Elektronische Bauelemente

SSG13N45S-C

13.5A, 45V, $R_{DS(ON)}$ 9.5mΩ
N-Ch Enhancement Mode Power MOSFET

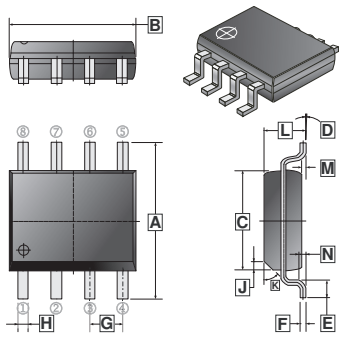
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSG13N45S-C 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 SSG13N45S-C meet the RoHS and Green Product requirement with full function reliability approved.

SOP-8

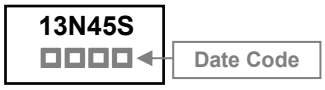


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.79	6.20	H	0.33	0.51
B	4.70	5.11	J	0.375 REF.	
C	3.80	4.00	K	45°REF.	
D	0°	8°	L	1.3	1.752
E	0.40	1.27	M	0	0.25
F	0.10	0.25	N	0.25 REF.	
G	1.27 TYP.				

FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge

MARKING

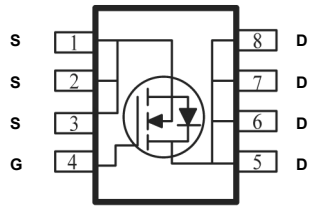


PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	2.5K	13 inch

ORDER INFORMATION

Part Number	Type
SSG13N45S-C	Lead (Pb)-free and Halogen-free



ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	45	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1], @V_{GS}=10V	T_A=25°C	I_D	13.5	A
	T_A=100°C		8.5	
Pulsed Drain Current [3]		I_{DM}	50	A
Total Power Dissipation [2]	T_A=25°C	P_D	3.1	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	°C
Thermal Resistance Ratings				
Maximum Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	t≦10s, 40	°C/W
			Steady State ,75	

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-Source Breakdown Voltage		BV_{DSS}	45	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	1	-	2.2	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance		g_{fs}	-	8	-	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}=36V, V_{GS}=0
	T_J=100°C		-	-	100		V_{DS}=36V, V_{GS}=0
Static Drain-Source On-Resistance [3]		$R_{DS(ON)}$	-	7.9	9.5	mΩ	V_{GS}=10V, I_D=12A
			-	11	14		V_{GS}=4.5V, I_D=8A
Gate Resistance		R_G	-	1.5	-	Ω	f=1MHz
Total Gate Charge(4.5V)		Q_g	-	7	-	nC	I_D=10A V_{DD}=20V V_{GS}=10V
Total Gate Charge		Q_g	-	14.5	-		
Gate-Source Charge		Q_{gs}	-	2	-		
Gate-Drain Change		Q_{gd}	-	2.5	-		
Turn-on Delay Time		$T_{d(on)}$	-	6	-	nS	V_{DD}=20V I_D=10A V_{GS}=10V R_G=10Ω
Rise Time		T_r	-	5	-		
Turn-off Delay Time		$T_{d(off)}$	-	21	-		
Fall Time		T_f	-	5	-		
Input Capacitance		C_{iss}	-	942	-	pF	V_{GS}=0 V_{DS}=20V f=1MHz
Output Capacitance		C_{oss}	-	309	-		
Reverse Transfer Capacitance		C_{rss}	-	29	-		
Source-Drain Diode							
Forward on Voltage [3]		V_{SD}	-	-	1.2	V	I_S=12A, V_{GS}=0
Continuous Source Current [1]		I_S	-	-	13.5	A	
Pulsed Source Current [3]		I_{SM}	-	-	50	A	
Reverse Recovery Time		T_{rr}	-	24	-	nS	I_F=10A,V_R=20V, dI/dt=200A/μs
Reverse Recovery Charge		Q_{rr}	-	19	-	nC	

Notes:
1. Surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. Pulse width limited by maximum junction temperature, pulse width≦300μs, duty cycle≦2%.
3. The data tested by pulsed, pulse width≦300μs, duty cycle≦2%.

TYPICAL CHARACTERISTICS CURVE

Fig 1. Typical Output Characteristics

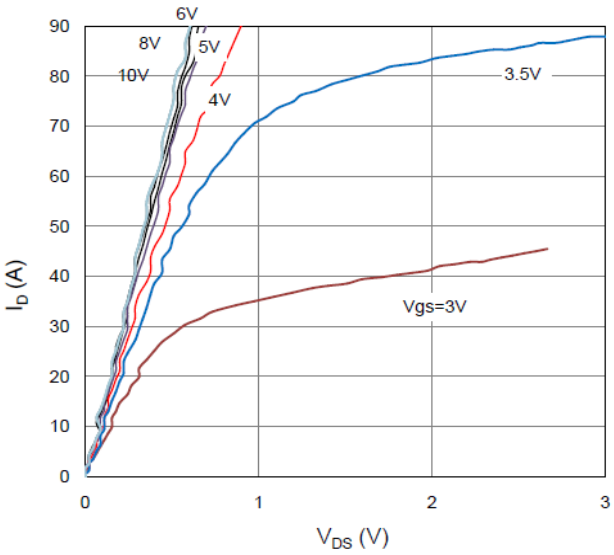


Figure 2. On-Resistance vs. Gate-Source Voltage

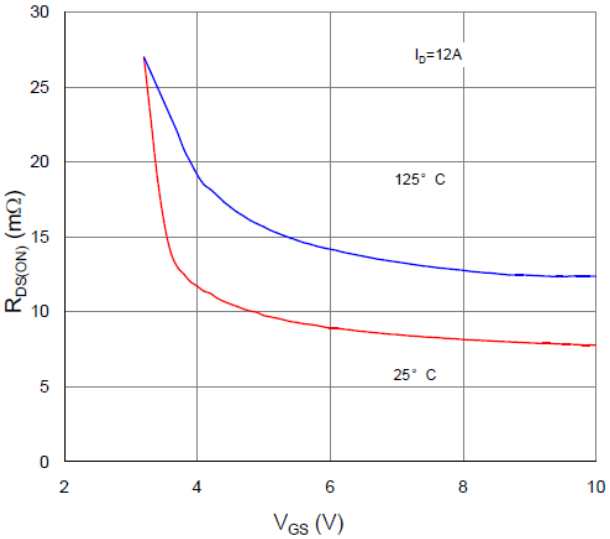


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

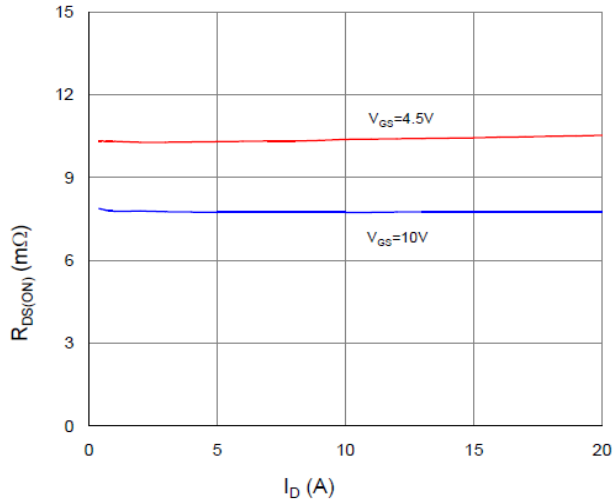


Figure 4. Normalized On-Resistance vs. Junction Temperature

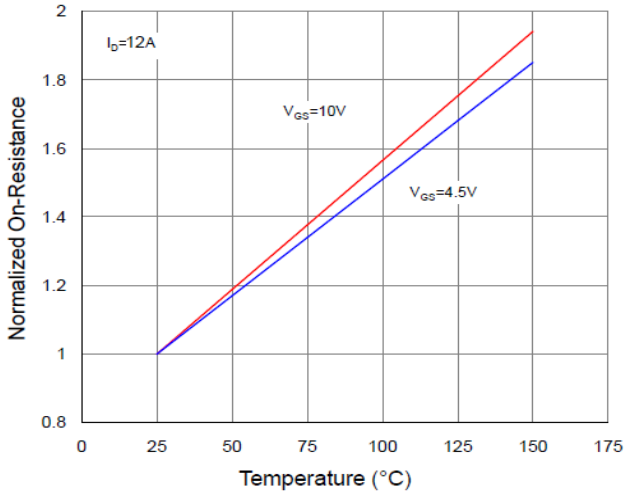


Figure 5. Typical Transfer Characteristics

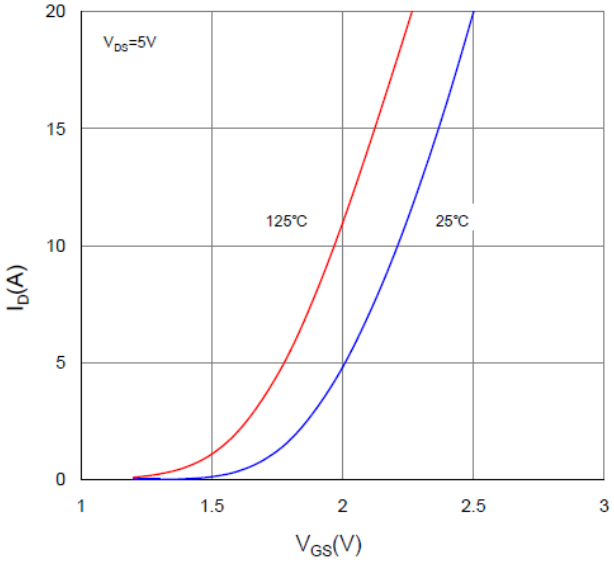
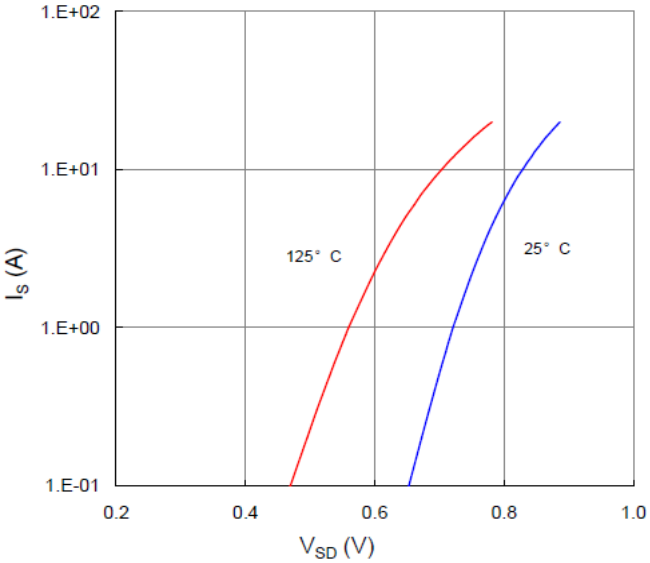


