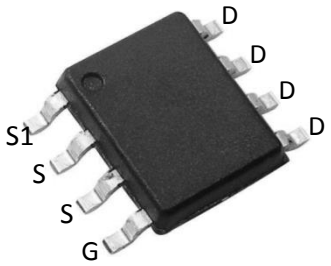
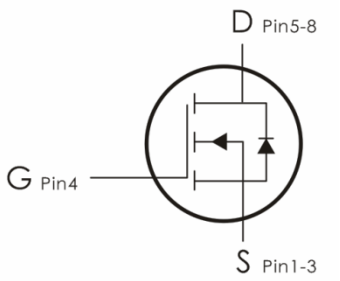
## Description：

This N-Channel MOSFET uses advanced SGT technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.




## Features：

1) $V_{DS}$=100V,$I_D$=12A,$R_{DS(ON)}$<12mΩ @$V_{GS}$=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.

## Absolute Maximum Ratings： ($T_C$=25℃ unless otherwise noted)

| Symbol | Parameter | Ratings | Units |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | 100 | V |
| $V_{GS}$ | Gate-Source Voltage | ±20 | V |
| $I_D$ | Drain Current Continuous[1] | 12 | A |
| $I_{D,\ pulse}$ | PulsedPulsed drain current[2] | 48 | |
| $P_D$ | Power Dissipation[3] | 4 | W |
| $E_{AS}$ | Single pulsed avalanche energy[5] | 65 | mJ |
| $T_J$, $T_{STG}$ | Operating and Storage Junction Temperature Range | -55 to +150 | ℃ |

## Thermal Characteristics：

| Symbol | Parameter | Max | Units |
|---|---|---|---|
| $R_{\theta JA}$ | Thermal Resistance,Junction to Ambient[4] | 31 | ℃/W |



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## Electrical Characteristics: ($T_C$=25℃ unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| $BV_{DSS}$ | Drain-Sourtce Breakdown Voltage | $V_{GS}$=0V,$I_D$=250μA | 100 | --- | --- | V |
| $I_{DSS}$ | Drain-Source Leakage Current | $V_{DS}$=100V , $V_{GS}$=0V, | --- | --- | 1 | uA |
| $I_{GSS}$ | Gate-Source Leakage Current | $V_{GS}$=±20V, $V_{DS}$=0V | --- | --- | ±100 | nA |
| **On Characteristics** | | | | | | |
| $V_{GS(th)}$ | GATE-Source Threshold Voltage | $V_{GS}$=$V_{DS}$, $I_D$=250μA | 1.5 | --- | 2.5 | V |
| $R_{DS(ON)}$ | Static Drain-Source On Resistance[2] | $V_{GS}$=10V,$I_D$=12A | --- | 9.2 | 12 | mΩ |
| | | $V_{GS}$=4.5V,$I_D$=9A | --- | 12 | 16 | mΩ |
| **Dynamic Characteristics** | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=50V, $V_{GS}$=0V, f=1MHz | --- | 1900 | --- | pF |
| $C_{oss}$ | Output Capacitance | | --- | 345 | --- | |
| $C_{rss}$ | Reverse Transfer Capacitance | | --- | 10.2 | --- | |
| **Switching Characteristics** | | | | | | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{GS}$=10 V, $V_{DS}$=50 V<br>$R_G$=2 Ω, $I_D$=10 A | --- | 20.1 | --- | ns |
| $t_r$ | Rise Time | | --- | 4.5 | --- | ns |
| $t_{d(off)}$ | Turn-Off Delay Time | | --- | 44.3 | --- | ns |
| $t_f$ | Fall Time | | --- | 8.5 | --- | ns |
| $Q_g$ | Total Gate Charge | $V_{GS}$=10V, $V_{DS}$=50V,<br>$I_D$=10A | --- | 32.1 | --- | nC |
| $Q_{gs}$ | Gate-Source Charge | | --- | 6.1 | --- | nC |
| $Q_{gd}$ | Gate-Drain Charge | | --- | 8.1 | --- | nC |
| $V_{plateau}$ | Gate plateau voltage | | --- | 3.3 | --- | V |
| **Drain-Source Diode Characteristics** | | | | | | |
| $V_{SD}$ | Source-Drain Diode Forward Voltage | $V_{GS}$=0V,$I_S$=12A | --- | --- | 1.3 | V |
| $I_S$ | Continuous Source Current | $V_{GS}$<$V_{th}$ | --- | --- | 12 | A |



