

## **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**

**FL6L52060L**

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

For switching  
For DC-DC Converter

■ Features

- Low drain-source ON resistance :  $R_{DS(on)}$  typ. = 80 mΩ ( VGS = -4.0 V )
- Low drive voltage : 1.8 V drive
- Halogen-free / RoHS compliant  
(EU RoHS / UL-94 V-0 / MSL:Level 1 compliant)

■ Marking Symbol : Y2

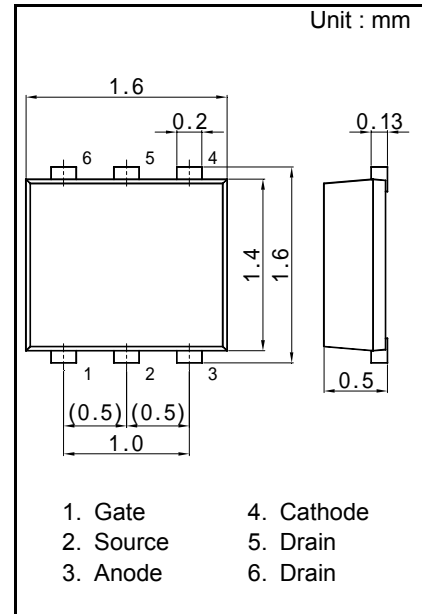
■ Packaging

Embossed type (Thermo-compression sealing): 10 000 pcs / reel (standard)

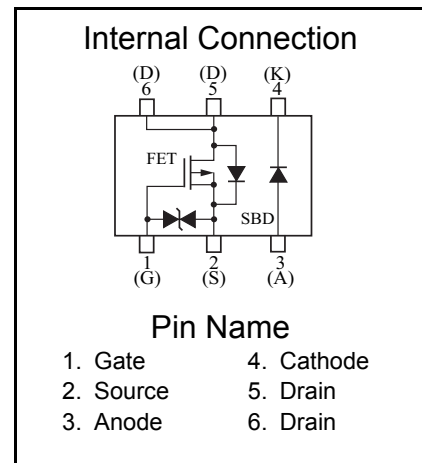
■ Absolute Maximum Ratings Ta = 25 °C

項目	Symbol	Rating	Unit
FET	Drain to Source Voltage	VDS	-20 V
	Gate to Source Voltage	VGS	±10 V
	Drain current	ID	-2.0 A
	Peak drain current	IDp	-8.0 A
	Channel temperature	Tch	150 °C
SBD	Reverse voltage	VR	20 V
	Forward current (Average)	IF(AV)	700 mA
Overall	Junction temperature	Tj	125 °C
	Total power dissipation**1	PD	540 mW
	Operating ambient temperature	Topr	-40 to + 85 °C
	Storage temperature	Tstg	-55 to +125 °C

Note: \*1 Measuring on ceramic substrate at 40 mm × 38 mm × 0.2 mm  
PD absolute maximum rating without a heat sink: 150 mW



Panasonic	WSSMini6-F1
JEITA	—
Code	—



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

FET (P-ch.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	VDSS	ID = -1.0 mA, VGS = 0 V	-20			V
Drain-source cutoff current	IDSS	VDS = -20 V, VGS = 0 V			-1.0	μA
Gate-source cutoff current	IGSS	VGS = ±8 V, VDS = 0 V			±10	μA
Gate threshold voltage	VTH	ID = -1.0 mA, VDS = -10 V	-0.4	-0.75	-1.1	V
Drain-source ON resistance *1	RDS(on)1	ID = -1.0 A, VGS = -4.0 V		80	120	mΩ
	RDS(on)2	ID = -1.0 A, VGS = -2.5 V		100	170	
	RDS(on)3	ID = -0.5 A, VGS = -1.8 V		140	230	
Forward transfer admittance *1	[Yfs]	ID = -1.0 A, VDS = -10 V, f = 1 kHz	3.0			S
Short-circuit input capacitance (Common source)	Ciss	VDS = -10 V, VGS = 0, f = 1 MHz		300		pF
Short-circuit output capacitance (Common source)	Coss			30		
Reverse transfer capacitance (Common source)	Crss			35		
Turn-on delay time *2	td(on)	VDD = -10 V, VGS = 0 V to -4.0 V		6		ns
Rise time *2	tr	ID = -1.0 A		8		
Turn-off delay time *2	td(off)	VDD = -10 V, VGS = -4.0 V to 0 V		57		ns
Fall time *2	tf	ID = -1.0 A		55		

