Elektronische Bauelemente

SSQF09N60H-C

13.8A, 600V, $R_{DS(ON)}$ 0.28Ω
N-Ch Super Junction Power MOSFET

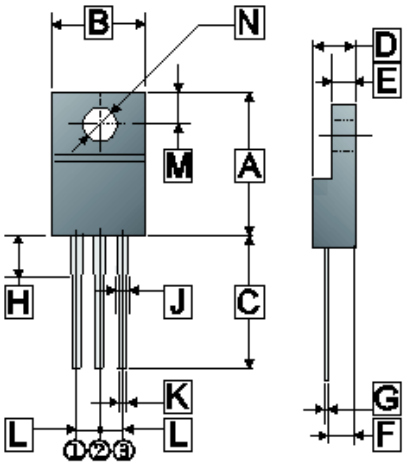
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSQF09N60H-C is power MOSFET using Super Junction technology that can realize very low on-resistance and gate charge. It will provide much high efficiency by using optimized charge coupling technology. These user friendly devices give an advantage of low EMI to designers as well as low switching loss, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSQF09N60H-C meet the RoHS and Green Product requirement with full function reliability approved.

ITO-220J

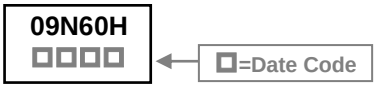


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	14.8	15.2	H	2.2 REF.	
B	9.96	10.36	J	0.9 REF.	
C	13.20 REF.		K	0.5	0.75
D	4.35	4.65	L	2.54 REF.	
E	2.85	3.15	M	2.70 REF.	
F	2.60	2.80	N	ϕ3.5 REF.	
G	0.50	0.75			

FEATURES

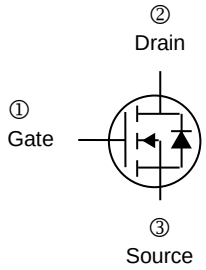
- Advanced Super Junction technology
- Super Low Gate Charge
- Green Device Available

MARKING



ORDER INFORMATION

Part Number	Type
SSQF09N60H-C	Lead (Pb)-free and Halogen-free



ABSOLUTE MAXIMUM RATINGS (T_J=25°C unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current [5] (Silicon Limited)	T_C=25°C	I_D	13.8	A
	T_C=100°C		8.7	
Continuous Drain Current [1] (Package Limited)	T_C=25°C		9.5	
	T_C=100°C		6	
Pulsed Drain Current [3]		I_{DM}	42	A
Total Power Dissipation	T_C=25°C	P_D	34.7	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150	°C
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	62.5	°C/W
Thermal Resistance Junction-Ambient [2]			110	
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	3.6	

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-Source Breakdown Voltage		BV_{DSS}	600	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	2	-	4	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}=±30V
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	1	μA	V_{DS}=480V, V_{GS}=0
	T_J=55°C		-	-	5		
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	0.25	0.28	Ω	V_{GS}=10V, I_D=6A
Total Gate Charge		Q_g	-	25	-	nC	I_D=9A V_{DD}=480V V_{GS}=10V
Gate-Source Charge		Q_{gs}	-	7	-		
Gate-Drain (“Miller”) Change		Q_{gd}	-	9	-		
Turn-on Delay Time		$T_{d(on)}$	-	20	-	nS	V_{DS}=300V I_D=9A V_{GS}=10V R_G=25Ω
Rise Time		T_r	-	43	-		
Turn-off Delay Time		$T_{d(off)}$	-	91	-		
Fall Time		T_f	-	42	-		
Input Capacitance		C_{iss}	-	941	-	pF	V_{GS}=0 V_{DS}=25V f=1MHz
Output Capacitance		C_{oss}	-	927	-		
Reverse Transfer Capacitance		C_{rss}	-	42	-		
Source-Drain Diode							
Diode Forward Voltage [4]		V_{SD}	-	-	1.4	V	I_S=9A, V_{GS}=0V
Continuous Source Current [1]		I_S	-	-	9.5	A	
Pulsed Source Current [3]		I_{SM}	-	-	42	A	
Reverse Recovery Time		T_{rr}	-	364	-	nS	V_{DD}=100V, I_S=9A, dI/dt=100A/μs
Reverse Recovery Charge		Q_{rr}	-	4.7	-	nC	

Notes:
1. Surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. When mounted on Min. copper pad.
3. Pulse width limited by maximum junction temperature, pulse width≦10us , duty cycle≦2%.
4. The data tested by pulsed, pulse width≦300us , duty cycle≦2%.
5. I_D limited by maximum junction temperature.

