

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

## DESCRIPTION

The SSG1A6P15 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 SSG1A6P15 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

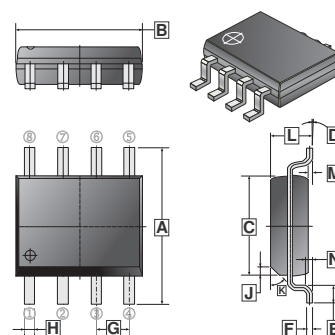
## MARKING



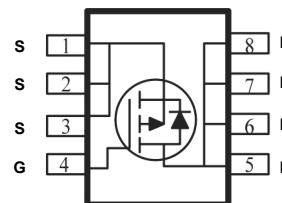
## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	2.5K	13' inch

## SOP-8



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	H	0.33	0.51
B	4.70	5.10	J	0.375 REF.	
C	3.80	4.00	K	45° REF.	
D	0°	8°	L	1.35	1.75
E	0.40	1.27	M	0.10	0.25
F	0.10	0.25	N	0.25 REF.	
G	1.27 TYP.				



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

Parameter	Symbol	Ratings	Unit	
Drain-Source Voltage	$V_{DS}$	-150	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V	
Continuous Drain Current @ $V_{GS}=10\text{V}$ <sup>1</sup>	$I_D$	$T_A=25^\circ\text{C}$	-1.6	A
		$T_A=70^\circ\text{C}$	-1.3	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	-6.4	A	
Total Power Dissipation	$P_D$	3	W	
Operating Junction & Storage Temperature Range	$T_J, T_{STG}$	-55 ~ 150	$^\circ\text{C}$	
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient <sup>1</sup>	$R_{\theta JA}$	$t \leq 10\text{sec}, 42$	$^\circ\text{C} / \text{W}$	
		Steady State, 105		
Thermal Resistance Junction-Ambient		125		
Thermal Resistance Junction-Case <sup>1</sup>	$R_{\theta JC}$	30		

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

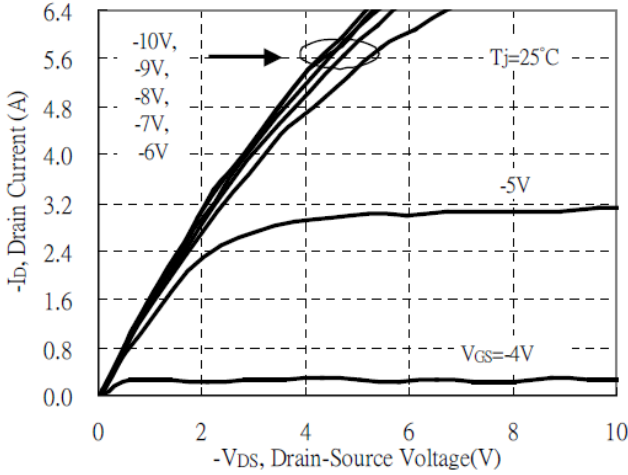
Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Drain-Source Breakdown Voltage	$BV_{DSS}$	-150	-	-	V	$V_{GS}=0V, I_D = -250\mu A$
Gate Threshold Voltage	$V_{GS(th)}$	-2	-	-4	V	$V_{DS}=V_{GS}, I_D = -250\mu A$
Gate-Body Leakage	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{DS}=0V, V_{GS} = \pm 20V$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	-1	$\mu A$	$V_{DS} = -120V, V_{GS}=0V, T_J=25^\circ C$
		-	-	-10	$\mu A$	$V_{DS} = -120V, V_{GS}=0V, T_J=125^\circ C$
Drain-Source On-Resistance <sup>3</sup>	$R_{DS(ON)}$	-	-	780	m $\Omega$	$V_{GS} = -10V, I_D = -1.6A$
Forward Transfer conductance	$g_{fs}$	-	2.5	-	S	$V_{DS} = -10V, I_D = -1.4A$
Total Gate Charge	$Q_g$	-	6	-	nC	$I_D = -1A$ $V_{DS} = -75V$ $V_{GS} = -10V$
Gate-Source Charge	$Q_{gs}$	-	2	-		
Gate-Drain Charge	$Q_{gd}$	-	1.4	-		
Turn-On Delay Time	$T_{d(on)}$	-	8	-	nS	$V_{DD} = -75V$ $I_D = -1A$ $V_{GS} = -10V$ $R_G = 1\Omega$
Rise Time	$T_r$	-	6	-		
Turn-Off Delay Time	$T_{d(off)}$	-	20	-		
Fall Time	$T_f$	-	4	-		
Input Capacitance	$C_{iss}$	-	498	-	pF	$V_{DS} = -15V$ $V_{GS} = 0$ $f = 1MHz$
Output Capacitance	$C_{oss}$	-	40	-		
Reverse Transfer Capacitance	$C_{rss}$	-	17	-		
<b>Source-Drain Diode</b>						
Continuous Source Current <sup>1</sup>	$I_S$	-	-	-1.6	A	
Pulsed Source Current <sup>2</sup>	$I_{SM}$	-	-	-6.4	A	
Diode Forward Voltage <sup>3</sup>	$V_{SD}$	-	-	-1.2	V	$V_{GS}=0V, I_S = -1.6A$
Reverse Recovery Time	$t_{rr}$	-	60	-	nS	$I_F = -1A, di/dt=100A/\mu s, T_J=25^\circ C$
Reverse Recovery Charge	$Q_{rr}$	-	120	-	nC	

