ACE13417B

P-Channel Enhancement Mode Power MOSFET

Description

The ACE13417B uses advanced trench technology to provide excellent R_{DS}, low gate charge and operation with gate voltages as low as 2.5V.This device is suitable for use as a load switch or in PWM applications.

Features

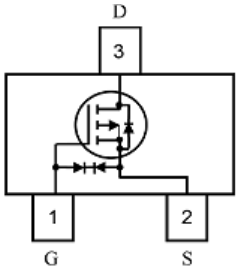
- V_{DS} (V) = -20V,I_D = -4.9A
- $R_{DS(ON)}$=34mΩ @ VGS= -4.5V
- $R_{DS(ON)}$=42mΩ @ VGS= -2.5V

Absolute Maximum Ratings

Parameter		Symbol	Max	Unit
Drain-Source Voltage		V_{DSS}	-20	V
Gate-Source Voltage		V_{GSS}	±12	V
Drain Current (Continuous)	T_A=25℃	I_D	-4.9	A
	T_A=70℃		-3.9	
Drain Current (Pulsed)		I_{DM}	-19.7	A
Power Dissipation	T_A=25℃	P_D	1.6	W
Operating temperature / storage temperature		T_J/T_{STG}	-55~150	℃

Packaging Type

SOT-23-3



Pin Configurations

SOT-23-3	Description	Function
1	G	Gate
2	S	Source
3	D	Drain

Ordering information

ACE13417B XX + H

- Halogen - free
- Pb - free
- BM : SOT23-3

Electrical Characteristics

T_A=25℃, unless otherwise specified.

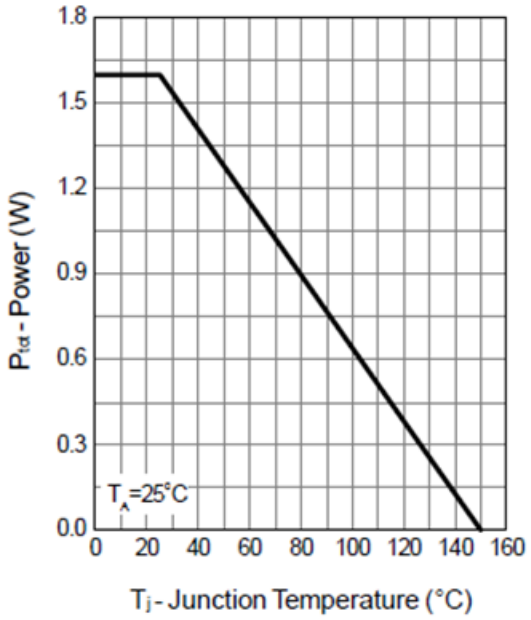
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON/OFF Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D= -250μA	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -16V , V_{GS} = 0V			-1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS} =V_{DS} , I_{DS}=-250μA	-0.45	-0.7	-1	V
Gate Leakage Current	I_{GSS}	V_{GS}= □±10V , V_{DS}=0V			±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = -4.5V , I_D= -4.9A		34	43	mΩ
		V_{GS} = -2.5V , I_D= -3.1A		42	60	mΩ
Forward Transconductance	g_{FS}	V_{DS}= -5V , I_D= -2A	6			S
Diode Forward Voltage	V_{SD}	I_{SD}= -1.6A , V_{GS}= 0V			-1.2	V
Switching Characteristics						
Total Gate Charge	Qg	V_{DS} =-10V, I_D = -4.9A V_{GS} = -4.5V		8		nC
Gate-Source Charge	Qgs			1.6		nC
Gate-Drain Charge	Qgd			1.9		nC
Turn-on Delay Time	td (on)	V_{DD} =-10V, R_L=10Ω I_D = -1A, V_{GEN} = -4.5V R_G = 6Ω		8		ns
Turn-on Rise Time	tr			12.8		ns
Turn-off Delay Time	td(off)			33		ns
Turn-off Fall Time	tf			18		ns
Dynamic Characteristics						
Input Capacitance	Ciss	V_{GS}=0V,V_{DS}= -10V,f= 1.0MHz		815		pF
Output Capacitance	Coss			145		pF
Reverse Transfer Capacitance	Crss			110		pF

Note :

