

## **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**

**FM6L52020L**

Silicon N-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 : Y6

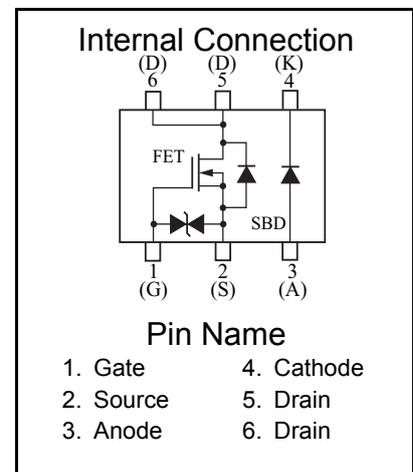
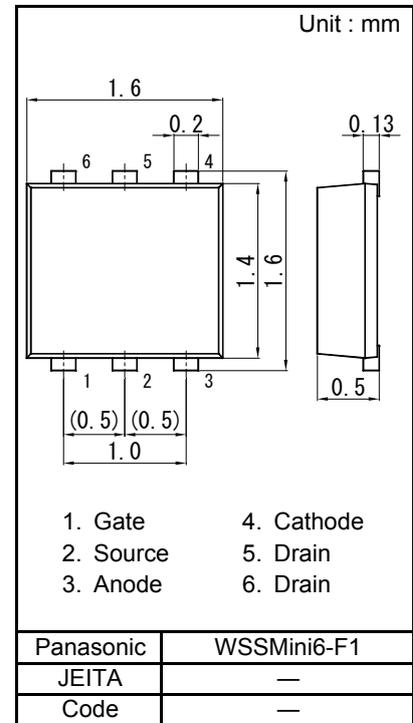
■ Packaging

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     | 2.2         | A    |
|         | Peak drain current                    | IDp    | 8.0         | A    |
|         | Channel temperature                   | Tch    | 150         | °C   |
| SBD     | Reverse voltage                       | VR     | 20          | V    |
|         | Forward current (Average)             | IF(AV) | 800         | mA   |
|         | Junction temperature                  | Tj     | 125         | °C   |
| Overall | Total power dissipation <sup>*1</sup> | 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



■ Electrical Characteristics Ta = 25 °C ± 3 °C  
FET (N-ch.)

| 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 = ±8 V, VDS = 0               |     |      | ±10 | μA   |
| Gate threshold voltage                           | VTH      | ID = 1.0 mA, VDS = 10 V           | 0.4 | 0.85 | 1.3 | V    |
| Drain-source ON resistance *1                    | RDS(on)1 | ID = 1.0 A, VGS = 4.0 V           |     | 80   | 105 | mΩ   |
|  | RDS(on)2 | ID = 0.5 A, VGS = 2.5 V           |     | 100  | 150 |      |
| 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    |     | 280  |     | pF   |
| Short-circuit output capacitance (Common source) | Coss     |                                   |     | 18   |     |      |
| Reverse transfer capacitance (Common source)     | Crss     |                                   |     | 17   |     |      |
| Turn-on delay time *2                            | td(on)   | VDD = 10 V, VGS = 0 to 4.0 V      |     | 5    |     | ns   |
| Rise time *2                                     | tr       | ID = 1.0 A                        |     | 8    |     |      |
| Turn-off delay time *2                           | td(off)  | VDD = 6 V, VGS = 4.0 to 0 V       |     | 20   |     | ns   |
| Fall time *2                                     | tf       | ID = 1.0 A                        |     | 18   |     |      |

