SZCJ

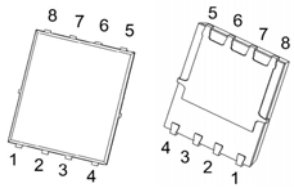
Shenzhen Changji Semiconductor Co., LTD.

# JSCJ PDFNWB5×6-8L Plastic-Encapsulate MOSFETS

## CJAC40N04 N-Channel Power MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)}$TYP | $I_D$ |
|---|---|---|
| 40V | 7.0mΩ@10V | 40A |
| | 10mΩ@4.5V | |

PDFNWB5×6-8L




### DESCRIPTION

The CJAC40N04 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 Power and current handing capability
- Load switch
- High density cell design for ultra low $R_{DS(ON)}$
- Lead free product is acquired
- Good stability and uniformity with high $E_{AS}$
- Excellent package for good heat dissipation

### APPLICATIONS

- SMPS and general purpose applications
- Hard switched and high frequency circuits
- Uninterruptible Power Supply
- Power management

### MARKING

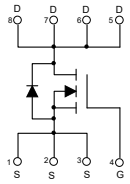



CJAC40N04 = Part No.

Solid dot=Pin1 indicator

XX=Code

### EQUIVALENT CIRCUIT




### MAXIMUM RATINGS ( $T_a$=25℃ unless otherwise noted )

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 40 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | |
| Continuous Drain Current | $I_D$ ① | 40 | A |
| Pulsed Drain Current | $I_{DM}$ ② | 120 | |
| Maximum Power Dissipation | $P_D$ ⑥ | 65 | W |
| Single Pulsed Avalanche Energy | $E_{AS}$ ③ | 150 | mJ |
| Thermal Resistance from Junction to Case | $R_{\theta JC}$ ⑥ | 1.92 | ℃/W |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ ⑥ | 62.5 | ℃/W |
| Operating Junction and Storage Temperature Range | $T_J$ ,$T_{stg}$ | -55~+150 | ℃ |

## MOSFET ELECTRICAL CHARACTERISTICS

**$T_a$=25℃ unless otherwise specified**

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Off characteristics** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)\ DSS}$ | $V_{GS}$ = 0V, $I_D$ =250uA | 40 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =40V, $V_{GS}$ =0V | | | 1.0 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{DS}$ =0V, $V_{GS}$ =±20V | | | ±100 | nA |
| **On characteristics** ④ | | | | | | |
| Gate-threshold voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250uA | 1.0 | 1.75 | 2.5 | V |
| Static drain-source on-sate resistance | $R_{DS(on)}$ | $V_{GS}$ =10V, $I_D$ =10A | | 7.0 | 9.5 | mΩ |
| | | $V_{GS}$ =4.5V, $I_D$ =10A | | 10 | 16 | mΩ |
| Forward transconductance | $g_{FS}$ | $V_{DS}$ =5V, $I_D$ =20A | | 36 | | S |
| **Dynamic characteristics** ④⑤ | | | | | | |
| Input capacitance | $C_{iss}$ | $V_{DS}$ =25V,$V_{GS}$ =0V, f =1MHz | | 1868 | | pF |
| Output capacitance | $C_{oss}$ | | | 175 | | |
| Reverse transfer capacitance | $C_{rss}$ | | | 160 | | |
| Gate resistance | $R_g$ | f=1MHZ | | 5.4 | | Ω |
| **Switching characteristics** ④⑤ | | | | | | |
| Total gate charge | $Q_g$ | $V_{GS}$=10V, $V_{DS}$=20V, $I_D$=10A | | 40 | | nC |
| Gate-source charge | $Q_{gs}$ | | | 4.4 | | |
| Gate-drain charge | $Q_{gd}$ | | | 10.3 | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DS}$=25V,$R_L$=2.5Ω, $V_{GS}$=10V,$R_G$=10Ω | | 19 | | ns |
| Turn-on rise time | $t_r$ | | | 38 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 52 | | |
| Turn-off fall time | $t_f$ | | | 14 | | |
| **Drain-Source Diode Characteristics** | | | | | | |
| Drain-source diode forward voltage | $V_{SD}$ ④ | $V_{GS}$ =0V, $I_S$=20A | | | 1.2 | V |
| Continuous drain-source diode forward current | $I_S$ ① | | | | 25 | A |
| Pulsed drain-source diode forward current | $I_{SM}$ ② | | | | 100 | A |

Notes:

1.$T_C$=25℃ Limited only by maximum temperature allowed.

