Elektronische Bauelemente

SSD56N10SV-C

56A, 100V, $R_{DS(ON)}$ 9mΩ

N-Channel Shielded Gate Trench Power MOSFET

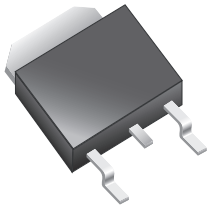
RoHS Compliant Product
A suffix of "-C" specifies halogen free

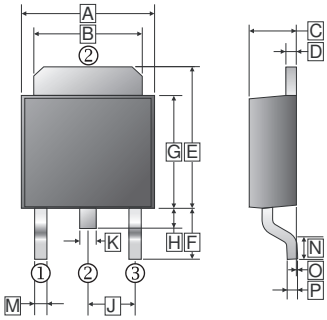
DESCRIPTION

The SSD56N10SV-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 SSD56N10SV-C meet the RoHS and Green Product requirement with full function reliability approved.

TO-252(D-Pack)





REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.3	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	0.4	0.9	N	1.55 Typ.	
E	6	7.7	O	0	0.15
F	2.90 REF		P	0.58 REF.	
G	5.4	6.4			
H	0.6	1.2			

FEATURES

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

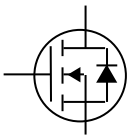
MARKING

56N10SV
□□□□
□ = Date Code

PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

② Drain
① Gate
③ Source



ORDER INFORMATION

Part Number	Type
SSD56N10SV-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @V_{GS}=10V	T_C=25℃	I_D	56	A
	T_C=100℃		35	
Pulsed Drain Current [2]		I_{DM}	160	A
Total Power Dissipation [3]	T_C=25℃	P_D	34.7	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	62	℃/W
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	3.6	

ELECTRICAL CHARACTERISTICS (T_J=25℃ 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		$V_{GS(th)}$	2	-	4	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance		g_{fs}	-	80	-	S	V_{DS}=5V, I_D=20A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	μA	V_{DS}=80V, V_{GS}=0
	T_J=55℃		-	-	5		V_{DS}=80V, V_{GS}=0
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	6.6	9	mΩ	V_{GS}=10V, I_D=13.5A
Total Gate Charge		Q_g	-	52	-	nC	I_D=20A V_{DS}=50V V_{GS}=10V
Gate-Source Charge		Q_{gs}	-	13.5	-		
Gate-Drain Change		Q_{gd}	-	16	-		
Turn-on Delay Time		$T_{d(on)}$	-	10	-	nS	V_{DD}=50V I_D=13.5A V_{GS}=10V R_G=3Ω
Rise Time		T_r	-	6.5	-		
Turn-off Delay Time		$T_{d(off)}$	-	45	-		
Fall Time		T_f	-	7.5	-		
Input Capacitance		C_{iss}	-	3148	-	pF	V_{GS}=0 V_{DS}=50V f=1MHz
Output Capacitance		C_{oss}	-	693	-		
Reverse Transfer Capacitance		C_{rss}	-	26	-		
Source-Drain Diode							
Diode Forward Voltage [2]		V_{SD}	-	-	1.2	V	V_{GS}=0, I_S=1A
Continuous Source Current [1]		I_S	-	-	56	A	V_G=V_D=0, Force Current
Reverse Recovery Time		T_{rr}	-	33	-	nS	I_F=13.5A, dI/dt=100A/μs, T_J=25℃
Reverse Recovery Charge		Q_{rr}	-	150	-	nC	

Notes:
1. The data tested by surface mounted on a 1inch^2 FR4 Board with 2OZ copper.
2. The data tested by pulsed, Pulse Width≦300μs, Duty Cycle≦2%.
3. The power dissipation is limited by 150℃, junct ion temperature.

