



## SSC8019GN2

### P-Channel Enhancement Mode MOSFET

#### ➤ Features

| $V_{DS}$ | $V_{GS}$  | $R_{DS(ON)}$ Typ.  | $I_D$ |
|----------|-----------|--------------------|-------|
| -16V     | $\pm 12V$ | 15m $\Omega$ @-4V5 | -12A  |
|          |           | 20m $\Omega$ @-2V5 |       |

#### ➤ Description

This device is produced with high cell density DMOS trench technology, which is especially used to minimize on-state resistance. This device particularly suits low voltage applications such as portable equipment, power management and other battery powered circuits, and low in-line power dissipation are needed in a very small outline surface mount package.

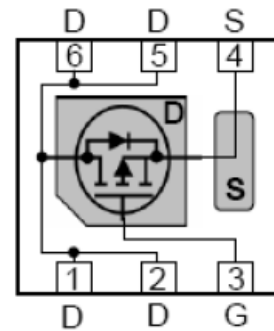
#### ➤ Applications

- Load Switch
- Portable Devices
- DCDC Conversion
- Charging

#### ➤ Ordering Information

| Device     | Package    | Shipping  |
|------------|------------|-----------|
| SSC8019GN2 | DFN2020-6L | 3000/Reel |

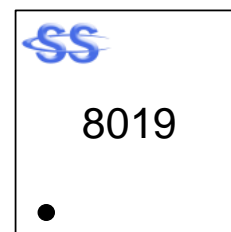
#### ➤ Pin Configuration



**DFN2020-6L (Top View)**



**Bottom View**



**Marking**



➤ **Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

| Symbol    | Parameter                             | Ratings                 | Unit |
|-----------|---------------------------------------|-------------------------|------|
| $V_{DS}$  | Drain-to-Source Voltage               | -16                     | V    |
| $V_{GS}$  | Gate-to-Source Voltage                | $\pm 12$                | V    |
| $I_D$     | Continuous Drain Current <sup>d</sup> | $T_C=25^\circ\text{C}$  | -12  |
|           |                                       | $T_C=100^\circ\text{C}$ | -6.6 |
| $I_{DM}$  | Pulsed Drain Current <sup>b</sup>     | -46                     | A    |
| $P_D$     | Power Dissipation <sup>c</sup>        | $T_C=25^\circ\text{C}$  | 3.9  |
|           |                                       | $T_C=100^\circ\text{C}$ | 1.6  |
| $T_J$     | Operation junction temperature        | -55~150                 | °C   |
| $T_{STG}$ | Storage temperature range             | -55~150                 |      |

➤ **Thermal Resistance Ratings ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

| Symbol          | Parameter   | Maximum | Unit |
|-----------------|---|---------|------|
| $R_{\theta JA}$ | Junction-to-Ambient Thermal Resistance <sup>a</sup> | 32      | °C/W |

Note:

- The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz.copper, in a still air environment with  $T_A=25^\circ\text{C}$ . The value in any given application depends on the user is specific board design. The power dissipation is based on the  $t \leq 10\text{s}$  thermal resistance rating.
- Repetitive rating, pulse width limited by junction temperature.
- The power dissipation  $P_D$  is based on  $T_{J(\text{MAX})}=150^\circ\text{C}$ , using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.
- The maximum current rating is package limited.

