

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

DESCRIPTION

The SSG13P03-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 synchronous buck converter applications.

The SSG13P03-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

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

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	3K	13 inch

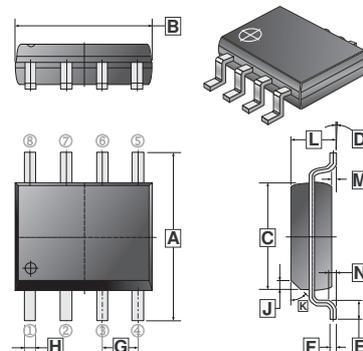
ORDER INFORMATION

Part Number	Type
SSG13P03-C	Lead (Pb)-free and Halogen-free

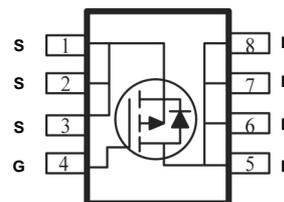
ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ , @ $V_{GS}=10V$	I_D	$T_C=25^\circ C$	-13
		$T_C=100^\circ C$	-9.1
		$T_A=25^\circ C$	-8.2
		$T_A=70^\circ C$	-6.6
Pulsed Drain Current ³	I_{DM}	-50	A
Total Power Dissipation	P_D	1.5	W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Data			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	83	$^\circ C/W$
Thermal Resistance Junction-Ambient ²		125	
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	25	

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.				



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}	-	24	-	S	$V_{DS} = -5V, I_D = -8A$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20V$	
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		$V_{DS} = -24V, V_{GS}=0$
Static Drain-Source On-Resistance ⁴	$R_{DS(ON)}$	-	-	15	m Ω	$V_{GS} = -10V, I_D = -8A$	
		-	-	25		$V_{GS} = -4.5V, I_D = -6A$	
Total Gate Charge	Q_g	-	21.8	-	nC	$I_D = -8A$ $V_{DS} = -15V$ $V_{GS} = -4.5V$	
Gate-Source Charge	Q_{gs}	-	7.9	-			
Gate-Drain Charge	Q_{gd}	-	6.5	-			
Turn-on Delay Time	$T_{d(on)}$	-	10	-	nS	$V_{DD} = -15V$ $I_D = -8A$ $V_{GS} = -10V$ $R_G = 3.3\Omega$	
Rise Time	T_r	-	39	-			
Turn-off Delay Time	$T_{d(off)}$	-	71.2	-			
Fall Time	T_f	-	28.6	-			
Input Capacitance	C_{iss}	-	2215	-	pF	$V_{GS}=0$ $V_{DS} = -15V$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	310	-			
Reverse Transfer Capacitance	C_{rss}	-	237	-			
Source-Drain Diode							
Continuous Source Current ¹	I_S	-	-	-8.2	A		
Pulsed Source Current ³	I_{SM}	-	-	-16.4			
Diode Forward Voltage ⁴	V_{SD}	-	-	-1.2	V	$V_{GS}=0, I_S = -1A, T_J=25^\circ\text{C}$	
Reverse Recovery Time	T_{rr}	-	16	-	nS	$I_F = -13A, di/dt=100A/\mu\text{s}, T_J=25^\circ\text{C}$	
Reverse Recovery Charge	Q_{rr}	-	8	-	nC		

Notes:

- Surface Mounted on 1"x1" FR4 Board with 2OZ copper.
- When mounted on Min. Copper pad.
- Pulse width limited by maximum junction temperature.
- Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

