ACE12327A

P-Channel Enhancement Mode MOSFET

Description

The ACE12327A is the P-Channel logic enhancement mode power field effect transistor which is produced using super high cell density DMOS trench technology. The ACE12327A has been designed specifically to improve the overall efficiency of DC/DC converters using either synchronous or conventional switching PWM controllers. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

Features

- -100V/-1.0A, $R_{DS(ON)}$= 650mΩ@V_{GS}= -10V
- -100V/-0.5A, $R_{DS(ON)}$= 750mΩ@V_{GS}= -4.5V
- High density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-6 package design

Applications

- Powered System
- DC/DC Converter
- Load Switch

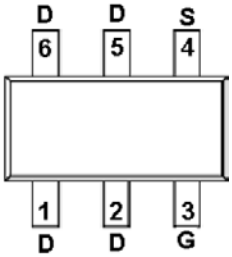
Absolute Maximum Ratings

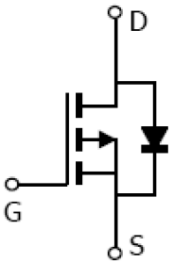
(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	-100	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current (T_J=150℃)	T_A=25℃	I_D	-1.5	A
	T_A=70℃		-1.2	
Pulsed Drain Current(*)		I_{DM}	-4.5	A
Power Dissipation	T_A=25℃	P_D	1.15	A
	T_A=70℃		0.8	
Operating Junction Temperature		T_J	-55~150	W
Storage Temperature Range		T_{STG}	-55~150	°C
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	100	°C /W

Packaging Type

SOT-23-6





Pin Description

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

Ordering information

ACE12327A XX + H

- Halogen - free
- Pb - free
- GM: SOT-23-6

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=-250uA	-100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-1	-1.5	-2.5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	uA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-80V, V_{GS}=0V, T_J=25℃			10	uA
		V_{DS}=-80V, V_{GS}=0V, T_J=55℃			100	
On-State Drain Current	$I_{D(on)}$	V_{DS}=V_{GS} =0V			-1.5	A
Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-1A		0.52	0.65	Ω
		V_{GS}=-4.5V, I_D=-0.5A		0.6	0.75	
Forward Trans Conductance	$gfs_{(1)}$	V_{DS}=-10V, I_D=-1A		2.9		S
Diode Forward Voltage	$V_{SD(1)}$	V_{GS}=0V, I_S=-1A			-12	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-50V, V_{GS}=-10V, I_D≡-1A		9.3		nC
Gate-Source Charge	Q_{gs}			1.75		
Gate-Drain Charge	Q_{gd}			1.25		
Input Capacitance	Ciss	V_{DS} = -25 V, f = 1 MHz, V_{GS} = 0		553		pF
Output Capacitance	Coss			29		
Reverse Transfer Capacitance	Crss			20		
Turn-On Time	td(on)	V_{DD}=-50V, I_D≡-0.5A, R_G=3.3Ω, V_{GS}=-10V		2		ns
	tr			18.4		
Turn-Off Time	td(off)			19.6		
	tf			19.5		

