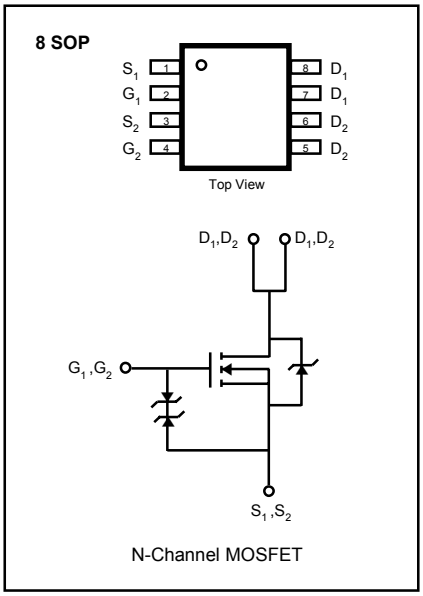
# Dual N-CHANNEL POWER MOSFET

# SSD2007A

## FEATURES

- ❑ Extremely Lower $R_{DS(ON)}$
- ❑ Improved Inductive Ruggedness
- ❑ Fast Switching Times
- ❑ Rugged Polysilicon Gate Cell Structure
- ❑ Low Input Capacitance
- ❑ Extended Safe Operating Area
- ❑ Improved High Temperature Reliability
- ❑ Surface Mounding Package : **8SOP**




## Absolute Maximum Ratings

| Symbol | Characteristic | Value | Units |
|---|---|---|---|
| $V_{DSS}$ | Drain-to-Source Voltage(1) | 50 | V |
| $V_{DGR}$ | Drain-Gate Voltage($R_{GS}$=1.0MΩ)(1) | 50 | V |
| $V_{GS}$ | Gate-to-Source Voltage | ±20 | V |
| $I_D$ | Continuous Drain Current $T_A$=25℃ | 2.0 | A |
| $I_D$ | Continuous Drain Current $T_A$=100℃ | 1.6 | A |
| $I_{DM}$ | Drain Current-Pulsed (2) | 8.0 | V |
| $P_D$ | Total Power Dissipation $T_A$=25℃<br>$T_A$=70℃ | 2.0<br>1.3 | W |
| $T_J$ , $T_{STG}$ | Operating and Storage<br>Junction Temperature Range | - 55 to +150 | ℃ |
| $T_L$ | Maximum Lead Temp. for Soldering<br>Purposes, 1/16" from case for 5 seconds | 300 | |

**Notes ;**

(1) $T_J$= 25℃ to 150℃

(2) Repetitive Rating : Pulse Width Limited by Max. Junction Temperature

## Electrical Characteristics ($T_A$=25℃ unless otherwise specified)

| Symbol | Characteristic | Min. | Typ. | Max. | Units | Test Condition |
|---|---|---|---|---|---|---|
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | 50 | -- | -- | V | $V_{GS}$=0V,$I_D$=250μA |
| $V_{GS(th)}$ | Gate Threshold Voltage | 2.0 | -- | 4.0 | V | $V_{DS}$= $V_{GS}$ ,$I_D$=250μA |
| $I_{GSS}$ | Gate-Source Leakage , Forward | -- | -- | 1.0 | μA | $V_{GS}$=20V |
| | Gate-Source Leakage , Reverse | -- | -- | -1.0 | μA | $V_{GS}$=-20V |
| $I_{DSS}$ | Drain-to-Source Leakage Current | -- | -- | 2 | μA | $V_{DS}$=50V |
| | | -- | -- | 25 | | $V_{DS}$=40V,$T_J$=55℃ |
| $I_{DON}$ | On-State Drain-Source Current(2) | 8.0 | -- | -- | A | $V_{GS}$=10V,$V_{DS}$=5V |
| $R_{DS(on)}$ | Static Drain-Source | | | 0.3 | Ω | $V_{GS}$=10V,$I_D$=1.5A |
| | On-State Resistance(2) | | | 0.5 | | $V_{GS}$=5.0V,$I_D$=0.6A |
| $g_{fs}$ | Forward Transconductance | -- | 2.5 | -- | S | $V_{DS}$ ≥15V,$I_D$=2.0A |
| $t_{d(on)}$ | Turn-On Delay Time | -- | -- | 40 | ns | $V_{DD}$=30V,$I_D$=0.6A, $Z_0$=6.0Ω, |
| $t_r$ | Rise Time | -- | -- | 70 | | |
| $t_{d(off)}$ | Turn-Off Delay Time | -- | -- | 100 | | |
| $t_f$ | Fall Time | -- | -- | 70 | | |
| $Q_g$ | Total Gate Charge | -- | -- | 15 | nC | $V_{DS}$=25V,$V_{GS}$=10V, $I_D$=1.3A |
| $Q_{gs}$ | Gate-Source Charge | -- | 1.0 | -- | | |
| $Q_{gd}$ | Gate-Drain (“Miller”) Charge | -- | 2.0 | -- | | |

