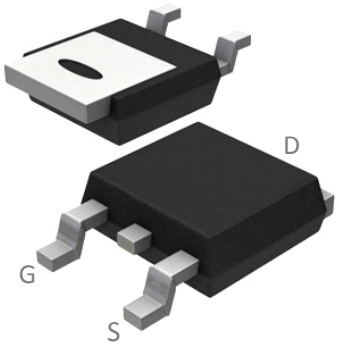
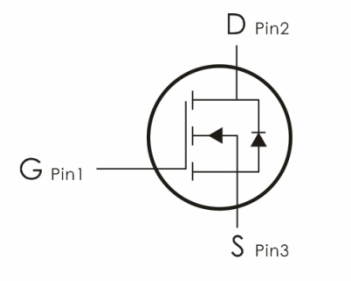
## Description：

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) $V_{DS}$=60V,$I_D$=55A,$R_{DS(ON)}$<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： (Tc=25℃ unless otherwise noted)

| Symbol | Parameter | Ratings | Units |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | 60 | V |
| $V_{GS}$ | Gate-Source Voltage | ±25 | V |
| $I_D$ | Continuous Drain Current $T_C$=25℃ | 55 | A |
| | Continuous Drain Current $T_C$=100℃ | 36 | |
| $E_{AS}$ | Single Pulse Avalanche Energy[note2] | 59 | mJ |
| $I_{DM}$ | Pulsed Drain Current[note1] | 220 | A |
| $P_D$ | Power Dissipation $T_C$=25℃ | 63 | W |
| $T_J$, $T_{STG}$ | Operating and Storage Junction Temperature Range | -55 to +175 | ℃ |

## Thermal Characteristics：

| Symbol | Parameter | Max | Units |
|---|---|---|---|
| $R_{\theta JC}$ | Thermal Resistance,Junction to Case | 2.4 | ℃/W |

## Package Marking and Ordering Information：

| Part NO. | Marking | Package |
|---|---|---|
| DOD55N06-H | 55N06-H | TO-252 |

## Electrical Characteristics: ($T_J$=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 | 60 | --- | --- | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{GS}$=0V, $V_{DS}$=60V | --- | --- | 1 | μA |
| $I_{GSS}$ | Gate-Source Leakage Current | $V_{GS}$=±25V, $V_{DS}$=0V | --- | --- | ±100 | nA |
| **On Characteristics** | | | | | | |
| $V_{GS(th)}$ | GATE-Source Threshold Voltage | $V_{GS}$=$V_{DS}$, $I_D$=250μA | 2 | 3 | 4 | V |
| $R_{DS(ON)}$ | Drain-Source On Resistance note3 | $V_{GS}$=10V,$I_D$=30A | --- | 8 | 12 | mΩ |
| **Dynamic Characteristics** | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=25V, $V_{GS}$=0V, f=1MHz | --- | 2045 | --- | pF |
| $C_{oss}$ | Output Capacitance | | --- | 170 | --- | |
| $C_{rss}$ | Reverse Transfer Capacitance | | --- | 151 | --- | |
| **Switching Characteristics** | | | | | | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{GS}$=10V ,$V_{DS}$=30V, $R_L$=1.5Ω,$R_{GEN}$=3Ω | --- | 10 | --- | ns |
| $t_r$ | Rise Time | | --- | 8 | --- | ns |
| $t_{d(off)}$ | Turn-Off Delay Time | | --- | 18 | --- | ns |
| $t_f$ | Fall Time | | --- | 5 | --- | ns |
| $Q_g$ | Total Gate Charge | $V_{GS}$=10V, $V_{DS}$=30V, $I_D$=20A | --- | 16 | --- | nC |
| $Q_{gs}$ | Gate-Source Charge | | --- | 5.6 | --- | nC |
| $Q_{gd}$ | Gate-Drain “Miller” Charge | | --- | 3.6 | --- | nC |
| **Drain-Source Diode Characteristics** | | | | | | |
| $I_S$ | Maximum Continuous Drain to Source Diode Forward Current | | --- | --- | 55 | A |
| $I_{SM}$ | Maximum Pulsed Drain to Source Diode Forward Current | | --- | --- | 220 | A |
| $V_{SD}$ | Source-Drain Diode Forward Voltage | $V_{GS}$=0V,$I_S$=30A | --- | --- | 1.2 | V |
| trr | Body Diode Revrse Recovery Time | $I_F$=20A, dI/t=50A/μs | --- | 18 | --- | ns |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Qrr** | Body Diode Revrse Recovery Charge | $I_F$=20A, dI/t=50A/ μ s | --- | 58 | --- | nc |