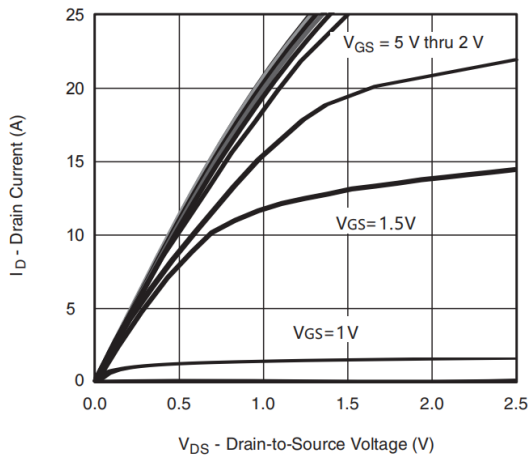


➤ **Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

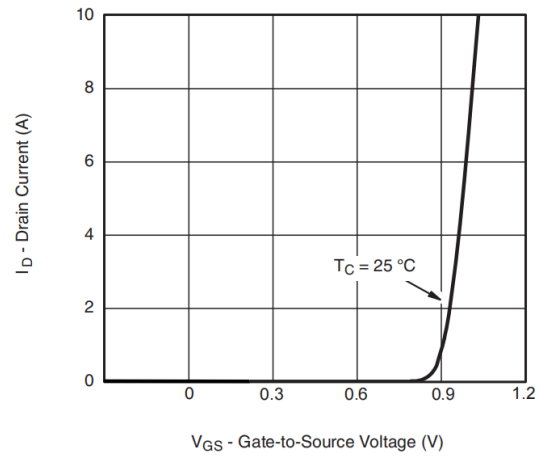
| Parameter                       | Symbol               | Test Conditions   | Min. | Typ.  | Max. | Unit |
|---------------------------------|----------------------|---|------|-------|------|------|
| Drain-Source Breakdown Voltage  | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA   | -16  |       |      | V    |
| Gate Threshold Voltage          | V <sub>GS(th)</sub>  | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA   | -0.4 | -0.65 | -1   | V    |
| Drain-Source On-Resistance      | R <sub>DS(on)</sub>  | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -4.1A   |      | 15    | 25   | mΩ   |
|                                 |                      | V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -3A   |      | 20    | 30   |      |
| Zero Gate Voltage Drain Current | I <sub>DSS</sub>     | V <sub>DS</sub> = -12V, V <sub>GS</sub> = 0V  |      |       | -1   | μA   |
| Gate-Source Leak Current        | I <sub>GSS</sub>     | V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V  |      |       | ±100 | nA   |
| Transconductance                | G <sub>FS</sub>      | V <sub>DS</sub> = -10V, I <sub>D</sub> = -1A  |      | 10    |      | s    |
| Forward Voltage                 | V <sub>SD</sub>      | V <sub>GS</sub> = 0V, I <sub>S</sub> = -1A  |      |       | -1.3 | V    |
| Input Capacitance               | C <sub>ISS</sub>     | V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V,<br>f = 1MHz   |      | 1850  |      | pF   |
| Output Capacitance              | C <sub>OSS</sub>     |   |      | 190   |      |      |
| Reverse Transfer Capacitance    | C <sub>RSS</sub>     |   |      | 170   |      |      |
| Total Gate Charge               | Q <sub>G</sub>       | V <sub>GS</sub> = -4.5V, V <sub>DS</sub> = -10V,<br>I <sub>D</sub> = -5A  |      | 16    |      | nC   |
| Gate to Source Charge           | Q <sub>GS</sub>      |   |      | 3     |      |      |
| Gate to Drain Charge            | Q <sub>GD</sub>      |   |      | 4     |      |      |
| Turn-on Delay Time              | T <sub>D(ON)</sub>   | V <sub>GS</sub> = -4.5V, V <sub>DS</sub> = -10V,<br>R <sub>L</sub> = 6Ω, R <sub>G</sub> = 3Ω,<br>I <sub>D</sub> = -1A |      | 31    |      | ns   |
| Rise Time                       | T <sub>r</sub>       |   |      | 27    |      |      |
| Turn-off Delay Time             | T <sub>D(OFF)</sub>  |   |      | 125   |      |      |
| Fall Time                       | T <sub>f</sub>       |   |      | 83    |      |      |



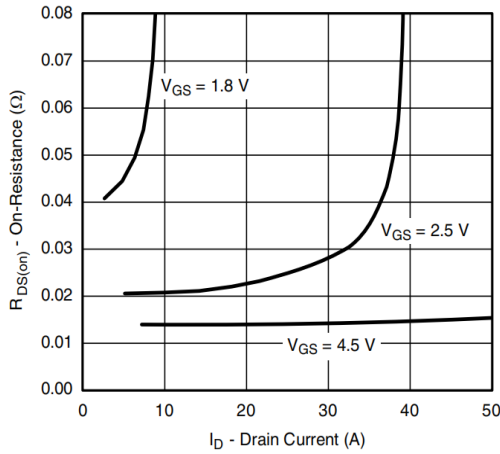
## ➤ Typical Performance Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)



