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**SK8403180L**

Silicon N-channel MOS FET

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)

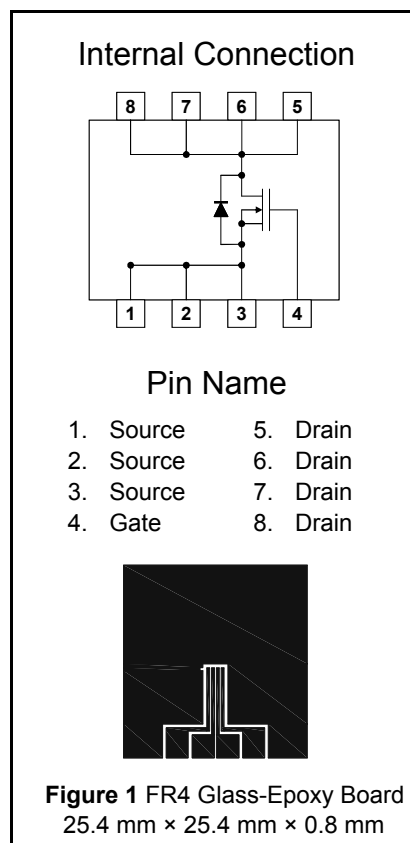
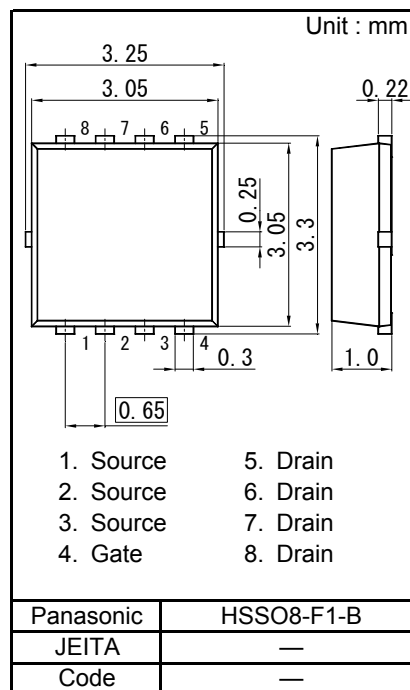
■ Absolute Maximum Ratings Ta = 25 °C

| 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 <sup>*1</sup> | 17   | A      |
|  |                    | Ta = 25 °C, DC <sup>*1</sup>       | 12   |        |
|  |                    | Tc = 25 °C                         | 39   |        |
|  |                    | Pulsed, Tch < 150 °C <sup>*2</sup> | 51   |        |
| Total Power Dissipation                        | PD                 | Ta = 25 °C, DC <sup>*1</sup>       | 2    | W      |
|  |                    | Tc = 25 °C                         | 19   |        |
| Thermal Resistance                             | Channel to Ambient | Rth(ch-a)                          | 62.5 | °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) <sup>*3</sup> | IAR                | 8.5                                | A    |        |
| Avalanche Energy (Single pulse) <sup>*3</sup>  | EAR                | 9                                  | 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 = 8.5 A, VGS = 10 V   |     | 5.1 | 7.1 | mΩ   |
|                                  | RDS(on)2 | ID = 8.5 A, VGS = 4.5 V  |     | 6.7 | 9.8 |      |

