Elektronische Bauelemente

SSG2609B-C

-3A, -60V, $R_{DS(ON)}$ 140mΩ
P-Ch Enhancement Mode Power MOSFET

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

FEATURES

The SSG2609B-C is the highest performance trench P-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the the synchronous buck converter applications.

The SSG2609B-C meet the RoHS and Green Product requirement with full function reliability approved.

APPLICATION

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

MARKING

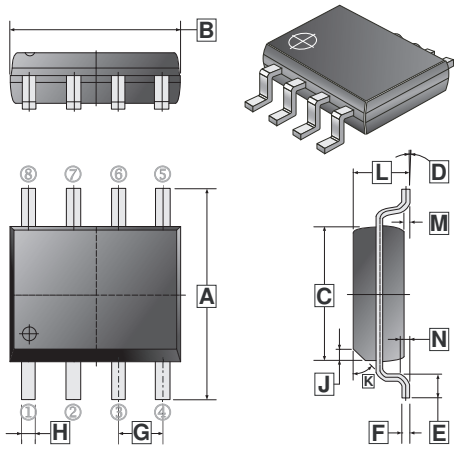
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	2.5K	13 inch

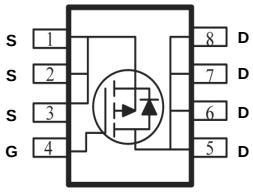
ORDER INFORMATION

Part Number	Type
SSG2609B-C	Lead (Pb)-free and Halogen-free

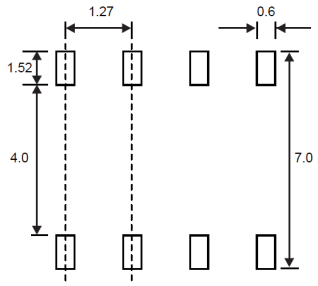
SOP-8



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.79	6.20	H	0.33	0.51
B	4.70	5.11	J	0.375 REF.	
C	3.80	4.00	K	45° REF.	
D	0°	8°	L	1.3	1.752
E	0.40	1.27	M	0	0.25
F	0.10	0.25	N	0.25 REF.	
G	1.27 TYP.				



Mounting Pad Layout



*Dimensions in millimeters

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current @V_{GS}= -10V [1]	T_A=25℃	I_D	-3	A
	T_A=70℃		-2.4	
Pulsed Drain Current [2]		I_{DM}	-6	A
Total Power Dissipation [3]	T_A=25℃	P_D	1.5	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	150, -55~150	℃
Thermal Data				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	85	℃/W
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	50	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	-60	-	-	V	V_{GS}=0, I_D= -250μA
Gate Threshold Voltage		$V_{GS(th)}$	-1	-	-2.5	V	V_{DS}=V_{GS}, I_D= -250μA
Forward Transconductance		g_{fs}	-	5.8	-	S	V_{DS}= -5V, I_D= -3A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V, V_{DS}=0
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	-1	μA	V_{DS}= -48V, V_{GS}=0
	T_J=55℃		-	-	-5		
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	-	140	mΩ	V_{GS}= -10V, I_D= -3A
			-	-	190		V_{GS}= -4.5V, I_D= -2A
Total Gate Charge		Q_g	-	5.9	-	nC	I_D= -3A V_{DS}= -20V V_{GS}= -4.5V
Gate-Source Charge		Q_{gs}	-	2.9	-		
Gate-Drain Change		Q_{gd}	-	1.8	-		
Turn-on Delay Time		$T_{d(on)}$	-	10	-	nS	V_{DD}= -12V I_D= -3A V_{GS}= -10V R_G=3.3Ω
Rise Time		T_r	-	17	-		
Turn-off Delay Time		$T_{d(off)}$	-	22	-		
Fall Time		T_f	-	21	-		
Input Capacitance		C_{iss}	-	715	-	pF	V_{GS}=0 V_{DS}= -15V f=1MHz
Output Capacitance		C_{oss}	-	51	-		
Reverse Transfer Capacitance		C_{rss}	-	34	-		
Source-Drain Diode							
Forward on Voltage [2]		V_{SD}	-	-	-1.2	V	I_S= -1A, V_{GS}=0, T_J=25℃
Continuous Source Current [1 4]		I_S	-	-	-3	A	V_G=V_D=0V, Force Current
Pulsed Source Current [2 4]		I_{SM}	-	-	-6		

