## DESCRIPTION

The 2SB801 is available in SOT-23 package

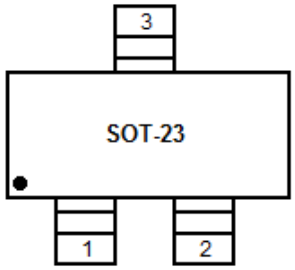
## FEATURES

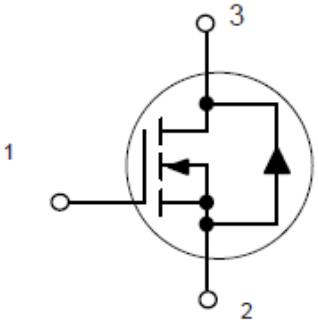
- Available in SOT-23 package

## ORDERING INFORMATION

| Package Type | Part Number |
|---|---|
| SOT-23 | 2SB801 |
| Note | 3,000pcs/Reel |
| AiT provides all RoHS Compliant Products | |

## PIN DESCRIPTION



## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| $V_{DSS}$, Drain–Source Voltage | 60Vdc |
| $V_{DGR}$, Drain–Gate Voltage ($R_{GS}$ = 1.0 MΩ) | 60Vdc |
| Drain Current | |
| $I_D$, Continuous $T_C$ = 25°C[NOTE 1] | 310mAdc |
| $I_{DM}$, Pulse t < 10us | 1200mAdc |
| Gate–Source Voltage | |
| $V_{GS}$, Continuous | ±20Vdc |
| $V_{GSM}$, Non–repetitive (tp ≤ 50μs) | ±40Vpk |

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## THERMAL CHARACTERISTICS

| Parameter | Symbol | Max | Unit |
|---|---|---|---|
| Total Device Dissipation FR-5 Board[NOTE2] | | | |
| $T_A$ = 25℃ | $P_D$ | 225 | mW |
| Derate above 25℃ | | 1.8 | mW/℃ |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 556 | ℃/W |
| Total Device Dissipation Alumina Substrate[NOTE3] | | | |
| $T_A$ = 25°C | $P_D$ | 300 | mW |
| Derate above 25°C | | 2.4 | mW/℃ |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 417 | ℃/W |
| Junction and Storage Temperature | $T_J$, $T_{STG}$ | -55 ~ +150 | ℃ |

NOTE1: The Power Dissipation of the package may result in a lower continuous drain current.
NOTE2: FR–5 = 1.0 x 0.75 x 0.062 in.
NOTE3: Alumina = 0.4 x 0.3 x 0.025 in 99.5% alumina.

## ELECTRICAL CHARACTERISTICS

$T_A$ = 25°C, unless otherwise noted

| Parameter | | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | | | |
| Drain–Source Breakdown Voltage | | $V_{(BR)DSS}$ | $V_{GS}$ = 0, $I_D$ = 10μAdc | 60 | - | - | Vdc |
| Zero Gate Voltage Drain Current | $T_J$ = 25°C<br>$T_J$ = 125°C | $I_{DSS}$ | $V_{GS}$ = 0, $V_{DS}$ = 60Vdc | -<br>- | -<br>- | 1.0<br>500 | μAdc |
| Gate–Body Leakage Current, Forward | | $I_{GSSF}$ | $V_{GS}$ = 20Vdc | - | - | 100 | nAdc |
| Gate–Body Leakage Current, Reverse | | $I_{GSSR}$ | $V_{GS}$= –20Vdc | - | - | -100 | nAdc |
| **ON CHARACTERISTICS**[NOTE4] | | | | | | | |
| Gate Threshold Voltage | | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250μAdc | 1.0 | 1.8 | 2.2 | Vdc |
| On–State Drain Current | | $I_{D(on)}$ | $V_{DS}$≥2.0$V_{DS(on)}$, $V_{GS}$=10Vdc | 500 | - | - | mA |
| Static Drain–Source On–State Voltage | | $V_{DS(on)}$ | $V_{GS}$=10Vdc, $I_D$=500mAdc<br>$V_{GS}$=5.0Vdc, $I_D$=50mAdc | -<br>- | -<br>- | 3.75<br>0.375 | Vdc |
| Static Drain–Source On–State Resistance | | $R_{DS(on)}$ | $V_{GS}$=10V, $I_D$=500mAdc<br>$V_{GS}$=5.0Vdc, $I_D$=50mAdc | -<br>- | 1.5<br>1.7 | 2.5<br>2.5 | Ohms |
| Forward Transconductance | | $g_{FS}$ | $V_{DS}$≥2.0$V_{DS(on)}$, $I_D$=200mAdc | 80 | - | - | mmhos |
| **DYNAMIC CHARACTERISTICS** | | | | | | | |
| Input Capacitance | | $C_{iss}$ | $V_{DS}$=25Vdc, $V_{GS}$=0, f=1.0MHz | - | 17 | 50 | pF |
| Output Capacitance | | $C_{oss}$ | | - | 10 | 25 | |
| Reverse Transfer Capacitance | | $C_{rss}$ | | - | 2.5 | 5.0 | |
| **SWITCHING CHARACTERISTICS** [NOTE4] | | | | | | | |
| Turn–On Delay Time | | $t_{d(on)}$ | $V_{DD}$ = 25Vdc , $I_D$≅ 500mAdc $R_G$ = 25Ω, $R_L$ = 50Ω, $V_{GEN}$ = 10V | - | 7 | 20 | ns |
| Turn–Off Delay Time | | $t_{d(off)}$ | | - | 11 | 40 | |
| **BODY–DRAIN DIODE RATINGS** | | | | | | | |
| Diode Forward On–Voltage | | $V_{SD}$ | $I_S$ = 115mAdc, $V_{GS}$ = 0V | - | - | -1.5 | Vdc |
| Source Current Continuous | | $I_S$ | Body Diode | - | - | -115 | mAdc |
| Source Current Pulsed | | $I_{SM}$ | | - | - | -800 | mAdc |

