



ACE23S46A

N-Channel Enhancement Mode MOSFET

Description

The ACE23S46A is the N-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, and low in-line power loss are needed in a very small outline surface mount package.

Features

- 20V/6.0A, $R_{DS(ON)} = 35m\Omega @ V_{GS} = 4.5V$
- 20V/5.0A, $R_{DS(ON)} = 40m\Omega @ V_{GS} = 2.5V$
- 20V/4.0A, $R_{DS(ON)} = 100m\Omega @ V_{GS} = 1.8V$
- Super high density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

Application

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

Absolute Maximum Ratings (TA=25°C Unless otherwise noted)

Parameter	Symbol	Max	Unit
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	±12	V
Continuous Drain Current ($T_J = 150^\circ C$)	$T_A = 25^\circ C$	4.0	A
	$T_A = 70^\circ C$	3.0	
Pulsed Drain Current	I_{DM}	13	A
Continuous Source Current (Diode Conduction)	I_S	1.0	A
Power Dissipation	$T_A = 25^\circ C$	1.25	W
	$T_A = 70^\circ C$	0.8	
Operating Junction Temperature	T_J	-55/150	°C
Storage Temperature Range	T_{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	140	°C/W

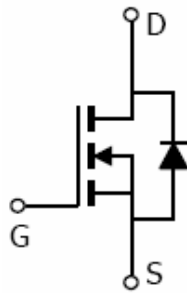
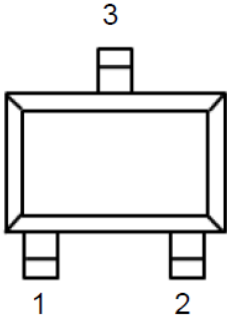


