



# ACE17411B

## P-Channel Enhancement Mode Power MOSFET

### Description

- load switch
- battery protection applications

### Features

- $V_{DS}=-30V$
- $I_D=-60A$
- $R_{DS(ON)}@V_{GS}=-10V, TYP 6.6 m\Omega$
- $R_{DS(ON)}@V_{GS}=-4.5V, TYP 8.5 m\Omega$

### Absolute Maximum Ratings

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

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  $T_A=25^\circ C$ . 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  $\leq 10s$  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	$^\circ C/W$



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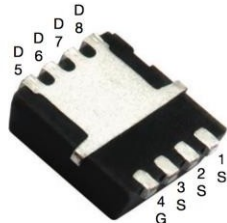
P-Channel Enhancement Mode Power MOSFET

## Packaging Type

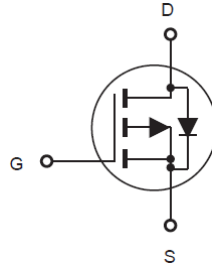
PDFN3\*3-8L



Top View

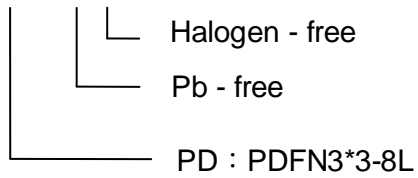


Bottom View



## Ordering information

ACE17411B XX -1 + H





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### Electrical Characteristics

$T_A=25^{\circ}\text{C}$ , unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -50\mu A$	-30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -3, V_{GS} = 0V$				$\mu A$
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_{DS} = -250\mu A$	-1	-1.4		V
Gate Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -15A$		6.6	8.5	m $\Omega$
		$V_{GS} = -4.5V, I_D = -10A$		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	$I_S$	$T_C = 25^{\circ}\text{C}$			-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	$t_{d(on)}$	$V_{GS}=-10V, V_{DS}=-15V,$ $R_L=30\Omega, R_G=6\Omega$		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	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V,$ $f=200\text{kHz}$		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<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^{\circ}\text{C}$ . The value in any given application depends on the user's specific board design.

B: The current rating is based on the  $t \leq 10s$  junction to ambient thermal resistance rating. Package limited 42A ◦



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Typical Performance Characteristics (T<sub>J</sub> = 25 °C, unless otherwise noted)

