

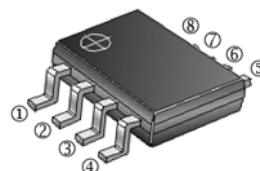
RoHS Compliant Product  
A suffix of "-C" specifies halogen & lead-free

## DESCRIPTION

The SSG05P03-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 SSG05P03-C meet the RoHS and Green Product requirement with full function reliability approved.

## SOP-8



## FEATURES

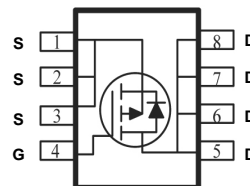
- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

## MARKING



## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	2.5K	13 inch



## ORDER INFORMATION

Part Number	Type
SSG05P03-C	Lead (Pb)-free and Halogen-free

## MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current @ $V_{GS}=10V$ <sup>1</sup>	$I_D$	$T_A=25^\circ C$	-5.5
		$T_A=70^\circ C$	-4.5
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	-25	A
Total Power Dissipation <sup>3</sup>	$P_D$	1.5	W
Operating Junction & Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^\circ C$
<b>Thermal Resistance Ratings</b>			
Maximum Thermal Resistance Junction-Ambient <sup>1</sup>	$R_{\theta JA}$	85	$^\circ C/W$
Maximum Thermal Resistance Junction-Case <sup>1</sup>	$R_{\theta JC}$	25	

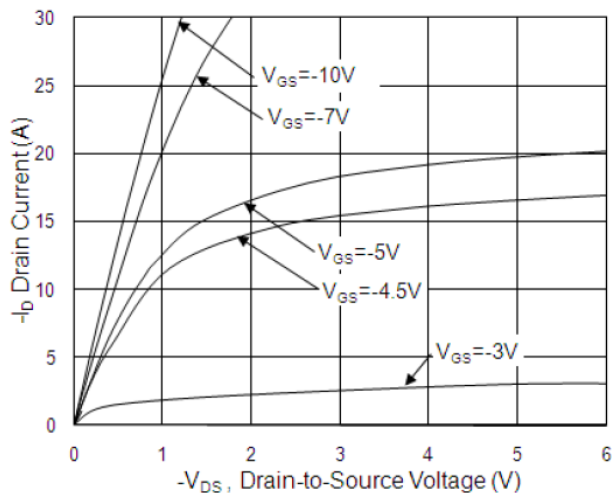
**ELECTRICAL CHARACTERISTICS** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

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 Transconductance	$g_{fs}$	-	11	-	S	$V_{DS} = -5V, I_D = -4A$	
Gate-Body Leakage	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{DS}=0V, V_{GS} = \pm 20V$	
Drain-Source Leakage Current	$I_{DSS}$	$T_J=25^\circ\text{C}$	-	-	-1	$\mu\text{A}$	$V_{DS} = -24V, V_{GS}=0V$
		$T_J=55^\circ\text{C}$	-	-	-5		
Drain-Source On-Resistance <sup>2</sup>	$R_{DS(ON)}$	-	-	42	m $\Omega$	$V_{GS} = -10V, I_D = -4A$	
		-	-	78		$V_{GS} = -4.5V, I_D = -3A$	
Total Gate Charge	$Q_g$	-	6.4	-	nC	$I_D = -4A$ $V_{DS} = -15V$ $V_{GS} = -4.5V$	
Gate-Source Charge	$Q_{gs}$	-	2.3	-			
Gate-Drain Charge	$Q_{gd}$	-	2	-			
Turn-On Delay Time	$T_{d(on)}$	-	2.8	-	nS	$V_{DD} = -15V$ $I_D = -4A$ $V_{GS} = -10V$ $R_G = 3.3\Omega$	
Rise Time	$T_r$	-	8.4	-			
Turn-Off Delay Time	$T_{d(off)}$	-	39	-			
Fall Time	$T_f$	-	6	-			
Input Capacitance	$C_{iss}$	-	585	-	pF	$V_{DS} = -15V$ $V_{GS} = 0$ $f = 1\text{MHz}$	
Output Capacitance	$C_{oss}$	-	100	-			
Reverse Transfer Capacitance	$C_{rss}$	-	85	-			
<b>Source-Drain Diode</b>							
Continuous Source Current <sup>1 4</sup>	$I_S$	-	-	-5.5	A	$V_G = V_D = 0V, \text{Force Current}$	
Pulsed Source Current <sup>2 4</sup>	$I_{SM}$	-	-	-25	A		
Diode Forward Voltage <sup>2</sup>	$V_{SD}$	-	-	-1.2	V	$V_{GS} = 0V, I_S = -1A, T_J = 25^\circ\text{C}$	
Reverse Recovery Time	$t_{rr}$	-	7.8	-	nS	$I_F = -4A, dI/dt = 100A/\mu\text{s}, T_J = 25^\circ\text{C}$	
Reverse Recovery Charge	$Q_{rr}$	-	2.5	-	nC	$T_J = 25^\circ\text{C}$	

