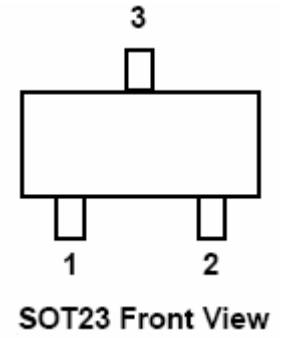
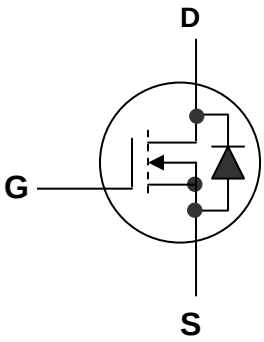
## 1. Features

- $V_{DS}$=20V,$R_{DS(ON)}$=30mΩ@ $V_{GS}$=10V,$I_D$=6.0A
- $V_{DS}$=20V,$R_{DS(ON)}$=40mΩ@ $V_{GS}$=4.5V,$I_D$=3.0A
- $V_{DS}$=20V,$R_{DS(ON)}$=55mΩ@ $V_{GS}$=2.5V,$I_D$=2.0A

## 2. Pin information




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

## 3. Maximum ratings

(Ta=25°C)

| Characteristic | Symbol | Rating | Unit |
|---|---|---|---|
| Drain-source voltage | $V_{DS}$ | 20 | V |
| Gate-source voltage | $V_{GS}$ | ±10 | V |
| Drain current-continuous*$T_J$=125℃ pulsed | $I_D$ | 6.0 | A |
| Peak drain current | $I_{DM}$ | 20 | A |
| Power dissipation* | $P_D$ | 1.25 | W |
| Thermal resistance,junction-ambient | $R_{thJA}$ | 100 | °C /W |
| Operating junction and storage temperature range | $T_j$ ,$T_{stg}$ | -55～150 | °C |

*Surface Mounted on FR 4 Board,t≤10 sec.

