Notification about the transfer of the semiconductor business

The semiconductor business of Panasonic Corporation was transferred on September 1, 2020 to Nuvoton Technology Corporation (hereinafter referred to as "Nuvoton"). Accordingly, Panasonic Semiconductor Solutions Co., Ltd. became under the umbrella of the Nuvoton Group, with the new name of Nuvoton Technology Corporation Japan (hereinafter referred to as "NTCJ").

In accordance with this transfer, semiconductor products will be handled as NTCJ-made products after September 1, 2020. However, such products will be continuously sold through Panasonic Corporation.

Publisher of this Document is NTCJ.
If you would find description “Panasonic” or “Panasonic semiconductor solutions”, please replace it with NTCJ.

※ Except below description page
“Request for your special attention and precautions in using the technical information and semiconductors described in this book”

Nuvoton Technology Corporation Japan

MOS FET

Panasonic

MTM78E2B0LBF

MTM78E2B0LBF

Gate Resistor installed Dual N-Channel MOS Type

For lithium-ion secondary battery protection circuit

■ Features

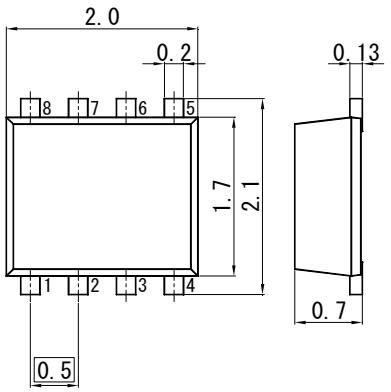
- Low drain-source On-state Resistance
  RDS(on) typ. = 21.5 mΩ (VGS =4.0 V)
- Halogen-free / RoHS compliant
  (EU RoHS / UL-94 V-0 / MSL:Level 1 compliant)

■ Marking Symbol: 5A

■ Packaging

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

Unit: mm



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

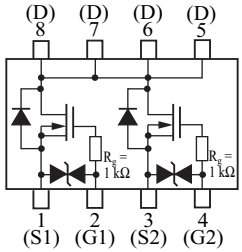
Panasonic	WSMini8-F1-B
JEITA	SC-113E
Code	—

■ 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

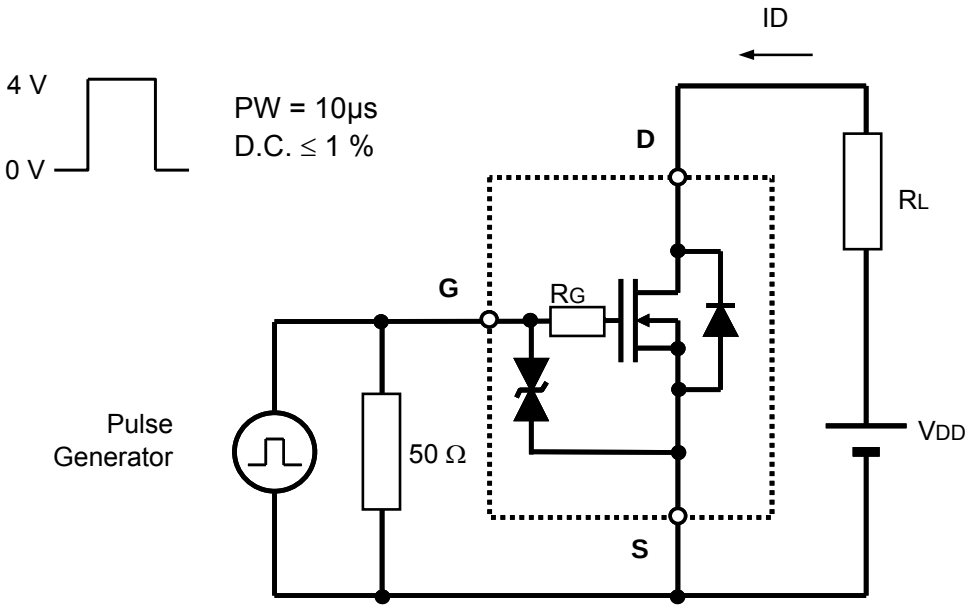
■ Electrical Characteristics Ta = 25°C ± 3°C