## Thermal Resistance

| Symbol | Characteristic | Typ. | Max. | Units |
|---|---|---|---|---|
| $R_{\theta JA}$ | Junction-to-Ambient | -- | 62.5 | ℃/W |

**Notes ;**

(1) $T_J$= 25℃ to 150℃

(2) Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

## Source-Drain Diode Ratings and Characteristics

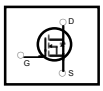
| Symbol | Characteristic | Min. | Typ. | Max. | Units | Test Condition |
|---|---|---|---|---|---|---|
| $I_S$ | Continuous Source Current (Body Diode) | -- | -- | 1.8 | A | Modified MOSFET Symbol Showing the Integral Reverse P-N Junction Rectifier  |
| | | -- | -- | | | |
| | | -- | -- | | | |
| $V_{SD}$ | Diode Forward Voltage(2) | -- | -- | 1.2 | V | $T_J$=25℃,$I_S$=1.25A,$V_{GS}$=0V |
| $t_{rr}$ | Reverse Recovery Time | -- | -- | 100 | ns | $T_J$=25℃,$I_F$=2.5A,$di_F/dt$=100A/μs |

**Fig 1. Output Characteristics**

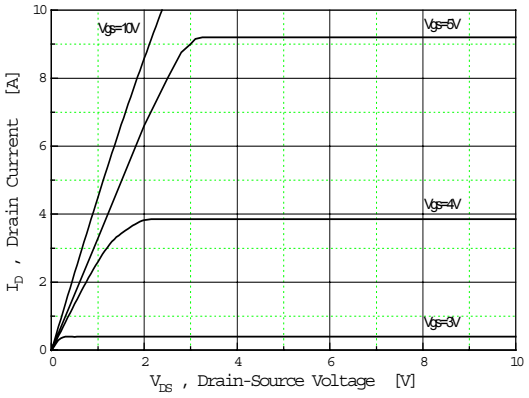