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Packaging Type

SOT23-3



Pin Description

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

Ordering information

ACE23S46A XX + H

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



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Electrical Characteristics

T_A=25°C, unless otherwise noted

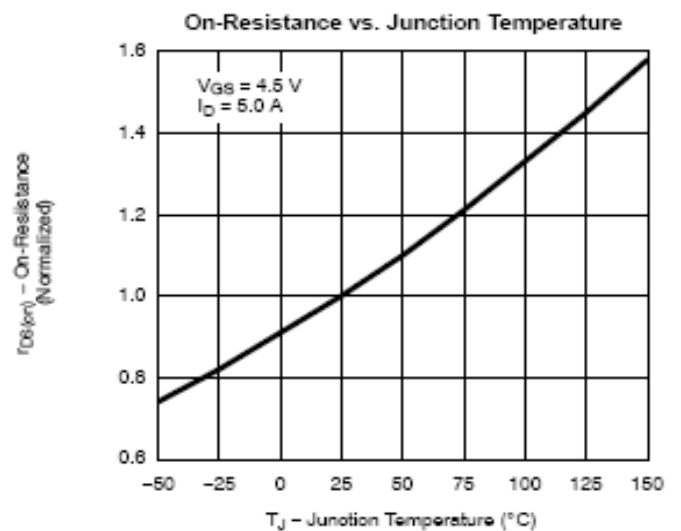
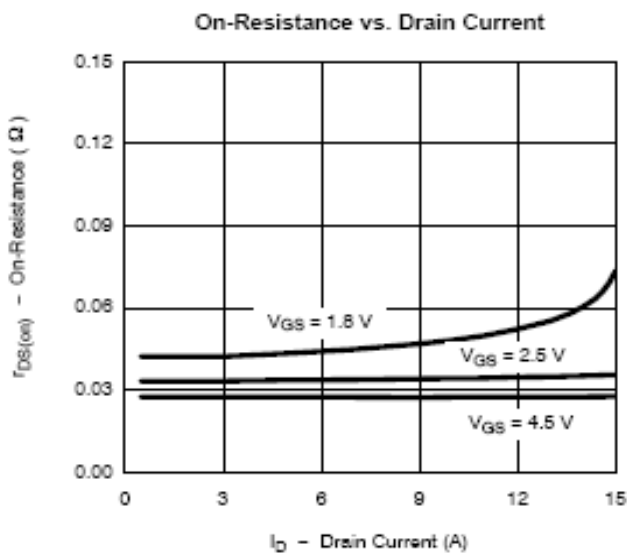
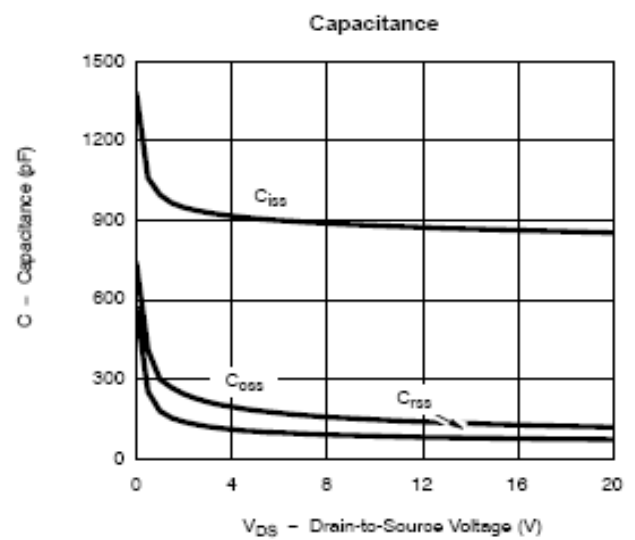
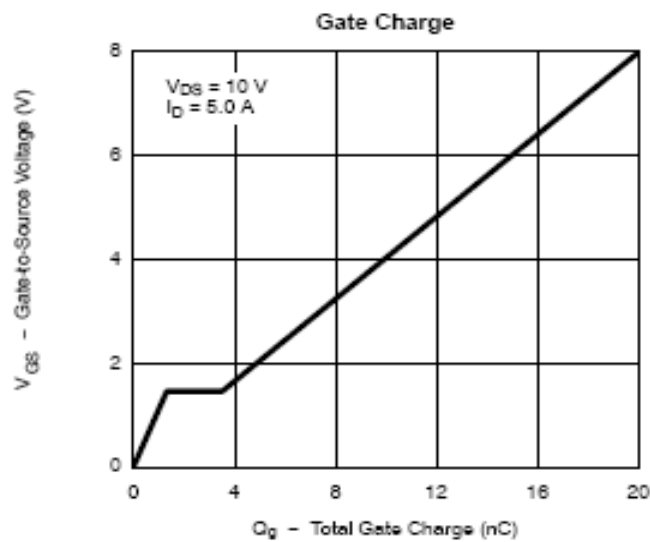
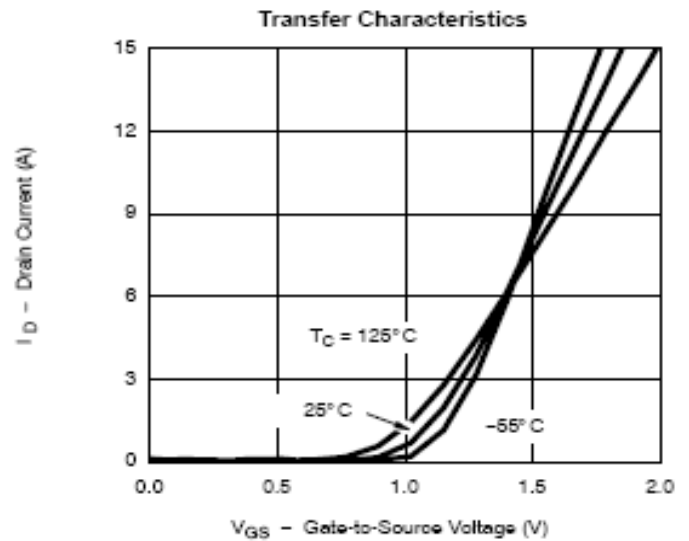
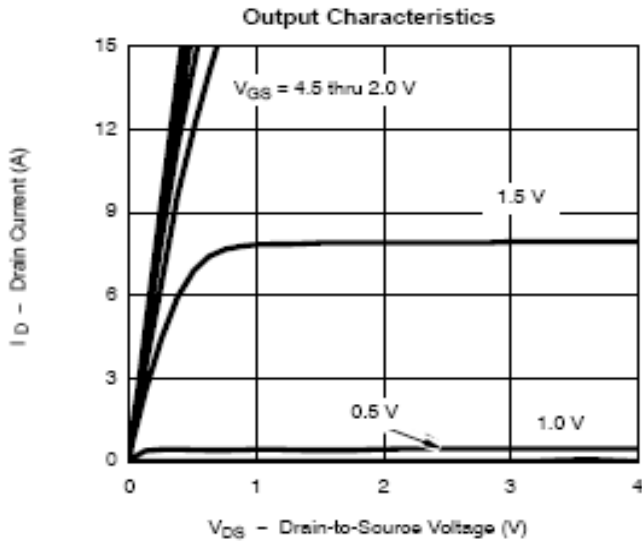
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.4		1.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	uA
		V _{DS} =20V, V _{GS} =0V T _J =55°C			10	
On-State Drain Current	I _{D(on)}	V _{DS} ≥5V, V _{GS} =4.5V	6			A
Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =6A		0.028	0.035	Ω
		V _{GS} =2.5V, I _D =5.0A		0.036	0.040	
		V _{GS} =1.8V, I _D =4.0A		0.080	0.100	
Forward Trans Conductance	G _{fs}	V _{DS} =15V, I _D =5.0A		30		S
Diode Forward Voltage	V _{SD}	I _S =1.0A, V _{GS} =0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =4.5V, I _D =5.0A		10	13	nC
Gate-Source Charge	Q _{gs}			1.4		
Gate-Drain Charge	Q _{gd}			2.1		
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHz		600		pF
Output Capacitance	C _{oss}			120		
Reverse Transfer Capacitance	C _{rss}			100		
Turn-On Time	td(on)	V _{DD} =10V, R _L =10Ω, V _{GEN} =4.5V, I _D =1.0A, R _G =6Ω		15	25	nS
	tr			40	60	
Turn-Off Time	td(off)			45	65	
	tf			30	40	



