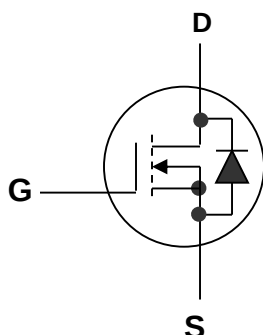
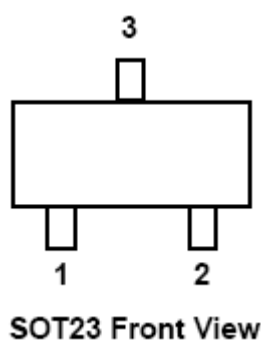


## 1. Features

- n**  $V_{DS}=20V, R_{DS(on)}=30m\Omega @ V_{GS}=10V, I_D=6.0A$
- n**  $V_{DS}=20V, R_{DS(on)}=40m\Omega @ V_{GS}=4.5V, I_D=3.0A$
- n**  $V_{DS}=20V, R_{DS(on)}=55m\Omega @ V_{GS}=2.5V, I_D=2.0A$

## 2.Symbol



| Pin | Function |
|-----|----------|
| 1   | Gate     |
| 2   | Source   |
| 3   | Drain    |

## 3. Absolute maximum ratings

( $T_A=25^{\circ}C$ , unless otherwise noted)

| Parameter                                     | Symbol         | Rating     | Units         |
|-----------------------------------------------|----------------|------------|---------------|
| Drain-source voltage                          | $V_{DS}$       | 20         | V             |
| Gate-source voltage                           | $V_{GS}$       | $\pm 10$   | V             |
| Drain current continuous * $T_J=125^{\circ}C$ | $I_D$          | 6.0        | A             |
| Drain current pulsed                          | $I_{DM}$       | 20         |               |
| Power dissipation*                            | $P_D$          | 1.25       | W             |
| Thermal resistance, junction-ambient          | $R_{thJA}$     | 100        | $^{\circ}C/W$ |
| Junction and storage temperature range        | $T_J, T_{STG}$ | -55 to 150 | $^{\circ}C$   |

\*Surface mounted on FR 4 board,  $t \leq 10$  sec.

## 4. Electrical characteristics

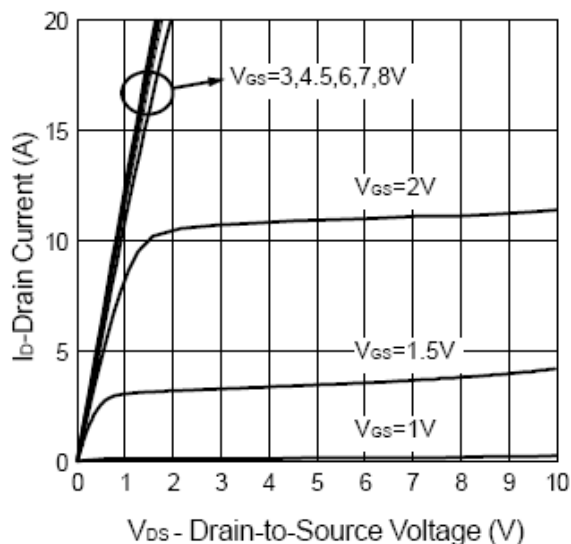
(T<sub>A</sub>=25°C, unless otherwise noted)

