



ACE3401D

P-Channel Enhancement Mode Field Effect Transistor

Description

This device is particularly suited for low voltage application such as portable equipment, power management and other battery powered circuits, and low in-line power dissipation are needed in a very small outline surface mount package Excellent thermal and electrical capabilities.

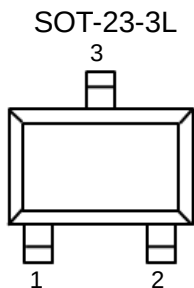
Features

- $V_{DS}(V)=-30V$, $I_D=-3A$
- $R_{DS(ON)}<63m\Omega$ @ $V_{GS}=-10V$
- Voltage controlled p-channel small signal switch
- High density cell design for low $R_{DS(ON)}$

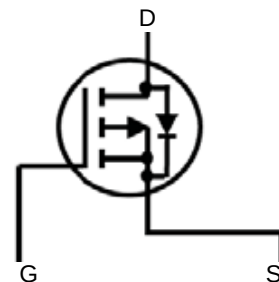
Absolute Maximum Ratings

Parameter		Symbol	Max	Unit
Drain-Source Voltage		V_{DSS}	-30	V
Gate-Source Voltage		V_{GSS}	± 12	V
Drain Current	$T_A=25^{\circ}C$	I_D	-3	A
	$T_A=70^{\circ}C$		-2.4	
Drain Current (Pulse)		I_{DM}	-30	A
Continuous Power Dissipation		P_D	500	mW
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^{\circ}C$

Packaging Type

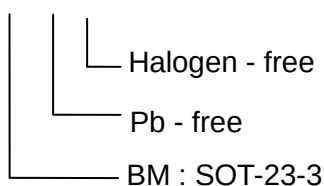


SOT-23-3	Description
1	Gate
2	Source
3	Drain



Ordering information

ACE3401D XX + H





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Electrical Characteristics

$T_A=25^{\circ}\text{C}$ unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V			-1	uA
Gate-Body Leakage, Forward	I _{GSSF}	V _{GS} =-20V			-100	nA
Gate-Body Leakage, Reverse	I _{GSSR}	V _{GS} =20V			100	nA
On characteristics						
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-4.2A			63	mΩ
		V _{GS} =-4.5V, I _D =-4A			75	
		V _{GS} =-2.5V, I _D =-1A			120	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-0.7	-1.0	-1.3	V
Switching characteristics ⁽³⁾						
Turn-On Delay Time	T _{d(on)}	V _{DD} =-15V, R _L =3.6Ω V _{GS} =-10V, R _{GEN} =6Ω		6.5		ns
Turn-On Rise Time	t _f			3.5		
Turn-Off Delay Time	t _{d(off)}			40		
Turn-Off Fall Time	t _f			13		
Dynamic characteristics ⁽³⁾						
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V f=200KHz		600		pF
Output Capacitance	C _{oss}			85		
Reverse Transfer Capacitance	C _{rss}			566		
Drain-source diode characteristics and maximum ratings						
Body Diode Forward Voltage	V _{SD}	V _{SD} =0V, I _S =-1A		-0.78	-1	V

Note:

- $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design.
- Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$



