ACE17411B

P-Channel Enhancement Mode Power MOSFET

Description

- load switch
- battery protection applications

Features

- V_{DS}=-30V
- I_D=-60A
- $R_{DS(ON)}$@V_{GS}=-10V,TYP 6.6 mΩ
- $R_{DS(ON)}$@V_{GS}=-4.5V,TYP8.5 mΩ

Absolute Maximum Ratings

Parameter		Symbol	Ratings	Units
Drain-Source Voltage		V_{DSS}	-30	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current(Continuous) *AC	T_C=25℃	I_D	-60	A
	T_C=100℃		-33	
Drain Current(Pulsed) *B		I_{DM}	-145	A
Power Dissipation	T_C=25℃	P_D	96	W
Operating temperature / storage temperature		T_J/T_{STG}	-55~150	℃

Note :

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B. Repetitive rating, pulse width limited by junction temperature.

C. The current rating is based on the t≤ 10s junction to ambient thermal resistance rating

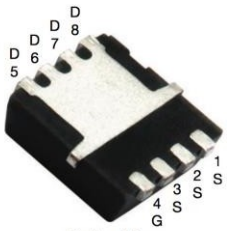
Thermal Resistance Ratings

Parameter		Symbol	Typical	Maximum	Units
Maximum Junction-to-Ambient	Steady State	R_{thJC}	1	1.3	°C/W

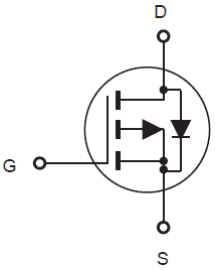
Packaging Type

PDFN3*3-8L

Top View



Bottom View



Ordering information

ACE17411B XX -1 + H

- Halogen - free
- Pb - free
- PD：PDFN3*3-8L

Electrical Characteristics

T_A=25℃, unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D= -50μA	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -3, V_{GS} = 0V				μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS}= -250μA	-1	-1.4		V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -15A		6.6	8.5	mΩ
		V_{GS} = -4.5V, I_D = -10A		8.5	11	
Forward Transconductance	gFS	V_{DS}= -5V, I_D= -10A	-20			S
Diode Forward Voltage	V_{SD}	I_{SD}= -1A , V_{GS}=0V			-1.2	V
Diode Forward Current *AB	I_S	T_C =25°C			-32	A
Switching						
Total Gate Charge	Q_g	V_{GS}=-10V , I_D=-1.5A V_{DS}=-15V,		93		nC
Gate-Source Charge	Q_{gs}			7.2		
Gate-Drain Charge	Q_{gd}			18.8		
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=-10V,V_{DS}=-15V, R_L=30Ω, R_G=6Ω		24.5		ns
Turn-on Rise Time	t_r			15		
Turn-off Delay Time	$t_{d(off)}$			236		
Turn-Off Fall Time	t_f			96		
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V, f=200kHz		4586		pF
Output Capacitance	C_{oss}			448		
Reverse Transfer Capacitance	C_{rss}			406		

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating. Package limited42A。

Typical Performance Characteristics (TJ = 25 °C, unless otherwise noted)

