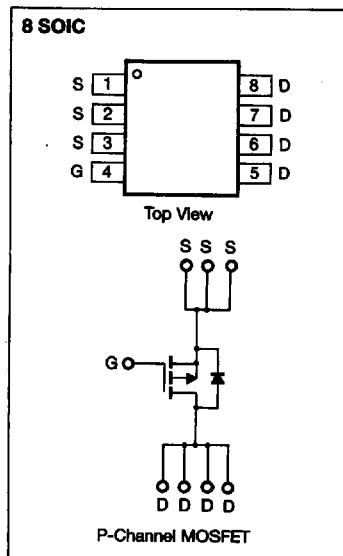


FEATURES

- Lower $R_{DS(on)}$
- Improved inductive ruggedness
- Fast switching times
- Rugged polysilicon gate cell structure
- Lower input capacitance
- Extended safe operating area
- Improved high temperature reliability

PRODUCT SUMMARY

Part Number	V _{DS}	R _{DS(on)}	I _D
SSD2102	-20V	0.06Ω	-5.3A



ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	SSD2102	Unit
Drain-Source Voltage (1)	V _{DSS}	-20	V _{dc}
Drain-Gate Voltage (R _{GS} =1.0MΩ)(1)	V _{DGR}	-20	V _{dc}
Gate-Source Voltage	V _{GS}	±20	V _{dc}
Continuous Drain Current T _A =25 °C	I _D	-5.3	A _{dc}
Continuous Drain Current T _A =70 °C	I _D	-4.2	A _{dc}
Drain Current - Pulsed (3)	I _{DM}	-15.0	A _{dc}
Total Power Dissipation at T _A =25 °C T _A =70 °C	P _D	2.5	Watts
		1.6	W/°C
Operating and Storage Junction Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes : (1) T_J=25°C to 150°C

(2) Pulse test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%

(3) Repetitive rating : Pulse width limited by junction temperature

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise specified)

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV _{DSS}	Drain-Source Breakdown Voltage	-20	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	Gate Threshold Voltage	-1.0	-	-	V	V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	Gate-Source Leakage Forward	-	-	-100	nA	V _{GS} =-20V
I _{GSS}	Gate-Source Leakage Reverse	-	-	100	nA	V _{GS} =20V
I _{DSS}	Zero Gate Voltage Drain Current	-	-	-2.0	μA	V _{DS} =-16V, V _{GS} =0V
		-	-	-25	μA	V _{DS} =-16V, V _{GS} =0V, T _J =55°C
I _{D(on)}	On-State Drain-Source Current	-15	-	-	A	V _{DS} =-5V, V _{GS} =-10V
R _{DS(on)}	Static Drain-Source On-Resistance(2)	-	-	0.06	Ω	V _{GS} =-10V, I _D =-5.3A
		-	-	0.08	Ω	V _{GS} =-6.0V, I _D =-3.6A
		-	-	0.125	Ω	V _{GS} =-4.5V, I _D =-2.0A
g _{fs}	Forward Transconductance (2)	4.0	-	-	Ω	V _{DS} =-15V, I _D =-5.3A
t _{D(on)}	Turn-On Delay Time	-	-	30	ns	V _{DD} =-10V, I _D =-1.0A, Z _O =6.0Ω (MOSFET switching times are essentially independent of operating temperature)
t _r	Rise Time	-	-	60	ns	
t _{D(off)}	Turn-Off Delay Time	-	-	120	ns	
t _f	Fall Time	-	-	100	ns	
Q _g	Total Gate Charge (Gate-Source Plus Gate-Drain)	-	-	25	nC	V _{GS} =-10V, I _D =-5.3A, V _{DS} =-15V (Gate charge is essentially independent of operating temperature)
Q _{gs}	Gate-Source Charge	-	3.0	-	nC	
Q _{gd}	Gate-Drain ("Miller") Charge	-	6.0	-	nC	

THERMAL RESISTANCE

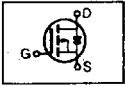
Symbol	Characteristics		SSD2102	Units	Remark
R _{thJA}	Junction-to-Ambient	MAX	50	K/W	Surface mounting

Notes : (1) T_J=25°C to 150°C

(2) Pulse test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%

(3) Repetitive rating : Pulse width limited by max. junction temperature

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	-	-	-5.3	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
VSD	Diode Forward Voltage(2)	-	-	-1.2	V	$T_A=25^\circ\text{C}$, $I_S=-5.3\text{A}$, $V_{GS}=0\text{V}$
t_r	Reverse Recovery Time	-	100	-	ns	$T_A=25^\circ\text{C}$, $I_F=-5.3\text{A}$, $dI_F/dt=100\text{A}/\mu\text{S}$

Notes : (1) $T_J=25^\circ\text{C}$ to 150°C

(2) Pulse test : Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

(3) Repetitive rating : Pulse width limited by max. junction temperature