CHARACTERISTIC CURVES

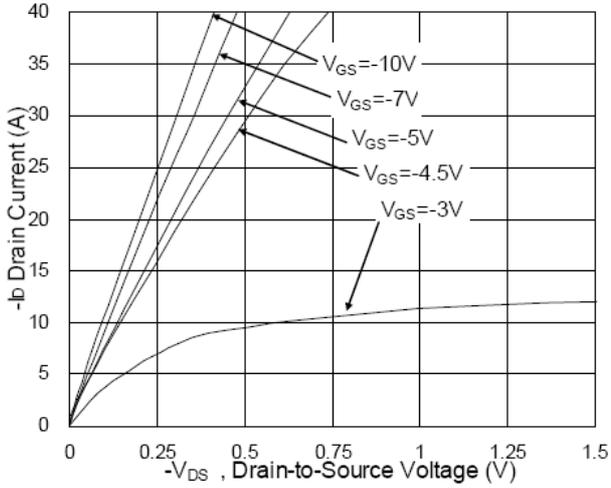


Fig.1 Typical Output Characteristics

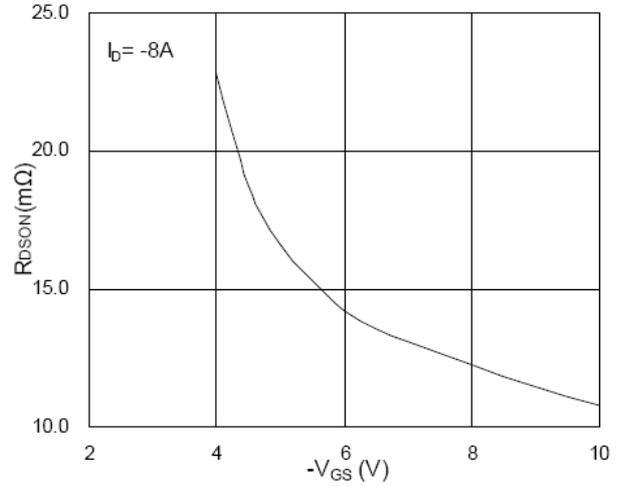


Fig.2 On-Resistance vs. G-S Voltage

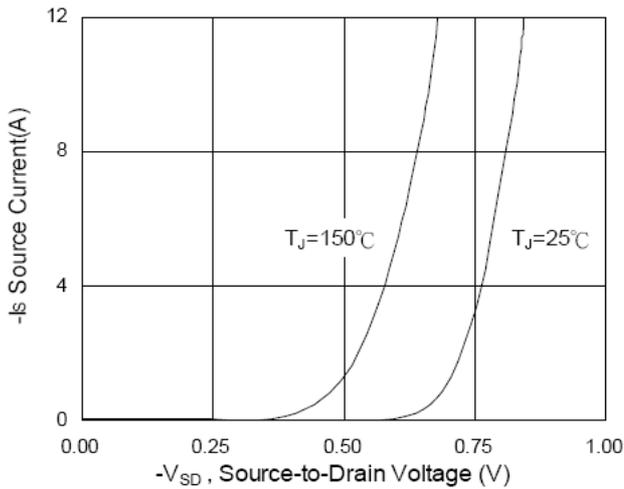


Fig.3 Forward Characteristics of Reverse

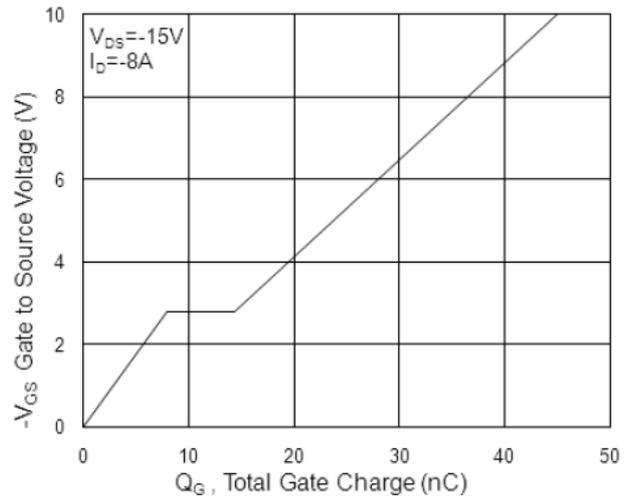


