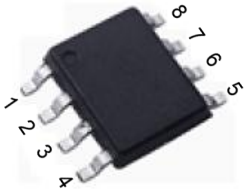
# N-Channel 30V (D-S) Power MOSFET

## Features

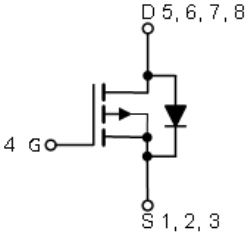
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM Rdson*Qg
- Halogen Free, Pb-Free
- RoHS Compliant




SOP-8

## Applications

- DC/DC
- Motors, lamps
- Power switching




## Absolute Maximum Ratings ($T_J$=25°C unless otherwise noted)

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain Source Voltage | | $V_{DS}$ | 30 | V |
| Gate Source Voltage | | $V_{GS}$ | ±20 | V |
| Drain Current, Continuous $V_{GS}$=10V *(Note 1)* | $T_A$=25°C | $I_D$ | 15 | A |
| Drain Current, Pulsed *(Note 2)* | | $I_{DM}$ | 60 | A |
| Single Avalanche Energy | | $E_{AS}$ | 63 | mJ |
| Power Dissipation *(Note 3)* | $T_A$=25°C | $P_D$ | 3 | W |
| Operating Junction/Storage Temperature Range | | $T_J/T_{STG}$ | -55 to +150 | °C |

*Note 1: Calculated continuous current based on maximum allowable junction temperature.*
*Note 2: Repetitive rating; pulse width limited by max. junction temperature.*
*Note 3:The power dissipation $P_D$ is based on max. junction temperature, using junction-to-case thermal resistance.*

## Thermal Characteristics

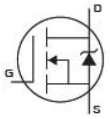
| Parameter | Symbol | Max | Unit |
|---|---|---|---|
| Junction-to-ambient (t ≤ 10s) *(Note 4)* | $R_{\theta JA}$ | 41 | °C/W |

*Note 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.*

## Electrical Characteristics ($T_J$ =25°C unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V, $I_D$=250μA | 30 | -- | -- | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=30V, $V_{GS}$=0V | -- | -- | 1 | uA |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{DS}$=$V_{GS}$, $I_{DS}$=250uA | 1 | -- | 2.5 | V |
| Gate Leakage Current | $I_{GSS}$ | $V_{GS}$=±20V | -- | -- | ±100 | nA |
| Drain-Source On-state Resistance *(Note 4)* | $R_{DS(on)}$ | $V_{GS}$=10V, $I_D$=15A | -- | 6.5 | 8 | mΩ |
| | | $V_{GS}$=4.5V, $I_D$=10A | -- | 9.8 | 14 | |
| Total Gate Charge | $Q_g$ | $V_{GS}$=10V, $V_{DS}$=15V, $I_D$=15A | -- | 23 | -- | nC |
| Gate-Source Charge | $Q_{gs}$ | | -- | 5 | -- | |
| Gate-Drain Charge | $Q_{gd}$ | | -- | 6 | -- | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{GS}$=10V, $V_{DS}$=22V, $I_D$=10A, $R_{GEN}$=2.2Ω | -- | 9.6 | -- | ns |
| Turn-on Rise Time | $t_r$ | | -- | 16.5 | -- | |
| Turn-off Delay Time | $t_{d(off)}$ | | -- | 25.8 | -- | |
| Turn-off Fall Time | $t_f$ | | -- | 2.8 | -- | |
| Input Capacitance | $C_{iss}$ | $V_{GS}$=0V, $V_{DS}$=30V, f=1MHz | -- | 1172 | -- | pF |
| Output Capacitance | $C_{oss}$ | | -- | 122 | -- | |
| Reverse Transfer Capacitance | $C_{rss}$ | | -- | 106 | -- | |

