

# EVVOSEMI<sup>®</sup>

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



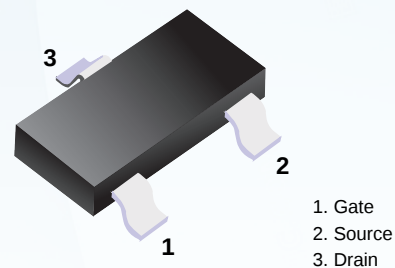
DC-DC

## Product Specification

|              |             |        |
|--------------|-------------|--------|
| ▶ Domestic   | Part Number | BSS138 |
| ▶ Overseas   | Part Number | BSS138 |
| ▶ Equivalent | Part Number | BSS138 |

EV is the abbreviation of name EVVO

## N-Channel MOSFET



### ■ Features

- $V_{DS} (V) = 50V$
- $I_D = 200 \text{ mA}$  ( $V_{GS} = 10V$ )
- $R_{DS(ON)} < 3.5 \Omega$  ( $V_{GS} = 10V$ )
- Fast Switching Speed
- Low On-Resistance

### ■ Simplified outline(SOT23)

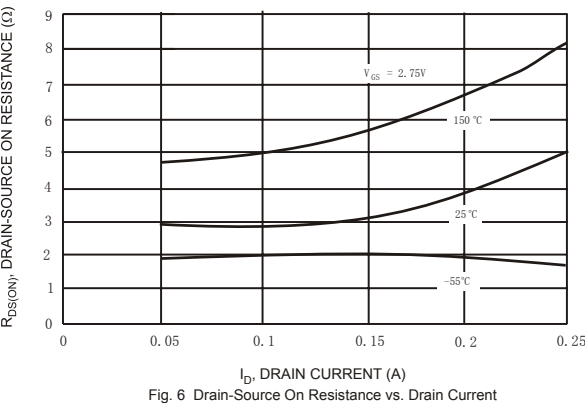
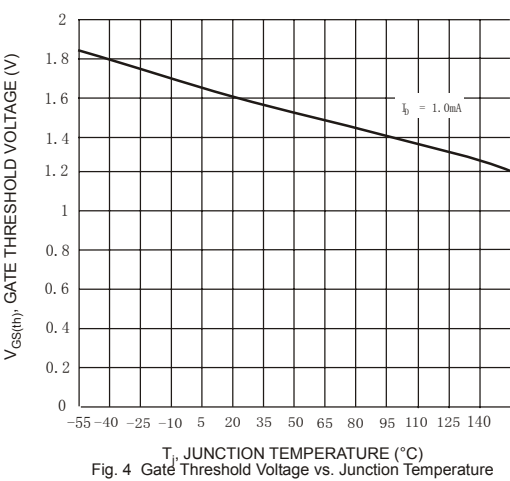
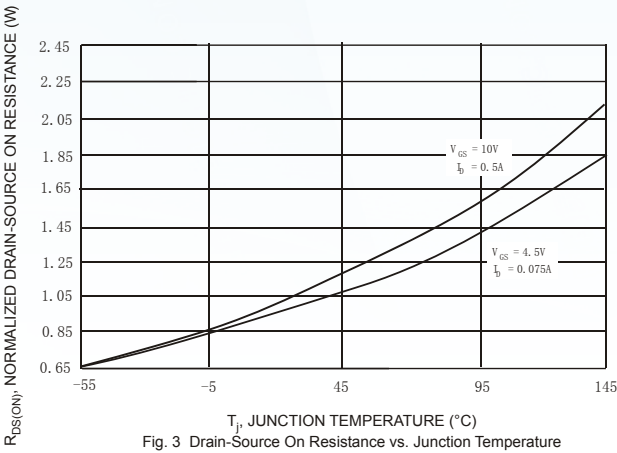
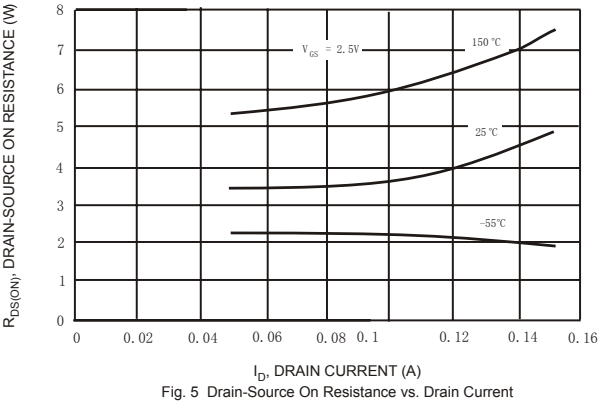
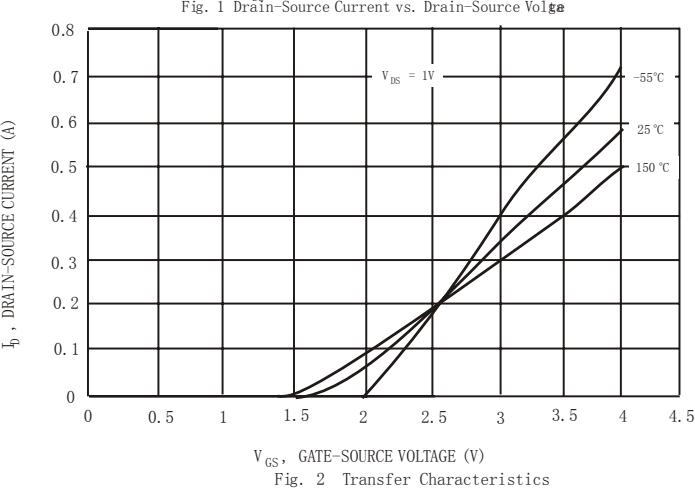
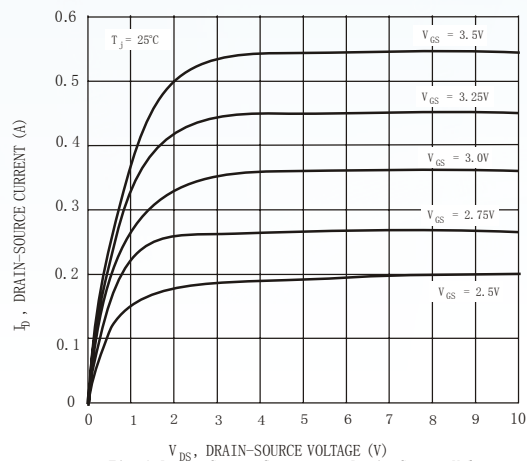
### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter                                  | Symbol     | Rating     | Unit                      |
|--------------------------------------------|------------|------------|---------------------------|
| Drain-Source Voltage                       | $V_{DS}$   | 50         | V                         |
| Drain-Gate Voltage $R_{GS} \leq 20K\Omega$ | $V_{DG}$   | 50         |                           |
| Gate-Source Voltage                        | $V_{GS}$   | $\pm 20$   |                           |
| Continuous Drain Current                   | $I_D$      | 200        | mA                        |
| Power Dissipation                          | $P_D$      | 300        | mW                        |
| Thermal Resistance.Junction- to-Ambient    | $R_{thJA}$ | 417        | $^\circ\text{C}/\text{W}$ |
| Junction Temperature                       | $T_J$      | 150        | $^\circ\text{C}$          |
| Storage Temperature Range                  | $T_{stg}$  | -55 to 150 |                           |