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

2. \*1 Pulse measurement

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

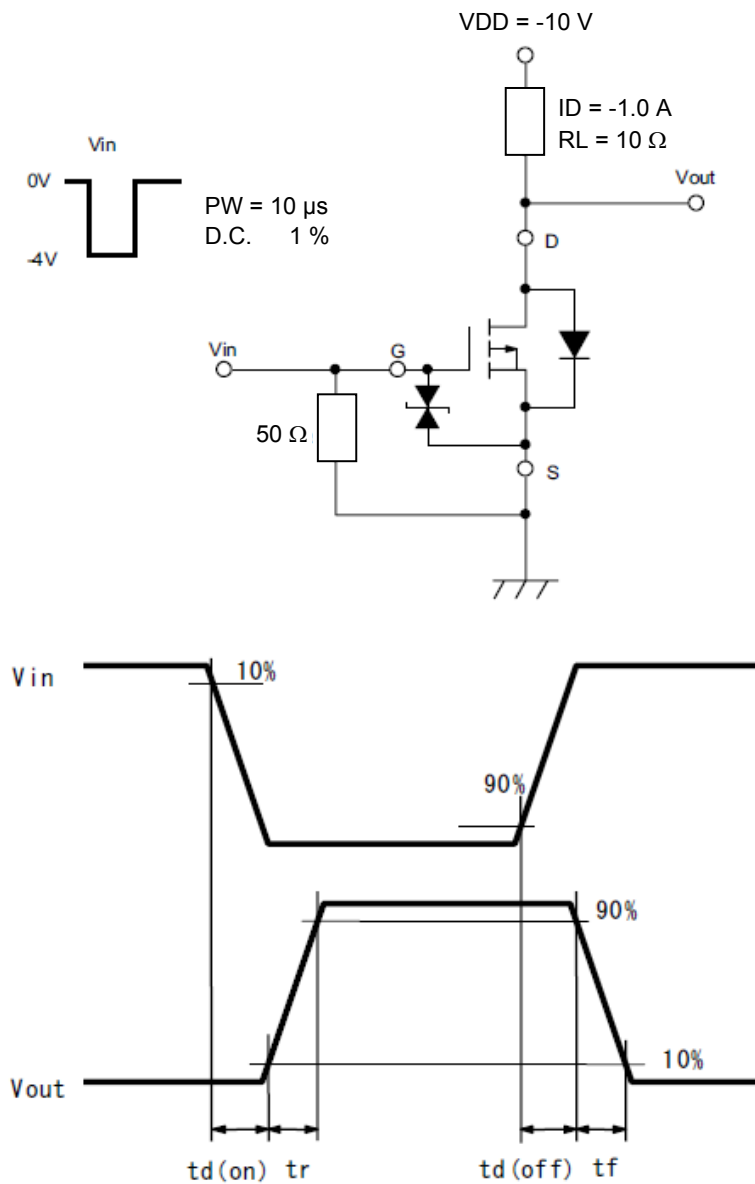
SBD

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Forward voltage	VF1	IF = 10 mA			0.4	V
	VF2	IF = 500 mA			0.55	
Reverse current	IR1	VR = 5 V			1	μA
	IR2	VR = 10 V			10	

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



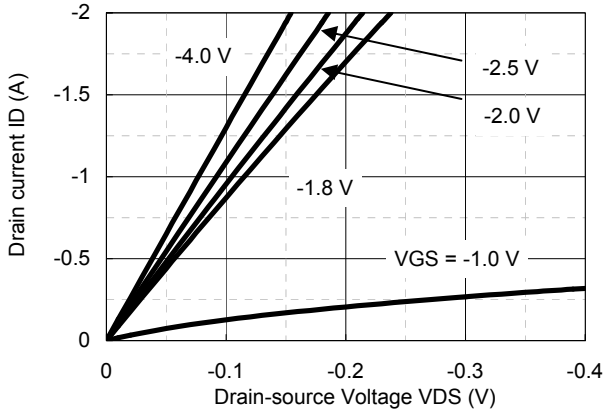
\*2 Measurement circuit for Turn-on Delay Time/Rise Time/Turn-off Delay Time/Fall Time