TYPICAL CHARACTERISTICS CURVE

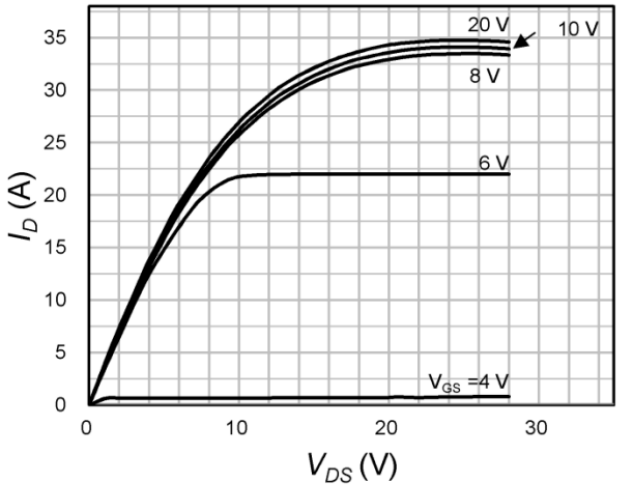


Fig.1 Typical Output Characteristics

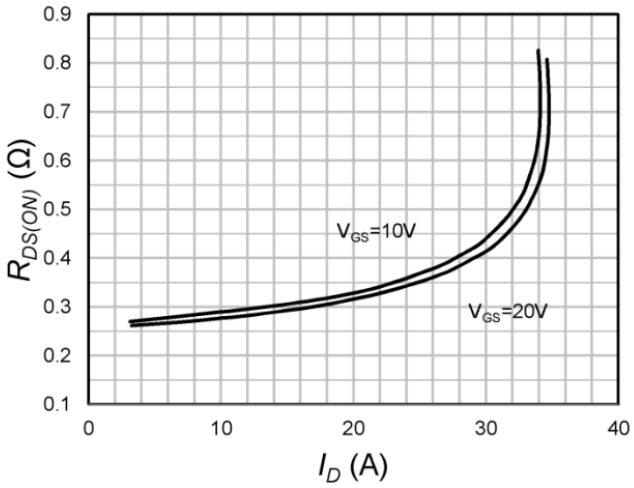


Fig.2 On-Resistance vs. Drain Current

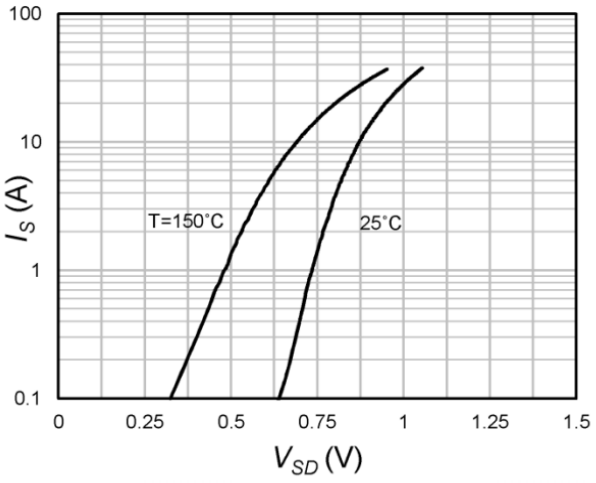


Fig.3 Forward Characteristics of Reverse

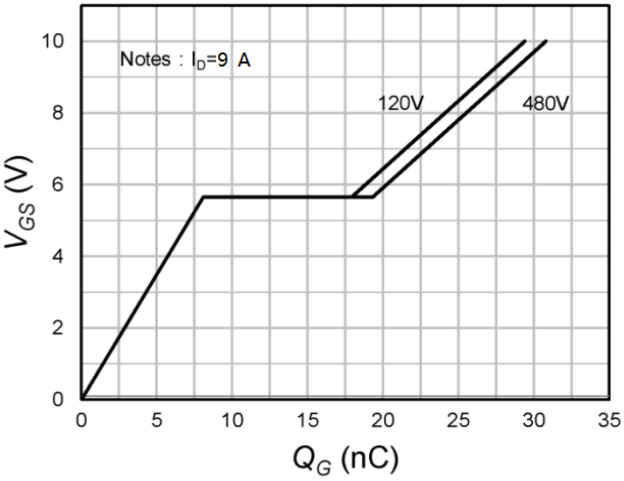


