Elektronische Bauelemente

SSD31N10SG

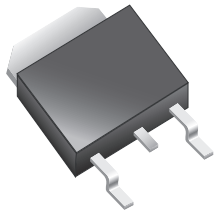
31A, 100V, $R_{DS(ON)}$ 29mΩ
N-Ch Enhancement Mode Power MOSFET

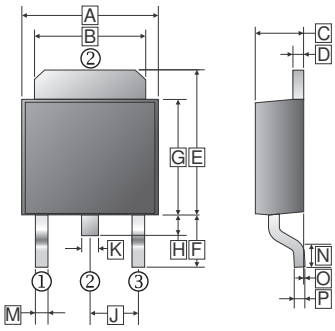
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSD31N100SG is the highest performance trench N-ch MOSFETs with extreme high cell density , which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.
The SSD31N10SG meet the RoHS and Green Product with Function reliability approved.

TO-252(D-Pack)



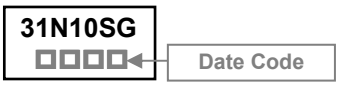


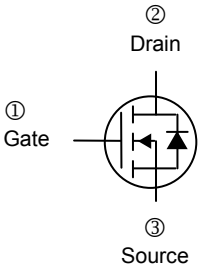
REF.	Millimeter Min.	Millimeter Max.	REF.	Millimeter Min.	Millimeter Max.
A	6.35	6.9	J	2.3 REF.	
B	4.95	5.53	K	0.89 REF.	
C	2.1	2.5	M	0.45	1.14
D	0.41	0.9	N	1.55 Typ.	
E	6	7.5	O	0	0.13
F	2.90 REF		P	0.58 REF.	
G	5.4	6.4			
H	0.6	1.2			

FEATURES

- $R_{DS(on)} \leqq 29m\Omega$ @V_{GS}=10V
- $R_{DS(on)} \leqq 36m\Omega$ @V_{GS}=4.5V
- High speed power switching, Logic Level
- Enhanced Body diode dv/dt capability
- Enhanced Avalanche Ruggedness
- 100% UIS Tested, 100% Rg Tested
- TO-252 Package

MARKING





PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

ABSOLUTE MAXIMUM RATINGS (T_J=25°C unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current (Silicon Limited)	T_C=25°C	I_D	31	A
	T_C=100°C		22	
Pulsed Drain Current		I_{DM}	80	A
Avalanche Energy, Single Pulse, @L=0.4mH	T_C=25°C	E_{AS}	20	mJ
Power Dissipation	T_C=25°C	P_D	62.5	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 ~ 175	°C
Thermal Resistance Ratings				
Maximum Thermal Resistance Junction-Ambient		$R_{\theta JA}$	50	°C / W
Maximum Thermal Resistance Junction-Case		$R_{\theta JC}$	2.4	

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-Source Breakdown Voltage		BV_{DSS}	100	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	1.4	2	2.4	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transfer conductance		g_{fs}	-	7	-	S	V_{DS}=5V, I_D=10A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	1	μA	V_{DS}=100V, V_{GS}=0
	T_J=100°C		-	-	100		V_{DS}=100V, V_{GS}=0
Static Drain-Source On-Resistance		$R_{DS(ON)}$	-	22	29	mΩ	V_{GS}=10V, I_D=10A
			-	25	36	mΩ	V_{GS}=4.5V, I_D=8A
Total Gate Charge		Q_g	-	13.5	-	nC	V_{GS}=10V
Total Gate Charge		Q_g	-	6.5	-		V_{GS}=4.5V
Gate-Source Charge		Q_{gs}	-	2.8	-		I_D=8A V_{DD}=50V V_{GS}=10V
Gate-Drain (“Miller”) Change		Q_{gd}	-	2	-		
Turn-on Delay Time		$T_{d(on)}$	-	7	-	nS	V_{DD}=50V I_D=8A V_{GS}=10V R_G=10Ω
Rise Time		T_r	-	4	-		
Turn-off Delay Time		$T_{d(off)}$	-	20	-		
Fall Time		T_f	-	4	-		
Input Capacitance		C_{iss}	-	930	-	pF	V_{GS}=0 V_{DS}=50V f=1.0MHz
Output Capacitance		C_{oss}	-	62	-		
Reverse Transfer Capacitance		C_{rss}	-	5.3	-		
Source-Drain Diode							
Forward On Voltage		V_{SD}	-	0.9	1.2	V	I_F=20A, V_{GS}=0
Reverse Recovery Time		T_{rr}	-	36	-	nS	V_R=50V, I_F=8A, dI/dt=500A/μs
Reverse Recovery Charge		Q_{rr}	-	100	-	nC	

