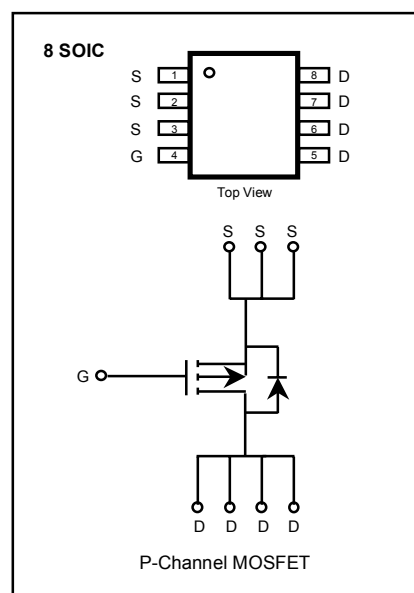


FEATURES

- 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	BVdss	Rds(on)	I_D
SSD2104	- 30V	0.07 Ω	- 4.6A



Absolute Maximum Ratings

Symbol	Characteristic	Value	Units
V_{DSS}	Drain-to-Source Voltage	- 30	V
I_D	Continuous Drain Current $T_A=25^\circ\text{C}$	- 4.6	A
	Continuous Drain Current $T_A=70^\circ\text{C}$	- 4.2	
I_{DM}	Drain Current-Pulsed ^①	- 15.0	A
V_{GS}	Gate-to-Source Voltage	± 20	V
P_D	Total Power Dissipation ($T_A=25^\circ\text{C}$)	2.5	W
	($T_A=70^\circ\text{C}$)	1.6	
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	--	50	$^\circ\text{C/W}$

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	-30	--	--	V	$V_{GS}=0V, I_D=-250\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	-1.0	--	--	V	$V_{DS}=-5V, I_D=-250\mu A$
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	$V_{DS}=-24V$
		--	--	-25		$V_{DS}=-24V, T_C=55^\circ\text{C}$
I_{DON}	On-State Drain-Source Current	-15	--	--	A	$V_{DS}=-5V, V_{GS}=-10V$
$R_{DS(on)}$	Static Drain-Source	--	--	0.07	Ω	$V_{GS}=-10V, I_D=-4.6A$
	On-State Resistance ②	--	--	0.135		$V_{GS}=-4.5V, I_D=2.0A$
g_{fs}	Forward Transconductance ②	--	7.0	--	S	$V_{DS}=-15V, I_D=-4.6A$
$t_{d(on)}$	Turn-On Delay Time	--	11	30	ns	$V_{DD}=-15V, I_D=-1.0A,$ $R_0=6.0\Omega,$ ②③
t_r	Rise Time	--	18	60		
$t_{d(off)}$	Turn-Off Delay Time	--	59	120		
t_f	Fall Time	--	32	100		
Q_g	Total Gate Charge	--	35	50	nC	$V_{DS}=-15V, V_{GS}=-10V,$ $I_D=-4.6A$ ②③
Q_{gs}	Gate-Source Charge	--	5.9	--		
Q_{gd}	Gate-Drain(" Miller ") Charge	--	7.2	--		

Source-Drain Diode Ratings and Characteristics

Symbol	Characteristic	Min.	Typ.	Max.	Units	Test Condition
I_S	Continuous Source Current (Body Diode)	--	--	-2.6	A	Modified MOSFET Symbol Showing the Integral Reverse P-N Junction Rectifier 
V_{SD}	Diode Forward Voltage ②	--	--	-1.2	V	$T_A=25^\circ\text{C}, I_S=-2.6A, V_{GS}=0V$
t_{rr}	Reverse Recovery Time ②	--	70	--	ns	$T_A=25^\circ\text{C}, I_F=-2.6A, di_F/dt=100A/\mu s$

Notes ;