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

2. \*1 Pulse measurement

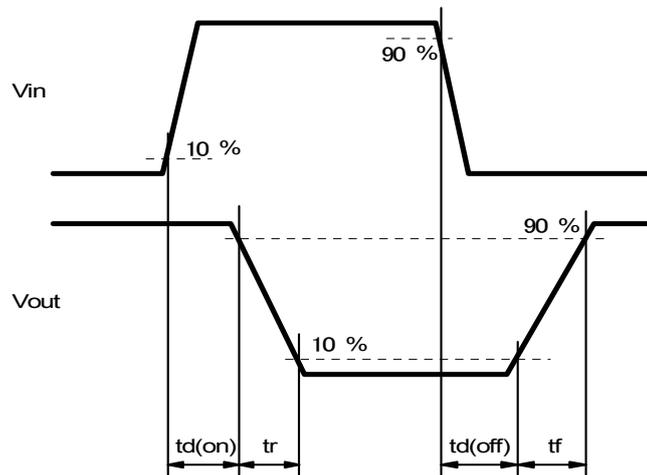
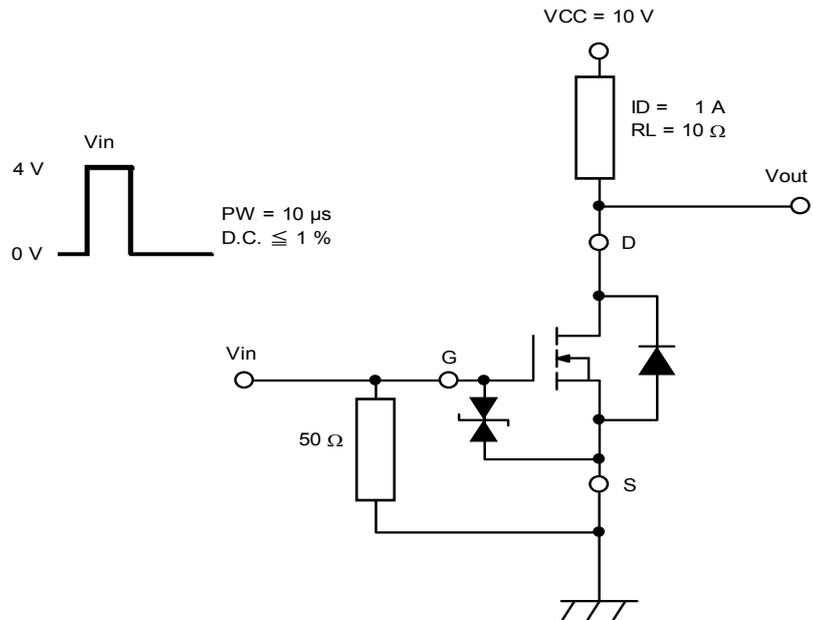
\*2 Measurement circuit for Turn-on Delay Time/Rise Time/Turn-off Delay Time/Fall Time

SBD

| Parameter       | Symbol | Conditions  | Min | Typ | Max  | Unit |
|-----------------|--------|-------------|-----|-----|------|------|
| Forward voltage | VF     | IF = 800 mA |     |     | 0.47 | V    |
| Reverse current | IR     | VR = 20 V   |     |     | 80   | μA   |

