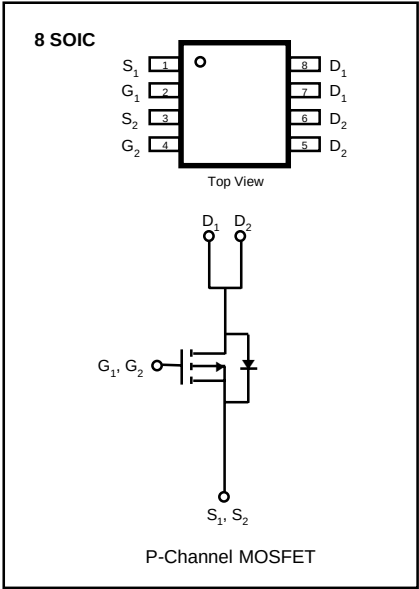


FEATURES

- ❑ 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
SSD2019A	-20V	0.11 Ω	-3.4A



Absolute Maximum Ratings

Symbol	Characteristic	Value	Units
V_{DSS}	Drain-to-Source Voltage	-20	V
I_D	Continuous Drain Current $T_A=25^{\circ}\text{C}$	-3.4	A
	Continuous Drain Current $T_A=70^{\circ}\text{C}$	-2.7	
I_{DM}	Drain Current-Pulsed ①	-8.0	A
V_{GS}	Gate-to-Source Voltage	± 12	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 ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Characteristic	Min.	Typ.	Max.	Units	Test Condition
BV_{DSS}	Drain-Source Breakdown Voltage	-20	--	--	V	$V_{GS}=0V, I_D=-250\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	-0.8	--	--	V	$V_{DS}=-5V, I_D=-250\mu A$
I_{GSS}	Gate-Source Leakage, Forward	--	--	-100	nA	$V_{GS}=-12V$
	Gate-Source Leakage, Reverse	--	--	100	nA	$V_{GS}=12V$
I_{DSS}	Drain-to-Source Leakage Current	--	--	-1.0	μA	$V_{DS}=-16V$
		--	--	-5.0		$V_{DS}=-10V, T_C=55^\circ\text{C}$
I_{DON}	On-State Drain-Source Current	-8.0	--	--	A	$V_{DS}=-5V, V_{GS}=-4.5V$
$R_{DS(on)}$	Static Drain-Source	--	0.086	0.11	Ω	$V_{GS}=-4.5V, I_D=-3.2A$
	On-State Resistance ②	--	0.103	0.15		$V_{GS}=-3.0V, I_D=-2.0A$
		--	0.108	0.19		$V_{GS}=-2.7V, I_D=-1.0A$
g_{fs}	Forward Transconductance ②	--	8.0	--	S	$V_{DS}=-9.0V, I_D=-3.4A$
$t_{d(on)}$	Turn-On Delay Time	--	18	40	ns	$V_{DD}=-6.0V, I_D=-1.0A,$ $V_{GS}=-4.5V,$ ②③
t_r	Rise Time	--	17	80		
$t_{d(off)}$	Turn-Off Delay Time	--	49	70		
t_f	Fall Time	--	17	40		
Q_g	Total Gate Charge	--	13	20	nC	$V_{DS}=-6.0V, V_{GS}=-4.5V,$ $I_D=-3.2A$ ②③
Q_{gs}	Gate-Source Charge	--	3.4	--		
Q_{gd}	Gate-Drain ("Miller") Charge	--	4.6	--		

Source-Drain Diode Ratings and Characteristics

Symbol	Characteristic	Min.	Typ.	Max.	Units	Test Condition
I_S	Continuous Source Current (Body Diode)	--	--	-1.25	A	Modified MOSFET Symbol Showing the Integral Reverse P-N Junction Rectifier 
V_{SD}	Diode Forward Voltage ②	--	--	-1.2	V	$T_A=25^\circ\text{C}, I_S=-3.4A, V_{GS}=0V$
t_{rr}	Reverse Recovery Time ②	--	75	100	ns	$T_A=25^\circ\text{C}, I_F=-3.4A, di_F/dt=100A/\mu s$