Notes:

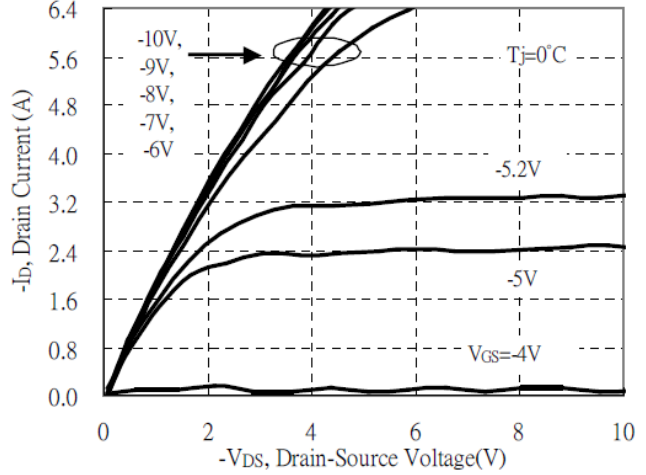
- Surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- The power dissipation is limited by 150°C junction temperature.
- The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$ .

**TYPICAL CHARACTERISTIC CURVES**

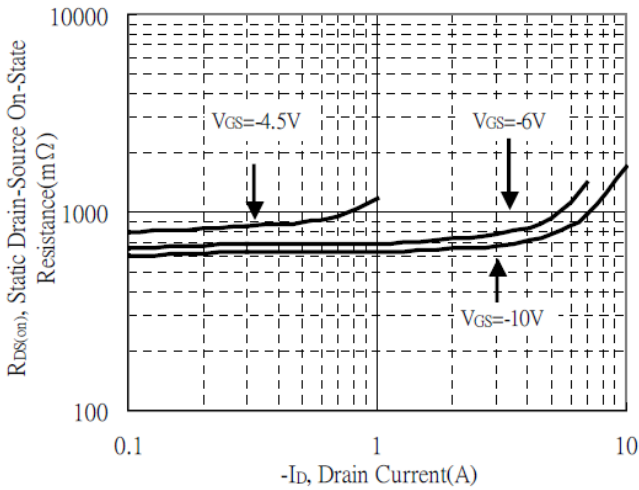
