



## SSC8041GN4

### P-Channel Enhancement Mode MOSFET

#### ➤ Features

| V <sub>DS</sub> | V <sub>GS</sub> | R <sub>DS(ON)</sub> | I <sub>D</sub> |
|-----------------|-----------------|---------------------|----------------|
| -40V            | ±20V            | 9mΩ@-10V            | -36A           |
|                 |                 | 16mΩ@-4V5           |                |

#### ➤ Description

This SSC8041GN4 uses advanced trench technology to provide excellent RDSON 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!**

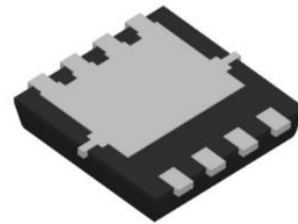
#### ➤ Applications

- Load Switch
- PWM Application
- Power Management

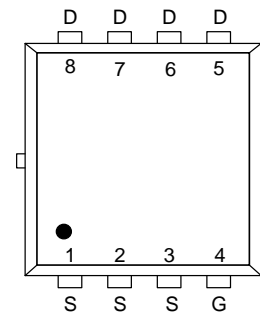
#### ➤ Ordering Information

| Device     | Package        | Shipping  |
|------------|----------------|-----------|
| SSC8041GN4 | PDFN3.3X3.3-8L | 5000/Reel |

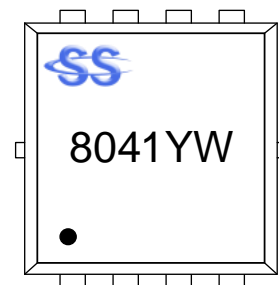
#### ➤ Pin configuration



**PDFN3.3X3.3-8L (Bottom View)**



**Pin Configuration (Top View)**



#### **Marking**

(YW: Internal Traceability Code)



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

| Symbol    | Parameter  | Ratings                 | Unit             |
|-----------|--|-------------------------|------------------|
| $V_{DSS}$ | Drain-to-Source Voltage                                      | -40                     | V                |
| $V_{GSS}$ | Gate-to-Source Voltage                                       | $\pm 20$                | V                |
| $I_D$     | Continuous Drain Current <sup>d</sup>                        | $T_C=25^\circ\text{C}$  | -36              |
|           |  | $T_C=100^\circ\text{C}$ | -20.4            |
| $I_{DSM}$ | Continuous Drain Current <sup>a</sup>                        | $T_A=25^\circ\text{C}$  | -14              |
|           |  | $T_A=70^\circ\text{C}$  | -10.7            |
| $I_{DM}$  | Pulsed Drain Current <sup>b</sup>                            | -144                    | A                |
| $P_D$     | Power Dissipation <sup>c</sup>                               | $T_C=25^\circ\text{C}$  | 21               |
|           |  | $T_C=100^\circ\text{C}$ | 8.3              |
| $P_{DSM}$ | Power Dissipation <sup>a</sup>                               | $T_A=25^\circ\text{C}$  | 3.13             |
|           |  | $T_A=70^\circ\text{C}$  | 2                |
| $I_{AS}$  | Avalanche Current <sup>b</sup> $L=0.5\text{mH}$ Single Pulse | -17                     | A                |
| $E_{AS}$  | Avalanche Energy <sup>b</sup> $L=0.5\text{mH}$ Single Pulse  | 72.3                    | mJ               |
| $T_J$     | Operation junction temperature                               | -55~150                 | $^\circ\text{C}$ |
| $T_{STG}$ | Storage temperature range                                    | -55~150                 |                  |

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

| Symbol          | Parameter   | Ratings | Unit               |
|-----------------|---|---------|--------------------|
| $R_{\theta JA}$ | Junction-to-Ambient Thermal Resistance <sup>a</sup> | 40      | $^\circ\text{C/W}$ |
| $R_{\theta JC}$ | Junction-to-Case Thermal Resistance                 | 6       |                    |

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  $T_{J(MAX)}=150^\circ\text{C}$ , 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.

