

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



FL6L52030L

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. = 300 mΩ ($V_{GS} = -4.0$ V)
- Low drive voltage : 2.5 V drive
- Halogen-free / RoHS compliant
 (EU RoHS / UL-94 V-0 / MSL:Level 1 compliant)

■ Marking Symbol Y3

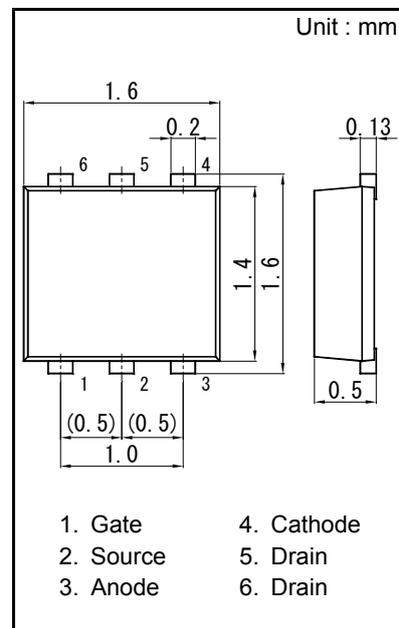
■ Packaging

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

■ Absolute Maximum Ratings $T_a = 25$ °C

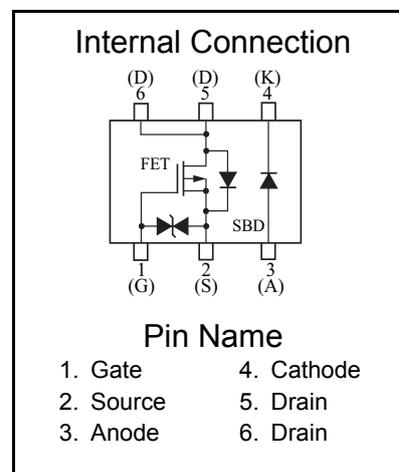
| 項目 | | Symbol | Rating | Unit |
|---------|---------------------------------------|--------|-------------|------|
| FET | Drain to Source Voltage | VDS | -20 | V |
| | Gate to Source Voltage | VGS | ±12 | V |
| | Drain current | ID | -1.0 | A |
| | Peak drain current | IDp | -4.0 | A |
| | Channel 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 ^{*1} | PD | 540 | mW |
| | Operating ambient temperature | Topr | -40 to +85 | °C |
| | Storage temperature | Tstg | -55 to +125 | °C |

Note: *1 Glass epoxy board (25.4 x 25.4 x t0.8 mm) coated with copper foil, which has more than 300mm².
 PD absolute maximum rating without a heat sink: 150 mW



- 1. Gate
- 2. Source
- 3. Anode
- 4. Cathode
- 5. Drain
- 6. Drain

| | |
|-----------|-------------|
| Panasonic | WSSMini6-F1 |
| JEITA | — |
| Code | — |



- Pin Name
- 1. Gate
 - 2. Source
 - 3. Anode
 - 4. Cathode
 - 5. Drain
 - 6. Drain

■ 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 | -20 | | | V |
| Drain-source cutoff current | IDSS | VDS = -20 V, VGS = 0 | | | -1.0 | μA |
| Gate-source cutoff current | IGSS | VGS = ±10 V, VDS = 0 | | | ±10 | μA |
| Gate threshold voltage | VTH | ID = -1.0 mA, VDS = -10 V | -0.45 | -1.0 | -1.5 | V |
| Drain-source ON resistance *1 | RDS(on) | ID = -0.5 A, VGS = -4.0 V | | 300 | 420 | mΩ |
| | | ID = -0.5 A, VGS = -2.5 V | | 420 | 560 | |
| Forward transfer admittance *1 | Yfs | ID = -0.5 A, VDS = -10 V, f = 1 kHz | 1.0 | | | S |
| Short-circuit input capacitance (Common source) | Ciss | VDS = -10 V, VGS = 0 V, f = 1 MHz | | 80 | | pF |
| Short-circuit output capacitance (Common source) | Coss | | | 12 | | |
| Reverse transfer capacitance (Common source) | Crss | | | 12 | | |
| Turn-on delay time *2 | td(on) | VDD = -15 V, VGS = 0 to -4.0 V | | 12 | | ns |
| Rise time *2 | tr | ID = -0.5 A | | 6 | | |
| Turn-off delay time *2 | td(off) | VDD = -15 V, VGS = -4.0 to 0 V | | 17 | | ns |
| Fall time *2 | tf | ID = -0.5 A | | 10 | | |

