Elektronische Bauelemente

SSQF84N04S-C

84A, 40V, $R_{DS(ON)}$ 2.6mΩ

N-Channel Shielded Gate Trench Power MOSFET

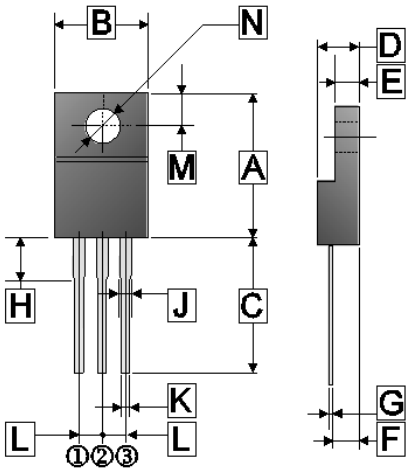
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSQF84N04S-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 SSQF84N04S-C meet the RoHS and Green Product requirement with full function reliability approved.

ITO-220J

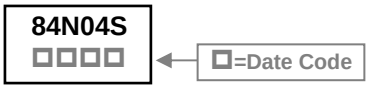


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	14.50	15.50	H	3.80 TYP.	
B	9.50	10.50	J	1.30 REF.	
C	13.20 REF.		K	0.30	0.90
D	4.24	4.84	L	2.54 REF.	
E	2.52	3.20	M	2.70 REF.	
F	2.50	2.90	N	ϕ 3.50 REF.	
G	0.47	0.75			

FEATURES

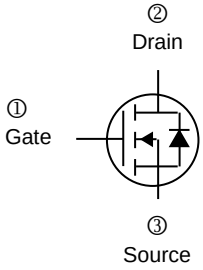
- Shielded Gate Trench Technology
- High Speed Power Switching
- Super Low Gate Charge
- Green Device Available

MARKING



ORDER INFORMATION

Part Number	Type
SSQF84N04S-C	Lead (Pb)-free and Halogen-free



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

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @V_{GS}=10V	T_C=25℃	I_D	84	A
	T_C=100℃		53	
Pulsed Drain Current [2]		I_{DM}	320	A
Total Power Dissipation [3]	T_A=25℃	P_D	32.8	W
Operating Junction and 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]		$R_{\theta JC}$	3.8	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-Source Breakdown Voltage		BV_{DSS}	40	-	-	V	V_{GS}=0V, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transfer Conductance		g_{fs}	-	53	-	S	V_{DS}=5V, I_D=20A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	T_C=25℃	I_{DSS}	-	-	1	μA	V_{DS}=32V, V_{GS}=0
	T_C=55℃		-	-	5		V_{DS}=32V, V_{GS}=0
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	-	2.6	mΩ	V_{GS}=10V, I_D=20A
			-	-	3.2		V_{GS}=4.5V, I_D=20A
Total Gate Charge (4.5V)		Q_g	-	45	-	nC	I_D=20A V_{DS}=15V V_{GS}=10V
Total Gate Charge			-	88	-		
Gate-Source Charge		Q_{gs}	-	12	-		
Gate-Drain (“Miller”) Change		Q_{gd}	-	18.5	-		
Turn-on Delay Time		$T_{d(on)}$	-	18.5	-	nS	V_{DD}=15V I_D=20A V_{GS}=10V R_G=3.3Ω
Rise Time		T_r	-	9	-		
Turn-off Delay Time		$T_{d(off)}$	-	58.5	-		
Fall Time		T_f	-	32	-		
Input Capacitance		C_{iss}	-	3972	-	pF	V_{GS}=0V V_{DS}=25V f=1MHz
Output Capacitance		C_{oss}	-	896	-		
Reverse Transfer Capacitance		C_{rss}	-	62	-		
Source-Drain Diode							
Diode Forward Voltage [2]		V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0V
Continuous Source Current [1]		I_S	-	-	84	A	V_G=V_D=0V, Force Current

Notes:
1. The data tested by surface mounted on a 1 inch2 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.

