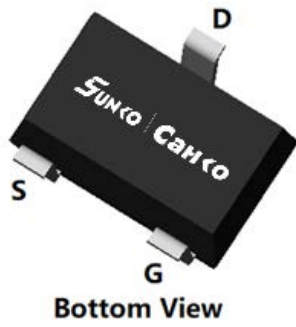
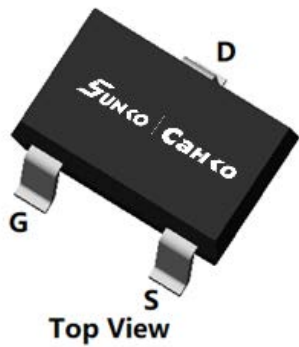
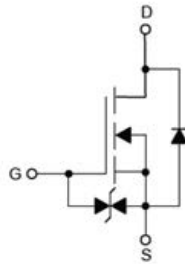


## N-Channel Enhancement Mode Field Effect Transistor



**SOT-323**



### Product Summary

- $V_{DS}$  20 V
- $I_D$  0.5 A
- $R_{DS(ON)}$  (at  $V_{GS}=4.5V$ ) <300 mohm
- $R_{DS(ON)}$  (at  $V_{GS}=2.5V$ ) <400 mohm
- $R_{DS(ON)}$  (at  $V_{GS}=1.8V$ ) <700 mohm
- ESD Protected Up to 2.0KV (HBM)

### General Description

- Trench Power LV MOSFET technology
- High Power and current handing capability
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

### Applications

- PWM application
- Load switch

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

| Parameter                                             |                                  | Symbol          | Limit    | Unit          |
|-------------------------------------------------------|----------------------------------|-----------------|----------|---------------|
| Drain-source Voltage                                  |                                  | $V_{DS}$        | 20       | V             |
| Gate-source Voltage                                   |                                  | $V_{GS}$        | $\pm 12$ | V             |
| Drain Current                                         | $T_A=25^{\circ}C$ @ Steady State | $I_D$           | 0.5      | A             |
|                                                       | $T_A=70^{\circ}C$ @ Steady State |                 | 0.4      |               |
| Pulsed Drain Current <sup>A</sup>                     |                                  | $I_{DM}$        | 3.3      | A             |
| Total Power Dissipation @ $T_A=25^{\circ}C$           |                                  | $P_D$           | 0.15     | W             |
| Thermal Resistance Junction-to-Ambient @ Steady State |                                  | $R_{\theta JA}$ | 833      | $^{\circ}C/W$ |
| Junction and Storage Temperature Range                |                                  | $T_J, T_{STG}$  | -55~+150 | $^{\circ}C$   |

### ■ Ordering Information

| PREFERED P/N | PACKING CODE | Marking | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|--------------|--------------|---------|----------------------|-------------------------|----------------------------|---------------|
| SCL3134KBW   | F2           | 34KB.   | 3000                 | 30000                   | 120000                     | 7" reel       |

# SCL3134KBW

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

| Parameter                             | Symbol              | Conditions                                                                              | Min  | Typ  | Max   | Units |
|---------------------------------------|---------------------|-----------------------------------------------------------------------------------------|------|------|-------|-------|
| Static Parameter                      |                     |                                                                                         |      |      |       |       |
| 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                                            |      | 220  | 300   | mΩ    |
|                                       |                     | V <sub>GS</sub> = 2.5V, I <sub>D</sub> =0.45A                                           |      | 290  | 400   |       |
|                                       |                     | V <sub>GS</sub> = 1.8V, I <sub>D</sub> =0.2A                                            |      | 420  | 700   |       |
| Diode Forward Voltage <sup>C</sup>    | V <sub>SD</sub>     | I <sub>S</sub> =0.5A, V <sub>GS</sub> =0V                                               |      | 0.85 | 1.2   | V     |
| Maximum Body-Diode Continuous Current | I <sub>S</sub>      |                                                                                         |      |      | 0.5   | A     |
| Gate Resistance                       | R <sub>g</sub>      | f=1 MHz, Open drain                                                                     |      | 50   |       | Ω     |
| Dynamic Parameters <sup>B</sup>       |                     |                                                                                         |      |      |       |       |
| Input Capacitance                     | C <sub>iss</sub>    | V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHZ                                       |      | 33   |       | pF    |
| Output Capacitance                    | C <sub>oss</sub>    |                                                                                         |      | 20   |       |       |
| Reverse Transfer Capacitance          | C <sub>rss</sub>    |                                                                                         |      | 10   |       |       |
| Switching Parameters <sup>B</sup>     |                     |                                                                                         |      |      |       |       |
| Total Gate Charge                     | Q <sub>g</sub>      | V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, I <sub>D</sub> =0.5A                       |      | 0.8  |       | nC    |
| Gate Source Charge                    | Q <sub>gs</sub>     |                                                                                         |      | 0.3  |       |       |
| Gate Drain Charge                     | Q <sub>gd</sub>     |                                                                                         |      | 0.15 |       |       |
| Reverse Recovery Chrage               | Q <sub>rr</sub>     | I <sub>F</sub> =0.5A, di/dt=20A/us                                                      |      | 0.4  |       | ns    |
| 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 |      | 4    |       |       |
| 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

