Elektronische Bauelemente

# SSG1A6P15-C

**-1.6A, -150V, $R_{DS(ON)}$ 780mΩ**
**P-Ch Enhancement Mode Power MOSFET**

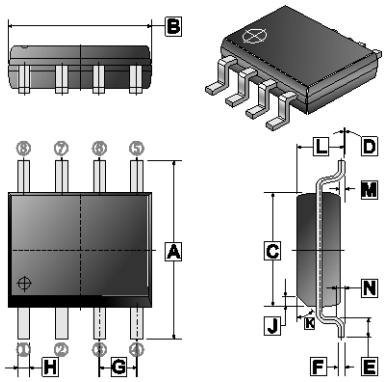
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

## DESCRIPTION

The SSG1A6P15-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 SSG1A6P15-C meet the RoHS and Green Product requirement with full function reliability approved.

**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. | | | | |

## FEATURES

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

## MARKING

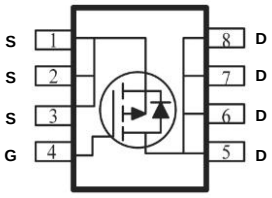
**1A6P15**
□□□□ = Date Code

## PACKAGE INFORMATION

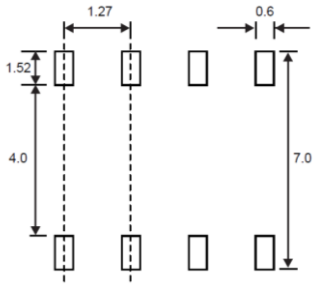
| Package | MPQ | Leader Size |
|---|---|---|
| SOP-8 | 2.5K | 13 inch |

## ORDER INFORMATION

| Part Number | Type |
|---|---|
| SSG1A6P15-C | Lead (Pb)-free and Halogen-free |




**Mounting Pad Layout**




*Dimensions in millimeters

## MAXIMUM RATINGS ($T_A$ = 25°C unless otherwise specified)

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

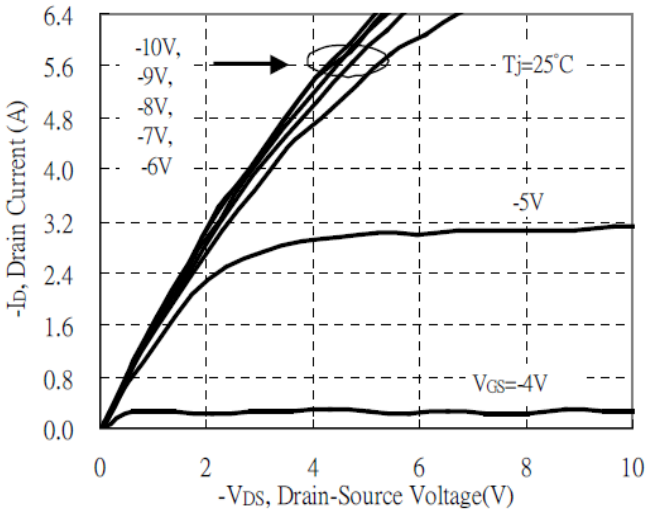
## ELECTRICAL CHARACTERISTICS ($T_A$ = 25°C unless otherwise specified)