2.$P_W$≤10μs, Duty cycle≤1%.

3.EAS condition: $V_{DD}$=20V,$V_{GS}$=10V, L=0.5mH, Rg=25Ω Starting $T_J$ = 25°℃.

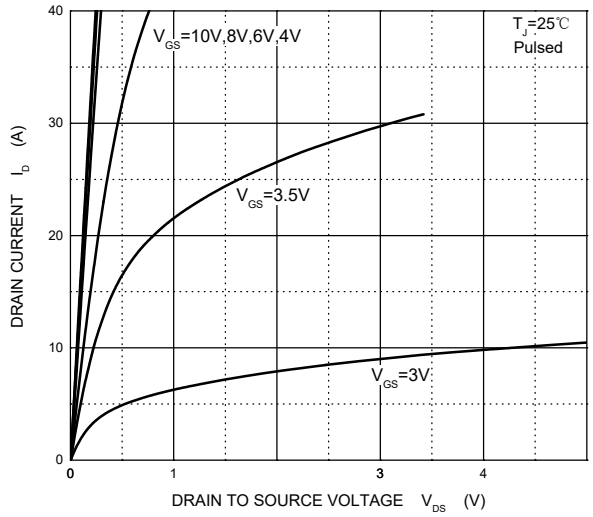
4.Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

5.Guaranteed by design, not subject to production.

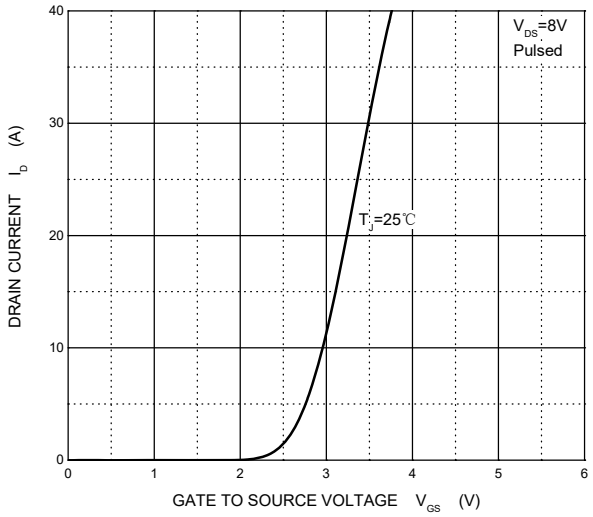
6.The value of RθJA is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with Ta=25 ℃.