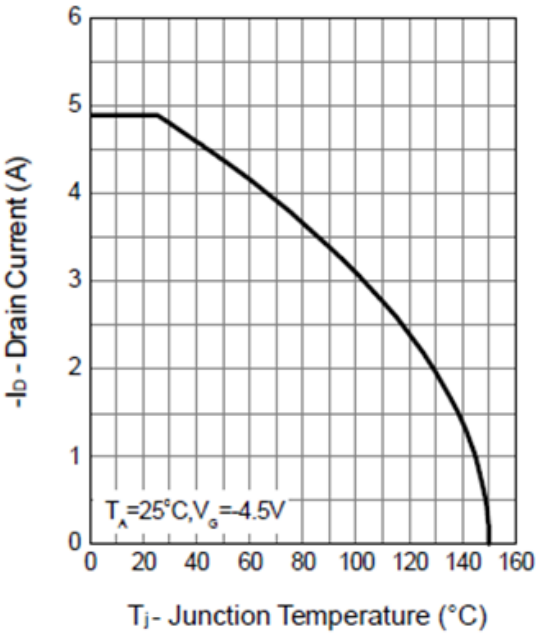
1. Pulse width limited by maximum junction temperature.
2. Pulse test: PW≤300μ s, duty cycle≤2%.
3. For design AID only, not subject to production testing.
4. Switching time is essentially independent of operating temperature.

