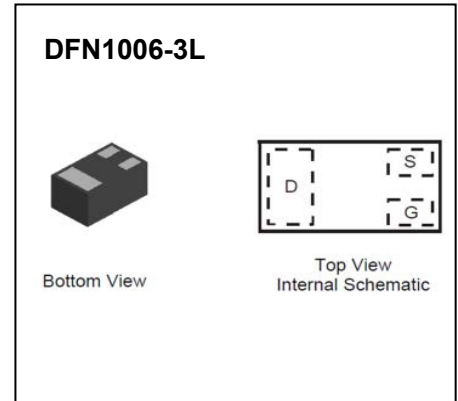




## DFN1006-3L Plastic-Encapsulate MOSFETs

### CJBA3139K P-Channel MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$  | $I_D$  |
|---------------|------------------|--------|
| -20V          | 520mΩ@-4.5V      | -0.66A |
|               | 780mΩ@-2.5V      |        |
|               | 950mΩ(TYP)@-1.8V |        |



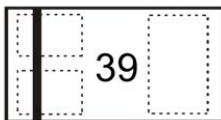
#### FEATURE

- Lead Free Product is Acquired
- Surface Mount Package
- P-Channel Switch with Low  $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive
- ESD Protected Gate

#### APPLICATION

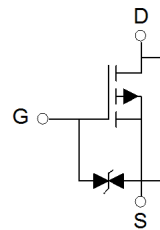
- Load/ Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

#### MARKING:



Top View  
Bar Denotes Gate  
and Source Side

#### Equivalent Circuit



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

| Parameter                                                        | Symbol          | Value    | Unit               |
|------------------------------------------------------------------|-----------------|----------|--------------------|
| Drain-Source Voltage                                             | $V_{DS}$        | -20      | V                  |
| Typical Gate-Source Voltage                                      | $V_{GS}$        | $\pm 12$ | V                  |
| Continuous Drain Current (note 1)                                | $I_D$           | -0.66    | A                  |
| Pulsed Drain Current ( $t_p=10\mu\text{s}$ )                     | $I_{DM}$        | -1.2     | A                  |
| Power Dissipation (note 1)                                       | $P_D$           | 275      | mW                 |
| Thermal Resistance from Junction to Ambient (note 1)             | $R_{\theta JA}$ | 455      | $^\circ\text{C/W}$ |
| Operation Junction and Storage Temperature Range                 | $T_J, T_{STG}$  | -55~ 150 | $^\circ\text{C}$   |
| Lead Temperature for Soldering Purposes(1/8" from case for 10 s) | $T_L$           | 260      | $^\circ\text{C}$   |

