

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

## DESCRIPTION

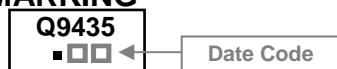
The SSG9435J-C is the highest performance trench P-Ch MOSFETs with extreme high cell density, which provide excellent  $R_{DS(ON)}$  and gate charge for most of the synchronous buck converter applications.

The SSG9435J-C meet the RoHS and Green Product requirement with full function reliability approved.

## FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge

## MARKING



## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	4K	13 inch

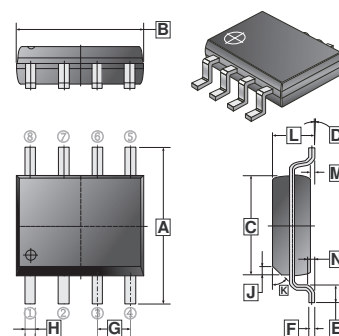
## ORDER INFORMATION

Part Number	Type
SSG9435J-C	Lead (Pb)-free and Halogen-free

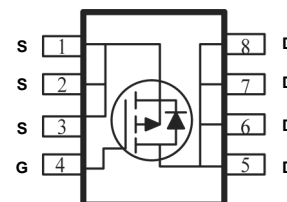
## MAXIMUM RATINGS

Parameter	Symbol	Ratings		Unit	
		$t \leq 10\text{sec}$	Steady State		
Drain-Source Voltage	$V_{DS}$	-30		V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$		V	
Continuous Drain Current <sup>1</sup> , @ $V_{GS}=10\text{V}$	$I_D$	$T_A=25^\circ\text{C}$	-5.1	-4.3	A
		$T_A=70^\circ\text{C}$	-4.1	-3.4	
Pulsed Drain Current <sup>3</sup>	$I_{DM}$	-20		A	
Power Dissipation	$P_D$	2		W	
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~150		$^\circ\text{C}$	
Thermal Data					
Thermal Resistance from Junction-Ambient <sup>1</sup>	$R_{\theta JA}$	$t \leq 10\text{sec}, 62.5$		$^\circ\text{C/W}$	
		Steady State, 89			
Thermal Resistance from Junction-Ambient <sup>2</sup>	$R_{\theta JA}$	125			
Thermal Resistance from Junction-Case <sup>1</sup>	$R_{\theta JC}$	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.			



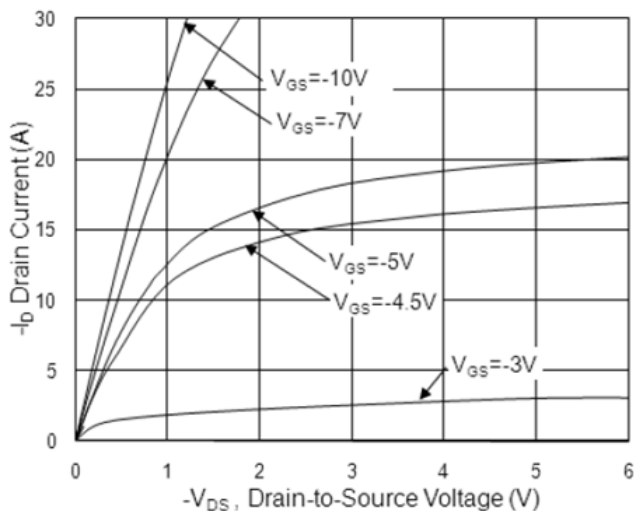
**ELECTRICAL CHARACTERISTICS** ( $T_J=25^\circ C$  unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	$BV_{DSS}$	-30	-	-	V	$V_{GS}=0, I_D=-250\mu A$	
Gate Threshold Voltage	$V_{GS(th)}$	-1	-1.5	-2	V	$V_{DS}=V_{GS}, I_D=-250\mu A$	
Forward Transconductance	$g_{fs}$	-	11	-	S	$V_{DS}=-5V, I_D=-4A$	
Gate-Source Leakage Current	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS}=\pm 20V$	
Drain-Source Leakage Current	$I_{DSS}$	$T_J=25^\circ C$	-	-	-1	$\mu A$	$V_{DS}=-24V, V_{GS}=0$
		$T_J=55^\circ C$	-	-	-5		$V_{DS}=-24V, V_{GS}=0$
Static Drain-Source On-Resistance <sup>4</sup>	$R_{DS(ON)}$	-	-	50	m $\Omega$	$V_{GS}=-10V, I_D=-4A$	
		-	-	75		$V_{GS}=-4.5V, I_D=-3A$	
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 ("Miller") 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	$V_{GS}=0$ $V_{DS}=-15V$ $f=1MHz$	
Output Capacitance	$C_{oss}$	-	100	-			
Reverse Transfer Capacitance	$C_{rss}$	-	85	-			
<b>Drain-Source Diode Characteristics</b>							
Continuous Source Current <sup>1</sup>	$I_S$	-	-	-5.1	A		
Pulsed Source Current <sup>3</sup>	$I_{SM}$	-	-	-20			
Diode Forward Voltage <sup>4</sup>	$V_{SD}$	-	-	-1.2	V	$V_{GS}=0, I_S=-2.6A$ $T_J=25^\circ C$	
Reverse Recovery Time	$t_{rr}$	-	7.8	-	nS	$I_F=-4A$ $di/dt=100A/\mu s$	
Reverse Recovery Charge	$Q_{rr}$	-	2.5	-	nC	$T_J=25^\circ C$	

