ACE8628B

Dual N-Channel Enhancement Mode Field Effect Transistor with ESD Protection

Description

The ACE8628B uses advanced trench technology to provide excellent RDS(ON) and low gate charge. They offer operation over a wide gate drive range from 1.8V to 12V. It is ESD protected. This device is suitable for use as a uni-directional or bi-directional load switch, facilitated by its common-drain configuration.

Features

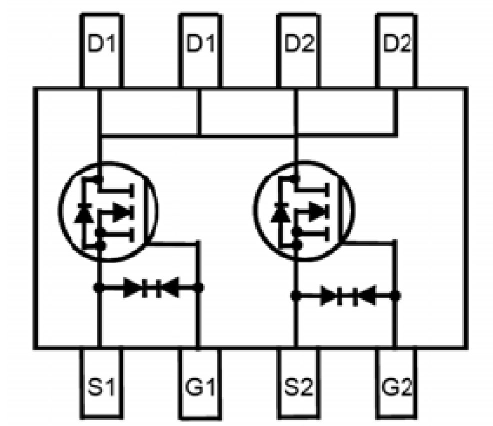
- V_{DS} 20V
- I_D=8A (V_{GS}=4.5V)
- $R_{DS(ON)}$<14mΩ (V_{GS}=4.5V)
- $R_{DS(ON)}$<15mΩ (V_{GS}=4V)
- $R_{DS(ON)}$<17.5mΩ (V_{GS}=3.1V)
- $R_{DS(ON)}$<21mΩ (V_{GS}=2.5V)
- ESD Protected: 2000V

Absolute Maximum Ratings

Parameter		Symbol	Max	Unit
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	±12	V
Drain Current (Continuous) * AC	T_A=25°C	I_D	8	A
	T_A=70°C		6.4	
Drain Current (Pulse) * B		I_{DM}	30	A
Power Dissipation	T_A=25°C	P_D	2.5	W
	T_A=70°C		1.6	
Operating and Storage Junction Temperature Range		T_J/T_{STG}	-55/150	°C

Packaging Type

DFN3*3-8L



Ordering information

ACE8628B XX + H

- H: Halogen - free
- +: Pb - free
- XX — NN : DFN3*3-8L

Electrical Characteristics

T_A=25℃, unless otherwise noted.

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 Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V		2.5	10	uA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250uA	0.4	0.51	1	V
Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=5A		12.1	14	mΩ
		V_{GS}=4V, I_D=5A		12.6	15	
		V_{GS}=3.1V, I_D=5A		13.5	17.5	
		V_{GS}=2.5V, I_D=2.5A		14.6	21	
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=8A		36		S
Diode Forward Voltage	V_{SD}	I_{SD}=1A, V_{GS}=0V		0.63	1	V
Maximum Body-Dode Continuous Current	I_S				2.4	A
Switching						
Total Gate Charge	Qg	V_{GS}=4.5V, V_{DS}=10V, I_D=8A		17.9		nC
Gate-Source Charge	Qgs			4.1		
Gate-Drain Charge	Qgd			5.6		
Turn-On Time	td(on)	V_{GS}=5V, R_L=1.5Ω, V_{DS}=10V, R_{GEN}=3Ω		6.2	12.4	nS
	tr			12.7	25.4	
Turn-Off Time	td(off)			51.7	103.4	
	tf			16	32	
Dynamic						
Input Capacitance	Ciss	V_{GS}=0V, V_{DS}=10V, f=1MHz		1810		pF
Output Capacitance	Coss			232		
REVERSE Transfer Capacitance	Crss			200		

Note:

A. 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. The current rating is based on the t ≤ 10s thermal resistance rating.

