

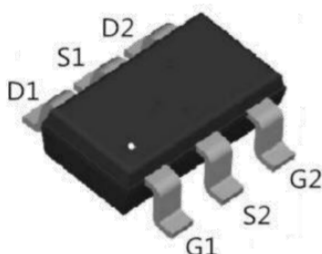
### Product Summary

- $V_{DS}$  -30 V
- $I_{DS}$  -3.5A
- $R_{DS(ON)}$  (at  $V_{GS}=-10V$ ) <88m $\Omega$
- $R_{DS(ON)}$  (at  $V_{GS}=-4.5V$ ) <138m $\Omega$

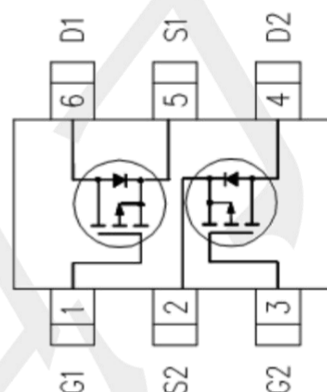
### Application

- Battery protection
- Load switch
- Power management
- DC/DC converter

### Package and Pin Configuration



### Circuit diagram



**Marking: 2623**

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

| PARAMETER                            | SYMBOL     | LIMIT       | UNIT |
|--------------------------------------|------------|-------------|------|
| Drain-Source Voltage                 | $V_{DS}$   | -30         | V    |
| Gate-Source Voltage                  | $V_{GS}$   | ±20         | V    |
| Continuous Drain Current             | $I_D$      | -3.5        | A    |
| Pulsed Drain Current (note 1)        | $I_{DM}$   | -12         | A    |
| Total Power Dissipation (note 2)     | $P_{DTOT}$ | 1.8         | W    |
| Operating Junction Temperature Range | $T_J$      | -55 to +150 | °C   |
| Storage Temperature Range            | $T_{stg}$  | -55 to +150 | °C   |

**Notes :** 1. Pulse width limited by Max.junction temperature.

2. Per element must not be exceeded

### Thermal Characteristic

| PARAMETER                              |                   | Symbol     | Value | Unit |
|----------------------------------------|-------------------|------------|-------|------|
| Junction-to-Ambient Thermal Resistance | PCB Mount (Note ) | $R_{thJA}$ | 115   | °C/W |