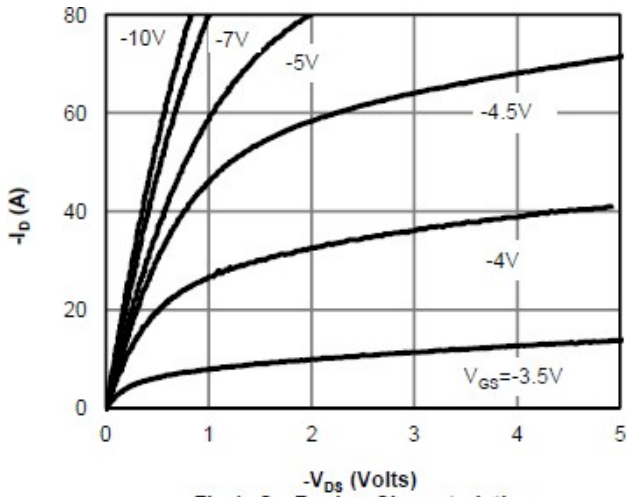


Fig 1: On-Region Characteristics

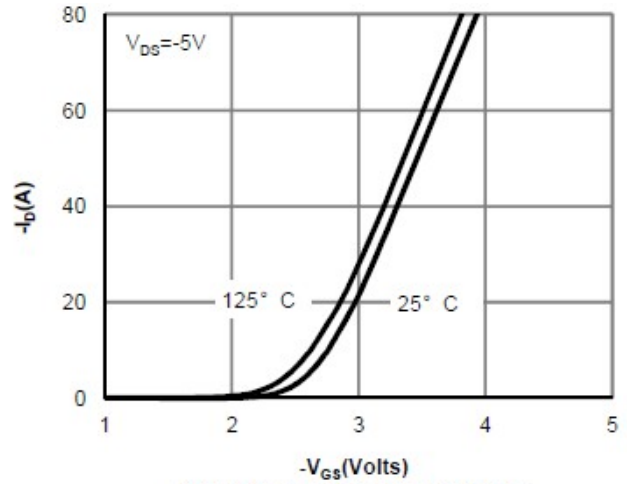


Figure 2: Transfer Characteristics

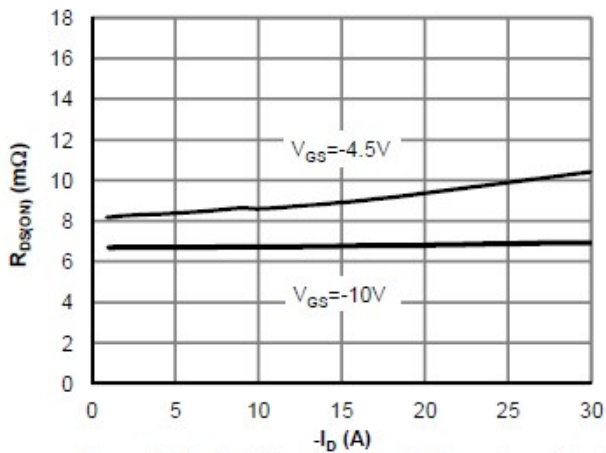


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

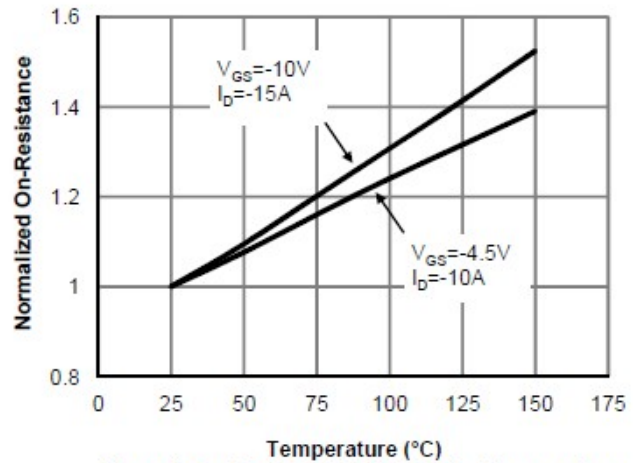


Figure 4: On-Resistance vs. Junction Temperature

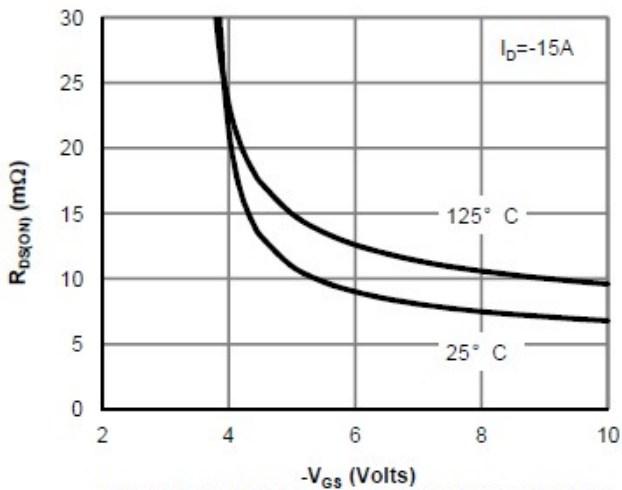


Figure 5: On-Resistance vs. Gate-Source Voltage

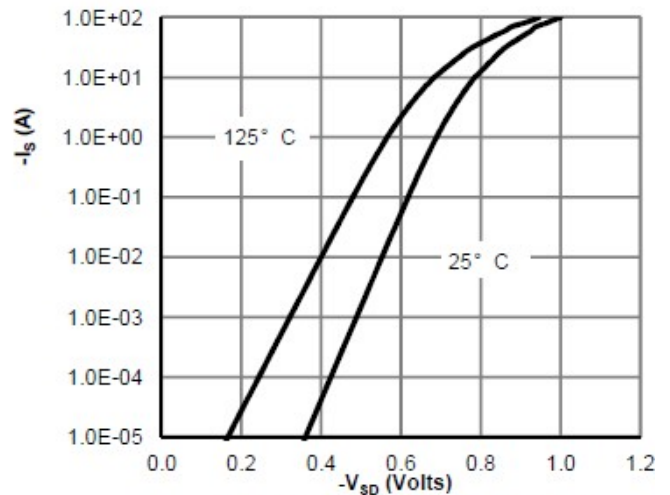


Figure 6: Body-Diode Characteristics



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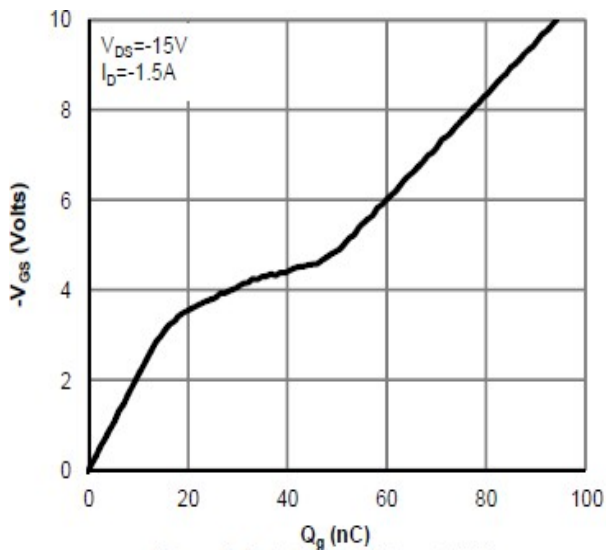


