



ACE7203B

P-Channel Enhancement Mode Power MOSFET

Description

ACE7203B 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

- $V_{DS}=-20V$, $I_D=-95A$
- $R_{DS(ON)1}@V_{GS}=-10V$, TYP 1.7m Ω
- $R_{DS(ON)1}@V_{GS}=-4.5V$, TYP 2.0m Ω
- $R_{DS(ON)1}@V_{GS}=-4.5V$, TYP 2.7m Ω

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Drain-Source Voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GSS}	± 12	V
Drain Current (Continuous)*AC	I_D	$T_A=25^\circ C$	-95
		$T_A=100^\circ C$	-60
Drain Current (Pulsed)*B	I_{DM}	-200	A
Power Dissipation	P_D	45	W
Operating temperature / storage temperature	T_J/T_{STG}	-55~150	$^\circ C$

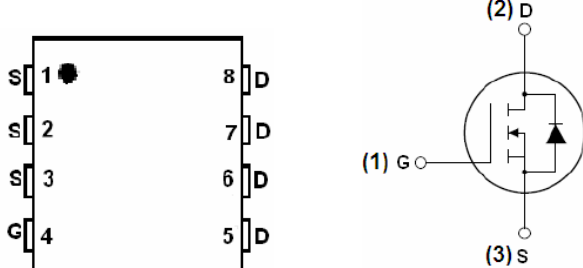
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$. The value in any given application depends on the user's specific board design.

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.

Packaging Type

DFN5*6-EP





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Ordering information

ACE7203B XX + H

- └─ Halogen - free
- └─ Pb - free
- └─ PN: DFN5*6-EP

Electrical Characteristics

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-10			V
Zero Gate Voltage Drain Current	I_{DSS1}	$V_{DS} = -30V, V_{GS} = 0V$			1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_{DS} = -250\mu A$	-0.4		-1.0	V
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 12V, V_{DS} = 0V$			± 500	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -20A$		1.7	2.3	m Ω
		$V_{GS} = -4.5V, I_D = -20A$		2.0	2.6	
		$V_{GS} = -2.5V, I_D = -20A$		2.7	3.6	
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				-95	A
Switching						
Total Gate Charge	Q_g	$V_{DS} = -16V, I_D = -5A, V_{GS} = -4.5V$		149		nC
Gate-Source Charge	Q_{gs}			14.4		nC
Gate-Drain Charge	Q_{gd}			42.8		nC
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = -15V, I_D = -10A, V_{GS} = -10V, R_{GEN} = 5\Omega$		21		ns
Turn-on Rise Time	t_r			20		ns
Turn-off Delay Time	$t_{d(off)}$			26		ns
Turn-off Fall Time	t_f			400		ns
Dynamic						
Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz$		14000		pF
Output Capacitance	C_{oss}			1670		pF
Reverse Transfer Capacitance	C_{rss}			730		pF



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Typical Performance Characteristics

