# SSC8621GN6

## N and P-Channel Enhancement Mode Power MOSFET

### ➢ Features

**N-Channel**

| $V_{DS}$ | $V_{GS}$ | $R_{DS(ON)}$ Typ. | $I_D$ |
|---|---|---|---|
| 20V | ±12V | 10mΩ@4.5V | 55A |
| | | 12.5mΩ@2.5V | |

**P-Channel**

| $V_{DS}$ | $V_{GS}$ | $R_{DS(ON)}$ Typ. | $I_D$ |
|---|---|---|---|
| -20V | ±12V | 14mΩ@-4.5V | -47A |
| | | 19mΩ@-2.5V | |

### ➢ Description

The SSC8621GN6 uses advanced trench technology to provide excellent RDS(ON) and low gate charge. The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other applications.

***100% UIS + ΔVDS + Rg Tested!***

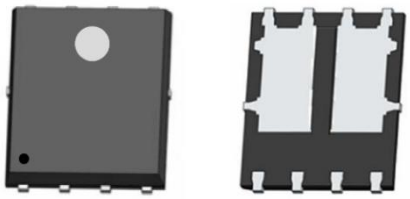
### ➢ Applications

- PWM Applications
- Load Switch
- DC-DC Converters
- Wireless Chargers

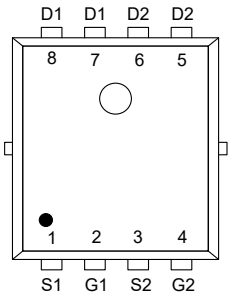
### ➢ Ordering Information

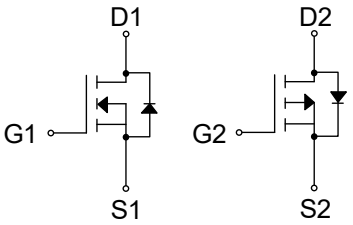
| Device | Package | Shipping |
|---|---|---|
| SSC8621GN6 | PDFN5X6-8L | 5000/Reel |

### ➢ Pin configuration



**PDFN5X6-8L**




**Pin Configuration (Top View)**


**Marking**

(XXYY: Internal Traceability Code)

## ➢ Absolute Maximum Ratings ($T_A$=25℃ unless otherwise noted)

| Symbol | Parameter | | N-Channel | P-Channel | Unit |
|---|---|---|---|---|---|
| $V_{DSS}$ | Drain-to-Source Voltage | | 20 | -20 | V |
| $V_{GSS}$ | Gate-to-Source Voltage | | ±12 | ±12 | V |
| $I_D$ | Continuous Drain Current [d] | $T_C$=25℃ | 55 | -47 | A |
| | | $T_C$=100℃ | 29 | -24 | |
| $I_{DSM}$ | Continuous Drain Current [a] | $T_A$=25℃ | 13 | -11 | A |
| | | $T_A$=70℃ | 9 | -8 | |
| $I_{DM}$ | Pulsed Drain Current [b] | | 220 | -188 | A |
| $P_D$ | Power Dissipation [c] | $T_C$=25℃ | 46 | 46 | W |
| | | $T_C$=100℃ | 18 | 18 | |
| $P_{DSM}$ | Power Dissipation [a] | $T_A$=25℃ | 2.6 | 2.6 | W |
| | | $T_A$=70℃ | 1.7 | 1.7 | |
| $I_{AS}$ | Avalanche Current [b] L=0.5mH Single Pulse | | 13.5 | -10 | A |
| $E_{AS}$ | Avalanche Energy [b] L=0.5mH Single Pulse | | 46 | 25 | mJ |
| $T_J$ | Operation junction temperature | | -55~150 | -55~150 | ℃ |
| $T_{STG}$ | Storage temperature range | | -55~150 | -55~150 | |

## ➢ Thermal Resistance Ratings ($T_A$=25℃ unless otherwise noted)

| Symbol | Parameter | Ratings | Max. | Unit |
|---|---|---|---|---|
| $R_{\theta JA}$ | Junction-to-Ambient Thermal Resistance [a] | 47 | 60 | ℃/W |
| $R_{\theta JC}$ | Junction-to-Case Thermal Resistance | 2.7 | 3.5 | |

Note:

a. The value of $R_{\theta JA}$ is measured with the device mounted on 1 $in^2$ FR-4 board with 2oz.copper, in a still air environment with $T_A$=25℃.The value in any given application depends on the user is specific board design. The power dissipation is based on the t≤10s thermal resistance rating.

b. Repetitive rating, pulse width limited by junction temperature.

c. The power dissipation $P_D$ is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.

d. The maximum current rating is package limited.

