Elektronische Bauelemente

SSQF11N20-C

11A, 200V, $R_{DS(ON)}$ 180mΩ

N-Ch Enhancement Mode Power MOSFET

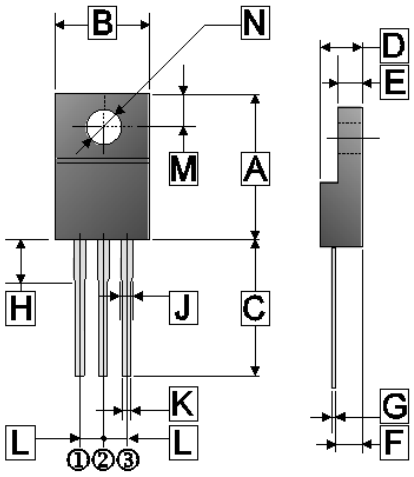
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSQF11N20-C is the highest performance 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 SSQF11N20-C meet the RoHS and Green Product requirement with full function reliability approved.

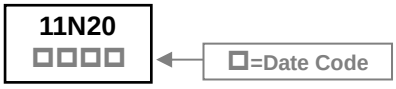
ITO-220J



FEATURES

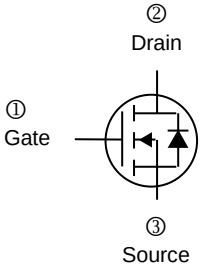
- High Speed Power Switching
- Super Low Gate Charge
- Green Device Available

MARKING



ORDER INFORMATION

Part Number	Type
SSQF11N20-C	Lead (Pb)-free and Halogen-free



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	14.8	15.2	H	2.2 REF.	
B	9.96	10.36	J	0.9 REF.	
C	13.20 REF.		K	0.5	0.75
D	4.35	4.65	L	2.54 REF.	
E	2.85	3.15	M	2.70 REF.	
F	2.60	2.80	N	ϕ 3.5 REF.	
G	0.50	0.75			

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

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	11	A
	T_C=100℃		7.2	
Pulsed Drain Current [3]		I_{DM}	40	A
Avalanche Current		I_{AS}	10	A
Single Pulse Avalanche Energy [5]		E_{AS}	15	mJ
Power Dissipation [4]	T_C=25℃	P_D	32	W
	T_A=25℃		2	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	62.5	℃/W
Thermal Resistance Junction-Ambient [2]			110	
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	3.9	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	200	-	-	V	V_{GS}=0V, 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}=0V
	T_J=55℃			-	5		V_{DS}=160V, V_{GS}=0V
Static Drain-Source On-Resistance [3]		$R_{DS(ON)}$	-	-	180	mΩ	V_{GS}=10V, I_D=5A
			-	-	190		V_{GS}=4.5V, I_D=5A
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}=0V V_{DS}=25V f=1MHz
Output Capacitance		C_{oss}	-	109	-		
Reverse Transfer Capacitance		C_{rss}	-	70	-		
Source-Drain Diode							
Diode Forward Voltage [3]		V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0V
Continuous Source Current [1]		I_S	-	-	11	A	V_{DS}=V_{GS}=0V, Force Current
Pulsed Source Current [3]		I_{SM}	-	-	40	A	
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. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. When mounted on Min. copper pad.
3. The data tested by pulsed pulse width≦ 300us, duty cycle≦ 2%.
4. The power dissipation is limited by 150℃ juncti on temperature.
5. The E_{AS} data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.3mH, I_{AS}=10A.

