ACE1500B

P-Channel Enhancement Mode Field Effect Transistor

Description

The ACE1500B is P-Channel enhancement mode power MOSFET which is produced with high cell density and DMOS trench technology .This device particularly suits low voltage applications, especially for battery powered circuits, the tiny and thin outline saves PCB consumption.

Features

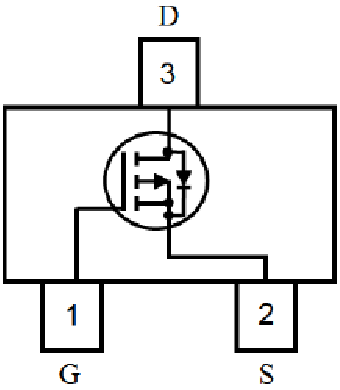
- V_{DS}(V)=-20V
- I_D=-1.6A (V_{GS}=-4.5V)
- $R_{DS(ON)}$ < 155mΩ (V_{GS}=-4.5V)
- $R_{DS(ON)}$ < 168mΩ (V_{GS}=-2.5V)
- $R_{DS(ON)}$ < 220mΩ (V_{GS}=-1.8V)

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Drain-Source Voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GSS}	±12	V
Drain Current (Continuous) T_A=25°C	I_D	-1.6	A
Drain Current (Pulse)	I_{DM}	-5	
Power Dissipation T_A=25°C	P_D	350	mW
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

Packaging Type

SOT-323



Ordering information

ACE1500B XX + H

- Halogen - free (H)
- Pb - free (+)
- CM : SOT-323 (XX)

Electrical Characteristics

T_A=25 °C unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250uA	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	uA
Gate Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V			100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-1A		145	155	mΩ
		V_{GS}=-2.5V, I_D=-0.5A		150	168	
		V_{GS}=-1.8V, I_D=-0.3A		180	220	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.4	-0.7	-1	V
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-2A		5		S
Diode Forward Voltage	V_{SD}	I_{SD}=-1.6A, V_{GS}=0V		-0.93	-1.1	V
Maximum Body-Diode Continuous Current	I_S				-1.6	A
Switching						
Total Gate Charge	Q_g	V_{DS}=-6V, I_D=-2.8A V_{GS}=-4.5V		4.9		nC
Gate-Source Charge	Q_{gs}			0.62		
Gate-Drain Charge	Q_{gd}			1.07		
Turn-On Delay Time	$T_{d(on)}$	V_{DS}=-6V,R_{GEN}=6Ω, V_{GS}=-4.5V R_L=6Ω		10.1		ns
Turn-On Rise Time	t_f			4.76		
Turn-Off Delay Time	$t_{d(off)}$			84.1		
Turn-Off Fall Time	t_f			25.2		
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=-6V, V_{GS}=0V f=1MHz		472		pF
Output Capacitance	C_{oss}			71		
Reverse Transfer Capacitance	C_{rss}			51		

Notes:

1. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.
2. Guaranteed by design, not subject to production testing.

