Elektronische Bauelemente

SSE133N12S-C

133A, 120V, $R_{DS(ON)}$ 7mΩ

N-Channel Shielded Gate Trench Power MOSFET

RoHS Compliant Product

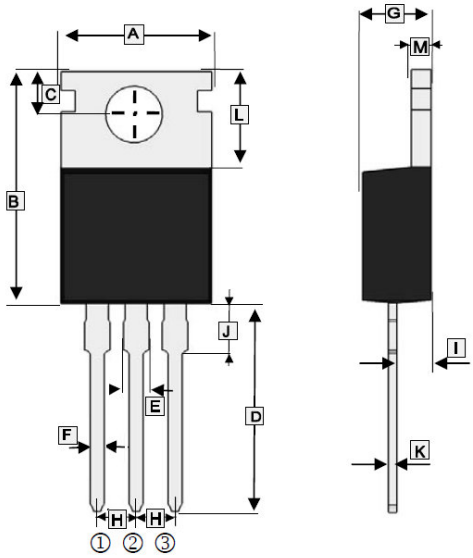
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSE133N12S-C is the Shielded Gate Technology 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 SSE133N12S-C meet the RoHS and Green Product requirement with full function reliability approved.

TO-220



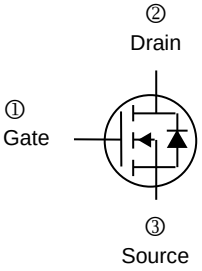
FEATURES

- Shielded Gate Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING

ORDER INFORMATION

Part Number	Type
SSE133N12S-C	Lead (Pb)-free and Halogen-free



REF.	Millimeter Min.	Millimeter Max.	REF.	Millimeter Min.	Millimeter Max.
A	9.70	10.60	H	2.54 TYP.	
B	14.22	16.50	I	2.03	2.92
C	2.54.	3.40	J	2.70	4.00
D	12.70	14.70	K	0.33	0.65
E	1.17	1.78	L	5.50	7.00
F	0.40	1.00	M	1.15	1.40
G	3.60	4.82			

ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	120	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @V_{GS}=10V	T_C=25℃	I_D	133	A
	T_C=100℃		88	
Pulsed Drain Current [2]		I_{DM}	320	A
Power Dissipation	T_C=25℃	P_D	214	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~175	℃
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	60	℃/W
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	0.7	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	120	-	-	V	V_{GS}=0V, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	1.4	-	2.4	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance		g_{fs}	-	75	-	S	V_{DS}=5V, I_D=20A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}=±20V, V_{DS}=0V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	μA	V_{DS}=120V, V_{GS}=0V
	T_J=100℃		-	-	100		
Static Drain-Source On-Resistance [3]		$R_{DS(ON)}$	-	5.8	7	mΩ	V_{GS}=10V, I_D=20A
			-	7.5	10		V_{GS}=4.5V, I_D=20A
Gate Resistance		R_g	-	2.56	-	Ω	V_{GS}=0V, V_{DS} Open, f=1MHz
Total Gate Charge (4.5V)		Q_g	-	20	-	nC	I_D=20A V_{DD}=60V V_{GS}=10V
Total Gate Charge			-	45	-		
Gate-Source Charge		Q_{gs}	-	8	-		
Gate-Drain Change		Q_{gd}	-	6	-		
Turn-on Delay Time		$T_{d(on)}$	-	15	-	nS	V_{DD}=60V I_D=20A V_{GS}=10V R_G=10Ω
Rise Time		T_r	-	8	-		
Turn-off Delay Time		$T_{d(off)}$	-	30	-		
Fall Time		T_f	-	9	-		
Input Capacitance		C_{iss}	-	3510	-	pF	V_{GS}=0V V_{DS}=60V f=1MHz
Output Capacitance		C_{oss}	-	380	-		
Reverse Transfer Capacitance		C_{rss}	-	6.5	-		
Source-Drain Diode							
Diode Forward Voltage [3]		V_{SD}	-	0.9	1.2	V	I_F=20A, V_{GS}=0V
Reverse Recovery Time		t_{rr}	-	45	-	nS	I_F=20A, V_R=60V, dI/dt=500A/μs
Reverse Recovery Charge		Q_{rr}	-	270	-	nC	

Notes:
1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2oz copper.
2. The Pulse width limited by maximum junction temperature, Pulse Width≤300μs, Duty Cycle≤2%.
3. The data tested by pulsed pulse width≤300us, duty cycle≤2%.

