

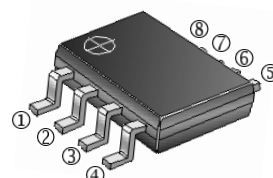
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSG4407S-C is the high cell density trenched P-Ch MOSFETs, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSG4407S-C meet the RoHS and Green Product requirement with full function reliability approved.

SOP-8



FEATURES

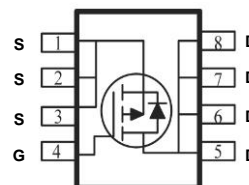
- Super Low Gate Charge
- Excellent CdV/dt Effect Decline
- Advanced High Cell Density Trench Technology
- Green Device Available

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	2.5K	13 inch



ORDER INFORMATION

Part Number	Type
SSG4407S-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}	± 25	V
Continuous Drain Current ¹ @ $V_{GS} = -10\text{V}$	I_D	$T_A=25^\circ\text{C}$	-14
		$T_A=70^\circ\text{C}$	-11
Pulsed Drain Current ²	I_{DM}	-56	A
Total Power Dissipation ³	P_D	3.1	W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Resistance Ratings			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	$t \leq 10\text{s}, 40$	$^\circ\text{C/W}$
		Steady State, 75	
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	24	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions	
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	$V_{GS}=0, I_D = -250\mu\text{A}$	
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-2.5	V	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$	
Forward Transfer Conductance	g_{fs}	-	25	-	S	$V_{DS} = -5V, I_D = -12A$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	-1	μA	$V_{DS} = -24V, V_{GS}=0$
		$T_J=55^\circ\text{C}$	-	-	-5		
Gate-Body Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{DS}=0, V_{GS} = \pm 25V$	
Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	-	9	m Ω	$V_{GS} = -10V, I_D = -12A$	
		-	-	13.5		$V_{GS} = -4.5V, I_D = -10A$	
Total Gate Charge	Q_g	-	30	-	nC	$I_D = -12A$ $V_{DS} = -15V$ $V_{GS} = -4.5V$	
Gate-Source Charge	Q_{gs}	-	10	-			
Gate-Drain ("Miller") Charge	Q_{gd}	-	10.4	-			
Turn-on Delay Time	$T_{d(on)}$	-	9.4	-	nS	$V_{DD} = -15V$ $V_{GS} = -10V$ $R_G = 3.3\Omega$ $I_D = -1A$	
Rise Time	T_r	-	10.2	-			
Turn-off Delay Time	$T_{d(off)}$	-	117	-			
Fall Time	T_f	-	24	-			
Input Capacitance	C_{iss}	-	3208	-	pF	$V_{GS}=0$ $V_{DS} = -25V$ $f = 1\text{MHz}$	
Output Capacitance	C_{oss}	-	409	-			
Reverse Transfer Capacitance	C_{rss}	-	372	-			
Source-Drain Diode Characteristics							
Forward on Voltage ²	V_{SD}	-	-	-1.2	V	$I_S = -1A, V_{GS}=0$	
Continuous Source Current ¹	I_S	-	-	-14	A		
Pulsed Source Current ²	I_{SM}	-	-	-56			
Reverse Recovery Time	T_{rr}	-	19.4	-	nS	$I_F = -10A, dI/dt = 100A/\mu\text{s}, T_J = 25^\circ\text{C}$	
Reverse Recovery Charge	Q_{rr}	-	9.1	-	nC		

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 $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. Pulse width limited by maximum junction temperature