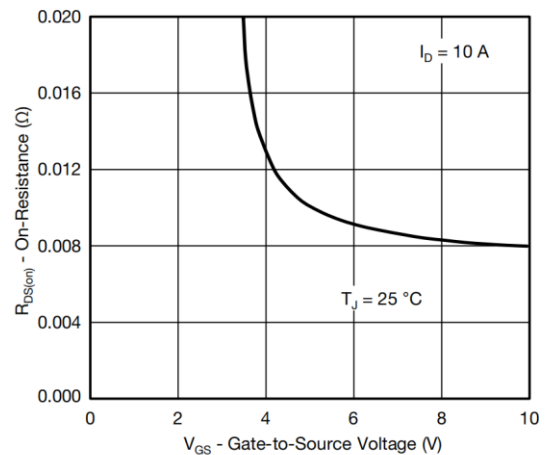
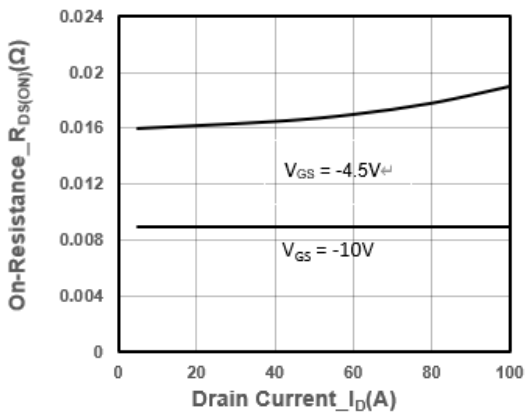
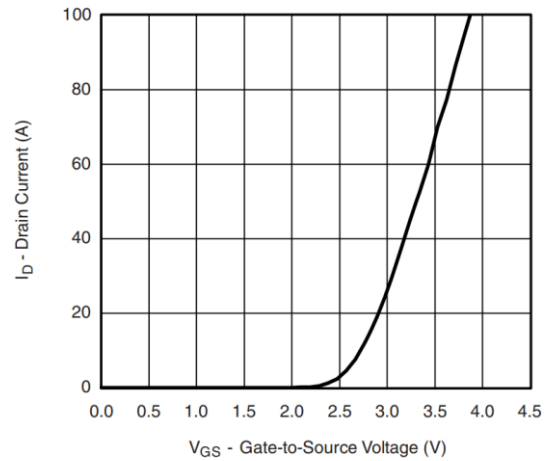
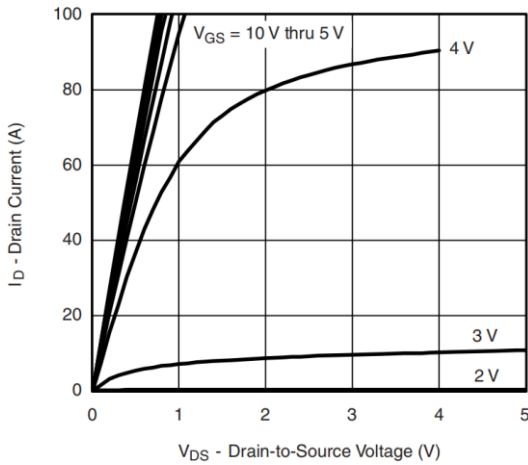


➤ **Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

| 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   | -40  |      |      | V    |
| Gate Threshold Voltage          | V <sub>GS(th)</sub>  | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250uA                                   | -1.2 | -2.1 | -3   | V    |
| Drain-Source On-Resistance      | R <sub>DS(on)</sub>  | V <sub>GS</sub> = -10V, I <sub>D</sub> = -20A   |      | 9    | 13   | mΩ   |
|                                 |                      | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -10A  |      | 16   | 23   |      |
| Zero Gate Voltage Drain Current | I <sub>DSS</sub>     | V <sub>DS</sub> = -40V, V <sub>GS</sub> = 0V  |      |      | 1    | μA   |
| Gate-Source Leak Current        | I <sub>GSS</sub>     | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V  |      |      | ±100 | nA   |
| Transconductance                | G <sub>FS</sub>      | V <sub>DS</sub> = -15V, I <sub>D</sub> = -12A   |      | 40   |      | s    |
| Forward Voltage                 | V <sub>SD</sub>      | V <sub>GS</sub> = 0V, I <sub>S</sub> = -5A  |      |      | 1.4  | V    |
| Gate Resistance                 | R <sub>G</sub>       | V <sub>DS</sub> = 0V, f = 1MHz  |      | 4    |      | Ω    |
| Input Capacitance               | C <sub>ISS</sub>     | V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V,<br>f = 1MHz                                     |      | 2500 |      | pF   |
| Output Capacitance              | C <sub>OSS</sub>     |   |      | 250  |      |      |
| Reverse Transfer Capacitance    | C <sub>RSS</sub>     |   |      | 230  |      |      |
| Total Gate Charge               | Q <sub>G</sub>       | V <sub>GS</sub> = -10V, V <sub>DS</sub> = -20V,<br>I <sub>D</sub> = -15A                      |      | 18   |      | nC   |
| Gate to Source Charge           | Q <sub>GS</sub>      |   |      | 5    |      |      |
| Gate to Drain Charge            | Q <sub>GD</sub>      |   |      | 6    |      |      |
| Turn-on Delay Time              | T <sub>D(ON)</sub>   | V <sub>GS</sub> = -10V, V <sub>DS</sub> = -10V,<br>R <sub>L</sub> = 10Ω, R <sub>G</sub> = 1Ω, |      | 12   |      | ns   |
| Rise Time                       | T <sub>r</sub>       |   |      | 12   |      |      |
| Turn-off Delay Time             | T <sub>D(OFF)</sub>  |   |      | 23   |      |      |
| Fall Time                       | T <sub>f</sub>       |   |      | 9    |      |      |
| Diode Recovery Time             | T <sub>rr</sub>      | I <sub>F</sub> = -20A, di/dt = 500A/us  |      | 20   |      | ns   |
| Diode Recovery Charge           | Q <sub>rr</sub>      | I <sub>F</sub> = -20A, di/dt = 500A/us  |      | 18   |      | nC   |

