



# ACE14411B

## P-Channel Enhancement Mode Power MOSFET

### Description

Load switch

PWM applications

### Features

- $V_{DS} (V) = -30V$
- $I_D = -15.6A$
- $R_{DS(ON)} @ V_{GS} = -10V, TYP 6m\Omega$
- $R_{DS(ON)} @ V_{GS} = -4.5V, TYP 8m\Omega$

### Absolute Maximum Ratings

Parameter	Symbol	Max	Unit	
Drain-Source Voltage	$V_{DSS}$	-30	V	
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V	
Drain Current (Continuous) *AC	$I_D$	$T_A = 25^\circ C$	-15.6	A
		$T_A = 70^\circ C$	-12.5	
Drain Current (Pulse) *B	$I_{DM}$	-60		
Power Dissipation	$P_D$	$T_A = 25^\circ C$	3.1	W
Operating and Storage Temperature Range	$T_J/T_{STG}$	-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  $t \leq 10s$  junction to ambient thermal resistance rating

### Thermal Resistance Ratings

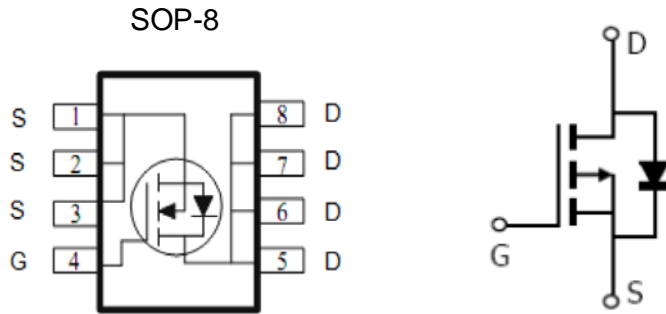
Parameter	Symbol	Maximum	Unit
Maximum Junction-to-Ambient	$R_{thJA}$	40	$^\circ C/W$



# ACE14411B

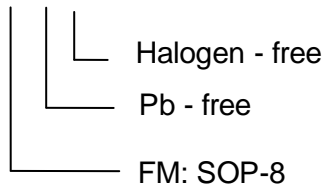
## P-Channel Enhancement Mode Power MOSFET

### Packaging Type



### Ordering information

ACE14411B XX + H





# ACE14411B

## P-Channel Enhancement Mode Power MOSFET

### Electrical Characteristics

T<sub>A</sub>=25 °C unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V			-1	uA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =-250uA	-1	-1.5	-3	V
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±100	nA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-13A		6	8	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-10A		8	11	
Forward Trans Conductance	g <sub>FS</sub>	V <sub>GS</sub> =-5V, I <sub>D</sub> =-10A	20			S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>SD</sub> =-1A, V <sub>GS</sub> =0V			-1.2	V
Diode Forward Current*AC	I <sub>S</sub>	TC=25°C			-15.6	A
Switching						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-24V, I <sub>D</sub> =-13A,		128		nC
Gate-Source Charge	Q <sub>gs</sub>			16		
Gate-Drain Charge	Q <sub>gd</sub>			35		
Turn-On Delay Time	T <sub>d(on)</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V, I <sub>D</sub> =-6.5A, R <sub>GEN</sub> =4.7Ω		26		ns
Turn-On Rise Time	t <sub>r</sub>			17		
Turn-Off Delay Time	t <sub>d(off)</sub>			145		
Turn-Off Fall Time	t <sub>f</sub>			69		
Dynamic						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-15V, f=1MHz		4590		pF
Output Capacitance	C <sub>oss</sub>			450		
Reverse Transfer Capacitance	C <sub>rss</sub>			400		