TYPICAL CHARACTERISTIC

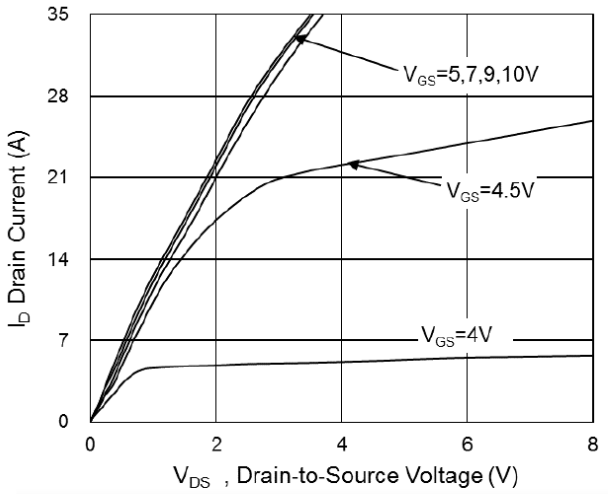


Fig.1 Typical Output Characteristics

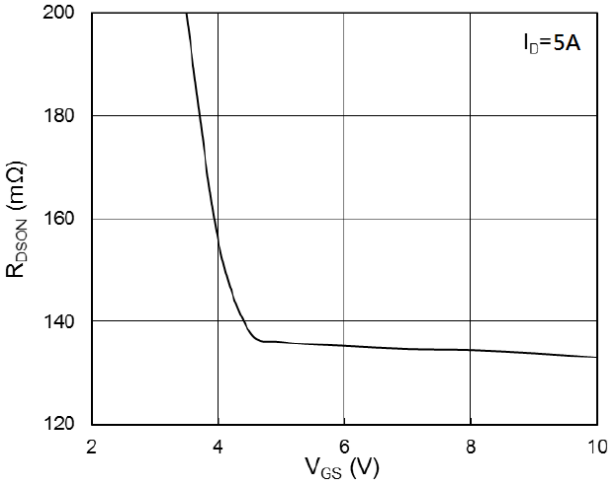


Fig.2 On-Resistance vs. Gate-Source

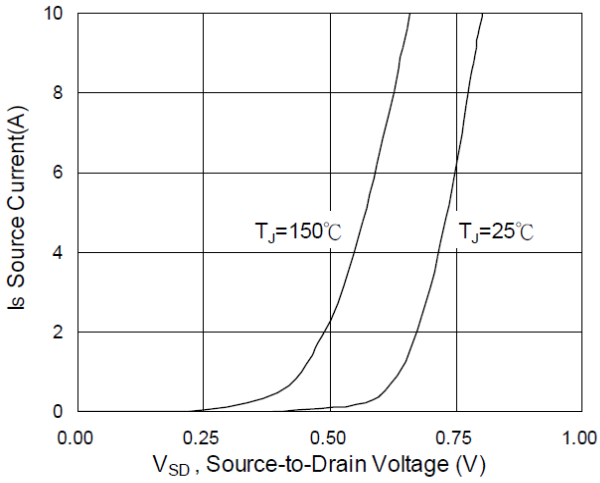


Fig.3 Forward Characteristics Of Reverse

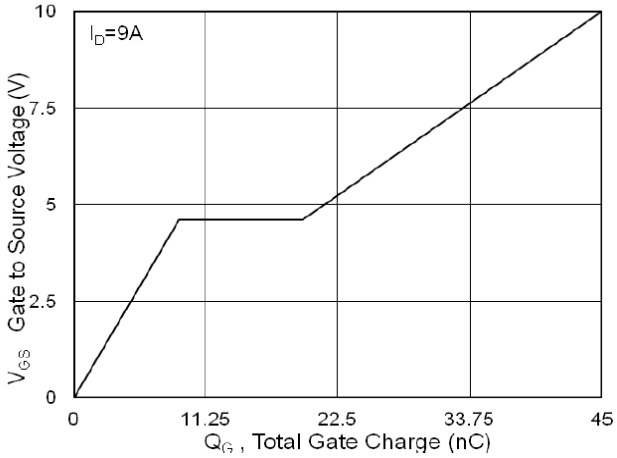


