

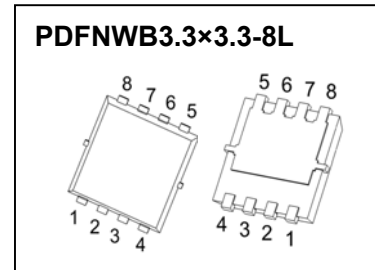


JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

## PDFNWB3.3×3.3-8L Plastic-Encapsulate MOSFETS

### **CJAB14P04 P-Channel Power MOSFET**

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---------------|-----------------|-------|
| -40 V         | 68mΩ@-10V       | -14A  |
|               | 98mΩ@-4.5V      |       |



#### **DESCRIPTION**

The CJAB14P04 uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. It can be used in a wide variety of applications

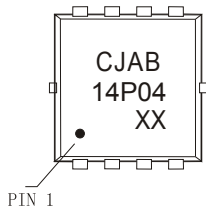
#### **FEATURES**

- High density cell design for ultra low  $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high  $E_{AS}$
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

#### **APPLICATIONS**

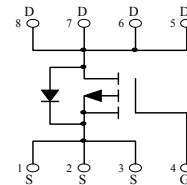
- Battery and loading switching

#### **MARKING**



CJAB14P04 = Part No.  
Solid dot = Pin1 indicator.  
XX = Code.

#### **EQUIVALENT CIRCUIT**



#### **ABSOLUTE MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)**

| Parameter                                        | Symbol                | Value    | Unit                 |
|--------------------------------------------------|-----------------------|----------|----------------------|
| Drain-Source Voltage                             | $V_{DS}$              | -40      | V                    |
| Gate-Source Voltage                              | $V_{GS}$              | ±20      | V                    |
| Continuous Drain Current                         | $I_D^{(1)}$           | -14      | A                    |
| Pulsed Drain Current                             | $I_{DM}^{(2)}$        | -56      | A                    |
| Single Pulsed Avalanche Energy                   | $E_{AS}^{(3)}$        | 20       | mJ                   |
| Maximum Power Dissipation                        | $P_D^{(1)}$           | 30       | W                    |
| Thermal Resistance from Junction to Ambient      | $R_{\theta JA}^{(6)}$ | 83.3     | $^{\circ}\text{C/W}$ |
| Thermal Resistance from Junction to Case         | $R_{\theta JC}^{(1)}$ | 4.1      | $^{\circ}\text{C/W}$ |
| Operating Junction and Storage Temperature Range | $T_J, T_{stg}$        | -55~+150 | $^{\circ}\text{C}$   |

# MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25^{\circ}\text{C}$  unless otherwise specified

| Parameter                                     | Symbol        | Test Condition                                                                 |                      | Min  | Typ  | Max       | Unit    |
|-----------------------------------------------|---------------|--------------------------------------------------------------------------------|----------------------|------|------|-----------|---------|
| Off characteristics                           |               |                                                                                |                      |      |      |           |         |
| Drain-source breakdown voltage                | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$                                                 |                      | -40  |      |           | V       |
| Zero gate voltage drain current               | $I_{DSS}$     | $V_{DS} = -32V, V_{GS} = 0V$                                                   | $T_J = 25^{\circ}C$  |      |      | -1.0      | $\mu A$ |
|                                               |               |                                                                                | $T_J = 125^{\circ}C$ |      |      | -50       |         |
| Gate-body leakage current                     | $I_{GSS}$     | $V_{DS} = 0V, V_{GS} = \pm 20V$                                                |                      |      |      | $\pm 100$ | nA      |
| On characteristics ④                          |               |                                                                                |                      |      |      |           |         |
| Gate-threshold voltage                        | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = -250\mu A$                                             |                      | -1.0 | -1.7 | -2.5      | V       |
| Static drain-source on-sate resistance        | $R_{DS(on)}$  | $V_{GS} = -10V, I_D = -6A$                                                     |                      |      | 68   | 80        | mΩ      |
|                                               |               | $V_{GS} = -4.5V, I_D = -4A$                                                    |                      |      | 98   | 120       | mΩ      |
| Forward transconductance                      | $g_{fs}$      | $V_{DS} = -10V, I_D = -10A$                                                    |                      |      | 22   |           | S       |
| Dynamic characteristics ④⑤                    |               |                                                                                |                      |      |      |           |         |
| Input capacitance                             | $C_{iss}$     | $V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$                                         |                      |      | 1700 | 3400      | pF      |
| Output capacitance                            | $C_{oss}$     |                                                                                |                      |      | 296  | 592       |         |
| Reverse transfer capacitance                  | $C_{rss}$     |                                                                                |                      |      | 205  | 410       |         |
| Switching characteristics ④⑤                  |               |                                                                                |                      |      |      |           |         |
| Total gate charge                             | $Q_g$         | $V_{GS} = -10V, V_{DS} = -15V, I_D = -10A$                                     |                      |      | 30   | 60        | nC      |
| Gate-source charge                            | $Q_{gs}$      |                                                                                |                      |      | 6    | 12        |         |
| Gate-drain charge                             | $Q_{gd}$      |                                                                                |                      |      | 9    | 18        |         |
| Turn-on delay time                            | $t_{d(on)}$   | $V_{DS} = -15V, I_D = -1A$<br>$V_{GS} = -10V, R_G = 2.5\Omega, R_L = 15\Omega$ |                      |      | 10   |           | ns      |
| Turn-on rise time                             | $t_r$         |                                                                                |                      |      | 26   |           |         |
| Turn-off delay time                           | $t_{d(off)}$  |                                                                                |                      |      | 35   |           |         |
| Turn-off fall time                            | $t_f$         |                                                                                |                      |      | 8    |           |         |
| Drain-Source Diode Characteristics            |               |                                                                                |                      |      |      |           |         |
| Drain-source diode forward voltage            | $V_{SD}$ ④    | $V_{GS} = 0V, I_S = -6A$                                                       |                      |      |      | -1.2      | V       |
| Continuous drain-source diode forward current | $I_S$ ①       |                                                                                |                      |      |      | -14       | A       |
| Pulsed drain-source diode forward current     | $I_{SM}$ ②    |                                                                                |                      |      |      | -56       | A       |

Notes:

1.  $T_C = 25^{\circ}\text{C}$  Limited only by maximum temperature allowed.

2.  $P_W \leq 10\mu s$ , Duty cycles  $\leq 1\%$ .