TYPICAL CHARACTERISTICS CURVE

Fig 1. Typical Output Characteristics

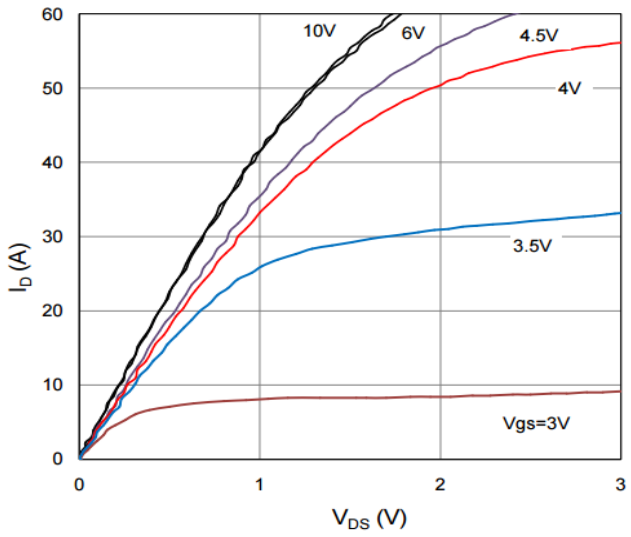


Figure 2. On-Resistance vs. Gate-Source Voltage

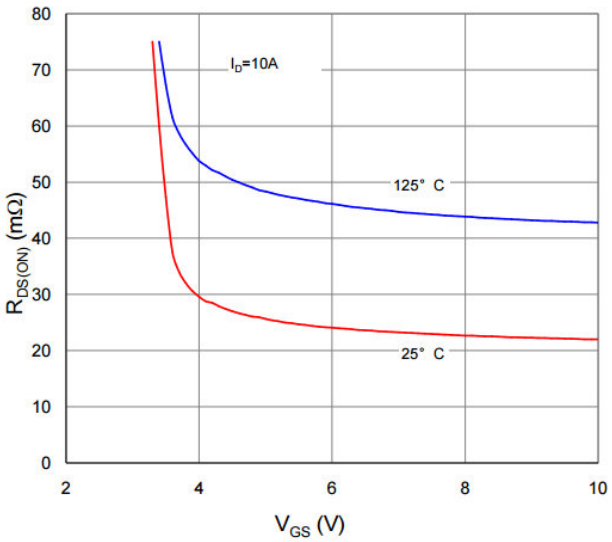


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

