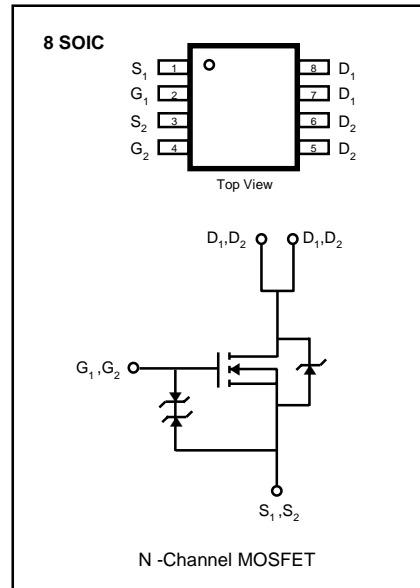


FEATURES

- ❑ Lower $R_{DS(on)}$
- ❑ Improved Inductive Ruggedness
- ❑ Fast Switching Times
- ❑ Low Input Capacitance
- ❑ Extended Safe Operating Area
- ❑ Improved High Temperature Reliability

Product Summary

| Part Number | BV_{DSS} | $R_{DS(on)}$ | I_D |
|-------------|------------|---------------|-------|
| SSD2025 | 60V | 0.10 Ω | 3.3A |



Absolute Maximum Ratings

| Symbol | Characteristic | Value | Units |
|----------------|--|--------------|------------------|
| V_{DSS} | Drain-to-Source Voltage | 60 | V |
| I_D | Continuous Drain Current $T_A=25^\circ\text{C}$ | 3.3 | A |
| | Continuous Drain Current $T_A=70^\circ\text{C}$ | 2.6 | |
| I_{DM} | Drain Current-Pulsed ^① | 10.0 | A |
| V_{GS} | Gate-to-Source Voltage | ± 20 | V |
| P_D | Total Power Dissipation ($T_A=25^\circ\text{C}$) | 2.0 | W |
| | ($T_A=70^\circ\text{C}$) | 1.3 | |
| T_J, T_{STG} | Operating and Junction Storage Temperature Range | - 55 to +150 | $^\circ\text{C}$ |


Thermal Resistance

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

Electrical Characteristics (T_C=25°C unless otherwise specified)

| Symbol | Characteristic | Min. | Typ. | Max. | Units | Test Condition |
|---------------------|---------------------------------|------|-------|------|-------|--|
| BV _{DSS} | Drain-Source Breakdown Voltage | 60 | -- | -- | V | V _{GS} =0V, I _D =250μA |
| V _{GS(th)} | Gate Threshold Voltage | 1.0 | -- | -- | V | V _{DS} =5V, I _D =250μA |
| I _{GSS} | Gate-Source Leakage, Forward | -- | -- | 100 | nA | V _{GS} =20V |
| | Gate-Source Leakage, Reverse | -- | -- | -100 | nA | V _{GS} =-20V |
| I _{DSS} | Drain-to-Source Leakage Current | -- | -- | 1.0 | μA | V _{DS} =48V |
| | | -- | -- | 25 | | V _{DS} =48V, T _C =55°C |
| I _{DON} | On-State Drain-Source Current | 10 | -- | -- | A | V _{DS} =5V, V _{GS} =10V |
| R _{DS(on)} | Static Drain-Source | -- | 0.065 | 0.1 | Ω | V _{GS} =10V, I _D =3.3A |
| | On-State Resistance ② | -- | 0.084 | 0.2 | | V _{GS} =4.5V, I _D =2.5A |
| g _{FS} | Forward Transconductance ② | -- | 7.0 | -- | S | V _{DS} =15V, I _D =3.3A |
| t _{d(on)} | Turn-On Delay Time | -- | 16 | 25 | ns | V _{DD} =30V, I _D =1.0A, R _θ =6.0Ω, ②③ |
| t _r | Rise Time | -- | 18 | 30 | | |
| t _{d(off)} | Turn-Off Delay Time | -- | 40 | 50 | | |
| t _f | Fall Time | -- | 23 | 40 | | |
| Q _g | Total Gate Charge | -- | 18 | 30 | nC | V _{DS} =30V, V _{GS} =10V, I _D =3.3A ②③ |
| Q _{gs} | Gate-Source Charge | -- | 2.3 | -- | | |
| Q _{gd} | Gate-Drain ("Miller") Charge | -- | 4.7 | -- | | |