Dynamic Characteristics

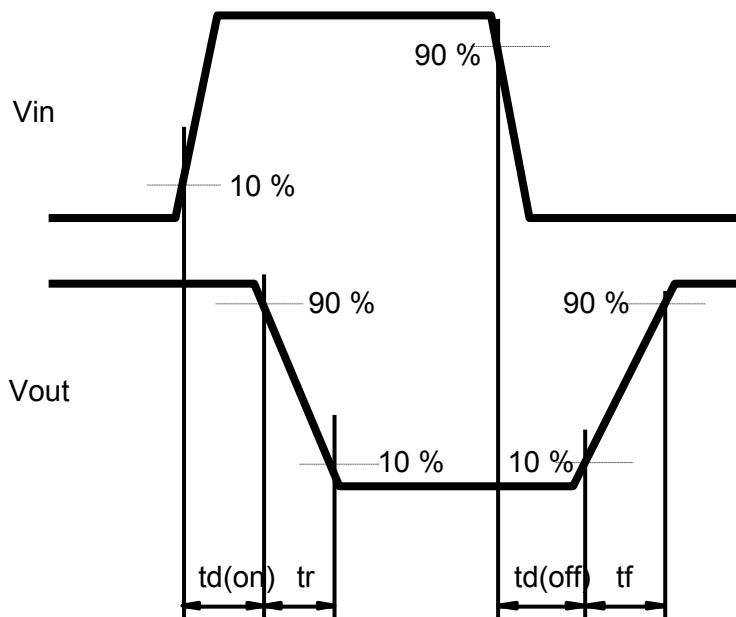
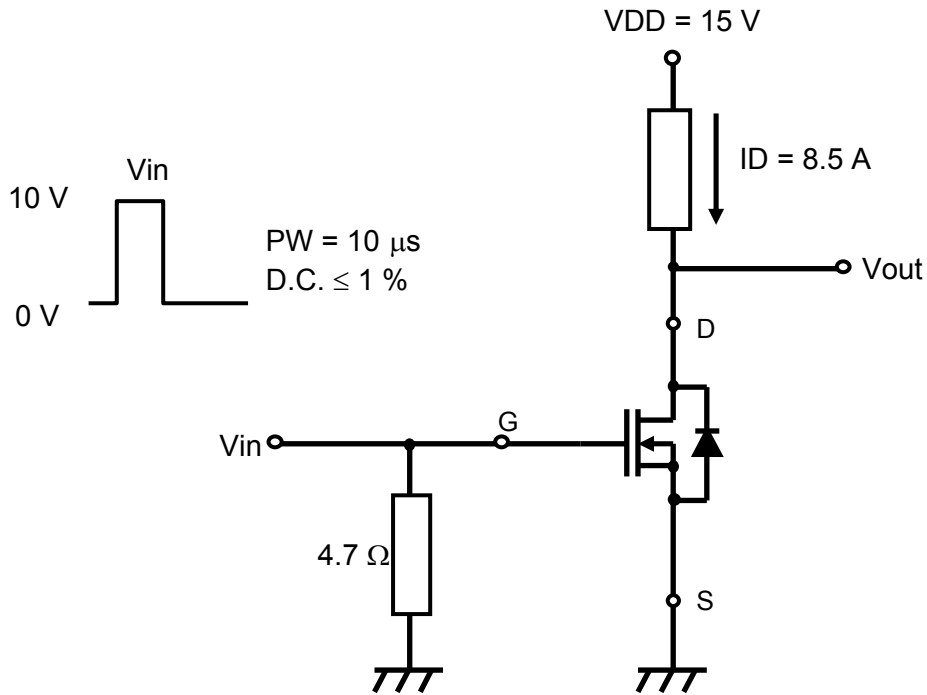
| Parameter                         | Symbol  | Conditions                                 | Min | Typ   | Max   | Unit |
|-----------------------------------|---------|--|-----|-------|-------|------|
| Input Capacitance                 | Ciss    | VDS = 10 V, VGS = 0 V<br>f = 1 MHz         |     | 1 200 | 1 680 | pF   |
| Output Capacitance                | Coss    |  |     | 140   | 200   |      |
| Reverse Transfer Capacitance      | Crss    |  |     | 100   | 160   |      |
| Turn-on Delay Time <sup>*1</sup>  | td(on)  | VDD = 15 V, VGS = 0 to 10 V                |     | 8     |       | ns   |
| Rise Time <sup>*1</sup>           | tr      | ID = 8.5 A                                 |     | 6     |       |      |
| Turn-off Delay Time <sup>*1</sup> | td(off) | VDD = 15 V, VGS = 10 to 0 V                |     | 39    |       | ns   |
| Fall Time <sup>*1</sup>           | tf      | ID = 8.5 A                                 |     | 6     |       |      |
| Total Gate Charge                 | Qg      | VDD = 15 V, VGS = 0 to 4.5 V<br>ID = 8.5 A |     | 10    |       | nC   |
| Gate to Source Charge             | Qgs     |  |     | 3     |       |      |
| Gate to Drain Charge              | Qgd     |  |     | 4     |       |      |
| Gate resistance                   | rg      | f = 5 MHz                                  |     | 1.2   | 3     | Ω    |