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Teat Conditions |
|---|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | | $BV_{DSS}$ | -150 | - | - | V | $V_{GS}$=0V, $I_D$= -250uA |
| Gate Threshold Voltage | | $V_{GS(th)}$ | -2 | - | -4 | V | $V_{DS}$=$V_{GS}$, $I_D$= -250μA |
| Gate-Body Leakage | | $I_{GSS}$ | - | - | ±100 | nA | $V_{DS}$=0V, $V_{GS}$= ±20V |
| Zero Gate Voltage Drain Current | $T_J$=25°C | $I_{DSS}$ | - | - | -1 | μA | $V_{DS}$= -120V, $V_{GS}$=0V |
| | $T_J$=125°C | | - | - | -10 | μA | $V_{DS}$= -120V, $V_{GS}$=0V |
| Drain-Source On-Resistance [3] | | $R_{DS(ON)}$ | - | - | 780 | mΩ | $V_{GS}$= -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<br>$V_{DS}$= -75V<br>$V_{GS}$= -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<br>$I_D$= -1A<br>$V_{GS}$= -10V<br>$R_G$=1Ω |
| 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<br>$V_{GS}$=0<br>f=1MHz |
| Output Capacitance | | $C_{oss}$ | - | 40 | - | | |
| Reverse Transfer Capacitance | | $C_{rss}$ | - | 17 | - | | |
| **Source-Drain Diode** | | | | | | | |
| Continuous Source Current [1] | | $I_S$ | - | - | -1.6 | A | |
| Pulsed Source Current [2] | | $I_{SM}$ | - | - | -6.4 | A | |
| Diode Forward Voltage [3] | | $V_{SD}$ | - | - | -1.2 | V | $V_{GS}$=0V , $I_S$= -1.6A |
| Reverse Recovery Time | | $t_{rr}$ | - | 60 | - | nS | $I_F$= -1A, dI/dt=100A/μs,<br>$T_J$=25℃ |
| Reverse Recovery Charge | | $Q_{rr}$ | - | 120 | - | nC | |

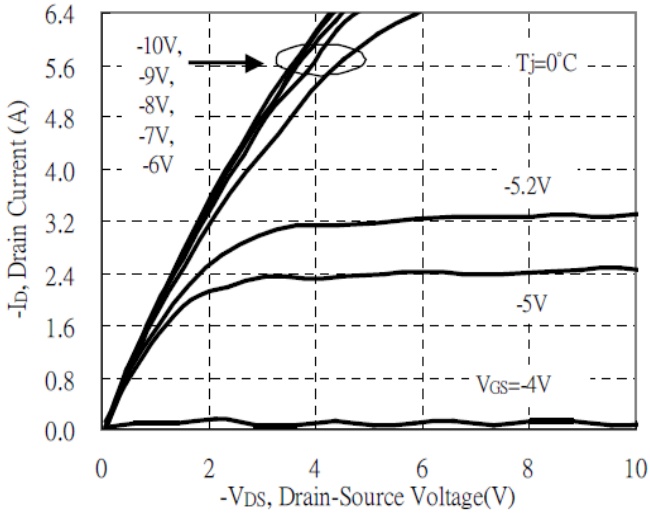
Notes:
1. Surface mounted on a 1 inch$^2$ FR-4 board with 2oz copper.
2. The power dissipation is limited by 150°C junction temperature.
3. The data tested by pulsed, pulse width≦ 300us, duty cycle≦ 2%.

