

## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---------------|-----------------|-------|
| 30V           | 2.9mΩ@10V       | 65A   |
|               | 4.5mΩ@4.5V      |       |



**合肥矽普半导体**

Siliup Semiconductor Technology Co., Ltd

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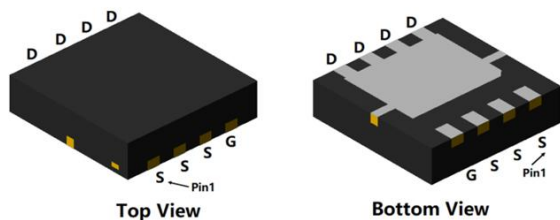
## Feature

- Fast switching speed
- Low On-Resistance
- 100% Single Pulse avalanche energy Test

## Applications

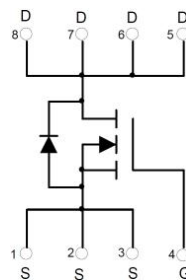
- DC-DC Converters.
- Power Management

## Package

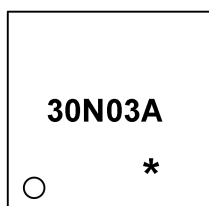


PDFN3X3-8L

## Circuit diagram



## Marking



30N03A  
\*

:Device Code  
:Month Code

## Order Information

| Device     | Package    | Unit/Tape |
|------------|------------|-----------|
| SP30N03ANJ | PDFN3X3-8L | 5000      |

**Absolute maximum ratings (Ta=25°C, unless otherwise noted)**

| Parameter                                  | Symbol           | Rating     | Unit |
|--------------------------------------------|------------------|------------|------|
| Drain-Source Voltage                       | V <sub>DSS</sub> | 30         | V    |
| Gate-Source Voltage                        | V <sub>GSS</sub> | ±20        | V    |
| Continuous Drain Current (Tc=25°C)         | I <sub>D</sub>   | 65         | A    |
| Continuous Drain Current (Tc=100°C)        | I <sub>D</sub>   | 43         | A    |
| Pulse Drain Current Tested                 | I <sub>DM</sub>  | 260        | A    |
| Single Pulse Avalanche Energy <sup>1</sup> | E <sub>AS</sub>  | 130        | mJ   |
| Power Dissipation (Tc=25°C)                | P <sub>D</sub>   | 39         | W    |
| Thermal Resistance Junction-to-Case        | R <sub>θJC</sub> | 2.88       | °C/W |
| Storage Temperature Range                  | T <sub>STG</sub> | -55 to 150 | °C   |
| Operating Junction Temperature Range       | T <sub>J</sub>   | -55 to 150 | °C   |

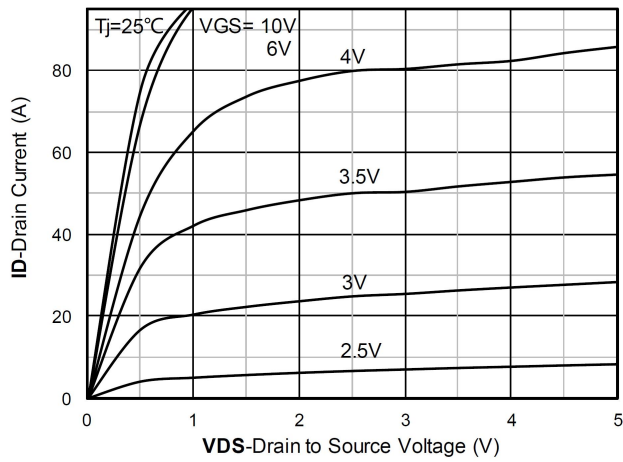
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