TYPICAL CHARACTERISTICS CURVE

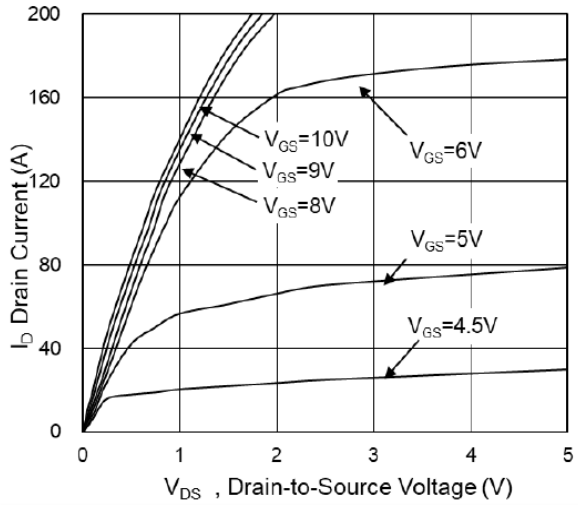


Fig.1 Typical Output Characteristics

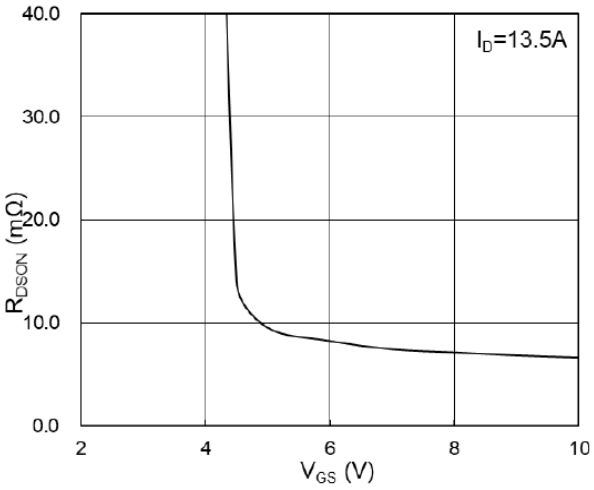


Fig.2 On-Resistance vs G-S Voltage

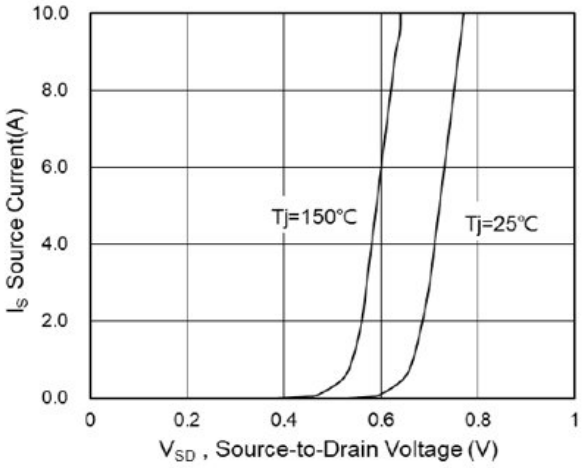


Fig.3 Source-Drain Forward Characteristics

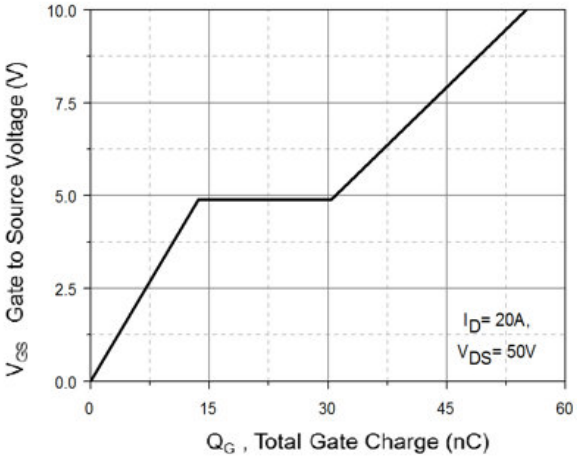


