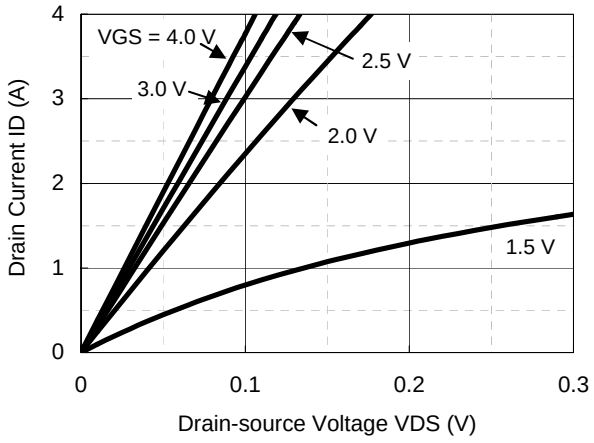
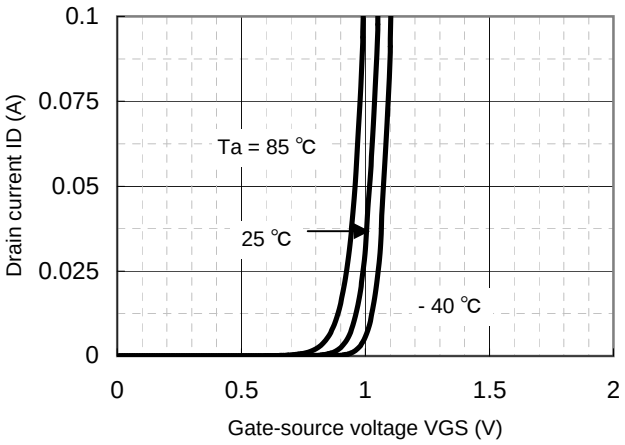
Technical Data (reference)

