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

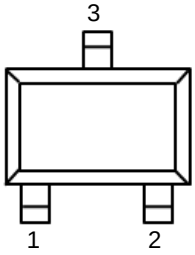
- V_{DS}(V)=-30V, I_D=-3A
- $R_{DS(ON)}$<63mΩ @ V_{GS}=-10V
- Voltage controlled p-channel small signal switch
- High density cell design for low $R_{DS(ON)}$

Absolute Maximum Ratings

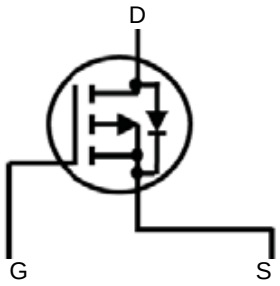
Parameter		Symbol	Max	Unit
Drain-Source Voltage		V_{DSS}	-30	V
Gate-Source Voltage		V_{GSS}	±12	V
Drain Current	T_A=25°C	I_D	-3	A
	T_A=70°C		-2.4	
Drain Current (Pulse)		I_{DM}	-30	A
Continuous Power Dissipation		P_D	500	mW
Operating and Storage Temperature Range		T_J,T_{STG}	-55 to 150	°C

Packaging Type

SOT-23-3L



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



Ordering information

ACE3401D XX + H

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

Electrical Characteristics

T_A=25 °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:

1. $R_{\theta JA}$ 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 RθCA is determined by the user's board design.

