# SSC8031GQ4

## P-Channel Enhancement Mode MOSFET

### ➢ Features

| VDS | VGS | RDSON Typ. | ID |
|---|---|---|---|
| -30V | ±20V | 10mR@-10V | -29A |
| | | 14mR@-4V5 | |

### ➢ 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 wild range of given voltage ratings(4.5V~25V) such as load switch and battery protection.

### ➢ Applications

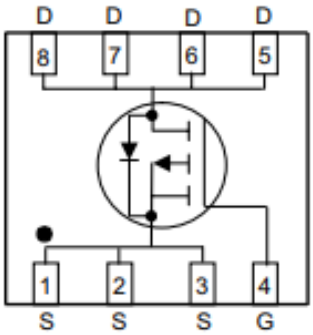
- Load Switch
- NB battery
- DCDC conversion

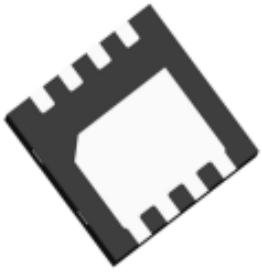
### ➢ Ordering Information

| Device | Package | Shipping |
|---|---|---|
| SSC8031GQ4 | DFN3x3 | 5000/Reel |

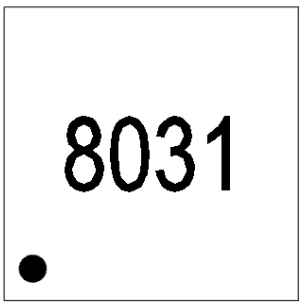
### ➢ Pin configuration

Top view



Bottom View




Marking

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

| Symbol | Parameter | Ratings | Unit |
|---|---|---|---|
| $V_{DSS}$ | Drain-to-Source Voltage | -30 | V |
| $V_{GSS}$ | Gate-to-Source Voltage | ±20 | V |
| $I_D$ | Continuous Drain Current [a] | -29 | A |
| $I_{DM}$ | Pulsed Drain Current [b] | -85 | A |
| $P_D$ | Power Dissipation [c] | 27 | W |
| $P_{DSM}$ | Power Dissipation [a] | 3.5 | W |
| $T_J$ | Operation junction temperature | -55 to 150 | ℃ |
| $T_{STG}$ | Storage temperature range | -55 to 150 | ℃ |

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

| Symbol | Parameter | Typical | Maximum | Unit |
|---|---|---|---|---|
| $R_{\theta JA}$ | Junction-to-Ambient Thermal Resistance [a] | | 39 | ℃/W |
| $R_{\theta JC}$ | Junction-to-Case Thermal Resistance | | 4.8 | |

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 current rating is based on the t≤ 10s thermal resistance rating.

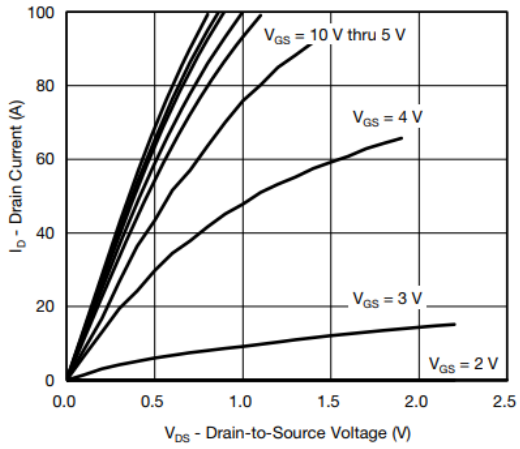
b. Repetitive rating, pulse width limited by junction temperature.

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.

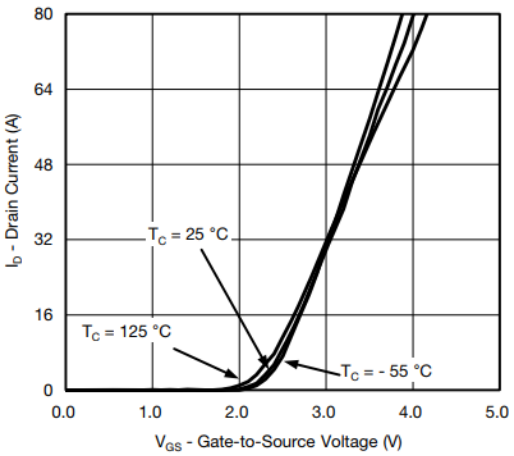
## ➢ Electronics Characteristics($T_A$=25℃ unless otherwise noted)