| Parameter                             | Symbol              | Conditions                                 | Min. | Typ. | Max. | Unit |
|---------------------------------------|---------------------|--------------------------------------------|------|------|------|------|
| Static Characteristics                |                     |                                            |      |      |      |      |
| Drain-Source Breakdown Voltage        | BV <sub>DSS</sub>   | VGS=0V , ID=250uA                          | 30   | -    | -    | V    |
| Drain-Source Leakage Current          | I <sub>DSS</sub>    | VDS=24V , VGS=0V , TJ=25℃                  | -    | -    | 1    | uA   |
| Gate-Source Leakage Current           | I <sub>GSS</sub>    | VGS=±20V , VDS=0V                          | -    | -    | ±100 | nA   |
| Gate Threshold Voltage                | V <sub>GS(th)</sub> | VGS=VDS , ID =250uA                        | 1.0  | 1.5  | 2.5  | V    |
| Static Drain-Source On-Resistance     | R <sub>DS(ON)</sub> | VGS=10V, ID=20A                            | -    | 2.9  | 4.2  | mΩ   |
|                                       |                     | VGS=4.5V, ID=15A                           | -    | 4.5  | 6    |      |
| Dynamic characteristics               |                     |                                            |      |      |      |      |
| Input Capacitance                     | C <sub>iss</sub>    | VDS=15V , VGS=0V , f=1MHz                  | -    | 3068 | -    | pF   |
| Output Capacitance                    | C <sub>oss</sub>    |                                            | -    | 369  | -    |      |
| Reverse Transfer Capacitance          | C <sub>rss</sub>    |                                            | -    | 289  | -    |      |
| Total Gate Charge                     | Q <sub>g</sub>      | VDS=15V , VGS=10V , ID=20A                 | -    | 44   | -    | nC   |
| Gate-Source Charge                    | Q <sub>gs</sub>     |                                            | -    | 7    | -    |      |
| Gate-Drain Charge                     | Q <sub>gd</sub>     |                                            | -    | 8    | -    |      |
| Switching Characteristics             |                     |                                            |      |      |      |      |
| Turn-On Delay Time                    | T <sub>d(on)</sub>  | VDD=15V VGS=10V , RG=3Ω, ID=30A            | -    | 10   | -    | nS   |
| Rise Time                             | T <sub>r</sub>      |                                            | -    | 29   | -    |      |
| Turn-Off Delay Time                   | T <sub>d(off)</sub> |                                            | -    | 46   | -    |      |
| Fall Time                             | T <sub>f</sub>      |                                            | -    | 17   | -    |      |
| Diode Characteristics                 |                     |                                            |      |      |      |      |
| Diode Forward Voltage                 | V <sub>SD</sub>     | VGS=0V , IS=1A , TJ=25℃                    | -    | -    | 1.2  | V    |
| Maximum Body-Diode Continuous Current | I <sub>S</sub>      |                                            | -    | -    | 65   | A    |
| Reverse recover time                  | T <sub>rr</sub>     | I <sub>S</sub> =30A, di/dt=100A/us, Tj=25℃ | -    | 17   | -    | nS   |
| Reverse recovery charge               | Q <sub>rr</sub>     |                                            | -    | 7    | -    | nC   |

