

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

DESCRIPTION

SSD65N10S-C is the highest performance trench N-ch MOSFETs with extreme high cell density, which provides excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

SSD65N10S-C meets the RoHS and Green Product requirement with full function reliability approved.

FEATURES

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Green Device Available

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

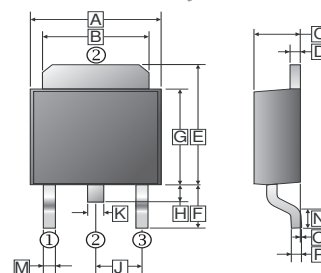
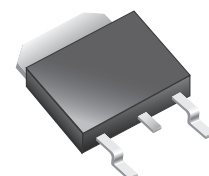
ORDER INFORMATION

Part Number	Type
SSD65N10S-C	Lead (Pb)-free and Halogen-free

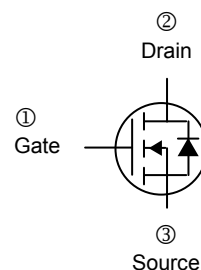
ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ @ $V_{GS}=10\text{V}$	I_D	$T_C=25^\circ\text{C}$	65
		$T_C=100^\circ\text{C}$	41
Pulsed Drain Current ²	I_{DM}	160	A
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	62.5
Operating Junction & Storage Temperature	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Resistance Ratings			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	2	

TO-252(D-Pack)



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.80	J	2.30	REF.
B	5.20	5.50	K	0.64	0.90
C	2.15	2.40	M	0.50	1.1
D	0.45	0.58	N	0.9	1.65
E	6.8	7.5	O	0	0.15
F	2.40	3.0	P	0.43	0.58
G	5.40	6.25			
H	0.64	1.20			



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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	100	-	-	V	$V_{GS}=0V, I_D=250\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	1.4	-	2.4	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
Drain-Source Leakage Current	I_{DSS}	-	-	1	uA	$V_{DS}=80V, V_{GS}=0, T_J=25^\circ\text{C}$
		-	-	100		$V_{DS}=80V, V_{GS}=0, T_J=100^\circ\text{C}$
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	-	8.4	9.8	m Ω	$V_{GS}=10V, I_D=20A$
		-	11.3	13		$V_{GS}=4.5V, I_D=20A$
Transconductance	g_{fs}	-	80	-	S	$V_{DS}=5V, I_D=10A$
Gate Resistance	R_g	-	1.4	-	Ω	$V_{DS}=V_{GS}=0V, f=1\text{MHz}$
Total Gate Charge (4.5V)	Q_g	-	12	-	nC	$I_D=20A$ $V_{DD}=50V$ $V_{GS}=10V$
Total Gate Charge		-	24	-		
Gate-Source Charge		-	4	-		
Gate-Drain Change		-	6	-		
Turn-on Delay Time	$T_{d(on)}$	-	6	-	Ns	$V_{DD}=50V$ $I_D=20A$ $V_{GS}=10V$ $R_G=10\Omega$
Rise Time	T_r	-	4	-		
Turn-off Delay Time	$T_{d(off)}$	-	18	-		
Fall Time	T_f	-	3	-		
Input Capacitance	C_{iss}	-	1450	-	pF	$V_{GS}=0V$ $V_{DS}=50V$ $f=1\text{MHz}$
Output Capacitance	C_{oss}	-	273	-		
Reverse Transfer Capacitance	C_{rss}	-	5	-		
Source-Drain Diode						
Diode Forward Voltage ³	V_{SD}	-	-	1.2	V	$I_F=20A, V_{GS}=0V$
Reverse Recovery Time	T_{rr}	-	40	-	nS	$I_F=20A, V_R=50V, di/dt=500A/\mu s$
Reverse Recovery Charge	Q_{rr}	-	152	-	nC	

Notes:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- The Pulse width limited by maximum junction temperature, Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
- The Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

CHARACTERISTIC CURVES

Fig 1. Typical Output Characteristics

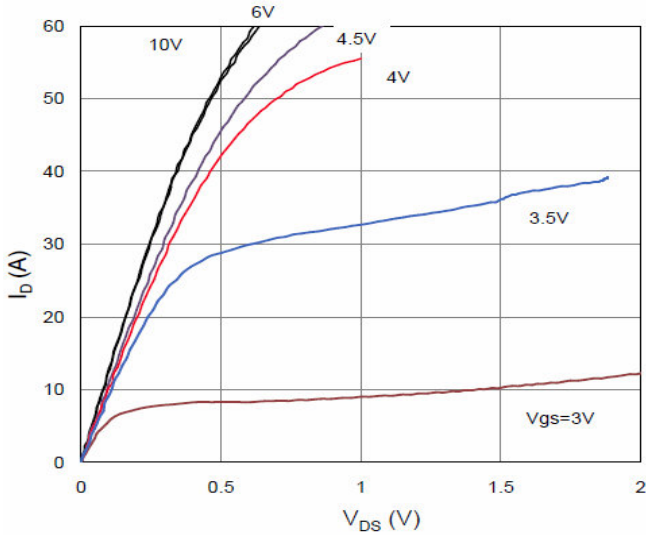


Figure 2. On-Resistance vs. Gate-Source Voltage

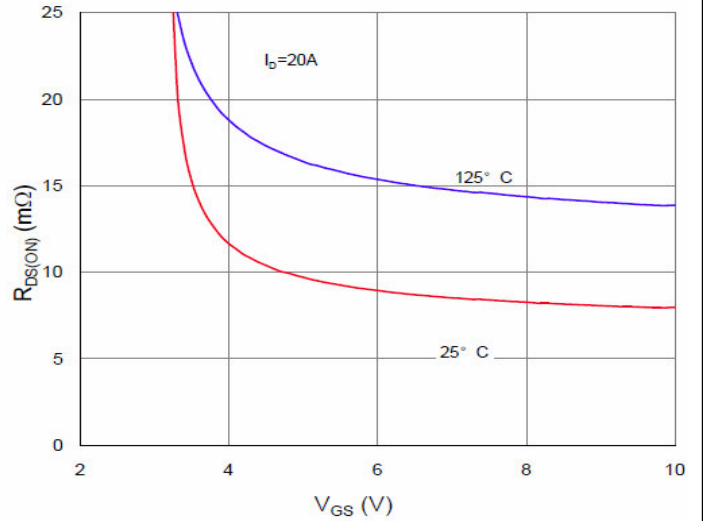


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