Notes ;

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

Fig 1. Output Characteristics

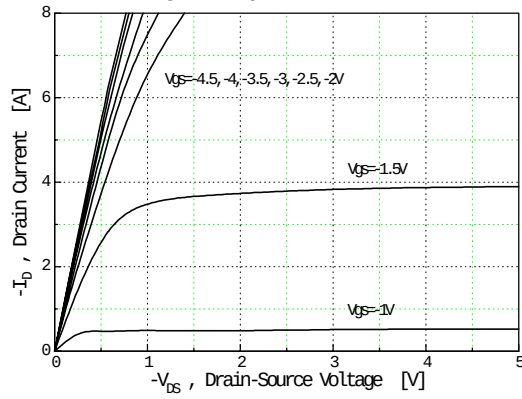


Fig 2. Transfer Characteristics

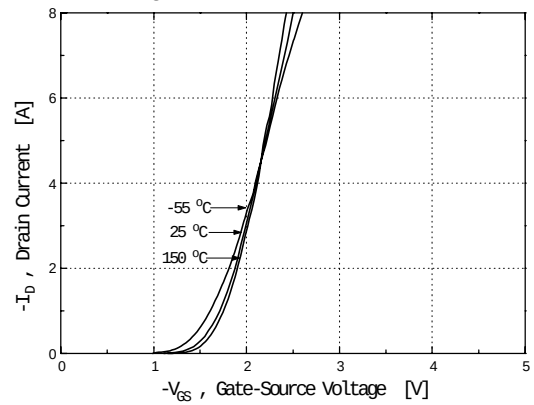


Fig 3. On-Resistance vs. Drain Current

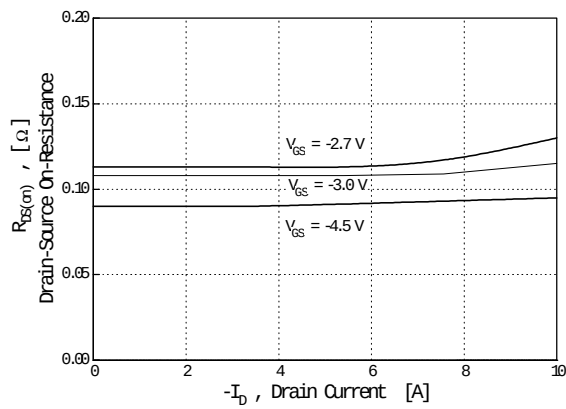


Fig 4. Source-Drain Forward Voltage

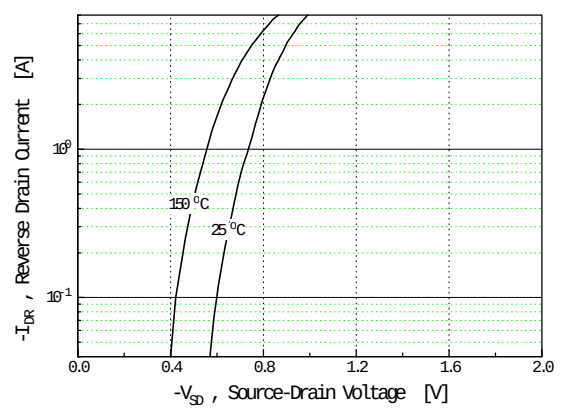


Fig 5. Capacitance vs. Drain-Source Voltage

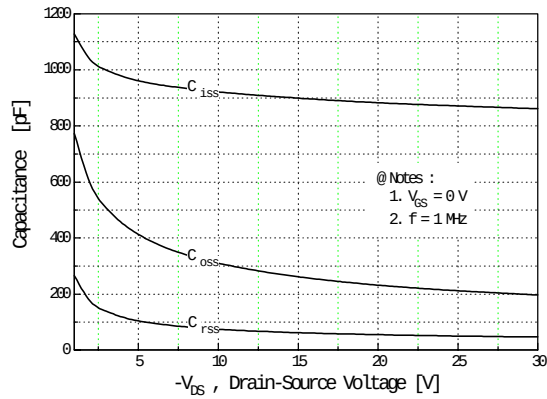