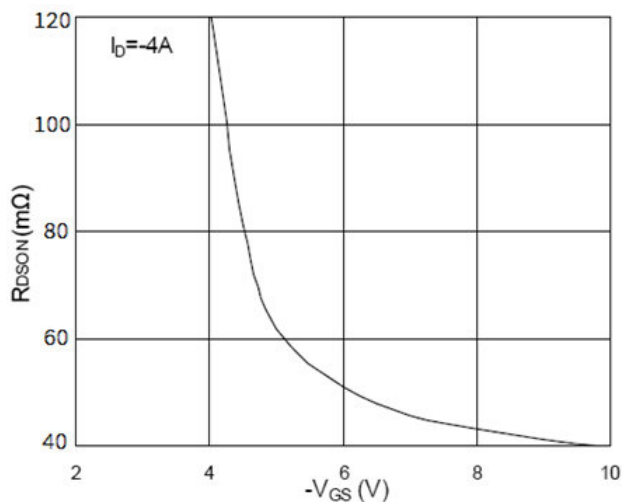
Notes:

1. Surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
2. When mounted on Min. copper pad.
3. Pulse width limited by maximum junction temperature, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
4. The data tested by pulsed, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

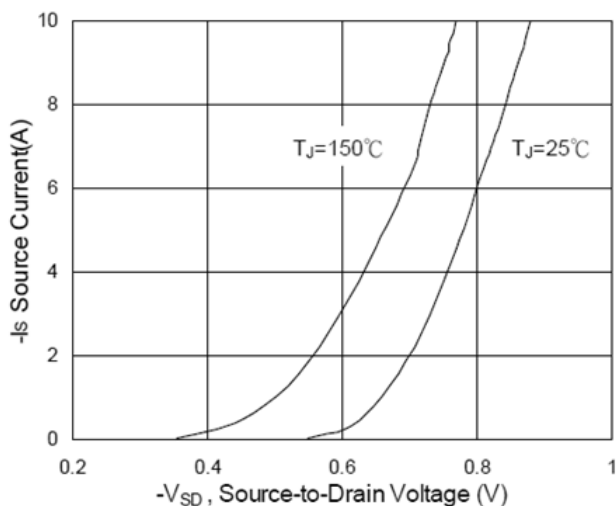
**CHARACTERISTIC CURVE**



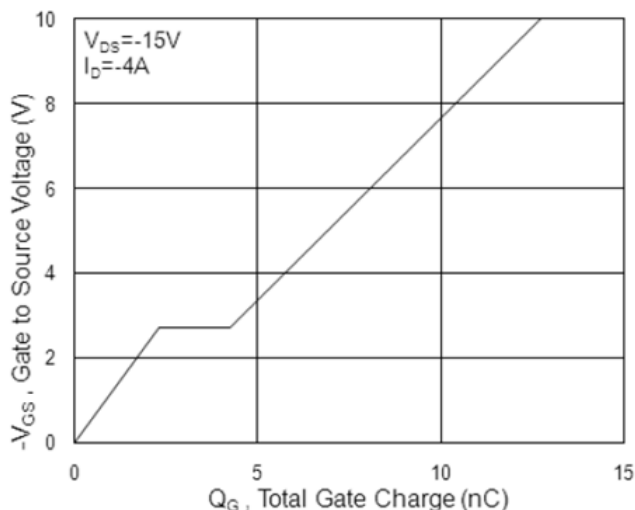
**Fig.1 Typical Output Characteristics**



