



# ACE13019B

## N-Channel Plastic-Encapsulate MOSFETS

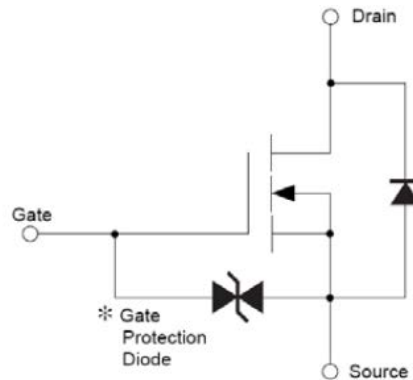
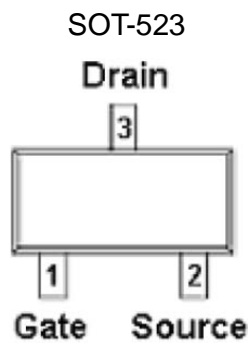
### Features

- Low on-resistance
- Fast switching speed
- Low voltage drive makes this device ideal for portable equipment
- Easily designed drive circuits
- Easy to parallel

### Absolute Maximum Ratings (Ta = 25°C unless otherwise noted)

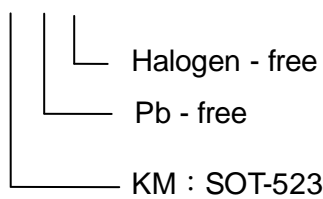
| Parameter                               | Symbol          | Max      | Unit          |
|-----------------------------------------|-----------------|----------|---------------|
| Drain-Source Voltage                    | $V_{DSS}$       | 30       | V             |
| Gate-Source Voltage                     | $V_{GSS}$       | $\pm 20$ | V             |
| Continuous Drain Current                | $I_D$           | 0.1      | A             |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 833      | $^{\circ}C/W$ |
| Power Dissipation                       | $P_D$           | 0.15     | W             |
| Junction Temperature                    | $T_J$           | 150      | $^{\circ}C$   |
| Storage Temperature                     | $T_{stg}$       | -55~+150 | $^{\circ}C$   |

### Packaging Type



### Ordering information

ACE13019B XX + H





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**Electrical Characteristics**  $T_A=25\text{ }^\circ\text{C}$  unless otherwise noted

| Parameter                         | Symbol        | Conditions                                                            | Min. | Typ. | Max.      | Unit       |
|-----------------------------------|---------------|-----------------------------------------------------------------------|------|------|-----------|------------|
| Off Characteristics               |               |                                                                       |      |      |           |            |
| Drain-Source Breakdown Voltage    | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=10\mu A$                                              | 30   |      |           | V          |
| Zero Gate Voltage Drain Current   | $I_{DSS}$     | $V_{DS}=30V, V_{GS}=0V$                                               |      |      | 1         | $\mu A$    |
| Gate Leakage Current              | $I_{GSS}$     | $V_{GS}=\pm 20V, V_{DS}=0V$                                           |      |      | $\pm 100$ | nA         |
| Gate Threshold Voltage            | $V_{GS(th)}$  | $V_{DS}=3V, I_{DS}=100\mu A$                                          | 0.8  |      | 1.5       | V          |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$  | $V_{GS}=4V, I_D=10mA$                                                 |      |      | 8         | m $\Omega$ |
|                                   |               | $V_{GS}=2.5V, I_D=1mA$                                                |      |      | 13        |            |
| Forward Transconductance          | $g_{FS}$      | $V_{DS}=3V, I_D=10A$                                                  | 20   |      |           | S          |
| Dynamic Characteristics*          |               |                                                                       |      |      |           |            |
| Input Capacitance                 | $C_{iss}$     | $V_{DS}=5V, V_{GS}=0V$<br>$f=1MHz$                                    |      | 13   |           | pF         |
| Output Capacitance                | $C_{oss}$     |                                                                       |      | 9    |           |            |
| Reverse Transfer Capacitance      | $C_{rss}$     |                                                                       |      | 4    |           |            |
| Switching Characteristics*        |               |                                                                       |      |      |           |            |
| Turn-On Delay Time                | $T_{d(on)}$   | $V_{DD}=5V, V_{GS}=5V$<br>$I_D=10mA, R_G=10\Omega$<br>$R_L=500\Omega$ |      | 15   |           | ns         |
| Turn-On Rise Time                 | $t_f$         |                                                                       |      | 35   |           |            |
| Turn-Off Delay Time               | $t_{d(off)}$  |                                                                       |      | 80   |           |            |
| Turn-Off Fall Time                | $t_f$         |                                                                       |      | 80   |           |            |

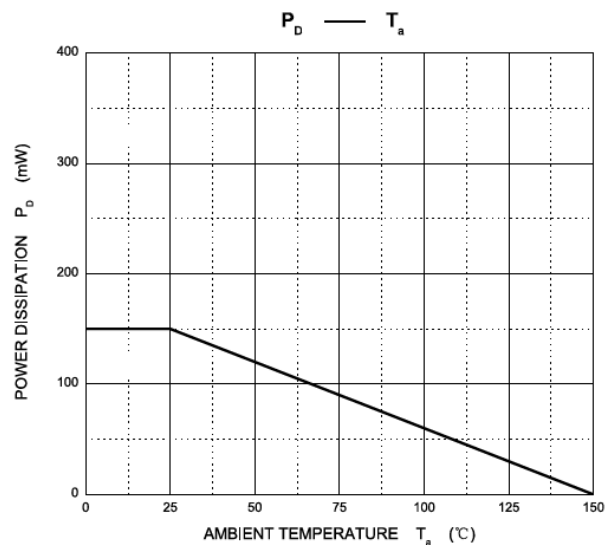
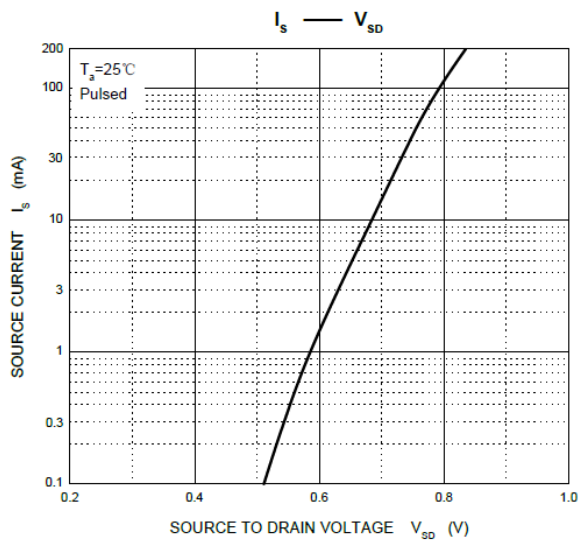
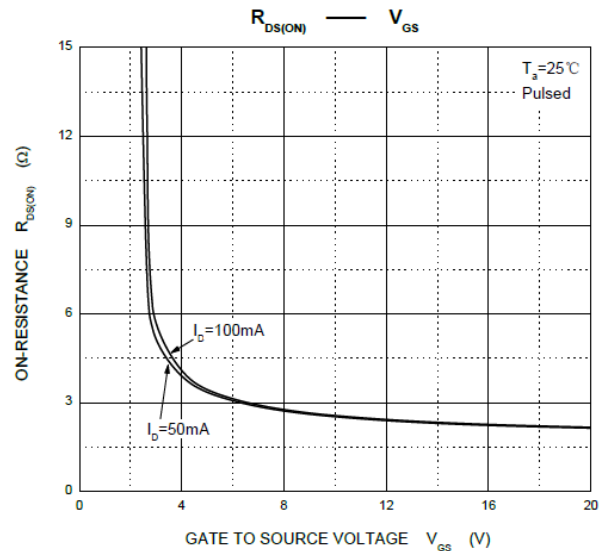
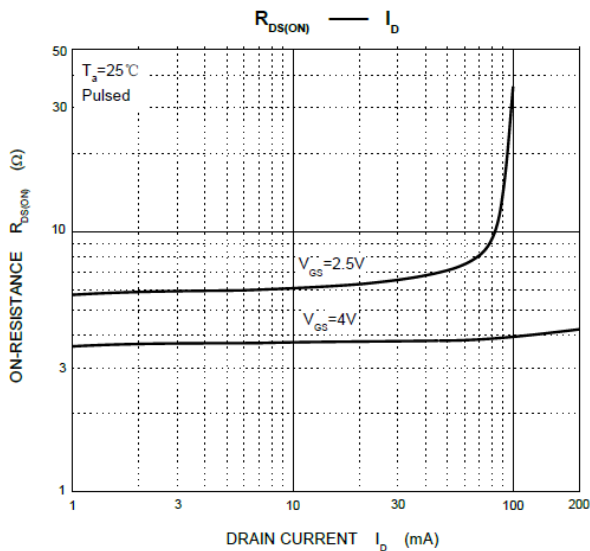
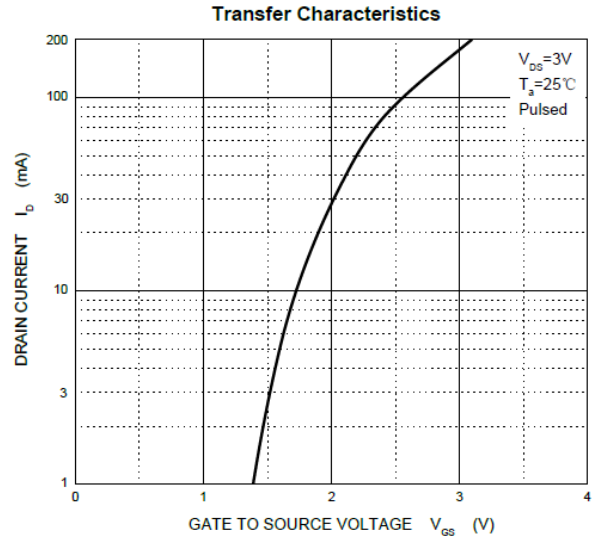
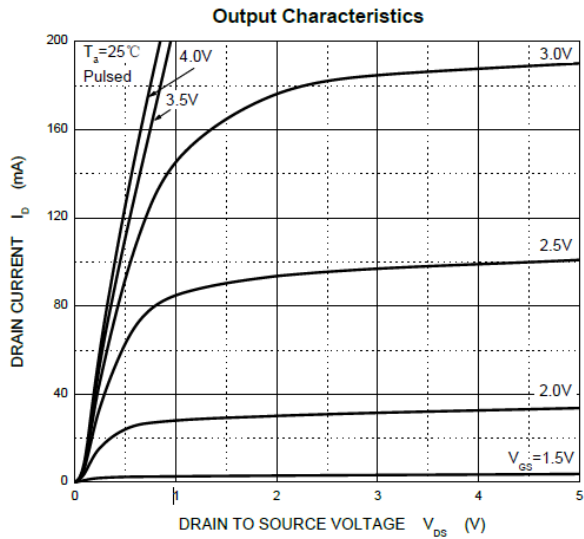
\* These parameters have no way to verify.