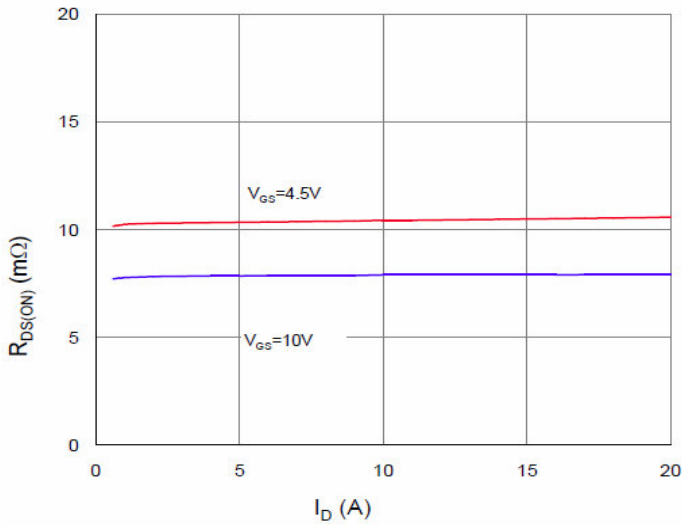


Figure 4. Normalized On-Resistance vs. Junction Temperature

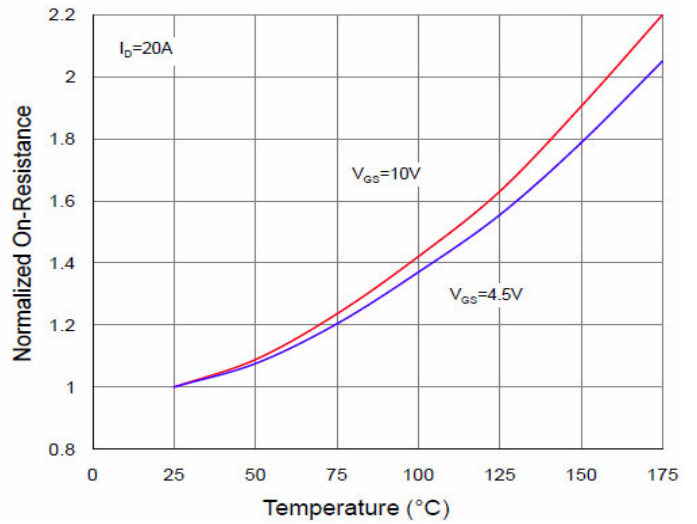


Figure 5. Typical Transfer Characteristics

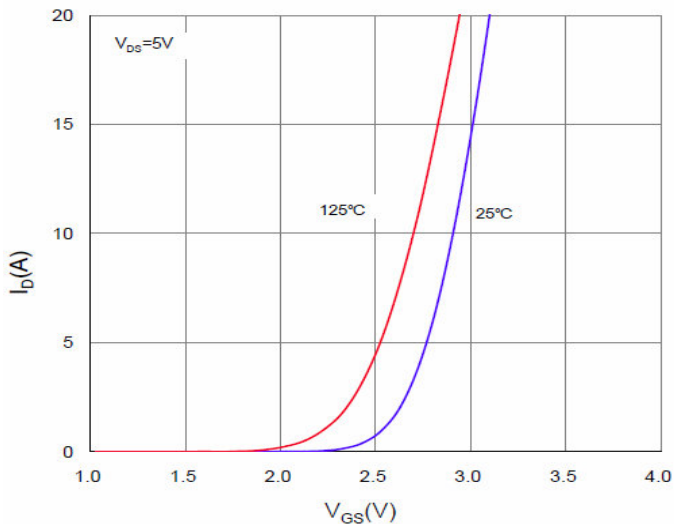
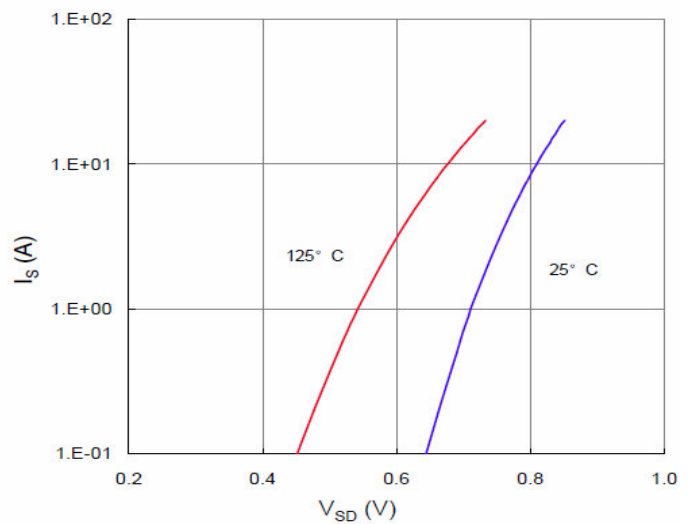


