

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



SK8403200L

SK8403200L

Silicon N-channel MOSFET

For Li-ion battery / for DC-DC converter

■ Features

- Low drain-source ON resistance:RDS(on)typ. = 3.7 mΩ (VGS = 10 V)
- Halogen-free / RoHS compliant
(EU RoHS / UL-94 V-0 / MSL:Level 1 compliant)

■ Marking Symbol: 1A

■ Packaging

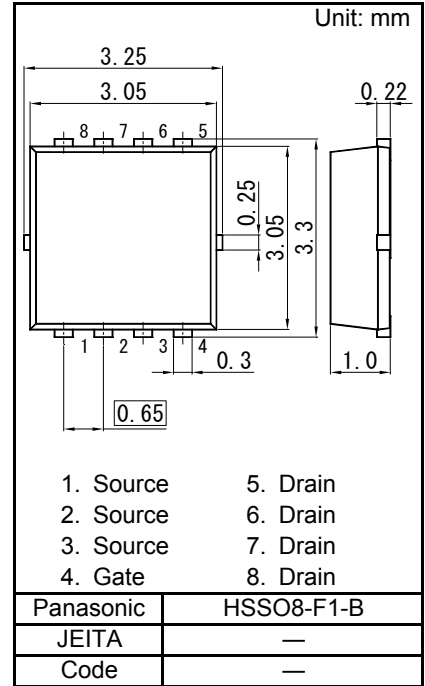
Embossed type (Thermo-compression sealing) : 3 000 pcs / reel (standard)

■ Absolute Maximum Ratings Ta = 25 °C

Parameter	Symbol	Rating	Unit
Drain-source Voltage	VDSS	30	V
Gate-source Voltage	VGSS	±20	V
Drain current	ID	23	A
Drain current(Pulsed) t=1ms	IDp ^{*1*2}	81.5	A
Total Power Dissipation	Ta = 25 °C, t = 10 s	PD ^{*1*2}	W
	Tc = 25 °C	PD ^{*1*2}	
Thermal Resistance	Channel to Ambient	Rth(ch-a)	°C / W
	Channel to Case	Rth(ch-c)	
Channel Temperature	Tch	150	°C
Storage Temperature Range	Tstg	-55 to +150	°C

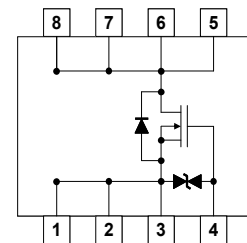
Note *1 Device mounted on a glass-epoxy board in Figure 1

*2 Pulse test: Ensure that the channel temperature does not exceed 150 °C



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

Internal Connection



Pin Name

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

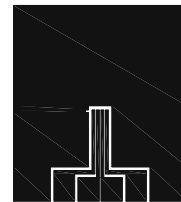


Figure 1 FR4 Glass-Epoxy Board
 25.4 mm × 25.4 mm × 0.8 mm



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

Static Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	VDSS	ID = 1.0 mA, VGS = 0 V	30			V
Zero Gate Voltage Drain Current	IDSS	VDS = 30 V, VGS = 0 V			10	μA
Gate-source Leakage Current	IGSS	VGS = ±16 V, VDS = 0 V			±10	μA
Gate-source Threshold Voltage	Vth	ID = 2.3 mA, VDS = 10 V	1.0		2.5	V
Drain-source On-State Resistance	RDS(on)1	ID = 11.5A, VGS = 10 V		3.7	5.0	mΩ
	RDS(on)2	ID = 11.5A, VGS = 4.5V		5.4	8.1	

