ACE3413

P-Channel Enhancement Mode MOSFET

Description

The ACE3413 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/-3.4A, $R_{DS(ON)}$=95mΩ@V_{GS}=-4.5V
- -20V/-2.4A, $R_{DS(ON)}$=120mΩ@V_{GS}=-2.5V
- -20V/-1.7A, $R_{DS(ON)}$=145mΩ@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
- Load Switch
- DSC
- LCD Display inverter

Absolute Maximum Ratings

(T_A=25℃ 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℃)	T_A=25℃	I_D	-3.5	A
	T_A=70℃		-2.8	
Pulsed Drain Current		I_{DM}	-15	A
Continuous Source Current (Diode Conduction)		I_S	-1.4	A
Power Dissipation	T_A=25℃	P_D	1.25	W
	T_A=70℃		0.8	
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	105	℃/W

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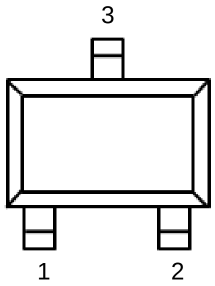
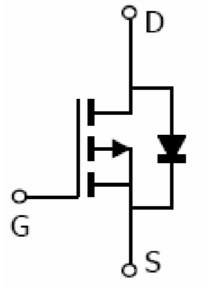
Packaging Type

SOT-23-3L



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



Ordering information

ACE3413 XX + H

Halogen-free

Pb - free

BM: SOT-23-3L

Electrical Characteristics

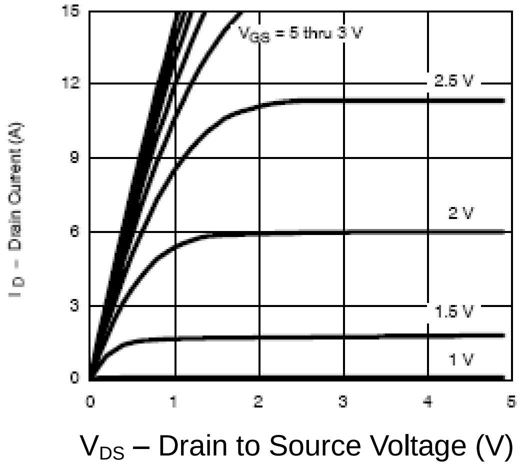
(T_A=25℃, Unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250uA	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.35		-0.8	
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℃			-5	
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=-3.4A		0.076	0.095	Ω
		V_{GS}=-2.5V, I_D=-2.4A		0.097	0.120	
		V_{GS}=-1.8V, I_D=-1.7A		0.123	0.145	
		V_{GS}=-1.25V, I_D=-1.0A		0.185	0.210	
Forward Transconductance	Gfs	V_{DS}=-5.0V, I_D=-2.8A		6		S
Diode Forward Voltage	V_{SD}	I_S=-1.5A, V_{GS}=0V		-0.8	-1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-6V, V_{GS}=-4.5V, I_D=-2.8A		4.8	8	nC
Gate-Source Charge	Q_{gs}			1.0		
Gate-Drain Charge	Q_{gd}			1.0		

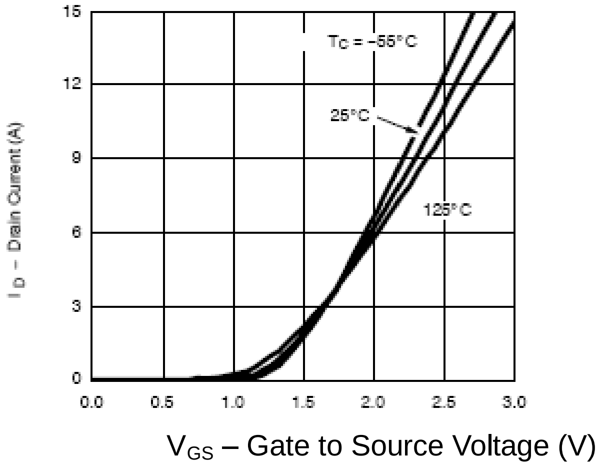
Input Capacitance	C_{iss}	V_{DS}=-6V, V_{GS}=0V, f=1MHz		485		pF
Output Capacitance	C_{oss}			85		
Reverse Transfer Capacitance	C_{rss}			40		
Turn-On Time	$t_{d(on)}$	V_{DD}=-6V, R_L=6Ω I_D≡-1.0A, V_{GEN}=-4.5V R_G=6Ω		10	16	ns
	t_r			13	23	
Turn-Off Time	$t_{d(off)}$			18	25	
	t_f			15	20	

