

## **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**



# MTM684100LBF

## Dual P-channel MOSFET

For switching

### ■ Features

- Low drain-source On-state Resistance  
 $R_{DS(on)}$  typ. = 32 m $\Omega$  (VGS = -4.0 V)
- Low drive voltage: 1.8V drive
- Halogen-free / RoHS compliant  
 (EU RoHS / UL-94 V-0 / MSL: Level 1 compliant)

■ Marking Symbol: 1C

■ Basic Part Number: Dual MTM23110 (Individual)

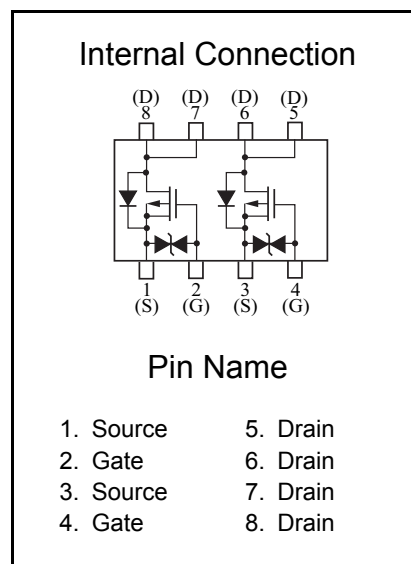
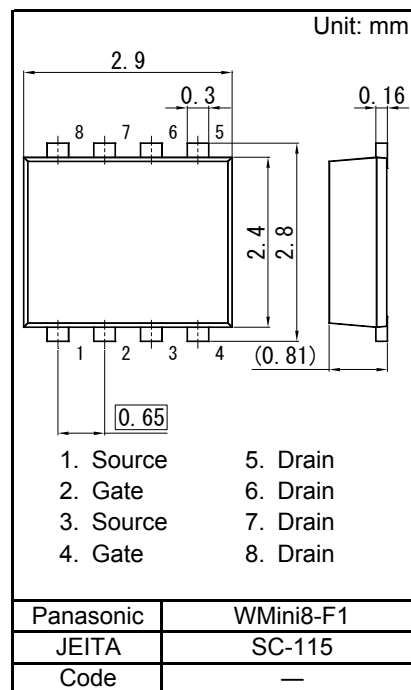
### ■ Packaging

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

### ■ Absolute Maximum Ratings Ta = 25 °C

Parameter		Symbol	Rating	Unit
FET1	Drain-source Voltage	VDS	-12	V
	Gate-source Voltage	VGS	±8	V
FET2	Drain current	ID	-4.8	A
	Peak drain current	IDp	-19	A
Overall	Total power dissipation *1	PD	1.0	W
	Channel temperature	Tch	150	°C
	Operating ambient temperature	Topr	-40 to +85	°C
	Storage temperature	Tstg	-55 to +150	°C

Note) \*1 Glass epoxy board: 25.4 mm × 25.4 mm × 0.8 mm Copper foil of the drain portion should have a area of 300 mm<sup>2</sup> or more  
 PD absolute maximum rating without a heat sink: 400 mW