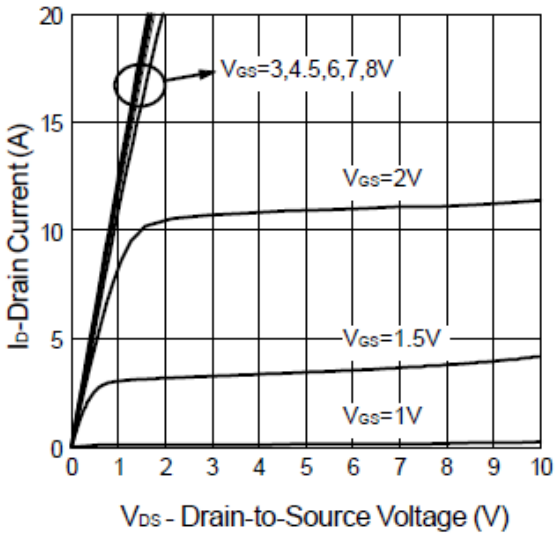
## 6. Electrical characteristics

（unless otherwise noted，Ta=25°C）

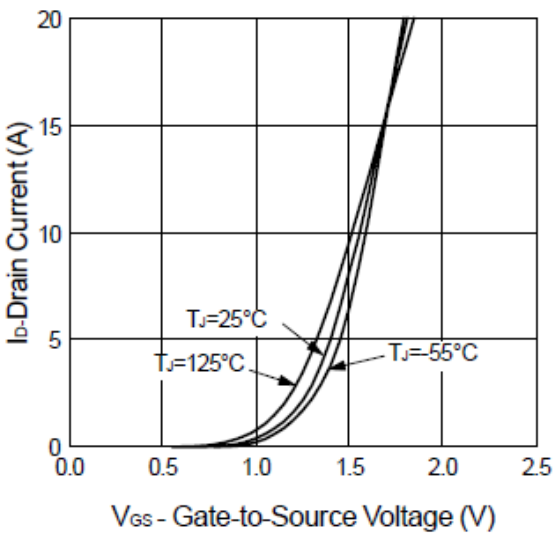
| Characteristic | Symbol | Test condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-source breakdown voltage | $V_{DSS}$ | $V_{GS}$=0V, $I_D$ =250μA | 20 | - | - | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$=16V, $V_{GS}$=0V | - | - | 1.0 | μA |
| Gate-body leakage | $I_{GSS}$ | $V_{GS}$=±10V, $V_{GS}$=0V | - | - | ±100 | nA |
| Gate threshold voltage* | $V_{GS(th)}$ | $V_{DS}$= $V_{GS}$ ,$I_D$=250μA | 0.5 | 0.78 | 1.0 | V |
| Drain-source on-state resistance* | $R_{DS(on)}$ | $V_{GS}$=10V, $I_D$=6.0A<br>$V_{GS}$=2.5V, $I_D$=3.0A<br>$V_{GS}$=1.8V, $I_D$=2.0A | - | 28<br>38<br>52 | 30<br>40<br>55 | mΩ |
| On-state drain current* | $I_{D(on)}$ | $V_{DS}$=5V,$V_{GS}$=4.5V | 5 | - | - | A |
| Forward transconductance* | $g_{fs}$ | $V_{DS}$=15$V_{DS(on)}$ ,$I_D$=5A | 30 | - | - | S |
| Input capacitance | $C_{iss}$ | $V_{DS}$=15V, $V_{GS}$=0V,f=1MHz | - | 888 | - | pF |
| Output capacitance | $C_{oss}$ | | - | 144 | - | |
| Reverse transfer capacitance | $C_{rss}$ | | - | 115 | - | |
| Total gate charge | $Q_g$ | $V_{DS}$=10V, $I_D$=3.5A,<br>$V_{GS}$=4.5V | | 16.8 | - | nC |
| Gate-source charge | $Q_{gs}$ | | | 2.5 | - | |
| Gate-drain charge | $Q_{gd}$ | | | 5.4 | - | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD}$=10V,$I_D$=1A,$R_G$=6Ω,<br>$R_L$=10Ω | - | 31.8 | - | ns |
| Rise time | $t_r$ | | - | 14.5 | - | |
| Turn-off delay time | $t_{d(off)}$ | | - | 50.3 | - | |
| Fall time | $t_f$ | | - | 31.9 | - | |
| Drain-source diode forward current* | $I_S$ | | - | - | 1.25 | A |
| Diode forward voltage | $V_{SD}$ | $V_{GS}$=0V, $I_S$=1.25A | - | 0.825 | 1.3 | V |