NOTE4: Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

## TYPICAL CHARACTERISTICS

Figure 1. Ohmic Region

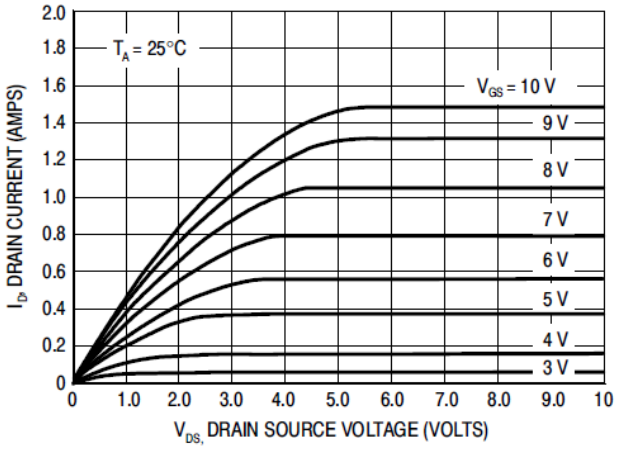



Figure 2. Transfer Characteristics

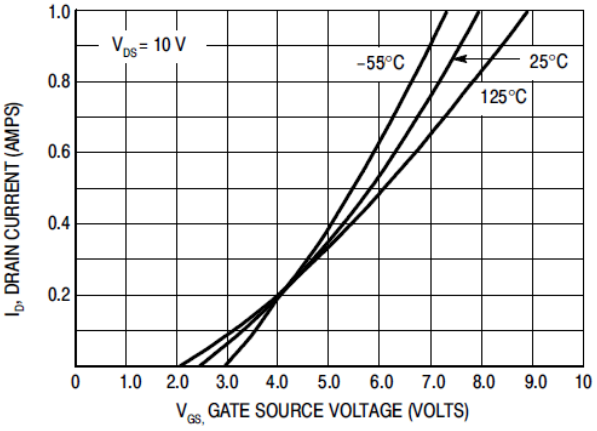



Figure 3. Temperature versus Static Drain–Source On–Resistance

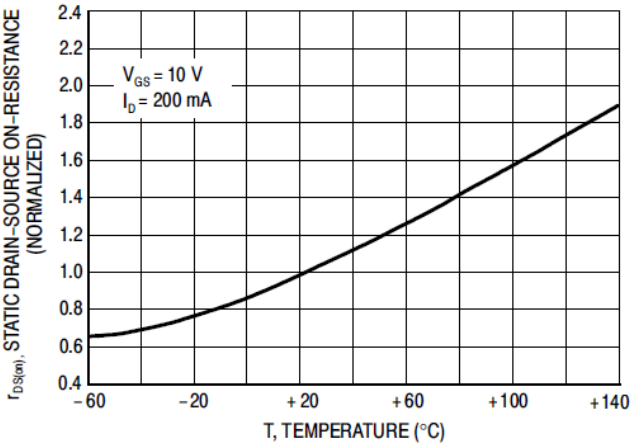
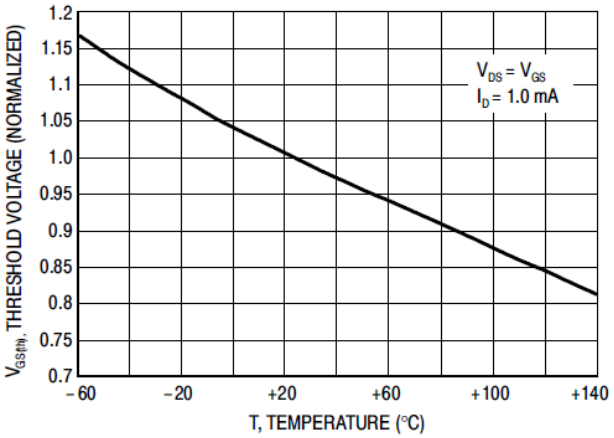
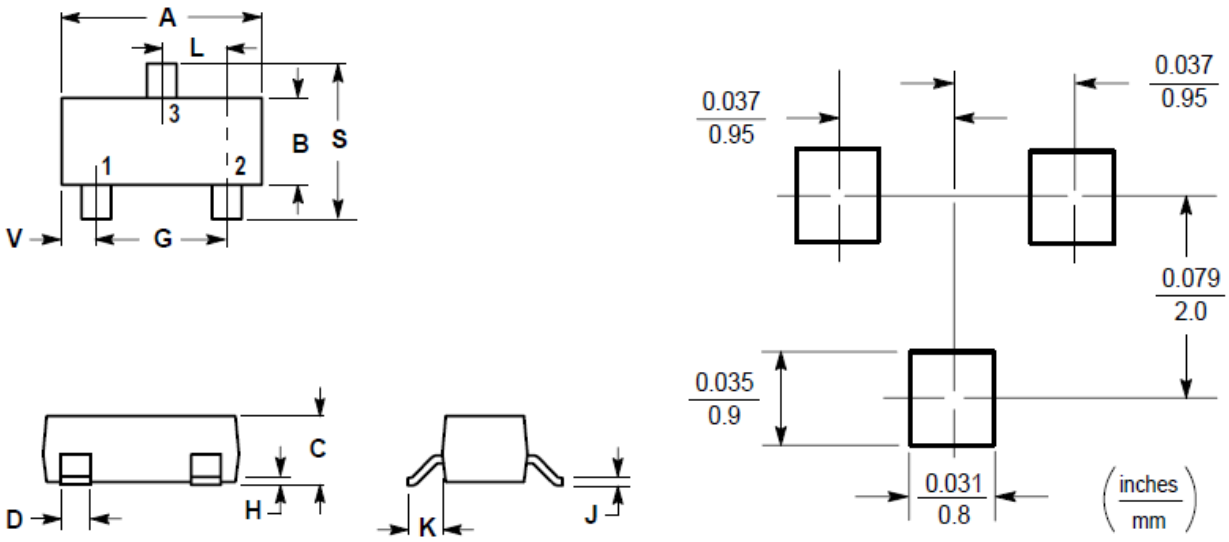



Figure 4. Temperature versus Gate Threshold Voltage



## PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)




| DIM | MILLIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 2.80 | 3.04 | 0.1102 | 0.1197 |
| B | 1.20 | 1.40 | 0.0472 | 0.0551 |
| C | 0.89 | 1.11 | 0.0350 | 0.0440 |
| D | 0.37 | 0.50 | 0.0150 | 0.0200 |
| G | 1.78 | 2.04 | 0.0701 | 0.0807 |
| H | 0.013 | 0.100 | 0.0005 | 0.0040 |
| J | 0.085 | 0.177 | 0.0034 | 0.0070 |
| K | 0.35 | 0.69 | 0.0140 | 0.0285 |
| L | 0.89 | 1.02 | 0.0350 | 0.0401 |
| S | 2.10 | 2.64 | 0.0830 | 0.1039 |
| V | 0.45 | 0.60 | 0.0177 | 0.0236 |

## IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc.'s integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or servere property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.