



ACE6901B

P-Channel Enhancement Mode Power MOSFET

Description

ACE6901B uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

Features

- $V_{DS}=-60V$, $I_D=-72A$
- $R_{DS(ON)}@V_{GS}=-10V$, TYP $7.2m\Omega$
- $R_{DS(ON)}@V_{GS}=-4.5V$, TYP $9.1m\Omega$

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Drain-Source Voltage	V_{DSS}	-60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current (Continuous)*AC	I_D	$T_A=25^\circ C$	-72
		$T_A=100^\circ C$	-45
Drain Current (Pulsed)*B	I_{DM}	-288	A
Power Dissipation	$T_A=25^\circ C$	P_D	142
Operating temperature / storage temperature	T_J/T_{STG}	-55~150	$^\circ C$

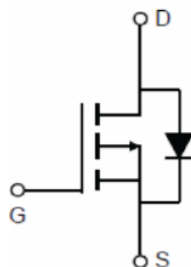
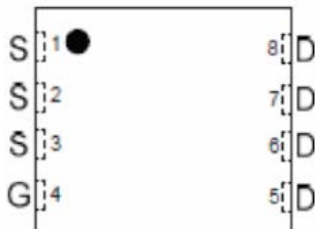
A: The value of $R_{\theta JA}$ is measured with the device mounted on $1in^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$. The value in any given application depends on the user's specific board design.

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.

Packaging Type

DFN5*6-EP



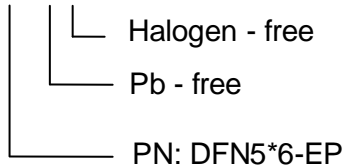


ACE6901B

P-Channel Enhancement Mode Power MOSFET

Ordering information

ACE6901B XX + H



Electrical Characteristics

T_A=25°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 = -250μA	-60			V
Zero Gate Voltage Drain Current	I _{DSS1}	V _{DS} = -60V, V _{GS} = 0V			1	μA
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _{DS} = -250μA	-1.2	-1.6	-2.5	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 = -20A		7.2	9	mΩ
		V _{GS} = -4.5V, I _D = -10A		9.1	12	
Forward Trans Conductance	g _{FS}	V _{DS} = -10V, I _D = -3A		30		S
Diode Forward Voltage	V _{SD}	I _{SD} = -10A, V _{GS} = 0V			1.0	V
Diode Forward Current	I _S				-72	A
Switching						
Total Gate Charge	Q _g	V _{DS} = -48V, I _D = -5A, V _{GS} = -4.5V		141		nC
Gate-Source Charge	Q _{gs}			17		nC
Gate-Drain Charge	Q _{gd}			28.6		nC
Turn-on Delay Time	t _{d(on)}	V _{DD} = -48V, I _D = -10A, V _{GS} = -10V, R _{GEN} = 5Ω		70		ns
Turn-on Rise Time	t _r			205		ns
Turn-off Delay Time	t _{d(off)}			402		ns
Turn-off Fall Time	t _f			197		ns
Dynamic						
Input Capacitance	C _{iss}	V _{DS} = -25V, V _{GS} = 0V, f = 1.0MHz		8620		pF
Output Capacitance	C _{oss}			486		pF
Reverse Transfer Capacitance	C _{rss}			288		pF



