



ACE2341

P-Channel Enhancement Mode MOSFET

Description

The ACE2341 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 Battery powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

Features

- -20V/-3.3A, $R_{DS(ON)}=45m\Omega@V_{GS}=-4.5V$
- -20V/-2.8A, $R_{DS(ON)}=55m\Omega@V_{GS}=-2.5V$
- -20V/-2.3A, $R_{DS(ON)}=65m\Omega@V_{GS}=-1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

Application

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

Absolute Maximum Ratings

($T_A=25^\circ C$ Unless otherwise noted)

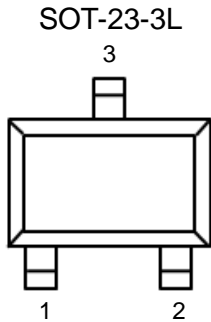
Parameter	Symbol	Typical	Unit	
Drain-Source Voltage	V_{DSS}	-20	V	
Gate-Source Voltage	V_{GSS}	± 12	V	
Continuous Drain Current ($T_J=150^\circ C$)	I_D	$T_A=25^\circ C$	-4.0	A
		$T_A=70^\circ C$	-2.8	
Pulsed Drain Current	I_{DM}	-12	A	
Continuous Source Current (Diode Conduction)	I_S	-1.0	A	
Power Dissipation	P_D	$T_A=25^\circ C$	1.25	W
		$T_A=70^\circ C$	0.8	
Operating Junction Temperature	T_J	-55/150	$^\circ C$	
Storage Temperature Range	T_{STG}	-55/150	$^\circ C$	
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	140	$^\circ C/W$	



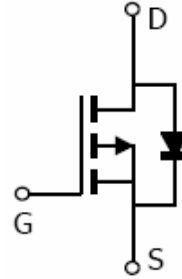
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Packaging Type

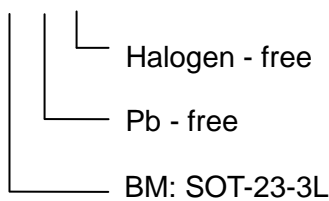


SOT-23-3L	Description
1	Gate
2	Source
3	Drain



Ordering information

ACE2341 XX + H



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	-0.35		-0.9	
Gate Leakage Current	I _{GSS}	V _{DS} =0.V, 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 =-3.3A		0.036	0.045	Ω
		V _{GS} =-2.5V, I _D =-2.8A		0.045	0.055	
		V _{GS} =-1.8V, I _D =-2.3A		0.055	0.065	
Forward Transconductance	G _{fs}	V _{DS} =-5.0V, I _D =-3.3A		3		S
Diode Forward Voltage	V _{SD}	I _S =-1.6A, V _{GS} =0V		-0.8	-1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =-6V, V _{GS} =-4.5V, I _D ≡ -3.3A		8	13	nC
Gate-Source Charge	Q _{gs}			1.2		
Gate-Drain Charge	Q _{gd}			2.2		
Input Capacitance	C _{iss}	V _{DS} =-6V, V _{GS} =0V,		700		pF



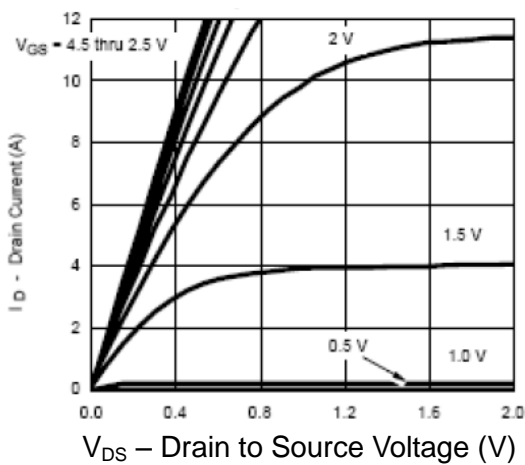
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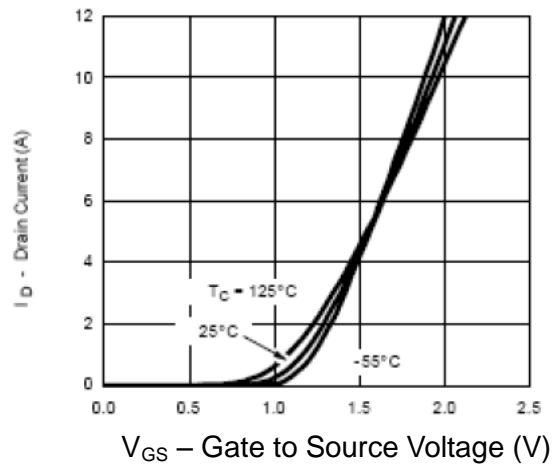
Output Capacitance	C_{OSS}	$f=1\text{MHz}$	160		
Reverse Transfer Capacitance	C_{RSS}		120		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-6\text{V}, R_L=6\Omega$ $I_D=-1.0\text{A}, V_{GEN}=-4.5\text{V}$ $R_G=6\Omega$	15	25	ns
	t_r		35	55	
Turn-Off Time	$t_{d(off)}$		60	90	
	t_f		40	60	