Body Diode Characteristic

| Parameter             | Symbol | Conditions            | Min | Typ | Max | Unit |
|-----------------------|--------|-----------------------|-----|-----|-----|------|
| Diode Forward Voltage | VSD    | IS = 8.5 A, VGS = 0 V |     | 0.8 | 1.2 | V    |

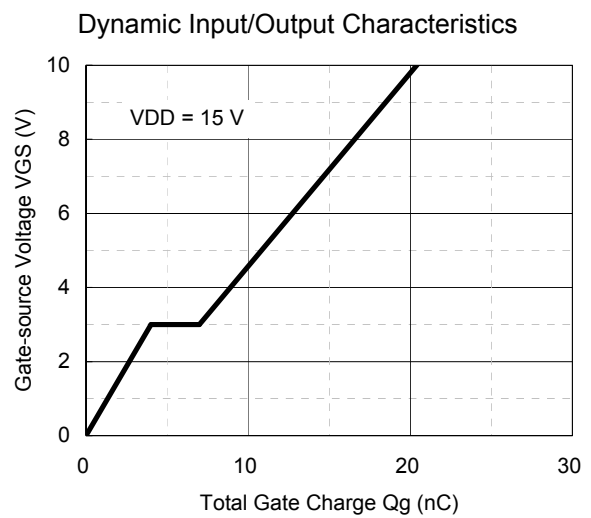
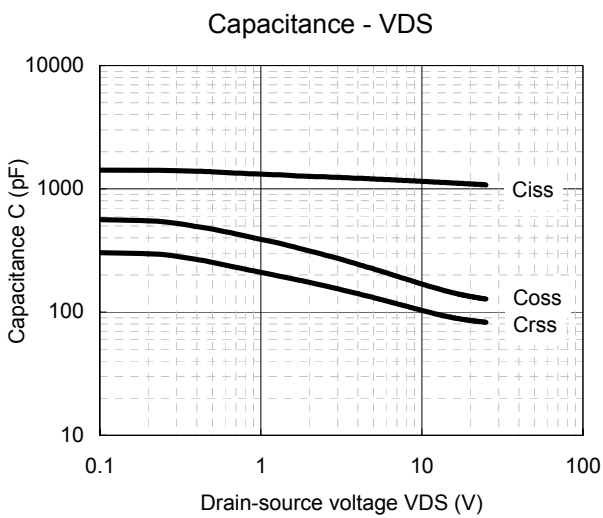
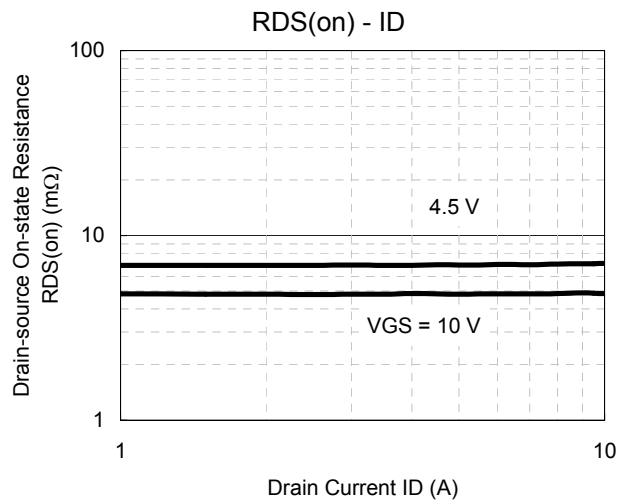
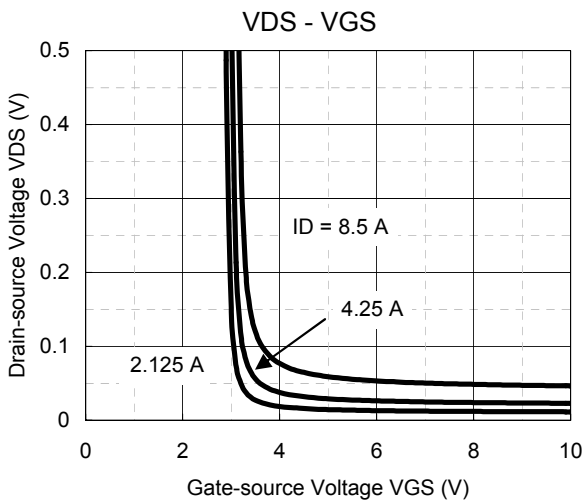
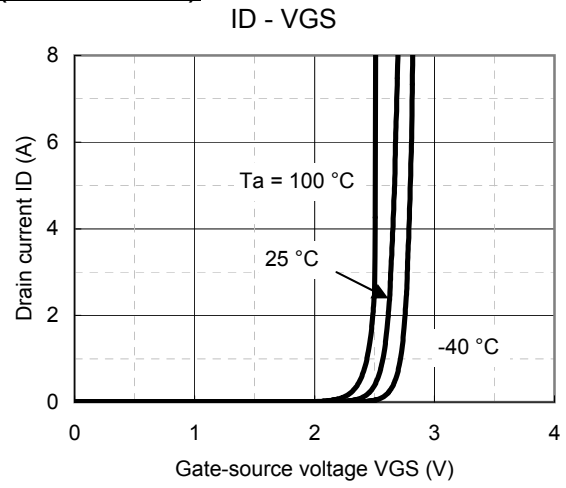
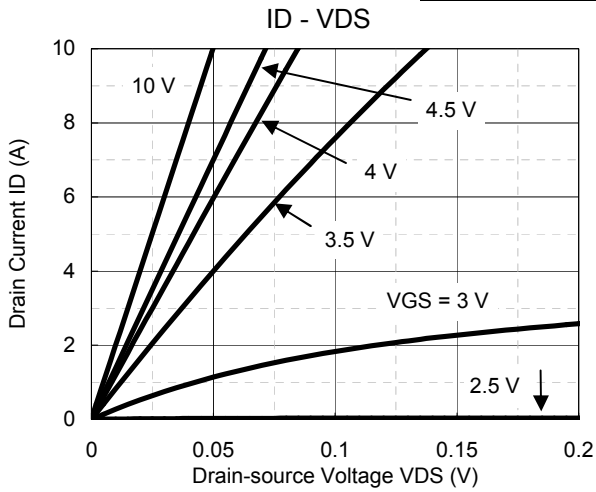
Note : 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 Measuring methods for transistors.  
2. \*1 Measurement circuit for Turn-on Delay Time / Rise Time / Turn-off Delay Time / Fall Time