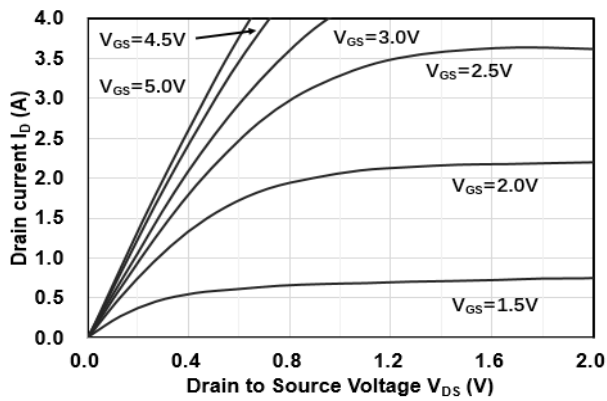


Figure1. Output Characteristics

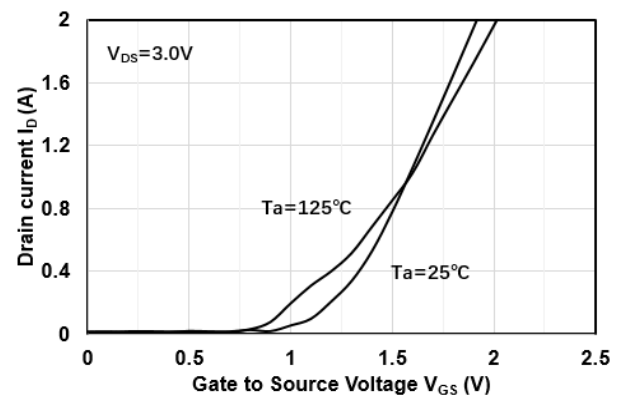


Figure2. Transfer Characteristics

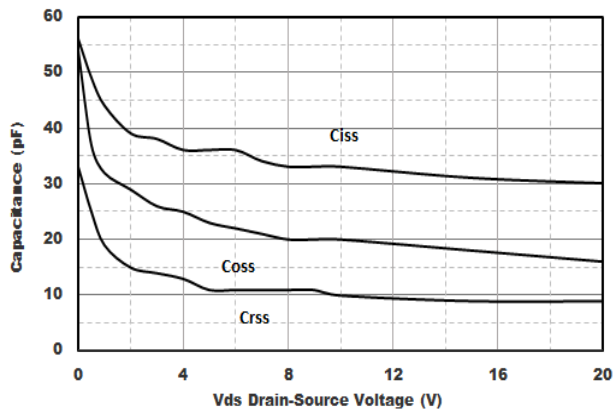


Figure3. Capacitance Characteristics

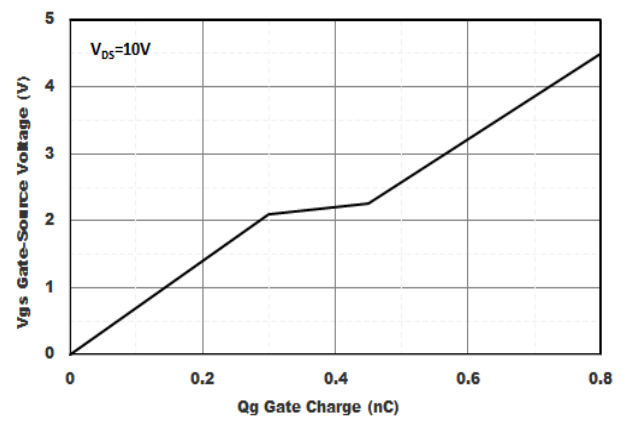


Figure4. Gate Charge

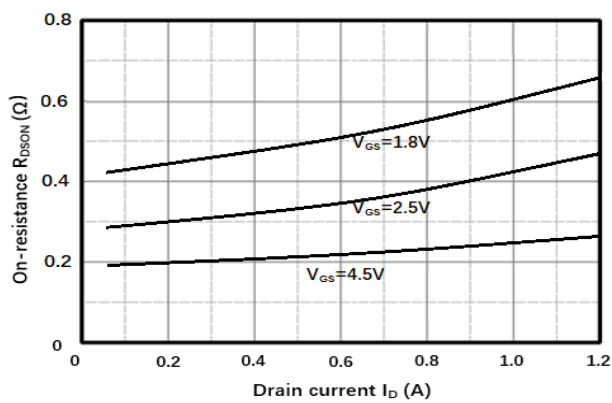


Figure5. Drain-Source on Resistance

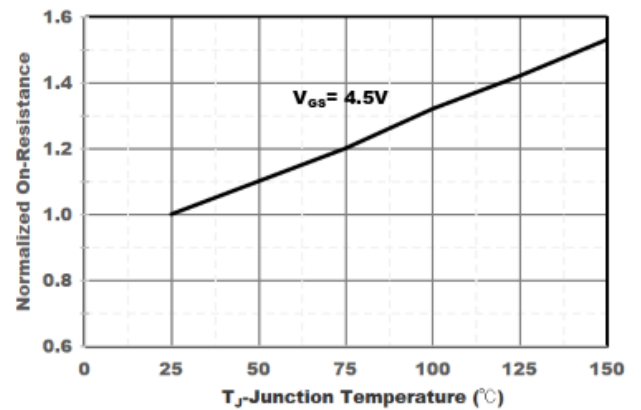


Figure6. Drain-Source on Resistance

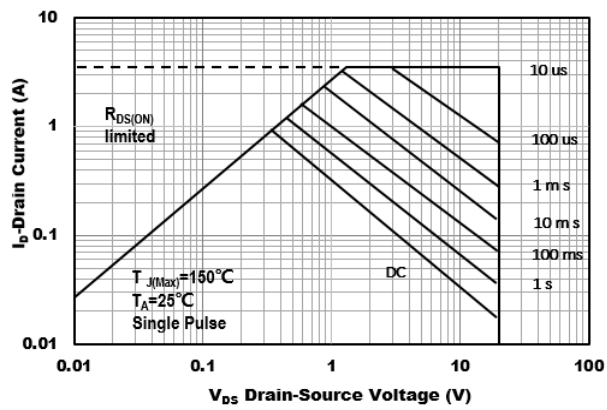


Figure7. Safe Operation Area

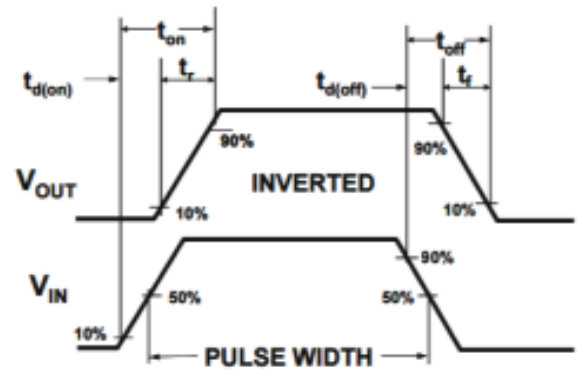
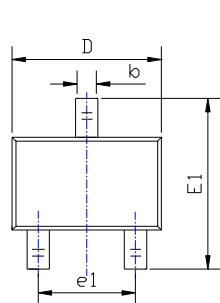
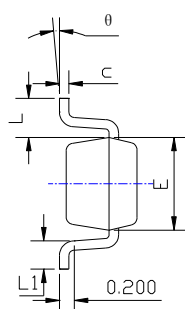


Figure8. Switching wave

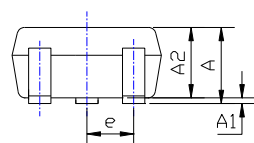
## ■SOT-323 Package information



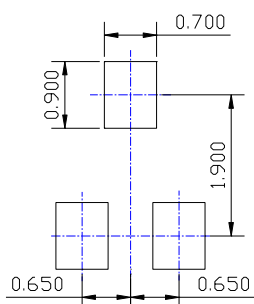
TOP VIEW



SIDE VIEW



SIDE VIEW



UNIT: mm

SUGGESTED SOLDER PAD LAYOUT

| SYMBOL | DIMENSIONS |       |            |       |
|--------|------------|-------|------------|-------|
|        | INCHES     |       | Millimeter |       |
|        | MIN.       | MAX.  | MIN.       | MAX.  |
| A      | 0.035      | 0.043 | 0.900      | 1.100 |
| A1     | 0.000      | 0.004 | 0.000      | 0.100 |
| A2     | 0.035      | 0.039 | 0.900      | 1.000 |
| b      | 0.006      | 0.016 | 0.150      | 0.400 |
| c      | 0.004      | 0.010 | 0.100      | 0.250 |
| D      | 0.071      | 0.087 | 1.800      | 2.200 |
| E      | 0.045      | 0.053 | 1.150      | 1.350 |
| E1     | 0.085      | 0.096 | 2.150      | 2.450 |
| e      | 0.026 TYP  |       | 0.650 TYP  |       |
| e1     | 0.047      | 0.055 | 1.200      | 1.400 |
| L      | 0.021 REF  |       | 0.525 REF  |       |
| L1     | 0.010      | 0.018 | 0.260      | 0.460 |
| θ      | 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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