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| | | | | | | |
|---|---|---|---|---|---|---|
| **$I_{SP}$** | Pulsed Source Current | $V_{GS}<V_{th}$ | --- | --- | 48 | A |
| **Trr** | Body Diode Reverse Recovery Time | $I_S$=10A , dI/dt=100A/ μ s | --- | 51 | --- | Ns |
| **Qrr** | Body Diode Reverse Recovery Charge | | --- | 86.8 | --- | Nc |
| **$I_{rrm}$** | Peak reverse recovery current | | --- | 2.9 | --- | A |

## Notes:

1) Calculated continuous current based on maximum allowable junction temperature.
2) Repetitive rating; pulse width limited by max. junction temperature.
3) Pd is based on max. junction temperature, using junction-case thermal resistance.
4) The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_a$=25 °C.
5) $V_{DD}$=50 V, $R_G$=50 Ω, L=0.3 mH, starting $T_j$=25 °C.

## Typical Characteristics: ($T_C$=25℃ unless otherwise noted)

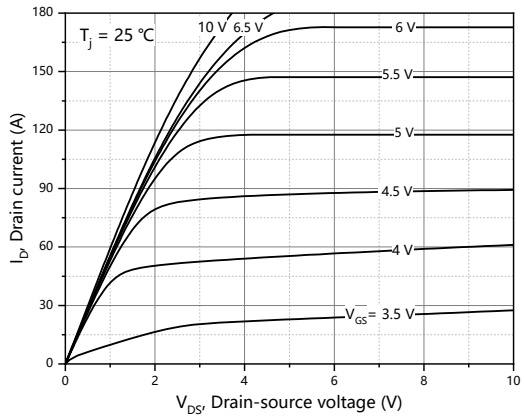



Figure 1, Typ. output characteristics

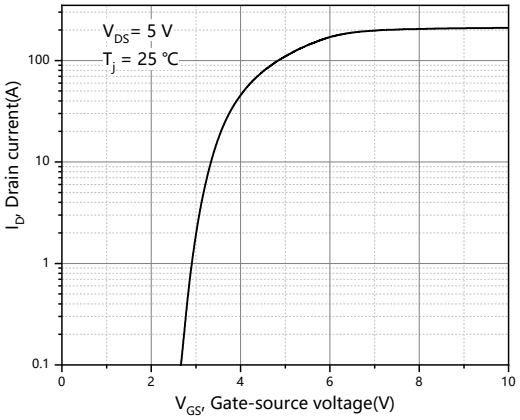



Figure 2, Typ. transfer characteristics

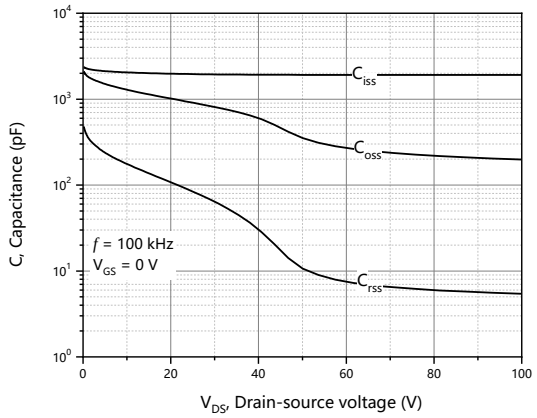



Figure 3, Typ. capacitances

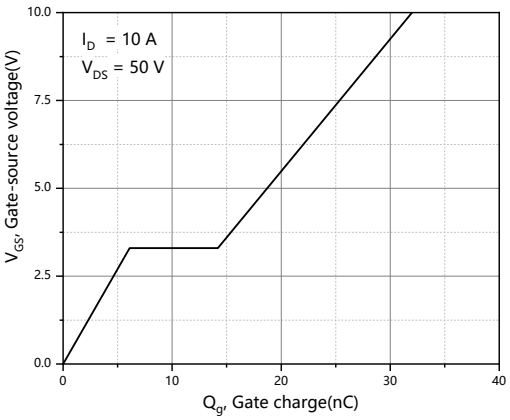



Figure 4, Typ. gate charge



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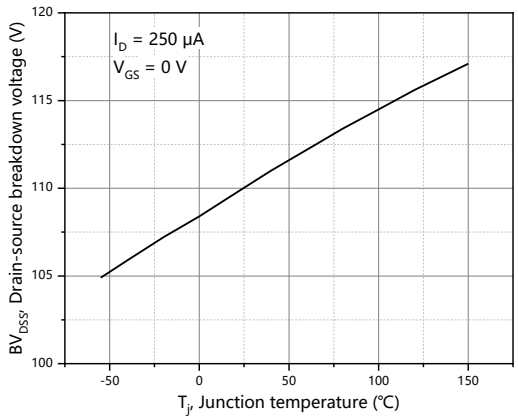



Figure 5, Drain-source breakdown voltage

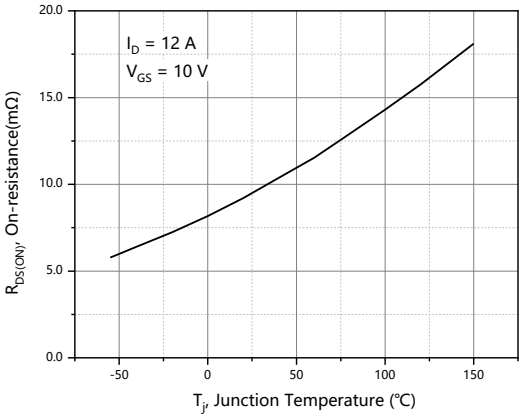



Figure 6, Drain-source on-state resistance

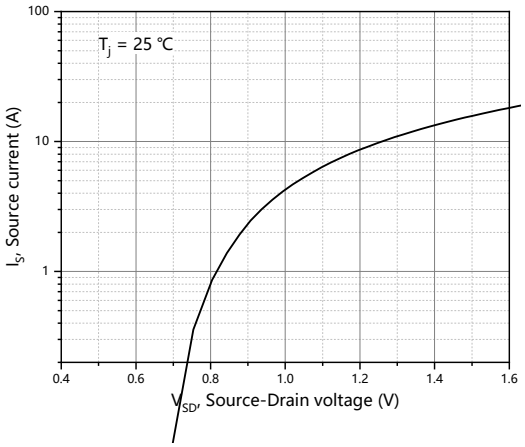



Figure 7, Forward characteristic of body diode

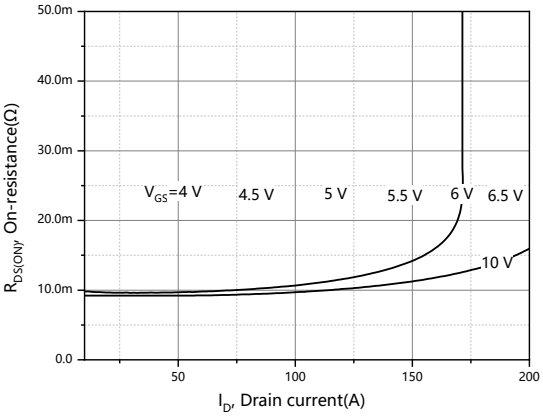



Figure 8, Drain-source on-state resistance

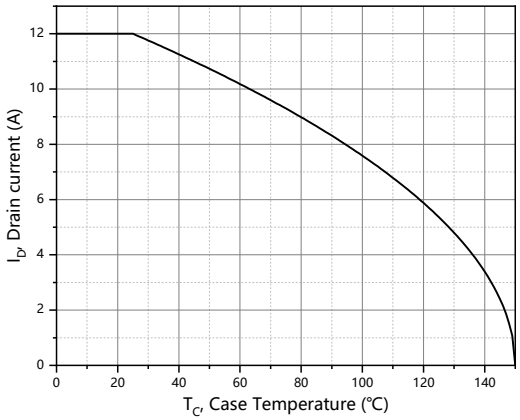



Figure 9, Drain current

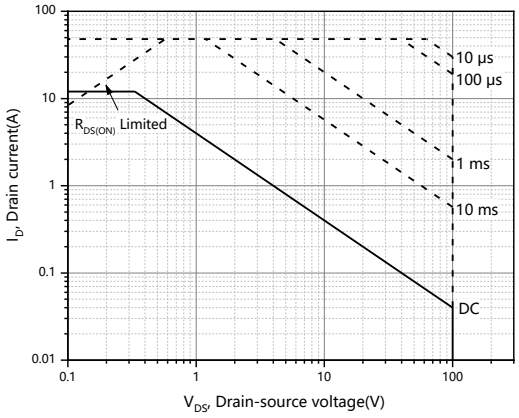



Figure 10, Safe operation area $T_C$=25 ℃



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