Dynamic Characteristics

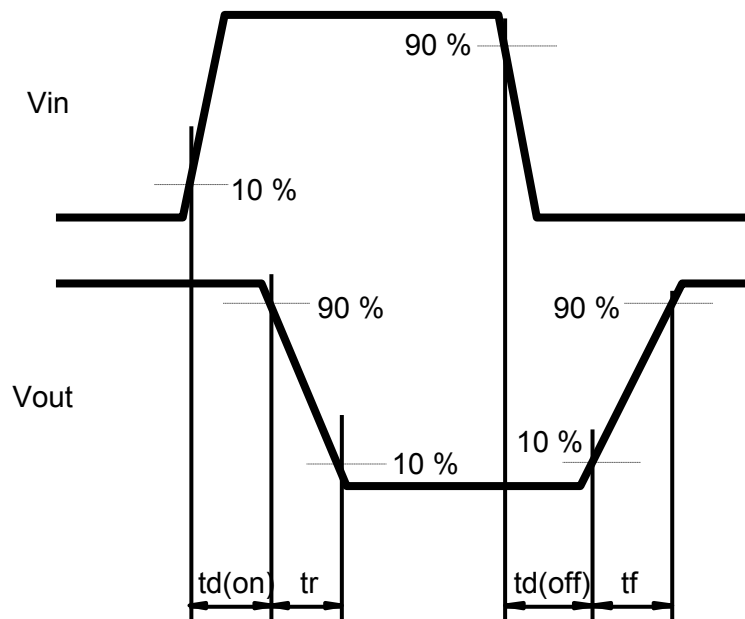
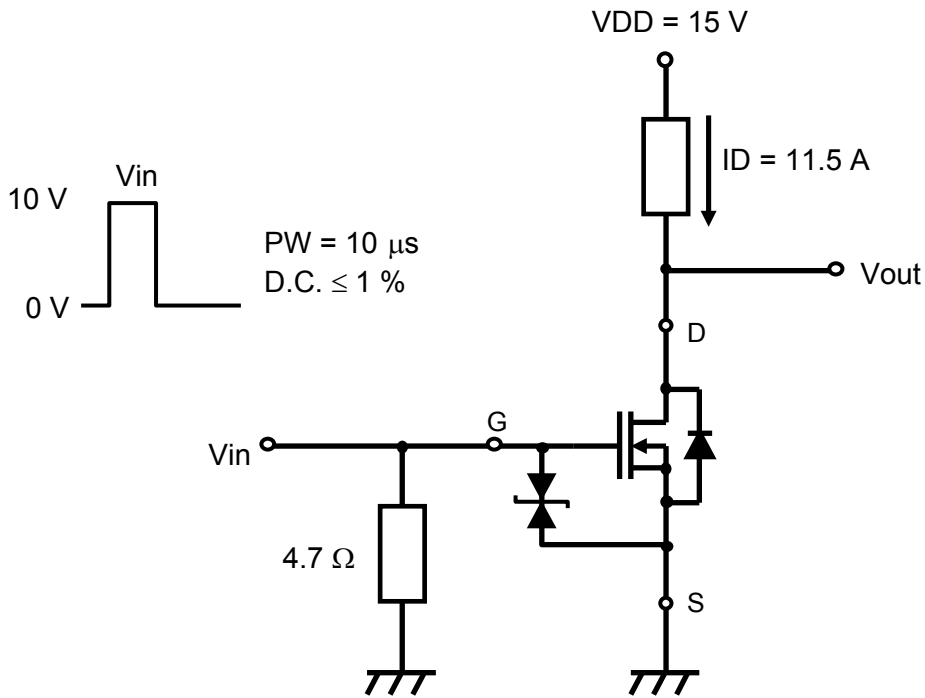
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input Capacitance	Ciss	VDS = 10 V, VGS = 0 V f = 1 MHz		1800		pF
Output Capacitance	Coss			230		
Reverse Transfer Capacitance	Crss			150		
Turn-on Delay Time ^{*1}	td(on)	VDD = 15 V, VGS = 0 to 10 V		11		ns
Rise Time ^{*1}	tr	ID = 11.5 A		6		
Turn-off Delay Time ^{*1}	td(off)	VDD = 15 V, VGS = 10 to 0 V		62		ns
Fall Time ^{*1}	tf	ID = 11.5 A		9		
Total Gate Charge	Qg	VDD = 15 V, VGS = 0 to 4.5 V, ID = 23 A		14		nC
Gate-source Charge	Qgs			4.5		
Gate-drain Charge	Qgd			5		

Note *1 Measurement circuit for Turn-on Delay Time/Rise Time/Turn-off Delay Time/Fall Time

Body Diode Characteristic

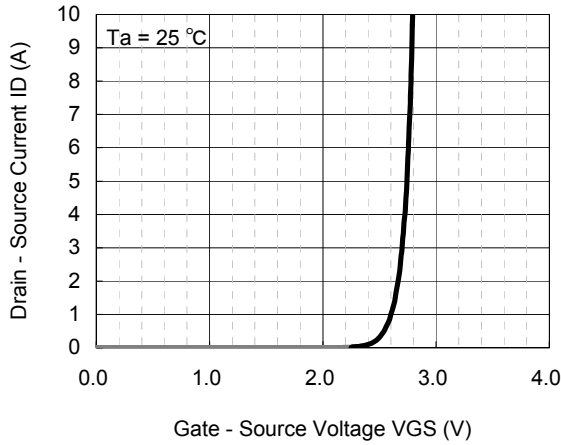
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage	VSD	IS = 11.5 A, VGS = 0 V		0.8	1.2	V