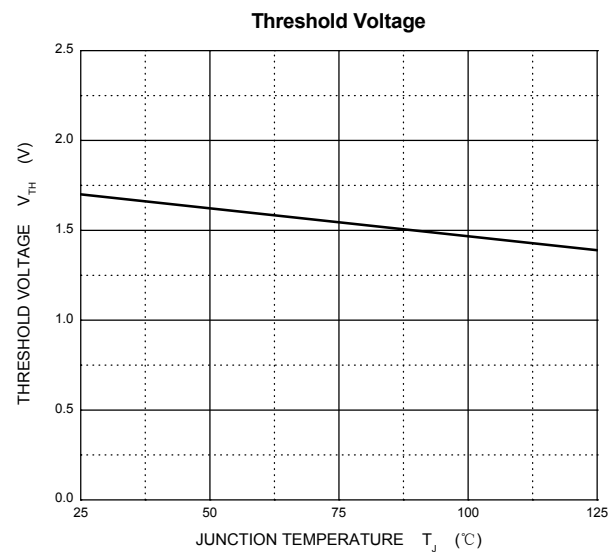
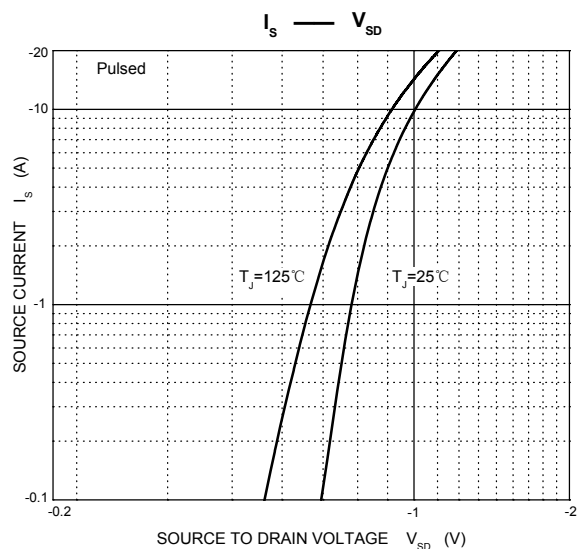
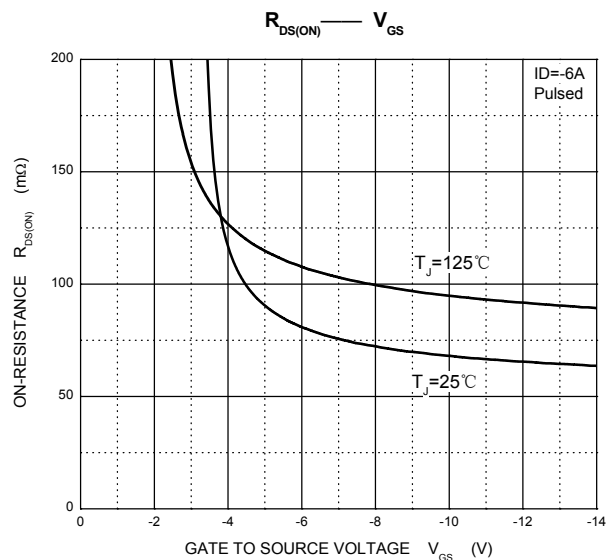
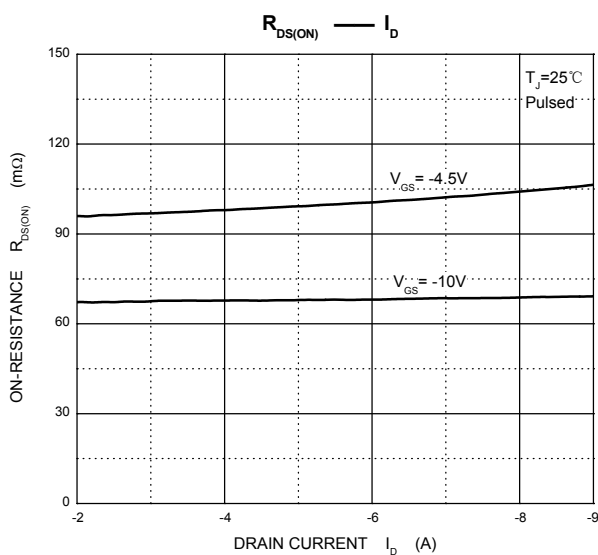
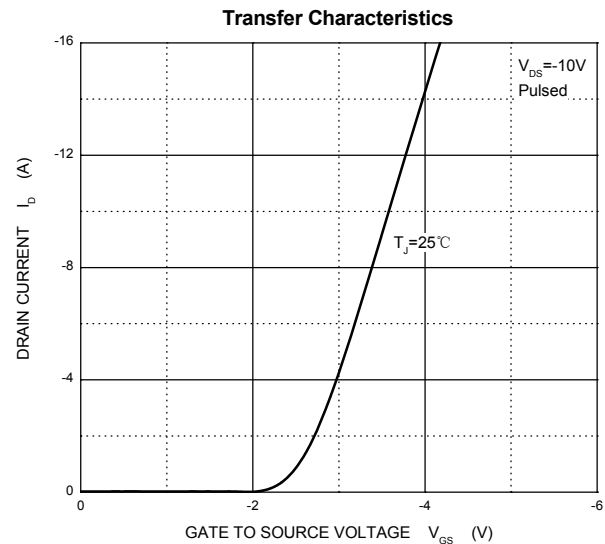
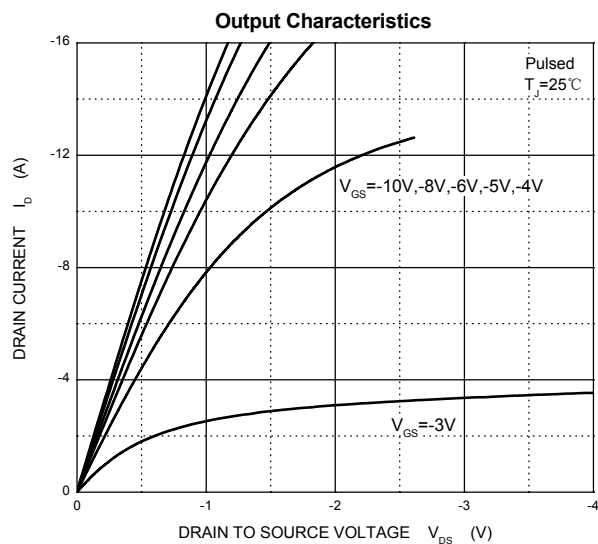
3. EAS condition:  $V_{DD} = -20V, V_{GS} = -10V, L = 0.1mH, R_g = 25\Omega$  Starting  $T_J = 25^{\circ}\text{C}$ .

4. Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

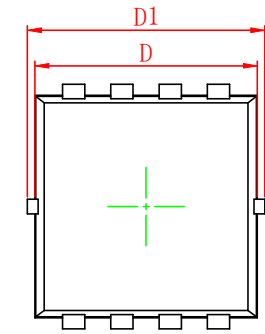
5. Guaranteed by design, not subject to production.

6. 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  $T_a = 25^{\circ}\text{C}$ .

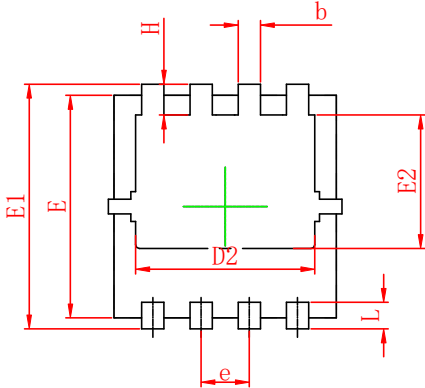
## Typical Characteristics



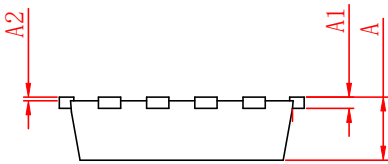
PDFNWB3.3×3.3-8L PACKAGE OUTLINE DIMENSIONS



Top View  
[顶视图]



Bottom View  
[背视图]

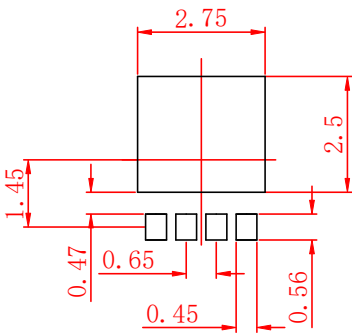


Side View  
[侧视图]

| Symbol | Dimensions In Millimeters |      | Dimensions In Inches |       |
|--------|---------------------------|------|----------------------|-------|
|        | Min.                      | Max. | Min.                 | Max.  |
| A      | 0.65                      | 0.90 | 0.026                | 0.035 |
| A1     | 0.15 REF.                 |      | 0.006 REF.           |       |
| A2     | 0~0.05                    |      | 0~0.002              |       |
| D      | 2.90                      | 3.20 | 0.114                | 0.126 |
| D1     | 3.00                      | 3.40 | 0.118                | 0.134 |
| D2     | 2.30                      | 2.70 | 0.091                | 0.106 |
| E      | 2.90                      | 3.20 | 0.114                | 0.126 |
| E1     | 3.00                      | 3.40 | 0.118                | 0.134 |
| E2     | 1.60                      | 1.90 | 0.063                | 0.075 |
| b      | 0.20                      | 0.42 | 0.008                | 0.017 |
| e      | 0.65 BSC.                 |      | 0.026 BSC.           |       |
| L      | 0.20                      | 0.50 | 0.008                | 0.020 |
| H      | 0.32                      | 0.52 | 0.012                | 0.020 |

- Notes:
- 1 Dimensions exclusive of mold gate burrs.
  - 2 Dimensions exclusive of mold flash and cutting burrs.

PDFNWB3.3×3.3-8L Suggested Pad Layout

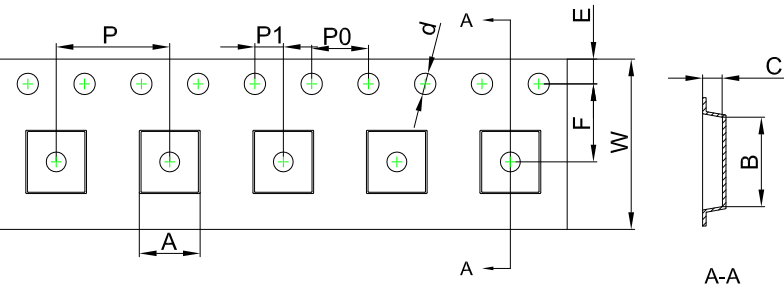


- Notes:
- 1 Controlling dimension: in millimeters.
  - 2 General tolerance:±0.05mm.
  - 2 The pad layout is for reference purpose only.