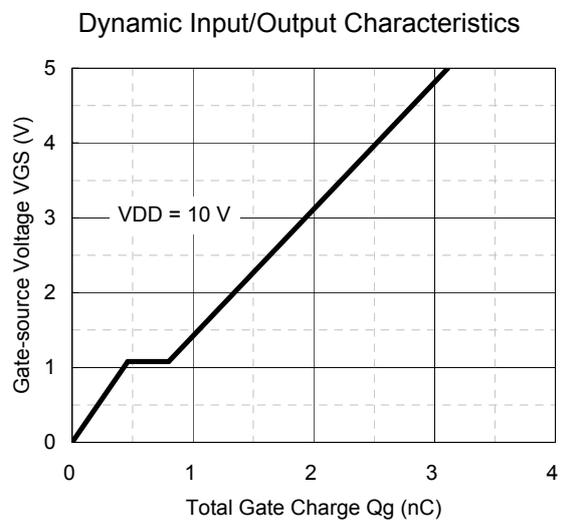
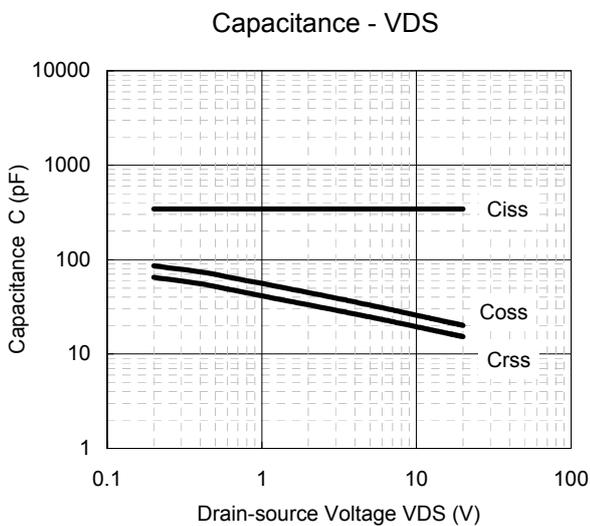
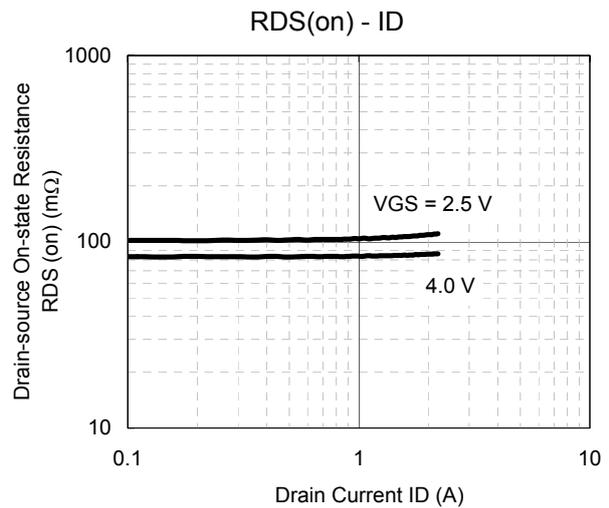
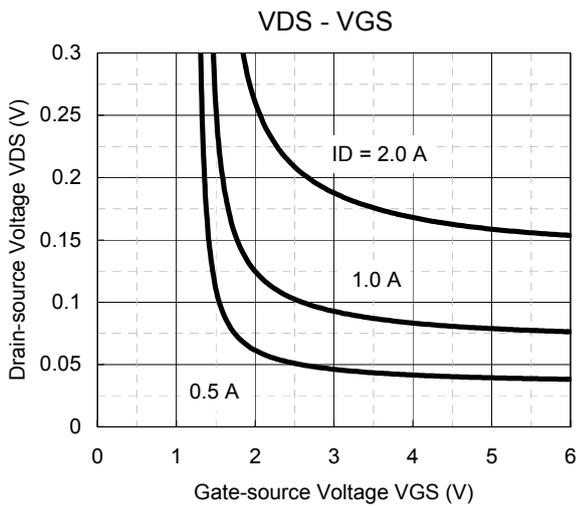
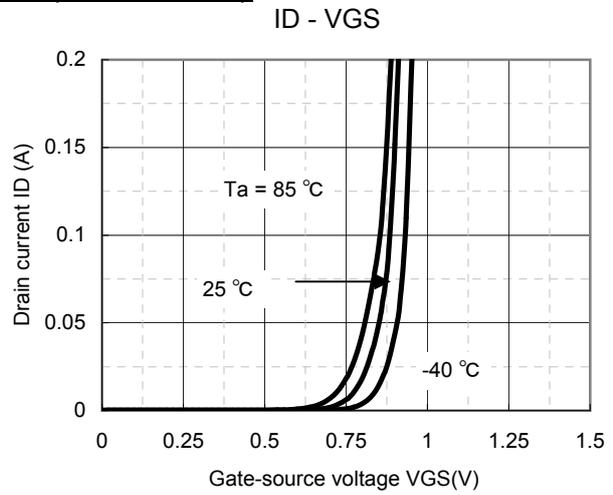
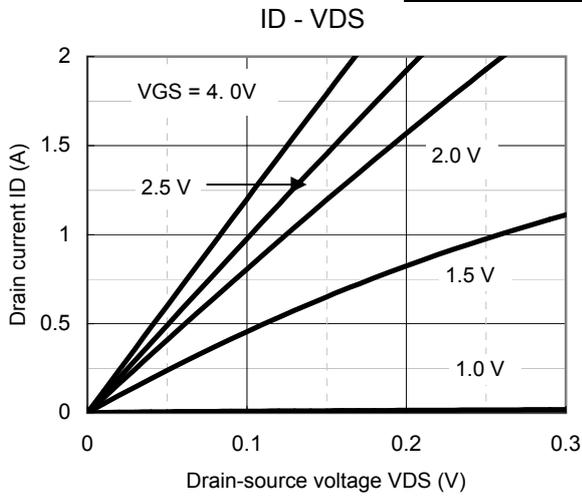
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7031 Measuring methods for diodes.