Typical Performance Characteristics

Fig.1 Output Characteristic

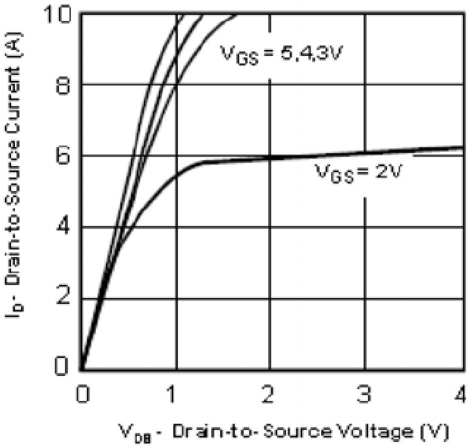


Fig.2 Transfer Characteristics

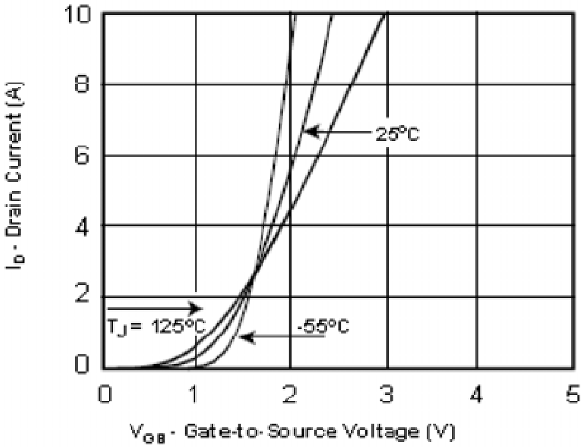


Fig.3 On-Resistance Variation with Temperature

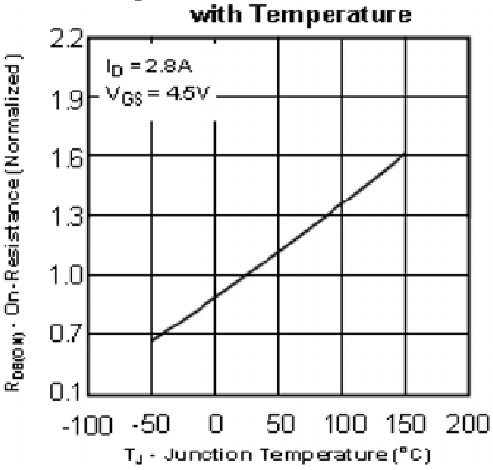


Fig.4 Body Diode Forward Voltage Variation with Source Current

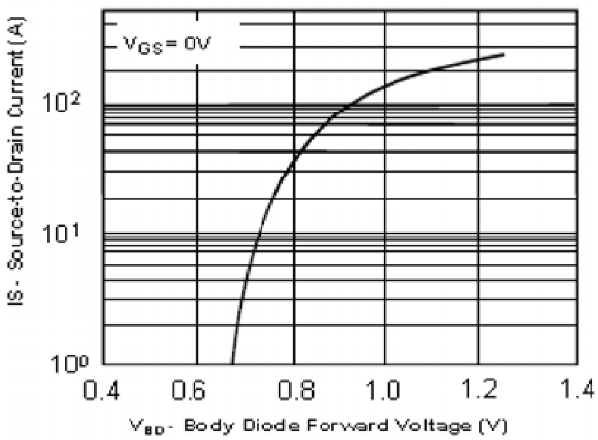


Fig.5 Gate Threshold Variation with Temperature

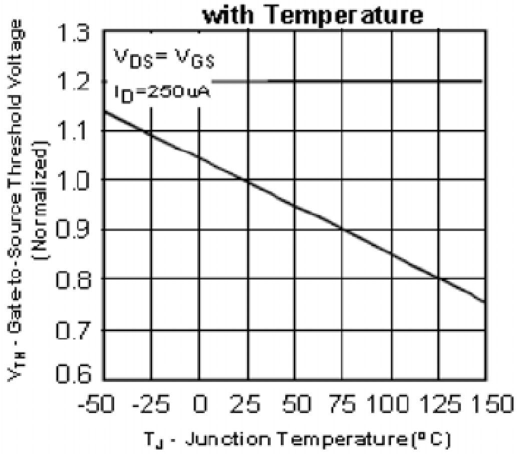
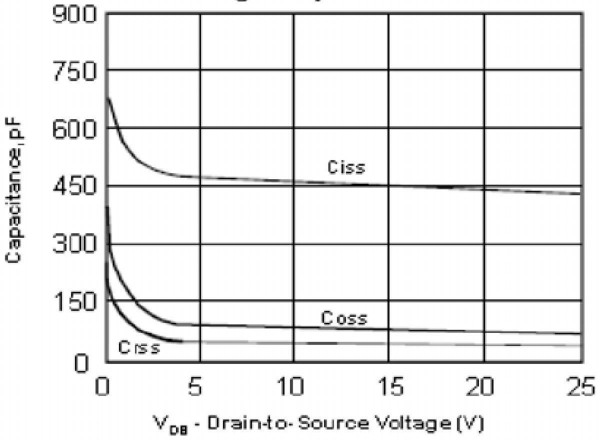