## MOSFET ELECTRICAL CHARACTERISTICS

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

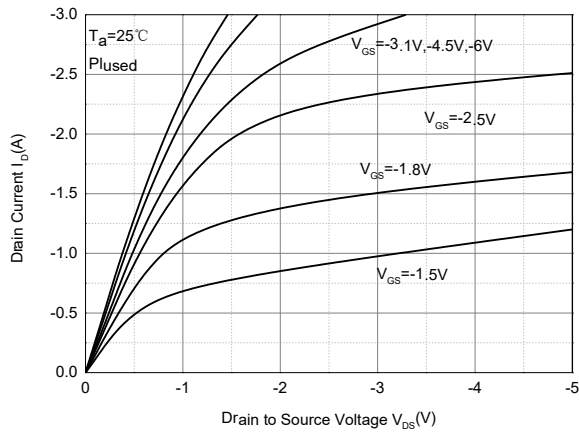
| Parameter                          | Symbol               | Test Condition                                                                                  | Min   | Typ   | Max  | Unit |
|------------------------------------|----------------------|-------------------------------------------------------------------------------------------------|-------|-------|------|------|
| STATIC PARAMETERS                  |                      |                                                                                                 |       |       |      |      |
| Drain-source breakdown voltage     | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> =-250μA                                                    | -20   |       |      | V    |
| Zero gate voltage drain current    | I <sub>DSS</sub>     | V <sub>DS</sub> =-20V, V <sub>GS</sub> = 0V                                                     |       |       | -1   | μA   |
| Gate-body leakage current          | I <sub>GSS</sub>     | V <sub>GS</sub> =±10V, V <sub>DS</sub> = 0V                                                     |       |       | ±20  | uA   |
| Gate threshold voltage (note 2)    | V <sub>GS(th)</sub>  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA                                       | -0.35 | -0.61 | -1.1 | V    |
| Drain-source on-resistance(note 2) | R <sub>DS(on)</sub>  | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1A                                                     |       | 450   | 520  | mΩ   |
|                                    |                      | V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-0.8A                                                   |       | 650   | 780  | mΩ   |
|                                    |                      | V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-0.5A                                                   |       | 950   |      | mΩ   |
| Forward tranconductance(note 2)    | g <sub>FS</sub>      | V <sub>DS</sub> =-10V, I <sub>D</sub> =-0.54A                                                   |       | 1.2   |      | S    |
| Diode forward voltage              | V <sub>SD</sub>      | I <sub>S</sub> =-0.5A, V <sub>GS</sub> = 0V                                                     |       |       | -1.2 | V    |
| DYNAMIC PARAMETERS(note 4)         |                      |                                                                                                 |       |       |      |      |
| Input Capacitance                  | C <sub>iss</sub>     | V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V, f =1MHz                                             |       | 113   |      | pF   |
| Output Capacitance                 | C <sub>oss</sub>     |                                                                                                 |       | 15    |      | pF   |
| Reverse Transfer Capacitance       | C <sub>rss</sub>     |                                                                                                 |       | 9     |      | pF   |
| SWITCHING PARAMETERS (note 4)      |                      |                                                                                                 |       |       |      |      |
| Turn-on delay time (note 3)        | t <sub>d(on)</sub>   | V <sub>DD</sub> =-4.5V, V <sub>GS</sub> =-10V,<br>I <sub>D</sub> =-200mA, R <sub>GEN</sub> =10Ω |       | 9     |      | ns   |
| Turn-on rise time (note 3)         | t <sub>r</sub>       |                                                                                                 |       | 5.7   |      | ns   |
| Turn-off delay time (note 3)       | t <sub>d(off)</sub>  |                                                                                                 |       | 32.6  |      | ns   |
| Turn-off fall time (note 3)        | t <sub>f</sub>       |                                                                                                 |       | 20.3  |      | ns   |

### Notes:

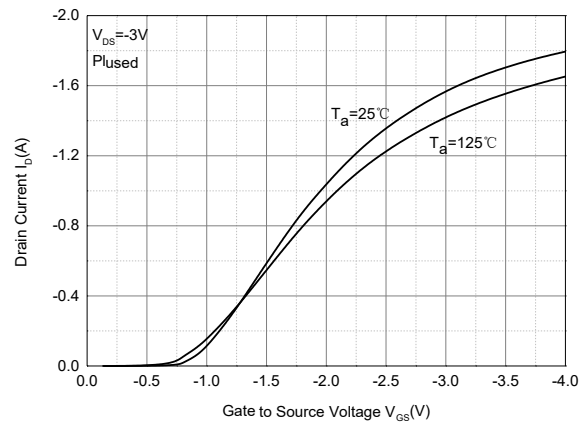
1. Surface mounted on FR4 board using 1 square inch pad size, 1oz copper.
2. Pulse Test : Pulse Width=300 $\mu s$ , Duty Cycle=2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to producing.

## Typical Characteristics

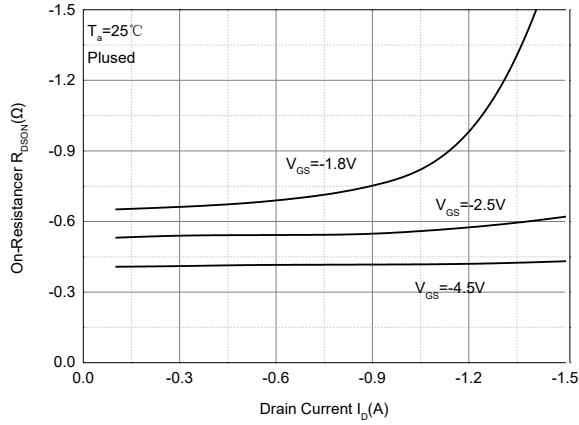
Output Characteristics



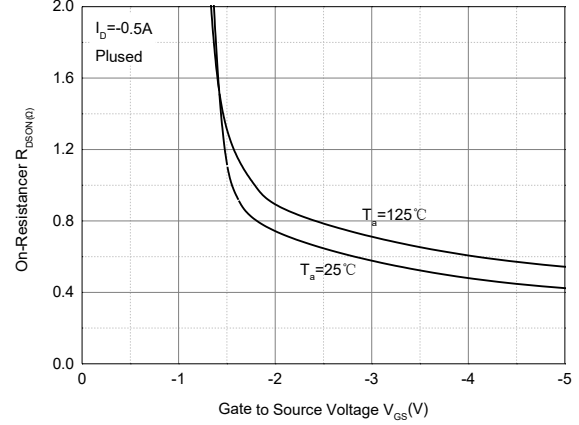
Transfer Characteristics



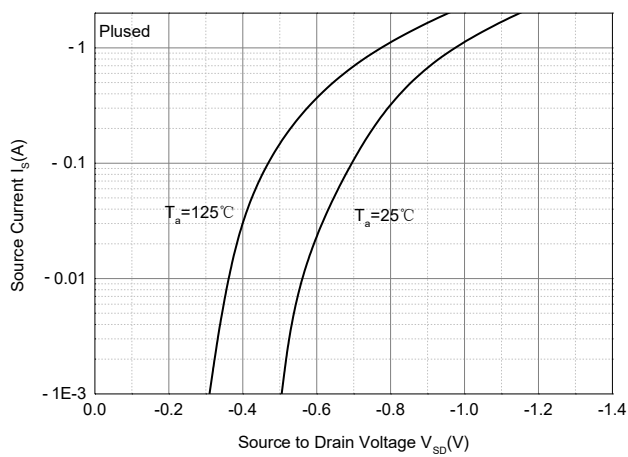
$R_{DS(ON)} - I_D$



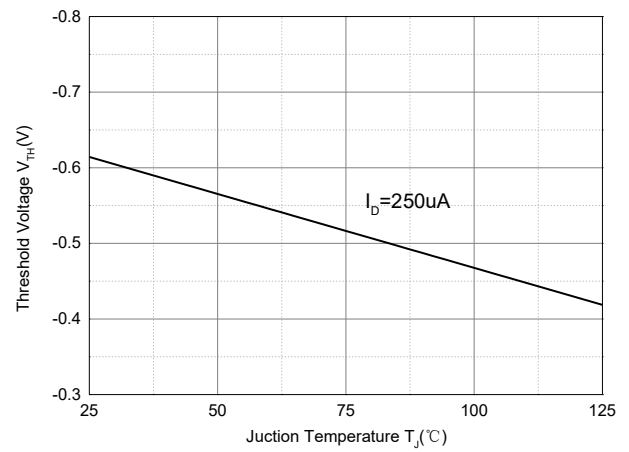
$R_{DS(ON)} - V_{GS}$



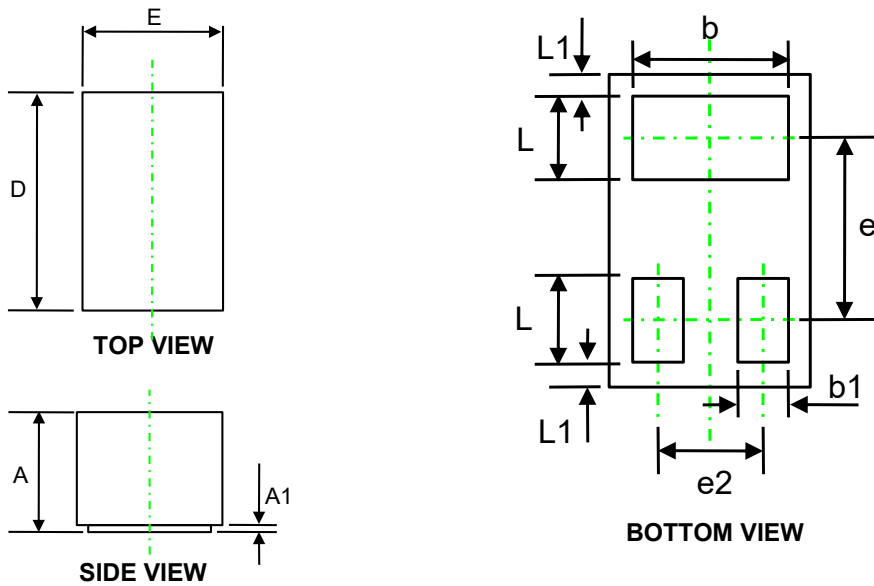
$I_S - V_{SD}$



Threshold Voltage

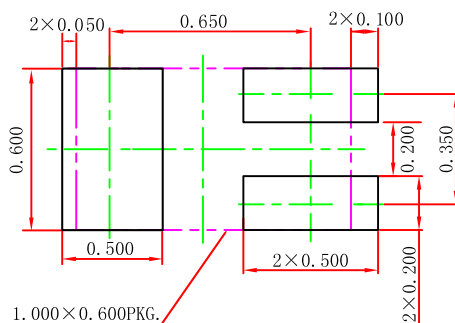


## DFN1006-3L Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.400                     | 0.550 | 0.016                | 0.022 |
| A1     | 0.000                     | 0.050 | 0.000                | 0.002 |
| D      | 0.950                     | 1.050 | 0.037                | 0.041 |
| E      | 0.550                     | 0.650 | 0.022                | 0.026 |
| b      | 0.450                     | 0.550 | 0.018                | 0.022 |
| e      | 0.650 REF.                |       | 0.026 REF.           |       |
| e2     | 0.350 REF.                |       | 0.014 REF.           |       |
| L1     | 0.050 REF.                |       | 0.002 REF.           |       |
| L      | 0.200                     | 0.300 | 0.008                | 0.012 |
| b1     | 0.100                     | 0.200 | 0.004                | 0.008 |

## DFN1006-3L Suggested Pad Layout



### Note:

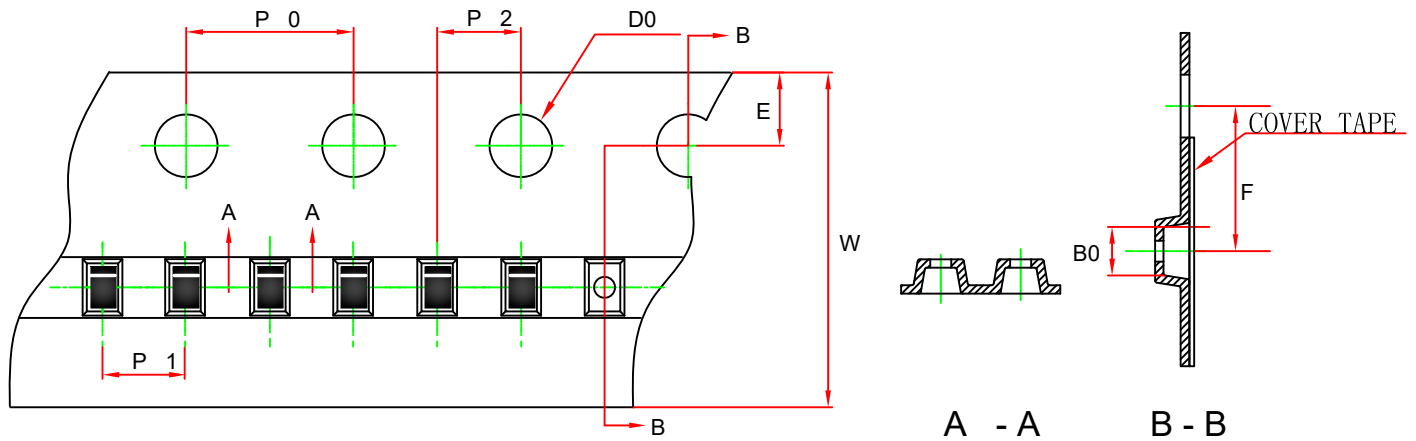
1. Controlling dimension: In millimeters.
2. General tolerance:  $\pm 0.050$  mm.
3. The pad layout is for reference purposes only.

### NOTICE

JSCJ reserves the 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.

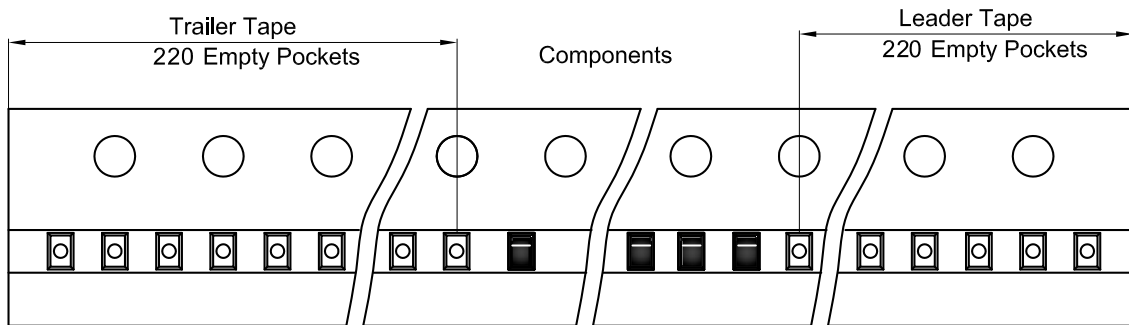
## DFN1006-3L Tape and Reel

### DFN1006-3L Embossed Carrier Tape

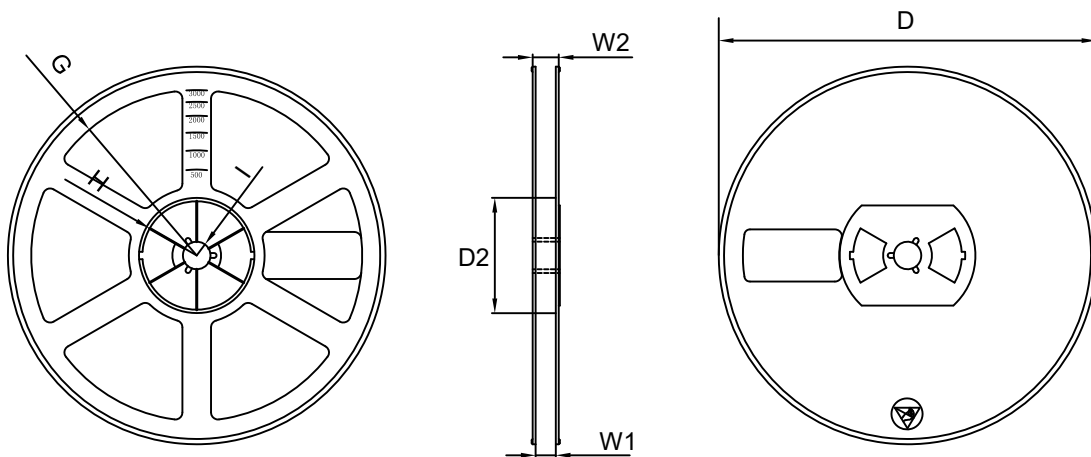


| Dimensions In Millimeters (mm) |         |        |        |        |        |        |        |        |
|--------------------------------|---------|--------|--------|--------|--------|--------|--------|--------|
| Pkg type                       | B0      | P0     | P1     | P2     | E      | F      | W      | D0     |
| DFN1006-3L                     | 1.11    | 4.00   | 2.00   | 2.00   | 1.75   | 3.50   | 8.00   | 1.55   |
| Tolerance                      | +/-0.06 | +/-0.1 | +/-0.1 | +/-0.1 | +/-0.1 | +/-0.1 | +/-0.3 | +/-0.1 |

### DFN1006-3L Tape Leader and Trailer



### DFN1006-3L Reel



| Symbol    | Dimensions In Millimeters (mm) |       |        |       |      |      |        |
|-----------|--------------------------------|-------|--------|-------|------|------|--------|
|           | D                              | D2    | G      | H     | I    | W1   | W2     |
| 7" Dia    | Φ178.00                        | 54.50 | R78.00 | R25.6 | R6.5 | 9.50 | 12.30  |
| Tolerance | +/-2                           | +/-1  | +/-1   | +/-1  | +/-1 | +/-2 | +/-1.5 |

| REEL      | Reel Size | Box        | Box size(mm) | Carton     | Carton Size(mm) |
|-----------|-----------|------------|--------------|------------|-----------------|
| 10000 pcs | 7 inch    | 150000 pcs | 220×220×210  | 600000 pcs | 450×450×240     |