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





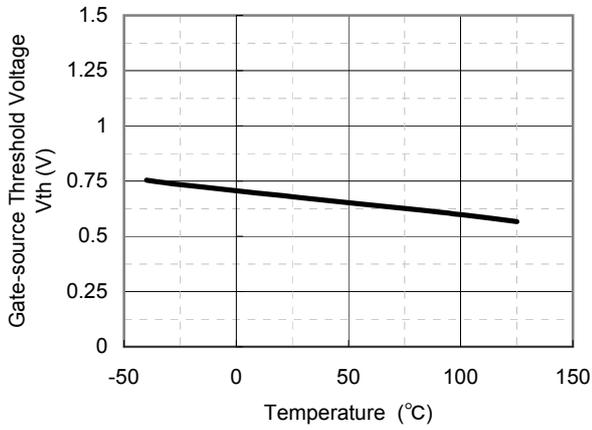
Technical Data ( reference )



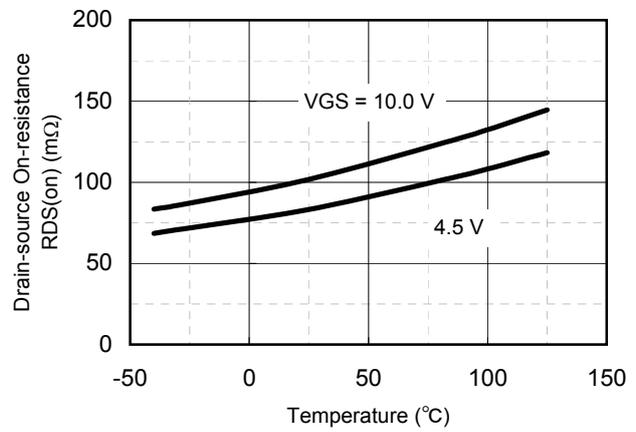


Technical Data ( reference )