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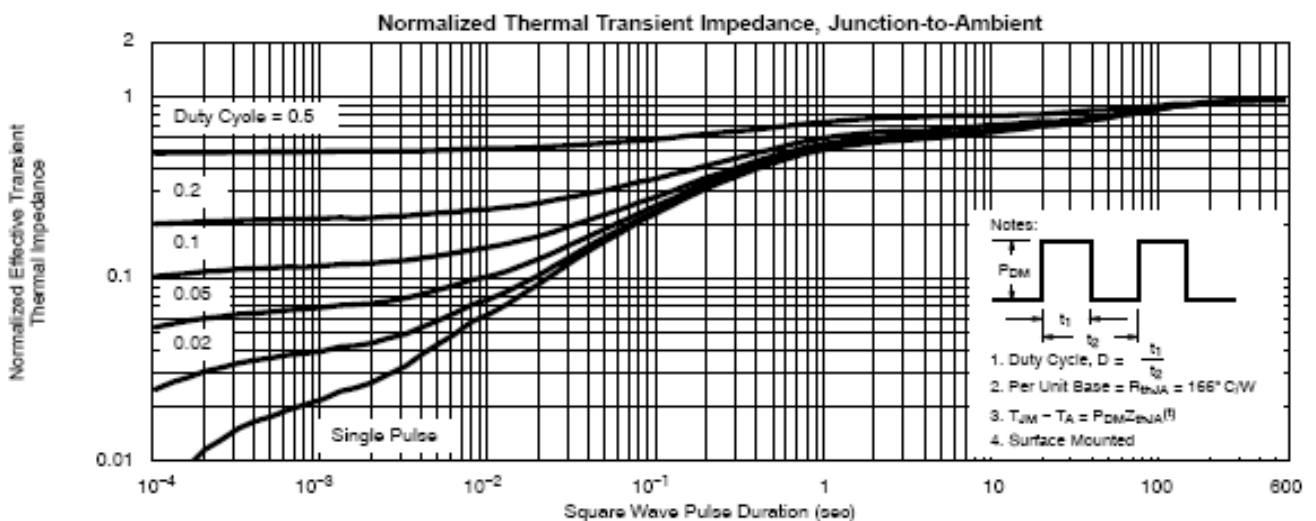
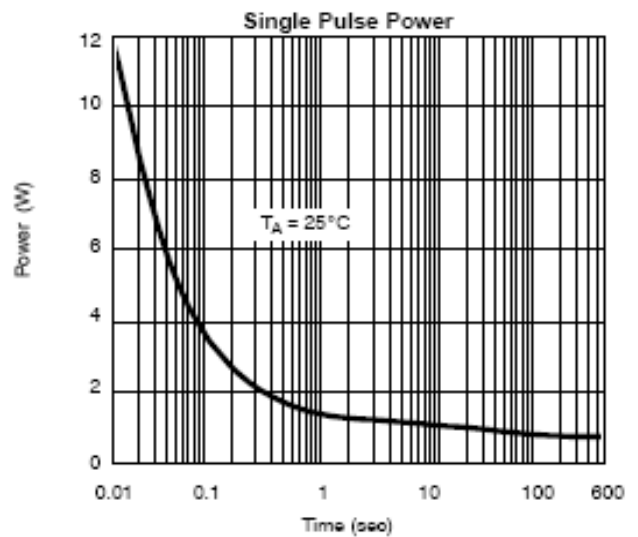
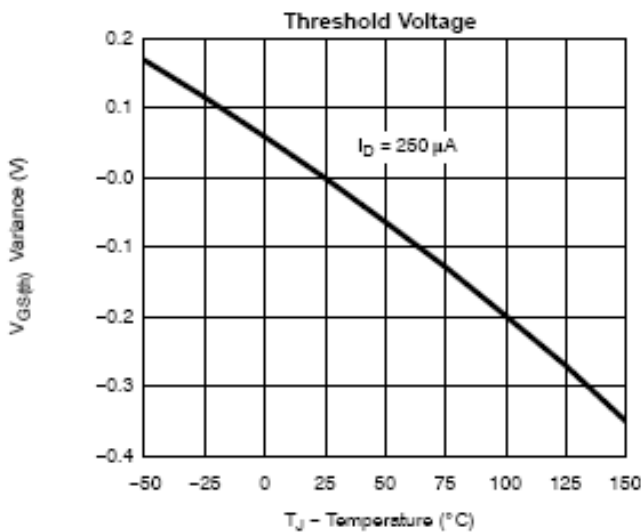
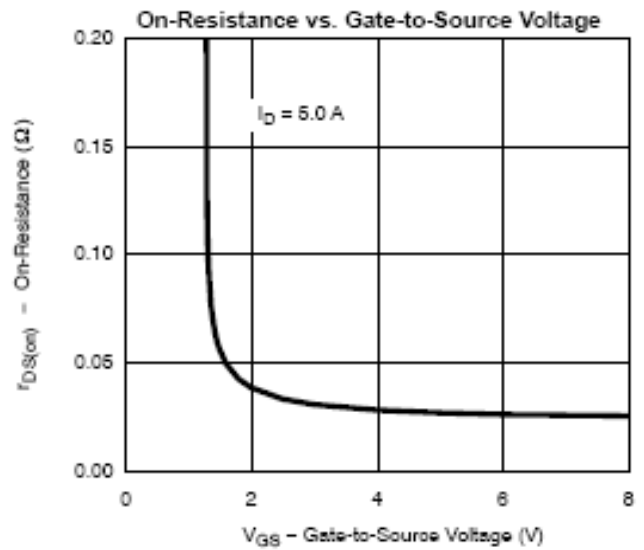
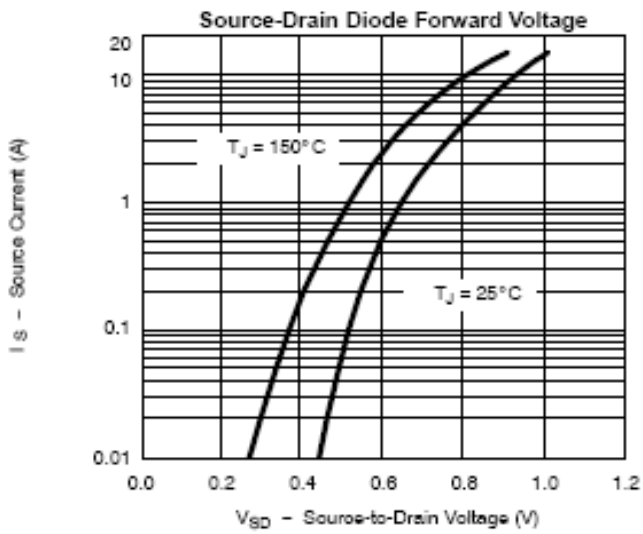
Typical Performance Characteristics