Fig.4 Gate-Charge Characteristics

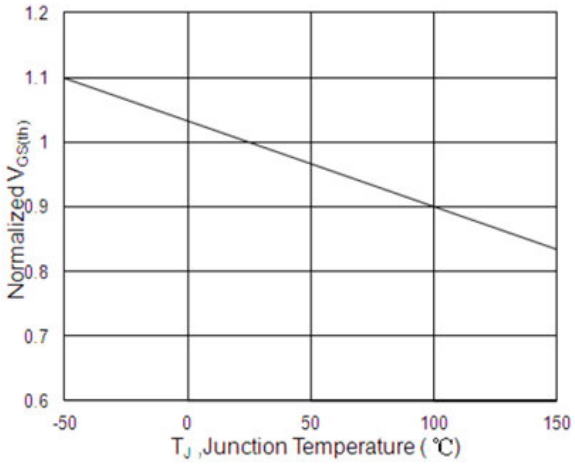


Fig.5 Normalized $V_{GS(th)}$ vs T_J

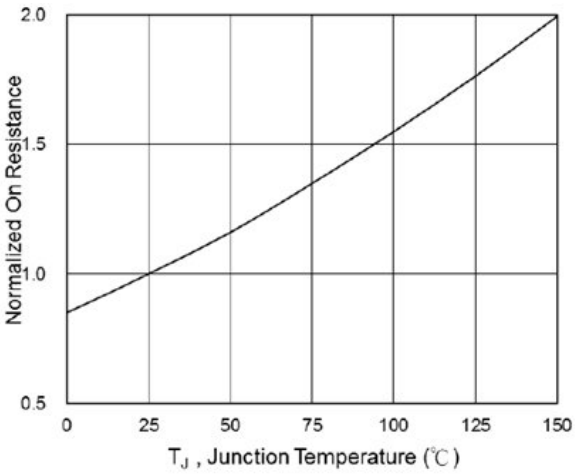


Fig.6 Normalized R_{DSON} vs T_J

TYPICAL CHARACTERISTICS CURVE

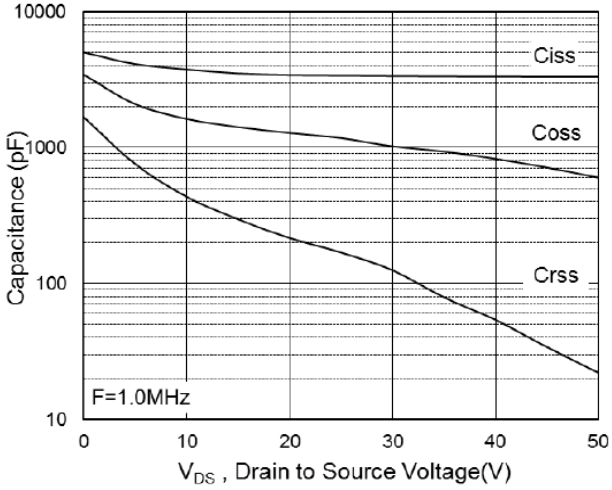


Fig.7 Capacitance