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

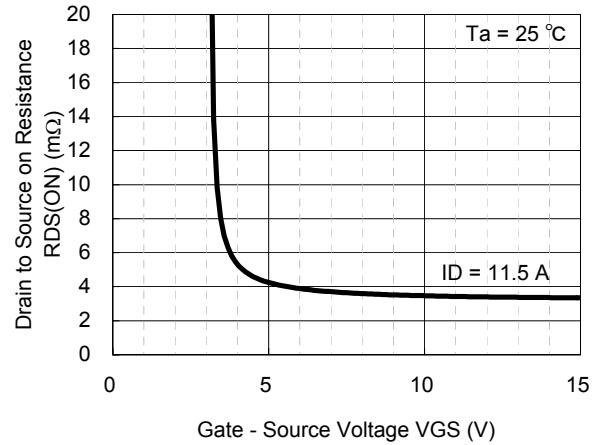


Technical Data (reference)

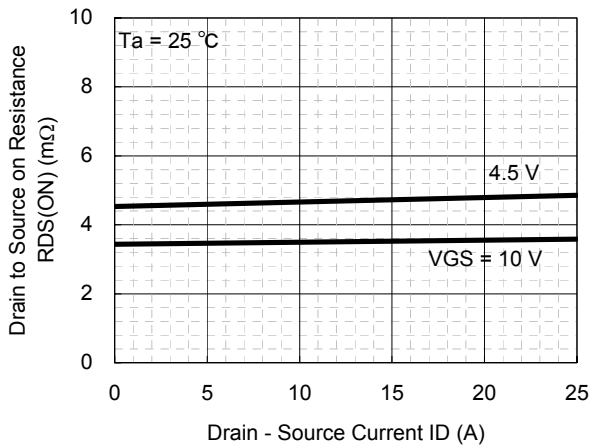
ID - VGS



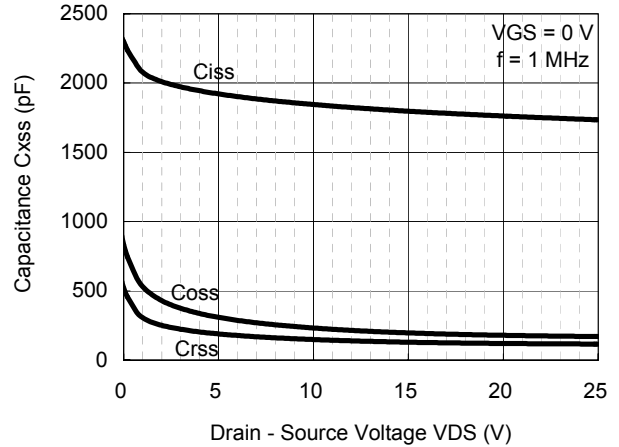
RDS(on) - VGS



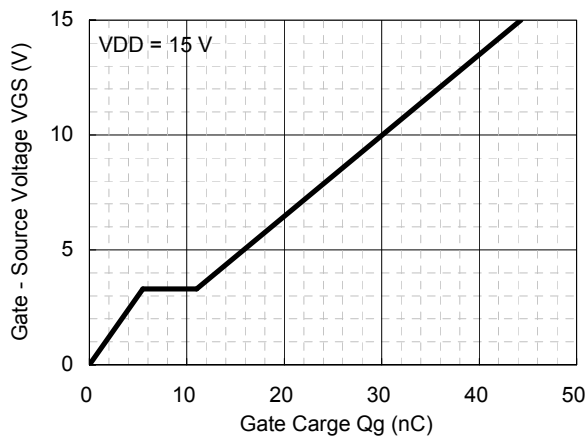
RDS(on) - ID