Typical Performance Characteristics

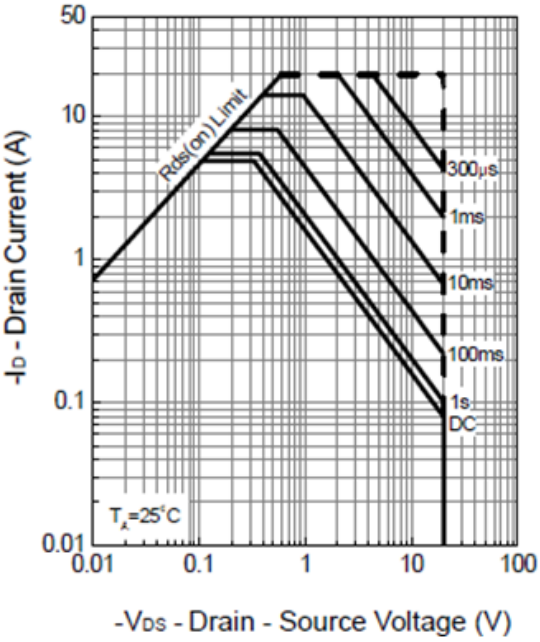
Power Dissipation



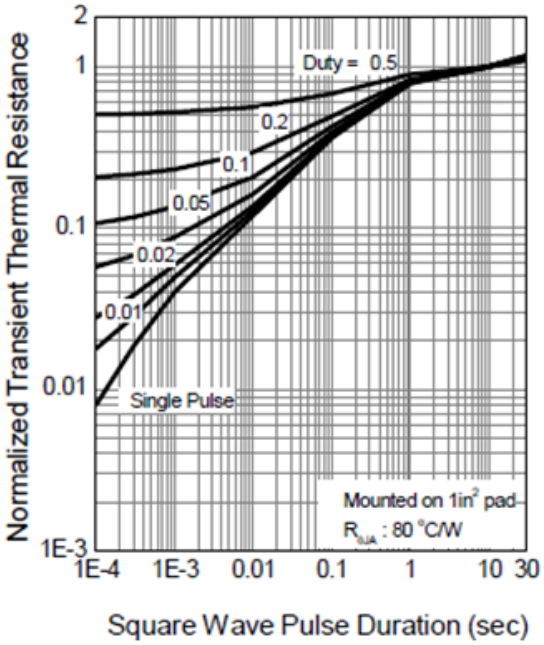
Drain Current



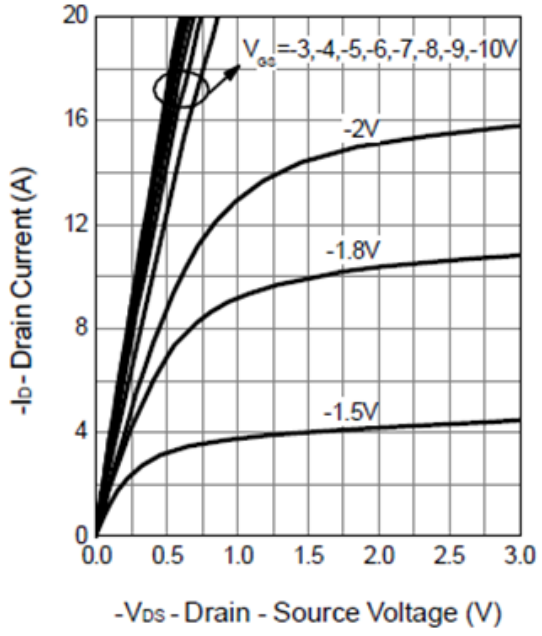
Safe Operation Area



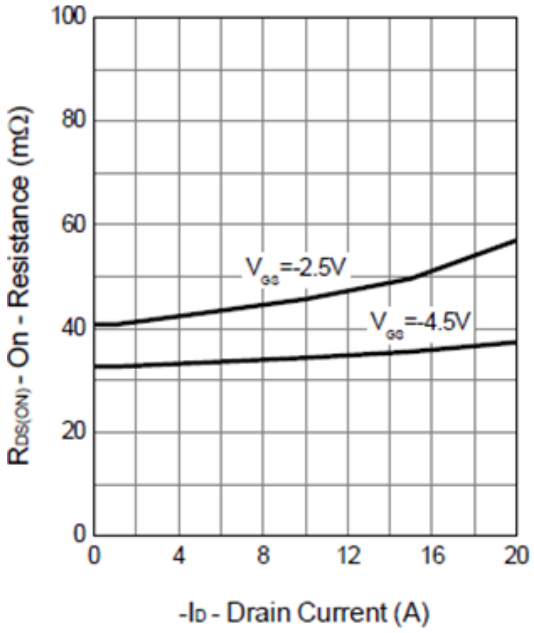
Thermal Transient Impedance