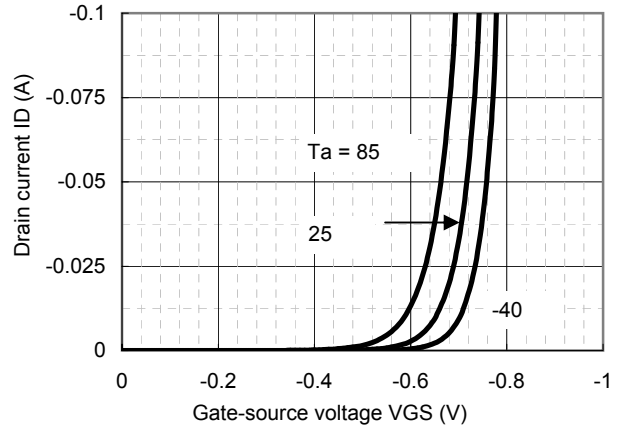


Technical Data ( reference )

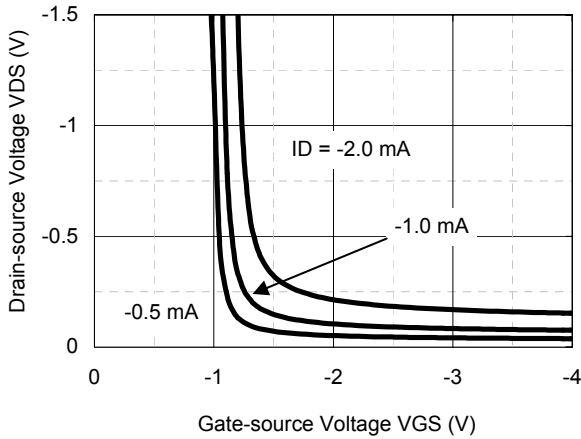
ID - VDS



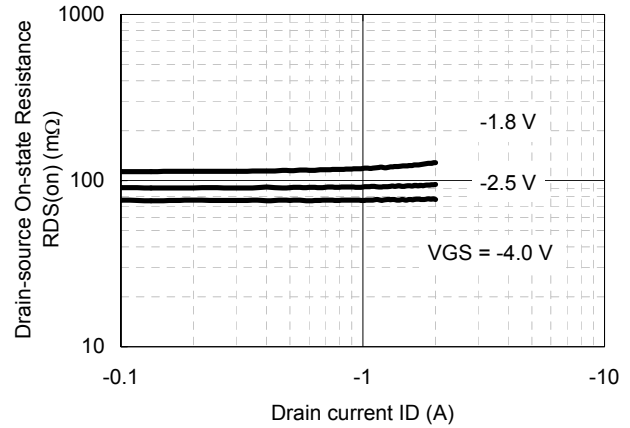
ID - VGS



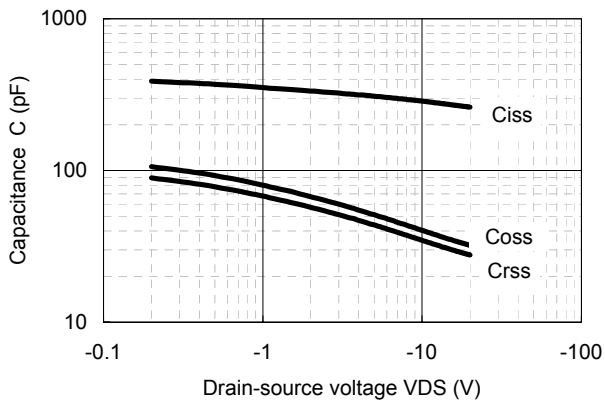
VDS - VGS



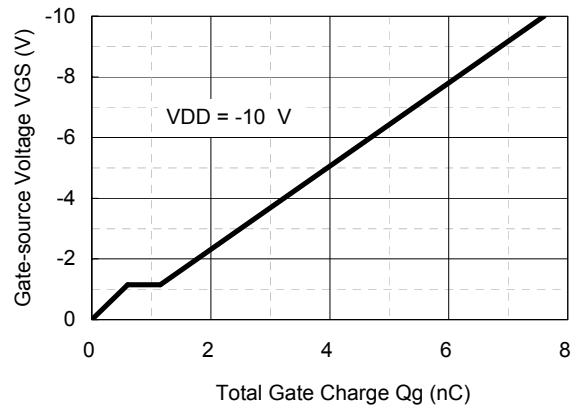