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

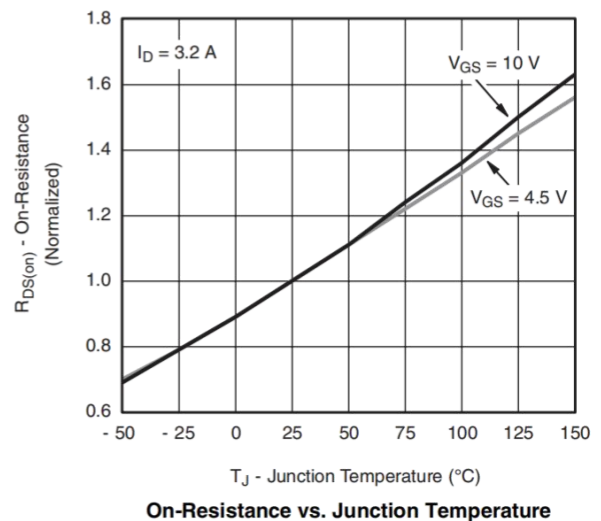
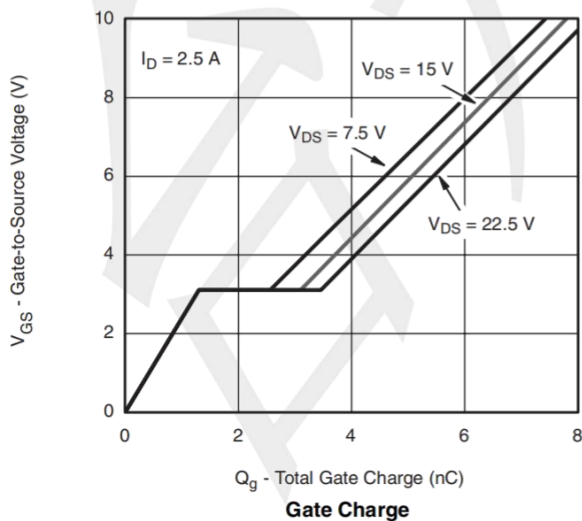
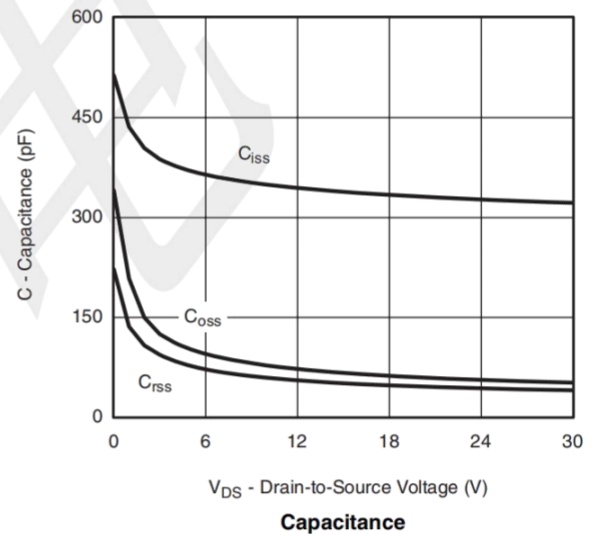
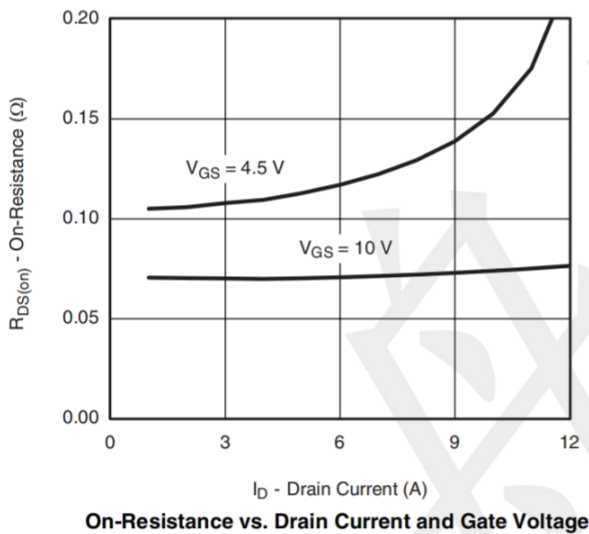
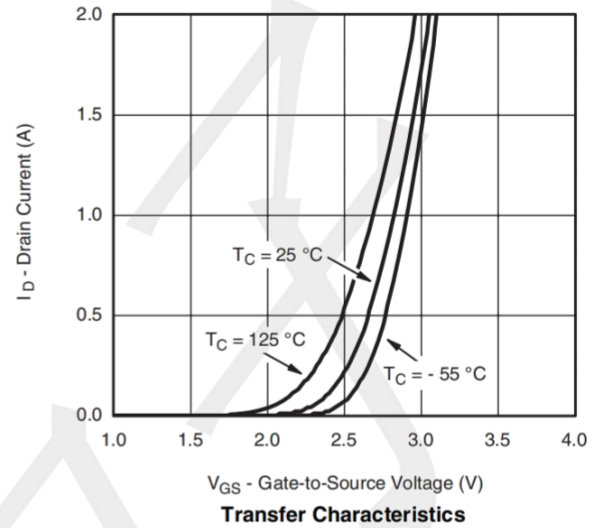
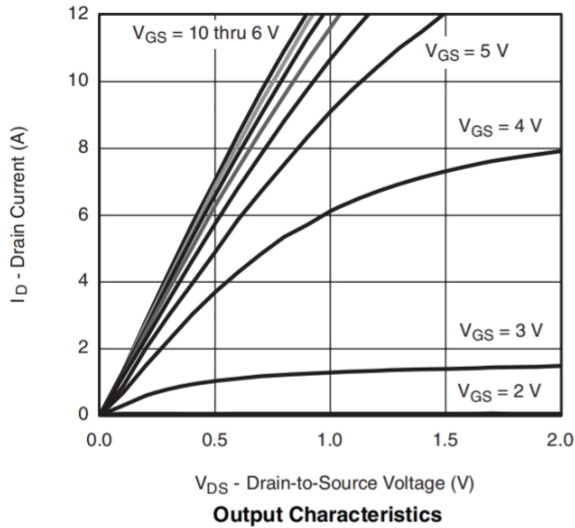
### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                                               | CONDITIONS                                                                      | SYMBOL       | MIN | TYP  | MAX       | UNIT       |
|---------------------------------------------------------|---------------------------------------------------------------------------------|--------------|-----|------|-----------|------------|
| Static                                                  |                                                                                 |              |     |      |           |            |
| Drain-Source Breakdown Voltage                          | $V_{GS}=0V, I_D= -250\mu A$                                                     | $BV_{DSS}$   | -30 | --   | --        | V          |
| Gate-Source Threshold Voltage                           | $V_{DS}=V_{GS}, I_D= -250\mu A$                                                 | $V_{GS(th)}$ | -1  | -2   | -3        | V          |
| Gate-Source Leakage                                     | $V_{DS}=0V, V_{GS}= \pm 20V$                                                    | $I_{GSS}$    | --  | --   | $\pm 100$ | nA         |
| Zero Gate Voltage Drain Current                         | $V_{DS}= -30V, V_{GS}=0V$                                                       | $I_{DSS}$    | --  | --   | -1        | $\mu A$    |
|                                                         | $V_{DS}= -30V, T_J=55^{\circ}C$                                                 |              | --  | --   | -10       | $\mu A$    |
| Drain-Source On-State Resistance<br>(Note 1)            | $V_{GS}= -10V, I_D= -3.5A$                                                      | $R_{DS(on)}$ | --  | 77   | 88        | m $\Omega$ |
|                                                         | $V_{GS}= -4.5V, I_D= -2.5A$                                                     |              | --  | 110  | 138       |            |
| Forward Transconductance (Note 2)                       | $V_{DS}= -10V, I_D= -3.5A$                                                      | $g_{fs}$     | --  | 7    | --        | S          |
| Dynamic (Note 2)                                        |                                                                                 |              |     |      |           |            |
| Total Gate Charge (Note 3)                              | $V_{DS}= -15V, I_D= -2.5A,$<br>$V_{GS}= -4.5V$                                  | $Q_g$        | --  | 4.1  | --        | nC         |
