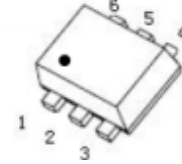
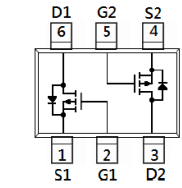


### Features

- $R_{DS(ON)}$  @  $V_{GS} = -10V$ ,  $I_D = -0.5A < 4\Omega$
- $R_{DS(ON)}$  @  $V_{GS} = -4.5V$ ,  $I_D = -0.2A < 6\Omega$
- $R_{DS(ON)}$  @  $V_{GS} = -2.5V$ ,  $I_D = -0.05A < 13\Omega$
- Advanced trench process technology

HF



SOT-563

### Mechanical Data

- Case: SOT-563
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin-Plated Leads, Solderability-per MIL-STD-202, Method 208

### Ordering Information

| Part Number | Package | Shipping Quantity     | Marking Code |
|-------------|---------|-----------------------|--------------|
| BL1025      | SOT-563 | 3000pcs / Tape & Reel | 1025         |

### Maximum Ratings (@ $T_A = 25^\circ C$ unless otherwise specified)

| Parameter                | Symbol    | Value    | Unit |
|--------------------------|-----------|----------|------|
| Drain-Source Voltage     | $V_{DSS}$ | -60      | V    |
| Gate -Source Voltage     | $V_{GSS}$ | $\pm 20$ | V    |
| Continuous Drain Current | $I_D$     | -0.2     | A    |
| Pulsed Drain Current     | $I_{DM}$  | -0.8     | A    |
| Power Dissipation        | $P_D$     | 0.3      | W    |

### Thermal Characteristics

| Parameter                                        | Symbol          | Value      | Unit         |
|--------------------------------------------------|-----------------|------------|--------------|
| Thermal Resistance Junction-to-Air <sup>*1</sup> | $R_{\theta JA}$ | 417        | $^\circ C/W$ |
| Operating Junction Temperature Range             | $T_J$           | -55 ~ +150 | $^\circ C$   |
| Storage Temperature Range                        | $T_{STG}$       | -55 ~ +150 | $^\circ C$   |

### Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

| Symbol                             | Parameter                         | Test Condition                                                                                   | Min. | Typ.  | Max. | Unit |
|------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------|------|-------|------|------|
| Static Characteristics             |                                   |                                                                                                  |      |       |      |      |
| V <sub>DSS</sub>                   | Drain-Source Breakdown Voltage    | V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA                                                    | -60  | -     | -    | V    |
| I <sub>DSS</sub>                   | Drain to Source Leakage Current   | V <sub>DS</sub> = -48V, V <sub>GS</sub> = 0V                                                     | -    | -     | -1   | μA   |
| I <sub>GSS</sub>                   | Gate-body Leakage                 | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V                                                     | -    | -     | ±10  | μA   |
| On Characteristics *2              |                                   |                                                                                                  |      |       |      |      |
| R <sub>DS(ON)</sub>                | Static Drain-Source On-resistance | V <sub>GS</sub> = -10V, I <sub>D</sub> = -0.5A                                                   | -    | 2.4   | 4    | Ω    |
|                                    |                                   | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -0.2A                                                  | -    | 2.65  | 6    |      |
|                                    |                                   | V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -0.05A                                                 | -    | 4.5   | 13   |      |
| V <sub>GS(TH)</sub>                | Gate Threshold Voltage            | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                                      | -1   | -1.5  | -2.5 | V    |
| Dynamic Characteristics *3         |                                   |                                                                                                  |      |       |      |      |
| C <sub>ISS</sub>                   | Input Capacitance                 | V <sub>GS</sub> = 0V<br>V <sub>DS</sub> = -25V<br>f = 1.0MHz                                     | -    | 51    | -    | pF   |
| C <sub>OSS</sub>                   | Output Capacitance                |                                                                                                  | -    | 15    | -    |      |
| C <sub>RSS</sub>                   | Reverse Transfer Capacitance      |                                                                                                  | -    | 2.2   | -    |      |
| Switching Characteristics *3       |                                   |                                                                                                  |      |       |      |      |
| t <sub>d(on)</sub>                 | Turn-on Delay Time                | V <sub>DD</sub> = -25V, I <sub>D</sub> = -0.1A<br>V <sub>GS</sub> = -10V, R <sub>G</sub> = 6Ω *2 | -    | 4.8   | -    | ns   |
| t <sub>r</sub>                     | Turn-on Rise Time                 |                                                                                                  | -    | 19    | -    |      |
| t <sub>d(off)</sub>                | Turn-Off Delay Time               |                                                                                                  | -    | 52    | -    |      |
| t <sub>f</sub>                     | Turn-Off Fall Time                |                                                                                                  | -    | 32    | -    |      |
| Q <sub>g</sub>                     | Total Gate Charge                 | V <sub>DD</sub> = -25V                                                                           | -    | 1.1   | -    | nC   |
| Q <sub>gs</sub>                    | Gate-Source Charge                | I <sub>D</sub> = -0.1A                                                                           | -    | 0.3   | -    |      |
| Q <sub>gd</sub>                    | Gate-Drain Charge                 | V <sub>GS</sub> = -4.5V                                                                          | -    | 0.2   | -    |      |
| Source-Drain Diode Characteristics |                                   |                                                                                                  |      |       |      |      |
| V <sub>SD</sub>                    | Diode Forward Voltage             | I <sub>S</sub> = -0.5A, V <sub>GS</sub> = 0V                                                     | -    | -0.95 | -1.3 | V    |
| I <sub>S</sub>                     | Diode Continuous Forward Current  |                                                                                                  | -    | -     | -0.2 | A    |

