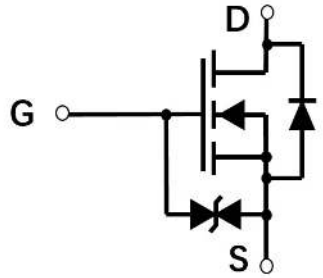
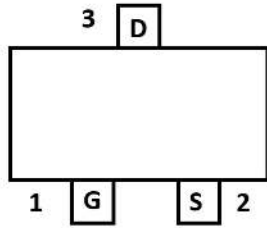
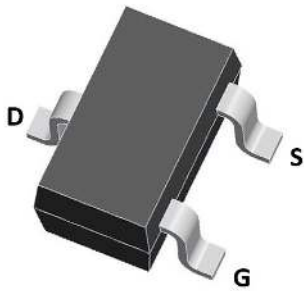


## N-Channel Enhancement Mode Field Effect Transistor



**SOT-323**

### Product Summary

- $V_{DS}$  20 V
- $I_D$  0.75 A
- $R_{DS(ON)}$ ( at  $V_{GS}=4.5V$ ) <260 mohm
- $R_{DS(ON)}$ ( at  $V_{GS}=2.5V$ ) <360 mohm
- ESD Protected Up to 4.0KV (HBM)

### General Description

- Trench Power LV MOSFET technology
- High Power and current handling capability

### Applications

- PWM application
- Load switch

### ■ Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter   | Symbol          | Limit                                 | Unit                      |
|---|-----------------|---------------------------------------|---------------------------|
| Drain-source Voltage                                  | $V_{DS}$        | 20                                    | V                         |
| Gate-source Voltage                                   | $V_{GS}$        | $\pm 12$                              | V                         |
| Drain Current   | $I_D$           | $T_A=25^\circ\text{C}$ @ Steady State | 0.75                      |
|   |                 | $T_A=70^\circ\text{C}$ @ Steady State | 0.6                       |
| Pulsed Drain Current <sup>A</sup>                     | $I_{DM}$        | 3.5                                   | A                         |
| Total Power Dissipation @ $T_A=25^\circ\text{C}$      | $P_D$           | 0.2                                   | W                         |
| Thermal Resistance Junction-to-Ambient @ Steady State | $R_{\theta JA}$ | 625                                   | $^\circ\text{C}/\text{W}$ |
| Junction and Storage Temperature Range                | $T_J, T_{STG}$  | -55~+150                              | $^\circ\text{C}$          |

### ■ Ordering Information

| PREFERRED P/N | PACKING CODE | Marking | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|---------|----------------------|-------------------------|----------------------------|---------------|
| YJL3134KW     | F2           | 34K.    | 3000                 | 30000                   | 120000                     | 7" reel       |