Typical Characteristics

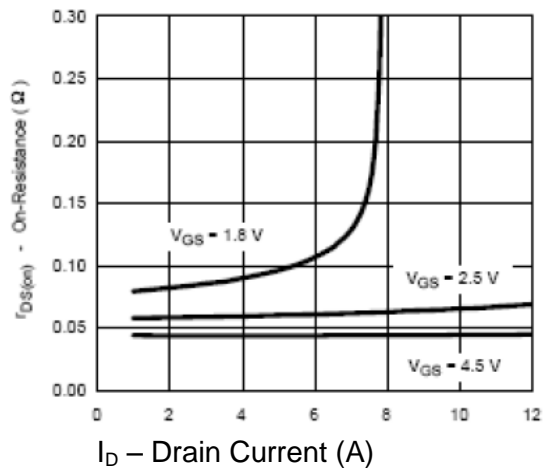
Output Characteristics



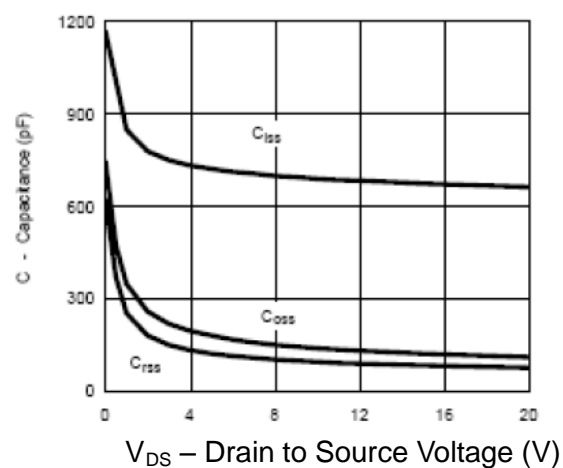
Transfer Characteristics



On-Resistance vs. Drain Current



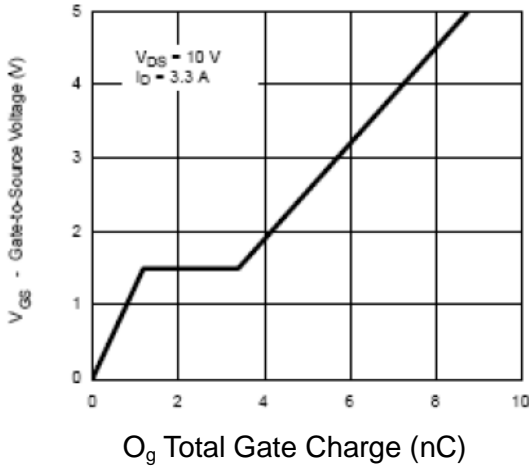
Capacitance



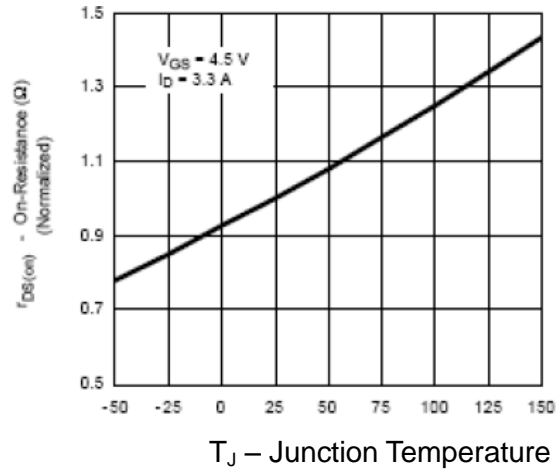


Typical Characteristics

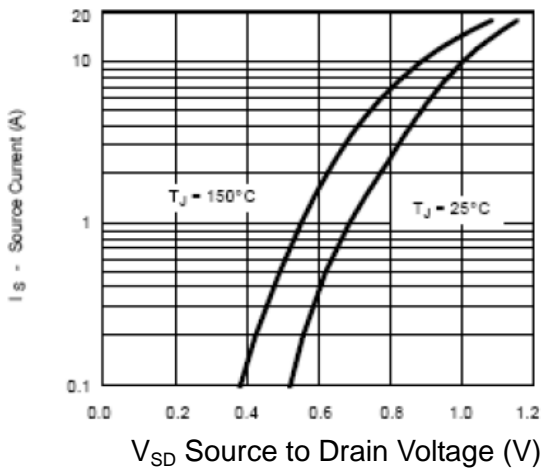
Gate Charge



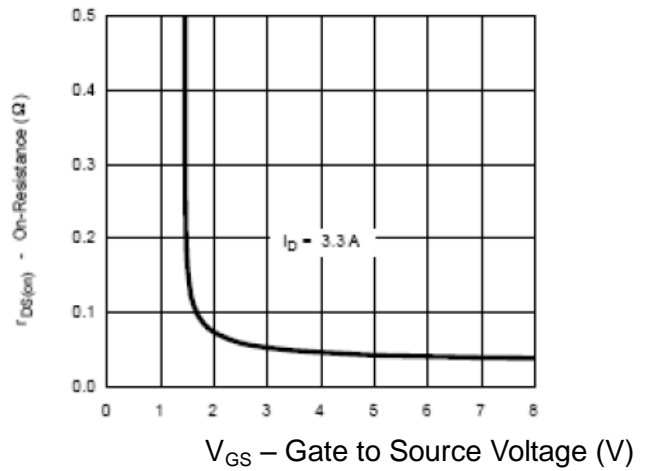
Normalized On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