| Symbol | Parameter | Test Conditions | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | VGS=0V , ID=-250uA | -30 | | | V |
| $V_{GS\ (th)}$ | Gate Threshold Voltage | VDS=VGS , ID=-250uA | -1 | -1.6 | -3 | V |
| $R_{DS(on)}$ | Drain-Source On-Resistance | VGS=-10V , ID=-10A | | 10 | 12 | mR |
| | | VGS=-4.5V , ID=-7A | | 14 | 16 | |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | VDS=-30V , VGS=0V | | | -1 | uA |
| $I_{GSS}$ | Gate-Source leak current | VGS=±20V , VDS=0V | | | ±100 | nA |
| $G_{FS}$ | Transconductance | VDS=-5V , ID=-10A | | 18 | | S |
| $V_{SD}$ | Forward Voltage | VGS=0V , IS=-1A | | -0.75 | -1.6 | V |
| Ciss | Input Capacitance | VDS=-20V , VGS=0V , f=1MHz | | 2000 | | pF |
| Coss | Output Capacitance | | | 550 | | |
| Crss | Reverse Transfer Capacitance | | | 800 | | |
| Qg | Total Gate charge | VGS=-4.5V , VDS=-15V, ID=-7A | | 24 | | nC |
| Qgs | Gate to Source charge | | | 8 | | |
| Qgd | Gate to Drain charge | | | 12 | | |
| $T_{D(ON)}$ | Turn-on delay time | VGS=-10V, VDS=-15V, RL=1.5R, RG=3R | | 8.6 | | ns |
| Tr | Rise time | | | 7 | | |
| $T_{D(OFF)}$ | Turn-off delay time | | | 39 | | |
| Tf | Fall time | | | 10 | | |

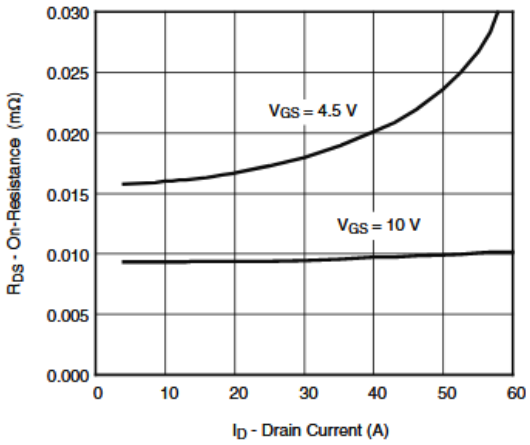
## ➢ Typical Characteristics($T_A$=25℃ unless otherwise noted)