# YJL3134KW

## ■ Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

| Parameter                               | Symbol              | Conditions  | Min  | Typ  | Max   | Units |
|---|---------------------|---|------|------|-------|-------|
| <b>Static Parameter</b>                 |                     |   |      |      |       |       |
| Drain-Source Breakdown Voltage          | BV <sub>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   |      | 2.5  | ±10   | μA    |
|   |                     | V <sub>GS</sub> = ±8V, V <sub>DS</sub> =0V  |      | 500  | ±2000 | nA    |
| Gate Threshold Voltage                  | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA                               | 0.35 | 0.75 | 1.1   | V     |
| Static Drain-Source On-Resistance       | R <sub>DS(ON)</sub> | V <sub>GS</sub> = 4.5V, I <sub>D</sub> =0.5A  |      | 165  | 260   | mΩ    |
|   |                     | V <sub>GS</sub> = 2.5V, I <sub>D</sub> =0.3A  |      | 215  | 360   |       |
|   |                     | V <sub>GS</sub> = 1.8V, I <sub>D</sub> =0.2A  |      | 300  | 700   |       |
| Diode Forward Voltage <sup>C</sup>      | V <sub>SD</sub>     | I <sub>S</sub> =0.75A, V <sub>GS</sub> =0V  |      |      | 1.2   | V     |
| Maximum Body-Diode Continuous Current   | I <sub>S</sub>      |   |      |      | 0.75  | A     |
| <b>Dynamic Parameters<sup>B</sup></b>   |                     |   |      |      |       |       |
| Input Capacitance                       | C <sub>iss</sub>    | V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHZ                                       |      | 56   |       | pF    |
| Output Capacitance                      | C <sub>oss</sub>    |   |      | 20   |       |       |
| Reverse Transfer Capacitance            | C <sub>rss</sub>    |   |      | 2.5  |       |       |
| <b>Switching Parameters<sup>B</sup></b> |                     |   |      |      |       |       |
| Total Gate Charge                       | Q <sub>g</sub>      | V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, I <sub>D</sub> =0.5A                       |      | 1    |       | nC    |
| Gate Source Charge                      | Q <sub>gs</sub>     |   |      | 0.28 |       |       |
| Gate Drain Charge                       | Q <sub>gd</sub>     |   |      | 0.22 |       |       |
| Reverse Recovery Charge                 | Q <sub>rr</sub>     | I <sub>F</sub> =0.5A, di/dt=20A/us  |      | 0.4  |       |       |
| Reverse Recovery Time                   | t <sub>rr</sub>     |   |      | 14.4 |       |       |
| Turn-on Delay Time                      | t <sub>D(on)</sub>  | V <sub>GS</sub> =4.5V, V <sub>DD</sub> =10V, R <sub>G</sub> =10Ω, I <sub>D</sub> =500mA |      | 2    |       | ns    |
| Turn-on Rise Time                       | t <sub>r</sub>      |   |      | 18.8 |       |       |
| Turn-off Delay Time                     | t <sub>D(off)</sub> |   |      | 10   |       |       |
| Turn-off Fall Time                      | t <sub>f</sub>      |   |      | 23   |       |       |