Figure 6. Typical Source-Drain Diode Forward Voltage



CHARACTERISTIC CURVES

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

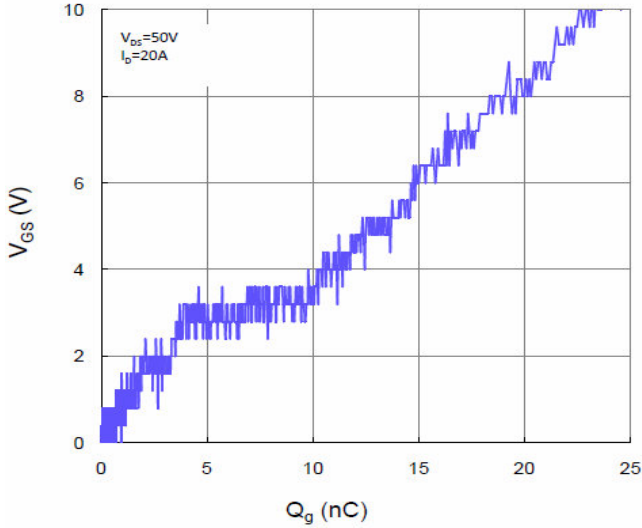


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

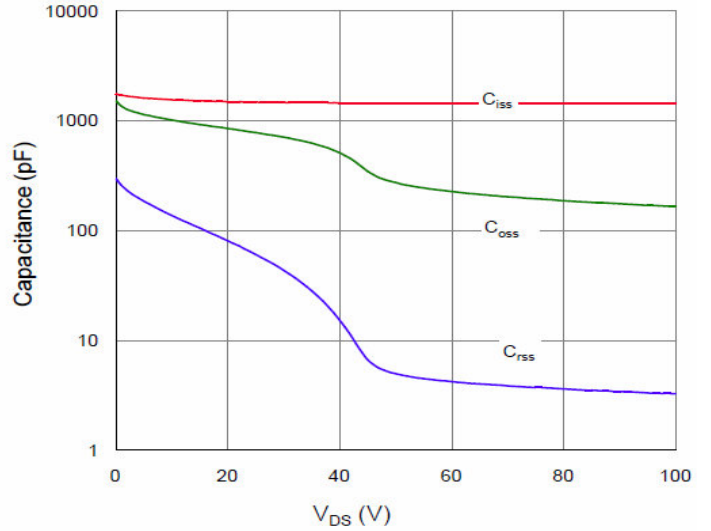


Figure 9. Maximum Safe Operating Area

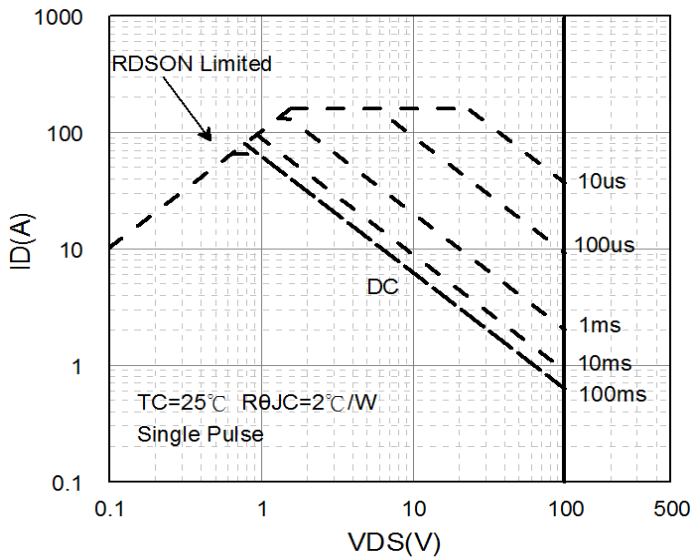


Figure 10. Drain Current vs. Case Temperature

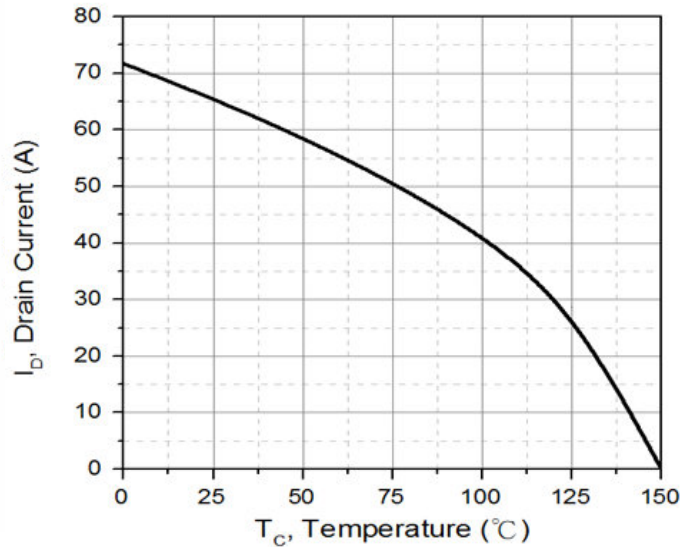


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

