

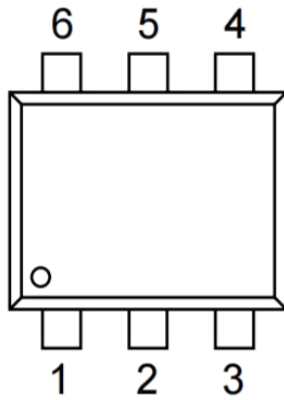
### Product Summary

- $V_{DS}$  30 V
- $I_{DS}$  100mA
- $R_{DS(ON)}$  (at  $V_{GS}=4.5V$ )  $\leq 3.6\Omega$
- $R_{DS(ON)}$  (at  $V_{GS}=2.5V$ )  $\leq 6.0\Omega$

### Application

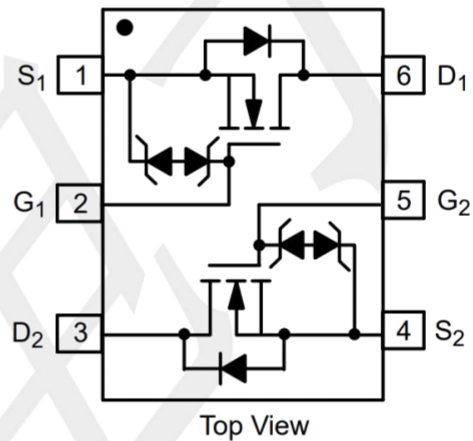
- Reverse Battery protection
- Load switch
- Power management
- Motor Control

### Package and Pin Configuration



SOT-563

### Circuit diagram



Top View

### Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                              | SYMBOL     | LIMIT       | UNIT |
|--|------------|-------------|------|
| Drain-Source Voltage                   | $V_{DS}$   | 30          | V    |
| Gate-Source Voltage                    | $V_{GS}$   | $\pm 20$    | V    |
| Continuous Drain Current               | $I_D$      | 100         | mA   |
| Pulsed Drain Current (t = 100 $\mu$ s) | $I_{DM}$   | 400         | mA   |
| Total Power Dissipation                | $P_{DTOT}$ | 150         | mW   |
| Operating Junction Temperature Range   | $T_J$      | -55 to +150 | °C   |
| Storage Temperature Range              | $T_{stg}$  | -55 to +150 | °C   |

### Thermal Characteristic

| PARAMETER                              | Symbol     | Value | Unit |
|--|------------|-------|------|
| Junction-to-Ambient Thermal Resistance | $R_{thJA}$ | 833   | °C/W |

Note : When mounted on 1" square PCB (FR4 material).