ACE6901B

P-Channel Enhancement Mode Power MOSFET

Typical Performance Characteristics

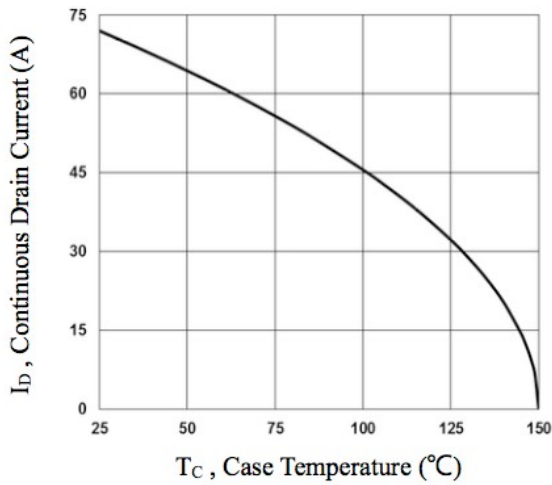


Fig.1 Continuous Drain Current vs. T_C

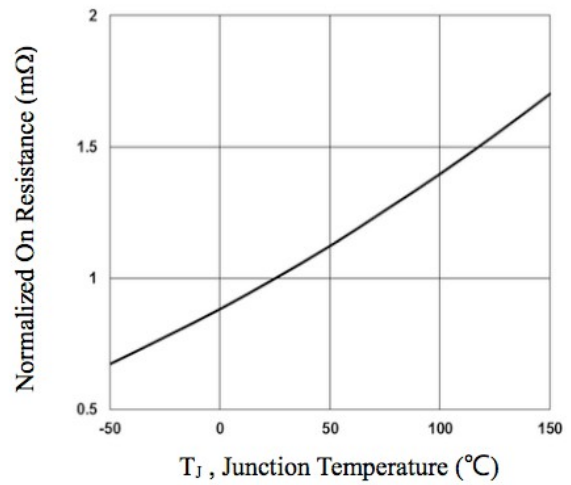


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

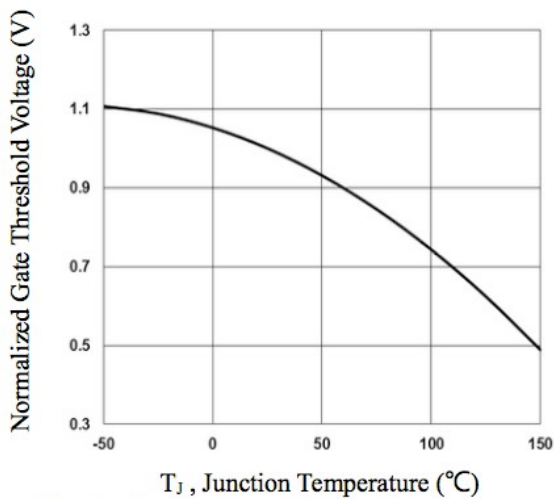


Fig.3 Normalized V_{th} vs. T_J

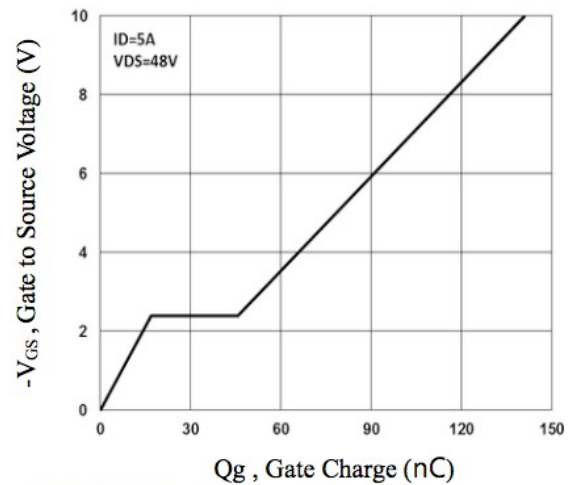


Fig.4 Gate Charge Waveform

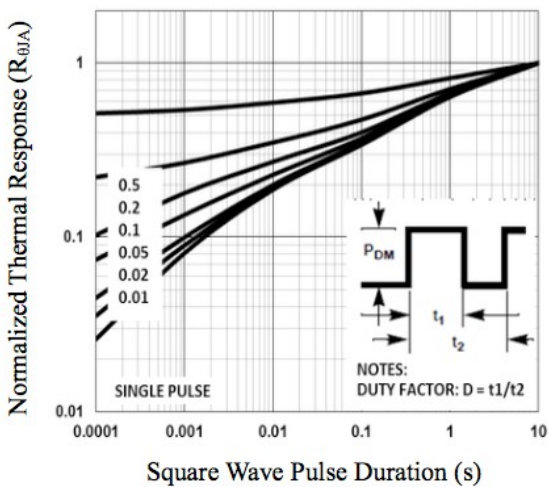


Fig.5 Normalized Transient Impedance

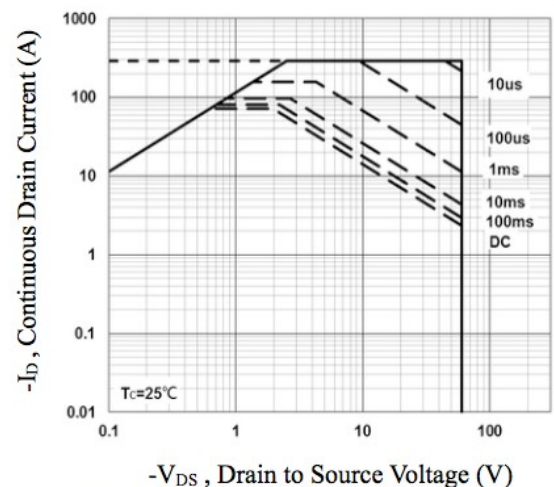


Fig.6 Maximum Safe Operation Area



ACE6901B

P-Channel Enhancement Mode Power MOSFET

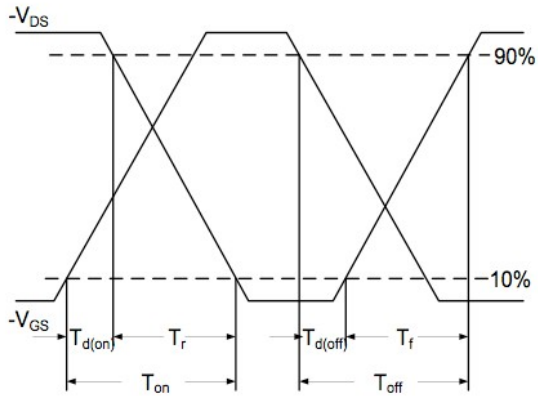


Fig.7 Switching Time Waveform

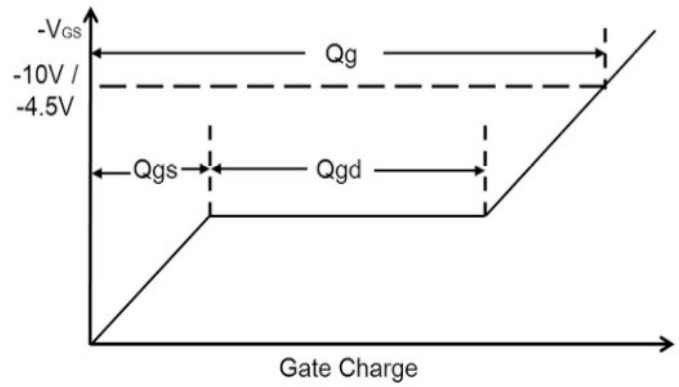


Fig.8 Gate Charge Waveform

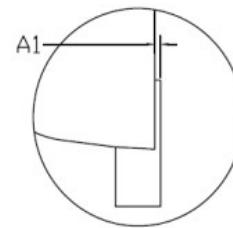
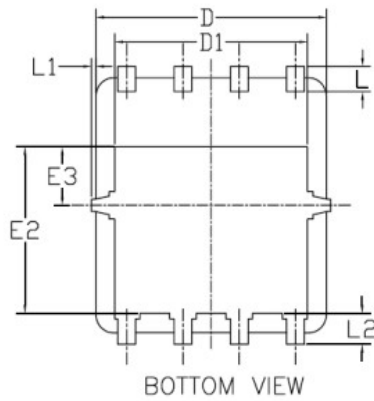
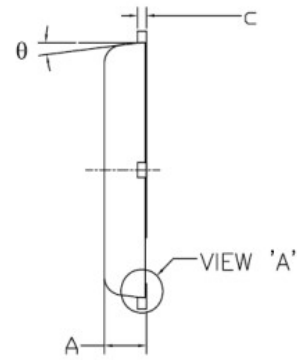
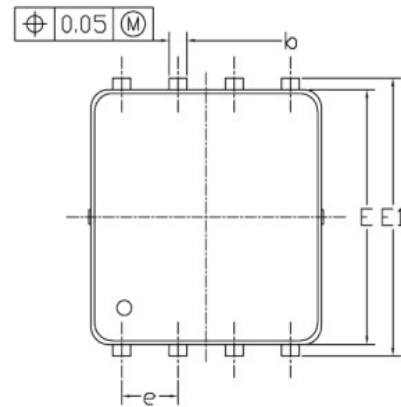


ACE6901B

P-Channel Enhancement Mode Power MOSFET