## 7. Package outline

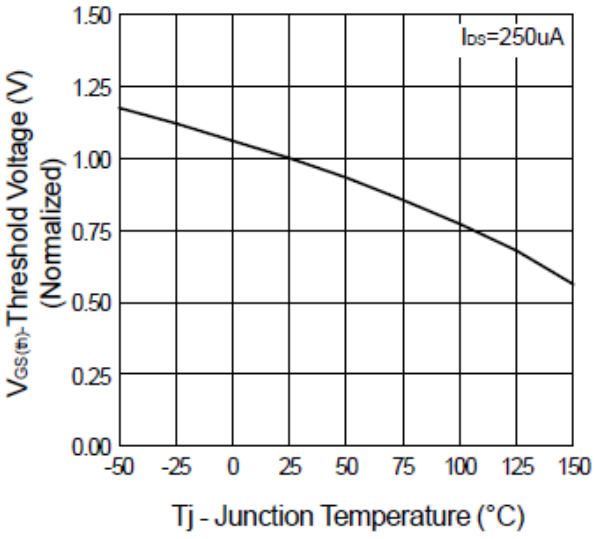
Output Characteristics



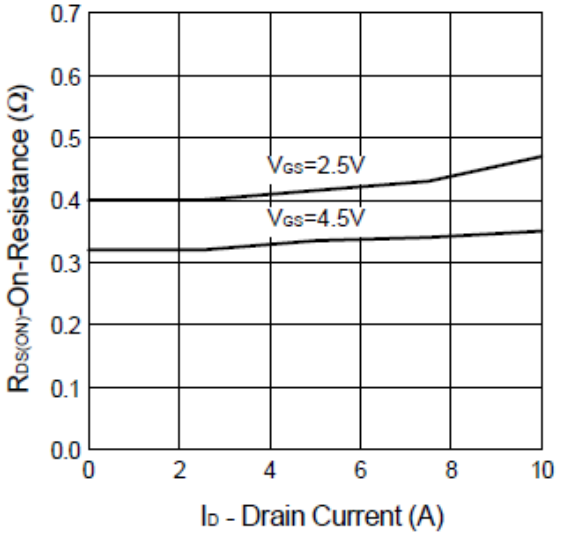

Transfer Characteristics



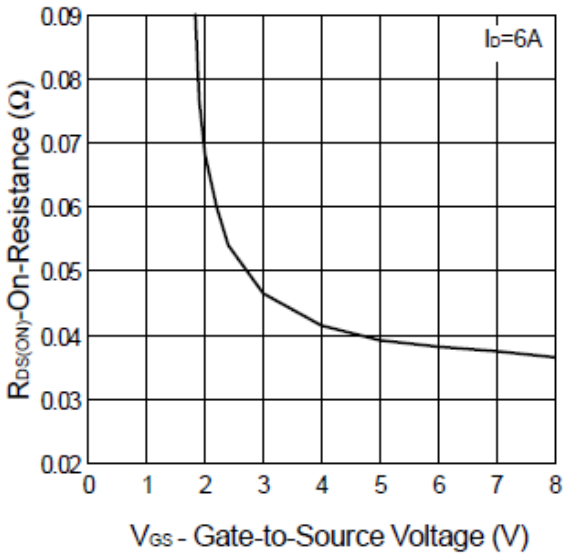

Threshold Voltage vs. Junction Temperature



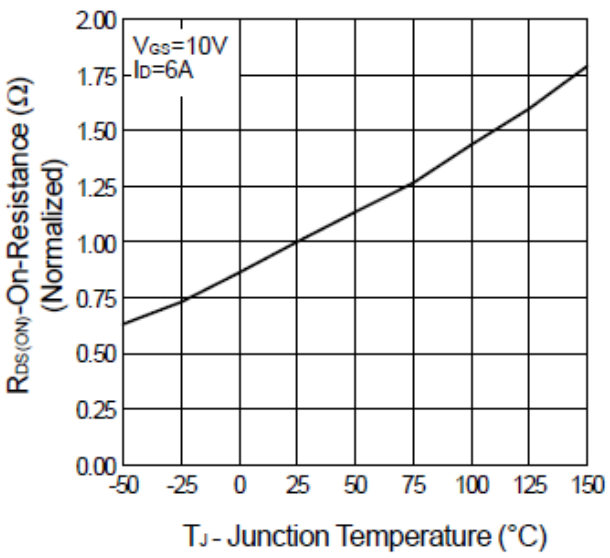

On-Resistance vs. Drain Current



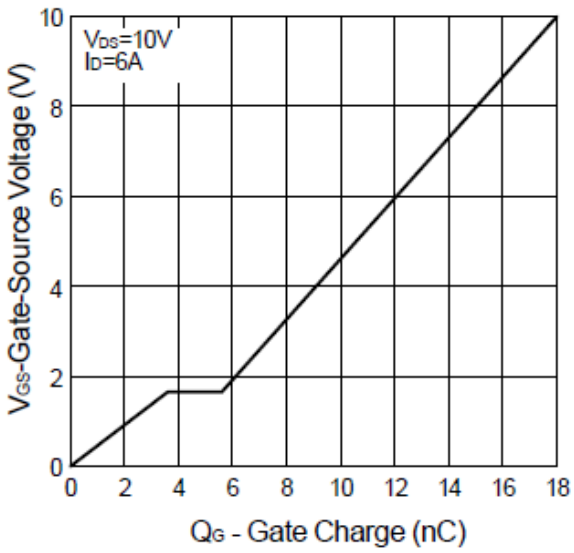
On-Resistance vs. Gate-to-Source Voltage