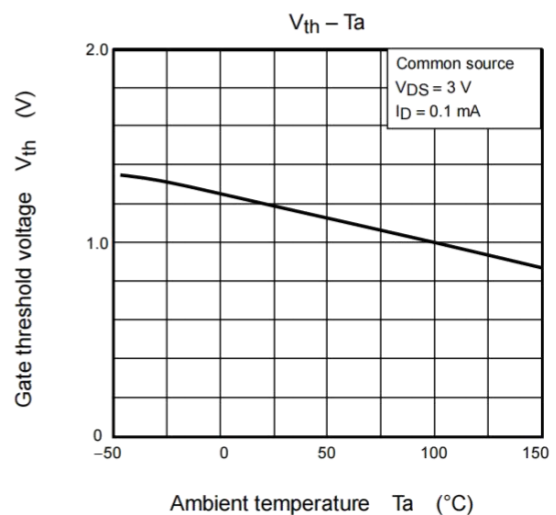
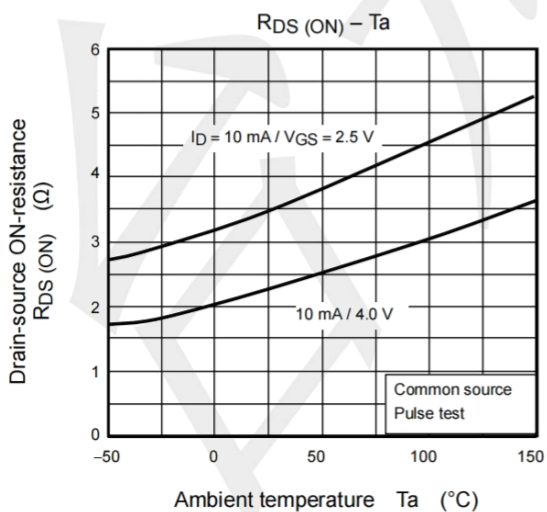
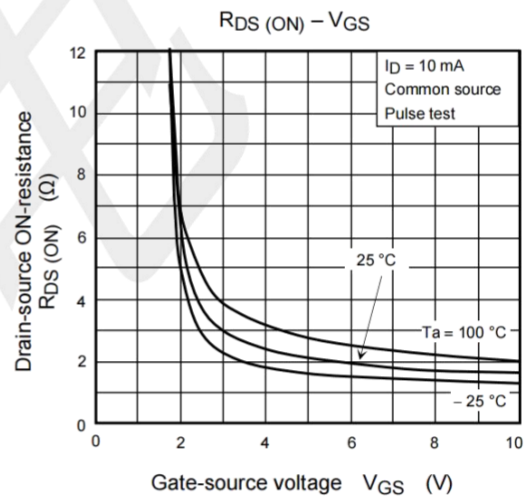
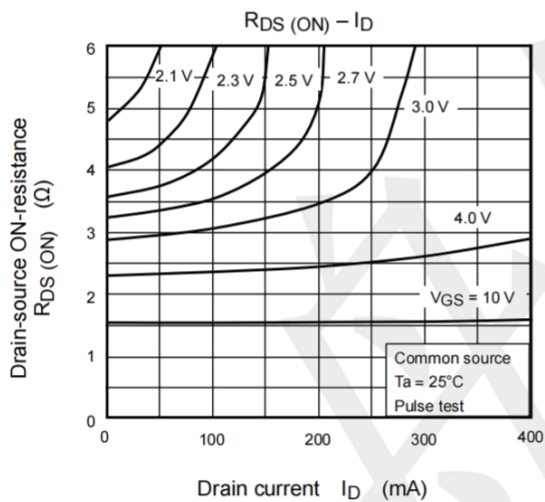
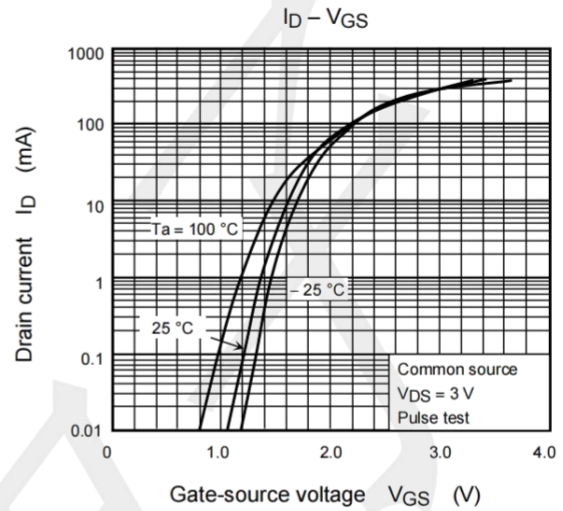
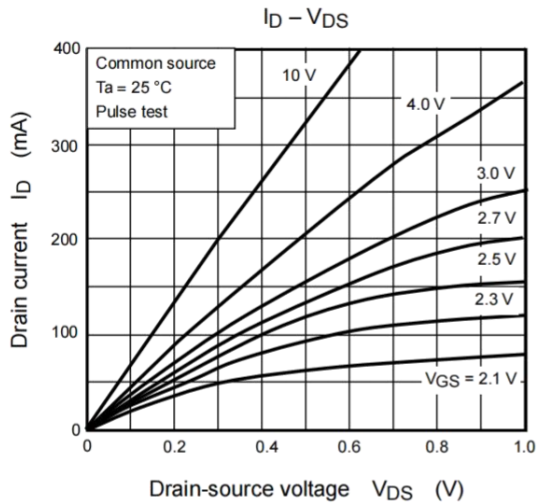
### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER  | CONDITIONS   | SYMBOL              | MIN | TYP  | MAX | UNIT |
|--|--|---------------------|-----|------|-----|------|
| <b>Static</b>  |  |                     |     |      |     |      |
| Drain-Source Breakdown Voltage                                 | V <sub>GS</sub> =0V, I <sub>D</sub> = 0.1mA  | BV <sub>DSS</sub>   | 30  | --   | --  | V    |
| Gate-Source Threshold Voltage                                  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = 0.1mA                                    | V <sub>GS(th)</sub> | 0.8 | --   | 1.5 | V    |
| Gate-Source Leakage  | V <sub>DS</sub> =0V, V <sub>GS</sub> = ±16V  | I <sub>GSS</sub>    | --  | --   | ±10 | μA   |
| Zero Gate Voltage Drain Current                                | V <sub>DS</sub> = 30V, V <sub>GS</sub> =0V   | I <sub>DSS</sub>    | --  | --   | 1   | μA   |
|  | V <sub>DS</sub> = 30V, T <sub>J</sub> =125°C   |                     | --  | --   | 50  | μA   |
| Drain-Source On-State Resistance (Note 1)                      | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 10mA  | R <sub>DS(on)</sub> | --  | 2.3  | 3.6 | Ω    |
|  | V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 10mA  |                     | --  | 3.5  | 6.0 |      |
| Forward Transconductance (Note 2)                              | V <sub>DS</sub> = 3V, I <sub>D</sub> = 10mA  | g <sub>fs</sub>     | --  | 40   | --  | S    |
