ACE14S19W

P-Channel Enhancement Mode MOSFET

Description

The ACE14S19W is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching and low in-line power loss are needed in a very small outline surface mount package.

Features

- -40V/-3.0A,$R_{DS(ON)}$=100mΩ@V_{GS}=- 10V
- -40V/-2.8A,$R_{DS(ON)}$=130mΩ@V_{GS}=-4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3 package design

Applications

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

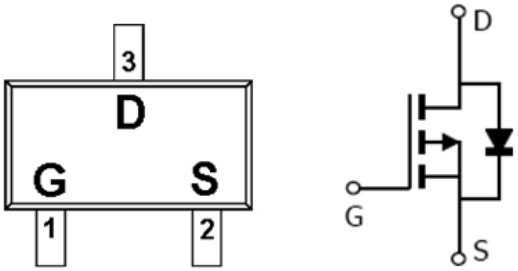
Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	-40	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current (T_J=150℃)	T_A=25℃	I_D	-3.5	A
	T_A=70℃		-2.8	
Pulsed Drain Current(*)		I_{DM}	-20	A
Continuous Source Current(Diode Conduction)		I_S	-1.4	A
Power Dissipation	T_A=25℃	P_D	1.25	A
	T_A=70℃		0.81	
Operating Junction Temperature		T_J	-55~150	W
Storage Temperature Range		T_{STG}	-55~150	°C
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	105	°C /W

Packaging Type

SOT-23-3



Pin Description

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

Ordering information

ACE14S19W XX + H

- Halogen - free
- Pb - free
- BM: SOT-23-3

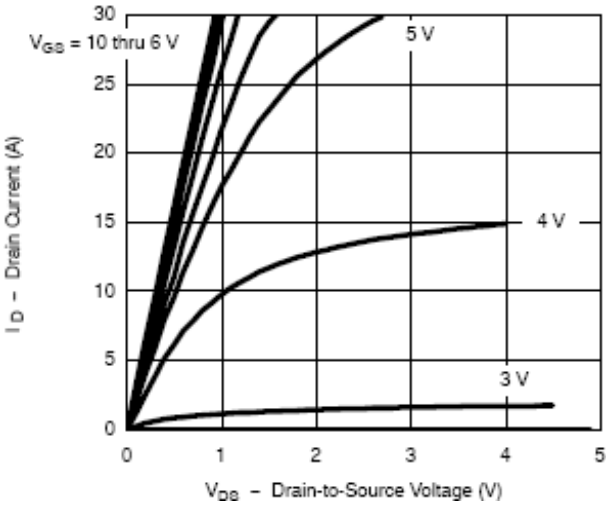
Electrical Characteristics

T_A=25℃, unless otherwise noted.

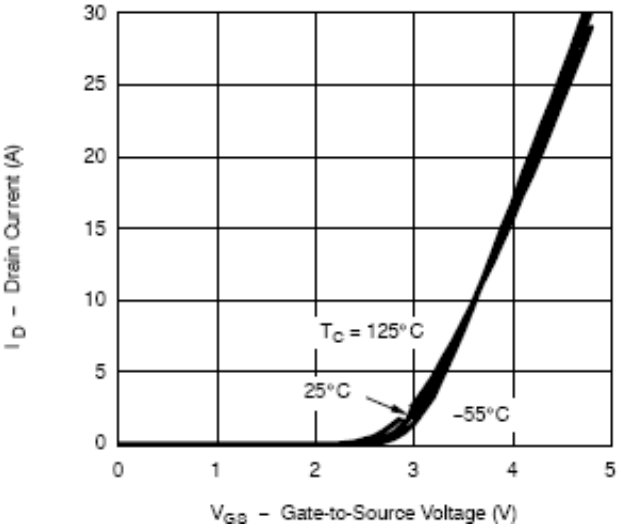
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250uA	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.8		-25	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	uA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-36V, V_{GS}=0V			-1	uA
		V_{DS}=-36V, V_{GS}=0V, T_J=85℃			-5	
On-State Drain Current	$I_{D(on)}$	V_{DS}= -5V, V_{GS}=-4.5V	-10			A
Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-3.0A		0.09	0.10	Ω
		V_{GS}=-4.5V, I_D=-2.8A		0.10	0.13	
Forward Trans Conductance	$gfs_{(1)}$	V_{DS}=-15V, I_D=-3.0A		13		S
Diode Forward Voltage	$V_{SD(1)}$	V_{GS}=0V, I_S=-1.3A		-0.55	-1.0	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-15V, V_{GS}=-10V, I_D≡-3.0A		9	12	nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			2.0		
Input Capacitance	Ciss	V_{DS} = -15 V, f = 1 MHz, V_{GS} = 0		500		pF
Output Capacitance	Coss			95		
Reverse Transfer Capacitance	Crss			50		
Turn-On Time	td(on)	V_{DD}=-15V, R_L=15Ω,I_D≡-1.0A, R_G=6Ω, V_{GS}=-10V		8	20	ns
	tr			10	20	
Turn-Off Time	td(off)			30	35	
	tf			15	20	