Typical Characteristics

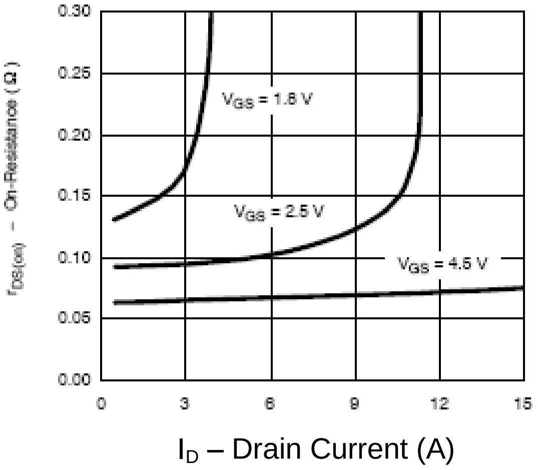
Output Characteristics



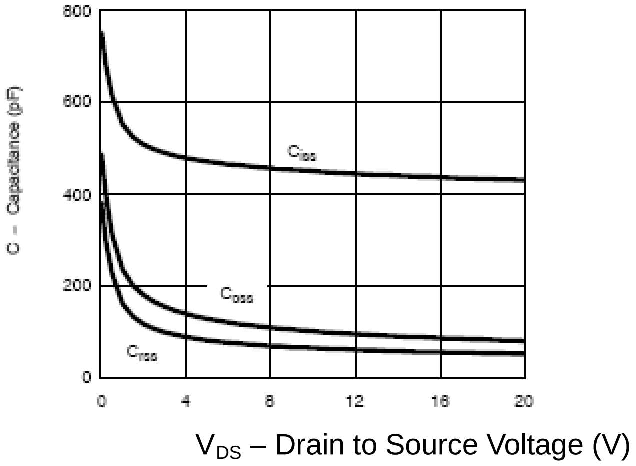
Transfer Characteristics



On-Resistance vs. Drain Current

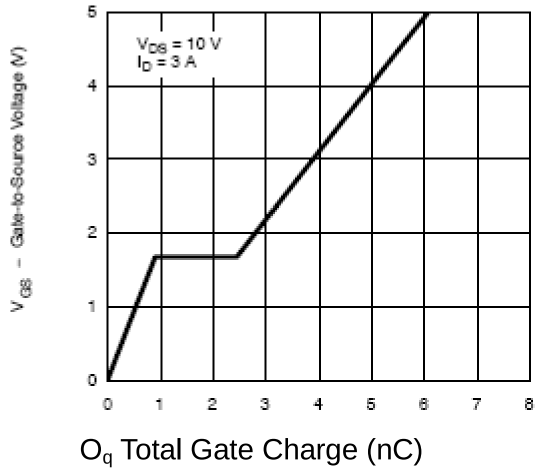


Capacitance

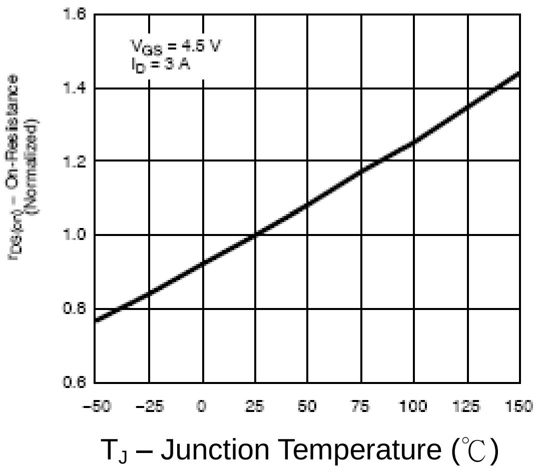


Typical Characteristics

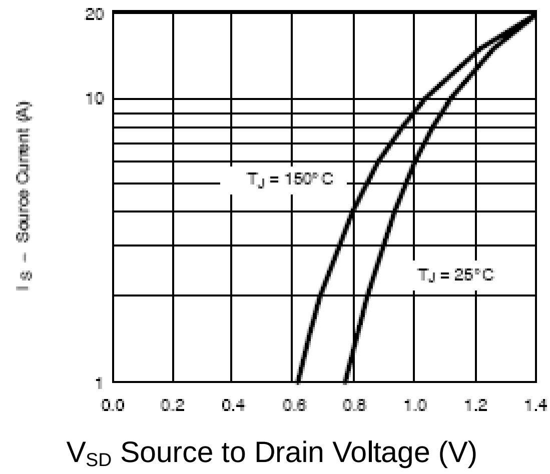
Gate Charge



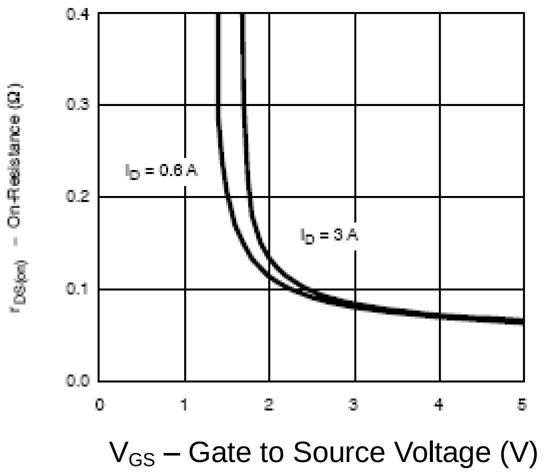
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