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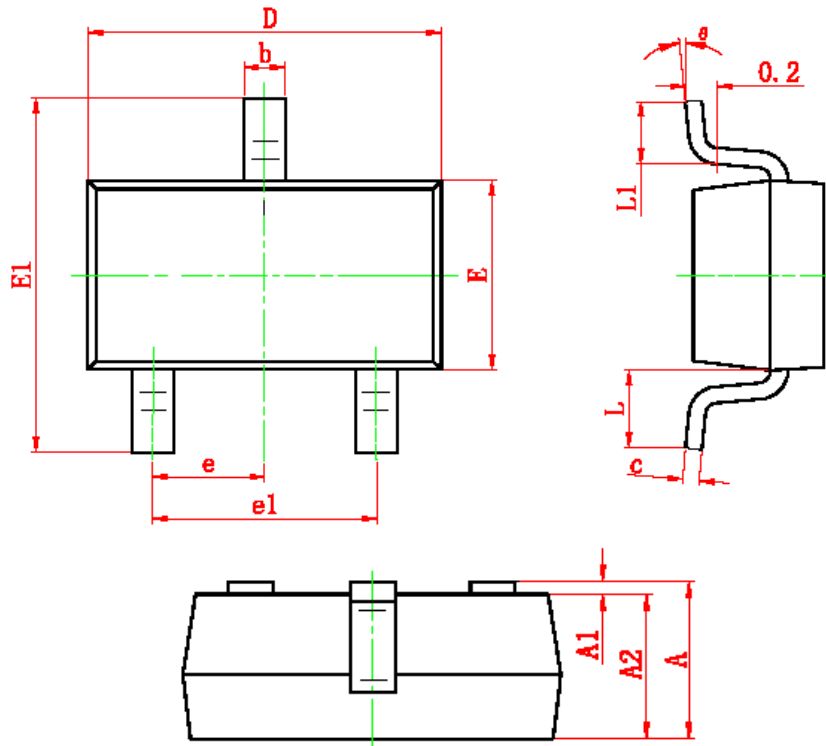


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Packing Information

SOT-23-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	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	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	6°



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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 used 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 whose 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.