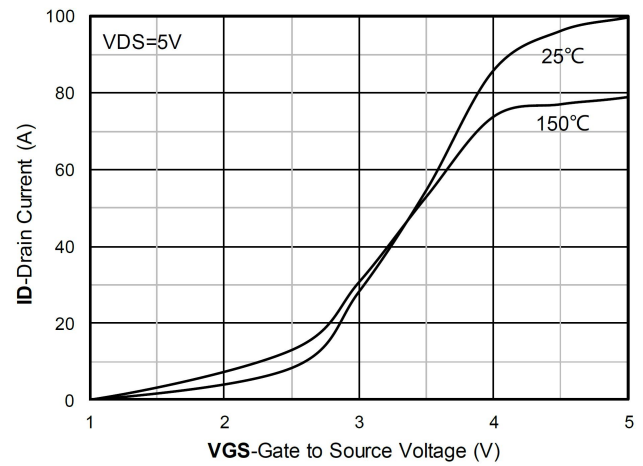
**Note:**

1. The EAS test condition is VDD=25V, VG=10V, L=0.1mH, Rg=25Ω

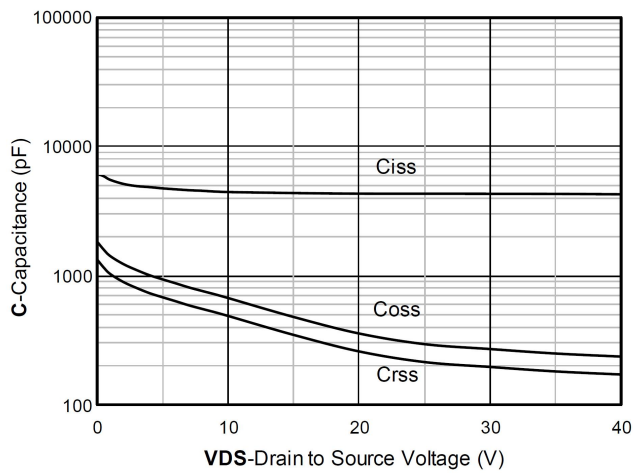
## Typical Characteristics



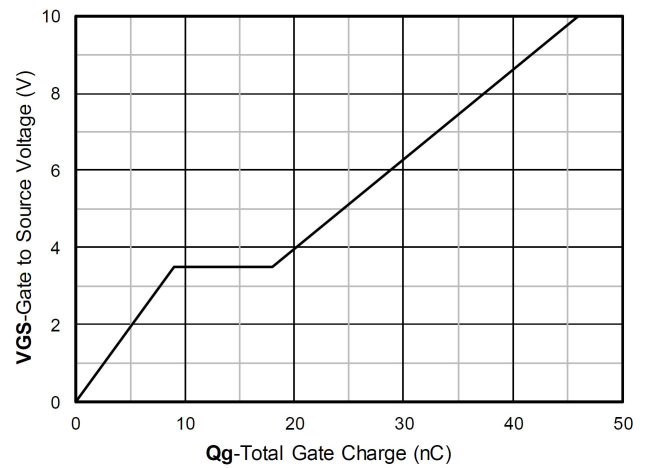
Output Characteristics



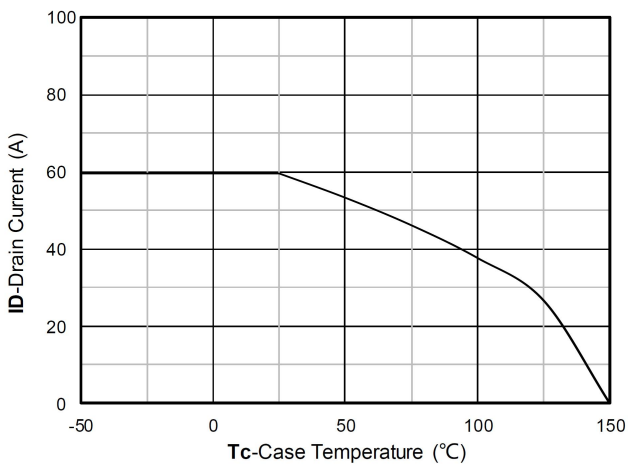
Transfer Characteristics



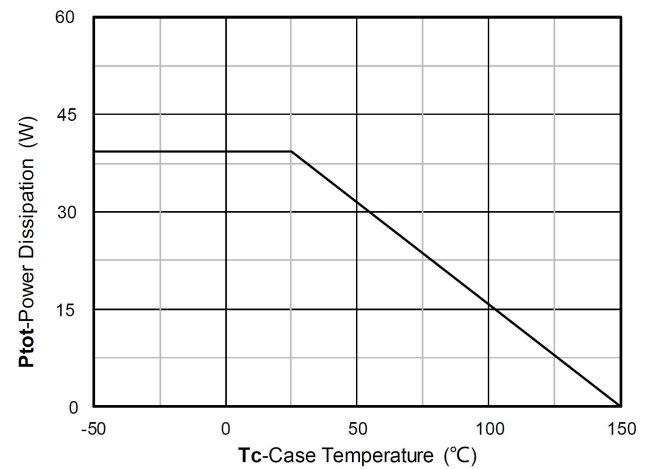