# Typical Characteristics

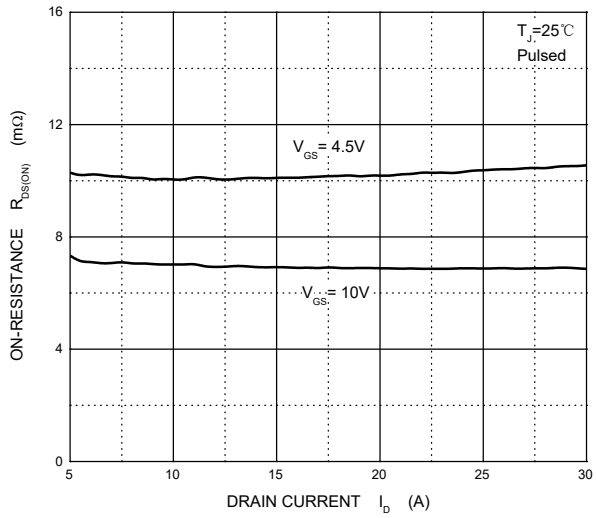
**Output Characteristics**



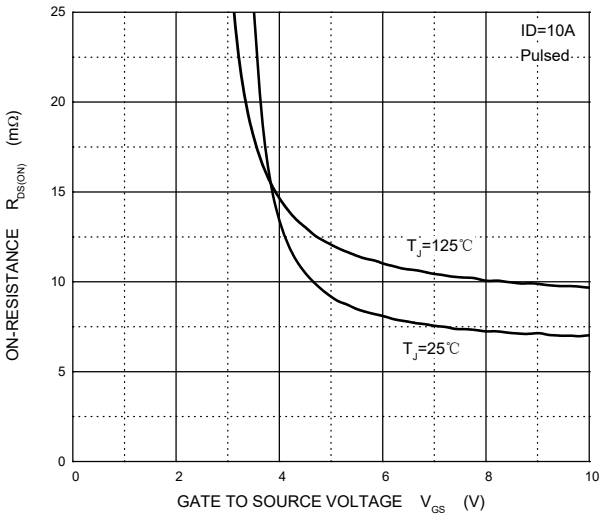

**Transfer Characteristics**



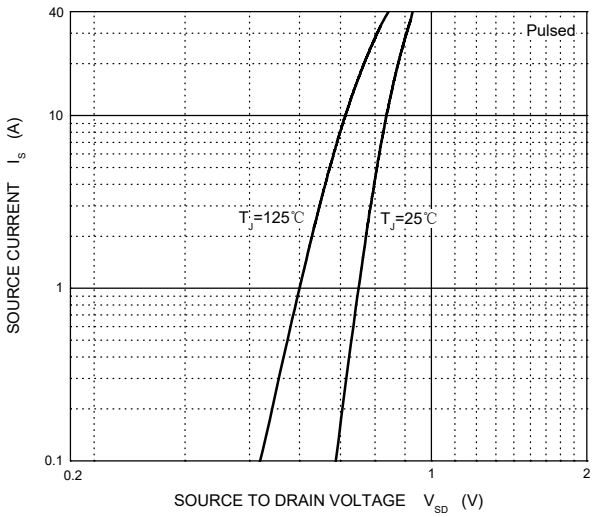

**$R_{DS(ON)}$ —— $I_D$**



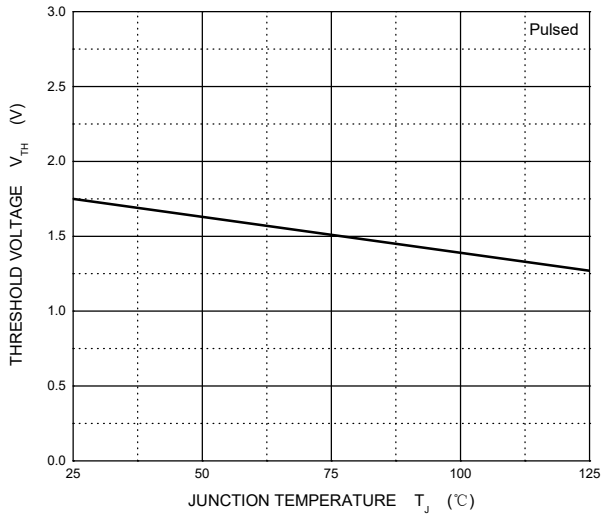

**$R_{DS(ON)}$—— $V_{GS}$**




**$I_S$ —— $V_{SD}$**

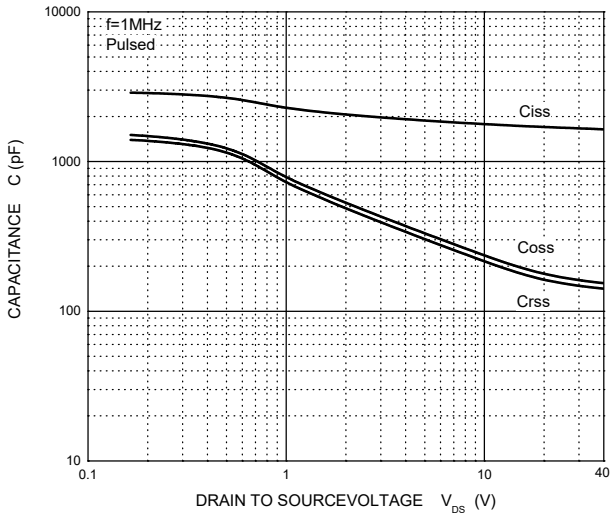



**Threshold Voltage**

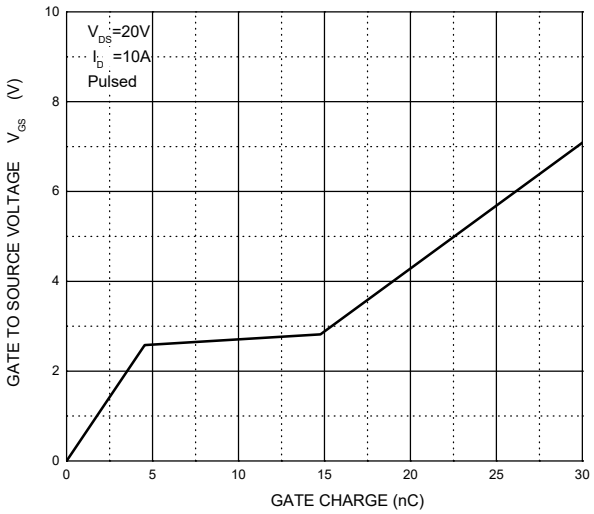


# Typical Characteristics

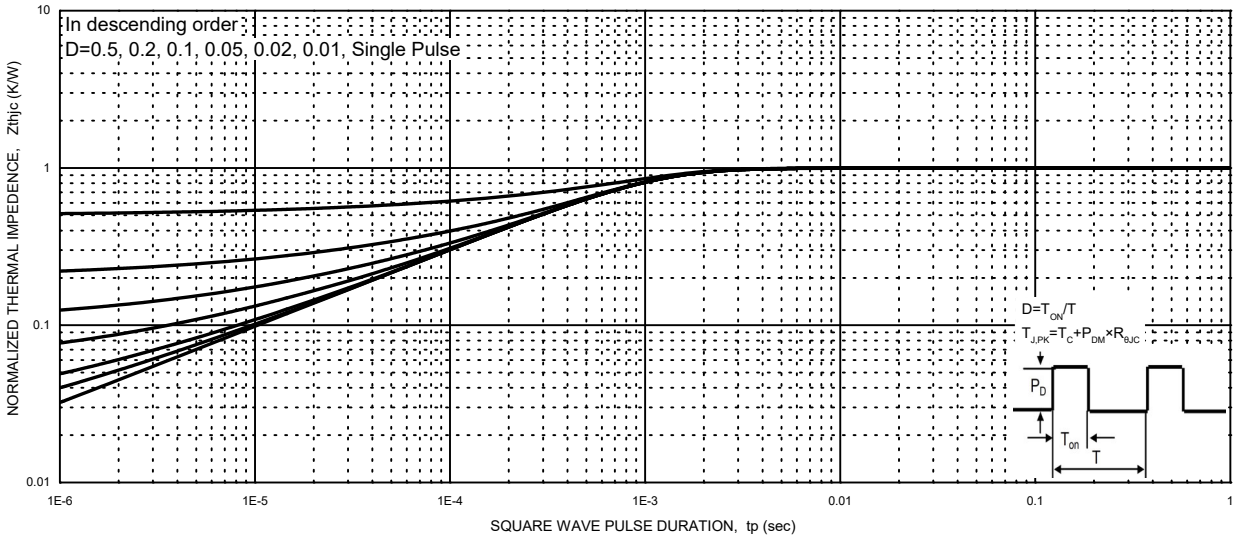
**Capacitances**



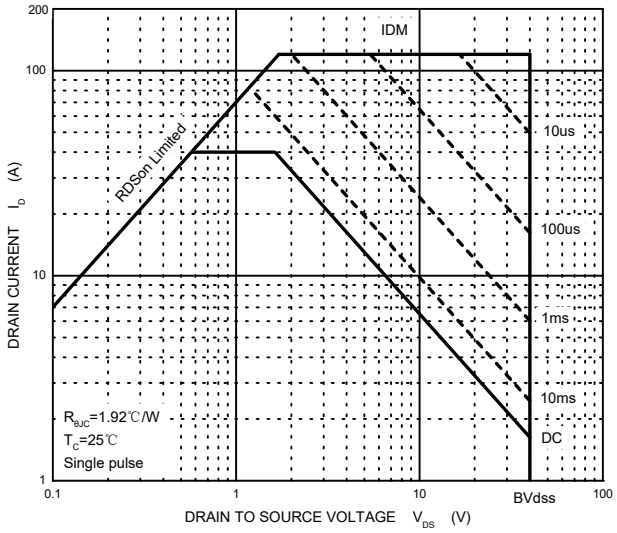

