ACE4613B

Complementary Enhancement Mode Field Effect Transistor

Description

The ACE4613B uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other applications.

Features

N-channel

- V_{DS}=30V
- I_D=7A

P-channel

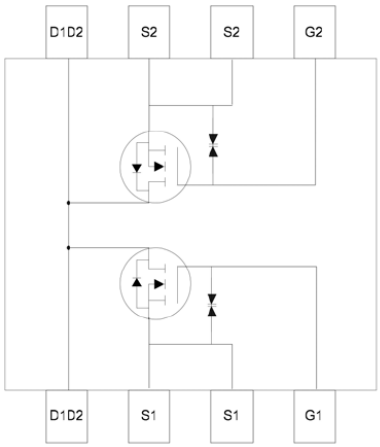
- V_{DS}=-30V
- I_D=-6A

Absolute Maximum Ratings

Parameter	Symbol	N-channel	P-channel	Unit
Drain-Source Voltage	V_{DSS}	30	-30	V
Gate-Source Voltage	V_{GSS}	±20	±20	V
Continuous Drain Current (Note 1)	I_D	7	-6	A
Pulse Drain Current (Note 2)	I_{DM}	30	-30	
Total Power Dissipation (Note 1)	P_D	1	1	W
Operating and Storage Temperature Range	T_J,T_{STG}	-55 to 150	-55 to 150	°C

Packaging Type

TSSOP-8



Ordering information

ACE4613B TM + H

- Halogen - free
- Pb - free
- TM : TSSOP-8

N-channel 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	30	33		V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250uA	1	1.5	3	V
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V, V_{GS}=0V			1	uA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=7A		31	40	mΩ
		V_{GS}=4.5V, I_D=5A		44	50	
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=5A		7.3		S
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V		0.76	1	V
Turn-On Delay Time	$T_{d(on)}$	V_{DS}=15V, V_{GS}=10V		4.5	18	ns
Turn-Off Delay Time	$t_{d(off)}$	R_{GEN}=3Ω, R_L=2.3Ω		19	70	
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V f=1MHz		407		pF
Output Capacitance	C_{oss}			113		
Reverse Transfer Capacitance	C_{rss}			57		

P-channel 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	-30	-34		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-1	uA
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-6A		35	45	mΩ
		V_{GS}=-4.5V, I_D=-5A		45	55	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250uA	-1	-1.5	-3	V
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-4A		12		S
Diode Forward Voltage	V_{SD}	I_S=-1A, V_{GS}=0V		-0.77		V
Turn-On Delay Time	$T_{d(on)}$	V_{DS}=-15V, V_{GS}=-10V		8	18	ns
Turn-Off Delay Time	$t_{d(off)}$	R_{GEN}=3Ω, R_L=2.5Ω		22	70	
Input Capacitance	C_{iss}	V_{DS}=-15V, V_{GS}=0V f=1MHz		950		pF
Output Capacitance	C_{oss}			137		
Reverse Transfer Capacitance	C_{rss}			118		

Note:

1. DUT is mounted on a 1in^2 FR-4 board with 2oz. Copper in a still air environment at 25°C, the current rating is based on the DC（<10s） test conditions
2. Repetitive rating, pulse width limited by junction temperature.

