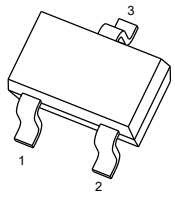
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD

# SOT-323 Plastic-Encapsulate MOSFETS

## CJ3144KW N-channel MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)}$MAX | $I_D$ |
|---|---|---|
| 30 V | 500mΩ@4V | 0.6A |
| | 600mΩ@2.5V | |

**SOT-323**




1. GATE
2. SOURCE
3. DRAIN

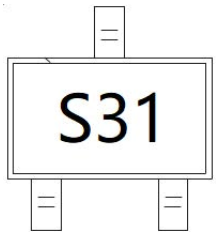
### Feature

- Surface Mount Package
- N-Channel Switch with Low $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive

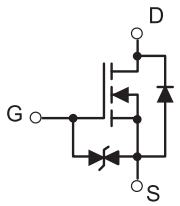
### Application

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

### MARKING




### Equivalent Circuit




### MOSFET MAXIMUM RATINGS ($T_a$ = 25°C unless otherwise noted)

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{DS}$ | Drain-Source voltage | 30 | V |
| $V_{GS}$ | Gate-Source Voltage | ±12 | V |
| $I_D$ | Continuous Drain Current | 0.6 | A |
| $P_D$ | Power Dissipation | 0.2 | W |
| $T_J$ | Junction Temperature | 150 | ℃ |
| $T_{stg}$ | Storage Temperature | -55-150 | ℃ |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient | 625 | ℃ /W |

## MOSFET ELECTRICAL CHARACTERISTICS

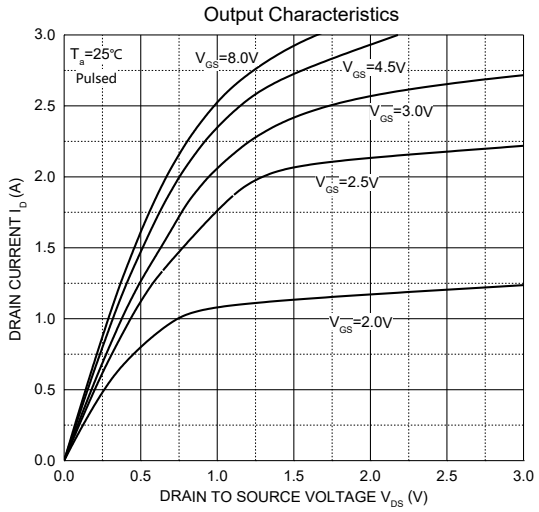
**$T_a$=25℃ unless otherwise specified**

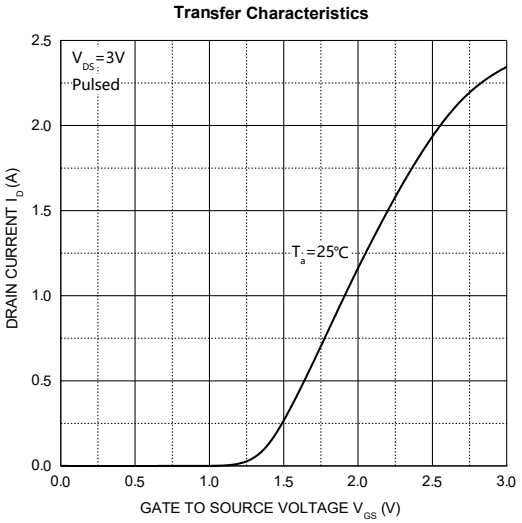
| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =250μA | 30 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =30V,$V_{GS}$ = 0V | | | 1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±10V, $V_{DS}$ = 0V | | | ±3 | μA |
| Gate threshold voltage(3) | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250μA | 0.5 | 1.0 | 1.5 | V |
| Drain-source on-resistance(3) | $R_{DS(on)}$ | $V_{GS}$ =4.5V, $I_D$ =0.6A | | 320 | 500 | mΩ |
| | | $V_{GS}$ =2.5V, $I_D$ =0.3A | | 410 | 600 | |
| Forward tranconductance | $g_{FS}$ | $V_{DS}$ =5V, $I_D$ =0.5A | 0.1 | | | S |
| **Dynamic characteristics**(4) | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=10V,$V_{GS}$=0V,f=1MHz | | 44 | | pF |
| Output Capacitance | $C_{oss}$ | | | 15 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 8 | | |
| Total gate charge | $Q_g$ | $V_{DS}$ =15V,$V_{GS}$ =4.5V,$I_D$ =0.8A | | 1.2 | | nC |
| Gate-source charge | $Q_{gs}$ | | | 0.28 | | |
| Gate-drain charge | $Q_{gd}$ | | | 0.3 | | |
| **Switching Characteristics**(4) | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DS}$=15V,$I_D$=0.7A, $V_{GS}$=4.5V,$R_G$=51Ω | | 5.0 | | ns |
| Turn-on rise time | $t_r$ | | | 8.2 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 23 | | |
| Turn-off fall time | $t_f$ | | | 41 | | |
| **Source-Drain Diode characteristics** | | | | | | |
| Diode Forward voltage(3) | $V_{DS}$ | $I_S$=0.6A, $V_{GS}$ = 0V | | 0.87 | 1.2 | V |