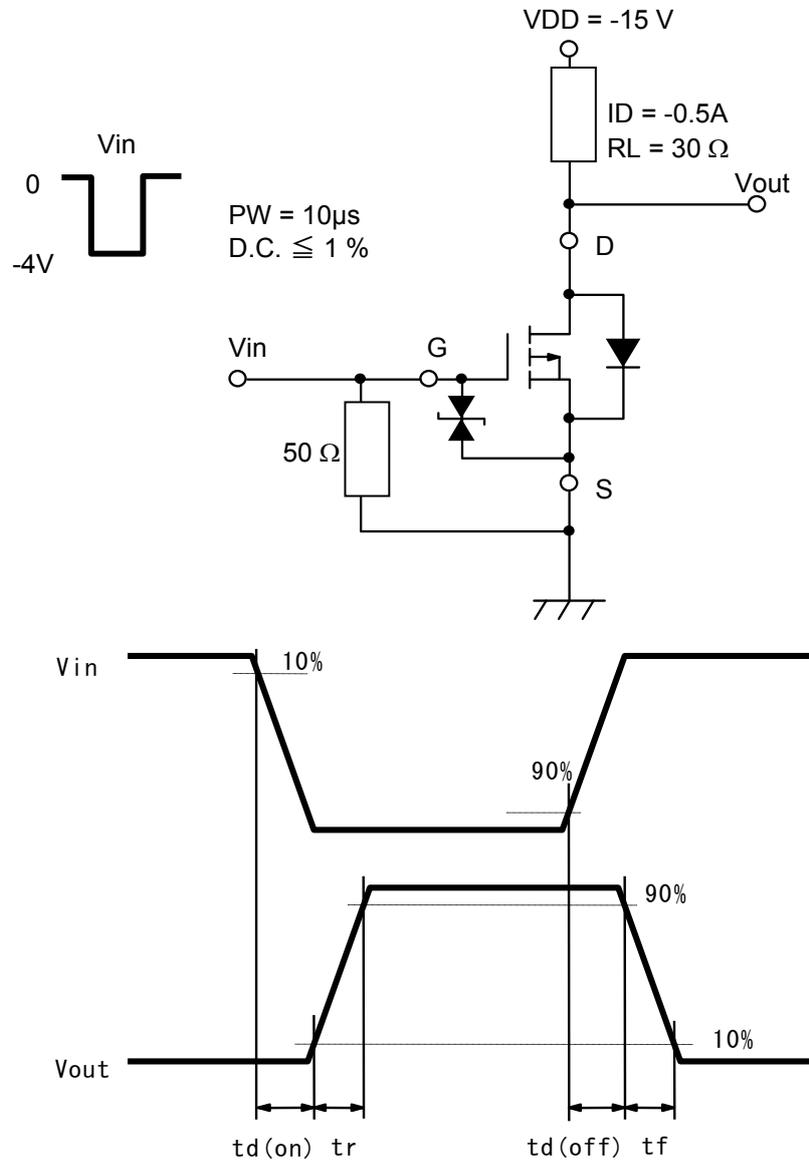
Note: 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 Measuring methods for transistors.
2. *1 Pulse measurement
*2 Measurement circuit for Turn-on Delay Time/Rise Time/Turn-off Delay Time/Fall Time