Notes:
1. The data tested by surface mounted on a 1 inch^2 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
4. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

CHARACTERISTIC CURVES

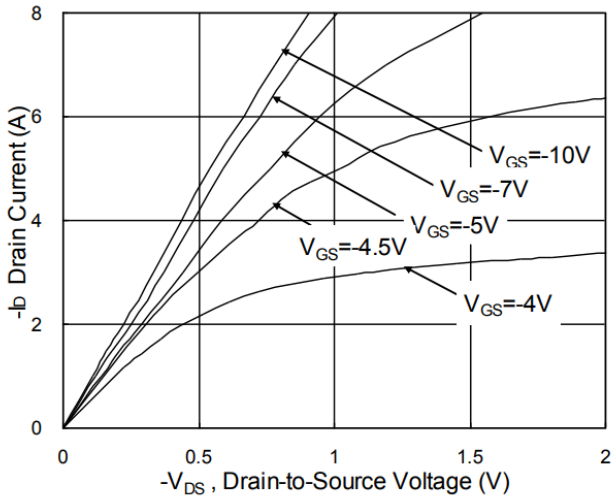


Fig.1 Typical Output Characteristics

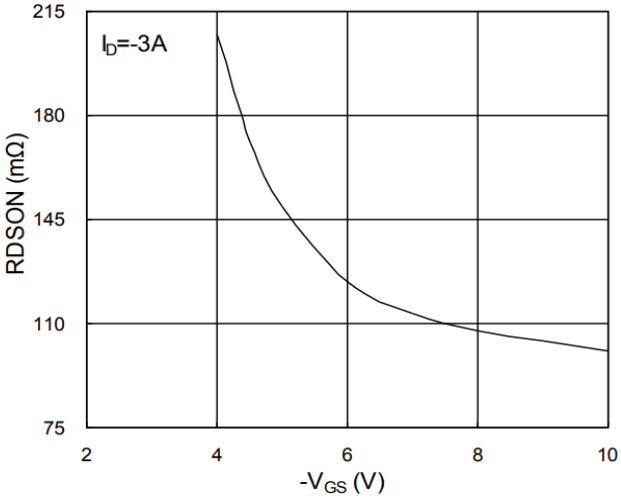


Fig.2 On-Resistance vs. G-S Voltage