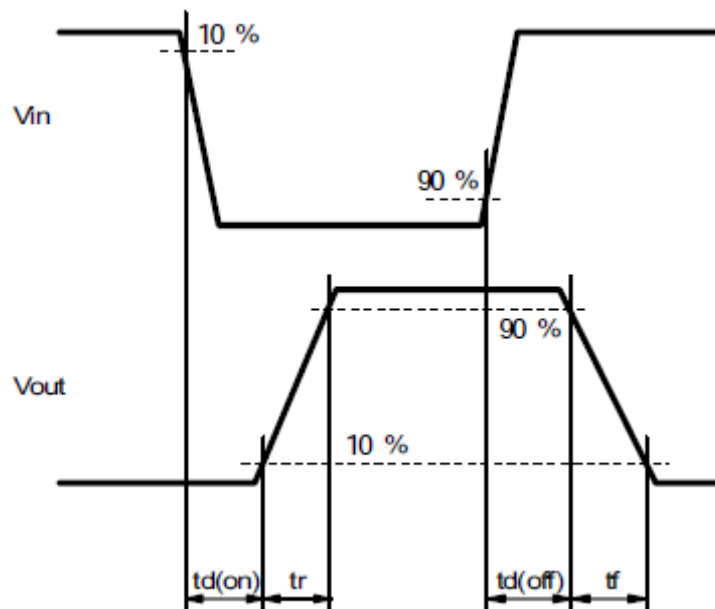
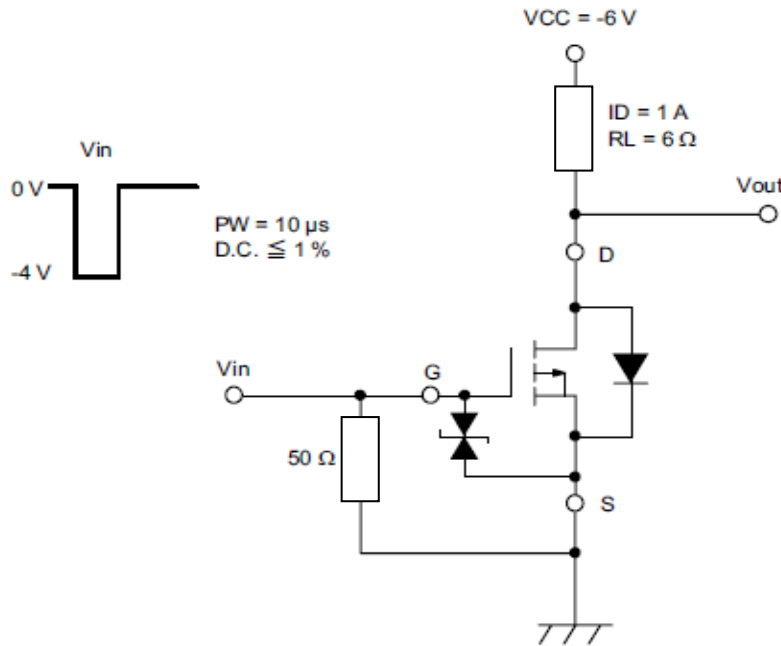
■ Electrical Characteristics Ta = 25°C ± 3°C

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	VDSS	ID = -1 mA, VGS = 0	-12			V
Drain-source cutoff current	IDSS	VDS = -12 V, VGS = 0			-1.0	μA
Gate-source cutoff current	IGSS	VGS = ±6.4 V, VDS = 0			±10	μA
Gate threshold voltage	Vth	ID = -1.0 mA, VDS = -6.0 V	-0.3	-0.65	-1.0	V
Drain-source ON resistance	RDS(ON)1	ID = -1.0 A, VGS = -4.0 V		32	42	mΩ
	RDS(ON)2	ID = -0.5 A, VGS = -2.5 V		37	55	mΩ
	RDS(ON)3	ID = -0.2 A, VGS = -1.8 V		50	75	mΩ
Forward transfer admittance	Yfs	ID = -1.0 A, VDS = -10 V	3.5			S
Short-circuit input capacitance (Common source)	Ciss	VDS = -10 V, VGS = 0, f = 1 MHz		1200		pF
Short-circuit output capacitance (Common source)	Coss			110		pF
Reverse transfer capacitance (Common source)	Crss			110		pF
Turn-on delay time <sup>*1</sup>	td(on)	VDD = -6 V, VGS = 0 V to -4 V		8		ns
Rise time <sup>*1</sup>	tr	ID = -1.0 A		11		ns
Turn-off delay time <sup>*1</sup>	td(off)	VDD = -6 V, VGS = -4 V to 0 V		235		ns
Fall time <sup>*1</sup>	tf	ID = -1.0 A		85		ns

