Elektronische Bauelemente

SSD24N15S-C

24A, 150V, $R_{DS(ON)}$ 56mΩ

N-Channel Shielded Gate Trench Power MOSFET

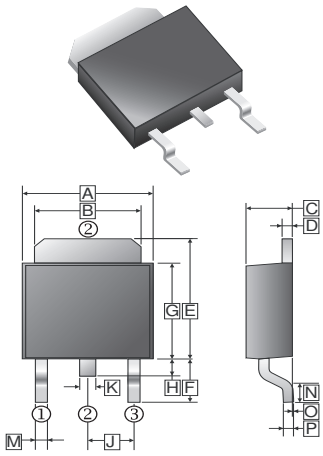
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSD24N15S-C is the Shielded Gate Technology 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.

SSD24N15S-C meets the RoHS and Green Product requirement with full function reliability approved.

TO-252(D-Pack)

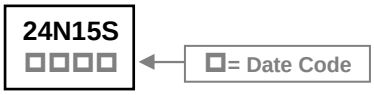


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.80	J	2.30 REF.	
B	5.20	5.50	K	0.64	0.90
C	2.15	2.40	M	0.50	1.1
D	0.45	0.58	N	0.9	1.65
E	6.8	7.5	O	0	0.15
F	2.40	3.0	P	0.43	0.58
G	5.40	6.25			
H	0.64	1.20			

FEATURES

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

MARKING

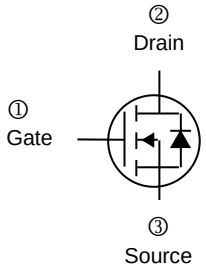


PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

ORDER INFORMATION

Part Number	Type
SSD24N15S-C	Lead (Pb)-free and Halogen-free



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

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @V_{GS}=10V	T_C=25℃	I_D	24	A
	T_C=100℃		16.5	
Pulsed Drain Current [2]		I_{DM}	56	A
Power Dissipation [3]	T_C=25℃	P_D	56.8	W
Operating Junction & Storage Temperature		T_J, T_{STG}	-55~150	℃
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	50	℃/W
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	2.2	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	150	-	-	V	V_{GS}=0V, I_D=250μA
Gate-Threshold Voltage		$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	uA	V_{DS}=120V, V_{GS}=0
	T_J=55℃		-	-	5		V_{DS}=120V, V_{GS}=0
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	-	56	mΩ	V_{GS}=10V, I_D=10A
			-	-	68		V_{GS}=4.5V, I_D=10A
Transconductance		g_{fs}	-	25	-	S	V_{DS}=5V, I_D=10A
Total Gate Charge		Q_g	-	19	-	nC	I_D=10A V_{DS}=75V V_{GS}=10V
Gate-Source Charge		Q_{gs}	-	4.5	-		
Gate-Drain Change		Q_{gd}	-	2.6	-		
Turn-on Delay Time		$T_{d(on)}$	-	18	-	nS	V_{DD}=75V I_D=10A V_{GS}=10V R_G=3.3Ω
Rise Time		T_r	-	5.8	-		
Turn-off Delay Time		$T_{d(off)}$	-	26.5	-		
Fall Time		T_f	-	4.5	-		
Input Capacitance		C_{iss}	-	1090	-	pF	V_{GS}=0V V_{DS}=50V f=1MHz
Output Capacitance		C_{oss}	-	93	-		
Reverse Transfer Capacitance		C_{rss}	-	6	-		
Source-Drain Diode							
Diode Forward Voltage [2]		V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0V
Continuous Source Current [1]		I_S	-	-	24	A	V_G=V_D=0, Force Current
Pulsed Source Current [2]		I_{SM}	-	-	56	A	
Reverse Recovery Time		T_{rr}	-	45	-	nS	I_F=10A, dI/dt=100A/μs, T_J=25℃
Reverse Recovery Charge		Q_{rr}	-	138	-	nC	

Notes:
1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. The data tested by pulsed pulse width≤300us, duty cycle≤2%.
3. The power dissipation is limited by 150℃ juncti on temperature.