CHARACTERISTICS CURVE

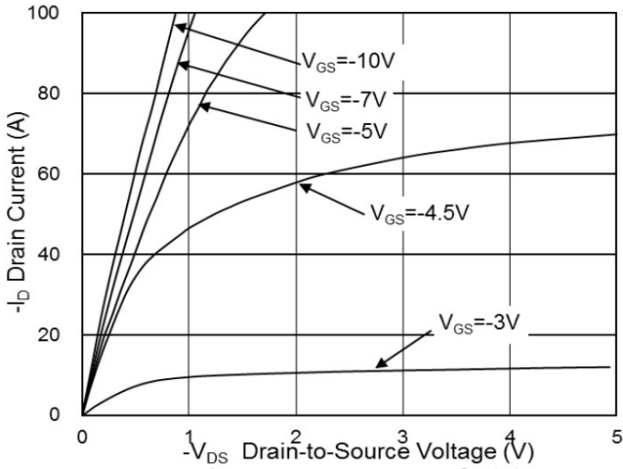


Fig.1 Typical Output Characteristics

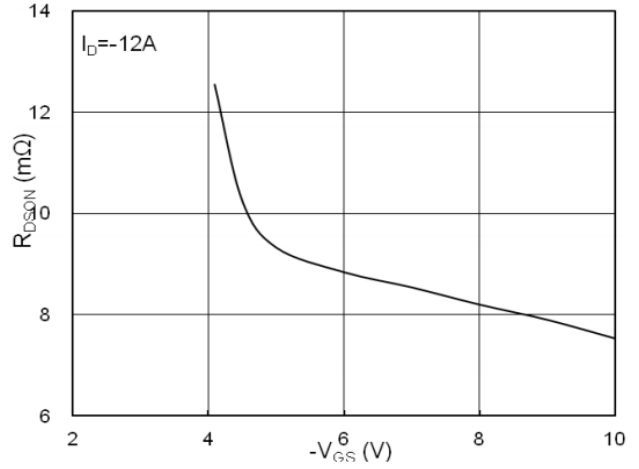


Fig.2 On-Resistance v.s Gate-Source

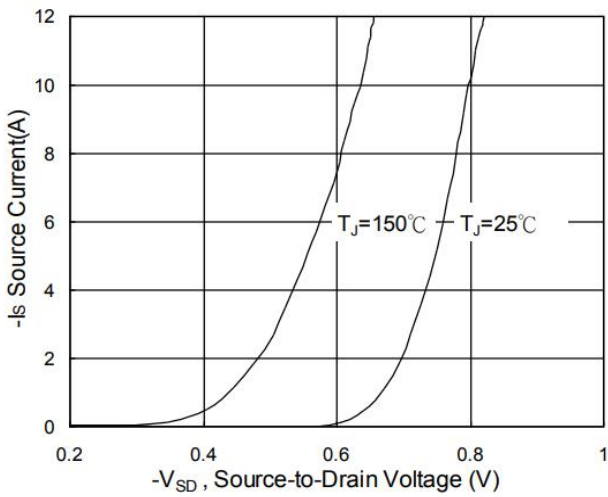


Fig.3 Forward Characteristics Of Reverse

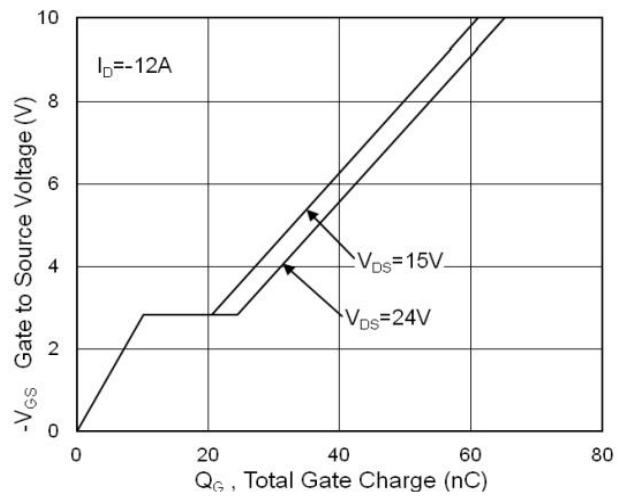


Fig.4 Gate-Charge Characteristics

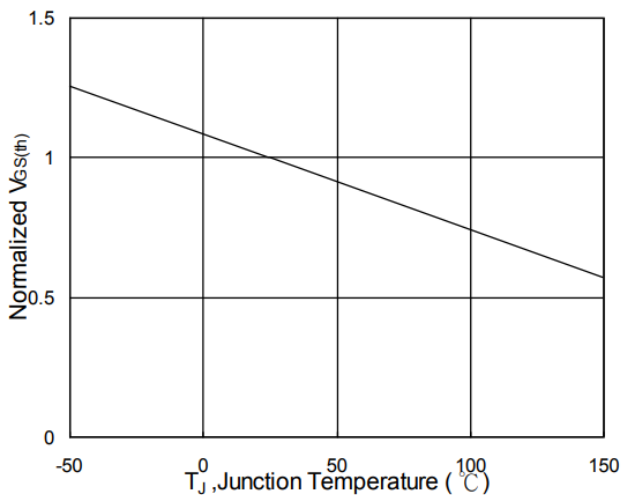


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

