



# SSC8129GS1

## P-Channel Enhancement Mode MOSFET

### ➤ Features

| VDS  | VGS  | RDS(on) Typ. | ID   |
|------|------|--------------|------|
| -20V | ±12V | 11mR@-4V5    | -15A |
|      |      | 13mR@-2V5    |      |

### ➤ Description

This device is produced with high cell density, DMOS trench technology, which is especially used to minimize on-state resistance. This device is particularly suited for low voltage power management requiring a wide range of given voltage ratings(4.5V-25V) such as load switch and battery protection.

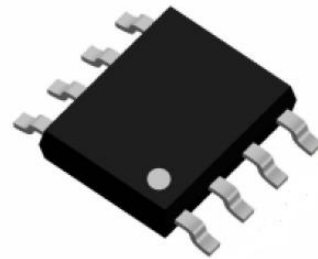
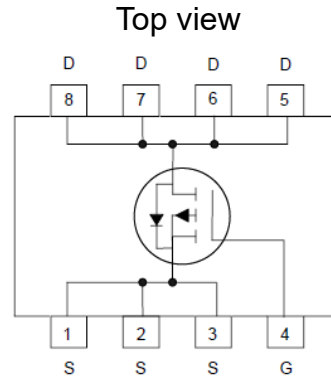
### ➤ Applications

- Load Switch
- NB battery
- DCDC conversion

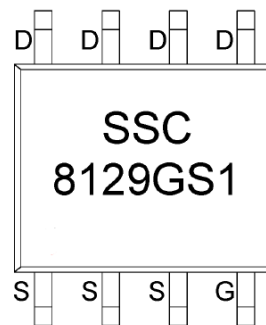
### ➤ Ordering Information

| Device     | Package | Shipping  |
|------------|---------|-----------|
| SSC8129GS1 | SOP8    | 2500/Reel |

### ➤ Pin configuration



SOP8



Marking



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

| Symbol    | Parameter                             | Ratings    | Unit               |
|-----------|---------------------------------------|------------|--------------------|
| $V_{DSS}$ | Drain-to-Source Voltage               | -20        | V                  |
| $V_{GSS}$ | Gate-to-Source Voltage                | $\pm 12$   | V                  |
| $I_D$     | Continuous Drain Current <sup>a</sup> | -15        | A                  |
| $I_{DM}$  | Pulsed Drain Current <sup>b</sup>     | -41        | A                  |
| $P_D$     | Power Dissipation <sup>c</sup>        | 5.5        | W                  |
| $P_{DSM}$ | Power Dissipation <sup>a</sup>        | 2.5        | W                  |
| $T_J$     | Operation junction temperature        | -55 to 150 | $^{\circ}\text{C}$ |
| $T_{STG}$ | Storage temperature range             | -55 to 150 | $^{\circ}\text{C}$ |

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

| Symbol          | Parameter   | Typical | Maximum | Unit                        |
|-----------------|---|---------|---------|-----------------------------|
| $R_{\theta JA}$ | Junction-to-Ambient Thermal Resistance <sup>a</sup> |         | 55      | $^{\circ}\text{C}/\text{W}$ |
| $R_{\theta JC}$ | Junction-to-Case Thermal Resistance                 |         | 25      |                             |

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 current rating 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  $T_{J(MAX)}=150^{\circ}\text{C}$ , using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.

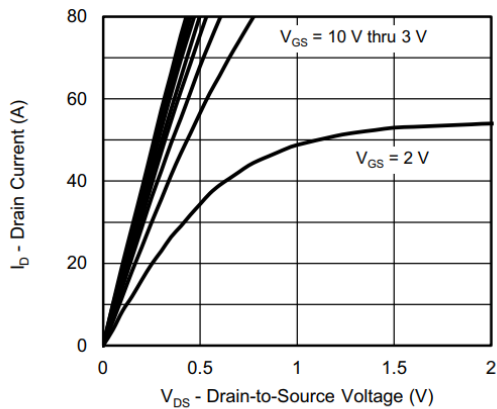


➤ **Electronics Characteristics**( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