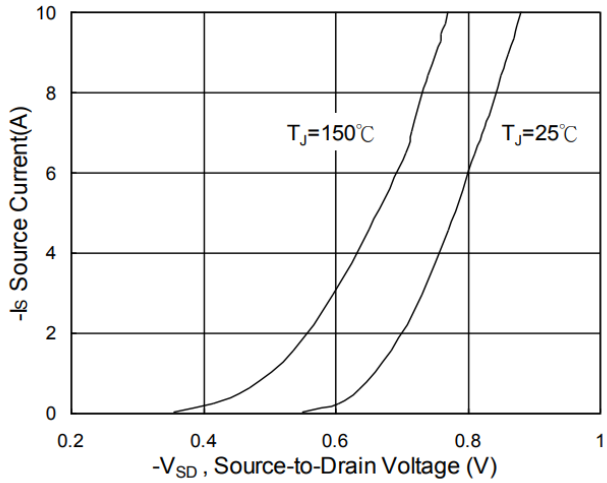


Fig.3 Forward Characteristics Of Reverse

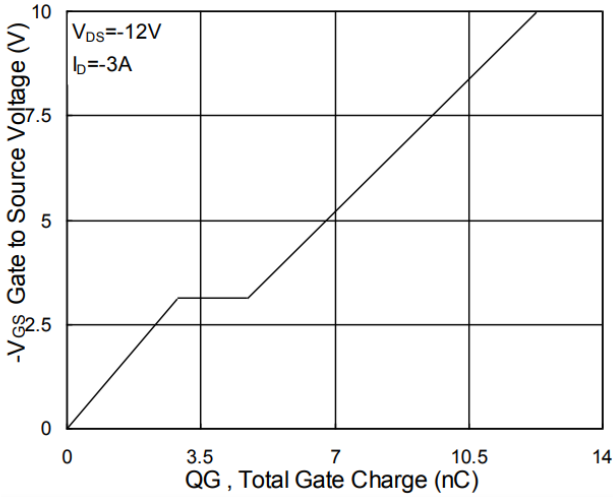


Fig.4 Gate-Charge Characteristics

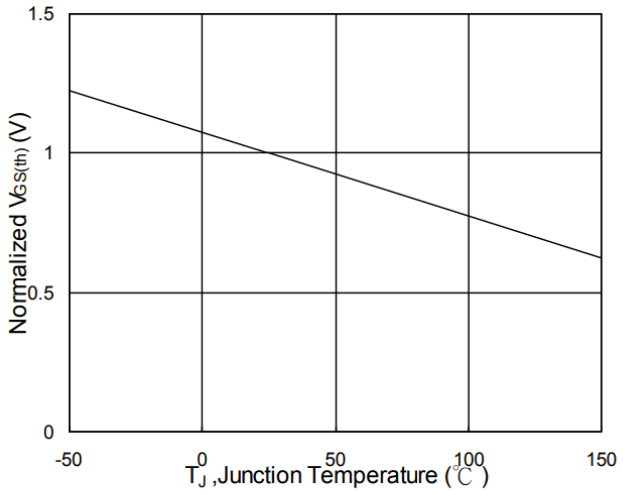


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

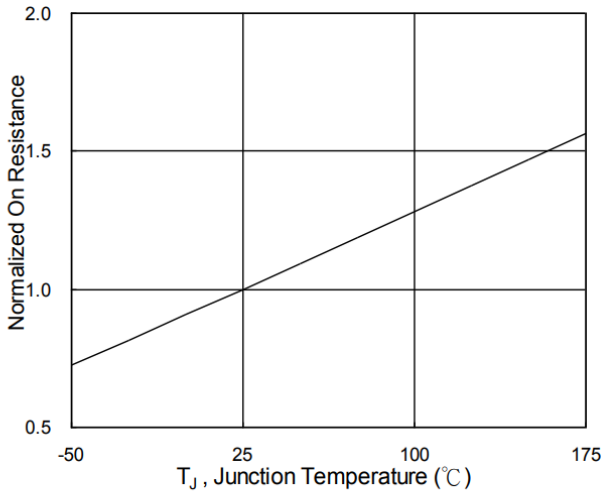


Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTIC CURVES