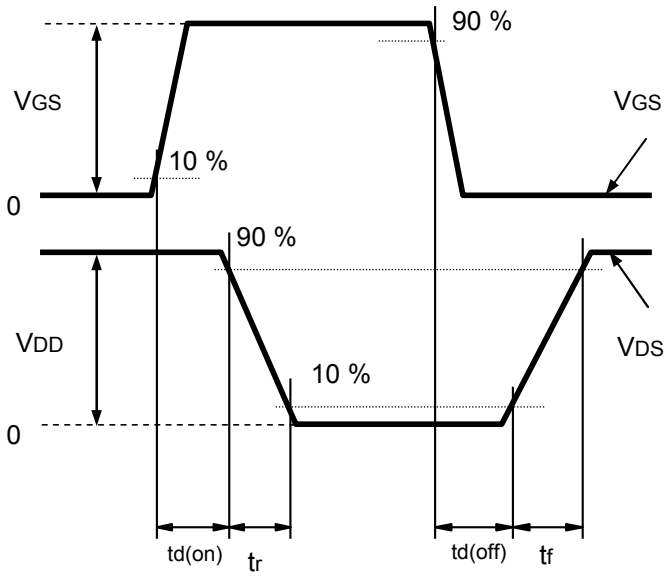
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	VDSS	ID = 1.0 mA, VGS = 0	20			V
Drain-source cutoff current	IDSS	VDS = 20 V, VGS = 0			1.0	μA
Gate-source cutoff current	IGSS	VGS = ±12 V, VDS = 0			±10	μA
Gate threshold voltage	Vth	ID = 1.0 mA, VDS = 10 V	0.40	0.85	1.30	V
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

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

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





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Revised : 2013-10-15

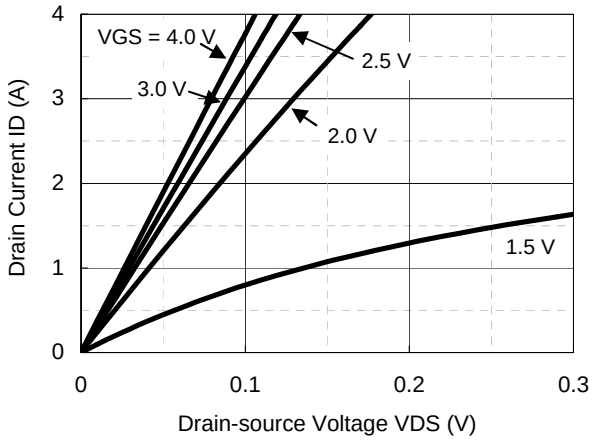
MOS FET

Panasonic

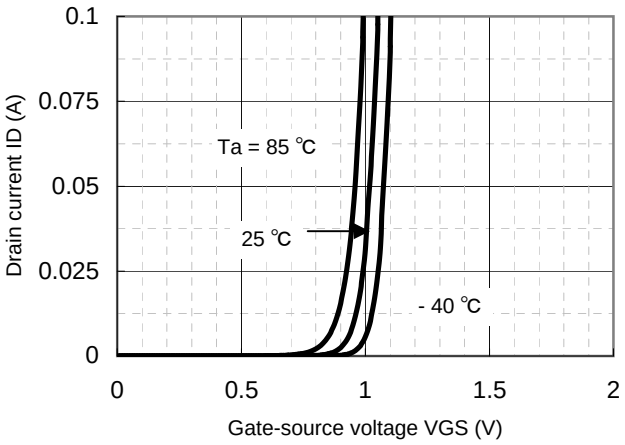
MTM78E2B0LBF

Technical Data (reference)