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 |

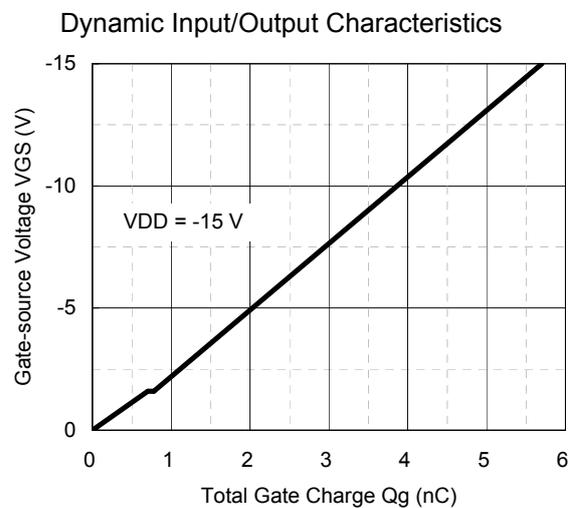
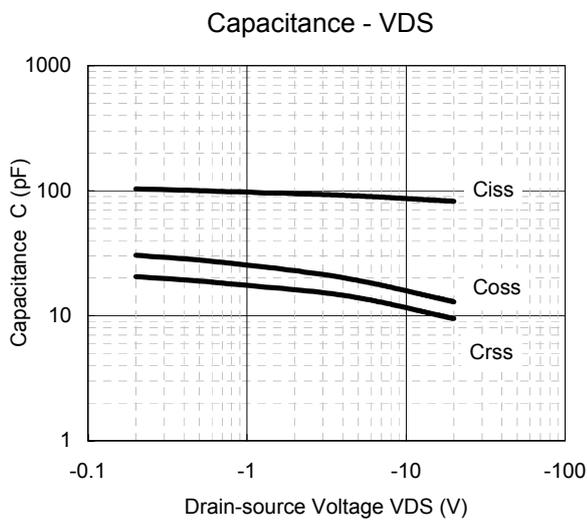
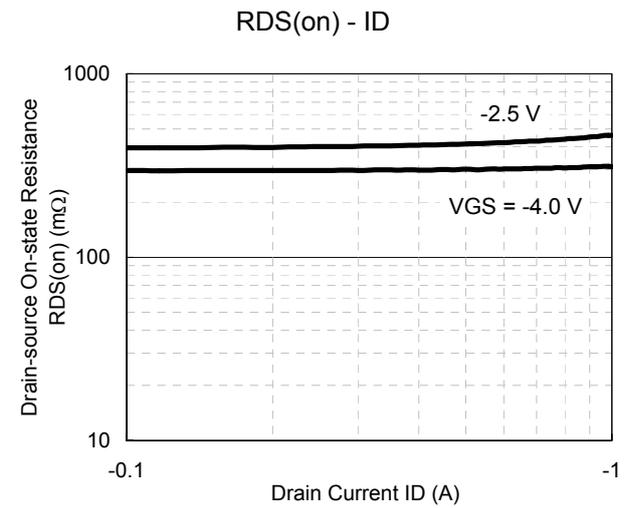
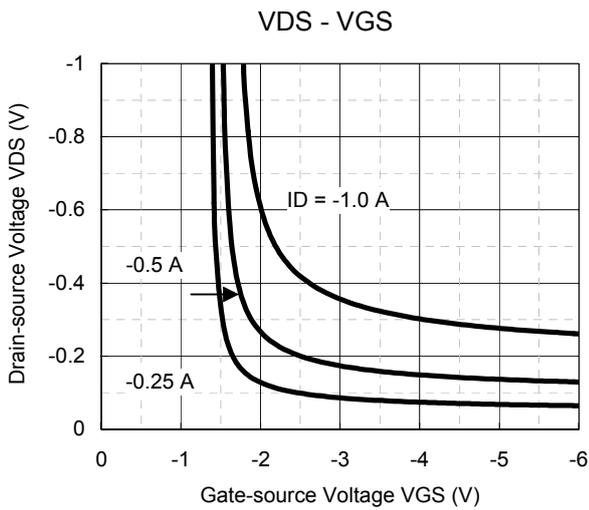
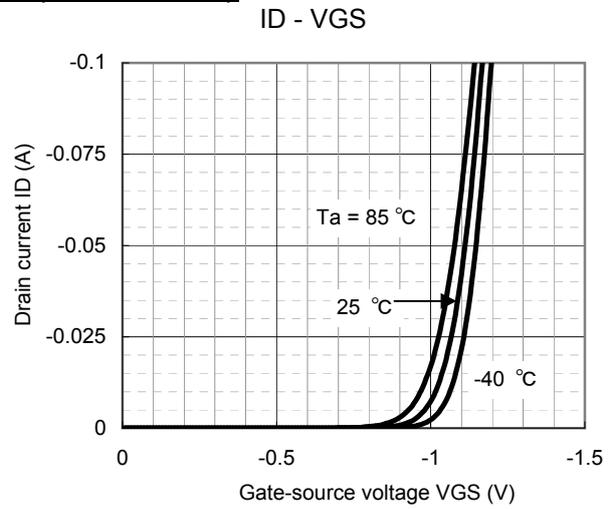
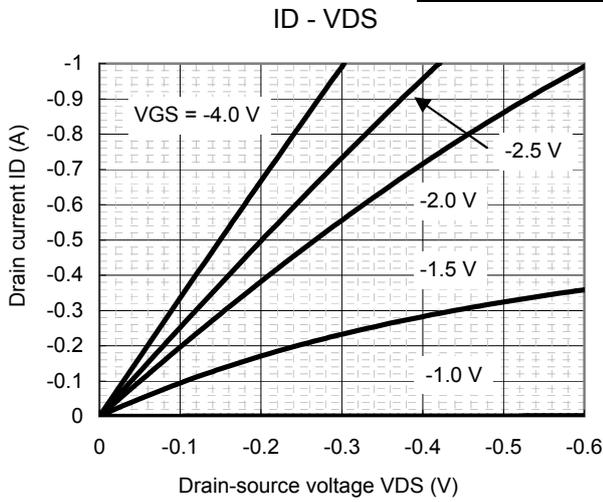
Note: Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7031 Measuring methods for diodes.

