Elektronische Bauelemente

SSD20N15B-C

20A, 150V, $R_{DS(ON)}$ 90mΩ
N-Ch Enhancement Mode Power MOSFET

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

DESCRIPTION

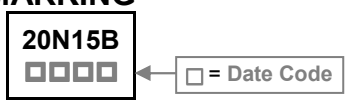
The SSD20N15B-C is the highest performance trench N-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSD20N15B-C meet 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



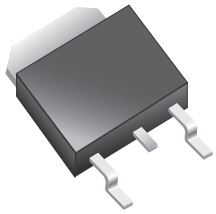
PACKAGE INFORMATION

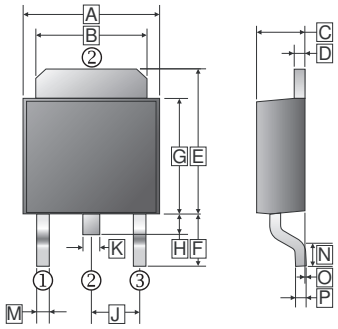
Package	MPQ	Leader Size
TO-252	2.5K	13 inch

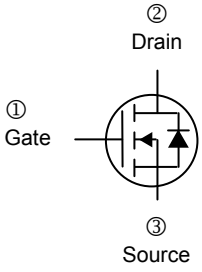
ORDER INFORMATION

Part Number	Type
SSD20N15B-C	Lead (Pb)-free and Halogen-free

TO-252(D-Pack)







REF.	Millimeter Min.	Millimeter Max.	REF.	Millimeter Min.	Millimeter 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			

ABSOLUTE MAXIMUM RATINGS

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°C	I_D	20	A
	T_C=100°C		14	
Pulsed Drain Current [2]		I_{DM}	40	A
Total Power Dissipation [3]	T_C=25°C	P_D	72.6	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	°C
Thermal Resistance Ratings				
Maximum Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	60	°C/W
Maximum Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	1.72	

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	150	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	1.2	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance		g_{fs}	-	33	-	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}=120V, V_{GS}=0
	T_J=55°C		-	-	5		V_{DS}=120V, V_{GS}=0
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	-	90	mΩ	V_{GS}=10V, I_D=10A
			-	-	110		V_{GS}=4.5V, I_D=10A
Total Gate Charge		Q_g	-	25.1	-	nC	I_D=10A V_{DS}=75V V_{GS}=4.5V
Gate-Source Charge		Q_{gs}	-	6.8	-		
Gate-Drain Change		Q_{gd}	-	12.6	-		
Turn-on Delay Time		$T_{d(on)}$	-	13	-	nS	V_{DD}=75V I_D=10A V_{GS}=10V R_G=3.3Ω
Rise Time		T_r	-	8.2	-		
Turn-off Delay Time		$T_{d(off)}$	-	25	-		
Fall Time		T_f	-	11	-		
Input Capacitance		C_{iss}	-	2285	-	pF	V_{GS}=0 V_{DS}=25V f=1MHz
Output Capacitance		C_{oss}	-	110	-		
Reverse Transfer Capacitance		C_{rss}	-	83	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	-	20	A	
Pulsed Source Current [2]		I_{SM}	-	-	40		
Diode Forward Voltage [2]		V_{SD}	-	-	1.2	V	V_{GS}=0, I_S=1A, T_J=25°C
Reverse Recovery Time		t_{rr}	-	37	-	nS	I_F=10A, dI/dt=100A/μs T_J=25°C
Reverse Recovery Charge		Q_{rr}	-	263	-	nC	

Notes:
1. Surface Mounted on 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°C, junction temperature.

TYPICAL CHARACTERISTICS CURVE

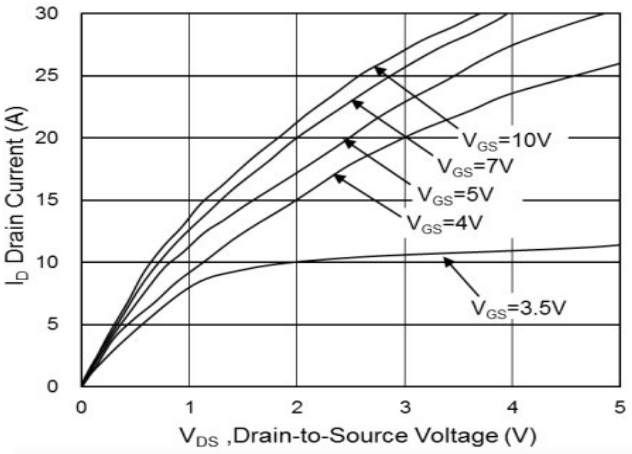


Fig.1 Typical Output Characteristics

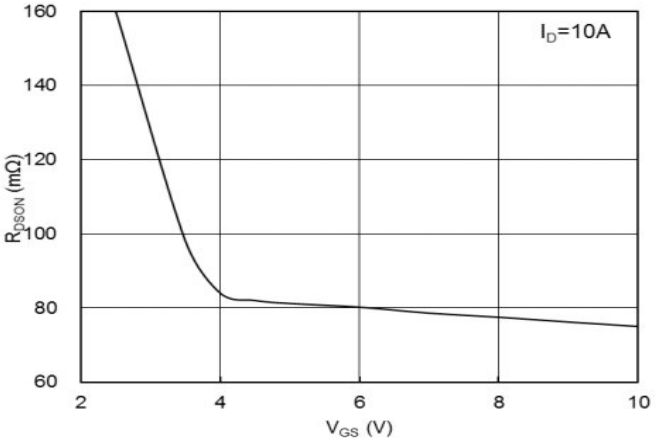


Fig.2 On-Resistance vs. Gate-Source Voltage

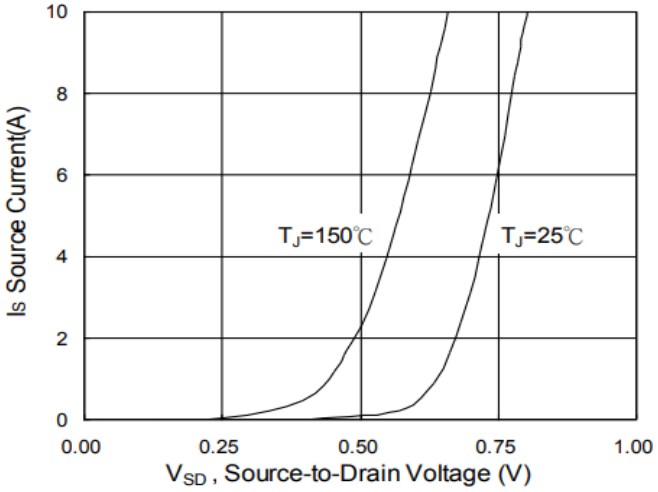


Fig.3 Forward Characteristics of Reverse

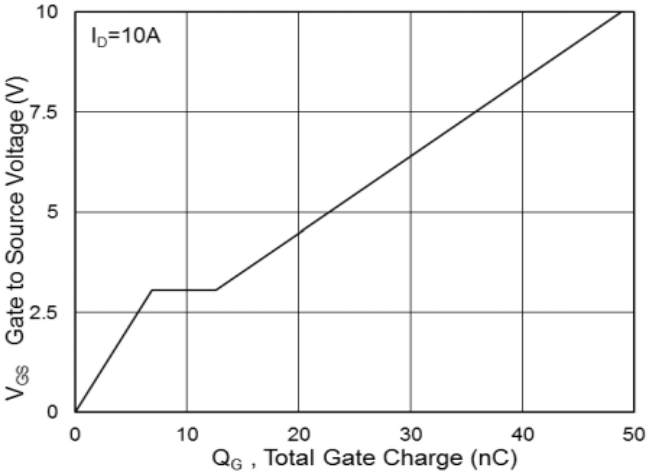