B. Repetitive rating, pulse width limited by junction temperature.

C. The RθJA is the sum of the thermal impedence from junction to lead $R_{\theta JL}$ and lead to ambient .

D. The static characteristics are obtained using <300 μs pulses, duty cycle 0.5% max.

E. 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

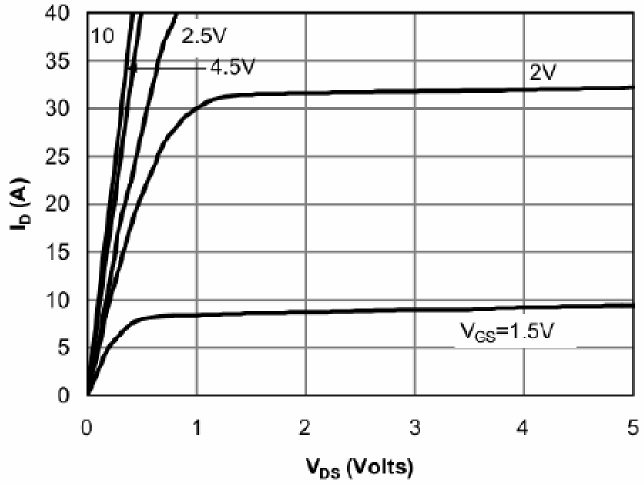


Fig 1: On-Region Characteristics