CHARACTERISTIC CURVES

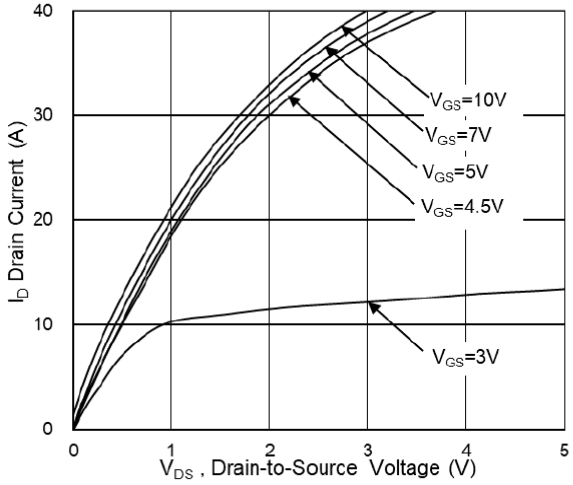


Fig.1 Typical Output Characteristics

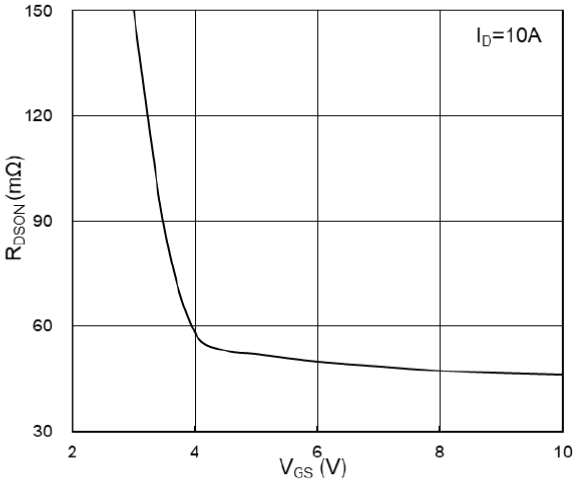


Fig.2 On-Resistance vs G-S Voltage

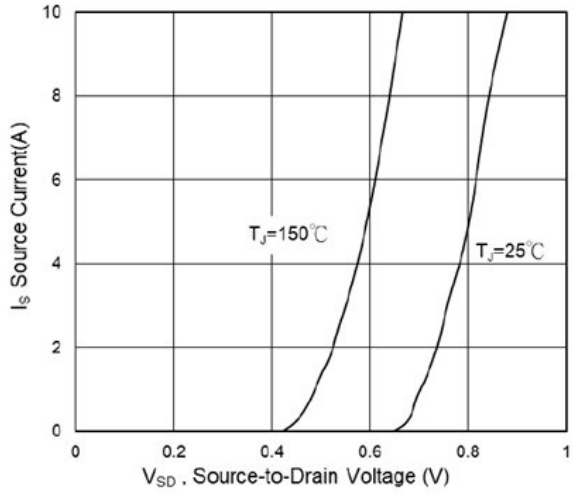


Fig.3 Source Drain Forward Characteristics

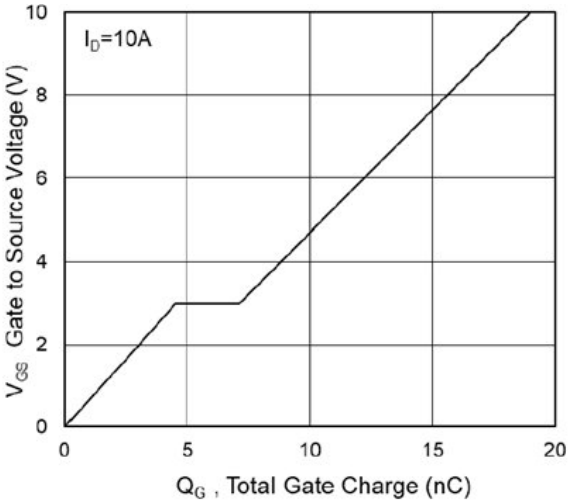


Fig.4 Gate-Charge Characteristics