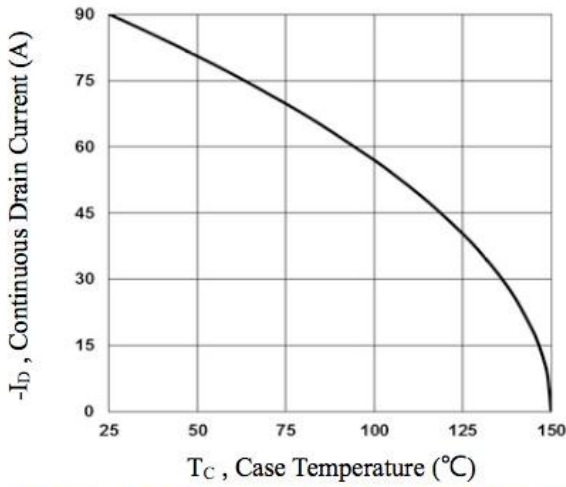


Fig.1 Continuous Drain Current vs. T_c

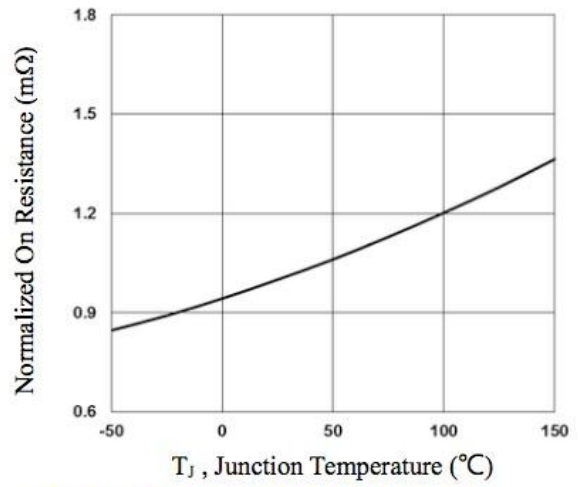


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

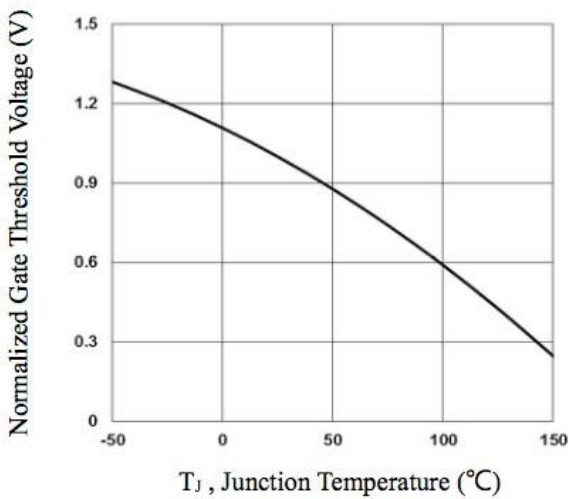


Fig.3 Normalized V_{th} vs. T_j

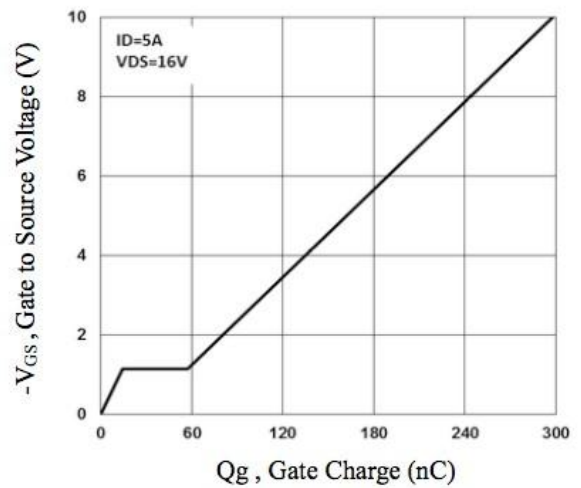


Fig.4 Gate Charge Waveform

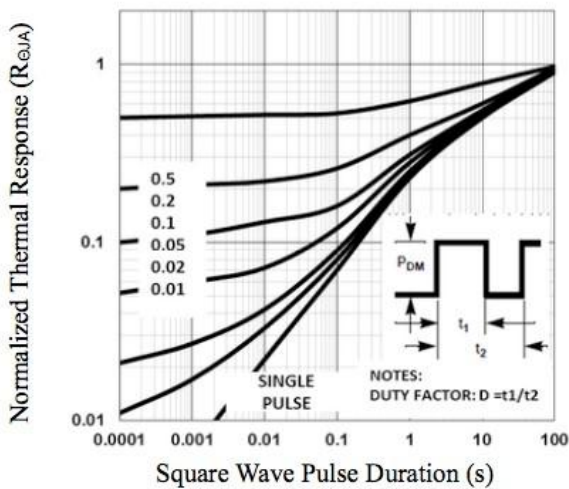


Fig.5 Normalized Transient Response

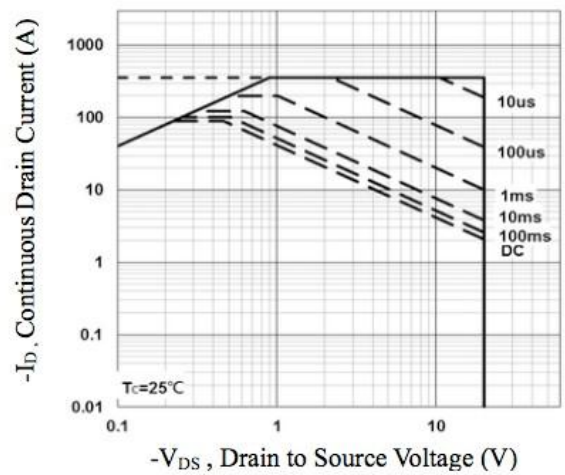


Fig.6 Maximum Safe Operation Area



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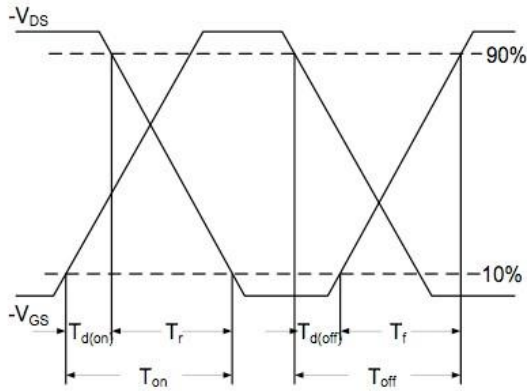


Fig.7 Switching Time Waveform

