

### Description

ACE2301B is produced with high cell density DMOS trench technology, which is especially used to minimize on-state resistance. This device particularly suits low voltage applications such as portable equipment, power management and other battery powered circuits, and low in-line power dissipation are needed in a very small outline surface mount package with excellent thermal and electrical capabilities.

### Features

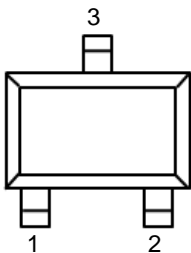
- $V_{DS} = -20V$
- $R_{DS(ON)}, V_{GS} @ -4.5V, I_{DS} @ -2A = 135m\Omega$
- $R_{DS(ON)}, V_{GS} @ -2.5V, I_{DS} @ -2A = 165m\Omega$

### Absolute Maximum Ratings

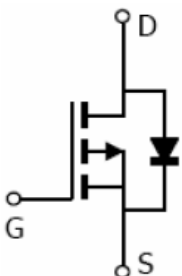
Parameter	Symbol	Max	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Drain Current	$I_D$	-1.9	A
Pulsed Drain Current <sup>1)</sup>	$I_{DM}$	-10	A
Maximum Power Dissipation	$P_D$	750	mW
		480	
Operating Junction Temperature	$T_J/T_J$	-55 to 150	$^{\circ}C$

### Packaging Type

SOT-23-3



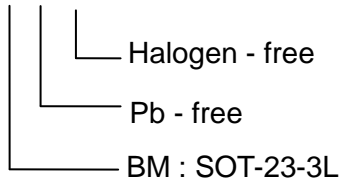
Pin	Symbol	Description
1	G	Gate
2	S	Source
3	D	Drain



### Ordering information

Selection Guide

ACE2301B XX + H



### Electrical Characteristics

T<sub>A</sub>=25 °C unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-20			V
Drain Cut-off Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V			-1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±100	nA
On characteristics						
Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2A		135	150	mΩ
	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2A		165	200	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-0.45	-0.75	-1.5	V
Forward Trans conductance	G <sub>fs</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-2.8A		6.5		S
Switching						
Turn-On Delay Time	T <sub>d(on)</sub>	V <sub>DD</sub> =-6V, RL=6Ω I <sub>D</sub> =-1A, V <sub>GEN</sub> =-4.5V RG=6R		13	25	ns
Turn-Off Delay Time	t <sub>d(off)</sub>			42	70	
Dynamic						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-6V, V <sub>GS</sub> =0V F=1.0MHz		415		pF
Output Capacitance	C <sub>oss</sub>			223		
Reverse Transfer Capacitance	C <sub>rss</sub>			87		
Drain-source diode characteristics and maximum ratings						
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1.6A, V <sub>GS</sub> =0V	-0.5		-1.2	V