| Parameter                           | Symbol              | Test Conditions                                                                                                  | Min | Typ   | Max  | Units |
|-------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------|-----|-------|------|-------|
| Drain-source breakdown voltage      | BV <sub>DSS</sub>   | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA                                                                       | 20  | -     | -    | V     |
| Zero gate voltage drain current     | I <sub>DSS</sub>    | V <sub>DS</sub> =16V, V <sub>GS</sub> =0V                                                                        | -   | -     | 1    | μA    |
| Gate- body leakage                  | I <sub>GSS</sub>    | V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V                                                                       | -   | -     | ±100 | nA    |
| Gate threshold voltage*             | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                                                         | 0.5 | 0.78  | 1.0  | V     |
| On state drain current              | I <sub>D(on)</sub>  | V <sub>DS</sub> =5V, V <sub>GS</sub> =4.5V                                                                       | 5   | -     | -    | A     |
| Static drain-source on-resistance*  | R <sub>DS(on)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =6.0A                                                                       | -   | 28    | 30   | mΩ    |
|                                     |                     | V <sub>GS</sub> =2.5V, I <sub>D</sub> =3.0A                                                                      | -   | 38    | 40   |       |
|                                     |                     | V <sub>GS</sub> =1.8V, I <sub>D</sub> =2.0A                                                                      | -   | 52    | 55   |       |
| Forward transconductance*           | g <sub>fs</sub>     | V <sub>DS</sub> =15V, I <sub>D</sub> =5A                                                                         | 30  | -     | -    | S     |
| Input capacitance                   | C <sub>iss</sub>    | V <sub>DS</sub> =15V, V <sub>GS</sub> =0V,<br>f=1MHz                                                             | -   | 888   | -    | pF    |
| Output capacitance                  | C <sub>oss</sub>    |                                                                                                                  | -   | 144   | -    |       |
| Reverse transfer capacitance        | C <sub>rss</sub>    |                                                                                                                  | -   | 115   | -    |       |
| Turn-on delay time                  | t <sub>d(on)</sub>  | V <sub>DD</sub> =10V, I <sub>D</sub> =1.0A,<br>R <sub>L</sub> =10Ω, R <sub>G</sub> =6Ω,<br>V <sub>GS</sub> =4.5V | -   | 31.8  | -    | ns    |
| Rise time                           | t <sub>r</sub>      |                                                                                                                  | -   | 14.5  | -    |       |
| Turn-off delay time                 | t <sub>d(off)</sub> |                                                                                                                  | -   | 50.3  | -    |       |
| Fall time                           | t <sub>f</sub>      |                                                                                                                  | -   | 31.9  | -    |       |
| Total gate charge                   | Q <sub>g</sub>      | V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V<br>I <sub>D</sub> =3.5A                                              | -   | 16.8  | -    | nC    |
| Gate-source charge                  | Q <sub>gs</sub>     |                                                                                                                  | -   | 2.5   | -    |       |
| Gate-drain charge                   | Q <sub>gd</sub>     |                                                                                                                  | -   | 5.4   | -    |       |
| Diode forward voltage               | V <sub>SD</sub>     | V <sub>GS</sub> =0V, I <sub>S</sub> =1.25A                                                                       | -   | 0.825 | 1.3  | V     |
| Drain-source diode forward current* | I <sub>S</sub>      |                                                                                                                  | -   | -     | 1.25 | A     |

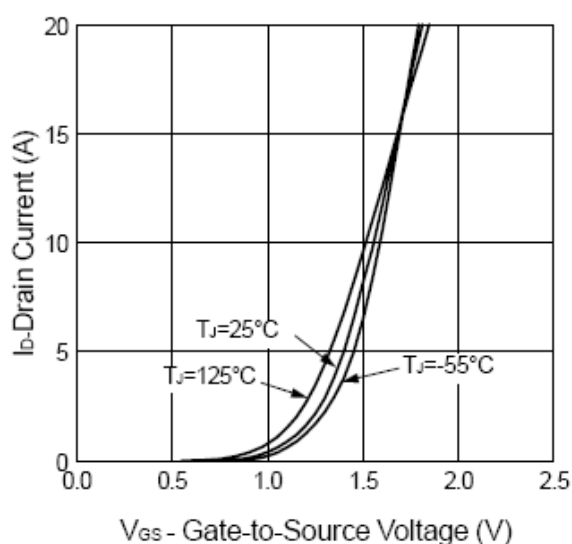
\*Pulsed test:pulse width≤300μs,duty cycle≤2%

