

JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

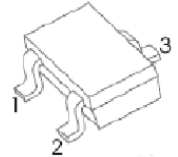
## SOT-323 Plastic-Encapsulate MOSFETS

### 2SK1658 N-channel MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | $I_D$ |
|---------------|-----------------|-------|
| 30V           | 10Ω@4V          | 100mA |
|               | 15Ω@2.5V        |       |

#### SOT-323

1. GATE
2. SOURCE
3. DRAIN



#### FEATURE

- Low on-resistance
- Fast switching speed
- Low voltage drive makes this device ideal for Portable equipment
- Easily designed drive circuits
- Easy to parallel

#### APPLICATION

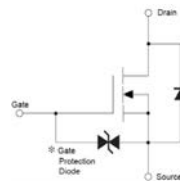
- Interfacing , Switching

#### MARKING



G20 = Device code  
Solid dot = Green molding compound device.

#### Equivalent Circuit



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

| Symbol          | Parameter                                        | Value   | Unit  |
|-----------------|--------------------------------------------------|---------|-------|
| $V_{DS}$        | Drain-Source voltage                             | 30      | V     |
| $V_{GS}$        | Gate-Source Voltage                              | ±7      | V     |
| $I_D$           | Continuous Drain Current                         | 0.1     | A     |
| $P_D$           | Power Dissipation                                | 0.2     | W     |
| $T_J, T_{stg}$  | Operation Junction and Storage Temperature Range | -55-150 | °C    |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient      | 625     | °C /W |

## MOSFET ELECTRICAL CHARACTERISTICS

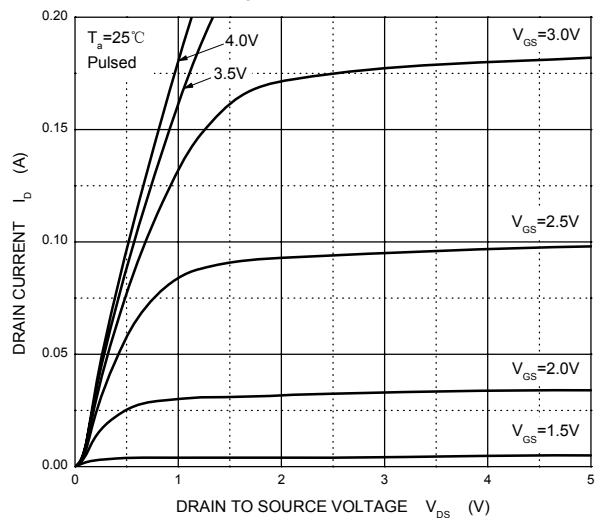
$T_a = 25^\circ\text{C}$  unless otherwise specified

| Parameter                       | Symbol        | Test Condition                                                               | Min | Typ | Max     | Unit     |
|---------------------------------|---------------|------------------------------------------------------------------------------|-----|-----|---------|----------|
| Off Characteristics             |               |                                                                              |     |     |         |          |
| Drain-Source Breakdown Voltage  | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 10\mu A$                                                 | 30  |     |         | V        |
| Zero Gate Voltage Drain Current | $I_{DSS}$     | $V_{DS} = 30V, V_{GS} = 0V$                                                  |     |     | 1       | $\mu A$  |
| Gate –Source leakage current    | $I_{GSS}$     | $V_{GS} = \pm 3V, V_{DS} = 0V$                                               |     |     | $\pm 1$ | $\mu A$  |
| Gate Cut-off Voltage            | $V_{GS(off)}$ | $V_{DS} = 3V, I_D = 1\mu A$                                                  | 0.9 |     | 1.5     | V        |
| Drain-Source On-Resistance      | $R_{DS(on)}$  | $V_{GS} = 4V, I_D = 10mA$                                                    |     | 5   | 10      | $\Omega$ |
|                                 |               | $V_{GS} = 2.5V, I_D = 10mA$                                                  |     | 7   | 15      | $\Omega$ |
| Forward Transconductance        | $g_{FS}$      | $V_{DS} = 3V, I_D = 10mA$                                                    | 20  |     |         | mS       |
| Dynamic Characteristics*        |               |                                                                              |     |     |         |          |
| Input Capacitance               | $C_{iss}$     | $V_{DS} = 3V, V_{GS} = 0V, f = 1MHz$                                         |     | 15  |         | pF       |
| Output Capacitance              | $C_{oss}$     |                                                                              |     | 10  |         | pF       |
| Reverse Transfer Capacitance    | $C_{rss}$     |                                                                              |     | 1.5 |         | pF       |
| Switching Characteristics*      |               |                                                                              |     |     |         |          |
| Turn-On Delay Time              | $t_{d(on)}$   | $V_{GS} = 3V, V_{DD} = 3V,$<br>$I_D = 10mA, R_g = 10\Omega, R_L = 300\Omega$ |     | 50  |         | ns       |
| Rise Time                       | $t_r$         |                                                                              |     | 23  |         | ns       |
| Turn-Off Delay Time             | $t_{d(off)}$  |                                                                              |     | 34  |         | ns       |
| Fall Time                       | $t_f$         |                                                                              |     | 43  |         | ns       |