Capacitance Characteristics



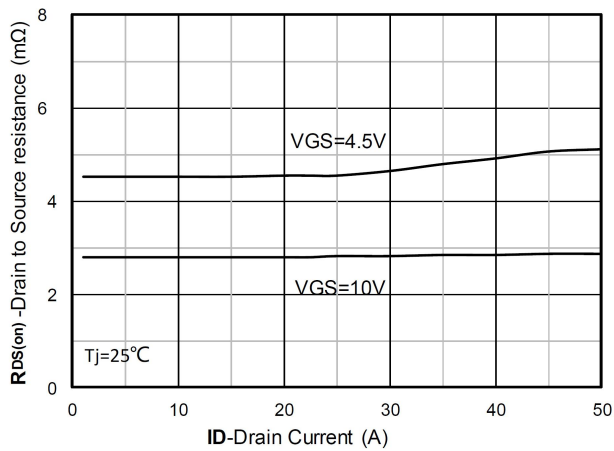
Gate Charge



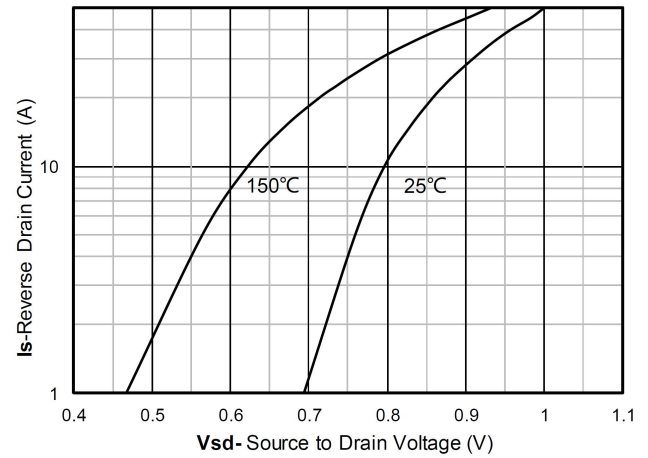
Current dissipation



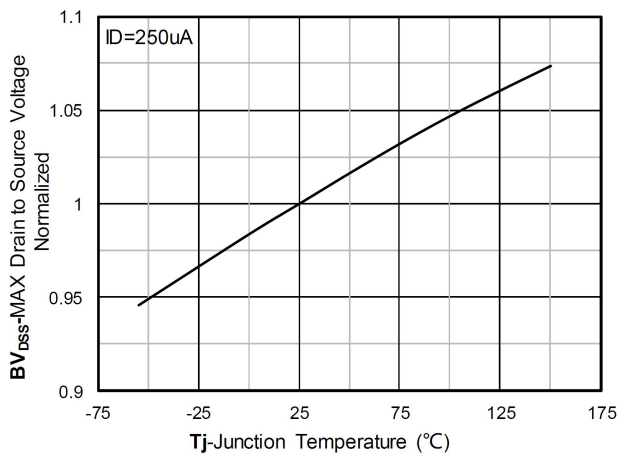
Power dissipation



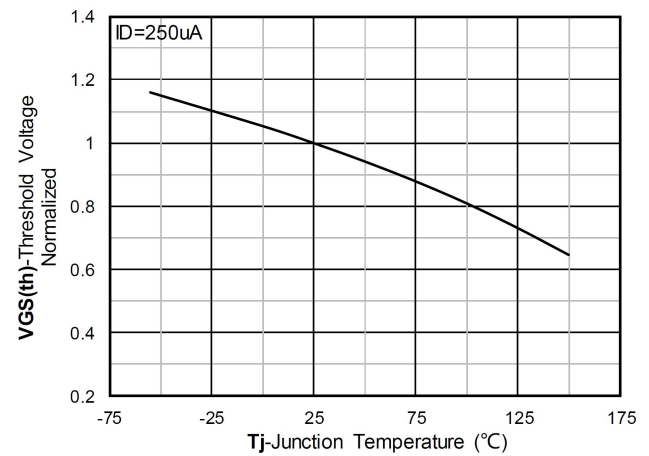
$R_{DS(on)}$  VS Drain Current



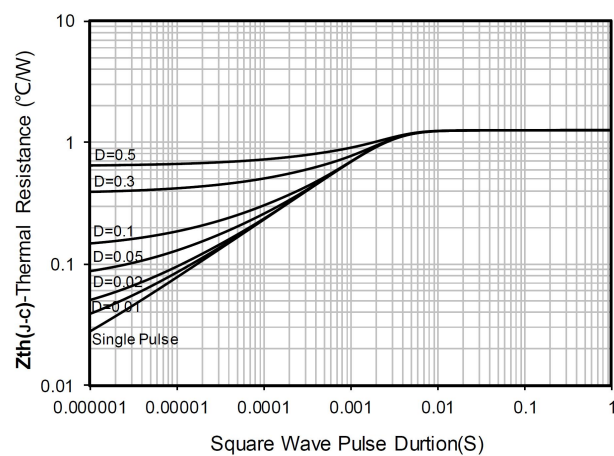
Forward characteristics of reverse diode