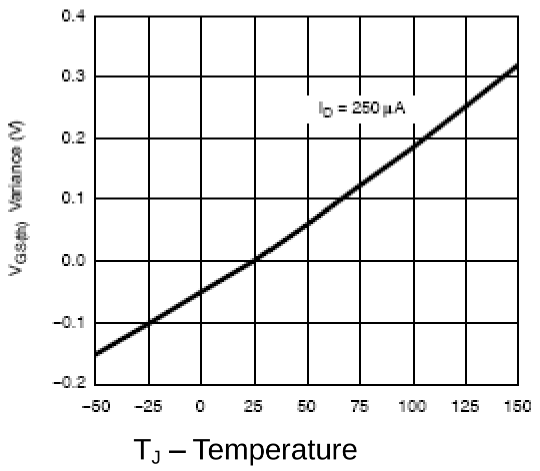


On-Resistance vs. Gate-to-Source Voltage

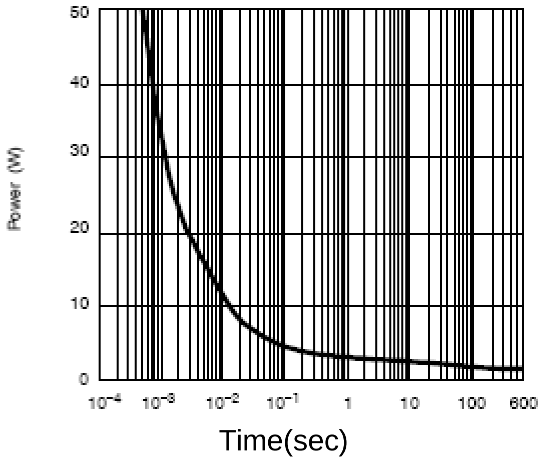


Typical Characteristics

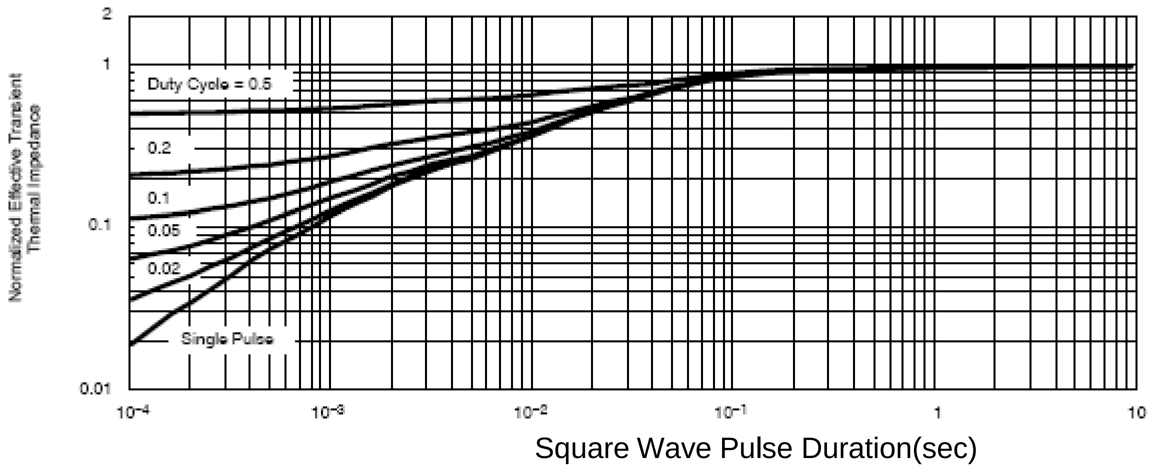
Threshold Voltage



Single Pulse Power, Junction-To-Ambient