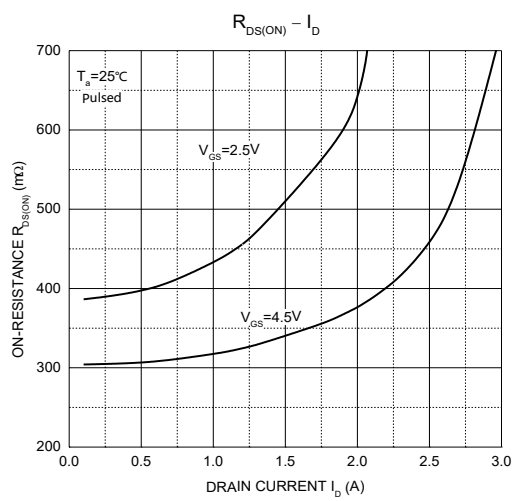
**Notes:**

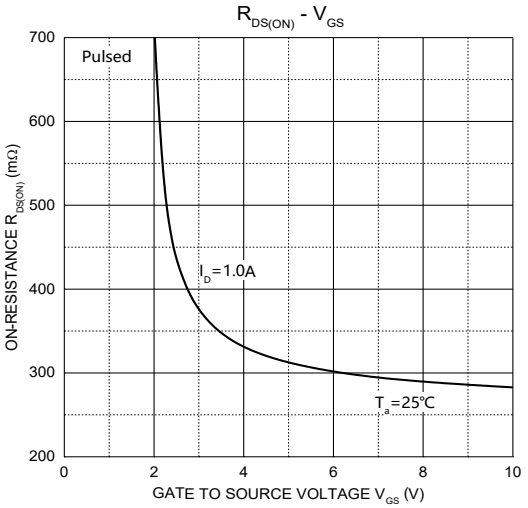
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at Ta=25℃.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤0.5%.
4. These parameters have no way to verify.