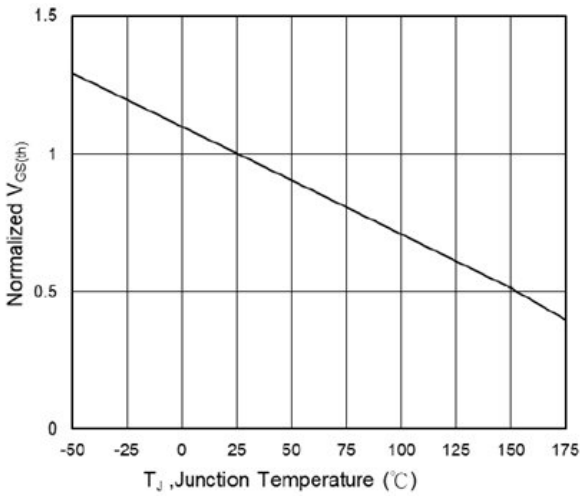


Fig.5 Normalized $V_{GS(th)}$ vs T_J

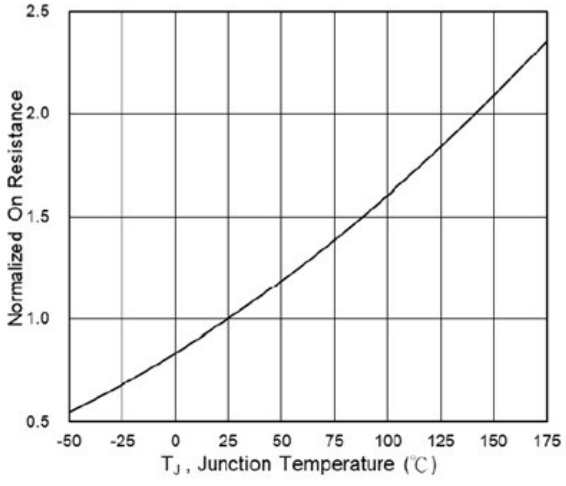


Fig.6 Normalized R_{DSON} vs T_J

CHARACTERISTIC CURVES

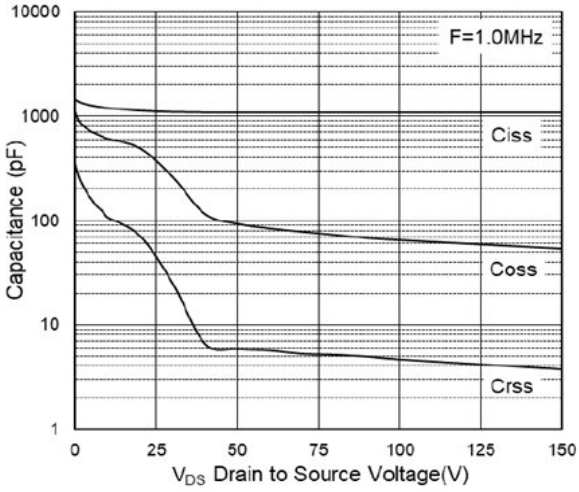


Fig.7 Capacitance

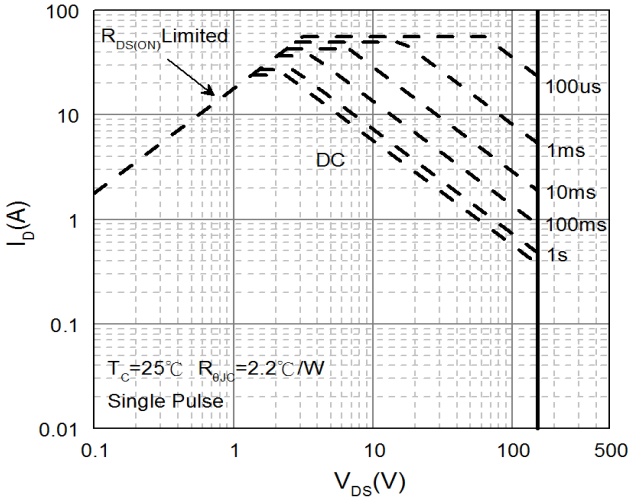


Fig.8 Safe Operating Area

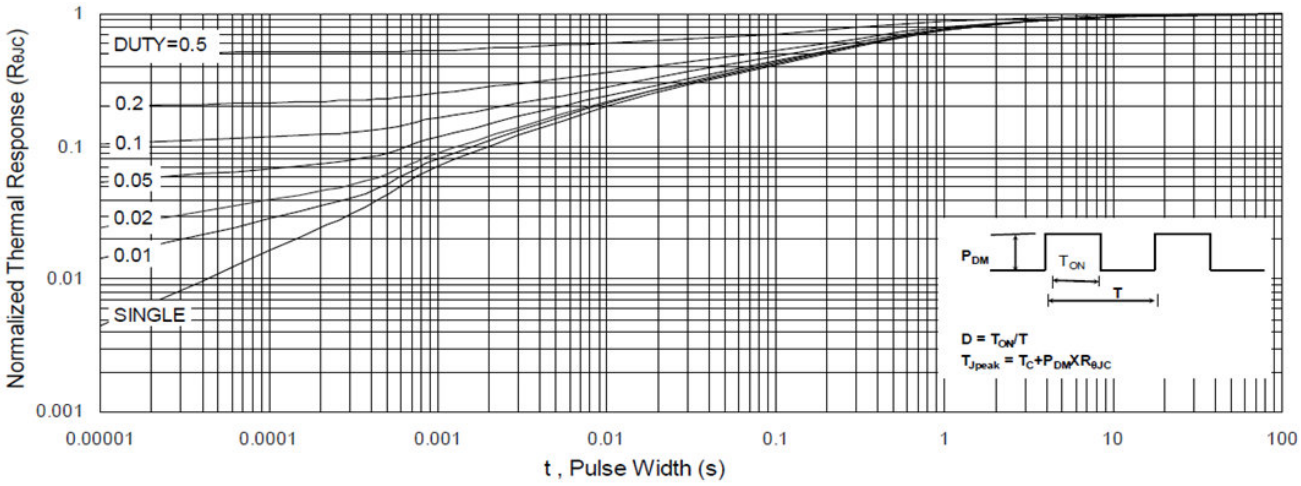