Note: 1. Pulse width limited by maximum junction temperature

2. Pulse test: PW ≤ 300us, duty cycle ≤ 2%

3. For design AID only, not subject to production testing

4. Switching time is essentially independent of operating temperature

Typical Performance Characteristics

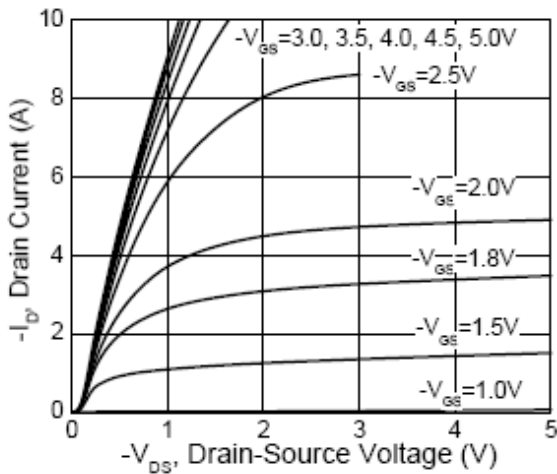


Figure 1. Output Characteristics

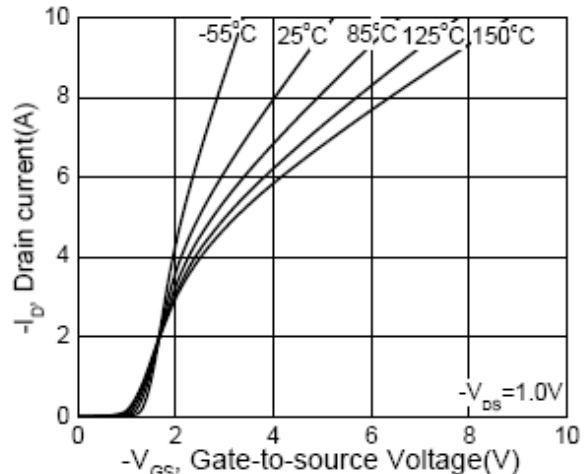


Figure 2. Transfer Characteristics

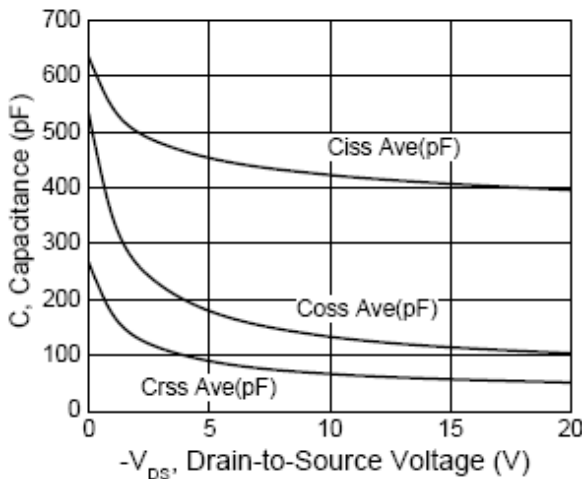


Figure 3. Capacitance

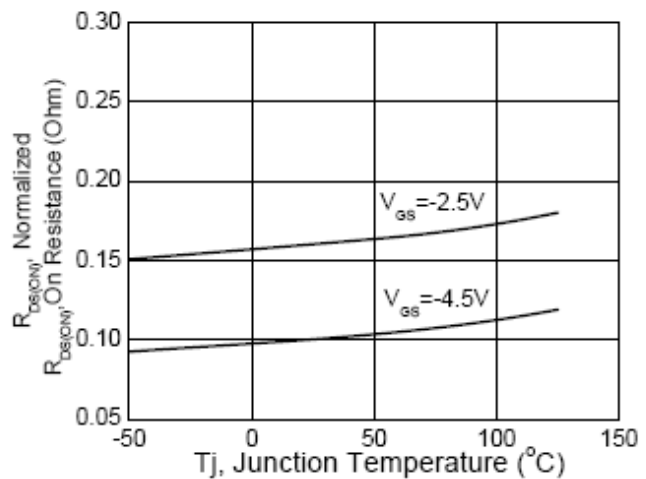


Figure 4. On Resistance Vs. Temperature

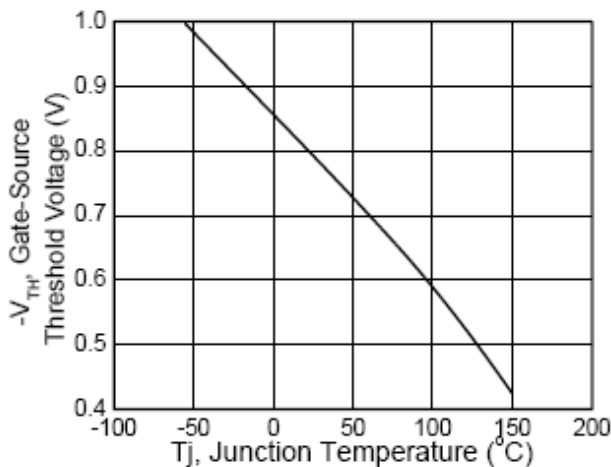


Figure 5. Gate Thershold Vs. Temperature

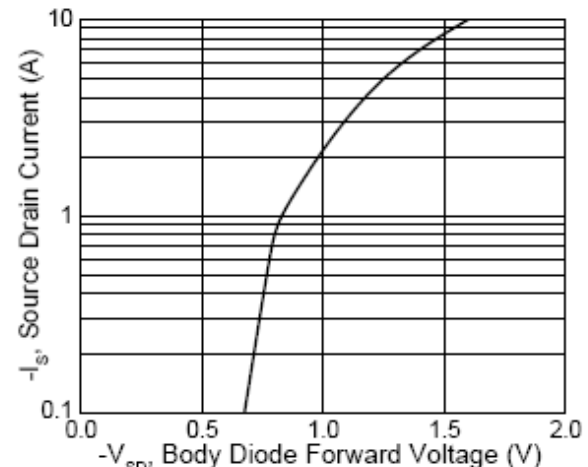
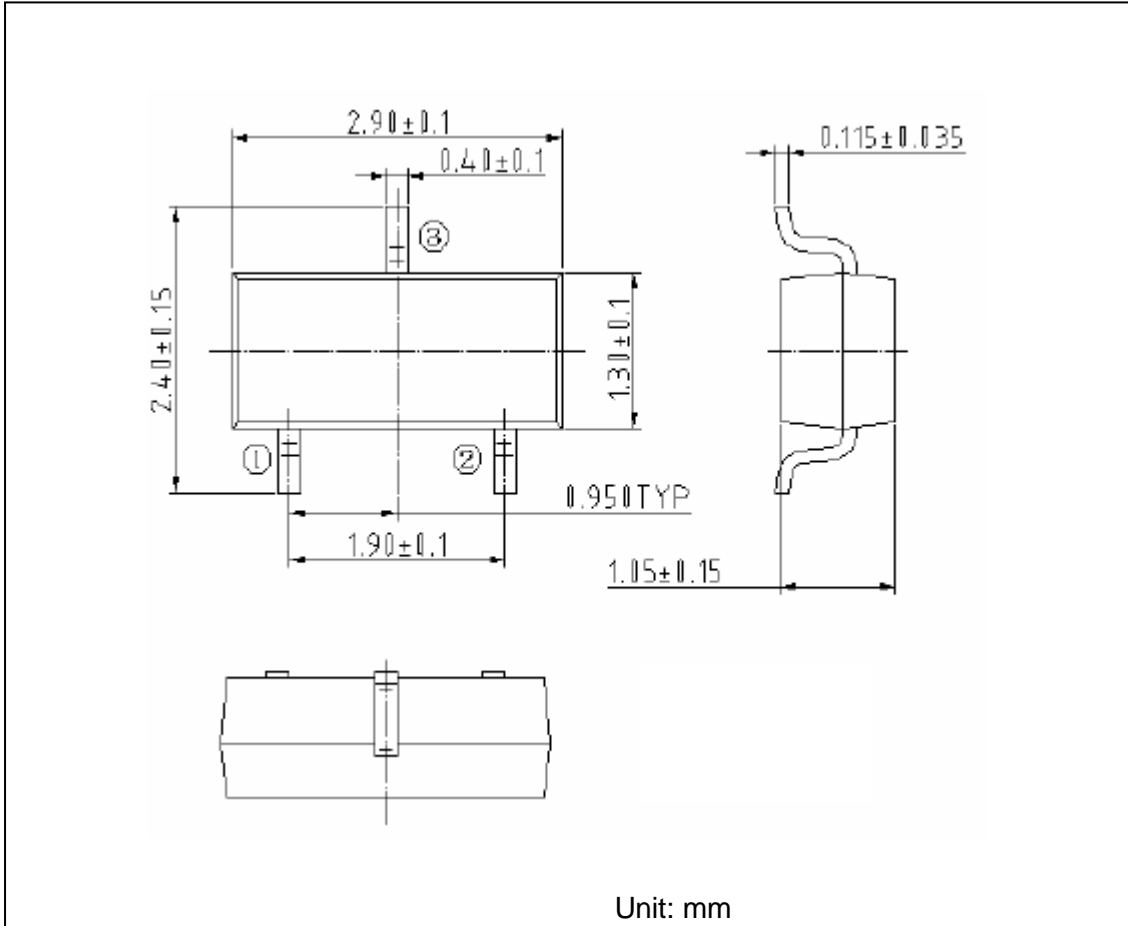


Figure 6. Body Diode Forward Voltage Vs. Source Current

### Packing Information

#### SOT-23-3L



## 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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