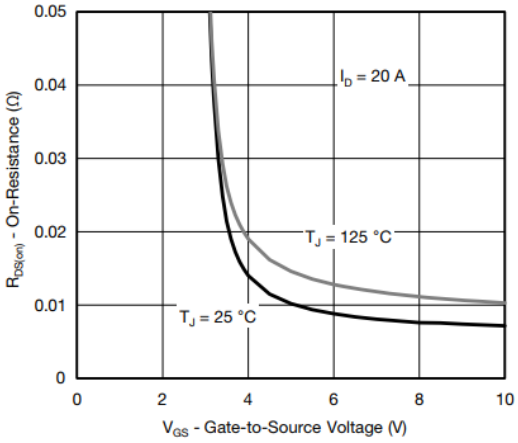

**Output Characteristics**



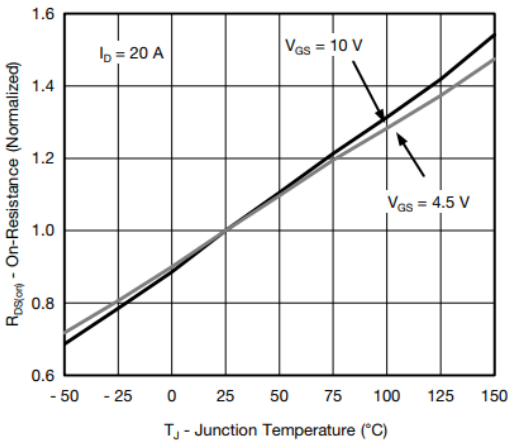

**Transfer Characteristics**



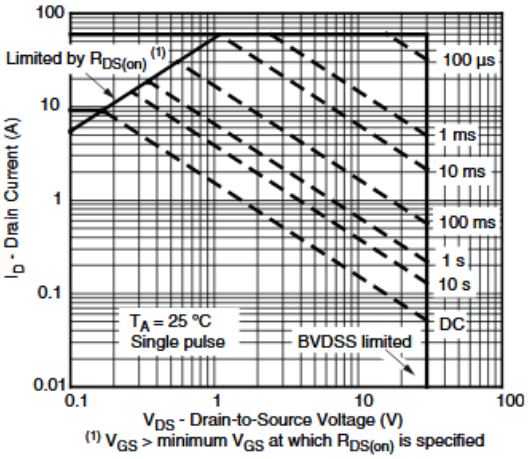

**On-Resistance vs. Drain Current and Gate Voltage**



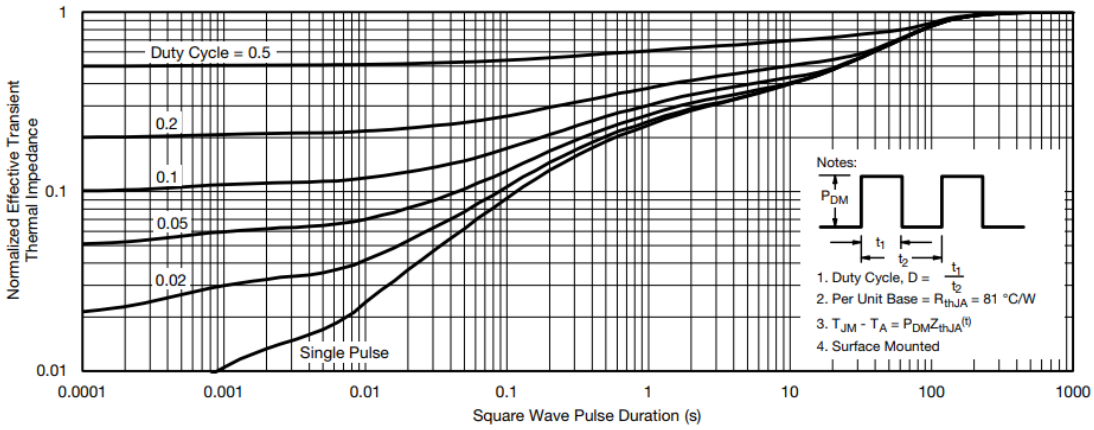

**On-Resistance vs. Gate-to-Source Voltage**




**On-Resistance vs. Junction Temperature**

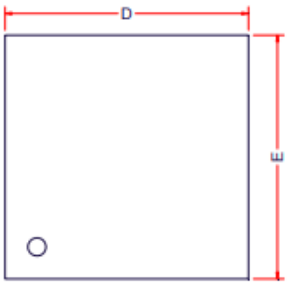



**Safe Operating Area, Junction-to-Ambient**

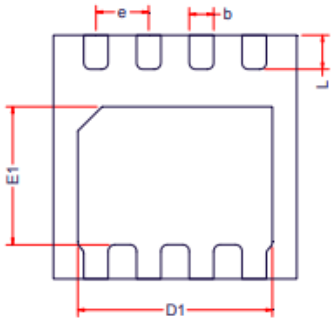



**Normalized Thermal Transient Impedance, Junction-to-Ambient**

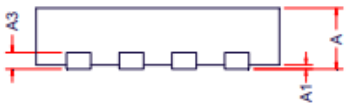
## ➢ Package Information




TOP VIEW




BOTTOM VIEW




SIDE VIEW

DFN3x3-8L

| Symbol | Dimensions in Millimeters | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | 0.70 | 0.75 | 0.80 |
| A1 | 0.00 | 0.02 | 0.05 |
| A2 | | 0.20Ref | |
| D | 2.90 | 3.00 | 3.10 |
| E | 2.90 | 3.00 | 3.10 |
| D1 | 2.35 | 2.40 | 2.45 |
| E1 | 1.65 | 1.70 | 1.75 |
| b | 0.25 | 0.30 | 0.35 |
| e | | 0.65BSC | |
| L | 0.37 | 0.42 | 0.47 |

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