**Gate Charge**



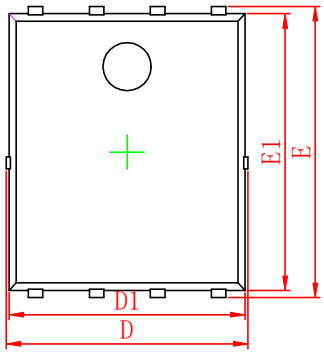

NORMALIZED TRAISIENT THERMAL IMPENDANCE



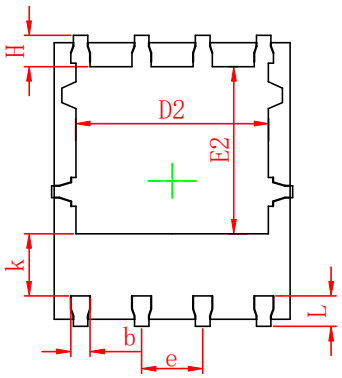

MAXIMUM FORWARD BIASED SAFE OPERATING AREA



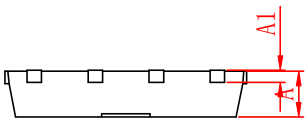
## PDFNWB5×6-8L PACKAGE OUTLINE DIMENSIONS




Top View
[顶视图]




Bottom View
[背视图]

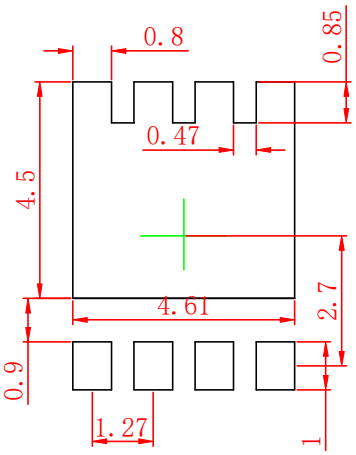



Side View
[侧视图]

| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.90 | 1.10 | 0.035 | 0.043 |
| A1 | 0.25 REF. | | 0.010 REF. | |
| D4.90 | | 5.10 | 0.193 0.201 | |
| D14.80 | | 5.00 | 0.189 0.197 | |
| D23.90 | | 4.10 | 0.154 0.161 | |
| E | 5.90 | 6.10 | 0.232 | 0.240 |
| E15.65 | | 5.85 | 0.222 0.230 | |
| E23.35 | | 3.65 | 0.132 0.144 | |
| k1.20 | | 1.50 | 0.047 0.059 | |
| b0.20 | | 0.45 | 0.008 0.018 | |
| e | 1.27 BSC | | 0.050 BSC | |
| L0.55 | | 0.75 | 0.022 0.030 | |
| H0.45 | | 0.75 | 0.018 0.030 | |

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

## PDFNWB5×6-8L Suggested Pad Layout



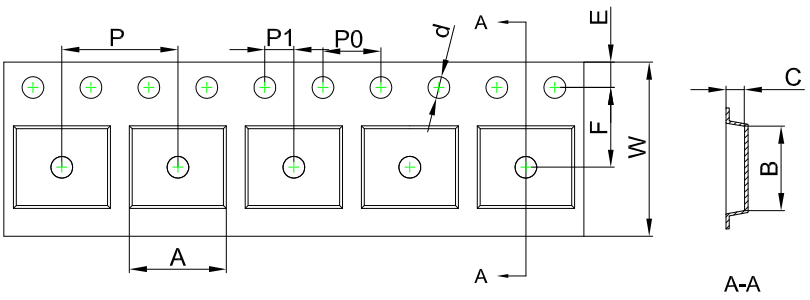

Notes：
1 Controlling dimension：in millimeters.
2 General tolerance:±0.05mm.
3 The pad layout is for referance purpose only.