TYPICAL CHARACTERISTIC

Fig 1. Typical Output Characteristics

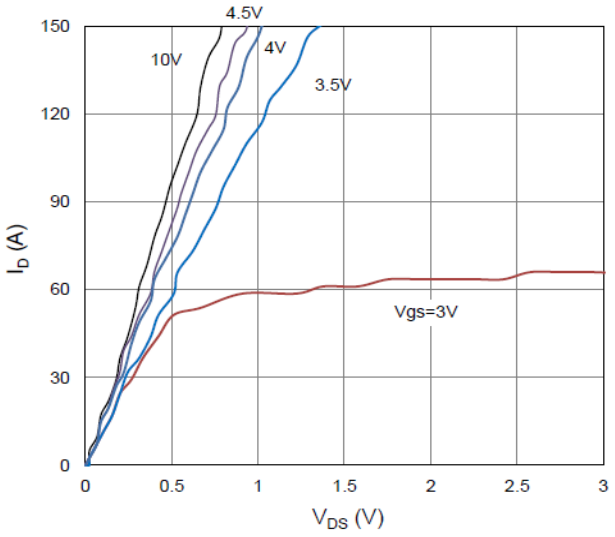


Figure 2. On-Resistance vs. Gate-Source Voltage

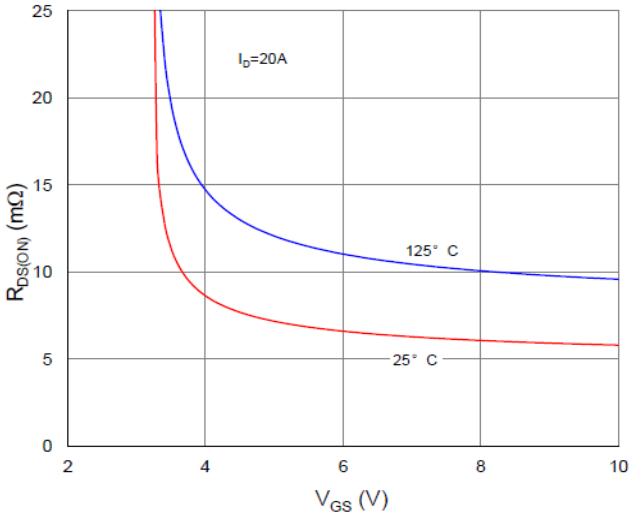


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

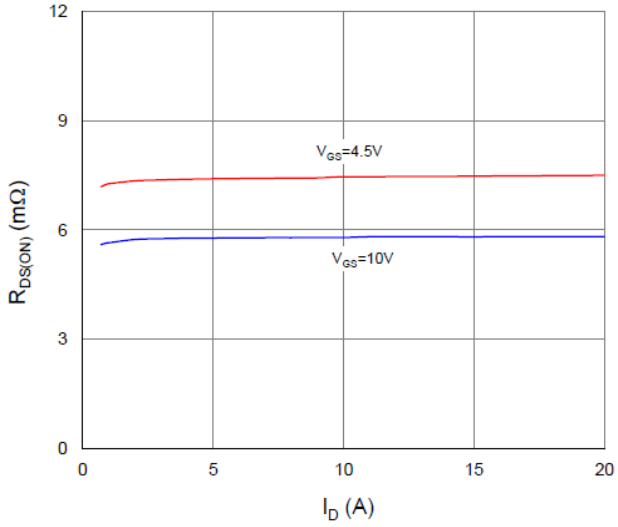


Figure 4. Normalized On-Resistance vs. Junction Temperature

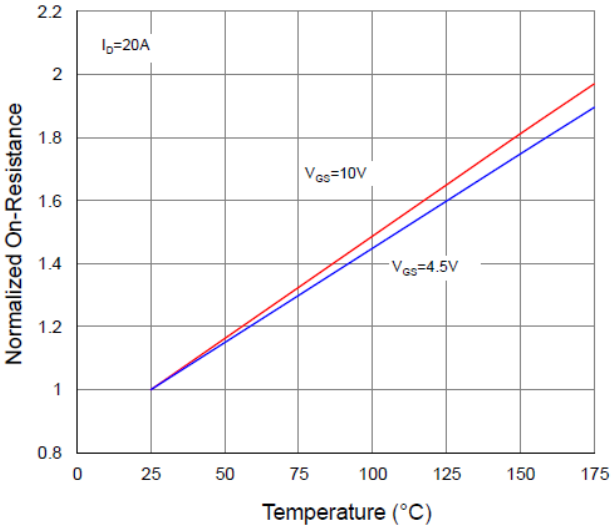


Figure 5. Typical Transfer Characteristics

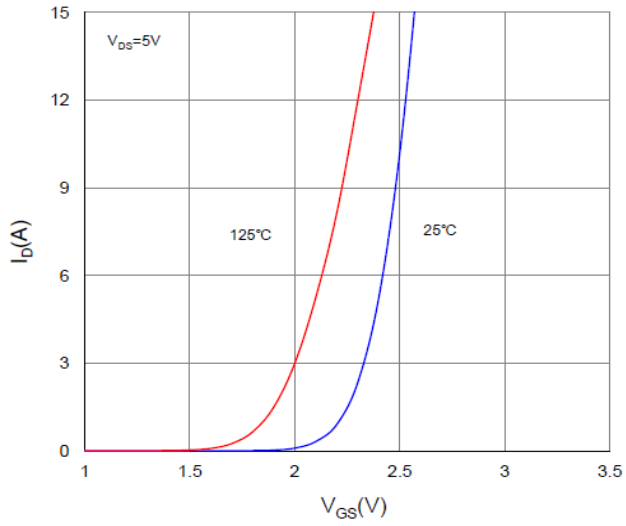
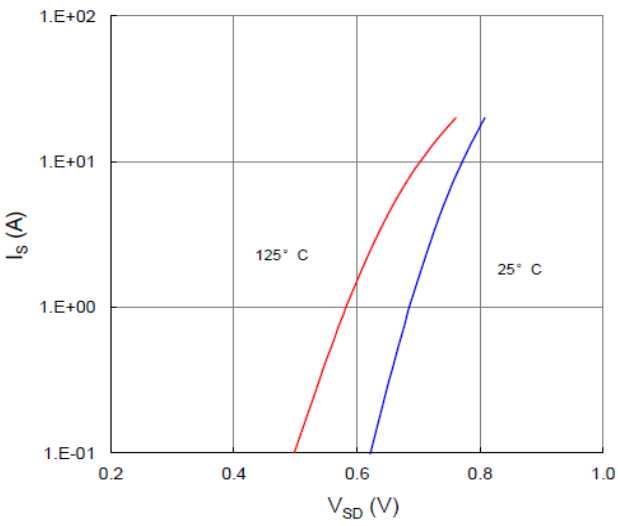


