

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

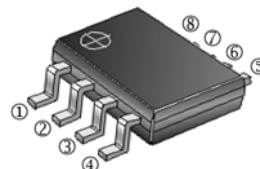
FEATURES

- Super High Density Cell Design for Extremely Low $R_{DS(ON)}$
- Suit for -4.5V Gate Drive Applications
- Fast Switching

APPLICATIONS

- Notebook
- Battery Protection
- Load Switch
- Hand-held Instruments

SOP-8



MARKING

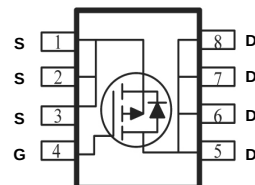


PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	3K	13 inch

ORDER INFORMATION

Part Number	Type
SSG3909-C	Lead (Pb)-free and Halogen-free



ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-7	A
Pulsed Drain Current	I_{DM}	-30	A
Power Dissipation	P_D	2	W
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	62	$^{\circ}\text{C/W}$
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV _{DSS}	-30	-	-	V	V _{GS} =0V, I _D = -250μA
Gate Threshold Voltage		V _{GS(th)}	-1	-	-2.5	V	V _{DS} =V _{GS} , I _D = -250μA
Gate-Source Leakage Current		I _{GSS}	-	-	±100	nA	V _{DS} =0V, V _{GS} = ±20V
Drain-Source Leakage Current	T _J =25°C	I _{DSS}	-	-	-1	μA	V _{DS} = -24V, V _{GS} =0V
Drain-Source On-Resistance ¹		R _{DS(ON)}	-	-	30	mΩ	V _{GS} = -10V, I _D = -4A
			-	-	55		V _{GS} = -4.5V, I _D = -2A
Gate Resistance		R _G	-	15	-	Ω	V _{DS} =V _{GS} =0V, f=1MHz
Forward Transconductance ¹		g _{fs}	-	10	-	S	V _{DS} = -5V, I _D = -7A
Total Gate Charge ²		Q _g	-	9.8	-	nC	V _{DS} = -20V
Gate-Source Charge ²		Q _{gs}	-	2.2	-		V _{GS} = -4.5V
Gate-Drain Charge ²		Q _{gd}	-	3.4	-		I _D = -7A
Turn-On Delay Time ²		T _{d(on)}	-	16.4	-	nS	V _{DS} = -24V
Rise Time ²		T _r	-	20.2	-		V _{GS} = -10V
Turn-Off Delay Time ²		T _{d(off)}	-	55	-		I _D = -1A
Fall Time ²		T _f	-	10	-		R _G =3.3Ω
Input Capacitance		C _{iss}	-	930	-	pF	V _{DS} = -15V
Output Capacitance		C _{oss}	-	148	-		V _{GS} =0V
Reverse Transfer Capacitance		C _{rss}	-	115	-		f=1MHz
Source-Drain Diode							
Diode Forward Voltage ¹		V _{SD}	-	-	-1.2	V	V _{GS} =0V, I _S = -2.3A
Continuous Source Current		I _S	-	-	-7	A	V _G =V _D =0V, Force Current
Pulsed Source Current ³		I _{SM}	-	-	-14		

Notes:

1. Pulse test : Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
2. Independent of operating temperature
3. Pulse width limited by maximum junction temperature