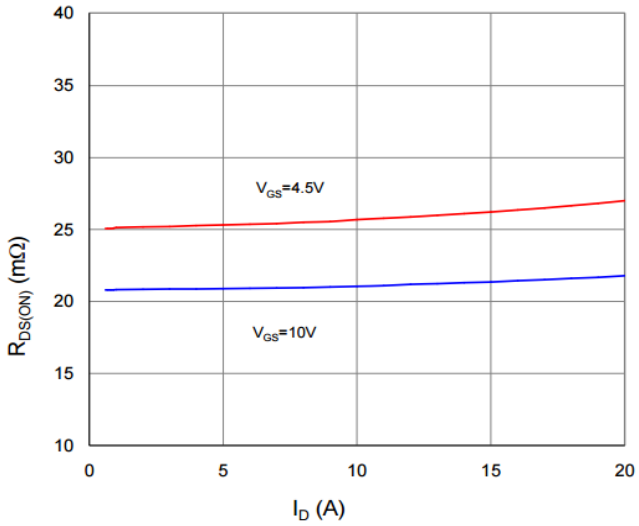


Figure 4. Normalized On-Resistance vs. Junction Temperature

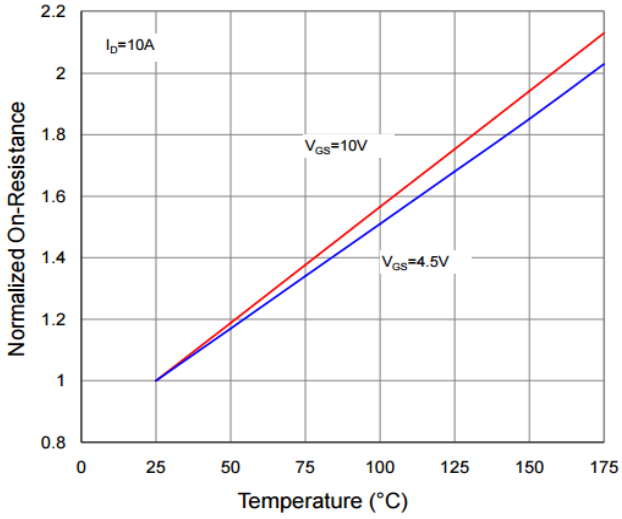


Figure 5. Typical Transfer Characteristics

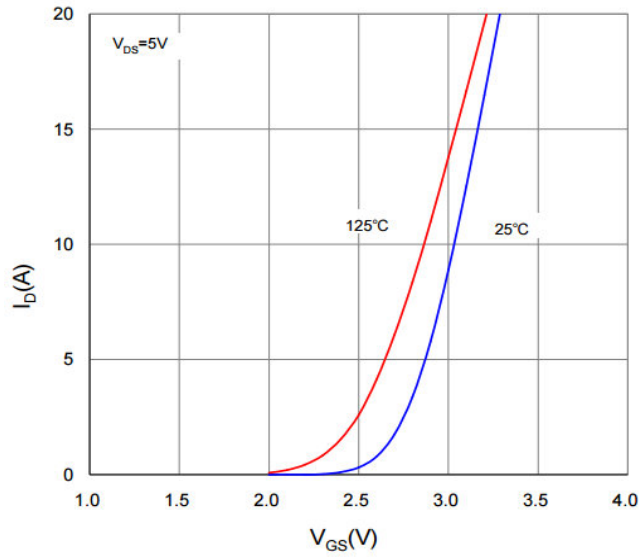
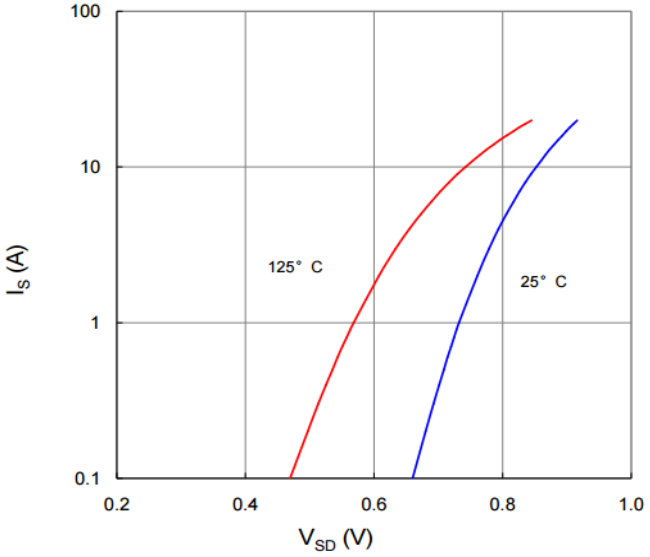