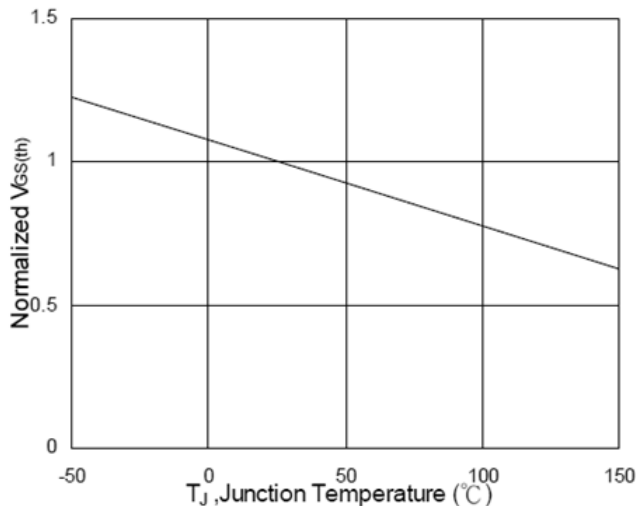
**Fig.2 On-Resistance vs. Gate-Source**



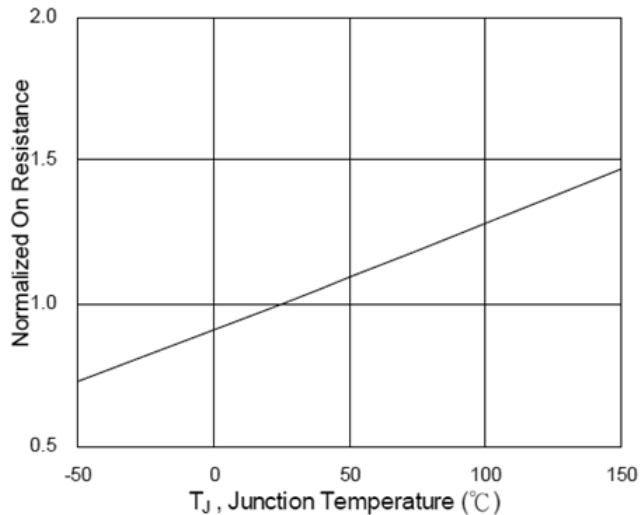
**Fig.3 Forward Characteristics of Reverse**