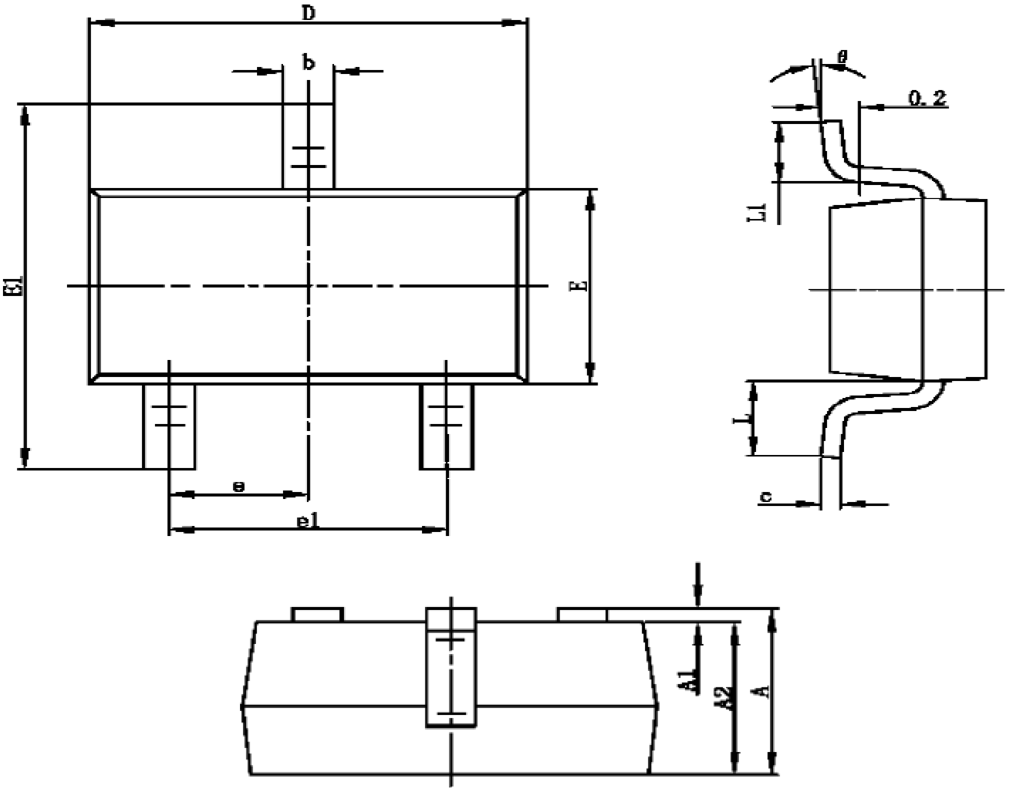


Normalized Thermal Transient Impedance, Junction-to-Foot



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°

Notes

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