Fig.6 Capacitance



Typical Performance Characteristics

Fig. 7 Gate Charge Waveform

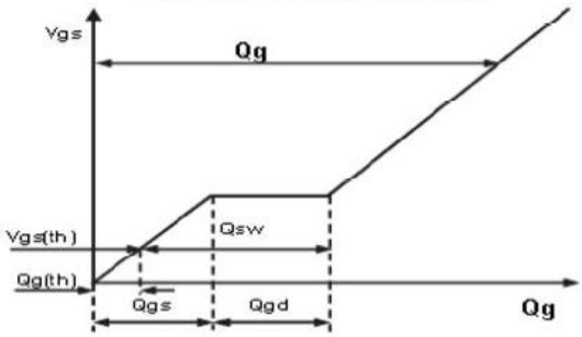


Fig. 8 Gate Charge

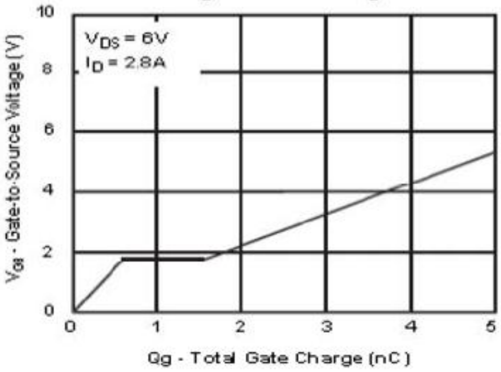


Fig. 9 Maximum Safe Operating Area

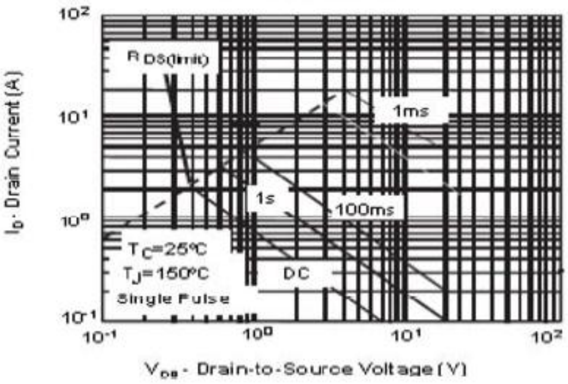
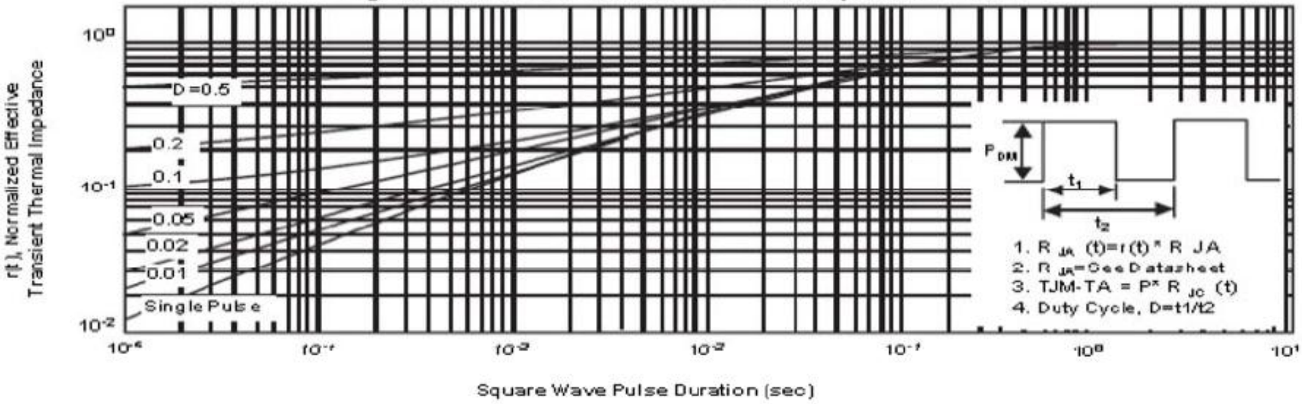
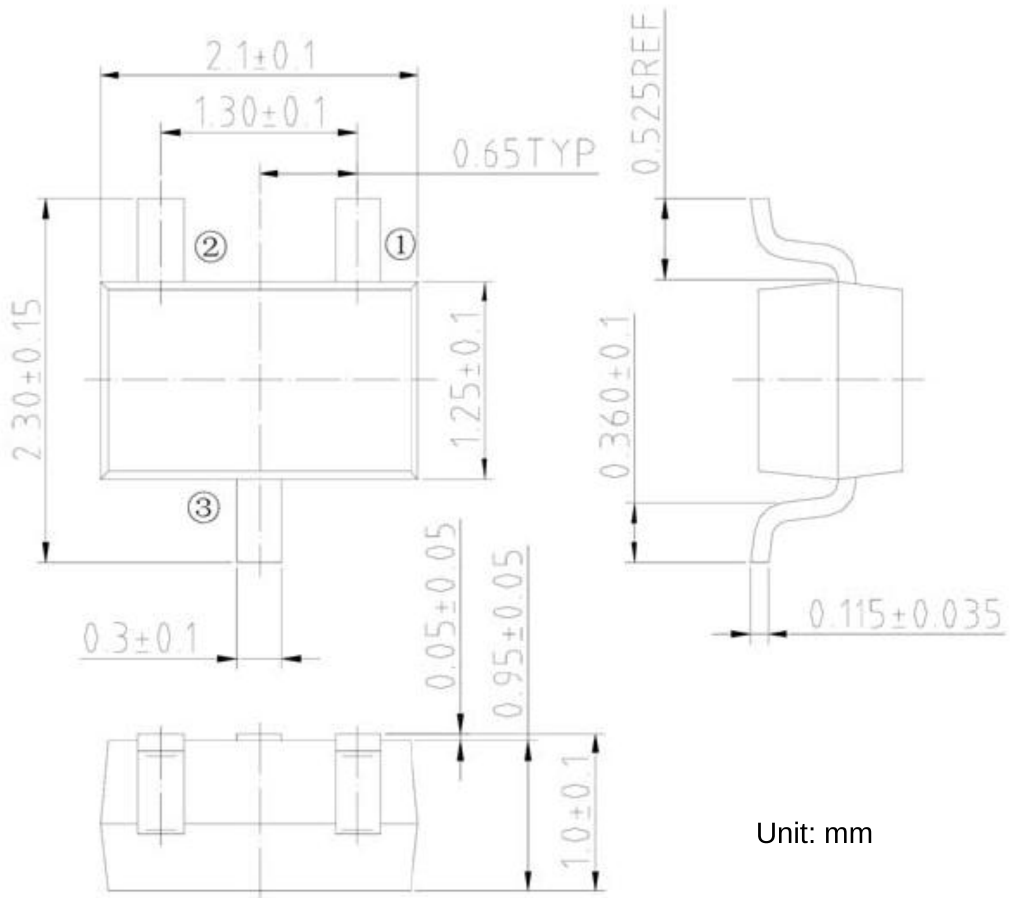


Fig. 10 Normalized Thermal Transient Impedance Curve



Packing Information

SOT-323



Unit: mm

Notes

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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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