**Fig.4 Gate-Charge Characteristics**

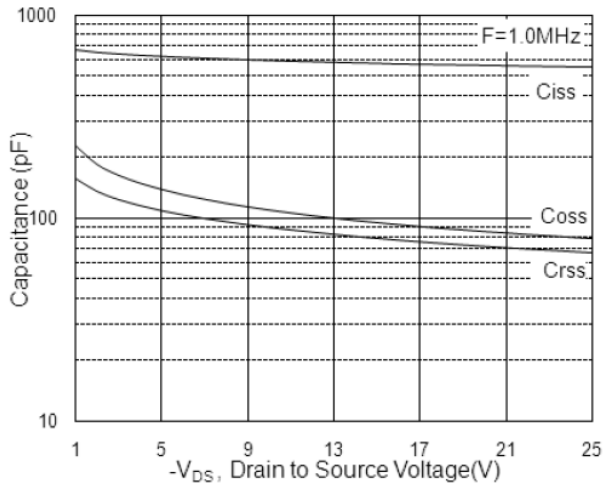


**Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$**

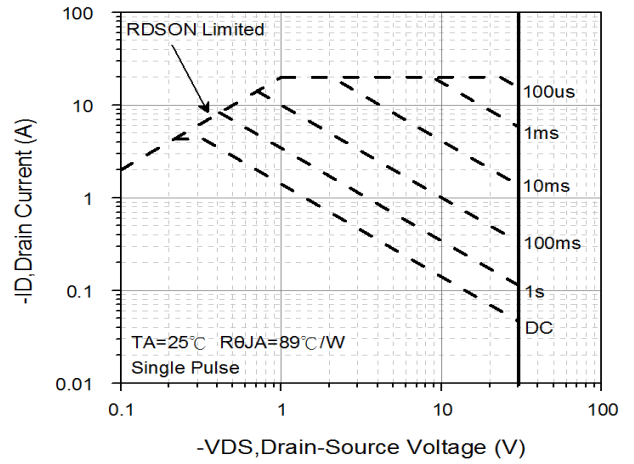


**Fig.6 Normalized  $R_{DS(ON)}$  vs.  $T_J$**

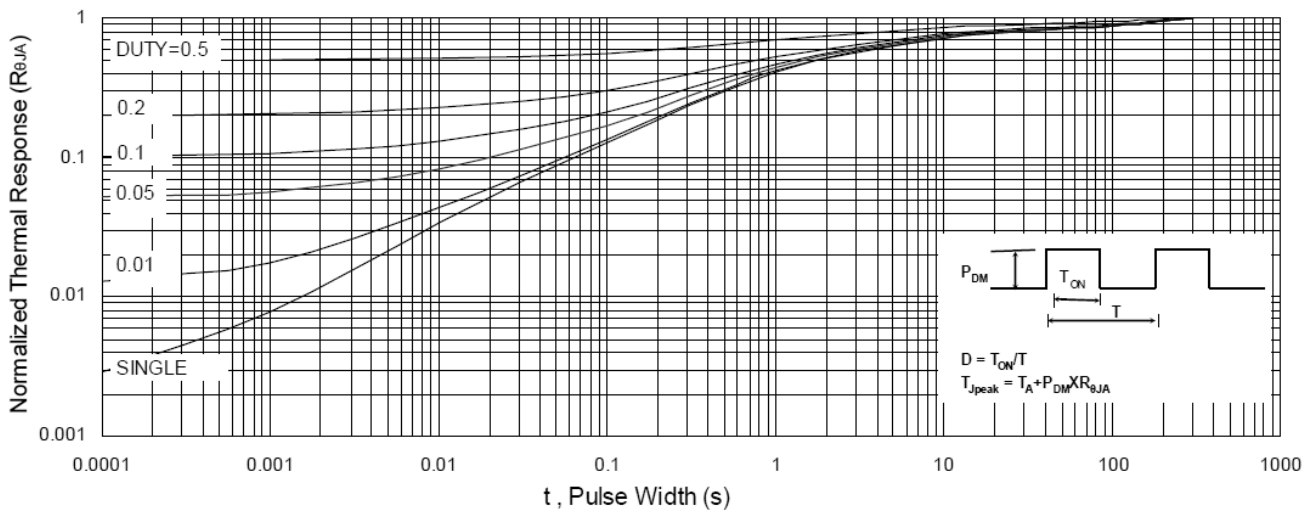
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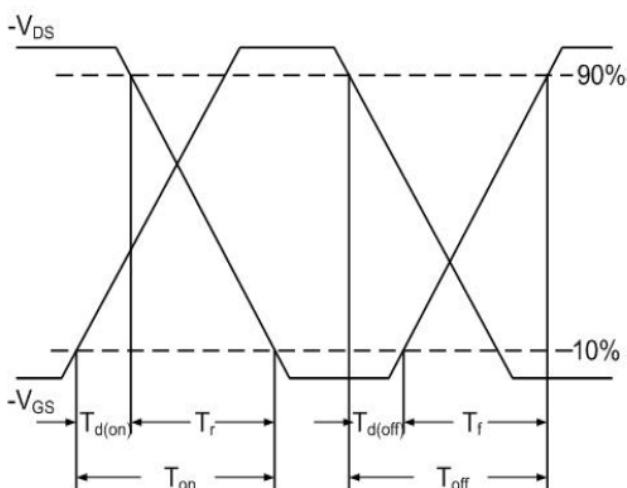
**Fig.7 Capacitance**



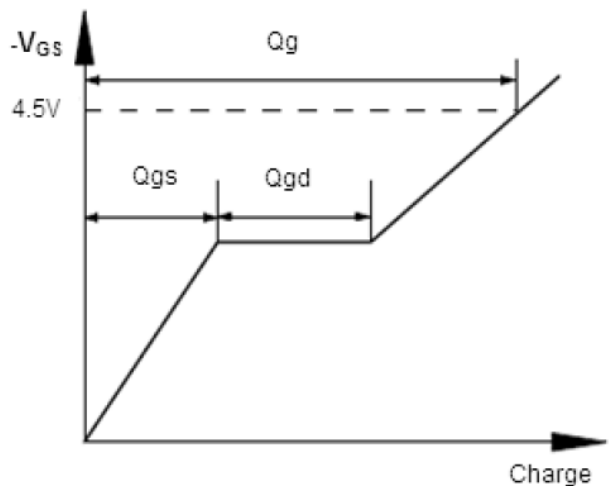
**Fig.8 Safe Operating Area**



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



**Fig.10 Switching Time Waveform**



**Fig.11 Gate Charge Waveform**