NOTICE

JSCJ reservesthe right to make modifications,enhancements,improvements,corrections or other changes without further notice to any product herein.JSCJ does not assume any liability arising out of the application or use of any product described herein.

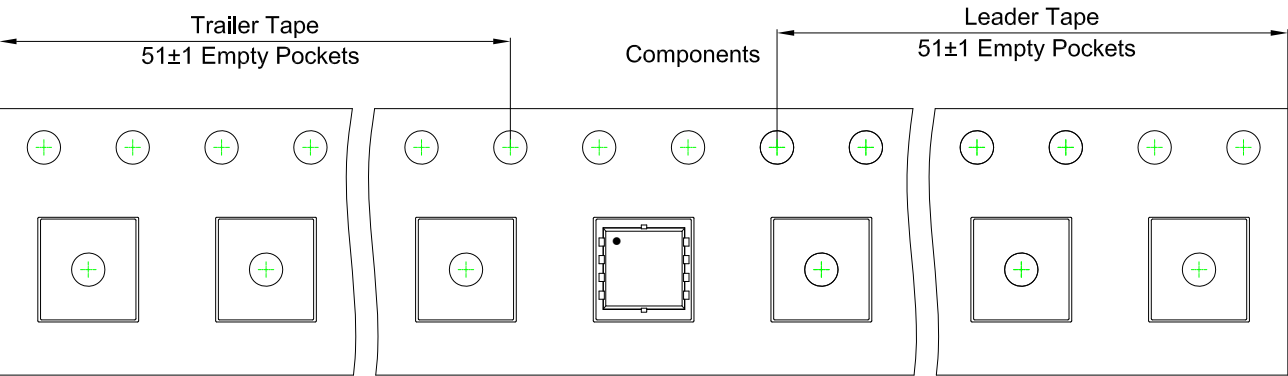
PDFNWB3.3×3.3-8L Embossed Carrier Tape



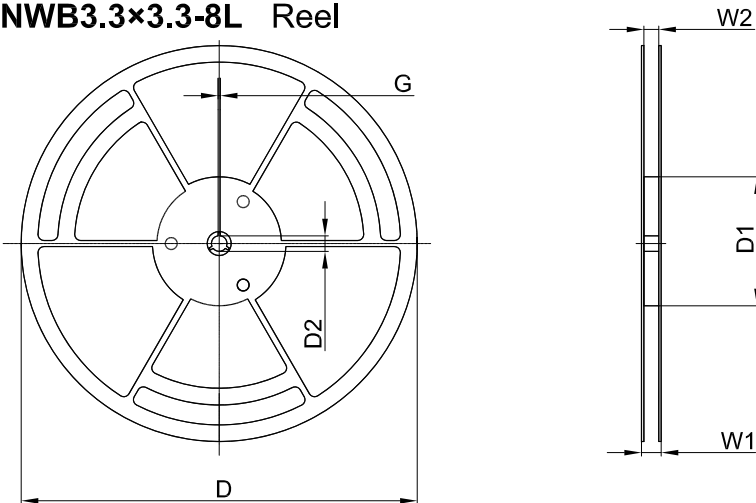
Packaging Description:  
**PDFNWB3.3×3.3-8L** parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 5,000 units per 13" or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter |      |      |      |       |      |      |      |      |      |       |
|------------------------------|------|------|------|-------|------|------|------|------|------|-------|
| Pkg type                     | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | W     |
| PDFNWB3.3×3.3-8L             | 3.55 | 3.55 | 1.10 | Ø1.50 | 1.75 | 5.50 | 4.00 | 8.00 | 2.00 | 12.00 |

PDFNWB3.3×3.3-8L Tape Leader and Trailer



PDFNWB3.3×3.3-8L Reel



| Dimensions are in millimeter |         |        |       |      |       |       |
|------------------------------|---------|--------|-------|------|-------|-------|
| Reel Option                  | D       | D1     | D2    | G    | W1    | W2    |
| 13"Dia                       | Ø330.00 | 100.00 | 13.00 | 1.90 | 17.60 | 12.40 |

| REEL      | Reel Size | Box       | Box Size(mm) | Carton     | Carton Size(mm) |
|-----------|-----------|-----------|--------------|------------|-----------------|
| 5,000 pcs | 13 inch   | 5,000 pcs | 340×336×29   | 50,000 pcs | 353×346×365     |