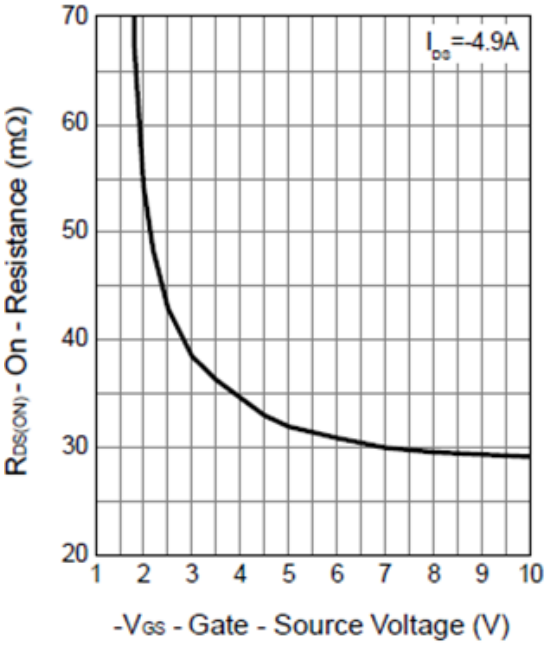
Output Characteristics



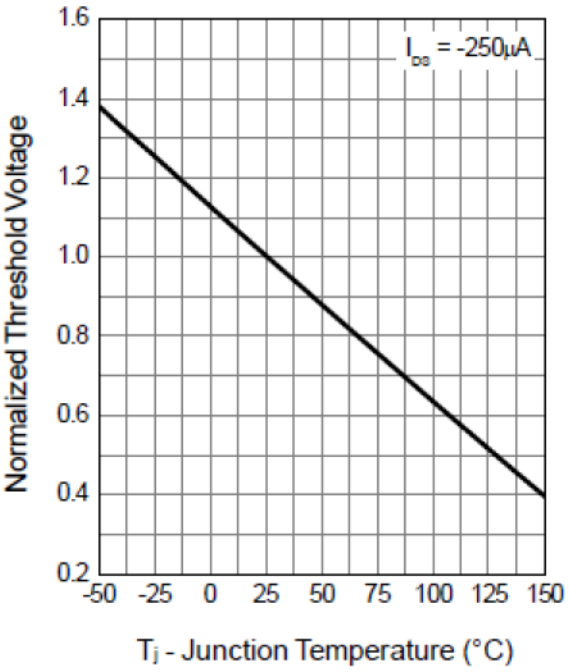
Drain-Source On Resistance



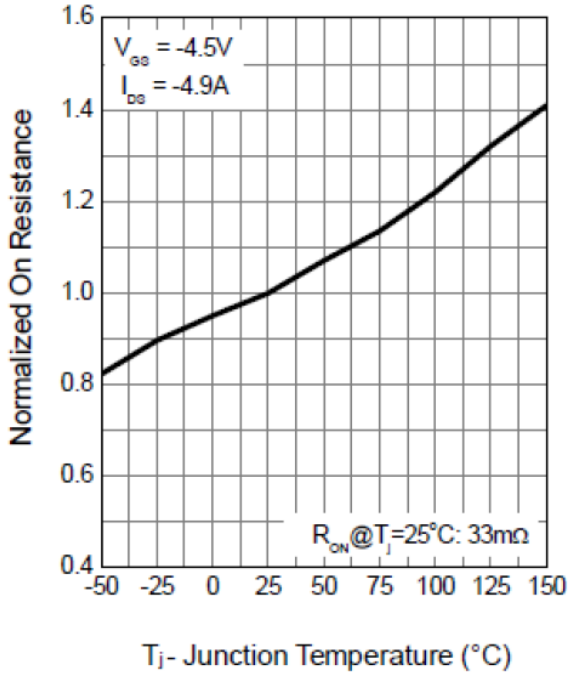
Gate-Source On Resistance



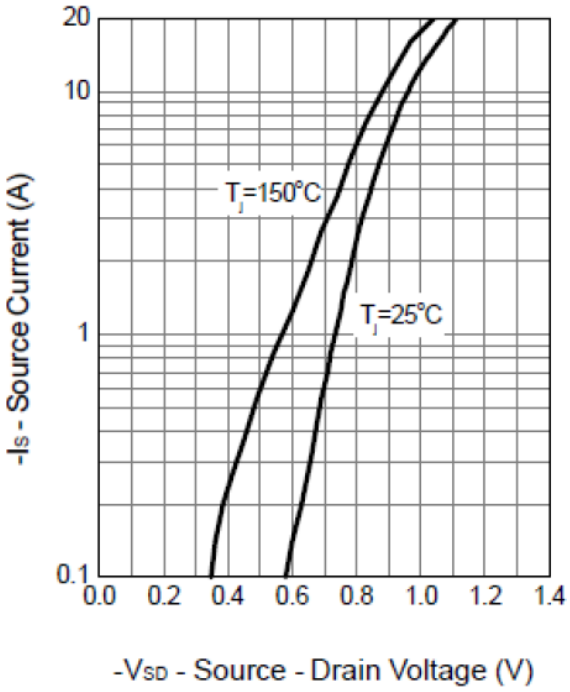
Gate Threshold Voltage