TYPICAL CHARACTERISTICS CURVE

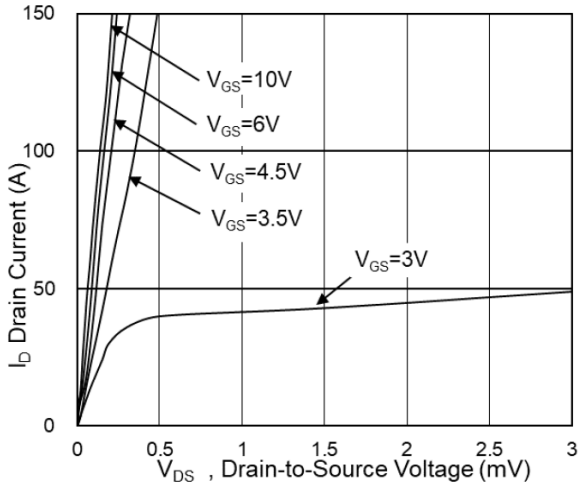


Fig.1 Typical Output Characteristics

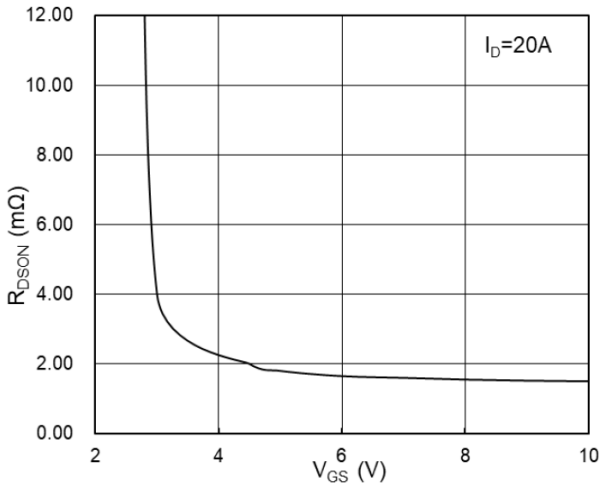


Fig.2 On-Resistance vs G-S Voltage

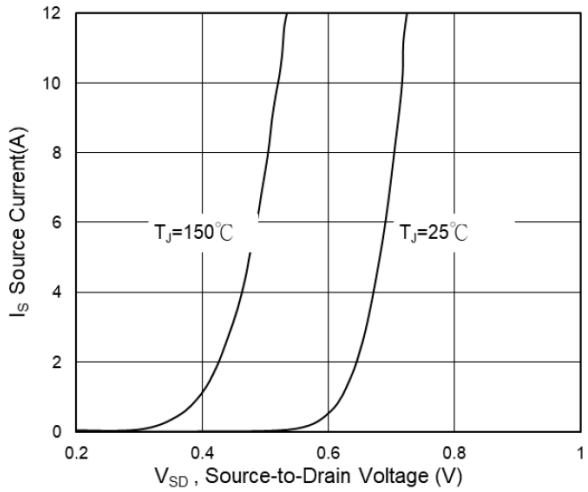


Fig.3 Source Drain Forward Characteristics

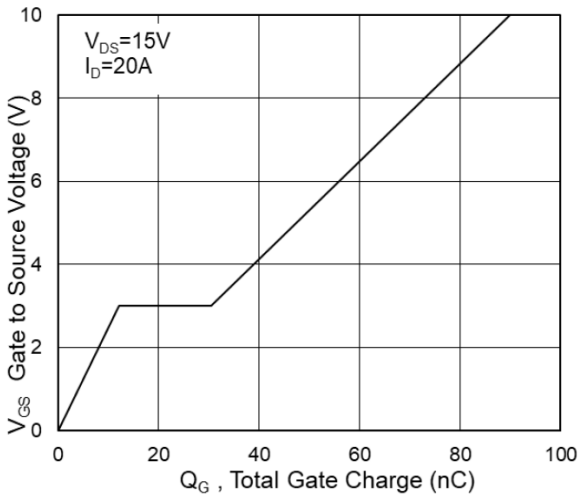