## TYPICAL CHARACTERISTIC CURVES

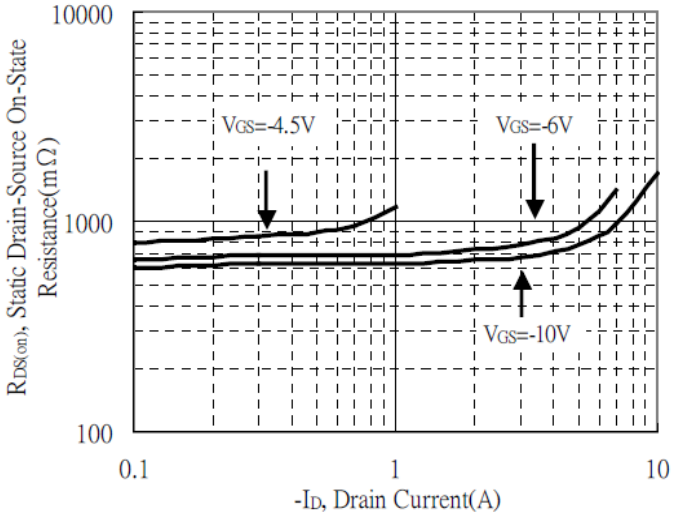
Typical Output Characteristics



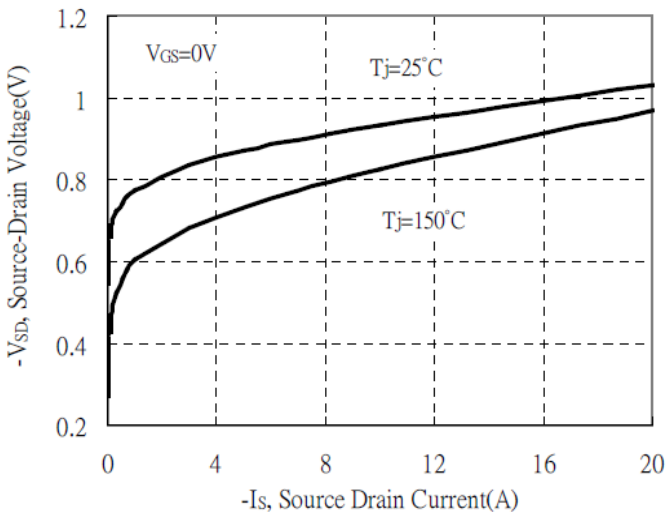

Typical Output Characteristics



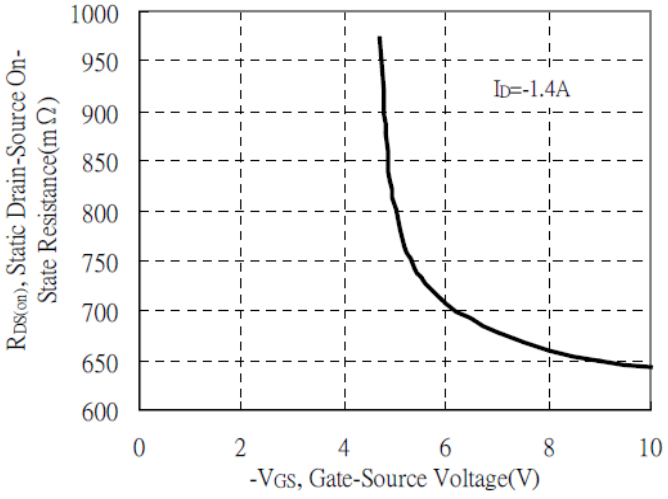

Static Drain-Source On-State resistance vs Drain Current



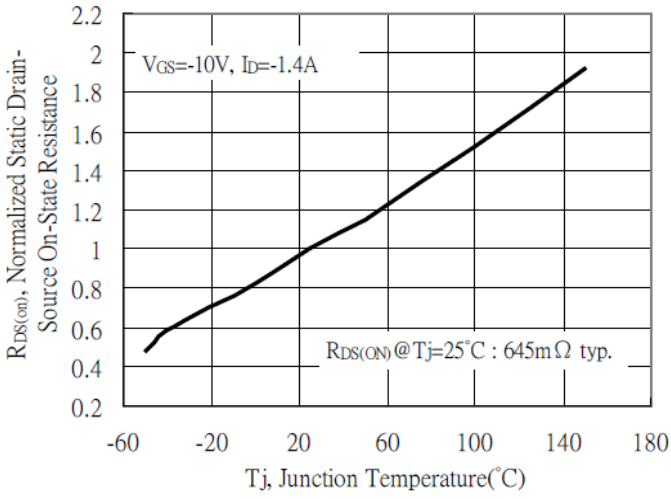

Source Drain Current vs Source-Drain Voltage




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