| Gate-Source Charge (Note 3)                             |                                                                                 | $Q_{gs}$     | --  | 1.3  | --        |            |
| Gate-Drain Charge (Note 3)                              |                                                                                 | $Q_{gd}$     | --  | 1.8  | --        |            |
| Input Capacitance                                       | $V_{DS}= -15V, V_{GS}= 0V,$<br>$F= 1.0MHz$                                      | $C_{iss}$    | --  | 340  | --        | pF         |
| Output Capacitance                                      |                                                                                 | $C_{oss}$    | --  | 67   | --        |            |
| Reverse Transfer Capacitance                            |                                                                                 | $C_{rss}$    | --  | 51   | --        |            |
| Switching                                               |                                                                                 |              |     |      |           |            |
| Turn-On Delay Time (Note 3)                             | $V_{DD}= -15V, I_D= -1A,$<br>$V_{GEN}= -4.5V,$<br>$R_L= 15\Omega, R_G= 1\Omega$ | $t_{d(on)}$  | --  | 40   | --        | nS         |
| Rise Time (Note 3)                                      |                                                                                 | $t_r$        | --  | 40   | --        |            |
| Turn-Off Delay Time (Note 3)                            |                                                                                 | $t_{d(off)}$ | --  | 20   | --        |            |
| Fall Time (Note 3)                                      |                                                                                 | $t_f$        | --  | 17   | --        |            |
| Source-Drain Diode Ratings and Characteristics (Note 2) |                                                                                 |              |     |      |           |            |
| Forward Voltage                                         | $V_{GS}= 0V, I_F= -0.75A$                                                       | $V_{SD}$     | --  | -0.8 | -1.2      | V          |
| Continuous Source Current                               | Integral reverse diode<br>in the MOSFET                                         | $I_S$        | --  | --   | -1.5      | A          |
| Pulsed Current (Note 1)                                 |                                                                                 | $I_{SM}$     | --  | --   | -12       | A          |