Typical Performance Characteristics

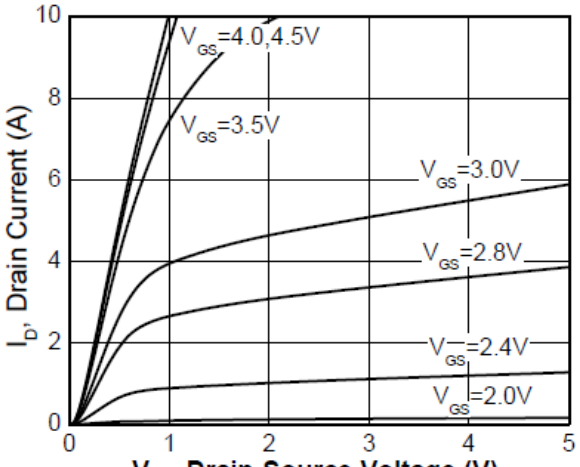


Figure 1. Output Characteristics

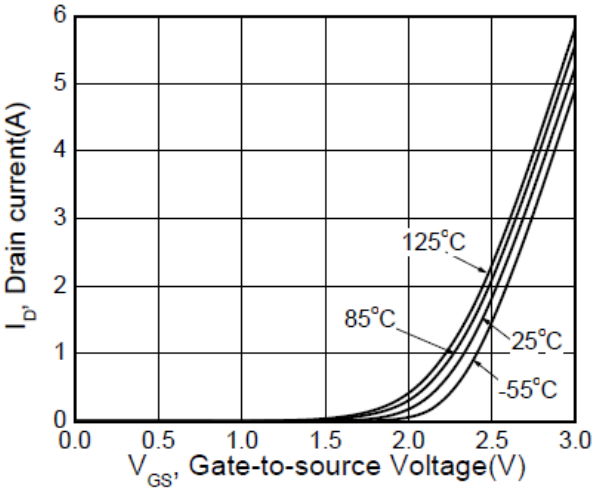


Figure 2. Transfer Characteristics

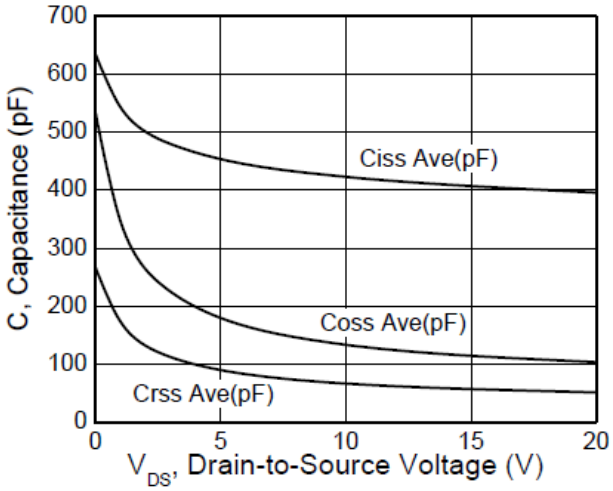


Figure 3. Capacitance

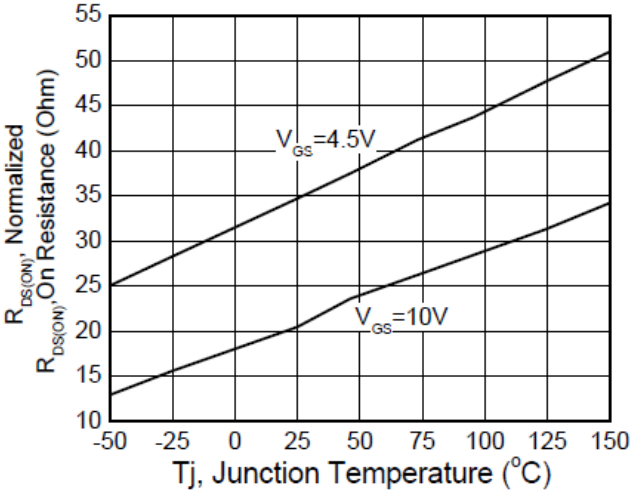


Figure 4. On Resistance Vs. Temperature