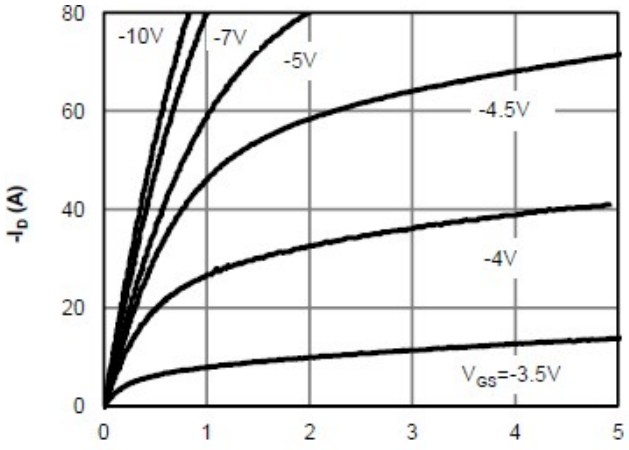


Fig 1: On-Region Characteristics

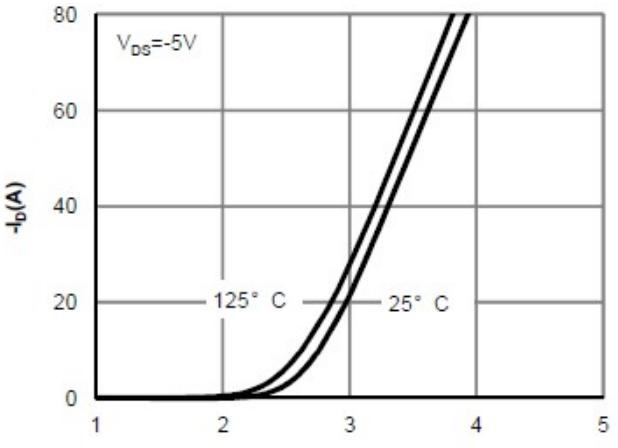


Figure 2: Transfer Characteristics

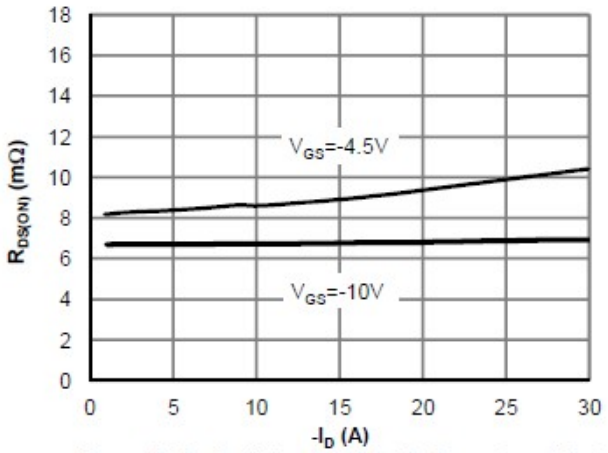


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

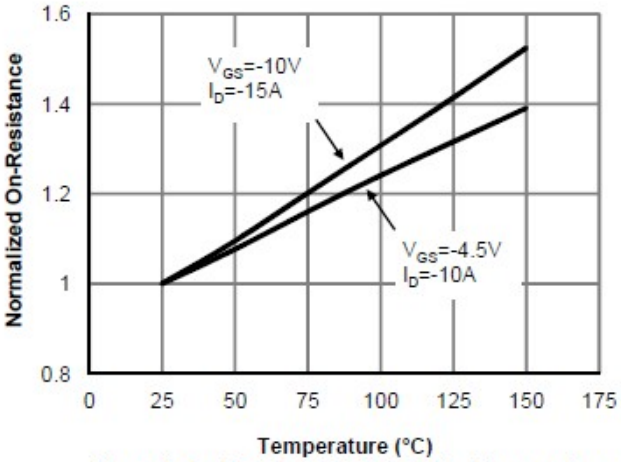


Figure 4: On-Resistance vs. Junction Temperature

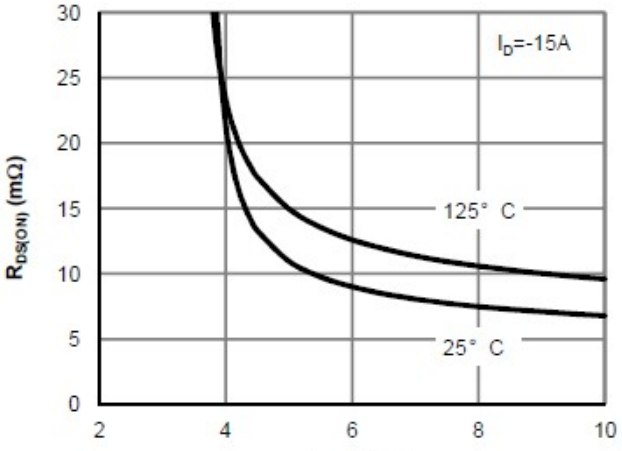


Figure 5: On-Resistance vs. Gate-Source Voltage

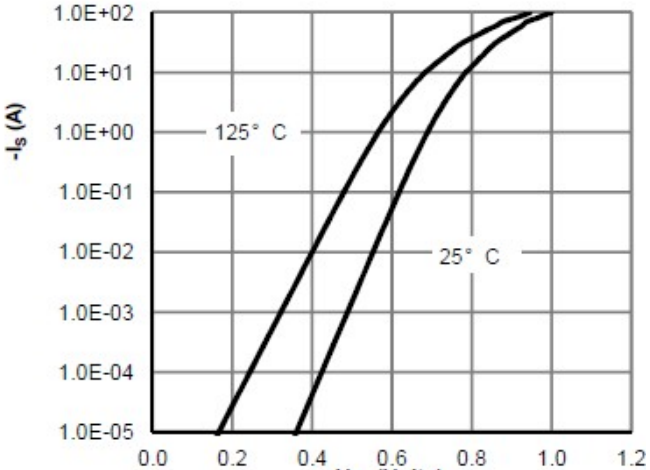