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

Typical Performance Characteristics

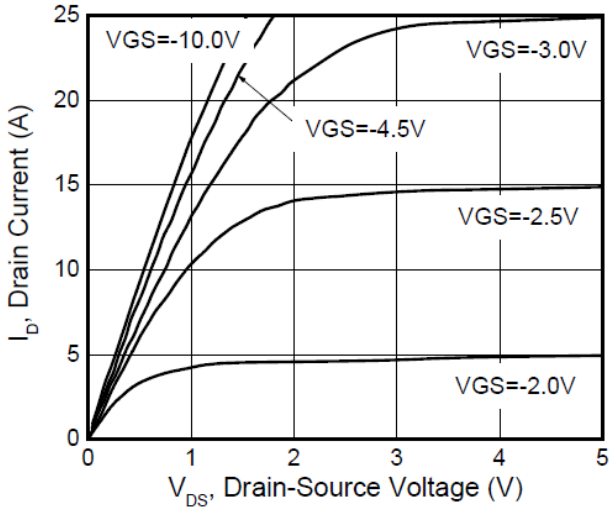


Figure 1. Output Characteristics

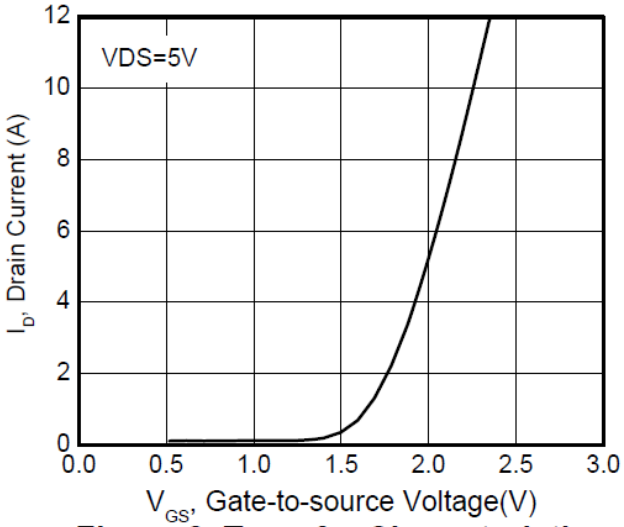


Figure 2. Transfer Characteristics

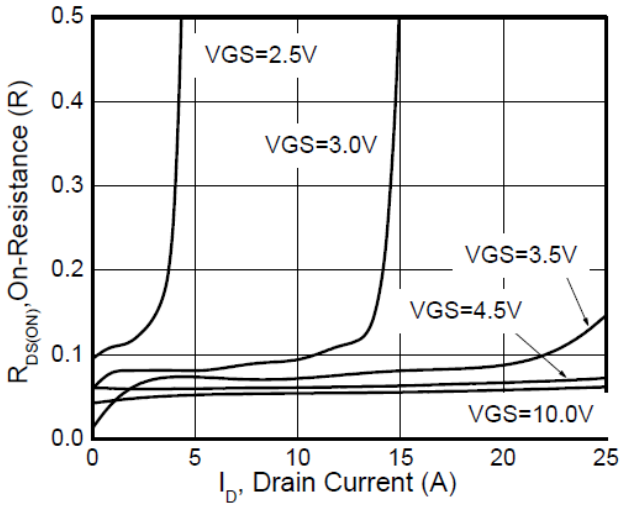


Figure 3. On Resistance VS I_d

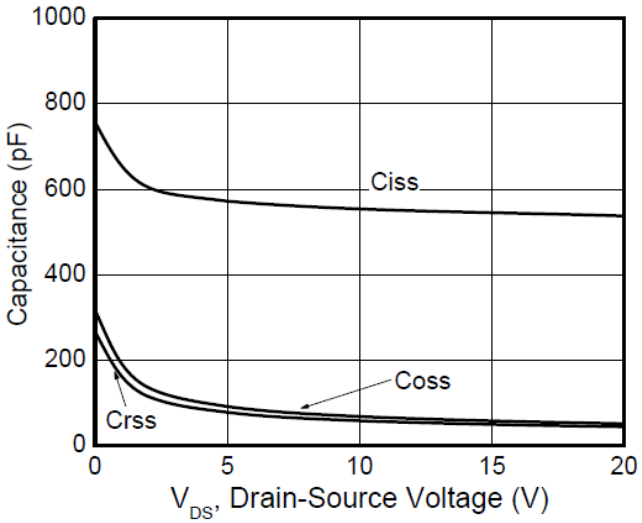


Figure 4. Capacitance

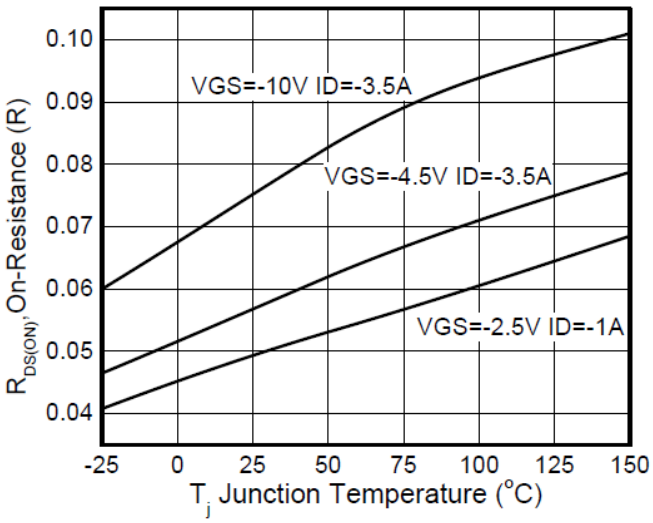


Figure 5 . On-resistance VS Temperature

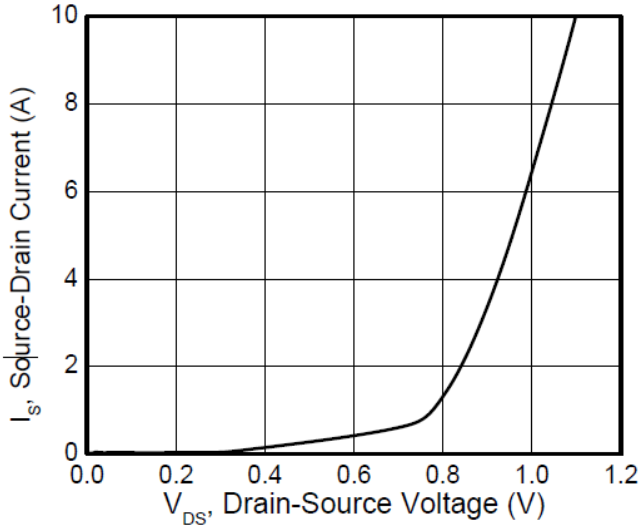