TYPICAL CHARACTERISTICS

Fig. 1 - Typical Output Characteristics

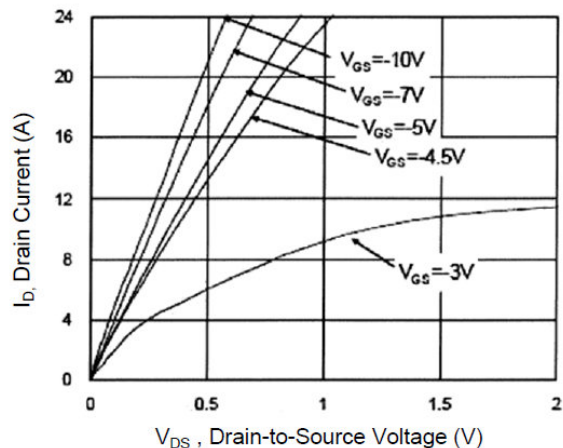


Fig. 2 - Typical Output Characteristics

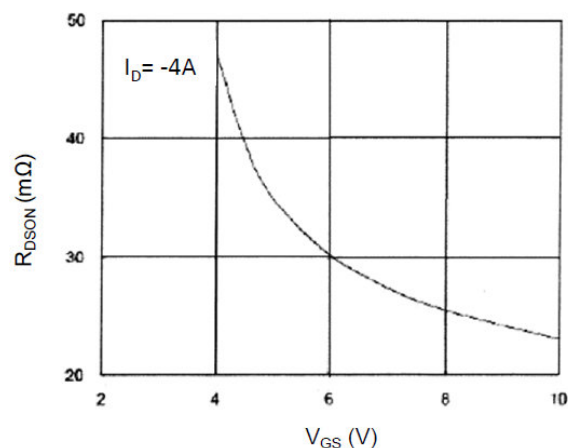


Fig. 3 - Forward Characteristics of Reverse

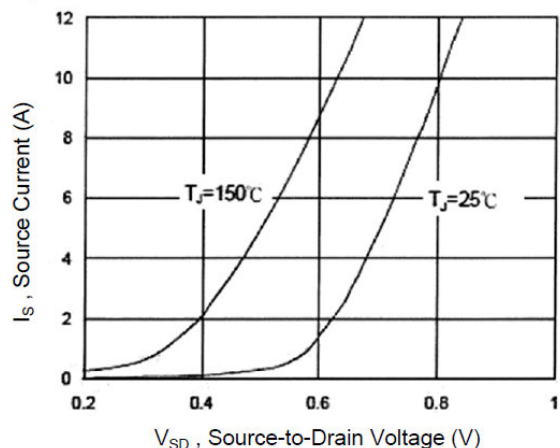


Fig. 4 - Gate-Charge Characteristics

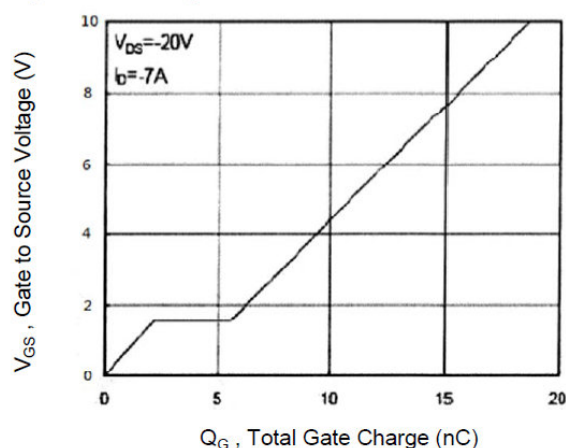


Fig. 5 - Normalized $V_{GS(th)}$ v.s T_J

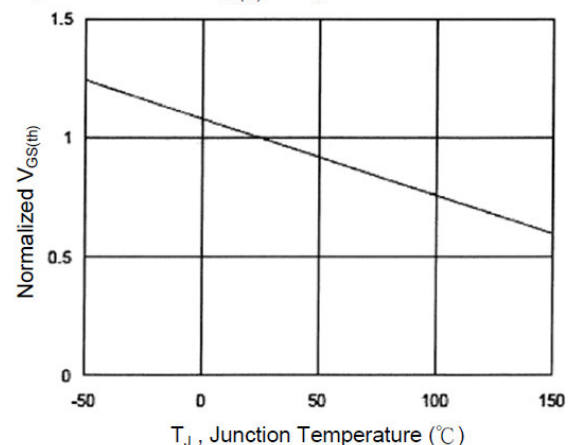
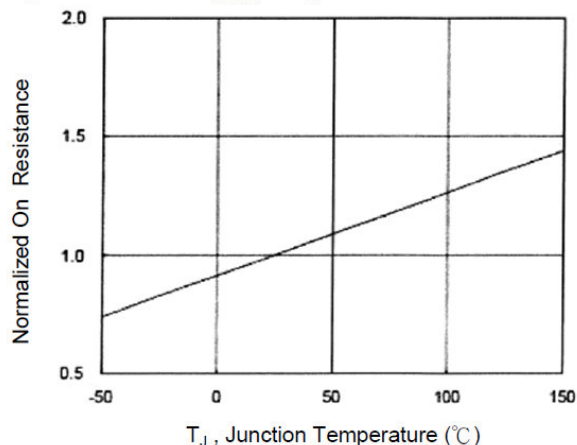