## 5. Test circuits and waveforms

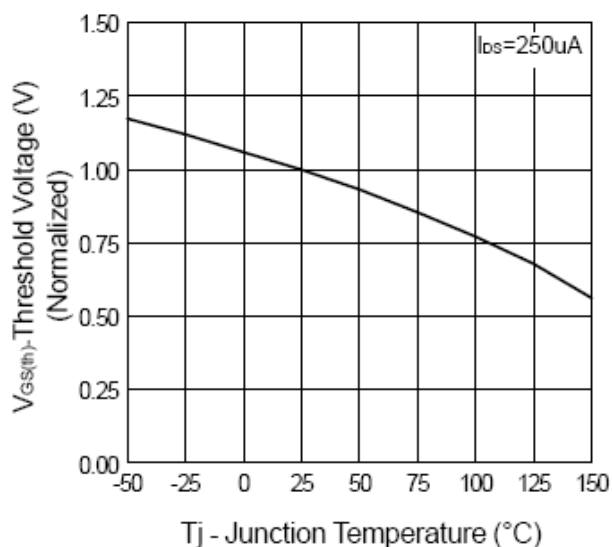
Output Characteristics



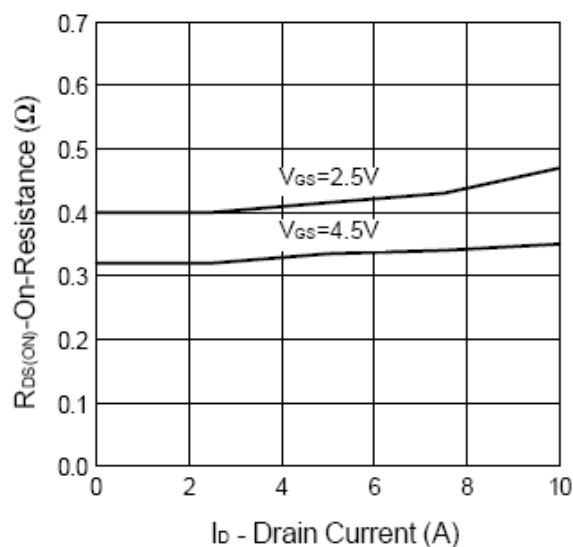
Transfer Characteristics



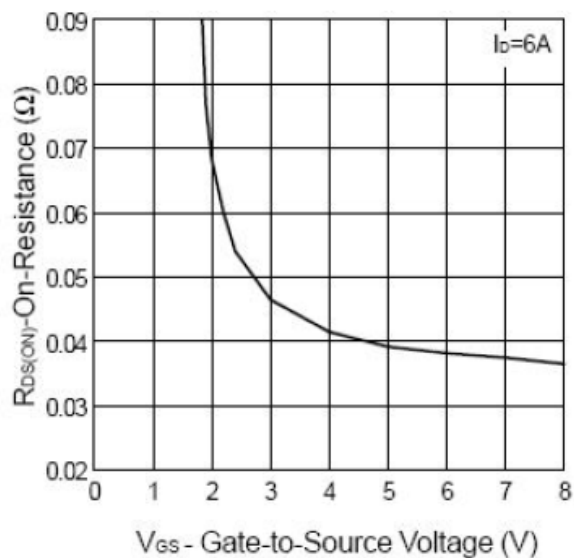
Threshold Voltage vs. Junction Temperature



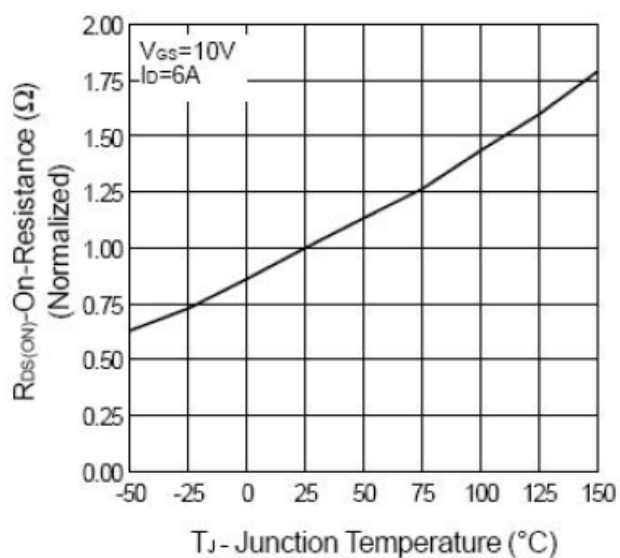
On-Resistance vs. Drain Current



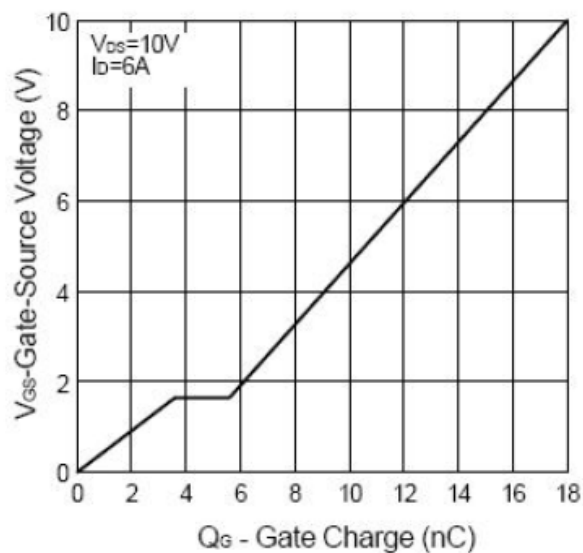
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature



Gate Charge



Capacitance