Typical Performance Characteristics

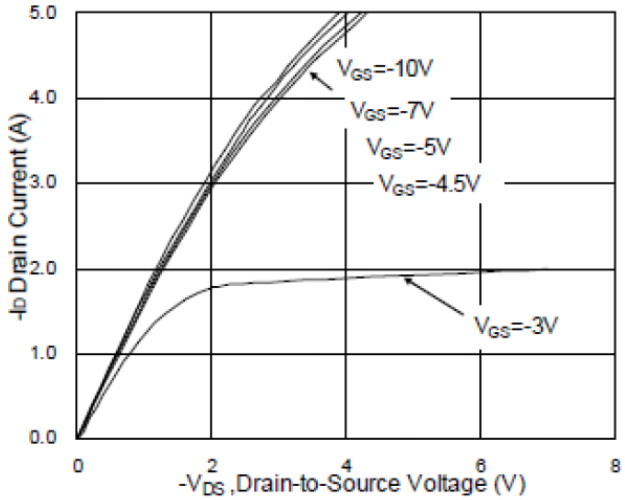


Fig 1 Output Characteristics

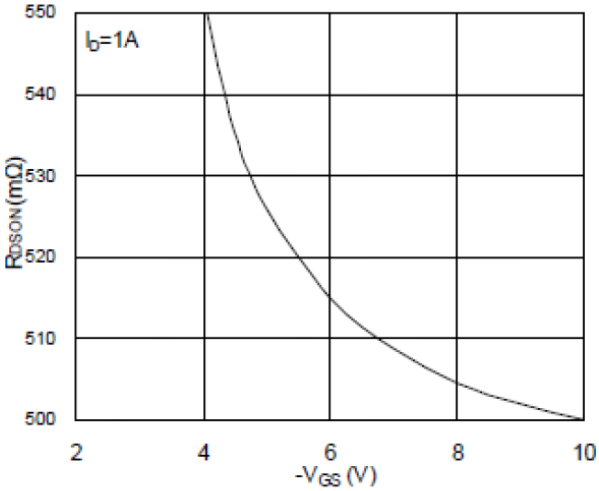


Fig. 2 On-Resistance vs Gate Source Voltage

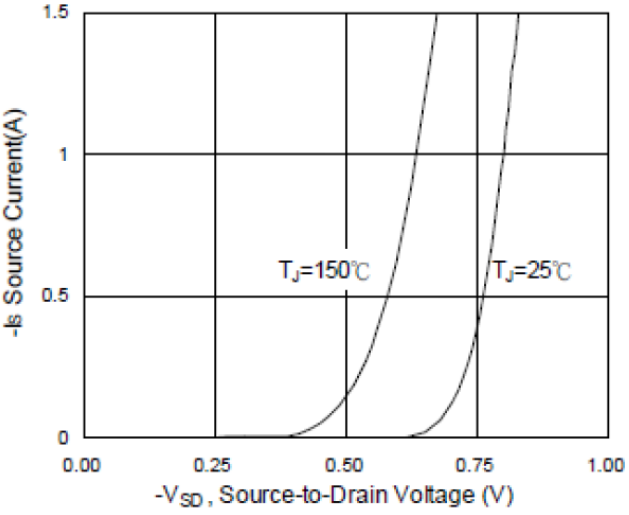


Fig 3 Source-Drain Forward Voltage

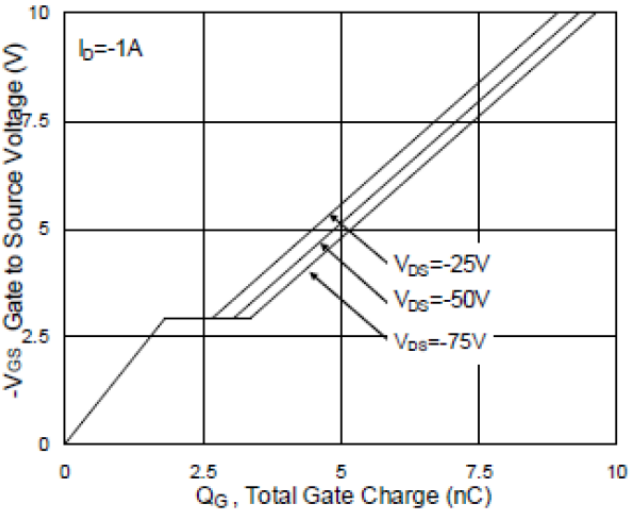


Fig. 4 Gate Charge

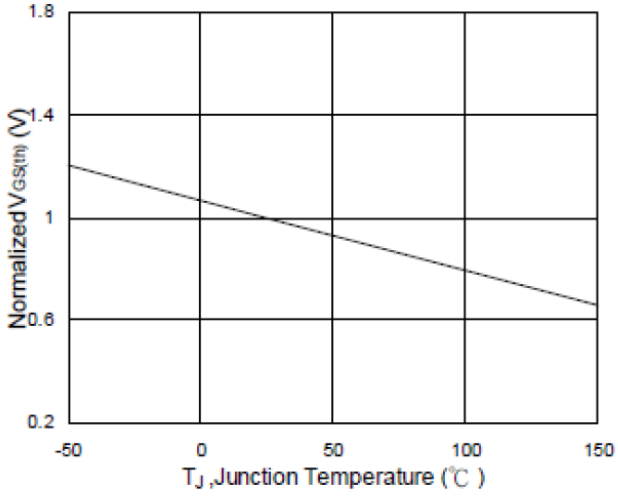


Fig. 5 Gate Voltage vs Junction temperature