Notes:

- 1、Surface mounted on a 1 inch square pad of copper
- 2、Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$
- 3、Guaranteed by design, not subject to production testing

Ratings and Characteristics Curves (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)

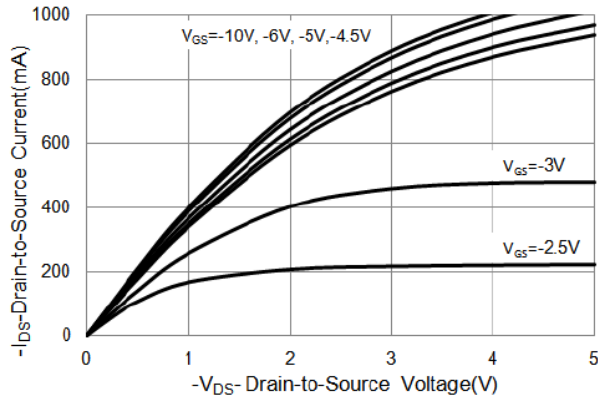


Fig 1 On-Region Characteristics

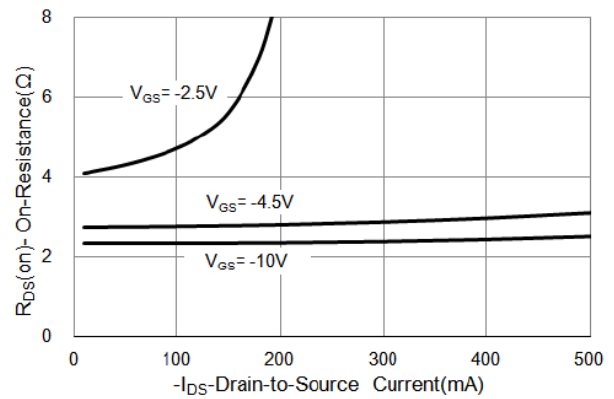


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

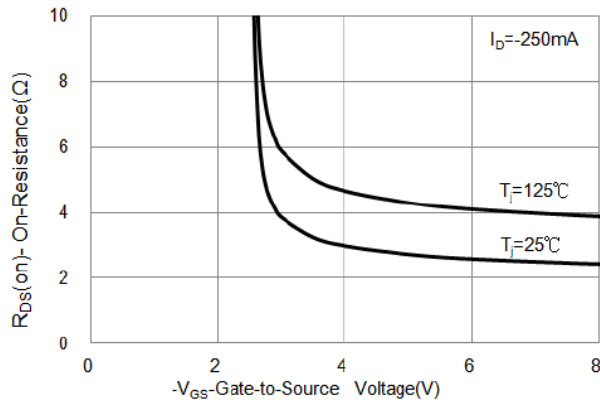


Fig 3 On-Resistance vs. Gate-Source Voltage

