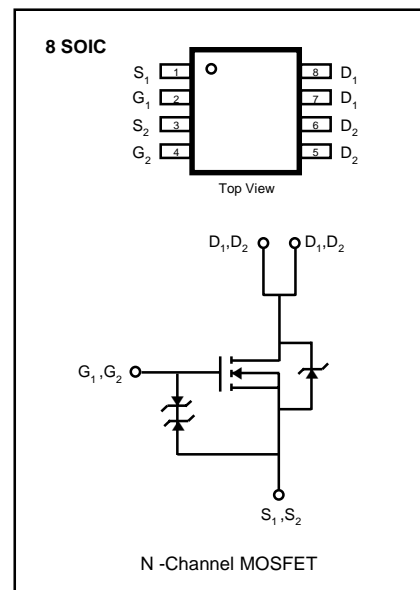


FEATURES

- ❑ 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
SSD2009	50V	0.13 Ω	3.0A



Absolute Maximum Ratings

Symbol	Characteristic	Value	Units
V_{DSS}	Drain-to-Source Voltage	50	V
I_D	Continuous Drain Current $T_A=25^\circ\text{C}$	3.0	A
	Continuous Drain Current $T_A=70^\circ\text{C}$	2.3	
I_{DM}	Drain Current-Pulsed ^①	10.0	A
V_{GS}	Gate-to-Source Voltage	± 20	V
P_D	Total Power Dissipation ($T_A=25^\circ\text{C}$)	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	$^\circ\text{C/W}$

Electrical Characteristics (T_C=25°C 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°C
I _{DON}	On-State Drain-Source Current	10	--	--	A	V _{DS} =5V, V _{GS} =10V
R _{DS(on)}	Static Drain-Source	--	0.065	0.13	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	--	S	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 _θ =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°C, I _S =1.5A, V _{GS} =0V
t _{rr}	Reverse Recovery Time ②	--	100	--	ns	T _A =25°C, 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