| <b>Dynamic (Note 2)</b>  |  |                     |     |      |     |      |
| Total Gate Charge (Note 3)                                     | V <sub>DS</sub> = 5V, I <sub>D</sub> = 10mA,<br>V <sub>GS</sub> = 5V                         | Q <sub>g</sub>      | --  | 350  | --  | nC   |
| Gate-Source Charge (Note 3)                                    |  | Q <sub>gs</sub>     | --  | 46   | --  |      |
| Gate-Drain Charge (Note 3)                                     |  | Q <sub>gd</sub>     | --  | 118  | --  |      |
| Input Capacitance  | V <sub>DS</sub> = 3V, V <sub>GS</sub> = 0V,<br>F= 1.0MHz                                     | C <sub>iss</sub>    | --  | 13.5 | --  | pF   |
| Output Capacitance   |  | C <sub>oss</sub>    | --  | 8.0  | --  |      |
| Reverse Transfer Capacitance                                   |  | C <sub>rss</sub>    | --  | 6.5  | --  |      |
| <b>Switching</b>   |  |                     |     |      |     |      |
| Turn-On Delay Time (Note 3)                                    | V <sub>DD</sub> = 5V, I <sub>D</sub> = 10mA,<br>V <sub>GS</sub> = 5V, R <sub>GEN</sub> = 50Ω | t <sub>d(on)</sub>  | --  | 6.7  | --  | nS   |
| Rise Time (Note 3)   |  | t <sub>r</sub>      | --  | 4.8  | --  |      |
| Turn-Off Delay Time (Note 3)                                   |  | t <sub>d(off)</sub> | --  | 35   | --  |      |
| Fall Time (Note 3)   |  | t <sub>f</sub>      | --  | 12   | --  |      |
| <b>Source-Drain Diode Ratings and Characteristics (Note 2)</b> |  |                     |     |      |     |      |
| Forward Voltage  | V <sub>GS</sub> = 0V, I <sub>F</sub> = 100mA   | V <sub>SD</sub>     | --  | 0.8  | 1.2 | V    |

