ACE1551B

N-Channel Enhancement Mode Field Effect Transistor

Description

The ACE1551B combines advanced trench MOSFET technology with a low resistance package to provide This device is ideal for Power Supply Converter Circuits and Load/Power Switching Cell Phones, Pagers.

Features

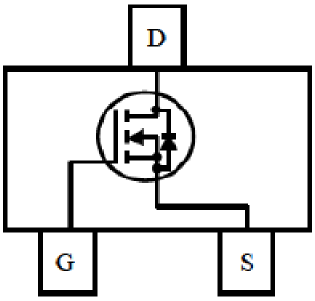
- V_{DS} =20V
- I_D=0.7A
- $R_{DS(ON)}$<360mΩ (V_{GS}=4.5V)
- $R_{DS(ON)}$<420mΩ (V_{GS}=2.5V)
- $R_{DS(ON)}$<560mΩ (V_{GS}=1.8V)

Absolute Maximum Ratings

Parameter		Symbol	Max	Unit
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	±12	V
Continuous Drain Current * AC	T_A=25℃	I_D	700	mA
	T_A=70℃		560	
Pulsed Drain Current * B		I_{DM}	1	A
Power Dissipation	T_A=25℃	P_D	0.27	W
	T_A=70℃		0.16	
Operating Junction Temperature / Storage Temperature Range		T_J/T_{STG}	-55/150	°C

Packaging Type

SOT-723



Ordering information

ACE1551B XX + H

- Halogen - free
- Pb - free
- JM : SOT-723

Electrical Characteristics

T_A=25℃, unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250 uA	20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250uA	0.4		1.0	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	uA
Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=0.8A		300	360	mΩ
		V_{GS}=2.5V, I_D=0.7A		340	420	
		V_{GS}=1.8V, I_D=0.6A		420	560	
Forward Transconductance	gfs	V_{DS}=10V,I_D=0.4A		1		S
Diode Forward Voltage	V_{SD}	I_{SD}=0.15A, V_{GS}=0V		0.65	1.2	V
Switching						
Total Gate Charge	Q_g	V_{DS}=10V, V_{GS}=4.5V, I_D=0.6A		1.06	1.38	nC
Gate-Source Charge	Q_{gs}			0.18		
Gate-Drain Charge	Q_{gd}			0.32		
Turn-On Time	td(on)	V_{GS}=4.5V, I_D=0.5A, V_{DS}=10V, R_G=1Ω		18	26	nS
	tr			20	28	
Turn-Off Time	td(off)			70	110	
	tf			25	40	
Dynamic						
Input Capacitance	Ciss	V_{GS}=0V, V_{DS}=10V, f=1MHz		70		pF
Output Capacitance	Coss			20		
REVERSE Transfer Capacitance	Crss			8		

Note:

1. The value of RθJA is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.
2. Repetitive rating, pulse width limited by junction temperature.
3. The RθJA is the sum of the thermal impedence from junction to lead RθJL and lead to ambient .
4. The static characteristics are obtained using <300 μs pulses, duty cycle 0.5% max.
5. These tests are performed with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

