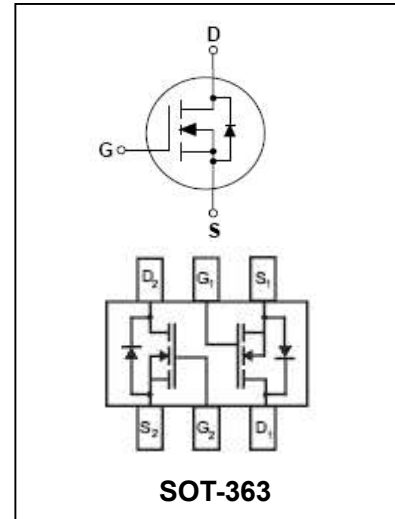


# N-Channel Logic Level Enhancement Mode Field Effect Transistor

## BSS138DW

### FEATURES

- Low On-Resistance.
- Low Gate Threshold Voltage.
- Low Input Capacitance.
- Fast Switching Speed.
- Low Input/Output Leakage.



### ORDERING INFORMATION

| Type No.  | Marking | Package Code |
|-----------|---------|--------------|
| BSS138DW□ | K38     | SOT-363      |

□: none is for Lead Free package;

“G” is for Halogen Free package.

### MAXIMUM RATING @ Ta=25°C unless otherwise specified

| Symbol          | Parameter                                   | Value       | Units |
|-----------------|---------------------------------------------|-------------|-------|
| $V_{DSS}$       | Drain-Source voltage                        | 50          | V     |
| $V_{DGR}$       | Drain-Gate voltage $R_{GS} \leq 20K \Omega$ | 50          | V     |
| $V_{GSS}$       | Gate-Surce Voltage                          | $\pm 20$    | V     |
| $I_D$           | Drain current -continuous                   | 200         | mA    |
| $P_D$           | Power Dissipation                           | 200         | mW    |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient     | 417         | °C/W  |
| $T_J, T_{stg}$  | Junction and Storage Temperature            | -55 to +150 | °C    |

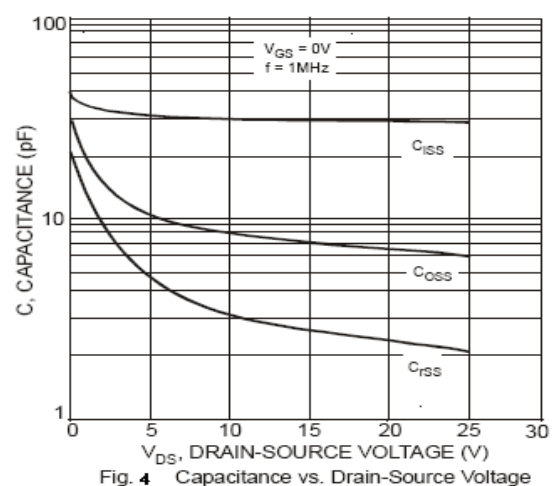
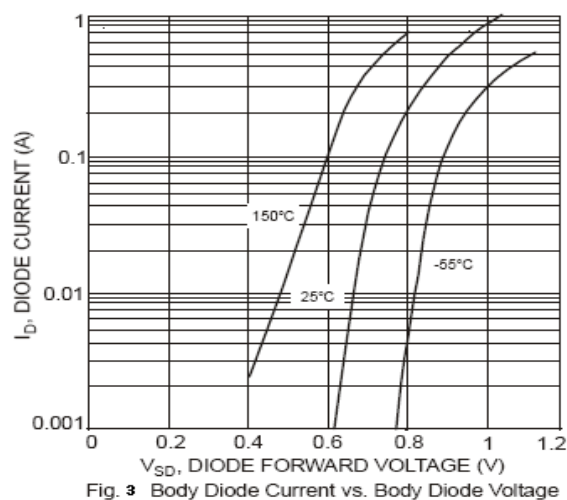
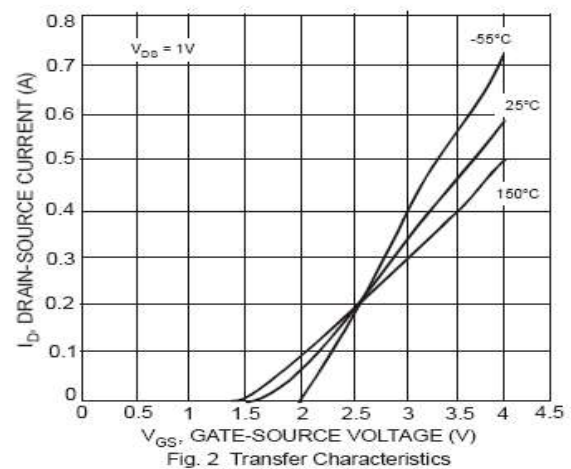
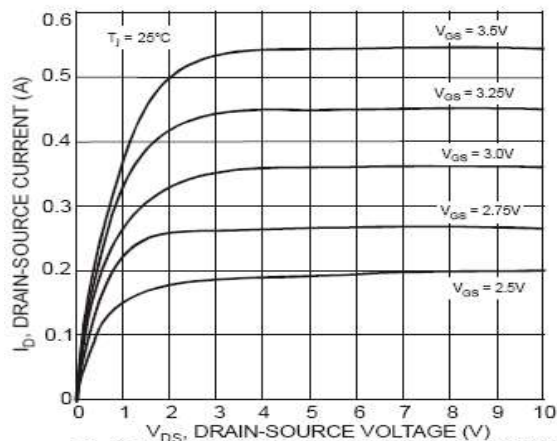
# N-Channel Logic Level Enhancement Mode Field Effect Transistor