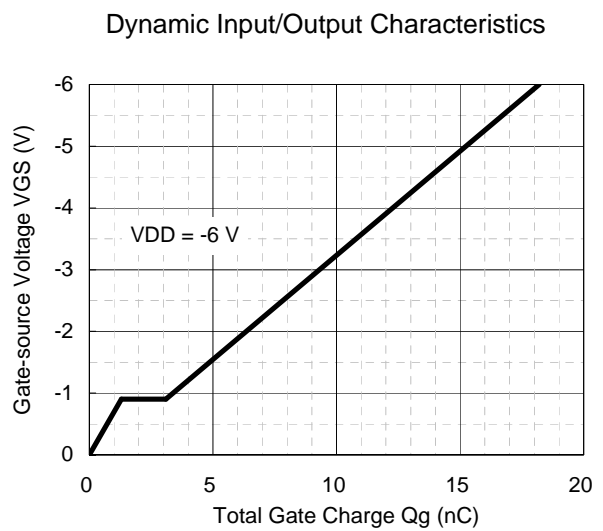
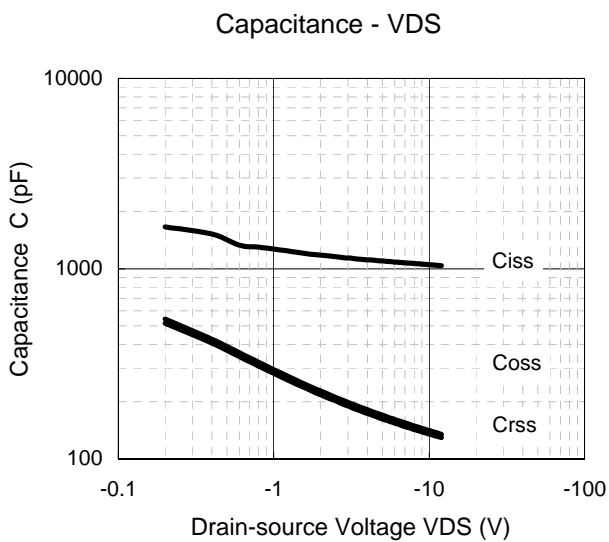
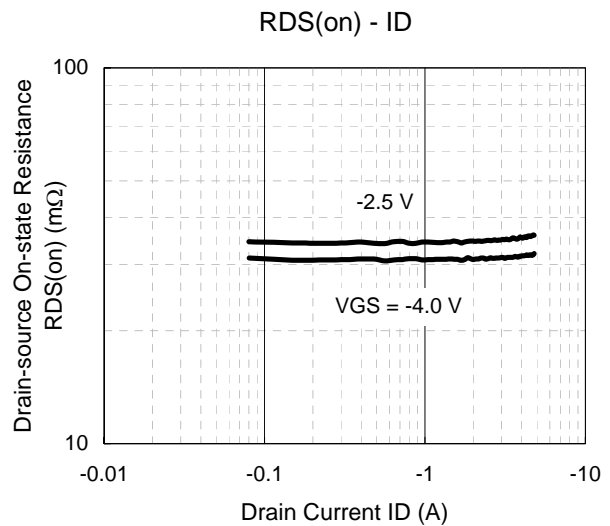
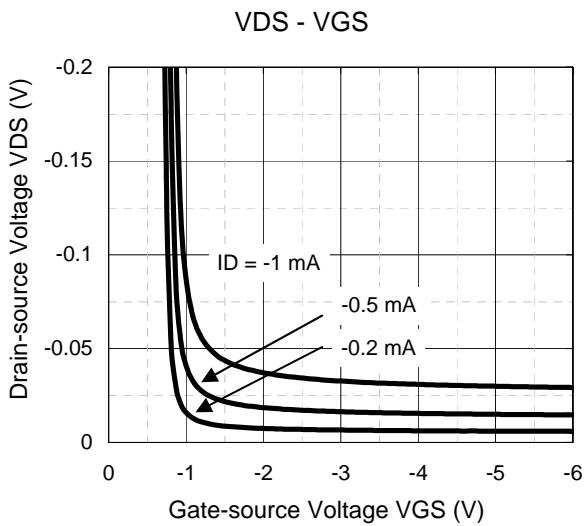