## Reverse Diode Characteristics ($T_J$ =25°C unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Continuous Source Current (Body Diode) *(Note 1)* | $I_S$ | MOSFET symbol showing the integral reverse p-n junction diode.  | -- | -- | 15 | A |
| Pulsed Source Current (Body Diode) *(Note 1)* | $I_{SM}$ | | -- | -- | 60 | A |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=15A, $V_{GS}$=0V | -- | -- | 1.2 | V |
| Reverse Recovery Time | $t_{rr}$ | $T_J$ = 25°C, $I_F$ =20A, di/dt = 100A/μs | -- | 10 | -- | ns |
| Reverse Recovery Charge | $Q_{rr}$ | | -- | 3 | -- | nC |

*Note 1: Calculated continuous current based on maximum allowable junction temperature.*

## Typical Characteristics Curves ($T_J$ = 25℃ unless otherwise noted)

Fig.1 - Typical Output Characteristics

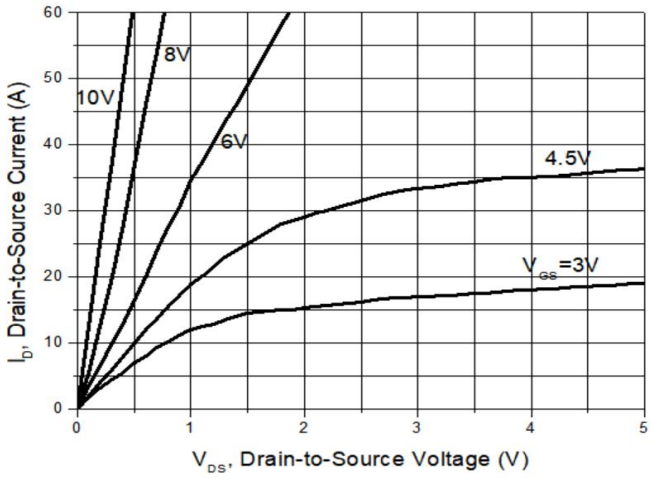



Fig.2 - Typical Transfer Characteristics

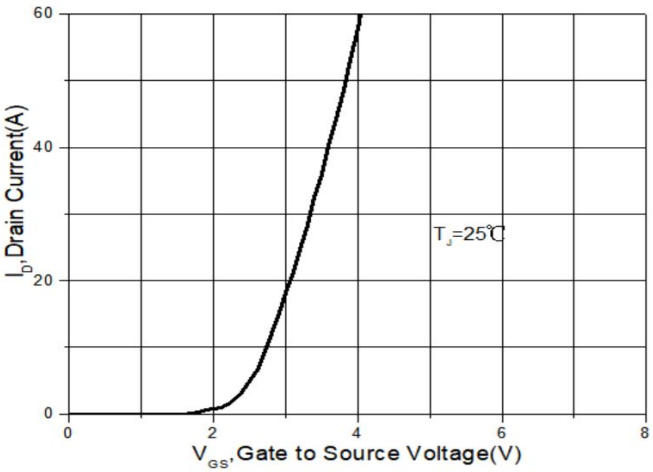



