

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

SK8603180L

Silicon N-channel MOSFET

For Load-switching / For DC-DC Converter

■ Features

- Low Drain-source On-state Resistance : $R_{DS(on)}$ typ = 6.7 mΩ (VGS = 4.5 V)
- Halogen-free / RoHS compliant
(EU RoHS / UL-94 V-0 / MSL : Level 1 compliant)

■ Marking Symbol : 18

■ Packaging

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

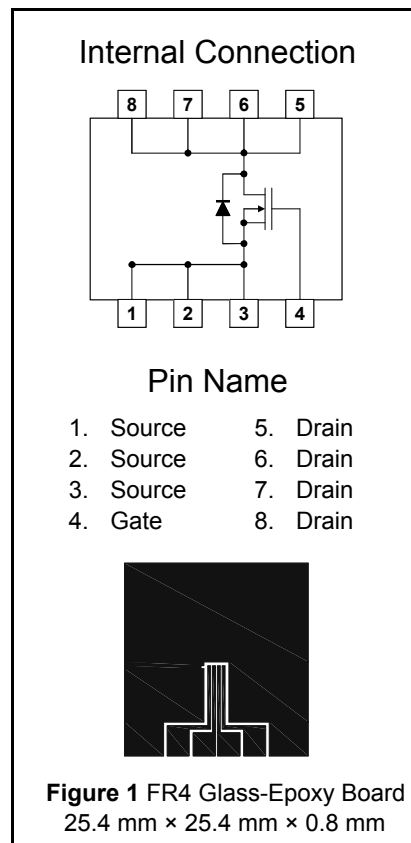
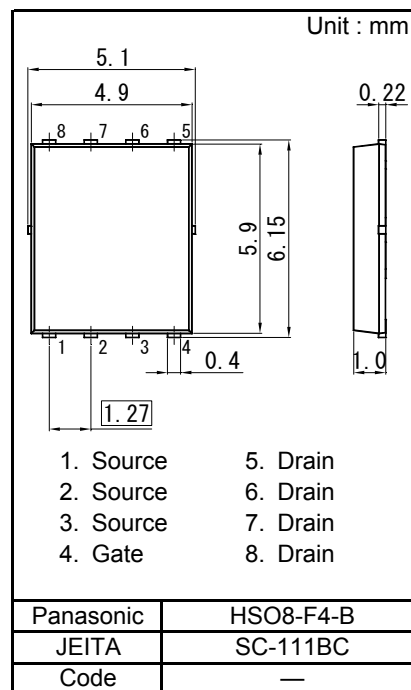
■ Absolute Maximum Ratings Ta = 25 °C

| Parameter | Symbol | Rating | Unit | |
|--|--------------------|------------------------------------|------|--------|
| Drain to Source Voltage | VDS | 30 | V | |
| Gate to Source Voltage | VGS | ±20 | | |
| Drain Current | ID | Ta = 25 °C, t = 10 s ^{*1} | 20 | A |
| | | Ta = 25 °C, DC ^{*1} | 15 | |
| | | Tc = 25 °C | 39 | |
| | | Pulsed, Tch < 150 °C ^{*2} | 60 | |
| Total Power Dissipation | PD | Ta = 25 °C, DC ^{*1} | 2.4 | W |
| | | Tc = 25 °C | 19 | |
| Thermal Resistance | Channel to Ambient | Rth(ch-a) | 51 | °C / W |
| | Channel to Case | Rth(ch-c) | 6.6 | |
| Channel Temperature | Tch | 150 | °C | |
| Operating ambient temperature | Topr | -40 to +85 | | |
| Storage Temperature Range | Tstg | -55 to +150 | | |
| Avalanche Current (Single pulse) ^{*3} | IAR | 10 | A | |
| Avalanche Energy (Single pulse) ^{*3} | EAR | 12 | mJ | |

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

*3 VDD = 24 V, VGS = 10 to 0 V, L = 0.1 mH, Tch = 25 °C (initial)



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

Static Characteristics

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|----------------------------------|----------|--------------------------|-----|-----|-----|------|
| Drain-source Breakdown Voltage | VDSS | ID = 1 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 = 1.45 mA, VDS = 10 V | 1.3 | | 3 | V |
| Drain-source On-state Resistance | RDS(on)1 | ID = 10 A, VGS = 10 V | | 5.1 | 7.1 | mΩ |
| | RDS(on)2 | ID = 10 A, VGS = 4.5 V | | 6.7 | 9.8 | |

Dynamic Characteristics

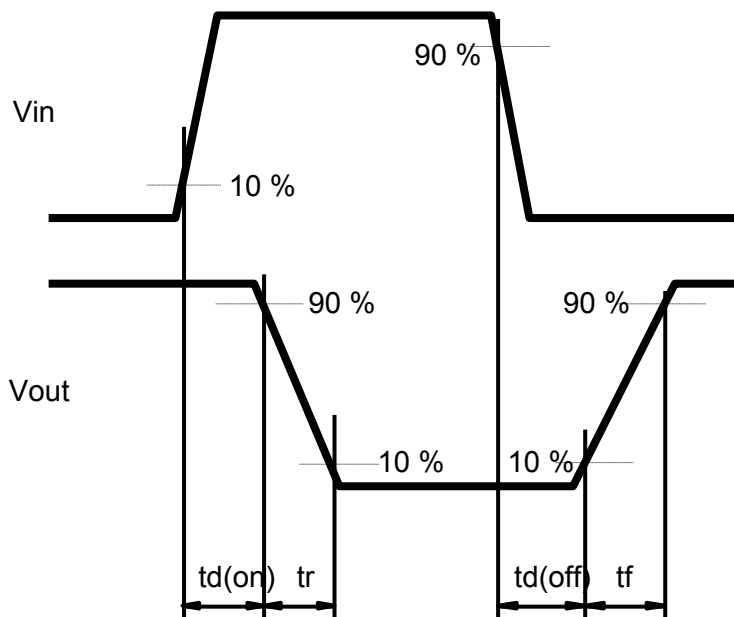
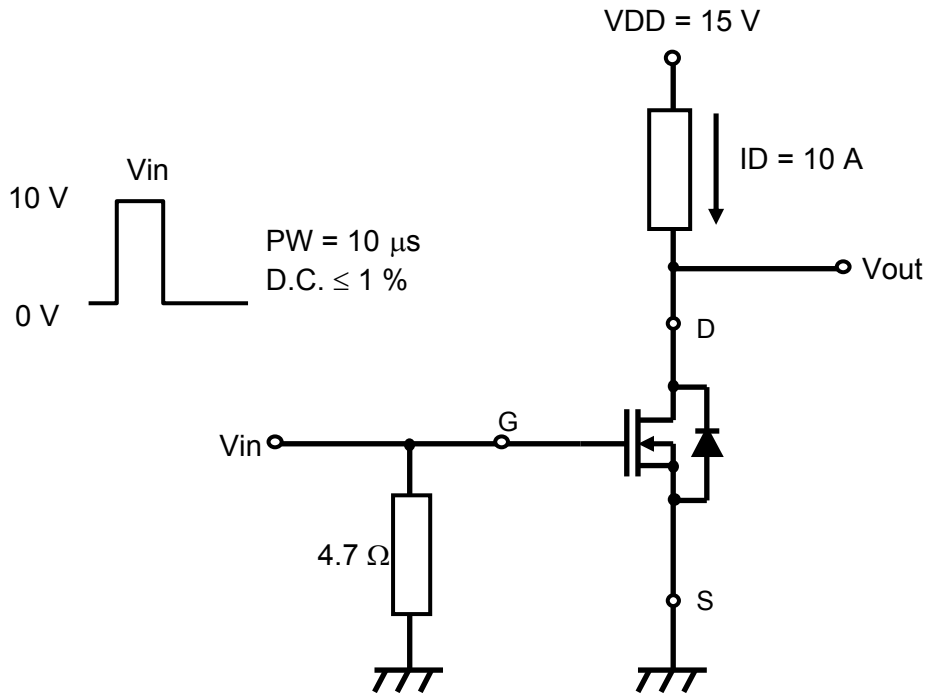
| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|-----------------------------------|---------|---|-----|-------|-------|------|
| Input Capacitance | Ciss | VDS = 10 V, VGS = 0 V f = 1 MHz | | 1 200 | 1 680 | pF |
| Output Capacitance | Coss | | | 140 | 196 | |
| Reverse Transfer Capacitance | Crss | | | 100 | 160 | |
| Turn-on Delay Time ^{*1} | td(on) | VDD = 15 V, VGS = 0 to 10 V | | 8 | | ns |
| Rise Time ^{*1} | tr | ID = 10 A | | 6 | | |
| Turn-off Delay Time ^{*1} | td(off) | VDD = 15 V, VGS = 10 to 0 V | | 39 | | ns |
| Fall Time ^{*1} | tf | ID = 10 A | | 6 | | |
| Total Gate Charge | Qg | VDD = 15 V, VGS = 0 to 4.5 V ID = 10 A | | 9.2 | | nC |
| Gate to Source Charge | Qgs | | | 3 | | |
| Gate to Drain Charge | Qgd | | | 3.5 | | |
| Gate resistance | rg | f = 5 MHz | | 1.4 | 3 | Ω |

Body Diode Characteristic

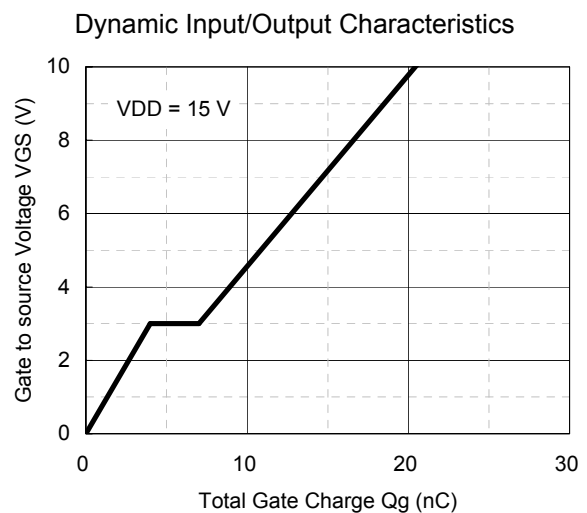
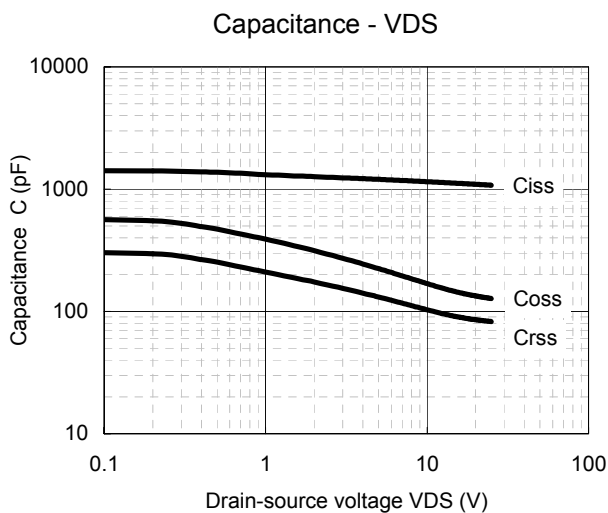
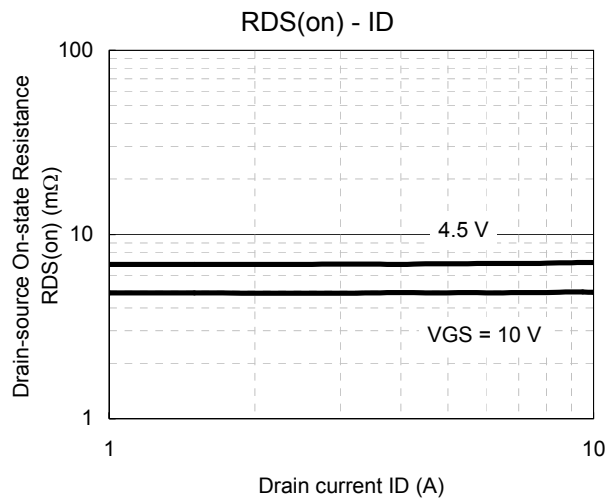
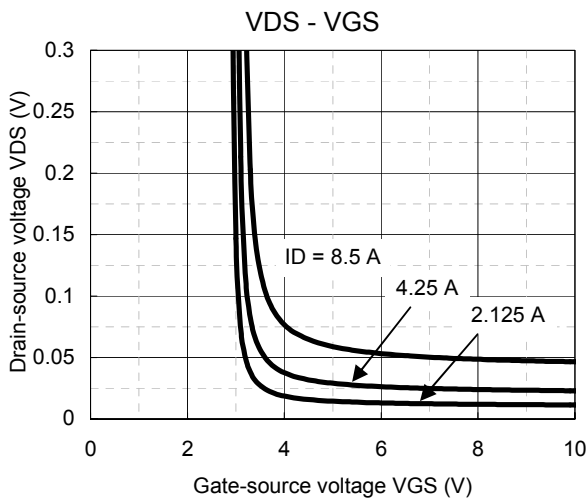
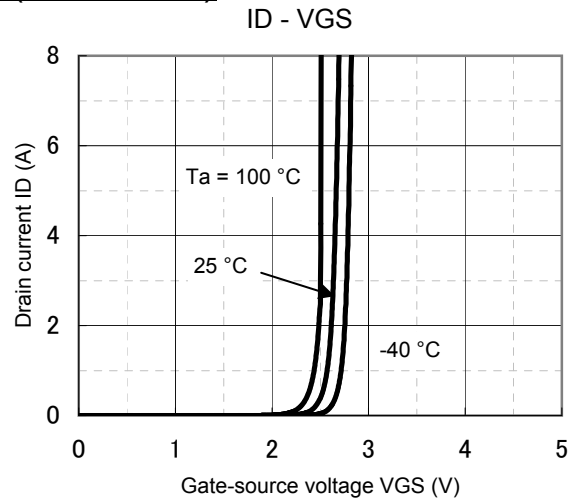
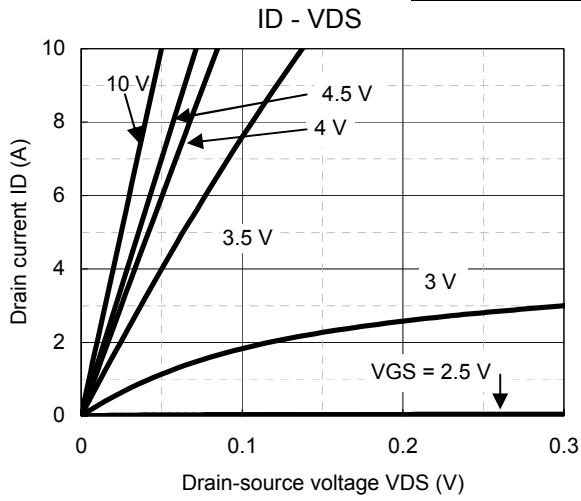
| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|-----------------------|--------|----------------------|-----|-----|-----|------|
| Diode Forward Voltage | VSD | IS = 10 A, VGS = 0 V | | 0.8 | 1.2 | V |

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

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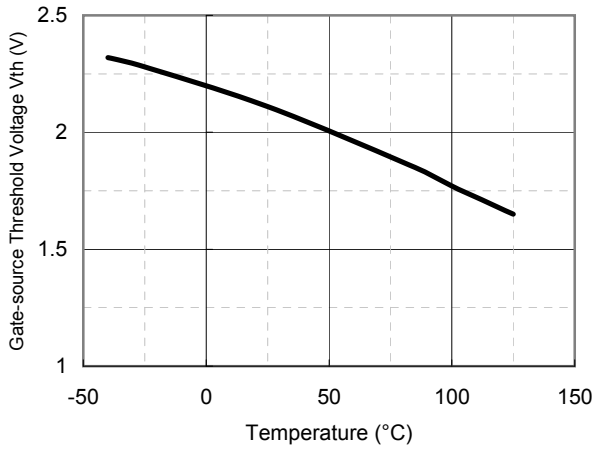


Technical Data (reference)

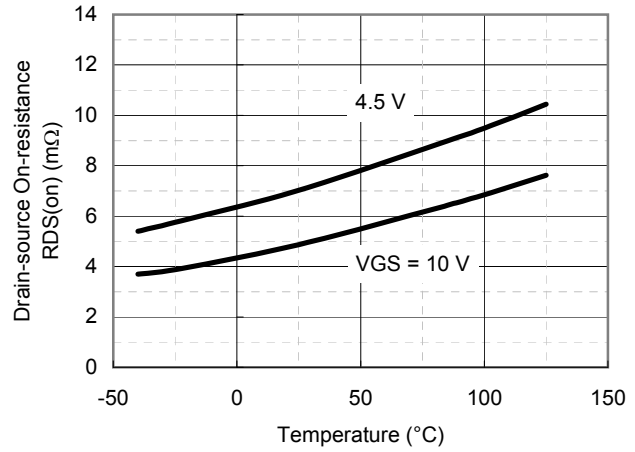


Technical Data (reference)

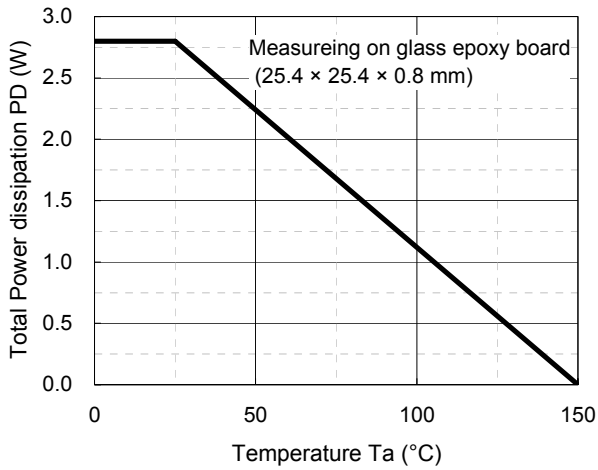
Vth - Ta



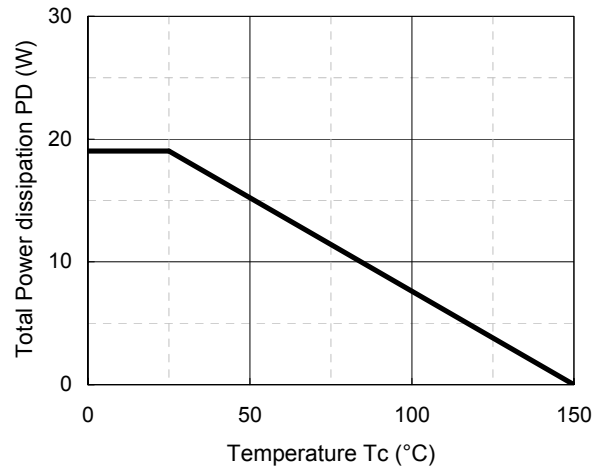
RDS(on) - Ta



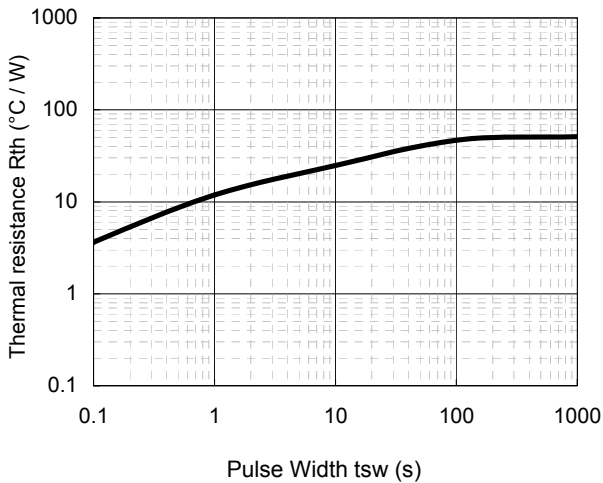
PD - Ta



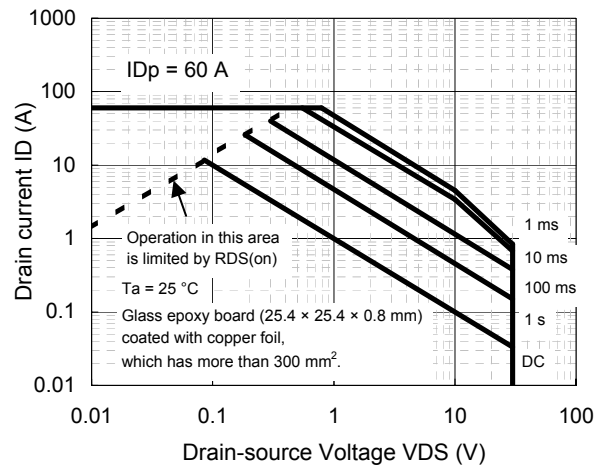
PD - Tc



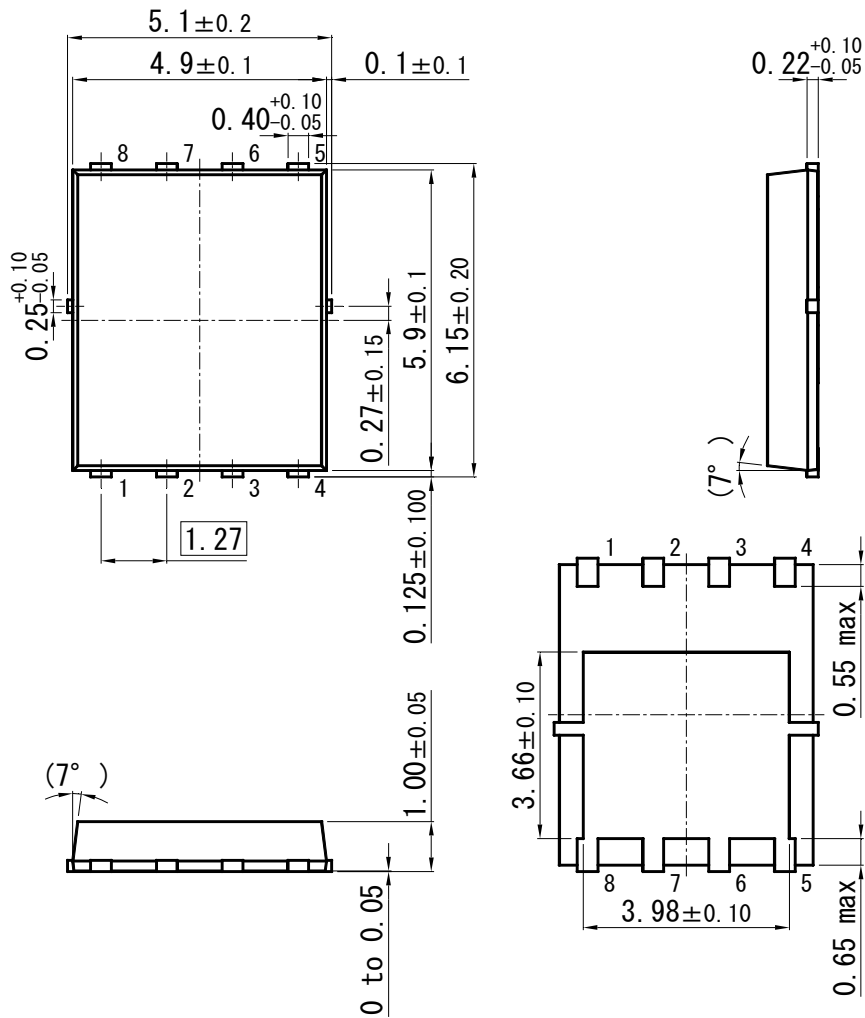
Rth - tsw



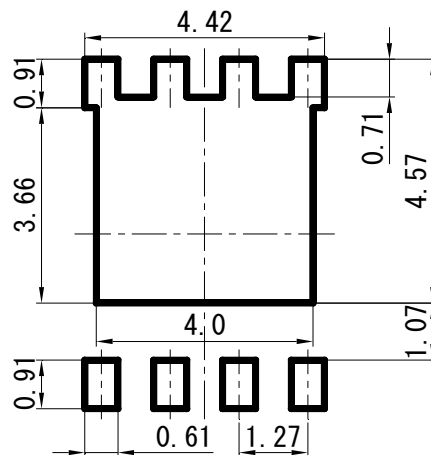
Safe Operating Area



HSO8-F4-B



■ Land Pattern (Reference) (Unit : mm)



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