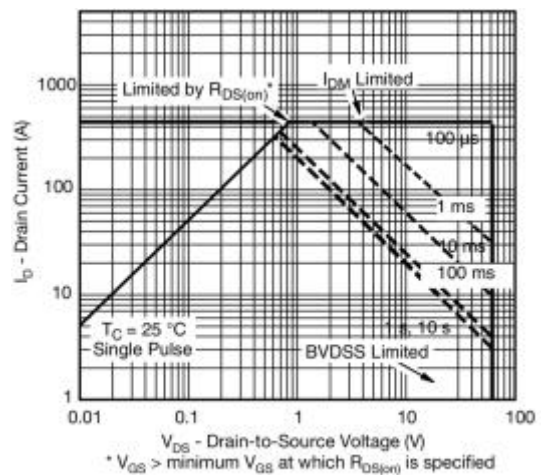
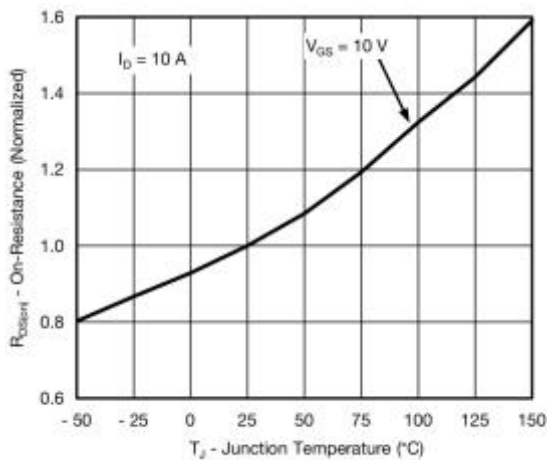


➤ **Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise noted)**



On-Resistance vs. Drain Current and Gate Voltage

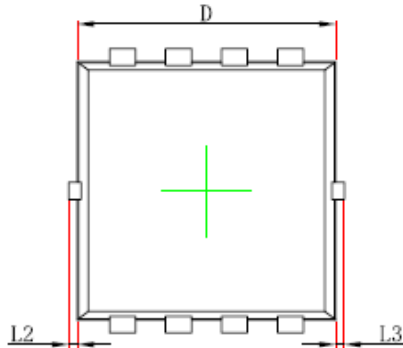
On-Resistance vs. Gate-to-Source Voltage



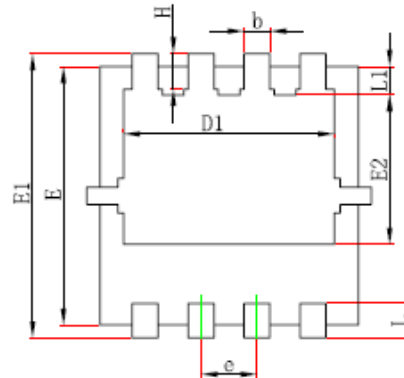
On-Resistance vs. Junction Temperature

Safe Operating Area

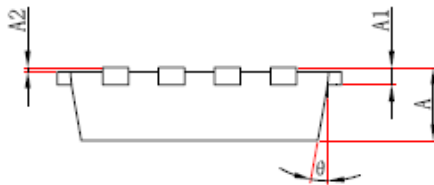
## ➤ Package Information



Top View  
[顶视图]



Bottom View  
[背视图]