Fig.4 Gate-Charge Characteristics

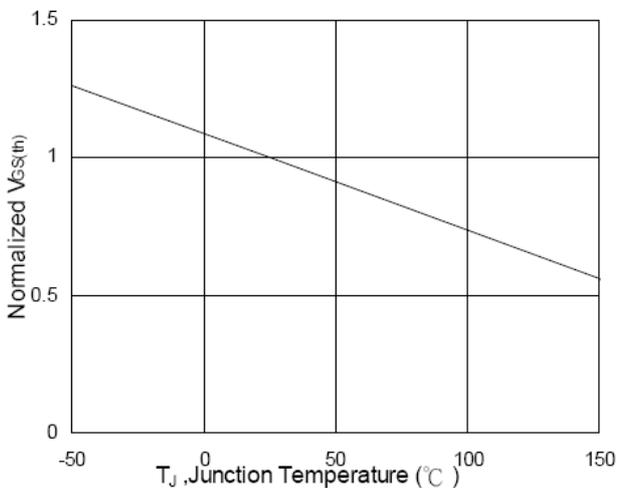


Fig.5 Normalized V_{GS(th)} vs. T_J

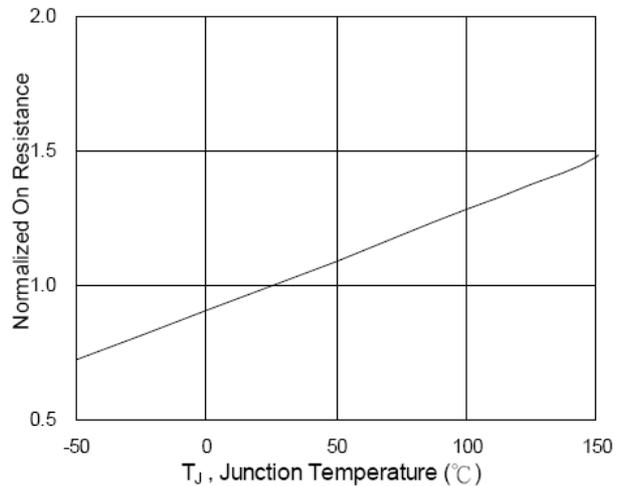


Fig.6 Normalized R_{DS(on)} vs. T_J

CHARACTERISTIC CURVES

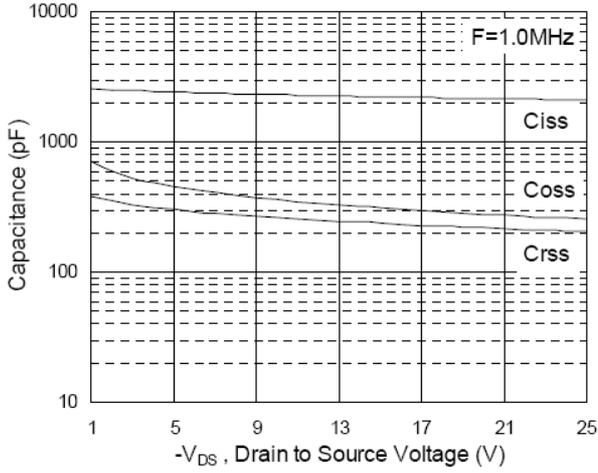


Fig.7 Capacitance