## BSS138DW

### ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

| Parameter                        | Symbol        | Test conditions                               | MIN | TYP | MAX     | UNIT     |
|----------------------------------|---------------|-----------------------------------------------|-----|-----|---------|----------|
| Gate leakage current             | $I_{GSS}$     | $V_{GS}=\pm 20V, V_{DS}=0V$                   |     |     | $\pm 1$ | $\mu A$  |
| Drain-Source Breakdown Voltage   | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$                     | 50  | 75  |         | V        |
| Gate Threshold Voltage           | $V_{GS(th)}$  | $V_{DS}=V_{GS}, I_D=250\mu A$                 | 0.5 | 1.2 | 1.6     | V        |
| Zero Gate Voltage Drain Current  | $I_{DSS}$     | $V_{DS}=50V, V_{GS}=0V$                       |     |     | 0.5     | $\mu A$  |
| Drain-source on-state resistance | $R_{DS(on)}$  | $I_D=0.22A, V_{GS}=10V$                       |     | 1.4 | 3.5     | $\Omega$ |
| Forward transfer admittance      | $g_{fs}$      | $V_{DS}=25V, I_D=0.2A, f=1MHz$                | 100 |     |         | mS       |
| Input capacitance                | $C_{iss}$     | $V_{DS}=10V, V_{GS}=0V, f=1.0MHz$             |     |     | 50      | pF       |
| Output capacitance               | $C_{oss}$     |                                               |     |     | 25      |          |
| Reverse transfer capacitance     | $C_{rss}$     |                                               |     |     | 8       |          |
| Turn-On Delay Time               | $t_{D(ON)}$   | $V_{DD}=30V, I_D=0.2A,$<br>$R_{GEN}=50\Omega$ |     |     | 20      | ns       |
| Turn-Off Delay Time              | $t_{D(OFF)}$  |                                               |     |     | 20      | ns       |

### TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

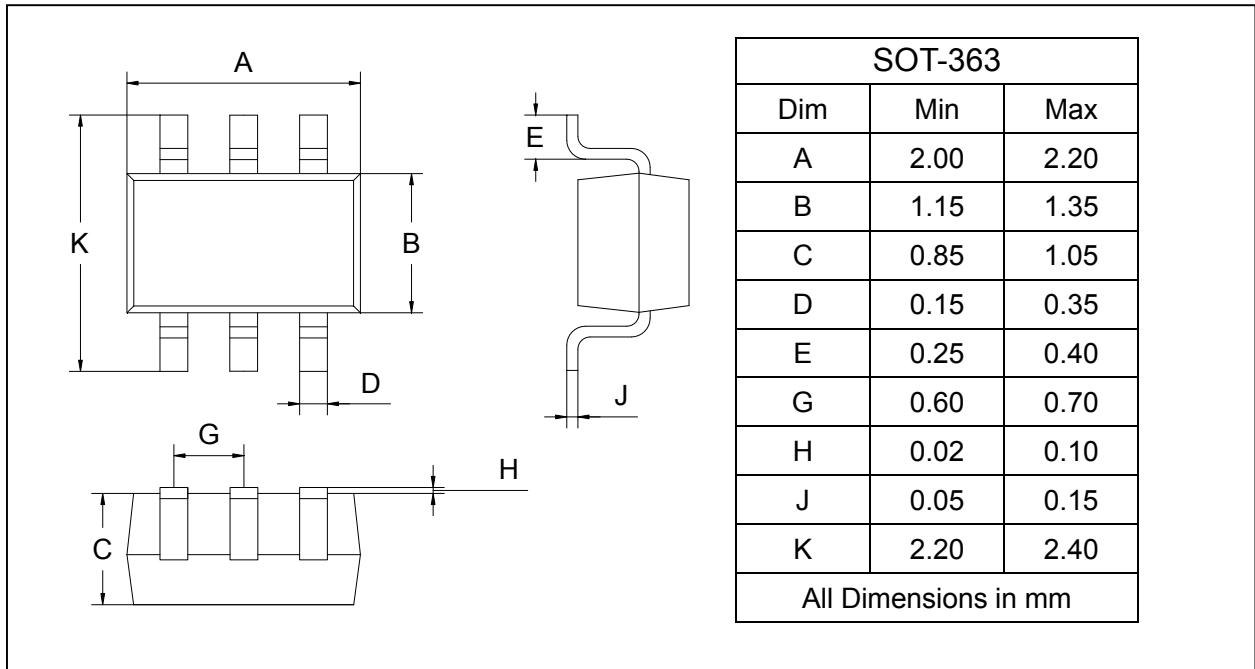


# N-Channel Logic Level Enhancement Mode Field Effect Transistor BSS138DW

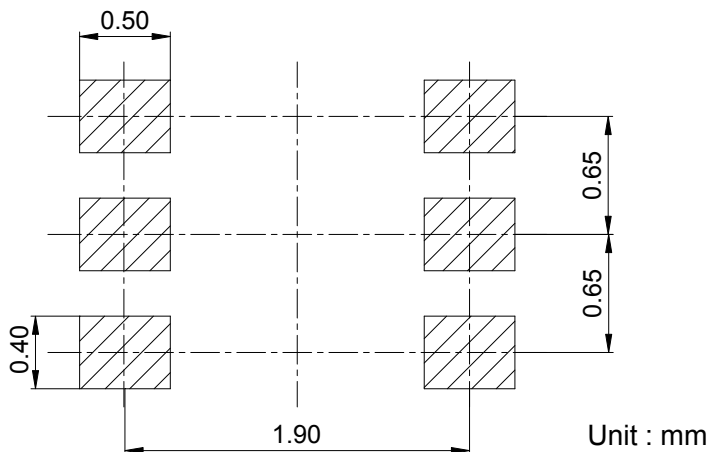
## PACKAGE OUTLINE

Plastic surface mounted package

SOT-363



## SOLDERING FOOTPRINT



## PACKAGE INFORMATION

| Device   | Package | Shipping       |
|----------|---------|----------------|
| BSS138DW | SOT-363 | 3000/Tape&Reel |