Fig.3 -Drain-to-Source Breakdown Voltage vs. Junction Temperature

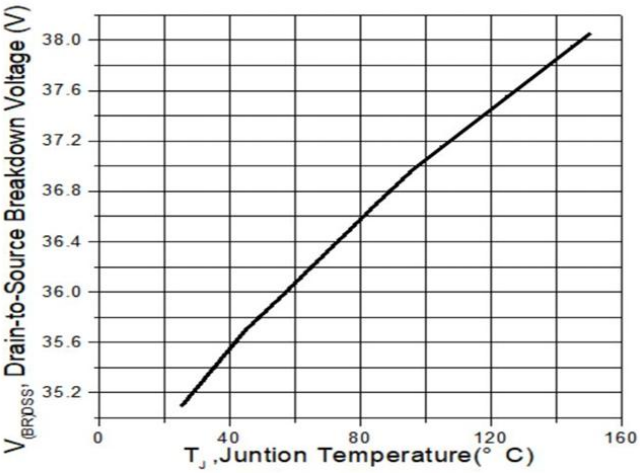



Fig.4 - On-Resistance vs. Junction Temperature

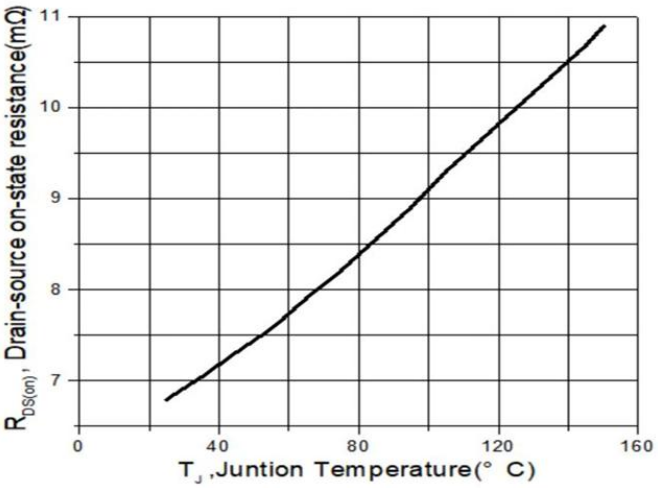



Fig.5 - VGS(th) vs. Junction Temperature

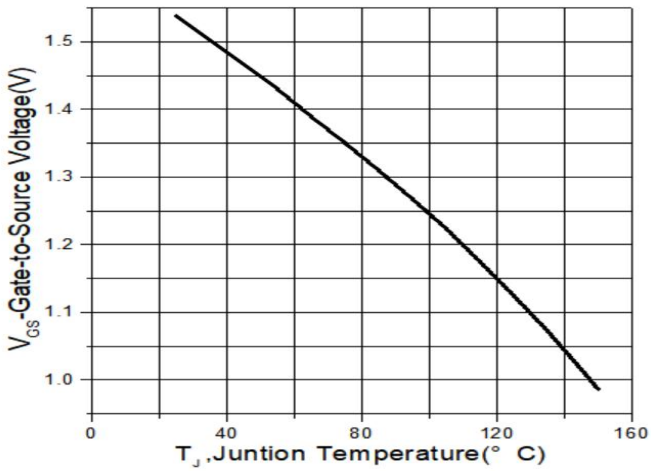



Fig.6 -Capacitance Characteristics

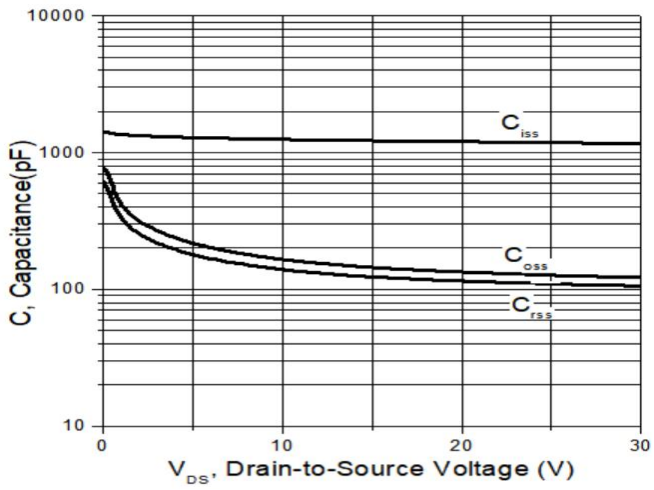


Fig.7-Drain Current vs. Case Temperature

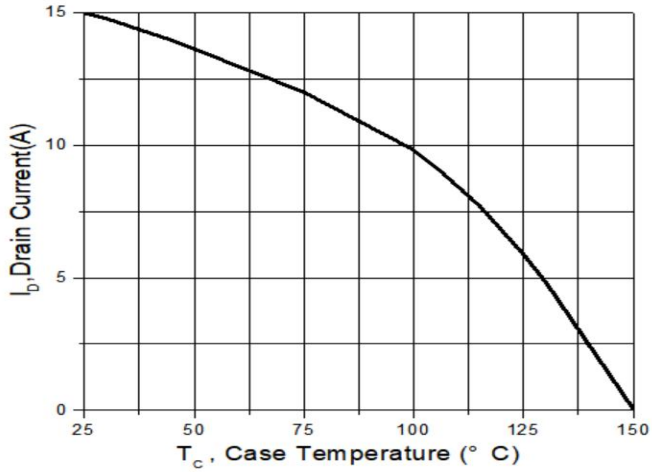



Fig.8-Gate Charge