## Notes:

**1. Reptive Rating: Pulse Width Limted by Maximu Junction Temperature**

**2. EAS conditon : TJ=25℃,VD=30V,G=10V,L=0.5mH,Rg=25Ω,IAS=15.3A**

**3. Pulse Tst: Pulse Width≤30 μ s, Duty Cycle≤0.5%**

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

**Figure1:** Output Characteristics

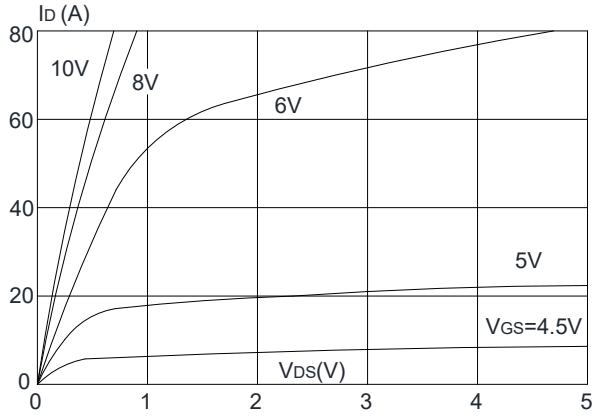



**Figure 2:** Typical Transfer Characteristics

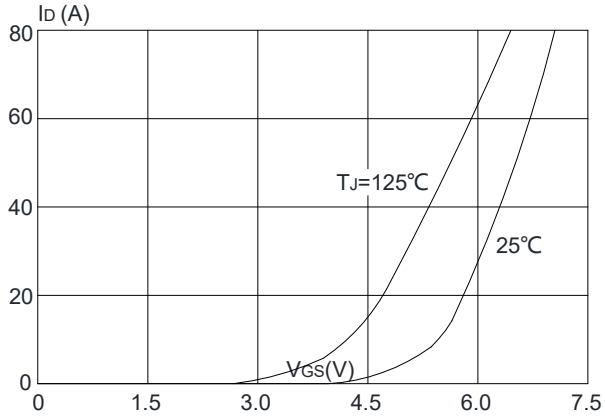



**Figure 3:**On-resistance vs. Drain Current

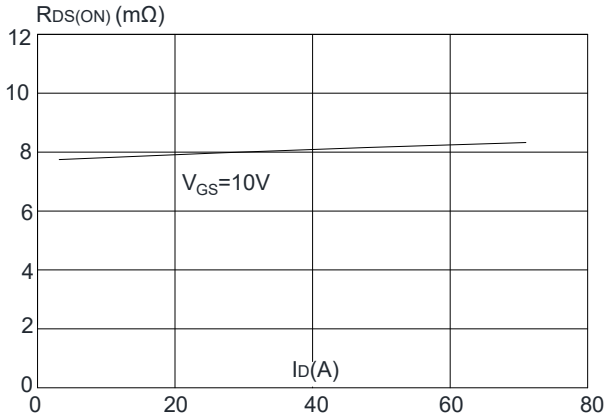



**Figure 4**: Body Diode Characteristics

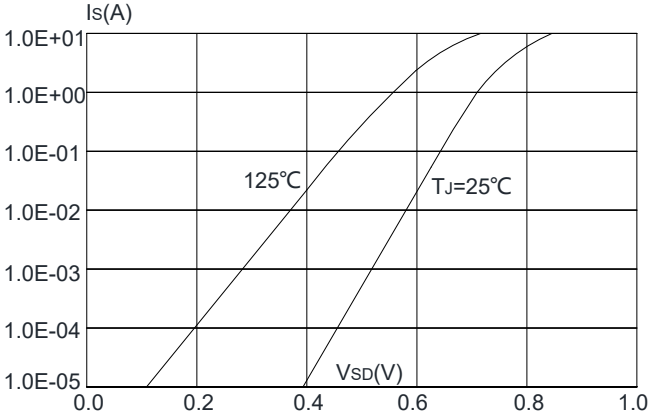



