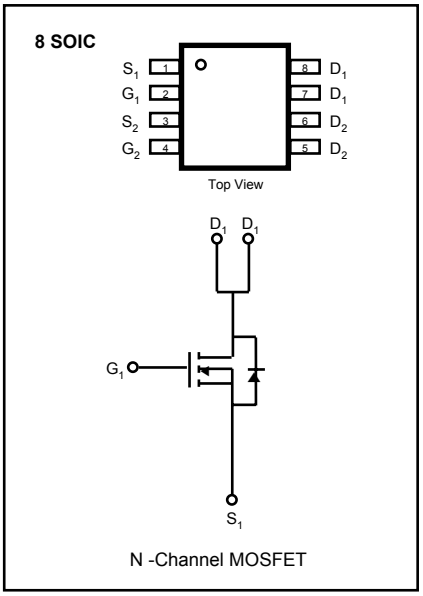
FEATURES

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



Product Summary

Part Number	BVdss	Rds(on)	I_D
SSD2009	**50V**	**0.13Ω**	**3.0A**

Absolute Maximum Ratings

Symbol	Characteristic	Value	Units
V_{DSS}	Drain-to-Source Voltage	50	V
I_D	Continuous Drain Current T_A=25℃	3.0	A
	Continuous Drain Current T_A=70℃	2.3	
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℃)	2.0	W
	(T_A=70℃)	1.3	
T_J , T_{STG}	Operating and Junction Storage Temperature Range	- 55 to +150	℃

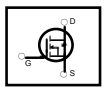
Thermal Resistance

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

Electrical Characteristics (T_C=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	1.0	--	3.0	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	--	--	2.0	μA	V_{DS}=40V
		--	--	25		V_{DS}=40V,T_C=55℃
I_{DON}	On-State Drain-Source Current	10	--	--	A	V_{DS}=5V ,V_{GS}=10V
$R_{DS(on)}$	Static Drain-Source	--	0.065	0.13	Ω	V_{GS}=10V,I_D=3.0A
	On-State Resistance ②	--	0.084	0.2		V_{GS}=4.5V,I_D=1.5A
g_{fs}	Forward Transconductance ②	--	7.0	--	℧	V_{DS} =15V,I_D=3.0A
$t_{d(on)}$	Turn-On Delay Time	--	16	20	ns	V_{DD}=25V,I_D=1.0A, R_0=6.0Ω, ②③
t_r	Rise Time	--	16	20		
$t_{d(off)}$	Turn-Off Delay Time	--	40	70		
t_f	Fall Time	--	23	50		
Q_g	Total Gate Charge	--	17	25	nC	V_{DS}=25V,V_{GS}=10V, I_D=2.0A ②③
Q_{gs}	Gate-Source Charge	--	1.8	--		
Q_{gd}	Gate-Drain(" Miller ") Charge	--	3.9	--		

Source-Drain Diode Ratings and Characteristics

Symbol	Characteristic	Min.	Typ.	Max.	Units	Test Condition
I_S	Continuous Source Current (Body Diode)	--	--	2.0	A	Modified MOSFET Symbol Showing the Integral Reverse P-N Junction Rectifier 
V_{SD}	Diode Forward Voltage ②	--	--	1.2	V	T_A=25℃,I_S=1.5A,V_{GS}=0V
t_{rr}	Reverse Recovery Time ②	--	100	--	ns	T_A=25℃,I_F=1.5A,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