#### Notes:

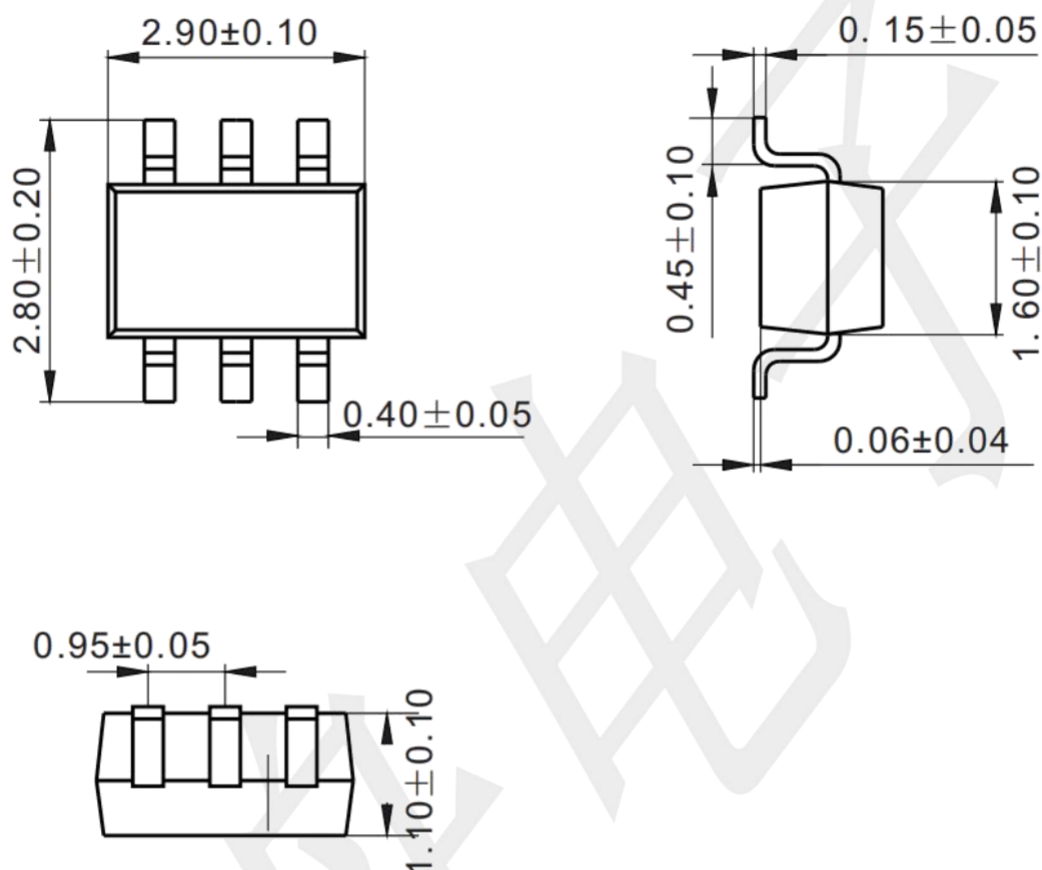
1. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

### TYPICAL CHARACTERISTICS(25 °C, unless otherwise noted)



## Package Outline & Dimensions

SOT23-6L



## Mounting Pad Layout (unit: mm)

