SZCJ

Shenzhen Changji Semiconductor Co., LTD.

# DFNWB3×3-8L Plastic-Encapsulate MOSFET

## CJAE10P06 P-Channel Power MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)}$TYP | $I_D$ |
|---|---|---|
| -60V | 26mΩ@-10V | -10A |




### DESCRIPTION

The CJAE10P06 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

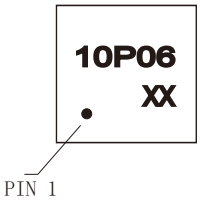
### FEATURES

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

### APPLICATIONS

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

### MARKING

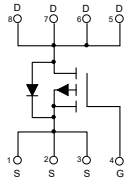



10P06=Part No.

Solid dot=Pin1 indicator.

XX=Code.

### EQUIVALENT CIRCUIT




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

| Parameter | Symbol | Limit | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | -60 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $I_D$ ① | -10 | A |
| Pulsed Drain Current | $I_{DM}$ ② | -40 | A |
| Single Pulsed Avalanche Energy | $E_{AS}$ ③ | 180 | mJ |
| Power Dissipation | $P_D$ ① | 30.5 | W |
| Operating Junction and Storage Temperature Range | $T_J$ ,$T_{stg}$ | -55~+150 | ℃ |

| Thermal Characteristics | | | | | |
|---|---|---|---|---|---|
| **Parameter** | | **Symbol** | **Typ** | **Max** | **Units** |
| Maximum Junction-to-Case | | $R_{\theta JC}$① | 2.5 | 3.3 | ℃/W |
| Maximum Junction-to-Ambient | t ≤ 10s | $R_{\theta JA}$⑥ | 22 | 35 | |
| | Steady State | | 52 | 83.3 | |

## 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, $I_D$ =-250μA | | -60 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =-60V, $V_{GS}$ =0V | $T_J$ =25℃ | | | 1 | μA |
| | | | $T_J$ =125℃ | | | 300 | |
| Gate-body leakage current | $I_{GSS}$ | $V_{DS}$ =0V, $V_{GS}$ =±20V | | | | ±100 | nA |
| **On characteristics** ④ | | | | | | | |
| Gate-threshold voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =-250μA | | -1.0 | -2.2 | -3.0 | V |
| Static drain-source on-sate resistance | $R_{DS(on)}$ | $V_{GS}$ =-10V, $I_D$ =-10A | | | 26 | 35 | mΩ |
| **Dynamic characteristics** ④⑤ | | | | | | | |
| Input capacitance | $C_{iss}$ | $V_{DS}$ =-25V,$V_{GS}$ =0V, f =1MHz | | | 4500 | | pF |
| Output capacitance | $C_{oss}$ | | | | 705 | | |
| Reverse transfer capacitance | $C_{rss}$ | | | | 515 | | |
| Gate resistance | Rg | f =1MHz | | | 6.0 | | Ω |
| **Switching characteristics** ④⑤ | | | | | | | |
| Total gate charge | $Q_g$ | $V_{GS}$=-10V, $V_{DS}$=-30V, $I_D$=-10A | | | 52 | | nC |
| Gate-source charge | $Q_{gs}$ | | | | 12 | | |
| Gate-drain charge | $Q_{gd}$ | | | | 15 | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD}$=-30V,$R_G$=3Ω $R_L$=1.5Ω,$V_{GS}$=-10V, | | | 16 | | ns |
| Turn-on rise time | $t_r$ | | | | 18 | | |
| Turn-off delay time | $t_{d(off)}$ | | | | 39 | | |
| Turn-off fall time | $t_f$ | | | | 44 | | |
| **Drain-Source Diode Characteristics** | | | | | | | |
| Drain-source diode forward voltage | $V_{SD}$ ④ | $V_{GS}$ =0V, $I_S$=-1A | | | | -1.2 | V |
| Continuous drain-source diode forward current | $I_S$ ① | | | | | -10 | A |
| Pulsed drain-source diode forward current | $I_{SM}$ ② | | | | | -40 | A |

Notes:

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

2.$P_W$≤10μs, Duty cycle≤1%.