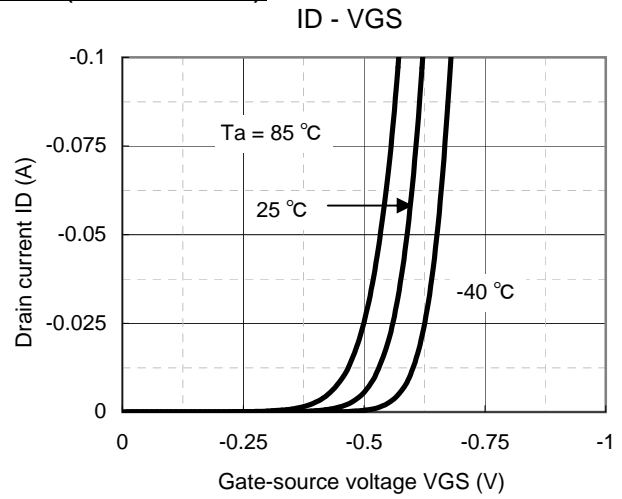
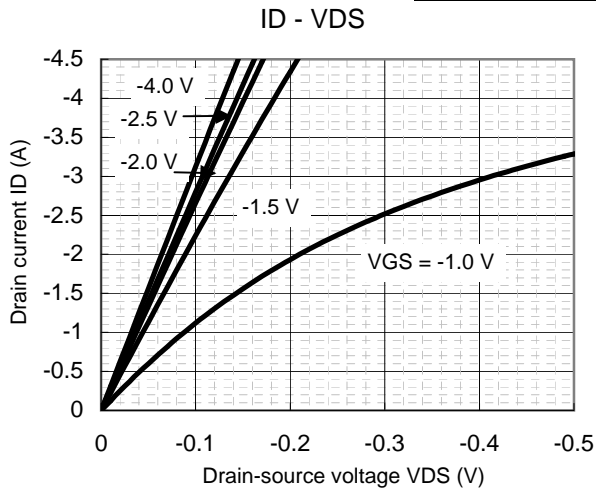
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 Measuring methods for transistors.