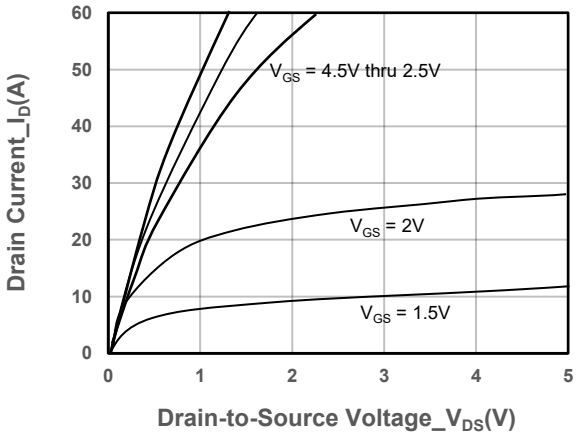
## ➢ N-Channel Electrical Characteristics ($T_A$=25℃ unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = 250uA | 20 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250uA | 0.45 | 0.8 | 1.5 | V |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$ = 4.5V, $I_D$ = 8A | | 10 | 13.5 | mΩ |
| | | $V_{GS}$ = 2.5V, $I_D$ = 8A | | 12.5 | 17 | |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 20V, $V_{GS}$ = 0V | | | -1 | μA |
| Gate-Source Leak Current | $I_{GSS}$ | $V_{GS}$ = ±12V, $V_{DS}$ = 0V | | | ±100 | nA |
| Transconductance | $G_{FS}$ | $V_{DS}$ = 5V, $I_D$ = 16A | | 15 | | s |
| Forward Voltage | $V_{SD}$ | $V_{GS}$ = 0V, $I_S$ = 1A | | 0.7 | 1.3 | V |
| Input Capacitance | $C_{ISS}$ | $V_{DS}$ = 10V, $V_{GS}$ = 0V, f = 1MHz | | 2035 | | pF |
| Output Capacitance | $C_{OSS}$ | | | 185 | | |
| Reverse Transfer Capacitance | $C_{RSS}$ | | | 170 | | |
| Total Gate Charge | $Q_G$ | $V_{GS}$ = 4.5V, $V_{DS}$ = 10V, $I_D$ = 10A | | 15 | | nC |
| Gate to Source Charge | $Q_{GS}$ | | | 1.9 | | |
| Gate to Drain Charge | $Q_{GD}$ | | | 2.7 | | |
| Turn-on Delay Time | $T_{D(ON)}$ | $V_{GS}$ = 4.5V, $V_{DS}$ = 10V, $R_L$ = 1Ω, $R_{GEN}$ = 3Ω, | | 7.5 | | ns |
| Rise Time | $T_r$ | | | 9 | | |
| Turn-off Delay Time | $T_{D(OFF)}$ | | | 18.2 | | |
| Fall Time | $T_f$ | | | 26 | | |