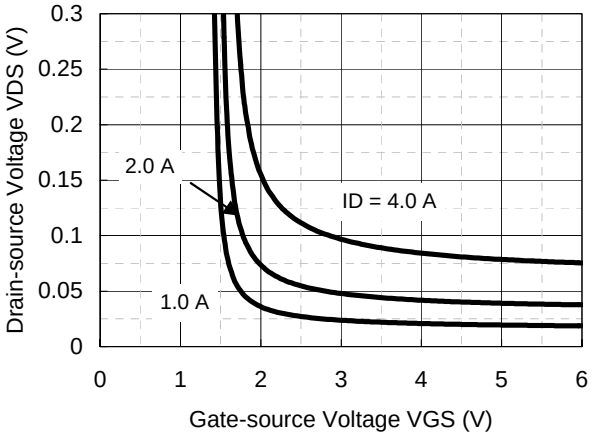
ID - VDS



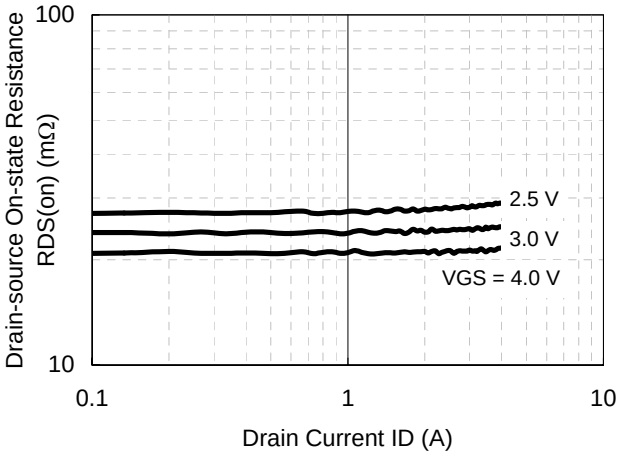
ID - VGS



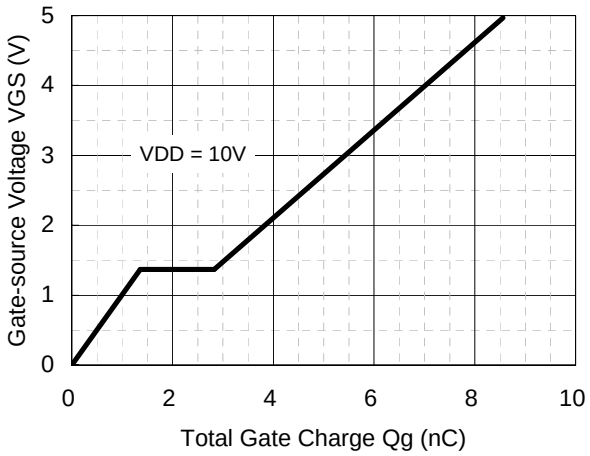
VDS - VGS



RDS(on) - ID



Dynamic Input/Output Characteristics



Established : 2010-03-03
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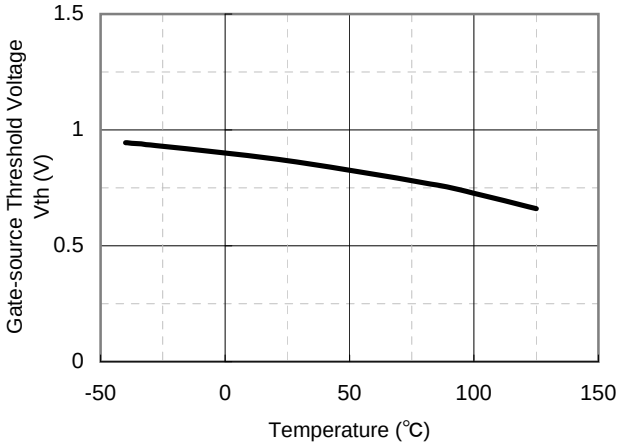
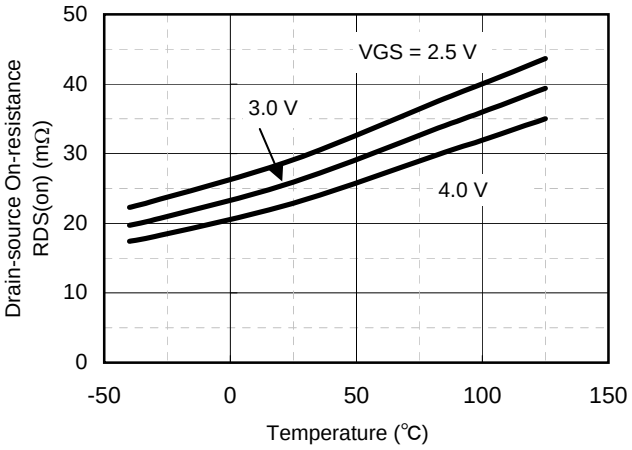
Technical Data (reference)