2. \*1 Measurement circuit for Turn-on Delay Time/Rise Time/Turn-off Delay Time/Fall Time

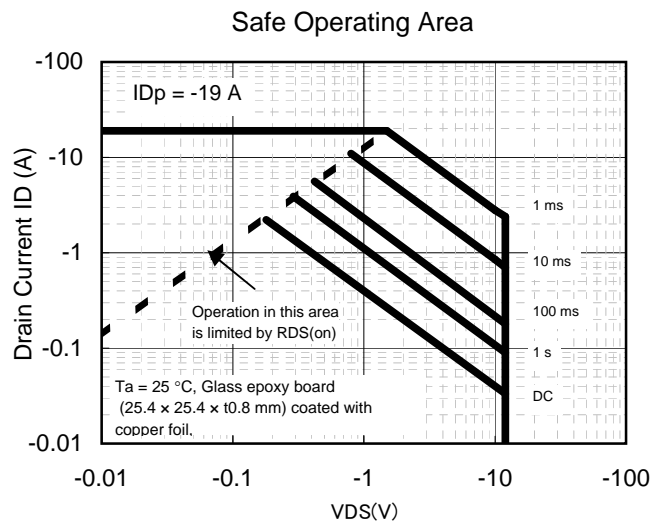
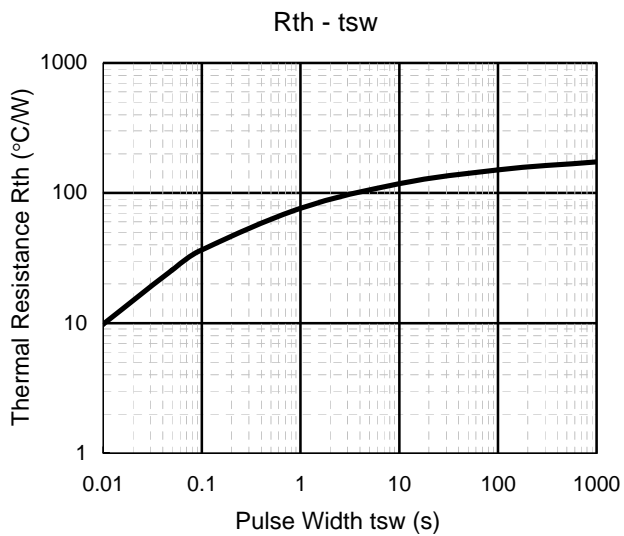
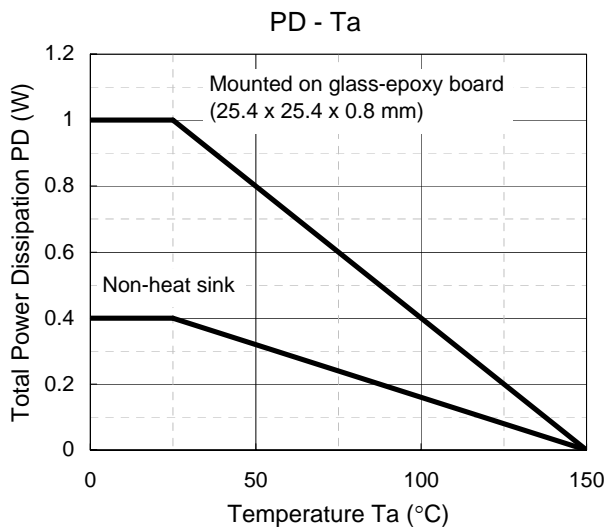
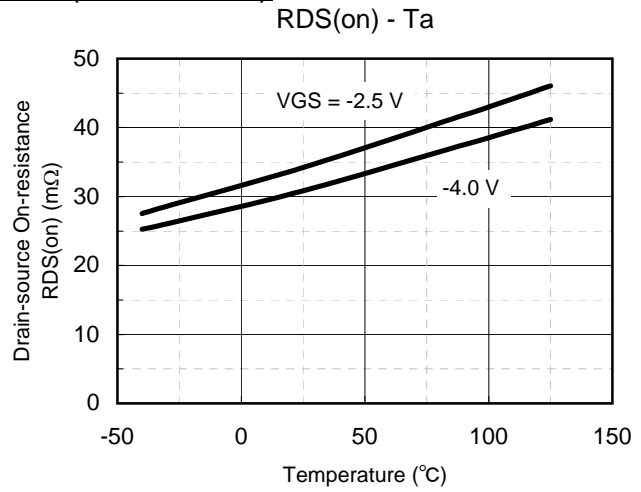
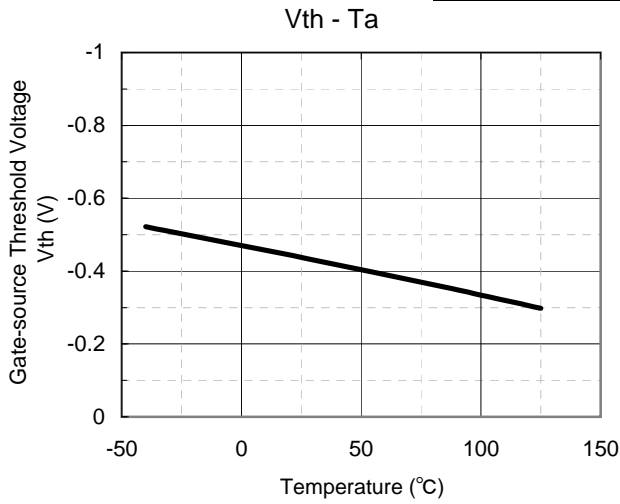
\*2 Measurement circuit for Turn-on Delay Time/Rise Time/Turn-off Delay Time/Fall Time



