

### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$     | $I_D$ |
|---------------|---------------------|-------|
| 40V           | 5.5m $\Omega$ @10V  | 35A   |
|               | 6.5m $\Omega$ @4.5V |       |

### Feature

- High cell density trench N-ch MOSFETs
- Super low gate charge
- Advanced high cell density Trench technology

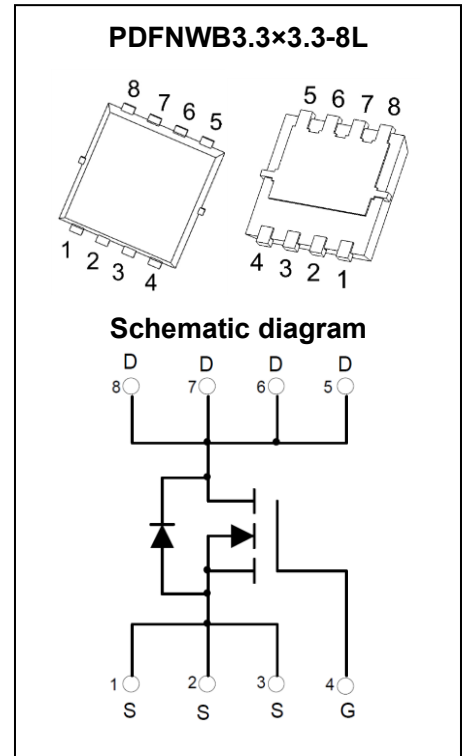
### Application

- Battery protection applications
- Load switch

### MARKING:



25N04= Device code  
 Solid dot=Pin1 indicator  
 XX=Date Code



### ABSOLUTE MAXIMUM RATINGS (TC=25°C unless otherwise noted)

| Parameter  | Symbol          | Value     | Unit          |
|--|-----------------|-----------|---------------|
| Drain-Source Voltage                                       | $V_{DS}$        | 40        | V             |
| Gate-Source Voltage  | $V_{GS}$        | $\pm 20$  | V             |
| Continuous Drain Current <sup>1,2</sup>                    | $I_D$           | 35        | A             |
| Pulsed Drain Current                                       | $I_{DM}$        | 80        | A             |
| Single Pulsed Avalanche Energy                             | $E_{AS}^*$      | 63        | mJ            |
| Avalanche Current  | $I_{AS}$        | 28        | A             |
| Power Dissipation  | $P_D$           | 3         | W             |
| Thermal Resistance from Junction to Ambient <sup>1,2</sup> | $R_{\theta JA}$ | 41.67     | $^{\circ}C/W$ |
| Junction Temperature                                       | $T_J$           | 150       | $^{\circ}C$   |
| Storage Temperature  | $T_{STG}$       | -55~ +150 | $^{\circ}C$   |

\* $E_{AS}$  Test Condition  $V_{DD} = 15V$ ,  $V_{GS} = 10V$ ,  $L = 0.1mH$ ,  $I_{AS} = 28A$