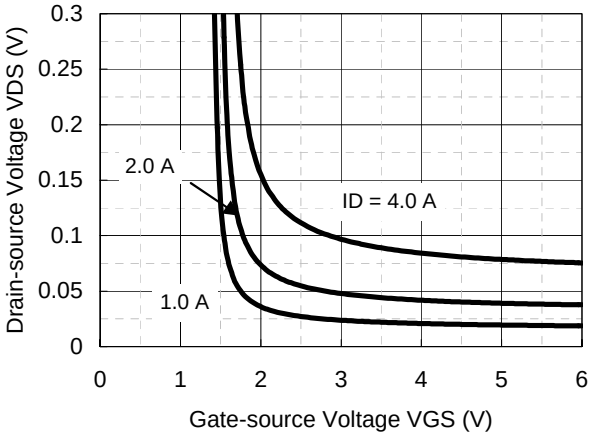
ID - VDS



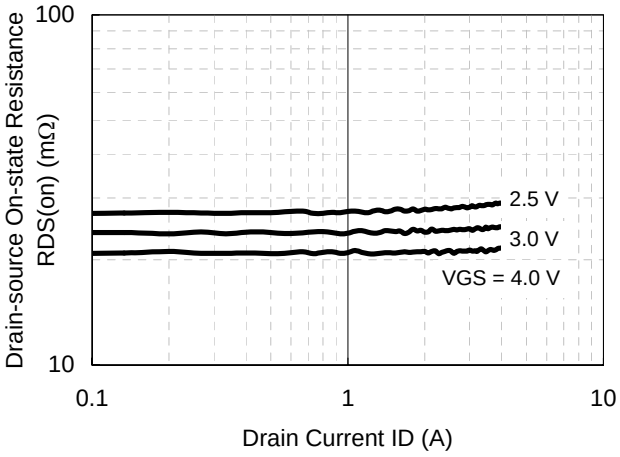
ID - VGS



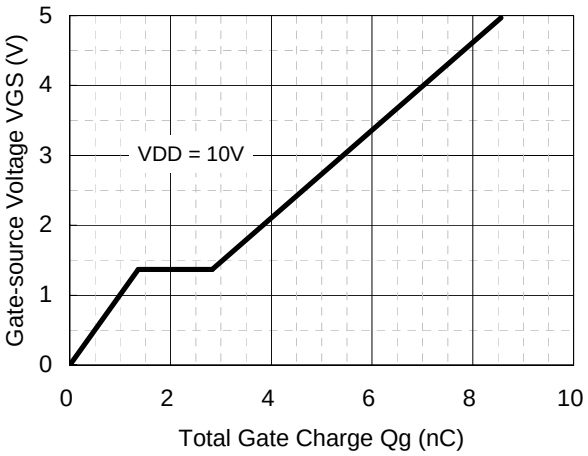
VDS - VGS



RDS(on) - ID



Dynamic Input/Output Characteristics



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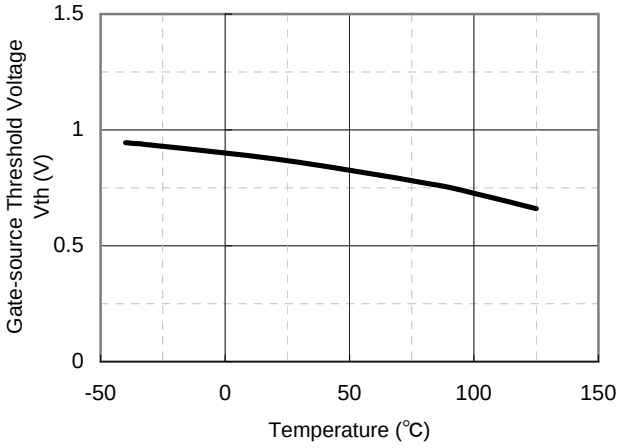
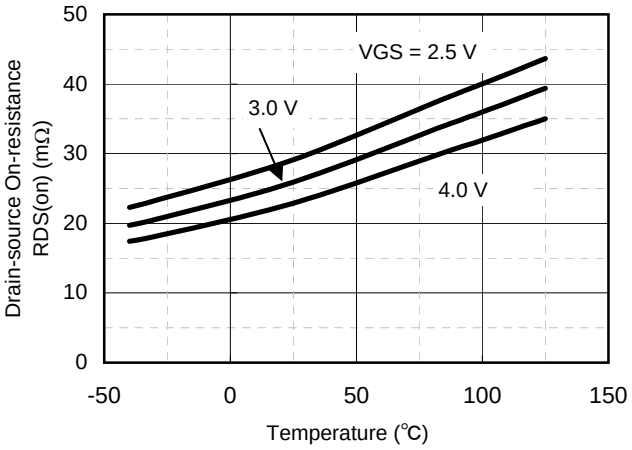
Technical Data (reference)