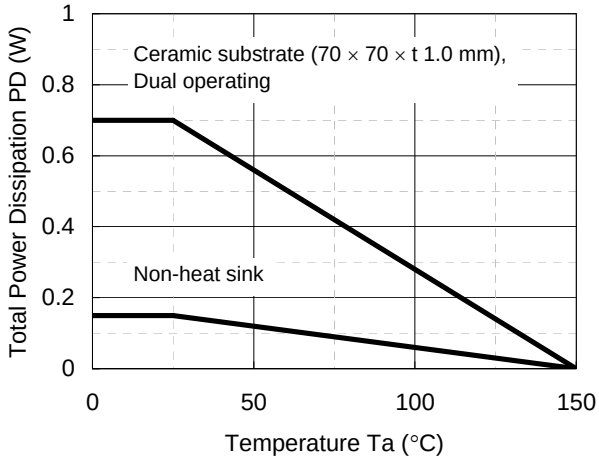
Vth - Ta



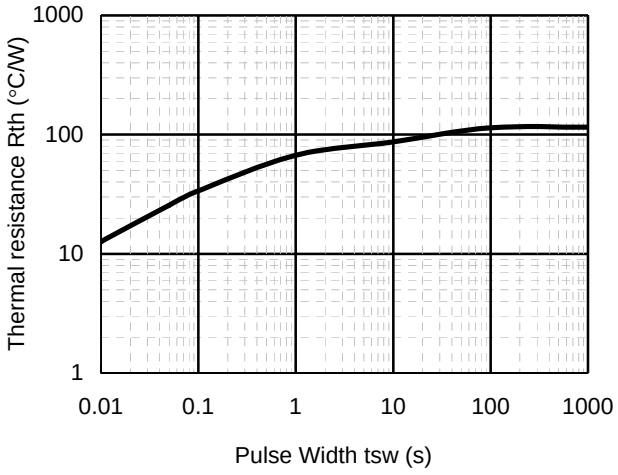
RDS(on) - Ta



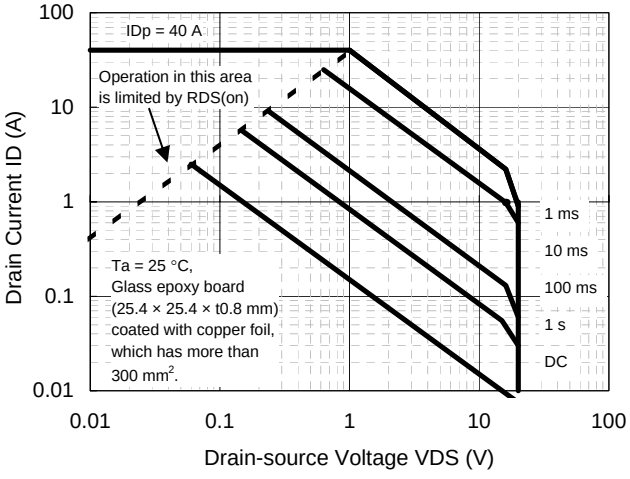
PD - Ta



Rth - tsw



Safe Operating Area



Established : 2010-03-03
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