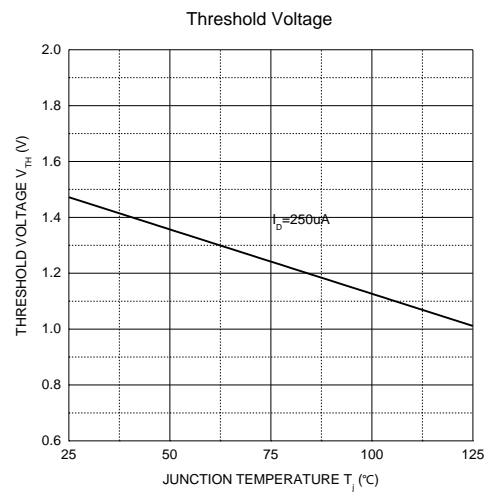
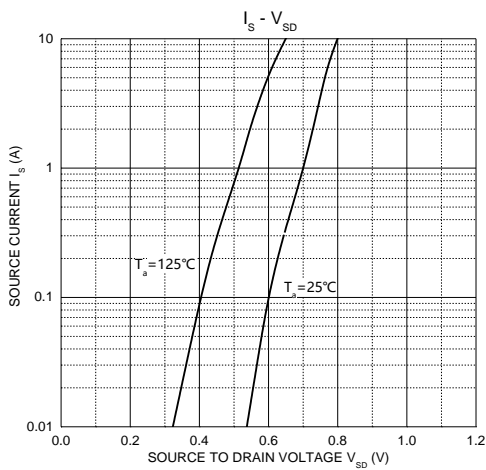
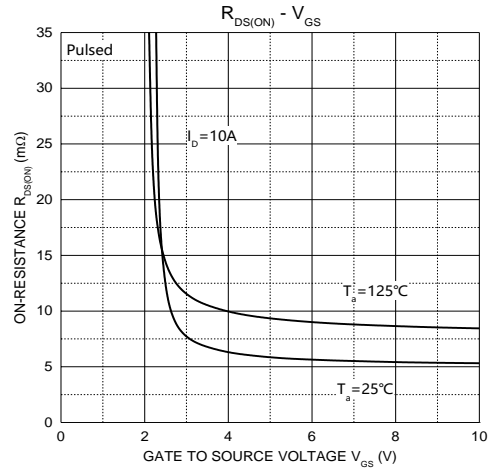
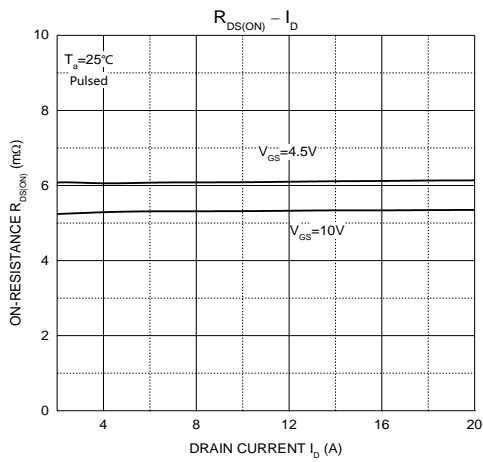
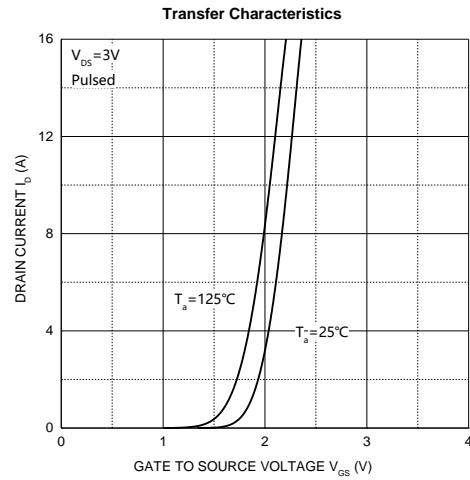
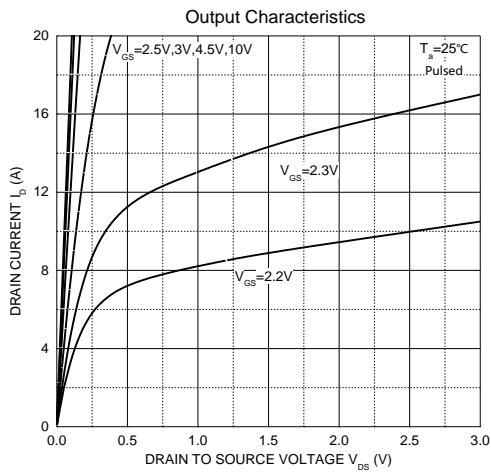
## MOSFET ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C unless otherwise noted)