Fig.4 Gate-Charge Characteristics

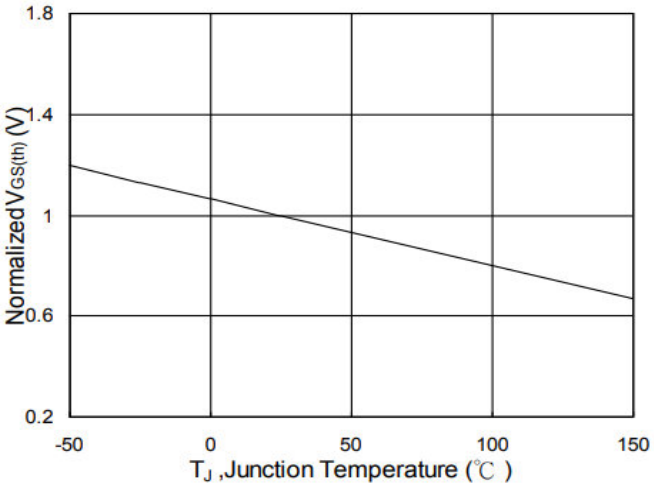


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

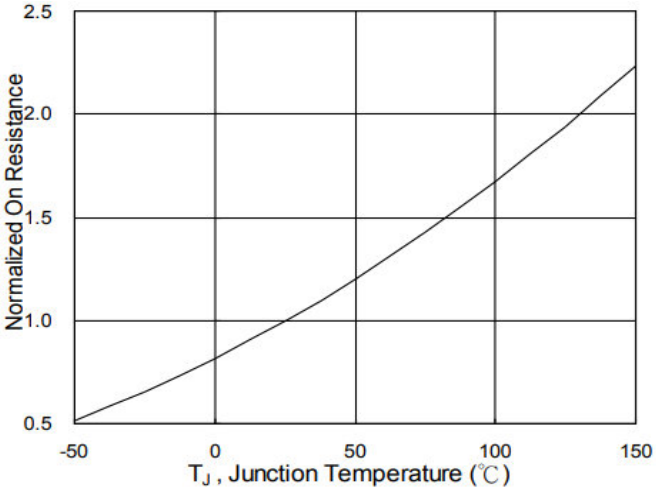


Fig.6 Normalized R_{DSON} vs. T_J

TYPICAL CHARACTERISTICS CURVE

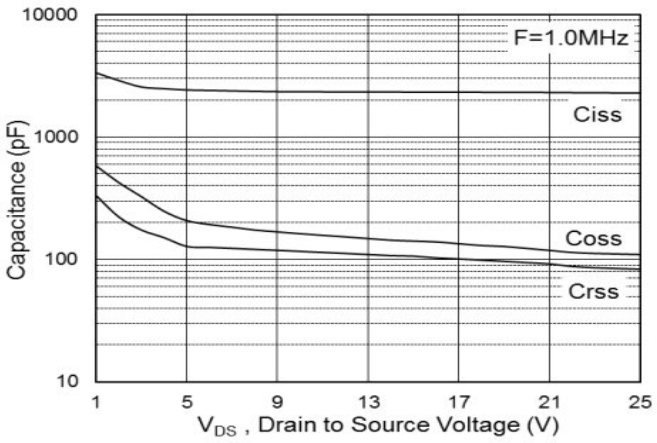


Fig.7 Capacitance