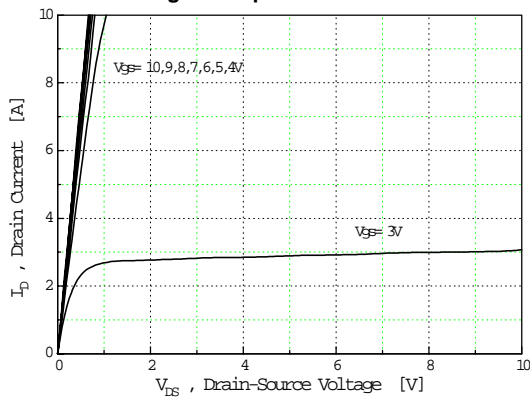


Fig 2. Transfer Characteristics

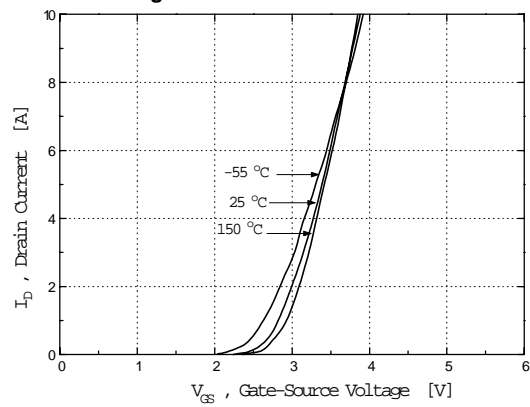


Fig 3. On-Resistance vs. Drain Current

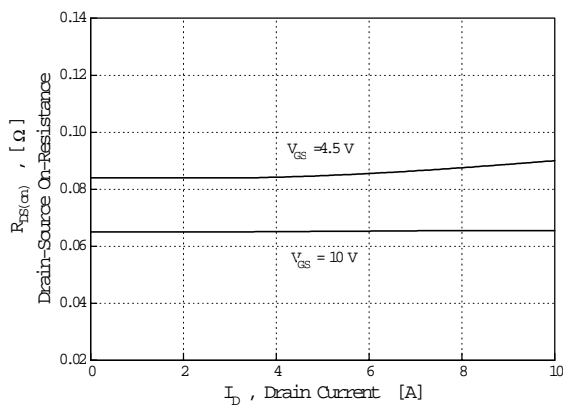


Fig 4. Source-Drain Forward Voltage

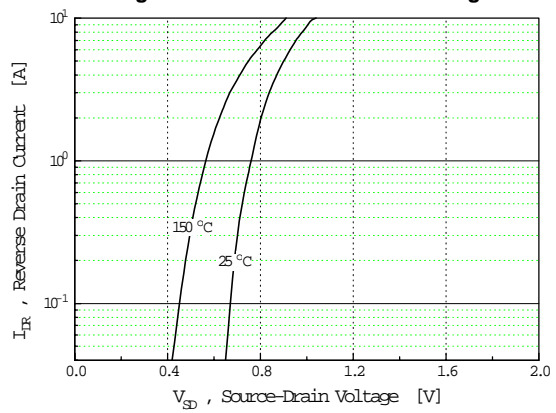


Fig 5. Capacitance vs. Drain-Source Voltage

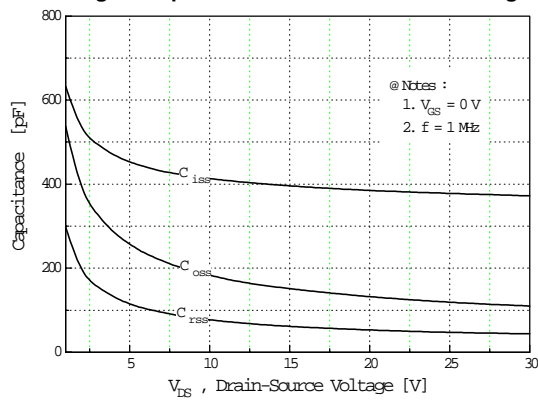


Fig 6. Gate Charge vs. Gate-Source Voltage

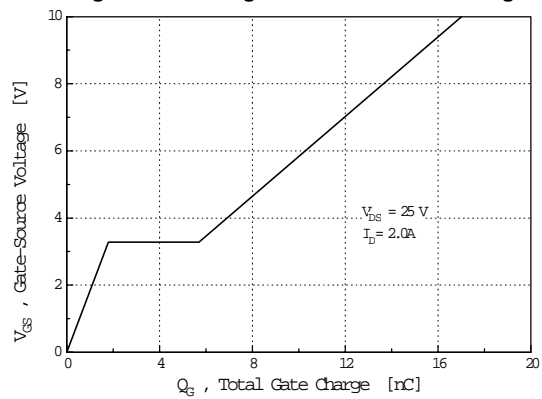


Fig 7. Breakdown Voltage vs. Temperature

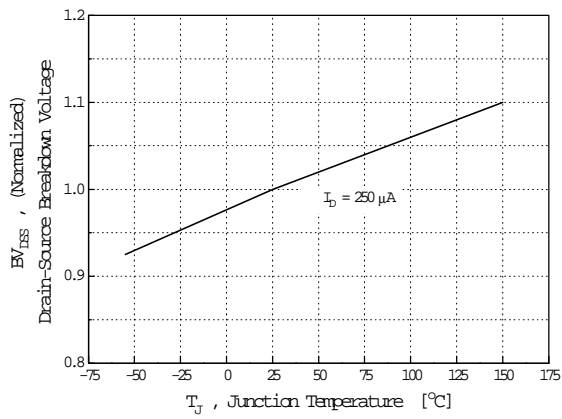


Fig 8. On-Resistance vs. Temperature

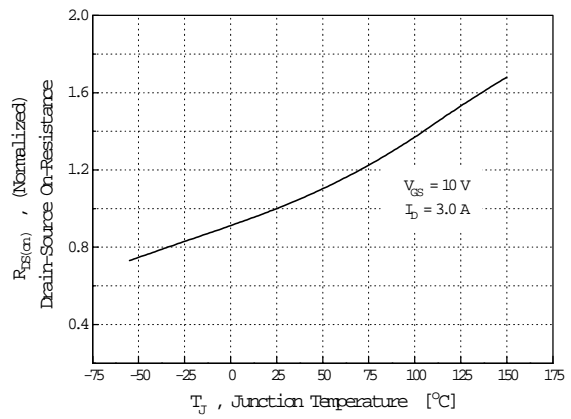
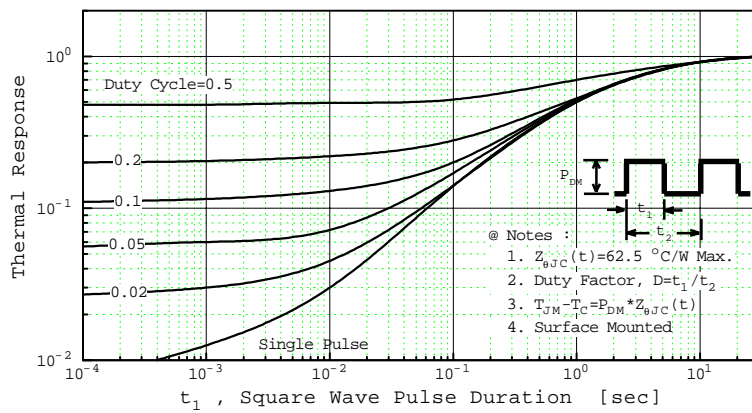


Fig 9. Normalized Effective Transient Thermal Impedance, Junction-to-Ambient



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