A. Repetitive Rating: Pulse width limited by maximum junction temperature.

B. These parameters have no way to verify.

C. Pulse Test: Pulse Width≤300us, Duty Cycle≤0.5%.



■ Typical Performance Characteristics

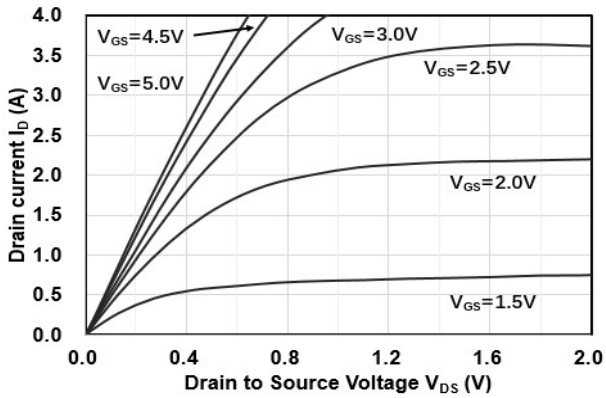


Figure1. Output Characteristics

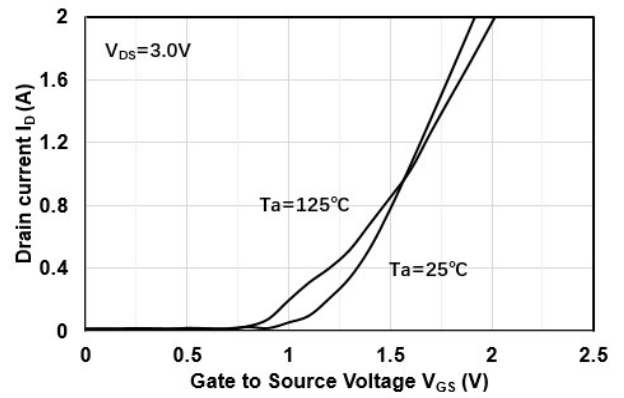


Figure2. Transfer Characteristics

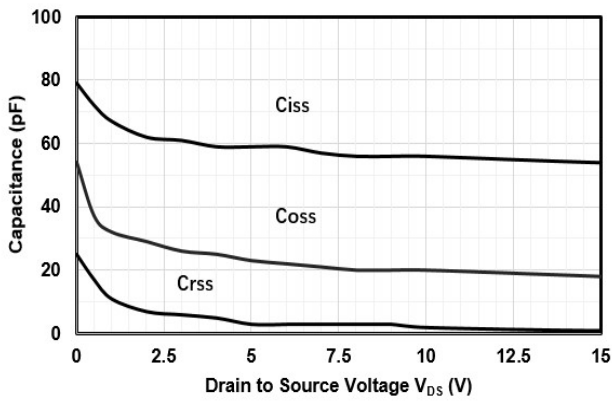


Figure3. Capacitance Characteristics

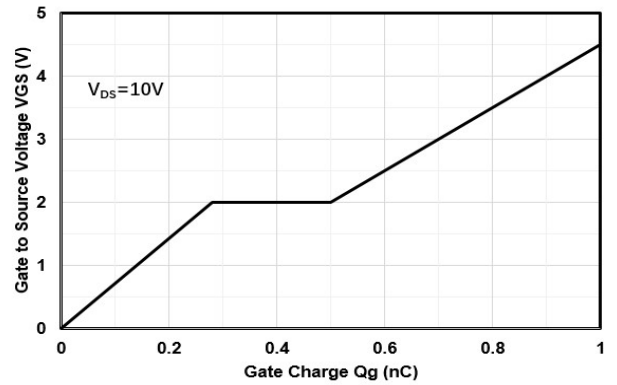


Figure4. Gate Charge

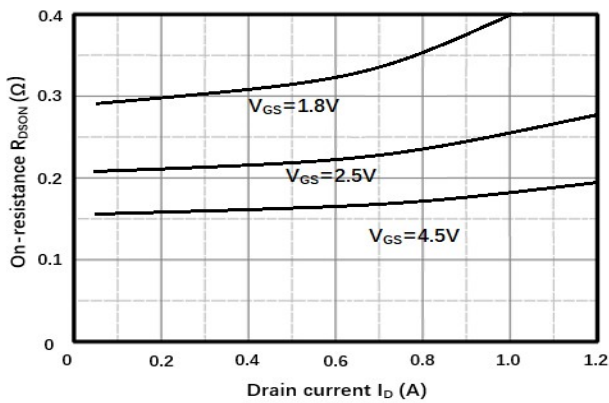


Figure5. Drain-Source on Resistance

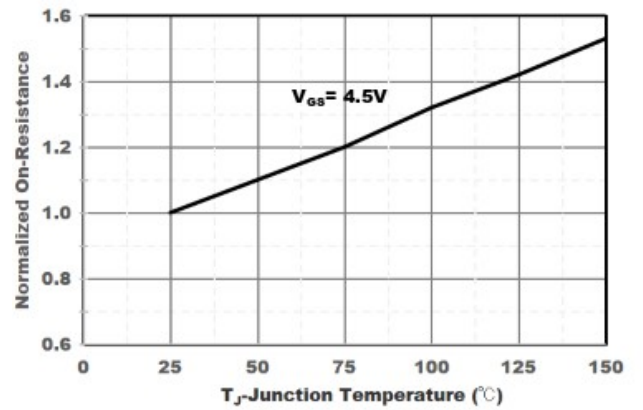


Figure6. Drain-Source on Resistance



# YJL3134KW

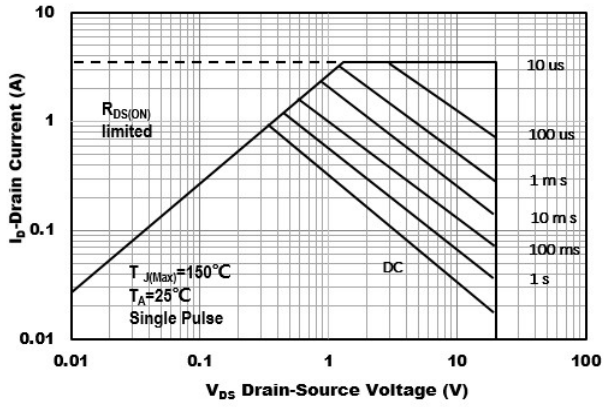


Figure7. Safe Operation Area

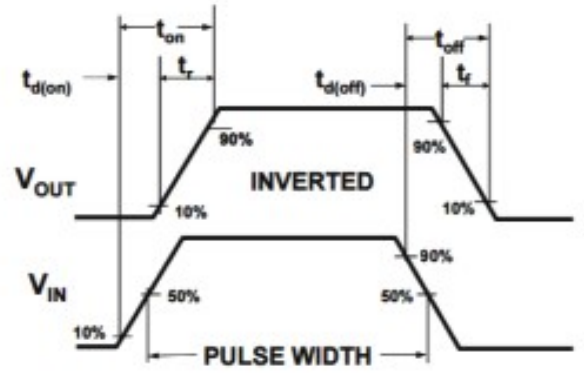
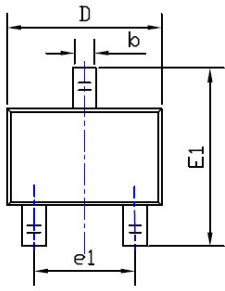


Figure8. Switching wave

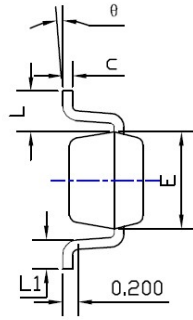


# YJL3134KW

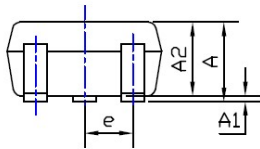
## ■SOT-323 Package information



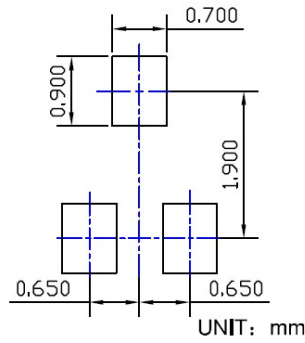
TOP VIEW



SIDE VIEW



SIDE VIEW



UNIT: mm

SUGGESTED SOLDER PAD LAYOUT

| SYMBOL | INCHES    |       |       | Millimeter |       |       |