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



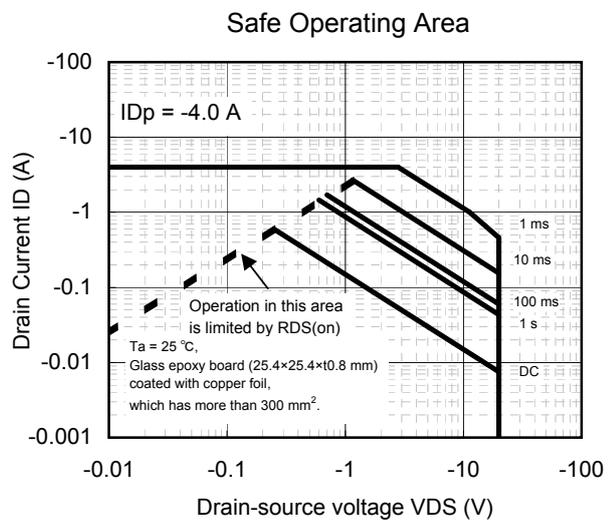
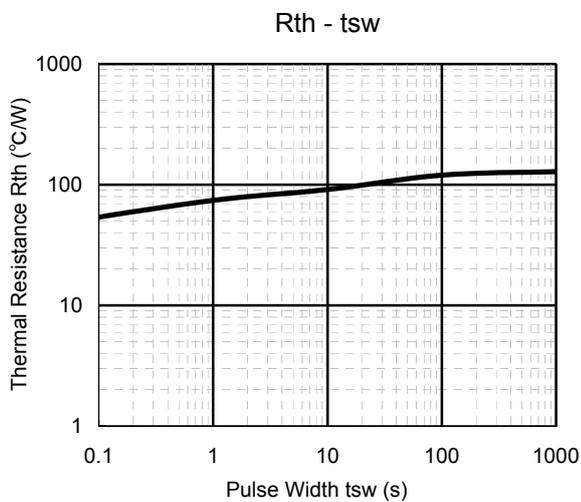
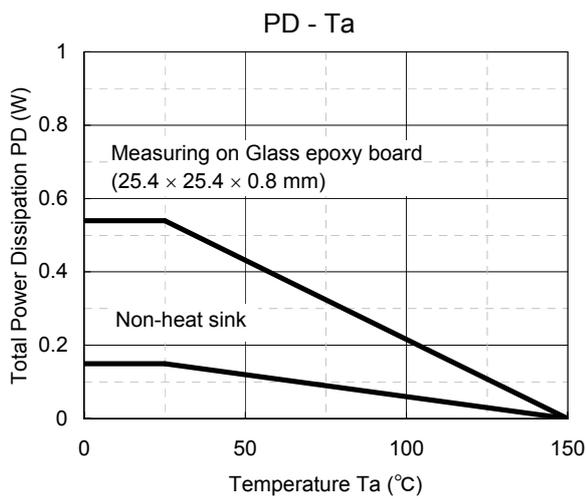
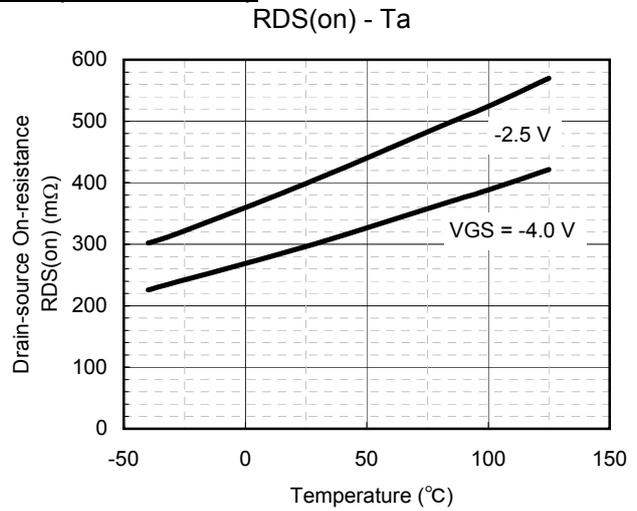
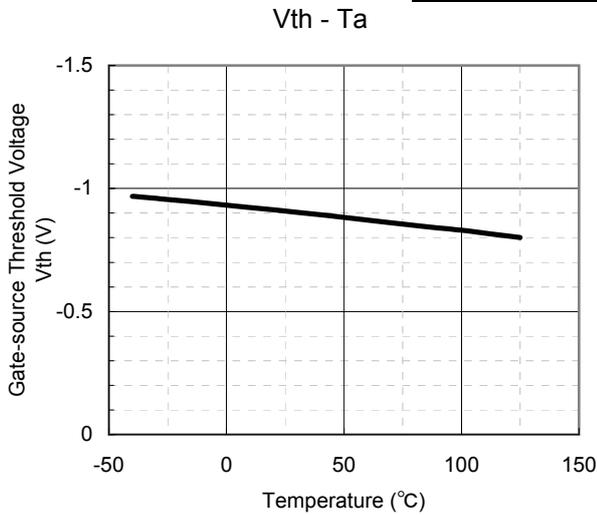