Figure 6. Typical Source-Drain Diode Forward Voltage



TYPICAL CHARACTERISTICS CURVE

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

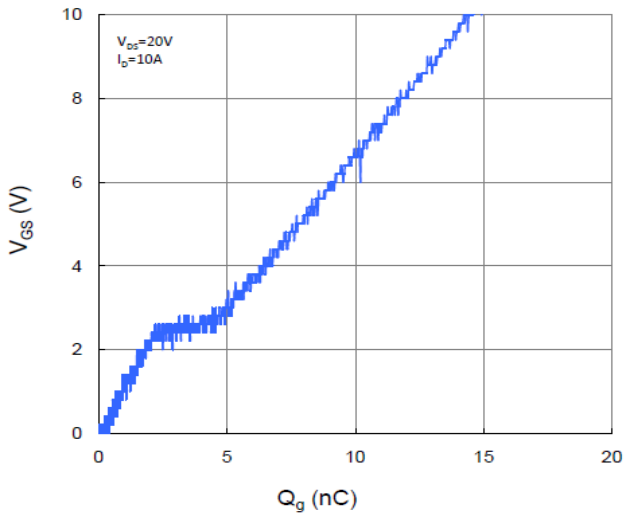


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

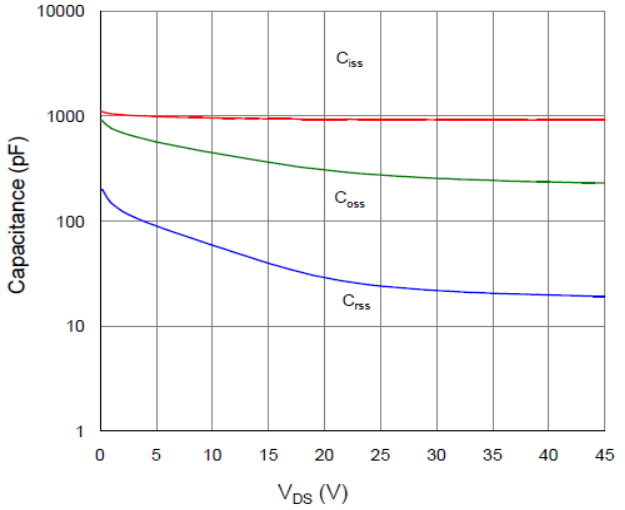


Figure 9. Maximum Safe Operating Area

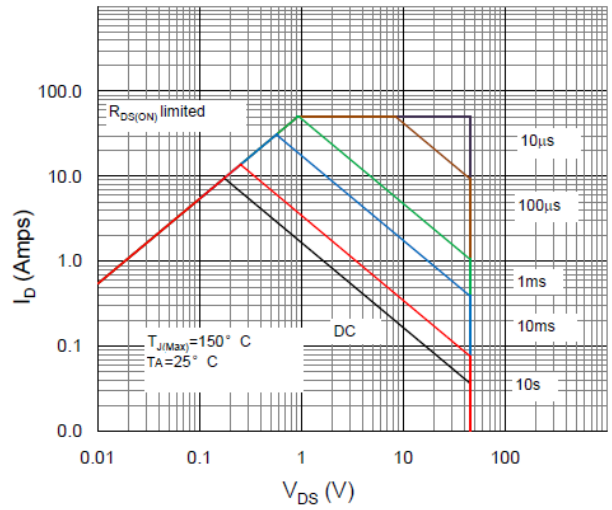


Figure 10. Maximun Drain Current vs. Ambient Temperature

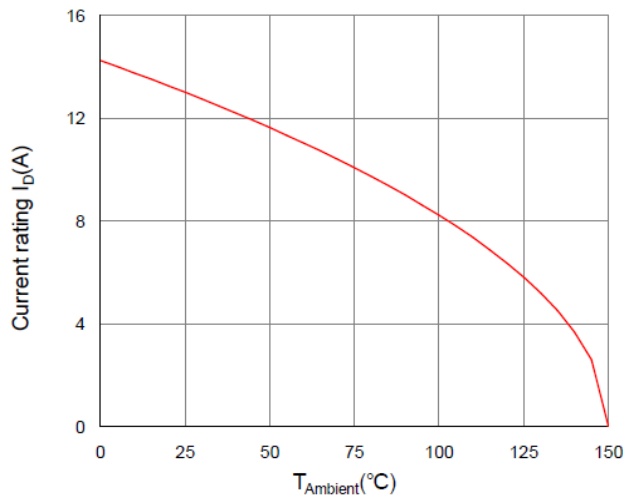


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient