

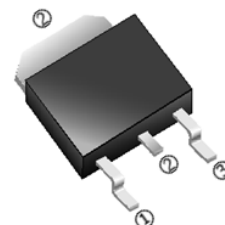
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSD68N12SV-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 SSD68N12SV-C meet the RoHS and Green Product requirement with full function reliability approved.

TO-252(D-Pack)



FEATURES

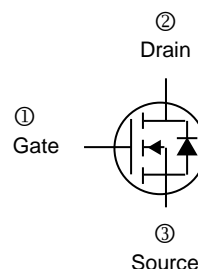
- Shielded Gate Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch



ORDER INFORMATION

Part Number	Type
SSD68N12SV-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	120	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ @ $V_{GS}=10\text{V}$	$T_C=25^\circ\text{C}$	68	A
	$T_C=100^\circ\text{C}$	43	A
Pulsed Drain Current ²	I_{DM}	200	A
Total Power Dissipation ³	$T_C=25^\circ\text{C}$	P_D	83.3 W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Resistance Rating			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	65	$^\circ\text{C/W}$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	1.5	

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV_{DSS}	120	-	-	V	$V_{GS}=0, I_D=250\mu A$	
Gate-Threshold Voltage	$V_{GS(th)}$	2	3	4	V	$V_{DS}=V_{GS}, I_D=250\mu A$	
Forward Transconductance	g_{fs}	-	55	-	S	$V_{DS}=5V, I_D=20A$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20V$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ C$	-	-	1	μA	$V_{DS}=96V, V_{GS}=0$
		$T_J=100^\circ C$	-	-	100		
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	8	9.5	m Ω	$V_{GS}=10V, I_D=20A$	
Total Gate Charge	Q_g	-	31	-	nC	$V_{DS}=60V$ $I_D=20A$ $V_{GS}=10V$	
Gate-Source Charge	Q_{gs}	-	10	-			
Gate-Drain ("Miller") Change	Q_{gd}	-	5	-			
Turn-on Delay Time	$T_{d(on)}$	-	12.7	-	nS	$V_{DD}=60V$ $I_D=20A$ $V_{GS}=10V$ $R_G=10\Omega$	
Rise Time	T_r	-	7	-			
Turn-off Delay Time	$T_{d(off)}$	-	20	-			
Fall Time	T_f	-	9	-			
Input Capacitance	C_{iss}	-	2509	-	pF	$V_{GS}=0$ $V_{DS}=60V$ $f=1MHz$	
Output Capacitance	C_{oss}	-	306	-			
Reverse Transfer Capacitance	C_{rss}	-	10	-			
Source-Drain Diode							
Diode Forward Voltage ²	V_{SD}	-	-	1.2	V	$I_F=20A, V_{GS}=0$	
Continuous Source Current ¹	I_S	-	-	68	A	$V_G=V_D=0, \text{Force Current}$	
Reverse Recovery Time	T_{rr}	-	56	-	nS	$I_F=20A, V_R=60V,$ $di_F/dt=100A/\mu S$	
Reverse Recovery Charge	Q_{rr}	-	78	-	nC		

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. The power dissipation is limited by 150 $^\circ C$ junction temperature.

CHARACTERISTIC CURVES

Fig 1. Typical Output Characteristics

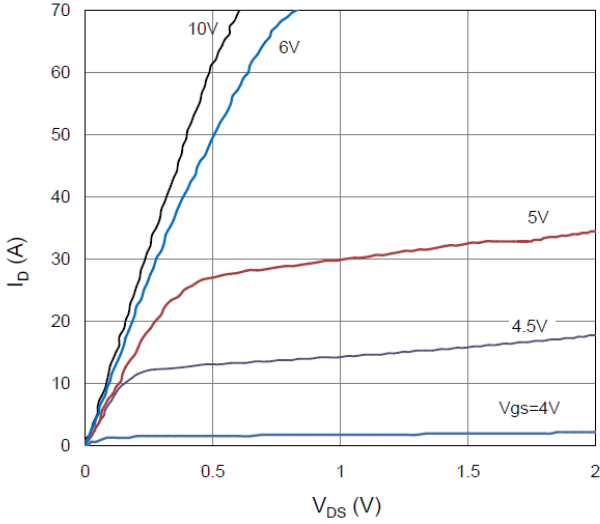


Figure 2. On-Resistance vs. Gate-Source Voltage

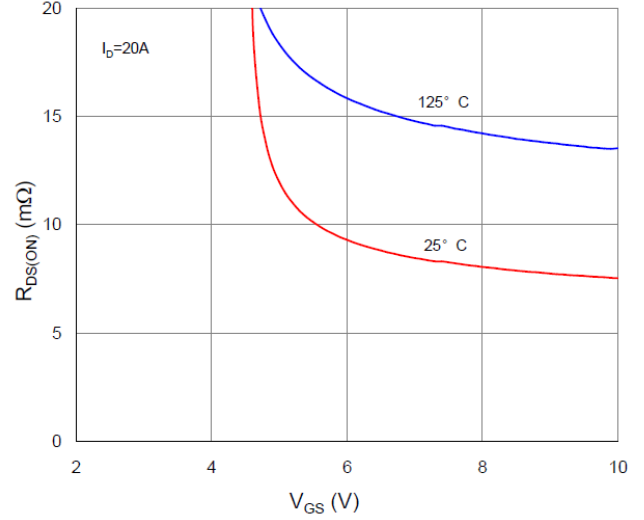


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

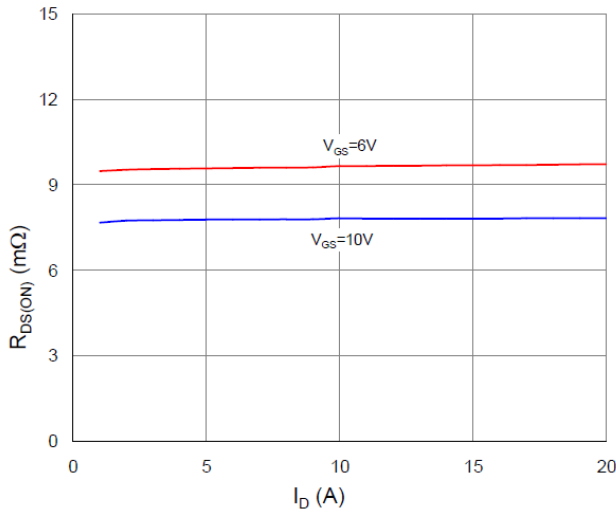


Figure 4. Normalized On-Resistance vs. Junction Temperature

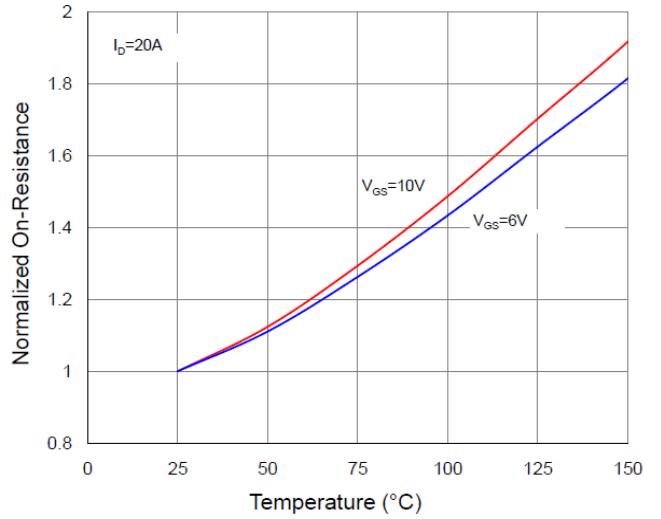


Figure 5. Typical Transfer Characteristics

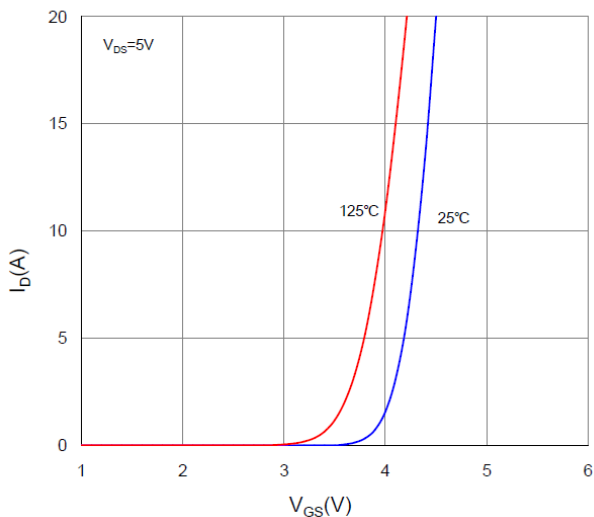
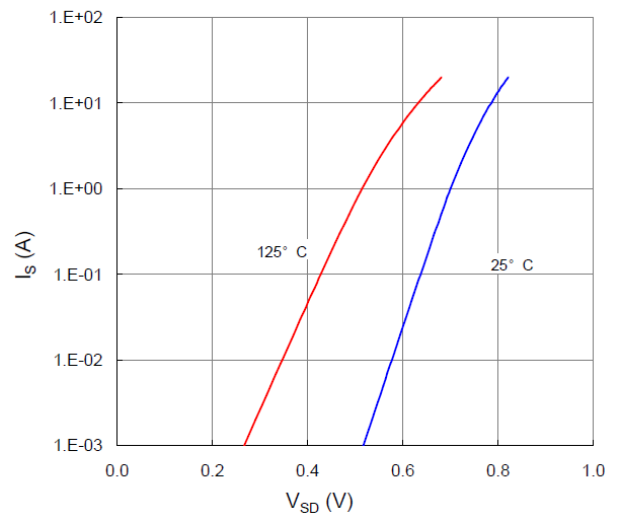