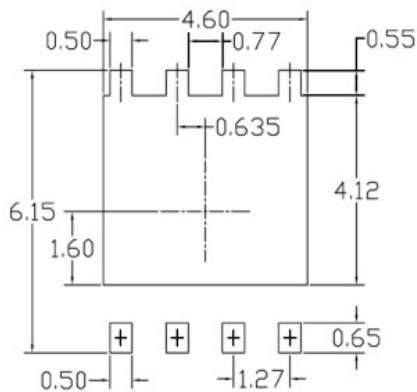
Packing Information

DFN5*6-EP



VIEW 'A'
(SCALE 5:1)

RECOMMENDED LAND PATTERN



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.85	0.95	1.00	0.033	0.037	0.039
A1	0.00	—	0.05	0.000	—	0.002
b	0.30	0.40	0.50	0.012	0.016	0.020
c	0.15	0.20	0.25	0.006	0.008	0.010
D	5.20 BSC			0.205 BSC		
D1	4.35 BSC			0.171 BSC		
E	5.55 BSC			0.219 BSC		
E1	6.05 BSC			0.238 BSC		
E2	3.625 BSC			0.143 BSC		
E3	1.275 BSC			0.050 BSC		
e	1.27 BSC			0.050 BSC		
L	0.45	0.55	0.65	0.018	0.022	0.026
L1	0	—	0.15	0	—	0.006
L2	0.68 REF			0.027 REF		
θ	0°	—	10°	0°	—	10°

UNIT: mm

NOTE

- PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
MOLD FLASH AT THE NON-LEAD SIDES SHOULD BE LESS THAN 6 MILS EACH.
- CONTROLLING DIMENSION IS MILLIMETER.
CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.



ACE6901B

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 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 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/>