# ACE14411B

## P-Channel Enhancement Mode Power MOSFET

### Typical Performance Characteristics

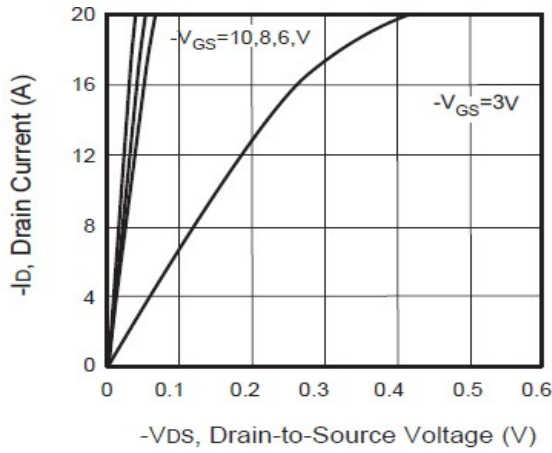


Figure 1. Output Characteristics

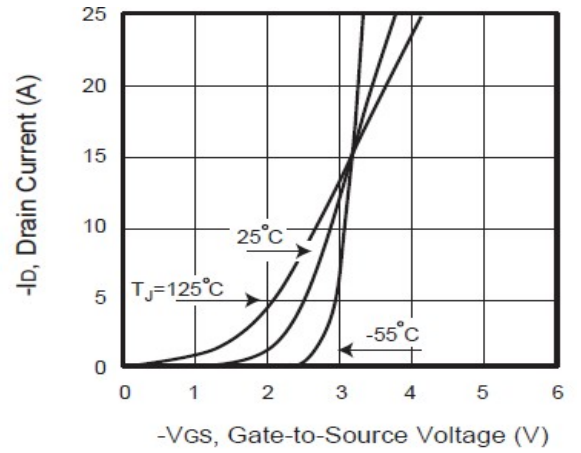


Figure 2. Transfer Characteristics

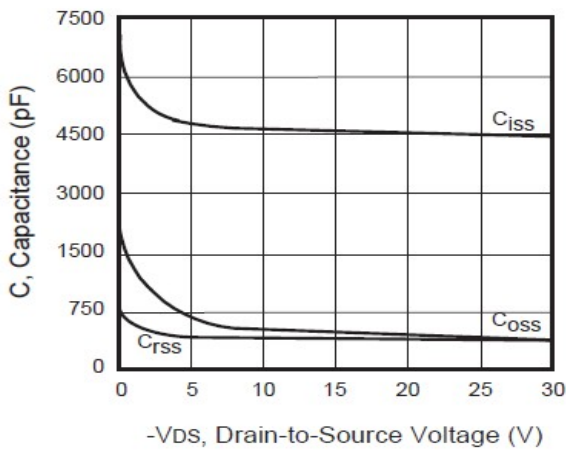


Figure 3. Capacitance

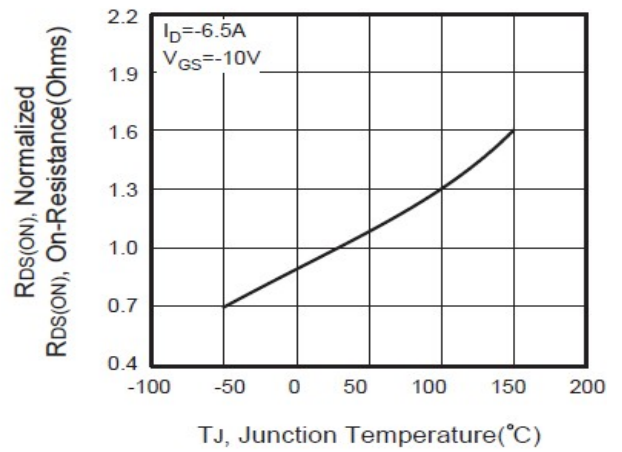


Figure 4. On-Resistance Variation with Temperature

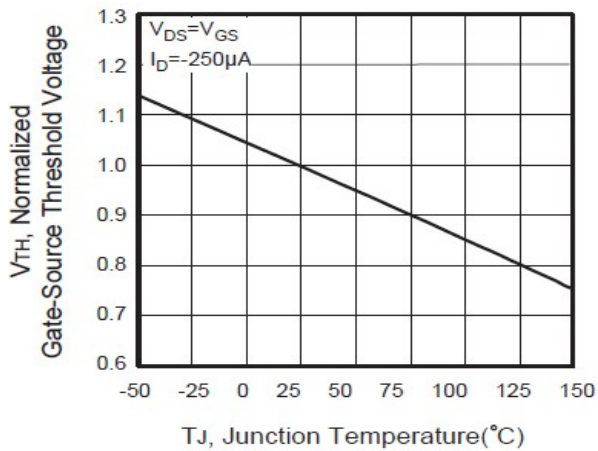


Figure 5. Gate Threshold Variation with Temperature

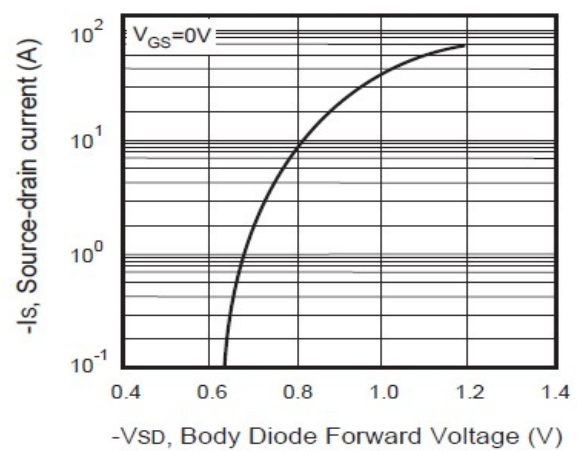


Figure 6. Body Diode Forward Voltage Variation with Source Current



# ACE14411B

## P-Channel Enhancement Mode Power MOSFET

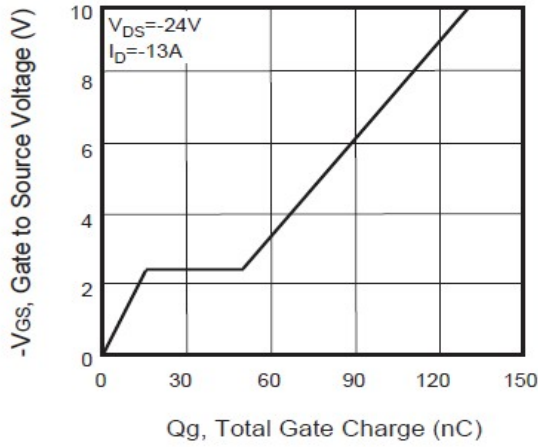


Figure 7. Gate Charge

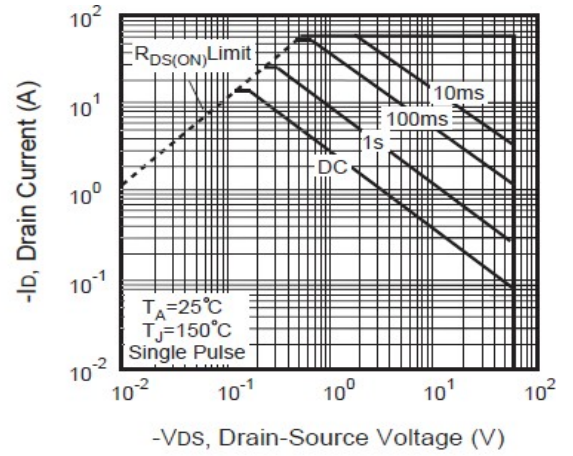


Figure 8. Maximum Safe Operating Area

