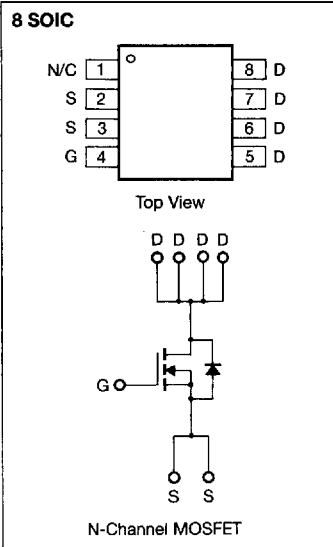


FEATURES

- 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
SSD2101	30V	0.03 Ω	7.0A



ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	SSD2101	Unit
Drain-Source Voltage (1)	V _{DS}	30	V _{dc}
Drain-Gate Voltage ($R_{GS}=1.0M\Omega$)(1)	V _{DGR}	30	V _{dc}
Gate-Source Voltage	V _{GS}	± 20	V _{dc}
Continuous Drain Current $T_A=25^\circ C$	I _D	7.0	A _{dc}
Continuous Drain Current $T_A=70^\circ C$	I _D	5.8	A _{dc}
Drain Current - Pulsed (3)	I _{DM}	20.0	A _{dc}
Total Power Dissipation at $T_A=25^\circ C$	P _D	2.5	Watts
$T_A=70^\circ C$		1.6	W/ $^\circ C$
Operating and Storage Junction Temperature Range	T _J , T _{STG}	-55 to +150	$^\circ C$

Notes : (1) $T_J=25^\circ C$ to $150^\circ C$

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

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

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

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV _{DSS}	Drain-Source Breakdown Voltage	30	-	-	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 _{SS}	Zero Gate Voltage Drain Current	-	-	2.0	μA	V _{DS} =24V, V _{GS} =0V
		-	-	25	μA	V _{DS} =24V, V _{GS} =0V, T _J =55°C
I _{D(on)}	On-State Drain-Source Current	20	-	-	A	V _{DS} =5V, V _{GS} =10V
R _{DS(on)}	Static Drain-Source On-Resistance(2)	-	-	0.03	Ω	V _{GS} =10V, I _D =7.0A
		-	-	0.05	Ω	V _{DS} =4.5V, I _D =3.5A
g _{fs}	Forward Transconductance (2)	-	14	-	U	V _{DS} ≥15V, I _D =7.0A
t _{d(on)}	Turn-On Delay Time	-	-	30	ns	V _{DD} =25V, 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	-	-	150	ns	
t _f	Fall Time	-	-	140	ns	
Q _g	Total Gate Charge (Gate-Source Plus Gate-Drain)	-	-	50	nC	V _{GS} =10V, I _D =2.0A, V _{DS} =15V (Gate charge is essentially independent of operating temperature)
Q _{gs}	Gate-Source Charge	-	3.4	-	nC	
Q _{gd}	Gate-Drain ("Miller") Charge	-	10.5	-	nC	

THERMAL RESISTANCE

Symbol	Characteristics		SSD2101	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%

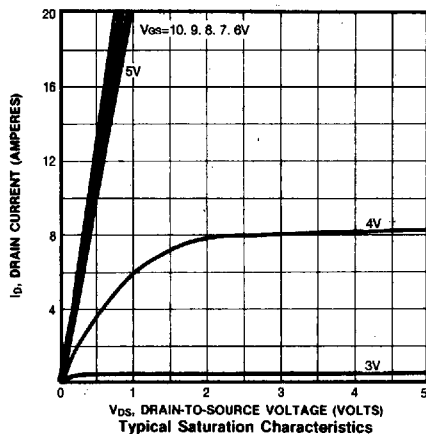
(3) Repetitive rating : Pulse width limited by max. junction temperature