Typical Performance Characteristics

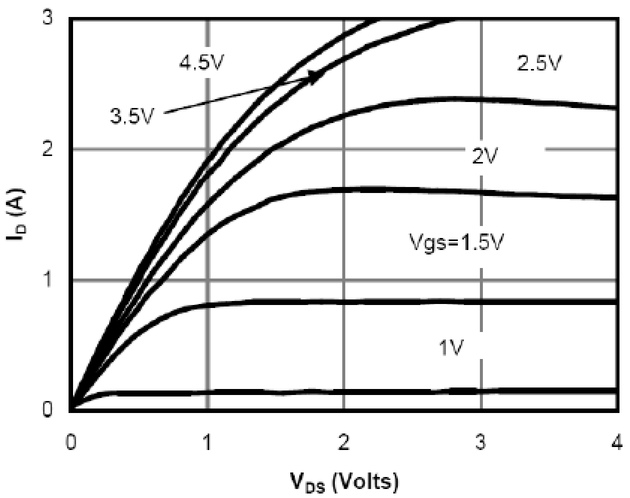


Figure 1: On-Region Characteristics

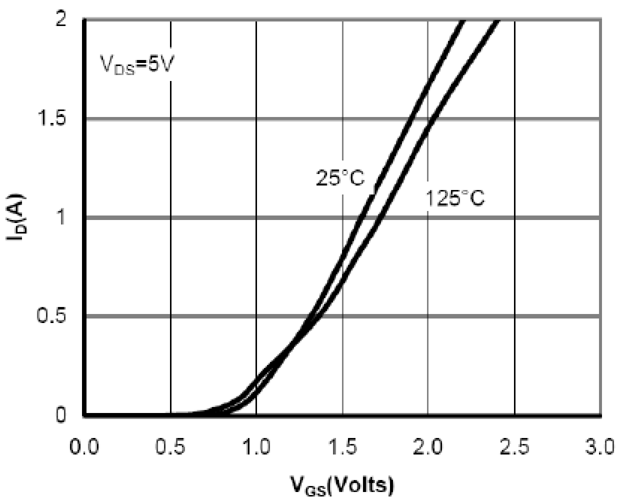


Figure 2: Transfer Characteristics

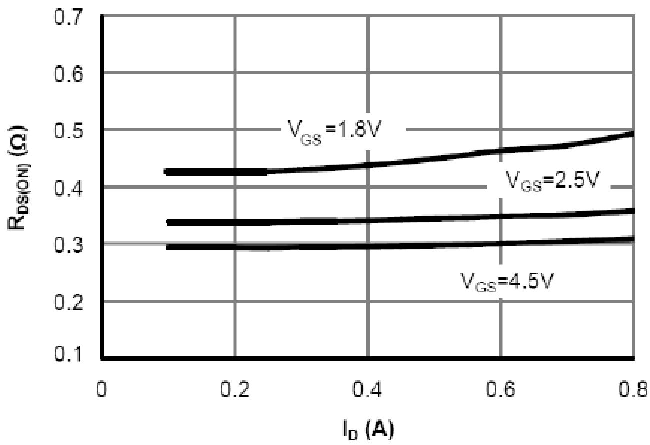


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

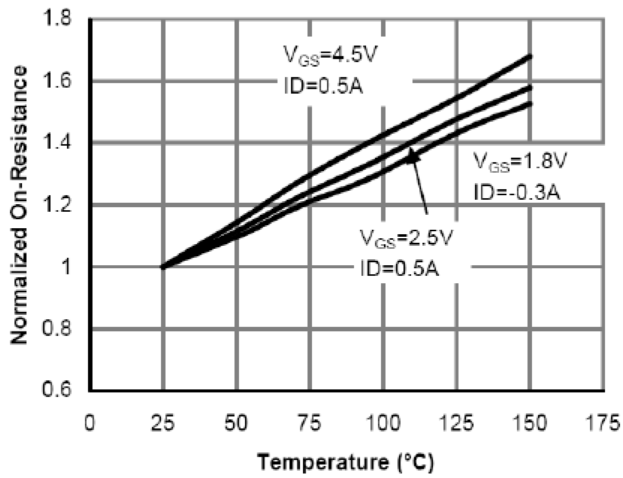


Figure 4: On-Resistance vs. Junction Temperature

Typical Performance Characteristics

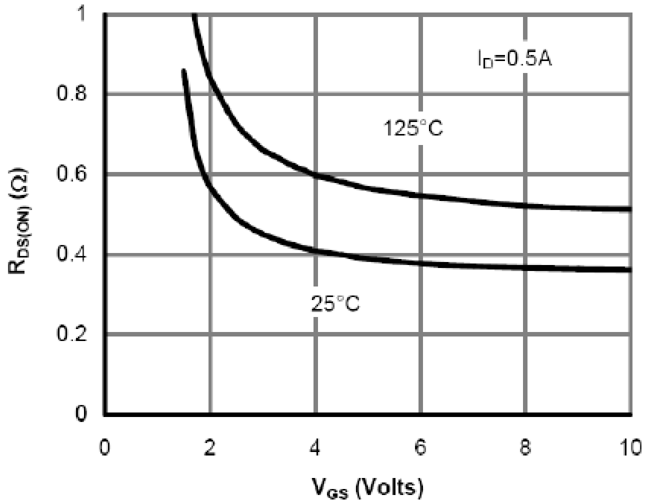


Figure 5: On-Resistance vs. Gate-Source Voltage

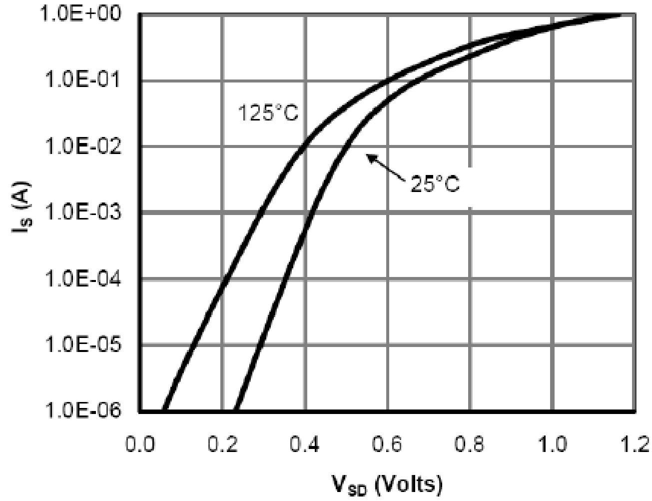


Figure 6: Body-Diode Characteristics