Figure 6. Typical Source-Drain Diode Forward Voltage



CHARACTERISTIC CURVES

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

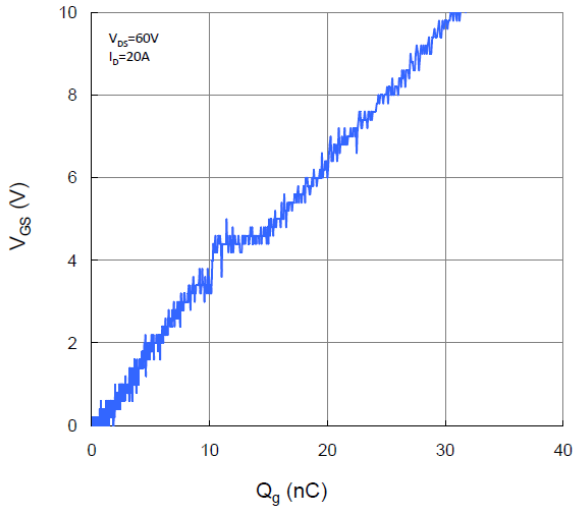


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

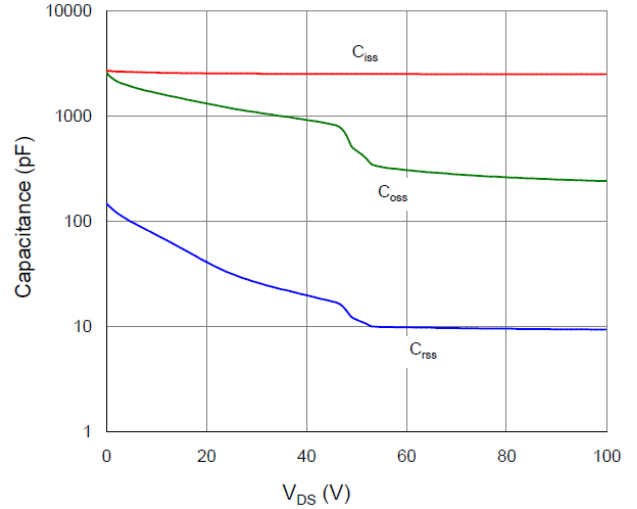


Figure 9. Maximum Safe Operating Area

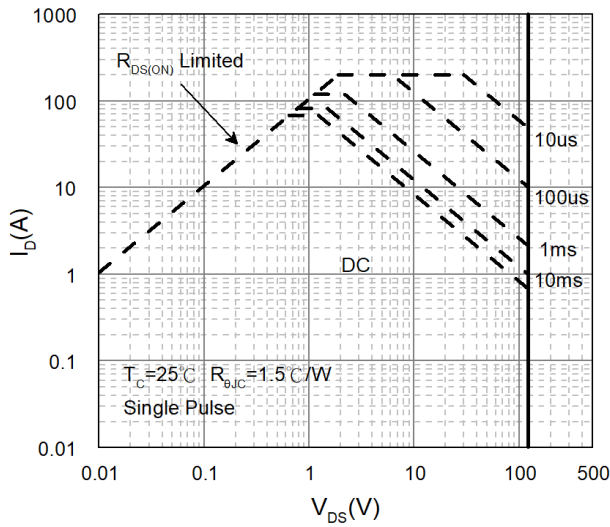


Figure 10. Maximum Drain Current vs. Case Temperature

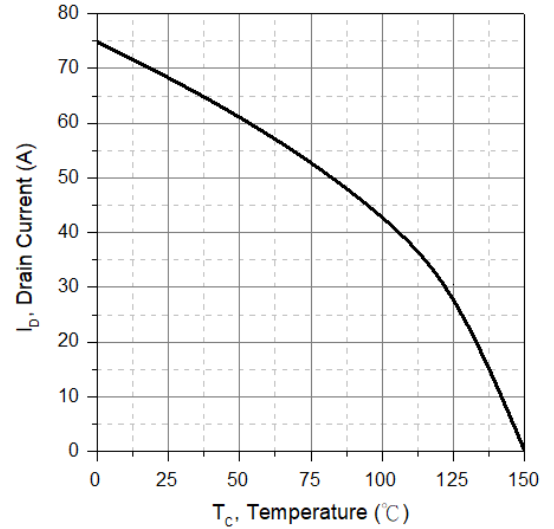
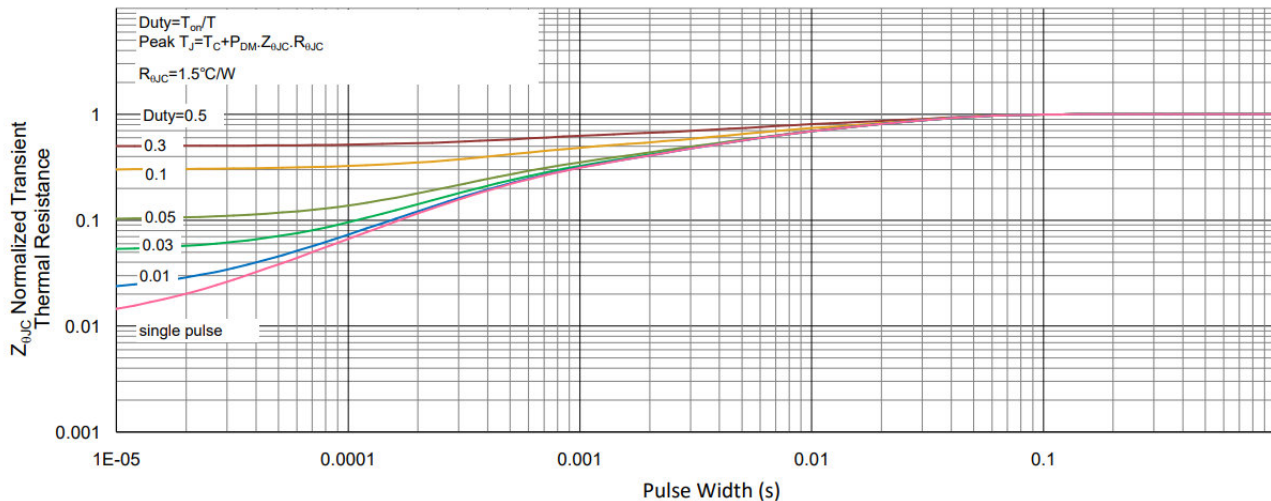
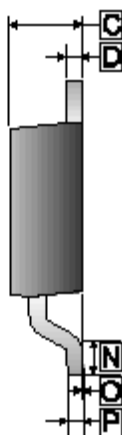
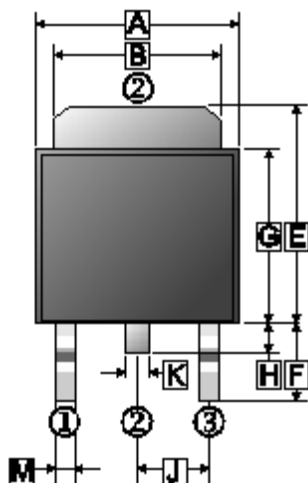


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case



PACKAGE OUTLINE DIMENSIONS

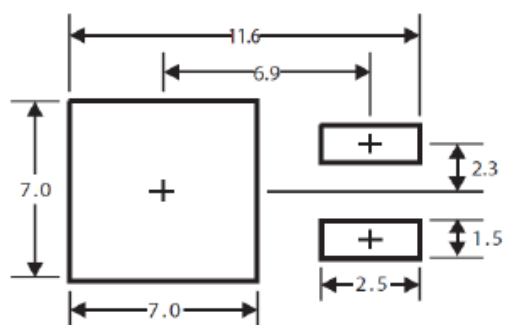
TO-252



REF.	Millimeter	
	Min.	Max.
A	6.30	6.90
B	4.95	5.53
C	2.10	2.50
D	0.40	0.90
E	6.00	7.70
F	2.90 REF.	
G	5.40	6.40
H	0.60	1.20
J	2.30 REF.	
K	0.89 REF.	
M	0.45	1.14
N	1.55 TYP.	
O	0	0.15
P	0.58 REF.	

MOUNTING PAD LAYOUT

TO-252



*Dimensions in millimeters