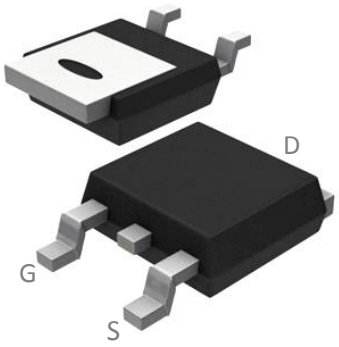
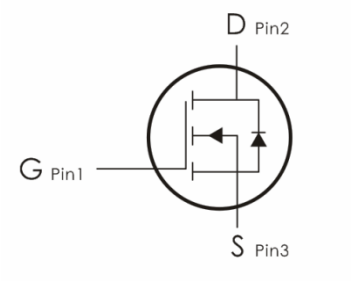
## Description：

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) $V_{DS}$=40V,$I_D$=30A,$R_{DS(ON)}$<16m Ω @$V_{GS}$=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 | 40 | V |
| $V_{GS}$ | Gate-Source Voltage | ±20 | V |
| $I_D$ | Continuous Drain Current-$T_C$=25℃[1] | 30 | A |
| | Continuous Drain Current-$T_C$=100℃[1] | 21.2 | |
| | Pulsed Drain Current[2] | 70 | |
| $P_D$ | Power Dissipation,$T_C$=25℃[4] | 45 | W |
| $T_J$, $T_{STG}$ | Operating and Storage Junction Temperature Range | -55 to +175 | ℃ |
| $R_{\theta JC}$ | Thermal Resistance,Junction to Case[2] | 3.3 | ℃/W |



Download from alldatasheet.com

## 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 | 40 | --- | --- | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{GS}$=0V, $V_{DS}$=40V | --- | --- | 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 | 1.5 | 2 | V |
| $R_{DS(ON)}$ | Drain-Source On Resistance | $V_{GS}$=10V,$I_D$=20A | --- | 12.9 | 16 | mΩ |
| | | $V_{GS}$=4.5V,$I_D$=15A | --- | 18.9 | 24 | |
| $G_{FS}$ | Forward Transconductance | $V_{DS}$=5V, $I_D$=20A | 33 | --- | --- | S |
| **Dynamic Characteristics**[4] | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=20V, $V_{GS}$=0V, f=1MHz | --- | 964 | --- | pF |
| $C_{oss}$ | Output Capacitance | | --- | 109 | --- | |
| $C_{rss}$ | Reverse Transfer Capacitance | | --- | 96 | --- | |
| **Switching Characteristics**[4] | | | | | | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{DD}$=30V, $I_D$=1A, $V_{GS}$=10V,$R_{GEN}$=3.3Ω | --- | 5.5 | --- | ns |
| $t_r$ | Rise Time | | --- | 14 | --- | ns |
| $t_{d(off)}$ | Turn-Off Delay Time | | --- | 24 | --- | ns |
| $t_f$ | Fall Time | | --- | 12 | --- | ns |
| $Q_g$ | Total Gate Charge | $V_{GS}$=10V, $V_{DS}$=20V, $I_D$=20A | --- | 22.9 | --- | nC |
| $Q_{gs}$ | Gate-Source Charge | | --- | 3.5 | --- | nC |
| $Q_{gd}$ | Gate-Drain “Miller” Charge | | --- | 5.3 | --- | nC |
| **Drain-Source Diode Characteristics** | | | | | | |
| $V_{SD}$ | Source-Drain Diode Forward Voltage[3] | $V_{GS}$=0V,$I_S$=30A | --- | --- | 1.2 | V |

,



Download from alldatasheet.com

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

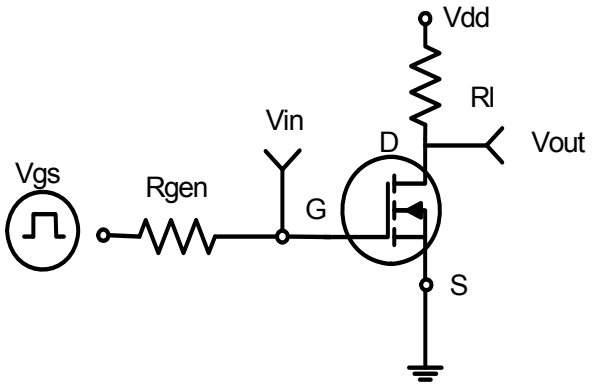



**Figure 1:Switching Test Circuit**

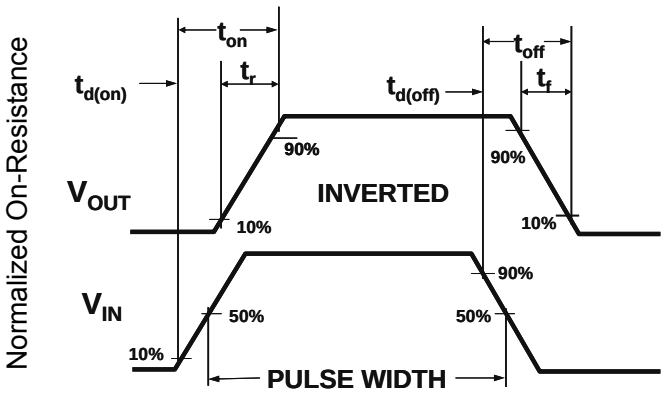
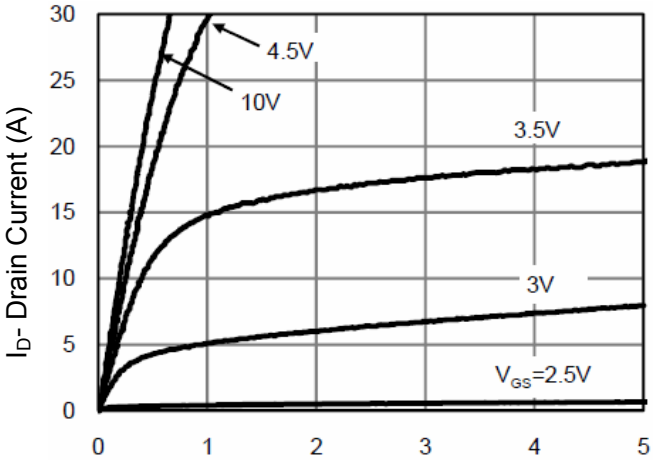
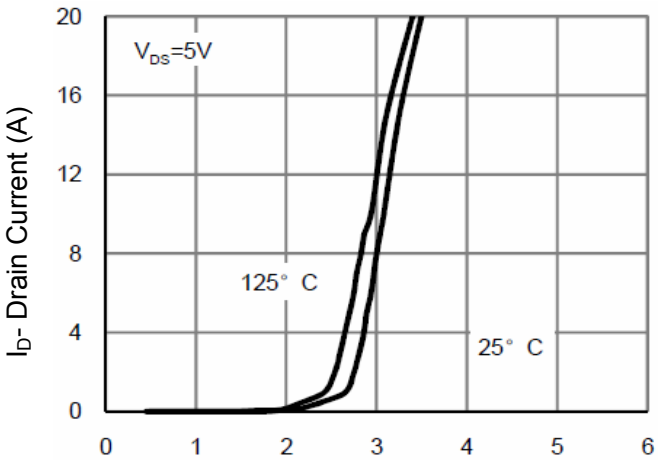



**Figure 2:Switching Waveforms**



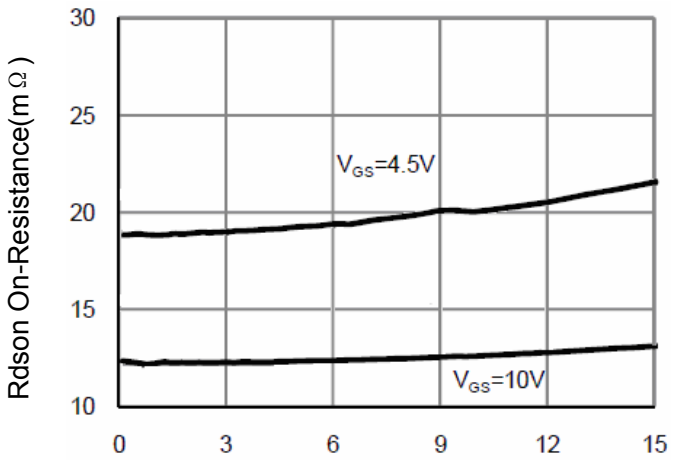

Vds Drain-Source Voltage (V)

**Figure 3 Output Characteristics**



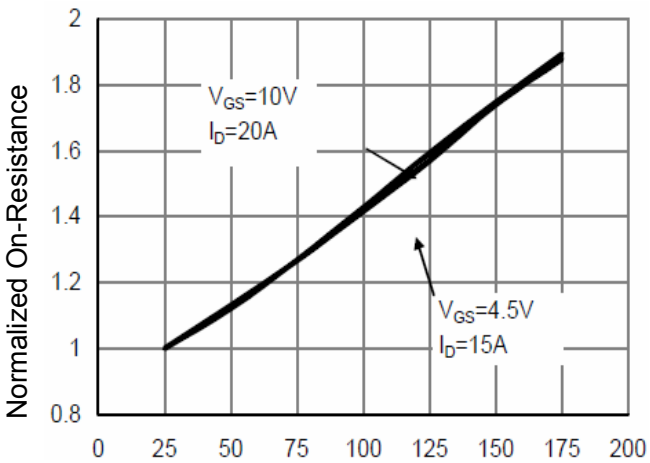

Vgs Gate-Source Voltage (V)

**Figure 4 Transfer Characteristics**




$I_D$- Drain Current (A)

**Figure 5 Drain-Source On-Resistance**




$T_J$-Junction Temperature(℃)

**Figure 6 Drain-Source On-Resistance**



Download from alldatasheet.com

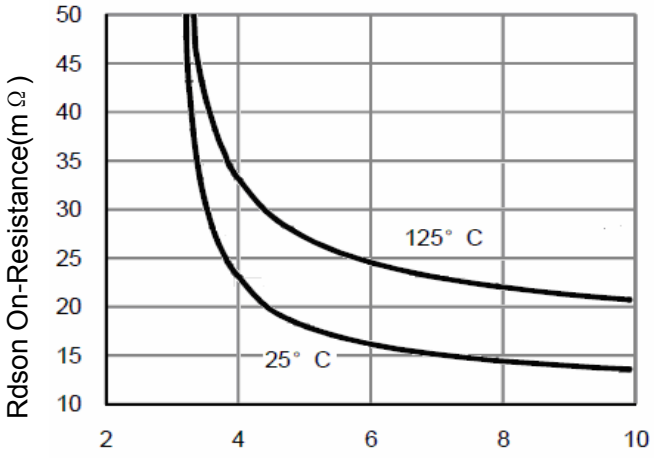



**Figure7 Rdson vs Vgs**

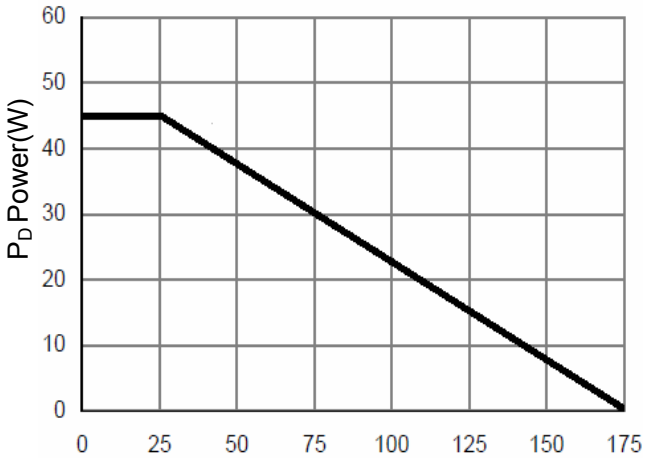



**Figure 8 Power Dissipation**

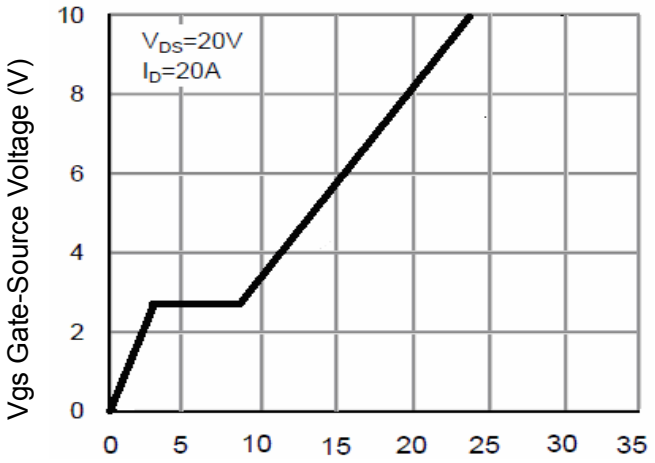



**Figure 9 Gate Charge**

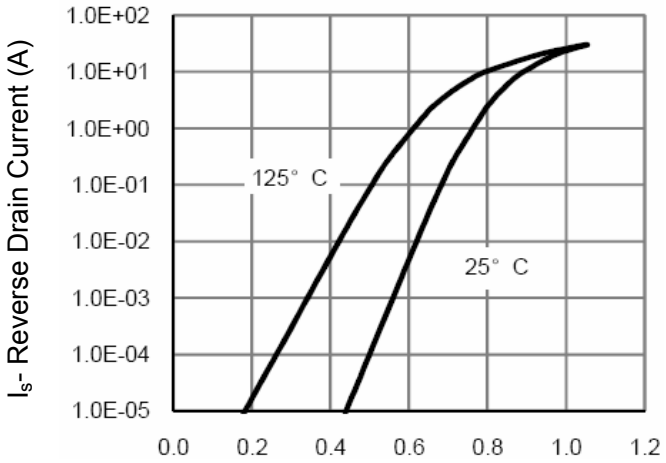



**Figure 10 Source- Drain Diode Forward**

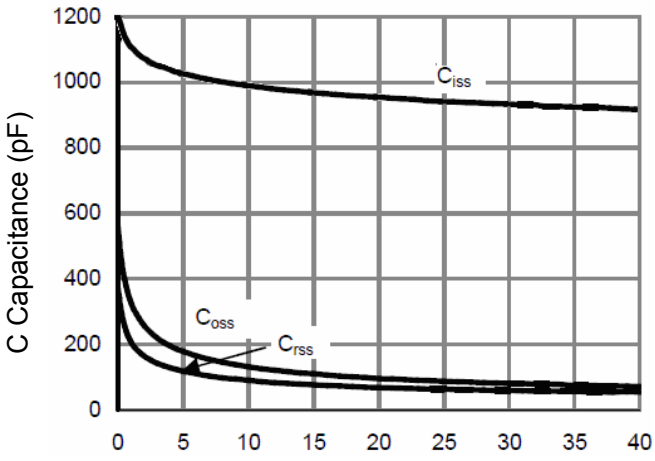



**Figure 11 Capacitance vs Vds**

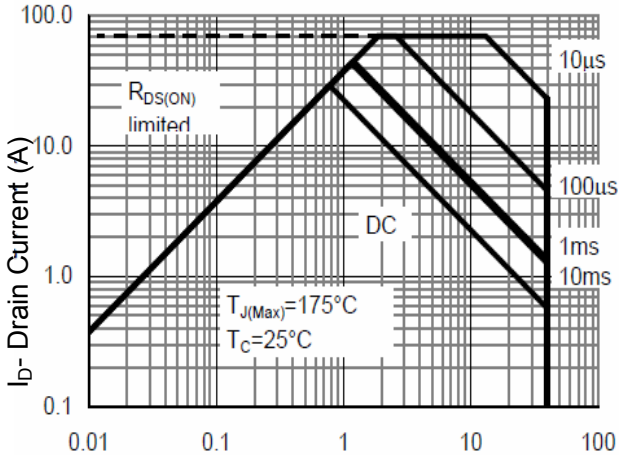



**Figure 12 Safe Operation Area**



Download from alldatasheet.com

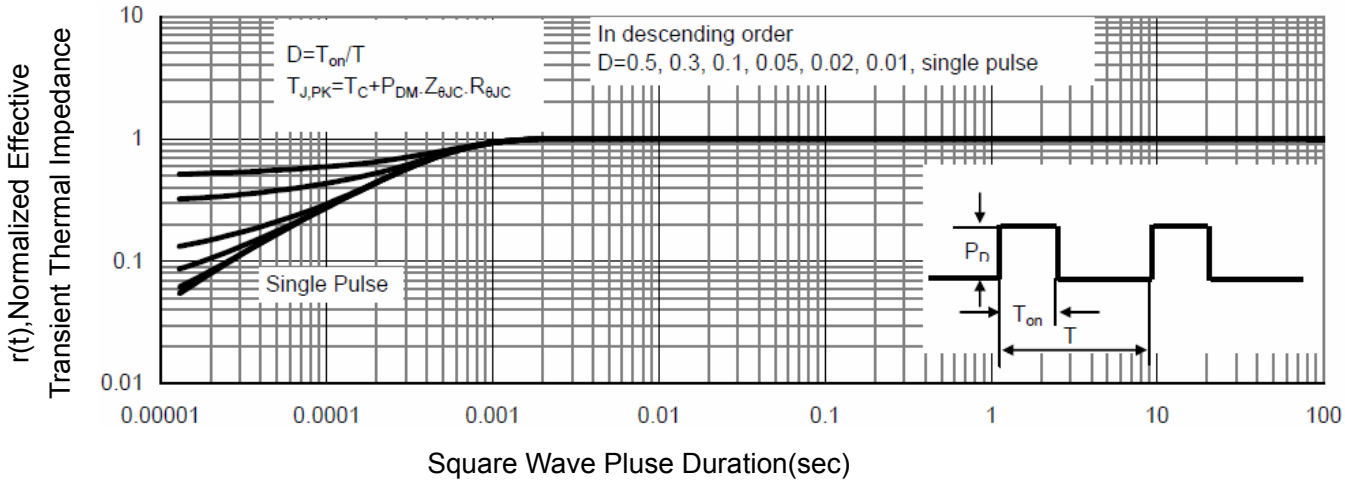



**Figure 13 Normalized Maximum Transient Thermal Impedance**



Download from alldatasheet.com