Source-Drain Diode Ratings and Characteristics

| Symbol | Characteristic | Min. | Typ. | Max. | Units | Test Condition |
|-----------------|---|------|------|------|-------|--|
| I _S | Continuous Source Current (Body Diode) | -- | -- | 1.7 | A | Modified MOSFET Symbol Showing the Integral Reverse P-N Junction Rectifier  |
| V _{SD} | Diode Forward Voltage ② | -- | -- | 1.2 | V | T _A =25°C, I _S =1.7A, V _{GS} =0V |
| t _{rr} | Reverse Recovery Time ② | -- | 70 | 100 | ns | T _A =25°C, I _F =1.7A, di _F /dt=100A/μs |

Notes ;

- ① Repetitive Rating : Pulse Width Limited by Maximum Junction Temperature
- ② Pulse Test : Pulse Width = 250μs, Duty Cycle ≤ 2%
- ③ Essentially Independent of Operating Temperature

Fig 1. Output Characteristics

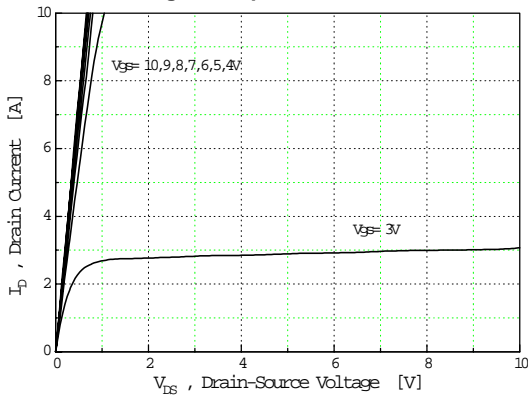


