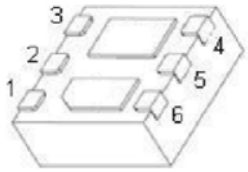
JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO., LTD

# DFNWB2X2-6L-U Plastic-Encapsulate MOSFETS

## CJM7201 N-Channel +P-Channel MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)}$MAX | $I_D$ |
|---|---|---|
| 60V | 7Ω@10V | 0.115A |
| | 7Ω@5V | |
| -20V | 112mΩ@-4.5V | -2.3A |
| | 142mΩ@-2.5V | |

**DFNWB2×2-6L-U**



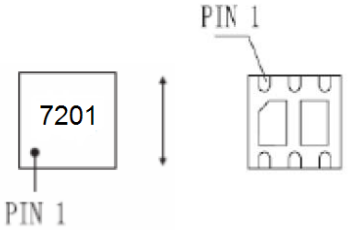

### FEATURE

- Surface Mount Package
- TrenchFET Power MOSFET
- High Density Cell Design for Low $R_{DS(ON)}$
- Voltage Controlled Small Signal Switch
- Rugged and Reliable
- High Saturation Current Capability

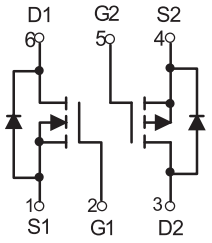
### APPLICATION

- Load Switch for Portable Devices
- DC/DC Converter

### MARKING




### Equivalent Circuit




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

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| **N-MOSFET** | | | |
| Drain-Source Voltage | $V_{DS}$ | 60 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current (note 1) | $I_D$ | 0.115 | A |
| Pulsed Drain Current (tp=10us) | $I_{DM}$ | 0.46 | A |
| **P-MOSFET** | | | |
| Drain-Source Voltage | $V_{DS}$ | -20 | V |
| Gate-Source Voltage | $V_{GS}$ | ±8 | V |
| Continuous Drain Current (note 1) | $I_D$ | -2.3 | A |
| Pulsed Drain Current (tp=10us) | $I_{DM}$ | -10 | A |
| **Temperature and Thermal Resistance** | | | |
| Thermal Resistance from Junction to Ambient (note 1) | $R_{\theta JA}$ | 167 | ℃/W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55~+150 | ℃ |
| Lead Temperature for Soldering Purposes(1/8'' from case for 10 s) | $T_L$ | 260 | ℃ |

## MOSFET ELECTRICAL CHARACTERISTICS

### N-ch MOSFET ELECTRICAL CHARACTERISTICS($T_a$=25℃ unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **STATIC 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 | | | 80 | nA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±20V, $V_{DS}$ = 0V | | | ±80 | nA |
| Gate threshold voltage (note 2) | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250μA | 1 | | 2.5 | V |
| Drain-source on-resistance(note 2) | $R_{DS(on)}$ | $V_{GS}$ =10V, $I_D$ =500mA | | | 7 | Ω |
| | | $V_{GS}$ =5V, $I_D$ =50mA | | | 7 | Ω |
| Forward tranconductance(note 2) | $g_{FS}$ | $V_{DS}$ =10V, $I_D$ =200mA | 80 | | | mS |
| Diode forward voltage | $V_{SD}$ | $I_S$=115mA, $V_{GS}$ = 0V | 0.55 | | 1.2 | V |
| **DYNAMIC CHARACTERISTICS (note 4)** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ =25V,$V_{GS}$ =0V,f =1MHz | | | 50 | pF |
| Output Capacitance | $C_{oss}$ | | | | 25 | pF |
| Reverse Transfer Capacitance | $C_{rss}$ | | | | 5 | pF |
| **SWITCHING CHARACTERISTICS (note 3,4)** | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{GEN}$=10V,$V_{DD}$=25V,$R_L$=50Ω | | | 20 | ns |
| Turn-off delay time | $t_{d(off)}$ | $I_D$=500mA,$R_G$=25Ω | | | 40 | ns |

### P-ch MOSFET ELECTRICAL CHARACTERISTICS($T_a$=25℃ unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **STATIC CHARACTERISTICS** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =-250μA | -20 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =-20V,$V_{GS}$ = 0V | | | -1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±8V, $V_{DS}$ = 0V | | | ±100 | nA |
| Gate threshold voltage (note 2) | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =-250μA | -0.4 | | -1 | V |
| Drain-source on-resistance(note 2) | $R_{DS(on)}$ | $V_{GS}$ =-4.5V, $I_D$ =-2.8A | | 90 | 112 | mΩ |
| | | $V_{GS}$ =-2.5V, $I_D$ =-2A | | 110 | 142 | mΩ |
| Forward tranconductance(note 2) | $g_{FS}$ | $V_{DS}$ =-5V, $I_D$ =-2.8A | | 6.5 | | S |
| Diode forward voltage | $V_{SD}$ | $I_S$=-0.7A, $V_{GS}$ = 0V | | -0.8 | -1.2 | V |
| **DYNAMIC CHARACTERISTICS (note 4)** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ =-10V,$V_{GS}$ =0V,f =1MHz | | 405 | | pF |
| Output Capacitance | $C_{oss}$ | | | 75 | | pF |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 55 | | pF |
| Gate resistance | $R_g$ | f =1MHz | | 6 | | Ω |
| **SWITCHING CHARACTERISTICS (note 3,4)** | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{GEN}$=-4.5V,$V_{DD}$=-10V,$R_L$=10Ω $I_D$=-1A,$R_g$=1Ω | | 11 | 20 | ns |
| Turn-on rise time | $t_r$ | | | 35 | 60 | ns |
| Turn-off delay time | $t_{d(off)}$ | | | 30 | 50 | ns |
| Turn-off fall time | $t_f$ | | | 10 | 20 | ns |
| Total gate charge | $Q_g$ | $V_{DS}$=-10V,$V_{GS}$=-4.5V,$I_D$=-3A | | | 10 | nC |
| Gate-source charge | $Q_{gs}$ | | | | 6 | nC |
| Gate-drain charge | $Q_{gd}$ | | | 0.7 | | nC |

**Notes :**

1.Surface mounted on FR4 board using the minimum recommended pad size.

2. Pulse Test : Pulse width=300μs, duty cycle≤2%.

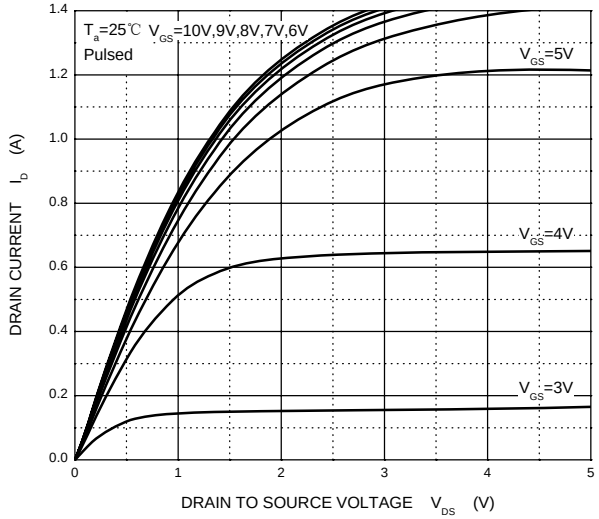
3. Switching characteristics are independent of operating junction temperature.

4. Graranted by design，not subject to producting.

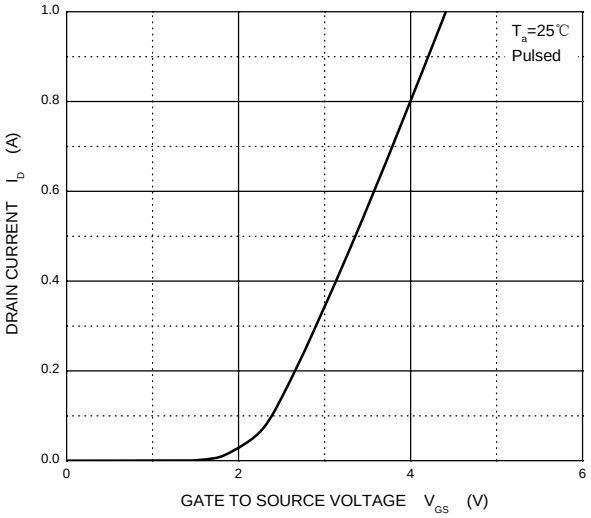
## Typical Characteristics

N-Channel Characteristics

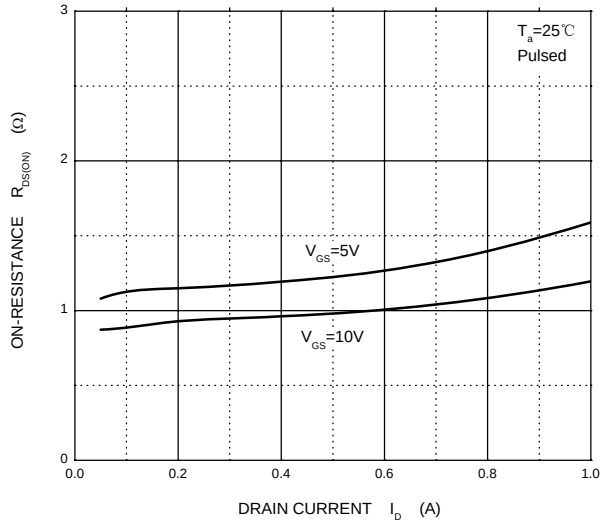
**Output Characteristics**



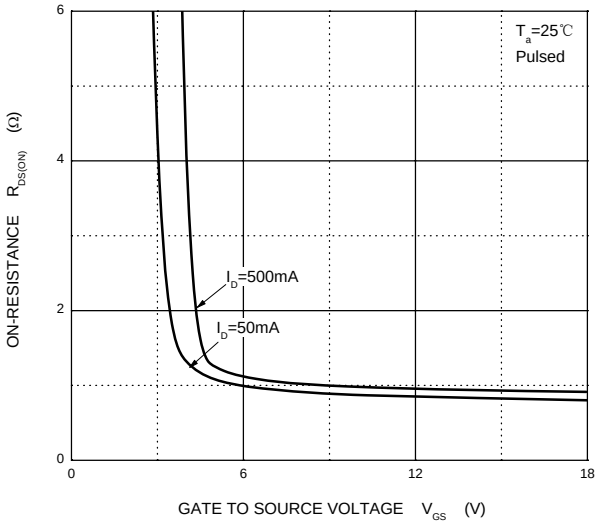

**Transfer Characteristics**



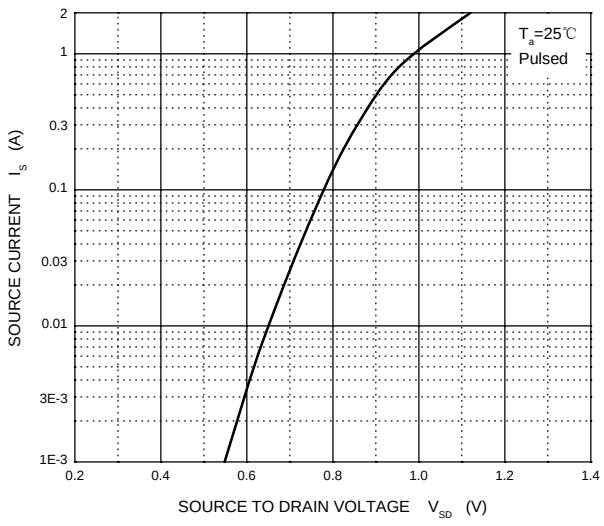

**$R_{DS(ON)}$ —— $I_D$**




**$R_{DS(ON)}$ —— $V_{GS}$**



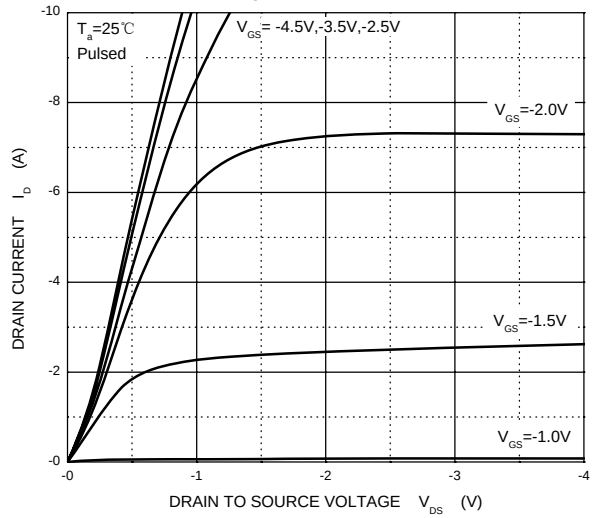

**$I_S$ —— $V_{SD}$**



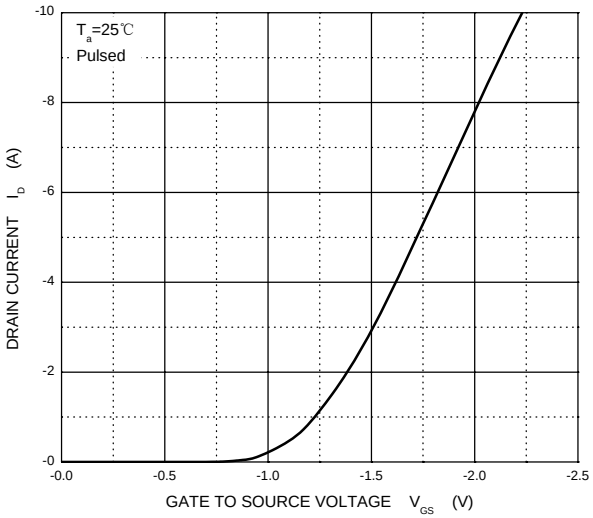
## Typical Characteristics

P-Channel Characteristics

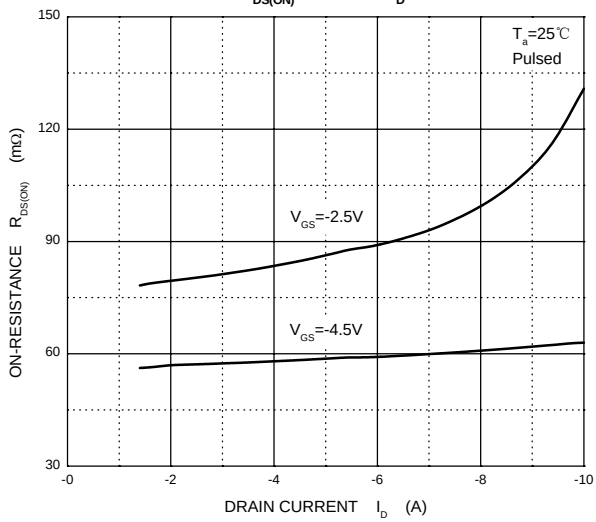