Typical Performance Characteristics

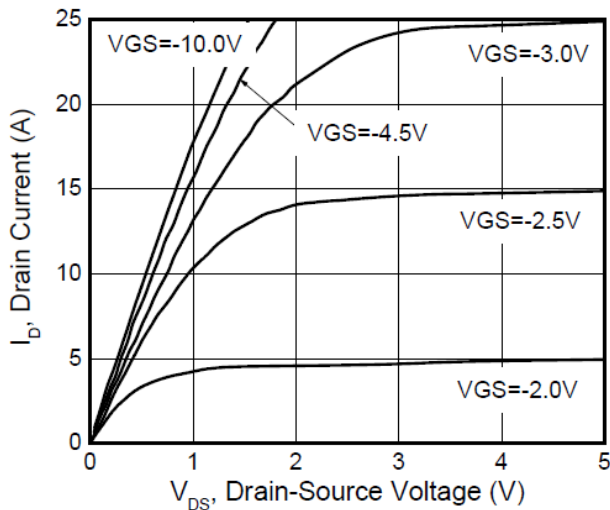


Figure 1. Output Characteristics

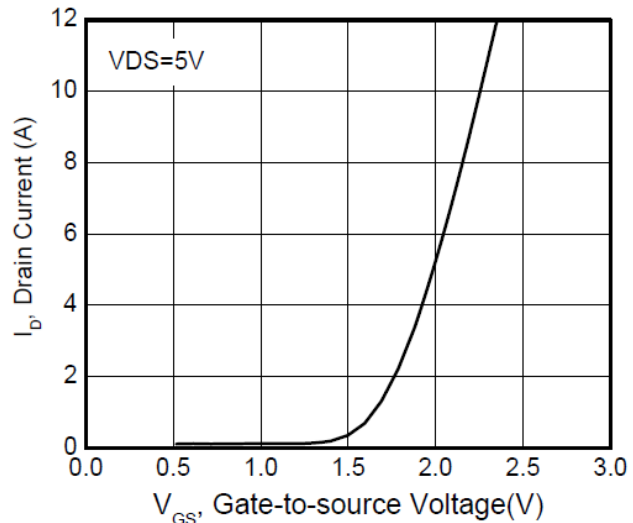


Figure 2. Transfer Characteristics

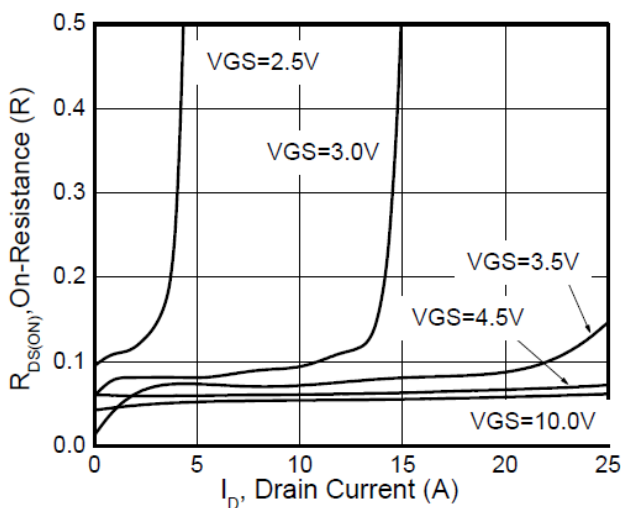


Figure 3. On Resistance VS I_d

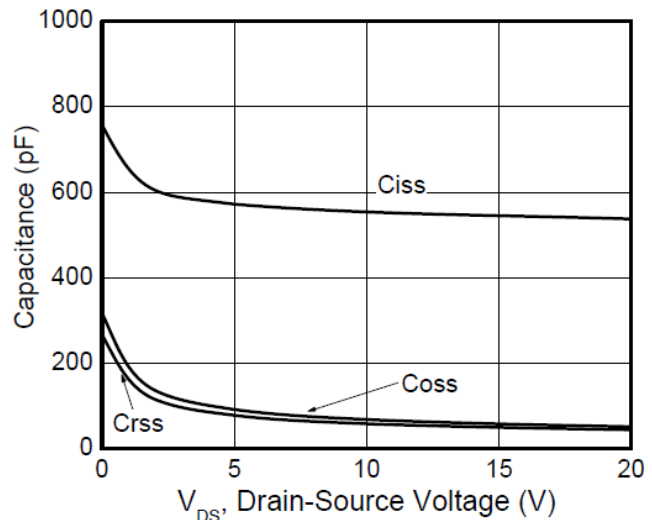


Figure 4. Capacitance

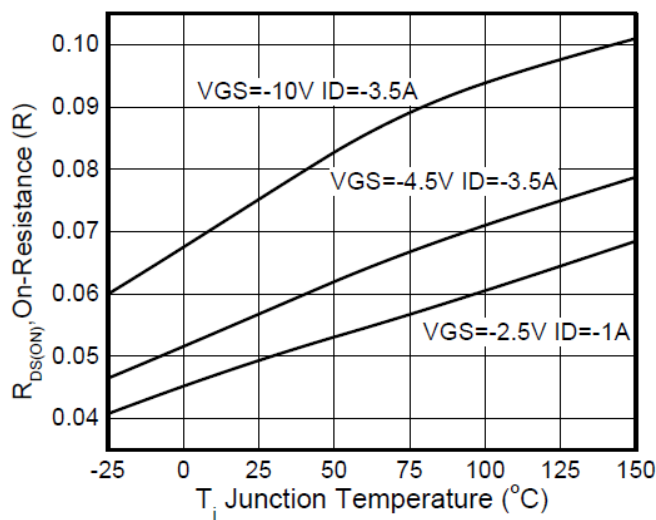


Figure 5 . On-resistance VS Temperature

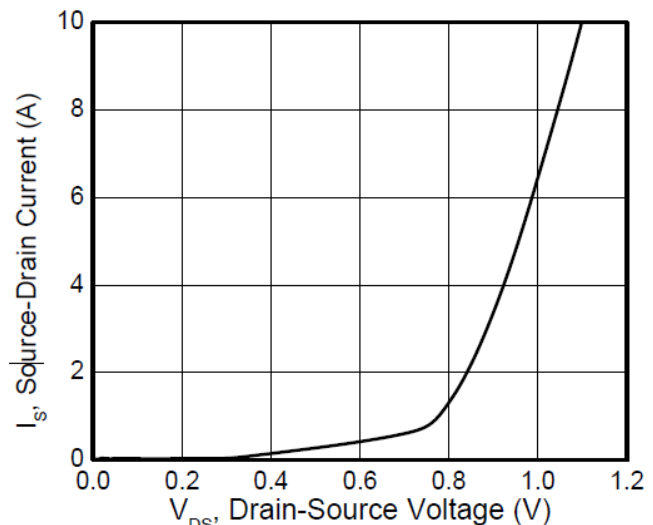
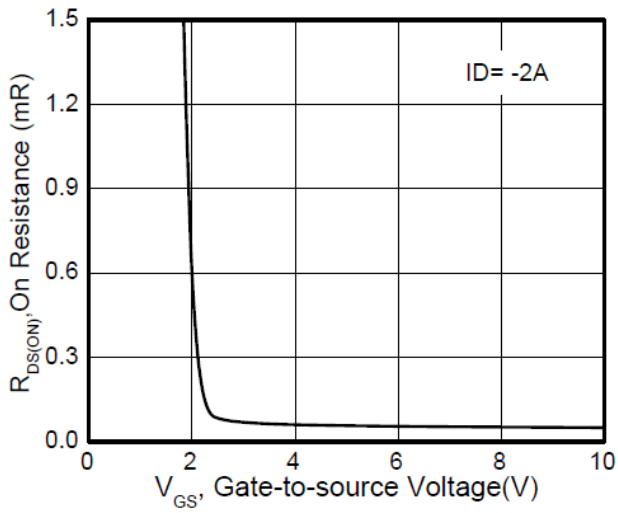
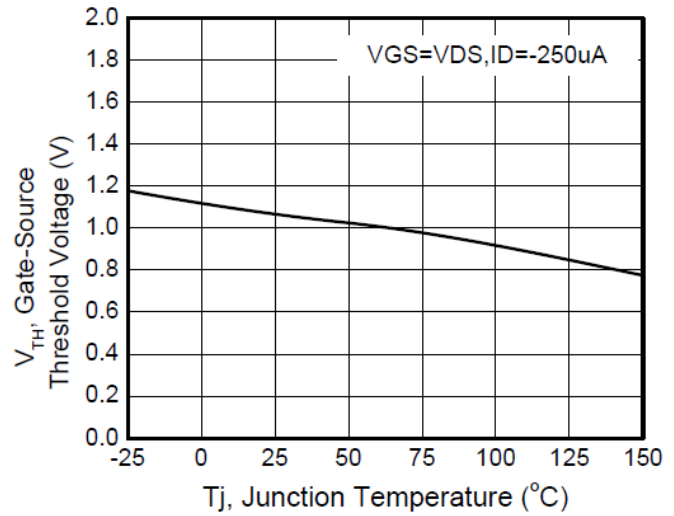