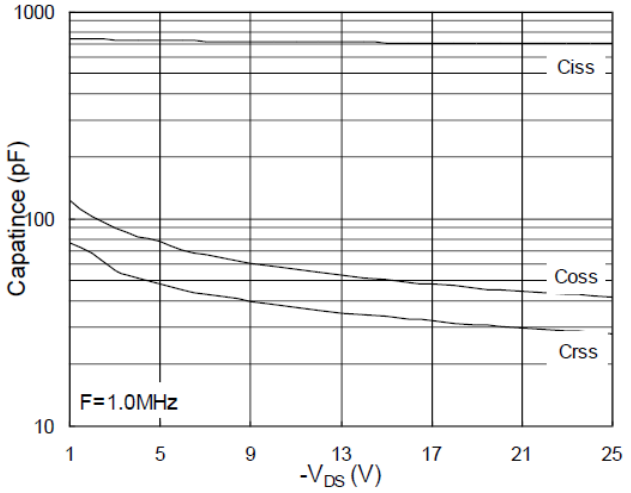


Fig.7 Capacitance

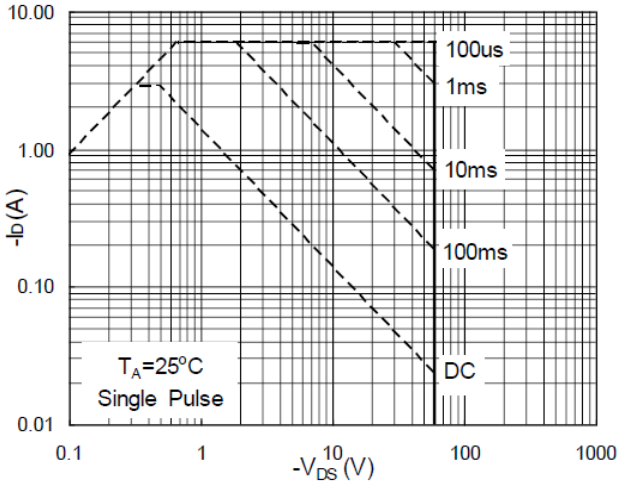


Fig.8 Safe Operating Area

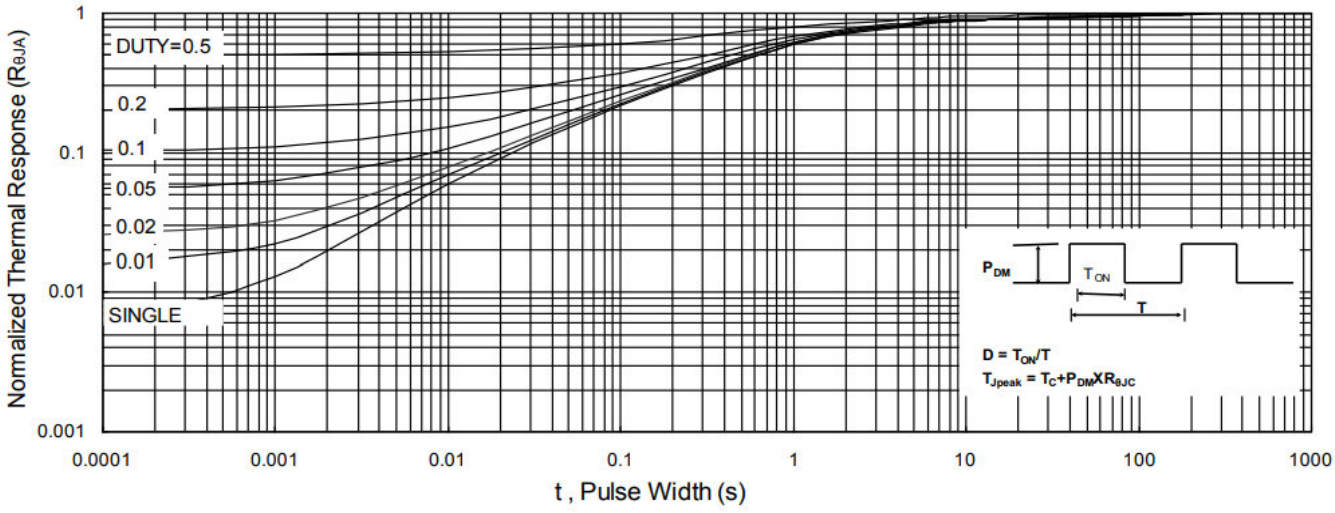


Fig.9 Normalized Maximum Transient Thermal Impedance

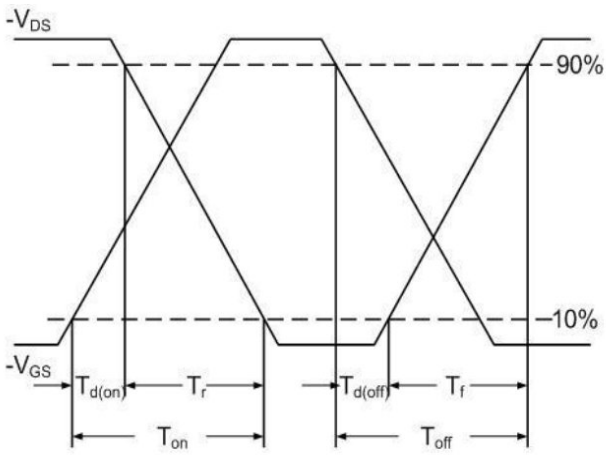


Fig.10 Switching Time Waveform

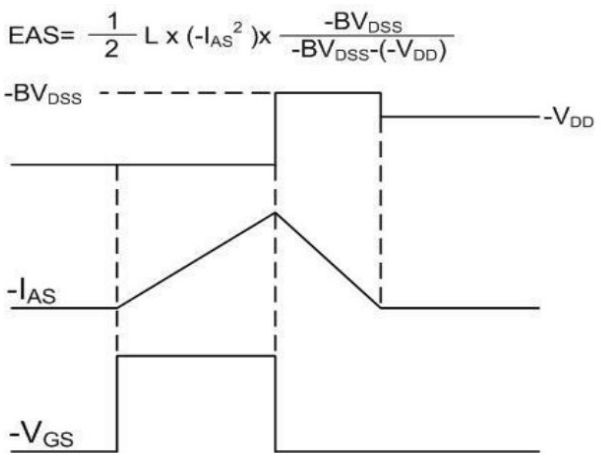


Fig.11 Unclamped Inductive Waveform