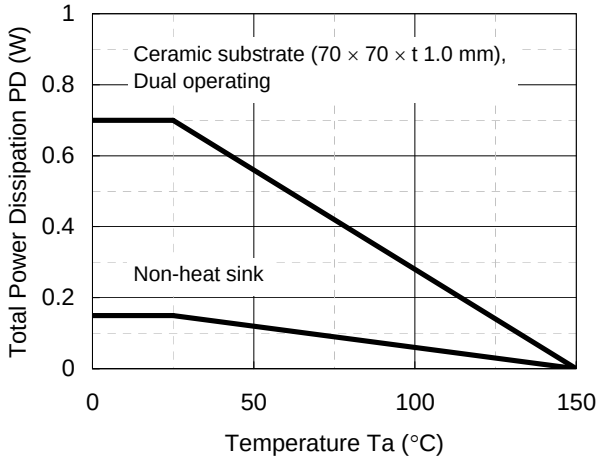
Vth - Ta



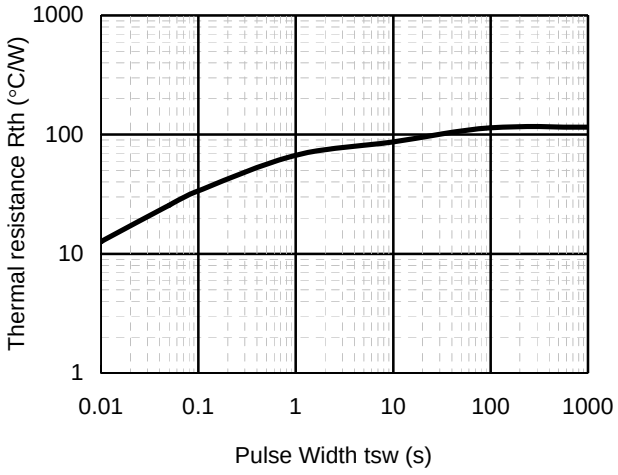
RDS(on) - Ta



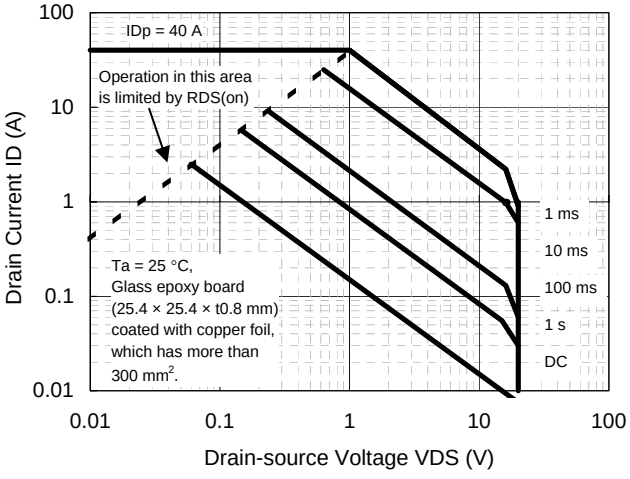
PD - Ta



Rth - tsw



Safe Operating Area



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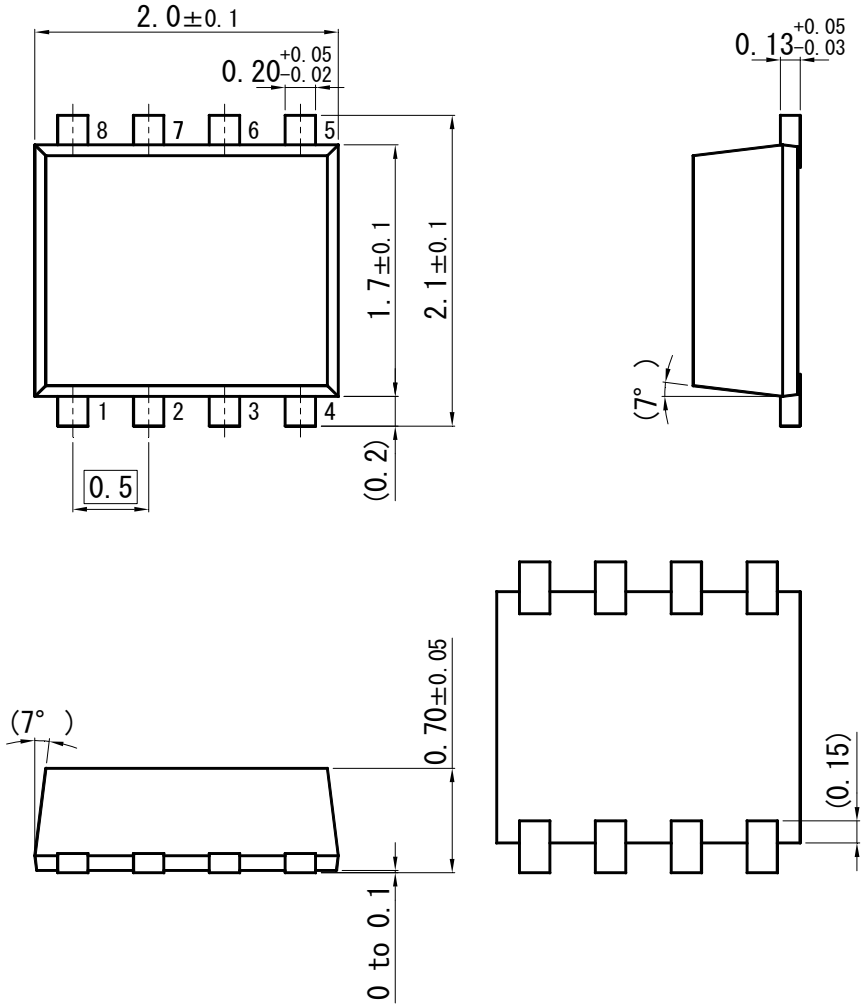
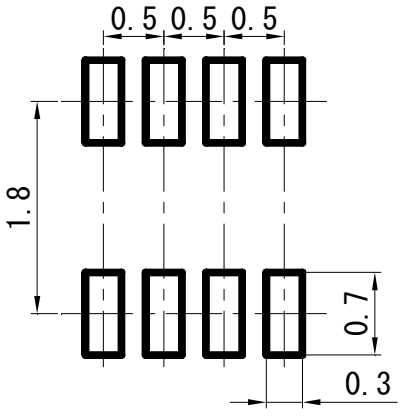
WSMini8-F1-B

Unit : mm



■ Land Pattern (Reference) (Unit : mm)



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