Typical Performance Characteristics

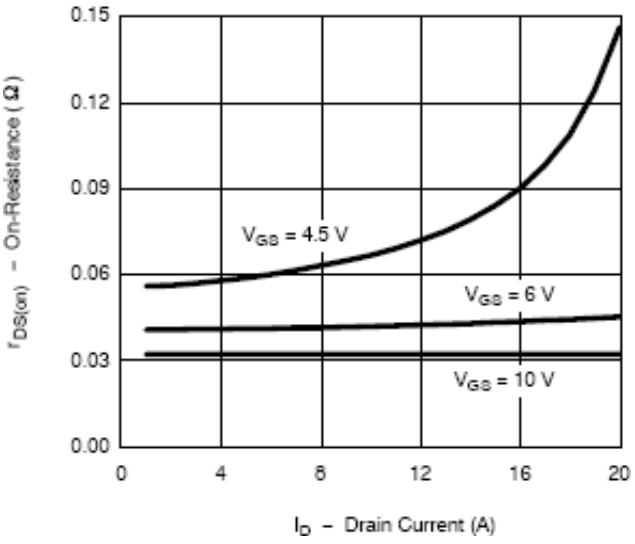
Output Characteristics



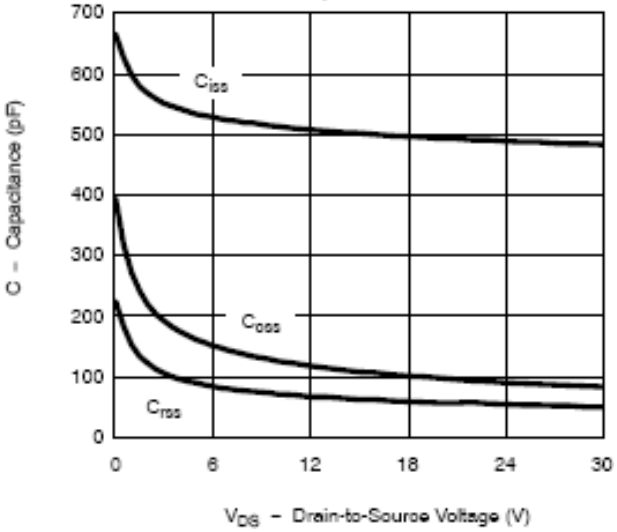
Transfer Characteristics



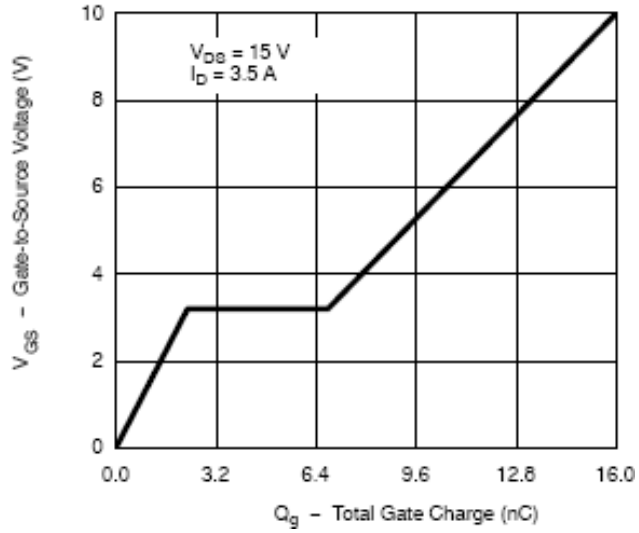