Figure 6. Body Diode Characteristics

Typical Performance Characteristics

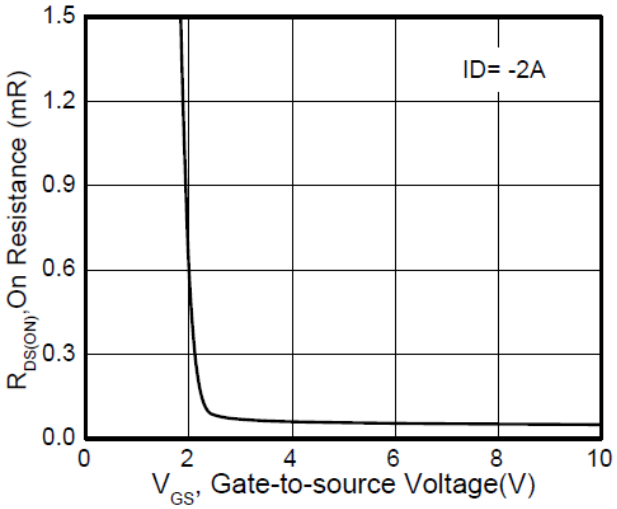


Figure 7. On Resistance VS V_{GS}

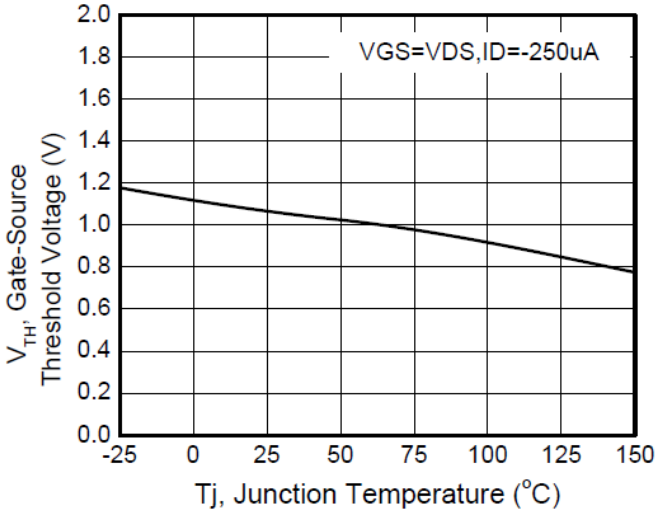
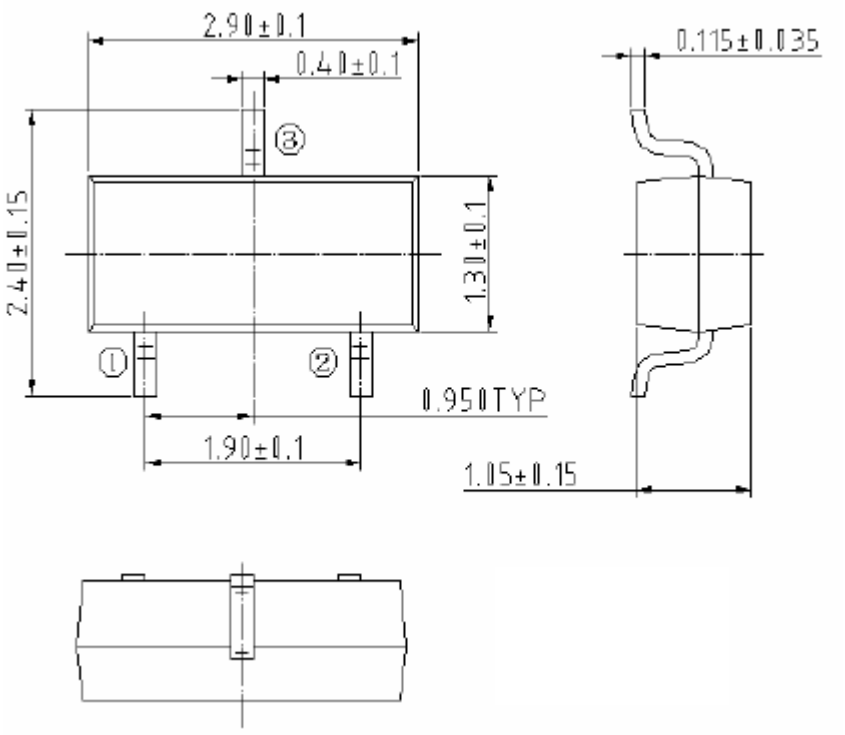


Figure 8. Gate Threshold Vs. Temperature

Packing Information

SOT-23-3L



Unit: mm

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 sued 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 shoes 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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