Fig.4 Gate-Charge Characteristics

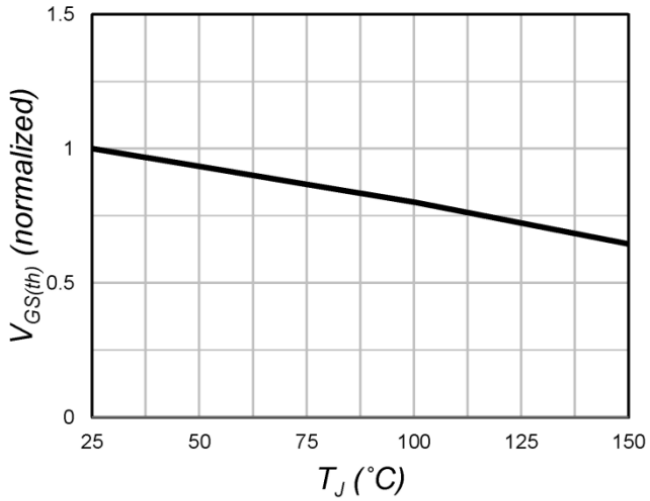


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

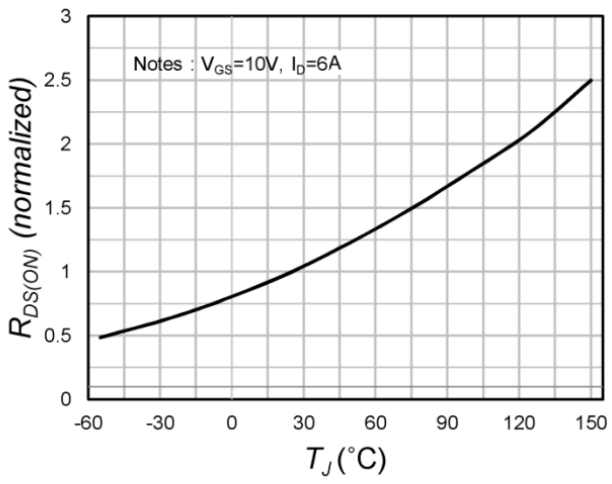


Fig.6 Normalized R_{DSON} vs. T_J

TYPICAL CHARACTERISTICS CURVE

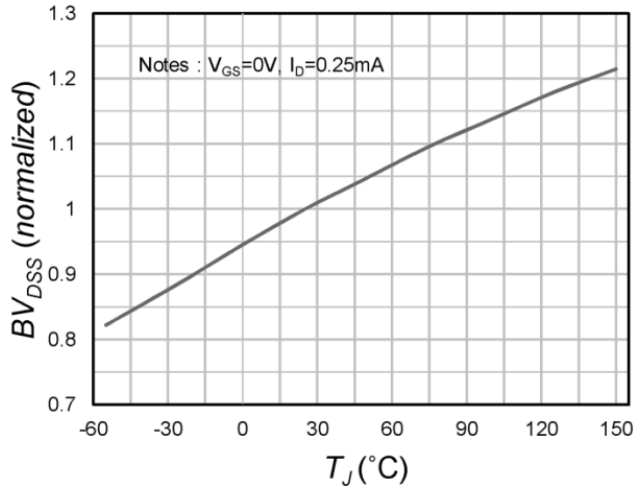


Fig.7 Drain-Source Breakdown Voltage(Normaized)