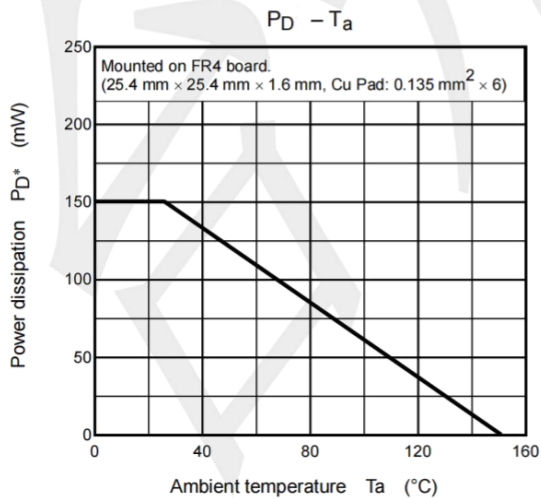
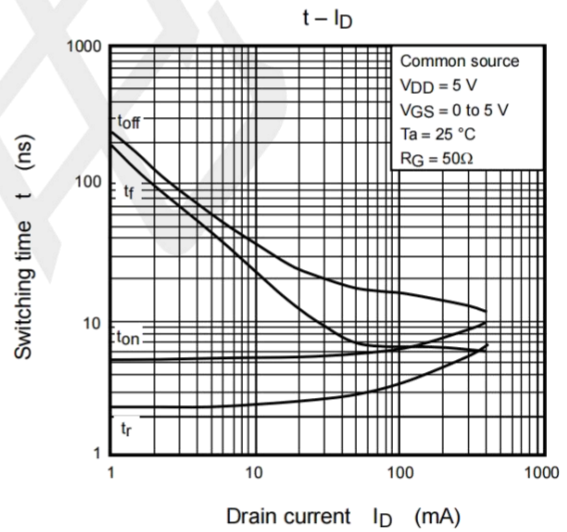
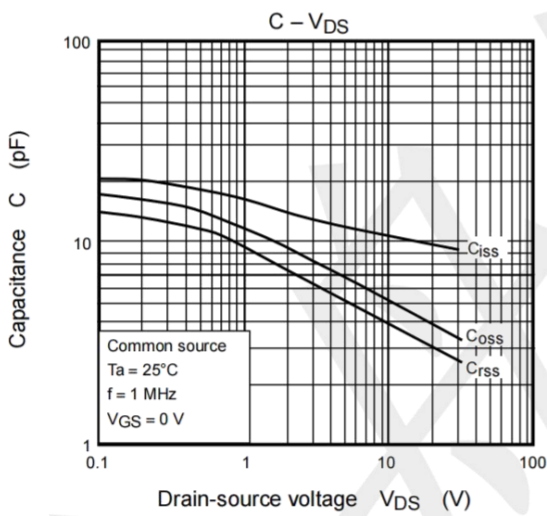
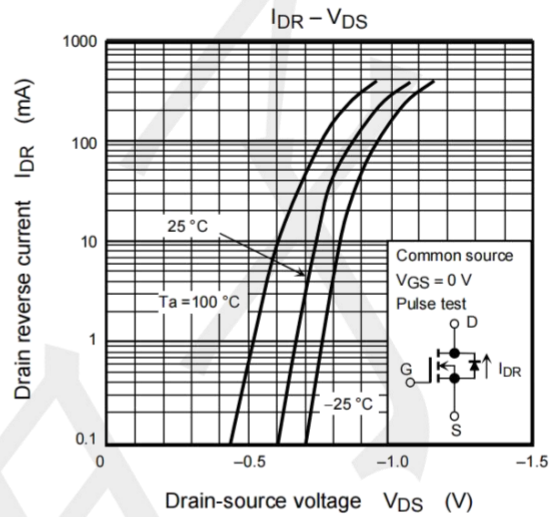
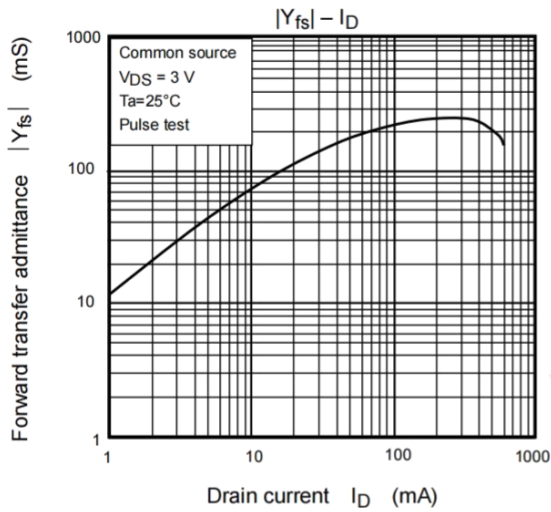
Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