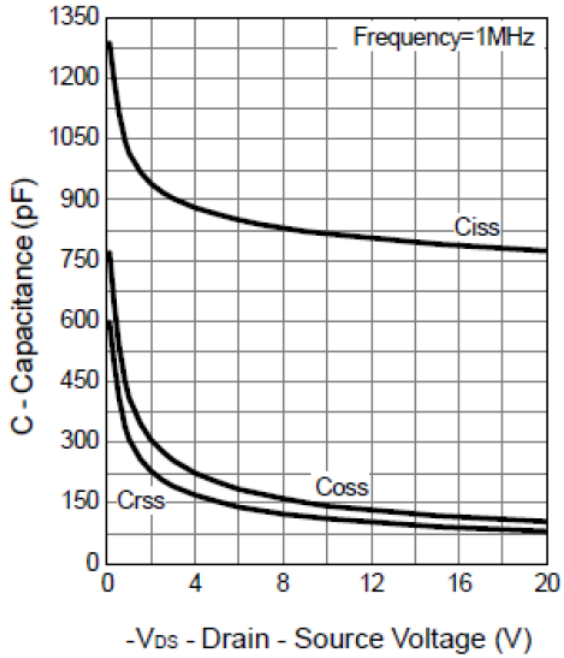
Drain-Source On Resistance



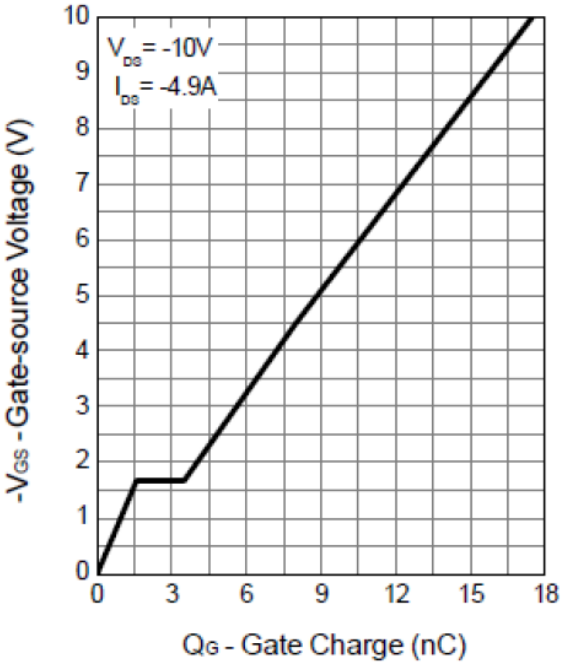
Source-Drain Diode Forward



Capacitance

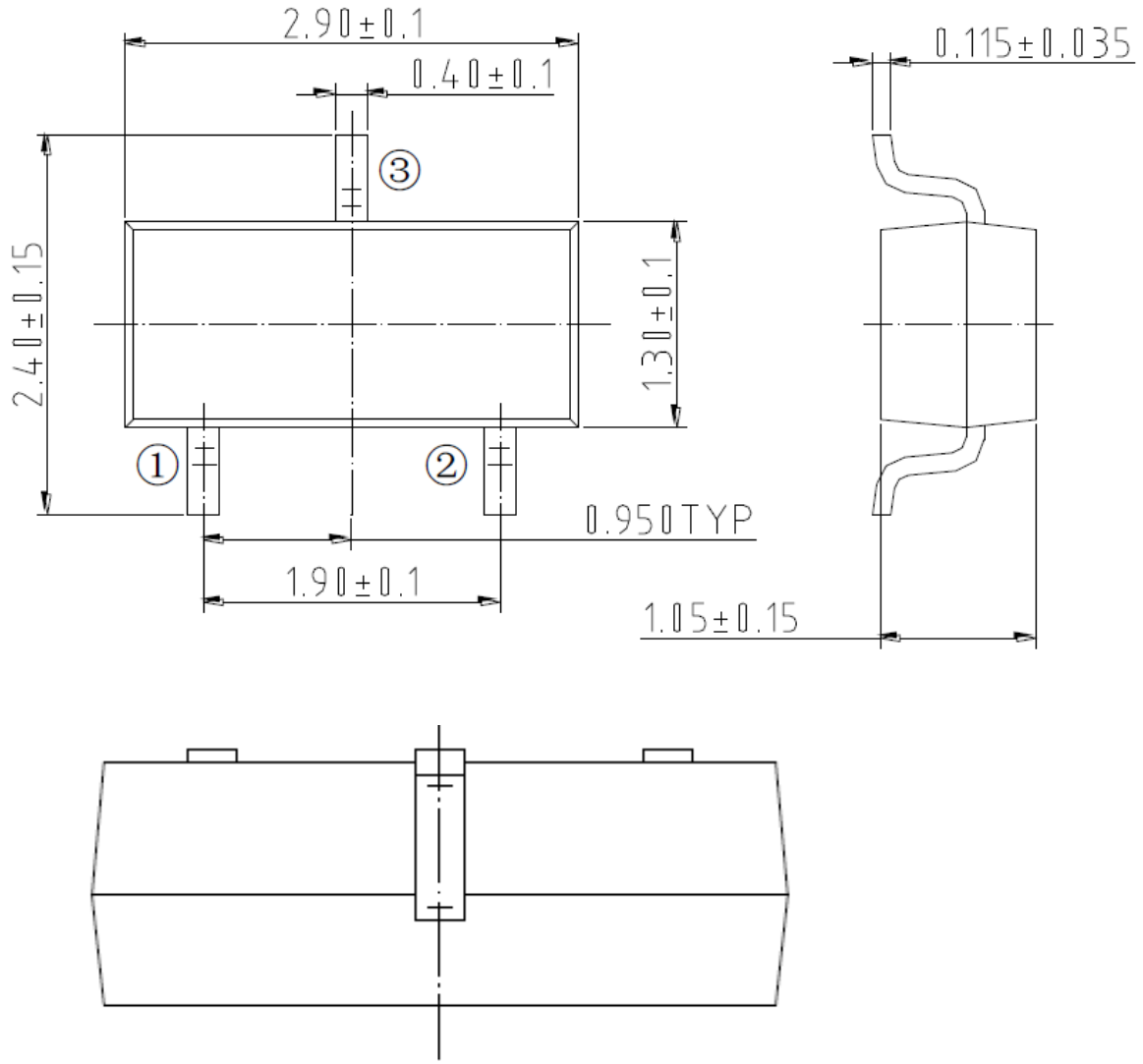


Gate Charge



Packing Information

SOT-23-3



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.