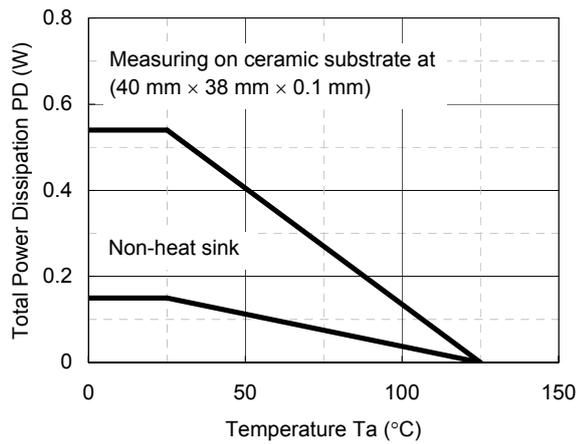
V<sub>th</sub> - T<sub>a</sub>



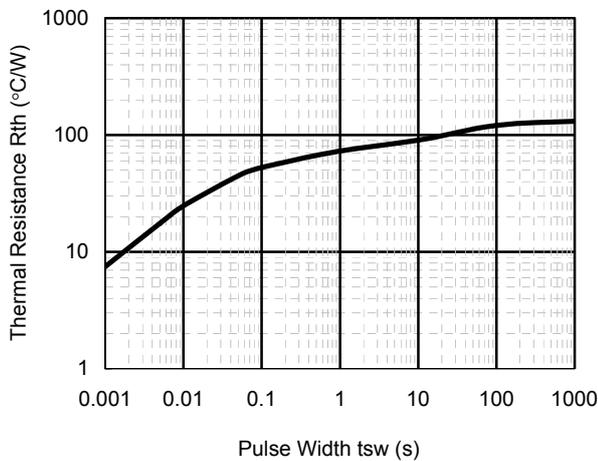
R<sub>DS(on)</sub> - T<sub>a</sub>



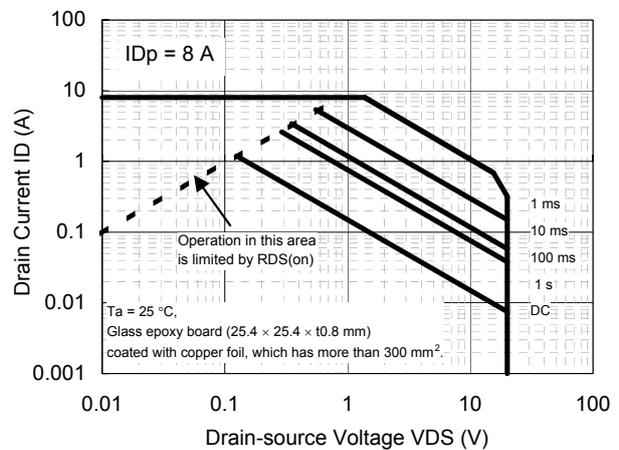
PD - T<sub>a</sub>



R<sub>th</sub> - t<sub>sw</sub>

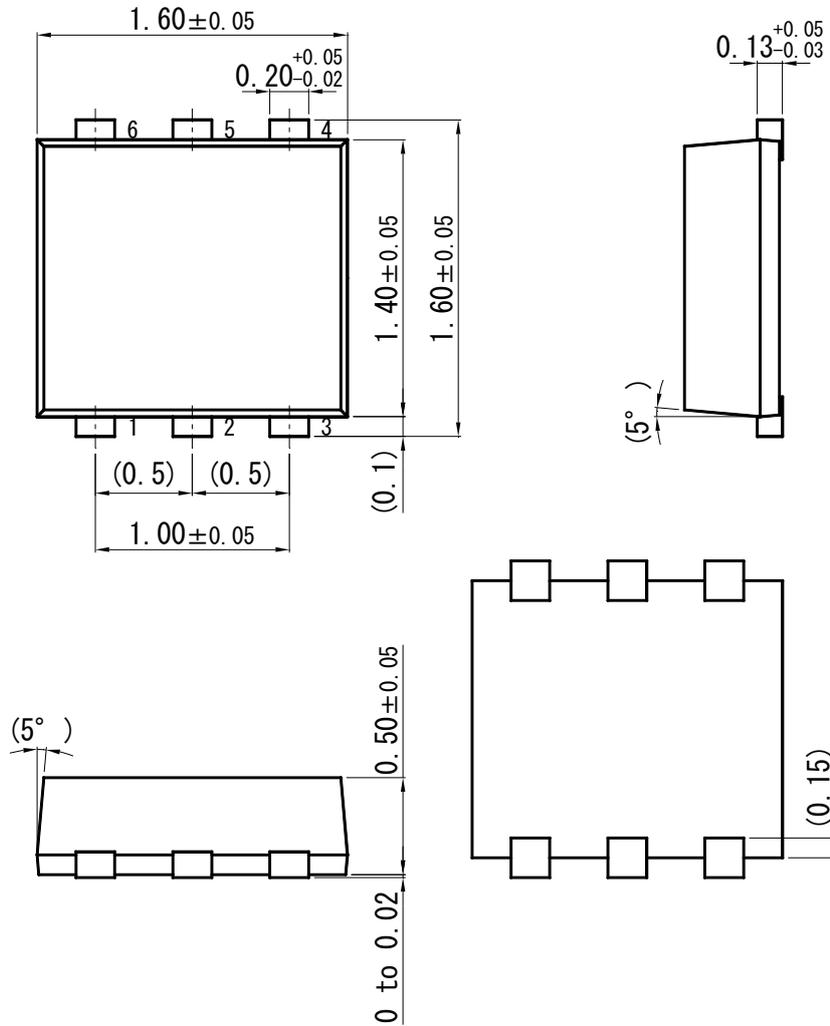


Safe Operating Area

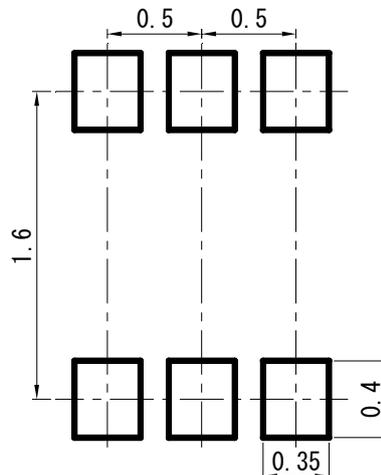


WSSMini6-F1

Unit: mm



■ Land Pattern (Reference) (Unit : mm)



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