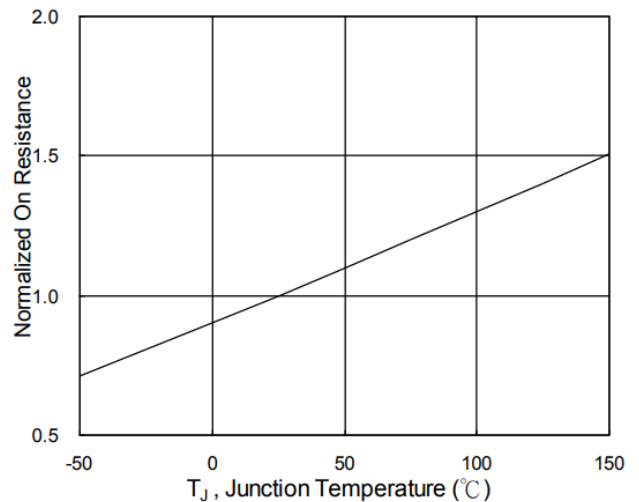


Fig.6 Normalized $R_{DS(ON)}$ vs. T_J

CHARACTERISTICS CURVE

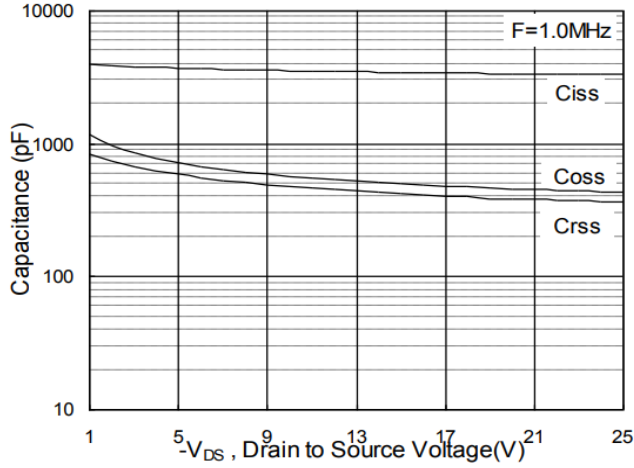


Fig.7 Capacitance

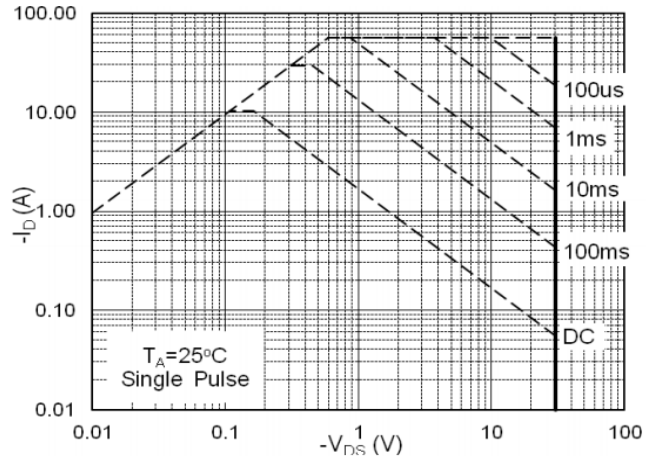


Fig.8 Safe Operating Area

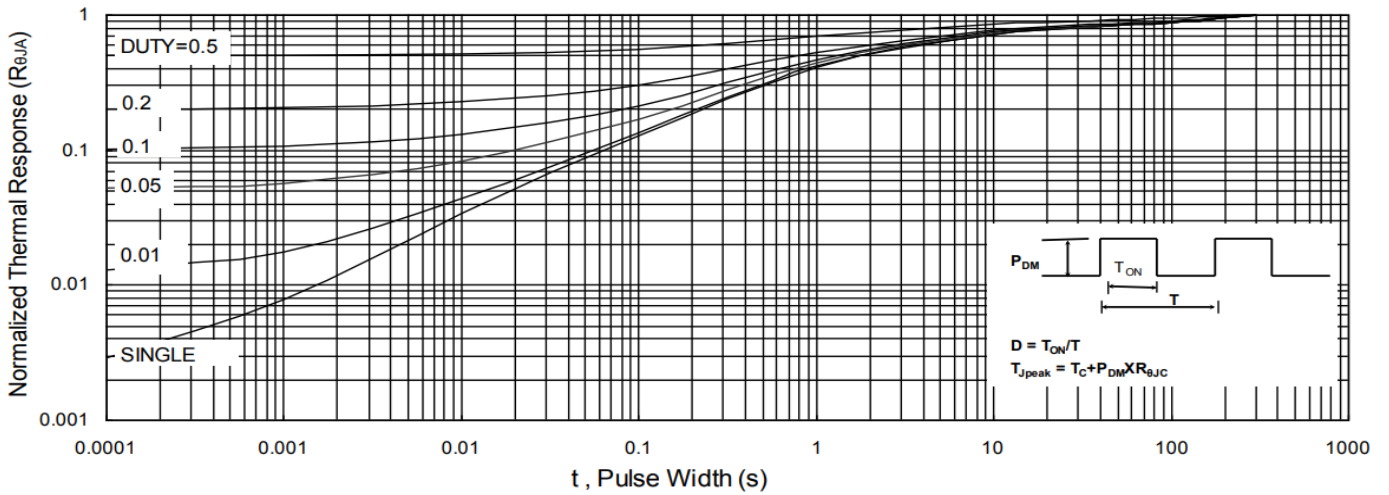


Fig.9 Normalized Maximum Transient Thermal Impedance

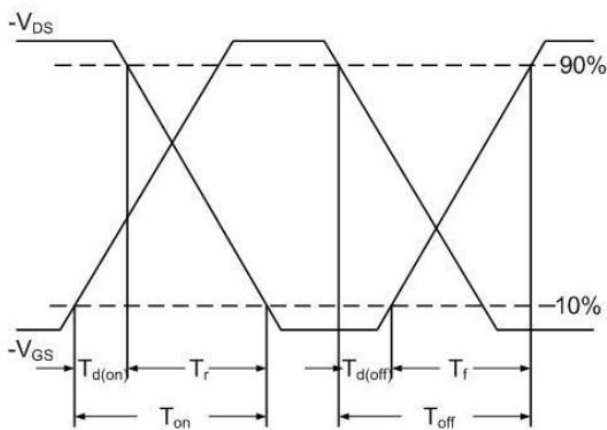


Fig.10 Switching Time Waveform

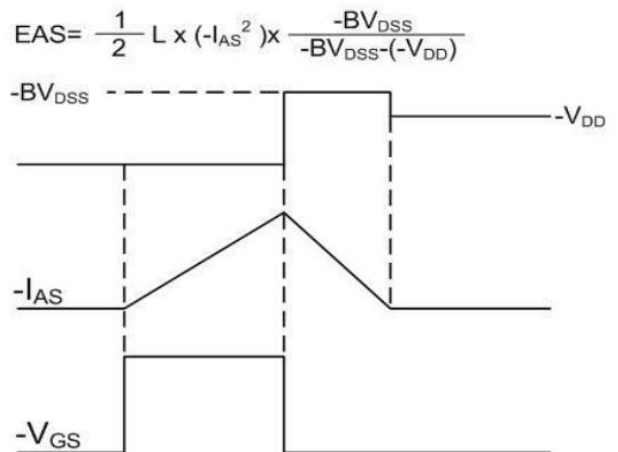
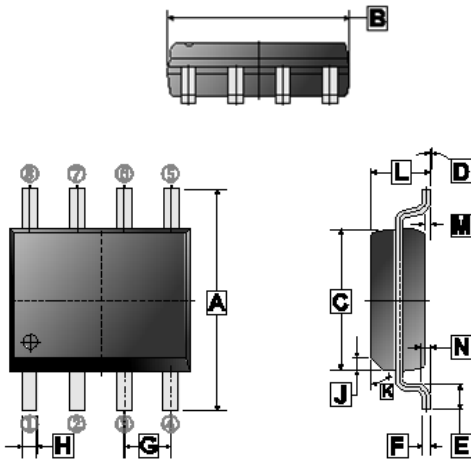


Fig.11 Unclamped Inductive Switching Waveform

PACKAGE OUTLINE DIMENSIONS

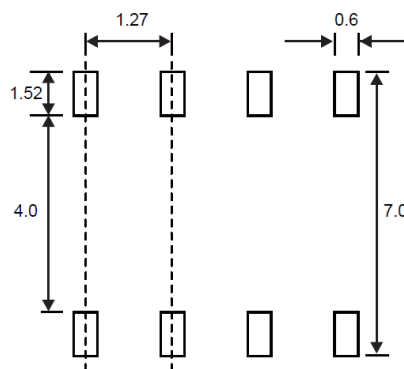
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REF.	Millimeter	
	Min.	Max.
A	5.79	6.20
B	4.70	5.11
C	3.80	4.00
D	0°	8°
E	0.40	1.27
F	0.10	0.25
G	1.27 TYP.	
H	0.33	0.51
J	0.375 REF.	
K	45° REF.	
L	1.30	1.752
M	0	0.25
N	0.25 REF.	

MOUNTING PAD LAYOUT

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*Dimensions in millimeters