RDS(on) - ID



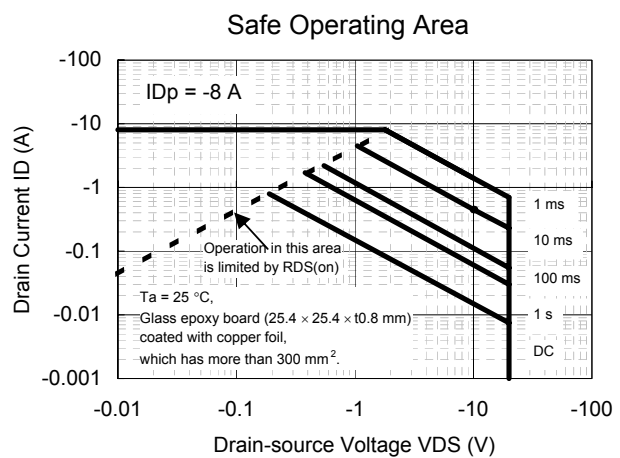
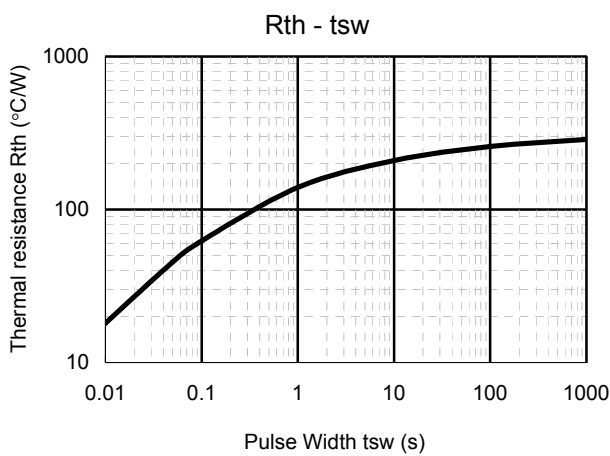
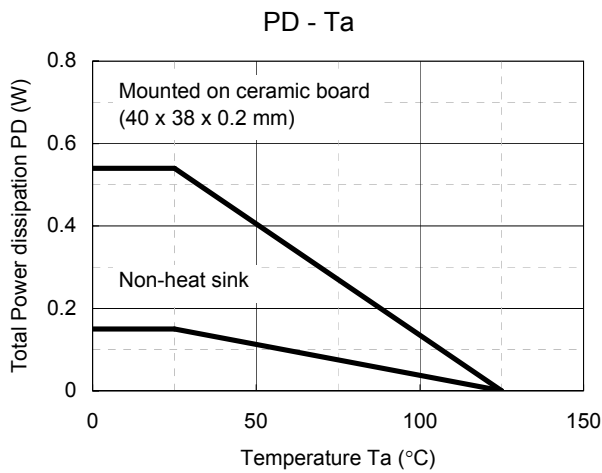
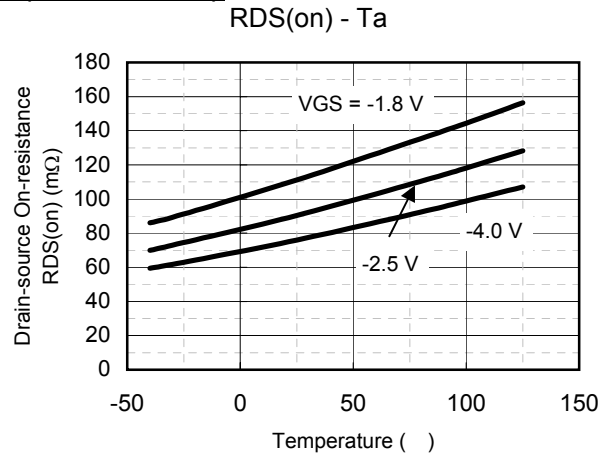
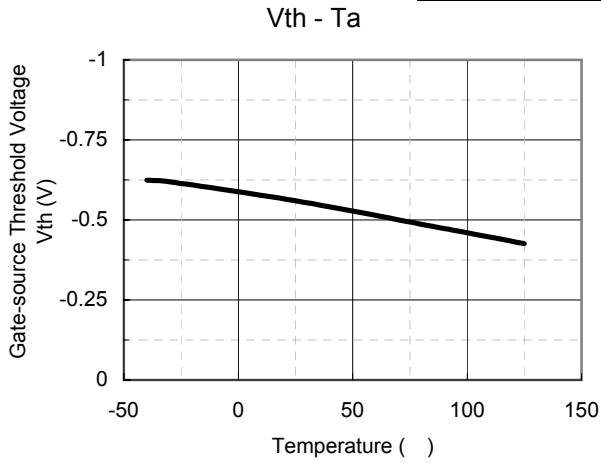
Capacitance - VDS