Fig.4 Gate-Charge Characteristics

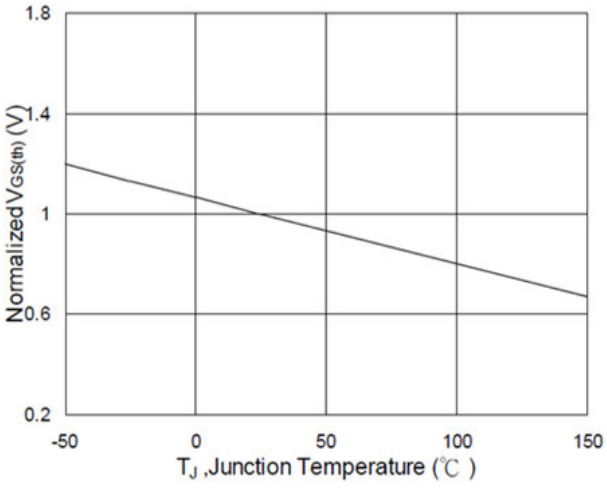


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

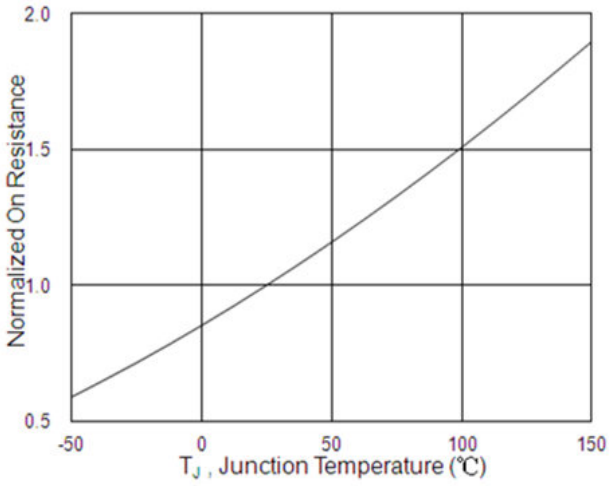


Fig.6 Normalized R_{DSON} vs. T_J

TYPICAL CHARACTERISTIC

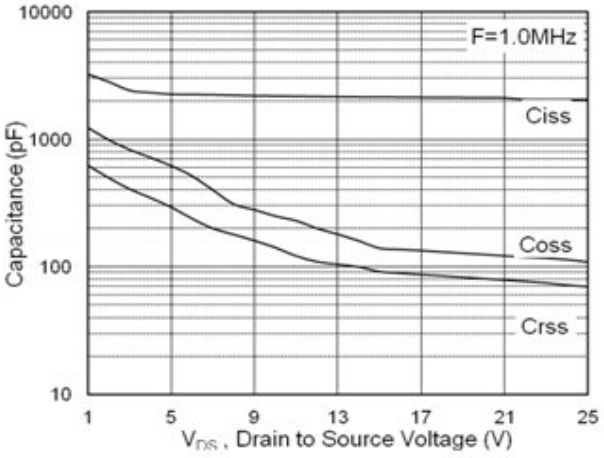


Fig.7 Capacitance