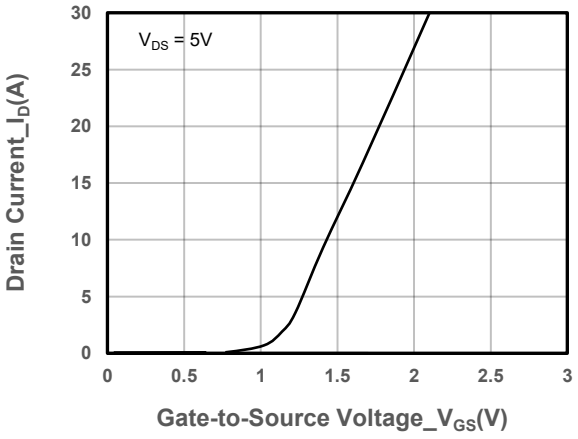
## ➢ P-Channel Electrical Characteristics ($T_A$=25℃ unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = -250uA | -20 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = -250uA | -0.45 | -0.8 | -1.5 | V |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$ = -4.5V, $I_D$ = -8A | | 14 | 19 | mΩ |
| | | $V_{GS}$ = -2.5V, $I_D$ = -8A | | 19 | 26 | |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = -20V, $V_{GS}$ = 0V | | | -1 | μA |
| Gate-Source Leak Current | $I_{GSS}$ | $V_{GS}$ = ±12V, $V_{DS}$ = 0V | | | ±100 | nA |
| Transconductance | $G_{FS}$ | $V_{DS}$ = -5V, $I_D$ = -8A | | 16 | | s |
| Forward Voltage | $V_{SD}$ | $V_{GS}$ = 0V, $I_S$ = -1A | | -0.7 | -1.3 | V |
| Input Capacitance | $C_{ISS}$ | $V_{DS}$ = -10V, $V_{GS}$ = 0V, f = 1MHz | | 2380 | | pF |
| Output Capacitance | $C_{OSS}$ | | | 196 | | |
| Reverse Transfer Capacitance | $C_{RSS}$ | | | 108 | | |
| Total Gate Charge | $Q_G$ | $V_{GS}$ = -4.5V, $V_{DS}$ = -10V, $I_D$ = -10A | | 18 | | nC |
| Gate to Source Charge | $Q_{GS}$ | | | 4 | | |
| Gate to Drain Charge | $Q_{GD}$ | | | 3.2 | | |
| Turn-on Delay Time | $T_{D(ON)}$ | $V_{GS}$ = -4.5V, $V_{DS}$ = -10V, $R_L$ = 1Ω, $R_{GEN}$ = 3Ω, | | 8 | | ns |
| Rise Time | $T_r$ | | | 36 | | |
| Turn-off Delay Time | $T_{D(OFF)}$ | | | 68 | | |
| Fall Time | $T_f$ | | | 70 | | |

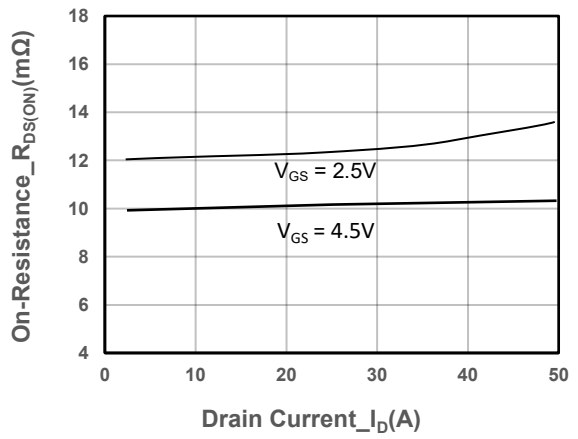
## ➢ N-Channel Typical Performance Characteristics ($T_A$=25℃ unless otherwise noted)