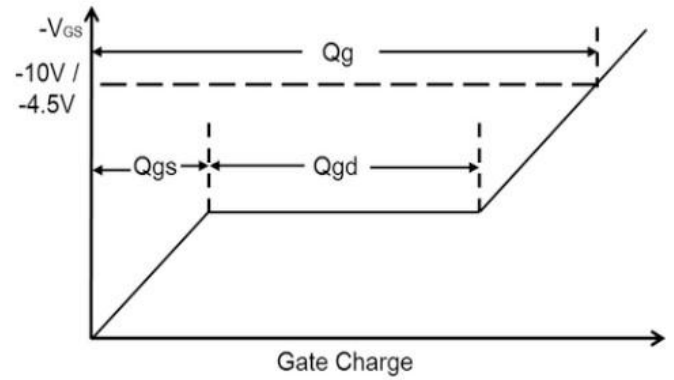


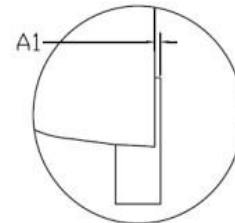
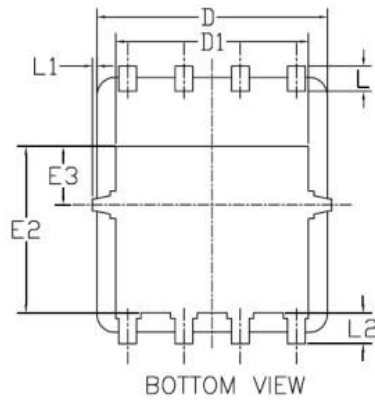
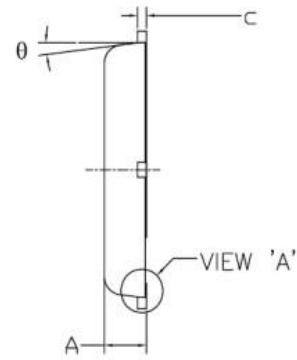
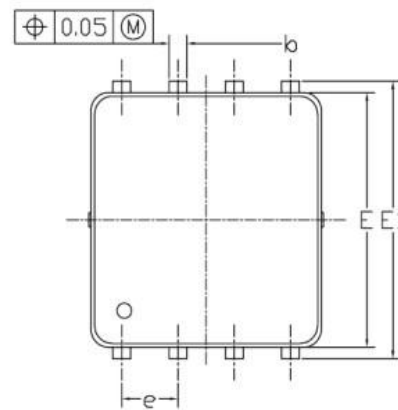
Fig.8 Gate Charge Waveform



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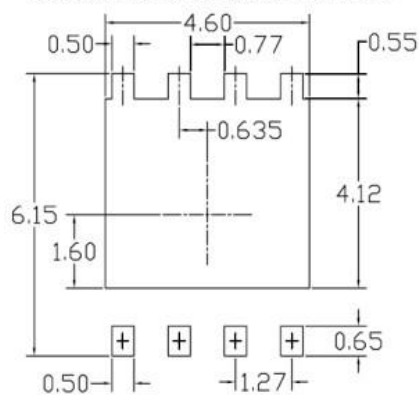
Packing Information

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

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



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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.

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