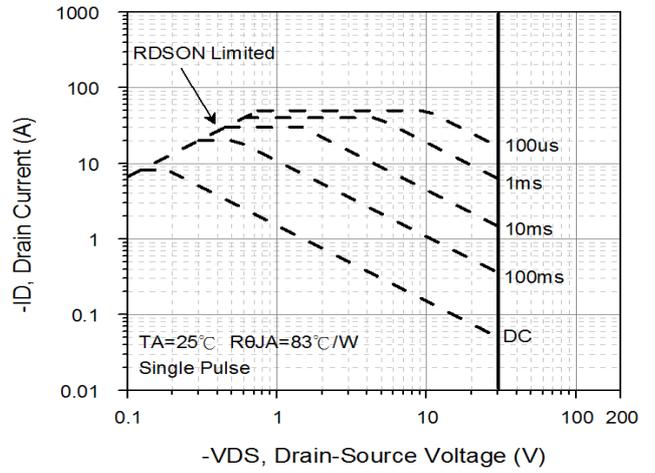


Fig.8 Safe Operating Area

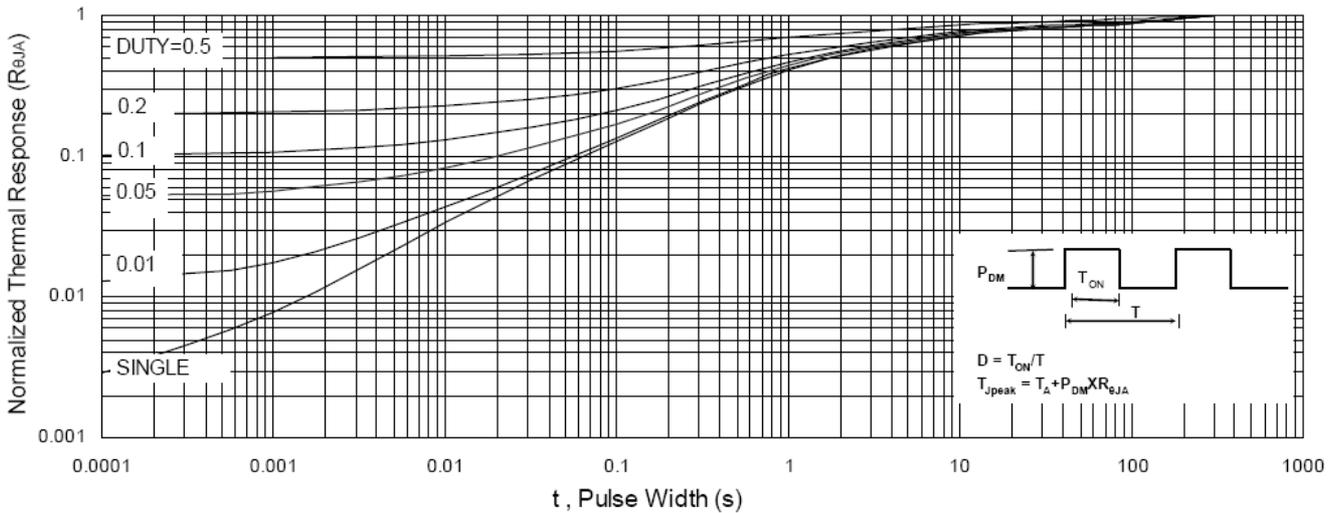


Fig.9 Normalized Maximum Transient Thermal Impedance

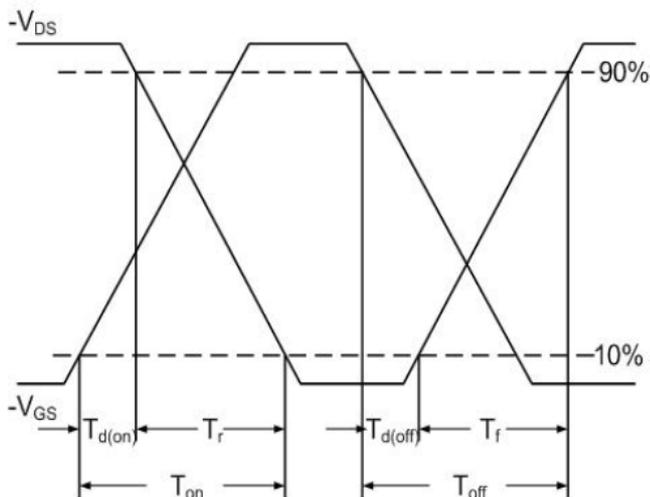


Fig.10 Switching Time Waveform

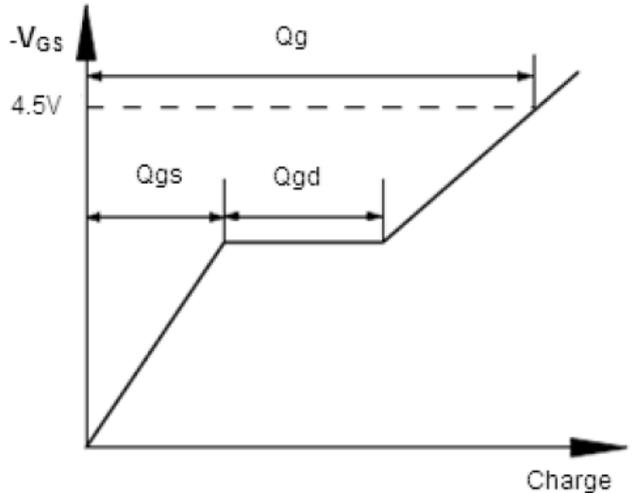


Fig.11 Gate Charge Waveform