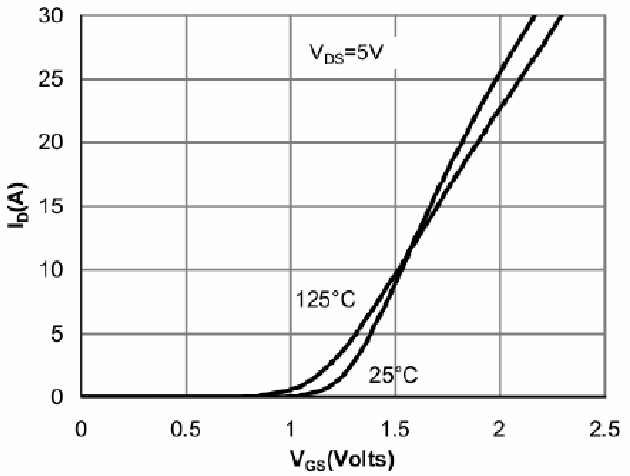


Figure 2: Transfer Characteristics

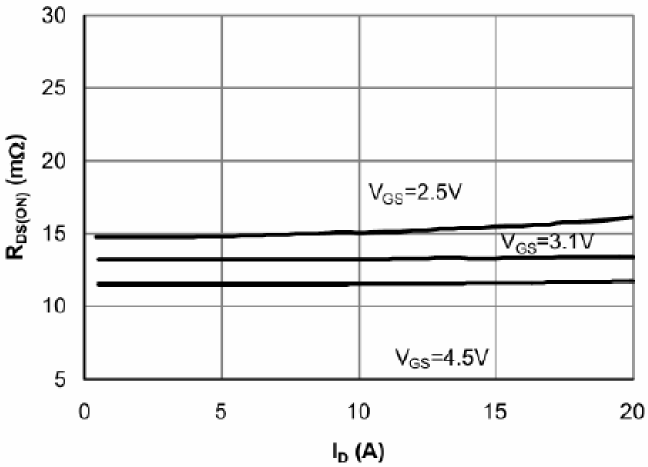


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

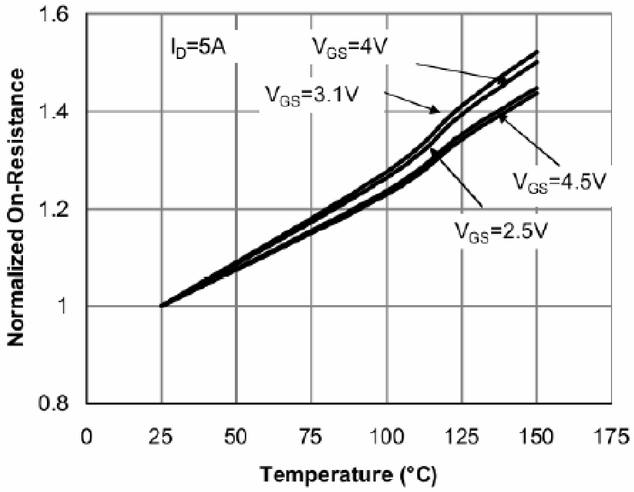


Figure 4: On-Resistance vs. Junction Temperature

Typical Performance Characteristics

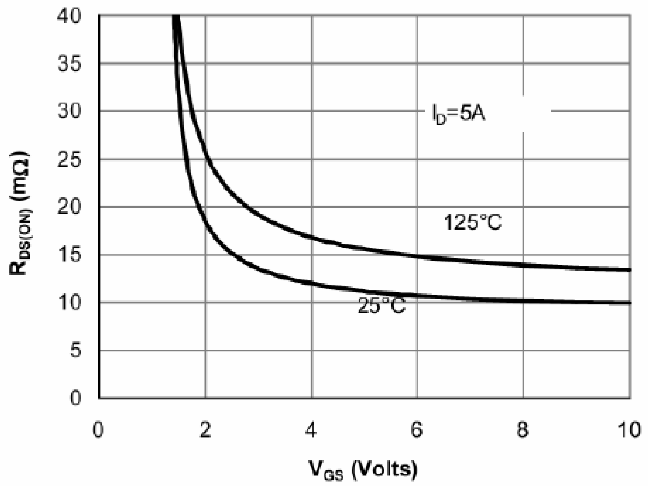


Figure 5: On-Resistance vs. Gate-Source Voltage

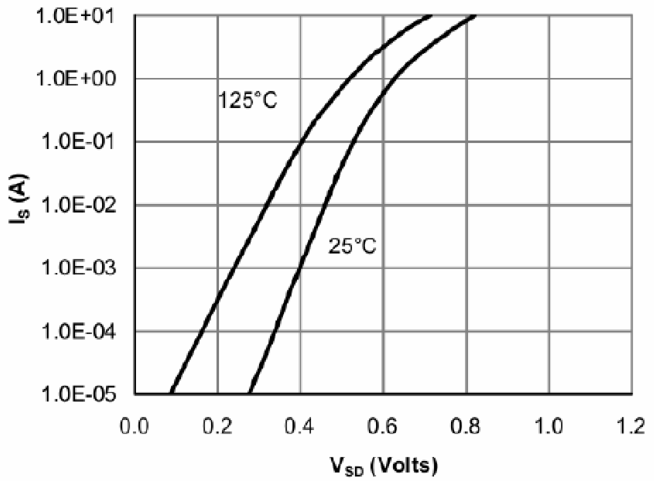


Figure 6: Body-Diode Characteristics

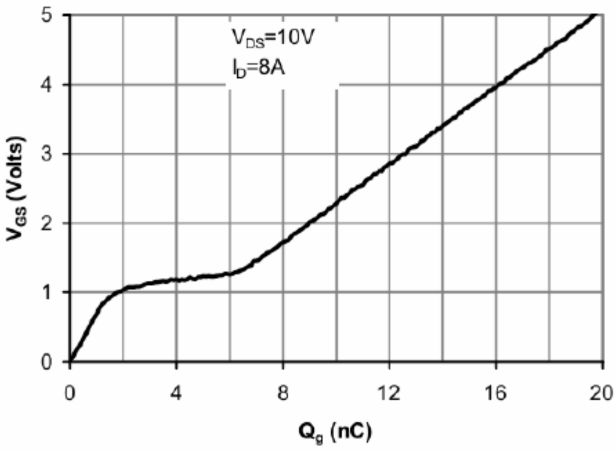


Figure 7: Gate-Charge Characteristics

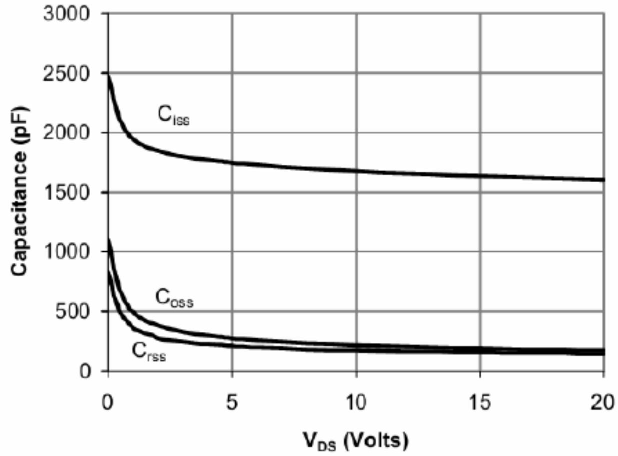


Figure 8: Capacitance Characteristics

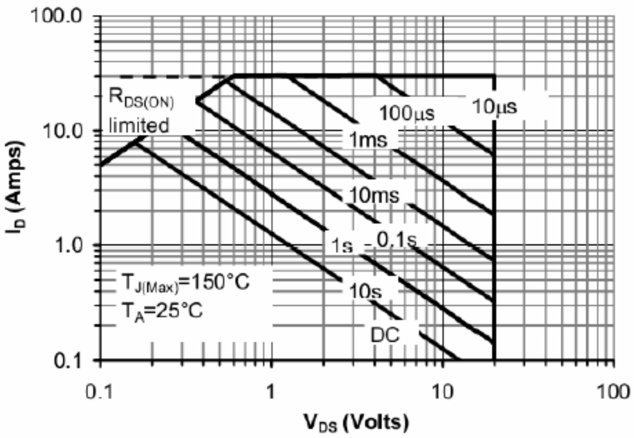


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

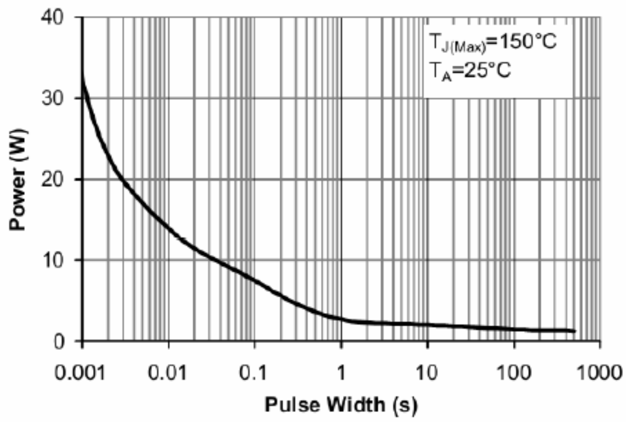


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