Figure 6. Typical Source-Drain Diode Forward Voltage



TYPICAL CHARACTERISTICS CURVE

Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

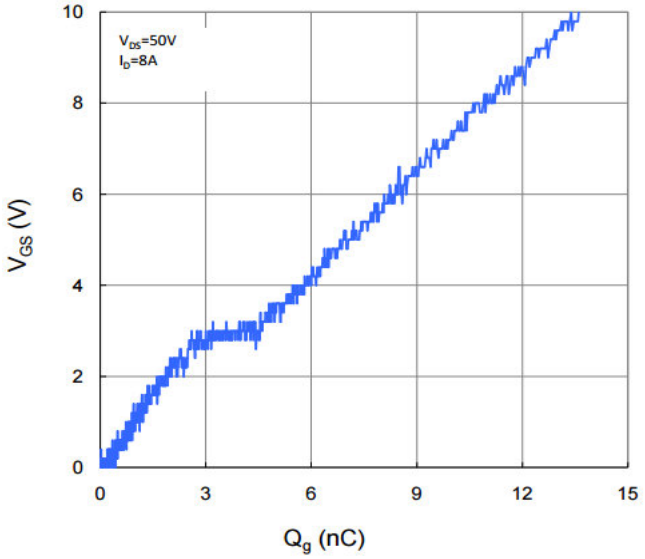


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

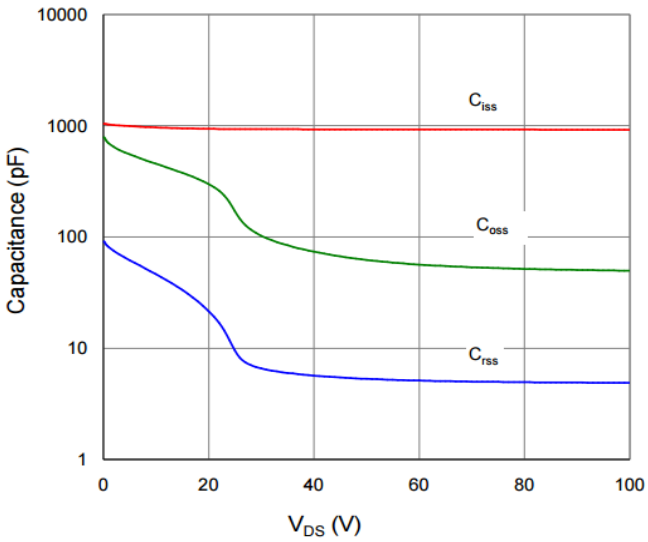


Figure 9. Maximum Safe Operating Area

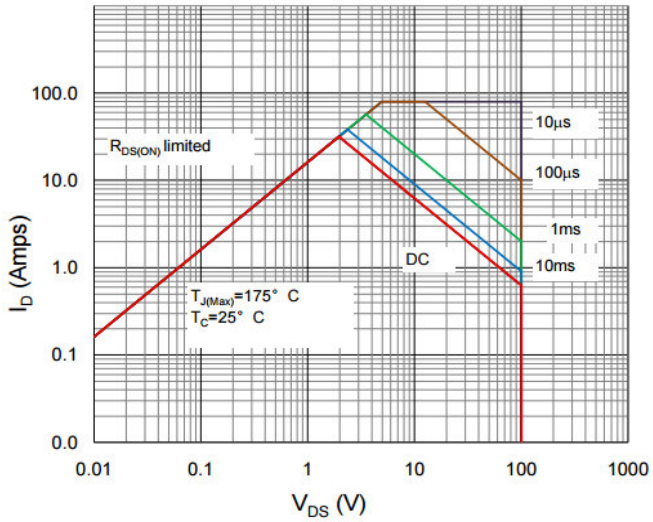


Figure 10. Maximun Drain Current vs. Case Temperature

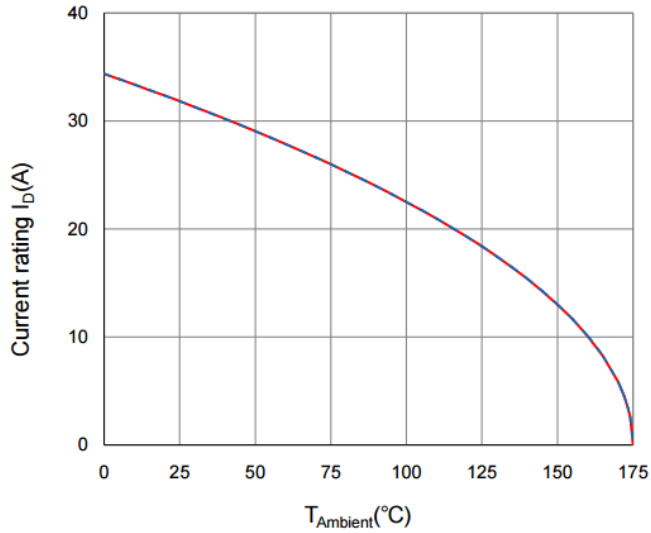


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient