Elektronische Bauelemente

SSE20N20-C

20A, 200V, $R_{DS(ON)}$ 180mΩ
N-Ch Enhancement Mode Power MOSFET

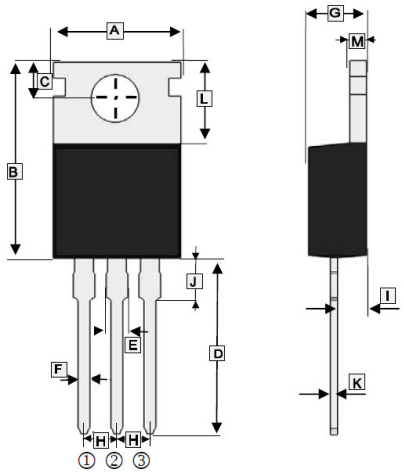
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSE20N20-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 SSE20N20-C meet the RoHS and Green Product requirement with full function reliability approved.

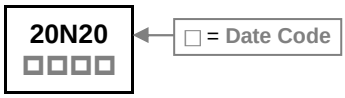
TO-220



FEATURES

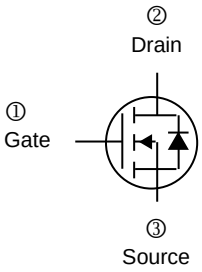
- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING



ORDER INFORMATION

Part Number	Type
SSE20N20-C	Lead (Pb)-free and Halogen-free



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	9.70	10.60	H	2.54 TYP.	
B	14.22	16.5	I	2.03	2.92
C	2.54.	3.40	J	2.70	3.30
D	12.7	14.7	K	0.33	0.65
E	1.17	1.78	L	5.5	7
F	0.4	1.00	M	1.20	1.40
G	3.60	4.82			

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @ V_{GS}=10V	T_C=25℃	I_D	20	A
	T_C=100℃		13.5	
Pulsed Drain Current [2]		I_{DM}	40	A
Avalanche Current		I_{AS}	10	A
Single Pulse Avalanche Energy [4]		E_{AS}	15	mJ
Total Power Dissipation [3]	T_C=25℃	P_D	113.6	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Ratings				
Maximum Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	60	℃/W
Maximum Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	1.1	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	200	-	-	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}	-	22	-	S	V_{DS}=5V, I_D=9A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	μA	V_{DS}=160V, V_{GS}=0
	T_J=55℃		-	-	5		V_{DS}=160V, V_{GS}=0
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	-	180	mΩ	V_{GS}=10V, I_D=9A
			-	-	190		V_{GS}=4.5V, I_D=9A
Total Gate Charge		Q_g	-	45	-	nC	I_D=9A V_{DS}=80V V_{GS}=10V
Gate-Source Charge		Q_{gs}	-	9	-		
Gate-Drain Change		Q_{gd}	-	10.5	-		
Turn-on Delay Time		$T_{d(on)}$	-	13	-	nS	V_{DD}=50V I_D=9A 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}	-	2047	-	pF	V_{GS}=0 V_{DS}=25V f=1MHz
Output Capacitance		C_{oss}	-	109	-		
Reverse Transfer Capacitance		C_{rss}	-	70	-		
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℃
Reverse Recovery Time		t_{rr}	-	37	-	nS	I_F=10A, dI/dt=100A/μs T_J=25℃
Reverse Recovery Charge		Q_{rr}	-	103	-	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℃ juncti on temperature.
4. The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.3mH, I_{AS}=10A.

TYPICAL CHARACTERISTICS CURVE

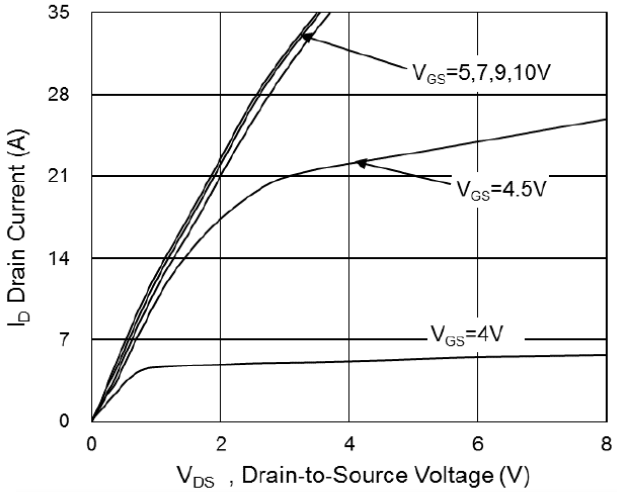


Fig.1 Typical Output Characteristics

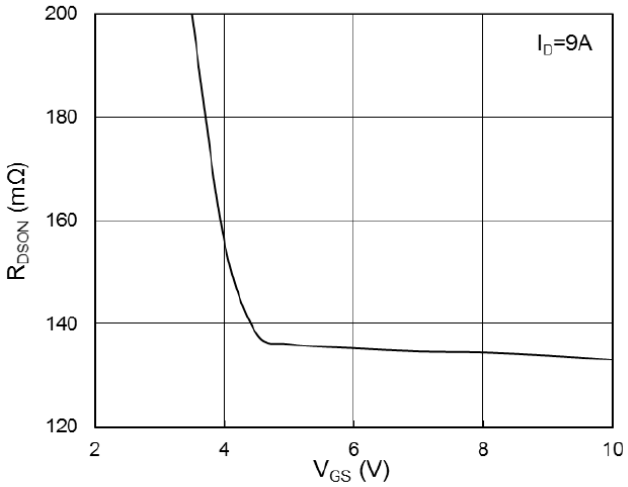


Fig.2 On-Resistance vs. Gate-Source

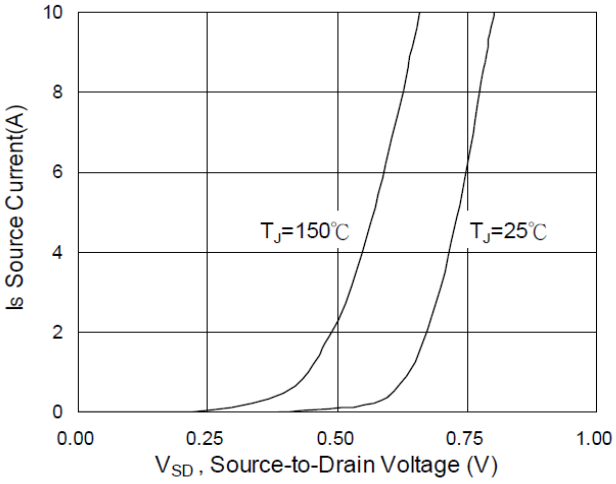


Fig.3 Forward Characteristics Of Reverse

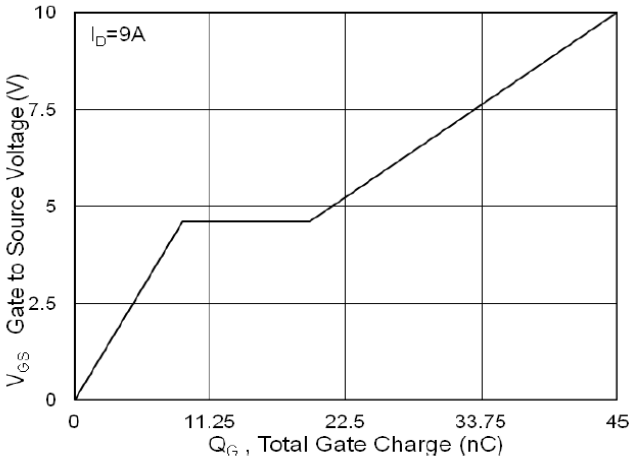


Fig.4 Gate-Charge Characteristics

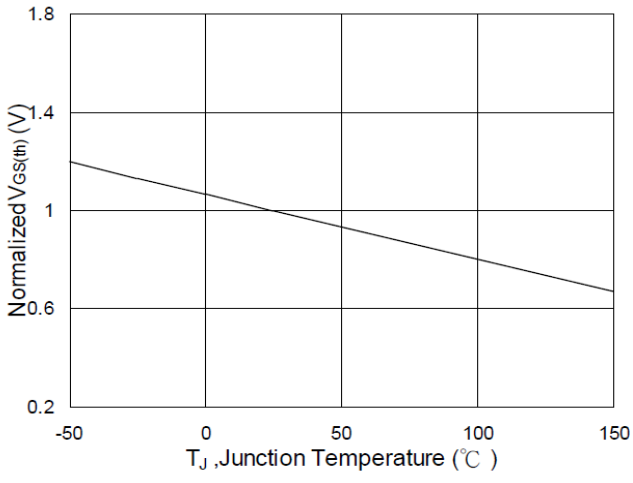


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

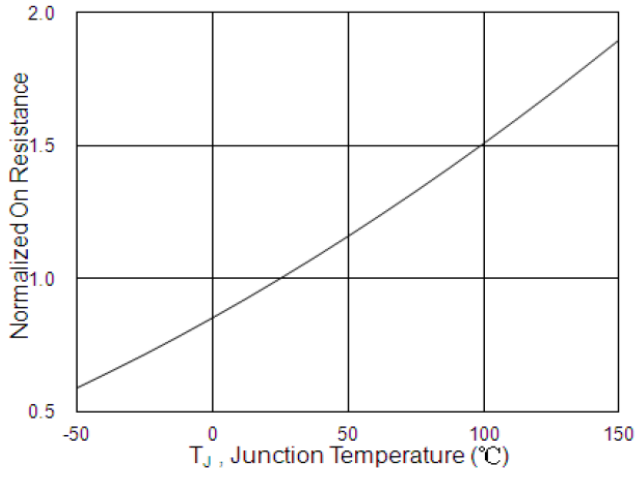


Fig.6 Normalized R_{DSON} vs. T_J

TYPICAL CHARACTERISTICS CURVE

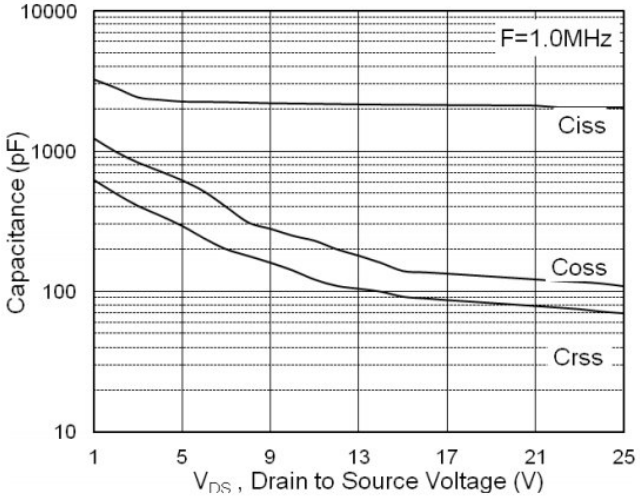


Fig.7 Capacitance