Fig.4 Gate-Charge Characteristics

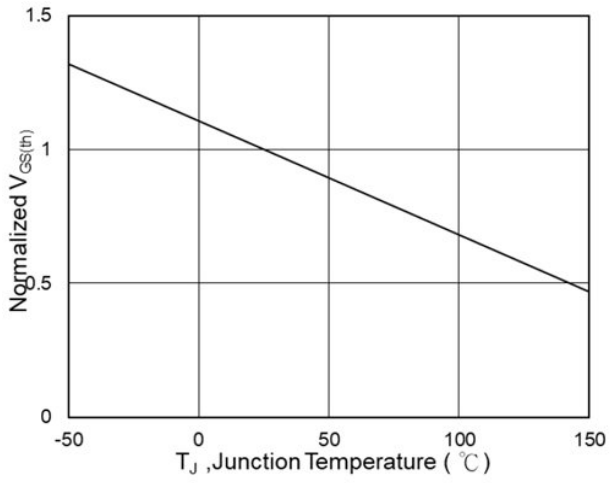


Fig.5 Normalized $V_{GS(th)}$ vs T_J

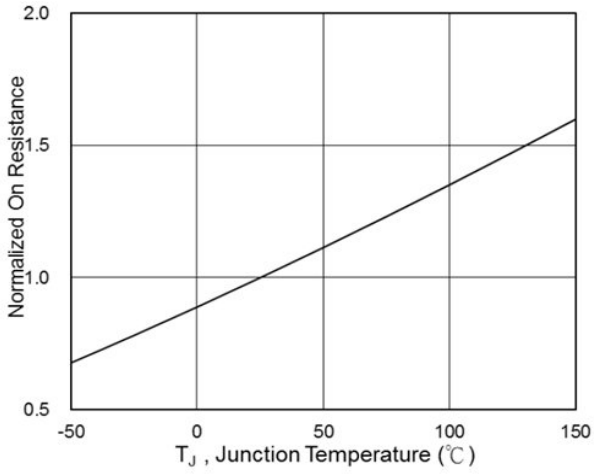


Fig.6 Normalized R_{DSON} vs T_J

TYPICAL CHARACTERISTICS CURVE

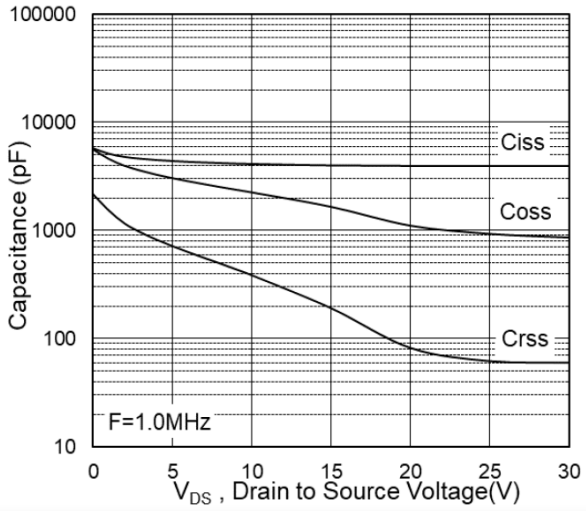


Fig.7 Capacitance

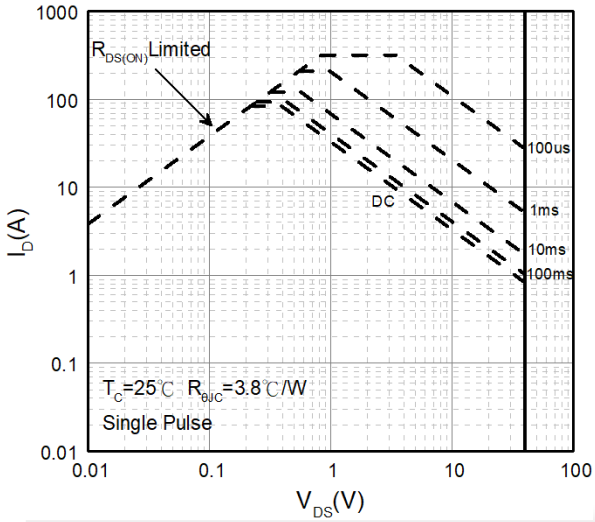


Fig.8 Safe Operating Area

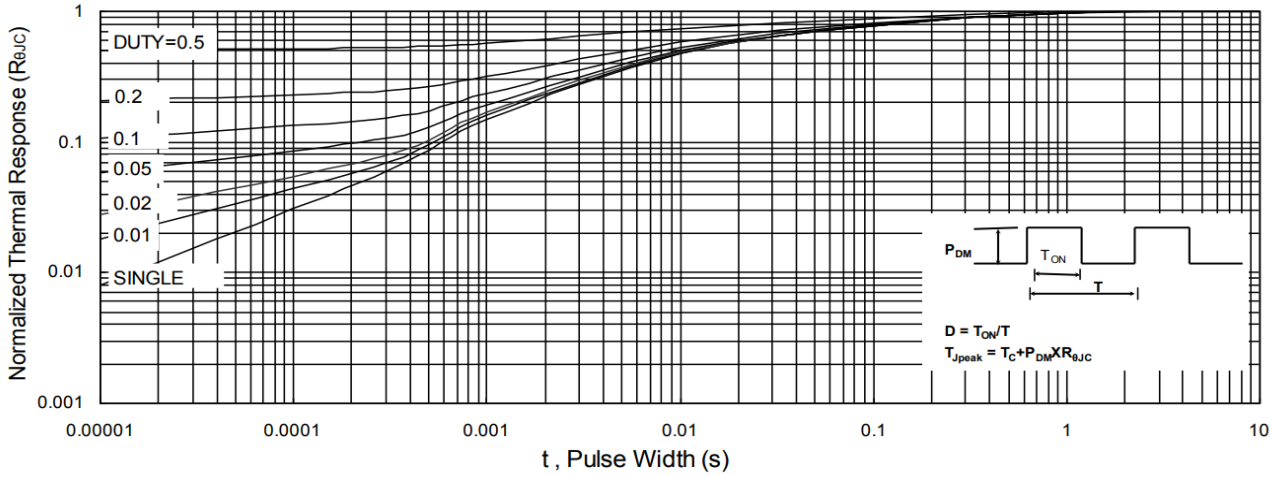


Fig.9 Normalized Maximum Transient Thermal Impedance

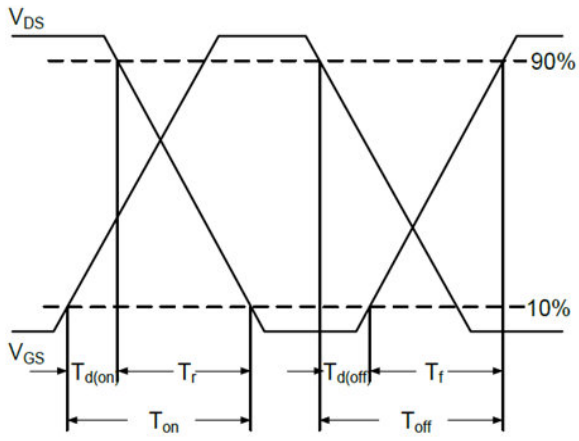


Fig.10 Switching Time Waveform

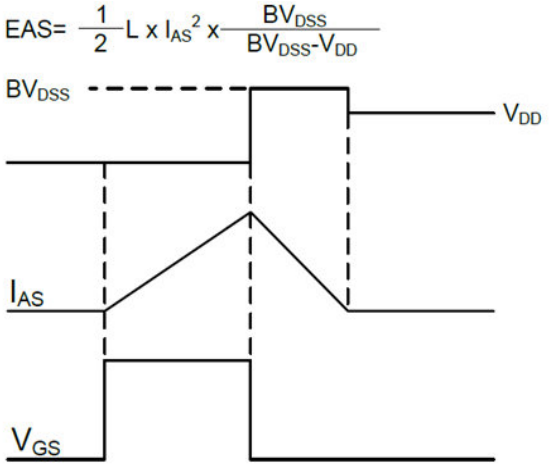


Fig.11 Unclamped Inductive Switching Waveform