Typical Performance Characteristics

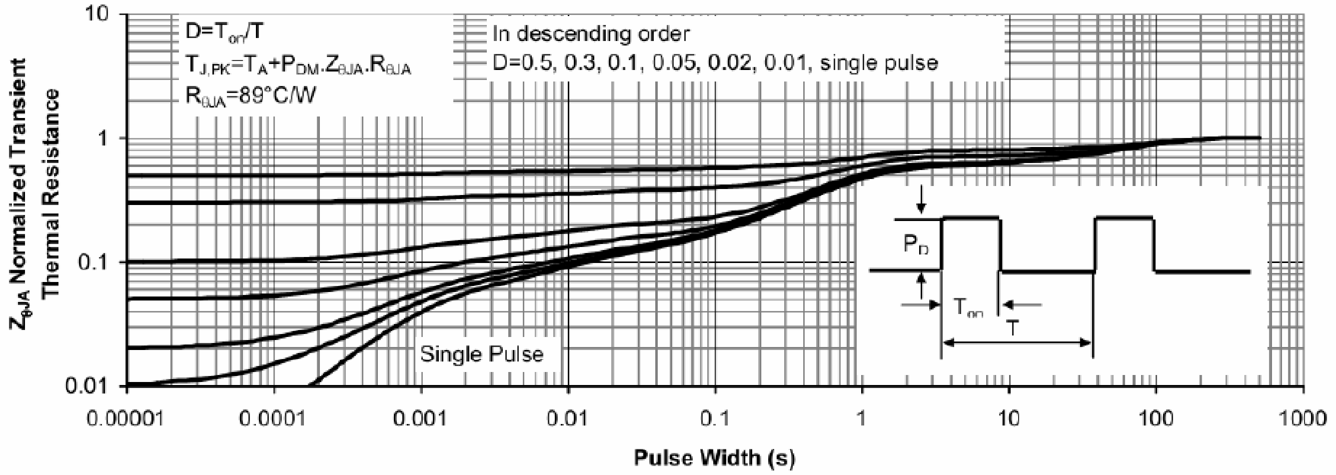
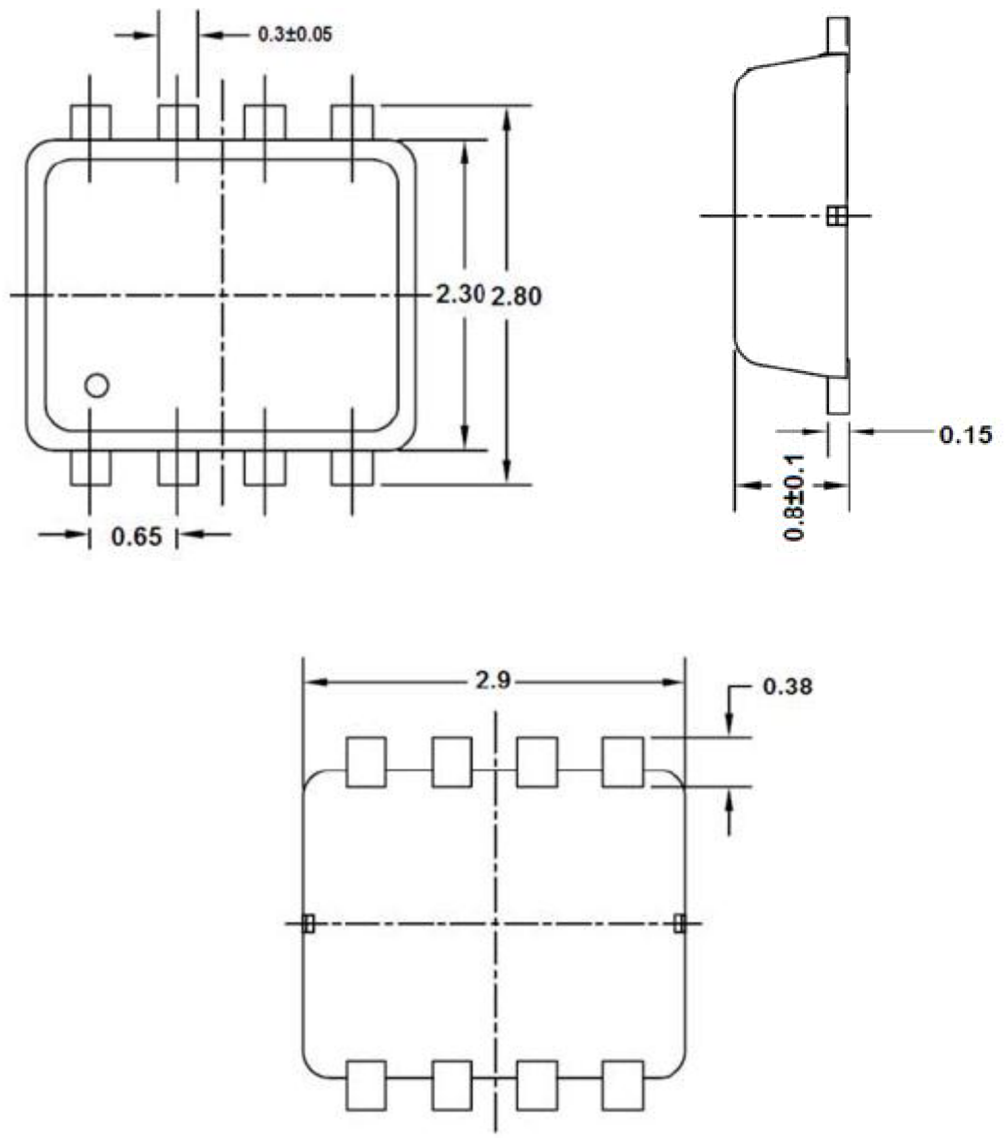


Figure 11: Normalized Maximum Transient Thermal Impedance

Packing Information

DFN3*3-8L



Notes

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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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