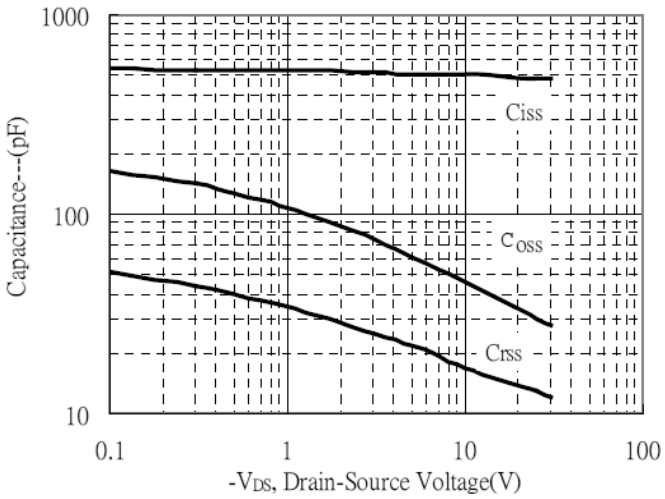



Normalized Drain-Source On-State Resistance vs Junction Tempearture

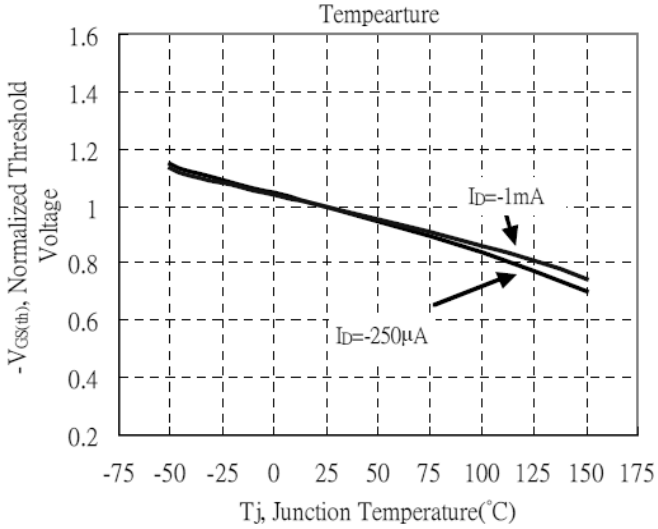


## TYPICAL CHARACTERISTIC CURVES

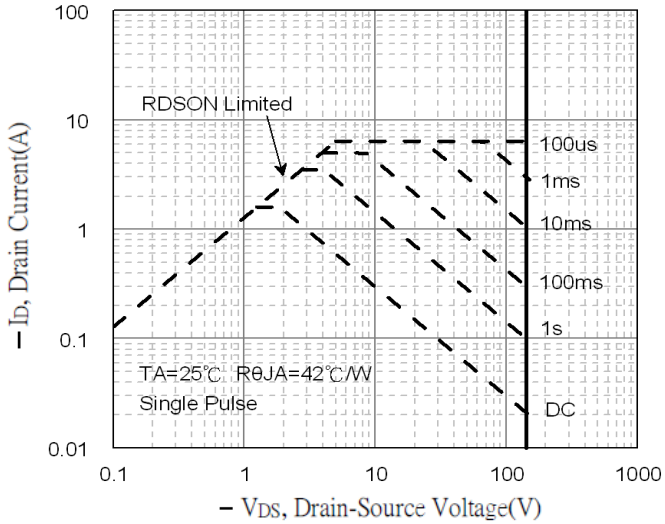
Capacitance vs Drain-to-Source Voltage



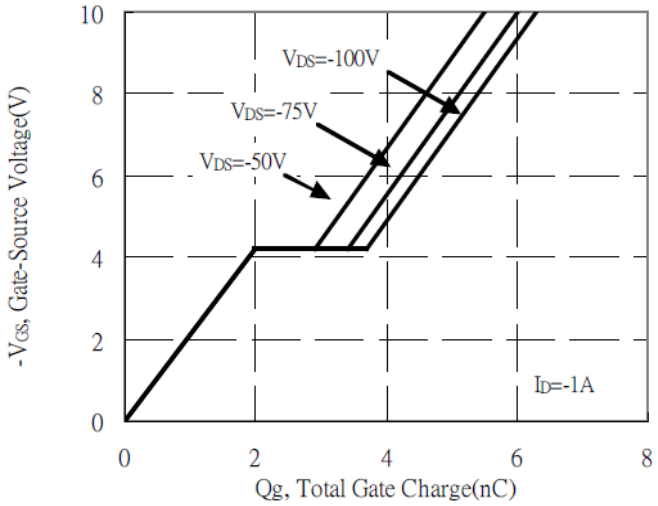

Normalized Threshold Voltage vs Junction Tempearture




Maximum Safe Operating Area




Gate Charge Characteristics




Transient Thermal Response Curves