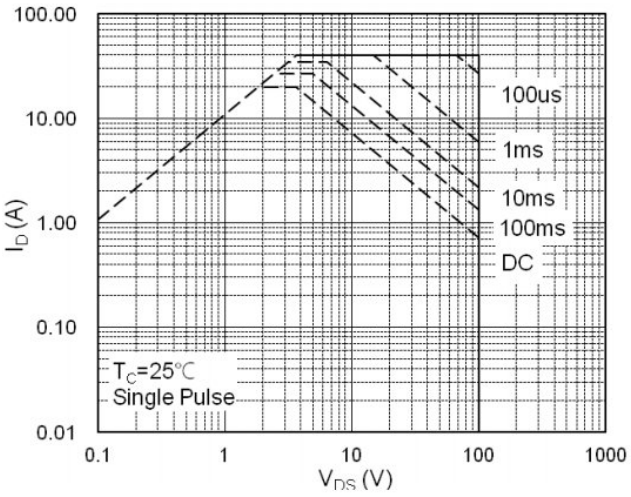


Fig.8 Safe Operating Area

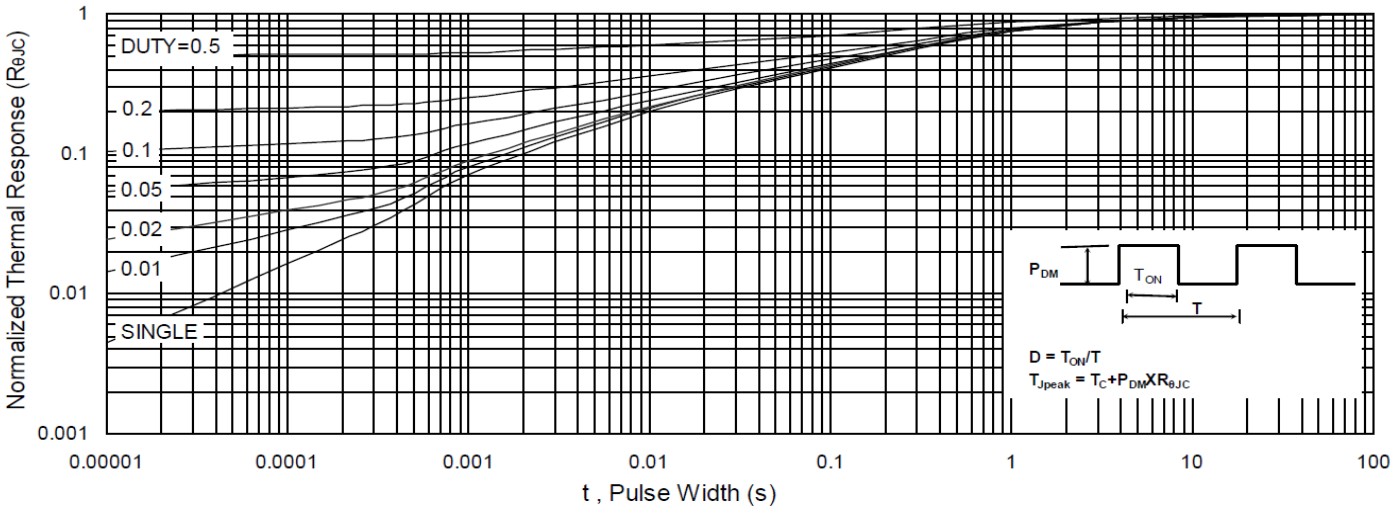


Fig.9 Normalized Maximum Transient Thermal Impedance

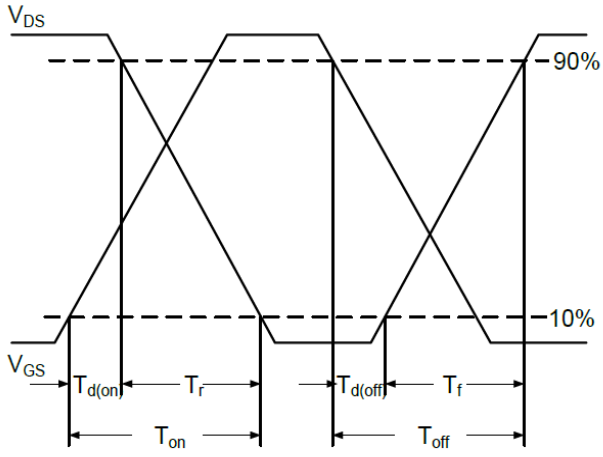


Fig.10 Switching Time Waveform

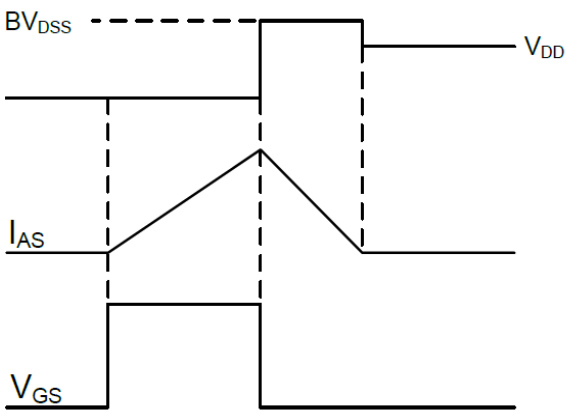


Fig.11 Unclamped Inductive Switching Waveform