NOTICE

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# PDFNWB5×6-8L Tape and Reel

## PDFNWB5×6-8L Embossed Carrier Tape

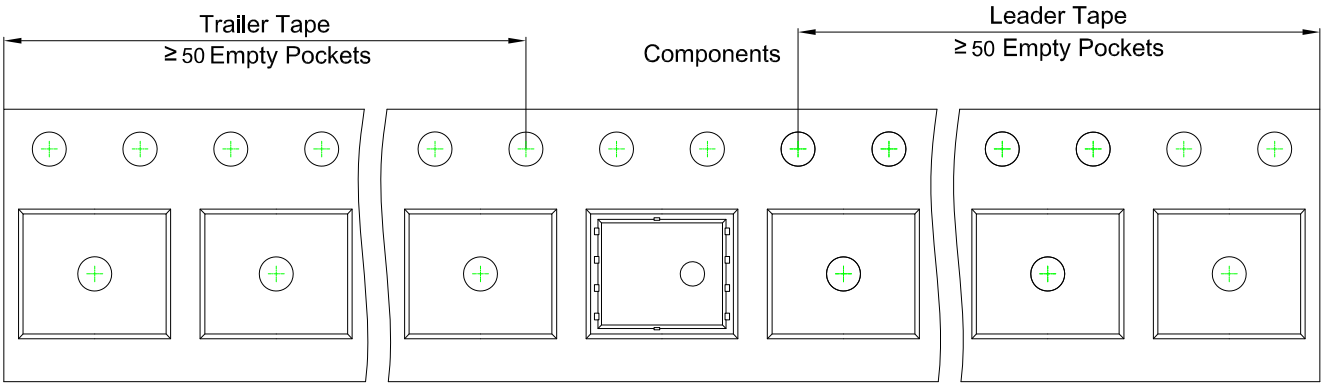



Packaging Description:

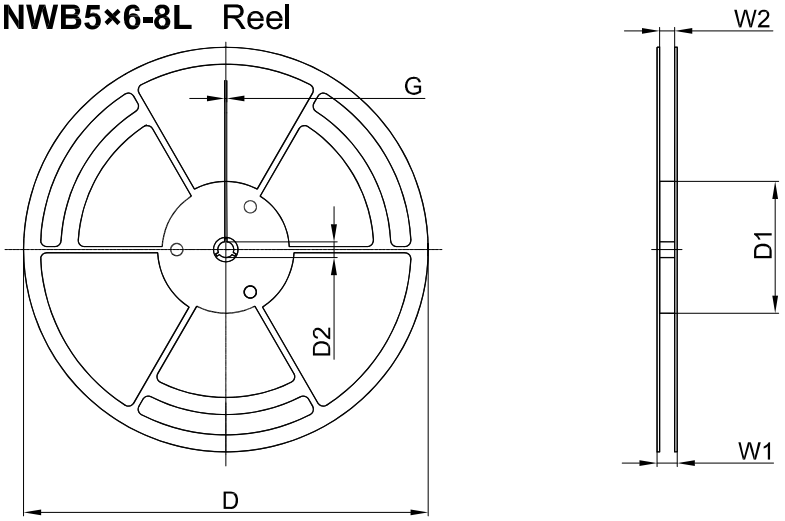
**PDFNWB5×6-8L** parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled 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 |
| **PDFNWB5×6-8L** | 6.30 | 5.30 | 1.10 | Ø1.50 | 1.75 | 5.50 | 4.00 | 8.00 | 2.00 | 12.00 |

## PDFNWB5×6-8L Tape Leader and Trailer




## PDFNWB5×6-8L Reel




| Dimensions are in millimeter | | | | | | |
|---|---|---|---|---|---|---|
| **Reel Option** | **D** | **D1** | **D2** | **G** | **W1** | **W2** |
| 13" Dia | φ330.00 | 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 | 10,000 pcs | 360×360×65 | 50,000 pcs | 378×358×382 |

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