Figure 6. Body Diode Characteristics

**Typical Performance Characteristics****Figure 7. On Resistance VS V_{GS}** **Figure 8. Gate Threshold Vs. Temperature**

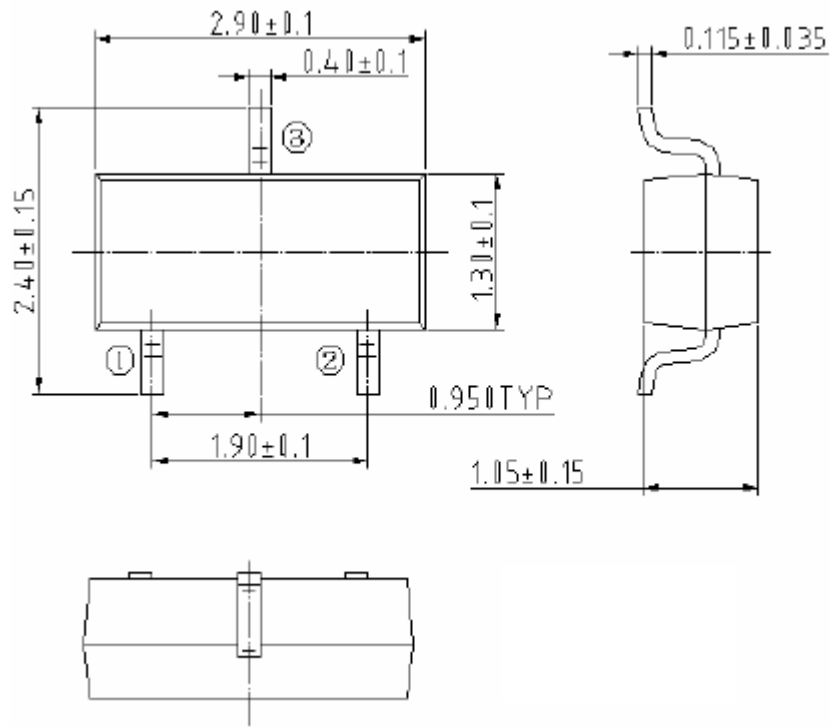


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Packing Information

SOT-23-3L



Unit: mm



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Notes

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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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