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

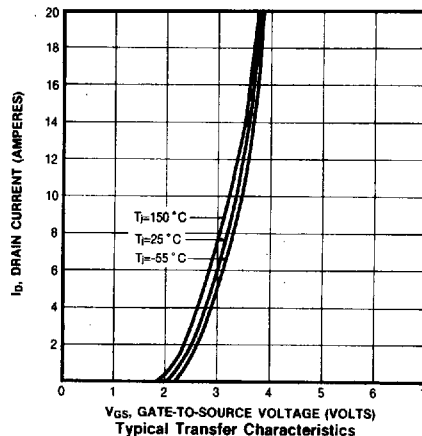
Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	-	-	2.8	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
V_{SD}	Diode Forward Voltage(2)	-	-	1.1	V	$T_A=25^\circ\text{C}$, $I_S=2.0\text{A}$, $V_{GS}=0\text{V}$
t_{rr}	Reverse Recovery Time	-	100	-	ns	$T_A=25^\circ\text{C}$, $I_F=2.0\text{A}$, $dI_F/dt=100\text{A}/\mu\text{S}$

Notes : (1) $T_J=25^\circ\text{C}$ to 150°C (2) Pulse test : Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

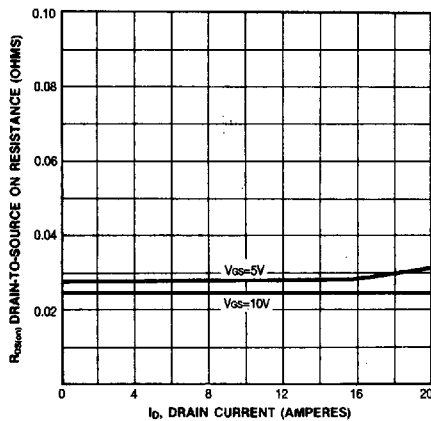
(3) Repetitive rating : Pulse width limited by max. junction temperature



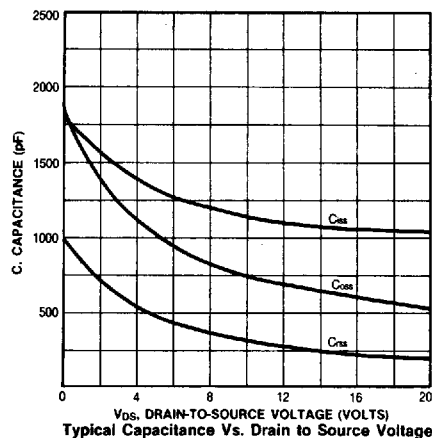
Typical Saturation Characteristics



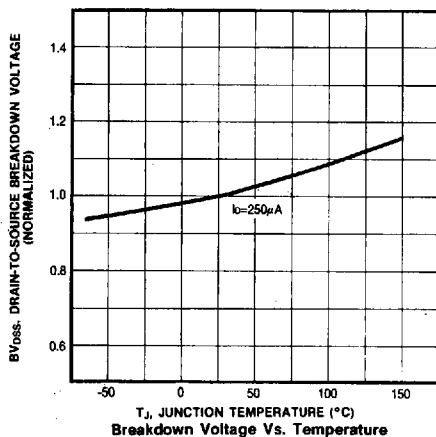
Typical Transfer Characteristics



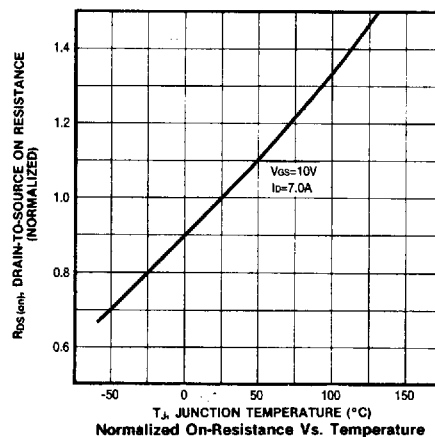
Typical On-Resistance Vs. Drain Current



Typical Capacitance Vs. Drain to Source Voltage



Breakdown Voltage Vs. Temperature



Normalized On-Resistance Vs. Temperature