### ■ Electrical Characteristics $T_a = 25^\circ\text{C}$

| Parameter                         | Symbol       | Test Conditions                                    | Min | Typ | Max       | Unit          |
|-----------------------------------|--------------|----------------------------------------------------|-----|-----|-----------|---------------|
| Drain-Source Breakdown Voltage    | $V_{DSS}$    | $I_D = 250 \mu\text{A}$ , $V_{GS} = 0V$            | 50  |     |           | V             |
| Zero Gate Voltage Drain Current   | $I_{DSS}$    | $V_{DS} = 50V$ , $V_{GS} = 0V$                     |     |     | 0.5       | $\mu\text{A}$ |
| Gate-Body Leakage Current         | $I_{GSS}$    | $V_{DS} = 0V$ , $V_{GS} = \pm 20V$                 |     |     | $\pm 100$ | nA            |
| Gate Threshold Voltage            | $V_{GS(th)}$ | $V_{DS} = V_{GS}$ , $I_D = 250 \mu\text{A}$        | 0.5 |     | 1.5       | V             |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS} = 10V$ , $I_D = 220\text{mA}$              |     |     | 3.5       | $\Omega$      |
| Forward Transconductance          | $g_{FS}$     | $V_{DS} = 25V$ , $I_D = 0.2A$ , $f = 1\text{KHz}$  | 100 |     |           | mS            |
| Input Capacitance                 | $C_{iss}$    | $V_{GS} = 0V$ , $V_{DS} = 10V$ , $f = 1\text{MHz}$ |     |     | 50        | pF            |
| Output Capacitance                | $C_{oss}$    |                                                    |     |     | 25        |               |
| Reverse Transfer Capacitance      | $C_{rss}$    |                                                    |     |     | 8         |               |
| Turn-On DelayTime                 | $t_{d(on)}$  | $V_{DS} = 30V$ , $I_D = 0.2A$ , $R_G = 50 \Omega$  |     |     | 20        | ns            |
| Turn-Off DelayTime                | $t_{d(off)}$ |                                                    |     |     | 20        |               |