Fig. 6 - Normalized $R_{DS(ON)}$ v.s T_J



TYPICAL CHARACTERISTICS

Fig. 7 - Capacitance

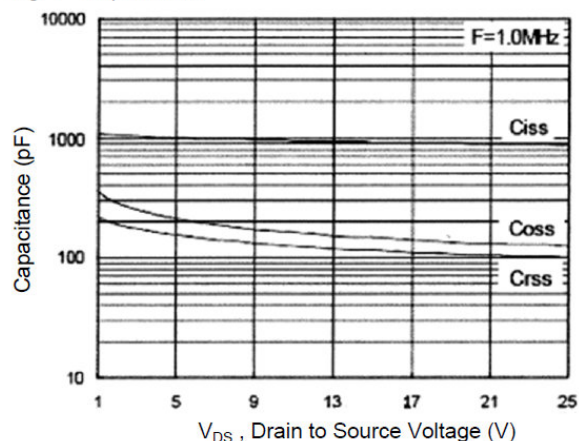


Fig. 8 - Safe Operating Area

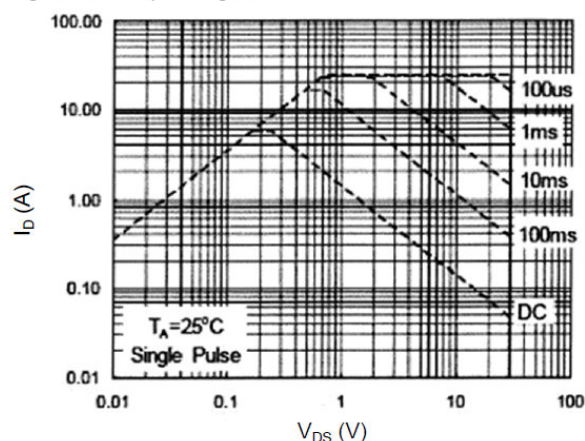


Fig. 9 - Normalized Maximum Transient Thermal Impedance

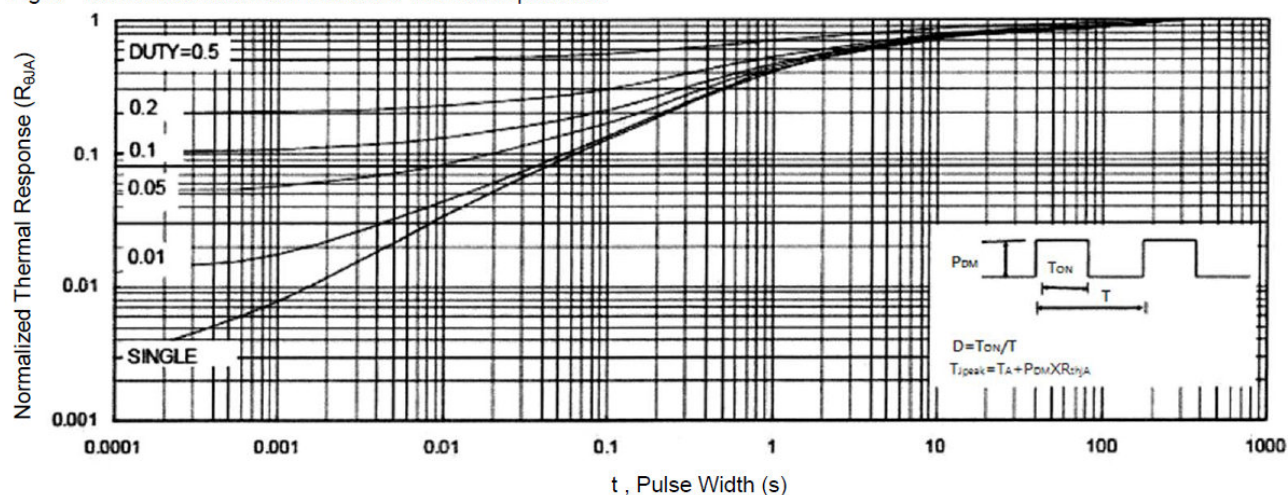
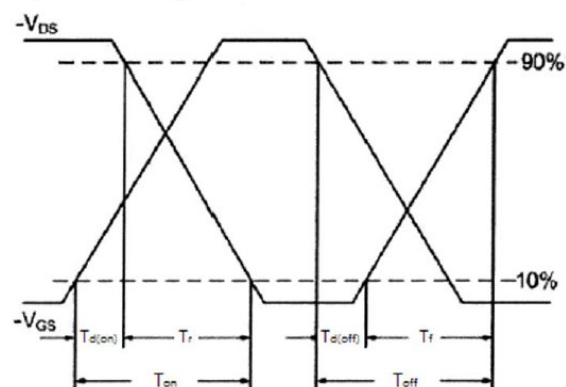
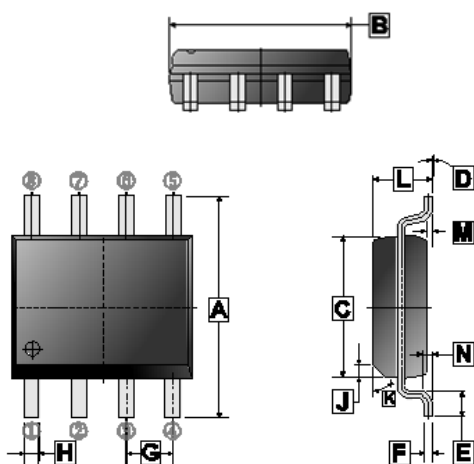


Fig. 10 - Switching Time Waveform



PACKAGE OUTLINE DIMENSIONS

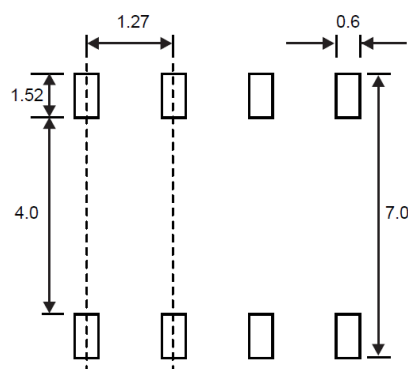
SOP-8



REF.	Millimeter	
	Min.	Max.
A	5.80	6.20
B	4.38	5.20
C	3.70	4.10
D	0°	8°
E	0.40	1.27
F	0.10	0.26
G	1.27 TYP.	
H	0.30	0.51
J	0.375 REF.	
K	45° REF.	
L	1.30	1.80
M	0	0.25
N	0.25 REF.	

MOUNTING PAD LAYOUT

SOP-8



*Dimensions in millimeters