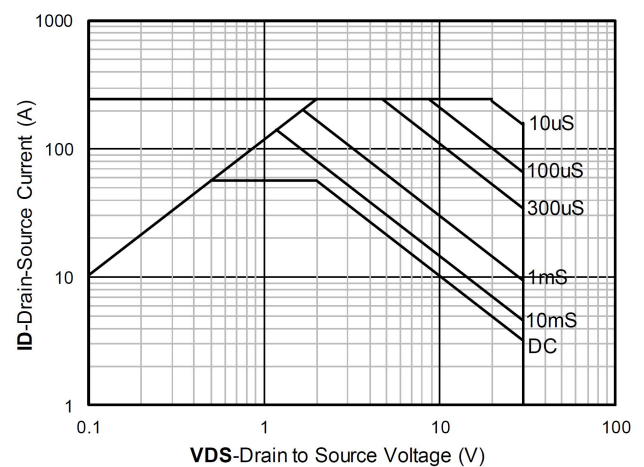
Normalized breakdown voltage



Normalized Threshold voltage

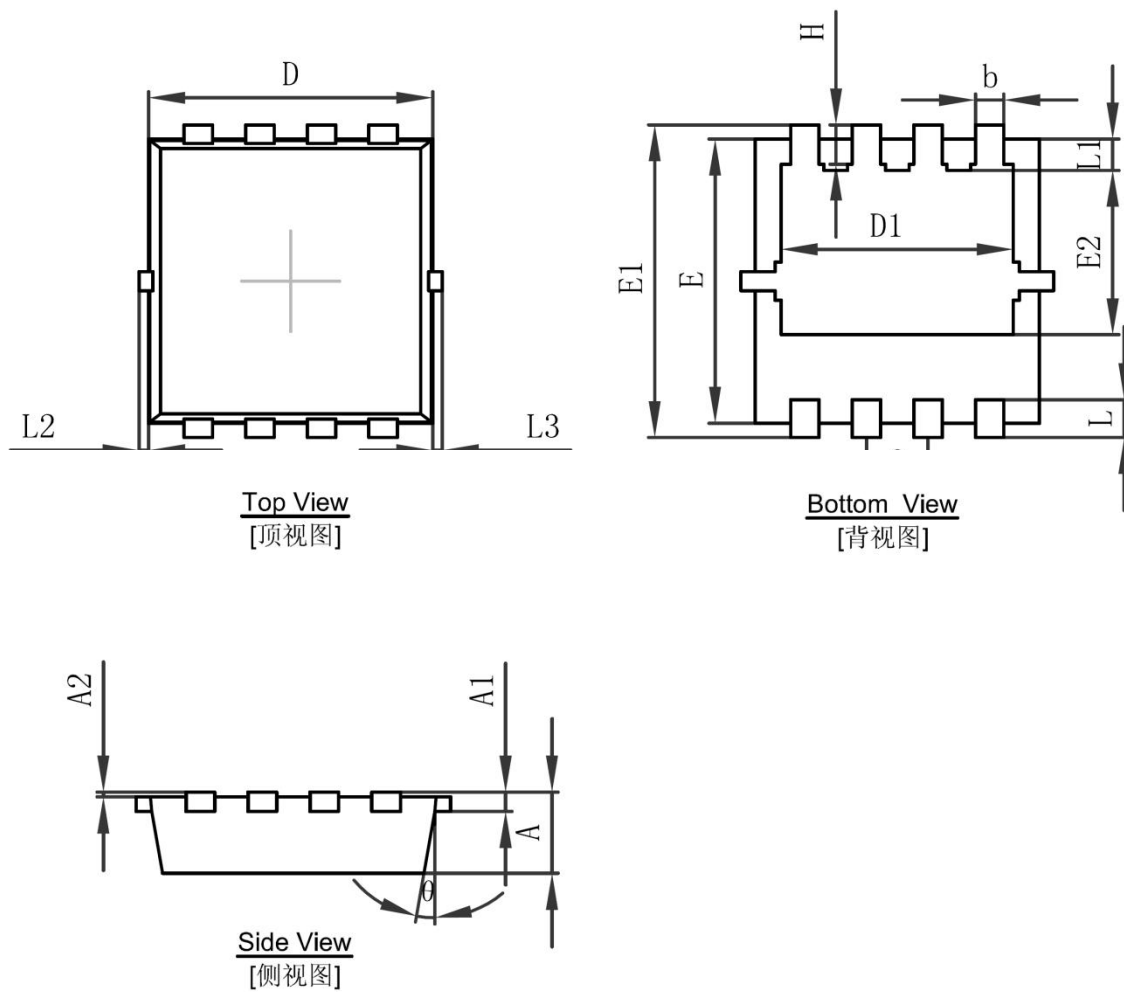


Maximum Transient Thermal Impedance



Safe Operation Area

**PDFN3X3-8L Package Information**



| 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°   |