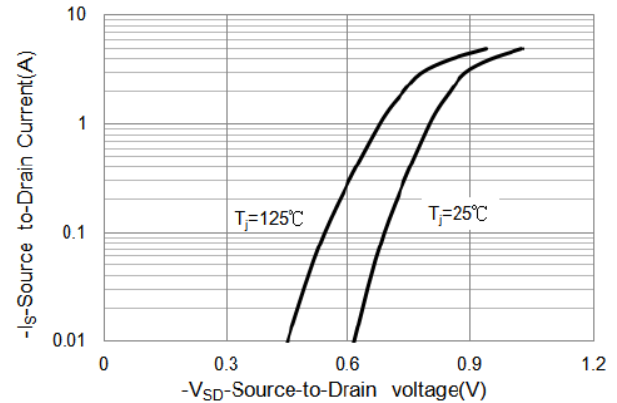


Fig 4 Body-Diode Characteristics

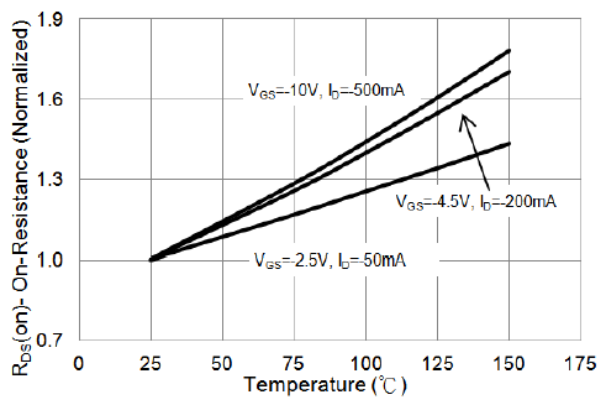


Fig 5 On-Resistance vs. Junction Temperature

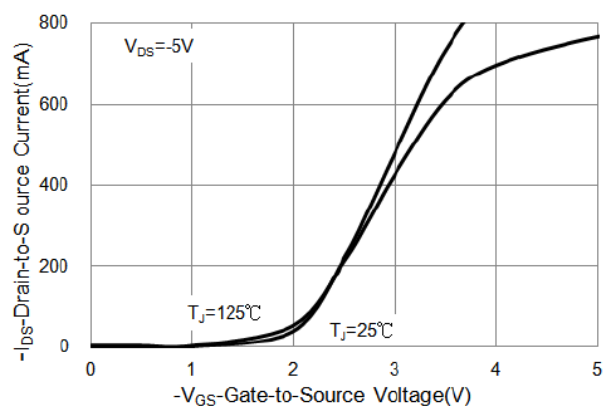


Fig 6 Transfer Characteristics

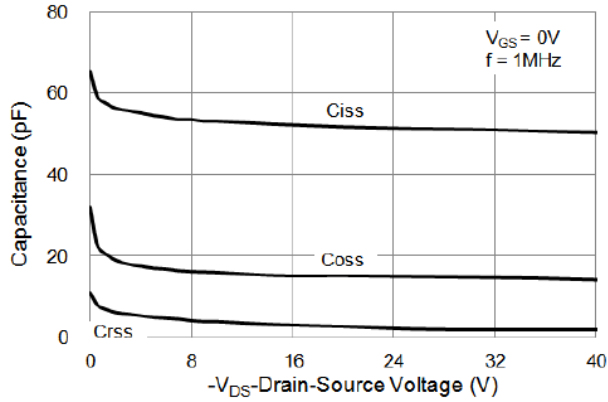


Fig 7 Capacitance Characteristics

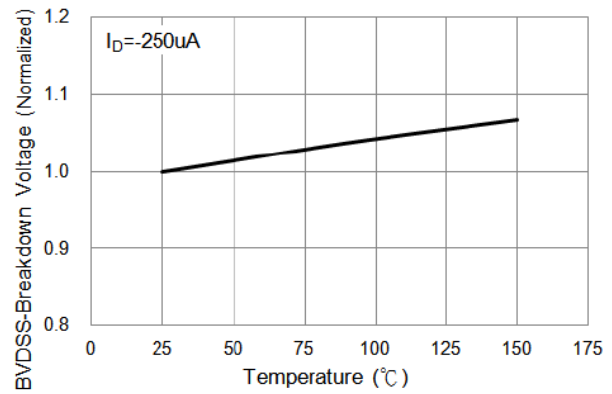


Fig 8 Drain-Source vs. Junction Temperature

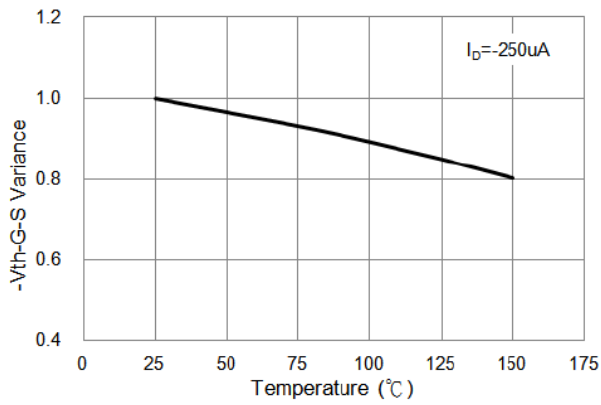
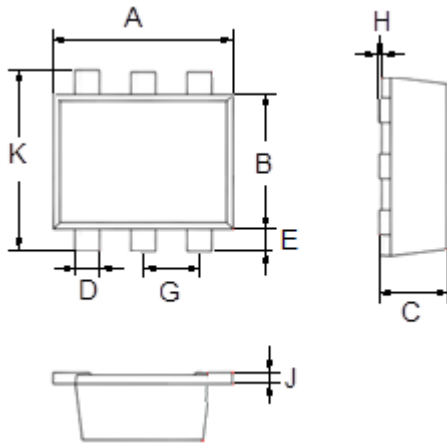


Fig 9 Gate Voltage vs. Junction Temperature