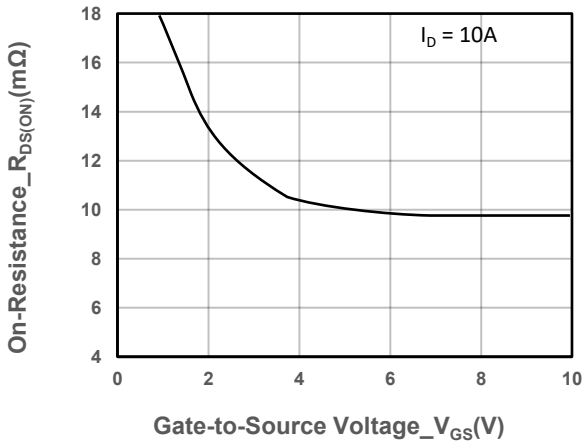

**Output Characteristics**



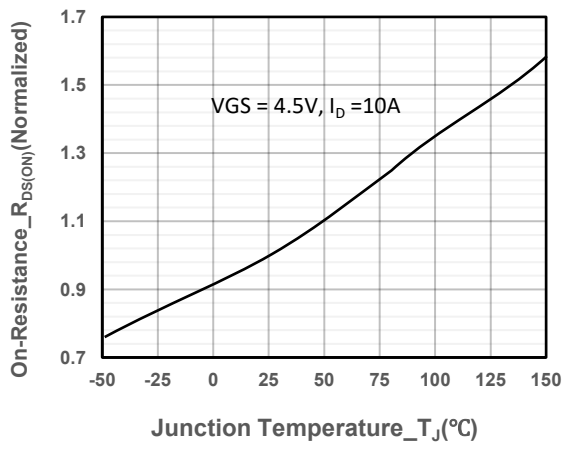

**Transfer Characteristics**



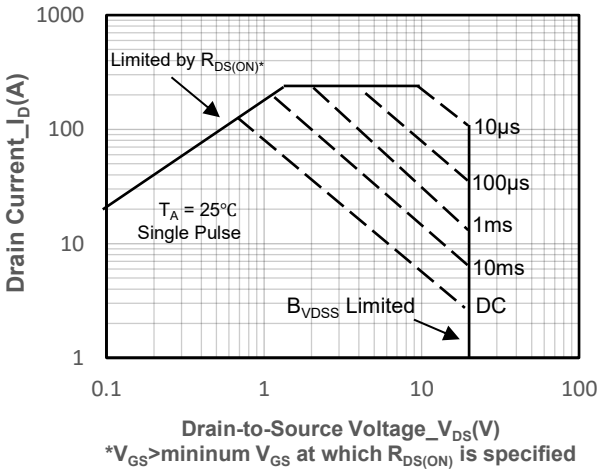

**On-Resistance vs. Drain Current and Gate Voltage**




**On-Resistance vs. Gate-to-Source Voltage**

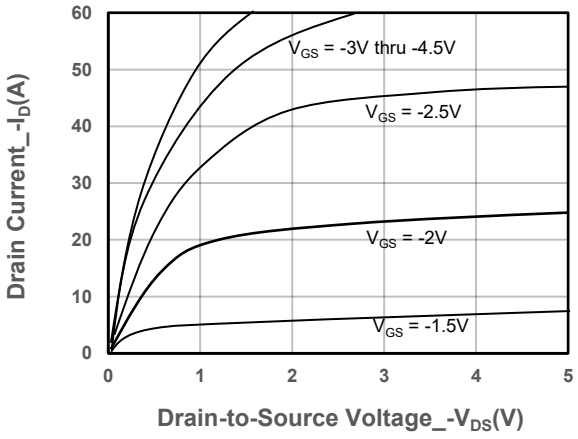



**On-Resistance vs. Junction Temperature**

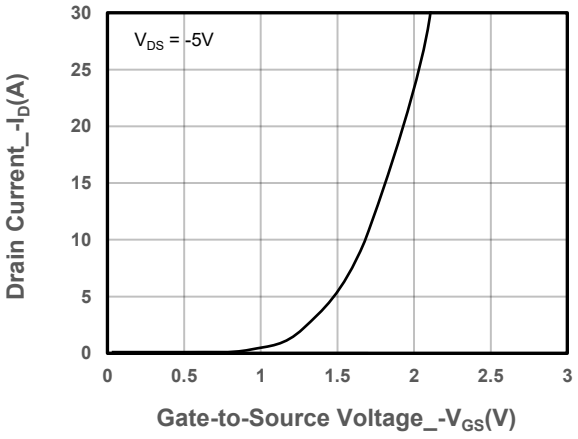



**Safe Operating Area vs. Junction-to-Ambient**

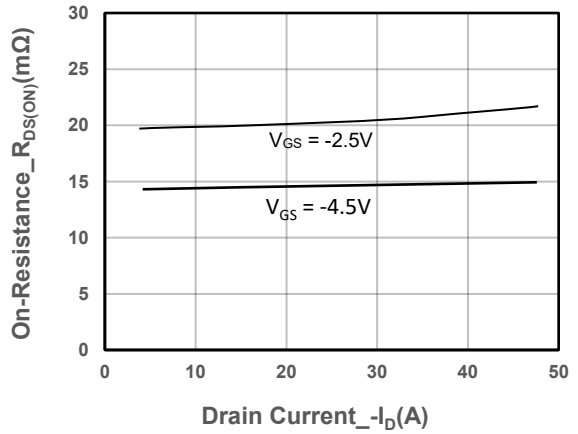
## ➢ P-Channel Typical Performance Characteristics ($T_A$=25℃ unless otherwise noted)