| Parameter                                 | Symbol               | Test Condition  | Min | Type | Max  | Unit |
|---|----------------------|---|-----|------|------|------|
| <b>Off Characteristics</b>                |                      |   |     |      |      |      |
| Drain-source breakdown voltage            | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA  | 40  |      |      | V    |
| Zero gate voltage drain current           | I <sub>DSS</sub>     | V <sub>DS</sub> = 40V, V <sub>GS</sub> = 0V   |     |      | 1    | μA   |
| Gate-body leakage current                 | I <sub>GSS</sub>     | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V  |     |      | ±100 | nA   |
| <b>On Characteristics</b>                 |                      |   |     |      |      |      |
| Gate threshold voltage <sup>3</sup>       | V <sub>GS(th)</sub>  | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA                              | 1   | 1.5  | 2.5  | V    |
| Drain-source on-resistance <sup>3</sup>   | R <sub>DS(on)</sub>  | V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A   |     | 5.5  | 7.2  | mΩ   |
|   |                      | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 10A  |     | 6.5  | 8.5  |      |
| Forward transconductance <sup>3</sup>     | g <sub>FS</sub>      | V <sub>DS</sub> = 10V, I <sub>D</sub> = 10A   |     |      |      | S    |
| <b>Dynamic characteristics</b>            |                      |   |     |      |      |      |
| Input capacitance                         | C <sub>iss</sub>     | V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V, f = 1MHz                                   |     | 2900 |      | pF   |
| Output capacitance                        | C <sub>oss</sub>     |   |     | 280  |      |      |
| Reverse transfer capacitance              | C <sub>rss</sub>     |   |     | 250  |      |      |
| <b>Switching Characteristics</b>          |                      |   |     |      |      |      |
| Total gate charge                         | Q <sub>g</sub>       | V <sub>DS</sub> = 20V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A                      |     | 30   |      | nC   |
| Gate-source charge                        | Q <sub>gs</sub>      |   |     | 8    |      |      |
| Gate-drain charge                         | Q <sub>gd</sub>      |   |     | 15   |      |      |
| Turn-on delay time                        | t <sub>d(on)</sub>   | V <sub>DD</sub> = 15V, V <sub>GS</sub> = 10V, R <sub>G</sub> = 3Ω, I <sub>D</sub> = 10A |     | 20   |      | ns   |
| Turn-on rise time                         | t <sub>r</sub>       |   |     | 5    |      |      |
| Turn-off delay time                       | t <sub>d(off)</sub>  |   |     | 70   |      |      |
| Turn-off fall time                        | t <sub>f</sub>       |   |     | 5    |      |      |
| <b>Source-Drain Diode Characteristics</b> |                      |   |     |      |      |      |
| Continuous Source Current                 | I <sub>S</sub>       | V <sub>G</sub> = V <sub>D</sub> = 0V, Force Current                                     |     |      | 35   | A    |
| Pulsed Source Current                     | I <sub>SM</sub>      |   |     |      | 80   |      |
| Diode Forward Voltage                     | V <sub>SD</sub>      | V <sub>GS</sub> = 0V, I <sub>S</sub> = 10A, T <sub>J</sub> = 25°C                       |     |      | 1.2  | V    |

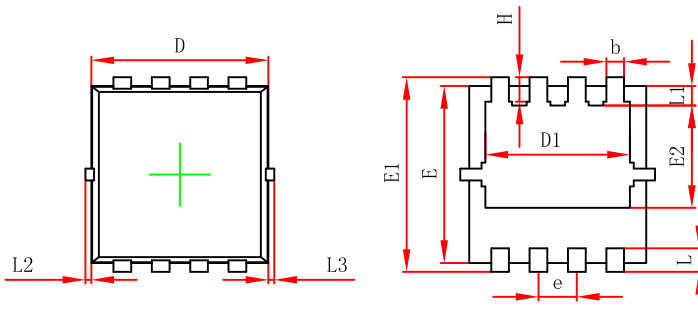
Notes :

- 1.R<sub>θJA</sub> is measured with the device mounted on 1 in<sup>2</sup> FR4 board with 1 oz. single side copper, in a still air environment with T<sub>A</sub> = 25°C.
- 2.R<sub>θJA</sub> is measured in the steady state
- 3.Pulse test : Pulse width ≤ 380μs, duty cycle ≤ 2%.

**Typical Electrical and Thermal Characteristics**

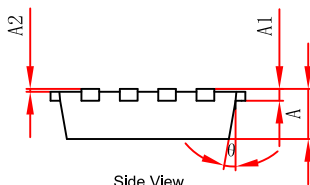


## PDFNWB3.3×3.3-8L Package Information



Top View  
[顶视图]

Bottom View  
[背视图]



Side View  
[侧视图]

| 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°   |

单击下面可查看定价，库存，交付和生命周期等信息

[>>GP\(格瑞宝\)](#)