Typical Output Characteristics



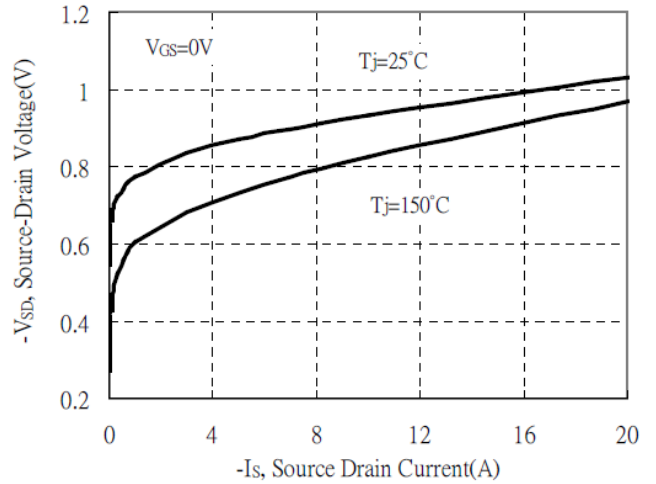
Typical Output Characteristics



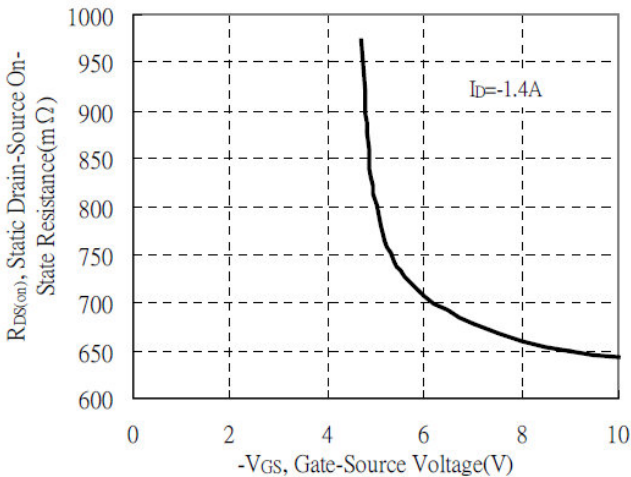
Static Drain-Source On-State resistance vs Drain Current



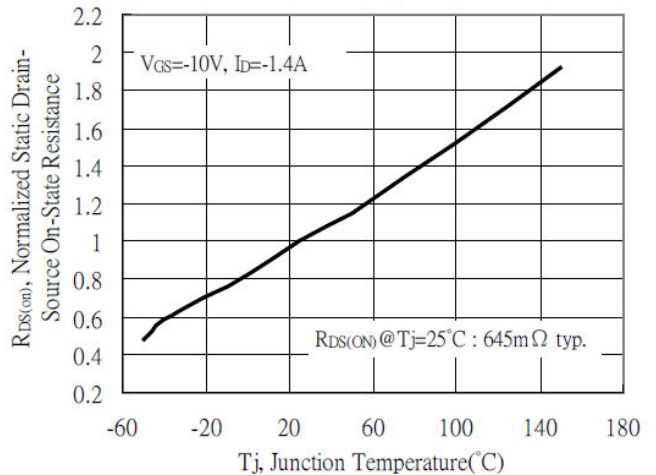
Source Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