Figure 6. Typical Source-Drain Diode Forward Voltage



TYPICAL CHARACTERISTIC

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

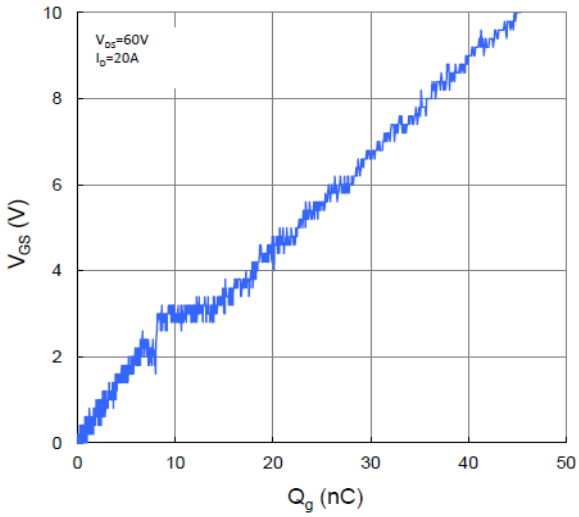


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

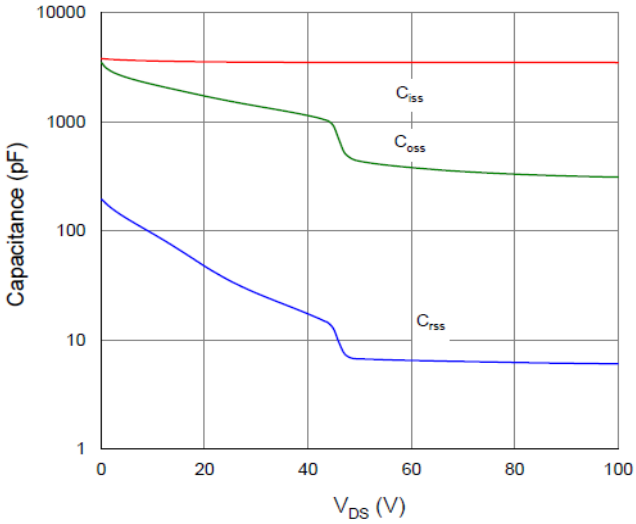


Figure 9. Maximum Safe Operating Area

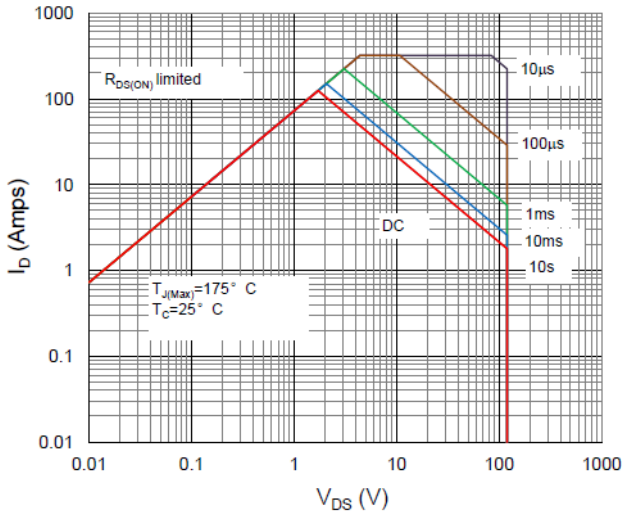


Figure 10. Maximun Drain Current vs. Case Temperature

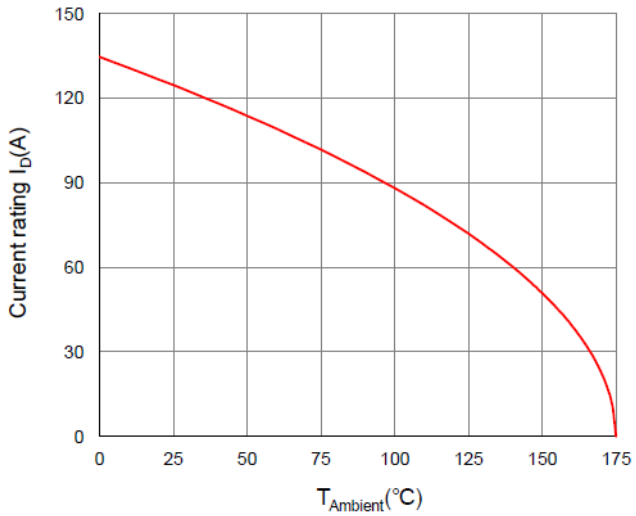


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient