



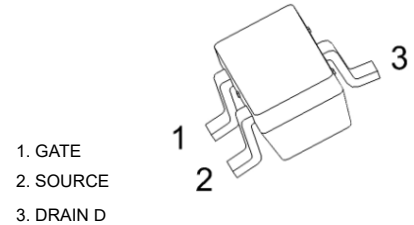
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD

## **SOT-23-3L Plastic-Encapsulate MOSFETS**

### **CJK2312** N-Channel MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$    | $I_D$ |
|---------------|--------------------|-------|
| 20V           | 14m $\Omega$ @10V  | 6A    |
|               | 17m $\Omega$ @4.5V |       |

**SOT-23-3L**



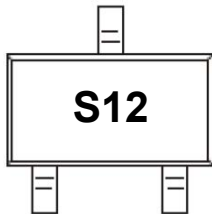
#### **FEATURES**

- TrenchFET Power MOSFET

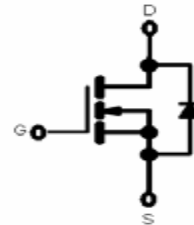
#### **APPLICATION**

- Load Switch for Portable Applications

#### **MARKING:**



#### **Equivalent Circuit**



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

| Symbol Para     | meter                                                            | Value    | Unit                 |
|-----------------|------------------------------------------------------------------|----------|----------------------|
| $V_{DS}$        | Drain-Source Voltage                                             | 20       | V                    |
| $V_{GS}$        | Gate-Source Voltage                                              | $\pm 10$ | V                    |
| $I_D$           | Continuous Drain Current (note 1)                                | 6        | A                    |
| $I_{DM}$        | Collector Current-Pulse(Note3)                                   | 22       | A                    |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient (note 2)             | 313      | $^{\circ}\text{C/W}$ |
| $T_J, T_{stg}$  | Operation Junction and Storage Temperature Range                 | -55~+150 | $^{\circ}\text{C}$   |
| $T_L$           | Lead Temperature for Soldering Purposes(1/8" from case for 10 s) | 260      | $^{\circ}\text{C}$   |

## MOSFET ELECTRICAL CHARACTERISTICS

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

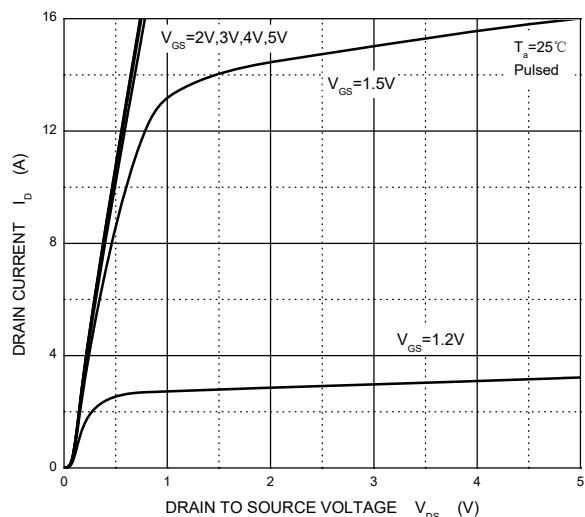
| Parameter                            | Symbol        | Test Condition                                                                   | Min | Typ | Max       | Unit      |
|--------------------------------------|---------------|----------------------------------------------------------------------------------|-----|-----|-----------|-----------|
| <b>STATIC PARAMETERS</b>             |               |                                                                                  |     |     |           |           |
| Drain-source breakdown voltage       | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                                                    | 20  |     |           | V         |
| Zero gate voltage drain current      | $I_{DSS}$     | $V_{DS} = 20V, V_{GS} = 0V$                                                      |     |     | 1         | $\mu A$   |
| Gate-body leakage current            | $I_{GSS}$     | $V_{GS} = \pm 10V, V_{DS} = 0V$                                                  |     |     | $\pm 100$ | nA        |
| Gate threshold voltage (note 3)      | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                                                | 0.5 | 0.7 | 1.1       | V         |
| Drain-source on-resistance(note 3)   | $R_{DS(on)}$  | $V_{GS} = 10V, I_D = 5A$                                                         |     | 11  | 14        | $m\Omega$ |
|                                      |               | $V_{GS} = 4.5V, I_D = 5A$                                                        |     | 13  | 17        | $m\Omega$ |
| Forward tranconductance(note 3)      | $g_{FS}$      | $V_{DS} = 10V, I_D = 5A$                                                         | 20  |     |           | S         |
| Diode forward voltage (note 3)       | $V_{SD}$      | $I_S = 6A, V_{GS} = 0V$                                                          |     |     | 1.2       | V         |
| <b>DYNAMIC PARAMETERS (note 4)</b>   |               |                                                                                  |     |     |           |           |
| Input Capacitance                    | $C_{iss}$     | $V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$                                            |     | 970 |           | pF        |
| Output Capacitance                   | $C_{oss}$     |                                                                                  |     | 158 |           | pF        |
| Reverse Transfer Capacitance         | $C_{rss}$     |                                                                                  |     | 145 |           | pF        |
| Gate Resistance                      | $R_g$         | $V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$                                             |     | 4   |           | $\Omega$  |
| <b>SWITCHING PARAMETERS (note 4)</b> |               |                                                                                  |     |     |           |           |
| Turn-on delay time                   | $t_{d(on)}$   | $V_{GEN} = 4.5V, V_{DD} = 10V$<br>$I_D = 6A, R_g = 6\Omega$<br>$R_L = 0.4\Omega$ |     | 12  |           | ns        |
| Turn-on rise time                    | $t_r$         |                                                                                  |     | 10  |           | ns        |
| Turn-off delay time                  | $t_{d(off)}$  |                                                                                  |     | 65  |           | ns        |
| Turn-off fall time                   | $t_f$         |                                                                                  |     | 20  |           | ns        |
| Total Gate Charge                    | $Q_g$         | $V_{DS} = 10V, V_{GS} = 4.5V$<br>$I_D = 6A$                                      |     |     | 32        | nC        |
| Gate-Source Chage                    | $Q_{gs}$      |                                                                                  |     | 2.5 |           | nC        |
| Gage-Drain Charge                    | $Q_{gd}$      |                                                                                  |     | 6.5 |           | nC        |

### Notes :

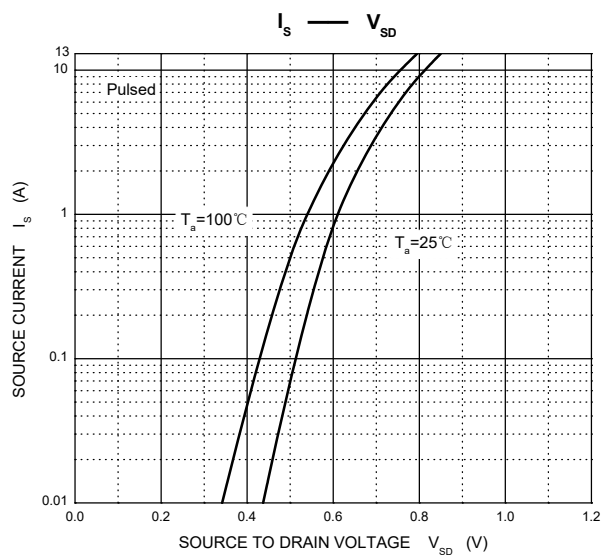
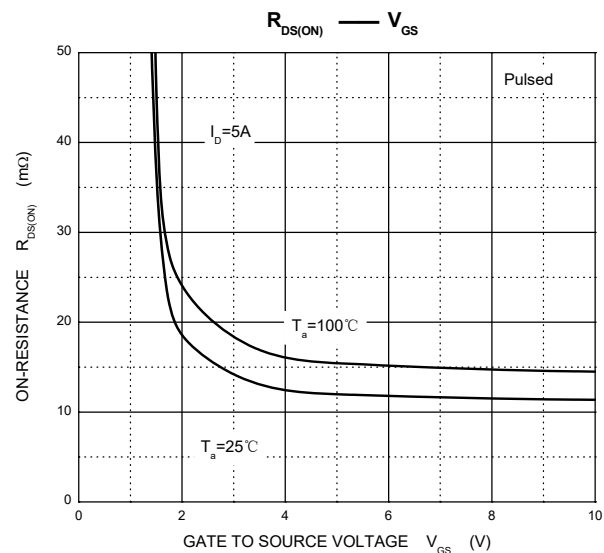
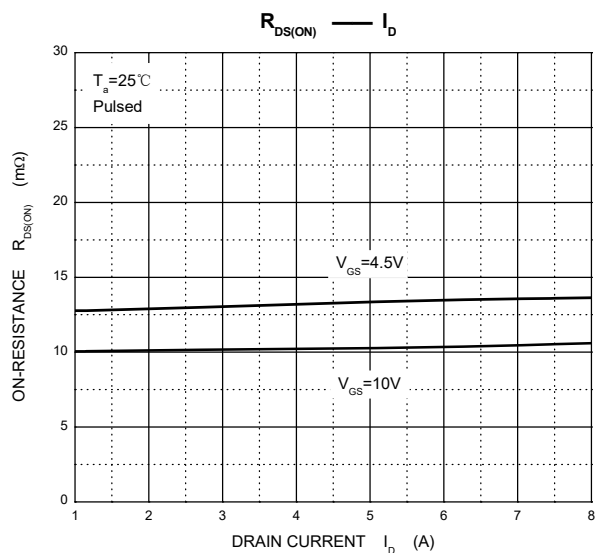
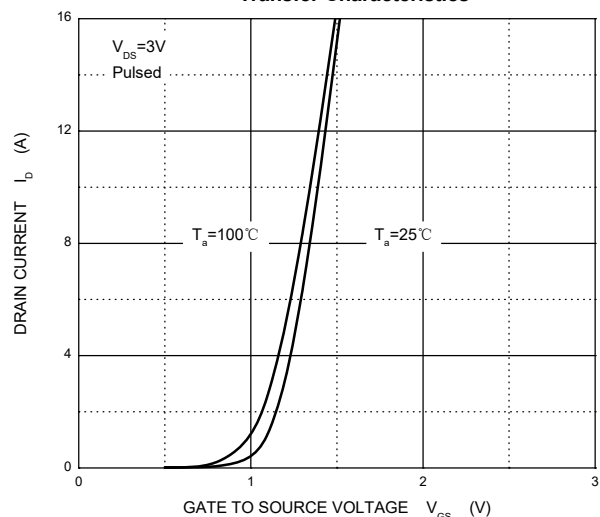
- 1.Surface mounted on FR4 board using 1 square inch pad size,1oz copper.
- 2.Surface mounted on FR4 board using the minimum pad size,1oz copper.
3. Pulse test : Pulse width=300 $\mu s$ , duty cycle $\leq 2\%$ .
4. These parameters have no way to verify.

# Typical Characteristics

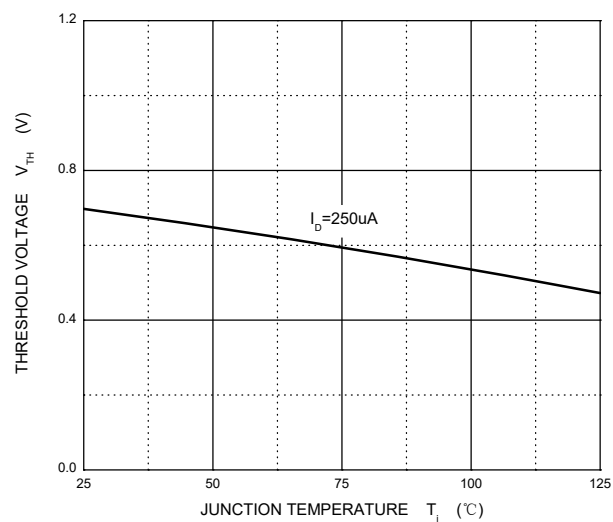
Output Characteristics



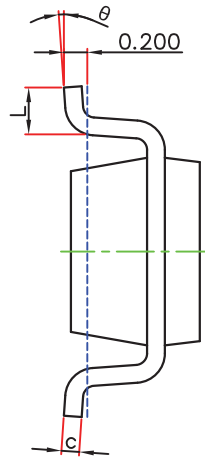
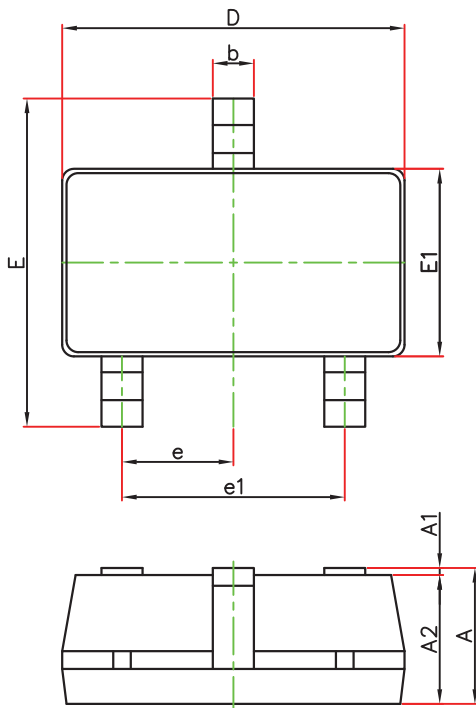
Transfer Characteristics



Threshold Voltage

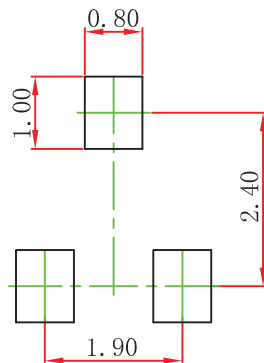


## SOT-23-3L Package Outline Dimensions



| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | Min.                      | Max.  | Min.                 | Max.  |
| A        | 1.050                     | 1.250 | 0.041                | 0.049 |
| A1       | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2       | 1.050                     | 1.150 | 0.041                | 0.045 |
| b        | 0.300                     | 0.500 | 0.012                | 0.020 |
| c        | 0.100                     | 0.200 | 0.004                | 0.008 |
| D        | 2.820                     | 3.020 | 0.111                | 0.119 |
| E1       | 1.500                     | 1.700 | 0.059                | 0.067 |
| E        | 2.650                     | 2.950 | 0.104                | 0.116 |
| e        | 0.950(BSC)                |       | 0.037(BSC)           |       |
| e1       | 1.800                     | 2.000 | 0.071                | 0.079 |
| L        | 0.300                     | 0.600 | 0.012                | 0.024 |
| $\theta$ | 0°                        | 8°    | 0°                   | 8°    |

## SOT-23-3L Suggested Pad Layout



Note:

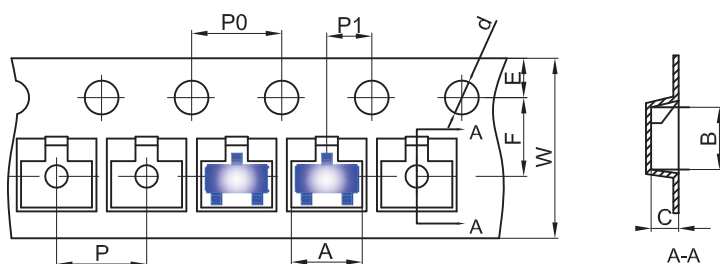
1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$  mm.
3. The pad layout is for reference purposes only.

### 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.

## SOT-23-3L Tape and Reel

### SOT-23-3L Embossed Carrier Tape

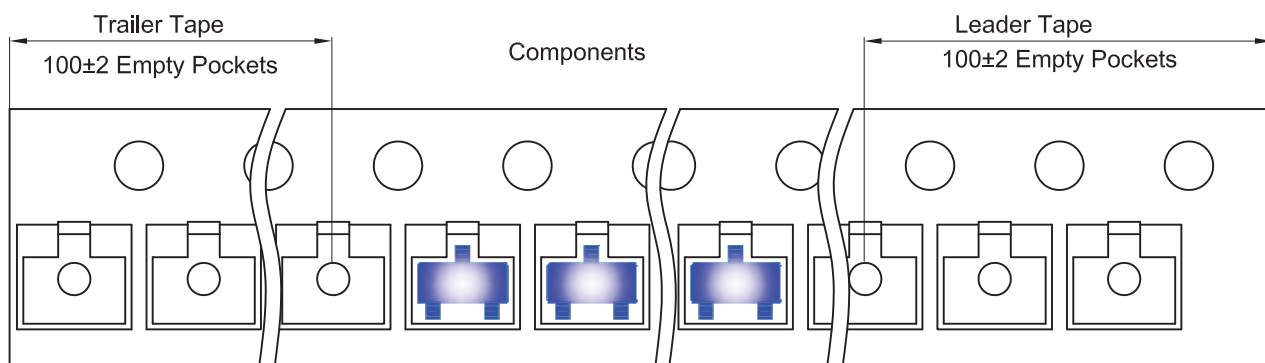


#### Packaging Description:

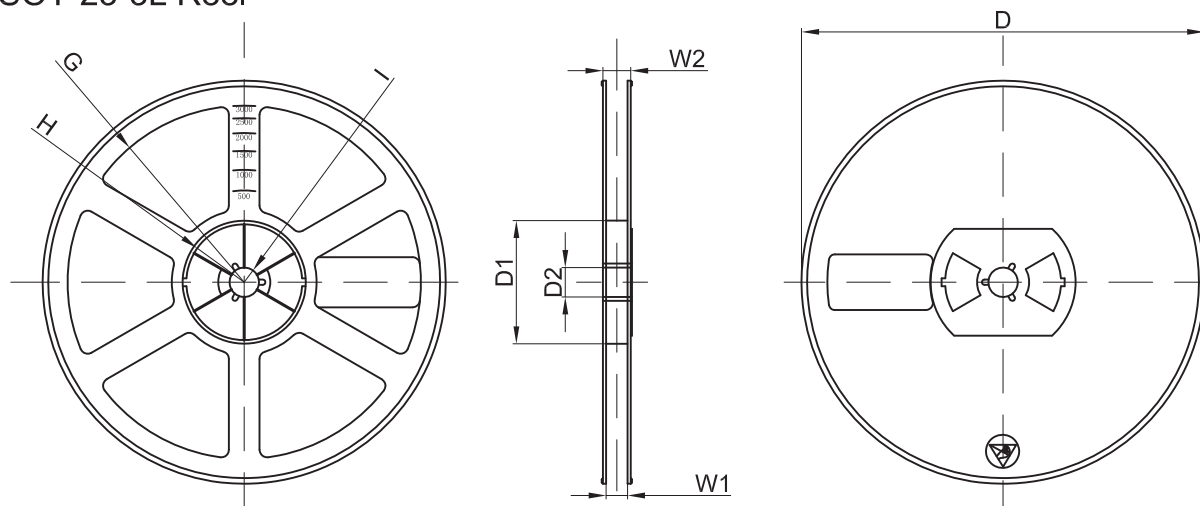
SOT-23-3L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts 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    |
| SOT-23-3L                    | 3.18 | 3.28 | 1.32 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

### SOT-23-3L Tape Leader and Trailer



### SOT-23-3L 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     |          |