On-Resistance vs. Drain Current



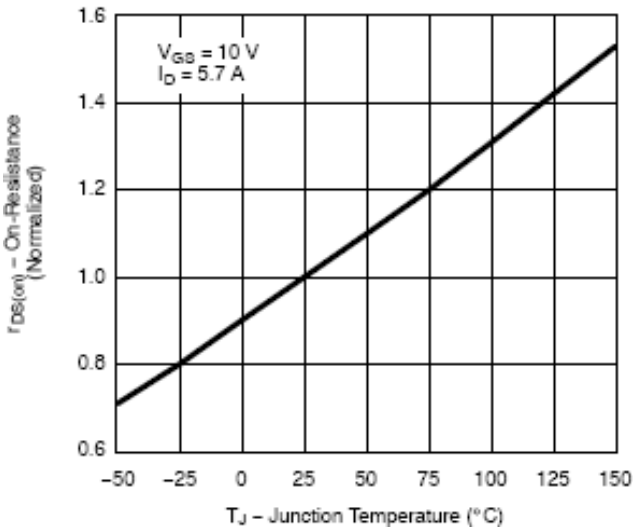
Capacitance



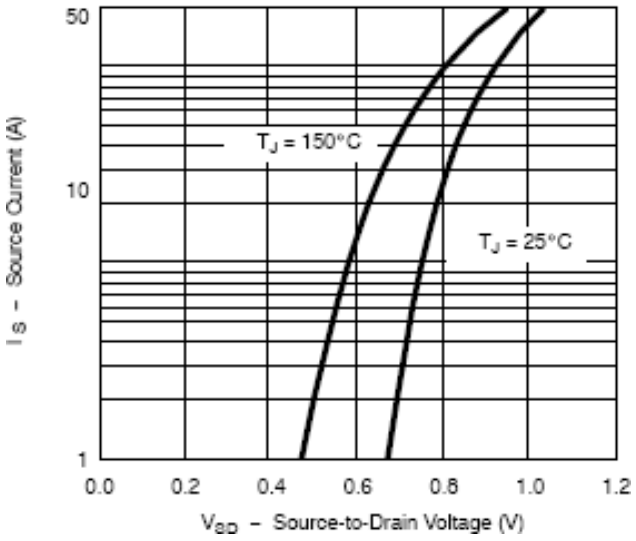
Gate Charge



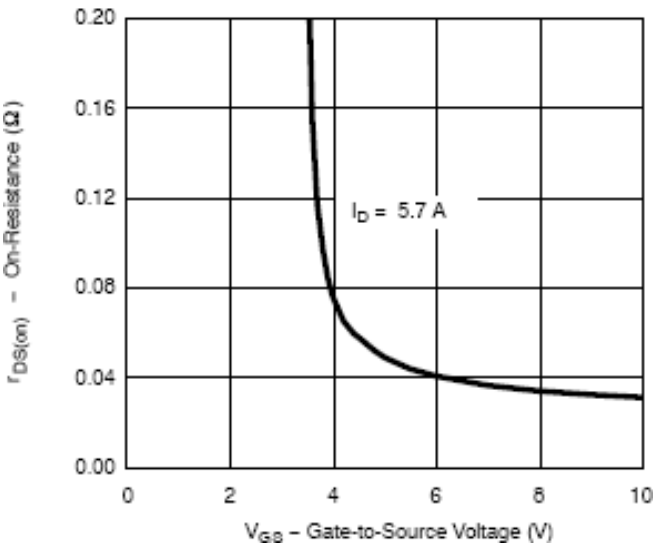