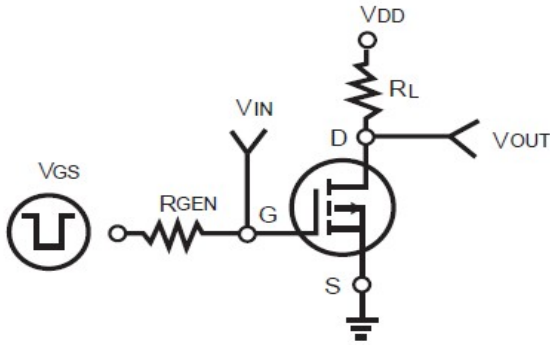


Figure 9. Switching Test Circuit

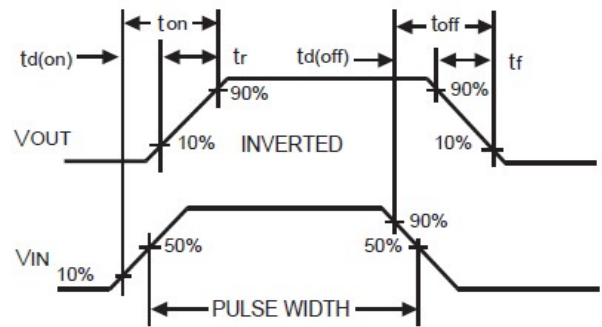


Figure 10. Switching Waveforms

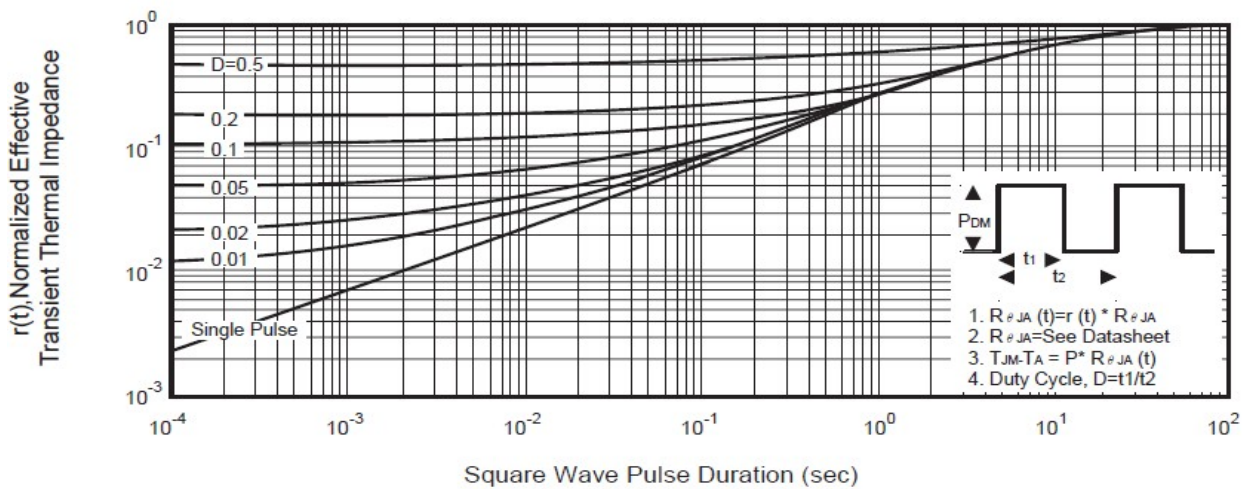


Figure 11. Normalized Thermal Transient Impedance Curve

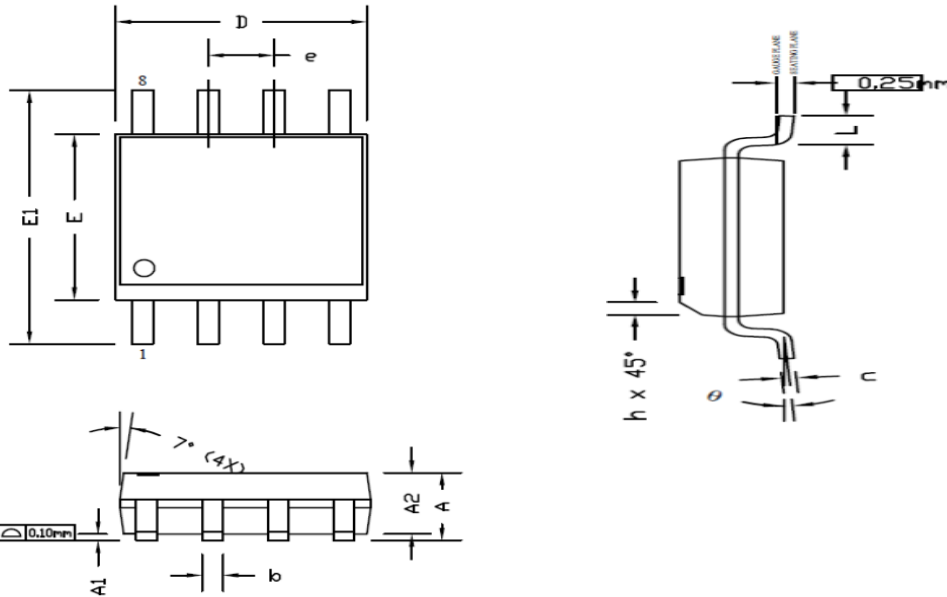


# ACE14411B

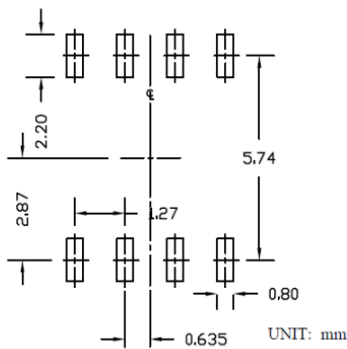
## P-Channel Enhancement Mode Power MOSFET

### Packing Information

#### SOP-8



#### RECOMMENDED LAND PATTERN



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min	Nom	Max	Min	Nom	Max
A	1.350	1.650	1.750	0.053	0.065	0.069
A1	0.100	0.150	0.250	0.004	0.006	0.010
A2	1.250	1.500	1.650	0.049	0.059	0.065
b	0.310	0.410	0.510	0.012	0.016	0.020
c	0.170	0.200	0.250	0.007	0.008	0.010
D	4.800	4.900	5.000	0.189	0.193	0.197
E	3.800	3.900	4.000	0.150	0.154	0.157
e	1.270 (BSC)			0.050 (BSC)		
E1	5.800	6.000	6.200	0.228	0.236	0.244
h	0.250	0.300	0.500	0.010	0.012	0.020
L	0.400	0.690	1.270	0.016	0.027	0.050
$\theta$	0°	4°	8°	0°	4°	8°

#### NOTE

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONS ARE INCLUSIVE OF PLATING.
3. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.  
MOLD FLASH AT THE NON-LEAD SIDES SHOULD BE LESS THAN 6 MILS EACH.
4. DIMENSION L IS MEASURED IN GAUGE PLANE.
5. CONTROLLING DIMENSION IS MILLIMETER.  
CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.



# ACE14411B

## P-Channel Enhancement Mode Power MOSFET

### 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 used 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 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.

ACE Technology Co., LTD.  
<http://www.ace-ele.com/>