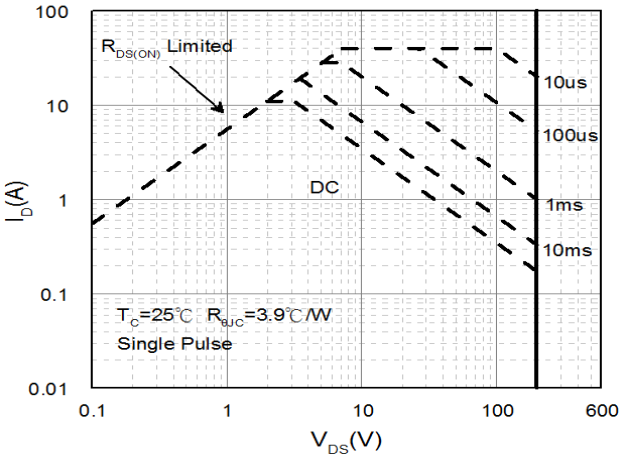


Fig.8 Safe Operating Area

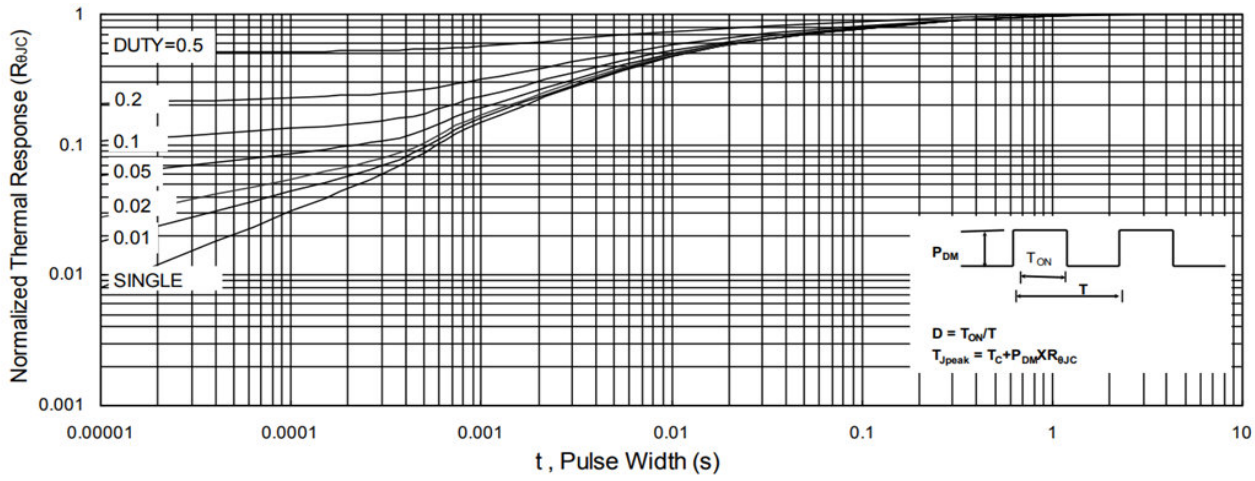


Fig.9 Normalized Maximum Transient Thermal Impedance

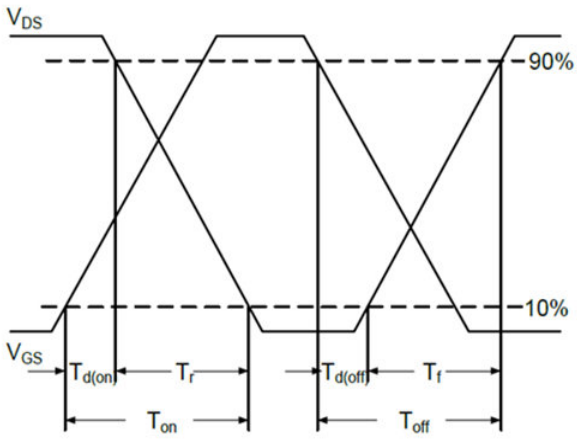


Fig.10 Switching Time Waveform

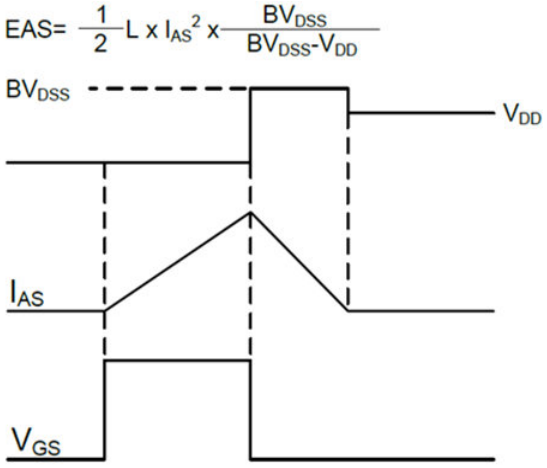


Fig.11 Unclamped Inductive Switching Waveform