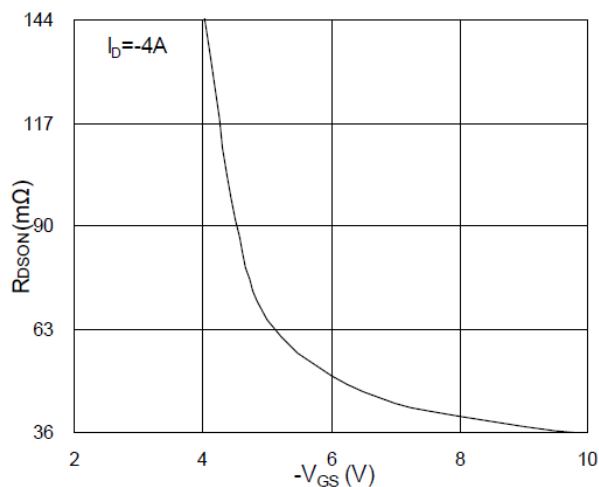
Notes:

- The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2oz copper.
- The data tested by pulsed, pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .
- The power dissipation is limited by 150 $^\circ\text{C}$  junction temperature.
- The data is theoretically the same as  $I_D$  and  $I_{DM}$ , in real applications, should be limited by total power dissipation.

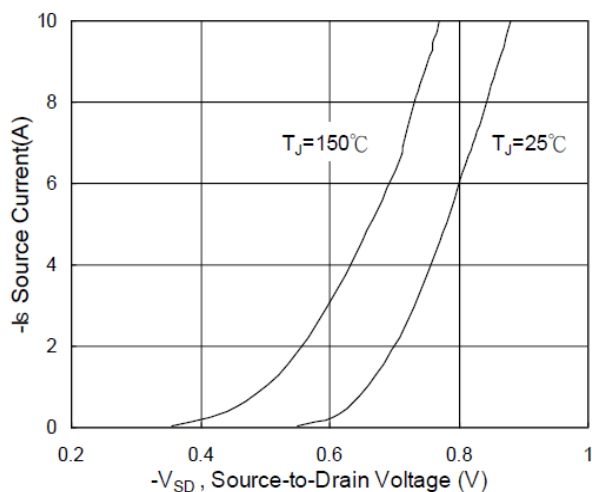
**CHARACTERISTIC CURVES**



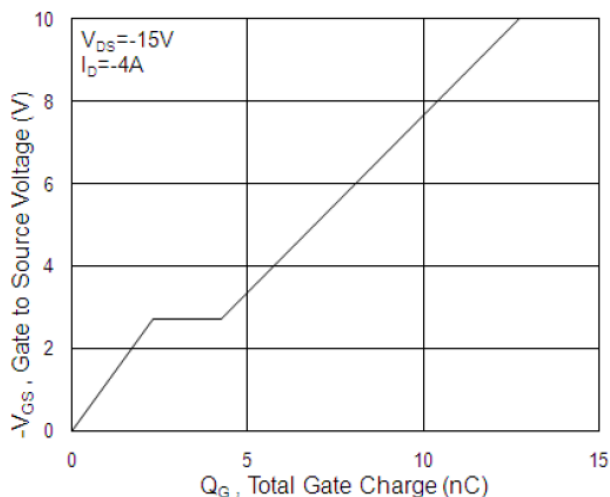
**Fig.1 Typical Output Characteristics**