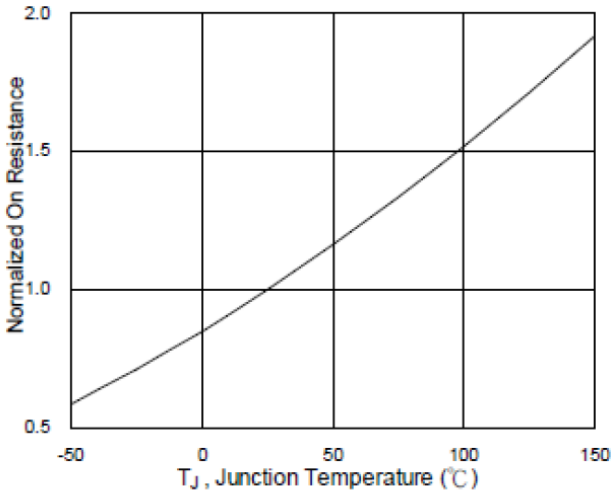
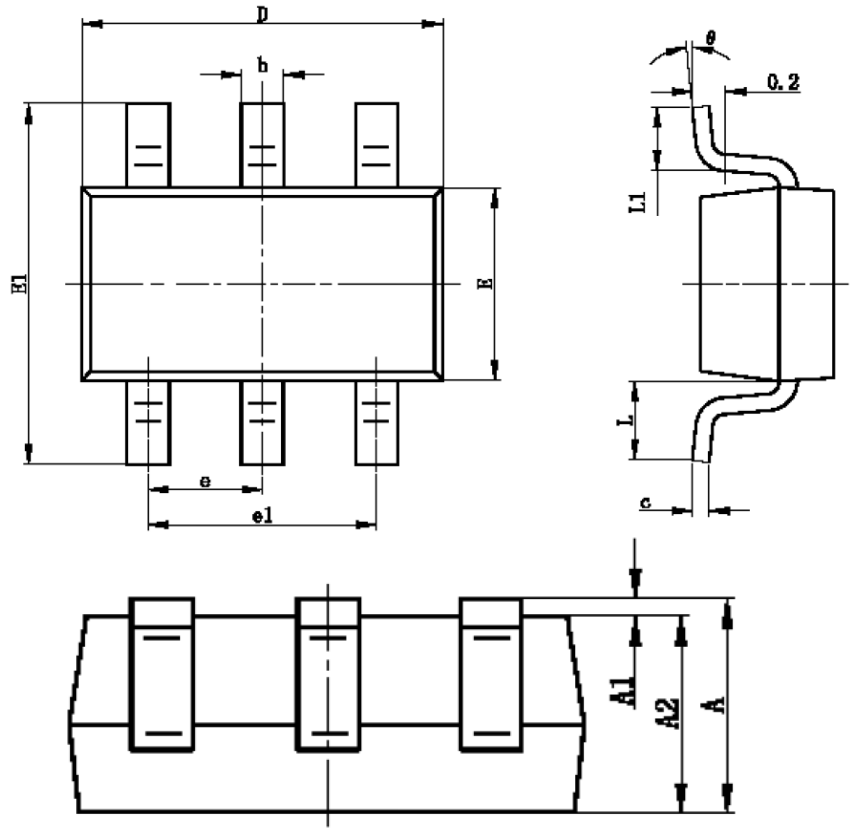


Fig. 6 On-Resistance vs Junction Temperature

Packing Information

SOT-23-6



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.020	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.700 REF		0.028 REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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.