On-Resistance vs. Junction Temperature



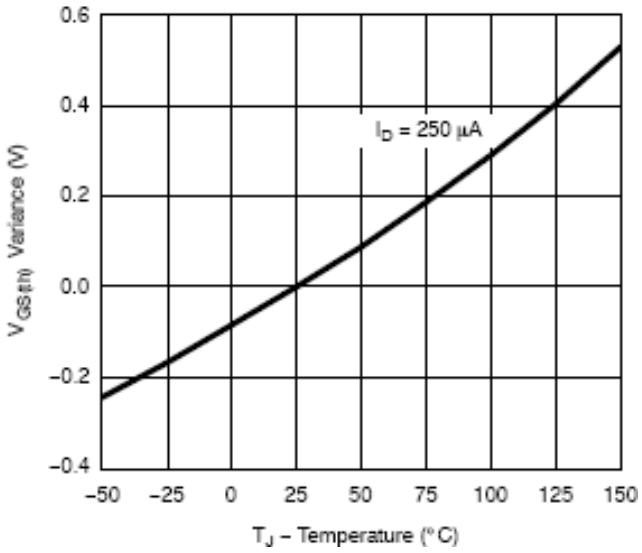
Source-Drain Diode Forward Voltage



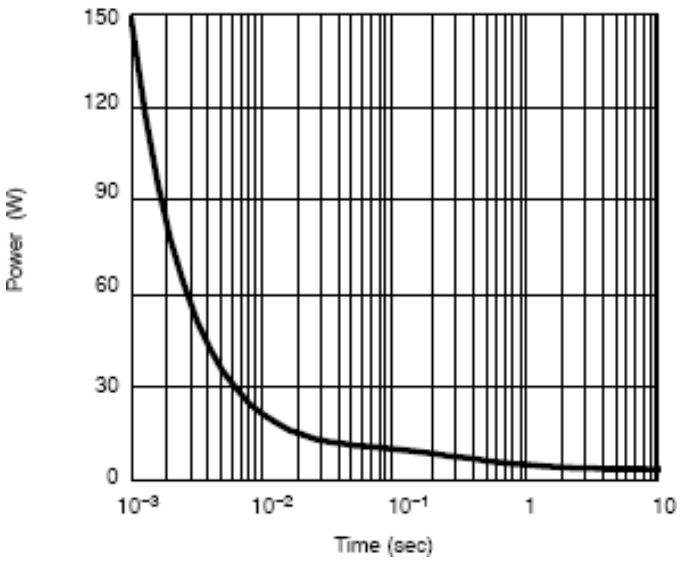
On-Resistance vs. Gate-to-Source Voltage