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

Fig 1. Output Characteristics

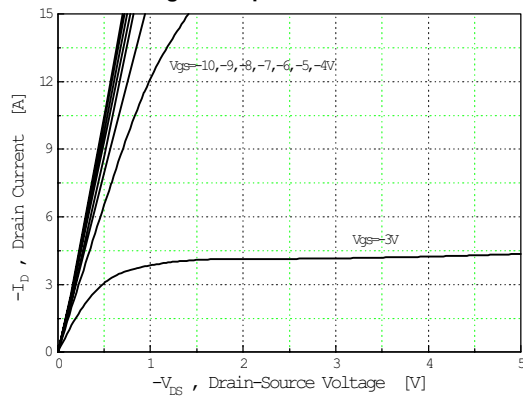


Fig 2. Transfer Characteristics

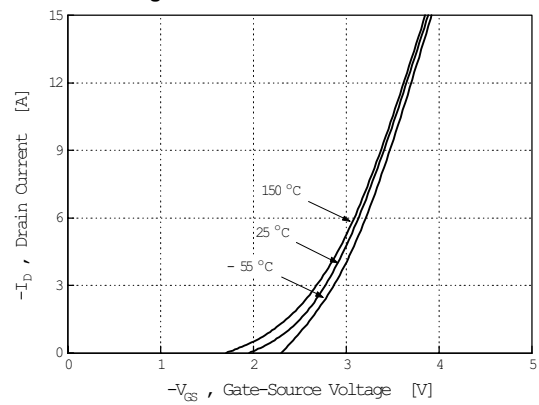


Fig 3. On-Resistance vs. Drain Current

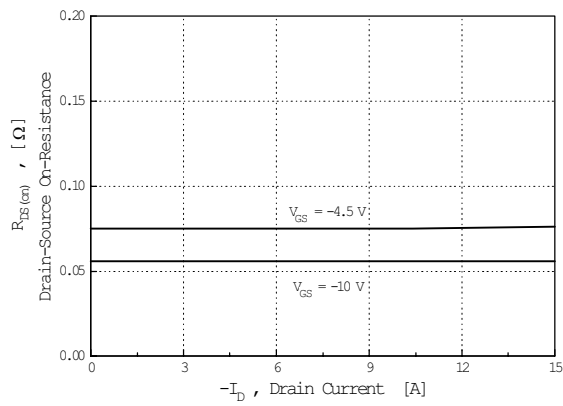


Fig 4. Source-Drain Forward Voltage

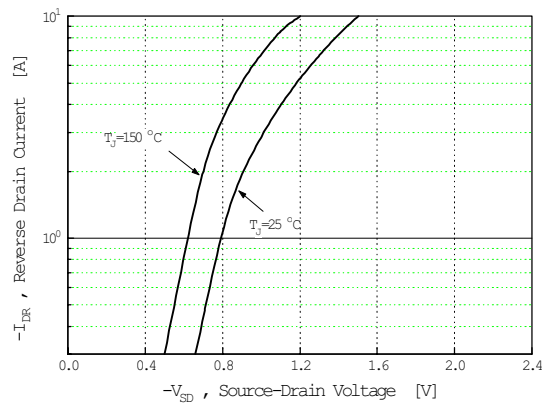


Fig 5. Capacitance vs. Drain-Source Voltage

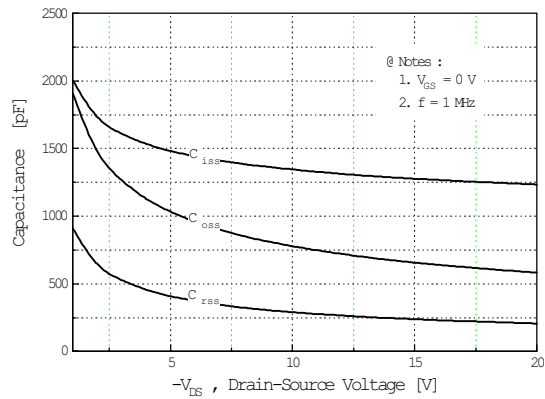


Fig 6. Gate Charge vs. Gate-Source Voltage

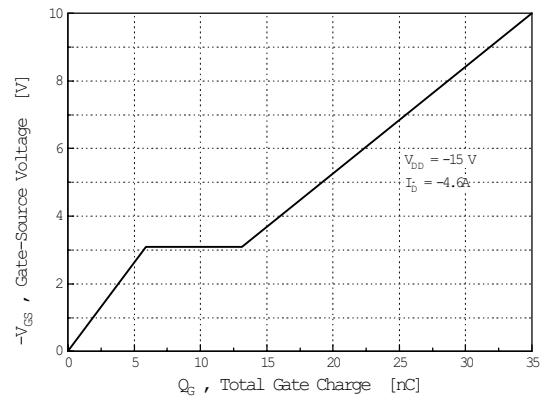


Fig 7. Breakdown Vltage vs. Temperature

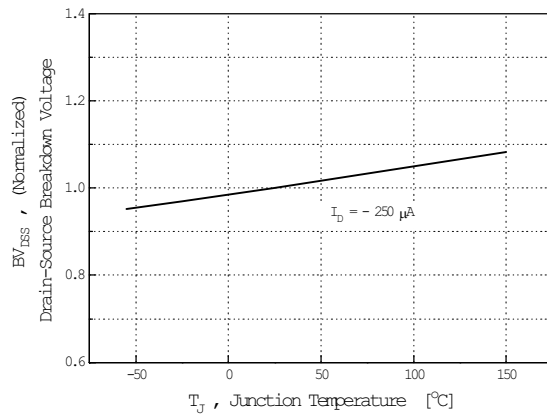


Fig 8. On-Resistance vs. Temperature

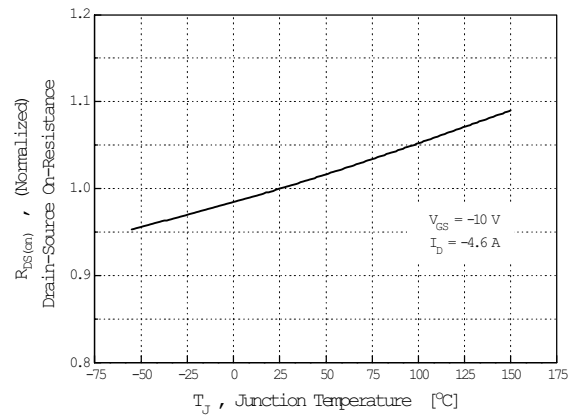


Fig 9. Nomalized Effective Transient Thermal Impedance, Junction-to-Ambient