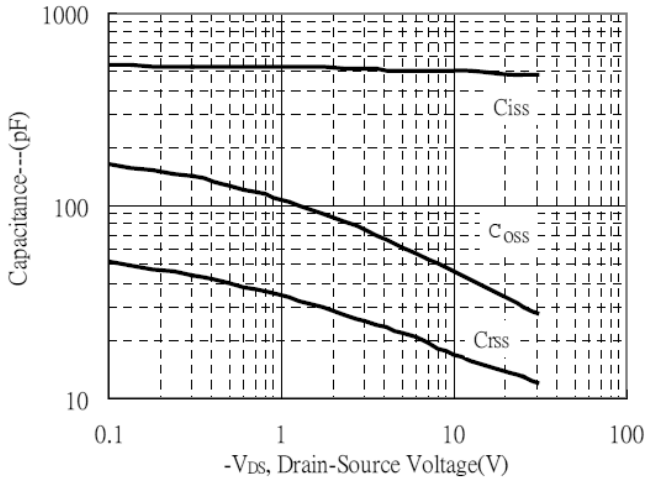


Normalized Drain-Source On-State Resistance vs Junction Temperature

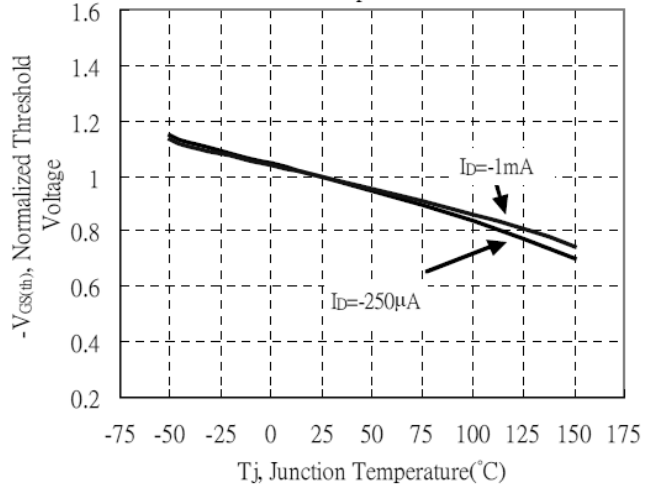


**TYPICAL CHARACTERISTIC CURVES**

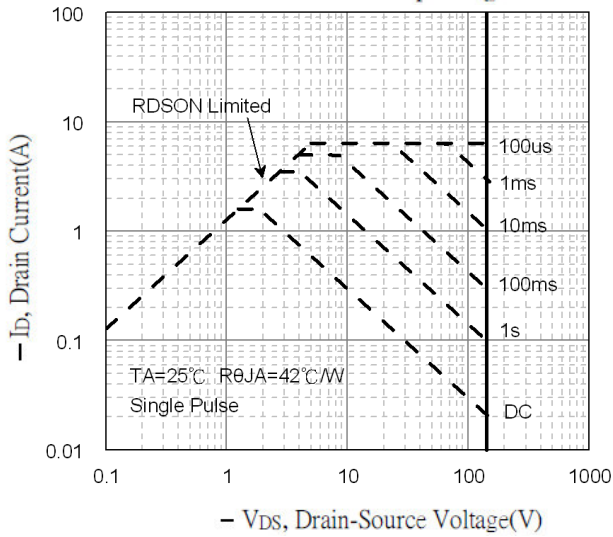
Capacitance vs Drain-to-Source Voltage



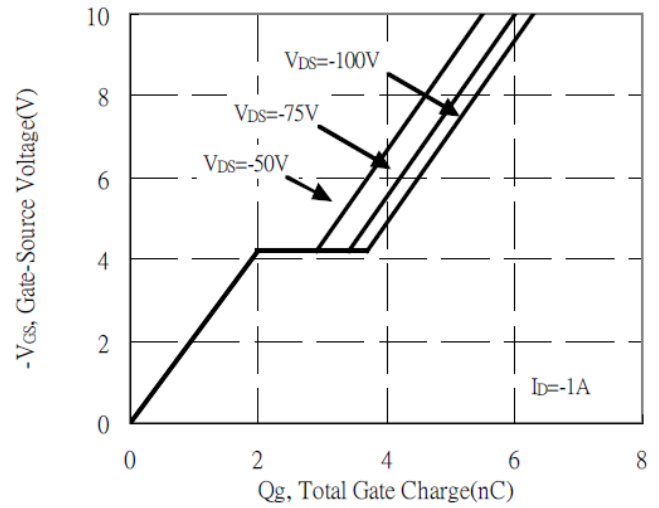
Normalized Threshold Voltage vs Junction Temperature



Maximum Safe Operating Area



Gate Charge Characteristics



Transient Thermal Response Curves