Dynamic Input/Output Characteristics

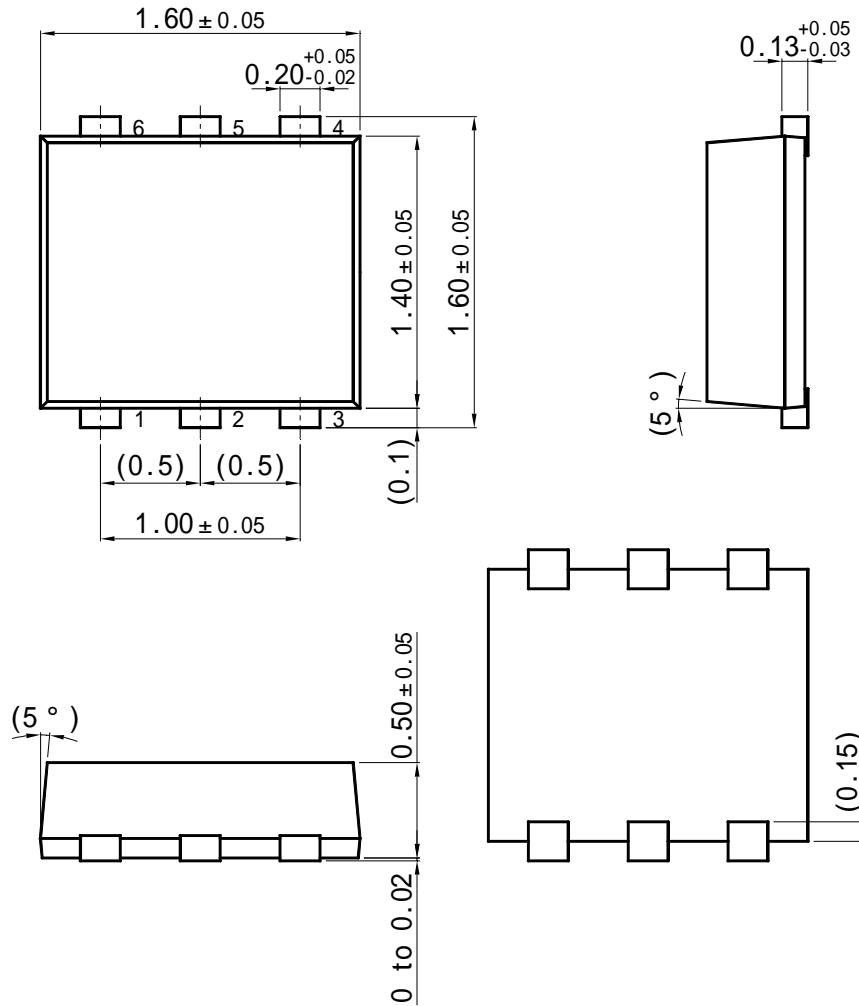


Technical Data ( reference )

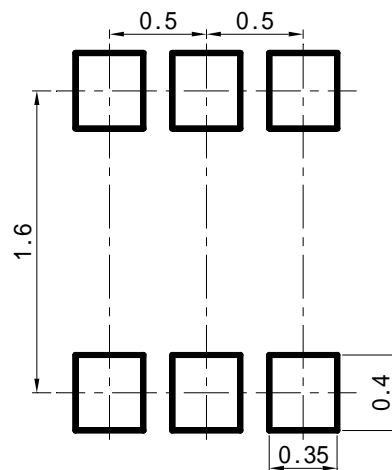


WSSMini6-F1

Unit: mm



■ Land Pattern (Reference) (Unit : mm)



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