Technical Data (reference)



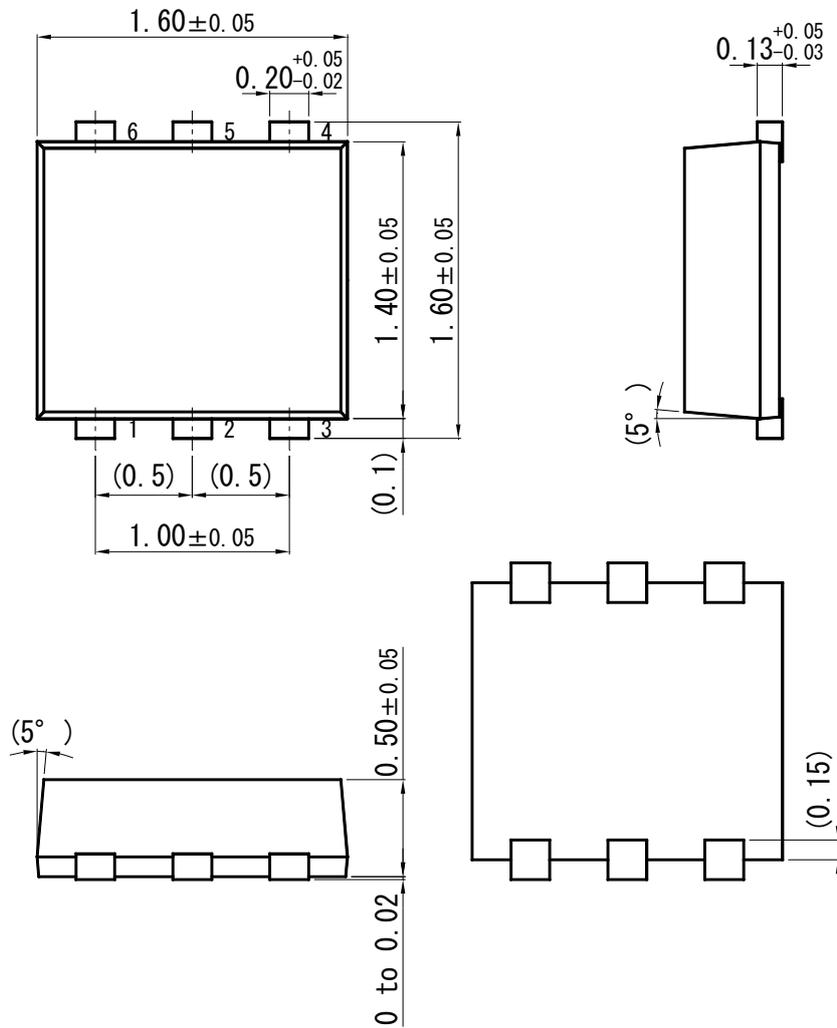


Technical Data (reference)

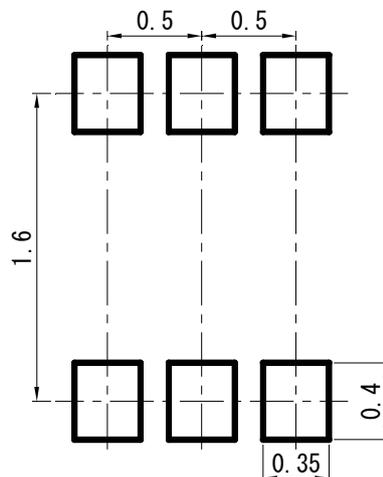


WSSMini6-F1

Unit: mm



■ Land Pattern (Reference) (Unit : mm)



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