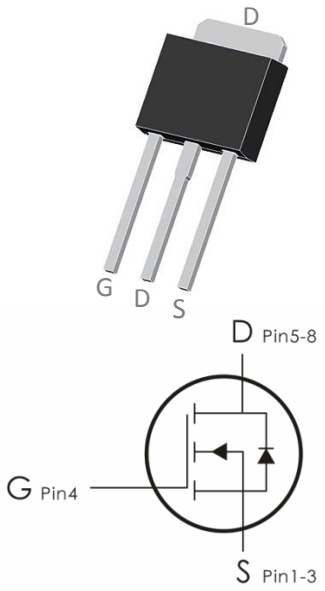
## Description：

This N-Channel MOSFET uses advanced trench 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,$I_D$=40A,$R_{DS(ON)}$<20mΩ @$V_{GS}$=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra $R_{DS(ON)}$.
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 |
| $I_D$ | Continuous Drain Current-TC=25℃[1] | 40 | A |
| | Continuous Drain Current-TC=100℃ | --- | |
| | Pulsed Drain Current[2] | 120 | |
| $E_{AS}$ | Single Pulse Avalanche Energy[5] | 30 | mJ |
| $P_D$ | Power Dissipation[3] | 72 | W |
| $T_J$, $T_{STG}$ | Operating and Storage Junction Temperature Range | -55 to +150 | ℃ |

## Thermal Characteristics：

| Symbol | Parameter | Max | Units |
|---|---|---|---|
| $R_{\theta JC}$ | Thermal Resistance,Junction to Case | 1.74 | ℃/W |
| $R_{\theta JA}$ | Thermal Resistance Junction to mbient[4] | 62 | ℃/W |

## 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 |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{GS}$=0V, $V_{DS}$=100V | --- | --- | 1 | μA |
| $I_{GSS}$ | Gate-Source Leakage Current | $V_{GS}$=±20V, $V_{DS}$=0A | --- | --- | ±100 | nA |
| **On Characteristics**[3] | | | | | | |
| $V_{GS(th)}$ | GATE-Source Threshold Voltage | $V_{GS}$=$V_{DS}$, $I_D$=250μA | 1 | --- | 2.5 | V |
| $R_{DS(ON)}$ | Drain-Source On Resistance | $V_{GS}$=10V,$I_D$=8A | --- | 17 | 20 | mΩ |
| | | $V_{GS}$=4.5V,$I_D$=6A | --- | --- | 26 | |
| **Dynamic Characteristics**[4] | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=50V, $V_{GS}$=0V, f=1MHz | --- | 1190.6 | --- | pF |
| $C_{oss}$ | Output Capacitance | | --- | 194.6 | --- | |
| $C_{rss}$ | Reverse Transfer Capacitance | | --- | 4.1 | --- | |
| **Switching Characteristics**[4] | | | | | | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{DD}$=50V,$I_D$=10A,$R_G$=2.2Ω $V_{GS}$=10V | --- | 17.8 | --- | ns |
| $t_r$ | Rise Time | | --- | 3.9 | --- | ns |
| $t_{d(off)}$ | Turn-Off Delay Time | | --- | 33.5 | --- | ns |
| $t_f$ | Fall Time | | --- | 3.2 | --- | ns |
| $Q_g$ | Total Gate Charge | $V_{GS}$=10V, $V_{DS}$=50V, $I_D$=8A | --- | 19.8 | --- | nC |
| $Q_{gs}$ | Gate-Source Charge | | --- | 2.4 | --- | nC |
| $Q_{gd}$ | Gate-Drain “Miller” Charge | | --- | 5.3 | --- | nC |
| **Drain-Source Diode Characteristics** | | | | | | |
| **Symbol** | **Parameter** | **Conditions** | **Min** | **Typ** | **Max** | **Units** |
| $V_{SD}$ | Source-Drain Diode Forward Voltage | $V_{GS}$=0V,$I_S$=8A | --- | --- | 1.3 | V |

| | | | | | | |
|---|---|---|---|---|---|---|
| **LS** | Continuous Source Current | VGS\<Vth | --- | --- | 40 | A |
| **LSp** | Pulsed Source Current | | --- | --- | 120 | |
| **Trr** | Reverse Recovery Time | $I_S$=8 A, di/dt=100 A/μs | --- | 50.2 | --- | NS |
| **Qrr** | Reverse Recovery Charge | | --- | 95.1 | --- | NC |