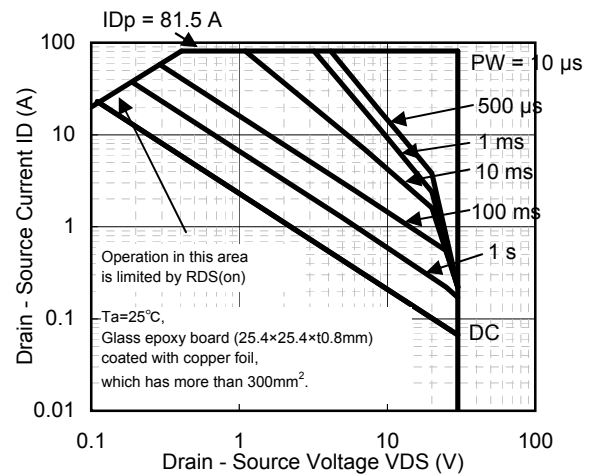
Capacitance - VDS



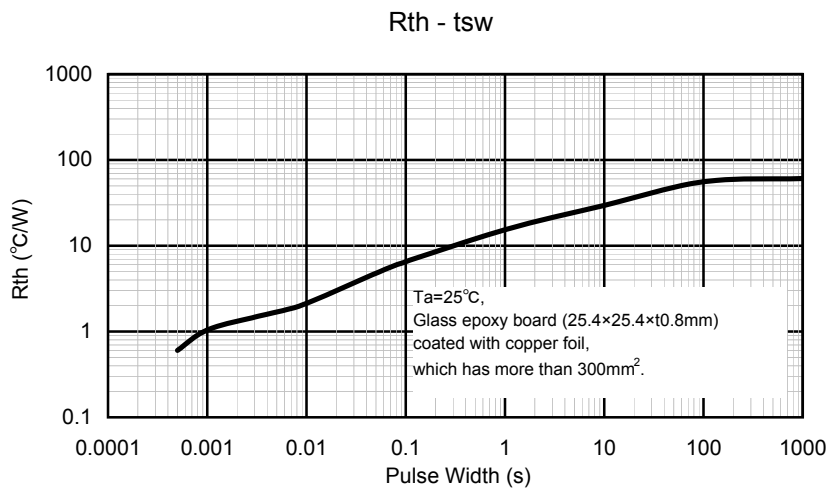
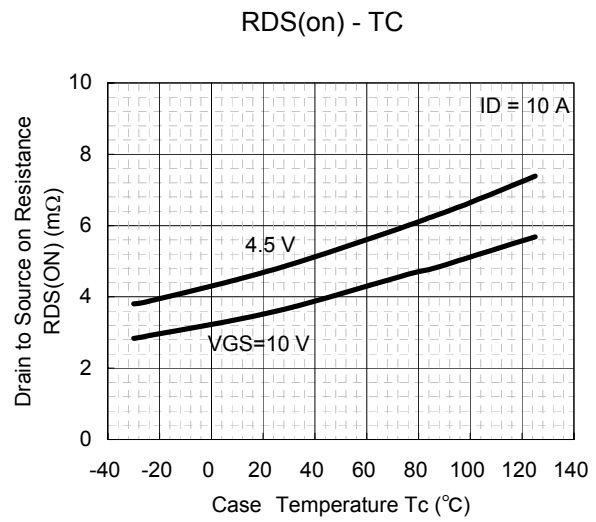
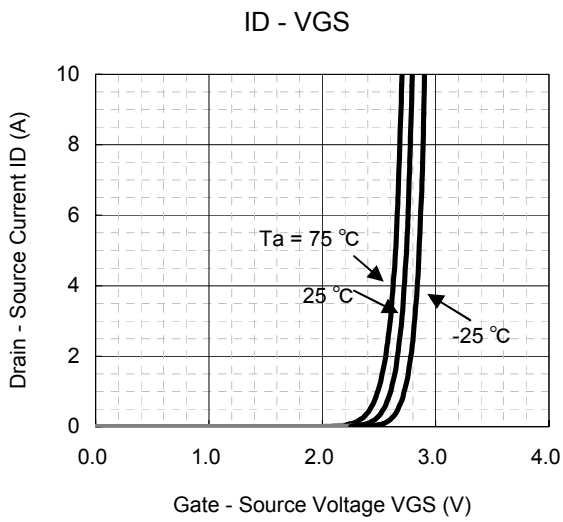
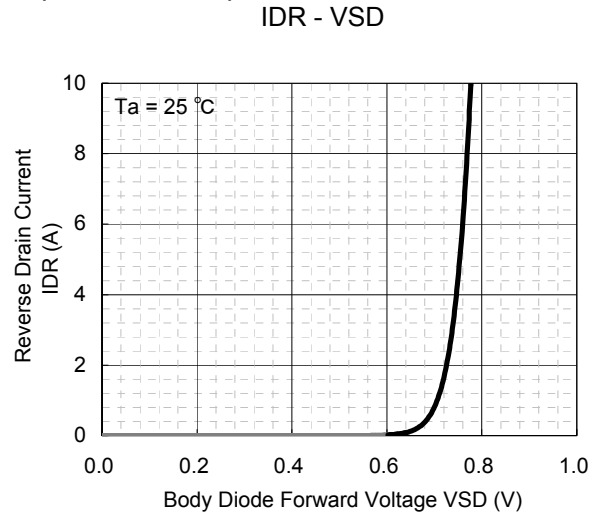
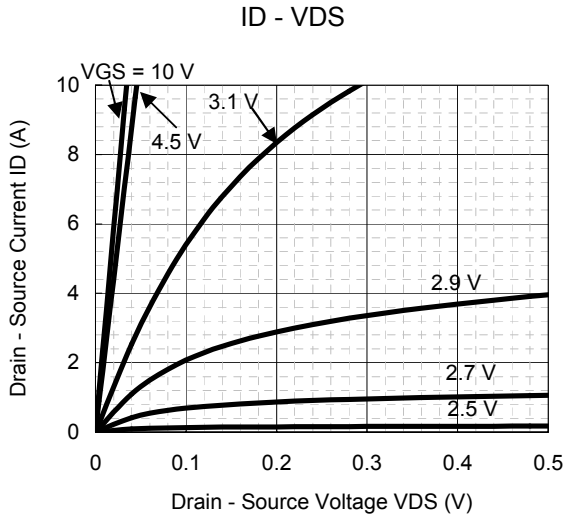
Dynamic Input/Output Characteristics