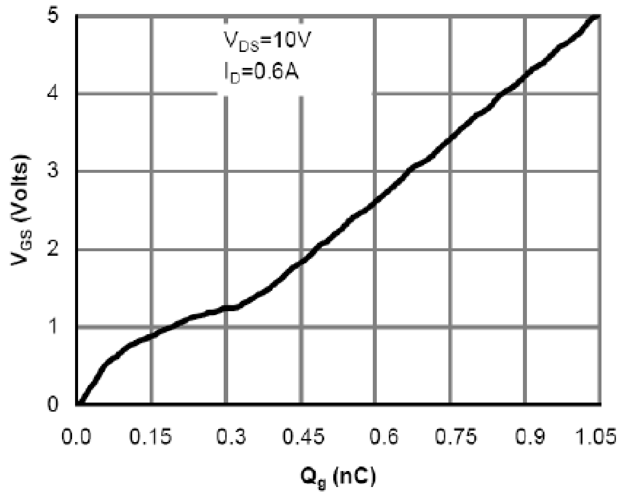


Figure 7: Gate-Charge Characteristics

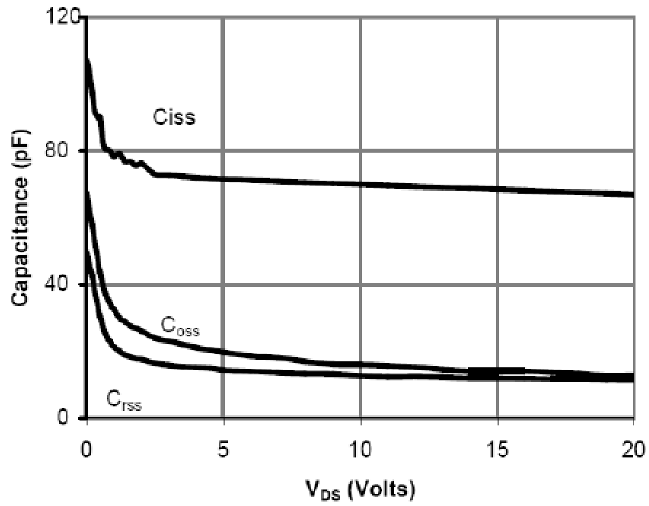


Figure 8: Capacitance Characteristics

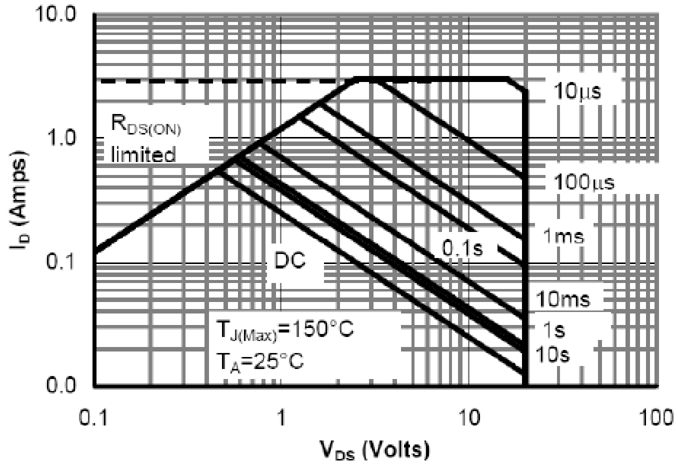


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

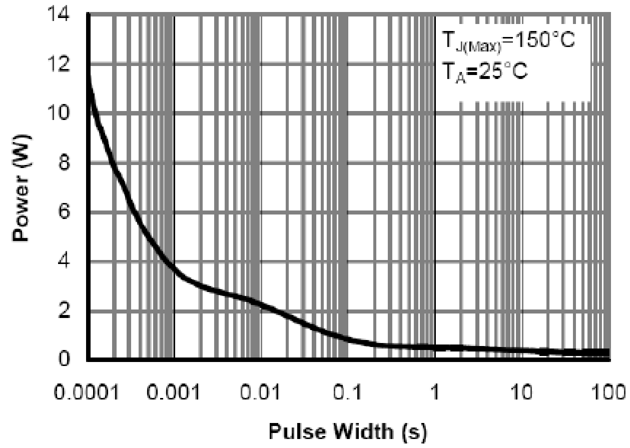


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

Typical Performance Characteristics

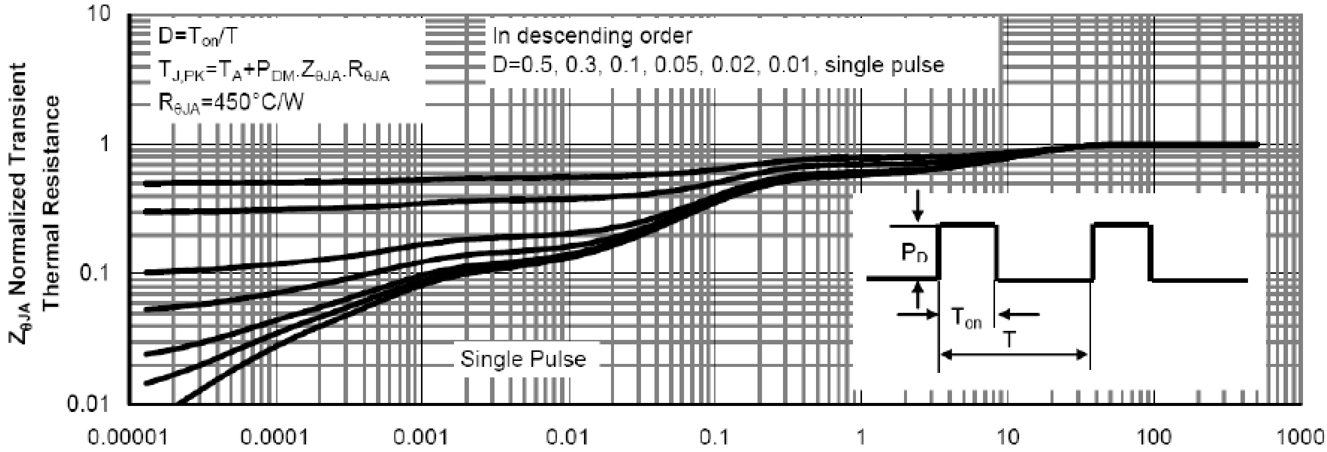
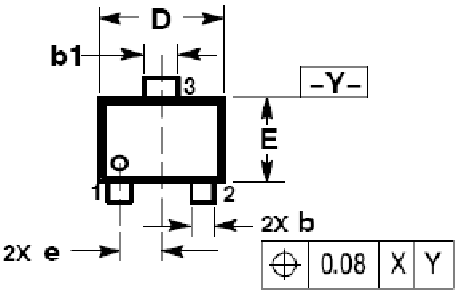


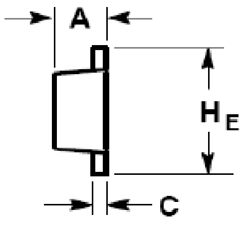
Figure 11: Normalized Maximum Transient Thermal Impedance

Packing Information

SOT-723