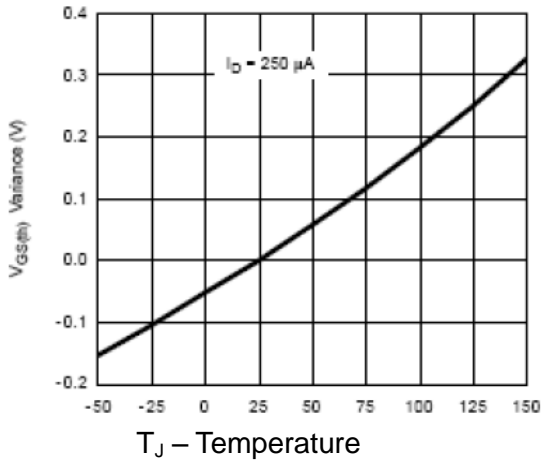


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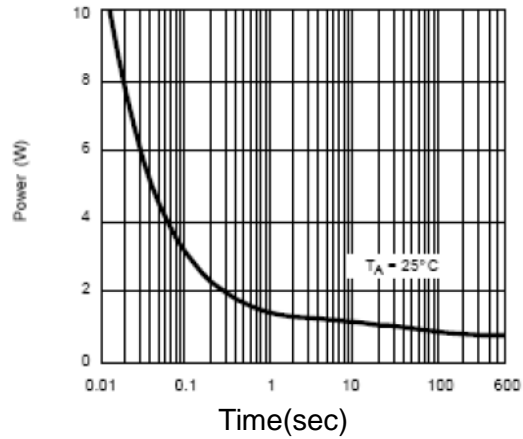
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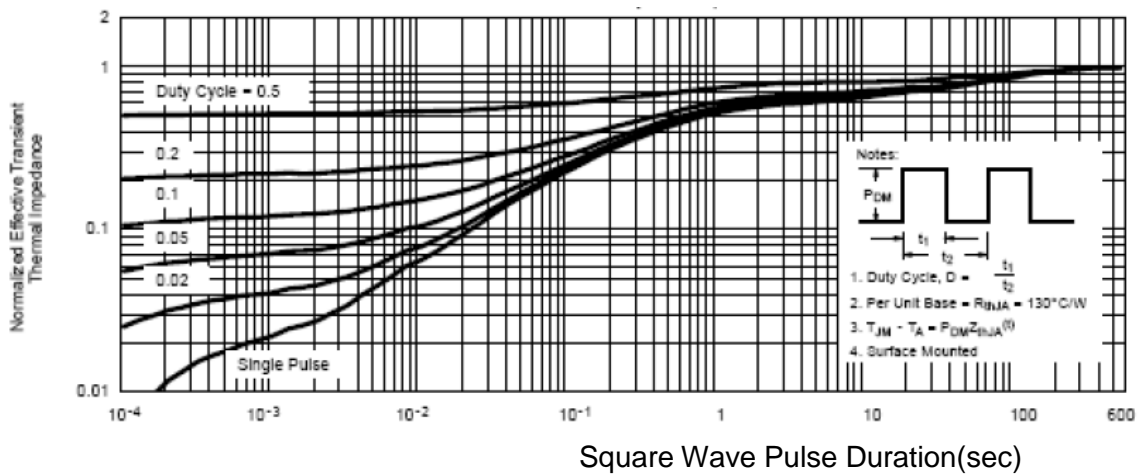
Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



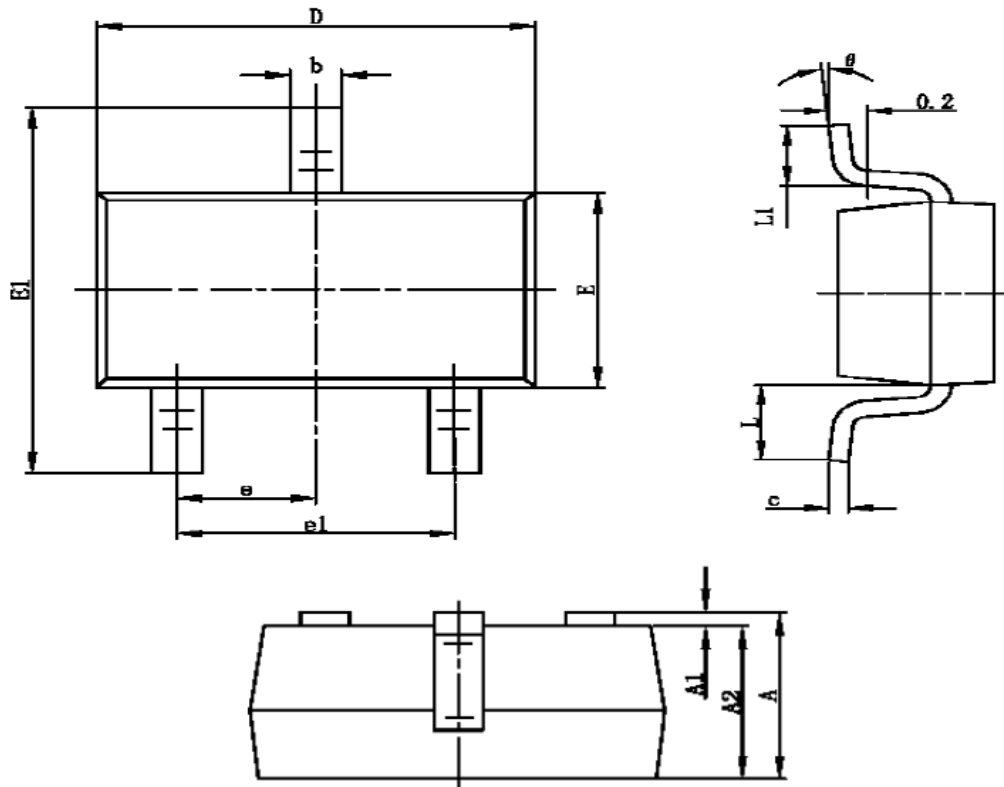


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Packing Information

SOT-23-3L



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	1.050	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	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°



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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.

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