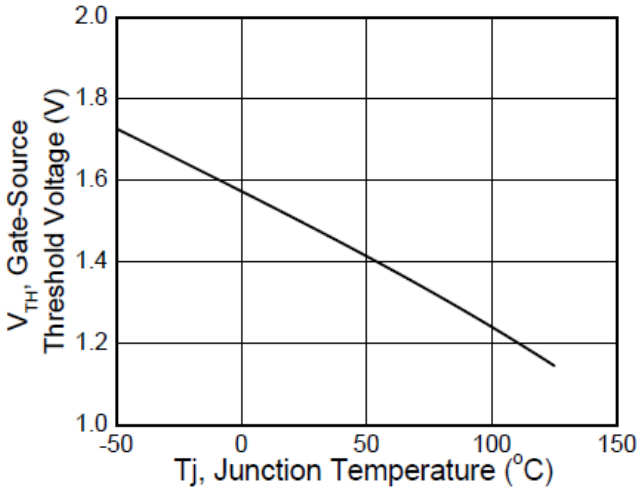


Figure 5. Gate Thershold Vs. Temperature

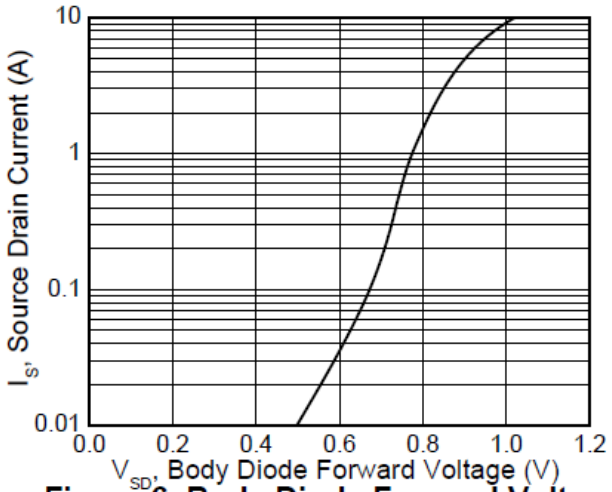


Figure 6. Body Diode Forward Voltage Vs. Source Current

Typical Performance Characteristics

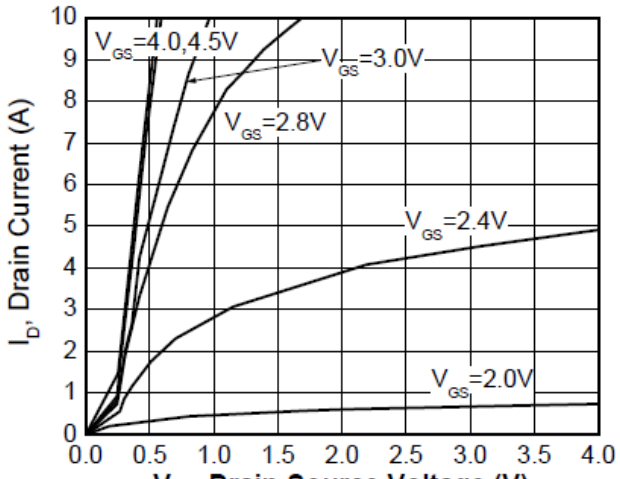


Figure 1. Output Characteristics

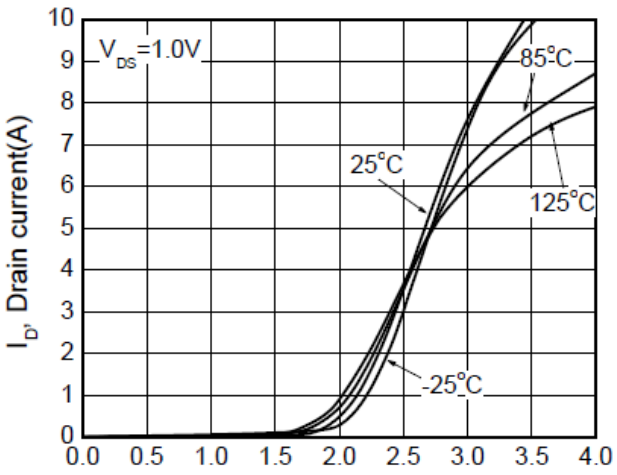


Figure 2. Transfer Characteristics