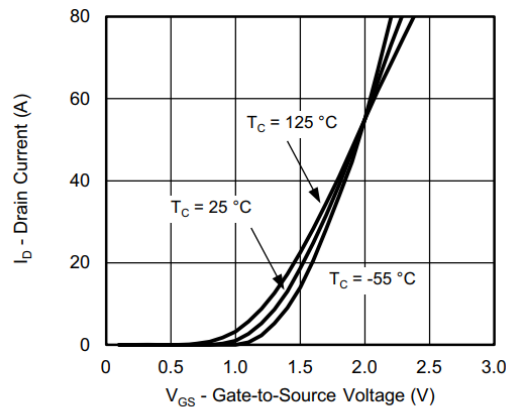
| Symbol        | Parameter                          | Test Conditions  | Min  | Typ. | Max       | Unit    |
|---------------|------------------------------------|--|------|------|-----------|---------|
| $V_{(BR)DSS}$ | Drain-Source<br>Breakdown Voltage  | $V_{GS}=0V, I_D=-250\mu A$                             | -20  |      |           | V       |
| $V_{GS(th)}$  | Gate Threshold<br>Voltage          | $V_{DS}=V_{GS}, I_D=-250\mu A$                         | -0.5 | -0.7 | -1        | V       |
| $R_{DS(on)}$  | Drain-Source On-<br>Resistance     | $V_{GS}=-4.5V, I_D=-10A$                               |      | 11   | 13        | mR      |
|               |                                    | $V_{GS}=-2.5V, I_D=-7A$                                |      | 13   | 16        |         |
| $I_{DSS}$     | Zero Gate Voltage<br>Drain Current | $V_{DS}=-16V, V_{GS}=0V$                               |      |      | -1        | $\mu A$ |
| $I_{GSS}$     | Gate-Source leak<br>current        | $V_{GS}=\pm 12V, V_{DS}=0V$                            |      |      | $\pm 100$ | nA      |
| $G_{FS}$      | Trans conductance                  | $V_{DS}=-5V, I_D=-10A$                                 |      | 18   |           | S       |
| $V_{SD}$      | Forward Voltage                    | $V_{GS}=0V, I_S=-2.3A$                                 |      | -0.7 | -1.3      | V       |
| $C_{iss}$     | Input Capacitance                  | $V_{DS}=-15V, V_{GS}=0V,$<br>$f=1MHz$                  |      | 1820 |           | pF      |
| $C_{oss}$     | Output Capacitance                 |  |      | 489  |           |         |
| $C_{rss}$     | Reverse Transfer<br>Capacitance    |  |      | 663  |           |         |
| $Q_g$         | Total Gate charge                  | $V_{GS}=-4.5V, V_{DS}=-15V,$<br>$I_D=-7A$              |      | 22   |           | nC      |
| $Q_{gs}$      | Gate to Source<br>charge           |  |      | 2.5  |           |         |
| $Q_{gd}$      | Gate to Drain<br>charge            |  |      | 6    |           |         |
| $T_{D(ON)}$   | Turn-on delay time                 | $V_{GS}=-10V,$<br>$V_{DS}=-15V, R_L=1.5R,$<br>$R_G=3R$ |      | 11   |           | ns      |
| $T_r$         | Rise time                          |  |      | 22   |           |         |
| $T_{D(OFF)}$  | Turn-off delay time                |  |      | 51   |           |         |
| $T_f$         | Fall time                          |  |      | 24   |           |         |



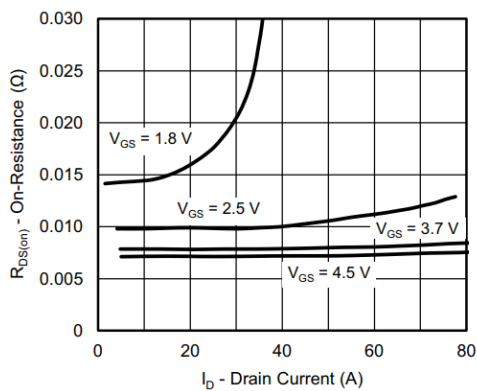
➤ **Typical Characteristics** ( $T_A=25^\circ\text{C}$  unless otherwise noted)



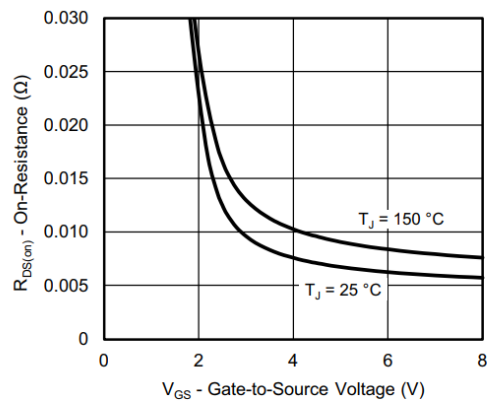
**Output Characteristics**



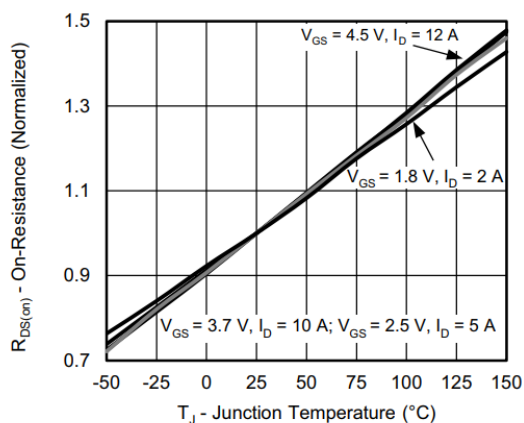
**Transfer Characteristics**



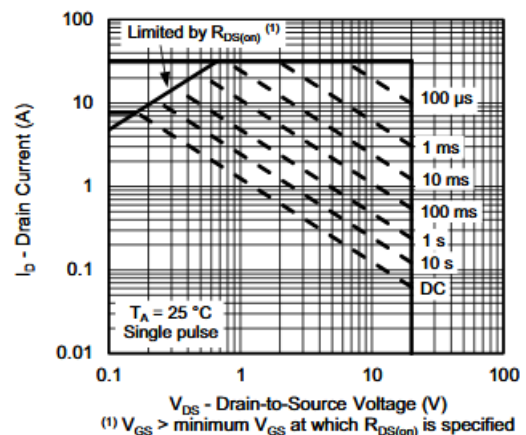
**On-Resistance vs. Drain Current and Gate Voltage**