**Fig 2. Transfer Characteristics**

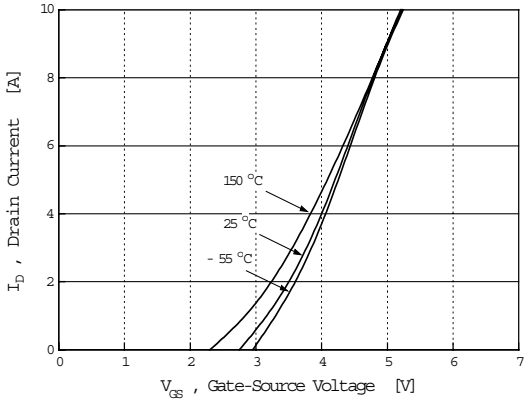



**Fig 3. On-Resistance vs. Drain Current**

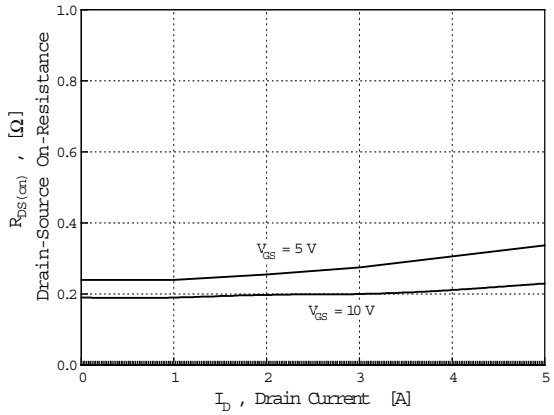



**Fig 4. Capacitance vs. Drain-Source Voltage**

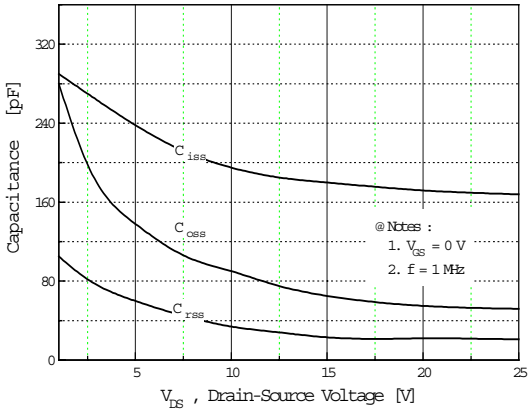



**Fig 5. Breakdown Voltage vs. Temperature**

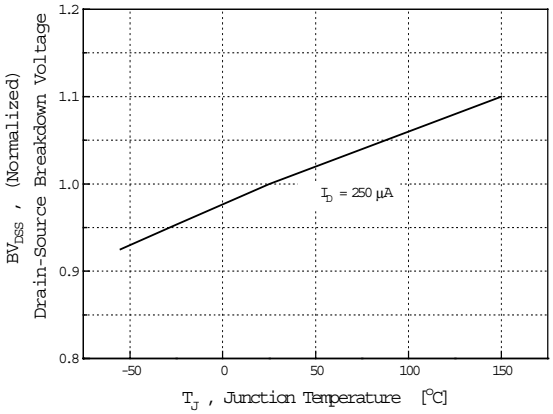



**Fig 6. Nomalized On-Resistance vs. Temperature**

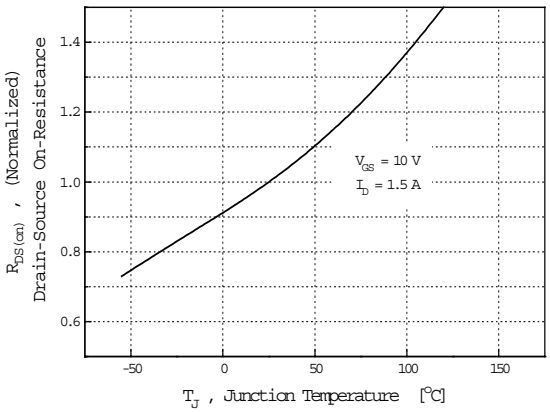


**Fig 7. Nomalized Effective Transient Thermal Impedance, Junction-to-Amdient**

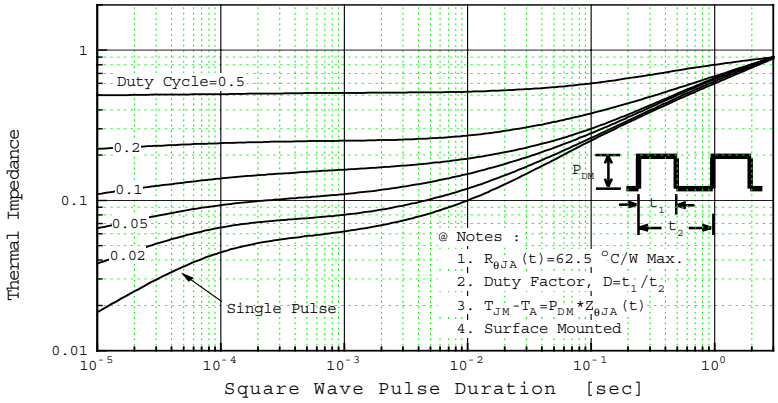



**Fig 8. Source-Drain Diode Forward Voltage**

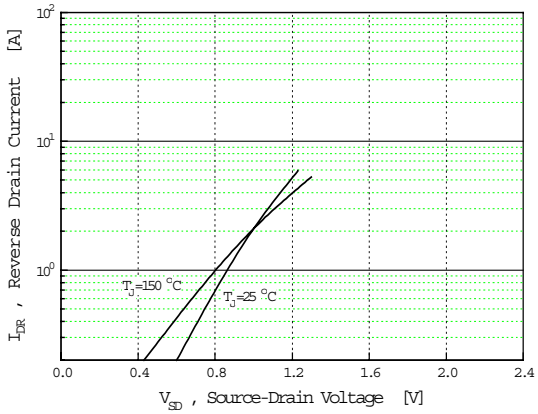



**Fig 9. Gate Charge vs. Gate-Source Voltage**

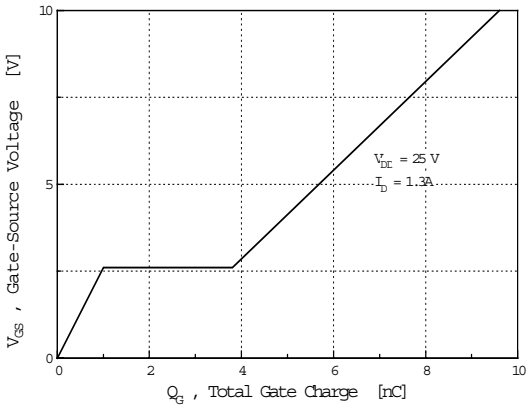
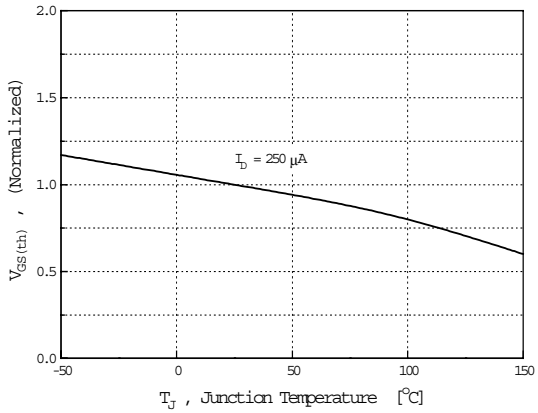



**Fig 10. Threshold Voltage**



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