Fig 6. Gate Charge vs. Gate-Source Voltage

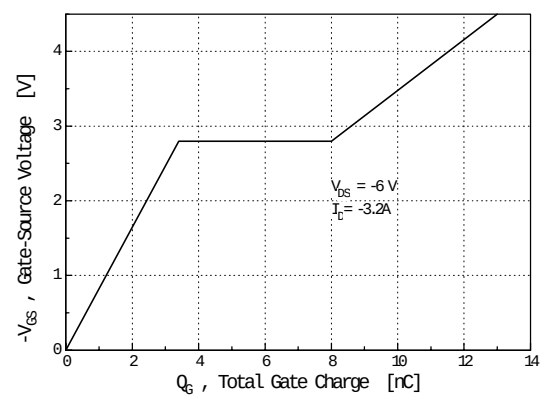


Fig 7. Breakdown Voltage vs. Temperature

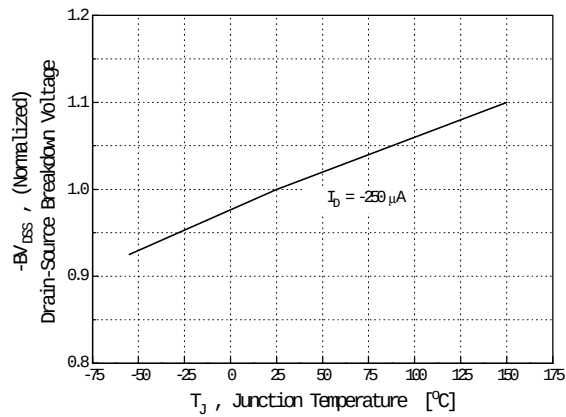


Fig 8. On-Resistance vs. Temperature

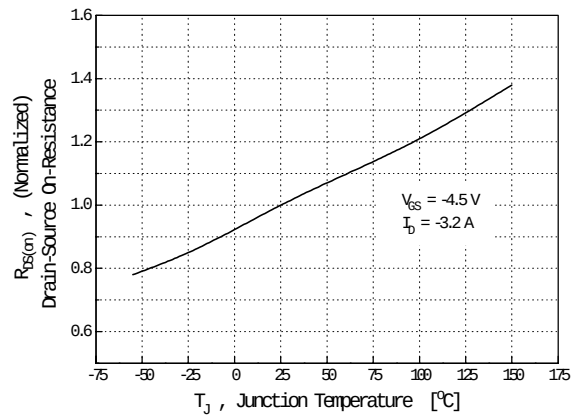
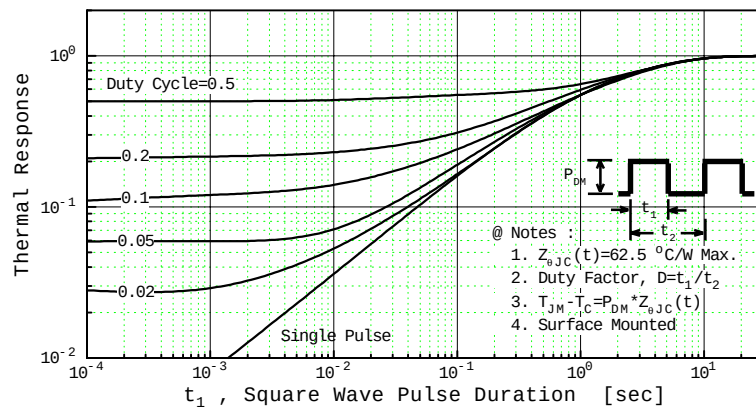


Fig 9. Normalized Effective Transient Thermal Impedance, Junction-to-Ambient



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