Safe Operating Area

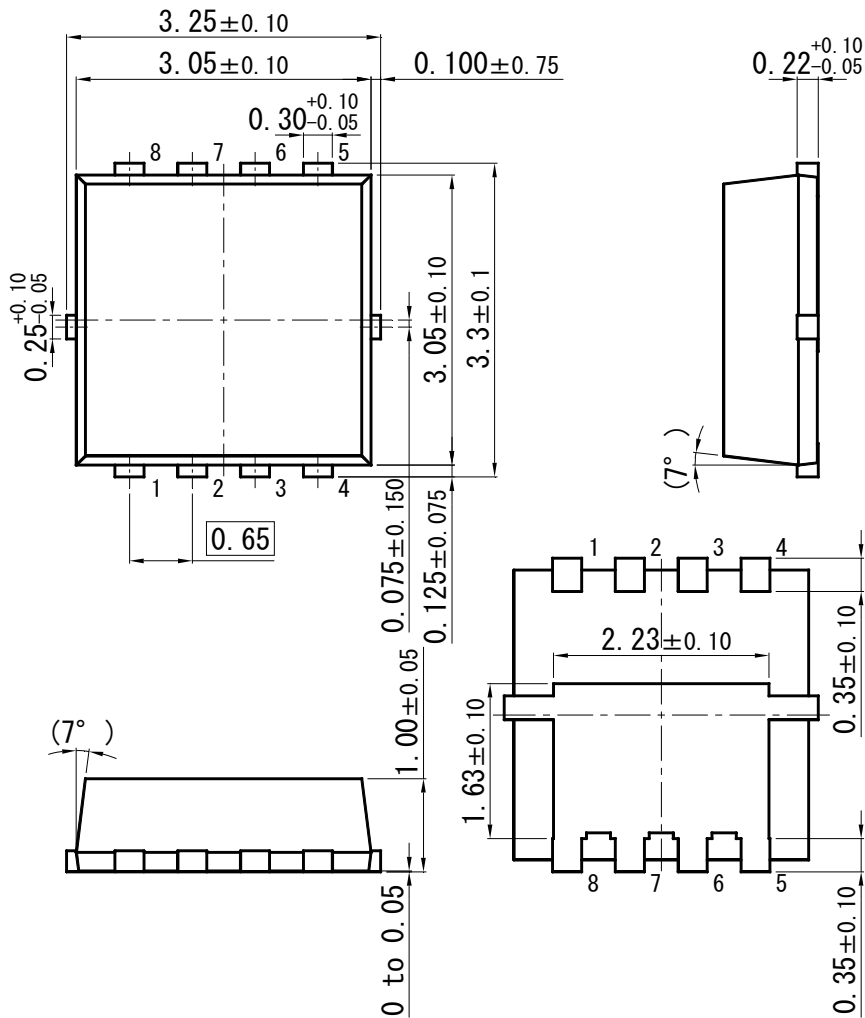


Technical Data (reference)

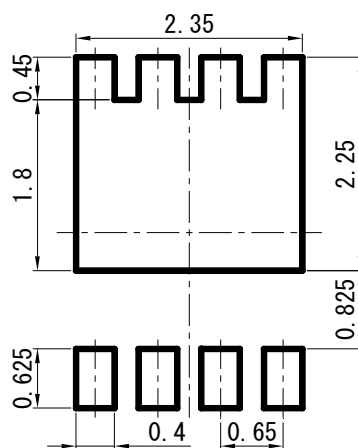


HSSO8-F1-B

Unit : mm



■ Land Pattern (Reference) (Unit: mm)



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