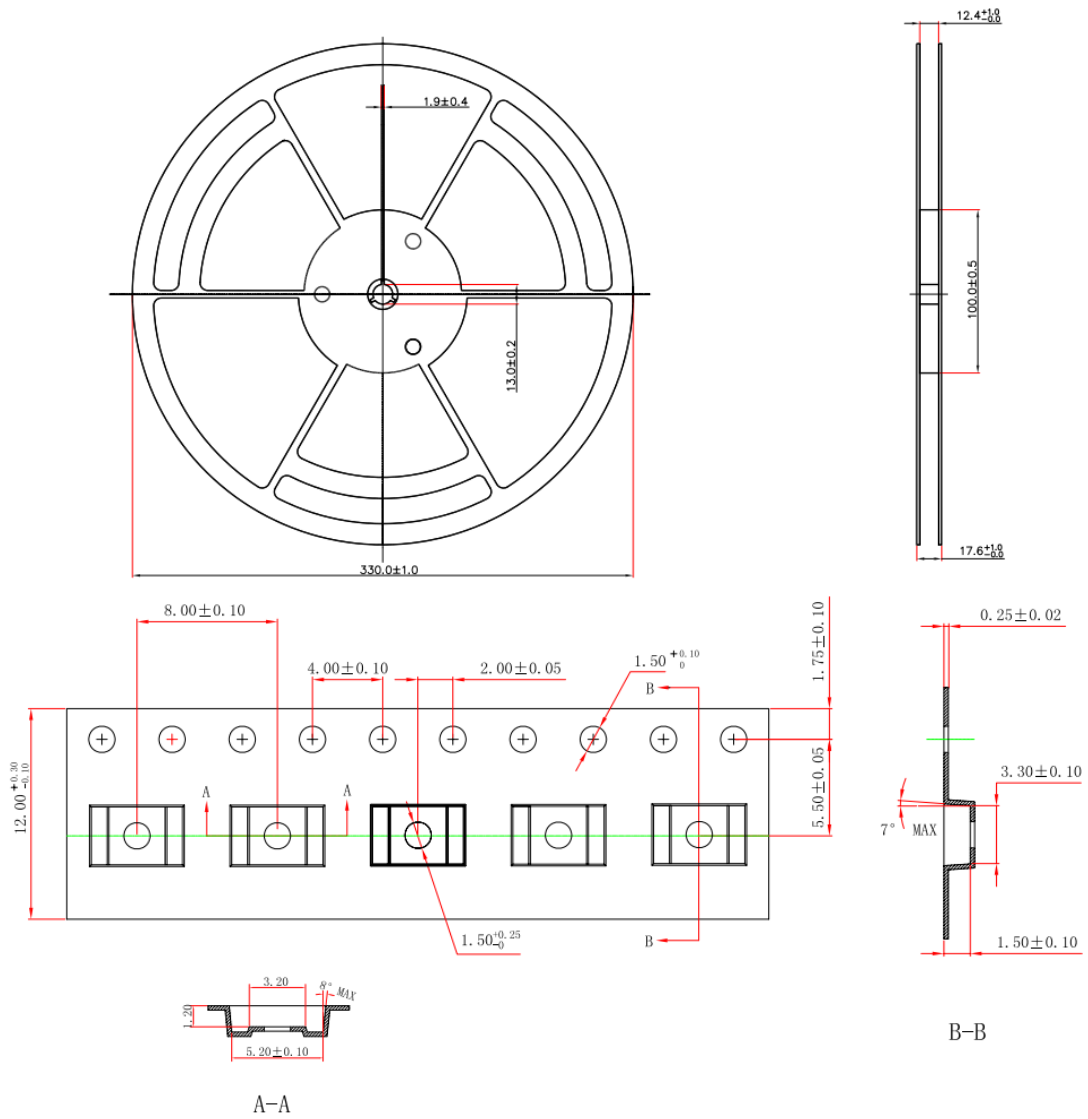
Side View  
[侧视图]

### Package: PDNF3.3X3.3-8L

| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.650                     | 0.850 | 0.026                | 0.033 |
| A1     | 0.152 REF.                |       | 0.006 REF.           |       |
| A2     | 0~0.05                    |       | 0~0.002              |       |
| D      | 2.900                     | 3.100 | 0.114                | 0.122 |
| D1     | 2.300                     | 2.600 | 0.091                | 0.102 |
| E      | 2.900                     | 3.100 | 0.114                | 0.122 |
| E1     | 3.150                     | 3.450 | 0.124                | 0.136 |
| E2     | 1.535                     | 1.935 | 0.060                | 0.076 |
| b      | 0.200                     | 0.400 | 0.008                | 0.016 |
| e      | 0.550                     | 0.750 | 0.022                | 0.030 |
| L      | 0.300                     | 0.500 | 0.012                | 0.020 |
| L1     | 0.180                     | 0.480 | 0.007                | 0.019 |
| L2     | 0~0.100                   |       | 0~0.004              |       |
| L3     | 0~0.100                   |       | 0~0.004              |       |
| H      | 0.315                     | 0.515 | 0.012                | 0.020 |
| θ      | 9°                        | 13°   | 9°                   | 13°   |



## ➤ Tape and Reel





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