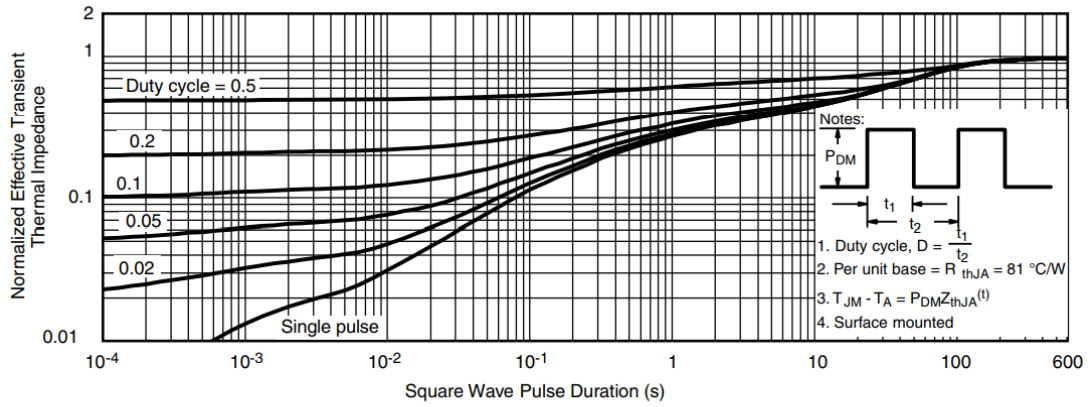
**On-Resistance vs. Gate-to-Source Voltage**



**On-Resistance vs. Junction Temperature**



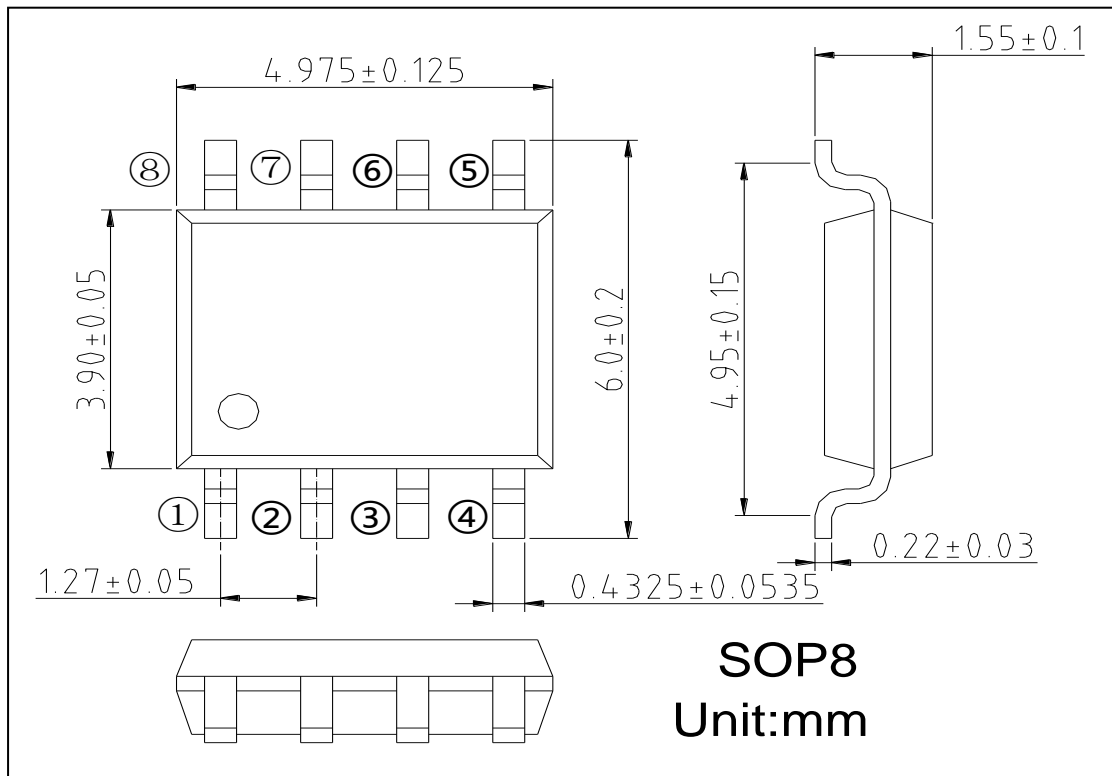
**Safe Operating Area, Junction-to-Ambient**



Normalized Thermal Transient Impedance, Junction-to-Ambient



➤ Package Information



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