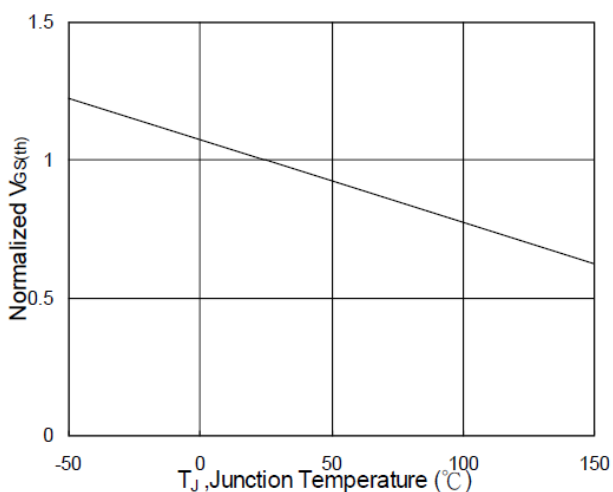
**Fig.2 On-Resistance vs. G-S Voltage**



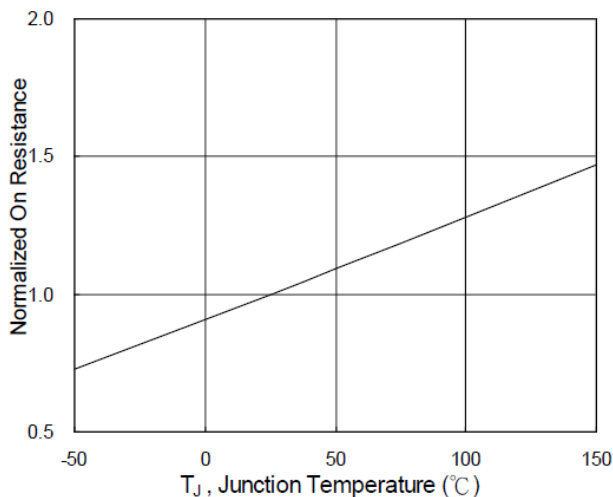
**Fig.3 Source Drain Forward Characteristics**