Figure 6: Body-Diode Characteristics

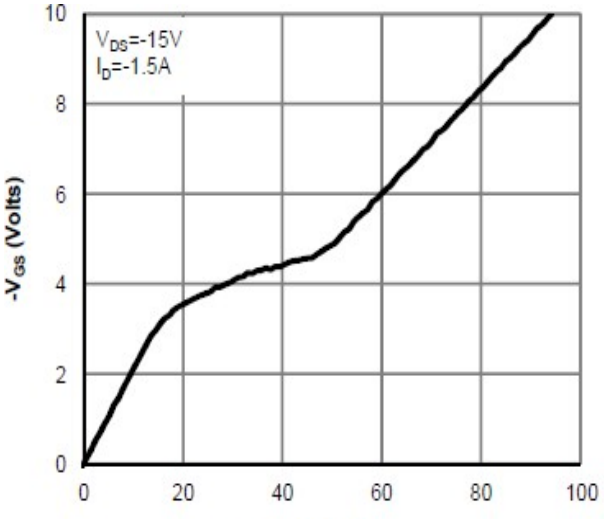


Figure 7: Gate-Charge Characteristics

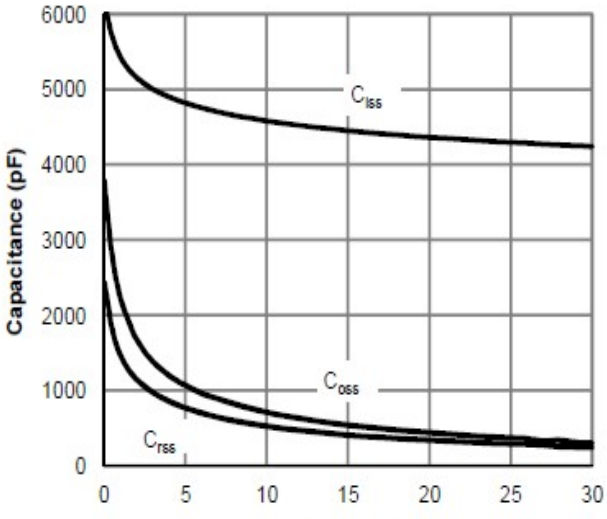


Figure 8: Capacitance Characteristics

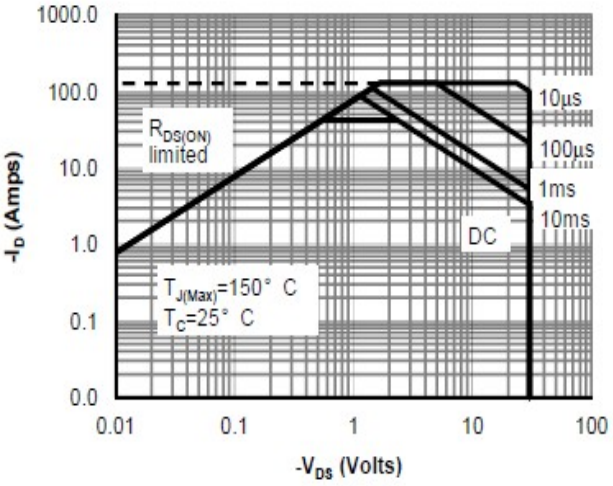


Figure 9: Maximum Forward Biased Safe Operating Area

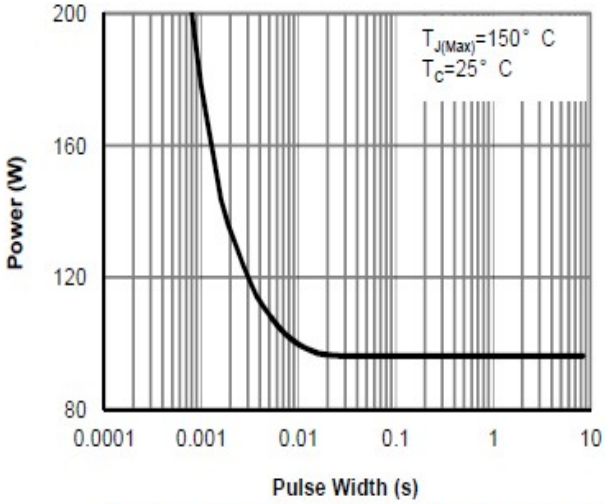


Figure 10: Single Pulse Power Rating Junction-to- case

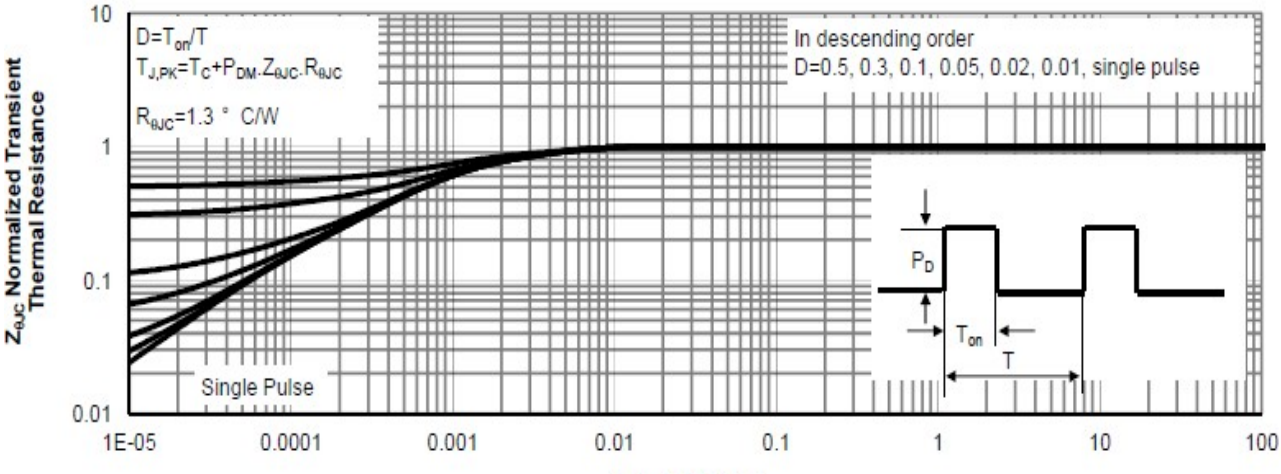
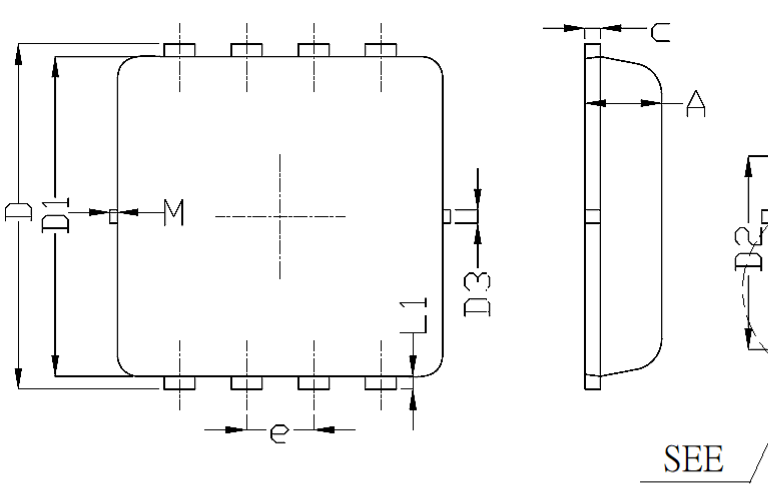