## 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 ℃.
5) $V_{DD}$=50 V, $R_G$=25 Ω, L=0.3 mH, starting $T_j$=25 ℃.

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

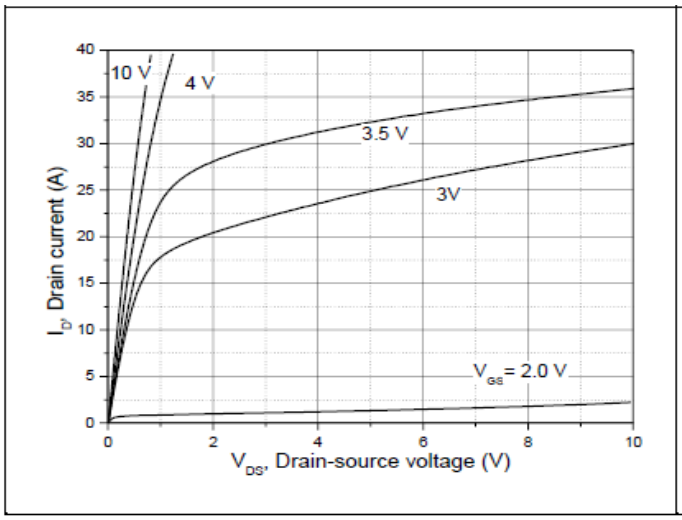



Figure 1, Typ. output characteristics

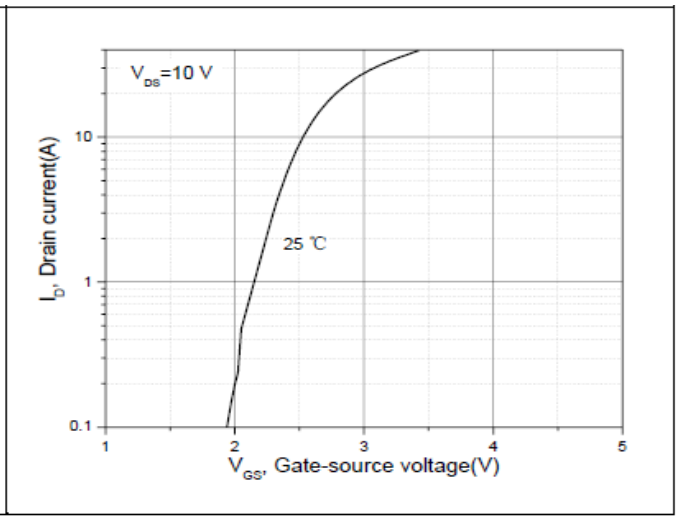



Figure 2, Typ. transfer characteristics

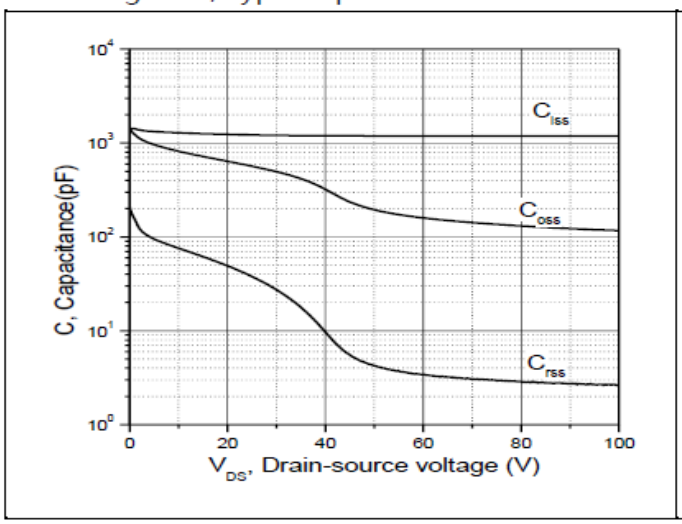



Figure 3, Typ. capacitances

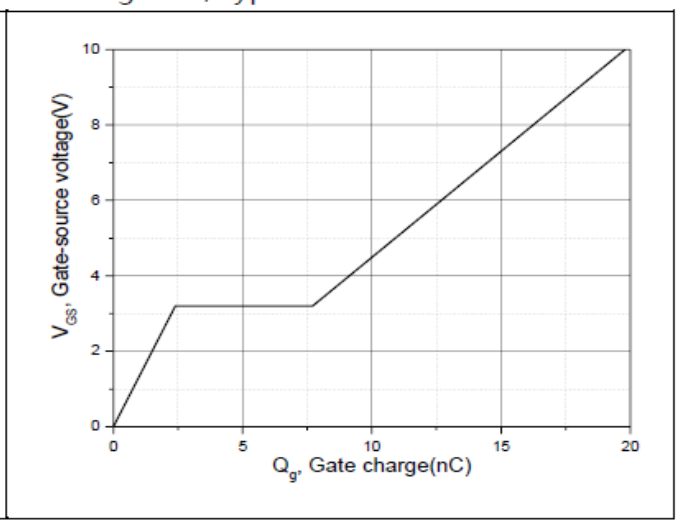



Figure 4, Typ. gate charge

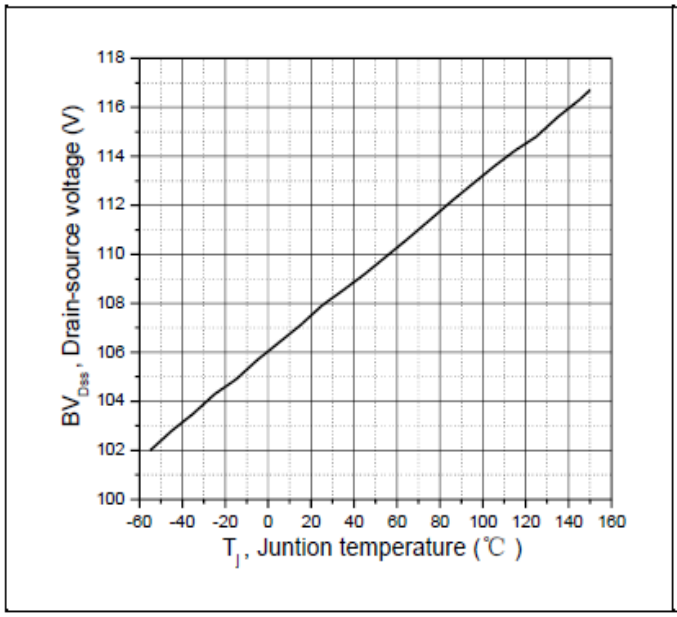



Figure 5, Drain-source breakdown voltage

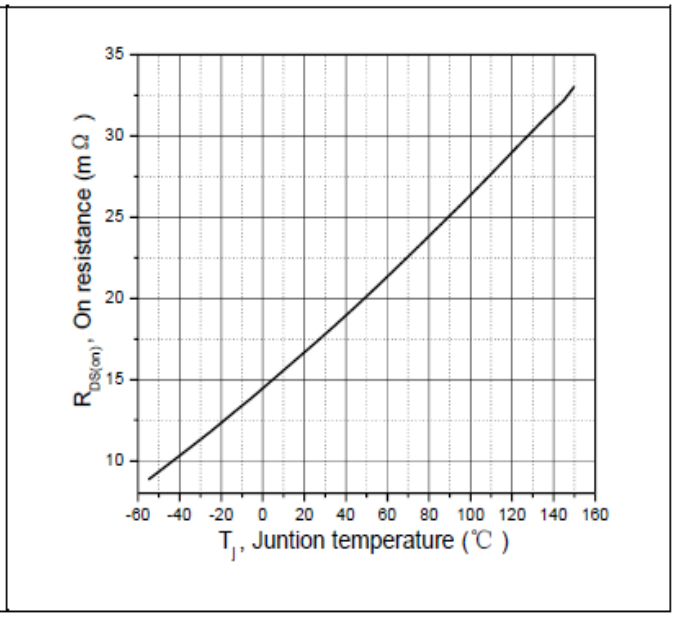



Figure 6, Drain-source on-state resistance

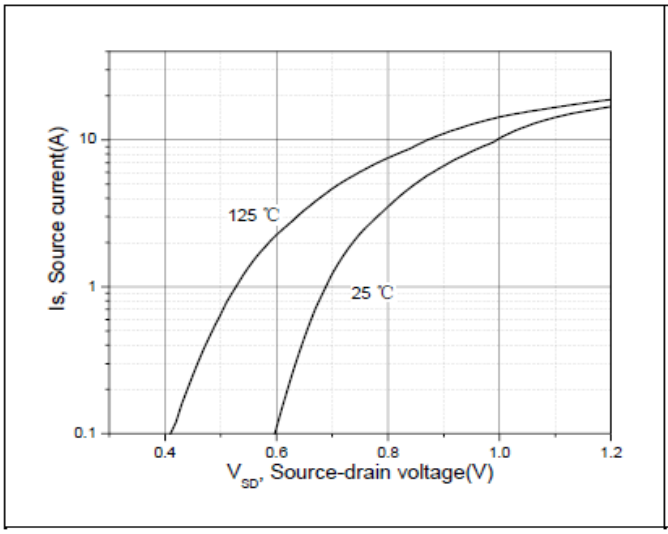



Figure 7, Forward characteristic of body diode

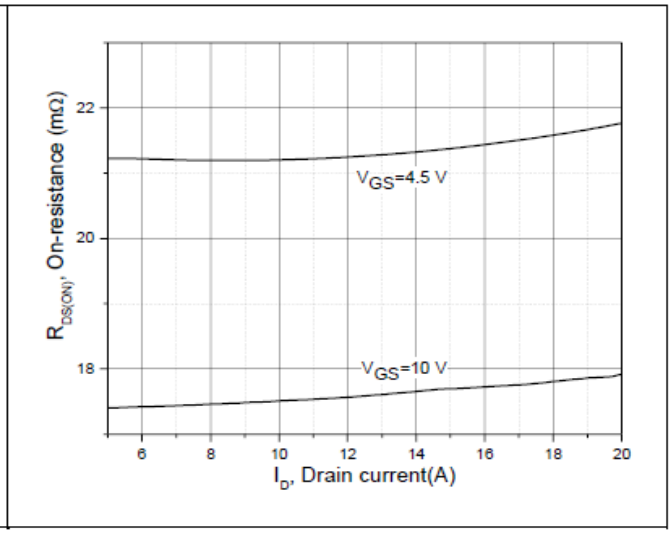



Figure 8, Drain-source on-state resistance

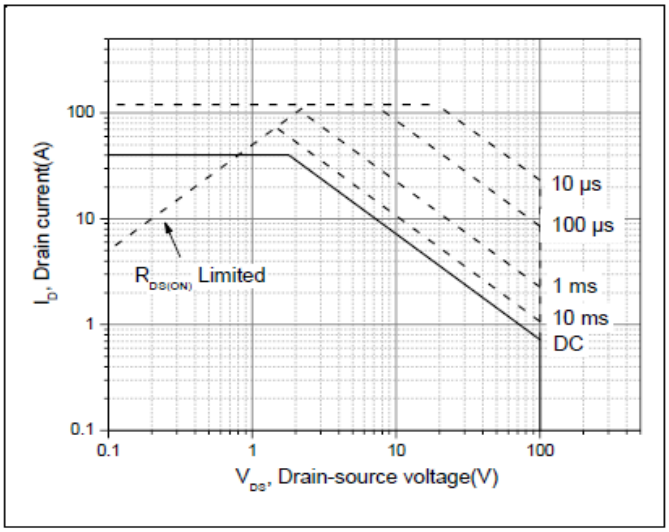



Figure 9, Safe operation area $T_C$=25 ℃

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