Fig.9 Normalized Maximum Transient Thermal Impedance

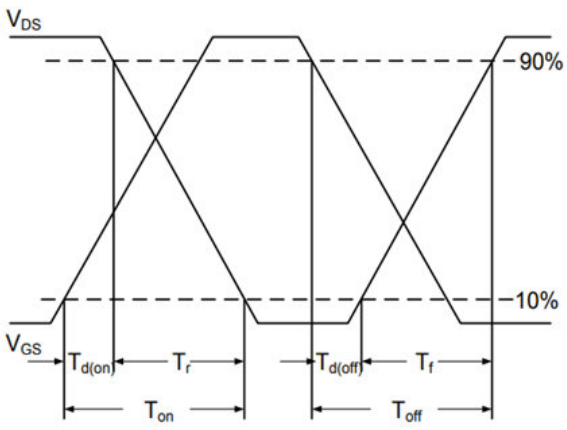


Fig.10 Switching Time Waveform

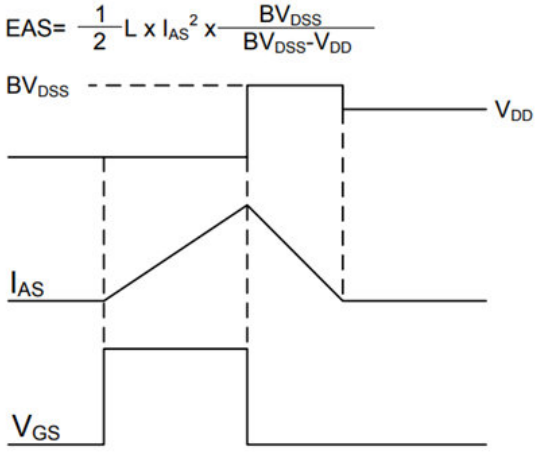
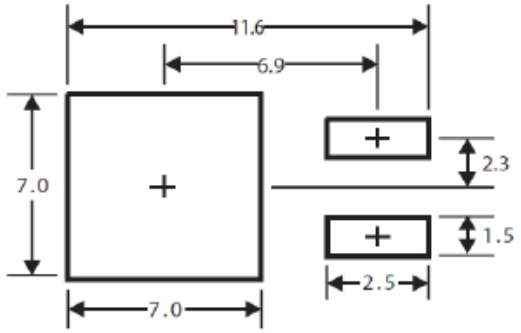


Fig.11 Unclamped Inductive Switching Waveform

CHARACTERISTIC CURVES



*Dimensions in millimeters

Fig.12 Mounting Pad Layout