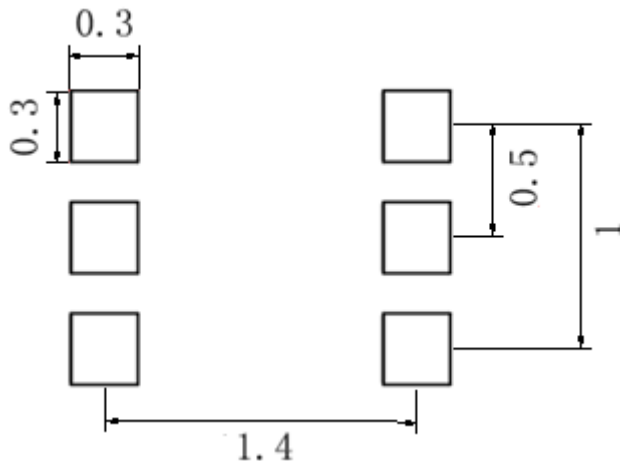
**Package Outline Dimensions** (Unit: mm)



| SOT-563   |       |       |
|-----------|-------|-------|
| Dimension | Min.  | Max.  |
| A         | 1.500 | 1.700 |
| B         | 1.100 | 1.300 |
| C         | 0.525 | 0.600 |
| D         | 0.170 | 0.270 |
| E         | 0.100 | 0.300 |
| G         | 0.450 | 0.550 |
| H         | 0.000 | 0.050 |
| J         | 0.090 | 0.160 |
| K         | 1.500 | 1.700 |

**Mounting Pad Layout** (Unit: mm)

**SOT-563**



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