|--------|-----------|-------|-------|------------|-------|-------|
|        | MIN.      | NOM.  | MAX.  | MIN.       | NOM.  | MAX.  |
| A      | 0.035     | ---   | 0.043 | 0.900      | ---   | 1.100 |
| A1     | 0.000     | ---   | 0.004 | 0.000      | ---   | 0.100 |
| A2     | 0.035     | 0.037 | 0.039 | 0.900      | 0.950 | 1.000 |
| b      | 0.006     | 0.012 | 0.016 | 0.150      | 0.300 | 0.400 |
| c      | 0.004     | ---   | 0.010 | 0.100      | ---   | 0.250 |
| D      | 0.071     | 0.079 | 0.087 | 1.800      | 2.000 | 2.200 |
| E      | 0.045     | 0.049 | 0.053 | 1.150      | 1.250 | 1.350 |
| E1     | 0.085     | 0.091 | 0.096 | 2.150      | 2.300 | 2.450 |
| e      | 0.026 TYP |       |       | 0.650 TYP  |       |       |
| e1     | 0.047     | 0.051 | 0.055 | 1.200      | 1.300 | 1.400 |
| L      | 0.021 REF |       |       | 0.525 REF  |       |       |
| L1     | 0.010     | 0.014 | 0.018 | 0.260      | 0.360 | 0.460 |
| theta  | 0°        | ---   | 8°    | 0°         | ---   | 8°    |

NOTE:

- 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
- 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
- 3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.



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