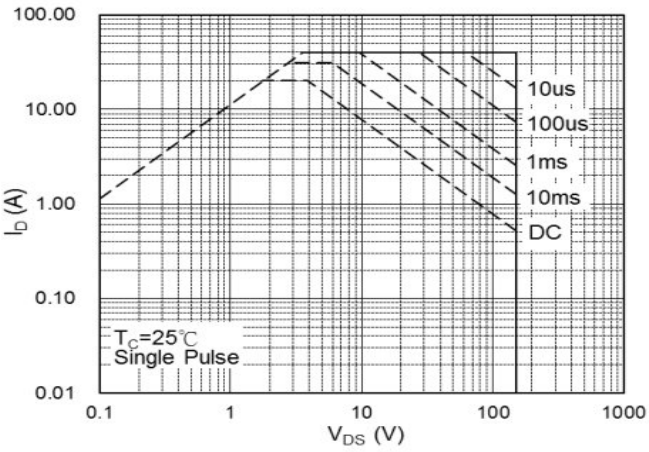


Fig.8 Safe Operating Area

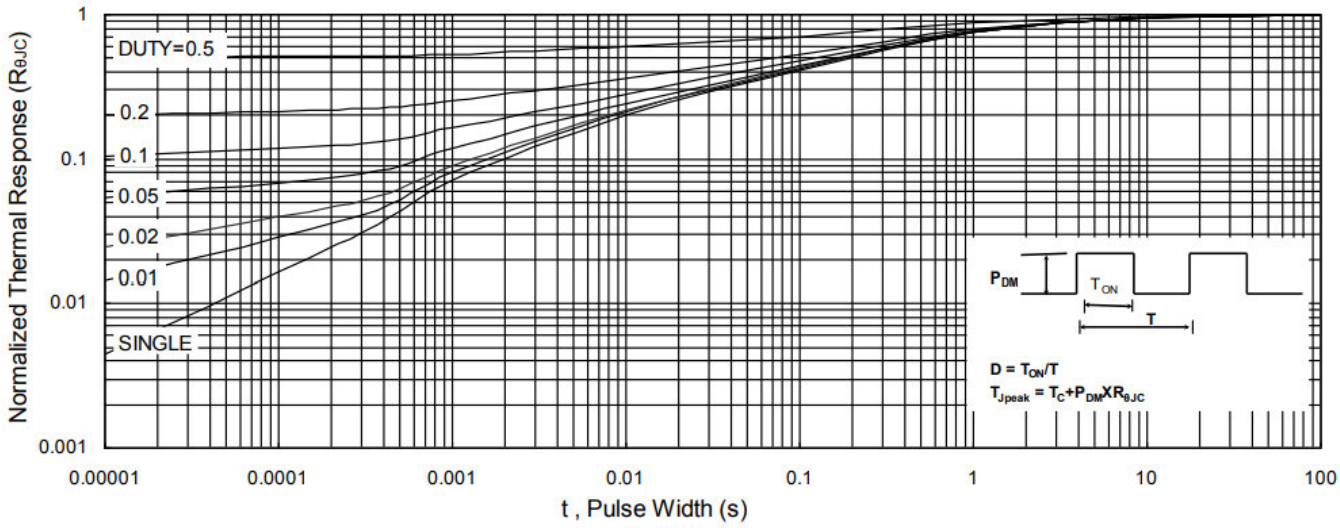


Fig.9 Normalized Maximum Transient Thermal Impedance

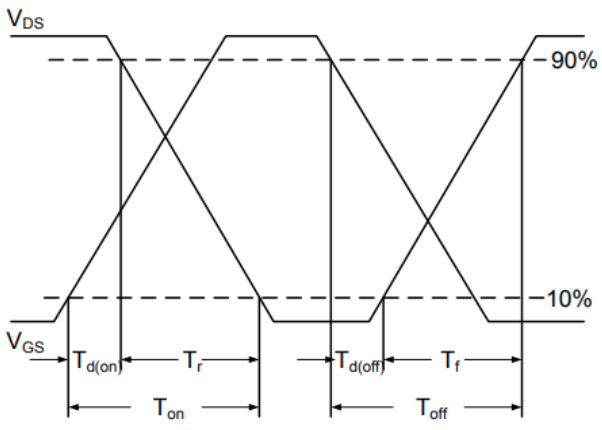


Fig.10 Switching Time Waveform

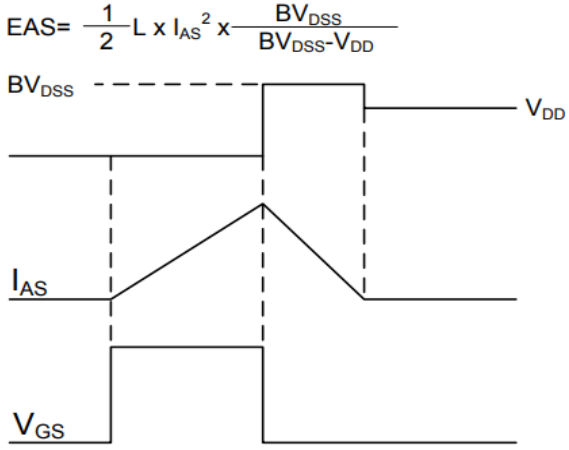


Fig.11 Unclamped Inductive Switching Waveform