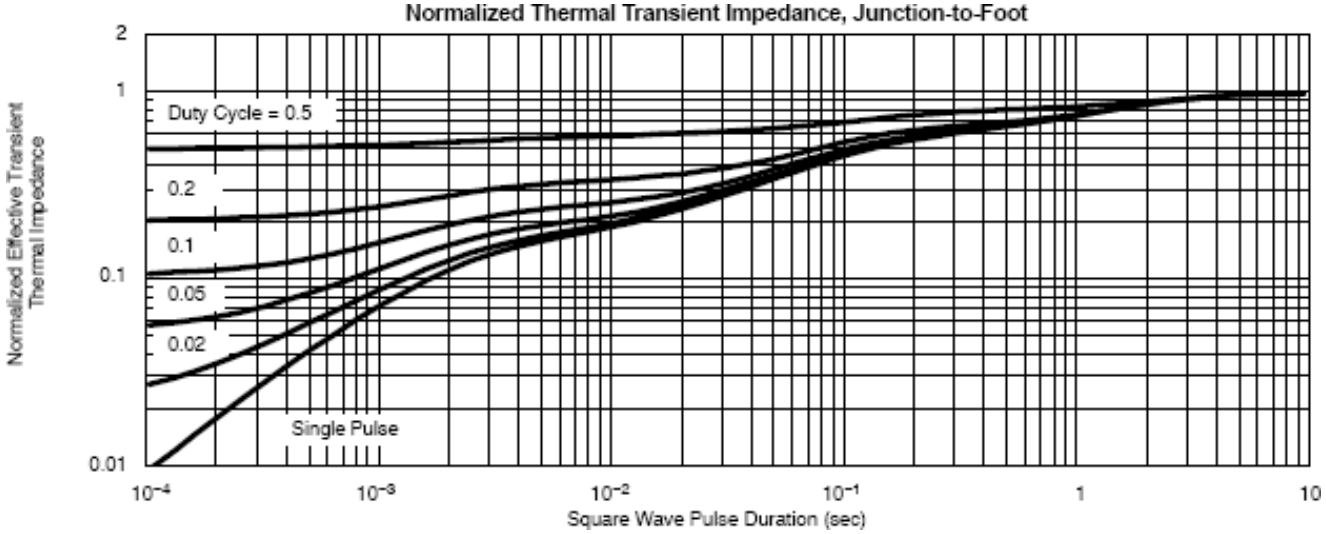
Threshold Voltage



Single Pulse Power, Junction-to-Ambient

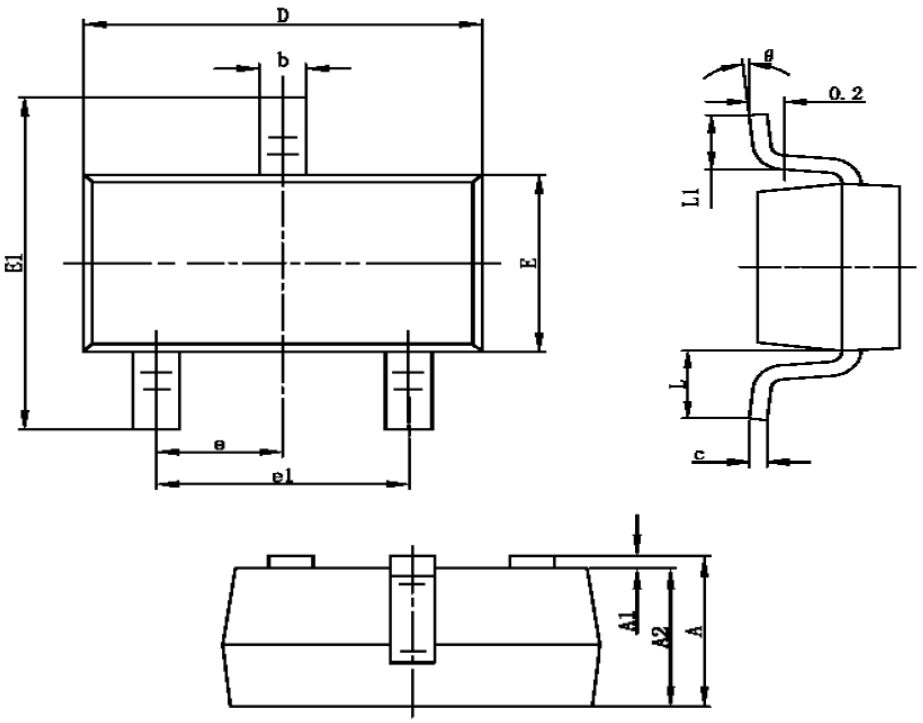


Normalized Thermal Transient Impedance, Junction-to-Foot



Packing Information

SOT-23-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
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	0.500	0.012	0.020
θ	0°	8°	0°	8°

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.