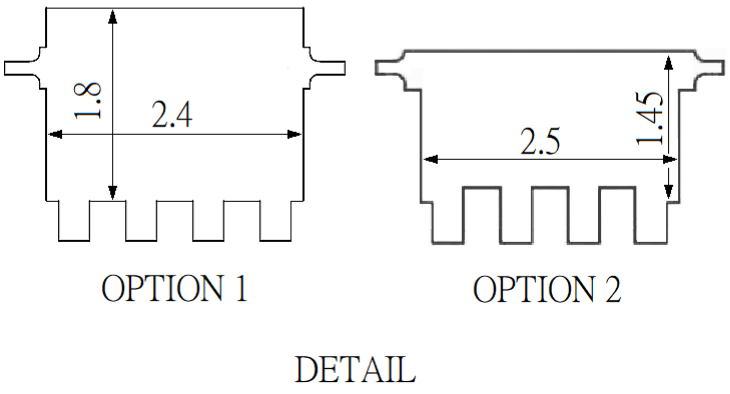


Figure 11: Normalized Maximum Transient Thermal Impedance

Packing Information

PDFN3*3-8L





SYMBOL	DIMENSIONS IN MILLMETERS		
	MIN	NOM	MAX
A	0.7	0.775	0.85
b	0.25	0.3	0.35
c	0.1	0.15	0.25
D	3.15	3.3	3.4
D1	2.95	3.1	3.2
D2	1.7	1.8	1.93
D3		0.13	
E	3.05	3.25	3.35
E1	2.95	3.15	3.2
E2	2.3	2.4	2.55
e	0.65 BSC		
H	0.33	0.43	0.53
L	0.3	0.4	0.5
L1	0.08	0.13	0.18
θ	-	10°	12°
M	-	-	0.15

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.