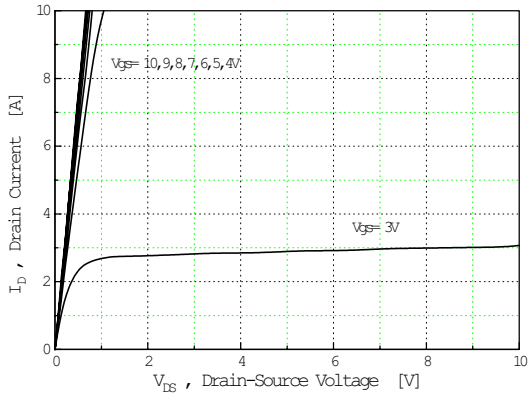


Fig 2. Transfer Characteristics

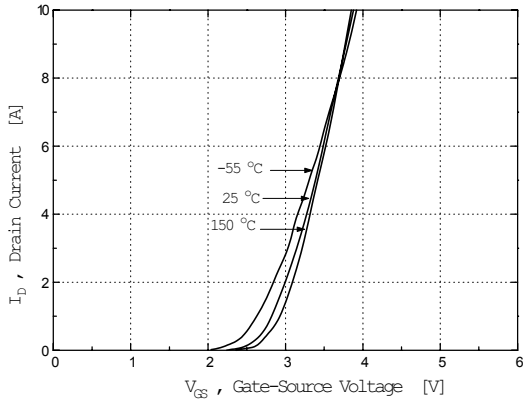


Fig 3. On-Resistance vs. Drain Current

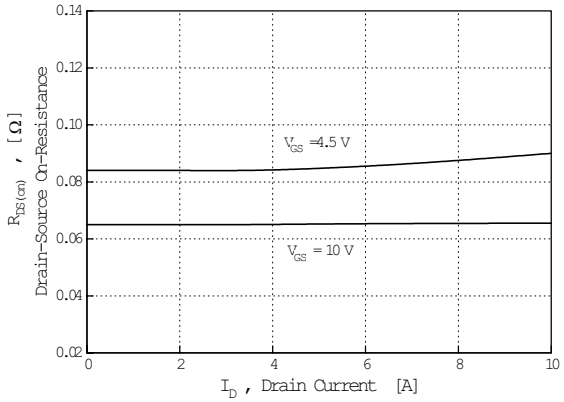


Fig 4. Source-Drain Forward Voltage

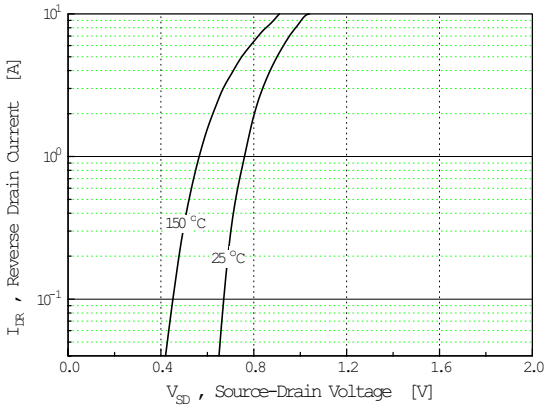


Fig 5. Capacitance vs. Drain-Source Voltage

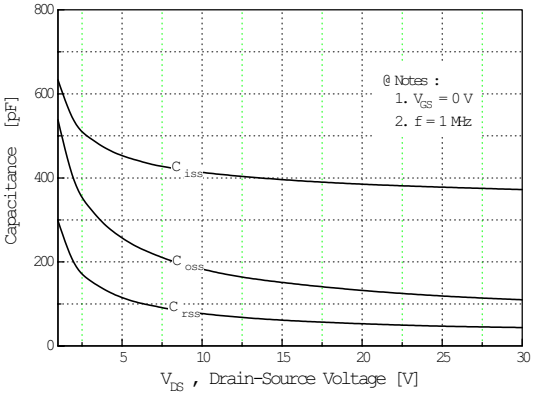


Fig 6. Gate Charge vs. Gate-Source Voltage

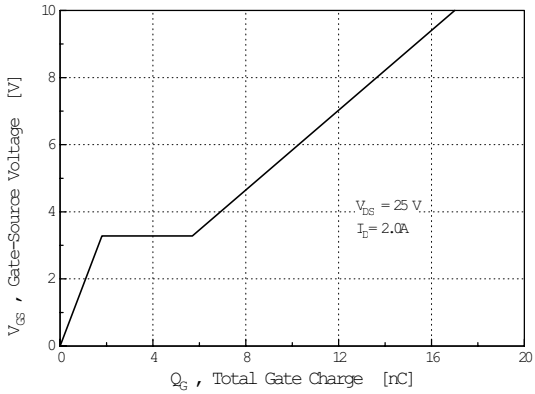


Fig 7. Breakdown Voltage vs. Temperature

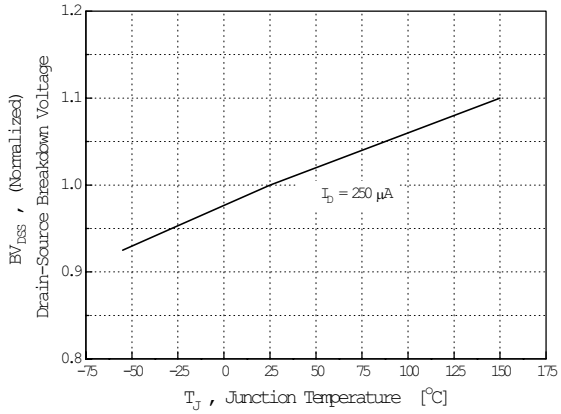


Fig 8. On-Resistance vs. Temperature

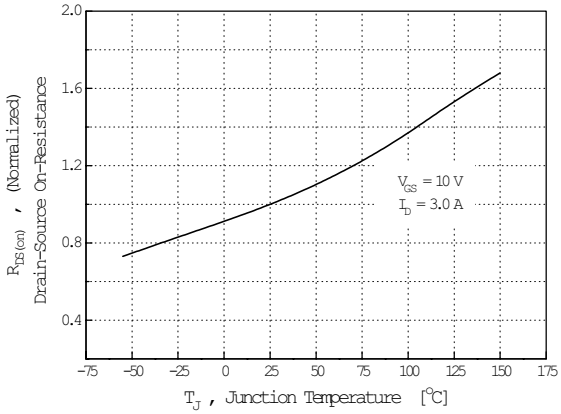


Fig 9. Nomalized Effective Transient Thermal Impedance, Junction-to-Ambient