Figure 7: Gate-Charge Characteristics

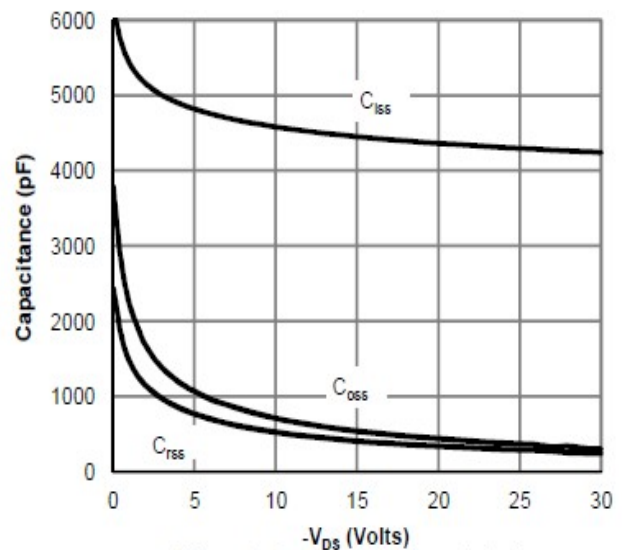


Figure 8: Capacitance Characteristics

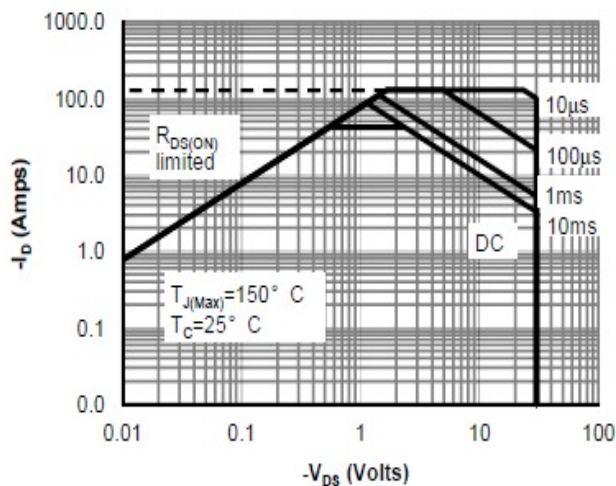


Figure 9: Maximum Forward Biased Safe Operating Area

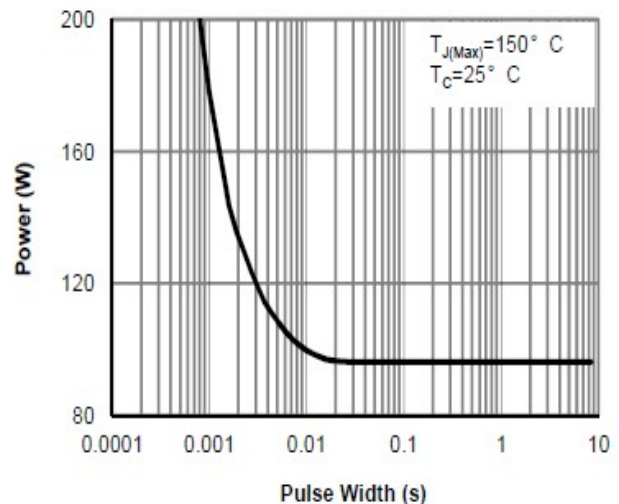


Figure 10: Single Pulse Power Rating Junction-to-case

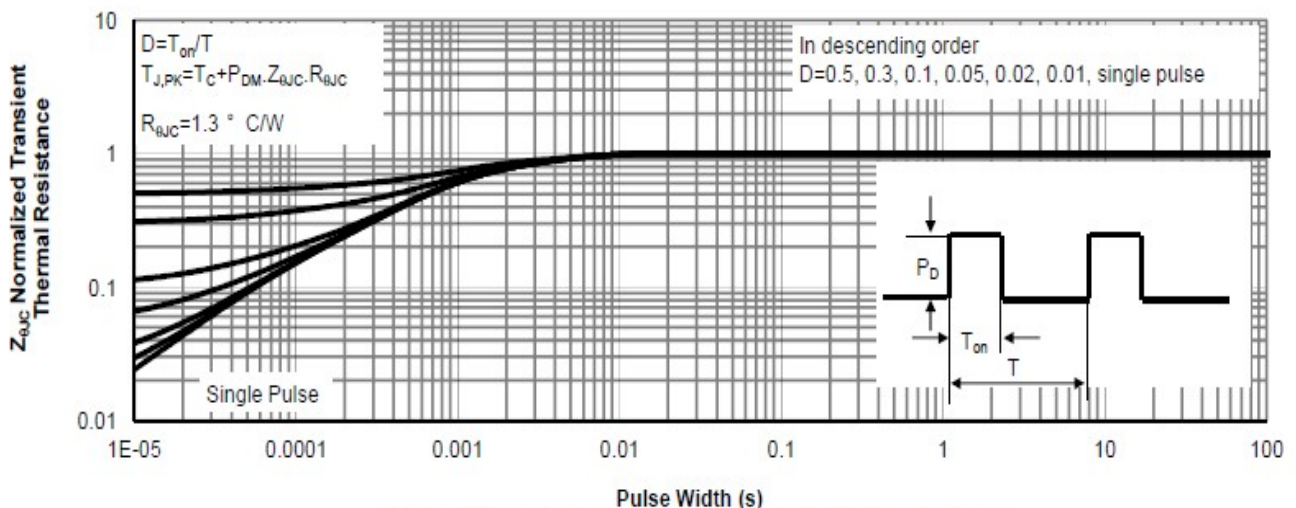


Figure 11: Normalized Maximum Transient Thermal Impedance

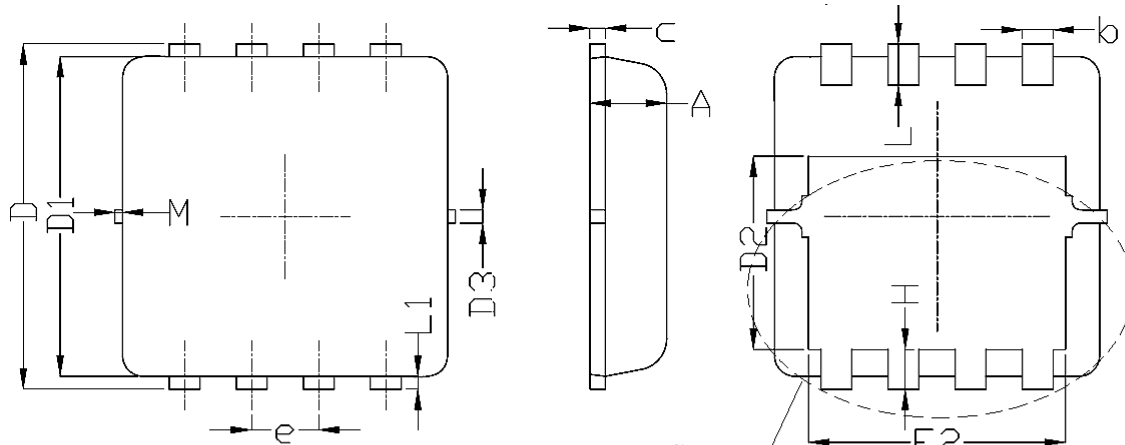


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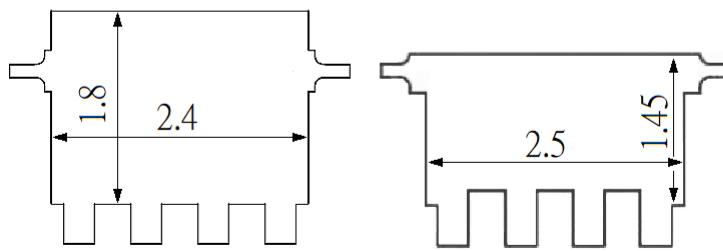
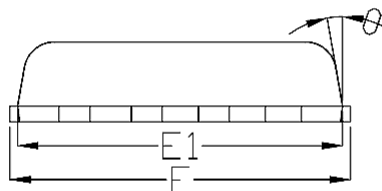
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### Packing Information

PDFN3\*3-8L



SEE  
DETAIL



OPTION 1

OPTION 2

DETAIL

SYMBOL	DIMENSIONS IN MILLIMETERS		
	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
$\theta$	-	10°	12°
M	-	-	0.15



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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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