### TYPICAL CHARACTERISTICS

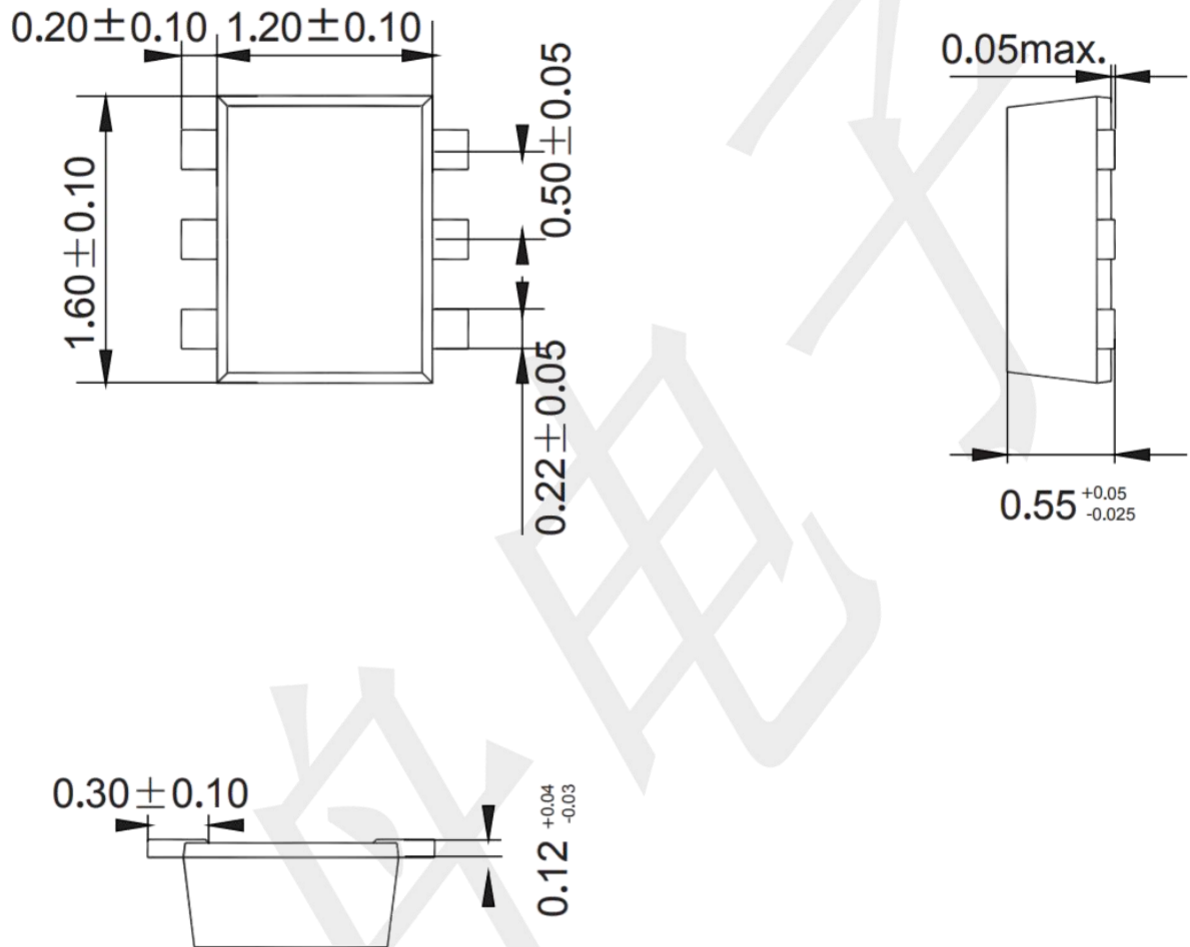


### TYPICAL CHARACTERISTICS



**Package information (unit: mm)**

SOT563



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