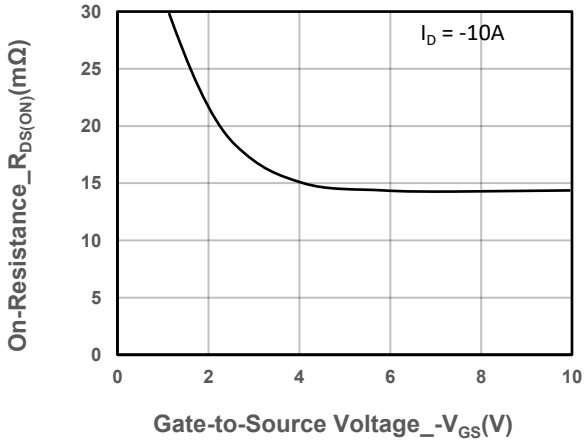

**Output Characteristics**



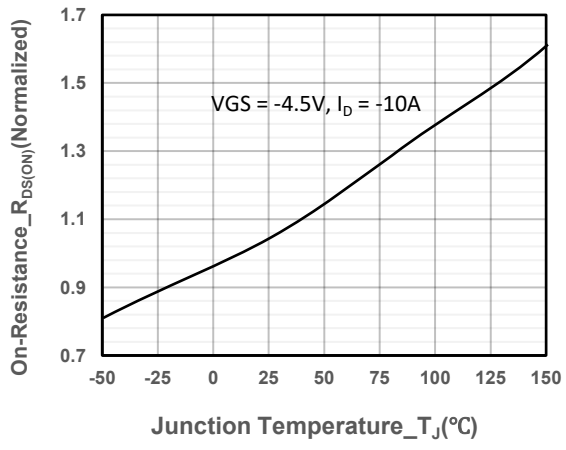

**Transfer Characteristics**



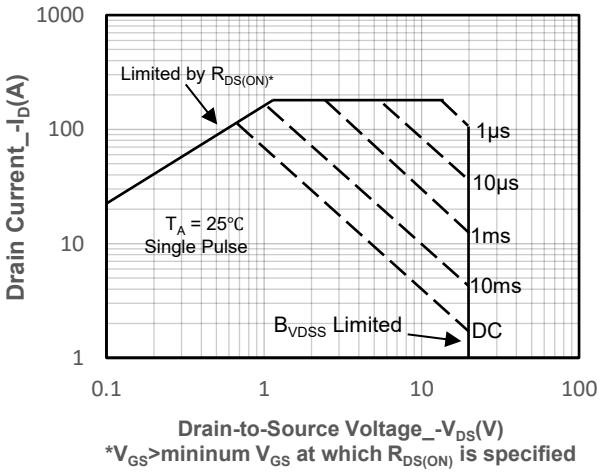

**On-Resistance vs. Drain Current and Gate Voltag**




**On-Resistance vs. Gate-to-Source Voltage**

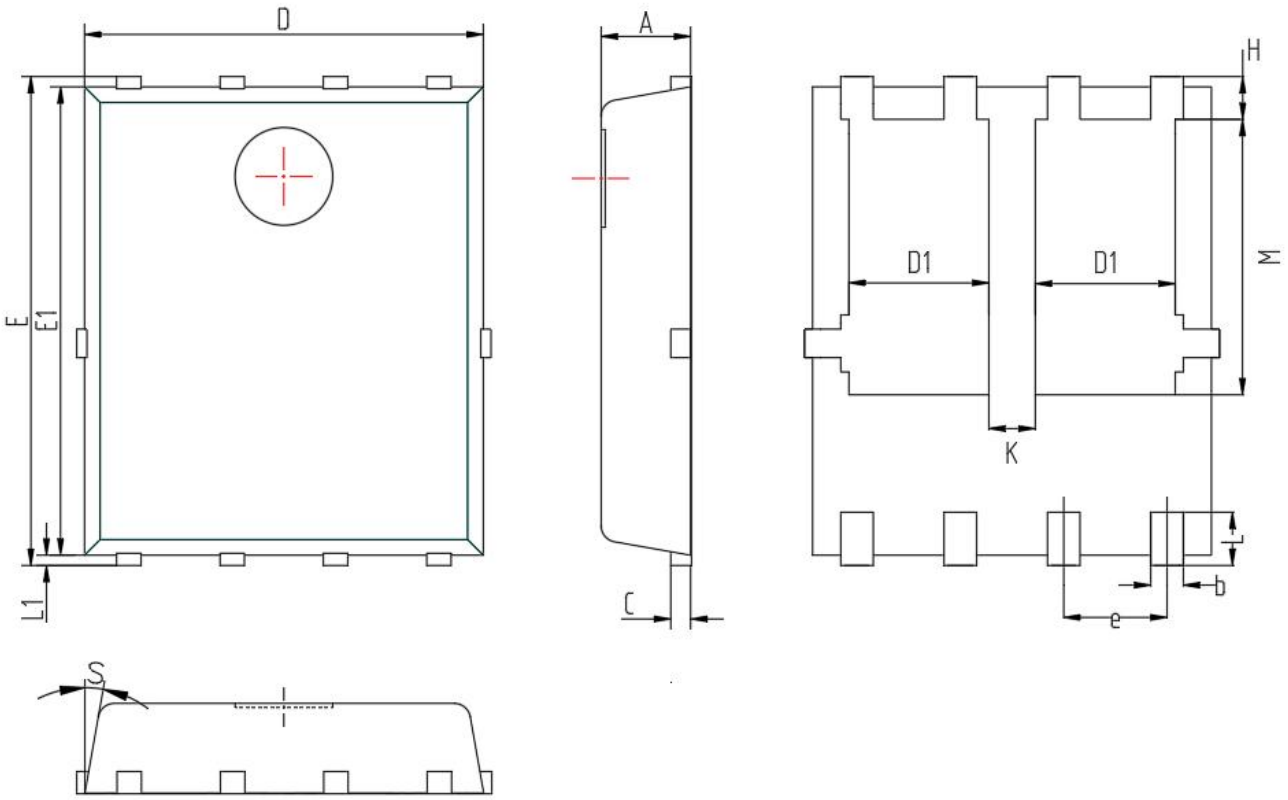



**On-Resistance vs. Junction Temperature**




**Safe Operating Area vs. Junction-to-Ambient**

## ➢ Package Information




| Symbol | MILL IMETER | | |
|---|---|---|---|
| | Min | Nom | Max |
| A | 0.9 | 1.10 | 1.20 |
| b | 0.25 | 0.30 | 0.5 |
| C | 0.20 | 0.25 | 0.35 |
| D | 4.80 | 5.00 | 5.20 |
| D1 | 1.50 | 1.70 | 1.80 |
| E | 5.90 | 6.00 | 6.30 |
| E1 | 5.60 | 5.75 | 5.90 |
| e | | 1.27 BSC | |
| H | 0.48 | 0.58 | 0.80 |
| K | 0.50 | 0.60 | 0.70 |
| L | 0.50 | 0.60 | 0.84 |
| L1 | 0.10 | 0.15 | 0.30 |
| M | 3.30 | 3.48 | 3.67 |
| S | | 12° BSC | |

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