Technical Data ( reference )

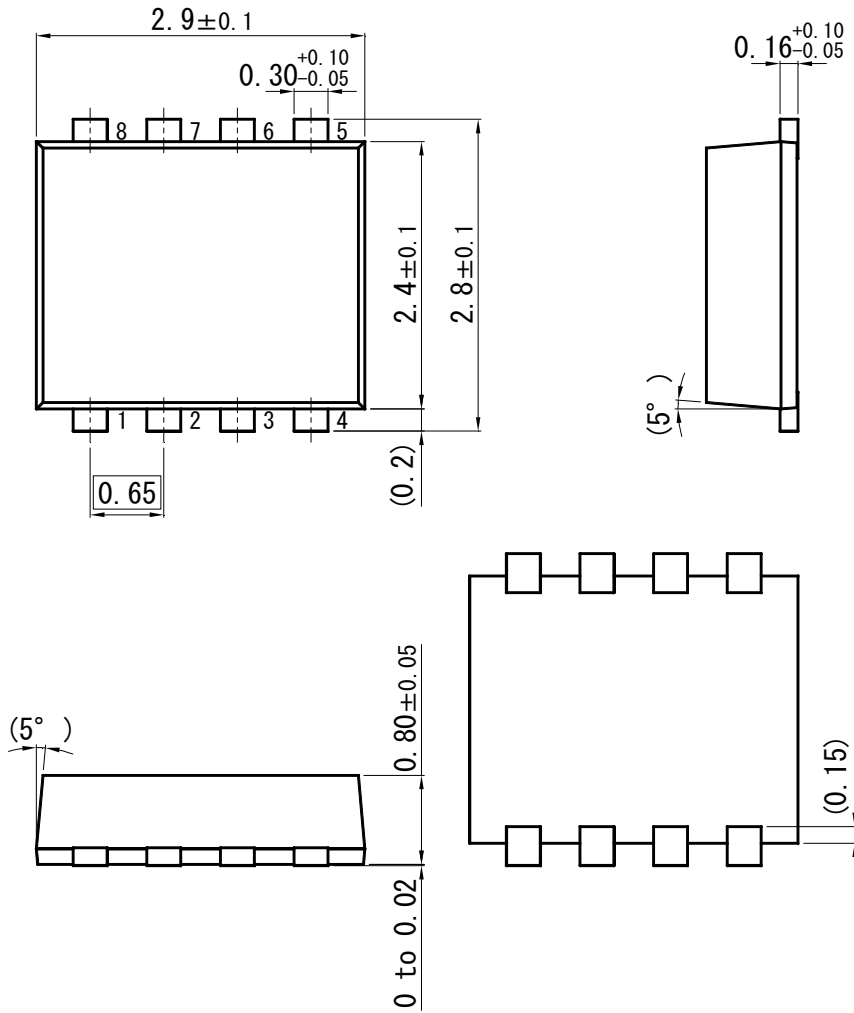


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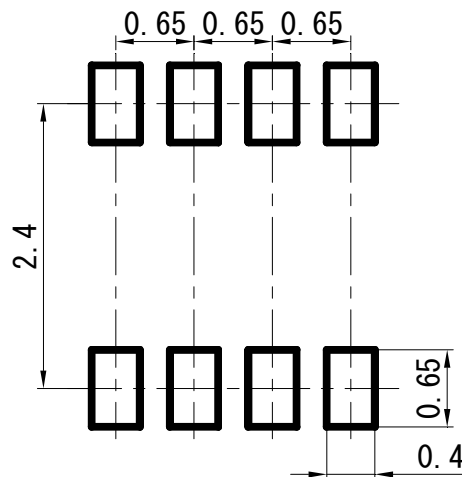


WMini8-F1

Unit : mm



■ Land Pattern (Reference) (Unit : mm)



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