Typical Characteristics



Typical Characteristics

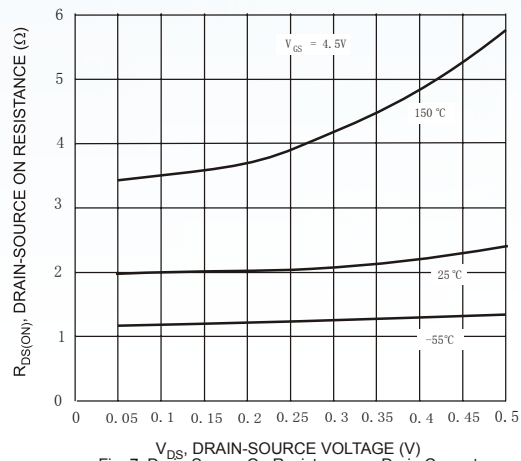


Fig. 7 Drain-Source On Resistance vs. Drain Current

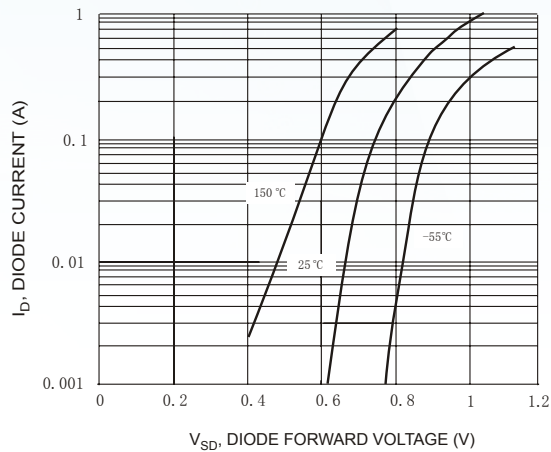


Fig. 9 Body Diode Current vs. Body Diode Voltage

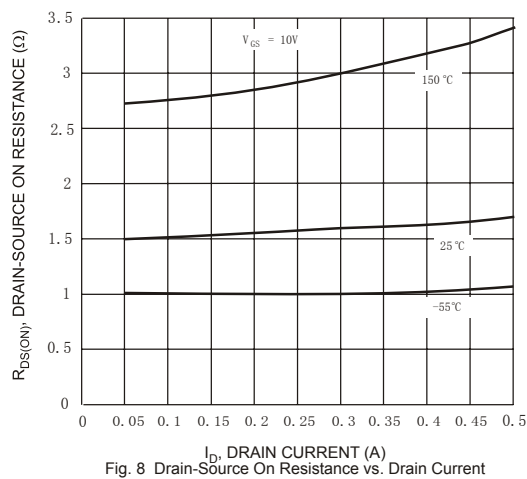


Fig. 8 Drain-Source On Resistance vs. Drain Current

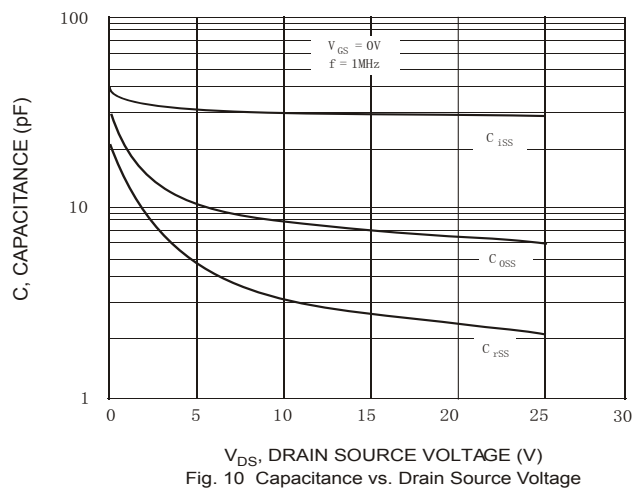
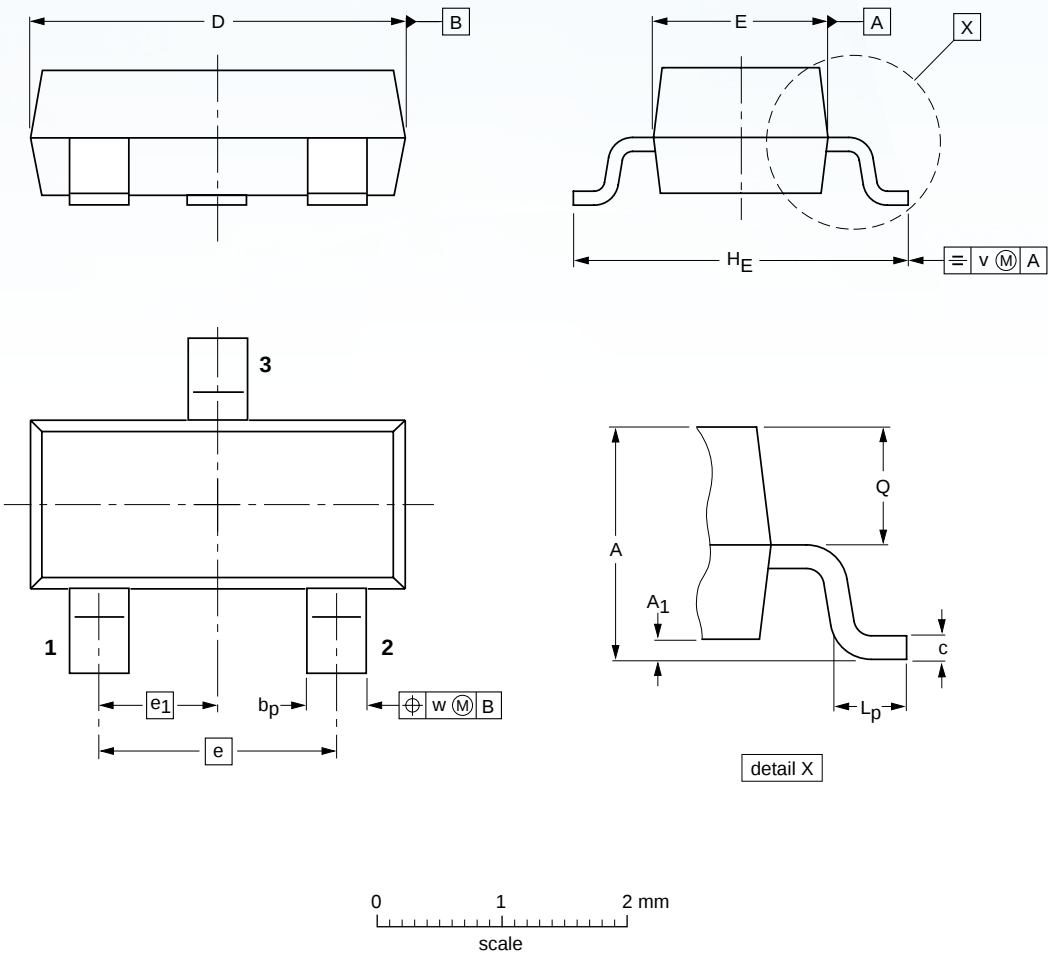


Fig. 10 Capacitance vs. Drain Source Voltage

■ SOT-23



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub><br>max. | b <sub>p</sub> | c            | D          | E          | e   | e <sub>1</sub> | H <sub>E</sub> | L <sub>p</sub> | Q            | v   | w   |
|------|------------|------------------------|----------------|--------------|------------|------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm   | 1.1<br>0.9 | 0.1                    | 0.48<br>0.38   | 0.15<br>0.09 | 3.0<br>2.8 | 1.4<br>1.2 | 1.9 | 0.95           | 2.5<br>2.1     | 0.45<br>0.15   | 0.55<br>0.45 | 0.2 | 0.1 |

Ordering information

| Product ID | Pack  | Naming rule                                        | Marking | Qty(PCS) |
|------------|-------|----------------------------------------------------|---------|----------|
| BSS138     | SOT23 | <div>BSS138</div> <div>产品名称<br/>product name</div> | J1      | 3000     |

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