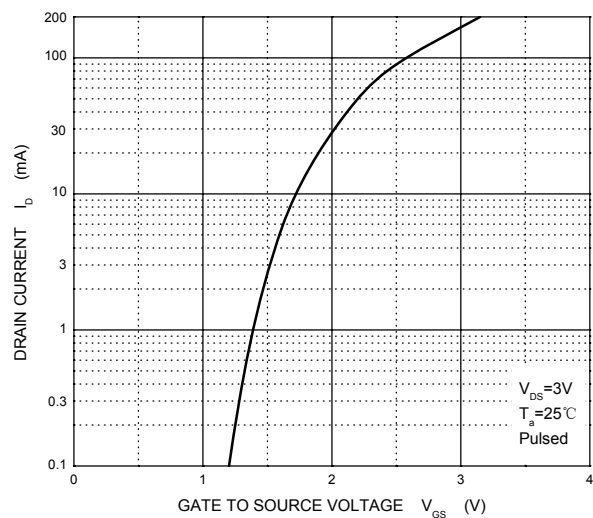
\*These parameters have no way to verify.

# Typical Characteristics

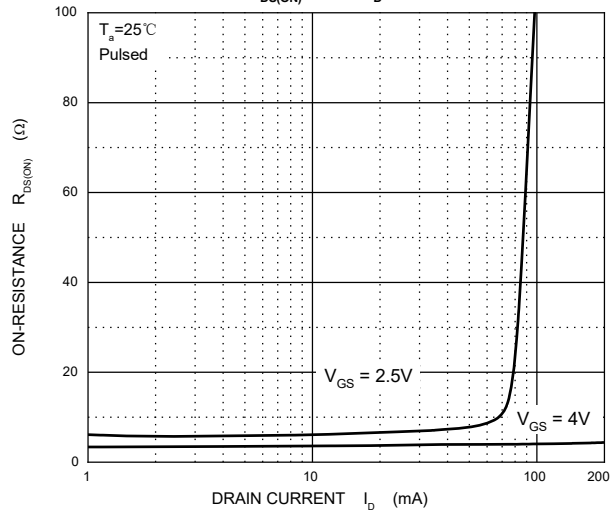
Output Characteristics



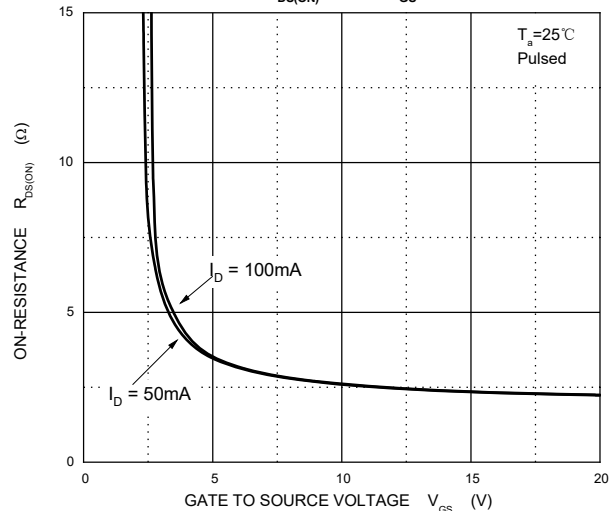
Transfer Characteristics



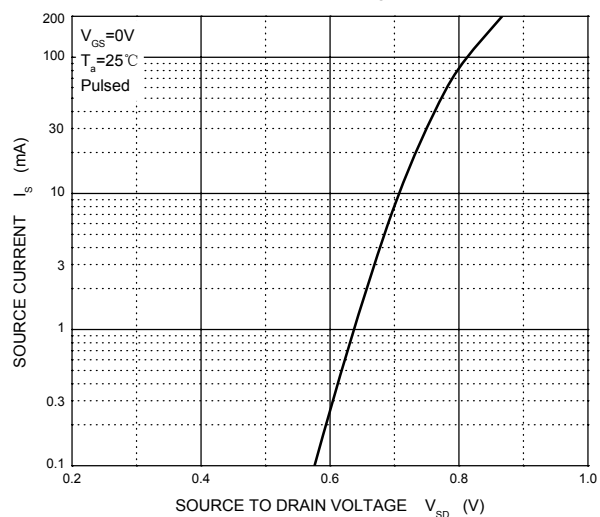
$R_{DS(ON)}$  —  $I_D$



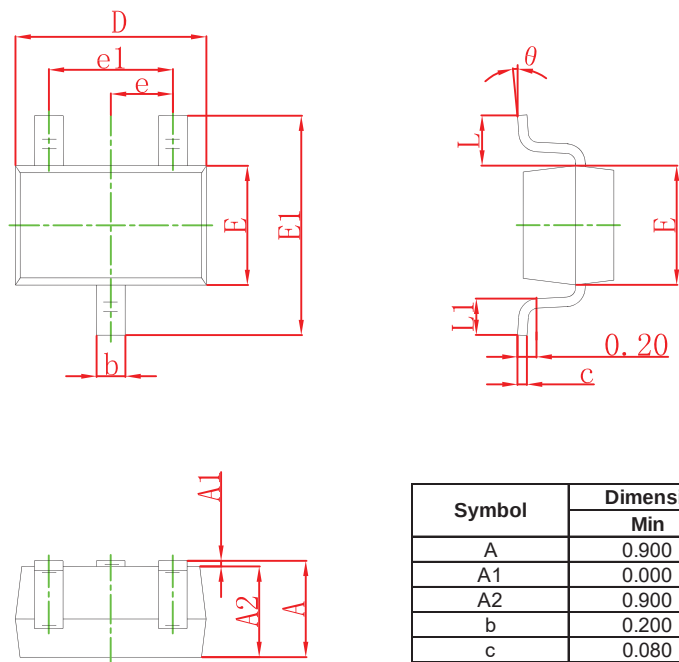
$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$

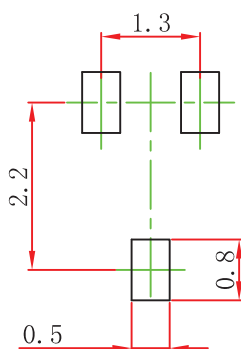


## SOT-323 Package Outline Dimensions



| 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



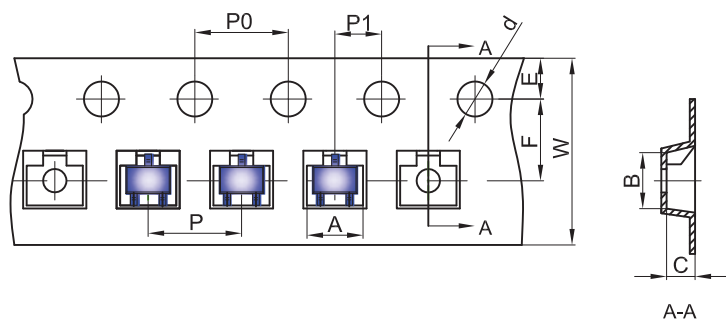
Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$  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.

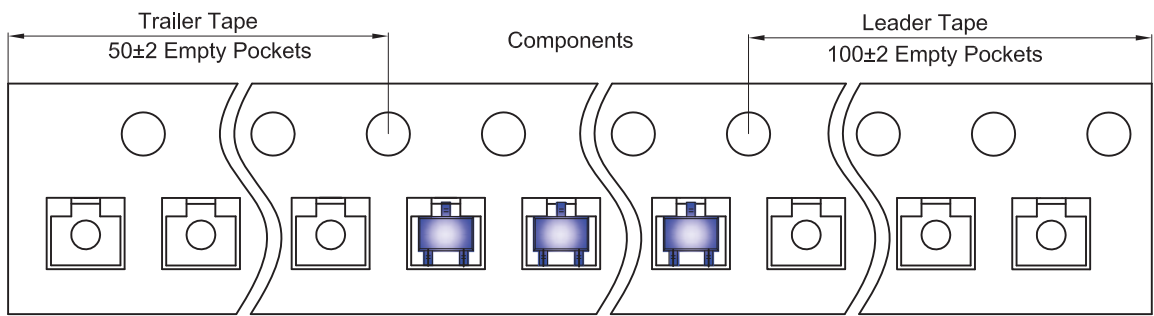
SOT-323 Embossed Carrier Tape



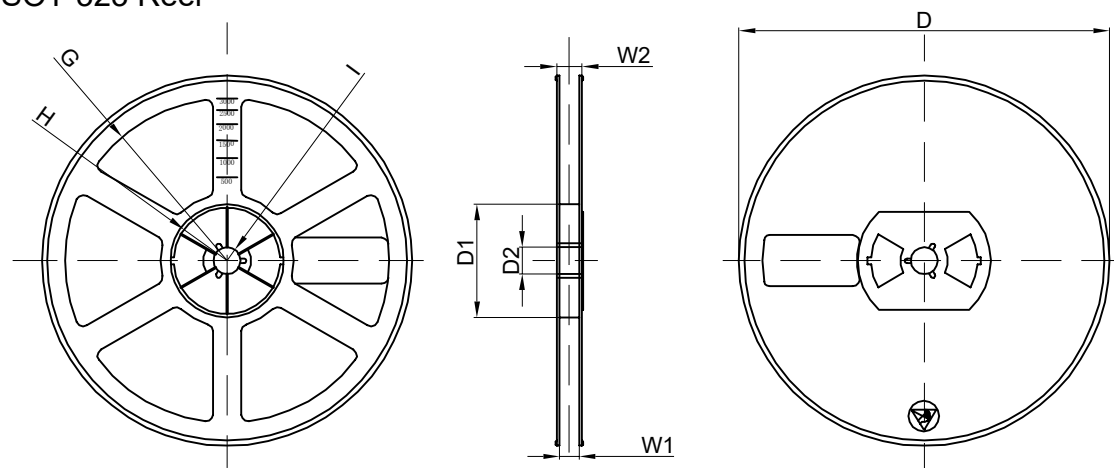
**Packaging Description:**  
SOT-323 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed 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    | 45,000 pcs | 203×203×195  | 180,000 pcs | 438×438×220     |          |