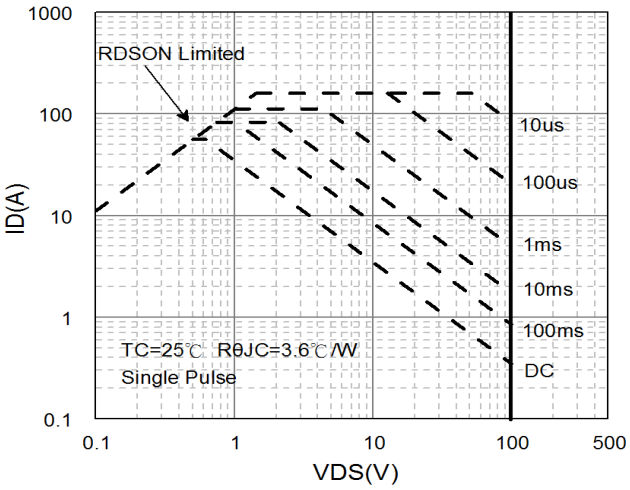


Fig.8 Safe Operating Area

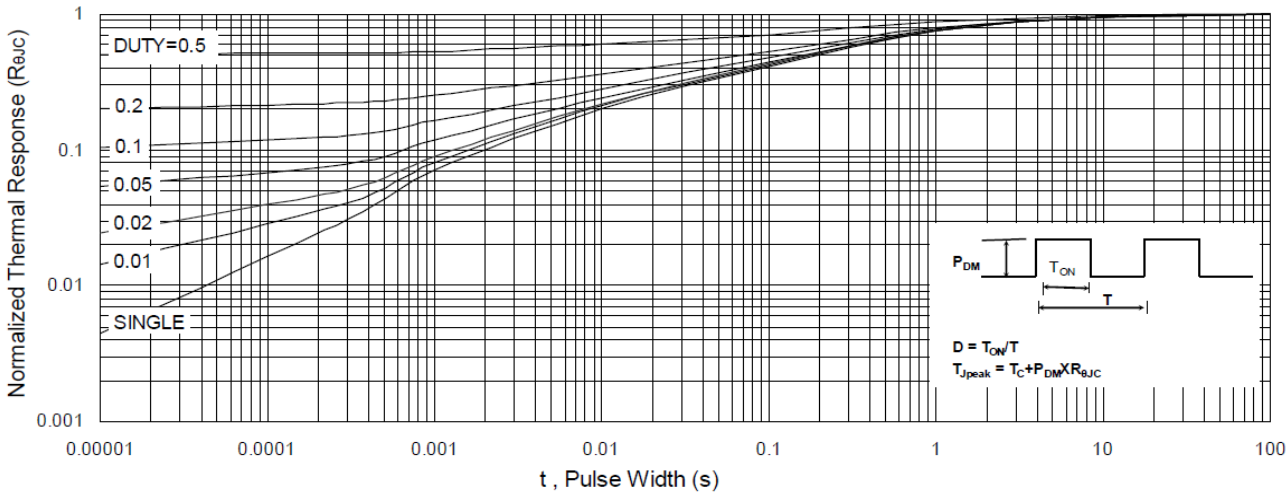


Fig.9 Normalized Maximum Transient Thermal Impedance

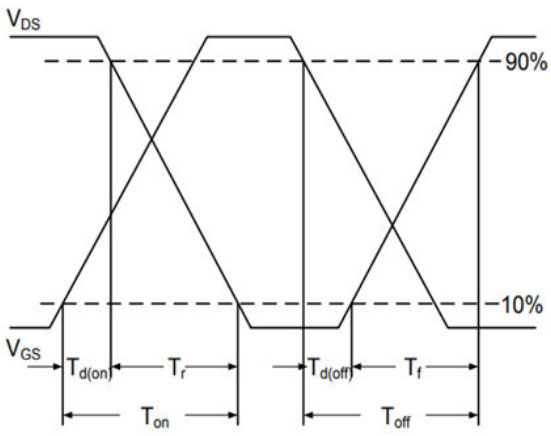


Fig.10 Switching Time Waveform

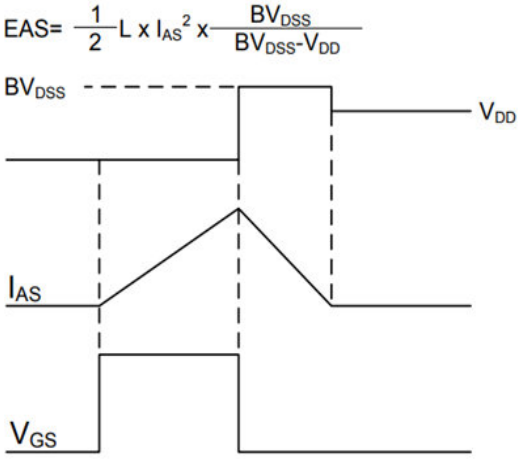


Fig.11 Unclamped Inductive Switching Waveform