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



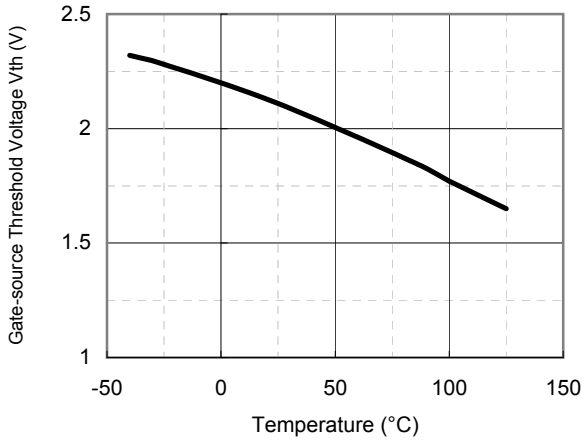


Technical Data ( reference )

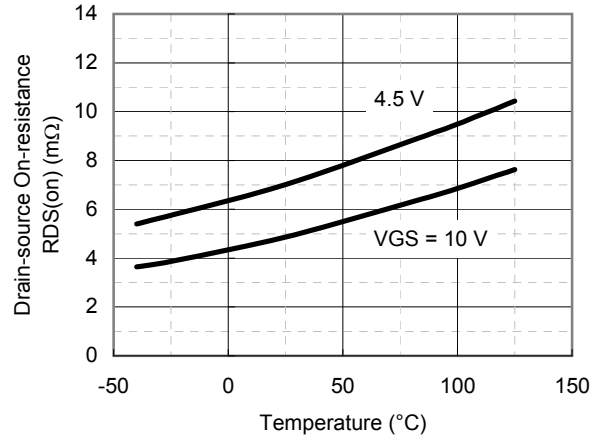


Technical Data ( reference )

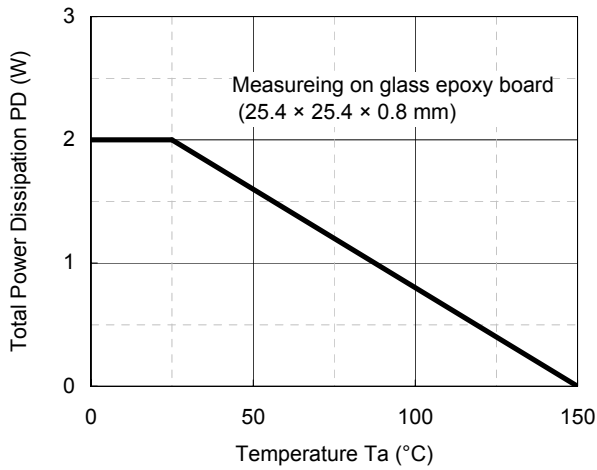
V<sub>th</sub> - T<sub>a</sub>



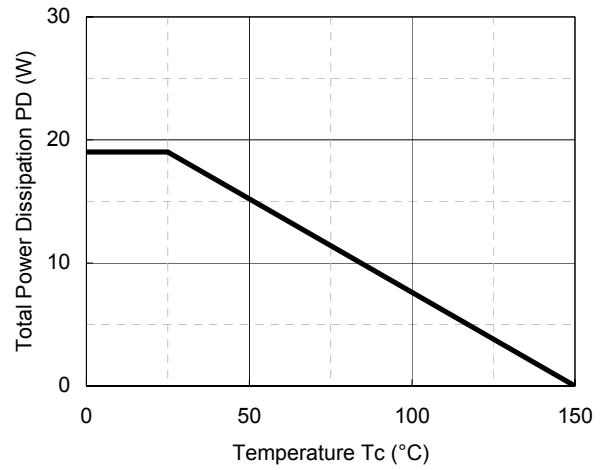
R<sub>DS(on)</sub> - T<sub>a</sub>



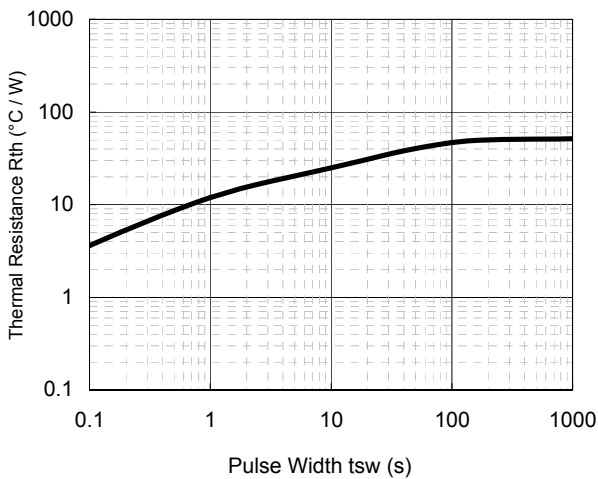
PD - T<sub>a</sub>



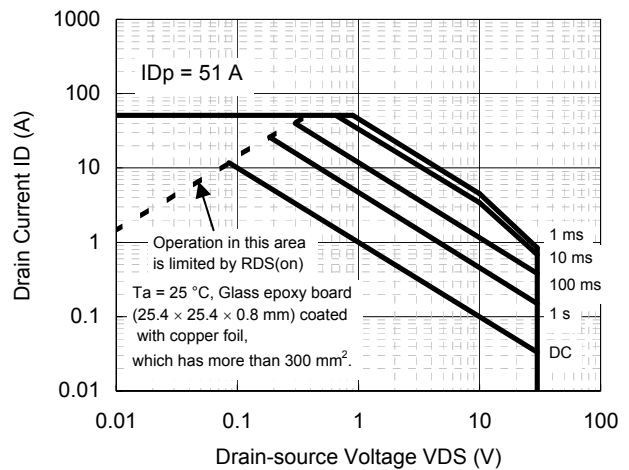
PD - T<sub>c</sub>



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

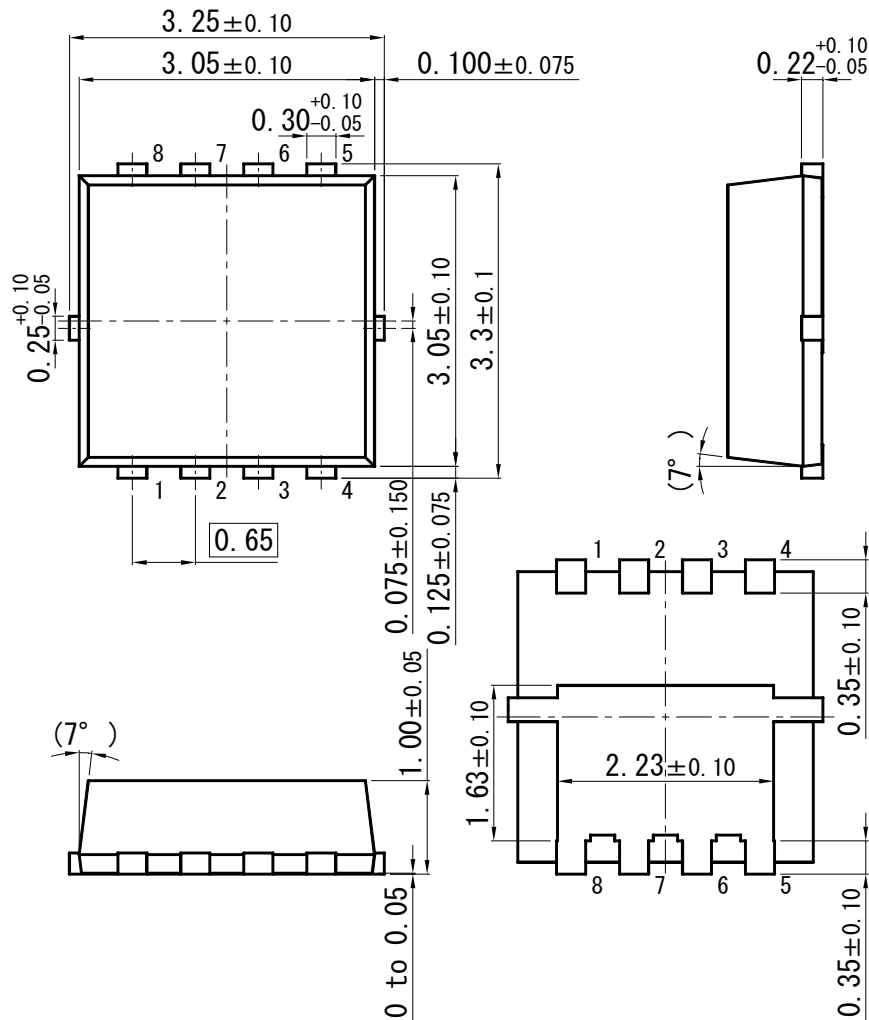


Safe Operating Area

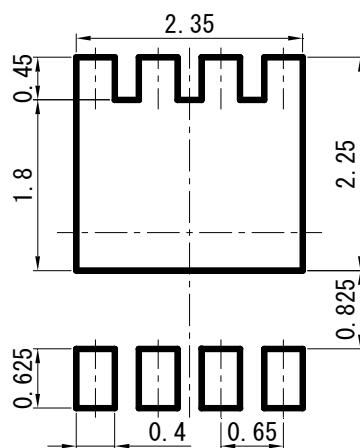


**HSSO8-F1-B**

Unit: mm



■ Land Pattern (Reference) (Unit : mm)



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