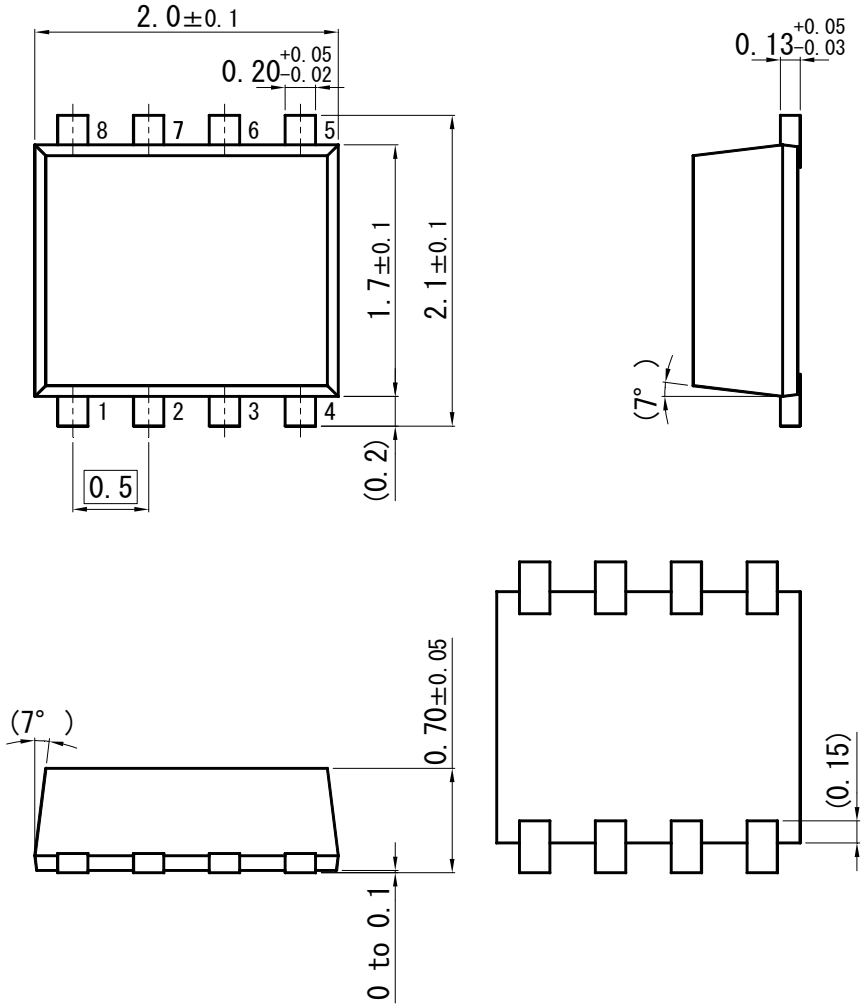
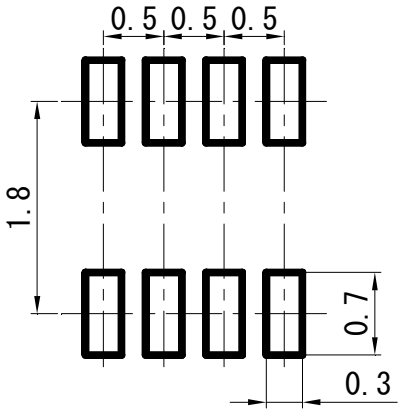
WSMini8-F1-B

Unit : mm



■ Land Pattern (Reference) (Unit : mm)



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

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