3.EAS condition: VDD=-15V,VGS=-10V, L=0.5mH, Rg=25Ω Starting TJ = 25°℃.

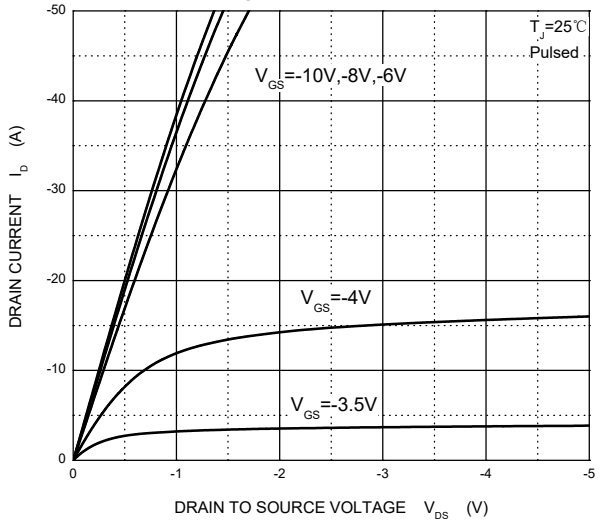
4.Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

5.Guaranteed by design, not subject to production.

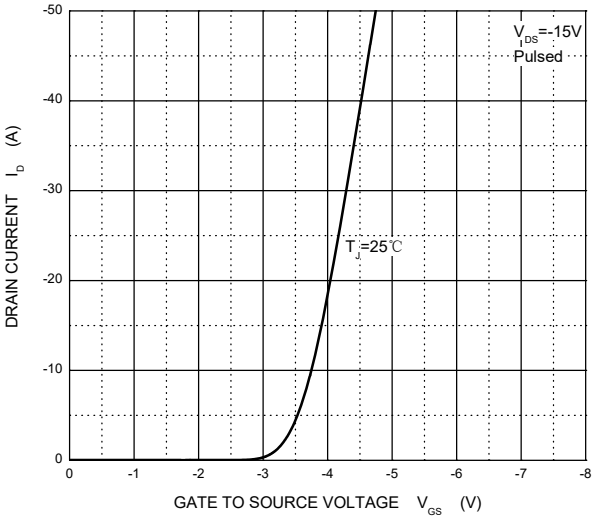
6.The value of RθJA is measured with the device mounted on 1 $in^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_a$=25℃..

## Typical Characteristics

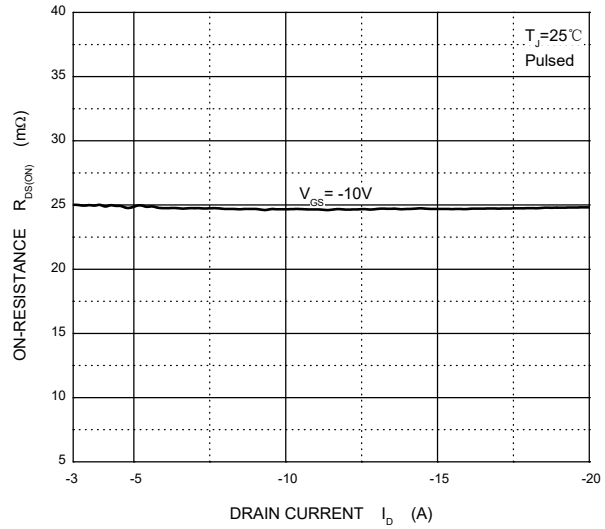
**Output Characteristics**



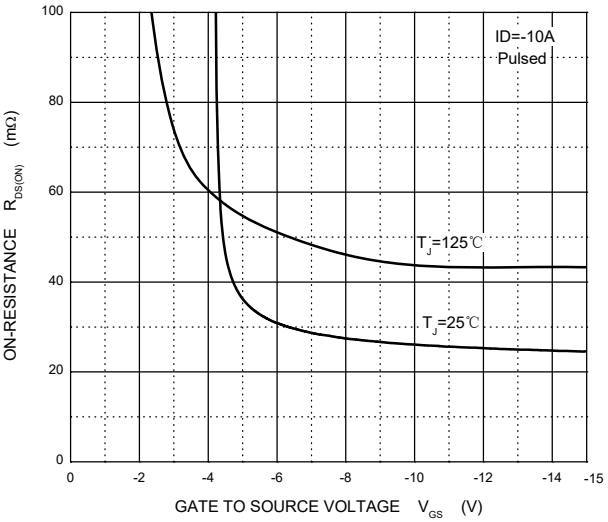

**Transfer Characteristics**



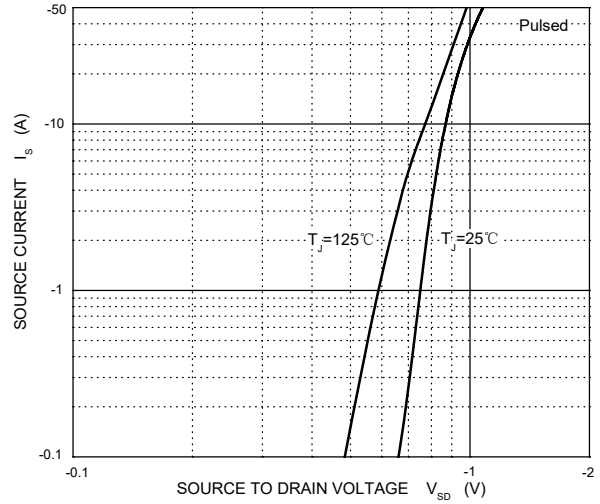

**$R_{DS(ON)}$ —— $I_D$**



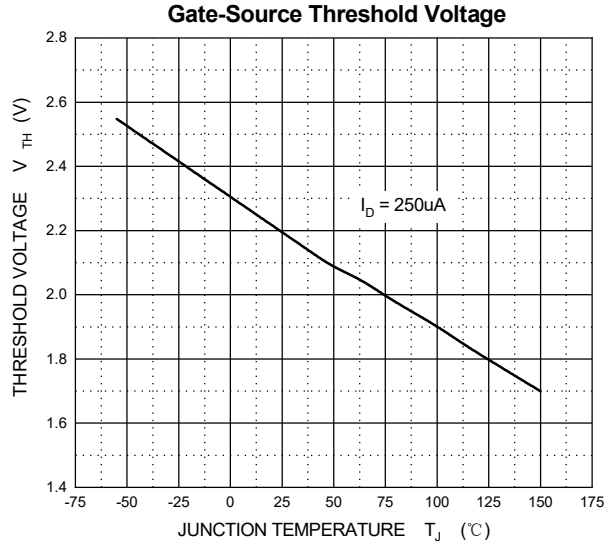

**$R_{DS(ON)}$—— $V_{GS}$**




**$I_S$ —— $V_{SD}$**

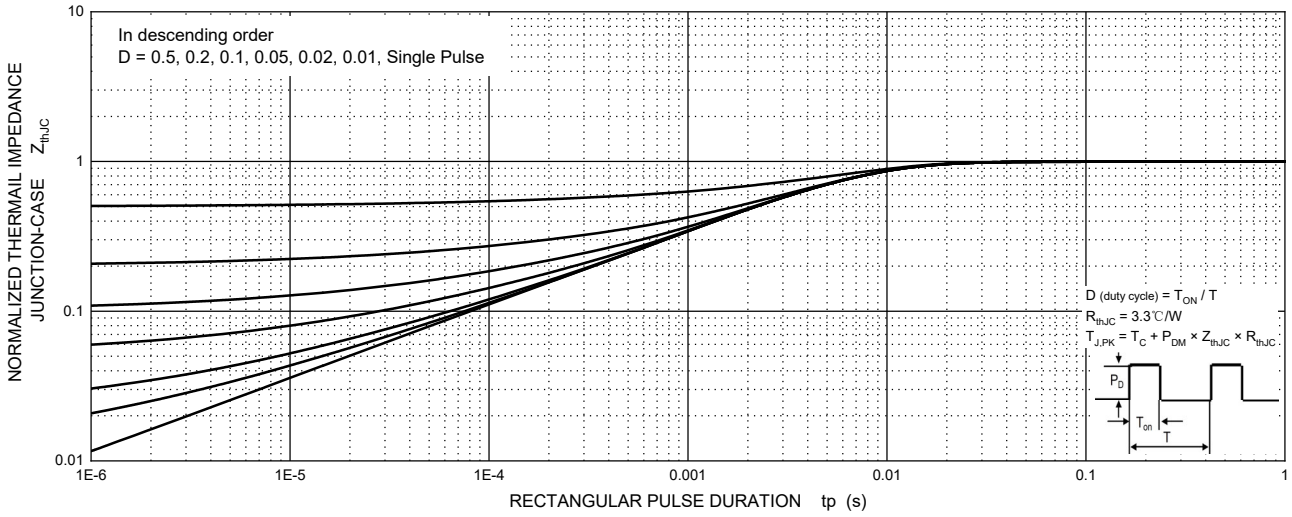



**Gate-Source Threshold Voltage**

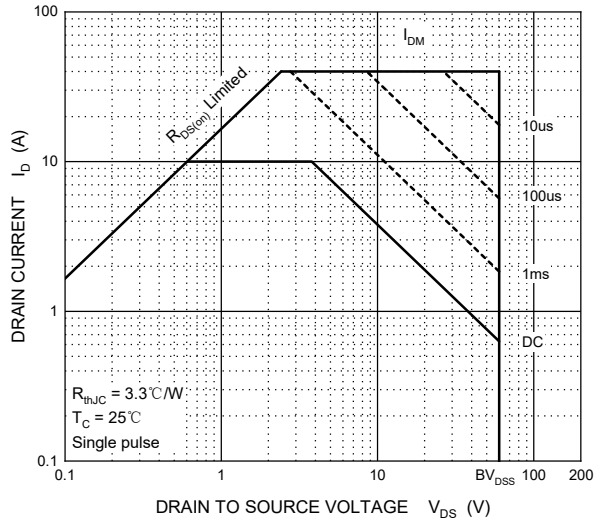


## Typical Characteristics

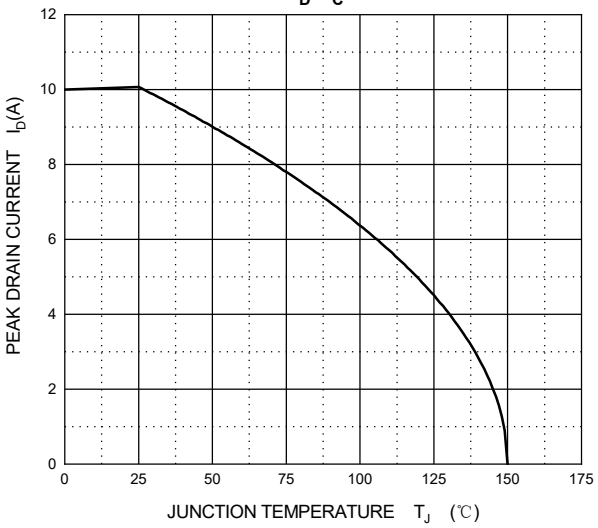
**Transient Thermal Impedance, Junction-Case**