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### Typical Characteristics



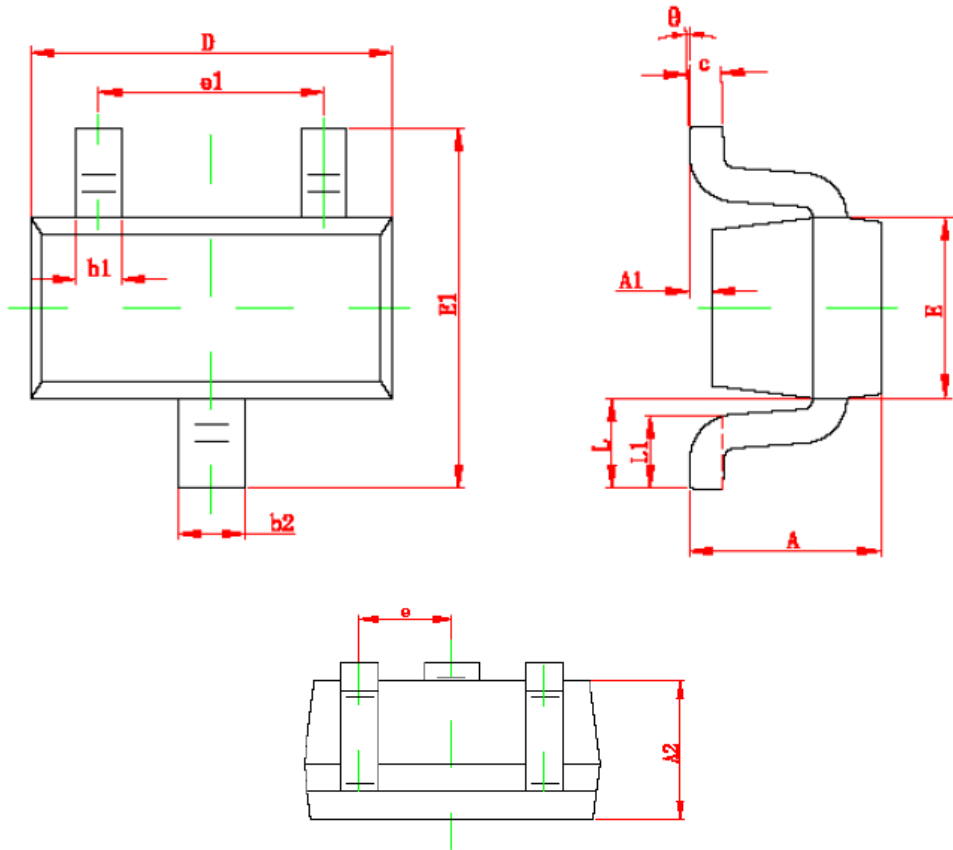


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### Packing Information

#### SOT-523



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.700                     | 0.900 | 0.028                | 0.035 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.700                     | 0.800 | 0.028                | 0.031 |
| b1     | 0.150                     | 0.250 | 0.006                | 0.010 |
| b2     | 0.250                     | 0.350 | 0.010                | 0.014 |
| c      | 0.100                     | 0.200 | 0.004                | 0.008 |
| D      | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 0.700                     | 0.900 | 0.028                | 0.035 |
| E1     | 1.450                     | 1.750 | 0.057                | 0.069 |
| e      | 0.500 TYP.                |       | 0.020 TYP.           |       |
| e1     | 0.900                     | 1.100 | 0.035                | 0.043 |
| L      | 0.400 REF.                |       | 0.016 REF.           |       |
| L1     | 0.260                     | 0.460 | 0.010                | 0.018 |
| theta  | 0°                        | 8°    | 0°                   | 8°    |



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### Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Electronics Co., LTD. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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