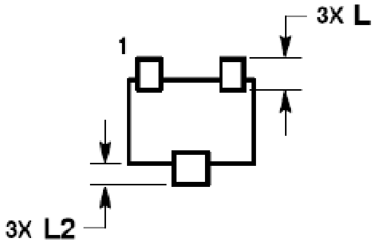


TOP VIEW



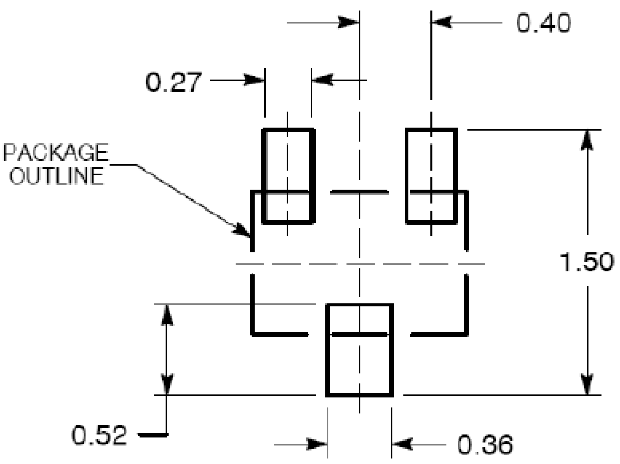
SIDE VIEW

DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.45	0.50	0.55
b	0.15	0.21	0.27
b1	0.25	0.31	0.37
C	0.07	0.12	0.17
D	1.15	1.20	1.25
E	0.75	0.80	0.85
e	0.40 BSC		
H_E	1.15	1.20	1.25
L	0.29 REF		
L2	0.15	0.20	0.25



BOTTOM VIEW

RECOMMENDED
SOLDERING FOOTPRINT



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 sued 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 shoes 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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