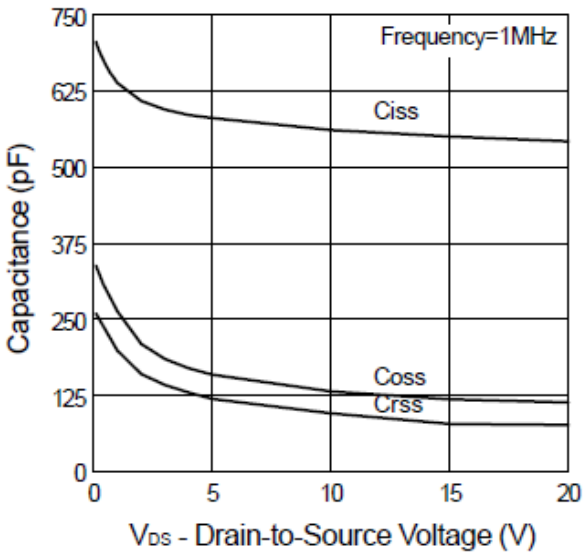

On-Resistance vs. Junction Temperature



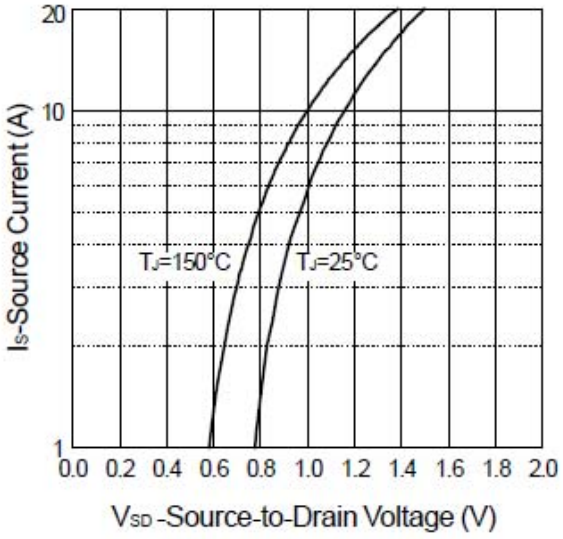

Gate Charge



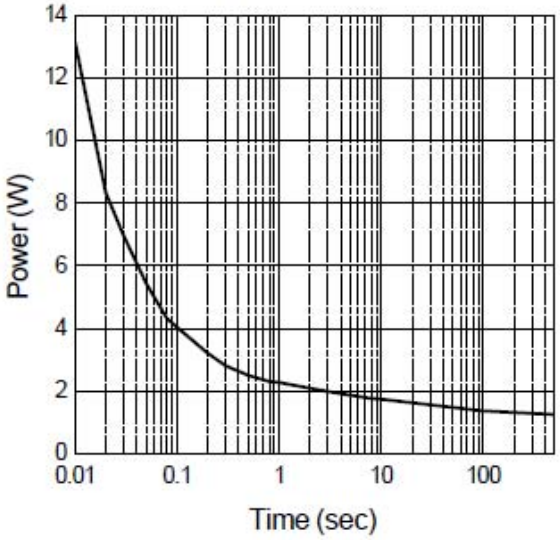

Capacitance



Source-Drain Diode Forward Voltage




Single Pulse Power




Normalized Thermal Transient Impedence, Junction to Ambient