**Figure 5:** Gate Charge Characteristics

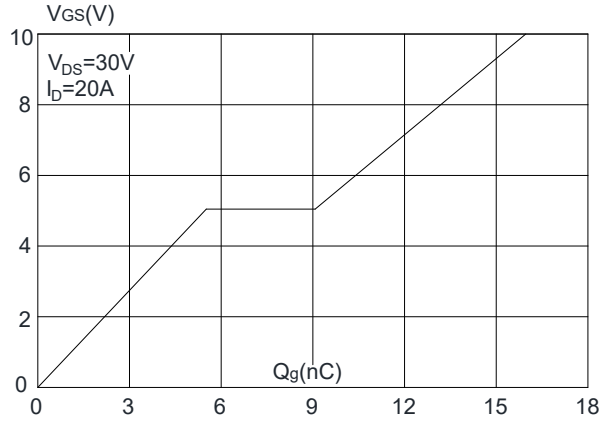



**Figure 6:** Capacitance Characteristics

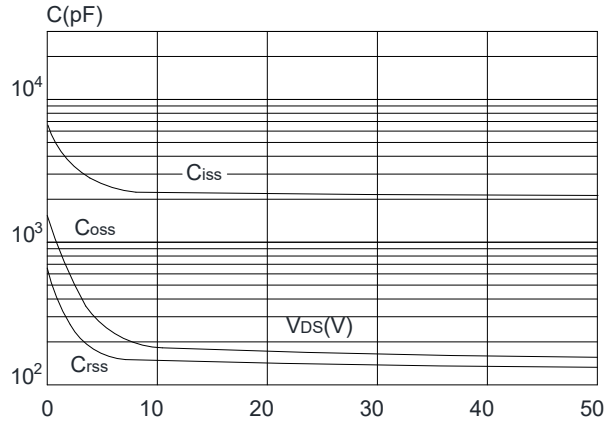


**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature

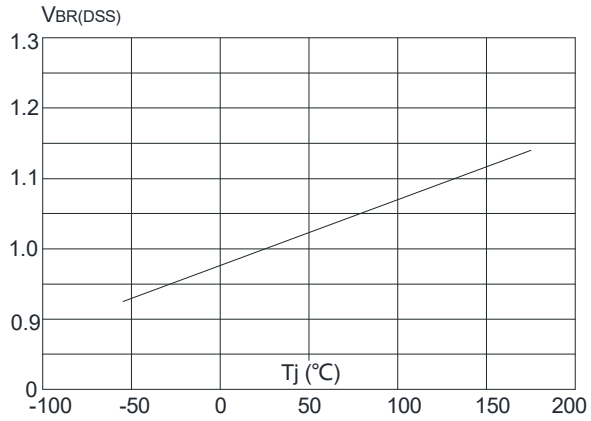



**Figure 8:** Normalized on Resistance vs. Junction Temperature

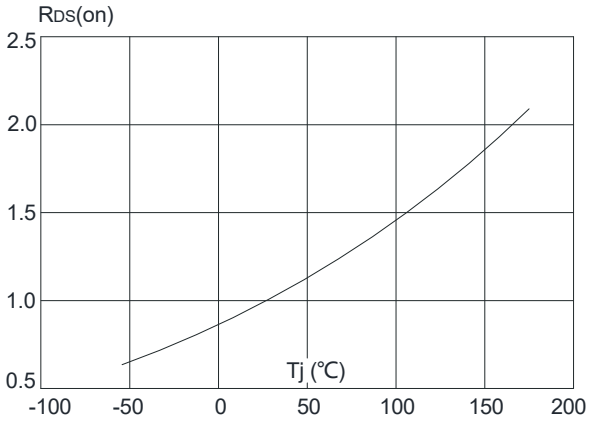



**Figure 9:** Maximum Safe Operating Area

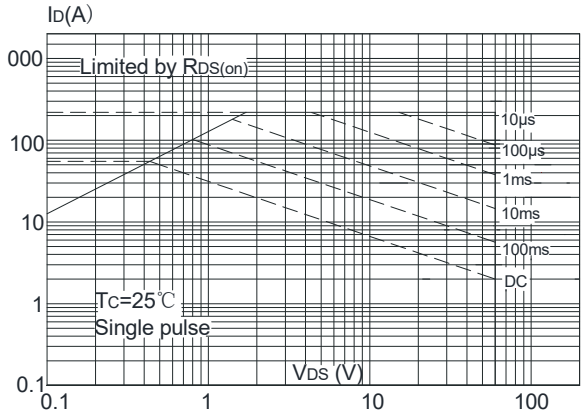



**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature

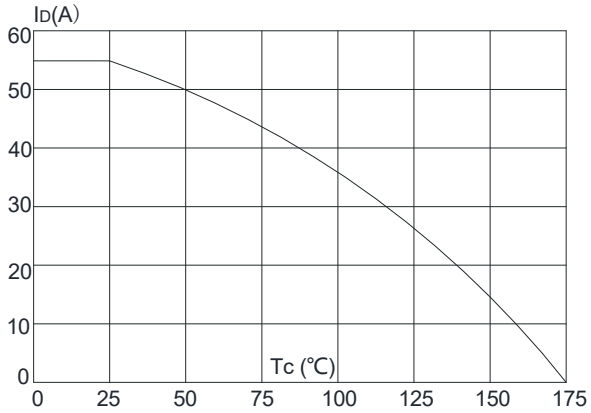



**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case