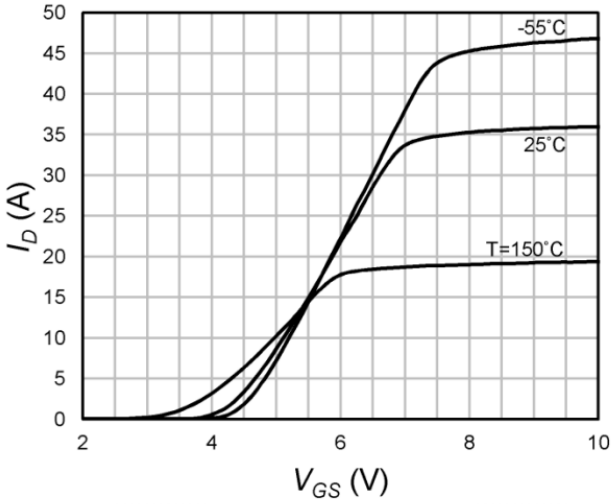


Fig.8 Transfer Characteristics

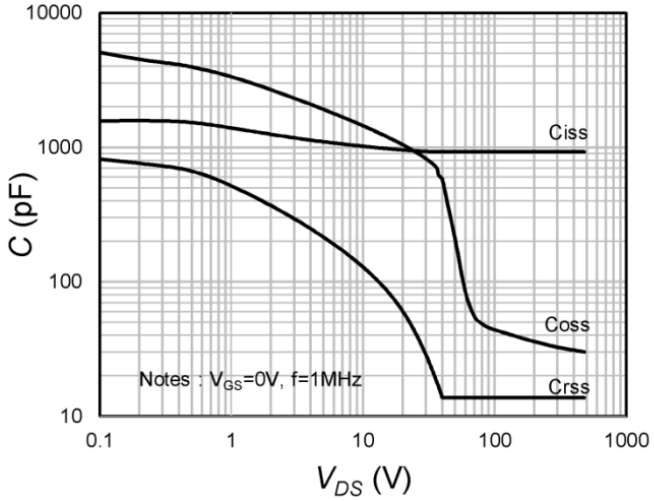


Fig.9 Capacitances

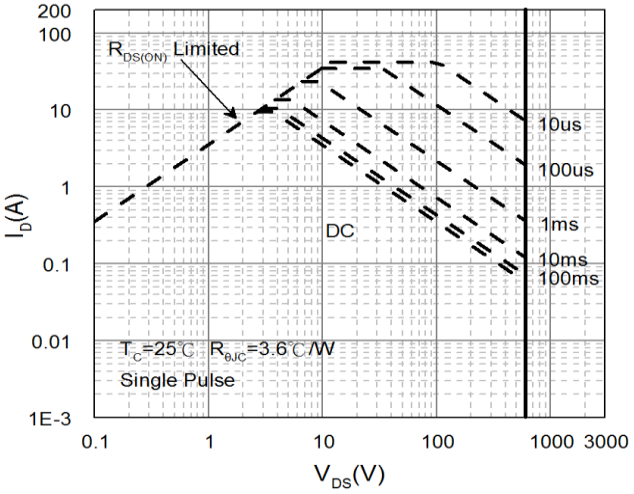


Fig.10 Safe Operating Area

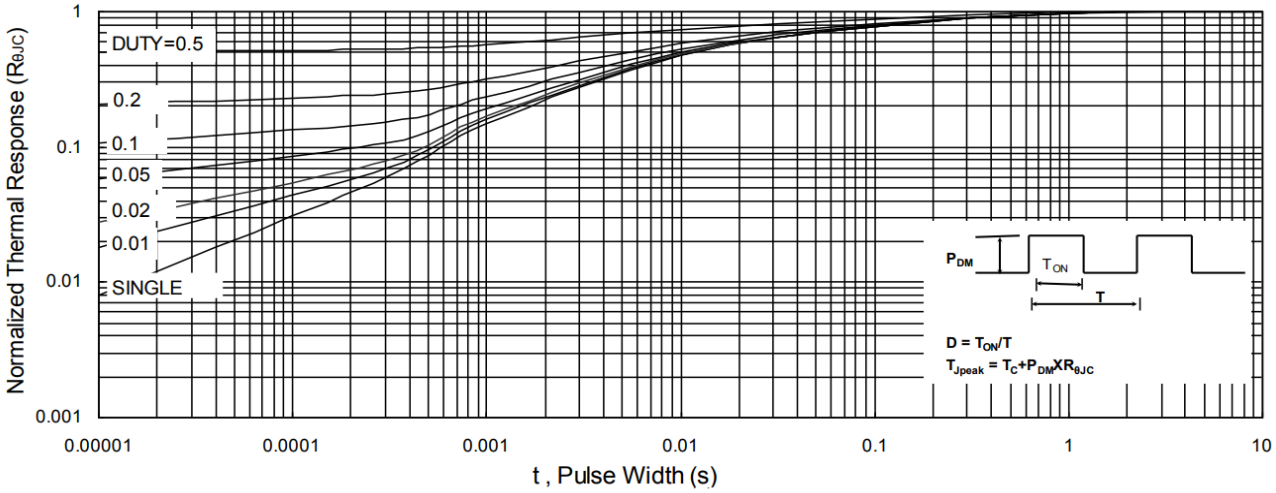


Fig.11 Normalized Maximum Transient Thermal Impedance