Fig 2. Transfer Characteristics

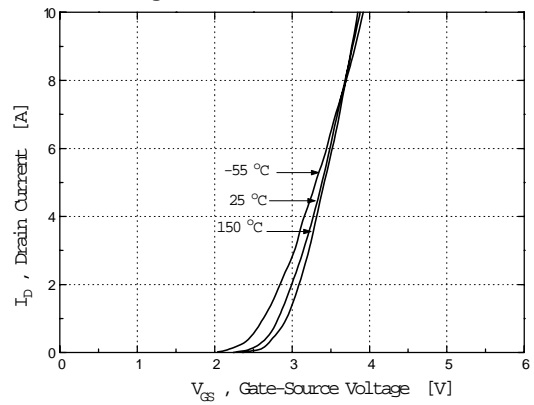


Fig 3. On-Resistance vs. Drain Current

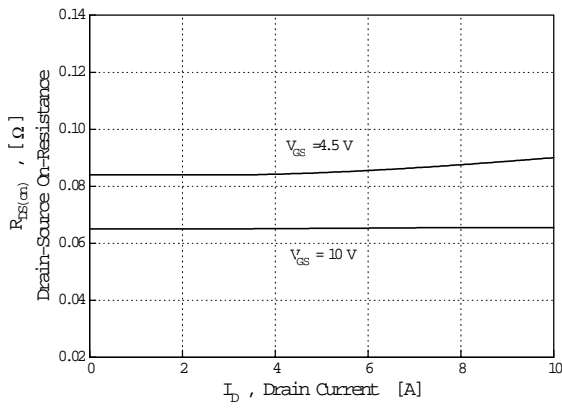


Fig 4. Source-Drain Forward Voltage

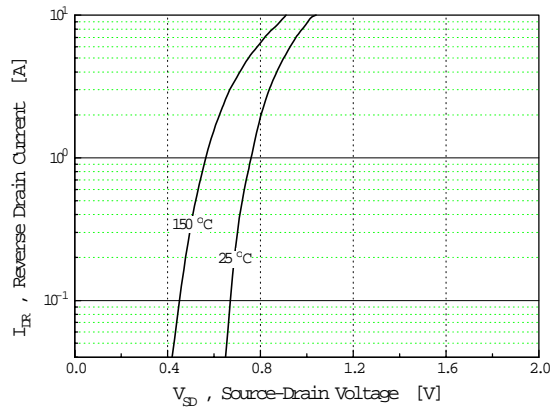


Fig 5. Capacitance vs. Drain-Source Voltage

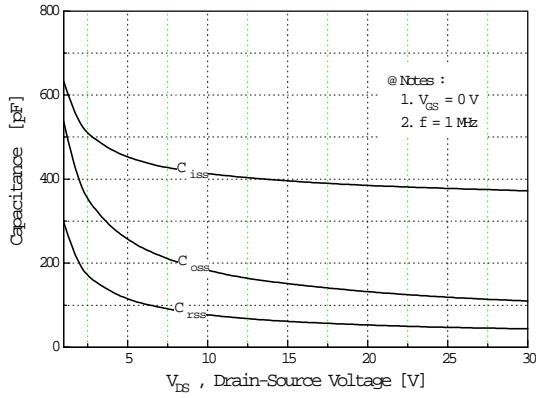


Fig 6. Gate Charge vs. Gate-Source Voltage

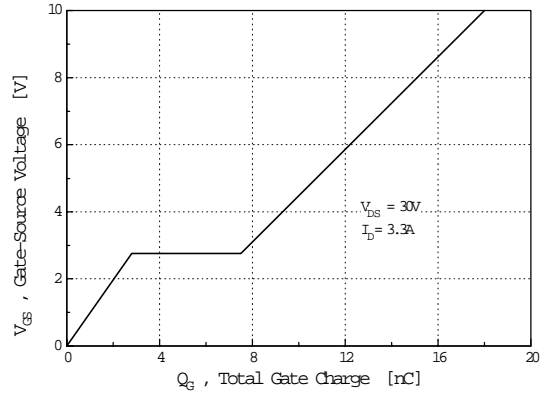


Fig 7. Breakdown Voltage vs. Temperature

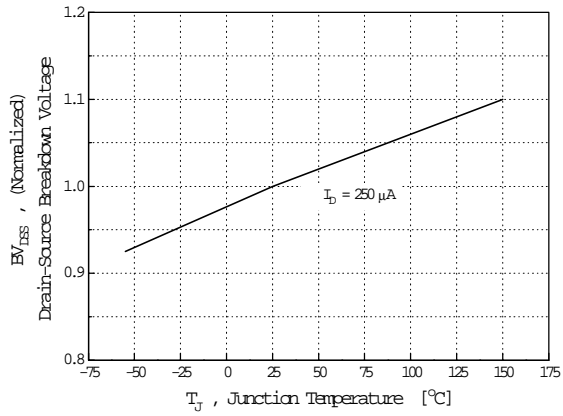


Fig 8. On-Resistance vs. Temperature

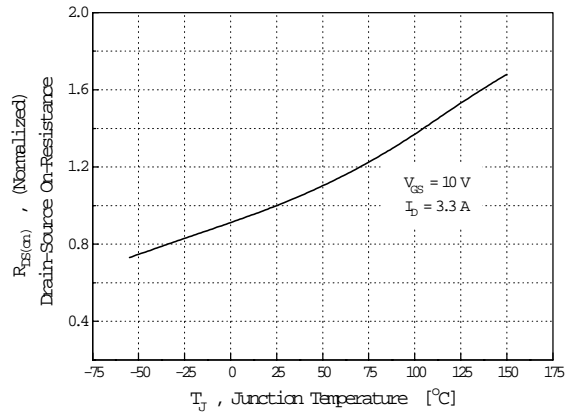
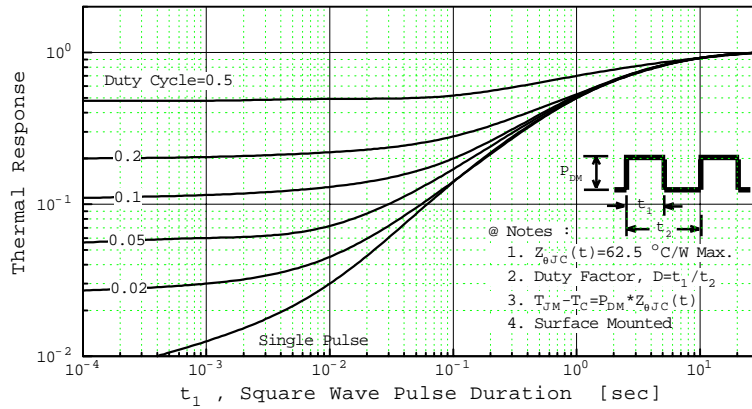


Fig 9. Normalized Effective Transient Thermal Impedance, Junction-to-Ambient



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