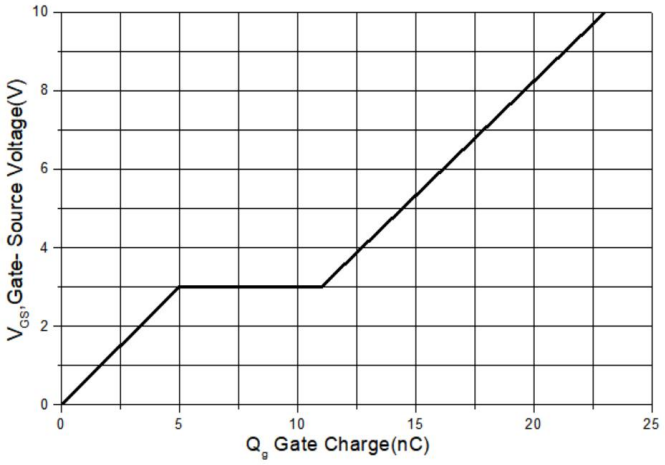



Fig.9- Safe Operation Area

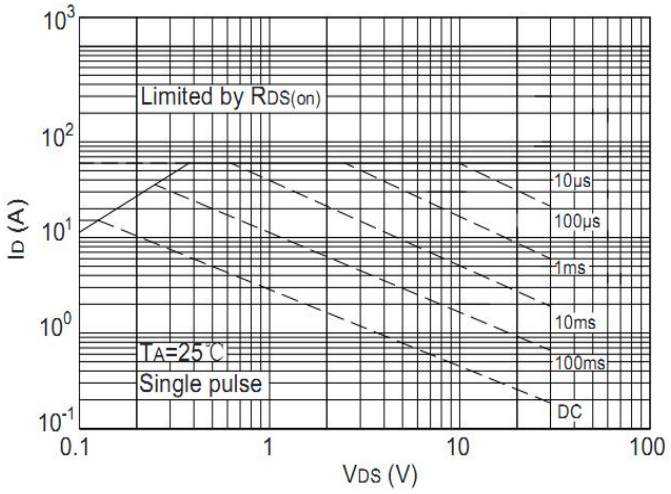
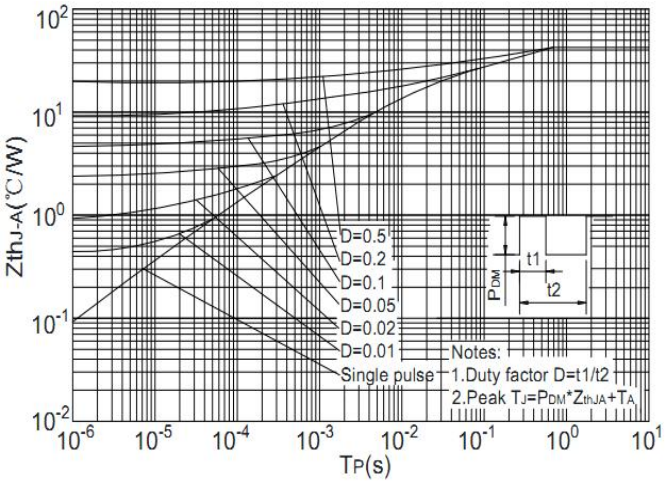
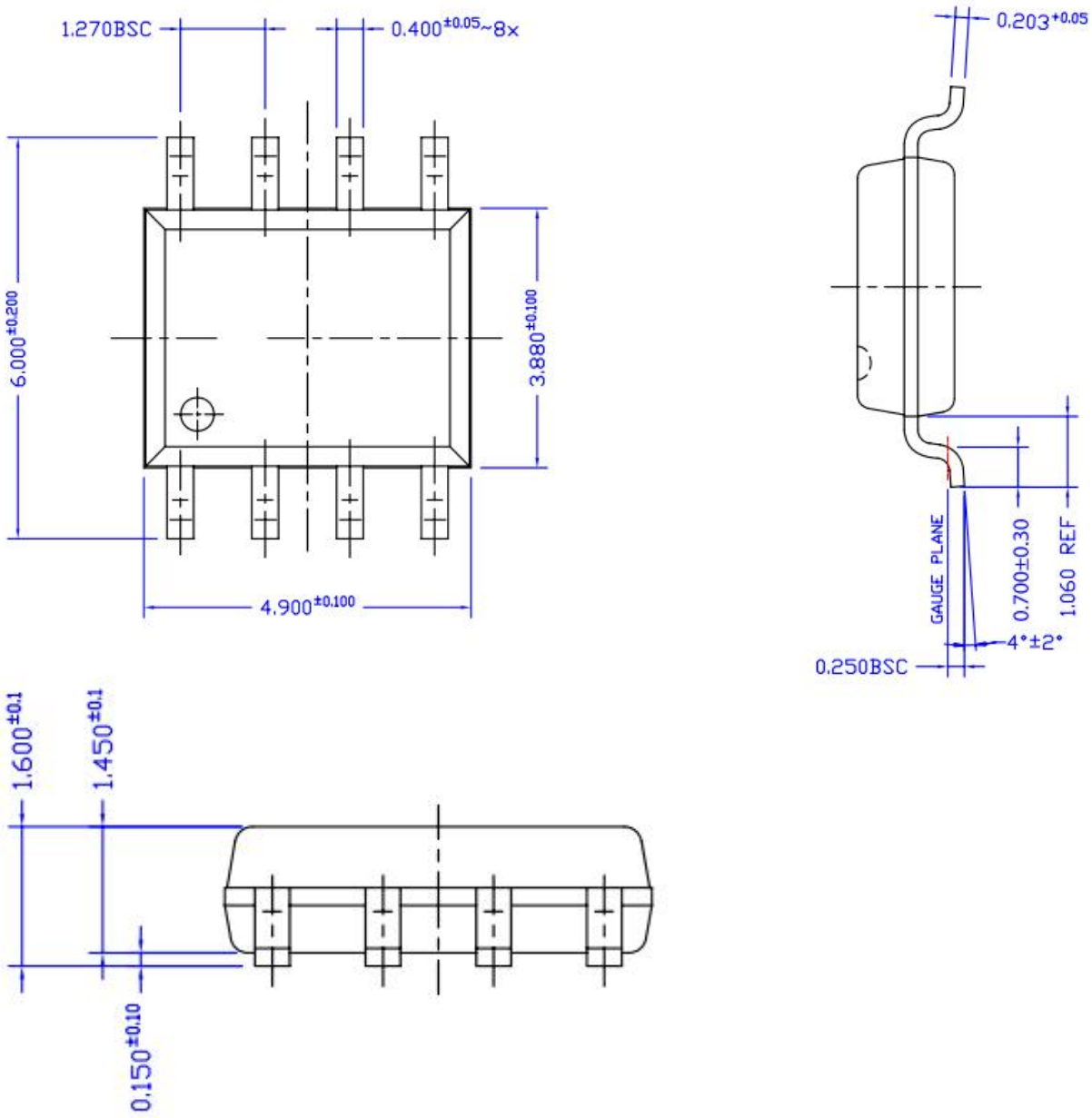



Fig.10 -Transient Thermal Impedance



## Package Outline Dimensions (Unit: millimeters)

### SOP-8




## Revision History

| Version | Date | Major Changes |
|---|---|---|
| Rev.A | 2025.08.04 | Official Release |
| | | |
| | | |

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