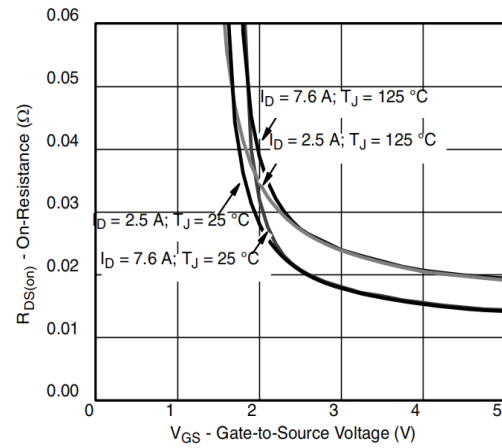
**Output Characteristics**



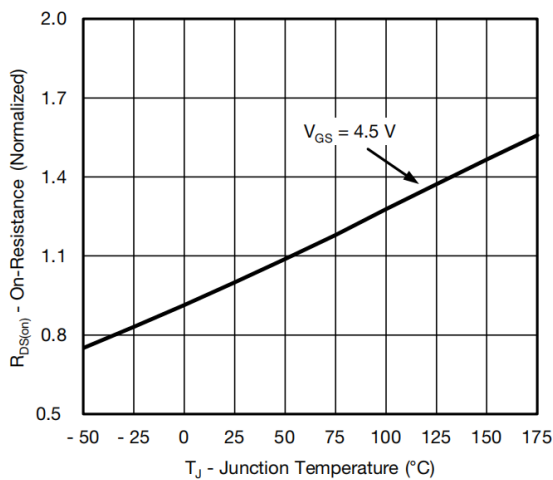
**Transfer Characteristics**



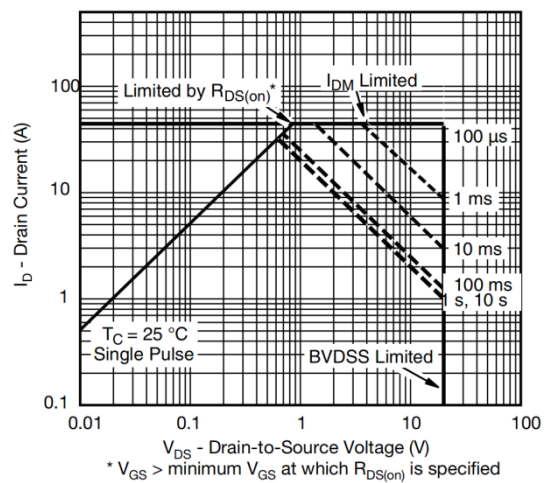
**On-Resistance vs. Drain Current**



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

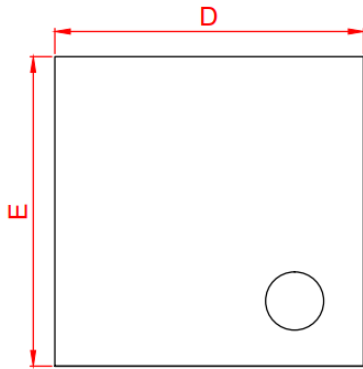


**On-Resistance vs. Junction Temperature**

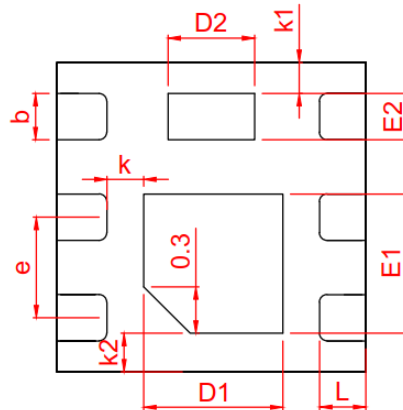


**Safe Operating Area**

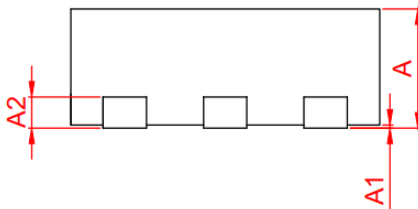
## ➤ Package Information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

| SYMBOL | MILLIMETER |      |      |
|--------|------------|------|------|
|        | MIN        | NOM  | MAX  |
| A      | 0.50       | 0.55 | 0.60 |
| * A1   | 0.00       | 0.02 | 0.05 |
| * b    | 0.25       | 0.30 | 0.35 |
| * A2   | 0.152 BSC  |      |      |
| * D    | 1.95       | 2.00 | 2.05 |
| * E    | 1.95       | 2.00 | 2.05 |
| * E1   | 0.80       | 0.90 | 1.00 |
| * E2   | 0.25       | 0.30 | 0.35 |
| * D1   | 0.80       | 0.90 | 1.00 |
| * D2   | 0.46       | 0.56 | 0.66 |
| * e    | 0.65 REF   |      |      |
| * L    | 0.25       | 0.30 | 0.35 |
| * K    | 0.20       | 0.25 | 0.30 |
| * K1   | 0.15       | 0.20 | 0.25 |
| * K2   | 0.20       | 0.25 | 0.30 |

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