**Maximum Safe Operating Area**



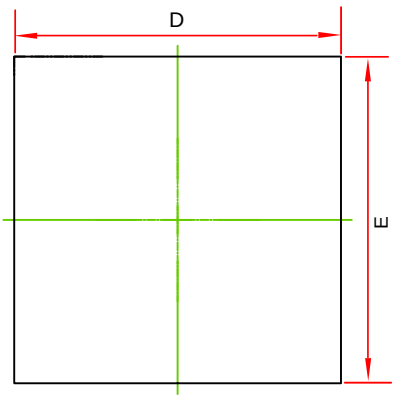

**$I_D$-$T_C$**



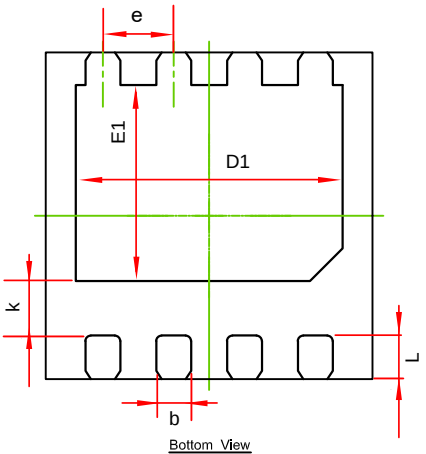


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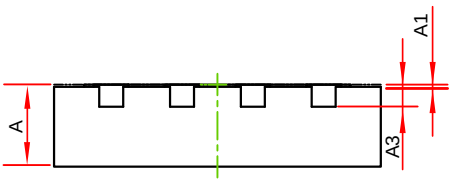
## DFNWB3X3-8L Package Outline Dimensions




Top View
[顶视图]



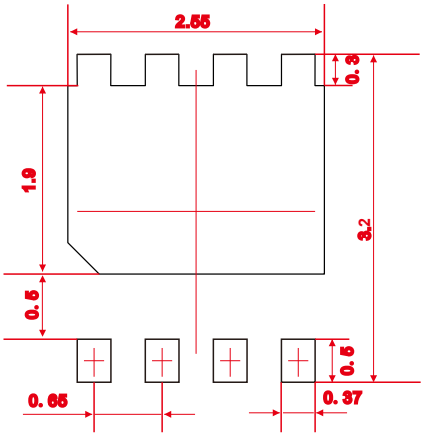

Bottom View
[背视图]




Side View
[侧视图]

| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.700 | 0.800 | 0.028 | 0.031 |
| A1 | 0.000 | 0.050 | 0.000 | 0.002 |
| A3 | 0.203 REF. | | 0.008 REF. | |
| D | 2.924 | 3.076 | 0.115 | 0.121 |
| E | 2.924 | 3.076 | 0.115 | 0.121 |
| D1 | 2.350 | 2.550 | 0.093 | 0.100 |
| E1 | 1.700 | 1.900 | 0.067 | 0.075 |
| k | 0.200 MIN. | | 0.008MIN. | |
| b | 0.270 | 0.370 | 0.011 | 0.015 |
| e | 0.650 TYP. | | 0.026 TYP. | |
| L | 0.300 | 0.500 | 0.012 | 0.020 |

## DFNWB3X3-8L Suggested Pad Layout

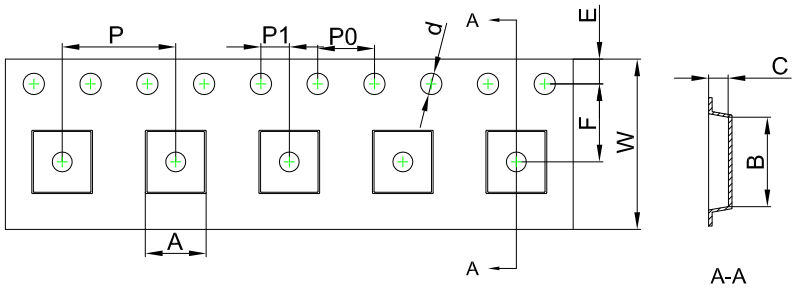



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

NOTICE

SZCJ reserves the right to make modifications,enhan nts,improvements,corrections or other es without further notice to any product herein. SZCJ does not assume any liability arising out of the application or use of any product described h

## DFNWB3×3-8L Embossed Carrier Tape

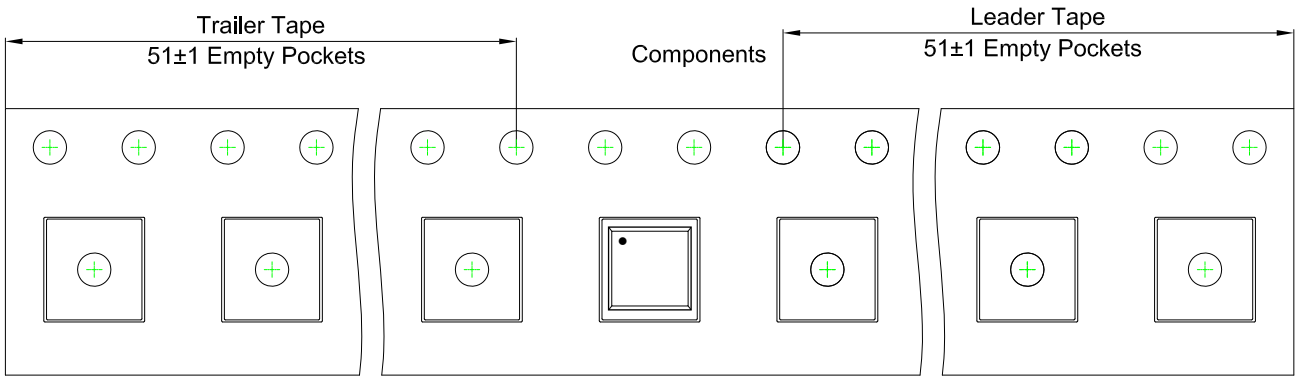



Packaging Description:

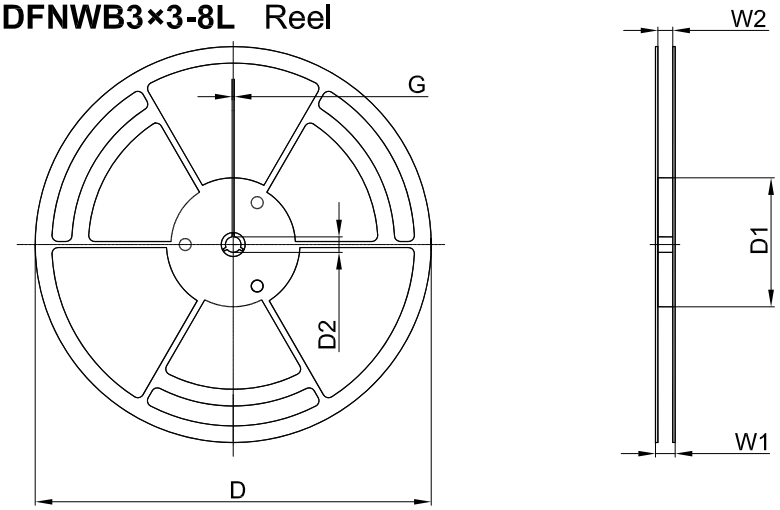
**DFNWB3x3-8L** parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled 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 |
| **DFNWB3×3-8L** | 3.35 | 3.35 | 1.13 | Ø1.50 | 1.75 | 5.50 | 4.00 | 8.00 | 2.00 | 12.00 |

## DFNWB3×3-8L Tape Leader and Trailer




## DFNWB3×3-8L 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 | 10,000 pcs | 360×360×65 | 50,000 pcs | 378×358×382 |