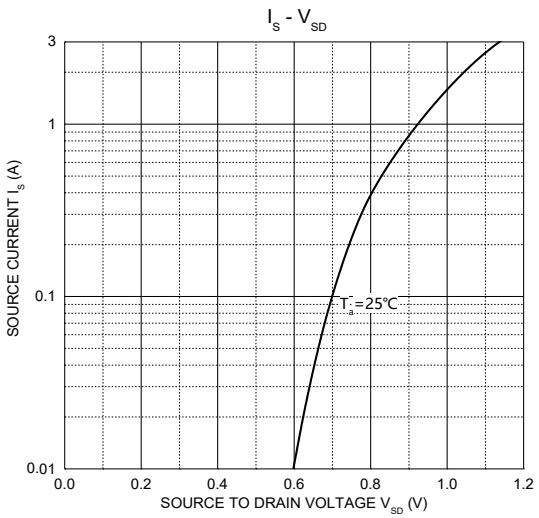
## Typical Characteristics

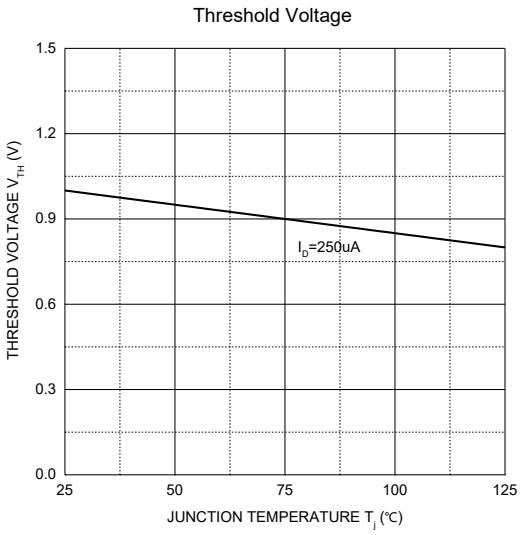


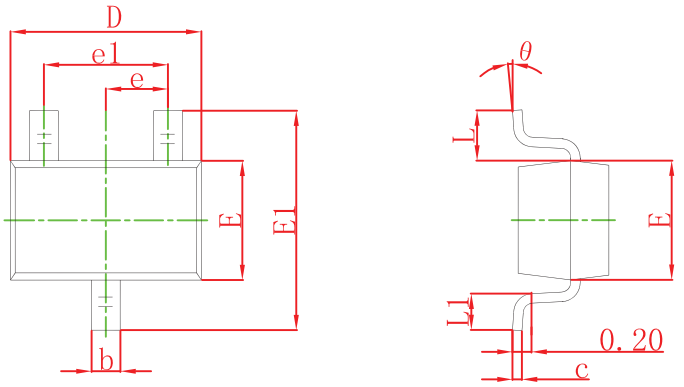



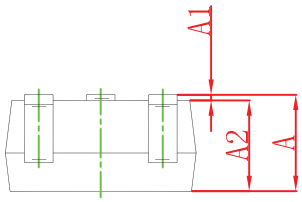



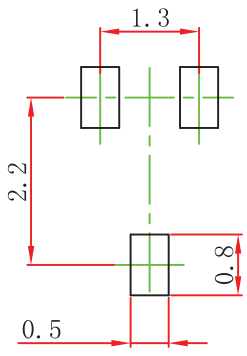
## SOT-323 Package Outline Dimensions




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.900 | 1.100 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.000 | 0.035 | 0.039 |
| b | 0.200 | 0.400 | 0.008 | 0.016 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.000 | 2.200 | 0.079 | 0.087 |
| E | 1.150 | 1.350 | 0.045 | 0.053 |
| E1 | 2.150 | 2.450 | 0.085 | 0.096 |
| e | 0.650 TYP | | 0.026 TYP | |
| e1 | 1.200 | 1.400 | 0.047 | 0.055 |
| L | 0.525 REF | | 0.021 REF | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| K | 0° | 8° | 0° | 8° |

## SOT-323 Suggested Pad Layout




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

NOTICE

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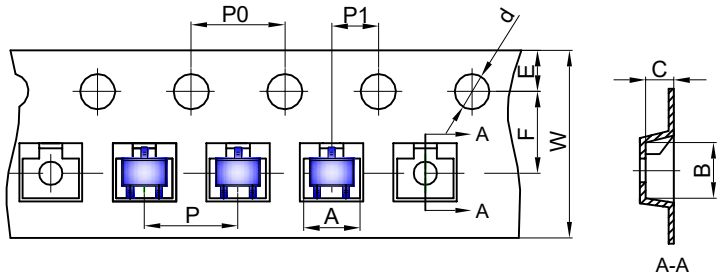
# SOT-323 Tape and reel

## SOT-323 Embossed Carrier Tape

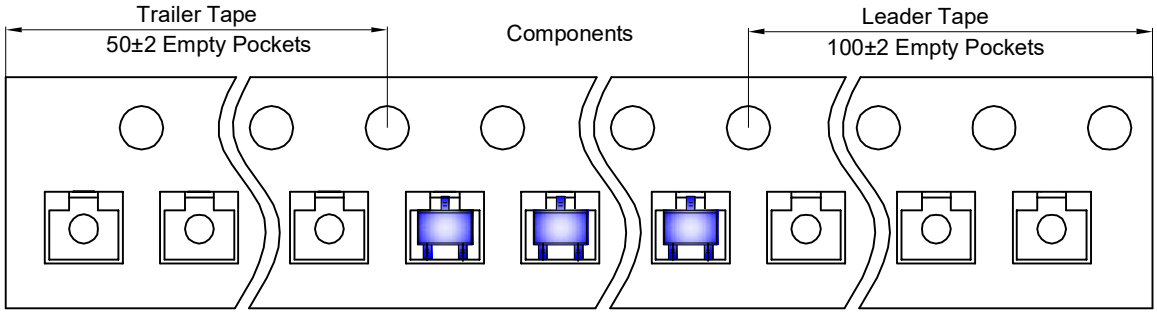



Packaging Description:

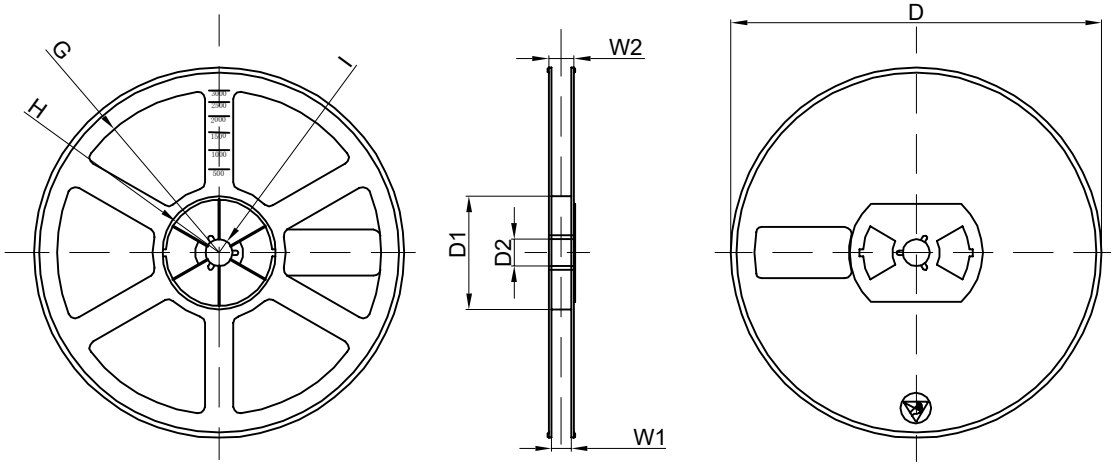
SOT-323 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm 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-323 | 2.25 | 2.55 | 1.19 | Ø1.55 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

## SOT-323 Tape Leader and Trailer




## SOT-323 Reel




| Dimensions are in millimeter | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Reel Option | D | D1 | D2 | G | H | I | W1 | W2 |
| 7"Dia | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| 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 | |

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