**Fig.4 Gate-Charge Characteristics**

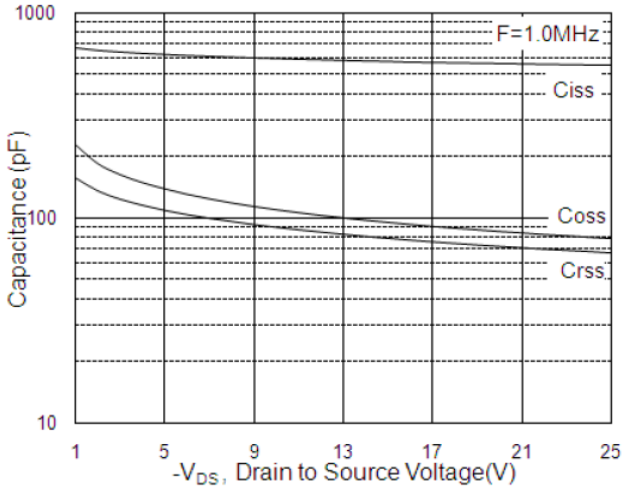


**Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$**

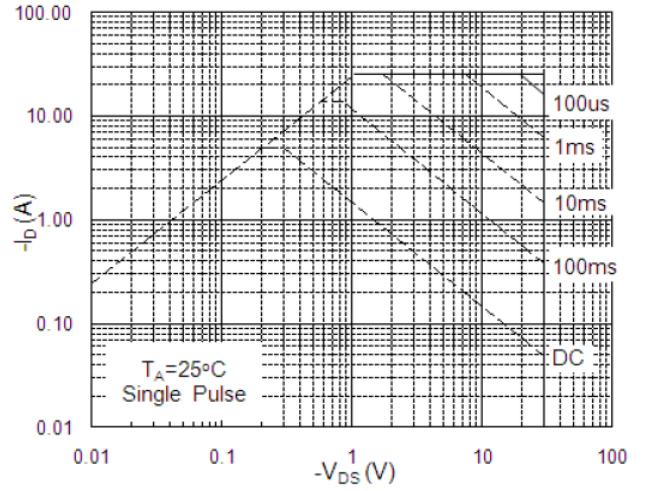


**Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$**

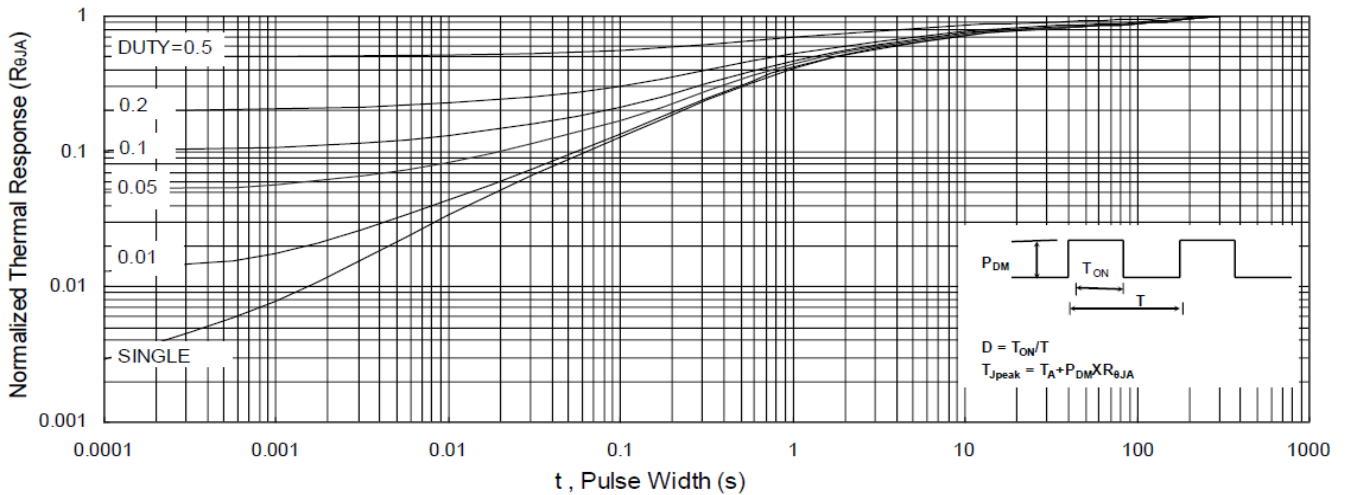
**CHARACTERISTIC CURVES**



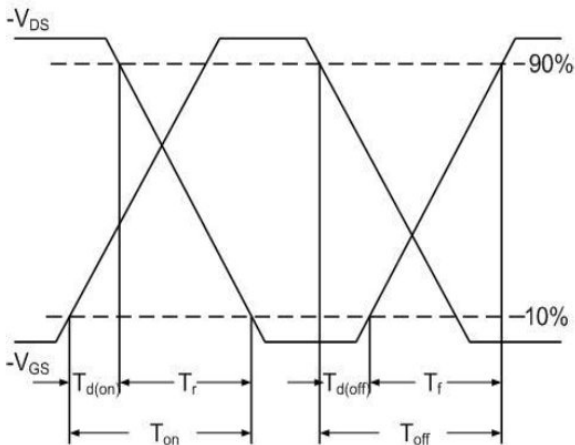
**Fig.7 Capacitance**



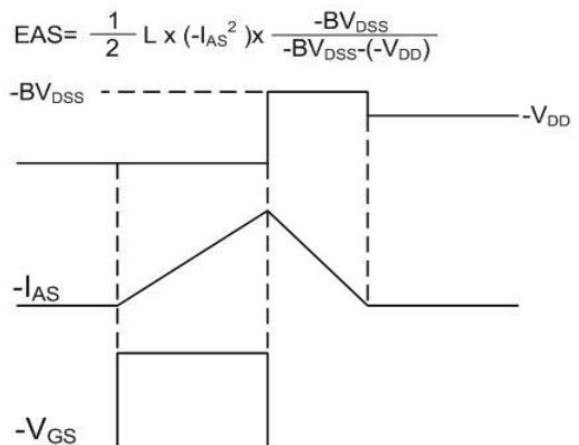
**Fig.8 Safe Operating Area**



**Fig.9 Normalized Maximum Transient Thermal Impedance**



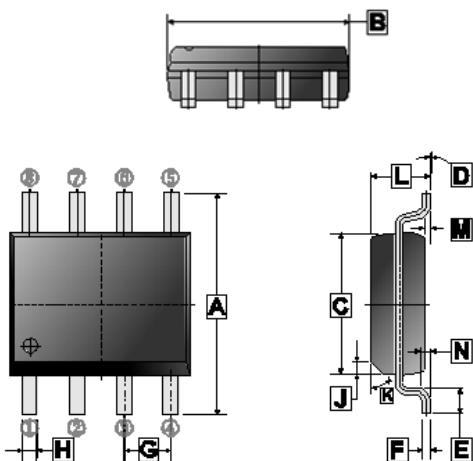
**Fig.10 Switching Time Waveform**



**Fig.11 Unclamped Inductive Switching Waveform**

**PACKAGE OUTLINE DIMENSIONS**

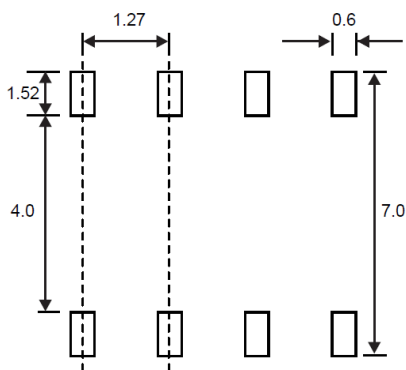
**SOP-8**



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**

**SOP-8**



\*Dimensions in millimeters