**Output Characteristics**



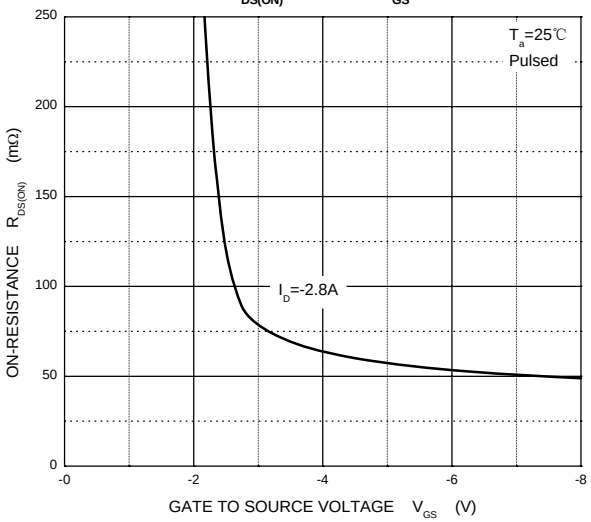

**Transfer Characteristics**



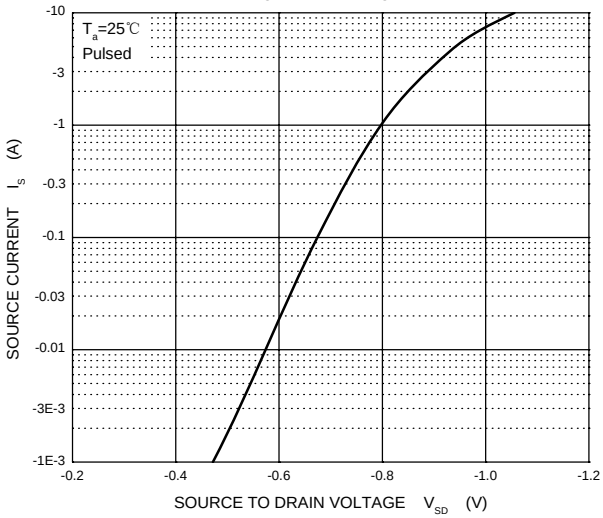

**$R_{DS(ON)}$ — $I_D$**



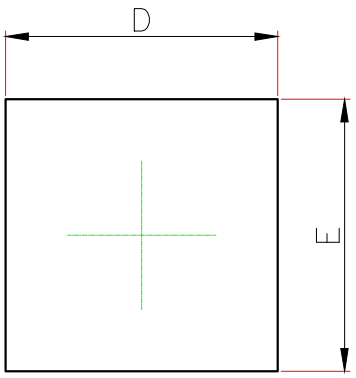

**$R_{DS(ON)}$ — $V_{GS}$**

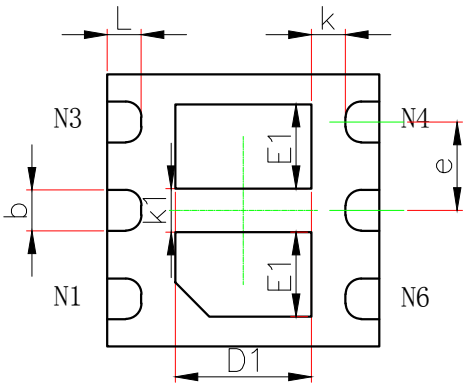


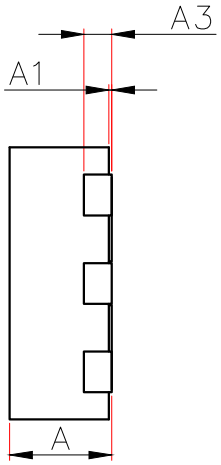

**$I_S$ — $V_{SD}$**



## DFNWB2×2-6L-U Package Outline Dimensions

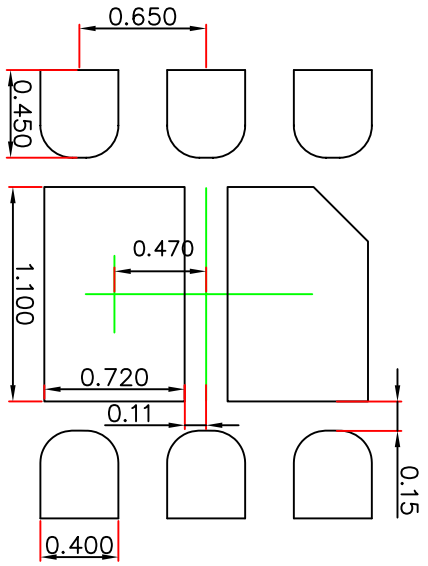


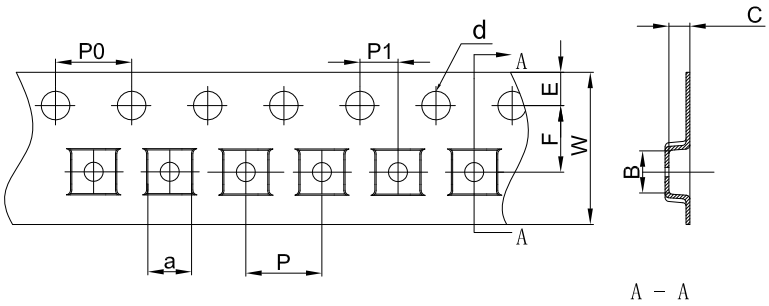

| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | MIN. | MAX. | MIN. | MAX. |
| A | 0.700 | 0.800 | 0.028 | 0.031 |
| A1 | 0.000 | 0.050 | 0.000 | 0.002 |
| A3 | 0.203REF. | | 0.008REF. | |
| D | 1.900 | 2.100 | 0.075 | 0.083 |
| E | 1.900 | 2.100 | 0.075 | 0.083 |
| D1 | 0.900 | 1.100 | 0.035 | 0.043 |
| E1 | 0.520 | 0.720 | 0.020 | 0.028 |
| b | 0.250 | 0.350 | 0.010 | 0.014 |
| e | 0.650TYP. | | 0.026TYP. | |
| k | 0.200MIN. | | 0.008MIN. | |
| k1 | 0.320REF | | 0.013REF. | |
| L | 0.200 | 0.300 | 0.008 | 0.012 |

## DFNWB2×2-6L-U Suggested Pad Layout




**Note:**
1.Controlling dimension:in millimeters.
2.General tolerance:±0.050mm.
3.The pad layout is for reference purposes only.

## DFNWB2×2-6L Embossed Carrier Tape

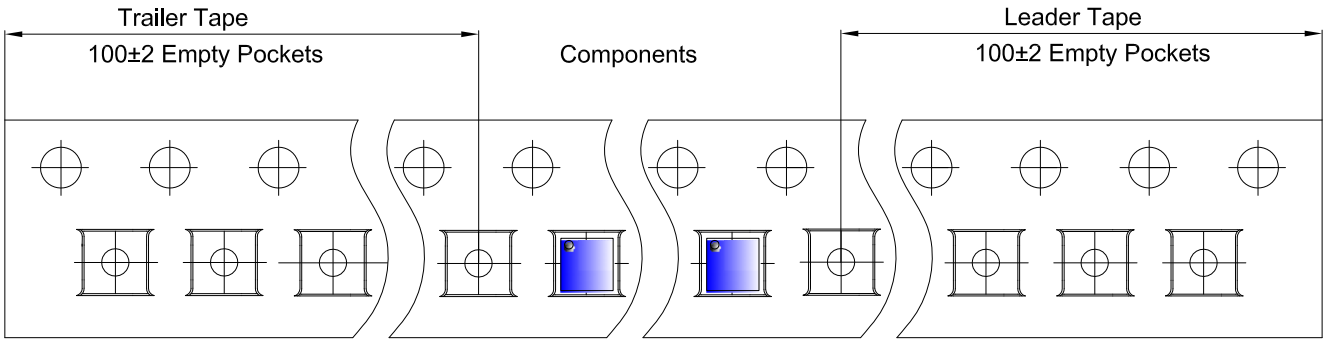



Packaging Description:

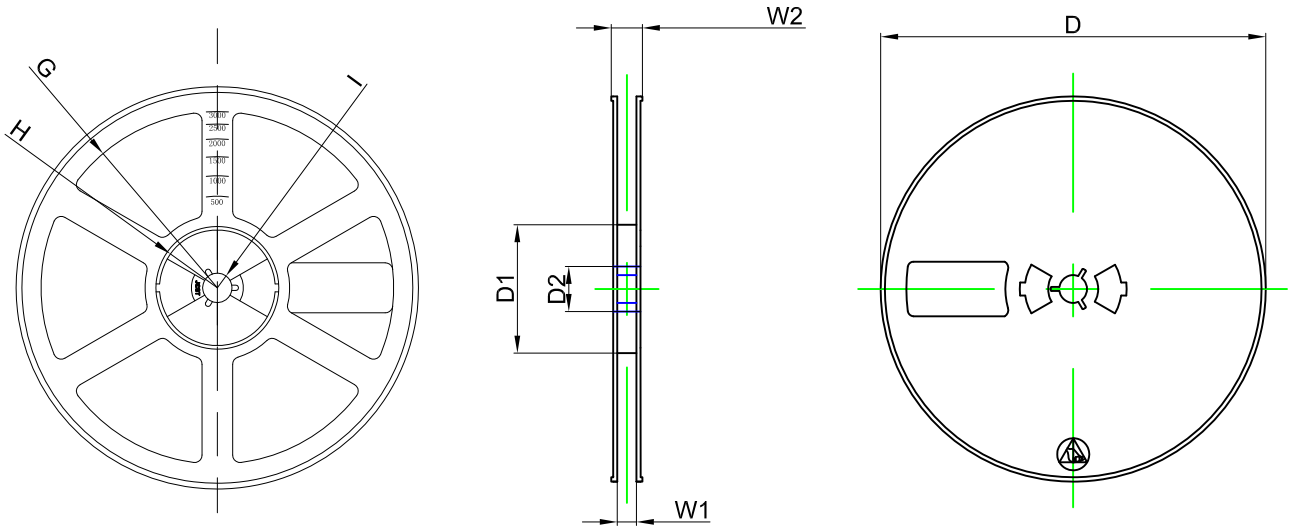
DFNWB2×2-6L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 18.0cm 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 |
| DFNWB2×2-6L | 2.30 | 2.30 | 1.10 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

## DFNWB2×2-6L Tape Leader and Trailer




## DFNWB2×2-6L Reel




| Dimensions are in millimeter | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Reel Option | D | D1 | D2 | G | H | I | W1 | W2 |
| 7"Dia | Ø180.00 | 60.00 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 13.10 |

| REEL | Reel Size | Box | Box Size(mm) | Carton | Carton Size(mm) | G.W.(kg) |
|---|---|---|---|---|---|---|
| 3000 pcs | 7 inch | 30,000 pcs | 203×203×195 | 120,000 pcs | 438×438×220 | |