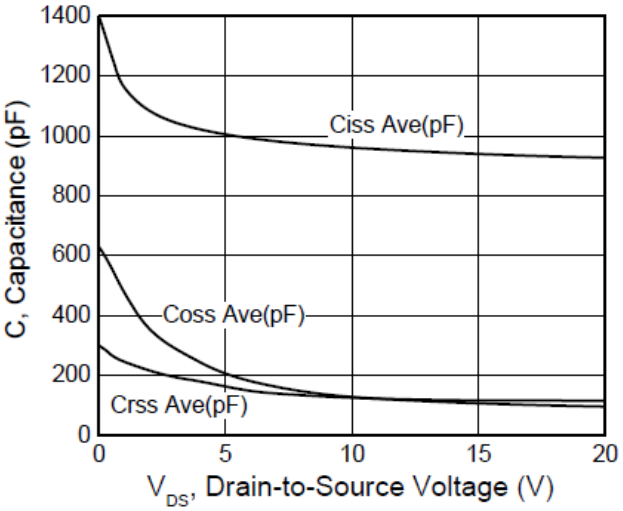


Figure 3. Capacitance

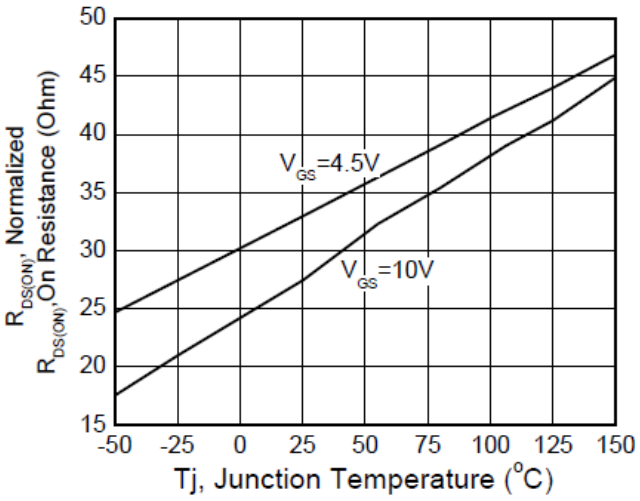


Figure 4. On Resistance Vs. Temperature

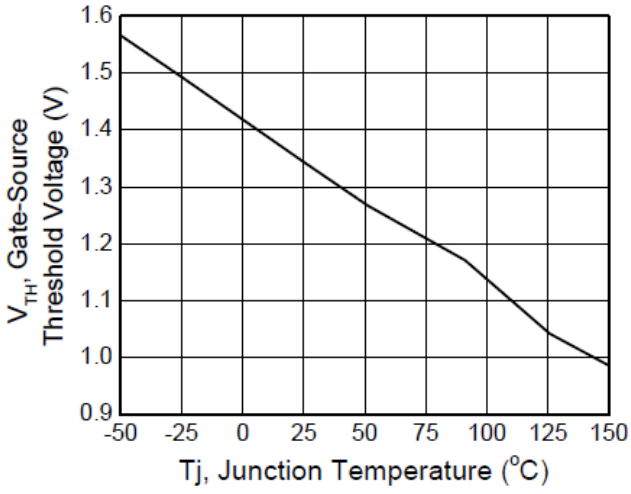


Figure 5. Gate Thershold Vs. Temperature

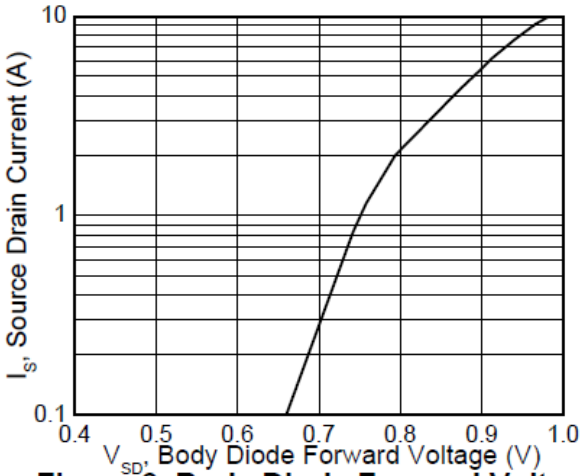
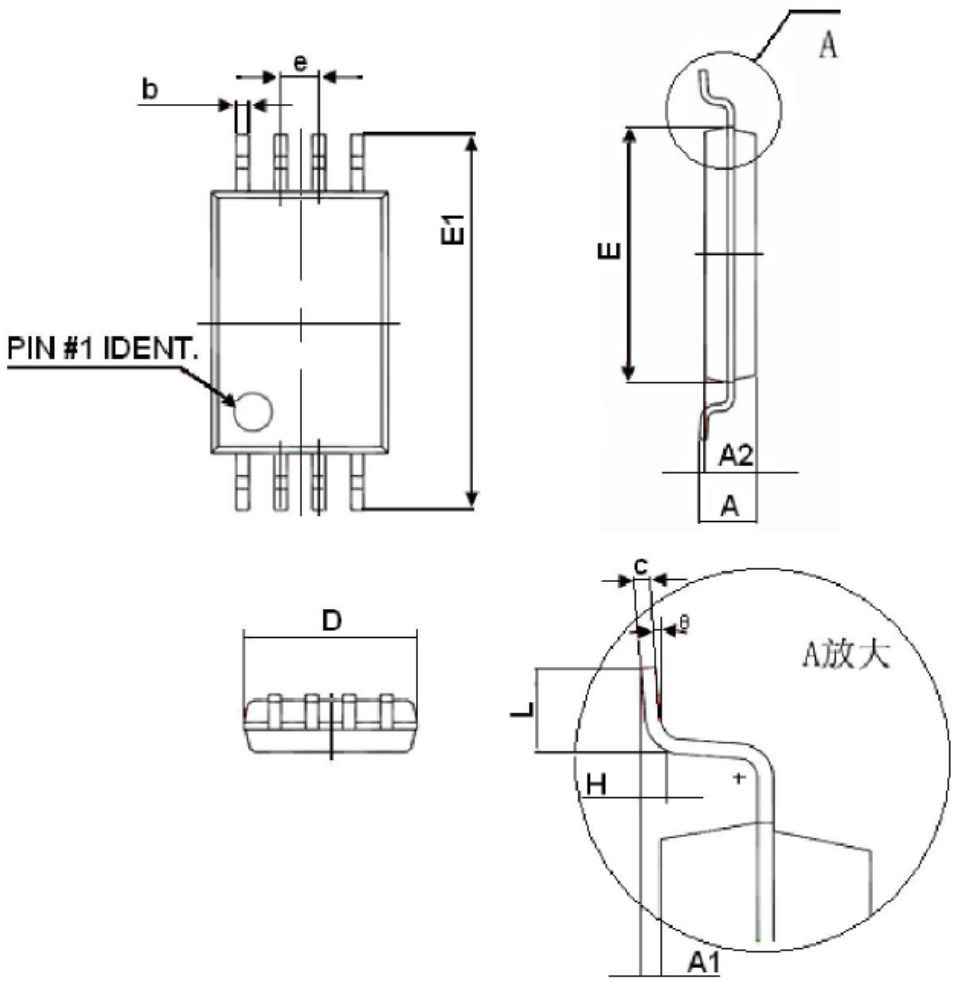


Figure 6. Body Diode Forward Voltage Vs. Source Current

Packing Information

TSSOP-8



Symbol	Dimensions In Millimeters	
	Mi	Ma
D	2.900	3.100
E	4.300	4.500
b	0.190	0.300
c	0.090	0.200
E1	6.250	6.550
A		1.100
A2	0.800	1.000
A1	0.020	0.150
e	0.65(BSC	
L	0.500	0.700
H	0.25(TYP	
Θ	1°	7°

Units: mm

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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